Downtown Cottage Grove Historic Preservation Handbook

A Handbook for Property Owners and Business Owners in the Downtown Cottage Grove National Register Historic District

Prepared in March 2010 by:

City of Cottage Grove
Community Development Department
400 E. Main Street
Cottage Grove, OR 97424
www.cottagegrove.org

Downtown Cottage Grove Historic Preservation Handbook
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March 22, 2010

Dear Friends:

This document is intended to provide owners and tenants of historic buildings in Cottage Grove's Downtown Historic District with a comprehensive guide to *issues, regulations, guidelines, incentives, and resources* available to you as owners/operators of National Register designated historic properties.

You'll find lots of resources in this document, as well as contacts for local and state agencies if you have more questions.

Section 1 answers questions you may have about owning a designated Historic Building in Cottage Grove. It includes answers to Frequently Asked Questions Regarding Historic Buildings and National Register Bulletin #5, which describes National Register Benefits and Restrictions.

Section 2 highlights financial incentives available to you as owners of historic buildings. This includes information on *Historic Preservation Tax Incentives* and the *Oregon Special Assessment Program*. We have also included information on the NEW *Cottage Grove Downtown Façade Grant Program*.

Section 3 recommends techniques for maintaining and enhancing your historic building. We've provided NPS Preservation Briefs on cleaning and water-repellent treatments for masonry buildings, repointing mortar joints, repairing windows, rehabilitating historic storefronts, and the use of awnings. We have also included a list of additional websites that you can explore to get answers to a variety of building maintenance concerns.

Section 4 includes applicable local regulations. Chapter 2.6.300 – Historic Preservation (HP) Overlay District includes criteria and procedures for new construction, additions and alterations within a designated historic district. This code is applicable to all properties within the Cottage Grove Downtown Historic District. You can download this code and historic alteration applications for at http://cottagegrove.org/commdev/ or pick up copies at the Community Development Department, City Hall, 400 E. Main Street.

Section 5 contains the *City of Cottage Grove Downtown Historic District Design Guidelines.* It is important that you have a copy of the adopted design guidelines for your neighborhood. These provide recommendations and guidance on rehabilitation, restoration, and maintenance of your building. They are intended to help property owners/tenants meet the Secretary of Interior's Standards for Rehabilitation of Historic Structures, which are referenced in Chapter 2.6.300 and are used by the State Historic Preservation Office (SHPO) and the National Park Service for tax credit programs and other financial incentive programs.

We hope that you find this document helpful. If you have any questions that remain unanswered, please contact us at (541)942-3340 or visit us at City Hall. We would like to do everything we can to ensure that you have a prosperous and rewarding experience in Cottage Grove's historic downtown.

Sincerely,

Amanda Ferguson
City Planner
Community Development Department
City of Cottage Grove

SECTION 1:

Frequently Asked Questions

Frequently asked questions regarding historic buildings

How do I know if a building is "historic"?

Any building over 50 years old may classify as "historic". Buildings that have particular merit may be designated as "historic landmarks" on the City of Cottage Grove's local inventory and/or on the National Register of Historic Places.

A building, site, or neighborhood may be eligible for local, state or national designation as a historic landmark based on any of the following criteria:

- Its association with historic or famous events;
- Its association with the lives of persons, or groups of people, significant in local, state or national history;
- Its architectural design or method of construction;
- Its relationship to the cultural, social, political and/or economic history of the community;
- Its identification as a resource that represents an aesthetic or educational feature of the community;
- The likelihood that the property will yield important information about pre-history or the historic past of the community.

What is the National Register of Historic Places?

The National Register is the official federal list of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering, and culture. National Register properties are recognized for having significance to the history of their community, state, or the nation.

If your property is designated on the National Register of Historic Places, it is automatically designated as a local historic landmark in Cottage Grove.

The National Park Service administers the National Register of Historic Places. The National Park Service has a "Frequently Asked Questions" page on the National Register at http://www.nps.gov/nr/faq.htm#nr.

What is the Historic Landmarks Commission?

The Historic Landmarks Commission is a volunteer, 5-member commission appointed by the City Council to review applications for new construction, additions, extensive remodeling, or demolition within the Historic Preservation Overlay District. This volunteer commission holds public meetings on Historic Alteration Permits. They also advise city staff on historic preservation planning issues and set policy and guidelines for preservation programs as part of Cottage Grove's Certified Local Government program.

What is the process for designating a building or neighborhood as a *local* historic landmark?

There are several ways to designate a building or neighborhood as a local historic landmark.

1. When any historic resource or neighborhood is officially entered into the National Register of Historic Places, the resource is automatically designated by HP overlay zoning as a local historic landmark.

   In this case, the property owner or neighborhood group applies to the National Park Service for designation as a National Register Historic Landmark or National Register Historic District. The application is sent to the State Historic Preservation Office for review before being sent on to the National Park Service in Washington, D.C. for designation on the National Register of Historic Places. The affected property owner(s) will be given an opportunity to opt-out of the designation by the State Historic Preservation Office. Any property designated on the National Register is automatically placed on Cottage Grove's local landmarks list and protected by our local Historic Preservation Overlay District.

2. A group or person may nominate the historic resource for local historic landmark designation through a Type III Historic Preservation application.

   A property owner or neighborhood group applies for this designation through the City of Cottage Grove's Community Development Department. The application is reviewed by the City's Historic Landmarks Commission at one of their regular meetings. The Historic Landmarks Commission bases their decision on criteria listed above.

3. The Historic Landmark Commission may recommend historic resources for local historic landmark designation based on a City-inventory of historic resources following the procedures set forth in the Historic Landmark Ordinance

   During this inventory, a historic building specialist reviews the architectural character of a

building or a neighborhood, its individual history and alterations which have occurred to the building(s) exterior. The Historic Landmarks Commission review the building(s) according to criteria listed above. Formal designation is made following the public hearing. Property owners have an opportunity to comment and opt-out of the designation.

4. The Planning Commission may recommend historic resources for local historic landmark designation following the procedures set forth in the Historic Landmark Ordinance.

Do property owners have a choice whether or not their building is listed as a "historic landmark"?

All affected property owners are invited to attend a public hearing before the Historic Landmarks Commission on any application for local Landmarks Designation. Individual property owners may object and opt-out at that time. If no objections are filed with the Community Development Department, the historic designation becomes final if the Historic Landmarks Commission votes to accept the application as presented.

National Register nominations follow the procedure established by the National Park Service. Property owners have an opportunity to opt-out in writing to the State Historic Preservation Office if they do not want to be nominated to the National Register.

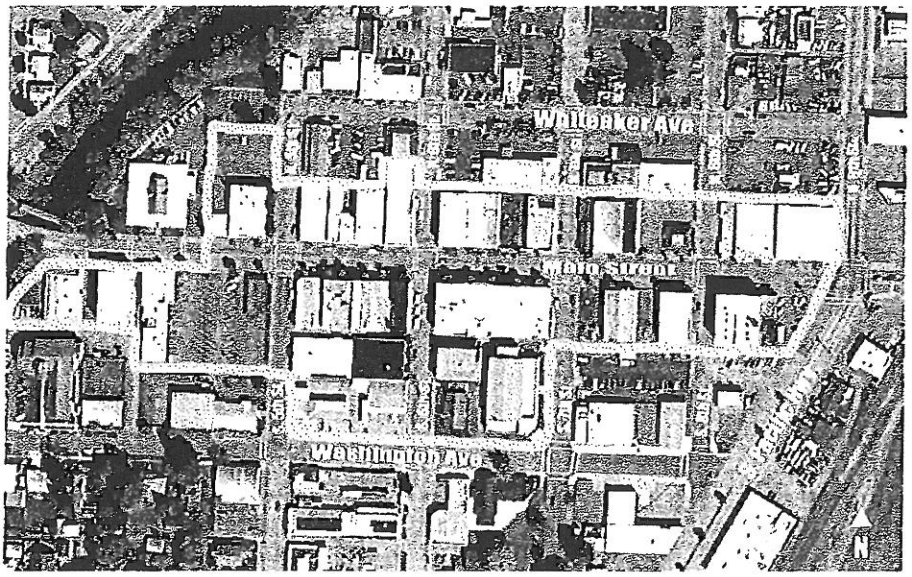
Designation is permanent. Once designated, the building remains designated as "historic" at a national and/or local level, unless demolished or moved.

Is Cottage Grove's Downtown listed on the National Register of Historic Places?

Yes. Downtown Cottage Grove was listed on the National Register of Historic Places in 1992.

The Downtown National Register Historic District is also designated as a "historic district" at the local level, which means that local Historic Preservation standards in the Cottage Grove Development Code apply to all "historic landmarks" in Downtown Cottage Grove.

The map below shows the outline of the Downtown National Register Historic District.



I own or lease a building in Cottage Grove's historic downtown. Is my building a "historic landmark"?

All buildings within a designated "historic neighborhood" or "historic district" are "historic landmarks", although some buildings are listed as "contributing" to the historic character of the district and others are listed as "non-contributing" or "non-contributing/non-historic". Historic buildings (i.e. older than 50 years) are typically listed as "non-contributing" when they have been altered so much that you can no longer see their historic form or materials. If you renovate your historic building, you may be able to change its listing from "non-contributing" to "contributing".

Are there other "historic landmarks" in Cottage Grove?

Yes. There are several dozen buildings listed as local "historic landmarks", as well as approximately a dozen buildings on the National Register of Historic Places that are not in the Downtown Historic District. For a list of local historic landmarks, check our website at www.cottagegrove.org.

What are the benefits of National Register designation?

Across the country, historic designation has been proven to be one of the best tools we have to improve property values and ensure neighborhood sustainability.

Contributing historic landmarks qualify for a 10-year tax freeze from the State of Oregon, and may qualify for "brick and mortar" grants from the Oregon State Historic Preservation Office for qualified restoration projects.

Owners of contributing historic landmarks may apply for Federal Historic Preservation Tax Incentives when remodeling their income-generating properties. The Federal Historic Preservation Tax Incentives program encourages private sector rehabilitation of historic buildings and is one of the nation's most successful and cost-effective community revitalization programs. It provides a 20% tax credit for qualifying rehabilitation projects.

What are the benefits of local designation?

Designation as a local historic landmark or historic neighborhood is intended to protect and encourage the continued use of historic resources. Designated resources are protected by the Historic Preservation Overlay District standards found in the Cottage Grove Development Code. These standards ensure that new construction or alterations on historic building or on adjacent properties are sensitive to the historic character of the resource and/or district.

Are financial incentives available?

Financial incentives are available through the State and Federal Government for buildings individually listed on the National Register of Historic Places or landmarks within a National Register Historic District.

The State Historic Preservation Office offers "Special Assessment" – a freeze on the assessed value of a building for 10 years. Applicants must prepare and commit to restoration and improvement plans of their building. All plans and alterations to both the exterior and interior must be approved by the State before work is commenced. For more information call the State Historic Preservation Office at 503-378-4168. The State Historic Preservation Office website is at prd.state.or.us.

The US Department of the Interior offers a 20% Federal tax credit for rehabilitation performed on income-producing buildings (apartments, bed & breakfast, commercial, etc.) Again, all work on both the exterior and interior must by approved before work is commenced. In this case, both the State and Federal Government review the planned restoration and renovation.

Also, the National Trust for Historic Preservation has a tax credit fund established jointly with Bank of America. Contact the National Trust for Historic Preservation for more information. The National Trust for Historic Preservation website is: www.ntph.org.

What protections or restrictions are placed on designated historic buildings?

Protections include the review of **new construction** adjacent to historic buildings. The Historic Landmarks Commission reviews new construction to ensure compatibility in scale, style, height, materials, architectural detail, and orientation with the adjacent historic building and neighborhood.

The Historic Landmark Commission also protects historic buildings from **demolition**. Demolition of historic buildings requires a public hearing before the Landmarks Commission, who can delay the demolition to give neighbors or other concerned citizens time to save the building.

Restrictions are placed on **exterior alterations** of historic buildings. Exterior alterations are reviewed by the Historic Landmarks Commission. Alterations including attaching decks or porches, replacing siding with different type of material, replacing windows with different materials or styles, removing historic ornamentation, changing rooflines, constructing an addition, etc. Minor exterior alterations (such as replacing missing historic features or repairing structures based on historic photographs) may be approved administratively by City Staff.

Interior alterations are not reviewed by the Historic Landmarks Commission, although building permits are required. If you have an intact historic interior, you should contact the State Historic Preservation Office (SHPO) before removing historic features. Removal of interior finishes may hurt your chances to qualify for state or federal financial incentives. If you are participating in the Special Assessment Program, you must receive SHPO approval for any changes you make to the interior of your building.

Routine maintenance is not reviewed. Routine maintenance includes cleaning, landscaping and minor repairs. In addition, paint colors are not reviewed.

I want to paint my historic building. Do I need a permit from the City?

If your building is already painted, you do not need a permit to re-paint it. We don't regulate paint colors. However, the City will offer assistance in selecting colors if requested by the property owner.

If your building is brick, and not painted, DO NOT paint it. Paint can be very damaging to historic brick. Contact the Community Development Department if you have questions.

Murals are allowed downtown, if (1) the surface is already painted, and (2) the mural doesn't act as a sign for your business. If you want to paint a new mural, you need to apply for a Type II Historic Alteration Permit. Contact the Community Development Department before you begin your project.

I want to renovate the exterior of my building. Do I need special approval?

Yes. If you want to change the exterior of your historic building, you should contact the City of Cottage Grove Community Development Department. Staff will help you determine if you need to get approval from the Community Development Department or the Historic Landmarks Commission for your project. You may also need to get building permits and specialty (sign, electrical, mechanical or plumbing) permits for your proposed work.

Please review the *Cottage Grove Downtown Historic District Design Guidelines*. They will help you figure out what kind of exterior changes might be appropriate on your historic building.

Does the Cottage Grove Historical Society have anything to do with the City of Cottage Grove's historic building program?

No, not directly. People often confuse the historical society with the Historic Landmarks Commission. The Cottage Grove Historical Society has nothing to do with the review of local landmarks – that's the role of the Historic Landmarks Commission.

The Cottage Grove Historical Society is a non-profit organization of volunteers that maintains the historic library.

The Cottage Grove Genealogical Society maintains historical records of families from the area.

Where can I get additional information about historic landmarks and historic preservation?

The Community Development Department has put together a *Historic Preservation Handbook* for your use. This document is full of tidbits on preserving your historic building. It also includes a copy of the *Cottage Grove Downtown Historic District Design Guidelines*. These guidelines were written to give property and business owners in the historic district suggestions and guidance for restoring, rehabilitating, and maintaining their historic properties.

You can also call the City of Cottage Grove Community Development Department at 541-942-3340, write to us at 400 East Main Street, Cottage Grove, OR 97424, or email the City Planner at planner@cottagegrove.org.

Applications and Development Code standards can be found on-line at www.cottagegrove.org.

Websites of Interest:

State Historic Preservation Office www.prd.state.or.us
National Trust for Historic Preservation www.ntph.org
The National Register of Historic Places www.cr.nps.gov
(Department of the Interior)
The Oregon Heritage Commission www.oregonheritage.org
City of Cottage Grove www.cottagegrove/planning.org
Cottage Grove Historical Society http://cottagegrovehistoricalsociety.com/
This Old House www.thisoldhouse.com
Old House Journal www.oldhousejournal.com

HERITAGE BULLETIN

Tips, Ideas & More to Help Preserve Oregon's Heritage

5

NATIONAL REGISTER BENEFITS AND RESTRICTIONS

NOVEMBER 2007

The National Register of Historic Places is the official federal list of properties that are significant in American history, architecture, archaeology, and engineering. This is primarily an honorific designation intended to recognize important buildings, structures, object, sites and districts to encourage their preservation. The National Register program is a federal program administered at the state level by the State Historic Preservation Office (SHPO). The regulation of National Register-listed properties in Oregon takes place at the local level. The following benefits and restrictions apply to National Register-listed properties:

Benefits:

- *Recognition*
- *Tax Credit Eligibility*
- *Consideration in planning for federally licensed, permitted or funded projects*
- *Grants*
- *Special Assessment*
- *Building Code Leniency*

BENEFITS

Recognition: Owners may purchase an official plaque that can be placed on the building. Please contact Susan Haylock at 503-986-0672 for ordering instructions.

Eligibility for federal tax credit: The SHPO administers a federal tax credit program that can save building owners twenty percent of the cost of rehabilitating their National Register-listed commercial, industrial, or rental residential building. Requirements include submitting a short application form and performing only work that meets appropriate rehabilitation standards. Because tax aspects outlined above are complex, individuals should consult legal counsel, an accountant or the appropriate local Internal Revenue Service office for assistance in determining the tax consequences of the above provisions.

Consideration in planning for federally licensed, permitted, or funded projects: Section 106 of the National Historic Preservation Act of 1966 requires that federal agencies allow for the Advisory

Council on Historic Preservation to have an opportunity to comment on all projects affecting historic properties listed in the National Register. This program is administered at the state level.

Grants: When funds are available, Preserving Oregon grant applications are invited, usually in November. Contact the SHPO for the grant schedule. Grants are awarded competitively since demand invariably exceeds availability of funds.

Special Assessment: This program allows owners of properties listed in the National Register of Historic Places to apply to freeze the assessed value of the property for a 10-year period. The program is designed as an incentive to assist property owners in the preservation of historic resources. The law requires property owners to submit a preservation plan for the building and to install an identification plaque. Owners have the opportunity to apply for an additional 10-year freeze after the completion of the first term.

Building Code Leniency: Under Section 3403.5 of the Uniform Building Code/Oregon Structural Specialty Code, National Register properties, and other certified historic buildings, are eligible to be considered for waivers of certain normal code requirements in the interest of preserving the integrity of the property.

RESTRICTIONS

No restrictions are imposed by the state or federal governments; however, state law in Oregon requires local governments to offer some level of protection to National Register properties. Local jurisdictions (county or city) regulate National Register-listed properties per their local ordinances, which means restrictions will vary from jurisdiction to jurisdiction. Contact your local planning bureau to determine the level of regulation in your community.

No restrictions are imposed by the state or federal government. Local jurisdictions regulate National Register listed properties per their local ordinances.

Historic District Listing: Private property owners may object to the listing of their property by sending a notarized letter to that effect to the SHPO prior to final review. In the case of a historic district, a majority of property owners must object in order to stop a nomination. Individual property owners within a historic district may not "opt out"

if the majority of owners have not objected. National Register-listed historic districts, just like individually listed buildings, are subject to whatever local regulations apply (as described above).

Public Property Listing: Public property owners may support or object to the listing of a publicly owned property, but owner consent is not required for nominations of public properties to move forward.

If you wish to comment on the nomination of a property to the National Register, please send your comments to the SHPO before the forthcoming meeting of the State Advisory Committee on Historic Preservation. A copy of the nomination and information on the National Register is available from the SHPO upon request.

If you wish to comment on the nomination of a property to the National Register, please send your comments to the State Historic Preservation Office before the forthcoming meeting of the State Advisory Committee on Historic Preservation.

ADDITIONAL INFORMATION

State Historic Preservation Office
Oregon Parks and Recreation Department
725 Summer Street, N.E., Suite C
Salem, OR 97301

Oregon SHPO website: www.oregonheritage.org
National Register website: www.cr.nps.gov/nr/index.htm

For general information about the National Register of Historic Places, contact Kimarie Lamb, Heritage Programs Adminstrative Specialist at 503-986-0690.

National Register Program Staff:

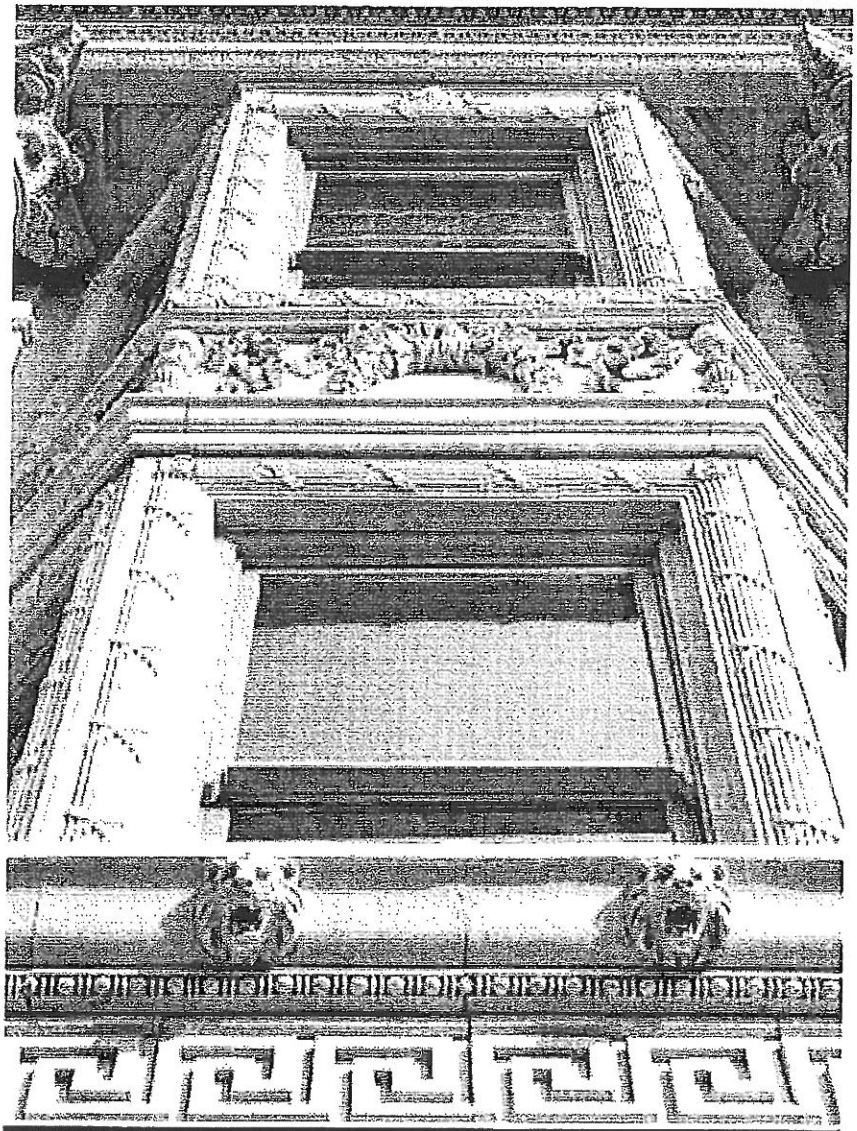
Ian Johnson, Historian
503-986-0678
ian.johnson@state.or.us

Cara Kaser, Architectural Historian
503-986-0784
cara.kaser@state.or.us

SECTION 2:

Financial Incentives and Assistance

Historic Preservation Tax Incentives



National Park Service
U.S. Department of the Interior

Technical Preservation Services

This booklet describes the Federal Historic Preservation Tax Incentives in general terms only. Every effort has been made to present current information as of the date given below. However, the Internal Revenue Code is complex and changes frequently. Furthermore, the provisions of the tax code regarding at-risk rules, passive activity limitation, and alternative minimum tax can affect a taxpayer's ability to use these tax credits. *Readers are strongly advised to consult an accountant, tax attorney, or other professional tax advisor, legal counsel, or the Internal Revenue Service for help in determining whether these incentives apply to their own situations.* For more detailed information, including copies of application forms, regulations, and other program information, contact one of the offices listed on pages 26-29.

Department of the Interior regulations governing the procedures for obtaining historic preservation certifications are more fully explained in Title 36 of the Code of Federal Regulations, Part 67. The Internal Revenue Service regulations governing the tax credits for rehabilitation are contained in Treasury Regulation Section 1.48-12. These sets of regulations take precedence in the event of any inconsistency with this booklet.

Technical Preservation Services
National Park Service
2009

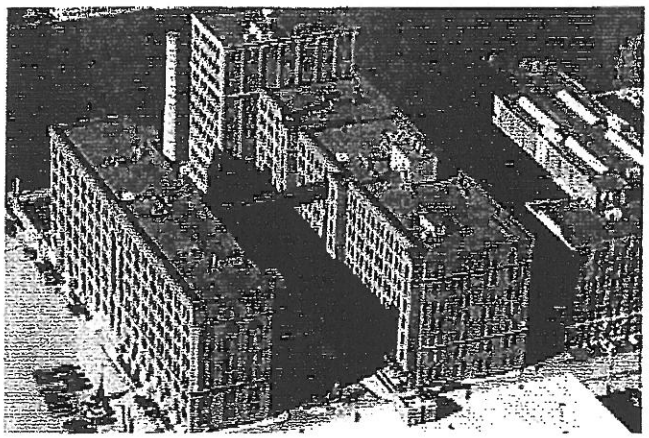
Cover: German Bank, Dubuque, Iowa (1901). After rehabilitation for continued commercial and residential use. Courtesy State Historical Society of Iowa. Photograph: John Zeiler

Quick Reference

Preservation Tax Incentives

Historic buildings are tangible links with the past. They help give a community a sense of identity, stability and orientation. The Federal government encourages the preservation of historic buildings through various means. One of these is the program of Federal tax incentives to support the rehabilitation of historic and older buildings. The Federal Historic Preservation Tax Incentives program is one of the Federal government's most successful and cost-effective community revitalization programs.

The National Park Service administers the program with the Internal Revenue Service in partnership with State Historic Preservation Offices. The tax incentives promote the rehabilitation of historic structures of every period, size, style and type. They are instrumental in preserving the historic places that give cities, towns and rural areas their special character. The tax incentives for preservation attract private investment to the historic cores of cities and towns. They also generate jobs, enhance property values, and augment revenues for State and local governments through increased property, business and income taxes. The Preservation Tax Incentives also help create moderate and low-income housing in historic buildings. Through this program, abandoned or underused schools, warehouses, factories, churches, retail stores, apartments, hotels, houses, and offices throughout the country have been restored to life in a manner that maintains their historic character.



Armstrong Cork Company Plant, Pittsburgh, Penn., vans (1901-1913). After rehabilitation for retail and housing. Photograph: Charles Ph

Current tax incentives for preservation, established by the Tax Reform Act of 1986 (PL 99-514; Internal Revenue Code Section 47 [formerly Section 48(g)]) include:

» a 20% tax credit for the *certified rehabilitation* of *certified historic structures.*

» a 10% tax credit for the rehabilitation of *non-historic, non-residential buildings* built before 1936.

From time to time, Congress has increased these credits for limited periods for the rehabilitation of buildings located in areas affected by natural disasters. For more information, see the instructions on IRS Form 3468, Investment Credit, or contact your State Historic Preservation Office.

In all cases the rehabilitation must be a *substantial* one and must involve a *depreciable* building. (These terms will be explained later.)

What Is a Tax Credit?

A tax credit differs from an income tax deduction. An income tax deduction lowers the amount of income subject to taxation. A tax credit, however, lowers the amount of tax owed. In general, a dollar of tax credit reduces the amount of income tax owed by one dollar.

» The 20% rehabilitation tax credit equals 20% of the amount spent in a *certified rehabilitation of a certified historic structure.*

» The 10% rehabilitation tax credit equals 10% of the amount spent to rehabilitate a *non-historic building* built before 1936.

20% Rehabilitation Tax Credit

The Federal historic preservation tax incentives program (the 20% credit) is jointly administered by the U.S. Department of the Interior and the Department of the Treasury. The National Park Service (NPS) acts on behalf of the Secretary of the Interior, in partnership with the State Historic Preservation Officer (SHPO) in each State. The Internal Revenue Service (IRS) acts on behalf of the Secretary of the Treasury. Certification requests (requests for approval for a taxpayer to receive these benefits) are made to the NPS through the appropriate SHPO. Comments by the SHPO on certification requests are fully considered by the NPS. However, approval of projects undertaken for the 20% tax credit is conveyed *only in writing* by duly authorized officials of the National Park Service. For a description of the roles of the NPS, the IRS and the SHPO, see "Tax Credits: Who Does What?" on pages 14 -15.

The 20% rehabilitation tax credit applies to any project that the Secretary of the Interior designates a *certified rehabilitation* of a *certified historic structure*. The 20% credit is available for properties rehabilitated for commercial, industrial, agricultural, or rental residential purposes, but it is not available for properties used exclusively as the owner's private residence.

What is a "certified historic structure?"

A *certified historic structure* is a building that is listed individually in the National Register of Historic Places —OR— a building that is located in a *registered historic district* and certified by the National Park Service as contributing to the historic significance of that district. The "structure" must be a building—not a bridge, ship, railroad car, or dam. (A *registered historic district* is any district listed in the National Register of Historic Places.

Hanny's Building, Phoenix, Arizona (1947). After rehabilitation of this department store for restaurant and other commercial use. Photograph: Ryden Architects, Inc

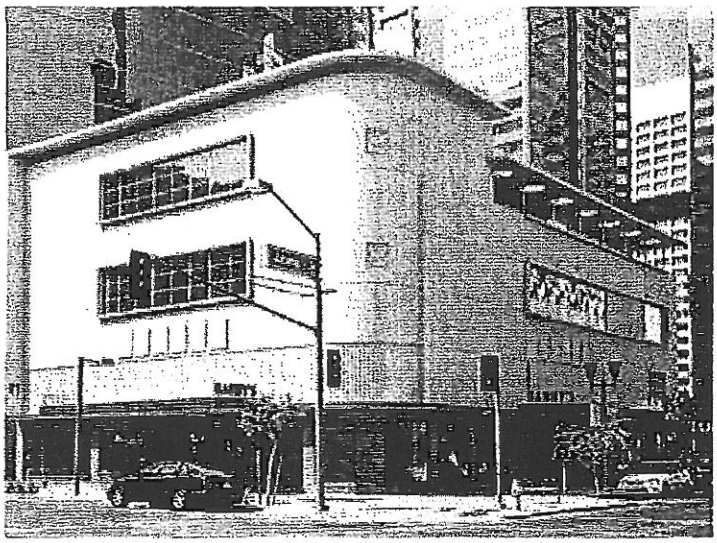
A State or local historic district may also qualify as a *registered historic district* if the district and the enabling statute are certified by the Secretary of the Interior.)

Obtaining Certified Historic Structure Status

Owners of buildings within historic districts must complete Part 1 of the Historic Preservation Certification Application—Evaluation of Significance. The owner submits this application to the SHPO. The SHPO reviews the application and forwards it to the NPS with a recommendation for approving or denying the request. The NPS then determines whether the building contributes to the historic district. If so, the building then becomes a *certified historic structure*. The NPS bases its decision on the Secretary of the Interior's "Standards for Evaluating Significance within Registered Historic Districts" (see page 23).

Buildings individually listed in the National Register of Historic Places are already certified historic structures. Owners of these buildings need not complete the Part 1 application (unless the listed property has more than one building).

Property owners unsure if their building is listed in the National Register or if it is located in a National Register or certified State or local historic district should contact their SHPO.



What if my building is not yet listed in the National Register?

Owners of buildings that are not yet listed individually in the National Register of Historic Places or located in districts that are not yet registered historic districts may use the Historic Preservation Certification Application, Part 1, to request a *preliminary determination of significance* from the National Park Service. Such a determination may also be obtained for a building located in a registered historic district but that is outside the period or area of significance of the district. A preliminary determination of significance allows NPS to review Part 2 of the application describing the proposed rehabilitation. Preliminary determinations, however, are not binding. They become final only when the building or the historic district is listed in the National Register or when the district documentation is amended to include additional periods or areas of significance. It is the owner's responsibility to obtain such listing through the State Historic Preservation Office in a timely manner.

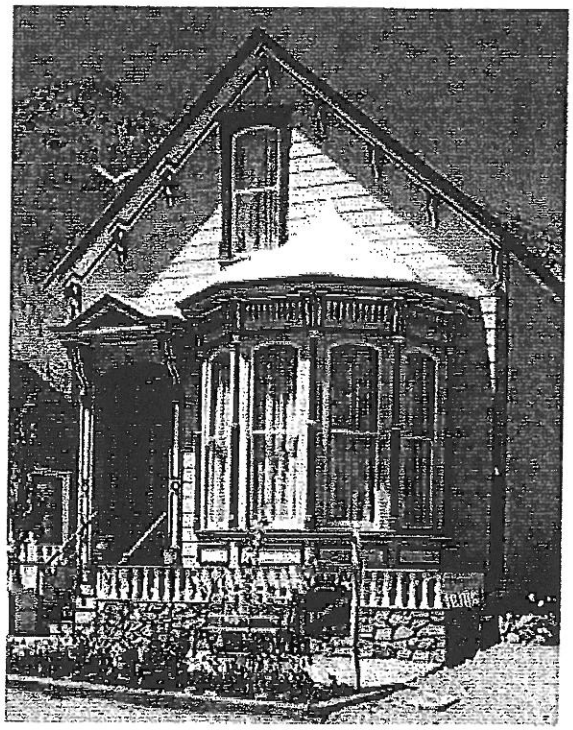
What is a "certified rehabilitation?"

The National Park Service must approve, or "certify," all rehabilitation projects seeking the 20% rehabilitation tax credit. A *certified rehabilitation* is a rehabilitation of a *certified historic structure* that is approved by the NPS as being consistent with the historic character of the property and, where applicable, the district in which it is located. The NPS assumes that some alteration of the historic building will occur to provide for an efficient use. However, the project must not damage, destroy, or cover materials or features, whether interior or exterior, that help define the building's historic character.

Application Process

Owners seeking certification of rehabilitation work must complete Part 2 of the Historic Preservation Certification Application—Description of Rehabilitation. Long-term lessees may also apply if their remaining lease period is at least 27.5 years for residential property or 39 years for nonresidential property. The owner submits the application to the SHPO. The SHPO provides technical assistance and literature on appropriate rehabilitation treatments, advises owners on their applications, makes site visits when possible, and forwards the application to the NPS, with a recommendation.

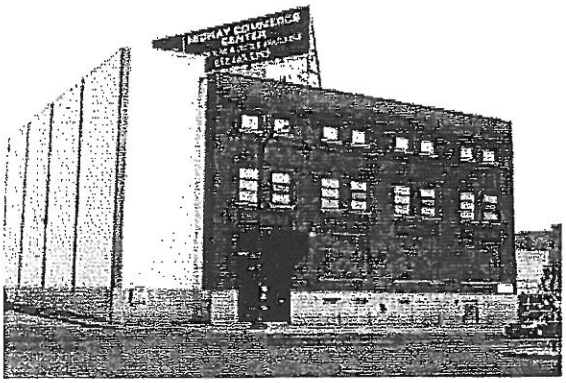
The NPS reviews the rehabilitation project for conformance with the "Secretary of the Interior's Standards for Rehabilitation," and issues a certification decision. The entire project is reviewed, including related demolition and new construction, and is certified, or approved, only if the overall rehabilitation project meets the Standards. These Standards appear on pages 24-25. Both the NPS and the IRS strongly encourage owners to apply *before* they start work.



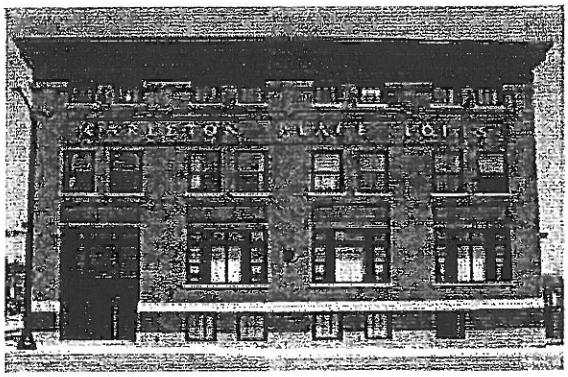
53 B Street, Virginia City, Nevada (1875) Rehabilitated as a bed and breakfast. Courtesy Chris Echin.

After the rehabilitation work is completed, the owner submits Part 3 of the Historic Preservation Certification Application—Request for Certification of Completed Work to the SHPO. The SHPO forwards the application to the NPS, with a recommendation as to certification. The NPS then evaluates the completed project against the work proposed in the Part 2—Description of Rehabilitation. Only completed projects that meet the Standards for Rehabilitation are approved as "certified rehabilitations" for purposes of the 20% rehabilitation tax credit.

Before



After



Carleton Place (historic name: Simmons Manufacturing Company), St. Paul, Minnesota (1909). Before and after rehabilitation for residential use. Courtesy Hess, Roise and Company

Processing Fees

The NPS charges a fee for reviewing applications, except where the total rehabilitation cost is under $20,000. Fees are charged according to a two-tiered system: a preliminary fee and a final fee. The $250 preliminary fee covers NPS review of proposed work. The final fee covers NPS review of completed projects. The final fee depends on the rehabilitation costs, according to the fee schedule below. The preliminary fee is deducted from the final fee. Payment should not be sent until requested by NPS. The NPS will not issue a certification decision until payment has been received. Fees—current as of this printing—may change. See the NPS website on page 26 for any fee changes.

Fee	Cost of Rehabilitation
$500	$20,000 to $99,999
$800	$100,000 to $499,999
$1,500	$500,000 to $999,999
$2,500	$1,000,000 or more

IRS Requirements

To be eligible for the 20% rehabilitation tax credit, a project must also meet basic IRS requirements:

» The building must be *depreciable*. That is, it must be used in a trade or business or held for the production of income. It may be used for offices, for commercial, industrial or agricultural enterprises, or for rental housing. It may not serve exclusively as the owner's private residence.

» The rehabilitation must be *substantial*. That is, during a 24-month period selected by the taxpayer, rehabilitation expenditures must exceed the greater of $5,000 or the adjusted basis of the building and its structural components. The adjusted basis is generally the purchase price, minus the cost of land, plus improvements already made, minus depreciation already taken. Once the substantial rehabilitation test is met, the credit may be claimed for all qualified

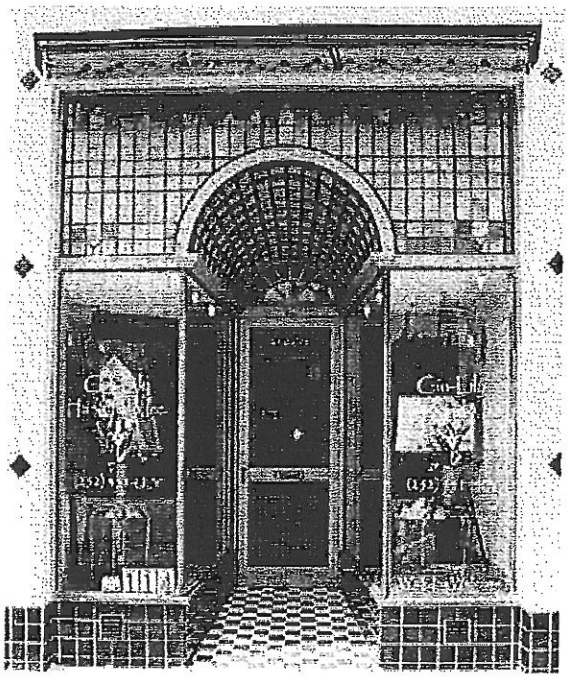
expenditures incurred before the measuring period, during the measuring period and after the measuring period through the end of the taxable year that the building is placed in service.

» Phased rehabilitations—that is, rehabilitations expected to be completed in two or more distinct stages of development—must also meet the "substantial rehabilitation test." However, for phased rehabilitations, the measuring period is 60 months rather than 24 months. This phase rule is available only if: (1) a set of architectural plans and specifications outlines and describes all rehabilitation phases; (2) the plans are completed before the physical rehabilitation work begins, and (3) it can reasonably be expected that all phases will be completed.

» The property must be placed in service (that is, returned to use). The rehabilitation tax credit is generally allowed in the taxable year the rehabilitated property is placed in service.

» The building must be a *certified historic structure* when placed in service. If the building or the historic district is not listed in the National Register, the owner must have requested that the SHPO nominate the building or the district to the National Register before the building is placed in service. If the building is located in a historic district that is listed in the National Register, the owner must submit Part 1 of the application before the rehabilitated building is placed in service.

» Qualified rehabilitation expenditures include costs of the work on the historic building, as well as architectural and engineering fees, site survey fees, legal expenses, development fees, and other construction-related costs, if such costs are added to the property basis and are reasonable and related to the services performed. They do not include acquisition or furnishing costs, new additions that expand the building, new building construction, or parking lots, sidewalks, landscaping, or other related facilities.



114 NW Main Street, Rocky Mount, North Carolina (1928). Photograph: William Ferguson

Getting your project approved, or "certified"

Tens of thousands of projects have been approved for the historic preservation tax credit. Observing the following points will make approval of your project easier:

» *Apply as soon as possible—preferably before beginning work.* Consult with the SHPO as soon as you can. Read carefully the program application, regulations, and any other information the SHPO supplies. Submit your application early in the project planning. Wait until the project is approved in writing by the NPS before beginning work. Work undertaken prior to approval by the NPS may jeopardize certification. In the case of properties not yet designated certified historic structures, apply before the work is completed and the building is placed in service.

» *Photograph the building inside and outside—before and after the project.* "Before" photographs are especially important. Without them, it may be impossible for the NPS to approve a project.

» *Read and follow the "Secretary of the Interior's Standards for Rehabilitation" and the "Guidelines for Rehabilitating Historic Buildings."* If you are unsure how they apply to your building, consult with the SHPO or the NPS.

» *Once you have applied, alert the SHPO and the NPS to any changes in the project.*

Claiming the 20% Rehabilitation Tax Credit

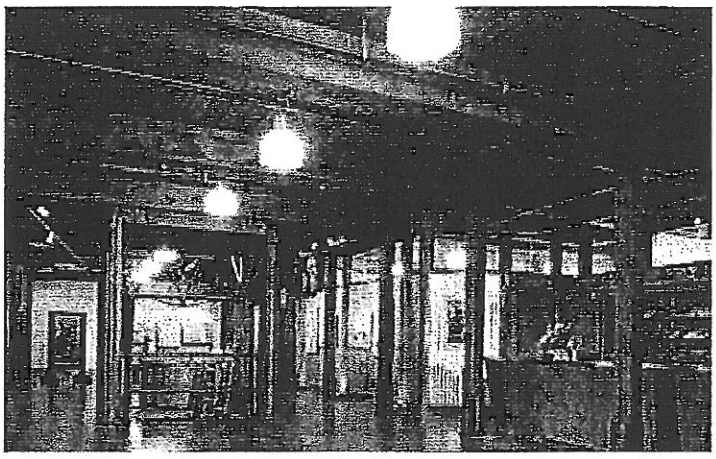
Generally, the tax credit is claimed on IRS form 3468 for the tax year in which the rehabilitated building is placed in service. For phased projects, the tax credit may be claimed before completion of the entire project provided that the substantial rehabilitation test has been met. If a building remains in service throughout the rehabilitation, then the credit may be claimed when the substantial rehabilitation test has been met. In general, unused tax credit can be "carried back" one year and "carried forward" 20 years.

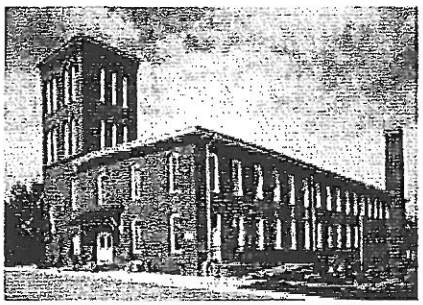
The IRS requires that the NPS certification of completed work (Application Part 3) be filed with the tax return claiming the tax credit. If final certification has not yet been received when the taxpayer files the tax return claiming the credit, a copy of the first page of the Historic Preservation Certification Application—Part 2 must be filed with the tax return, with proof that the building is a *certified historic structure* or that such status has been requested. The copy of the application filed must show evidence that it has been received by either the SHPO or the NPS (date-stamped receipt or other notice is sufficient). If the taxpayer then fails to receive final certification within 30 months after claiming the credit, the taxpayer must agree to extend the period of assessment. If the NPS denies certification to a rehabilitation project, the credit will be disallowed.

Recapture of the Credit

The owner must hold the building for five full years after completing the rehabilitation, or pay back the credit. If the owner disposes of the building within a year after it is placed in service, 100% of the credit is recaptured. For properties held between one and five years, the tax credit recapture amount is reduced by 20% per year.

The NPS or the SHPO may inspect a rehabilitated property at any time during the five-year period. The NPS may revoke certification if work was not done as described in the Historic Preservation Certification Application, or if unapproved alterations were made for up to five years after certification of the rehabilitation. The NPS will notify the IRS of such revocations.





Prizery/R.J. Reynolds Tobacco Warehouse, South Boston, Virginia (1900). Rehabilitated for commercial use. Photographs: Ian Bradshaw.

Depreciation

Rehabilitated property is depreciated using the straight-line method over 27.5 years for residential property and over 39 years for nonresidential property. The depreciable basis of the rehabilitated building must be reduced by the full amount of the tax credit claimed.

Rehabilitation Tax Credits: Who Does What?

The Federal historic preservation tax incentives program is a partnership among the National Park Service (NPS), the State Historic Preservation Officer (SHPO), and the Internal Revenue Service (IRS). Each plays an important role.

SHPO

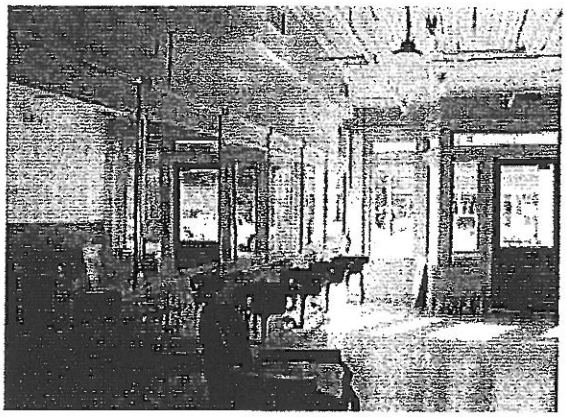
- Serves as first point of contact for property owners.
- Provides application forms, regulations, and other program information.
- Maintains complete records of the State's buildings and districts listed in the National Register of Historic Places, as well as State and local districts that may qualify as registered historic districts.
- Assists anyone wishing to list a building or a district in the National Register of Historic Places.
- Provides technical assistance and literature on appropriate rehabilitation treatments.
- Advises owners on their applications and makes site visits on occasion to assist owners.
- Makes certification recommendations to the NPS.

NPS

- Reviews all applications for conformance to the *Secretary of the Interior's Standards for Rehabilitation.*
- Issues all certification decisions (approvals or denials) in writing.
- Transmits copies of all decisions to the IRS.
- Develops and publishes program regulations, the *Secretary of the Interior's Standards for Rehabilitation*, the Historic Preservation Certification Application, and information on rehabilitation treatments.

