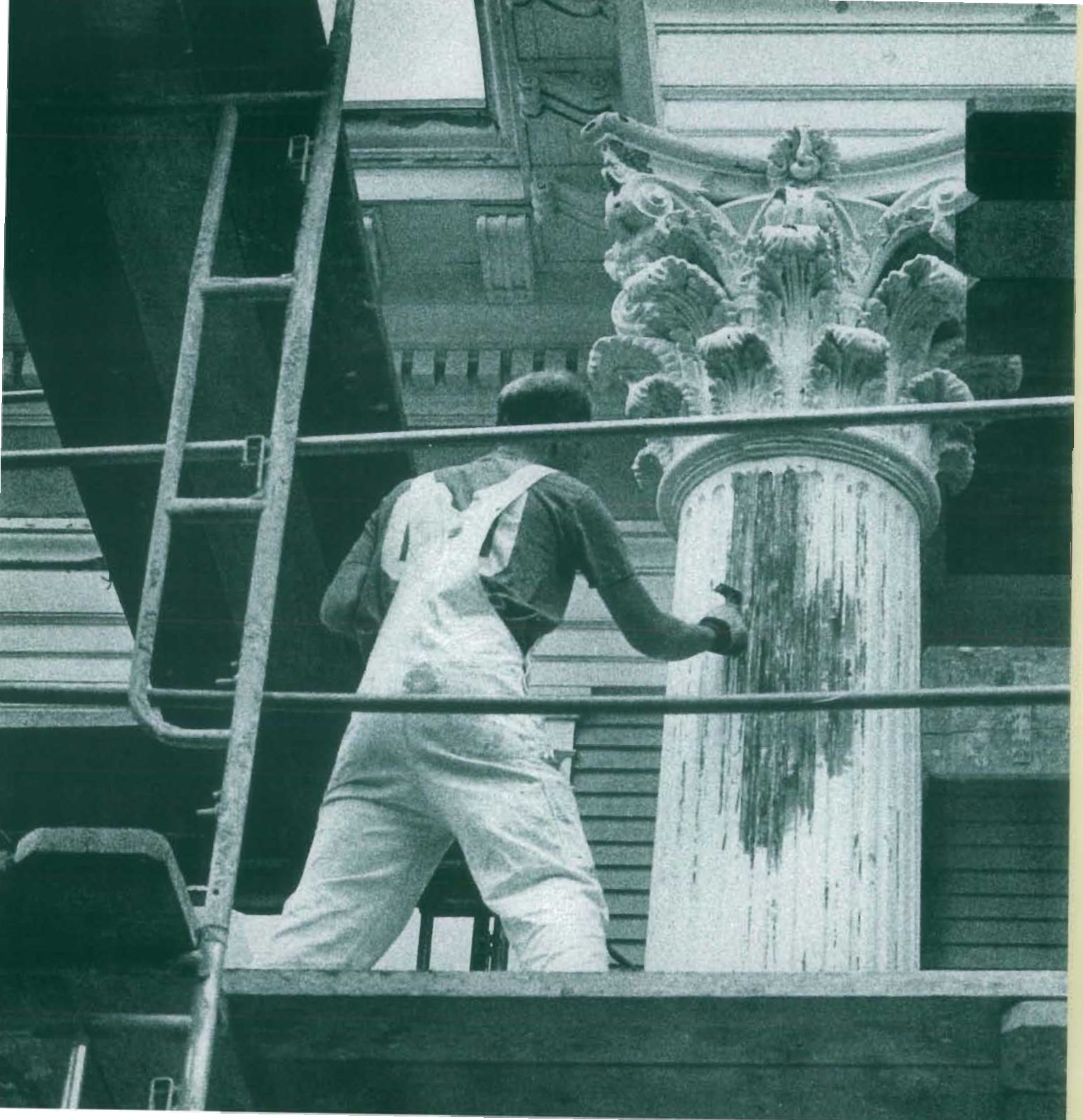


The Secretary of the Interior's Standards for Rehabilitation &

Illustrated Guidelines for Rehabilitating Historic Buildings

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

The Secretary of the Interior's Standards for Historic Preservation Projects with Guidelines for Applying the Standards were written in 1976 by W. Brown Morton III and Gary L. Hume (the ten Standards for Rehabilitation and their guidelines have been the most-used component of this larger document which also contains standards and guidelines for acquisition, protection, stabilization, preservation, restoration, and reconstruction). The guidelines to the rehabilitation standards were revised and expanded in 1983 by Gary L. Hume and Kay D. Weeks and issued together with the 1976 standards as a separate book entitled *The Secretary of the Interior's Standards for Rehabilitation with Guidelines for Applying the Standards*. The 1976 Standards for Rehabilitation were revised in 1990 by Gary L. Hume, H. Ward Jandl,and Kay D. Weeks following a public commenting period.

The Secretary of the Interior's Standard's for Rehabilitation and Illustrated Guidelines for Rehabilitating Historic Buildings / W. Brown Morton III ... [et al.] ; Anne E. Grimmer and Kay D. Weeks, project directors.
p. cm.
Includes bibliographical references.
1. Architecture—United States—Conservation and restoration—Standards. 2. Historic buildings—United States—Conservation and restoration—Standards. I. Morton, W. Brown. II. Grimmer, Anne E.. III. Weeks, Kay D. IV. United States. National Park Service. Preservation Assistance Division. V. Title: Illustrated guidelines for rehabilitating historic buildings.
NA106.S4 1991
720' .28'8021873—dc20 91-27060
CIP

For sale by the U.S. Government Printing Office
Superintendent of Documents, Mail Stop: SSOP, Washington, DC 20402-9328
ISBN 0-16-035979-1

The Secretary of the Interior's Standards for Rehabilitation &

Illustrated Guidelines for Rehabilitating Historic Buildings

W. Brown Morton III • Gary L. Hume • Kay D. Weeks • H. Ward Jandl

Anne E. Grimmer and Kay D. Weeks
Project Directors

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

Washington, D.C.
Reprinted 1997



Contents

Acknowledgements iii

Foreword iv

The Secretary of the Interior's Standards for Rehabilitation v

Guidelines for Rehabilitating Historic Buildings viii

Building Exterior
Masonry 1

Building Exterior
Wood 9

Building Exterior
Architectural Metals 17

Building Exterior
Roofs 23

Building Exterior
Windows 29

Building Exterior
Entrances and Porches 35

Building Exterior
Storefronts 41

Building Interior
Structural Systems 47

Building Interior
Spaces, Features, and Finishes 53

Building Interior
Mechanical Systems 61

Building Site 67

Setting *District or Neighborhood* 75

Energy Conservation 83

New Additions
to Historic Buildings 89

Accessibility Considerations 95

Health and Safety
Considerations 99

Appendix

Technical Guidance Publications 105

Photo Credit for Book Cover

Front/Back Covers: Residential rehabilitation, Seattle, Washington. © 1991. Mary Randlett.

Photo Credits for Chapter Heads

Building Exterior—Masonry. Jack E. Boucher, HABS.

Building Exterior—Wood. Jack E. Boucher, HABS.

Building Exterior—Architectural Metals. Cervin Robinson, HABS.

Building Exterior—Roofs. Jack E. Boucher, HABS.

Building Exterior—Windows. Jack E. Boucher, HABS.

Building Exterior—Entrances and Porches. Jack E. Boucher, HABS.

Building