IRS

- Publishes regulations governing which rehabilitation expenses qualify, the time periods for incurring expenses, the tax consequences of certification decisions by NPS, and all other procedural and legal matters concerning both the 20% and the 10% rehabilitation tax credits.
- Answers public inquiries concerning legal and financial aspects of the Historic Preservation Tax Incentives, and publishes the audit guide, *Market Segment Specialization Program: Rehabilitation Tax Credit*, to assist owners.
- Insures that only parties eligible for the rehabilitation tax credits utilize them.



Odd Fellows Building, Raleigh, North Carolina (c. 1860). Rehabilitated for continued commercial use. Courtesy Empire Properties.

10% Rehabilitation Tax Credit

The 10% rehabilitation tax credit is available for the rehabilitation of *non-historic buildings* placed in service before 1936.

As with the 20% rehabilitation tax credit, the 10% credit applies only to buildings—not to ships, bridges or other structures. The rehabilitation must be substantial, exceeding either $5,000 or the adjusted basis of the property, whichever is greater. And the property must be *depreciable.*

The 10% credit applies only to buildings rehabilitated for *non-residential* uses. Rental housing would thus not qualify. Hotels, however, would qualify. They are considered to be in commercial use, not residential.

A building that was moved after 1935 is ineligible for the 10% rehabilitation credit. (A moved *certified historic structure,* however, can still be eligible for the 20% credit.) Furthermore, projects undertaken for the 10% credit must meet a specific physical test for retention of external walls and internal structural framework:

- at least 50% of the building's external walls existing at the time the rehabilitation began must remain in place as external walls at the work's conclusion, and
- at least 75% of the building's existing external walls must remain in place as either external or internal walls, and
- at least 75% of the building's internal structural framework must remain in place.

Claiming the 10% Rehabilitation Tax Credit

The tax credit must be claimed on IRS form 3468 for the tax year in which the rehabilitated building is placed in service. There is no formal review process for rehabilitations of non-historic buildings.

The 10% or 20% Credit: Which One Applies?

The 10% rehabilitation tax credit applies only to non-historic buildings first placed in service before 1936 and rehabilitated for non-residential uses. The 20% rehabilitation tax credit applies only to *certified historic structures,* and may include buildings built after 1936. The two credits are mutually exclusive.

Buildings listed in the National Register of Historic Places are not eligible for the 10% credit. Buildings located in National Register listed historic districts or certified State or local historic districts are presumed to be historic and are therefore not eligible for the 10% credit. In general, owners of buildings in these historic districts may claim the 10% credit *only* if they file Part 1 of the Historic Preservation Certification Application with the National Park Service before the physical work begins and receive a determination that the building does *not* contribute to the district and is not a certified historic structure.

Other Tax Provisions Affecting Use of Preservation Tax Incentives

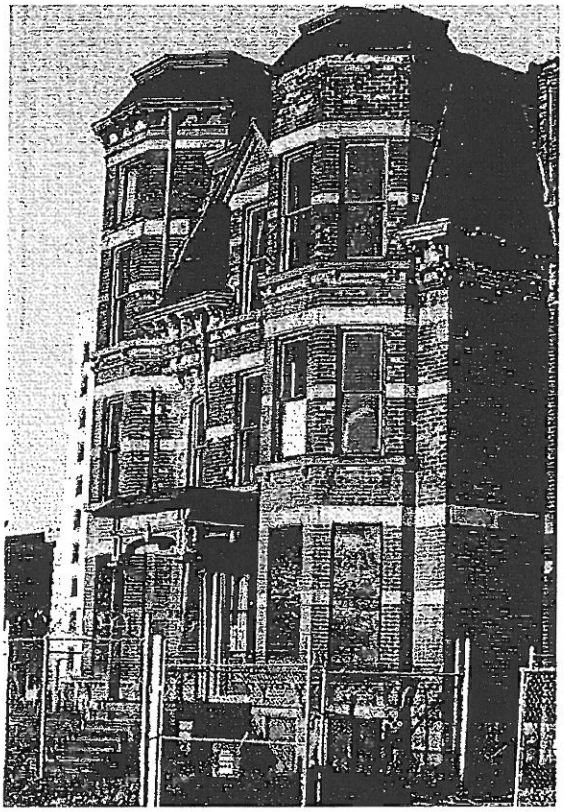
A number of provisions in the Internal Revenue Code affect the way in which real estate investments are treated generally. These provisions include the *"at-risk" rules,* the *passive activity limitation,* and the *alternative minimum tax.* What these provisions mean, in practice, is that many taxpayers may not be able to use tax credits earned in a certified rehabilitation project.

A brief discussion of these matters follows. Applicants should seek professional advice concerning the personal financial implications of these provisions.

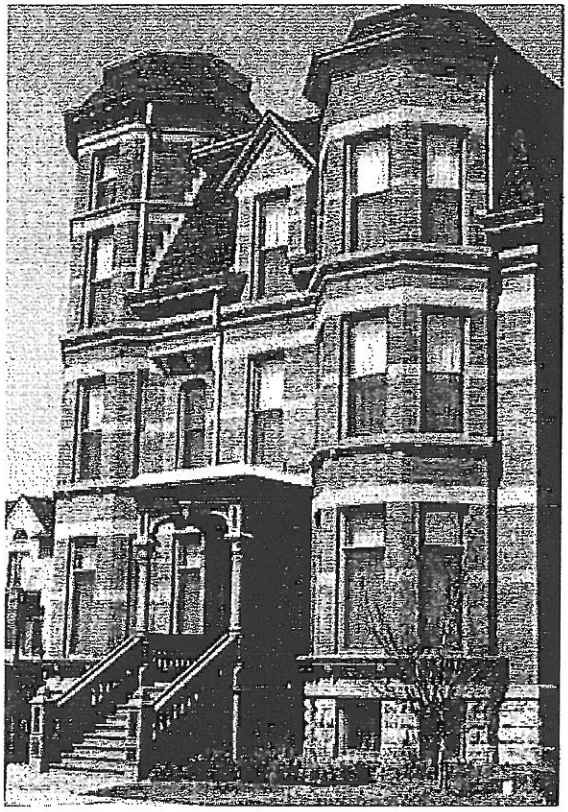
At-Risk Rules

Under Internal Revenue Code Section 465, a taxpayer may deduct losses and obtain credits from a real estate

Before



After



Iron Harvey House, Detroit, Michigan (1875). (opposite) Before rehabilitation, (above) After rehabilitation as a bed and breakfast. Courtesy, Marilyn Hasin-Yezbick. Photograph, Steven C. Flam, Inc.

investment only to the extent that the taxpayer is "at-risk" for the investment. The amount that a taxpayer is "at-risk" is generally the sum of cash or property contributions to the project plus any borrowed money for which the taxpayer is personally liable, including certain borrowed amounts secured by the property used in the project. In addition, in the case of the activity of holding real property, the amount "at-risk" includes qualified non-recourse financing borrowed from certain financial institutions or government entities.

Passive Activity Limitation

The passive activity limitation provides that losses and credits from "passive" income sources, such as real estate limited partnerships, cannot be used to offset tax liability from "active" sources such as salaries. This passive activity limitation does not apply to:

- Most regular corporations.
- Real estate professionals who materially participate in a real property trade or business and who satisfy eligibility requirements regarding the proportion and amount of time spent in such businesses.

For other taxpayers, two exceptions apply: a general exception and a specific exception for certified rehabilitations.

General Passive Loss Rules

Taxpayers with incomes less than $100,000 (generally, adjusted gross income with certain modifications) may take up to $25,000 in losses annually from rental properties. This $25,000 annual limit on losses is reduced for individuals with incomes between $100,000 and $150,000 and eliminated for individuals with incomes over $150,000.

Passive Credit Exemption

Individuals, including limited partners, with modified adjusted gross incomes of less than $200,000 (and, subject to phase out, up to $250,000) investing in a rehabilitation credit project may use the tax credit to offset the tax owed on up to $25,000 of income. Thus, a taxpayer in the 33% tax bracket could use $8,250 of tax credits per year (33% x $25,000 = $8,250).

This $25,000 amount is first reduced by losses allowed under the general "passive loss" rule above for taxpayers with incomes less than $150,000.

Alternative Minimum Tax

For purposes of the rehabilitation tax credit, the alternative minimum tax does not apply to qualified rehabilitation expenditures "properly taken into account for periods after December 31, 2007."

However, for qualified rehabilitation expenditures taken into account for periods before January 1, 2008, taxpayers who are not required to pay tax under the regular tax system may still be liable for tax under the alternative minimum tax laws. Alternative minimum taxable income is computed from regular taxable income with certain adjustments and the addition of all appropriate tax preference items.

Nonrefundable credits, such as the rehabilitation tax credit, may not be used to reduce the alternative minimum tax. If a taxpayer cannot use the tax credit because of the alternative minimum tax, the credit can be carried back or forward.

Rehabilitations Involving Governments and Other Tax-Exempt Entities

Property used by governmental bodies, nonprofit organizations, or other tax-exempt entities is not eligible for the rehabilitation tax credit if the tax-exempt entity enters into a disqualified lease (as the lessee) for more than 50% of the property. A disqualified lease occurs when:

- Part or all of the property was financed directly or indirectly by an obligation in which the interest is tax-exempt under Internal Revenue Code Section 103(a) and such entity (or related entity) participated in such financing; or,
- Under the lease there is a fixed or determinable price for purchase or an option to buy which involves such entity (or related entity); or,
- The lease term is in excess of 20 years; or,
- The lease occurs after a sale or lease of the property and the lessee used the property before the sale or lease.

Other Tax Incentives for Historic Preservation

Other Federal and State tax incentives exist for historic preservation. They may be combined with the rehabilitation tax credit.

Charitable Contributions for Historic Preservation Purposes

Internal Revenue Code Section 170(h) and Department of the Treasury Regulation Section 1.170A-14 provide for income and estate tax deductions for charitable contributions of partial interests in historic property (principally easements). Generally, the IRS considers that a donation of a qualified real property interest to preserve a *historically important land area* or a

certified historic structure meets the test of a charitable contribution for conservation purposes. For purposes of the charitable contribution provisions only, a *certified historic structure* need not be depreciable to qualify, and may include the land area on which it is located.

A facade easement on a building in a registered historic district must preserve the entire exterior of the building (including its front, sides, rear, and height) and must prohibit any change to the exterior of the building that is inconsistent with its historic character. The easement donor must enter into a written agreement with the organization receiving the easement contribution, and must provide additional substantiation requirements. If the deduction claimed is over $10,000, the taxpayer must pay a $500 filing fee. For additional information, see IRS publication 526.

State Tax Incentives

A number of States offer tax incentives for historic preservation. They include tax credits for rehabilitation, tax deductions for easement donations, and property tax abatements or moratoriums. The SHPO will have information on current State programs. Requirements for State incentives may differ from those outlined here.

Tax Credit for Low-Income Housing

The Tax Reform Act of 1986 (IRC Section 42) also established a tax credit for the acquisition and rehabilitation, or new construction of low-income housing. The credit is approximately 9% per year for 10 years for projects not receiving certain Federal subsidies and approximately 4% for 10 years for projects subsidized by tax-exempt bonds or below market Federal loans. The units must be rent restricted and occupied by individuals with incomes below the area median gross income. The law sets a 15-year compliance period. Credits are allocated by State housing credit agencies. The tax credit for low-income housing can be combined with the tax credit for the rehabilitation of certified historic structures.

The Secretary of the Interior's Standards for Evaluating Significance Within Registered Historic Districts

The following Standards govern whether buildings within a historic district contribute to the significance of the district. Owners of buildings that meet these Standards may apply for the 20% rehabilitation tax credit. Buildings within historic districts that meet these Standards *cannot* qualify for the 10% credit.

1. A building contributing to the historic significance of a district is one which by location, design, setting, materials, workmanship, feeling and association adds to the district's sense of time and place and historical development.

2. A building not contributing to the historic significance of a district is one which does not add to the district's sense of time and place and historical development; or one where the location, design, setting, materials, workmanship, feeling and association have been so altered or have so deteriorated that the overall integrity of the building has been irretrievably lost.

3. Ordinarily buildings that have been built within the past 50 years shall not be considered to contribute to the significance of a district unless a strong justification concerning their historical or architectural merit is given or the historical attributes of the district are considered to be less than 50 years old.

The Secretary of the Interior's Standards for Rehabilitation

Rehabilitation projects must meet the following Standards, as interpreted by the National Park Service, to qualify as "certified rehabilitations" eligible for the 20% rehabilitation tax credit. The Standards are applied to projects in a reasonable manner, taking into consideration economic and technical feasibility.

The Standards (36 CFR Part 67) apply to historic buildings of all periods, styles, types, materials, and sizes. They apply to both the exterior and the interior of historic buildings. The Standards also encompass related landscape features and the building's site and environment as well as attached, adjacent, or related new construction.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.

2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.

3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.

4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.

5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.

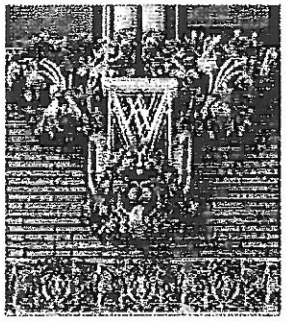
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.

7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

8. Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.



Van Allen and Son Department Store, Clinton, Iowa (1913-1915). Courtesy Community Housing Initiatives, Inc.

For More Information

For more information on tax incentives for historic preservation, contact the NPS, the IRS, or one of the SHPOs listed below. Available information includes:

- A *Catalog* of NPS publications on appropriate methods to preserve historic buildings. These include *Guidelines for Rehabilitating Historic Buildings*, *Preservation Briefs*, and many others.
- The Historic Preservation Certification Application (a 3-part form: Part 1—Evaluation of Significance; Part 2—Description of Rehabilitation; Part 3—Request for Certification of Completed Work).
- Department of the Interior, National Park Service, regulations on "Historic Preservation Certifications." [36 CFR Part 67].
- Department of the Treasury, Internal Revenue Service, regulations on "Investment Tax Credit for Qualified Rehabilitation Expenditures." [Treasury Regulation Section 1.48-12].
- *Market Segment Specialization Program: Rehabilitation Tax Credit* (available only from the IRS).

National Park Service

Preservation Tax Incentives
Technical Preservation Services
National Park Service
1849 C St., NW (org code 2255)
Washington, DC 20240

tel: 202-513-7270
email: nps_hps-info@nps.gov
web: www.nps.gov/history/hps/tps/tax/

Internal Revenue Service

web: www.nps.gov/history/hps/tps/tax/IRS.htm

Additional IRS website: www.irs.gov/businesses/small/industries/article/0,,id=97599,00.html

State Historic Preservation Offices

Websites for the State Historic Preservation Offices listed below can be found at: **www.ncshpo.org**

ALABAMA, Alabama Historical Commission, 468 South Perry Street, Montgomery, AL 36130-0900, 334-242-3184. ALASKA, History and Archeology, Department of Natural Resources, Division of Parks and Outdoor Recreation, 550 W. 7th Avenue, Suite 1310, Anchorage, AK 99501-3565, 907-269-8721. ARIZONA, Office of Historic Preservation, Arizona State Parks, 1300 W. Washington, Phoenix, AZ 85007, 602-542-4009. ARKANSAS, Arkansas Historic Preservation Program, 1500 Tower Building, 323 Center Street, Little Rock, AR 72201, 501-324-9880. CALIFORNIA, Office of Historic Preservation, Department of Parks and Recreation, PO Box 942896, Sacramento, CA 94296-0001, 916-653-6624. COLORADO, Colorado Historical Society, Colorado History Museum, 1300 Broadway, Denver, CO 80203-2137, 303-866-3355. CONNECTICUT, Connecticut Commission on Culture and Tourism, History and Museums Division, One Constitution Plaza, 2nd Floor, Hartford, CT 06103, 860-256-2800. DELAWARE, Division of Historical and Cultural Affairs, 21 The Green, Dover, DE 19901, 302-736-7400. DISTRICT OF COLUMBIA, Historic Preservation Office, D.C. Office of Planning, 801 North Capitol Street, NE, 3rd floor, Washington, DC 20002, 202-442-8800. FLORIDA, Division of Historical Resources, Department of State, R.A. Gray Building, 500 S. Bronough Street, Tallahassee, FL 32399-0250, 850-245-6333. GEORGIA, Department of Natural Resources, Historic Preservation Division, 34 Peachtree Street, NW, Suite 1600, Atlanta, GA 30303, 404-656-2840. HAWAII, Hawaii Historic Preservation Office, 1151 Punchbowl Street, Honolulu, HI 96813, 808-587-0401. IDAHO, Idaho State Historic Preservation Office, 210 Main St., Boise, ID 83702-7264, 208-334-3861. ILLINOIS, Illinois Historic Preservation Agency, Preservation Services Division, One Old State Capitol Plaza, Springfield, IL 62701, 217-782-4836. INDIANA, Department of Natural Resources, 402 West Washington Street, Room W 274, Indianapolis, IN 46204, 317-232-4020. IOWA, State Historical Society of Iowa, 600 East Locust Street, Des Moines, IA 50319-0290, 515-281-4137. KANSAS, Kansas State Historical Society, Cultural Resources Division, 6425 SW 6th Avenue, Topeka, KS 66615-1099, 785-272-8681, ext. 240.

KENTUCKY, Kentucky Heritage Council, 300 Washington Street, Frankfort, KY 40601, 502-564-7005. LOUISIANA, Office of Cultural Development, PO Box 44247, Baton Rouge, LA 70804, 225-342-8160. MAINE, Maine Historic Preservation Commission, 55 Capitol Street, Station 65, Augusta, ME 04333-0065, 207-287-2132. MARYLAND, Maryland Historical Trust, 100 Community Place, Crownsville, MD 21032-2023, 410-514-7600. MASSACHUSETTS, Massachusetts Historical Commission, Massachusetts Archives Facility, 220 Morrissey Boulevard, Boston, MA 02125, 617-727-8470. MICHIGAN, State Historic Preservation Office, Michigan Historical Center, Department of History, Arts and Libraries, PO Box 30740, 702 W. Kalamazoo Street, Lansing, MI 48909-8240, 517-373-1630. MINNESOTA, Minnesota Historical Society, State Historic Preservation Office, 345 Kellogg Boulevard West, St. Paul, MN 55102, 651-259-3450. MISSISSIPPI, Department of Archives and History, PO Box 571, Jackson, MS 39205, 601-576-6850. MISSOURI, Department of Natural Resources, PO Box 176, Jefferson City, MO 65102, 573-751-7858. MONTANA, Montana Historical Society, 1410 8th Avenue, PO Box 201202, Helena, MT 59620-1202, 406-444-7715. NEBRASKA, Nebraska State Historical Society, 1500 R Street, PO Box 82554, Lincoln, NE 68501-2554, 402-471-4746. NEVADA, State Historic Preservation Office, Department of Cultural Affairs, 100 No. Stewart Street, Capitol Complex, Carson City, NV 89701, 775-684-3448. NEW HAMPSHIRE, Division of Historical Resources, 19 Pillsbury Street, 2nd Floor, Concord, NH 03301, 603-271-6435. NEW JERSEY, Department of Environmental Protection, Historic Preservation Office, PO Box 404, Trenton, NJ 08625-0404, 609-292-2023. NEW MEXICO, State Historic Preservation Division, Office of Cultural Affairs, Villa Rivera Building, 3rd floor, 228 E. Palace Avenue, Santa Fe, NM 87503, 505-827-6320. NEW YORK, Office of Parks, Recreation and Historic Preservation, Bureau of Historic Preservation, Peebles Island, PO Box 189, Waterford, NY 12188-0189, 518-237-8643. NORTH CAROLINA, Office of Archives and History, 4617 Mail Service Center, Raleigh, NC 27699-4617, 919-807-6585. NORTH DAKOTA, State Historical Society of North Dakota, ND Heritage Center, 612 East Boulevard Ave., Bismarck, ND 58505, 701-328-2666.

OHIO, Historic Preservation Office, Ohio Historical Society, 1982 Velma Avenue, Columbus, OH 43211-2497, 614-298-2000. OKLAHOMA, State Historic Preservation Office, Oklahoma History Center, 2401 North Laird Avenue, Oklahoma City, OK 73105-7914, 405-521-6249. OREGON, Oregon Historic Preservation Office, 725 Summer St. NE, Suite C, Salem OR 97301, 503-986-0688. PENNSYLVANIA, Pennsylvania Historical and Museum Commission, Bureau for Historic Preservation, Commonwealth Keystone Building, 400 North Street, 2nd floor, Harrisburg, PA 17120-0093, 717-787-0772. COMMONWEALTH OF PUERTO RICO, State Historic Preservation Office, La Fortaleza, PO Box 82, San Juan, PR 00901, 787-721-3737. RHODE ISLAND, Rhode Island Historical Preservation and Heritage Commission, Old State House, 150 Benefit Street, Providence, RI 02903, 401-277-2678. SOUTH CAROLINA, Department of Archives and History, 8301 Parklane Road, Columbia, SC 29223-4905, 803-896-6196. SOUTH DAKOTA, South Dakota State Historical Society, 900 Governors Drive, Pierre, SD 57501-2217, 605-773-3458. TENNESSEE, Tennessee Historical Commission, 2941 Lebanon Road, Nashville, TN 37243-0442, 615-532-1550. TEXAS, Texas Historical Commission, PO Box 12276, Austin, TX 78711-2276, 512-463-6094. UTAH, Utah State Historical Society, 300 S. Rio Grande, Salt Lake City, UT 84101-1106, 801-533-3500. VERMONT, Vermont Division for Historic Preservation, National Life Building, Drawer 20, Montpelier, VT 05620-0501, 802-828-3056. VIRGIN ISLANDS, Virgin Islands State Historic Preservation Office, Kongens Gade 17, Charlott Amalie, St. Thomas, VI 00802, 340-776-8605. VIRGINIA, Department of Historic Resources, 2801 Kensington Avenue, Richmond, VA 23221, 804-367-2323. WASHINGTON, Department of Archaeology and Historic Preservation, PO Box 48343, Olympia, Washington 98504-8343, 360-586-3065. WEST VIRGINIA, Division of Culture and History, 1900 Kanawha Boulevard East, Capitol Complex, Charleston, WV 25305-0300, 304-558-0240. WISCONSIN, Division of Historic Preservation - Public History, Wisconsin Historical Society, 816 State Street, Madison, WI 53706, 608-264-6490. WYOMING, State Historic Preservation Office, Division of Cultural Resources, Wyoming State Parks and Cultural Resources, 3rd Floor Barrett, 2301 Central Avenue, Cheyenne, WY 82002, 307-777-7697.

SPECIAL ASSESSMENT OF HISTORIC PROPERTY PROGRAM
Program Information and Application Instructions
(Revised 1/7/10)

Program Information

The Special Assessment Program is a state-sponsored incentive program instituted in 1975 to encourage the preservation and appropriate rehabilitation of properties listed in the National Register of Historic Places.

Under this program a property's assessed value is frozen for a period of 10 years. This allows the owner to restore or improve the condition of the property and not pay additional taxes on the resulting increase in the property's value until the ten-year benefit period has expired.

What kinds of properties are eligible for this benefit?

The tax benefit is applicable to a property listed, or soon to be listed, in the National Register of Historic Places, or that is deemed historic by the State Historic Preservation Officer. NOTE: Properties deemed eligible for listing by the State Historic Preservation Officer must be listed in the National Register of Historic Places within 2 years of certification in order to retain the tax benefit.

Properties within National Register-listed districts must be considered contributing to the district in order to be eligible, or otherwise become contributing as a result of rehabilitation through the required Preservation Plan.

What part of the property does the benefit cover?

The special assessment applies to the entire property (interior and exterior), including any outbuildings that are considered historically contributing, as well as specified parcels of land under and around buildings. New construction, existing or proposed, is included under the benefit if deemed compatible to the existing structure by the SHPO or the local government.

Is the benefit automatic once my property is listed on the National Register?

No. To receive the special assessment benefit, an owner must make a separate application through the State Historic Preservation Office.

Does it cost anything to apply?

Yes. There is a filing fee, which is 1/10 of 1% of the Assessed Value of the property (Value x .001). Example: $75,000 x .001 = $75.00. The fee helps offset the cost of administering the program.

What does an application consist of?

The application submittal should contain the application/certification form, the Preservation Plan form, a current property tax statement, non-refundable filing fee, proof of insurance, floor and site plans, and current color photographs of each elevation of each building situated on the property, interior photos of any significant historic features, and close-up or detail views showing problem areas.

What is a Preservation Plan?

A Preservation Plan is an outline of rehabilitation, preservation, and maintenance projects an owner is planning to perform on the property during the 10-year term.

Rehabilitation that has been completed within two years prior to making an application may qualify an owner for the tax benefit if the SHPO determines that said rehabilitation meets the Secretary of the Interior's Standards for Rehabilitation.

For 2nd term applications the Preservation Plan must contain a project or projects that bring the property into ADA compliance, or that improve seismic stability, energy conservation, or sustainability.

An owner may, from time to time, request amendments to their original Preservation Plan. Those requests will be reviewed by the SHPO staff for approval or denial.

What is the deadline for applying?

Applications are accepted year-round. For those who apply between January 1 and March 31 of any given year the tax benefit will begin July 1 of that year. For those who apply between April 1 and December 31 of any given year the tax benefit will begin July 1 of the following year.

Can I get advice on whether or not I would qualify for the program?

Yes. SHPO staff offers pre-application conferences and/or site visits where potential applicants can present their proposals and get advice on treatment options. Depending on the complexity of the project(s), it may be helpful to have architects, engineers, or other professionals present in addition to the owner(s).

Do I have to pay back the taxes at the end of the benefit?

No. Tax savings accumulated during the ten-year period do not have to be paid back, unless the benefit is removed early due to disqualification.

Do I have to pay back taxes if I sell my property?

No. Sale or transfer does not trigger repayment of taxes. This also applies in the case of destruction of the property by acts of nature, and initial sale of a condominium.

Can I get off the tax benefit if I want to?

Yes, with consequences. An owner may request removal of the tax benefit at any time during the benefit period. Early removal requires repayment of any taxes saved, plus interest and possible penalties.

Can I lose my benefit, and what are the consequences?

Yes. If an owner does not follow the program requirements, lets the property deteriorate, performs an unapproved project that compromises the historic integrity of the property, or creates an adverse effect the property could be removed from the benefit by the SHPO. If that occurs the owner is liable for all back taxes, interest, and a 15% penalty.

Can I apply for the benefit more than once?

Owners of commercial property are automatically eligible to apply for a second term. Residential property owner's are only eligible to reapply if there has been NO ordinance or resolution passed by their local government prohibiting reapplication. (Check with the SHPO office, or your local government for verification.)

Reapplications must also include a project or projects detailing measures to be taken for purposes of promoting American with Disabilities Act compliance, or that create improvements to seismic, energy conservation, or sustainability.

A second term of the tax benefit IS NOT an extension of the original benefit. An owner cannot reapply for a second term until the first benefit has expired. The assessor will readjust the assessed value upward to meet current values. The real market value at time of re-application becomes the new "frozen" value.

Who do I go to for approval of projects?

If the property is subject to local historic preservation ordinances, then the local government would have approval authority if they so choose. If not subject to local preservation ordinances, or the local government chooses not to exercise project approval authority, the SHPO would

have approval authority. This review and approval process applies to all projects, within or outside the scope of the original Preservation Plan. It is advisable to call the SHPO to determine if a potential project will need review and approval.

If I don't agree with a determination made by the SHPO or my local government, can I do anything about it?

Yes. Any decision made by the SHPO can be appealed to the Historic Assessment Review Committee. Any decision made by a local government can be appealed through their local process.

Can I have other property tax exemptions if I am under Special Assessment?

Yes. A property utilizing this benefit is also entitled to any other exemption or special assessment provided by law.

Are there any additional requirements? Yes.

- An owner is required to affix an identification plaque on the property. Plaques are provided by the SHPO.
- An owner is required to show proof that property is insured in an amount equal to the replacement value.
- An owner is required to go through prior review and approval for all rehabilitation work. This includes work outlined in the Preservation Plan, as well as work outside the scope of the Plan.
- An owner will be asked to provide an updated report on their Preservation Plan in the 3rd, 6th, and 9th year of the benefit.
- By the end of the 5th year on the program, an owner must expend, at a minimum, 10% of the RMV of the structure only in rehabilitation projects. The value of donated materials, labor, or services may be included in that expenditure. If an owner meets that goal prior to the 5th year they may provide that information early.
- An owner is required to notify the SHPO if the property is sold anytime during the ten-year property tax benefit period.

Application Instructions

Complete and accurate information is in the best interest of the applicant because it allows the SHPO to understand the property from a distance.

Sections 1 through 4 provides summary information about the property's location, status in the National Register of Historic Places, values for tax purposes, current use, estimated costs of the rehabilitation, and owner's contact information. It also includes an affidavit that, when signed, signifies that the owner has provided accurate information, understands the rules governing the program, and agrees to abide by them.

Section 5, is the Preservation Plan portion of the application. In this section you will describe in detail the condition and integrity of the property and how you propose to rehabilitate it. Proposed treatments will be judged on the *Secretary of Interior's Standards for the Rehabilitation of Historic Property*. The program applies to all aspects of the exterior of a property, significant interior features, landscapes, outbuildings, and other free-standing features.

Section 1. Property Information

- **Historic Name of Property** – as given in the National Register document. Some properties within historic districts do not have specific names associated with them, in which case the street address should be used.

- **National Register District and rank** – This only applies to properties within National Register-listed Historic Districts. Use the district name as listed in the National Register document and indicate whether the property is "contributing" or "non-contributing."
- **Date Listed on the National Register** – available from the NPS website or by calling the SHPO.
- **Property Address** –as listed in the National Register documentation.

Section 2. Property Tax Information

- **Tax Account Number, Current Assessed Value, and Current Real Market Value** – available from the current property tax statement, or the tax assessor's office in the county where the property is located.
- **Application Fee** – Multiply the Assessed Value figure by one-tenth of one percent to determine the application fee, e.g. $269,000.00 x .001 = $269.00
- Your check should be made payable to: Oregon Parks & Recreation Department

Section 3. Preservation Plan Overview

- **Estimated Costs** – Rehab/maintenance costs need not be "hard" figures, but should be realistic.
- **Current Use**
- **First or second term check box**

Section 4. Owner Information

- **Owner Name, Address, Telephone, etc.** – Self-explanatory.
- **Representative** – Name and phone number. The owner may assign a representative to deal with the SHPO regarding treatment of the property.
- **Affidavit** – The document must be signed and dated by the owner of record, signifying understanding of and agreement with the rules of the program.

Section 5. Preservation Plan Form

- **Architectural Feature and Date** – Give the name of the building part referred to and when it was built or added. Terms can be found in an architectural dictionary.
- **Description/Condition of Feature** – Describe the feature and its current state of repair.
- **Proposed Treatment** – Describe how the feature will be treated, e.g. cleaned, repaired, painted, restored. Include information showing how the treatment meets the *Secretary of the Interior's Standards for Rehabilitation of Historic Property*.
- **Photos/Drawings** – Reference the appropriate photos and drawings in the application.

Mail complete applications (see "checklist" for list of accompanying items) to:

Susan Haylock
State Historic Preservation Office
725 Summer St. NE Ste C
Salem OR 97301
Phone: 503-986-0672
E-mail: Susan.Haylock@state.or.us

Historic Landmarks Commission

2010 Historic Renovation Grant Program
Information Sheet

The City of Cottage Grove has received a grant from the State Historic Preservation Office to assist property owners with needed historic renovations. The Cottage Grove Landmarks Commission's renovation grant program will make these funds available to Downtown Historic District property owners or tenants desiring to make exterior rehabilitation or renovation improvements.

Eligibility:

- The building must be within the Downtown National Register Historic District. Preference will be given to "contributing" buildings; secondary preference to enhancement projects on "non-contributing" buildings.
- Projects must be on the exterior, but exclude new construction/additions.
- Projects must meet the Secretary of Interior's Standards for Rehabilitation.

Grant Requirements:

Renovation or rehabilitation work shall be located on the primary façade of the structure or on a façade that is highly visible to the public. Structural improvements to preserve the integrity of the structure may also qualify.

A 1:1 match is required. Projects may receive 50% of the project cost up to a maximum of $3,000 in grant funds, whichever is the lesser amount.

Work must be completed (and receipts turned in) by April 30, 2011.

Property owners will be required to sign **five (5) year preservation agreements** at the completion of the project. This agreement will stipulate that the results of the project must be maintained for the duration of the agreement.

Project work plans must be approved by the Historic Landmarks Commission and the State Historic Preservation Office before work may begin.

Building and specialty permits will be required for approved structural work as required by the Building Code.

Application Process:

If you are interested in applying for these grant funds, submit a Renovation Grant Application to the Community Development Department by **May 1, 2010.**

Applications and grant program guidelines are available at www.cottagegrove.org or from the Community Development Department, City Hall, 400 E. Main Street.

City of Cottage Grove
Historic Landmarks Commission
2010 Historic Renovation Grant Program

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The conditions of this program require that all improvements and projects maintain or enhance the architectural integrity of the structure.

Applications are due by May 1, 2010. Projects must be complete by April 30, 2011.

Questions about the program or the application should be directed to City Planner Amanda Ferguson at 541-942-3340, or email planner@cottagegrove.org.

The process and eligibility for participating in this program are as follows:

1. Eligibility:
    a. Properties within the National Register Downtown Historic District are eligible. Properties designated as contributing to the Downtown Historic District will be given preference.
    b. Secondary consideration will be given to properties within the district that are not designated as contributing but would be contributing when the proposed work is complete, or to properties within the district that are designated as non-contributing if the project enhances the conformity of the building.
2. Projects:
    a. Renovation or rehabilitation work shall be located on the primary façade of the structure or on a façade that is highly visible to the public. Structural improvements to preserve the integrity of the structure may also qualify.
    b. Design and materials shall be in keeping with the architectural integrity of the structure. Contemporary materials such as vinyl or fiber cement boards are not eligible for grant funding.
    c. Additions or non-historic alterations are not eligible.
    d. Project work plans must meet the Secretary of Interior's Standards for Rehabilitation and be approved by the Historic Landmarks Commission and the State Historic Preservation Office before work may begin.
    e. Building and specialty permits will be required for approved structural work as required by the Building Code.
3. Application:
    a. Complete the Renovation Grant Application and submit it to the Community Development Department.
    b. Include copies of at least two bids with the application, or provide a written explanation of why only a single bid was warranted. Property owners may do the work themselves; however, only the cost of materials may be funded by the grant if work is performed by the owner and not by a licensed contractor.
    c. Detailed plans of the proposed work, photos (digital preferred) of the façade prior to work, specifications, and any manufacturer's product information shall be submitted with the application.

4. Review, Approval and Conditions:
   The City Planner through the Historic Landmarks Commission will review and approve projects that are in keeping with the historic integrity of the structure, subject to the following conditions:
   a. Historic restoration and renovation projects will be given priority over periodic maintenance-type projects. For example, a project to restore architectural details such as transom windows or to remove contemporary alterations will be given priority over the installation of awnings or repainting. Conditions of approval may be applied to the project.
   b. Grants shall not be awarded for work that is completed. Secondary consideration may be given and grants awarded for recently purchased materials and for work already in progress only if all grant funds have not been awarded prior to June 30, 2010.
   c. Projects may receive up to 50% of the project cost or up to a maximum of $3,000 in grant funds, whichever is the lesser amount. (Example, a project of $2,000 would be eligible to receive a $1,000 grant or 50% of the project cost. A $10,000 project would be eligible to receive a maximum $3,000 grant.)
   d. Grant recipients are required to display a sign (available from the Community Development Department) identifying the project as having received grant funding. The sign shall be displayed during construction and for one month after the project is complete.
   e. Projects must be completed by April 30, 2011. Funds shall be distributed to the owner/applicant (not the contractor) upon completion of the project and submission of receipts. All grant funds shall be distributed by May 30, 2011.
   f. Grants are considered taxable income. Grant recipients will receive an IRS 1099 form and must report the income on their tax returns.
   g. Grant recipients shall take photographs during the project showing the work in progress. Submittals should include photographs of people doing the work.
   h. Grant recipients shall record a Five Year Covenant Agreement with the following conditions:
      i. The Owner agrees to assume the cost of the continued maintenance and repair of said property so as to preserve the architectural, historical or archeological integrity of the same in order to protect and enhance those qualities that made the property eligible for listing as a landmark in a National Register District.
      ii. The Owner agrees that no visual or exterior structural alterations will be made to the property without prior written permission of the City of Cottage Grove.
      iii. The Owner agrees that the State Historic Preservation Office and City of Cottage Grove, their agents and designees shall have the right to inspect the property at all reasonable times in order to ascertain whether or not the conditions of this agreement are being observed.
      iv. The Owner agrees that the property shall remain on the National Register for at least five full years following completion of the project. If the property is removed from the Register during this time, the grant shall be repaid in full to the City of Cottage Grove.
   i. Grant recipients shall contact the Community Development Department when the proposed work actually begins, and when the project is complete. A staff member will inspect the work when the project is completed.
   j. Grant recipients shall obtain City or State building permits prior to start of work.

5. Grants are awarded by the Historic Landmarks Commission. The decision of the Historic Landmarks Commission concerning grant awards is final.

6. Payment of grant amounts shall be made after all work is complete. Grant recipients shall submit copies of receipts and contractor's payments, photographs of the work in progress, and photographs of completed work. Digital photos are preferred. Payment requests shall be submitted no later than April 30, 2011.

File No.: _____
Date Submitted by Applicant: _____
Date Deemed Complete: _____

400 Main Street Cottage Grove, OR 97424

2010 HISTORIC RENOVATION GRANT PROGRAM APPLICATION

To: City of Cottage Grove Historic Landmarks Commission

A. Applicant

1. Name: _____ Phone No.:_____
2. Mailing Address: _____
3. Status: ☐ Owner ☐ Agent

Note: If agent you must have owner's consent and signature.

B. Owner *(if not applicant)*

4. Owner's Name: _____ Phone No.:_____
5. Owner's Mailing Address: _____

C. Location of Property

6. Address/Location: _____
7. Map & Tax Lot Number *(attach legal description if necessary))*:_____
8. Present Use: _____

D. Proposed Renovation:

9. Describe proposed Renovation/Restoration/Maintenance Project (NOTE: SOME ALTERATIONS MAY REQUIRE HISTORIC REVIEW AND/OR BUILDING PERMITS):

_____

_____

_____

10. Expected Cost of total project: _____

E. Required Plans:

A **site plan** indicating location of the structure on the property and the location of the proposed alteration(s) is required. **Diagrams** shall show the proposed alterations indicating style and type of materials proposed to be used. Scaled free-hand drawings are acceptable.

F. Photographs:

Submit "before" photos of the project site. "During work and after" photographs are required upon completion of the project. Digital photos should be submitted on disk or via email to planner@cottagegrove.org.

G. Narrative:

The following are definitions of the various types of work activities noted in the Secretary of the Interior's Standards for the Treatment of Historic Properties. They are for reference when identifying the type of work proposed in this grant application.

> PRESERVATION focuses on the maintenance and repair of existing historic materials and retention of a property's form as it has evolved over time.
>
> REHABILITATION acknowledges the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character.
>
> RESTORATION depicts a property at a particular period of time in its history, while removing evidence of other periods.
>
> RECONSTRUCTION recreates vanished or non-surviving portions of a property for interpretive purposes.

Historic or Preservation Significance: Describe how the project will enhance the historical nature of, or preserve, renovate or rebuild, the historic aspects of the structure.

_____

_____

_____

Historic Documentation: Indicate any physical evidence such as old paint lines, original moldings, historic photographs, etc. that support your request to alter the exterior.

_____

_____

_____

FILING INFORMATION: Historic Landmarks Commission will review the applications on a first-come, first-served basis. A **pre-application meeting** with the City Planner is required prior to the acceptance of the application as complete. Only complete applications will be scheduled for review.

NOTE: The City may be able to provide some historic technical assistance and/or design assistance on your proposal. Contact the City Planner at (541) 942-3340 or planner@cottagegrove.org for information.

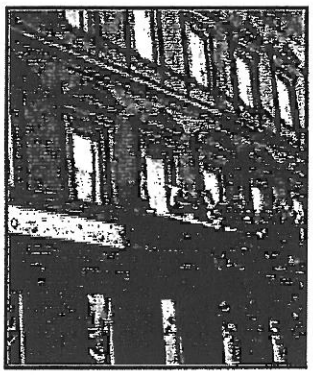
SECTION 3:

Maintaining and Enhancing Your Historic Building

1 Preservation Briefs

Technical Preservation Services
National Park Service
U.S. Department of the Interior

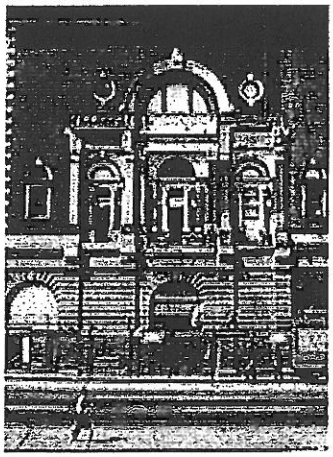
Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Buildings



Robert C. Mack, FAIA
Anne Grimmer

A NOTE TO OUR USERS: The web versions of the **Preservation Briefs** differ somewhat from the printed versions. Many illustrations are new, captions are simplified, illustrations are typically in color rather than black and white, and some complex charts have been omitted.

Inappropriate cleaning and coating treatments are a major cause of damage to historic masonry buildings. While either or both treatments may be appropriate in some cases, they can be very destructive to historic masonry if they are not selected carefully. Historic masonry, as considered here, includes stone, brick, architectural terra cotta, cast stone, concrete and concrete block. It is frequently cleaned because cleaning is equated with improvement. Cleaning may sometimes be followed by the application of a water-repellent coating. However, unless these procedures are carried out under the guidance and supervision of an architectural conservator, they may result in irrevocable damage to the historic resource.



Ninety years of accumulated dirt and pollutants are being

The purpose of this Brief is to provide information on the variety of cleaning methods and materials that are available for use on the *exterior* of historic masonry buildings, and to provide guidance in selecting the most appropriate method or combination of methods. The difference between water-repellent coatings and waterproof coatings is explained, and the purpose of each, the suitability of their application to historic masonry buildings, and the possible consequences of their inappropriate use are discussed.

The Brief is intended to help develop sensitivity to the qualities of historic masonry that makes it so special, and to assist historic building owners and property managers in working cooperatively with architects, architectural conservators, and contractors. Although specifically intended for historic buildings, the information is applicable

removed from this historic theater using an appropriate chemical cleaner, applied in stages. Photo: Richard Wagner, AIA.

to all masonry buildings. This publication updates and expands *Preservation Briefs 1: The Cleaning and Waterproof Coating of Masonry Buildings.* The Brief is not meant to be a cleaning manual or a guide for preparing specifications. Rather, it provides general information to raise awareness of the many factors involved in selecting cleaning and water-repellent treatments for historic masonry buildings.

Preparing for a Cleaning Project

Reasons for cleaning. First, it is important to determine whether it is appropriate to clean the masonry. The objective of cleaning a historic masonry building must be considered carefully before arriving at a decision to clean. There are several major reasons for cleaning a historic masonry building: **improve the appearance of the building** by removing unattractive dirt or soiling materials, or non-historic paint from the masonry; **retard deterioration** by removing soiling materials that may be damaging the masonry; or **provide a clean surface** to accurately match repointing mortars or patching compounds, or to conduct a condition survey of the masonry.

Identify what is to be removed. The general nature and source of dirt or soiling material on a building must be identified to remove it in the gentlest means possible--that is, in the most effective, yet least harmful, manner. Soot and smoke, for example, require a different cleaning agent to remove than oil stains or metallic stains. Other common cleaning problems include biological growth such as mold or mildew, and organic matter such as the tendrils left on masonry after removal of ivy.

Consider the historic appearance of the building. If the proposed cleaning is to remove paint, it is important in each case to learn whether or not unpainted masonry is historically appropriate. And, it is necessary to consider why the building was painted. Was it to cover bad repointing or unmatched repairs? Was the building painted to protect soft brick or to conceal deteriorating stone? Or, was painted masonry simply a fashionable treatment in a particular historic period? Many buildings were painted at the time of construction or shortly thereafter; retention of the paint, therefore, may be more appropriate historically than removing it. And, if the building appears to have been painted for a long time, it is also important to think about whether the paint is part of the character of the historic building and if it has acquired significance over time.

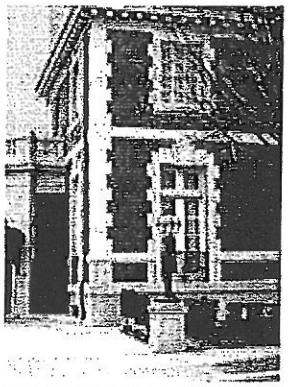
Consider the practicalities of cleaning or paint removal. Some gypsum or sulfate crusts may have become integral with the stone and, if cleaning could result in removing some of the stone surface, it may be preferable not to clean. Even where unpainted masonry is appropriate, the retention of the paint may be more practical than removal in terms of long range preservation of the masonry. In some cases, however, removal of the paint may be desirable. For example, the old paint layers may have built up to such an extent that removal is necessary to ensure a sound surface to which the new paint will adhere.

Study the masonry. Although not always necessary, in some instances it can be beneficial to have the coating or paint type, color, and layering on the masonry researched before attempting its removal. Analysis of the nature of the soiling or of the paint to be removed from the masonry, as well as guidance on the appropriate cleaning method, may be provided by professional consultants, including architectural conservators, conservation scientists, and preservation architects. The State Historic

Preservation Office (SHPO), local historic district commissions, architectural review boards, and preservation-oriented websites may also be able to supply useful information on masonry cleaning techniques.

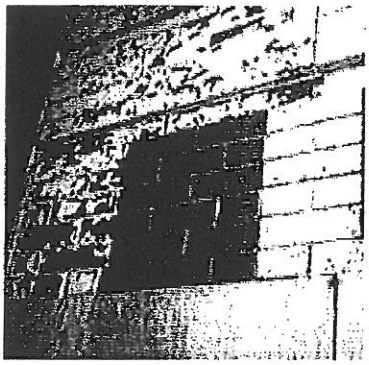
Understanding the Building Materials

The construction of the building must be considered when developing a cleaning program because inappropriate cleaning can have a deleterious effect on the masonry as well as on other building materials. The masonry material or materials must be correctly identified. It is sometimes difficult to distinguish one type of stone from another; for example, certain sandstones can be easily confused with limestones. Or, what appears to be natural stone may not be stone at all, but cast stone or concrete. Historically, cast stone and architectural terra cotta were frequently used in combination with natural stone, especially for trim elements or on upper stories of a building where, from a distance, these substitute materials looked like real stone. Other features on historic buildings that appear to be stone, such as decorative cornices, entablatures and window hoods, may not even be masonry, but metal.



The decorative trim on this brick builing is architectural terra-cotta intended to simulate the limestone foundation. Photo: NPS files.

Identify prior treatments. Previous treatments of the building and its surroundings should be researched and building maintenance records should be obtained, if available. Sometimes if streaked or spotty areas do not seem to get cleaner following an initial cleaning, closer inspection and analysis may be warranted. The discoloration may turn out not to be dirt but the remnant of a water-repellent coating applied long ago which has darkened the surface of the masonry over time. Successful removal may require testing several cleaning agents to find something that will dissolve and remove the coating. Complete removal may not always be possible. Repairs may have been stained to match a dirty building, and cleaning may make these differences apparent. De-icing salts used near the building that have dissolved can migrate into the masonry. Cleaning may draw the salts to the surface, where they will appear as efflorescence (a powdery, white substance), which may require a second treatment to be removed. Allowances for dealing with such unknown factors, any of which can be a potential problem, should be included when investigating cleaning methods and materials. Just as more than one kind of masonry on a historic building may necessitate multiple cleaning approaches, unknown conditions that are encountered may also require additional cleaning treatments.



Choose the appropriate cleaner. The importance of testing cleaning methods and materials cannot be over emphasized. Applying the wrong cleaning agents to historic masonry can have disastrous results. Acidic cleaners can be extremely damaging to acid-sensitive stones, such as marble and limestone, resulting in etching and dissolution of these stones. Other kinds of masonry can also be damaged by incompatible cleaning agents, or even by cleaning agents that are usually compatible. There are also numerous kinds of sandstone, each with a considerably different geological composition. While an acid-based cleaner may be safely used on some sandstones, others are acid-sensitive and

Any cleaning method should be tested before using it on historic masonry. Photo: NPS files.

can be severely etched or dissolved by an acid cleaner. Some sandstones contain water-soluble minerals and can be eroded by water cleaning. And, even if the stone type is correctly identified, stones, as well as some bricks, may contain unexpected impurities, such as iron particles, that may react negatively with a particular cleaning agent and result in staining. Thorough understanding of the physical and chemical properties of the masonry will help avoid the inadvertent selection of damaging cleaning agents.

Other building materials also may be affected by the cleaning process. Some chemicals, for example, may have a corrosive effect on paint or glass. The portions of building elements most vulnerable to deterioration may not be visible, such as embedded ends of iron window bars. Other totally unseen items, such as iron cramps or ties which hold the masonry to the structural frame, also may be subject to corrosion from the use of chemicals or even from plain water. The only way to prevent problems in these cases is to study the building construction in detail and evaluate proposed cleaning methods with this information in mind. However, due to the very likely possibility of encountering unknown factors, any cleaning project involving historic masonry should be viewed as unique to that particular building.

Cleaning Methods and Materials

Masonry cleaning methods generally are divided into three major groups: water, chemical, and abrasive. *Water methods* soften the dirt or soiling material and rinse the deposits from the masonry surface. *Chemical cleaners* react with dirt, soiling material or paint to effect their removal, after which the cleaning effluent is rinsed off the masonry surface with water. *Abrasive methods* include blasting with grit, and the use of grinders and sanding discs, all of which mechanically remove the dirt, soiling material or paint (and, usually, some of the masonry surface). Abrasive cleaning is also often followed with a water rinse. *Laser cleaning*, although not discussed here in detail, is another technique that is used sometimes by conservators to clean small areas of historic masonry. It can be quite effective for cleaning limited areas, but it is expensive and generally not practical for most historic masonry cleaning projects.

Although it may seem contrary to common sense, masonry cleaning projects should be carried out starting at the bottom and proceeding to the top of the building always keeping all surfaces wet below the area being cleaned. The rationale for this approach is based on the principle that dirty water or cleaning effluent dripping from cleaning in progress above will leave streaks on a dirty surface but will not streak a clean surface as long as it is kept wet and rinsed frequently.

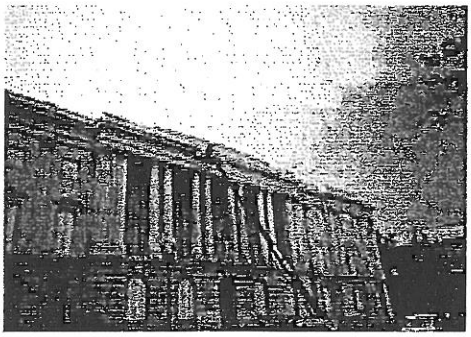
Water Cleaning

Water cleaning methods are generally the *gentlest means possible*, and they can be used safely to remove dirt from all types of historic masonry.* There are essentially four kinds of water-based methods: soaking; pressure water washing; water washing supplemented with non-ionic detergent; and steam, or hot-pressurized water cleaning. Once water cleaning has been completed, it is often necessary to follow up with a water rinse to wash off the loosened soiling material from the masonry.

* Water cleaning methods may not be appropriate to use on some badly deteriorated masonry because water may exacerbate the deterioration, or on gypsum or alabaster, which are very soluble in water.

Soaking. Prolonged spraying or misting with water is particularly effective for cleaning limestone and marble. It is also a good method for removing heavy accumulations of soot, sulfate crusts or gypsum crusts that tend to form in protected areas of a building not regularly washed by rain. Water is distributed to lengths of punctured hose or pipe with non-ferrous fittings hung from moveable scaffolding or a swing stage that continuously mists the surface of the masonry with a very fine spray. A timed on-off spray is another approach to using this cleaning technique. After one area has been cleaned, the apparatus is moved on to another. Soaking is often used in combination with water washing and is also followed by a final water rinse. Soaking is a very slow method--it may take several days or a week--but it is a very gentle method to use on historic masonry.

Water Washing. Washing with low-pressure or medium-pressure water is probably one of the most commonly used methods for removing dirt or other pollutant soiling from historic masonry buildings. Starting with a very low pressure (100 psi or below), even using a garden hose, and progressing as needed to slightly higher pressure--generally no higher than 300-400 psi--is always the recommended way to begin. Scrubbing with natural bristle or synthetic bristle brushes--never metal which can abrade the surface and leave metal particles that can stain the masonry--can help in cleaning areas of the masonry that are especially dirty.



Low-to-medium-pressure steam (hot-pressurized water washing) is a gentle method of softening heavy soiling deposits and cleaning historic marble. Photo: NPS files.

Water Washing with Detergents. Non-ionic detergents--which are not the same as soaps--are synthetic organic compounds that are especially effective in removing oily soil. (Examples of some of the numerous proprietary non-ionic detergents include Igepal by GAF, Tergitol by Union Carbide and Triton by Rohm & Haas.) Thus, the addition of a non-ionic detergent, or surfactant, to a low- or medium-pressure water wash can be a useful aid in the cleaning process. (A non-ionic detergent, unlike most household detergents, does not leave a solid, visible residue on the masonry.) Adding a non-ionic detergent and scrubbing with a natural bristle or synthetic bristle brush can facilitate cleaning textured or intricately carved masonry. This should be followed with a final water rinse.

Steam/Hot-Pressurized Water Cleaning. Steam cleaning is actually low-pressure hot water washing because the steam condenses almost immediately upon leaving the hose. This is a gentle and effective method for cleaning stone and particularly for acid-sensitive stones. Steam can be especially useful in removing built-up soiling deposits and dried-up plant materials, such as ivy disks and tendrils. It can also be an efficient means of cleaning carved stone details and, because it does not generate a lot of liquid water, it can sometimes be appropriate to use for cleaning interior masonry.

Potential hazards of water cleaning. Despite the fact that water-based methods are generally the most gentle, even they can be damaging to historic masonry. Before beginning a water cleaning project, it is important to make sure that all mortar joints are sound and that the building is watertight. Otherwise water can seep through the walls to the interior, resulting in rusting metal anchors and stained and ruined plaster.

Some water supplies may contain traces of iron and copper which may cause masonry to discolor. Adding a chelating or complexing agent to the water, such as EDTA (ethylene diamine tetra-acetic acid), which inactivates other metallic ions, as well as softens

minerals and water hardness, will help prevent staining on light-colored masonry.

Any cleaning method involving water should never be done in cold weather or if there is any likelihood of frost or freezing because water within the masonry can freeze, causing spalling and cracking. Since a masonry wall may take over a week to dry after cleaning, no water cleaning should be permitted for several days prior to the first average frost date, or even earlier if local forecasts predict cold weather.

Most important of all, it is imperative to be aware that using water at too high a pressure, a practice common to "power washing" and "water blasting", is very abrasive and can easily etch marble and other soft stones, as well as some types of brick. In addition, the distance of the nozzle from the masonry surface and the type of nozzle, as well as gallons per minute (gpm), are also important variables in a water cleaning process that can have a significant impact on the outcome of the project. This is why it is imperative that the cleaning be closely monitored to ensure that the cleaning operators do not raise the pressure or bring the nozzle too close to the masonry in an effort to "speed up" the process. The appearance of grains of stone or sand in the cleaning effluent on the ground is an indication that the water pressure may be too high.

Chemical Cleaning

Chemical cleaners, generally in the form of proprietary products, are another material frequently used to clean historic masonry. They can remove dirt, as well as paint and other coatings, metallic and plant stains, and graffiti. Chemical cleaners used to remove dirt and soiling include **acids, alkalies** and **organic compounds.** Acidic cleaners, of course, should not be used on masonry that is acid sensitive. Paint removers are **alkaline,** based on **organic solvents** or other chemicals.

Chemical Cleaners to Remove Dirt

Both alkaline and acidic cleaning treatments include the use of water. Both cleaners are also likely to contain surfactants (wetting agents), that facilitate the chemical reaction that removes the dirt. Generally, the masonry is wet first for both types of cleaners, then the chemical cleaner is sprayed on at very low pressure or brushed onto the surface. The cleaner is left to dwell on the masonry for an amount of time recommended by the product manufacturer or, preferably, determined by testing, and rinsed off with a low- or moderate-pressure cold, or sometimes hot, water wash.

More than one application of the cleaner may be necessary, and it is always a good practice to test the product manufacturer's recommendations concerning dilution rates and dwell times. Because each cleaning situation is unique, dilution rates and dwell times can vary considerably. The masonry surface may be scrubbed lightly with natural or synthetic bristle brushes prior to rinsing. After rinsing, pH strips should be applied to the surface to ensure that the masonry has been neutralized completely.

Acidic Cleaners. Acid-based cleaning products may be used on **non-acid sensitive masonry,** which generally includes: granite, most sandstones, slate, unglazed brick and unglazed architectural terra cotta, cast stone and concrete. Most commercial acidic cleaners are composed primarily of hydrofluoric acid, and often include some phosphoric acid to prevent rust-like stains from developing on the masonry after the cleaning. Acid cleaners are applied to the pre-wet masonry which should be kept wet while the acid is allowed to "work", and then removed with a water wash.

Alkaline Cleaners. Alkaline cleaners should be used on **acid-sensitive** masonry,

including: limestone, polished and unpolished marble, calcareous sandstone, glazed brick and glazed architectural terra cotta, and polished granite. (Alkaline cleaners may also be used sometimes on masonry materials that are not acid sensitive--after testing, of course--but they may not be as effective as they are on acid-sensitive masonry.) Alkaline cleaning products consist primarily of two ingredients: a non-ionic detergent or surfactant; and an alkali, such as potassium hydroxide or ammonium hydroxide. Like acidic cleaners, alkaline products are usually applied to pre-wet masonry, allowed to dwell, and then rinsed off with water. (Longer dwell times may be necessary with alkaline cleaners than with acidic cleaners.) Two additional steps are required to remove alkaline cleaners after the initial rinse. First the masonry is given a slightly acidic wash--often with acetic acid--to neutralize it, and then it is rinsed again with water.

Chemical Cleaners to Remove Paint and Other Coatings, Stains and Graffiti

Removing paint and some other coatings, stains and graffiti can best be accomplished with alkaline paint removers, organic solvent paint removers, or other cleaning compounds. The removal of layers of paint from a masonry surface usually involves applying the remover either by brush, roller or spraying, followed by a thorough water wash. As with any chemical cleaning, the manufacturer's recommendations regarding application procedures should always be tested before beginning work.

Alkaline Paint Removers. These are usually of much the same composition as other alkaline cleaners, containing potassium or ammonium hydroxide, or trisodium phosphate. They are used to remove oil, latex and acrylic paints, and are effective for removing multiple layers of paint. Alkaline cleaners may also remove some acrylic water-repellent coatings. As with other alkaline cleaners, both an acidic neutralizing wash and a final water rinse are generally required following the use of alkaline paint removers.

Organic Solvent Paint Removers. The formulation of organic solvent paint removers varies and may include a combination of solvents, including methylene chloride, methanol, acetone, xylene and toluene.

Other Paint Removers and Cleaners. Other cleaning compounds that can be used to remove paint and some painted graffiti from historic masonry include paint removers based on N-methyl-2-pyrrolidone (NMP), or on petroleum-based compounds. Removing stains, whether they are industrial (smoke, soot, grease or tar), metallic (iron or copper), or biological (plant and fungal) in origin, depends on carefully matching the type of remover to the type of stain. Successful removal of stains from historic masonry often requires the application of a number of different removers before the right one is found. The removal of layers of paint from a masonry surface is usually accomplished by applying the remover either by brush, roller or spraying, followed by a thorough water wash.

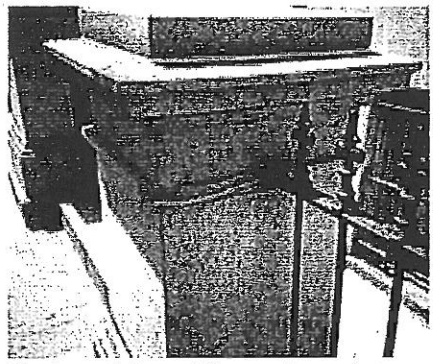
Potential hazards of chemical cleaning. Since most chemical cleaning methods involve water, they have many of the potential problems of plain water cleaning. Like water methods, they should not be used in cold weather because of the possibility of freezing. Chemical cleaning should never be undertaken in temperatures below 40 degrees F (4 degrees C), and generally not below 50 degrees F. In addition, many chemical cleaners simply do not work in cold temperatures. Both acidic and alkaline cleaners can be dangerous to cleaning operators, and clearly, there are environmental concerns associated with the use of chemical cleaners.

If not carefully chosen, chemical cleaners can react adversely with many types of masonry. Obviously, acidic cleaners should not be used on acid-sensitive materials; however, it is not always clear exactly what the composition is of any stone or other masonry material. For, this reason, testing the cleaner on an inconspicuous spot on the building is always necessary. While certain acid-based cleaners may be appropriate if used as directed on a particular type of masonry, if left too long or if not adequately rinsed from the masonry they can have a negative effect. For example, hydrofluoric acid can etch masonry leaving a hazy residue (whitish deposits of silica or calcium fluoride salts) on the surface. While this efflorescence may usually be removed by a second cleaning--although it is likely to be expensive and time-consuming--**hydrofluoric acid** can also leave calcium fluoride salts or a colloidal silica deposit on masonry which may be impossible to remove. Other acids, particularly **hydrochloric (muriatic) acid**, which is very powerful, should not be used on historic masonry, because it can dissolve lime-based mortar, damage brick and some stones, and leave chloride deposits on the masonry.

Alkaline cleaners can stain sandstones that contain a ferrous compound. Before using an alkaline cleaner on sandstone it is always important to test it, since it may be difficult to know whether a particular sandstone may contain a ferrous compound. Some alkaline cleaners, such as **sodium hydroxide (caustic soda or lye)** and **ammonium bifluoride**, can also damage or leave disfiguring brownish-yellow stains and, in most cases, should not be used on historic masonry. Although alkaline cleaners will not etch a masonry surface as acids can, they are caustic and can burn the surface. In addition, alkaline cleaners can deposit potentially damaging salts in the masonry which can be difficult to rinse thoroughly.

Poulticing to Remove Stains and Graffiti

Graffiti and stains, which have penetrated into the masonry, often are best removed by using a poultice. A poultice consists of an absorbent material or clay powder (such as kaolin or fuller's earth, or even shredded paper or paper towels), mixed with a liquid (a solvent or other remover) to form a paste which is applied to the stain. The poultice is kept moist and left on the stain as long as necessary for it to draw the stain out of the masonry. As it dries, the paste absorbs the staining material so that it is not redeposited on the masonry surface.



The iron stain on this granite post may be removed by applying a commercial rust-removal product in a poultice. Photo: NPS files

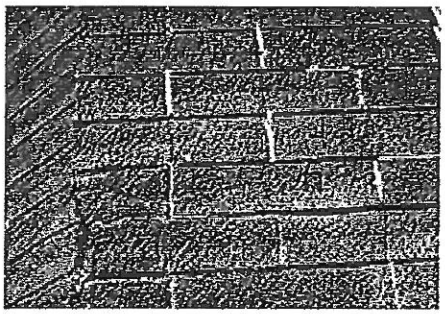
Some commercial cleaning products and paint removers are specially formulated as a paste or gel that will cling to a vertical surface and remain moist for a longer period of time in order to prolong the action of the chemical on the stain. Pre-mixed poultices are also available as a paste or in powder form needing only the addition of the appropriate liquid. The masonry must be pre-wet before applying an alkaline cleaning agent, but not when using a solvent. Once the stain has been removed, the masonry must be rinsed thoroughly.

Abrasive and Mechanical Cleaning

Generally, abrasive cleaning methods are not appropriate for use on historic masonry buildings. Abrasive cleaning methods are just that--abrasive. Grit blasters, grinders, and sanding discs all operate by abrading the dirt or paint off the surface of the masonry, rather than reacting with the dirt and the masonry which is how water and chemical methods work. Since the abrasives do not differentiate between the dirt and the masonry, they can also remove the outer surface of the masonry at the same time, and result in permanently damaging the masonry. Brick, architectural terra cotta, soft stone, detailed carvings, and polished surfaces, are especially susceptible to physical and aesthetic damage by abrasive methods. Brick and architectural terra cotta are fired products which have a smooth, glazed surface which can be removed by abrasive blasting or grinding. Abrasively-cleaned masonry is damaged aesthetically as well as physically, and it has a rough surface which tends to hold dirt and the roughness will make future cleaning more difficult. Abrasive cleaning processes can also increase the likelihood of subsurface cracking of the masonry. Abrasion of carved details causes a rounding of sharp corners and other loss of delicate features, while abrasion of polished surfaces removes the polished finish of stone.

Mortar joints, especially those with lime mortar, also can be eroded by abrasive or mechanical cleaning. In some cases, the damage may be visual, such as loss of joint detail or increased joint shadows. As mortar joints constitute a significant portion of the masonry surface (up to 20 per cent in a brick wall), this can result in the loss of a considerable amount of the historic fabric. Erosion of the mortar joints may also permit increased water penetration, which will likely necessitate repointing.

Abrasive Blasting. Blasting with abrasive grit or another abrasive material is the most frequently used abrasive method. Sandblasting is most commonly associated with abrasive cleaning. Finely ground silica or glass powder, glass beads, ground garnet, powdered walnut and other ground nut shells, grain hulls, aluminum oxide, plastic particles and even tiny pieces of sponge, are just a few of the other materials that have also been used for abrasive cleaning. Although abrasive blasting is not an appropriate method of cleaning historic masonry, it can be safely used to clean some materials. Finely-powdered walnut shells are commonly used for cleaning monumental bronze sculpture, and skilled conservators clean delicate museum objects and finely detailed, carved stone features with very small, micro-abrasive units using aluminum oxide.



Sandblasting has permanently damaged this brick wall. Photo: NPS files

A number of current approaches to abrasive blasting rely on materials that are not usually thought of as abrasive, and not as commonly associated with traditional abrasive grit cleaning. Some patented abrasive cleaning processes--one dry, one wet--use finely-ground glass powder intended to "erase" or remove dirt and surface soiling only, but not paint or stains. Cleaning with baking soda (sodium bicarbonate) is another patented process. Baking soda blasting is being used in some communities as a means of quick graffiti removal. However, it should not be used on historic masonry which it can easily abrade and can permanently "etch" the graffiti into the stone; it can also leave potentially damaging salts in the stone which cannot be removed. Most of these abrasive grits may be used either dry or wet, although dry grit tends to be used more frequently.

Ice particles, or pelletized dry ice (carbon dioxide or CO2), are another medium used as an abrasive cleaner. This is also too abrasive to be used on most historic masonry, but it may have practical application for removing mastics or asphaltic coatings from some

substrates.

Some of these processes are promoted as being more environmentally safe and not damaging to historic masonry buildings. However, it must be remembered that they are abrasive and that they "clean" by removing a small portion of the masonry surface, even though it may be only a minuscule portion. The fact that they are essentially abrasive treatments must always be taken into consideration when planning a masonry cleaning project. In general, abrasive methods should not be used to clean historic masonry buildings. In some, very limited instances, highly-controlled, gentle abrasive cleaning may be appropriate on selected, hard-to-clean areas of a historic masonry building if carried out under the watchful supervision of a professional conservator. But, abrasive cleaning should never be used on an entire building.

Grinders and Sanding Disks. Grinding the masonry surface with mechanical grinders and sanding disks is another means of abrasive cleaning that should not be used on historic masonry. Like abrasive blasting, grinders and disks do not really clean masonry but instead grind away and abrasively remove and, thus, damage the masonry surface itself rather than remove just the soiling material.

Planning a Cleaning Project

Once the masonry and soiling material or paint have been identified, and the condition of the masonry has been evaluated, planning for the cleaning project can begin.

Testing cleaning methods. In order to determine the *gentlest means possible*, several cleaning methods or materials may have to be tested prior to selecting the best one to use on the building. Testing should always begin with the gentlest and least invasive method proceeding gradually, if necessary, to more complicated methods, or a combination of methods. All too often simple methods, such as a low-pressure water wash, are not even considered, yet they frequently are effective, safe, and not expensive. Water of slightly higher pressure or with a non-ionic detergent additive also may be effective. It is worth repeating that these methods should always be tested prior to considering harsher methods; they are safer for the building and the environment, often safer for the applicator, and relatively inexpensive.

The level of cleanliness desired also should be determined prior to selection of a cleaning method. Obviously, the intent of cleaning is to remove most of the dirt, soiling material, stains, paint or other coating. A "brand new" appearance, however, may be inappropriate for an older building, and may require an overly harsh cleaning method to be achieved. When undertaking a cleaning project, it is important to be aware that some stains simply may not be removable. It may be wise, therefore, to agree upon a slightly lower level of cleanliness that will serve as the standard for the cleaning project. The precise amount of residual dirt considered acceptable may depend on the type of masonry, the type of soiling and difficulty of total removal, and local environmental conditions.

Cleaning tests should be carried out in an area of sufficient size to give a true indication of their effectiveness. It is preferable to conduct the test in an inconspicuous location on the building so that it will not be obvious if the test is not successful. A test area may be quite small to begin, sometimes as small as six square inches, and gradually may be increased in size as the most appropriate methods and cleaning agents are determined. Eventually the test area may be expanded to a square yard or more, and it should

include several masonry units and mortar joints. It should be remembered that a single building may have several types of masonry and that even similar materials may have different surface finishes. Each material and different finish should be tested separately. Cleaning tests should be evaluated only after the masonry has dried completely. *The results of the tests may indicate that several methods of cleaning should be used on a single building.*

When feasible, test areas should be allowed to weather for an extended period of time prior to final evaluation. A waiting period of a full year would be ideal in order to expose the test patch to a full range of seasons. If this is not possible, the test patch should weather for at least a month or two. For any building which is considered historically important, the delay is insignificant compared to the potential damage and disfigurement which may result from using an incompletely tested method. *The successfully cleaned test patch should be protected as it will serve as a standard against which the entire cleaning project will be measured.*

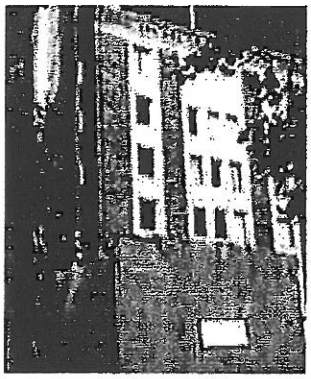
Environmental considerations. The potential effect of any method proposed for cleaning historic masonry should be evaluated carefully. Chemical cleaners and paint removers may damage trees, shrubs, grass, and plants. A plan must be provided for environmentally safe removal and disposal of the cleaning materials and the rinsing effluent before beginning the cleaning project. Authorities from the local regulatory agency--usually under the jurisdiction of the federal or state Environmental Protection Agency (EPA)--should be consulted prior to beginning a cleaning project, especially if it involves anything more than plain water washing. This advance planning will ensure that the cleaning effluent or run-off, which is the combination of the cleaning agent and the substance removed from the masonry, is handled and disposed of in an environmentally sound and legal manner. Some alkaline and acidic cleaners can be neutralized so that they can be safely discharged into storm sewers. However, most solvent-based cleaners cannot be neutralized and are categorized as pollutants, and must be disposed of by a licensed transport, storage and disposal facility. Thus, it is always advisable to consult with the appropriate agencies before starting to clean to ensure that the project progresses smoothly and is not interrupted by a stop-work order because a required permit was not obtained in advance.

Vinyl guttering or polyethylene-lined troughs placed around the perimeter of the base of the building can serve to catch chemical cleaning waste as it is rinsed off the building. This will reduce the amount of chemicals entering and polluting the soil, and also will keep the cleaning waste contained until it can be removed safely. Some patented cleaning systems have developed special equipment to facilitate the containment and later disposal of cleaning waste.

Concern over the release of volatile organic compounds (VOCs) into the air has resulted in the manufacture of new, more environmentally responsible cleaners and paint removers, while some materials traditionally used in cleaning may no longer be available for these same reasons. Other health and safety concerns have created additional cleaning challenges, such as lead paint removal, which is likely to require special removal and disposal techniques.

Cleaning can also cause damage to non-masonry materials on a building, including glass, metal and wood. Thus, it is usually necessary to cover windows and doors, and other features that may be vulnerable to chemical cleaners. They should be covered with plastic or polyethylene, or a masking agent that is applied as a liquid which dries to form a thin protective film on glass, and is easily peeled off after the

cleaning is finished. Wind drift, for example, can also damage other property by carrying cleaning chemicals onto nearby automobiles, resulting in etching of the glass or spotting of the paint finish. Similarly, airborne dust can enter surrounding buildings, and excess water can collect in nearby yards and basements.



The lower floors of this historic brick and architectural terra-cotta building have been covered during chemical cleaning to protect pedestrians and vehicular traffic from potentially harmful overspray. Photo: NPS files.

Safety considerations. Possible health dangers of each method selected for the cleaning project must be considered before selecting a cleaning method to avoid harm to the cleaning applicators, and the necessary precautions must be taken. The precautions listed in Material Safety Data Sheets (MSDS) that are provided with chemical products should always be followed. Protective clothing, respirators, hearing and face shields, and gloves must be provided to workers to be worn at all times. Acidic and alkaline chemical cleaners in both liquid and vapor forms can also cause serious injury to passers-by. It may be necessary to schedule cleaning at night or weekends if the building is located in a busy urban area to reduce the potential danger of chemical overspray to pedestrians. Cleaning during non-business hours will allow HVAC systems to be turned off and vents to be covered to prevent dangerous chemical fumes from entering the building which will also ensure the safety of the building's occupants. Abrasive and mechanical methods produce dust which can pose a serious health hazard, particularly if the abrasive or the masonry contains silica.

Water-Repellent Coatings and Waterproof Coatings

To begin with, it is important to understand that waterproof coatings and water-repellent coatings are not the same. Although these terms are frequently interchanged and commonly confused with one another, they are completely different materials. **Water-repellent coatings**--often referred to incorrectly as "sealers", but which do not or should not "seal"--are intended to keep liquid water from penetrating the surface but to allow water vapor to enter and leave, or pass through, the surface of the masonry. Water-repellent coatings are generally transparent, or clear, although once applied some may darken or discolor certain types of masonry while others may give it a glossy or shiny appearance. **Waterproof coatings** seal the surface from liquid water and from water vapor. They are usually opaque, or pigmented, and include bituminous coatings and some elastomeric paints and coatings.

Water-Repellent Coatings

Water-repellent coatings are formulated to be vapor permeable, or "breathable". They do not seal the surface completely to water vapor so it can enter the masonry wall as well as leave the wall. While the first water-repellent coatings to be developed were primarily acrylic or silicone resins in organic solvents, now most water-repellent coatings are water-based and formulated from modified siloxanes, silanes and other alkoxysilanes, or metallic stearates. While some of these products are shipped from the factory ready to use, other water-borne water repellents must be diluted at the job site. Unlike earlier water-repellent coatings which tended to form a "film" on the masonry surface, modern water-repellent coatings actually penetrate into the masonry substrate slightly and, generally, are almost invisible if properly applied to the masonry. They are

also more vapor permeable than the old coatings, yet they still reduce the vapor permeability of the masonry. Once inside the wall, water vapor can condense at cold spots producing liquid water which, unlike water vapor, cannot escape through a water-repellent coating. The liquid water within the wall, whether from condensation, leaking gutters, or other sources, can cause considerable damage.

This clear coating has failed and is pulling off pieces of the stone as it peels. Photo: NPS files

Water-repellent coatings are not consolidants. Although modern water-repellents may penetrate slightly beneath the masonry surface, instead of just "sitting" on top of it, they do not perform the same function as a consolidant which is to "consolidate" and replace lost binder to strengthen deteriorating masonry. Even after many years of laboratory study and testing, few consolidants have proven very effective. The composition of fired products such as brick and architectural terra cotta, as well as many types of building stone, does not lend itself to consolidation.

Some modern water-repellent coatings which contain a binder intended to replace the natural binders in stone that have been lost through weathering and natural erosion are described in product literature as both a water repellent and a consolidant The fact that the newer water-repellent coatings penetrate beneath the masonry surface instead of just forming a layer on top of the surface may indeed convey at least some consolidating properties to certain stones. However, a water-repellent coating cannot be considered a consolidant. In some instances, a water-repellent or "preservative" coating, if applied to already damaged or spalling stone, may form a surface crust which, if it fails, may exacerbate the deterioration by pulling off even more of the stone.

Is a Water-Repellent Treatment Necessary?

Water-repellent coatings are frequently applied to historic masonry buildings for the wrong reason. They also are often applied without an understanding of what they are and what they are intended to do. And these coatings can be very difficult, if not impossible, to remove from the masonry if they fail or become discolored. Most importantly, the application of water-repellent coatings to historic masonry is usually unnecessary.

Most historic masonry buildings, unless they are painted, have survived for decades without a water-repellent coating and, thus, probably do not need one now. Water penetration to the interior of a masonry building is seldom due to porous masonry, but results from poor or deferred maintenance. Leaking roofs, clogged or deteriorated gutters and downspouts, missing mortar, or cracks and open joints around door and window openings are almost always the cause of moisture-related problems in a historic masonry building. **If historic masonry buildings are kept watertight and in good repair, water-repellent coatings should not be necessary.**

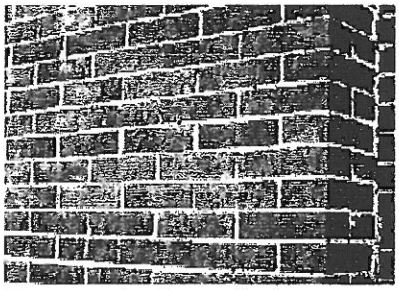
Rising damp (capillary moisture pulled up from the ground), or condensation can also be a source of excess moisture in masonry buildings. A water-repellent coating will not solve this problem either and, in fact, may be likely to exacerbate it. Furthermore, a water-repellent coating should never be applied to a damp wall. Moisture in the wall would reduce the ability of a coating to adhere to the masonry and to penetrate below the surface. But, if it did adhere, it would hold the moisture inside the masonry because, although a water-repellent coating is permeable to water vapor, liquid water cannot pass

through it. In the case of rising damp, a coating may force the moisture to go even higher in the wall because it can slow down evaporation, and thereby retain the moisture in the wall.

Excessive moisture in masonry walls may carry waterborne soluble salts from the masonry units themselves or from the mortar through the walls. If the water is permitted to come to the surface, the salts may appear on the masonry surface as efflorescence (a whitish powder) upon evaporation. However, the salts can be potentially dangerous if they remain in the masonry and crystallize beneath the surface as subflorescence. Subflorescence eventually may cause the surface of the masonry to spall, particularly if a water-repellent coating has been applied which tends to reduce the flow of moisture out from the subsurface of the masonry. Although many of the newer water-repellent products are more breathable than their predecessors, they can be especially damaging if applied to masonry that contains salts, because they limit the flow of moisture through masonry.

When a Water-Repellent Coating May be Appropriate

There are some instances when a water-repellent coating may be considered appropriate to use on a historic masonry building. Soft, incompletely fired brick from the 18th-and early-19th centuries may have become so porous that paint or some type of coating is needed to protect it from further deterioration or dissolution. When a masonry building has been neglected for a long period of time, necessary repairs may be required in order to make it watertight. If, following a reasonable period of time after the building has been made watertight and has dried out completely, moisture appears actually to be penetrating through the repointed and repaired masonry walls, then the application of a water-repellent coating may be considered *in selected areas only*. This decision should be made in consultation with an architectural conservator. And, if such a treatment is undertaken, it should not be applied to the entire exterior of the building.



Improper cleaning methods may have been responsible for the formation of efflorescence on this brick. Photo: NPS files.

Anti-graffiti or barrier coatings are another type of clear coating--although barrier coatings can also be pigmented--that may be applied to exterior masonry, but they are not formulated primarily as water repellents. The purpose of these coatings is to make it harder for graffiti to stick to a masonry surface and, thus, easier to clean. But, like water-repellent coatings, in most cases the application of anti-graffiti coatings is generally not recommended for historic masonry buildings. These coatings are often quite shiny which can greatly alter the appearance of a historic masonry surface, and they are not always effective. Generally, other ways of discouraging graffiti, such as improved lighting, can be more effective than a coating. However, the application of anti-graffiti coatings may be appropriate in some instances on vulnerable areas of historic masonry buildings which are frequent targets of graffiti that are located in out-of-the-way places where constant surveillance is not possible.

Some water-repellent coatings are recommended by product manufacturers as a means of keeping dirt and pollutants or biological growth from collecting on the surface of masonry buildings and, thus, reducing the need for frequent cleaning. While this at times may be true, in some cases a coating may actually retain dirt more than uncoated masonry. Generally, the application of a water-repellent coating is not recommended on a historic masonry building as a means of preventing biological growth. Some water-repellent coatings may actually encourage biological growth on a masonry wall.

Biological growth on masonry buildings has traditionally been kept at bay through regularly-scheduled cleaning as part of a maintenance plan. Simple cleaning of the masonry with low-pressure water using a natural- or synthetic-bristled scrub brush can be very effective if done on a regular basis. Commercial products are also available which can be sprayed on masonry to remove biological growth.

In most instances, a water-repellent coating is not necessary if a building is watertight. The application of a water-repellent coating is not a recommended treatment for historic masonry buildings unless there is a specific problem which it may help solve. If the problem occurs on only part of the building, it is best to treat only that area rather than an entire building. Extreme exposures such as parapets, for example, or portions of the building subject to driving rain can be treated more effectively and less expensively than the entire building. Water-repellent coatings are not permanent and must be reapplied periodically although, if they are truly invisible, it can be difficult to know when they are no longer providing the intended protection.

Testing a water-repellent coating by applying it in one small area may not be helpful in determining its suitability for the building because a limited test area does not allow an adequate evaluation of a treatment. Since water may enter and leave through the surrounding untreated areas, there is no way to tell if the coated test area is "breathable." But trying a coating in a small area may help to determine whether the coating is visible on the surface or if it will otherwise change the appearance of the masonry.

Waterproof Coatings

In theory, waterproof coatings usually do not cause problems as long as they exclude all water from the masonry. If water does enter the wall from the ground or from the inside of a building, the coating can intensify the damage because the water will not be able to escape. During cold weather this water in the wall can freeze causing serious mechanical disruption, such as spalling.

In addition, the water eventually will get out by the path of least resistance. If this path is toward the interior, damage to interior finishes can result; if it is toward the exterior, it can lead to damage to the masonry caused by built-up water pressure.

In most instances, waterproof coatings should not be applied to historic masonry. The possible exception to this might be the application of a waterproof coating to below-grade exterior foundation walls as a last resort to stop water infiltration on interior basement walls. **Generally, however, waterproof coatings, which include *elastomeric paints*, should almost never be applied above grade to historic masonry buildings.**

Summary

A well-planned cleaning project is an essential step in preserving, rehabilitating or restoring a historic masonry building. Proper cleaning methods and coating treatments, when determined necessary for the preservation of the masonry, can enhance the aesthetic character as well as the structural stability of a historic building. Removing years of accumulated dirt, pollutant crusts, stains, graffiti or paint, if done with appropriate caution, can extend the life and longevity of the historic resource. Cleaning that is carelessly or insensitively prescribed or carried out by inexperienced workers can

have the opposite of the intended effect. It may scar the masonry permanently, and may actually result in hastening deterioration by introducing harmful residual chemicals and salts into the masonry or causing surface loss. Using the wrong cleaning method or using the right method incorrectly, applying the wrong kind of coating or applying a coating that is not needed can result in serious damage, both physically and aesthetically, to a historic masonry building. Cleaning a historic masonry building should always be done using the gentlest means possible that will clean, but not damage the building. It should always be taken into consideration before applying a water-repellent coating or a waterproof coating to a historic masonry building whether it is really necessary and whether it is in the best interest of preserving the building.

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Acknowledgements

Robert C. Mack, FAIA, is a principal in the firm of MacDonald & Mack Architects, Ltd., an architectural firm that specializes in historic buildings in Minneapolis, Minnesota. **Anne Grimmer** is a Senior Architectural Historian in the Technical Preservation Services Branch, Heritage Preservation Services Program, National Park Service, Washington, D.C.

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Home page logo: Approriate cleaning of historic masonry. Photo: NPS files.

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Repointing Mortar Joints in Historic Masonry Buildings

Robert C. Mack, FAIA, and John P. Speweik

A NOTE TO OUR USERS: The web versions of the **Preservation Briefs** differ somewhat from the printed versions. Many illustrations are new, captions are simplified, illustrations are typically in color rather than black and white, and some complex charts have been omitted.

Masonry--brick, stone, terra-cotta, and concrete block--is found on nearly every historic building. Structures with all-masonry exteriors come to mind immediately, but most other buildings at least have masonry foundations or chimneys. Although generally considered "permanent," masonry is subject to deterioration, especially at the mortar joints. Repointing, also known simply as "pointing"or--somewhat inaccurately--"tuck pointing"*, is the process of removing deteriorated mortar from the joints of a masonry wall and replacing it with new mortar. Properly done, repointing restores the visual and physical integrity of the masonry. Improperly done, repointing not only detracts from the appearance of the building, but may also cause physical damage to the masonry units themselves.

The purpose of this Brief is to provide general guidance on appropriate materials and methods for repointing historic masonry buildings and it is intended to benefit building owners, architects, and contractors. The Brief should serve as a guide to prepare specifications for repointing historic masonry buildings. It should also help develop sensitivity to the particular needs of historic masonry, and to assist historic building owners in working cooperatively with architects, architectural conservators and historic preservation consultants, and contractors. Although specifically intended for historic buildings, the guidance is appropriate for other masonry buildings as well. This publication updates *Preservation Briefs 2: Repointing Mortar Joints in Historic Brick Buildings* to include all types of historic unit masonry. The scope of the earlier Brief has

also been expanded to acknowledge that the many buildings constructed in the first half of the 20th century are now historic and eligible for listing in the National Register of Historic Places, and that they may have been originally constructed with portland cement mortar.

**Tuckpointing technically describes a primarily decorative application of a raised mortar joint or lime putty joint on top of flush mortar joints.*

Historical Background

Mortar consisting primarily of lime and sand has been used as an integral part of masonry structures for thousands of years. Up until about the mid-19th century, lime or quicklime (sometimes called lump lime) was delivered to construction sites, where it had to be slaked, or combined with water. Mixing with water caused it to boil and resulted in a wet lime putty that was left to mature in a pit or wooden box for several weeks, up to a year. Traditional mortar was made from lime putty, or slaked lime, combined with local sand, generally in a ratio of 1 part lime putty to 3 parts sand by volume. Often other ingredients, such as crushed marine shells (another source of lime), brick dust, clay, natural cements, pigments, and even animal hair were also added to mortar, but the basic formulation for lime putty and sand mortar remained unchanged for centuries until the advent of portland cement or its forerunner, Roman cement, a natural, hydraulic cement.

Portland cement was patented in Great Britain in 1824. It was named after the stone from Portland in Dorset which it resembled when hard. This is a fast-curing, hydraulic cement which hardens under water. Portland cement was first manufactured in the United States in 1872, although it was imported before this date. But it was not in common use throughout the country until the early 20th century. Up until the turn of the century portland cement was considered primarily an additive, or "minor ingredient" to help accelerate mortar set time. By the 1930s, however, most masons used a mix of equal parts portland cement and lime putty. Thus, the mortar found in masonry structures built between 1873 and 1930 can range from pure lime and sand mixes to a wide variety of lime, portland cement, and sand combinations.

In the 1930s more new mortar products intended to hasten and simplify masons' work were introduced in the U.S. These included **masonry cement**, a premixed, bagged mortar which is a combination of portland cement and ground limestone, and **hydrated lime**, machine-slaked lime that eliminated the necessity of slaking quicklime into putty at the site.

Identifying the Problem Before Repointing

The decision to repoint is most often related to some obvious sign of deterioration, such as disintegrating mortar, cracks in mortar joints, loose bricks or stones, damp walls, or damaged plasterwork. It is, however, erroneous to assume that repointing alone will solve deficiencies that result from other problems. The root cause of the deterioration--leaking roofs or gutters, differential settlement of the building, capillary action causing rising damp, or extreme weather exposure--should always be dealt with prior to beginning work. Without appropriate repairs to eliminate the source of the problem, mortar deterioration will continue and any

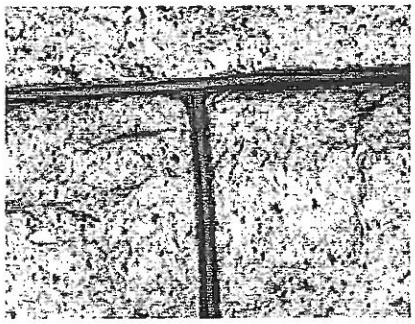
repointing will have been a waste of time and money.

Masons practice using lime putty mortar to repair historic marble. Photo: NPS files.

Use of Consultants. Because there are so many possible causes for deterioration in historic buildings, it may be desirable to retain a consultant, such as a historic architect or architectural conservator, to analyze the building. In addition to determining the most appropriate solutions to the problems, a consultant can prepare specifications which reflect the particular requirements of each job and can provide oversight of the work in progress. Referrals to preservation consultants frequently can be obtained from State Historic Preservation Offices, the American Institute for Conservation of Historic and Artistic Works (AIC), the Association for Preservation Technology (APT), and local chapters of the American Institute of Architects (AIA).

Finding an Appropriate Mortar Match

Preliminary research is necessary to ensure that the proposed repointing work is both physically and visually appropriate to the building. Analysis of unweathered portions of the historic mortar to which the new mortar will be matched can suggest appropriate mixes for the repointing mortar so that it will not damage the building because it is excessively strong or vapor impermeable. Examination and analysis of the masonry units--brick, stone or terra cotta--and the techniques used in the original construction will assist in maintaining the building's historic appearance. A simple, non- technical, evaluation of the masonry units and mortar can provide information concerning the relative strength and permeability of each--critical factors in selecting the repointing mortar--while a visual analysis of the historic mortar can provide the information necessary for developing the new mortar mix and application techniques.

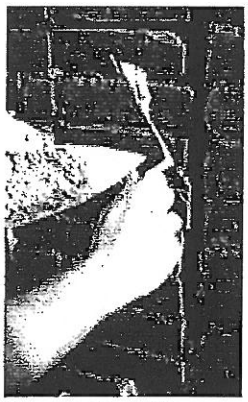


This late 19th century granite has recently been repointed with the joint profile and mortar color carefully matched to the original. Photo: NPS files.

Although not crucial to a successful repointing project, for projects involving properties of special historic significance, a mortar analysis by a qualified laboratory can be useful by providing information on the original ingredients. However, there are limitations with such an analysis, and replacement mortar specifications should not be based solely on laboratory analysis. Analysis requires interpretation, and there are important factors which affect the condition and performance of the mortar that cannot be established through laboratory analysis. These may include: the original water content, rate of curing, weather conditions during original construction, the method of mixing and placing the mortar, and the cleanliness and condition of the sand. *The most useful information that can come out of laboratory analysis is the identification of sand by gradation and color.* This allows the color and the texture of the mortar to be matched with some accuracy because sand is the largest ingredient by volume.

In creating a repointing mortar that is compatible with the masonry units, the objective is to achieve one that matches the historic mortar as closely as possible, so that the new material can coexist with the old in a sympathetic, supportive and, if necessary, sacrificial capacity. The exact physical and chemical properties of the historic mortar are not of major significance as long as the new mortar conforms to the following criteria:

- The new mortar must match the historic mortar in **color, texture and tooling.** (If a laboratory analysis is undertaken, it may be possible to match the binder components and their proportions with the historic mortar, if those materials are available.)
- The **sand must match the sand** in the historic mortar. (The color and texture of the new mortar will usually fall into place if the sand is matched successfully.)
- The new mortar must have **greater vapor permeability** and be **softer** (measured in compressive strength) than the masonry units.
- The new mortar must be **as vapor permeable** and **as soft or softer** (measured in compressive strength) than the historic mortar. (Softness or hardness is not necessarily an indication of permeability; old, hard lime mortars can still retain high permeability.)



This mortar is the proper consistency for repointing historic brick. Photo: John P. Speweik.

Mortar Analysis

Methods for analyzing mortars can be divided into two broad categories: **wet chemical** and **instrumental.** Many laboratories that analyze historic mortars use a simple **wet-chemical** method called acid digestion, whereby a sample of the mortar is crushed and then mixed with a dilute acid. The acid dissolves all the carbonate-containing minerals not only in the binder, but also in the aggregate (such as oyster shells, coral sands, or other carbonate-based materials), as well as any other acid-soluble materials. The sand and fine-grained acid-insoluble material is left behind. There are several variations on the simple acid digestion test. One involves collecting the carbon dioxide gas given off as the carbonate is digested by the acid; based on the gas volume the carbnate content of the mortar can be accurately determined (Jedrzejewska, 1960). Simple acid digestion methods are rapid, inexpensive, and easy to perform, but the information they provide about the original composition of a mortar is limited to the color and texture of the sand. The gas collection method provides more information about the binder than a simple acid digestion test.

Instrumental analysis methods that have been used to evaluate mortars include polarized light or thin-section microscopy, scanning electron microscopy, atomic absorption spectroscopy, X-ray diffraction, and differential thermal analysis. All instrumental methods require not only expensive, specialized equipment, but also highly-trained experienced analysts. However, instrumental methods can provide much more information about a mortar. Thin-section microscopy is probably the most commonly used instrumental method. Examination of thin slices of a mortar in transmitted light is often used to supplement acid digestion methods, particularly to look

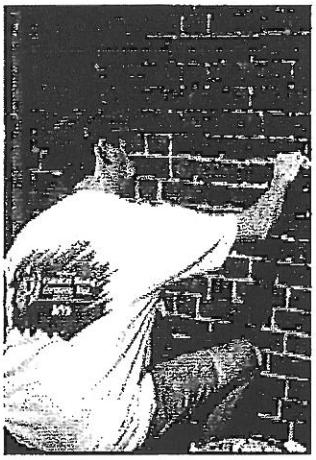
for carbonate-based aggregate. For example, the new ASTM test method, ASTM C 1324-96 "Test Method for Examination and Analysis of Hardened Mortars" which was designed specifically for the analysis of modern lime-cement and masonry cement mortars, combines a complex series of wet chemical analyses with thin-section microscopy.

The drawback of most mortar analysis methods is that mortar samples of known composition have not been analyzed in order to evaluate the method. Historic mortars were not prepared to narrowly defined specifications from materials of uniform quality; they contain a wide array of locally derived materials combined at the discretion of the mason. While a particular method might be able to accurately determine the original proportions of a lime-cement-sand mortar prepared from modern materials, the usefulness of that method for evaluating historic mortars is questionable unless it has been tested against mortars prepared from materials more commonly used in the past. **Lorraine Schnabel.**

Properties of Mortar

Mortars for repointing should be softer or more permeable than the masonry units and no harder or more impermeable than the historic mortar to prevent damage to the masonry units. It is a common error to assume that hardness or high strength is a measure of appropriateness, particularly for lime-based historic mortars. Stresses within a wall caused by expansion, contraction, moisture migration, or settlement must be accommodated in some manner; in a masonry wall, these stresses should be relieved by the mortar rather than by the masonry units. A mortar that is stronger in compressive strength than the masonry units will not "give," thus causing stresses to be relieved through the masonry units--resulting in permanent damage to the masonry, such as cracking and spalling, that cannot be repaired easily.

While stresses can also break the bond between the mortar and the masonry units, permitting water to penetrate the resulting hairline cracks, this is easier to correct in the joint through repointing than if the break occurs in the masonry units.



This early 19th century building is being repointed with lime mortar. Photo: Travis McDonald.

Permeability, or rate of vapor transmission, is also critical. High lime mortars are more permeable than denser cement mortars. Historically, mortar acted as a bedding material--not unlike an expansion joint--rather than a "glue" for the masonry units, and moisture was able to migrate through the mortar joints rather than the masonry units. When moisture evaporates from the masonry it deposits any soluble salts either on the surface as *efflorescence* or below the surface as *subflorescence.* While salts deposited on the surface of masonry units are usually relatively harmless, salt crystallization within a masonry unit creates pressure that can cause parts ofthe outer surface to spall off or delaminate. If the mortar does not permitmoisture or moisture vapor to migrate out of the wall and evaporate, theresult will be damage to the masonry units.

Components of Mortar

Sand. Sand is the largest component of mortar and the material that gives mortar its distinctive color, texture and cohesiveness. Sand must be free of impurities, such as salts or clay. The three key characteristics of sand are: particle shape, gradation and void ratios.

When viewed under a magnifying glass or low-power microscope, particles of sand generally have either rounded edges, such as found in beach and river sand, or sharp, angular edges, found in crushed or manufactured sand. For repointing mortar, rounded or natural sand is preferred for two reasons. It is usually similar to the sand in the historic mortar and provides a better visual match. It also has better working qualities or plasticity and can thus be forced into the joint more easily, forming a good contact with the remaining historic mortar and the surface of the adjacent masonry units. Although manufactured sand is frequently more readily available, it is usually possible to locate a supply of rounded sand.

The gradation of the sand (particle size distribution) plays a very important role in the durability and cohesive properties of a mortar. Mortar must have a certain percentage of large to small particle sizes in order to deliver the optimum performance. Acceptable guidelines on particle size distribution may be found in ASTM C 144 (American Society for Testing and Materials). However, in actuality, since neither historic nor modern sands are always in compliance with ASTM C 144, matching the same particle appearance and gradation usually requires sieving the sand.

A scoop of sand contains many small voids between the individual grains. A mortar that performs well fills all these small voids with binder (cement/lime combination or mix) in a balanced manner. Well-graded sand generally has a 30 per cent void ratio by volume. Thus, 30 per cent binder by volume generally should be used, unless the historic mortar had a different binder: aggregate ratio. This represents the 1:3 binder to sand ratios often seen in mortar specifications.

For repointing, sand generally should conform to ASTM C 144 to assure proper gradation and freedom from impurities; some variation may be necessary to match the original size and gradation. Sand color and texture also should match the original as closely as possible to provide the proper color match without other additives.

Lime. Mortar formulations prior to the late-19th century used lime as the primary binding material. Lime is derived from heating limestone at high temperatures which burns off the carbon dioxide, and turns the limestone into quicklime. There are three types of limestone--calcium, magnesium, and dolomitic--differentiated by the different levels of magnesium carbonate they contain which impart specific qualities to mortar. Historically, calcium lime was used for mortar rather than the dolomitic lime (calcium magnesium carbonate) most often used today. But it is also important to keep in mind the fact that the historic limes, and other components of mortar, varied a great deal because they were natural, as opposed to modern lime which is manufactured and, therefore, standardized. Because some of the kinds of lime, as well as other components of mortar, that were used historically are no longer readily available, even when a conscious effort is made to replicate a "historic" mix, this may not be achievable due to the differences between modern and historic materials.

Lime, itself, when mixed with water into a paste is very plastic and creamy. It will remain workable and soft indefinitely, if stored in a sealed container. Lime (calcium hydroxide) hardens by carbonation absorbing carbon dioxide primarily from the air, converting itself

Caulking was inappropriately used here in place of mortar on the top of the wall. As a result, it has not been durable. Photo: NPS files.

to calcium carbonate. Once a lime and sand mortar is mixed and placed in a wall, it begins the process of carbonation. If lime mortar is left to dry too rapidly, carbonation of the mortar will be reduced, resulting in poor adhesion and poor durability. In addition, lime mortar is slightly water soluble and thus is able to re-seal any hairline cracks that may develop during the life of the mortar. Lime mortar is soft, porous, and changes little in volume during temperature fluctuations thus making it a good choice for historic buildings. *Because of these qualities, high calcium lime mortar may be considered for many repointing projects, not just those involving historic buildings.*

For repointing, lime should conform to ASTM C 207, Type S, or Type SA, Hydrated Lime for Masonry Purposes. This machine-slaked lime is designed to assure high plasticity and water retention. The use of quicklime which must be slaked and soaked by hand may have advantages over hydrated lime in some restoration projects if time and money allow.

Lime putty. Lime putty is slaked lime that has a putty or paste-like consistency. It should conform to ASTM C 5. Mortar can be mixed using lime putty according to ASTM C 270 property or proportion specification.

Portland cement. More recent, 20th-century mortar has used portland cement as a primary binding material. A straight portland cement and sand mortar is extremely hard, resists the movement of water, shrinks upon setting, and undergoes relatively large thermal movements. When mixed with water, portland cement forms a harsh, stiff paste that is quite unworkable, becoming hard very quickly. (Unlike lime, portland cement will harden regardless of weather conditions and does not require wetting and drying cycles.) Some portland cement assists the workability and plasticity of the mortar without adversely affecting the finished project; it also provides early strength to the mortar and speeds setting. Thus, it may be appropriate to add some portland cement to an essentially lime-based mortar even when repointing relatively soft 18th or 19th century brick under some circumstances when a slightly harder mortar is required. The more portland cement that is added to a mortar formulation the harder it becomes--and the faster the initial set.

For repointing, portland cement should conform to ASTM C 150. White, non- staining portland cement may provide a better color match for some historic mortars than the more commonly available grey portland cement. But, it should not be assumed, however, that white portland cement is always appropriate for all historic buildings, since the original mortar may have been mixed with grey cement. The cement should not have more than 0.60 per cent alkali to help avoid efflorescence.

Masonry cement. Masonry cement is a preblended mortar mix commonly found at hardware and home repair stores. It is designed to produce mortars with a compressive strength of 750 psi or higher when mixed with sand and water at the job site. It may contain hydrated lime, but it always contains a large amount of portland cement, as well as ground limestone and other workability agents, including air-entraining agents. Because masonry cements are not required to contain hydrated lime, and generally do not contain lime, they produce high strength mortars that can damage historic masonry.

For this reason, they generally are not recommended for use on historic masonry buildings.

Lime mortar (pre-blended). Hydrated lime mortars, and pre-blended lime putty mortars with or without a matched sand are commercially available. Custom mortars are also available with color. In most instances, pre-blended lime mortars containing sand may not provide an exact match; however, if the project calls for total repointing, a pre-blended lime mortar may be worth considering as long as the mortar is compatible in strength with the masonry. If the project involves only selected, "spot" repointing, then it may be better to carry out a mortar analysis which can provide a custom pre-blended lime mortar with a matching sand. In either case, if a preblended lime mortar is to be used, it should contain Type S or SA hydrated lime conforming to ASTM C 207.

Water. Water should be potable--clean and free from acids, alkalis, or other dissolved organic materials.

Other Components

Historic components. In addition to the color of the sand, the texture of the mortar is of critical importance in duplicating historic mortar. Most mortars dating from the mid-19th century on--with some exceptions--have a fairly homogeneous texture and color. Some earlier mortars are not as uniformly textured and may contain lumps of partially burned lime or "dirty lime", shell (which often provided a source of lime, particularly in coastal areas), natural cements, pieces of clay, lampblack or other pigments, or even animal hair. The visual characteristics of these mortars can be duplicated through the use of similar materials in the repointing mortar.

Replicating such unique or individual mortars will require writing new specifications for each project. If possible, suggested sources for special materials should be included. For example, crushed oyster shells can be obtained in a variety of sizes from poultry supply dealers.

Pigments. Some historic mortars, particularly in the late 19th century, were tinted to match or contrast with the brick or stone. Red pigments, sometimes in the form of brick dust, as well as brown, and black pigments were commonly used. Modern pigments are available which can be added to the mortar at the job site, but they should not exceed 10 per cent by weight of the portland cement in the mix, and carbon black should be limited to 2 per cent. Only synthetic mineral oxides, which are alkali-proof and sun-fast, should be used to prevent bleaching and fading.

Modern components. Admixtures are used to create specific characteristics in mortar, and whether they should be used will depend upon the individual project. *Air entraining agents*, for example, help the mortar to resist freeze-thaw damage in northern climates. *Accelerators* are used to reduce mortar freezing prior to setting while *retarders* help to extend the mortar life in hot climates. Selection of admixtures should be made by the architect or architectural conservator as part of the specifications, not something routinely added by the masons.

Generally, modern chemical additives are unnecessary and may, in fact, have detrimental effects in historic masonry projects. The use of antifreeze compounds is not recommended. They are not very effective with high lime mortars and may introduce salts, which may cause efflorescence later. A better practice is to warm the sand and water, and to protect the completed work from freezing. No definitive study has determined whether air-entraining additives should be used to resist frost action and

enhance plasticity, but in areas of extreme exposure requiring high-strength mortars with lower permeability, air-entrainment of 10-16 percent may be desirable (see formula for "severe weather exposure" in **Mortar Type and Mix**). Bonding agents are not a substitute for proper joint preparation, and they should generally be avoided. If the joint is properly prepared, there will be a good bond between the new mortar and the adjacent surfaces. In addition, a bonding agent is difficult to remove if smeared on a masonry surface.

Mortar Type and Mix

Mortars for repointing projects, especially those involving historic buildings, typically are custom mixed in order to ensure the proper physical and visual qualities. These materials can be combined in varying proportions to create a mortar with the desired performance and durability. The actual specification of a particular mortar type should take into consideration all of the factors affecting the life of the building including: current site conditions, present condition of the masonry, function of the new mortar, degree of weather exposure, and skill of the mason. Thus, no two repointing projects are exactly the same. Modern materials specified for use in repointing mortar should conform to specifications of the American Society for Testing and Materials (ASTM) or comparable federal specifications, and the resulting mortar should conform to ASTM C 270, Mortar for Unit Masonry.

Here, a hammer and chisel are being correctly used to prepare a joint for repointing. Photo: John P. Speweik.

Specifying the proportions for the repointing mortar for a specific job is not as difficult as it might seem. Five mortar types, each with a corresponding recommended mix, have been established by ASTM to distinguish high strength mortar from soft flexible mortars. The ASTM designated them in decreasing order of approximate general strength as Type M (2,500 psi), Type S (1,800 psi), Type N (750 psi), Type O (350 psi) and Type K (75 psi). (The letters identifying the types are from the words MASON WORK using every other letter.) Type K has the highest lime content of the mixes that contain portland cement, although it is seldom used today, except for some historic preservation projects. The designation "L" in the accompanying chart identifies a straight lime and sand mix. Specifying the appropriate ASTM mortar by proportion of ingredients, will ensure the desired physical properties. Unless specified otherwise, measurements or proportions for mortar mixes are always given in the following order: cement-lime-sand. Thus, a Type K mix, for example, would be referred to as 1-3-10, or 1 part cement to 3 parts lime to 10 parts sand. Other requirements to create the desired visual qualities should be included in the specifications.

The strength of a mortar can vary. If mixed with higher amounts of portland cement, a harder mortar is obtained. The more lime that is added, the softer and more plastic the mortar becomes, increasing its workability. A mortar strong in compressive strength might be desirable for a hard stone (such as granite) pier holding up a bridge deck, whereas a softer, more permeable lime mortar would be preferable for a historic wall of soft brick. Masonry deterioration caused by salt deposition results when the mortar is less permeable than the masonry unit. A strong mortar is still more permeable than hard, dense stone. However, in a wall constructed of soft bricks where the masonry unit itself has a relatively high permeability or vapor transmission rate, a soft, high lime mortar is necessary to retain sufficient permeability.

Budgeting and Scheduling

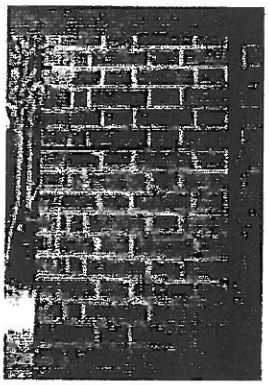
Repointing is both expensive and time consuming due to the extent of handwork and special materials required. It is preferable to repoint only those areas that require work rather than an entire wall, as is often specified. But, if 25 to 50 per cent or more of a wall needs to be repointed, repointing the entire wall may be more cost effective than spot repointing. Total repointing may also be more sensible when access is difficult, requiring the erection of expensive scaffolding (unless the majority of the mortar is sound and unlikely to require replacement in the foreseeable future). Each project requires judgement based on a variety of factors. Recognizing this at the outset will help to prevent many jobs from becoming prohibitively expensive.

When repairing this stone wall, the mason matched the raised profile of the original tuckpointing. Photo: NPS files.

In scheduling, seasonal aspects need to be considered first. Generally speaking, wall temperatures between 40 and 95 degrees F (8 and 38 degrees C) will prevent freezing or excessive evaporation of the water in the mortar. Ideally, repointing should be done in shade, away from strong sunlight in order to slow the drying process, especially during hot weather. If necessary, shade can be provided for large-scale projects with appropriate modifications to scaffolding.

The relationship of repointing to other work proposed on the building must also be recognized. For example, if paint removal or cleaning is anticipated, and if the mortar joints are basically sound and need only selective repointing, it is generally better to postpone repointing until after completion of these activities. However, if the mortar has eroded badly, allowing moisture to penetrate deeply into the wall, repointing should be accomplished before cleaning. Related work, such as structural or roof repairs, should be scheduled so that they do not interfere with repointing and so that all work can take maximum advantage of erected scaffolding.

Building managers also must recognize the difficulties that a repointing project can create. The process is time consuming, and scaffolding may need to remain in place for an extended period of time. The joint preparation process can be quite noisy and can generate large quantities of dust which must be controlled, especially at air intakes to protect human health, and also where it might damage operating machinery. Entrances may be blocked from time to time making access difficult for both building tenants and visitors. Clearly, building managers will need to coordinate the repointing work with other events at the site.



A mechanical grinder improperly used to cut out the horizontal joint and incompatible repointing have seriously damaged the

Contractor Selection

The ideal way to select a contractor is to ask knowledgeable owners of recently repointed historic buildings for recommendations. Qualified contractors then can provide lists of other repointing projects for inspection. More commonly, however, the contractor for a repointing project is selected through a competitive bidding process over which the client or consultant has only limited control. In this situation it is

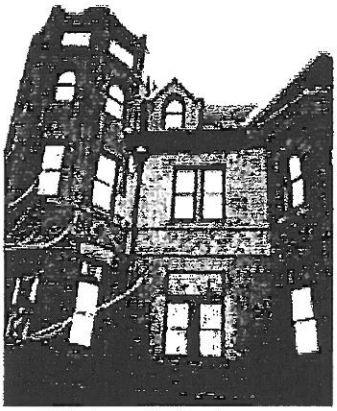
19th century brick. Photo: NPS files.

important to ensure that the specifications stipulate that masons must have a minimum of five years' experience with repointing historic masonry buildings to be eligible to bid on the project. Contracts are awarded to the lowest responsible bidder, and bidders who have performed poorly on other projects usually can be eliminated from consideration on this basis, even if they have the lowest prices.

The contract documents should call for unit prices as well as a base bid. Unit pricing forces the contractor to determine in advance what the cost addition or reduction will be for work which varies from the scope of the base bid. If, for example, the contractor has fifty linear feet less of stone repointing than indicated on the contract documents but thirty linear feet more of brick repointing, it will be easy to determine the final price for the work. Note that each type of work--brick repointing, stone repointing, or similar items--will have its own unit price. The unit price also should reflect quantities; one linear foot of pointing in five different spots will be more expensive than five contiguous linear feet.

Execution of the Work

Test Panels. These panels are prepared by the contractor using the same techniques that will be used on the remainder of the project. Several panel locations--preferably not on the front or other highly visible location of the building--may be necessary to include all types of masonry, joint styles, mortar colors, and other problems likely to be encountered on the job. If cleaning tests, for example, are also to be undertaken, they should be carried out in the same location. Usually a 3 foot by 3 foot area is sufficient for brickwork, while a somewhat larger area may be required for stonework. These panels establish an acceptable standard of work and serve as a benchmark for evaluating and accepting subsequent work on the building.



Unskilled repointing has negatively impacted the character of this late-19th century building. Photo: NPS files.

Joint Preparation. Old mortar should be removed to a minimum depth of 2 to 2-1/2 times the width of the joint to ensure an adequate bond and to prevent mortar "popouts." For most brick joints, this will require removal of the mortar to a depth of approximately ½ to 1 inch; for stone masonry with wide joints, mortar may need to be removed to a depth of several inches. Any loose or disintegrated mortar beyond this minimum depth also should be removed.

Although some damage may be inevitable, careful joint preparation can help limit damage to masonry units. The traditional manner of removing old mortar is through the use of hand chisels and mash hammers. Though labor-intensive, in most instances this method poses the least threat for damage to historic masonry units and produces the best final product.

The most common method of removing mortar, however, is through the use of power saws or grinders. The use of power tools by unskilled masons can be disastrous for historic masonry, particularly soft brick. Using power saws on walls with thin joints, such as most brick walls, almost always will result in damage to the masonry units by breaking the edges and by overcutting on the head, or vertical joints.

However, small pneumatically-powered chisels generally can be used safely and effectively to remove mortar on historic buildings as long as the masons maintain

appropriate control over the equipment. Under certain circumstances, thin diamond-bladed grinders may be used to cut out *horizontal* joints only on hard portland cement mortar common to most early-20th century masonry buildings. Usually, automatic tools most successfully remove old mortar without damaging the masonry units when they are used in combination with hand tools in preparation for repointing. Where horizontal joints are uniform and fairly wide, it may be possible to use a power masonry saw to assist the removal of mortar, such as by cutting along the middle of the joint; final mortar removal from the sides of the joints still should be done with a hand chisel and hammer. Caulking cutters with diamond blades can sometimes be used successfully to cut out joints without damaging the masonry. Caulking cutters are slow; they do not rotate, but vibrate at very high speeds, thus minimizing the possibility of damage to masonry units. Although mechanical tools may be safely used in limited circumstances to cut out horizontal joints in preparation for repointing, they should never be used on vertical joints because of the danger of slipping and cutting into the brick above or below the vertical joint. Using power tools to remove mortar without damaging the surrounding masonry units also necessitates highly skilled masons experienced in working on historic masonry buildings. Contractors should demonstrate proficiency with power tools before their use is approved.

Using any of these power tools may also be more acceptable on hard stone, such as quartzite or granite, than on terra cotta with its glass-like glaze, or on soft brick or stone. The test panel should determine the acceptability of power tools. If power tools are to be permitted, the contractor should establish a quality control program to account for worker fatigue and similar variables.

Mortar should be removed cleanly from the masonry units, leaving square corners at the back of the cut. Before filling, the joints should be rinsed with a jet of water to remove all loose particles and dust. At the time of filling, the joints should be damp, but with no standing water present. For masonry walls--limestone, sandstone and common brick--that are extremely absorbent, it is recommended that a continual mist of water be applied for a few hours before repointing begins.

Mortar Preparation. Mortar components should be measured and mixed carefully to assure the uniformity of visual and physical characteristics. Dry ingredients are measured by volume and thoroughly mixed before the addition of any water. Sand must be added in a damp, loose condition to avoid over sanding. Repointing mortar is typically pre-hydrated by adding water so it will just hold together, thus allowing it to stand for a period of time before the final water is added. Half the water should be added, followed by mixing for approximately 5 minutes. The remaining water should then be added in small portions until a mortar of the desired consistency is reached. The total volume of water necessary may vary from batch to batch, depending on weather conditions. It is important to keep the water to a minimum for two reasons: first, a drier mortar is cleaner to work with, and it can be compacted tightly into the joints; second, with no excess water to evaporate, the mortar cures without shrinkage cracks. Mortar should be used within approximately 30 minutes of final mixing, and "retempering," or adding more water, should not be permitted.

Using Lime Putty to Make Mortar. Mortar made with lime putty and sand, sometimes referred to as roughage or course stuff, should be measured by volume, and may require slightly different proportions from those used with hydrated lime. No additional water is usually needed to achieve a workable consistency because enough water is already contained in the putty. Sand is proportioned first, followed by the lime putty, then mixed for five minutes or until all the sand is thoroughly coated with the lime putty. But mixing, in the familiar sense of turning over with a hoe, sometimes may not be sufficient if the best possible performance is to be obtained from a lime putty mortar.

Although the old practice of chopping, beating and ramming the mortar has largely been forgotten, recent field work has confirmed that lime putty and sand rammed and beaten with a wooden mallet or ax handle, interspersed by chopping with a hoe, can significantly improve workability and performance. The intensity of this action increases the overall lime/sand contact and removes any surplus water by compacting the other ingredients. It may also be advantageous for larger projects to use a mortar pan mill for mixing. Mortar pan mills which have a long tradition in Europe produce a superior lime putty mortar not attainable with today's modern paddle and drum type mixers.

For larger repointing projects the lime putty and sand can be mixed together ahead of time and stored indefinitely, on or off site, which eliminates the need for piles of sand on the job site. This mixture, which resembles damp brown sugar, must be protected from the air in sealed containers with a wet piece of burlap over the top or sealed in a large plastic bag to prevent evaporation and premature carbonation. The lime putty and sand mixture can be recombined into a workable plastic state months later with no additional water.

If portland cement is specified in a lime putty and sand mortar--Type O (1:2:9) or Type K (1:3:11)--the portland cement should first be mixed into a slurry paste before adding it to the lime putty and sand. Not only will this ensure that the portland cement is evenly distributed throughout the mixture, but if dry portland cement is added to wet ingredients it tends to "ball up," jeopardizing dispersion. (Usually water must be added to the lime putty and sand anyway once the portland cement is introduced.) Any color pigments should be added at this stage and mixed for a full five minutes. The mortar should be used within 30 minutes to 1½ hours and it should not be retempered. Once portland cement has been added the mortar can no longer be stored.

Filling the Joint. Where existing mortar has been removed to a depth of greater than 1 inch, these deeper areas should be filled first, compacting the new mortar in several layers. The back of the entire joint should be filled successively by applying approximately 1/4 inch of mortar, packing it well into the back corners. This application may extend along the wall for several feet. As soon as the mortar has reached thumb-print hardness, another 1/4 inch layer of mortar--approximately the same thickness--may be applied. Several layers will be needed to fill the joint flush with the outer surface of the masonry. It is important to allow each layer time to harden before the next layer is applied; most of the mortar shrinkage occurs during the hardening process and layering thus minimizes overall shrinkage.

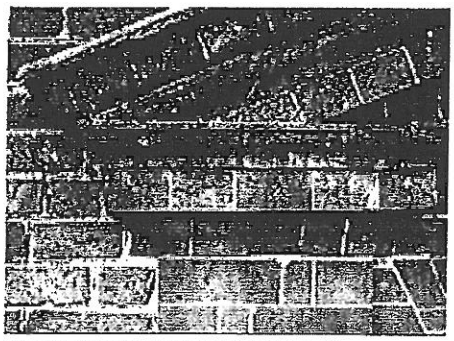
When the final layer of mortar is thumb-print hard, the joint should be tooled to match the historic joint. Proper timing of the tooling is important for uniform color and appearance. If tooled when too soft, the color will be lighter than expected, and hairline cracks may occur; if tooled when too hard, there may be dark streaks called "tool burning," and good closure of the mortar against the masonry units will not be achieved.

If the old bricks or stones have worn, rounded edges, it is best to recess the final mortar slightly from the face of the masonry. This treatment will help avoid a joint which is visually wider than the actual joint; it also will avoid creation of a large, thin featheredge which is easily damaged, thus admitting water. After tooling, excess mortar can be removed from the edge of the joint by brushing with a natural bristle or nylon brush. Metal bristle brushes should never be used on historic masonry.

Curing Conditions. The preliminary hardening of high-lime content mortars--those mortars that contain more lime by volume than portland cement, i.e., Type O (1:2:9), Type K (1:3:11), and straight lime/sand, Type "L" (0:1:3)--takes place fairly rapidly as water in the mix is lost to the porous surface of the masonry and through evaporation. A

high lime mortar (especially Type "L") left to dry out too rapidly can result in chalking, poor adhesion, and poor durability. Periodic wetting of the repointed area after the mortar joints are thumb-print hard and have been finish tooled may significantly accelerate the carbonation process. When feasible, misting using a hand sprayer with a fine nozzle can be simple to do for a day or two after repointing. Local conditions will dictate the frequency of wetting, but initially it may be as often as every hour and gradually reduced to every three or four hours. Walls should be covered with burlap for the first three days after repointing. (Plastic may be used, but it should be tented out and not placed directly against the wall.) This helps keep the walls damp and protects them from direct sunlight. Once carbonation of the lime has begun, it will continue for many years and the lime will gain strength as it reverts back to calcium carbonate within the wall.

***Aging* the Mortar.** Even with the best efforts at matching the existing mortar color, texture, and materials, there will usually be a visible difference between the old and new work, partly because the new mortar has been matched to the unweathered portions of the historic mortar. Another reason for a slight mismatch may be that the sand is more exposed in old mortar due to the slight erosion of the lime or cement. Although spot repointing is generally preferable and some color difference should be acceptable, if the difference between old and new mortar is too extreme, it may be advisable in some instances to repoint an entire area of a wall, or an entire feature such as a bay, to minimize the difference between the old and the new mortar. If the mortars have been properly matched, usually the best way to deal with surface color differences is to let the mortars age naturally. Other treatments to overcome these differences, including cleaning the non-repointed areas or staining the new mortar, should be carefully tested prior to implementation.



This 18th century pediment and surrounding wall exhibit distinctively different mortar joints. Photo: NPS files.

Staining the new mortar to achieve a better color match is generally not recommended, but it may be appropriate in some instances. Although staining may provide an initial match, the old and new mortars may weather at different rates, leading to visual differences after a few seasons. In addition, the mixtures used to stain the mortar may be harmful to the masonry; for example, they may introduce salts into the masonry which can lead to efflorescence.

Cleaning the Repointed Masonry. If repointing work is carefully executed, there will be little need for cleaning other than to remove the small amount of mortar from the edge of the joint following tooling. This can be done with a stiff natural bristle or nylon brush after the mortar has dried, but before it is initially set (1-2 hours). Mortar that has hardened can usually be removed with a wooden paddle or, if necessary, a chisel.

Further cleaning is best accomplished with plain water and natural bristle or nylon brushes. If chemicals must be used, they should be selected with extreme caution. Improper cleaning can lead to deterioration of the masonry units, deterioration of the mortar, mortar smear, and efflorescence. New mortar joints are especially susceptible to damage because they do not become fully cured for several months. Chemical cleaners, particularly acids, should never be used on dry masonry. The masonry should always be completely soaked once with water before chemicals are applied. After cleaning, the walls should be flushed again with plain water to remove all traces of the chemicals.

Several precautions should be taken if a freshly repointed masonry wall is to be cleaned. First, the mortar should be fully hardened before cleaning. Thirty days is usually sufficient, depending on weather and exposure; as mentioned previously, the mortar will continue to cure even after it has hardened. Test panels should be prepared to evaluate the effects of different cleaning methods. Generally, on newly repointed masonry walls, only very low pressure (100 psi) water washing supplemented by stiff natural bristle or nylon brushes should be used, except on glazed or polished surfaces, where only soft cloths should be used.**

New construction "bloom" or efflorescence occasionally appears within the first few months of repointing and usually disappears through the normal process of weathering. If the efflorescence is not removed by natural processes, the safest way to remove it is by dry brushing with stiff natural or nylon bristle brushes followed by wet brushing. Hydrochloric (muriatic) acid, is generally ineffective, and it should not be used to remove efflorescence. It may liberate additional salts, which, in turn, can lead to more efflorescence.

Surface Grouting is sometimes suggested as an alternative to repointing brick buildings, in particular. This process involves the application of a thin coat of cement-based grout to the mortar joints and the mortar/brick interface. To be effective, the grout must extend slightly onto the face of the masonry units, thus widening the joint visually. The change in the joint appearance can alter the historic character of the structure to an unacceptable degree. In addition, although masking of the bricks is intended to keep the grout off the remainder of the face of the bricks, some level of residue, called "veiling," will inevitably remain. Surface grouting cannot substitute for the more extensive work of repointing, and it is not a recommended treatment for historic masonry.

***Additional information on masonry cleaning is presented in Preservation Briefs 1: Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Buildings, Robert C. Mack, FAIA, and Anne Grimmer, Washington, D.C.: Technical Preservation Services, National Park Service, U.S. Department of the Interior, 2000; and Keeping it Clean: Removing Exterior Dirt, Paint, Stains & Graffiti from Historic Masonry Buildings, Anne E. Grimmer, Washington, D.C.: Technical Preservation Services, National Park Service, U.S. Department of the Interior, 1988.*

Visually Examining the Mortar and the Masonry Units

A simple *in situ* comparison will help determine the hardness and condition of the mortar and the masonry units. Begin by scraping the mortar with a screwdriver, and gradually tapping harder with a cold chisel and mason's hammer. Masonry units can be tested in the same way beginning, even more gently, by scraping with a fingernail. This relative analysis which is derived from the 10-point hardness scale used to describe minerals, provides a good starting point for selection of an appropriate mortar. It is described more fully in "The Russack System for Brick & Mortar Description" referenced in **Selected Reading** at the end of this Brief.

Mortar samples should be chosen carefully, and picked from a variety of locations on the building to find unweathered mortar, if possible. Portions of the building may have been repointed in the past while other areas may be subject to conditions causing unusual deterioration. There may be several colors of mortar dating from different construction periods or sand used from different sources during the initial construction. Any of these

situations can give false readings to the visual or physical characteristics required for the new mortar. Variations should be noted which may require developing more than one mix.

1) Remove with a chisel and hammer three or four unweathered samples of the mortar to be matched from several locations on the building. (Set the largest sample aside--this will be used later for comparison with the repointing mortar). Removing a full representation of samples will allow selection of a "mean" or average mortar sample.

2) Mash the remaining samples with a wooden mallet, or hammer if necessary, until they are separated into their constituent parts. There should be a good handful of the material.

3) Examine the powdered portion--the lime and/or cement matrix of the mortar. Most particularly, note the color. There is a tendency to think of historic mortars as having white binders, but grey portland cement was available by the last quarter of the 19th century, and traditional limes were also sometimes grey. Thus, in some instances, the natural color of the historic binder may be grey, rather than white. The mortar may also have been tinted to create a colored mortar, and this color should be identified at this point.

4) Carefully blow away the powdery material (the lime and/or cement matrix which bound the mortar together).

5) With a low power (10 power) magnifying glass, examine the remaining sand and other materials such as lumps of lime or shell.

6) Note and record the wide range of color as well as the varying sizes of the individual grains of sand, impurities, or other materials.

Other Factors to Consider

Color. Regardless of the color of the binder or colored additives, the sand is the primary material that gives mortar its color. A surprising variety of colors of sand may be found in a single sample of historic mortar, and the different sizes of the grains of sand or other materials, such as incompletely ground lime or cement, play an important role in the texture of the repointing mortar. Therefore, when specifying sand for repointing mortar, it may be necessary to obtain sand from several sources and to combine or screen them in order to approximate the range of sand colors and grain sizes in the historic mortar sample.

Pointing Style. Close examination of the historic masonry wall and the techniques used in the original construction will assist in maintaining the visual qualities of the building. Pointing styles and the methods of producing them should be examined. It is important to look at both the horizontal and the vertical joints to determine the order in which they were tooled and whether they were the same style. Some late-19th and early-20th century buildings, for example, have horizontal joints that were raked back while the vertical joints were finished flush and stained to match the bricks, thus creating the illusion of horizontal bands. Pointing styles may also differ from one facade to another; front walls often received greater attention to mortar detailing than side and rear walls. **Tuckpointing** is not true repointing but the application of a raised joint or lime putty joint on top of flush mortar joints. **Penciling** is a purely decorative, painted surface treatment over a mortar joint, often in a contrasting color.

Masonry Units. The masonry units should also be examined so that any replacement units will match the historic masonry. Within a wall there may be a wide range of colors, textures, and sizes, particularly with hand-made brick or rough-cut, locally-quarried stone. Replacement units should blend in with the full range of masonry units rather than a single brick or stone.

Matching Color and Texture of the Repointing Mortar

New mortar should match the unweathered interior portions of the historic mortar. The simplest way to check the match is to make a small sample of the proposed mix and allow it to cure at a temperature of approximately 70 degrees F for about a week, or it can be baked in an oven to speed up the curing; this sample is then broken open and the surface is compared with the surface of the largest "saved" sample of historic mortar.

If a proper color match cannot be achieved through the use of natural sand or colored aggregates like crushed marble or brick dust, it may be necessary to use a modern mortar pigment.

During the early stages of the project, it should be determined how closely the new mortar should match the historic mortar. Will "quite close" be sufficient, or is "exactly" expected? The specifications should state this clearly so that the contractor has a reasonable idea how much time and expense will be required to develop an acceptable match.

The same judgment will be necessary in matching replacement terra cotta, stone or brick. If there is a known source for replacements, this should be included in the specifications. If a source cannot be determined prior to the bidding process, the specifications should include an estimated price for the replacement materials with the final price based on the actual cost to the contractor.

Mortar Types
(Measured by volume)

Designation	Cement	Hydrated Lime or Lime Putty	Sand
M	1	1/4	3 - 3 3/4
S	1	1/2	4 - 4 1/2
N	1	1	5 - 6
O	1	2	8 - 9
K	1	3	10 - 12
"L"	0	1	2 1/4 - 3

Suggested Mortar Types for Different Exposures

	Exposure		
Masonry Material	Sheltered	Moderate	Severe
Very durable: granite, hard-cored brick, etc.	O	N	S
Moderately durable: limestone, durable stone, molded brick	K	O	N
Minimally durable:			

soft hand-made brick	"L"	K	O

Summary

For the Owner/Administrator. The owner or administrator of a historic building should remember that repointing is likely to be a lengthy and expensive process. First, there must be adequate time for evaluation of the building and investigation into the cause of problems. Then, there will be time needed for preparation of the contract documents. The work itself is precise, time-consuming and noisy, and scaffolding may cover the face of the building for some time. Therefore, the owner must carefully plan the work to avoid problems. Schedules for both repointing and other activities will thus require careful coordination to avoid unanticipated conflicts. The owner must avoid the tendency to rush the work or cut corners if the historic building is to retain its visual integrity and the job is to be durable.

For the Architect/Consultant. Because the primary role of the consultant is to ensure the life of the building, a knowledge of historic construction techniques and the special problems found in older buildings is essential. The consultant must assist the owner in planning for logistical problems relating to research and construction. It is the consultant's responsibility to determine the cause of the mortar deterioration and ensure that it is corrected before the masonry is repointed. The consultant must also be prepared to spend more time in project inspections than is customary in modern construction.

For the Masons. Successful repointing depends on the masons themselves. Experienced masons understand the special requirements for work on historic buildings and the added time and expense they require. The entire masonry crew must be willing and able to perform the work in conformance with the specifications, even when the specifications may not be in conformance with standard practice. At the same time, the masons should not hesitate to question the specifications if it appears that the work specified would damage the building.

Conclusion

A good repointing job is meant to last, at least 30 years, and preferably 50- 100 years. Shortcuts and poor craftsmanship result not only in diminishing the historic character of a building, but also in a job that looks bad, and will require future repointing sooner than if the work had been done correctly. The mortar joint in a historic masonry building has often been called a wall's "first line of defense." Good repointing practices guarantee the long life of the mortar joint, the wall, and the historic structure. Although careful maintenance will help preserve the freshly repointed mortar joints, it is important to remember that mortar joints are intended to be sacrificial and will probably require repointing some time in the future. Nevertheless, if the historic mortar joints proved durable for many years, then careful repointing should have an equally long life, ultimately contributing to the preservation of the entire building.

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Useful Addresses

Brick Institute of America
11490 Commerce Park Drive
Reston, VA 22091

National Lime Association
200 N. Glebe Road, Suite 800
Arlington, VA 22203

Portland Cement Association
5420 Old Orchard Road
Skokie, IL 60077

Acknowledgments

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Washington, D.C. October, 1998

Home page logo: Soft mortar for repointing. Photo: John P. Speweik.

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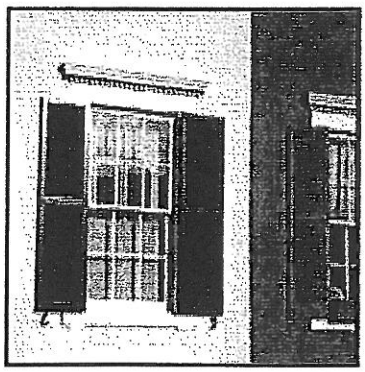
The Repair of Historic Wooden Windows

John H. Myers



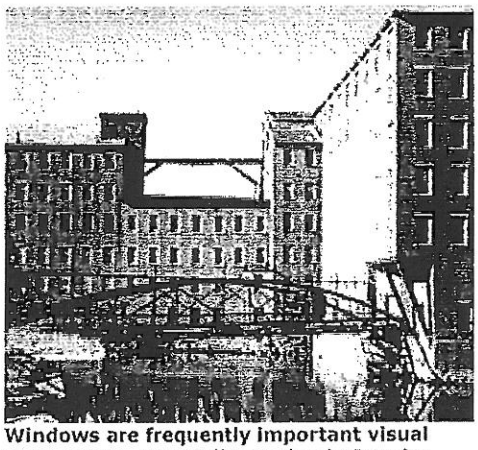
A NOTE TO OUR USERS: The web versions of the **Preservation Briefs** differ somewhat from the printed versions. Many illustrations are new, captions are simplified, illustrations are typically in color rather than black and white, and some complex charts have been omitted.

The windows on many historic buildings are an important aspect of the architectural character of those buildings. Their design, craftsmanship, or other qualities may make them worthy of preservation. This is self-evident for ornamental windows, but it can be equally true for warehouses or factories where the windows may be the most dominant visual element of an otherwise plain building. Evaluating the significance of these windows and planning for their repair or replacement can be a complex process involving both objective and subjective considerations. *The Secretary of the Interior's Standards for Rehabilitation* and the accompanying guidelines, call for respecting the significance of original materials and features, repairing and retaining them wherever possible, and when necessary, replacing them in kind. This Brief is based on the issues of significance and repair which are implicit in the standards, but the primary emphasis is on the technical issues of planning for the repair of windows including evaluation of their physical condition, techniques of repair, and design considerations when replacement is necessary.

Much of the technical section presents repair techniques as an instructional guide for the do-it-yourselfer. The information will be useful, however, for the architect, contractor, or developer on large-scale projects. It presents a methodology for approaching the evaluation and repair of existing windows, and considerations for replacement, from which the professional can develop alternatives and specify appropriate materials and procedures.

Architectural or Historical Significance

Evaluating the architectural or historical significance of windows is the first step in planning for window treatments, and a general understanding of the function and history of windows is vital to making a proper evaluation. As a part of this evaluation, one must consider four basic window functions: admitting light to the interior spaces, providing fresh air and ventilation to the interior, providing a visual link to the outside world, and enhancing the appearance of a building. No single factor can be disregarded when planning window treatments; for example, attempting to conserve energy by closing up or reducing the size of window openings may result in the use of *more* energy by increasing electric lighting loads and decreasing passive solar heat gains.



Windows are frequently important visual focal points, especially on simple facades such as this mill building. Replacement of the multi-pane windows with larger panes could dramatically alter the appearance of the building. Photo: NPS files.

Historically, the first windows in early American houses were casement windows; that is, they were hinged at the side and opened outward. In the beginning of the eighteenth century single- and double-hung windows were introduced. Subsequently many styles of these vertical sliding sash windows have come to be associated with specific building periods or architectural styles, and this is an important consideration in determining the significance of windows, especially on a local or regional basis. Site-specific, regionally oriented architectural comparisons should be made to determine the significance of windows in question. Although such comparisons may focus on specific window types and their details, the ultimate determination of significance should be made within the context of the whole building, wherein the windows are one architectural element.

After all of the factors have been evaluated, **windows should be considered significant to a building if they: 1)** are original, **2)** reflect the original design intent for the building, **3)** reflect period or regional styles or building practices, **4)** reflect changes to the building resulting from major periods or events, or **5)** are examples of exceptional craftsmanship or design. Once this evaluation of significance has been completed, it is possible to proceed with planning appropriate treatments, beginning with an investigation of the physical condition of the windows.

Physical Evaluation

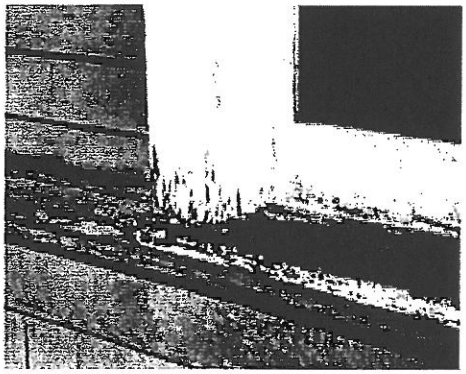
The key to successful planning for window treatments is a careful evaluation of existing physical conditions on a unit-by-unit basis. A graphic or photographic system may be devised to record existing conditions and illustrate the scope of any necessary repairs. Another effective tool is a window schedule which lists all of the parts of each window unit. Spaces by each part allow notes on existing conditions and repair instructions. When such a schedule is completed, it indicates the precise tasks to be performed in the repair of each unit and becomes a part of the specifications. In any evaluation, one should note at a minimum:

- **1)** window location
- **2)** condition of the paint

- **3)** condition of the frame and sill
- **4)** condition of the sash (rails, stiles and muntins)
- **5)** glazing problems
- **6)** hardware, and
- **7)** the overall condition of the window (excellent, fair, poor, and so forth)

Many factors such as poor design, moisture, vandalism, insect attack, and lack of maintenance can contribute to window deterioration, but moisture is the primary contributing factor in wooden window decay. All window units should be inspected to see if water is entering around the edges of the frame and, if so, the joints or seams should be caulked to eliminate this danger. The glazing putty should be checked for cracked, loose, or missing sections which allow water to saturate the wood, especially at the joints. The back putty on the interior side of the pane should also be inspected, because it creates a seal which prevents condensation from running down into the joinery. The sill should be examined to insure that it slopes downward away from the building and allows water to drain off. In addition, it may be advisable to cut a dripline along the underside of the sill. This almost invisible treatment will insure proper water runoff, particularly if the bottom of the sill is flat. Any conditions, including poor original design, which permit water to come in contact with the wood or to puddle on the sill must be corrected as they contribute to deterioration of the window.

One clue to the location of areas of excessive moisture is the condition of the paint; therefore, each window should be examined for areas of paint failure. Since excessive moisture is detrimental to the paint bond, areas of paint blistering, cracking, flaking, and peeling usually identify points of water penetration, moisture saturation, and potential deterioration. Failure of the paint should not, however, be mistakenly interpreted as a sign that the wood is in poor condition and hence, irreparable. Wood is frequently in sound physical condition beneath unsightly paint. After noting areas of paint failure, the next step is to inspect the condition of the wood, particularly at the points identified during the paint examination.



Deterioration of poorly maintained windows usually begins on horizontal surfaces and at joints, where water can collect and saturate the wood. Photo: NPS files.

Each window should be examined for operational soundness beginning with the lower portions of the frame and sash. Exterior rainwater and interior condensation can flow downward along the window, entering and collecting at points where the flow is blocked. The sill, joints between the sill and jamb, corners of the bottom rails and muntin joints are typical points where water collects and deterioration begins. The operation of the window (continuous opening and closing over the years and seasonal temperature changes) weakens the joints, causing movement and slight separation. This process makes the joints more vulnerable to water which is readily absorbed into the endgrain of the wood. If severe deterioration exists in these areas, it will usually be apparent on visual inspection, but other less severely deteriorated areas of the wood may be tested by two traditional methods using a small ice pick.

An ice pick or an awl may be used to test wood for soundness. The technique is simply to jab the pick into a wetted wood surface at an angle and pry up a small section of the wood. Sound wood will separate in long fibrous splinters, but decayed wood will lift up in short irregular pieces due to the breakdown of fiber strength.

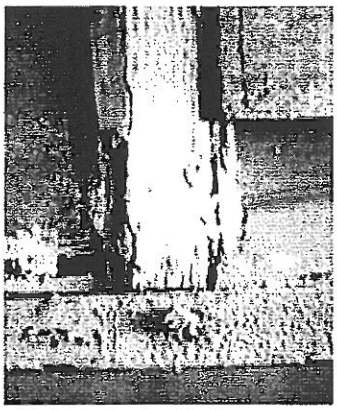
Another method of testing for soundness consists of pushing a sharp object into the wood, perpendicular to the surface. If deterioration has begun from the hidden side of a member and the core is badly decayed, the visible surface may appear to be sound wood. Pressure on the probe can force it through an apparently sound skin to penetrate deeply into decayed wood. This technique is especially useful for checking sills where visual access to the underside is restricted.

Following the inspection and analysis of the results, the scope of the necessary repairs will be evident and a plan for the rehabilitation can be formulated. Generally the actions necessary to return a window to "like new" condition will fall into three broad categories: ***1) routine maintenance procedures***, ***2) structural stabilization***, and ***3) parts replacement.*** These categories will be discussed in the following sections and will be referred to respectively as **Repair Class I**, **Repair Class II**, and **Repair Class III.** Each successive repair class represents an increasing level of difficulty, expense, and work time. Note that most of the points mentioned in Repair Class I are routine maintenance items and should be provided in a regular maintenance program for any building. The neglect of these routine items can contribute to many common window problems.

Before undertaking any of the repairs mentioned in the following sections all sources of moisture penetration should be identified and eliminated, and all existing decay fungi destroyed in order to arrest the deterioration process. Many commercially available fungicides and wood preservatives are toxic, so it is extremely important to follow the manufacturer's recommendations for application, and store all chemical materials away from children and animals. After fungicidal and preservative treatment the windows may be stabilized, retained, and restored with every expectation for a long service life.

Repair Class I: Routine Maintenance

Repairs to wooden windows are usually labor intensive and relatively uncomplicated. On small scale projects this allows the do-it-yourselfer to save money by repairing all or part of the windows. On larger projects it presents the opportunity for time and money which might otherwise be spent on the removal and replacement of existing windows, to be spent on repairs, subsequently saving all or part of the material cost of new window units. Regardless of the actual costs, or who performs the work, the evaluation process described earlier will provide the knowledge from which to specify an appropriate work program, establish the work element priorities, and identify the level of skill needed by the labor force.



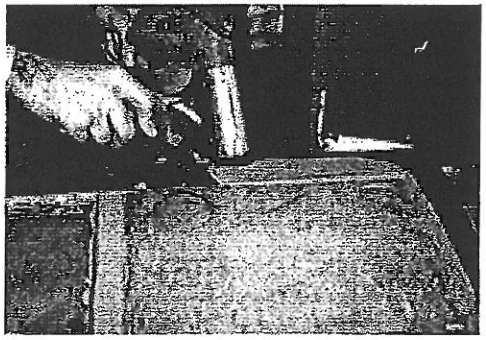
This historic double-hung window has many layers of paint, some cracked and missing putty, slight separation at the joints, broken sash cords, and one cracked pane. Photo: NPS files.

The routine maintenance required to upgrade a window to "like new" condition normally includes the following steps: 1) some degree of interior and exterior paint removal, 2) removal and repair of sash (including reglazing where necessary), 3) repairs to the frame, 4) weatherstripping and reinstallation of the sash, and 5) repainting. These operations are illustrated for a typical

After removing paint from the seam between the interior stop and the jamb, the stop can be pried out and gradually worked loose using a pair of putty knives as shown. Photo: NPS files.

double-hung wooden window, but they may be adapted to other window types and styles as applicable.

Historic windows have usually acquired many layers of paint over time. Removal of excess layers or peeling and flaking paint will facilitate operation of the window and restore the clarity of the original detailing. Some degree of paint removal is also necessary as a first step in the proper surface preparation for subsequent refinishing (if paint color analysis is desired, it should be conducted prior to the onset of the paint removal). There are several safe and effective techniques for removing paint from wood, depending on the amount of paint to be removed.



Sash can be removed and repaired in a convenient work area. Paint is being removed from this sash with a hot air gun. Photo: NPS files.

Paint removal should begin on the interior frames, being careful to remove the paint from the interior stop and the parting bead, particularly along the seam where these stops meet the jamb. This can be accomplished by running a utility knife along the length of the seam, breaking the paint bond. It will then be much easier to remove the stop, the parting bead and the sash. The interior stop may be initially loosened from the sash side to avoid visible scarring of the wood and then gradually pried loose using a pair of putty knives, working up and down the stop in small increments. With the stop removed, the lower or interior sash may be withdrawn. The sash cords should be detached from the sides of the sash and their ends may be pinned with a nail or tied in a knot to prevent them from falling into the weight pocket.

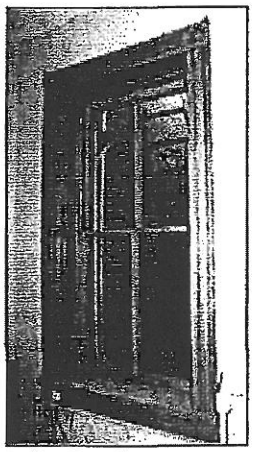
Removal of the upper sash on double-hung units is similar but the parting bead which holds it in place is set into a groove in the center of the stile and is thinner and more delicate than the interior stop. After removing any paint along the seam, the parting bead should be carefully pried out and worked free in the same manner as the interior stop. The upper sash can be removed in the same manner as the lower one and both sash taken to a convenient work area (in order to remove the sash the interior stop and parting bead need only be removed from one side of the window). Window openings can be covered with polyethylene sheets or plywood sheathing while the sash are out for repair.

The sash can be stripped of paint using appropriate techniques, but if any heat treatment is used, the glass should be removed or protected from the sudden temperature change which can cause breakage. An overlay of aluminum foil on gypsum board or asbestos can protect the glass from such rapid temperature change. It is important to protect the glass because it may be historic and often adds character to the window. Deteriorated putty should be removed manually, taking care not to damage the wood along the rabbet. If the glass is to be removed, the glazing points which hold the glass in place can be extracted and the panes numbered and removed for cleaning and reuse in the same openings. With the glass panes out, the remaining putty can be removed and the sash can be sanded, patched, and primed with a preservative primer. Hardened putty in the rabbets may be softened by heating with a soldering iron at the

point of removal. Putty remaining on the glass may be softened by soaking the panes in linseed oil, and then removed with less risk of breaking the glass. Before reinstalling the glass, a bead of glazing compound or linseed oil putty should be laid around the rabbet to cushion and seal the glass. Glazing compound should only be used on wood which has been brushed with linseed oil and primed with an oil based primer or paint. The pane is then pressed into place and the glazing points are pushed into the wood around the perimeter of the pane.

The final glazing compound or putty is applied and beveled to complete the seal. The sash can be refinished as desired on the inside and painted on the outside as soon as a "skin" has formed on the putty, usually in 2 or 3 days. Exterior paint should cover the beveled glazing compound or putty and lap over onto the glass slightly to complete a weather-tight seal. After the proper curing times have elapsed for paint and putty, the sash will be ready for reinstallation.

While the sash are out of the frame, the condition of the wood in the jamb and sill can be evaluated. Repair and refinishing of the frame may proceed concurrently with repairs to the sash, taking advantage of the curing times for the paints and putty used on the sash. One of the most common work items is the replacement of the sash cords with new rope cords or with chains. The weight pocket is frequently accessible through a door on the face of the frame near the sill, but if no door exists, the trim on the interior face may be removed for access. Sash weights may be increased for easier window operation by elderly or handicapped persons. Additional repairs to the frame and sash may include consolidation or replacement of deteriorated wood. Techniques for these repairs are discussed in the following sections.



Following the relatively simple repairs, the window is weathertight, like new in appearance, and serviceable for many years to come.Photo: NPS files.

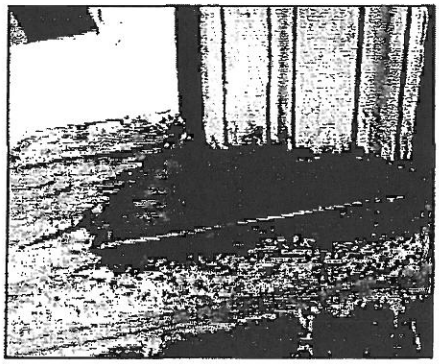
The operations just discussed summarize the efforts necessary to restore a window with minor deterioration to "like new" condition. The techniques can be applied by an unskilled person with minimal training and experience. To demonstrate the practicality of this approach, and photograph it, a Technical Preservation Services staff member repaired a wooden double-hung, two over two window which had been in service over ninety years. The wood was structurally sound but the window had one broken pane, many layers of paint, broken sash cords and inadequate, worn-out weatherstripping. The staff member found that the frame could be stripped of paint and the sash removed quite easily. Paint, putty and glass removal required about one hour for each sash, and the reglazing of both sash was accomplished in about one hour. Weatherstripping of the sash and frame, replacement of the sash cords and reinstallation of the sash, parting bead, and stop required an hour and a half. These times refer only to individual operations; the entire process took several days due to the drying and curing times for putty, primer, and paint, however, work on other window units could have been in progress during these lag times.

Repair Class II: Stabilization

The preceding description of a window repair job focused on a unit which was operationally sound. Many windows will show some additional degree of physical deterioration, especially in the vulnerable areas mentioned earlier, but even badly

damaged windows can be repaired using simple processes. Partially decayed wood can be waterproofed, patched, built-up, or consolidated and then painted to achieve a sound condition, good appearance, and greatly extended life. Three techniques for repairing partially decayed or weathered wood are discussed in this section, and all three can be accomplished using products available at most hardware stores.

One established technique for repairing wood which is split, checked or shows signs of rot, is to: **1)** dry the wood, **2)** treat decayed areas with a fungicide, **3)** waterproof with two or three applications of boiled linseed oil (applications every 24 hours), **4)** fill cracks and holes with putty, and **5)** after a "skin" forms on the putty, paint the surface. Care should be taken with the use of fungicide which is toxic. Follow the manufacturers' directions and use only on areas which will be painted. When using any technique of building up or patching a flat surface, the finished surface should be sloped slightly to carry water away from the window and not allow it to puddle. Caulking of the joints between the sill and the jamb will help reduce further water penetration.



This illustrates a two-part expoxy patching compound used to fill the surface of a weathered sill and rebuild the missing edge. When the epoxy cures, it can be sanded smooth and painted to achieve a durable and waterproof repair. Photo: NPS files.

When sills or other members exhibit surface weathering they may also be built-up using wood putties or homemade mixtures such as sawdust and resorcinol glue, or whiting and varnish. These mixtures can be built up in successive layers, then sanded, primed, and painted. The same caution about proper slope for flat surfaces applies to this technique.

Wood may also be strengthened and stabilized by consolidation, using semirigid epoxies which saturate the porous decayed wood and then harden. The surface of the consolidated wood can then be filled with a semirigid epoxy patching compound, sanded and painted. Epoxy patching compounds can be used to build up missing sections or decayed ends of members. Profiles can be duplicated using hand molds, which are created by pressing a ball of patching compound over a sound section of the profile which has been rubbed with butcher's wax. This can be a very efficient technique where there are many typical repairs to be done. The process has been widely used and proven in marine applications; and proprietary products are available at hardware and marine supply stores. Although epoxy materials may be comparatively expensive, they hold the promise of being among the most durable and long lasting materials available for wood repair. More information on epoxies can be found in the publication "Epoxies for Wood Repairs in Historic Buildings," cited in the bibliography.

Any of the three techniques discussed can stabilize and restore the appearance of the window unit. There are times, however, when the degree of deterioration is so advanced that stabilization is impractical, and the only way to retain some of the original fabric is to replace damaged parts.

Repair Class III: Splices and Parts Replacement

When parts of the frame or sash are so badly deteriorated that they cannot be stabilized there are methods which permit the retention of some of the existing or original fabric.

These methods involve replacing the deteriorated parts with new matching pieces, or splicing new wood into existing members. The techniques require more skill and are more expensive than any of the previously discussed alternatives. It is necessary to remove the sash and/or the affected parts of the frame and have a carpenter or woodworking mill reproduce the damaged or missing parts. Most millwork firms can duplicate parts, such as muntins, bottom rails, or sills, which can then be incorporated into the existing window, but it may be necessary to shop around because there are several factors controlling the practicality of this approach. Some woodworking mills do not like to repair old sash because nails or other foreign objects in the sash can damage expensive knives (which cost far more than their profits on small repair jobs); others do not have cutting knives to duplicate muntin profiles. Some firms prefer to concentrate on larger jobs with more profit potential, and some may not have a craftsman who can duplicate the parts. A little searching should locate a firm which will do the job, and at a reasonable price. If such a firm does not exist locally, there are firms which undertake this kind of repair and ship nationwide. It is possible, however, for the advanced do-it-yourselfer or craftsman with a table saw to duplicate moulding profiles using techniques discussed by Gordie Whittington in "Simplified Methods for Reproducing Wood Mouldings," *Bulletin* of the Association for Preservation Technology, Vol. III, No. 4, 1971, or illustrated more recently in *The Old House*, Time-Life Books, Alexandria, Virginia, 1979.

The repairs discussed in this section involve window frames which may be in very deteriorated condition, possibly requiring removal; therefore, caution is in order. The actual construction of wooden window frames and sash is not complicated. Pegged mortise and tenon units can be disassembled easily, if the units are out of the building. The installation or connection of some frames to the surrounding structure, especially masonry walls, can complicate the work immeasurably, and may even require dismantling of the wall. It may be useful, therefore, to take the following approach to frame repair: **1)** conduct regular maintenance of sound frames to achieve the longest life possible, **2)** make necessary repairs in place, wherever possible, using stabilization and splicing techniques, and **3)** if removal is necessary, thoroughly investigate the structural detailing and seek appropriate professional consultation.

Another alternative may be considered if parts replacement is required, and that is sash replacement. If extensive replacement of parts is necessary and the job becomes prohibitively expensive it may be more practical to purchase new sash which can be installed into the existing frames. Such sash are available as exact custom reproductions, reasonable facsimiles (custom windows with similar profiles), and contemporary wooden sash which are similar in appearance. There are companies which still manufacture high quality wooden sash which would duplicate most historic sash. A few calls to local building suppliers may provide a source of appropriate replacement sash, but if not, check with local historical associations, the state historic preservation office, or preservation related magazines and supply catalogs for information.

If a rehabilitation project has a large number of windows such as a commercial building or an industrial complex, there may be less of a problem arriving at a solution. Once the evaluation of the windows is completed and the scope of the work is known, there may be a potential economy of scale. Woodworking mills may be interested in the work from a large project; new sash in volume may be considerably less expensive per unit; crews can be assembled and trained on site to perform all of the window repairs; and a few extensive repairs can be absorbed (without undue burden) into the total budget for a large number of sound windows. While it may be expensive for the average historic home owner to pay seventy dollars or more for a mill to grind a custom knife to duplicate four or five bad muntins, that cost becomes negligible on large commercial projects which may have several hundred windows.

Most windows should not require the extensive repairs discussed in this section. The ones which do are usually in buildings which have been abandoned for long periods or have totally lacked maintenance for years. It is necessary to thoroughly investigate the alternatives for windows which do require extensive repairs to arrive at a solution which retains historic significance and is also economically feasible. Even for projects requiring repairs identified in this section, if the percentage of parts replacement per window is low, or the number of windows requiring repair is small, repair can still be a cost effective solution.

Weatherization

A window which is repaired should be made as energy efficient as possible by the use of appropriate weatherstripping to reduce air infiltration. A wide variety of products are available to assist in this task. Felt may be fastened to the top, bottom, and meeting rails, but may have the disadvantage of absorbing and holding moisture, particularly at the bottom rail. Rolled vinyl strips may also be tacked into place in appropriate locations to reduce infiltration. Metal strips or new plastic spring strips may be used on the rails and, if space permits, in the channels between the sash and jamb. Weatherstripping is a historic treatment, but old weatherstripping (felt) is not likely to perform very satisfactorily. Appropriate contemporary weatherstripping should be considered an integral part of the repair process for windows. The use of sash locks installed on the meeting rail will insure that the sash are kept tightly closed so that the weatherstripping will function more effectively to reduce infiltration. Although such locks will not always be historically accurate, they will usually be viewed as an acceptable contemporary modification in the interest of improved thermal performance.

Many styles of storm windows are available to improve the thermal performance of existing windows. The use of exterior storm windows should be investigated whenever feasible because they are thermally efficient, cost-effective, reversible, and allow the retention of original windows (see "Preservation Briefs: 3"). Storm window frames may be made of wood, aluminum, vinyl, or plastic; however, the use of unfinished aluminum storms should be avoided. The visual impact of storms may be minimized by selecting colors which match existing trim color. Arched top storms are available for windows with special shapes. Although interior storm windows appear to offer an attractive option for achieving double glazing with minimal visual impact, the potential for damaging condensation problems must be addressed. Moisture which becomes trapped between the layers of glazing can condense on the colder, outer prime window, potentially leading to deterioration. The correct approach to using interior storms is to create a seal on the interior storm while allowing some ventilation around the prime window. In actual practice, the creation of such a durable, airtight seal is difficult.

Window Replacement

Although the retention of original or existing windows is always desirable and this Brief is intended to encourage that goal, there is a point when the condition of a window may clearly indicate replacement. The decision process for selecting replacement windows should not begin with a survey of contemporary window products which are available as replacements, but should begin with a look at the windows which are being replaced. Attempt to understand the contribution of the window(s) to the appearance of the facade including: **1)** the pattern of the openings and their size; **2)** proportions of the

frame and sash; **3)** configuration of window panes; **4)** muntin profiles; **5)** type of wood; **6)** paint color; **7)** characteristics of the glass; and **8)** associated details such as arched tops, hoods, or other decorative elements. Develop an understanding of how the window reflects the period, style, or regional characteristics of the building, or represents technological development.

Armed with an awareness of the significance of the existing window, begin to search for a replacement which retains as much of the character of the historic window as possible. There are many sources of suitable new windows. Continue looking until an acceptable replacement can be found. Check building supply firms, local woodworking mills, carpenters, preservation oriented magazines, or catalogs or suppliers of old building materials, for product information. Local historical associations and state historic preservation offices may be good sources of information on products which have been used successfully in preservation projects.

Consider energy efficiency as one of the factors for replacements, but do not let it dominate the issue. Energy conservation is no excuse for the wholesale destruction of historic windows which can be made thermally efficient by historically and aesthetically acceptable means. In fact, a historic wooden window with a high quality storm window added should thermally outperform a new double-glazed metal window which does not have thermal breaks (insulation between the inner and outer frames intended to break the path of heat flow). This occurs because the wood has far better insulating value than the metal, and in addition many historic windows have high ratios of wood to glass, thus reducing the area of highest heat transfer. One measure of heat transfer is the U-value, the number of Btu's per hour transferred through a square foot of material. When comparing thermal performance, the lower the U-value the better the performance. According to ASHRAE 1977 Fundamentals, the U-values for single glazed wooden windows range from 0.88 to 0.99. The addition of a storm window should reduce these figures to a range of 0.44 to 0.49. A non-thermal break, double-glazed metal window has a U-value of about 0.6.

Conclusion

Technical Preservation Services recommends the retention and repair of original windows whenever possible. We believe that the repair and weatherization of existing wooden windows is more practical than most people realize, and that many windows are unfortunately replaced because of a lack of awareness of techniques for evaluation, repair, and weatherization. Wooden windows which are repaired and properly maintained will have greatly extended service lives while contributing to the historic character of the building. Thus, an important element of a building's significance will have been preserved for the future.

Additional Reading

ASHRAE Handbook 1977 Fundamentals. New York: American Society of Heating, Refrigerating and Air-conditioning Engineers, 1978 (chapter 26).

Ferro, Maximillian. *Preservation: Present Pathway to Fall River's Future.* Fall River, Massachusetts: City of Fall River, 1979 (chapter 7).

"Fixing Double-hung Windows." *Old House Journal* (no. 12, 1979): 135.

Morrison, Hugh. *Early American Architecture*. New York: Oxford University Press, 1952.

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Washington, D.C. 1981

Home page logo: Historic six-over-six windows--preserved. Photo: NPS files.

This publication has been prepared pursuant to the National Historic Preservation Act of 1966, as amended, which directs the Secretary of the Interior to develop and make available information concerning historic properties. Technical Preservation Services (TPS), Heritage Preservation Services Division, National Park Service prepares standards, guidelines, and other educational materials on responsible historic preservation treatments for a broad public.

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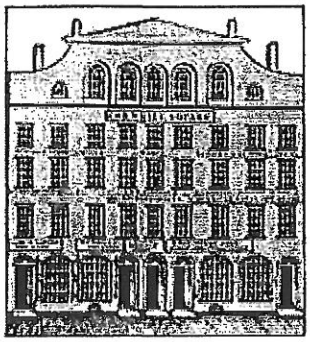
11 Preservation Briefs

Technical Preservation Services
National Park Service
U.S. Department of the Interior

Rehabilitating Historic Storefronts

H. Ward Jandl



A NOTE TO OUR USERS: The web versions of the **Preservation Briefs** differ somewhat from the printed versions. Many illustrations are new, captions are simplified, illustrations are typically in color rather than black and white, and some complex charts have been omitted.

The storefront is the most important architectural feature of many historic commercial buildings. It also plays a crucial role in a store's advertising and merchandising strategy to draw customers and increase business. Not surprisingly, then, the storefront has become the feature most commonly altered in a historic commercial building. In the process, these alterations may have completely changed or destroyed a building's distinguishing architectural features that make up its historic character.

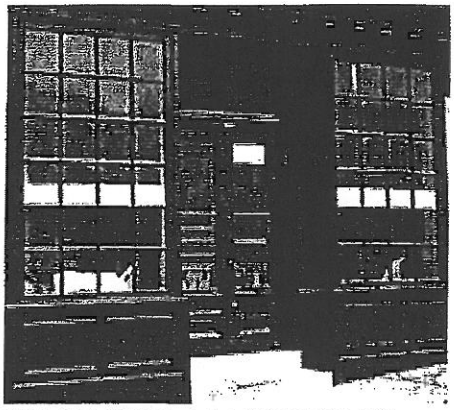
As more and more people come to recognize and appreciate the architectural heritage of America's downtowns, however, a growing interest can be seen in preserving the historic character of commercial buildings. The sensitive rehabilitation of storefronts can result not only in increased business for the owner but can also provide evidence that downtown revitalization efforts are succeeding.

Once a decision is made to rehabilitate a historic commercial building, a series of complex decisions faces the owner, among them:

- if the original storefront has survived largely intact but is in a deteriorated condition, what repairs should be undertaken?
- if the storefront has been modernized at a later date, should the later alterations be kept or the building restored to its original appearance or an entirely new design chosen?
- if the building's original retail use is to be changed to office or residential, can the commercial appearance of the building be retained while accommodating the new use?

This Preservation Brief is intended to assist owners, architects, and planning officials in answering such questions about how to evaluate and preserve the character of historic storefronts. In so doing, it not only addresses the basic design issues associated with storefront rehabilitation, but recommends preservation treatments as well. Finally, although the Brief focuses on storefront rehabilitation, it is important to review this specific work in the broader context of preserving and maintaining the overall structure. Money spent on storefront rehabilitation may be completely wasted if repair and maintenance problems on the rest of the building are neglected.

Historical Overview



This cast iron storefront from the late 19th century has been well maintained over the years. Photo: NPS files.

Commercial establishments of the 18th and early 19th centuries were frequently located on the ground floor of buildings and, with their residentially scaled windows and doors, were often indistinguishable from surrounding houses. In some cases, however, large bay or oriel windows comprised of small panes of glass set the shops apart from their neighbors. Awnings of wood and canvas and signs over the sidewalk were other design features seen on some early commercial buildings. The ground floors of large commercial establishments, especially in the first decades of the 19th century, were distinguished by regularly spaced, heavy piers of stone or brick, infilled with paneled doors or small paned window sash.

Entrances were an integral component of the facade, typically not given any particular prominence although sometimes wider than other openings.

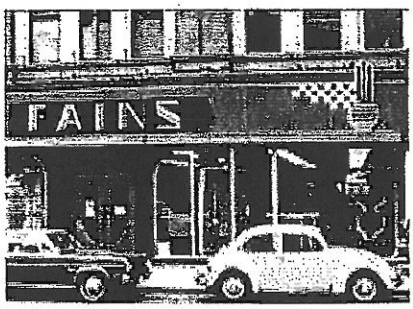
The ready availability of architectural cast iron after the 1840s helped transform storefront design as architects and builders began to experiment using iron columns and lintels at the ground floor level. Simultaneous advances in the glass industry permitted manufacturing of large panes of glass at a reasonable cost. The combination of these two technical achievements led to the storefront as we know it today--large expanses of glass framed by thin structural elements. The advertisement of the merchant and his products in the building facade and display windows quickly became critical factors in the competitive commercial atmosphere of downtowns. In the grouping of these wide-windowed facades along major commercial streets, the image of America's cities and towns radically changed.

The first cast iron fronts were simple post-and-lintel construction with little decoration. As iron craftsmen became more adept and as more ornate architectural styles became popular, cast iron fronts were given Italianate, Venetian Gothic, and French Second Empire details. Cast iron storefronts could be selected directly from catalogs, which began to appear in the early 1850s. Standardized sills, columns, and lintels could be arranged to create fronts of all sizes, styles and configurations. In the 1870s sheet metal storefronts became popular; they were also sold in standardized sizes and configurations through manufacturers' catalogs.

The typical 19th century storefront consisted of single or double doors flanked by display

windows. The entrance was frequently recessed, not only to protect the customer from inclement weather but to increase the amount of space in which to display merchandise. In some cases an additional side door provided access to the upper floors. Thin structural members of cast iron or wood, rather than masonry piers, usually framed the storefront. The windows themselves were raised off the ground by wood, cast iron or pressed metal panels or bulkheads; frequently, a transom or series of transoms (consisting of single or multiple panes of glass) were placed above each window and door. The signboard above the storefront (the fascia covering the structural beam) became a prominent part of the building. Canvas awnings, or in some cases tin or wooden canopies, often shaded storefronts of the late 19th century. Iron fronts were frequently put onto existing buildings as a way of giving them an up-to-date appearance. Except for expanding the display window area to the maximum extent possible and the increasing use of canvas awnings, few major technical innovations in storefront design can be detected from the 1850s through 1900.

The first decades of the 20th century saw the growing use of decorative transom lights (often using small prismatic glass panes) above display windows; in some cases, these transoms could be opened to permit air circulation into the store. Electric incandescent lights enabled storeowners to call attention to their entrance and display windows and permitted nighttime shopping. In the 1920's and 1930s a variety of new materials were introduced into the storefront, including aluminum and stainless steel framing elements, pigmented structural glass (in a wide variety of colors), tinted and mirrored glass, glass block and neon.



This 1930s Moderne storefront has gained significance over time and should be preserved. Photo: NPS files.

A bewildering number of proprietary products also appeared during this period, many of which went into storefronts including Aklo, Vitrolux, Vitrolite, and Extrudalite. Highly colored and heavily patterned marble was a popular material for the more expensive storefronts of this period. Many experiments were made with recessed entries, floating display islands, and curved glass. The utilization of neon lighting further transformed store signs into elaborate flashing and blinking creations. During this period design elements were simplified and streamlined; transom and signboard were often combined. Signs utilized typefaces for the period, including such stylized lettering as "Broadway," "Fino" and "Monogram." Larger buildings of this period, such as department stores, sometimes had fixed metal canopies, with lighting and signs as an integral component of the fascia.

Because commercial architecture responds to a variety of factors--environmental, cultural, and economic--distinct regional variations in storefronts can be noted. Fixed metal canopies supported by guy wires, for example, were common in late 19th and early 20th century storefronts in southern states where it was advantageous to have shaded entrances all year long. Such a detail was less common in the northeast where moveable canvas awnings predominated. These awnings could be lowered in summer to keep buildings cooler and raised in winter when sunlight helps to heat the building.

Guidelines for Rehabilitating Existing Historic Storefronts

1. **Become familiar with the style** of your building and the role of the storefront in the overall design. Don't "early up" a front. Avoid stock "lumberyard colonial" detailing such as coach lanterns, mansard overhangings, wood shakes, nonoperable shutters and small paned windows except where they existed historically.

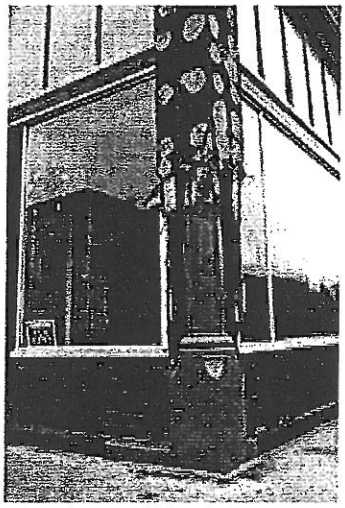
2. **Preserve the storefront's character** even though there is a new use on the interior. If less exposed window area is desirable, consider the use of interior blinds and insulating curtains rather than altering the existing historic fabric.

3. **Avoid use of materials that were unavailable** when the storefront was constructed; this includes vinyl and aluminum siding, anodized aluminum, mirrored or tinted glass, artificial stone, and brick veneer.

4. **Choose paint colors based on the buildings historical appearance.** In general do not coat surfaces that have never been painted. For 19th century storefronts, contrasting colors may be appropriate, but avoid too many different colors on a single facade.

Evaluating the Storefront

The important key to a successful rehabilitation of a historic commercial building is planning and selecting treatments that are sensitive to the architectural character of the storefront.



Storefronts of the 1940s, 50s, and 60s were frequently installed by attaching studs or a metal grid over an early front and applying new covering materals. Photo: Bob Dunn.

As a first step, it is therefore essential to identify and evaluate the existing storefront's construction materials; architectural features; and the relationship of those features to the upper stories. This evaluation will permit a better understanding of the storefront's role in, and significance to, the overall design of the building. A second and equally important step in planning the rehabilitation work is a careful examination of the storefront's physical conditions to determine the extent and nature of rehabilitation work needed. In most cases, this examination is best undertaken by a qualified professional.

The following questions should be taken into consideration in this two-part evaluation:

Construction Materials, Features, and Design Relationships

Storefront's Construction Materials: What are the construction materials? Wood? Metal? Brick or other masonry? A combination?

Storefront's Architectural Features: What are the various architectural features comprising the storefront and how are they arranged in relationship to each other?

Supporting Columns/Piers:

What do the columns or piers supporting the storefront look like? Are they heavy or light in appearance? Are they flush with the windows or do they protrude? Are they all structural elements or are some columns decorative?

Display Windows and Transoms:

Are the display windows and transoms single panes of glass or are they subdivided? Are they flush with the facade or are they recessed? What is the proportion of area between the display windows and transom? Are there window openings in the base panels to allow natural light into the basement?

Entrances:

Are the entrances centered? Are they recessed? Is one entrance more prominent than the others? How is the primary retail entrance differentiated from other entrances? Is there evidence that new entrances have been added or have some been relocated? Are the doors original or are they later replacements?

Decorative Elements:

Are there any surviving decorative elements such as molded cornices, column capitals, fascia boards, brackets, signs, awnings or canopies? Is there a beltcourse, cornice, or fascia board between the first and second floor? Are some elements older than others indicating changes over time?

Storefront's Relationship to Upper Stories: Is there a difference in materials between the storefront and upper stories? Were the storefront and floors above it created as an overall design or were they very different and unrelated to each other?

It is also worthwhile to study the neighboring commercial buildings and their distinctive characteristics to look for similarities (canopies, lighting, signs) as well as differences. This can help determine whether the storefront in question is significant and unique in its own right and/or whether it is significant as part of an overall commercial streetscape.

Physical Condition

Mild Deterioration: Do the surface materials need repair? Is paint flaking? Are metal components rusting? Do joints need recaulking where materials meet glass windows? Mild deterioration generally requires only maintenance level treatments.

Moderate Deterioration: Can rotted or rusted or broken sections of material be replaced with new material to match the old? Can solid material (such as Carrara glass) from a non-conspicuous location be used on the historic facade to repair damaged elements? Do stone or brick components need repointing? Is the storefront watertight with good flashing connections? Are there leaky gutters or air conditioner units which drip condensation on the storefront? Is caulking needed? Moderate deterioration generally requires patching or splicing of the existing elements with new pieces to match the deteriorated element.

Severe Deterioration: Have existing facing materials deteriorated beyond repair through vandalism, settlement, or water penetration? Is there a loss of structural integrity? Is the material rusted through, rotted, buckling, completely missing? Are structural lintels sagging? Are support columns settled or out of alignment? Severe deterioration generally requires replacement of deteriorated elements as part of the overall rehabilitation.

In evaluating whether the existing storefront is worthy of preservation, recognize that good design can exist in any period; a storefront added in 1930 may have greater architectural merit than what is replaced. In commercial historic districts, it is often the

diversity of styles and detailing that contribute to the character; removing a storefront dating from 1910 simply because other buildings in the district have been restored to their 1860s appearance may not be the best preservation approach. If the storefront design is a good example of its period and if it has gained significance over time, it should be retained as part of the historical evolution of the building (this architectural distinctiveness could also be an economic asset as it may attract attention to the building).

Deciding a Course of Action

The evaluation of the storefront's architectural features and physical condition will help determine the best course of action in the actual rehabilitation work. The following recommendations, adapted from the Secretary of the Interior's "Standards for Rehabilitation" and the accompanying interpretive guidelines, are designed to ensure that the historic commercial character of the building is retained in the rehabilitation process.

If the original or significant storefront exists, repair and retain the historic features using recommended treatments (see following sections on rehabilitating metal, wood and masonry storefronts as well as the guidelines for rehabilitating existing historic storefronts).

If the original or significant storefront no longer exists or is too deteriorated to save, undertake a contemporary design which is compatible with the rest of the building in scale, design, materials, color and texture; or undertake an accurate restoration based on historical research and physical evidence (see section on "Replacement Storefronts"). Where an original or significant storefront no longer exists and no evidence exists to document its early appearance, it is generally preferable to undertake a contemporary design that retains the commercial "flavor" of the building. The new storefront design should not draw attention away from the historic building with its detailing but rather should respect the existing historic character of the overall building.

A new design that copies traditional details or features from neighboring buildings or other structures of the period may give the building a historical appearance which blends in with its neighbors but which never, in fact, existed. For this reason, use of conjectural designs, even if based on similar buildings elsewhere in the neighborhood or the availability of different architectural elements from other buildings or structures, is generally not recommended.

Rehabilitating Metal Storefronts

Rehabilitating metal storefronts can be a complex and time-consuming task. Before steps are taken to analyze or treat deteriorated storefronts, it is necessary to know which metal is involved, because each has unique properties and distinct preservation treatments. Storefronts were fabricated using a variety of metals, including cast iron, bronze, copper, tin, galvanized sheet iron, cast zinc, and stainless steel. Determining metallic composition can be a difficult process especially if components are encrusted with paint. Original architect's

specifications (sometimes available from permit offices, town halls, or records of the original owner) can be important clues in this regard and should be checked if at all possible.

Iron--a magnetic, gray-white malleable metal, readily susceptible to oxidation. Cast iron, most commonly found in storefronts, is shaped by molds and can withstand great compressive loads. Rolled sheet iron, sometimes galvanized with zinc, also was used in store-front construction. Stainless steel began to appear in storefronts after 1930.

Zinc--a medium-hard, bluish-white metal, widely used as a protective coating for iron and steel. It is softer than iron and is nonmagnetic.

Copper--a nonmagnetic, corrosion-resistant, malleable metal, initially reddish-brown but when exposed to the atmosphere turns brown to black to green.

Bronze and brass--nonmagnetic, abrasive-resistant alloys combining copper with varying amounts of zinc, lead, or tin. These copper alloys, more commonly found in office buildings or large department stores, range in color from lemon yellow to golden brown to green depending on their composition and are well suited for casting.

This finely detailed bronze storefront is typical of many constructed during the 1920s. The original grilles, spandrel panel and windows are all intact. Photo: NPS files.

Aluminum--a lightweight, nonmagnetic metal commonly found on storefronts dating from the 1920s and 30s. Its brightness and resistance to corrosion has made it a popular storefront material in the 20th century.

Repair and Replacement of Metal

Simply because single components of a storefront need repair or replacement should not be justification for replacing an entire storefront. Deteriorated metal architectural elements can be repaired by a variety of means, although the nature of the repair will depend on the extent of the deterioration, the type of metal and its location, and the overall cost of such repairs. Patches can be used to mend, cover or fill a deteriorated area. Such patches should be a close match to the original material to prevent galvanic corrosion. Splicing--replacement of a small section with new material--should be undertaken on structural members only when temporary bracing has been constructed to carry the load. Reinforcing--or bracing the damaged element with additional new metal material--can relieve fatigue or overloading in some situations.

If metal components have deteriorated to a point where they have actually failed (or are missing), replacement is the only reasonable course of action. If the components are significant to the overall design of the storefront, they should be carefully removed and substituted with components that match the original in material, size and detailing.

Before going to the expense of reproducing the original, it may be useful to check salvage yards for compatible components. Missing parts of cast iron storefronts can be replaced by new cast iron members that are reproductions of the original. New wooden patterns, however, usually need to be made if the members are large. This procedure tends to be expensive (it is usually impossible to use existing iron components as patterns to cast large elements because cast iron shrinks 1/5 inch per foot as it cools).

In some situations, less expensive substitute materials such as aluminum, wood, plastics, and fiberglass, painted to match the metal, can be used without compromising the architectural character of the resource.

Cleaning and Painting

Cast iron storefronts are usually encrusted with layers of paint which need to be removed to restore crispness to the details. Where paint buildup and rust are not severe problems, handscraping and wire-brushing are viable cleaning methods. While it is necessary to remove all rust before repainting, it is not necessary to remove all paint. For situations involving extensive paint buildup and corrosion, mechanical methods such as low-pressure gentle dry grit blasting (80-100 psi) can be effective and economical, providing a good surface for paint. Masonry and wood surfaces adjacent to the cleaning area, however, should be protected to avoid inadvertent damage from the blasting. It will be necessary to recaulk and putty the heads of screws and bolts after grit blasting to prevent moisture from entering the joints. Cleaned areas should be painted immediately after cleaning with a rust-inhibiting primer to prevent new corrosion. Before any cleaning is undertaken, local codes should be checked to ensure compliance with environmental safety requirements.

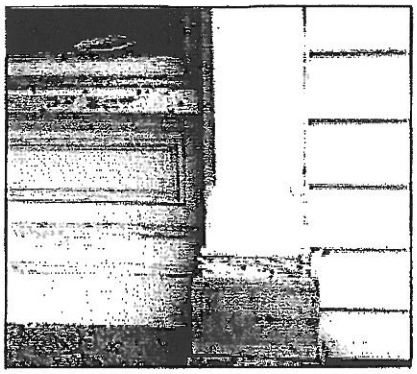
Storefronts utilizing softer metals (lead, tin), sheet metals (sheet copper), and plated metals (tin and terneplate) should not be cleaned mechanically (grit blasting) because their plating or finish can be easily abraded and damaged. It is usually preferable to clean these softer metals with a chemical (acid pickling or phosphate dipping) method. Once the surface of the metal has been cleaned of all corrosion, grease, and dirt, a rustinhibiting primer coat should be applied. Finish coats especially formulated for metals, consisting of lacquers, varnishes, enamels or special coatings, can be applied once the primer has dried. Primer and finish coats should be selected for chemical compatibility with the particular metal in question.

Bronze storefronts, common to large commercial office buildings and major department stores of the 20th century, can be cleaned by a variety of methods; since all cleaning removes some surface metal and patina, it should be undertaken only with good reason (such as the need to remove encrusted salts, bird droppings or dirt). Excessive cleaning can remove the texture and finish of the metal. Since this patina can protect the bronze from further corrosion, it should be retained if possible. If it is desirable to remove the patina to restore the original surface of the bronze, several cleaning methods can be used: chemical compounds including rottenstone and oil, whiting and ammonia, or precipitated chalk and ammonia, can be rubbed onto bronze surfaces with a soft, clean cloth with little or no damage. A number of commercial cleaning companies successfully use a combination of 5% oxalic acid solution together with finely ground India pumice powder. Fine glass-bead blasting (or peening) and crushed walnut shell blasting also can be acceptable mechanical methods if carried out in controlled circumstances under low (80-100 psi) pressure. Care should be taken to protect any adjacent wood or masonry from the blasting.

The proper cleaning of metal storefronts should not be considered a "do-it-yourself" project. The nature and condition of the material should be assessed by a competent professional, and the work accomplished by a company specializing in such work.

Rehabilitating Wooden Storefronts

The key to the successful rehabilitation of wooden storefronts is a careful evaluation of existing physical conditions. Moisture, vandalism, insect attack, and lack of maintenance can all contribute to the deterioration of wooden storefronts.



Rather than replace an entire wooden storefront, a new wooden component can be pieced-in, as seen in this column base. Photo: NPS files.

Paint failure should not be mistakenly interpreted as a sign that the wood is in poor condition and therefore irreparable. Wood is frequently in sound physical condition beneath unsightly paint. An ice pick or awl may be used to test wood for soundness--decayed wood that is jabbed will lift up in short irregular pieces; sound wood will separate in long fibrous splinters.

Repair and Replacement of Wood

Storefronts showing signs of physical deterioration can often be repaired using simple methods. Partially decayed wood can be patched, built up, chemically treated or consolidated and then painted to achieve a sound condition, good appearance, and greatly extended life.

To repair wood showing signs of rot, it is advisable to dry the wood; carefully apply a fungicide such as pentachlorophenol (a highly toxic substance) to all decayed areas; then treat with 2 or 3 applications of boiled linseed oil (24 hours between applications). Afterward, fill cracks and holes with putty; caulk the joints between the various wooden members; and finally prime and paint the surface.

Partially decayed wood may also be strengthened and stabilized by consolidation, using semirigid epoxies which saturate porous decayed wood and then harden. The consolidated wood can then be filled with a semirigid epoxy patching compound, sanded and painted. More information on epoxies can be found in the publication "Epoxies for *Wood Repairs in Historic Buildings*," cited in the bibliography.

Where components of wood storefronts are so badly deteriorated that they cannot be stabilized, it is possible to replace the deteriorated parts with new pieces. These techniques all require skill and some expense, but are recommended in cases where decorative elements, such as brackets or pilasters, are involved. In some cases, missing edges can be filled and rebuilt using wood putty or epoxy compounds. When the epoxy cures, it can be sanded smooth and painted to achieve a durable and waterproof repair.

Repainting of Wood

Wooden storefronts were historically painted to deter the harmful effects of weathering (moisture, ultraviolet rays from the sun, wind, etc.) as well as to define and accent architectural features. Repainting exterior woodwork is thus an inexpensive way to provide continued protection from weathering and to give a fresh appearance to the storefront.

Before repainting, however, a careful inspection of all painted wood surfaces needs to be conducted in order to determine the extent of surface preparation necessary, that is, whether

the existing layers of paint have deteriorated to the point that they will need to be partially or totally removed prior to applying the new paint.

As a general rule, removing paint from historic exterior woodwork should be avoided unless absolutely essential. Once conditions warranting removal have been identified, however, paint can be removed to the next sound layer using the gentlest method possible, then the woodwork repainted. For example, such conditions as mildewing, excessive chalking, or staining (from the oxidization of rusting nails or metal anchorage devices) generally require only thorough surface cleaning prior to repainting. Intercoat peeling, solvent blistering, and wrinkling require removal of the affected layer using mild abrasive methods such as hand scraping and sanding. In all of these cases of limited paint deterioration, after proper surface preparation the exterior woodwork may be given one or more coats of a high quality exterior oil finish paint.

On the other hand, if painted wood surfaces display continuous patterns of deep cracks or if they are extensively blistering and peeling so that bare wood is visible, the old paint should be completely removed before repainting. (It should be emphasized that because peeling to bare wood--the most common type of paint problem--is most often caused by excess interior or exterior moisture that collects behind the paint film, the first step in treating peeling is to locate and remove the source or sources of moisture. If this is not done, the new paint will simply peel off.)

There are several acceptable methods for total paint removal, depending on the particular wooden element involved. They include such thermal devices as an electric heat plate with scraper for flat surfaces such as siding, window sills, and doors or an electric hot-air gun with profiled scraper for solid decorative elements such as gingerbread or molding. Chemical methods play a more limited, supplemental role in removing paint from historic exterior woodwork; for example, caustic or solvent-base strippers may be used to remove paint from window muntins because thermal devices can easily break the glass. Detachable wooden elements such as exterior shutters, balusters and columns, can probably best be stripped by means of immersion in commercial dip tanks because other methods are too laborious. Care must be taken in rinsing all chemical residue off the wood prior to painting or the new paint will not adhere.

Finally, if the exterior woodwork has been stripped to bare wood, priming should take place within 48 hours (unless the wood is wet, in which case it should be permitted to dry before painting). Application of a high quality oil type exterior primer will provide a surface over which either an oil or latex top coat can be successfully used.

Rehabilitating Masonry Storefronts

Some storefronts are constructed of brick or stone, and like their metal and wooden counterparts, also may have been subjected to physical damage or alterations over time. Although mortar may have disintegrated, inappropriate surface coatings applied, and openings reduced or blocked up, careful rehabilitation will help restore the visual and physical integrity of the masonry storefront.

Repair and Replacement of Masonry

If obvious signs of deterioration--disintegrating mortar, spalling bricks or stone--are present, the causes (ground moisture, leaky downspouts, etc.) should be identified and corrected. Some repointing may be necessary on the masonry surface, but should be limited to areas in which so much mortar is missing that water accumulates in the

mortar joints, causing further deterioration. New mortar should duplicate the composition, color, texture, and hardness, as well as the joint size and profile of the original. Badly spalling bricks may have to be replaced. Deteriorated stone may be replaced in kind, or with a matching substitute material; in some cases where not visually prominent, it may be covered with stucco, possibly scored to resemble blocks of stone.

Cleaning Masonry

Inappropriate cleaning techniques can be a major source of damage to historic masonry buildings. Historic masonry should be cleaned only when necessary to halt deterioration or to remove graffiti and stains, and always with the gentlest means possible, such as water and a mild detergent using natural bristle brushes, and/or a non-harmful chemical solution, both followed by a low-pressure water rinse.

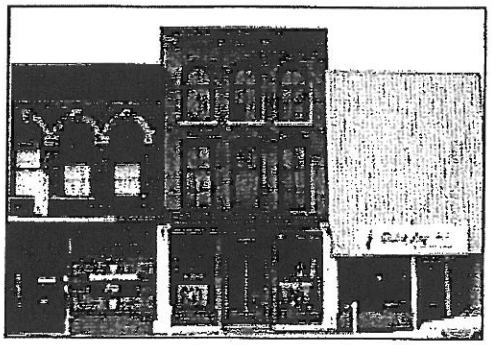
It is important to remember that many mid-19th century brick buildings were painted immediately or soon after construction to protect poor quality brick or to imitate stone. Some historic masonry buildings not originally painted were painted at a later date to hide alterations or repairs, or to solve recurring maintenance or moisture problems. Thus, whether for reasons of historical tradition or practicality, it may be preferable to retain existing paint. If it is readily apparent that paint is not historic and is a later, perhaps unsightly or inappropriate treatment, removal may be attempted, but only if this can be carried out without damaging the historic masonry. Generally, paint removal from historic masonry may be accomplished successfully only with the use of specially formulated chemical paint removers. No abrasive techniques, such as wet or dry sandblasting should be considered. If nonhistoric paint cannot be removed without using abrasive methods, it is best to leave the masonry painted, although repainting in a compatible color may help visually.

Removing unsightly mastic from masonry presents a similarly serious problem. Its removal by mechanical means may result in abrading the masonry, and chemical and heat methods may prove ineffective, although solvents like acetone will aid in softening the hardened mastic. If the mastic has become brittle, a flat chisel may be used to pop it off; but this technique, if not undertaken with care, may result in damaging the masonry. And even if total removal is possible, the mastic may have permanently stained the masonry. Replacement of these masonry sections marred by mastic application may be one option in limited situations; individual pieces of stone or bricks that have been damaged by inappropriate alterations may be cut out and replaced with new pieces that duplicate the original. However, since an exact match will be nearly impossible to achieve, it may be necessary to paint the repaired masonry in order to create a harmonious facade. Replacement of a large area with new materials may not be acceptable as it may give the building a new, nonhistoric appearance inappropriate to the building style and period.

Designing Replacement Storefronts

Where an architecturally or historically significant storefront no longer exists or is too deteriorated to save, a new front should be designed which is compatible with the size, scale, color, material, and character of the building. Such a design should be undertaken

based on a thorough understanding of the building's architecture and, where appropriate, the surrounding streetscape. For example, just because upper floor windows are arched is not sufficient justification for designing arched openings for the new storefront. The new design should "read" as a storefront; filling in the space with brick or similar solid material is inappropriate for historic buildings. Similarly the creation of an arcade or other new design element, which alters the architectural and historic character of the building and its relationship with the street, should be avoided. The guidelines on page 8 can assist in developing replacement storefront designs that respect the historic character of the building yet meet current economic and code requirements.



This photograph shows the impact of preserving historic storefronts. The one on the right has been totally obscured by a "modern" front added in the 1950s. Photo: NPS files.

Guidelines for Designing Replacement Storefronts

1. ***Scale:*** Respect the scale and proportion of the existing building in the new storefront design.

2. ***Materials:*** Select construction materials that are appropriate to the storefronts; wood, cast iron, and glass are usually more appropriate replacement materials than masonry which tends to give a massive appearance.

3. ***Cornice:*** Respect the horizontal separation between the storefront and the upper stories. A cornice or fascia board traditionally helped contain the store's sign.

4. ***Frame:*** Maintain the historic planar relationship of the storefront to the facade of the building and the streetscape (if appropriate). Most storefront frames are generally composed of horizontal and vertical elements.

5. ***Entrances:*** Differentiate the primary retail entrance from the secondary access to upper floors. In order to meet current code requirements, out-swinging doors generally must be recessed. Entrances should be placed where there were entrances historically, especially when echoed by architectural detailing (a pediment or projecting bay) on the upper stories.

6. ***Windows:*** The storefront generally should be as transparent as possible. Use of glass in doors, transoms, and display areas allows for visibility into and out of the store.

7. ***Secondary Design Elements:*** Keep the treatment of secondary design elements such as graphics and awnings as simple as possible in order to avoid visual clutter to the building and its streetscape.

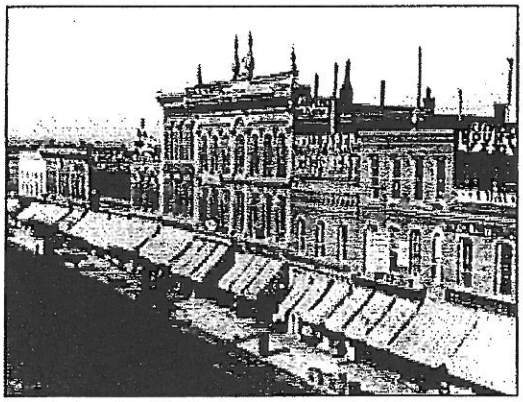
A restoration program requires thorough documentation of the historic development of the building prior to initiating work. If a restoration of the original storefront is contemplated, old photographs and prints, as well as physical evidence, should be used in determining the form and details of the original. Because storefronts are particularly susceptible to alteration in response to changing marketing techniques, it is worthwhile to find visual documentation from a variety of periods to have a clear understanding of the evolution of the storefront. Removal of later additions that contribute to the

character of the building should not be undertaken.

Other Considerations

Pigmented Structural Glass

The rehabilitation of pigmented structural glass storefronts, common in the 1930's, is a delicate and often frustrating task, due to the fragility and scarcity of the material. Typically the glass was installed against masonry walls with asphaltic mastic and a system of metal shelf angles bolted to the walls on three-foot centers. Joints between the panels were filled with cork tape or an elastic joint cement to cushion movement and prevent moisture infiltration.



Try to locate old photographs or prints to determine what alterations have been made to the storefront and when they were undertaken. Awnings were common elements of storefronts at the turn of the century. Photo: NPS files.

The decision to repair or replace damaged glass panels should be made on a case-by-case basis. In some instances, the damage may be so minor or the likelihood of finding replacement glass so small, that repairing, reanchoring and/or stabilizing the damaged glass panel may be the only prudent choice. If the panel is totally destroyed or missing, it may be possible to replace with glass salvaged from a demolition; or a substitute material, such as "spandrel glass," which approximates the appearance of the original. Although pigmented structural glass is no longer readily available, occasionally long-established glass "jobbers" will have a limited supply to repair historic storefronts.

Awnings

Where based on historic precedent, consider the use of canvas awnings on historic storefronts. Awnings can help shelter passersby, reduce glare, and conserve energy by controlling the amount of sunlight hitting the store window, although buildings with northern exposures will seldom functionally require them. Today's canvas awnings have an average life expectancy of between 4 and 7 years. In many cases awnings can disguise, in an inexpensive manner, later inappropriate alterations and can provide both additional color and a strong store identification. Fixed aluminum awnings and awnings simulating mansard roofs and umbrellas are generally inappropriate for older commercial buildings. If awnings are added, choose those that are made from soft canvas or vinyl materials rather than wood or metal; be certain that they are installed without damaging the building or visually impairing distinctive architectural features and can be operable for maximum energy conservation effect.

Signs

Signs were an important aspect of 19th and early 20th century storefronts and today play an important role in defining the character of a business district. In examining historic streetscape photographs, one is struck by the number of signs--in windows, over doors, painted on exterior walls, and hanging over (and sometimes across) the street. While this confusion was part of the character of 19th century cities and towns, today's

approach toward signs in historic districts tends to be much more conservative. Removal of some signs can have a dramatic effect in improving the visual appearance of a building; these include modern backlit fluorescent signs, large applied signs with distinctive corporate logos, and those signs attached to a building in such a way as to obscure significant architectural detailing. For this reason, their removal is encouraged in the process of rehabilitation. If new signs are designed, they should be of a size and style compatible with the historic building and should not cover or obscure significant architectural detailing or features. For many 19th century buildings, it was common to mount signs on the lintel above the first story. Another common approach, especially at the turn of the century, was to paint signs directly on the inside of the display windows. Frequently this was done in gold leaf. New hanging signs may be appropriate for historic commercial buildings, if they are of a scale and design compatible with the historic buildings. Retention of signs and advertising painted on historic walls, if of historic or artistic interest (especially where they provide evidence of early or original occupants), is encouraged.

Paint Color

Paint analysis can reveal the storefront's historic paint colors and may be worth undertaking if a careful restoration is desired. If not, the paint color should be, at a minimum, appropriate to the style and setting of the building. This also means that if the building is in a historic district, the color selection should complement the building in question as well as other buildings in the block. In general, color schemes for wall and major decorative trim or details should be kept simple; in most cases the color or colors chosen for a storefront should be used on other painted exterior detailing (windows, shutter, cornice, etc.) to unify upper and lower portions of the facade.

Windows

Glass windows are generally the most prominent features in historic storefronts, and care should be taken to ensure that they are properly maintained. For smaller paned windows with wooden frames, deteriorated putty should be removed manually, taking care not to damage wood along the rabbet. To reglaze, a bead of linseed oil-based putty should be laid around the perimeter of the rabbet; the glass pane pressed into place; glazing points inserted to hold the pane; and a final seal of putty beveled around the edge of the glass. For metal framed windows, glazing compound and special glazing clips are used to secure the glass; a final seal of glazing compound then is often applied. If the glass needs replacing, the new glass should match the original in size, color and reflective qualities. Mirrored or tinted glass are generally inappropriate replacements for historic storefronts. The replacement of cracked or missing glass in large windows should be undertaken by professional glaziers.

Code Requirements

Alterations to a storefront called for by public safety, handicapped access, and fire codes can be difficult design problems in historic buildings. Negotiations can be undertaken with appropriate officials to ensure that all applicable codes are being met while maintaining the historic character of the original construction materials and features. If, for instance, doors opening inward must be changed, rather than replace them with new doors, it may be possible to reverse the hinges and stops so that they will swing outward.

Summary

A key to the successful rehabilitation of historic commercial buildings is the sensitive treatment of the first floor itself. Wherever possible, significant storefronts (be they original or later alterations), including windows, sash, doors, transoms, signs and decorative features, should be repaired in order to retain the historic character of the building. Where original or early storefronts no longer exist or are too deteriorated to save, the commercial character of the building should nonetheless be preserved--either through an accurate restoration based on historic research and physical evidence or a contemporary design which is compatible with the scale, design, materials, color and texture of the historic building. The sensitive rehabilitation of historic storefronts will not only enhance the architectural character of the overall building but will contribute to rejuvenating neighborhoods or business districts as well.

Additional Reading

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Washington, D.C. September, 1982

Home page logo: The Joy Building from "Early Illustrations and Views of American Architecture" by Edmund V. Gillon, Jr. Photo: Courtesy, Dover Publications, Inc.

This publication has been prepared pursuant to the National Historic Preservation Act of 1966, as amended, which directs the Secretary of the Interior to develop and make available information concerning historic properties. Technical Preservation Services (TPS), Heritage Preservation Services Division, National Park Service prepares standards, guidelines, and other educational materials on responsible historic preservation treatments for a broad public.

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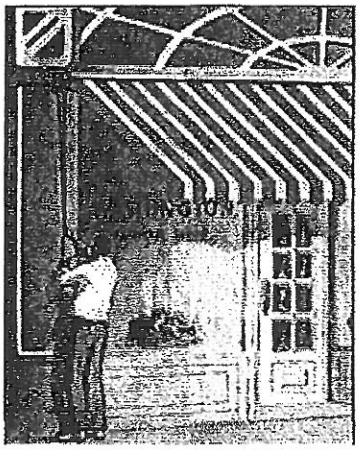
44 Preservation Briefs

Technical Preservation Services
National Park Service
U.S. Department of the Interior

The Use of Awnings on Historic Buildings
Repair, Replacement & New Design

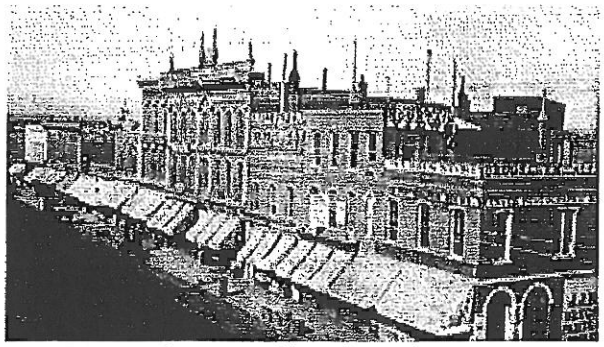
Chad Randl



A NOTE TO OUR USERS: The web versions of the **Preservation Briefs** differ somewhat from the printed versions. Many illustrations are new, captions are simplified, illustrations are typically in color rather than black and white, and some complex charts have been omitted.

Introduction

A shopkeeper rolls out an awning at the beginning of the workday; a family gathers under a porch awning on a late summer afternoon. These are familiar and compelling images of earlier urban and residential life in America. For two centuries, awnings not only played an important functional role, they helped define the visual character of our streetscapes. Yet, compared to historic photographs of downtowns and neighborhoods with myriad awnings, today's streets often seem plain and colorless.

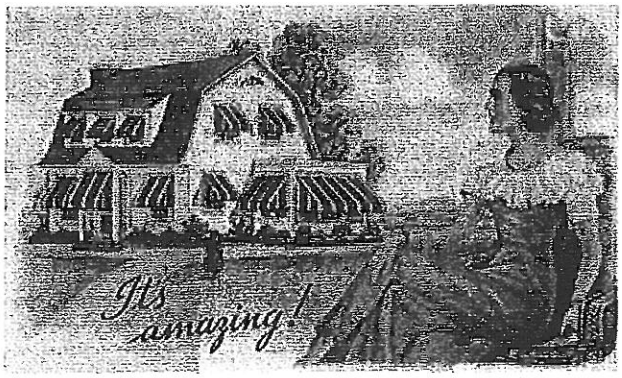


Storefront awnings over sidewalks and entrances were typical features of American streetscapes for much of the 19th and 20th centuries. Photo of Larimer Street, Denver, Colorado, c. 1870, Denver Public Library, Western History Collection, x-22058.

Throughout their history, awnings have had great appeal. Along with drapes, curtains, shutters, and blinds they provided natural climate control in an age before air conditioning and tinted glass. By blocking out the sun's rays while admitting daylight and allowing air to circulate between interior and exterior, they were remarkably efficient and cost effective. Awnings permitted window-shopping on rainy days; they protected show window displays from fading due to sunlight. On the primary facade and near eye level, they were central to a building's appearance. Manufacturers came up with attractive, attention-getting awnings featuring distinctive stripes, ornate valances, and painted lettering and logos. With a wide range of color and pattern

choices, owners could select an awning that complemented the building and get both style and function in a relatively affordable package.

In recent years, building owners and others interested in historic buildings have rediscovered awnings. Local "main street" preservation programs encouraging-and in some cases funding-rehabilitation work have helped spur the awning's return. Continued concerns over energy efficiency have also persuaded building owners and developers to use awnings to reduce heat gain, glare, and cooling costs. Because awnings were so common until the mid-twentieth century, they are visually appropriate for many historic buildings, unlike some other means of energy conservation.

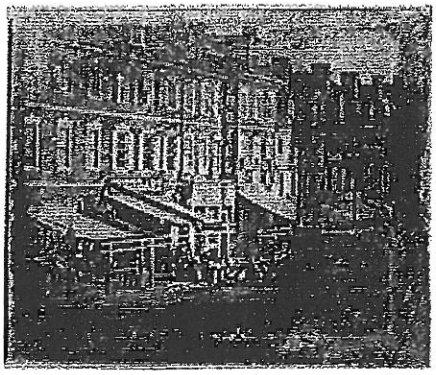


Awnings were an easy way to dress up and distinguish homes of virtually any style. Image: Otis Awning Fabrics Company brochure, c. 1920s.

This Preservation Brief provides historical background information about diverse awning applications in the United States; suggests ways that historic awnings can best be maintained, repaired, and preserved; and recommends the varying circumstances in which replacement in kind, or new awning design may be appropriate for historic buildings.

Historical Background

Awnings are remarkable building features that have changed little over the course of history. Records dating back to ancient Egypt and Syria make note of woven mats that shaded market stalls and homes. In the Roman Empire, large retractable fabric awnings sheltered the seating areas of amphitheatres and stadiums, including the Coliseum. The Roman poet Lucretius, in 50 B.C., likened thunder to the sound that "linen-awning, stretched, o'er mighty theatres, gives forth at times, a cracking roar, when much 'tis beaten about, betwixt the poles and cross-beams." Over the next two millennia awnings appeared throughout the world, while the technology used in their construction changed little.


Early 19th century awnings featured canvas coverings stretched between the building facade and post-supported front bars. Projecting frameworks of

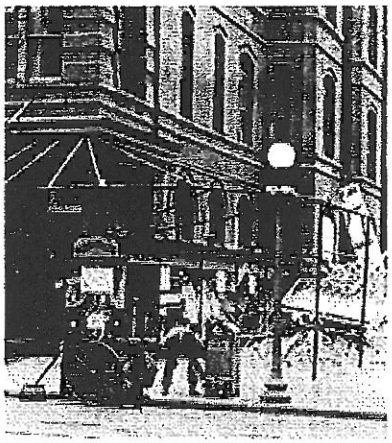
Awnings in the 19th Century

When awnings began to commonly appear on American storefronts-during the first half of the 19th century-they were simple, often improvised and strictly utilitarian assemblies. The basic hardware consisted of timber or cast iron posts set along the sidewalk edge and linked by a front cross bar. To lend support to larger installations, angled rafters linked the front cross bar to the building facade. The upper end of the canvas was connected to the facade with nails, with grommets and hooks, or by lacing the canvas to a headrod bolted to the facade. The other (projecting) end of the canvas was draped over, or laced to, a front bar with the edge often

extension bars were not common until later in the century. Photo: Second Street, Philadelphia, c. 1841, Print and Photo Collection, The Free Library of Philadelphia.

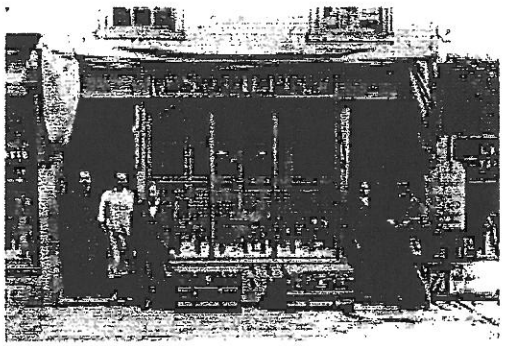
hanging down to form a valance. On ornate examples, metal posts were adorned with filigree and the tops decorated with spear ends, balls or other embellishments. On overcast days or when rain did not threaten, the covering was often rolled up against the building facade; during the winter months proper maintenance called for the removal and storage of awnings. Photographs from the mid-1800s often show the bare framework, suggesting that the covering was extended only when necessary. Canvas duck was the predominant awning fabric. A strong, closely woven cotton cloth used for centuries to make tents and sails, canvas is a versatile material with a relatively short lifespan compensated for by its low cost.

Awnings became a common feature in the years after the Civil War. Iron plumbing pipe, which was quickly adapted for awning frames, became widely available and affordable as a result of mid-century industrialization. It was a natural material for awning frames, easily bent and threaded together to make a range of different shapes and sizes. At the same time the advent of the steamship forced canvas mills and sail makers to search for new markets. An awning industry developed offering an array of frame and fabric options adaptable to both storefronts and windows.



During the second half of the 19th century, iron plumbing pipe became a popular material for fixed awning frames. Here, a pipe frame without its canvas cover extends around the corner of a building in Washington, D.C. Photo: Library of Congress, Prints and Photographic Division, LC-USZ62-121160.

Operable Awnings. In the second half of the 19th century, manufactured operable awnings grew in popularity. Previously, most awnings had fixed frames-the primary way to retract the covering was to roll it up the rafters by hand. Operable systems for both storefront and window awnings had extension arms that were hinged where they joined the facade. The arms were lowered to project the awning or raised to retract the awning using simple rope and pulley arrangements. Because the canvas remained attached to the framework, retractable awnings allowed a more flexible approach to shading-shopkeepers and owners could incrementally adjust the amount of awning coverage depending upon the weather conditions. When the sun came out from behind clouds, the awning could be deployed with ease. In case of sudden storms, owners could quickly retract the awning against the building wall where it was protected from wind gusts.



A 19th century shoe store in Richmond, Virginia had an operable awning retracted against the building facade. Hinged extension

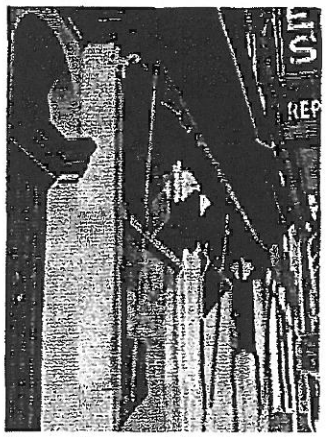
But the early operable awnings had their own drawbacks. When retracted, the coverings on early operable awnings bunched up against the building facade where it was still partially exposed to inclement weather. (In fact, deterioration was often accelerated as moisture pooled in the fabric folds.) Also, the retracted fabric often obscured a portion of the window or door opening and unless it was folded carefully, presented an unkempt appearance.

Roller Awnings. Addressing the drawbacks of the original hinged awning, new roller

arms were raised and lowered allowing for an awning configuration easily changed in response to weather conditions. This photo shows how the fabric gathered and was exposed to the elements when retracted - part of the reason roller awnings later became prevalent. Photo: Library of Congress, Prints and Photographic Division, LC-USZ62-99053.

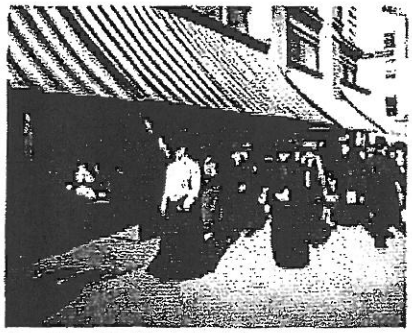
awnings featured a wood or metal cylinder around which the canvas was stored when the awning was retracted. When fully retracted, only the valance was visible. The roller was usually bolted to a backboard set against the building and protected beneath a wood or galvanized metal hood. In some cases it was installed in a recessed box built into the facade. A long detachable handle (called a "winding brace"), or a gearbox and crankshaft attached to the building, was used to turn the roller. Some later models were operated by electric motor. Rollers, especially those on window awnings, often contained a spring that helped retract the awning and kept the canvas from sagging excessively.

Most 19th century roller awnings had fixed arms that were similar to those found on the earlier operable awnings. The arms hinged flush to the building when the awning was retracted and, with the help of gravity, straightened out over the sidewalk when extended. When a storefront awning's projection exceeded its drop by more than a foot, its long arms were connected to an adjustable slide rod rather than hinged directly to the building facade-increasing head room along the sidewalk.



The roller bar at the top of a fixed-arm awning is cranked to release the fabric. As the canvas unfurls the vertical arms swing downward from their lower point. Because the pictured awning had a large projection, extending far from the building wall, the lower hinges were mounted on vertical slide rods affixed to the facade. When the awning is lowered, the bottom hinges of the arms travels up the slide rod to increase headroom beneath the fully extended awning. Photo: NPS files.

Shapes and Stripes. An expanded variety of available canvas colors, patterns, and valance shapes also appeared during this period. Some coverings were dyed a solid color; shades of slate, tan, and green were especially popular. Others had painted stripes on the upper surface of the canvas. Awning companies developed a colorful vocabulary of awning stripes that enhanced the decorative schemes of buildings, and in some cases, served as a building's primary decorative feature.



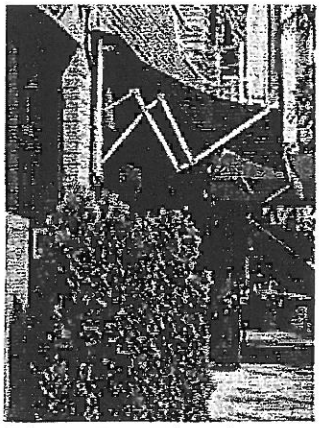
A wide selection of striped patterns took the awning beyond its original, utilitarian function to serve as a decorative and appealing building feature. Photo: Library of Congress, Prints and Photographic Division, LC-D4-62072.

The broader choice of frame and canvas options encouraged the reassessment of awnings simply as a means to provide shelter from rain and sun. Homeowners found that the new generation of awnings could enhance exterior paint schemes and increase the visual appeal of their homes.

Manufacturers developed new awning shapes, colors, patterns and hardware to fit different house, door, window and porch styles. They were an affordable, quick and simple improvement. They also proved to be an easy means of capturing outside space. Homeowners could use awning-covered balconies, porches and patios at any time of day; grocery stores were able to convert sidewalks to outdoor display areas protected from sunlight and quick changes in the weather. On Main Street, businesses used the expanded repertoire of awnings to draw attention to their buildings with bright colors, whimsical stripe patterns and exotic scallops. Awnings increasingly functioned as signs identifying the proprietor's name, goods on offer, or

year of establishment. It was a trend that would culminate over a century later with awning installations in which shelter was secondary to advertisement.

Awnings in the 20th Century

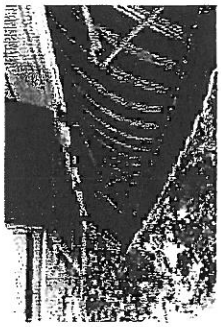


Scissor arm awnings have a pair of vertical, hinged arms on either side of the assembly supporting the front bar. To unfurl the awning, the roller is cranked and the arms extend outward pulling the cover away from the roller. Photo: NPS files.

Awning development during the early twentieth century focused on improving operability. Variations in roller awnings addressed the need to provide an increasingly customized product that accomodated a wide range of storefront configurations and styles.

New folding-arm awnings appeared that operated either vertically or horizontally supplementing the fixed-arm awnings developed in the latter 19th century. Vertical folding arms were made up of smaller hinged arms that crossed like scissors. Operated by gravity the arms extended outward pulling the covering off the roller. Like a fixed-arm awning, the pitch of a scissors-type awning varied depending on whether it was fully or only partially extended.

Somewhat different was the "lateral arm awning" a horizontally operating awning that worked like a human elbow with the spring action in the arms pushing outward toward the street, unfurling the cover from the roller and maintaining tension. Lateral arm awnings featured a shallow drop that remained relatively constant regardless of how far the arms were extended Scissor arm awnings have a pair of vertical, hinged arms on either side of the assembly supporting the front bar. To unfurl the awning, the roller is cranked and the arms extend outward pulling the cover away from the roller. Operable awnings, whether fixed arm, scissors arm, or lateral arm, rapidly gained popularity as customers came to appreciate the flexibility, concealed appearance, and longer lifespan made possible by roller units.



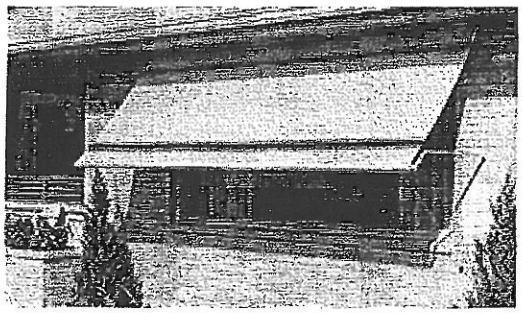
Lateral-arm awnings were preferred on long elevations, especially those with sheet glass (where vertical arms could not be fastened to the building façade). When lateral arm awnings were installed across a broad storefront or porch, manufacturers recommended spacing the arms at approximately eight foot intervals. Photo: NPS files.

New Coverings. Slower to change was the fabric used to cover awnings. Canvas duck remained the common awning fabric during the first half of the twentieth century. However, its tendency to stretch and fade, and its susceptability to mildew, and flammable materials like cigarettes and matches motivated the awning industry to search for alternatives. Shortly after World War II, a vinyl plastic coating that increased fade and water resistance was first applied to the canvas. By the 1960s, vinyl resins, acrylic fibers and polyester materials were all being used to provide a longer-lasting awning cover. Ironically, just when these innovations promised more durable awnings, the fabric awning industry felt the debilitating impact of changing architectural fashion, the widespread adoption of air conditioning, and the increasing availability of aluminum awnings.

Modernism dominated commercial architecture during the postwar era. The style's signature form-austere steel, glass, and concrete boxes-had little use for fabric awnings. Colorful awnings seemed old-fashioned, an unwanted distraction from the smooth lines of the machine aesthetic. The preference, instead, was for perforated structural screens

or brises-soleil (French: "breaks the sun") that integrated shading functions with new building forms. It was assumed that new buildings had no need for awnings. Widely available for the first time, mechanical air conditioning threatened to make the awning an unnecessary vestige of an earlier era. Awning companies fought back with arguments that traditional shading systems could reduce the required size and investment in air conditioning systems. Though canvas awnings continued to be used on contemporary buildings, new types were often selected to do the job, aluminum and fiberglass awnings.

Widely available by the 1950s, aluminum awnings were touted as longer-lasting and lower-maintenance than traditional awnings. Though used on small-scale commercial structures, they were especially popular with homeowners. Aluminum awnings were made with slats called "pans" arranged horizontally or vertically. For variety and to match the building to which they were applied, different colored slats could be arranged to create stripes or other decorative patterns. While aluminum awnings were usually fixed, in the 1960s several operable roller awnings were developed, including one with the trade name Flexalum Roll-Up.



The years after World War II saw the widespread adoption of aluminum awnings on both storefronts and residences. Operable aluminum awnings incorporated a spring-loaded roller into the frontbar. Photo: NPS files.

Also during this period, manufactured flat-metal canopies were an increasingly popular feature, used in new commercial construction and when remodeling existing storefronts. They were particularly common in the South where shading was critical to the comfort of both window shoppers and store interiors. Often made of aluminum, the canopies could stretch across a single facade, or be connected to extend along an entire block.

New Shapes. An increasing reliance upon fixed aluminum frames and plastic coverings, spurred the development of new awning shapes during the 1970s and 1980s. Often, the awning served as a business's primary sign. Mansard awnings, concave awnings, quarter-round awnings, and quarter-rounds with rounded dome ends appeared with increasing frequency. Most had vinyl or other plastic coverings that were touted as being more resilient than traditional materials. Featuring bold lettering and colors that were often emphasized by illuminating the awnings from within, these awnings were common on new commercial strips and were even popular inside enclosed shopping centers and food courts. They were also applied, less successfully, to older or historic buildings where their shape, size, and material bore little resemblance to traditional awnings.

Although the 1950s and 1960s saw the end of the canvas awning's ubiquity on Main Street, it remained a moderately popular feature of residential architecture. New materials and technologies such as lateral arm operators, acrylic fabric, and aluminum kept the awning relevant to the postwar ranch house and afforded an economical way to update older structures. Colorful awnings helped suburban dwellers distinguish their homes from other, similar, models in the neighborhood.

Awnings Today

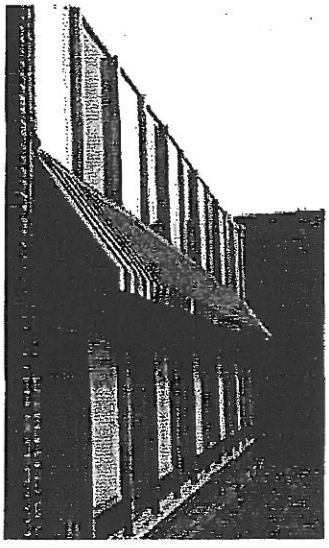
Today, awnings come in a variety of shapes, sizes, frames and fabrics. Fixed, quarter-round, back-lit awnings with broad faces featuring company names, logos, phone numbers, and street addresses function more as signs than sunshades. Restaurants and

other commercial chains use illuminated awnings with nationally recognized brand graphics and stripe and color patterns to attract customers along suburban strips. The triangular shed frame shape has enjoyed a resurgence of popularity in recent years, in many cases playing off nostalgia for the traditional awning. Relatively new "staple-in" awnings with a shed shape are commonly used on new commercial construction. This system has a welded frame of extruded aluminum with a slot on the outer edge. The fabric covering is pulled taut, and the ends are secured in the groove with galvanized steel staples. A vinyl trim bead covers the groove, protecting the fabric edges and providing a flush appearance.

Apart from the strip mall, awnings are also reappearing in historic business districts and residential neighborhoods. In these locations, new awnings typically feature fixed frames or operating lateral arms-both differing little from the awnings of one hundred years before. Fixed frame awnings have frames made of either aluminum or light-gauge galvanized or zinc-coated steel pipes welded together. Frames are secured to building facades with clamps, z-shaped clips, and other hardware. Until recently, operable awnings found in historic commercial districts were primarily those with historic frames and hardware that had survived to the present. But new lateral arm awnings with powder-coated aluminum frames are an increasingly common choice for building owners who want the convenience of an operable system.

Solution-dyed acrylics and acrylic-coated polyester-cotton blended fabrics are often used to replicate historic awning coverings. These relatively new materials resemble canvas in appearance and texture, yet offer greater strength and durability. Because acrylics are woven (with the stripes and colors woven directly into the fabric rather than painted on the surface), they are durable and allow light to filter through while keeping heat out. They dry quickly, thereby reducing damage caused by mildew, and contain a UV inhibitor that further reduces sunlight damage. Poly-cotton fabrics coated with a thin acrylic layer that repels dirt and resists abrasion are also used. Both acrylic and poly-cotton fabrics do not stretch or shrink like traditional canvas so they are generally easier to measure, cut, and install.

Preserving Existing Historic Awnings



If awnings already exist on a historic building, they should be evaluated to determine whether they are appropriate to the age, style, and scale of the building, using the criteria identified below. Backlit awnings and dome awnings are usually inappropriate for 19th century and other historic buildings, while aluminum awnings may be perfectly compatible with buildings from the 1950 or 60s. The time is approaching when some aluminum awnings may even be considered appropriate to older buildings, if the awnings formed part of an updated storefront, or are central features of an intact postwar refashioning of the building's exterior.

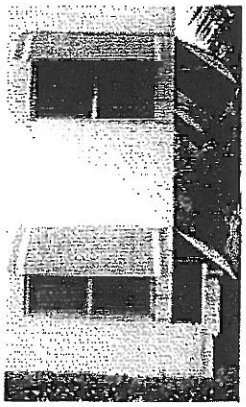
When an existing awning is determined to be appropriate to the building, a program of repair and regular maintenance should be developed. The condition of its covering, hardware, connections between the hardware and the building, and the awning's operability should be evaluated. Hardware such as

This 1950s-era dry cleaner has an aluminum awning that, with its vertical pattern and alternating stripes, complements the facade's porcelain enamel panels and aluminum mullions. The awning forms an essential element of the building's historic character. Photo: NPS files.

arms, rollers, and gearboxes may only need cleaning and lubrication. In other cases more substantial repairs by an awning company familiar with historic hardware may also be needed.

Awning Repair and Maintenance. The best preservation practice is to maintain and repair historic features. The proper care and maintenance of existing awnings and canopies will extend the life of both hardware and covering while ensuring the safety of those passing beneath them. Parts for historic hardware can still be obtained from some suppliers, either from existing stock or as newly manufactured pieces. In some cases, new marine and boating hardware can substitute for missing historic awning hardware. Damaged pieces of the still popular galvanized pipe frames can easily be bent back into shape or, if necessary, replaced with virtually identical material.

Ongoing maintenance consists of keeping all pivot points and gears lubricated and clean of debris. Regular inspections should also include checking for rust on the frame and hardware. Such areas should be promptly scraped and painted, as rust may discolor and deteriorate fabric coverings. When awning hardware is properly repaired and maintained, its lifespan can be significantly extended.



These fiberglass "clamshell" awnings, although not as old as the 1930s building to which they were affixed, are important features that have acquired significance. They were retained when the building was recently rehabilitated. Photo: NPS files.

Exposure to the elements and the limited lifespan of even new acrylic fabrics mean the repair and replacement of the covering will probably occur more frequently than any work on the frame or hardware. The longevity of any fabric covering is largely dependent upon where it is installed and how it is cared for. Awnings beneath overhanging trees, for example, are vulnerable to sap, fruit, and animal droppings that contain acids, which can deteriorate and discolor fabrics. Branches, flags, banners or other objects brushing against an awning can abrade the awning fabric. With proper care acrylic fabrics on fixed awnings have a service life of eight to fifteen years of year-round exposure.

Regular cleaning will lengthen the lifespan of any awning. About once a month the covering should be hosed down with clean water. Choose a sunny day so that the fabric dries quickly and thoroughly. Keep retractable awnings extended until they dry completely. The awning underside can be kept clean by brushing it with a household broom. Regular cleaning helps prevent dirt from becoming embedded in the fabric. At least twice a year the awning should be gently scrubbed using a soft brush and a mild, natural soap (not a detergent) and rinsed with a garden hose. Every two or three years, professional cleaning is recommended. During this process, the covering is usually removed from the building, washed, and treated with an appropriate water repellant solution. Local awning companies may offer this service or the building owner can ship the covering to a specialty awning cleaning firm. Depending on the frame style and fabric, some awnings may be cleaned without being removed.

While most fixed awnings remain in place year round, they last longer if taken down at the end of the warm weather season. Preferably, coverings should be removed by an awning service that can clean them, restitch seams if necessary, and store them for the winter. Property owners removing awning coverings themselves need to store them in a dry place with good air circulation.

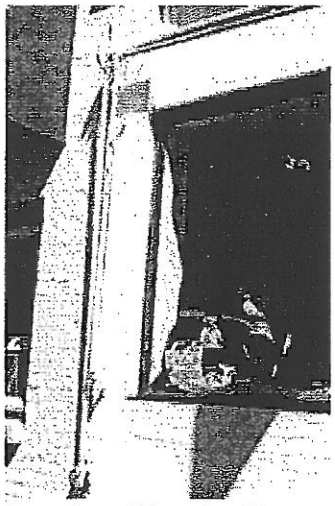
If a covering begins to sag between cleanings, the cause (an object on top stretching the material, loose laces, a damaged seam) must be addressed as soon as possible. When other maintenance or repair work is undertaken on the building, it is advisable to remove fixed awnings temporarily, as they are easily damaged or stained by materials dropped from above.

Although more durable than in times past, awning covers can still develop tears and holes caused by ladders, falling trees, and vandalism. Fabric nearing the end of its service life is most vulnerable to tearing along the seams. Though awning companies are usually called to undertake repair work, enterprising owners can undertake some work themselves. If the damage is minor, repair work may be done while the awning remains in place. Small holes or tears in acrylic coverings can be immediately treated with a hot needle or awl that will melt the frayed edges and prevent the damage from spreading. Patch kits are available that function like band-aids, keeping the torn edges together. These patches, glued or sewn to the fabric, let the awning color show through but do have a semi-gloss sheen to them. Significant damage requires removing the covering and, usually, sending it to a sewing shop. There, work may include inserting a patch, restitching seams, or replacing an entire fabric panel. If the awning is relatively new it is possible to obtain a good match between replacement and original material.

Installing New Awnings

Since awning fabrics are subject to weathering and deterioration and hardware is exposed to the elements, some awnings may be beyond repair. Depending on the circumstances, new awnings may replace deteriorated existing awnings in kind or be installed where awnings were once in place as seen in pictorial or physical documentation. In other instances, they may be newly installed where no awning previously existed, provided they are compatible with the historic building. Whatever the circumstances, it is important to select an appropriate awning shape, material, frame dimensions, signage (if any), and placement on the facade.

If the condition of a historically appropriate existing awning is beyond repair, it should be used as the basis for selecting a replacement. When a historic awning is missing, owners should first look for evidence of a previous awning installation. Evidence can be either physical or documentary. The existence of surviving hardware-rollers and arms, gearboxes, clamps and other fasteners-or signs that hardware was once in place, such as bolt holes or recessed roller boxes-are the most likely forms of physical evidence.

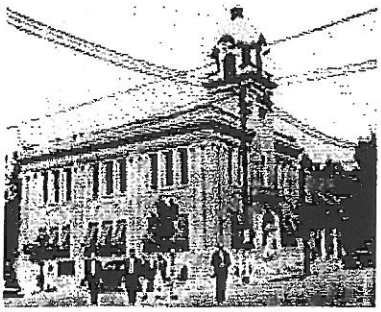


A gearbox, slide rod, roller, front bar, and extension arm reveal that this 19th century facade once featured a retractable awning. It is likely that with minor repairs the

Storefront remodeling projects often uncover concealed and disused awning hardware that can either be repaired or at least suggest what type of awning was formerly in place. This is especially true for awnings that had an operating rod, gearboxes, and perhaps motors concealed in recesses within the building wall. Protected from the elements, these items are likely to survive in repairable condition. Sometimes physical evidence of earlier awnings can be found in the basement or upper floors where hardware and even old coverings may have been stored after being removed from the facade. Clamps, fasteners, and bolt holes in an exterior

wall can reveal the position, type and dimensions of a missing awning installation. Fittings or other marks on the side of the entrance or windows, for example, suggest that a fixed-arm awning was present rather than a lateral-arm awning. Gearboxes point to a retractable rather than a fixed awning.

surviving hardware could again be made operable, recovered with a canvas or acrylic fabric, and reused to service the storefront. Photo: NPS files.



When the county clerk in Morgan County, West Virginia was looking to reduce glare in the courthouse offices she located a 1940s photo showing sets of awnings on the first floor. Photo: Frances Widmeyer and Debra Kesecker.

Historic photographs and drawings are a primary documentary resource used to determine an earlier awning configuration. Photographs have the added benefit of providing information about the covering, such as stripe pattern, valance type, and lettering. When old photographs indicate that the historic character of a building was defined in part by distinctive awnings, it is appropriate to install new awnings that replicate their appearance. If there is evidence that awnings were once present but no information about their color or signage is available, a color should be selected that is in keeping with the historic character of the building and district.

Where no awning currently exists, and there is no evidence of a past one, it may still be possible to add an awning to a historic building without altering distinctive features, damaging historic fabric or changing the building's historic character. A new awning should be compatible with the features and characteristics of a historic building, as well as with neighboring buildings, or the historic district, if applicable. Historic photographs of similar neighboring buildings with awnings, can also be helpful in choosing an appropriate installation. When selecting and installing a new awning, a number of other factors should be considered: shape, scale, massing, placement, signage, and color.

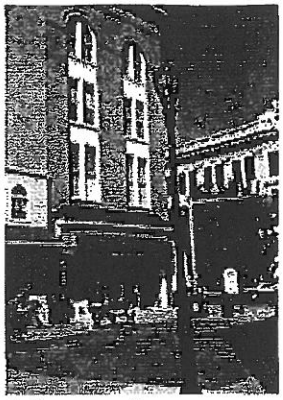
Using the historic photos as a guide (see photo, above, left), new awnings with a similar shape and stripe pattern were installed increasing the comfort of employees and protecting county records from direct sunlight. Photo: NPS files.

Simple shed-type awnings with acrylic or canvas coverings and free-hanging valances are appropriate for most historic residences featuring rectilinear openings. Photo: NPS files.

Shape. Traditionally, both residential and commercial awnings were triangular in section, usually with a valance hanging down the outside edge. Early examples of these "shed" awnings had simple frameworks consisting of pipes or planks angling out from the building facade and supported on posts. Early retractable versions continued this triangular form.

New awning shapes appeared in the later 19th century to accommodate the expanding variety of door and window configurations. Casement window awnings were box-like in shape to accommodate the outward swing of the vertical sash. Window openings with arched tops, such as those found on Italianate houses and commercial buildings, were often shaded by awnings with matching tops.

Generally, traditional shed awnings are appropriate for most historic window, door, and storefronts installations. It is preferable (and in some historic districts, required) that these awnings have free-hanging valances, the flapping bottom pieces so characteristic of historic awnings. Quarter-round awnings, modern mansard awnings, and other contemporary commercial designs with distended, fixed valances have no precedent in traditional awning design and are usually inappropriate for historic buildings.



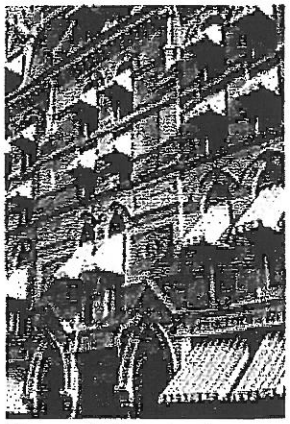
A dome awning was an inappropriate addition to this circa 1890s building. In order to qualify for historic tax credits the new vinyl awning was replaced with a shed awning with a canvas-like woven acrylic covering. Photo: NPS files.

Likewise, staple-in systems are not recommended for historic buildings. One of the distinctive features of a staple-in system is an exceptionally taut and wrinkle-free appearance; indeed, this is a chief appeal of the system when applied to new construction. Historic awnings, however, were either retractable or built with a covering laced onto a frame. Both forms had a fair amount of give in the fabric. Staple systems, especially those with long valances, usually present an appearance more suited to newer construction. While not recommended for installation on most historic buildings, they may be appropriate for infill construction within a historic district.

Single awnings should not be set over more than one door or window bay. A separate shed awning with a canvas or acrylic covering would be more appropriate over each of these openings. Photo: NPS files.

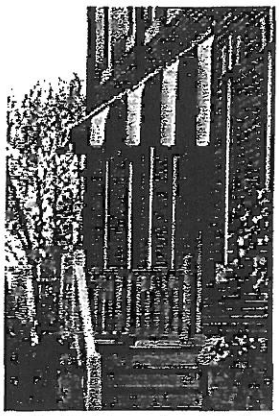
Scale, Massing, and Placement. Because their primary purpose was functional rather than decorative, awnings were traditionally installed only where necessary. Window awnings were most commonly found on building elevations with southern exposures in the northern areas of the United States and on elevations with both northern and southern exposures in the southern United States. They were also found on east and west elevations, and sometimes just on selective windows. Retractable awnings were originally more common in northern climates where awnings required additional protection from extreme weather conditions.

The design of a particular commercial building influenced the placement of its awnings. Some storefronts with traditional glass transoms had the awning placed below the transom, others had the awning installed above the transom. On both commercial and residential buildings, awnings were only wide enough to cover the window openings that they sheltered; a single awning rarely covered two or more bays. On storefronts, they were not higher up on the building façade than was necessary to shade the entrance and display window. Thus, it is important when installing new awnings on historic buildings to ensure that the covering not obscure the building's distinctive architectural features.



These window awnings today match what would have appeared in the 19th century. The fabric is slightly loose on the frames, the valances hang

Also, new awning hardware should not be installed in a way that damages historic materials. Clamps and fasteners used to attach awning frames should penetrate mortar joints rather than brick or other masonry surfaces. If new



This postwar aluminum awning does not contribute to the character of this 19th century residence and could be replaced during a rehabilitation project with a fabric shed awning more in keeping with the building's age and appearance. Photo: NPS files.

backboards and rollers are installed, care needs to be taken not to damage cornices or transoms. Finally, awning placement, size, and shape must be compatible with the historic character of the building.

freely, each window bay has its own awning, and the awning frames are set within the openings. Photo: Mike Jackson.

Material. Historically, awnings were covered with canvas that was either solid in color or painted with stripes. During the second half of the twentieth century canvas fell out of favor and was superceded by vinyl and other synthetic textiles. For various reasons - particularly its reflectivity and texture-vinyl is generally an unsuitable material for awnings on historic buildings. Many historic review commissions note the inappropriateness of vinyl in their guidelines and call for the use of canvas, canvas blends, or acrylics that resemble canvas.

Weather-resistant acrylic fabrics such as solution-dyed acrylic and acrylic-coated polyester-cotton approximate the historic look of canvas coverings, yet afford a new level of durability, color-fastness, and ease of use. Quality poly-cotton coverings may be more appropriate in some cases because, like traditional awnings, the colors and stripes are painted directly on the upper surface, while the underside remains a pearl gray color.

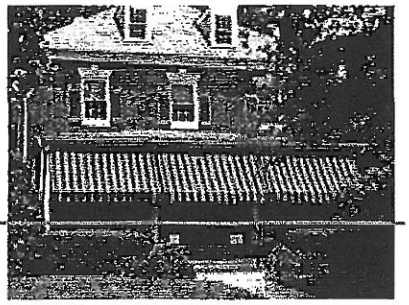
Signage. In addition to sheltering shoppers and merchandise, and reducing glare and temperatures, awnings on commercial buildings offer valuable advertising space. Photographs from the mid-19th century show a wide range of lettering and logos-business names, types of trade (hosiery shop, telegraph house), street numbers-on the sloped coverings and side flaps of awnings. The most common placement of a shop proprietor's business name or service was on the valance hanging down from the awning edge. The front valance provided a flat surface visible whether the awning was retracted against the building wall or fully extended. Many establishments, however, left their awnings unadorned without any lettering.

Appropriate lettering, as on this roller awning valance, can function as distinctive signage without detracting from the historic character of the building. Photo: NPS files.

Today creating large lettered signs on a new awning as part of a rehabilitation project requires special care and is not appropriate in all cases. Used long before any local signage control, historic examples of such lettering often reflected the character of a district, with more upscale retail areas, for example, being more reserved than wholesale districts. Contemporary awning lettering can add visual interest and commercial identity but should be designed in keeping with the historic character of a building and its historic district.

Color. As in the past, variety in awning color is an appropriate characteristic when reintroducing awnings in historic districts. Since the 19th century, awnings have featured a range of different stripe patterns and an extensive color palette. These lively, even whimsical, designs embellished building facades like a

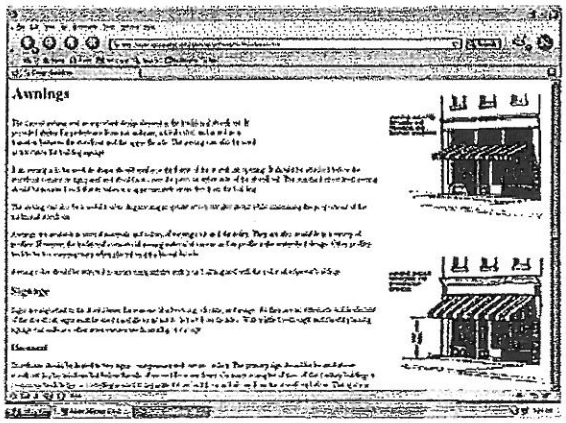
necktie or scarf does a suit. The vibrancy they lent to city streets and neighborhoods is part of the history of these environments and similar results can be achieved today as well.



The green and burgundy stripes that decorate these porch awnings complement the matching shutters and brick facade. Photo:NPS files.

Awning and Canopy Regulation

Because commercial awnings often extend into the public right-of-way, municipal building departments usually regulate their use. Regulations specify construction type (materials and dimensions of framing members, the use of flame retardant fabrics), minimum height above the sidewalk (usually between seven and ten feet), minimum distance between the projecting edge and the curb (usually between one and two feet), and maximum projection from the building wall. Such regulations are meant to ensure that awnings are securely built, do not pose a threat to pedestrians, and are not at risk from widely-loaded trucks. Lettering, color, and the relationship to adjacent awning designs may also be subject to building department review and approval.



Local historic district commissions and neighborhood improvement associations often publish awning guidance on their websites. Image: Ripon Main Street, Inc.

Awning work on buildings located in historic districts will likely be reviewed by a historic district commission (HDC). HDCs may also review grant applications and recommend approvals for facade improvement programs, where such programs are in place. Though commissions look at projects on a case-by-case basis, many have established guidelines that address general issues and local concerns relating to awnings and canopies.

Often, local design guidelines are modeled upon *The Secretary of the Interior's Standards and Guidelines for Rehabilitating Historic Buildings*. These standards set forth principles meant to ensure that new elements are added sensitively, do not damage historic fabric, and are compatible with the historic character of the building.

Summary

Like all exterior building features that are subjected to snow, rain, sunlight, wind, and pollution-awnings need regular attention. Covered even with modern materials, they require maintenance, repair, and eventually replacement. Awnings are often the first feature to be altered when historic buildings change owners or uses. They often have a significant role in contributing to the historic character of a building. It is important that owners, architects, engineers, historians, and others consider this when planning work on a historic building.

Awnings and the Sun

Although their effectiveness can be affected by many factors including location, climate, window size, and glass type, the energy efficiency advantages of awnings are clear. According to the Department of Energy, awnings can reduce heat gain up to 65% in south facing windows and up to 77% on windows facing east. Awnings reduce stress on existing air conditioning systems, and make it possible to install new HVAC systems with smaller capacity, thus saving purchasing and operating costs. Air conditioners need to work less hard, less often. When used with air conditioners, awnings can lower the cost of cooling a building by up to 25%.*

Awnings offer a number of benefits to owners of historic buildings. Awnings can make unnecessary a host of other alterations made to buildings in the name of energy efficiency. Awnings provide nearly comparable glare reduction and reduced heat-gain as tinted windows or window films, yet are in keeping with the historic appearance of a building facade. They help protect historic windows and storefronts, and allow windows to remain open, and cool air to circulate, even during inclement weather. In warm climates, they reduce the need to replace existing windows with new units with insulating glass for the purpose of energy conservation.

Funding Awning and Canopy Work

In some commercial districts, local "main street" associations, chambers of commerce, or business improvement district offices offer assistance for awning rehabilitation projects. Such organizations may sponsor grant programs or low-interest loan programs with funds that can be used for awning work. These initiatives, often bundled with facade improvement and signage programs, enhance the visual character of a street or neighborhood, encourage conformance with guidelines, and offset what is in some cases the higher cost of a historically appropriate installation. When a building is located within a historic district, additional grants, loans and tax incentives may exist. The availability of funding assistance, in these cases, is usually contingent upon completing rehabilitation work in keeping with established preservation practices.

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Front cover image: Anchor Industries, Inc.

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WEB SITES OF INTEREST

AASHTO Center for Environmental Excellence :	www.environment.transportation.org
Advisory Council:	www.achp.gov
American Cultural Resources Association:	www.acra-crm.org
American Institute of Architects:	www.aia.org
American Institute for Conservation of Historic and Artistic Works:	http://aic.stanford.edu
Government Printing Office (Federal Register notices):	www.access.gpo.gov
HABS/HAER:	http://lcweb2.loc.gov/ammem/hhhtml
League of Historic American Theaters:	www.lhat.org
Library of Congress (current bills and reports):	http://thomas.loc.gov
Michigan Land Use Institute:	www.mlui.org
National Association of Tribal Historic Preservation Officers:	www.nathpo.org
National Center for Preservation Technology and Training:	www.ncptt.nps.gov
National Council for Preservation Education:	www.ncpe.us
National Preservation Conference:	www.nthpconference.org
National Register of Historic Places:	www.cr.nps.gov/nr
National Transportation Enhancements Clearinghouse:	www.enhancements.org

National Trust for Historic Preservation:	www.nthp.org
National Park Service Cultural Programs:	http://www.nps.gov/history/about.htm
Partners in Tourism:	www.culturalheritagetourism.org
Planetizen Planning and Development Network:	www.planetizen.com
Preservation Action:	www.preservationaction.org
Reconnecting America, Center for Transit Oriented Development:	www.reconnectingamerica.org
Resources and Research Tools:	www.preservationdirectory.com
Scenic America:	www.scenic.org
Smart Growth America:	www.smartgrowthamerica.org
Smart Growth Online:	www.webmaster@smartgrowth.org
Society for American Archaeology:	www.saa.org
Society for Commercial Archeology:	www.sca-roadside.org
Sprawl Watch Clearinghouse:	www.sprawlwatch.org

SECTION 4:

Historic Review

Chapter 2.6.300 -- Historic Preservation (HP) Overlay District

2.6.300 Historic Preservation Overlay District – Purpose

The Historic Preservation Overlay District is intended to protect and encourage the continued use of historic resources. This overlay district implements the Historic Sites and Structures element of the Comprehensive Plan. It includes criteria and procedures for Historic Landmark designation, development standards for new construction within historic districts or next to historic landmarks, restrictions on demolition of historic buildings, and standards for alterations or additions to historic landmarks.

2.6.310 Historic Preservation Overlay District – Applicability

A. **Applicability.** This chapter is applicable to all historic landmarks and properties directly adjacent to historic landmarks.

1. "Historic landmarks" are defined as a "historic resource that has been designated under the procedures described in this chapter and is therefore subject to its rules and regulations." (See Chapter 1.3 for definitions relating to historic landmarks.) Historic Landmarks may include neighborhoods, buildings, a portion of a building, sites, trees, statues, signs, or other objects or spaces that the City or the Keeper of the National Register of Historic Places has designated or listed for their special historic, cultural, archaeological, or architectural merit. Any property listed on the National Register of Historic Places individually or in a district is immediately designated as a historic landmark under this chapter. All properties designated as historic landmarks shall be shown as being part of the HP Historic Preservation Overlay District on the Cottage Grove Zoning Map.

2. Properties directly adjacent to an individually listed historic landmark or listed as "non-contributing" within a designated National Register Historic District are subject to the design review criteria of Sections 2.6.340 Development Standards, 2.6.360 New Construction & Relocation on properties adjacent to historic landmarks, and 2.6.380 Signs only.

B. **Standards Supersede.** The standards and regulations in this chapter are in addition to all base zone district standards and regulations and, in case of any conflicts or for other preservation-related reasons, shall supersede base zone district standards and regulations.

2.6.320 Historic Preservation Overlay District – Historic Landmark Designation

A. **Methods of Designation.** There are four ways for a historic resource to become designated by the HP Overlay District as a local historic landmark:

1. When any historic resource within the jurisdiction of the City is officially entered into the National Register of Historic Places, the resource shall automatically become designated

by HP overlay zoning as a local historic landmark; or

2. A group or person may nominate the historic resource for local historic landmark designation through a Type III Historic Preservation application to be processed through the Historic Landmark Commission; or

3. The Historic Landmark Commission may recommend local historic resources for historic landmark designation following the procedures set forth in the Historic Landmark Ordinance; or

4. The Planning Commission may recommend historic resources for local historic landmark designation following the procedures set forth in the Historic Landmark Ordinance.

B. Requirements for Designation. To be designated as a local historic landmark under subsection 2 above, the applicant will have to show compliance with the following:

1. Owner Support. Any group or person may nominate a resource for local historic landmark designation; however, all nominations must include written proof that the owner or a majority of the owners of the historic resource support such designation.

2. Review criteria. The applicant must show how the nominated historic resource merits honor and recognition as a historic landmark that has significance to the City under one or more of the following criteria:

   a. Its association with historic or famous events that have made a significant contribution to the broad patterns of local, state, or national history; or

   b. Its association with the lives of persons, or groups of people, significant in local, state, or national history; or

   c. Its architectural design or method of construction, which portrays and/or embodies one or more of the following:

      1) Distinctive architectural type, style or character from a period in the past.

      2) Architectural merit by reason of its use of materials, design, details, or craftsmanship.

      3) The work of a builder or architect whose work has influenced the development of the community.

   d. Its relationship to the cultural, social, political and/or economic history of the community.

   e. Its identification as a resource that represents an aesthetic or educational feature of the community.

f. It is likely to yield important information about pre-history or the historic past of the community.

C. Duration of Designation. Once adopted, the HP Historic Preservation Overlay District designation remains for the life of the resource. Demolitions, exterior alterations, additions or new construction on a HP designated site(s) shall be subject to the standards of this chapter.

2.6.330 Historic Preservation Overlay District – Allowed Uses

A. Allowed Uses from Base Zoning District. Allowed uses within the Historic Preservation Overlay District are based on those permitted by the "base zoning district" (see Chapters 2.2, 2.3, 2.4, and 2.5).

B. Special HP Conditional Uses. In cases where the base zoning district does not list a use as permitted for a historic landmark property, the owners or their assigns may apply for a special HP conditional use permit to allow such use under the following standards:

1. The use is such that it will otherwise enable the continued preservation of the landmark by allowing for a more economical return for the property.

2. The use will not interfere with the ability of the landmark to meet the criteria for alterations listed in this Chapter under Section 2.6.350.

3. The use will not adversely affect the character of the neighborhood and functions of other properties in the area.

C. Nonconforming uses of historic landmarks. Nonconforming status shall not be a factor for consideration in the nomination or designation of a historic landmark or its subsequent treatment. Any historic landmark that is not in conformance with base zoning district standards and/or regulation shall be exempt from Chapter 5.2 Nonconforming Uses and Developments.

2.6.340 Historic Preservation Overlay District – Development Standards

A. Base Zone standards. The development standards of the base zone (such as setbacks, lot coverage, building height, off-street parking requirements, etc.) apply to all new construction, additions or alterations within the Historic Preservation Overlay District. They shall not apply to any repair, replacement, reconstruction or restoration of historically significant or accurate features.

B. Altered standards. Dimensional development standards may be altered for new construction, additions or alterations upon or adjacent to a historic landmark through a Type III Historic Alteration application process if the approval body finds that the alteration would enable such development to more successfully address the review criteria of this chapter.

C. **Design Guidelines.** At the request of the Historic Landmarks Commission, affected property owners, the Community Development Director or City Council, the Community Development Department may work with property owners within designated historic districts to draft and adopt design guidelines. Design guidelines will provide guidance for compliance with the standards in 2.6.350-2.6.390. Design Guidelines shall be adopted through a Type IV process as an appendix to Chapter 14 Development Code.

2.6.350 Historic Preservation Overlay District – Alterations of historic landmarks

A. **Purpose.** *The Secretary of the Interior's Standards for the Treatment of Historic Properties* establish minimum requirements for the alteration of historic landmarks. These standards are intended to preserve the distinguishing features of historic resources while allowing needed repairs, alterations and expansions. These requirements, as stated below, may be supplemented by adopted Design Guidelines.

B. **Applicability.** Section 2.6.350 applies to all alterations to historic landmarks.

1. Minor Alterations. Minor alterations such as replacing siding or windows, re-roofing with different materials than existing, remodeling porches, minor additions or exterior alterations, murals, solar panels, etc. shall be processed through a Type II Historic Alteration review;

2. Major Remodels, Additions and New Construction. Type III permits required. Major Remodels, additions or new construction shall be processed through a Type III Historic Alteration review. The Historic Landmark Commission shall process all Type III applications required under Section 2.6.350 following procedures established in Section 4.1.400.

3. Exempt Activities. The following activities are not exclusive but are illustrative of activities exempt from this section: "in-kind" repair/minor replacement of existing features where the material, dimension and finish match (examples include repair of wood siding or wood windows, roof repair, gutter installation, dryrot repair, etc.), painting of previously painted exterior surfaces, interior residential remodels, landscaping, construction of fences under 6' in height, and construction of accessory buildings exempt from building permits under the current adopted Building Code. Note: Exemption from Section 2.6.350 does not exempt any activity from other Development Code or Building/Specialty Code requirements.

4. The Community Development Director shall determine the application type.

C. **Standards.** All projects that are subject to 2.6.310 shall meet all of the standards in subsections 1-9 below. Adopted Design Guidelines provide guidance for compliance to these standards for all types of alterations to historic landmarks within designated historic districts.

1. The distinguishing historic qualities or character shall not be destroyed. Removal or alteration of historic material, distinctive features and/or spatial relationships shall be

avoided whenever possible.

2. All landmarks shall be recognized as products of their own time. Alterations that have no historic basis and which create a false sense of historical development or add conjectural features or elements shall be avoided.

3. Changes that have acquired historic significance in their own right may be retained and preserved.

4. Distinctive materials, features, finishes and construction techniques or examples of craftsman shall be preserved. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and, where possible, materials. Replacement of missing features shall be substantiated by documentary and physical evidence.

5. Cleaning and maintenance shall be undertaken using the gentlest means possible. Treatments that cause damage to historic materials shall not be used.

6. New additions, exterior alterations, and adjacent or related new construction shall not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and shall be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

7. New additions and adjacent or related new construction shall be undertaken in such a manner that, if removed in the future, the essential form and integrity of the landmark and its environment would be unimpaired.

8. Archeological resources shall be protected and preserved in place, or if necessarily disturbed, mitigation measures shall be undertaken.

9. *The Secretary of the Interior's Standards for the Treatment of Historic Properties 1992* shall serve as supplemental guidelines for alteration projects, as appropriate.

D. State Historic Preservation Office Review. Review and approval of alteration applications by the City does not substitute or remove requirements for review by the State Historic Preservation Office when the historic landmark is subject to any state or federal programs.

2.6.360 Historic Preservation Overlay District – New construction and relocations on properties adjacent to historic landmarks

A. Purpose. The design and layout of new construction or relocations on properties adjacent to historic landmarks or on properties adjacent to those identified as conforming within a designated historic district can have a significant impact upon the integrity of the historic resource or district and hence shall be subject to review under this chapter.

B. Applicability. All new construction and relocations on properties directly adjacent to historic landmarks or on properties identified as conforming within a designated historic district shall be subject to design review through a Type III Historic Alteration permit.

C. Standards. In order to achieve the purpose of this Chapter and honor, respect and support the historic preservation effort of owners of historic landmarks, the following design criteria, in addition to any other applicable design review criteria in Section 2.2.140 or in adopted *Design Guidelines*, shall apply to proposed activities on such properties:

1. New construction or relocations on properties adjacent to historic landmarks shall be compatible with the overall character of the landmark in:

   a. Appearance of exterior materials, such as roofing and siding;

   b. Exterior features, such as roof pitch, eaves, window shapes, types and arrangements, doorways, porches, etc.;

   c. Size, height, bulk, mass, scale, placement, arrangement of spaces and overall proportions.

2. New construction or relocations within designated historic districts should follow applicable adopted Design Guidelines.

2.6.370 Historic Preservation Overlay District – Demolition or Relocation of historic landmarks

A. Purpose. The purpose of this section is to encourage the retention of historic landmarks on their original sites. Demolition or relocation of historic landmarks erodes the historic fabric of the City of Cottage Grove and shall be discouraged unless adverse circumstances require such actions. This standard gives the approval body the ability to delay the demolition or relocation of a building or structure to allow community members or the City time to find an alterative solution to the demolition or relocation of the structure.

B. Applicability. Section 2.6.360 applies to all historic landmarks and all features of historic landmarks that contribute to the historic character of the landmark, including historic buildings, historic accessory buildings, and significant historic signage. No demolition permits shall be issued for the removal of any of these features from a contributing historic landmark without approval of a Type III Historic Alteration permit.

C. Review Criteria. In order to approve an application for the demolition or relocation of a designated historic landmark or feature thereof, the approval body shall find that:

1. No prudent and feasible alternative exists; or

2. The designated property is deteriorated beyond repair; or

3. The value to the community of the proposed use of the property outweighs the value of retaining the designated historic landmark.

D. Review Procedure.

1. The Historic Landmark Commission shall review and make a recommendation to the Planning Commission based on the review criteria above in accordance with the procedures established in the Historic Landmark Ordinance.

2. The Planning Commission shall hold a public hearing on the application in accordance with the Type III application process. Upon the close of the hearing, the Commission may take any combination of the following actions:

   a. Approve the issuance of a permit, when it is found that the application is in compliance with all other codes, ordinances and policies of the City.

   b. Stay the issuance of a permit for a period of up to 90 days, when it is found that in the interest of preserving historic values, the landmark should not be demolished.

   c. Require the photographic, video, or drawn recordation of the property to be demolished.

   d. Require the salvage and curation of significant elements.

3. At the end of the stay of issuance by the Planning Commission, the City Council may, at the request of the Commission, or on its own motion, continue the stay for an additional period not to exceed 210 days from the date of application, when it finds that:

   a. There is a program or project underway that could result in public or private acquisition of the landmark for preservation; and

   b. There are reasonable grounds to believe such program or project will meet with success.

4. A demolition permit shall be issued at the end of a stay of issuance ordered by the City Council when it is found that:

   a. The preservation project or program has not been successful;

   b. The application for demolition has not been withdrawn; and

   c. The application complies with any other relevant codes and ordinances of the City.

5. During any such stay of issuance as listed above, no demolition permit shall be issued and no person shall demolish the designated landmark unless the stay of issuance has

been successfully appealed and a directive to issue a demolition permit has been ordered.

2.6.380 Historic Preservation Overlay District – Signs

A. Applicability. Sign permits for historic landmarks shall be required and shall be subject to Community Development Director approval. A Type II application process shall be used for sign permit review for all signs in the Downtown Historic District and/or on a historic landmark property. The Community Development Director may at his discretion process a sign permit for a significant building and/or sign as a Type III application. The Historic Landmark Commission shall comment on all sign permits.

B. Sign Standards. All signs placed upon historic landmarks shall conform to the sign regulations of the base zoning district and Chapter 3.8 signs of this title, except that sign type, design and materials shall be compatible with the historical character of the landmark and/or comparable signs that previously existed on the landmark itself during its historic period of significance. All signs shall be applied to the landmark in a manner that minimizes harm to its historic material to the greatest extent possible. *The City of Cottage Grove Downtown Historic Design Guidelines* shall be used to guide the design of signs in the Downtown Historic District.

C. Historically Significant Signs. Any sign designated as a historic landmark by virtue of its own merit under one or more of the criteria listed in this Chapter is exempt from any sign and/or nonconforming lot and use regulations of this Title, with the exception of the criteria for alterations listed in this Chapter under Section 2.6.350. The Community Development Department may process and approve, approve with conditions, or deny application for designation of historic signs at the request of the owner under a Type II application process. The Historic Landmark Commission shall comment on all applications for historic sign designation.

2.6.390 Historic Preservation Overlay District – Building code considerations

Alterations that require a building permit shall conform to the requirements of the State Structural Specialty Code, except that, upon review and authorization of the City Building Official, alternative standards, such as those found in the Uniform Code for Building Conservation, may be applied when their application shall:

1. Promote the objectives and standards of the criteria for alterations of this chapter; and

2. Result in conditions that are no more hazardous to life, safety, fire safety and sanitation than those in existence prior to alteration.

SECTION 5:

Downtown Historic District Guidelines

City of Cottage Grove
Downtown Historic District Design Guidelines

City of Cottage Grove
Downtown Historic Design Guidelines

Prepared by

Community Development Department
City of Cottage Grove, Oregon

May 3, 2007

Adopted by City Council on November 19, 2007

Table of Contents

Introduction

The City of Cottage Grove Downtown Historic District Design Guidelines give property and businesses owners in the historic district suggestions and guidance for restoring, rehabilitating, and maintaining their historic properties. It is the intent of these guidelines to enrich the understanding of our historic buildings, encourage respectful rehabilitation, and aid in the understanding of the resources' role in the history and development of the City of Cottage Grove, thereby encouraging continuity. This approach advocates the retention of unique features, repair of original details, and when necessary, replacement with in-kind materials similar to the original. The retention of these materials and details helps to define the character and atmosphere of the original downtown district.

These guidelines are intended to be advisory, not rigid or inflexible, in providing suggestions for sensitive ways in which to maintain, rehabilitate, and utilize the historic resources within downtown Cottage Grove. Retention and recovery of significant architectural features, appropriate use of materials, and sensitive new design can help preserve and improve the integrity of individual historic buildings for many years to come.

The City of Cottage Grove Downtown Historic District Design Guidelines are based on the Secretary of the Interior's Standards for Rehabilitation. These standards make recommendations that can be applied to many different resources types, including buildings, sites, structures, objects, and districts. Additional consideration may affect preservation or rehabilitation projects, including land use codes and building codes. Before undertaking any work on historic properties in Cottage Grove, the local zoning ordinance, Chapter 2.6.300-345 of the Development Code of the City of Cottage Grove, Oregon, as it applies to historic landmarks, should be reviewed and followed. The entire text of Chapter 2.6.300-345 is included in the appendix of these design guidelines. The City of Cottage Grove has a specific review process for alterations, additions, and demolition of historic properties. Please call the Community Development Department for more information at 942-3340.

Historic properties in Cottage Grove and the Downtown Historic District may be eligible for special benefits if qualifications are met. These benefits may include the State of Oregon Special Assessment Program (a tax benefits program for properties that qualify), and the Federal Historic Preservation Historic Tax Incentives (for income- producing properties that are either listed on or eligible for listing on the National Register of Historic Places). Information on tax incentive programs are included in Chapter 6 of this document.

This document includes sections on the major aspects of historic review and design for a downtown commercial district. Written guidelines and illustrations are provided to assist in determining appropriate rehabilitation methods. It explains the process and principles for historic preservation, and provides information and direction for appropriate treatment of historic properties. The glossary and appendices provide further specifics.

CHAPTER 1

Cottage Grove Historic Downtown District History

Prior to 1880, there were apparently no commercial buildings on the east side of the River. The only public building east of the River was the Union Church/Good Templar Hall, a two-story wooden structure, which was near the east bank of the Coast Fork along the south side of the wagon road, near the site where the present day Methodist Church now stands. The Hall was built on a donated lot around 1873. The older Ira Conner residence and the Lurch House-only recently constructed on the northwest corner of the Shields claim-were perhaps the only houses on the south side of East Main in 1880. Along the north side of the road in 1880, between the river and the railroad tracks, were the homes of Mrs. James McFarland, O.F. Knox, G. Van Schoiack, Joe Mann, and the Griffins.

In 1880, Ben and Aaron Lurch lost their store on the West Side to fire, and the merchants decided to build a new establishment next to their new home on the east side of the river. The Lurch Store, erected at what is now the southwest corner of 5th and Main, next door to their new residence, was the first business to locate east of the river. By the time the Lurch store was constructed, a wooden plank sidewalk was being laid from the bridge toward the railroad depot (which was built in 1879) along East Main.

In 1880, just after the Lurch store was constructed, a new schoolhouse was built on the east side of the river. The move of these two important structures to the east started the relocation and reformation of the focus of Cottage Grove's commercial district to where it is today. Other early buildings sprang up after the Lurch move on the east side of the river near the railroad platform; most were tin-clad warehouses. A telegraph office was built at the depot about 1885 although a line had been run prior to the construction to a store on the west side from Latham. Other early structures included a combined hotel and restaurant, saloons, and, in 1884, the Fashion Livery Stable. Slowly over time, other wooden one- and two- story false front commercial buildings sprang up along the street and began to cover the newly created lots between the river and the railroad.

In 1891 the original charter of 1887 that incorporated the west and east side of Cottage Grove as a city was withdrawn. The State Legislature passed a new law reestablishing the City of Cottage Grove with several new areas of development. Shortly after, in 1893, the East and West sides of the City split. The separate incorporation of the City of East Cottage Grove was entered into State Law in February 1893. In 1895, the East Siders again went to Legislature and won approval to rename their separate city Lemati.

Each town developed its own laws and separate fire departments. By 1895, Lemati had installed their own superior iron pipe water system, and had built a separate city hall building just off Main at 6th Street. The East Siders bought a street grader in 1894, and graveled East Main Street in 1895. Many lots in the McFarland and Shields additions were subdivided, and wooden one- and two-story false front commercial buildings sprang

up. Between 1890 and 1900, the new Main Street in Lemati inexorably eclipsed the old Main Street along River Road, and most businesses on the west side slowly but surely relocated east across the river. By 1899, when Lemati and West Cottage Grove finally reunited as the City of Cottage Grove, Oregon, the first brick buildings along Main Street had already been erected and occupied, showing the great prosperity that Lemati held during the 1890s and the strong foundation it set in the East Main commercial district.

Development continued rapidly on East Main through the early part of the twentieth century. Today, we see the remnants of this time in the brick buildings along Main, especially on the 500 and 600 blocks. The next great wave of development that occurred in downtown was brought on by the motor age. Prior to 1920, the Pacific Highway passed through Cottage Grove along River Road. When the highway was rerouted the first time down 5th Street to Main, people were brought through Main Street and away from the older west side businesses.

Bringing the highway to the heart of Cottage Grove sparked commercial industries, aimed at motorists, to build within the downtown. Much of the motor age development still remains within the Historic District, and helps define the borders of the district. In 1940 the highway was again rerouted to its current location along the west edge of the railroad.

Little has changed in the downtown district since 1940. However, various circumstances have changed the look of the district, such as: a series of fires between the 1970s and 1990 devastated or destroyed some of the downtown buildings; some old primary structures were demolished in the early 1970s to make way for the new City Hall near the river; and the remodeling of facades has remained an ongoing process, and was very prevalent in the 1960s. Despite the many changes, the Cottage Grove Downtown District retains much of it historical integrity while it continues its traditional function as the center of civic life in the community.

For more historic information on the City of Cottage Grove please reference the *Historic Downtown Cottage Grove: 1879-1942*, a historical context and statement of significance created in by the Cottage Grove Historical Society in 1994.

Looking from the corner 5th & Main in the late 1920's. Both buildings on the right and left edge of the photo are now one-story structures.

Cottage Grove Historical Timeline

The Cottage Grove Historical Timeline highlights important development, commerce, and community events that have changed the face of the city. Some events are specifically important to the downtown district and can help one understand its various phases of development.

1848: First settlers James Chapin and Richard Robinson build on their Donation Land Claims near Cottage Grove.
1851: First land claims in Cottage Grove—J. Cochran and William Shields.
1857: First lumber mill on Silk Creek built by Hazelton. First store built by Charles Samuels.
1862: East Coast Fork of the Willamette River name changed to Row River due to feuds that took place there.
1863: Gold discovered in Bohemia Mountains.
1867: Post office moved to Cottage Grove from Creswell.
1869: The first Cottage Grove Hotel built; it burns in 1906.
1872: Oregon Central Railroad arrives in Cottage Grove, giving birth to sawmills and logging camps.
1873: Good Templer's Lodge built on Main Street.
1874: Cottage Grove Grange #75 organized.
1880: First school established on Second and Adams Streets. J.C. Stouffer sets shingle and planning mill on the north bank of Silk Creek.
1881: Telegraph arrives in Cottage Grove.
1887: First Cottage Grove City Council meeting.

1889: Telephone comes to Cottage Grove.
1890: Population soars from 800 to 3,000 due to mining boom. Oregon Hotel and Sherwood Hotel built.
1892: First City water flows in wooden pipes from Mt. David Reservoir.
1893: The town "Lemati" secedes from Cottage Grove, and stays so until 1899.
1897: Catholic Church dedicated.
1898: Booth Kelly Lumber Company formed. Cottage Grove post office moved on March 28 to east side of the river. May 10th the post office's name is restored to Cottage Grove Post Office after a short stint as the Lemati Post Office.
1899: Cottage Grove, reunited, is again recognized as a incorporated city in Oregon.
1902: Oregon Southern Railroad is formed to service the mining district (the Old Slow and Easy).
1904: Levi Geer opened the Calapooya Mineral Springs in London.
1905: Chambers Lumber Mill opens.
1906: Local logs shipped to San Francisco to help them rebuild after the earthquake and fire.
1908: The Electric Arcade Theater opens in the current building on the north side of intersection of 5th and Main.
1909: Pacific Highway and Main Street paved. First automobile comes to the city.
1912: Clinton and John Spriggs build blacksmith shop at the present day Cascade Home Center on 6th and Washington.
1913: The Masonic Temple addition was constructed on top of the old Eakin & Bristow building.
1914: The McFarland Cemetery deeded to Lane County.
1916: Bohemia Lumber Company gets it start.
1917: The Hotel Bartell opens.
1918: Cottage Grove Cannery opens.
1919: The Galloping Goose Trolley offers Row River passenger service.
1925: The Chambers Railroad Bridge built across the Coast Fork River.
1931: Safeway and J.C. Penney open new stores. Safeway moved off of Main Street in the 1950s, then out of the downtown district in the 1970s, but still has a store within Cottage Grove. There is no longer a J.C.Penney.
1932: The first Bohemia Days celebration.
1933: Mt. David oil derrick crashes, recalling questionable 1923 scam.
1940-1943: Cottage Grove Dam and lake constructed, flooding settlement of Hebron.
1941-1943: Dorena Dam and lake constructed, flooding town of Dorena.
1941: Old Westside School razed.
1958: Cottage Grove Museum created.
1969: Cottage Grove named "All America City" by Look Magazine.
1976: The new City Hall, at 400 E. Main, is finished and dedicated.
1977: Movie "Animal House" filmed in downtown.
1979: Gateway Plaza shopping center opens.
1980's: Timber industry collapses in Cottage Grove.
1993: Cottage Grove downtown is listed on The National Register of Historic Places.
1996: Wal-Mart opens on Row River Road.
2004: Cottage Grove is again named "All America City" by the National Civic League.

Cottage Grove's Other Historic Resources

Collections of other historically significant structures are scattered throughout the City of Cottage Grove, but are predominately in the Northwest Neighborhood, Pine Woods Neighborhood, and along River Road. For a more complete listing of historic buildings and neighborhoods outside of downtown reference the Cottage Grove Context Statement.

The Pine Woods Neighborhood, just south of Main Street, has a large collection of historic homes along Washington Avenue and Adams Avenue.

CHAPTER 2

Historic Preservation Principles

There are four distinctly different, yet related, approaches to the treatment of historic properties. Choosing the method of treatment that is most appropriate for a property is important. The choice depends on a variety of factors, including the property's historical significance, physical condition, proposed use, and intended interpretation.

Preservation is the maintenance and repair of existing historic materials, and the conscious retention of the property's form as it has evolved over time.

- The focus should be on maintenance and repair of historic materials and features, rather then extensive replacement and new construction.
- New exterior additions are not part of this treatment.
- Sensitive upgrading of mechanical, electrical, and plumbing systems, and other work required by code is appropriate

Restoration is the process of returning a historic property to its appearance in a particular time in the property's history. The process requires the removal of evidence of other time periods and does not illustrate the evolution of the building over time.

- Limited and sensitive upgrading of mechanical systems and other code-required work to make a property functional is appropriate.
- The property's significance to a particular period of time should outweigh the potential loss of materials, features, spaces, and finishes that characterize other periods.
- Substantial physical and documentary evidence must exist for accurate restoration work.
- Contemporary alterations and additions are not part of this treatment.

Rehabilitation is the treatment used when there is a need to alter or add to a historic property to meet needs of continuing or changing use while retaining the property's historical, cultural, and/or architectural values.

- Only those features, which are deteriorated beyond repair, may be replaced; repair all that is possible.
- Alterations and additions to the property may be necessary for new or continued use and should be planned according to the following guidelines.
- The treatment should be used only when the depiction of a particular period in the property's history is not appropriate.

Reconstruction recreates vanished or deteriorated portions of a property for interpretive use.

- There must be significant historical documentation to be able to accurately reconstruct portions of the property.
- This treatment is appropriate when no other property exists with the same associative value.

Secretary of the Interior's Standards for Rehabilitation

The Secretary of the Interior's Standards for Rehabilitation are ten basic principles created to help preserve the distinctive character of a historic building and its site, while allowing for reasonable change to meet new needs.

The Standards (36 CFR Part 67) apply to historic buildings of all periods, styles, types, materials, and sizes. They apply to both the exterior and interior of historic buildings. The Standards also encompass related landscape features as well as attached, adjacent, or new construction.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.

2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.

3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.

4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.

5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.

6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.

7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

8. Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be

differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

General Design Guidelines for Cottage Grove Downtown Historic District

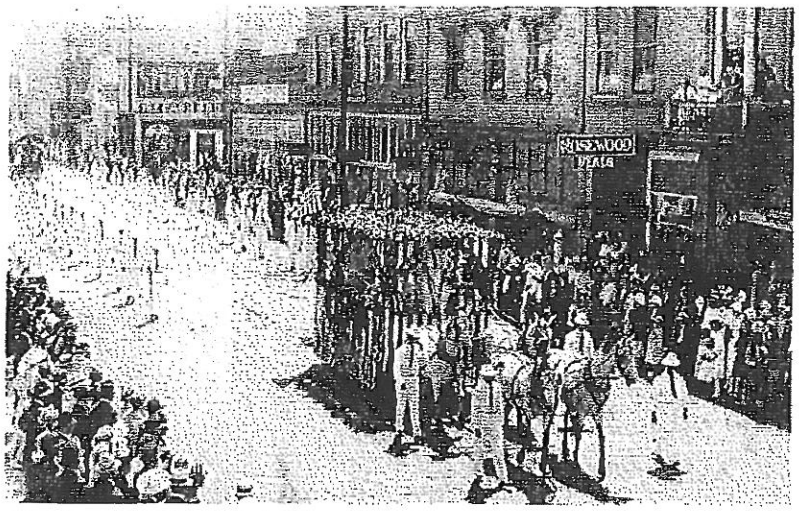
- Repair rather than replace. Try to keep significant primary facades or elevations, including doors, transoms, windows, sashes, signs, and decorative features. If repair is not possible, the element should be accurately reproduced based on historic research and/or physical evidence.

- Base rehabilitation and restoration on solid historical documentation such as physical evidence, photographs, or original drawings; do not assume what the building looked liked originally.

- Avoid creating a "look" not based on historical fact.

- Follow the historic preservation principle most appropriate to the specific building (preservation, restoration, rehabilitation, or reconstruction).

- Try to apply the Secretary of the Interior's Standards for Rehabilitation to each element of the historic building during any preservation/restoration/ rehabilitation/reconstruction project.



Main Street has always been a Mecca for the Cottage Grove Community, and all should be done to preserve the character of the district as possible. The parade seen above from 1916 has many of the same buildings of modern day Main Street and photographic evidence like this should be used to base any restoration projects.

CHAPTER 3

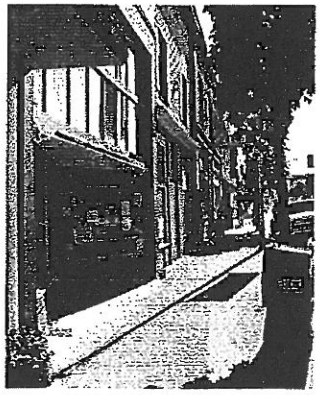
Specific Design Guidelines for Downtown District

A. New Buildings within the District:

New buildings within the downtown commercial district should blend in with neighboring historic contributing buildings. Scale, height, massing, rhythm of openings, and materials should all be considerations in the design of new buildings. For all new development within the historic district an Alteration to Historic Landmark Permit Application and a Design Review Application must be submitted to the Community Development Department for approval by the Planning Commission. The Planning Commission decision will be based upon compliance with these guidelines.

1. *Siting/Setback:* New buildings should conform to adjacent or surrounding buildings in terms of their siting and set back. Most of the historic buildings within Cottage Grove's downtown district front directly to the sidewalk and cover the majority of their lot. It is especially important to maintain the horizontal and vertical plane of the fronts of buildings on Main Street to keep the integrity of the historic district. New buildings should conform to the existing planes set by adjacent buildings within the district.

   New construction next to existing buildings should abut them when neighboring buildings dictate this pattern.



The 500 block on Main clearly depicts fronting to the sidewalk.

2. *Orientation:* The orientation of new buildings should match that of adjacent or surrounding buildings. Facades or parapets should be oriented in the same direction.

3. *Form/Massing:* Form and massing are important considerations for commercial properties. New retail buildings should in some way imitate or otherwise complement historic buildings within the district. New facades, for example, should extend the line of existing parapets or repeat the form and massing of adjacent buildings. Similarly, new commercial buildings, even those covering more then one lot, should suggest the form and massing of a single lot development.

4. *Height:* New commercial development within the historic district should respect the heights of adjacent and nearby buildings. Again, owners wishing to build a new commercial building within the district should attempt to relate the new building to the surrounding historic buildings by not exceeding the height precedent set by historic buildings within the district.

The newly redone Homestead buildings display rhythm with their first and second floor windows.

5. *Bay Division/Rhythm:* The rhythm of door and window openings and other vertical divisions of commercial buildings within the district should be repeated in new construction.

6. *Details:* Details on newer commercial buildings should in some way complement the surrounding buildings, but not copy their design. Cornice lines, string courses, and window locations should be reminiscent of other buildings while still preserving the irregular patterns of these aspects on Main Street.

7. *Materials:* New buildings within the historic downtown should utilize materials common on the surrounding historic buildings whenever possible. Trim materials, glass, and materials for details, such as doors, should also match the character and quality of surrounding historic examples.

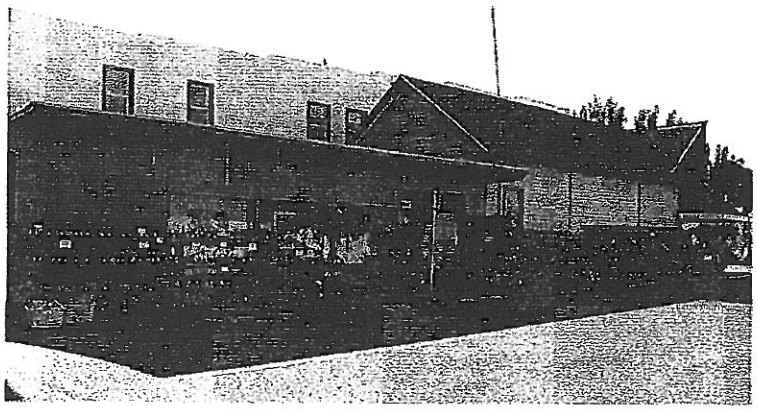
8. *Windows and Doors:* Window and door arrangements, as suggested vertically by bays and horizontally by stories, should follow the precedent set by the other contributing historic buildings within the district. The traditional proportions of window openings to wall spaces should also be respected.

9. *Style:* New buildings in design should complement the existing commercial styles within the district, especially the styles directly surrounding the new building. Special care should be taken in designing a building that emulates the historic styles within the district, while not too closely copying another building within the district.

10. *Streetscape*: Bicycle racks, benches, café tables, and flowerpots are appropriate in recessed awnings of new construction as long as 5 feet of the sidewalk remains clear.

B. Additions and Alterations to Historic Buildings within the District:

While additions are generally not suggested, if more space is needed additions should be made to the back of the building. Additions, including new stories, should be setback far enough to not be visually apparent from the street, and should be distinct but related to the original structure.



The Bookmine's addition does not take away from the original false front structure that sits on the first half of the lot and demonstrates what an appropriate addition within the district should look like. The addition is simple, low in profile, and completely hidden from Main Street.

For new additions or alterations to buildings in the historic district, an Alteration to Historic Landmark Permit Application and Design Review Application must be submitted to the Community Development Department for approval by the planning staff or Planning Commission. These design guidelines will be what all Planning approval decisions will be based upon.

C. Preservation and/or Restoration of Historic Buildings:

The unique character of Cottage Grove's Historic Downtown should be preserved and maintained to the up most degree. The City highly suggests and appreciates property and business owners' attempts to better the appearance of each building within the district; however, the following sub-groups need to be carefully examined. Streetscapes, setbacks, heights and widths, elevations, floors, roofs, foundations, exterior materials, decorative details, windows, doors, awnings and signage are all key components to the historic integrity of the district. Changes to these should be based on historic documentation as well as the following suggestions.

For all restoration and/or preservation work done within the historic district an Alteration to Historic Landmark Permit Application must be submitted to the Community Development Department for approval by the planning staff or the Planning Commission. These design guidelines will be what all Alteration to Historic Permit Application decision will be based upon.

Streetscapes and Setbacks:

1. A uniform setback should be carefully maintained within the district.

2. Walls of the front facades and sidewalls should not be stepped back, but should preserve the vertical plane.

3. Bicycle racks, benches, café tables, and flowerpots are appropriate in recessed awnings as long as 5 feet of the sidewalk remains clear.

Building Heights and Widths:

1. Maintain elements that define existing height.

2. Floor-to floor heights are usually uniform; this pattern should be maintained by retaining the alignment of the storefronts, window openings and horizontal trim.

3. Cornices should not be aligned, but should preserve the irregular pattern line created by different building heights and details on the cornices and parapets.

4. If a cornice has been removed, design the new cornice on historic photographs and written descriptions. If no historic documentation exists, design a simple cornice using elements related to the rest of the building's details and styles.

5. Maintain the historic pattern of façade widths.

6. Visually divide large buildings into typical widths at first floors by creating individual storefronts.

7. Preserve the historic visual character of the upper floors of the buildings.

8. Do not paint a portion of the façade using different paint schemes, or add or remove existing ornamentation in order to define a storefront that occupied a portion of the building block.

Elevations and Floors:

1. On the first floor maintain the appropriate historical storefront with large glass display windows and a kick plate below the windows.

2. Keep a recessed entry, transoms, a sign band, and decorative framing, if present currently, or in historic evidence.

3. On the upper floors maintain the historic vertical plane and repetitive pattern of windows that is unique to upper stories within the district.

4. Limit ornamental detailing to cornices and window heads, unless other ornamentation was present historically.

Roofs and Foundations:

1. When replacing a roof, use only a roof form which is hidden from public view behind the parapet or cornice (unless historic evidence indicates the roof was configured differently).

2. Foundation materials should be retained and repaired whenever possible. If repair is not feasible, the new foundation should match the historic one in material, appearance, and height to maintain the pattern of the streetscape.

Exterior materials and Decorative Details:

1. When repairing existing or constructing new brick walls, joint width and surface form should match the existing forms. Mortar mixture, mortar color, brick color, and brick size and shape should all be matched to the original brick wall.

2. Brick that was not painted historically should remain unpainted.

3. Do not sandblast masonry to remove dirt or paint from the wall surfaces. The least damaging method for brick cleaning for each building should be used.

4. Preserve existing historic wood siding and details. If portions need to be replaced match the siding and details to the existing woodwork.

5. All wood should be painted to prevent damage. Clear finishes or the use of wood that is unfinished is inappropriate for the historic district.

6. Materials such as stucco, metal, terra cotta, ceramic tiles, colored or ornamental glass, enameled metal, or concrete should be preserved and/or restored to reflect the historic periods in which it was used.

Brick that was not historically painted should remain bare, however, any historically painted brick, like the above Coca-Cola sign, should be preserved.

7. Do not stucco a brick building that has not been previously stuccoed.

8. Shutters are not generally appropriate for use on commercial buildings within the district.

9. The use of plastic, bright-unfinished metal, and unpainted wood are inappropriate within the district and should not be used.

10. Vinyl siding is not appropriate for the historic district.

Interiors:

1. Maintain original height of the ceiling within the structure. Exteriors lighting is more appropriate then recessed lighting in a dropped ceiling.

2. Preserve ALL historic tin ceilings.

3. Tin ceilings are encouraged if historically appropriate for the structure.

4. Do not remove historic thresholds from the front entrance.

5. ADA access improvements should be made to the side or rear if the building has raised thresholds.

Windows and Doors:

1. Retain the original sash and frame by repairing whenever possible. Where too deteriorated to repair, match new windows in the same materials and configurations as the original windows.

2. Do not add windows to sidewalls unless there is no alternative. If windows must be added, larger windows should be limited to the first floor and should be simple. Additional windows on the upper floors should use window openings of the same size and shape as existing openings, and the windows should be placed in a regular spacing pattern. New windows should mimic the same sash and frame as other existing windows throughout the building.

3. If doors need to be replaced, try to match the new doors to the style and era of the building. Base new doors of historical evidence if possible.

4. During renovation the City encourages infilled windows and doors to be reopened and utilized.

5. Do not infill windows or doors unless absolutely necessary. If it is necessary to fill in a window or door keep the original window or door in place, and fill the inside portion. Mirrored or darkly tinted glass might be appropriate to put in the window or doorframe on the infilled opening.

6. Ornamental glass should be retained where existing, or placed where historically documented.

7. Maintain regularly spaced window openings on upper floors.

8. Use interior storm windows for energy efficiency rather than replacing existing windows with double pane windows.

Awnings:

1. Awnings are only appropriate on the north side of Main Street since this is where they were historically used. Awnings will be permitted on the south side of Main Street only if evidence of an awning on that storefront can be historically proven.

2. Awnings generally extended across the full width of an individual storefront, but in some cases, awnings covered individual windows. Restoration should aim to use what was on the building historically.

3. Awnings should be made out of canvas and be designed to roll or fold up when not in use. They should be hung above the transom, unless historic evidence indicates otherwise.

4. Permanent canopies should not be constructed unless there is a clear evidence of their existence historically. Brightly colored and flamboyant patterns on the awnings are not appropriate.

The awning on the Knickerbocker Building is constructed of appropriate materials and is located on the historically correct side of the street.

5. Contemporary materials, such as vinyl and plaster, shall not be used for awnings.

Signage:

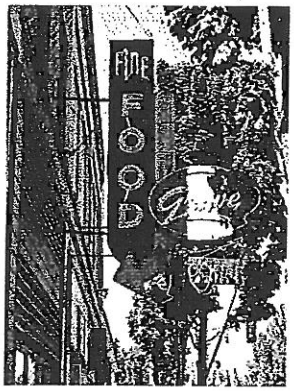
1. Commercial signs should be flush mounted on the sign band above the transom, painted on a window, hanging on the front of the building, or on the awning.

2. Signs cannot obscure building features, such as windows, cornices, or decorative details.

3. Sign material, style and color should complement the building's architectural style and materials. Vinyl or plastic signs and flat plywood rectangular signs are especially not appropriate within the district.

4. When there are a variety of shops in one building, signs for each shop should relate to one another in design, size, color, and placement.

5. Signs should have easy-to-read lettering and should not be overly complex. Too many signs only confuse observers; the number of signs should be kept to a minimum.



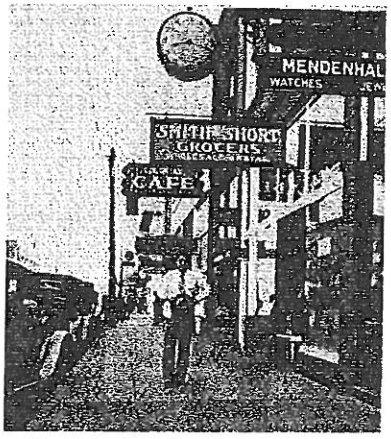
The historic neon sign at the Grove Tavern is a good example of historical signage in downtown.

6. Historical signs should be preserved to maintain authenticity in the district.

7. Signs can have exterior illumination with a light quality close to that of incandescent light.

8. Floodlights should be kept to an absolute minimum and when used should be shielded so as to not be seen from the public right of way.

9. Neon signs are appropriate if historically documented.



This 1920s photo shows historic signage that the City would like to see brought back to the district.

10. Franchise and chain store signs should adapt their standardized signs to meet local guidelines.

11. Projection signs are appropriate, but the bottom of the sign must be at least 8 feet from the ground. Internally lit signs are not appropriate for the downtown district.

12. Signage on a historic building should meet all of our current development

Murals:

1. Murals require Community Development Department approval.

2. Murals should not be painted on unpainted brick.

3. Historic murals should be preserved and restored appropriately.

4. Repaint all existing murals.

Alleys:

1. Garbage shall be enclosed in site obscuring locked receptacles.
2. The city encourages alley entrances to become a source of entry for the public.
3. These entries should be user friendly and historically appropriate.
4. Painting alleys to brighten the atmosphere and "clean-up" the appearance is highly recommended.
5. Adding historically appropriate lighting in the alleys is encouraged.

CHAPTER 4

Maintenance of Historic Buildings

Improper maintenance often results in deterioration of historic buildings. Proper maintenance prolongs the life of the building and allows for the retention of the original materials and design. Buildings should be regularly inspected for signs of deterioration. When attended to immediately, repairs are usually simple and inexpensive. Property owners within the historic downtown are greatly encouraged to maintain their buildings for future generations. The following provides key suggestions for maintenance of historic buildings within the district.

Drainage Control and Protection from Moisture:

1. An intact roof is the first line of defense against moisture. Roofs should be sloped enough to drain and be covered with an impervious membrane.

2. Roof drainage should be directed to gutters and then into downspouts. Gutters and downspouts, and their connections, must be kept intact, sloped to drain, and free of debris.

3. Discharge from gutters and downspouts and from slopes above the building must be directed away from the building.

4. Chimneys, vents, and skylights should be carefully flashed.

5. Seams and seals should be intact. All caulking should adhere to both sides of a crack and should have a smooth, elastic surface and be visibly unobtrusive. If caulking is pulled away from the sides or is cracked, it should be replaced.

6. Brick, stone, and concrete are susceptible to moisture damage, which can cause spalling of the surface and the need to replace the masonry units. Once the outside skin of the masonry has been compromised, water can saturate the surface and further deteriorate the masonry. Unfortunately, sealants cannot effectively replace the outer surface.

Cleaning:

1. Use cleaning methods recommended by preservation professionals. For extensive cleaning, especially of masonry buildings, consider hiring a preservation professional to clean the building.

2. DO NOT SANDBLAST or use other abrasive cleaning methods on any surface, especially masonry.

Painting:

1. Wood surfaces should always be painted to protect the surface from deterioration. Cracked paint should be scraped away. Cracks in the wood should be filled and sanded. Missing pieces should be duplicated and replaced. The surfaces should be primed prior to the repainting of the wood.

2. Exposed masonry should be left unpainted, unless is has been previously painted to protect the surface from further deterioration. A previously painted surface should be repainted rather than chemically cleaned. Before repainting, mortar should be re-pointed if necessary and loose paint should be scraped off. The building should be cleaned with a water wash and primed before painting.

Stucco:

1. Do not remove current stucco from buildings.

2. Paint and maintain stuccoed surfaces.

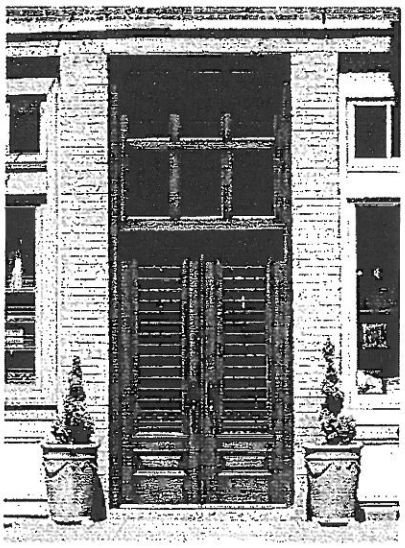
3. Do not further texture stucco or add large materials to smooth-faced stucco.

Maintenance of Doors and Windows:

1. Repair windows and doors whenever possible. Replace them only when deteriorated beyond repair or missing. If replacement is required, windows should be replaced with wood sashes and frames. Do not cover or remove original details.

2. Repair window sashes by filling cracks with caulk or wood putty, sanding the surface, and painting. Only those portions of the sash that cannot be repaired should be replaced, rather then replacing the whole window.

3. Loose glazing putty should be replaced if cracked or dried out. Loose caulking between the window frame and the wall opening should be removed and the joints should be re-caulked to prevent air and water infiltration.



The doors replaced on the Old Town Club Building are great examples of era appropriate pieces. The doors are too fancy for downtown and the historic hotel that was originally at this location; however, the addition of these doors and the reopening of the transoms brought the façade of the building back to the most historically significant time period for this structure.

4. Loose or broken window panes can be easily repaired. Remove old glazing putty. Replace the broken panes with glass similar to the existing glass and, using a glazier's point and putty, re-glaze both new and loose panes.

5. Replacement windows should match the original windows in size and materials. Windows that are not in keeping with the style of the building are not allowed.

6. Storm windows can conserve heat and energy, especially on upper floors. Storm windows should duplicate the shape of the window and can be mounted on the exterior; however, on the front of the building, it is more desirable to mount them on the interior where they will not be seen. Care must be taken to ventilate them properly to prevent moisture from accumulating and damaging the wood.

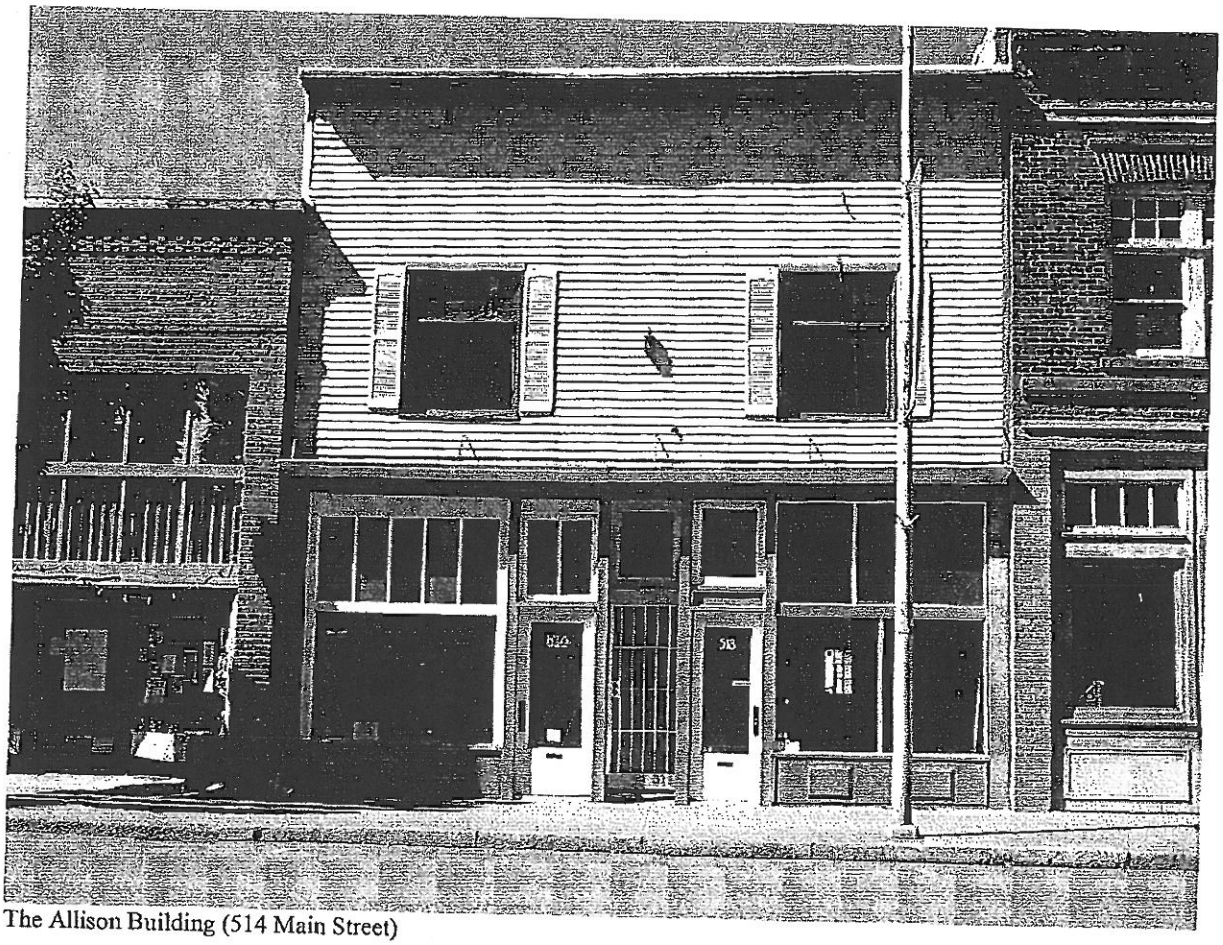
7. If the original door is deteriorated beyond repair or missing, a replacement door may be used. There are basically two options to replacing doors: have a new door built with the same design, proportions, and materials as the original door, or find a manufactured door that resembles the original.

8. Do not use doors decorated with moldings, cross bucks, or window grills unless there is evidence that the original doors had these elements.

CHAPTER 5

Historic Commercial Styles in Downtown District

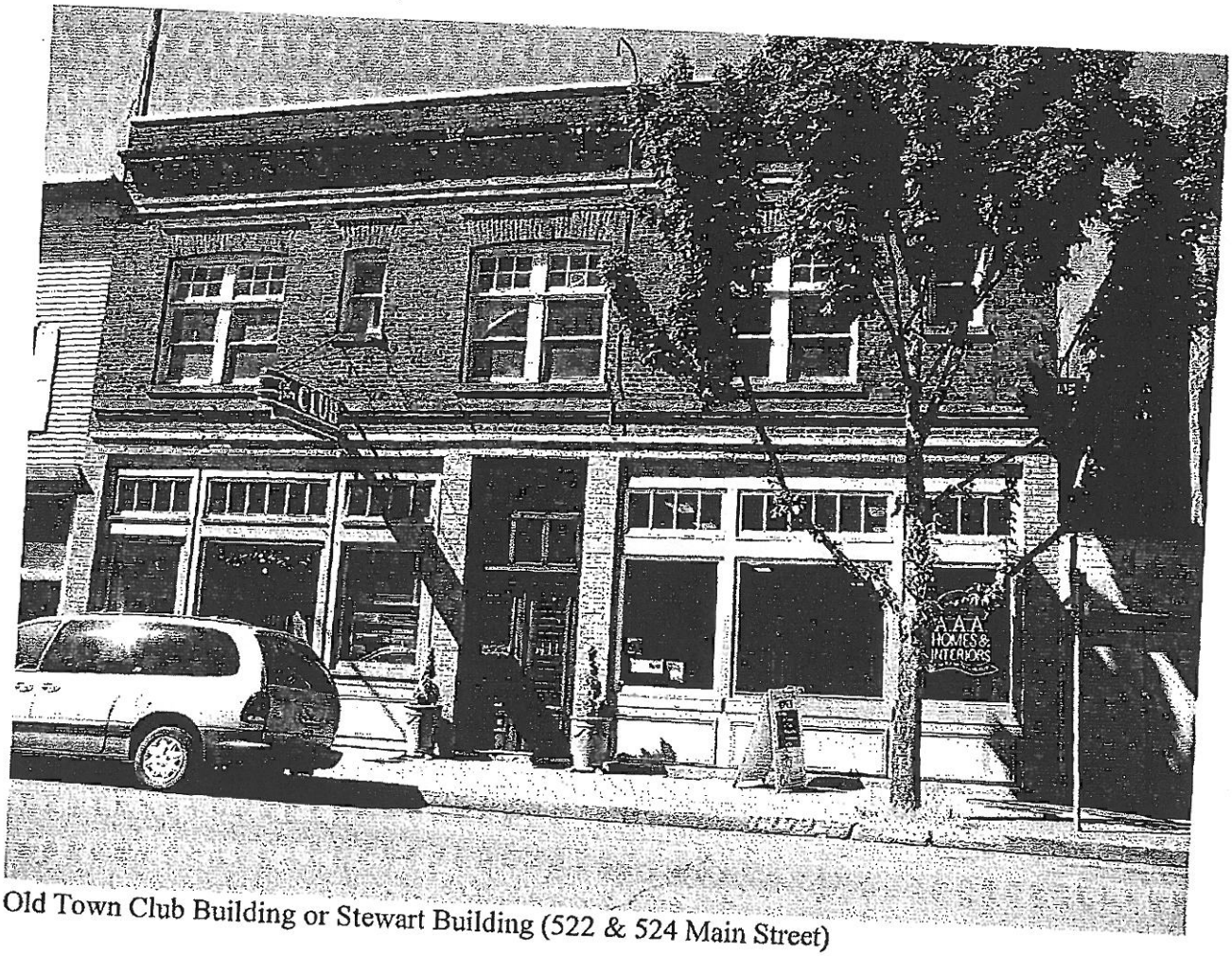
False Front Commercial



The Allison Building (514 Main Street)

False Front commercial dominated the downtown core until 1900. Generally, false front commercial are gabled roof buildings (sometimes with a second floor apartment space) that had a "false front", usually rectangular in form, built across the gabled roof. These fronts were commonly used for signage and often had a simple shed roof covering the entrance. Several false front buildings still reside in the historic downtown, such as the Allison Building (514 Main), The Bookmine (702 Main), and Cascade Home Center (49 South 6th). Cascade Home Center sports a later version of the false front commercial.

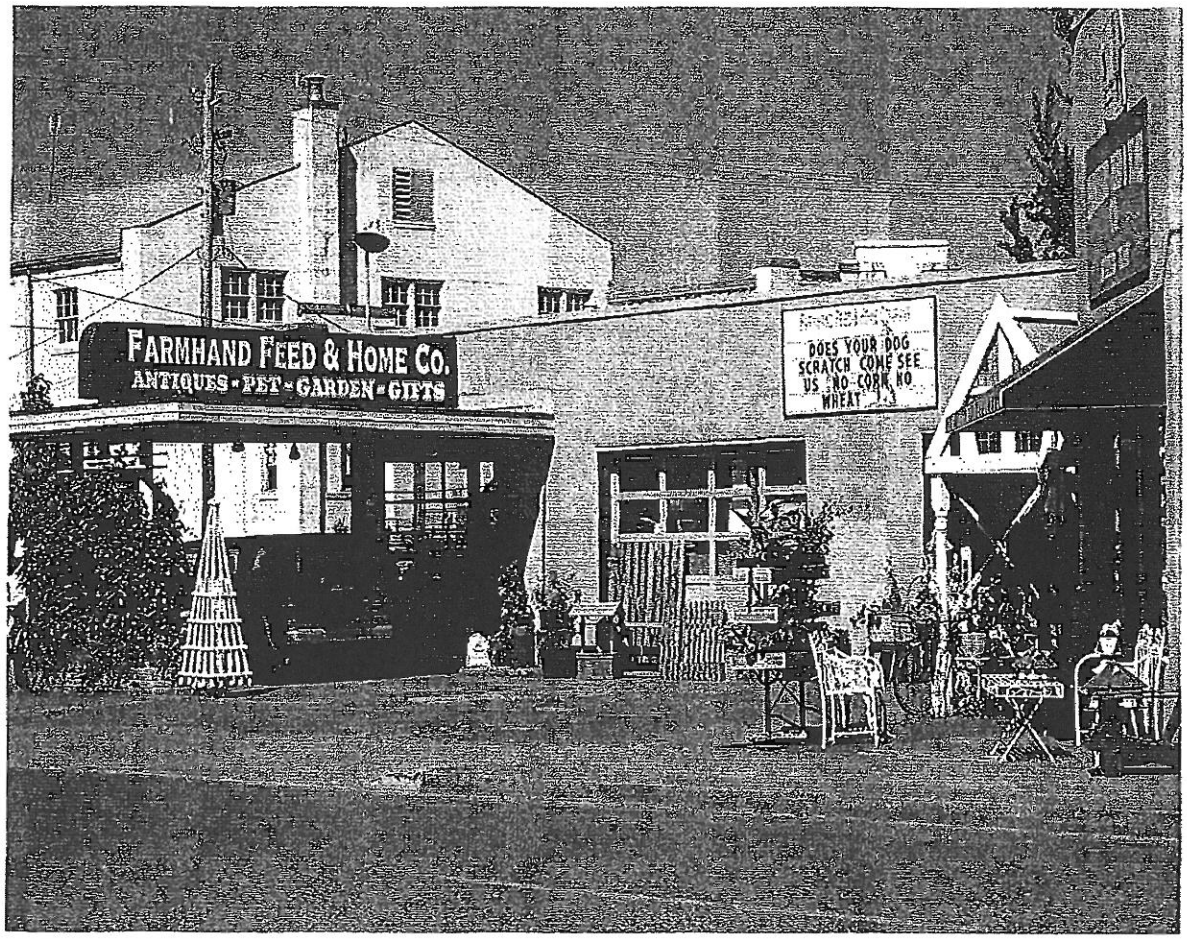
Brick Commercial



Old Town Club Building or Stewart Building (522 & 524 Main Street)

A number of commercial brick buildings still survive in the Downtown Historic District. Typical characteristics of brick commercial architecture include recessed entries, sometimes with canted display windows. Transoms are common, though many have been covered with modern siding or materials. The second floors frequently display single or paired double hung windows. Corbelled brick defines the cornice and parapet. One of the most significant brick buildings is the Stewart Building (522 & 524 Main). This building was designed by Eugene architect John Hunzicker and has two commercial bays on the first floor.

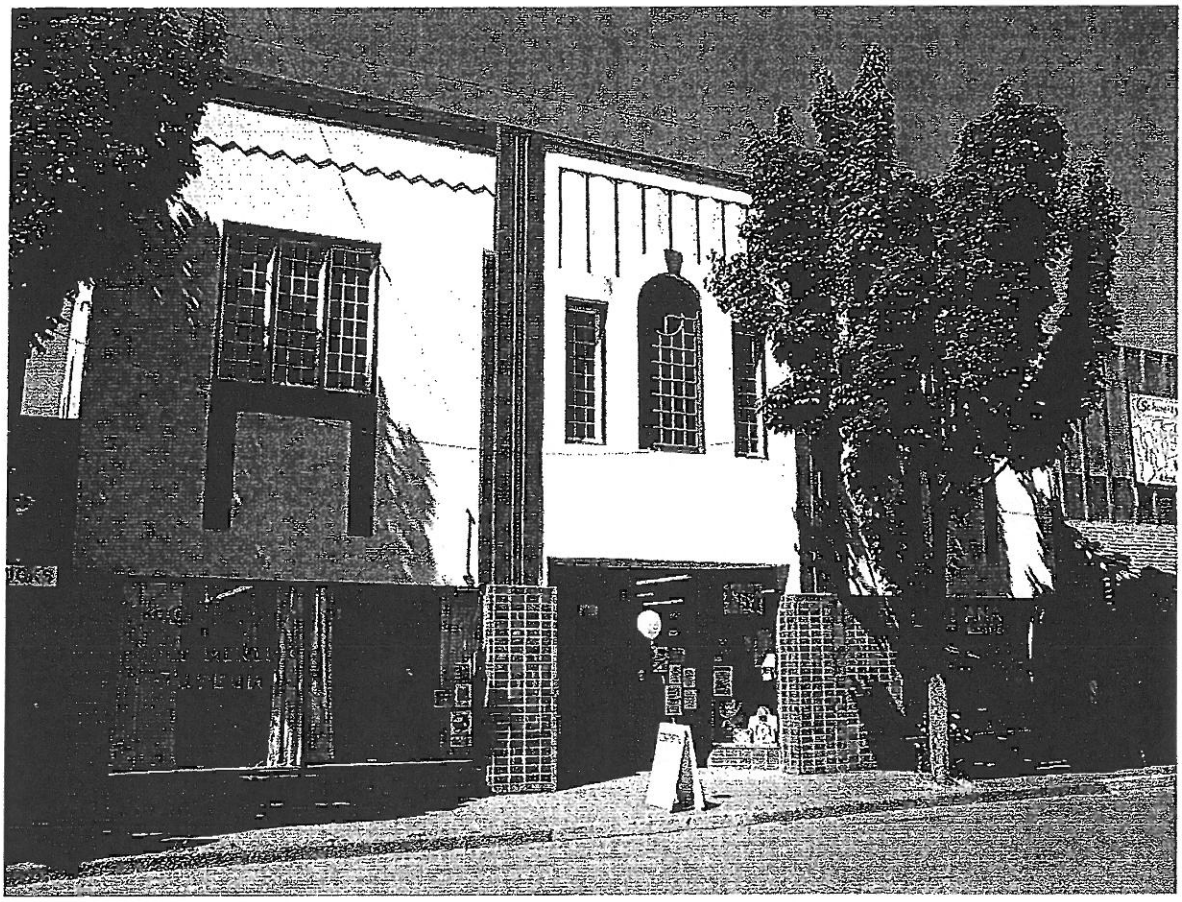
Motor Age Commercial Structures



While not within the historic district, the current Farm Hand Feed & Home Co. is a great example of a motor age commercial style building being used for other business types while still keeping its architectural style.

After World War I Cottage Grove entered a new stage of development. The automobile had become popularized and businesses related to the auto industry began to appear. With this boom of auto businesses architectural styles related to this industry began to appear in great quantity in Cottage Grove. Buildings such as Holloman Ford and the Githens building were built for this industry, as well as the Farm Hand Feed building located on 6th street, which used to be a gas station. Motor Age construction and patterns of development are common in the historic district and continue down both the new and old locations of the Pacific Highway.

Art Deco



The newly renovated Hart Building Façade exposed and preserved its art deco architecture.

The Art Deco style is exemplified by "cubist-inspired European Modernism, with streamlined, rhythmic machine formed, exotic Pre-Columbian and Navajo zigzag imagery, and a love of gaudy colors and shiny materials" (*Architecture: From Prehistory to Postmodernity*, Marvin Trachtenberg & Isabelle Hyman, 2003, p. 526). While Cottage Grove has a limited supply of Art Deco inspired architecture, there are two buildings that bring this style into the historic downtown. The Armory on Washington Street, a John Hunzicker firm design, and the newly restored Hart Building's façade give visitors and residents a look at this unique period of design in the district's history. The Hart Building's original façade was not Art Deco, but when it was remodeled to Art Deco in 1938 its new façade became and continues to be more historically significant then the original.

Fraternal Architecture

I.O.O.F. Building is the best-preserved fraternal architecture within the district, and Cottage Grove as a whole.

The I.O.O.F. Building is the most significant fraternal structure in town and also demonstrates how fraternal architecture can take on almost any style. I.O.O.F. is the only American Renaissance structure within the community, and both its style and architecture make it significant. Fraternal architecture can take on any style, and be made of almost any material. Other fraternal architecture within Cottage Grove, such as the old Masonic Lodge on the corner of Main and River Road, should also be maintained to the same historic degree as any historic building within the district.

CHAPTER 6

The Special Assessment of Historic Property Program

This program is a tax incentive program administered by the State Historic Preservation Office (SHPO) and consists of a 15-year freeze on the assessed value of qualifying historic properties. The purpose of this program is to encourage the maintenance and rehabilitation of historic properties throughout Oregon. An additional 15-year, one-time only, special assessment is available for commercial properties that are trying to make improvements in one or more of the following areas: energy conservation, seismic improvements, and Americans with Disabilities Act (ADA) compliance.

How does a property qualify?

A property must be: 1.) in need of rehabilitation work, and 2.) must be designated historic at the national level.

To be designated historic at the national level means: 1.) the property is listed individually on the National Register of Historic Places, **or** 2.) the property is a contributing element to historic character of a National Register Historic District, **or** 3.) the properties have been recommended for listing by the State Advisory Committee on Historic Preservation. All contributing (primary or secondary) structures within the Cottage Grove Downtown Historic District are eligible.

What am I required to do?

A property owner must:

1. Make an application to SHPO (State Historic Preservation Office) with a restoration plan;

2. Complete the rehabilitation work outlined in his or her preservation plan (submitted with the application) and maintain the property in good condition;

3. Seek prior design review and approval from SHPO for any significant changes, alterations, or additions to the historic features of the property;

4. Follow the Secretary of the Interior's "Standards for Rehabilitation" to maintain the historic character of property;

5. Hold a yearly open house allowing the public to tour the property;

6. Display a standard plaque that identifies the property as listed on the National Register and participating in Oregon's Special Assessment for Historic Property Program;

7. Periodically produce progress reports of the rehabilitation work for SHPO.

Contact Information:

To find out more or to obtain an application package contact:

Oregon State Historic Preservation Office
1115 Commercial St. NE Suite 2
Salem, OR 97310-1021
Phone: (503) 378- 4168 ext. 227
FAX: (503) 378-6447

CHAPTER 7

Resources

The following sources have contributed to the completion of the City of Cottage Grove Downtown Historic District Design Guidelines:

Architecture From Prehistory to Postmodernity. Prepared by Marvin Trachtenberg & Isabelle Hyman, 2002, Prentice-Hall Inc.

Springfield Historic Design Guidelines. Prepared by the Springfield Historic Commissioners, 2003.

The Madison Historic Preservation Manual: A Handbook for Owners and Residents. Prepared by William Chapman, 1990.

Cottage Grove Historic Context Statement Prepared by Kenneth J. Guzowski, August 1992

Secretary of the Interior's Standards for Rehabilitation, http://www.cr.nps.gov/hps/tps.tax/rehabstandards.htm

Oregon State Historic Preservation Office, http://egov.oregon.gov/OPRD/HCD/SHPO/index.shtml

Cottage Grove Historical Society & Marsha Allen

CHAPTER 8

Glossary

Arch - a construction technique and structural member, usually curved and often made of masonry. Composed of individual wedge-shaped pieces that span an opening and support the weight above by resolving vertical pressure into horizontal or diagonal thrust.

Alteration - the change, addition, removal, or physical modification or repair, which affects the exterior appearance of a building.

Apron - An either plain or decorated piece of trim found directly below the sill of a window.

Architectural Significance - A building or district important because 1) it portrays the environment of a group of people in an era of history characterized by a distinctive architectural style; 2) it embodies those distinguishing characteristics of an architectural-type specimen; 3) it is the work of a master builder or architect whose work has influenced the development of the community; or 4} it contains elements of architectural design, detail, materials or craftsmanship which represents a significant innovation.

Architrave - the lowest part of an entablature, or the molded frame above a door or window opening.

Asymmetrical - a building with an exterior appearance that is not symmetrical or balanced. Any arrangement of building elements, including doors, windows, or porches that are offset to one side.

Balcony - a platform projecting from the wall or window of a building, usually enclosed by a railing.

Baluster - One of a series of posts or pillars that support the upper rail of a railing or handrail. Balusters may be lathe-turned, simple cut-outs, or square posts.

Balustrade - A handrail or railing supported by a series of balusters, such as on porches, staircases and balconies. Or, the entire railing system including a top rail and its balusters, and sometimes a bottom rail.

Barge board - an ornamental board, sometimes jigsaw-cut, that serves as trim and is attached to the overhanging raking ends of a gabled roof; sometimes called a vergeboard.

Battered piers and posts - tapered piers and posts that are thicker at the base than at the top.
Bay - a regularly repeated spatial element defined by beams or ribs and their supports.

Bay window - a projecting bay with windows that forms an extension of the interior floor space. On the outside, it extends to the ground level, in contrast to an oriel window, which projects from the wall plane above ground level.

Beltcourse (or stringcourse) - a horizontal course or masonry or wood on the exterior of a building that usually corresponds with the level of an interior floor.

Beveled siding - siding tapered or beveled so that its upper edge is thinner than its lower; it is lapped in laying to cover the horizontal joint between two adjoining pieces; also called clapboards.

Board-and-batten siding - vertical siding made up of alternative wide and thin boards where the thin boards cover the joints between the wide boards.

Brackets (or braces) -projecting elements, sometimes carved or decorated, that support or appear to support a projecting eave, lintel or other overhangs.

Casement window - a window that is hinged on the side and opens inward or outward.

Chamfered post - a post exhibiting a beveled edge, which may be either a flat surface, a grooved surface, or a more elaborately molded surface.

Certified Rehabilitation - rehabilitation that complies with the Secretary of the Interior's Standards for Rehabilitation and has been approved by the National Park Service.

Chimney pot - a decorative masonry element placed at the top of a chimney, common on Queen Anne and Tudor Revival buildings.

Clapboards - siding that consists of narrow, horizontal, overlapping wooden boards that are tapered or beveled so that the upper edge is thinner than its lower; the reveal (the exposed area of each board not overlapped by another board) is usually three to six inches.

Column - a vertical shaft or pillar usually circular in section that supports, or appears to support a capital, load beam or architrave.

Corbel - a projection from a masonry wall or chimney, sometimes supporting a load and sometimes for decorative effect.

Corner board - a board that is used as trim on the external corner of a wood-framed structure and against which the ends of the siding are usually fitted.

Cornice - the exterior trim of a structure at the meeting of the roof and wall; usually consists of bed molding, soffit, fascia, and crown molding.

Course - in masonry, a layer of bricks or stones running horizontally in a wall.

Cresting - decorative grillework or trim applied to the ridge crest of a roof; common on Queen Anne style buildings.

Cross-gabled roof - a roof that has two intersecting gables where one is the main axis or ridge of the house and the other is perpendicular to the main ridge. Dentil molding —a molding composed of small rectangular blocks run in a row.

Detailing - The decorative embellishments of a building that help convey its architectural style.

Dormer - A vertical window that projects through a pitched roof, covered with its own roof. The specific name of a dormer is frequently determined by the shape or type of its roof. For instance, a **shed dormer** is covered by a single incline, or shed roof. Other examples include **hip dormer and gable dormer.**

Double-hung sash window - a window with two or more sashes; it can be opened by sliding the bottom portion up or the top portion down, and is usually weighted within the frame to make lifting easier.

Droplap siding - a type of horizontal board siding that is overlapped; the profile often includes a rounded "channel" along the top edge of the board; sometimes referred to as channel siding.

Eave - the part of the roof that projects beyond the walls of a building. A wide eave is commonly identified as an **overhanging eave.**

Entablature - the part of a building carried by the columns; consisting of the cornice at the top, the frieze in the middle, and the architrave on the bottom.

Facade- the principle face or front elevation of a building.

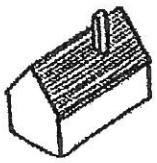
Fanlight - a window, often semicircular, over a door with radiating muntins suggesting a fan.

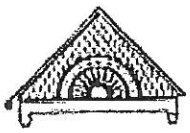
Fascia board - a flat member or board horizontally located at the top of an exterior wall, directly beneath the eaves.

Flashing - pieces of non-corrosive metal used around wall and roof junctions and angles as a means of preventing leaks.

Frieze - the middle division of an entablature, below the cornice.

Gable - the vertical triangular portion of an exterior wall at the end of a building having a double-sloping roof. Usually the base of the triangle sits at the level of the eaves, and the apex at the ridge of the roof, bounded by the two roof slopes; the term sometimes refers to the entire end wall. Gabled roof - a roof form having an inverted "V"-shaped roof at one or both ends.





Gambrel roof - a roof having two pitches on each sloped side, typical of Dutch Colonial Revival architecture; a double slope on two sides of a building.

Gingerbread - highly decorative woodwork with cut-out ornamentation, made with a jigsaw or scroll saw.

Goal 5 - A portion of state land-use law that pertains to the protection of historic resources. This goal also applies to natural and scenic areas, as well as open space and other community assets.

Half-timbering - in late medieval architecture, a type of construction in which the heavy timber framework is exposed, and the spaces between the timbers are filled with wattle-and-daub, plaster, or brickwork. The effect of half-limbering was imitated primarily in the Tudor Revival styles of the 20th century.

Header- A brick laid with the short side exposed, as opposed to a "stretcher."

Hipped roof - a roof that slopes upward on all four sides, like a pyramid.

Hip gambrel roof - A combination of a hip roof and a gambrel roof. The hip portion is on the gabled ends of a gambrel roof.

Historic District - A geographically definable area with a high concentration of significant resources. If listed on the National Register of Historic Places, properties which contribute to the historic district can qualify for tax incentives.

Historic Resource - A building, structure, object, site or district that is over fifty years old and retains its historic integrity.

Historic Preservation League of Oregon (HPLO) - A non-profit, statewide organization that is committed to the historic preservation of historic resources. HPLO offers technical assistance to individuals, local governments, and local non-profit groups.

Historical Significance - A resource that is important because: 1) it has character, interest or value as part of the development, heritage or cultural characteristics of the community; 2} it is the site of a historic event with an effect on society; 3) it is identified with a person or a group of persons who had some influence on society; or 4) exemplifies the cultural, political, economic, social or historical heritage of the community.

Hood molding - a decorative molding over a window or door frame, commonly found on Italianate-style buildings.

Horizontal lapped board siding - a term used to describe siding material that consists of wooden boards that are applied horizontally and are overlapped; used in a generic sense when it cannot be determined easily if the boards are beveled clapboards.

Infill — construction of new buildings on empty lots between existing structures.

Inventory - A census of historic resources within a specific geographic area or that is linked by other means.

Jerkinhead roof - a gabled roof truncated or clipped at the apex; also called a clipped gable roof. Common in bungalows and Tudor Revival style architecture.

Leaded glass - small panes of glass, either clear or colored, that are held together in place by strips of lead called cames.

Light- A section of a window, the pane or glass.

Lintel - A horizontal structural member that supports a load over an opening such as a door or window; usually made of wood, stone, or steel; may be exposed or obscured by wall covering.

Mansard roof — a roof with two slopes where the lower slope is nearly vertical and often concave or convex in profile. Common in Second Empire style architecture.

Massing - The overall group of forms that comprise the physical bulk and weight of a 3-dimensional building or space.

Molding - a decorative band or strip with a constant profile or section generally used in cornices and as trim around window and door openings. It provides a contoured transition from one surface to another or produces a rectangular or curved profile to a flat surface.

Monitor (roof)- A roof with a continous section raised above the main part of the roof in order to admit light. Usually used in factories.

Mullion - the vertical member of a window or door that divides and supports panes or panels in a series.

Muntin - one of the members, vertical or horizontal, that divides and supports the pans of glass in a window.

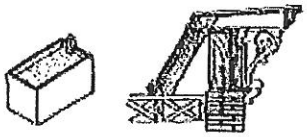
National Register of Historic Place - The national list of historic resources that are considered worthy of preservation. Individual nominations to the Register are made by the property owner to the State Historic Preservation Office. If approved at that level, nomination is forwarded to the Keeper of the National Register at the Department of the Interior in Washington, D.C. for final approval.

National Trust for Historic Preservation- A congressionally chartered non-profit, membership-based organization dedicated to historic preservation. The Trust's Western Regional Office provides technical and field services to Oregon as well as eight western states.

Oriel window - a window bay that projects from the building beginning above the ground level.

Palladian window - a window divided into three parts: a large arched central window flanked by two smaller rectangular windows. Common to Italianate and Colonial Revival style architecture.

Parapet - a wall that extends above the roof line.



Pediment - A triangular section framed by a horizontal molding on its base and two sloping moldings on each of its sides; used as a crowning element for doors, windows, over mantels, and niches. Pent roof - a small sloping roof, the upper end of which butts against a wall of a house, usually above the first-floor windows.

Pier — a stout, vertical, structural support, often made of masonry; common supports for porch posts on Craftsman bungalows.

Pilaster - a pier or pillar (or vertical portion of) attached to the wall of a building, often with a capital and base.

Pitch - the degree of slope or inclination of a roof.

Porch - a covered entrance or semi-enclosed space either projecting from the facade of a building or recessed into the facade beneath the main portion of the building's roof. Portico - a porch or covered walkway consisting of a roof supported by columns. Post - a vertical support member of a building; square, rectangular or boxed posts commonly support porch roofs of Craftsman bungalows, while turned posts are commonly found on Queen Anne style houses.

Purlins - Horizontal members in the roof frame that run on the top of, or between rafters.

Pyramid-hipped roof - A pyramid-shaped roof with four sides of equal slope and shape. Synonym: pyramidal roof.

Quoins — cornerstones of a building, rising the entire height of the wall, and distinguished from the main wall construction material by size, texture, or conspicuous joining. In masonry construction, they reinforce the corners; in wood construction, they do not bear any load, are made of wood, and imitate the effect of stone or brick for decorative purposes.

Rafters (and rafter tails) - the sloping wooden roof-frame members that extend from the ridge to the eaves and establish the pitch of the roof. In Craftsman and bungalow style buildings, the ends of these, called "rafter tails," are often left exposed rather than boxed in by a soffit.

Reconstruction - Rebuilding a building or part of a building that has been destroyed. It differs from restoration in that a replica is recreated, based on archaeological and historical documents and physical evidence.

Rehabilitation - Returning a property to a state of utility through repair or alteration, making contemporary, efficient use possible while preserving those portions or features of the property which are significant for architectural, historical or cultural values.

Remodel - Redesign so that historic features are obliterated.

Restoration- Accurately recovering the form and details of a property and its setting as it appeared at an earlier period of time by means of removal of later work or by the replacement of missing earlier work.

Ribbon coursing - a method of applying wood shingles as siding where the courses of shingles alternate between a wide and narrow reveal.

Ribbon window - a continuous horizontal row or band of windows separated only by mullions. Used to some degree in Craftsman style buildings, but they also appear in early modern styles.

Rustication - masonry characterized by smooth or roughly textured block faces and strongly emphasized recessed joints.

Sash — window framework that may be fixed or moveable. If moveable, it may slide, as in a double-hung window; or it may pivot, as in a casement window.

Scale - The relative size of objects or elements to one another, making sure they work together and that one does not outweigh another.

Secretary of the Interior's Standards for Rehabilitation - Design standards developed by the National Parks Service to evaluate the appropriateness of a wide variety of alterations to historic buildings.

Setback - the distance between the street or sidewalk and the front edge of a building.

Shakes - hand-cut wood shingles that are heavier than shingles; usually not tapered as are shingles, with more irregular, rough surfaces than shingles. Used for roofing materials on some contemporary styles of houses.

Shed roof - A roof consisting of one inclined plane. A shed roof need not be carried by a higher wall (i.e. it may serve as a buildings primary roof form).

Shingles - Thin rectangular pieces of wood or other material used in overlapping rows as a means of covering walls or roofs; the base of the shingles can be cut in a variety of shapes to give the shingled surface a distinctive pattern.

Shiplap siding - a type of horizontal board siding that is rabbited so as to be flush-mounted, tight surface on the exterior wall; occasionally the edges of the boards are beveled and when placed together the joint creates a small "V" groove.

Sidelight — a framed window on either side of a door or window.

Siding (also called sheathing) - the material that covers the exterior surface of a buildings walls; may include horizontally lapped boards such as clapboards, weatherboard, shiplap or droplap; vertical boards such as board-and-batten; shingles such as cedar shingles, decoratively shaped wood shingles, and asbestos cement shingles.

Sill - the lowest horizontal member in a frame or opening of a window or door; also the lowest horizontal member in a framed wall or partition.

Skirting - siding or latticework applied below the watertable molding on a building; sometimes applied only beneath the decking of the porch.

Soffit - The exposed underside of an arch, cornice, balcony, eave, beam, etc.; sometimes embellished with **soffit panels** or other decorative devices.

Spelling - the cracking or flaking of particles from a surface; occasionally occurs in masonry walls where moisture is a problem.

Special Assessment - Also known as the Oregon Property Tax Freeze. This program allows the owner of a building on the National Register or in a National Register Historic District to freeze the assessed value (not rate) for 15 years. The program was enacted to promote rehabilitation of historic buildings.

State Advisory Committee on Historic Preservation - The state board which reviews Register nominations, as well as other topics related to preservation in Oregon.

State Historic Preservation Office (SHPO) - The state agency that is responsible for the statewide Inventory of historic resources, including archaeological resources; reviewing National Register nominations and administration of the Special Assessment program

Stoop - A small covered entry.

Stucco - An exterior wall covering consisting of a mixture of portland cement, sand, lime, and water; or a mixture of portland cement, sand, hair (or fiber), and sometimes crushed stone for texture; this term is often used synonymously with cement plaster.

Surrounds - the molded trim around a door or window.

Symmetry - Refers to a balanced overall exterior appearance of a building. The porch, door, windows and other features on the front facade of a building are arranged in such a manner that if the building was divided down the center, each side would mirror the other.

Tongue-and-groove - a type of board milled to create a recessed groove along one side and a corresponding flange along the other side that lock together when two or more boards are placed side-by-side. Tongue-and-groove boards were commonly used for flooring and siding.

Transom windows — a window or series of windows above a door or large window.

Trellis - A light frame or latticework used as a screen or as a support for vines.

Turned post - A post that has been decoratively made by turning it on a lathe.

Veranda - a covered porch or balcony, which wraps around at least one corner of the house.

Vergeboard - an ornamental board, sometimes jigsaw cut, that serves as trim and is attached to the overhanging eaves of a gable roof; sometimes called a bargeboard.

Vernacular - Architecture that exhibits regional forms and materials. Stylistic character is generally lacking except for simplified ornamentation that vaguely shows some influence from one or more particular styles. For example, a simple dwelling may have fish-scale shingles in the gable, turned columns with gingerbread brackets or simple spindles around the porch reflecting house styles from the Victorian era.

Water table - a projecting ledge, molding, or string course just beneath the siding of a building, designed to throw off rainwater; it usually divides the foundation of a building from the first floor.

Weatherboard siding - a horizontal lapped board siding where the boards are not tapered, but are of even width.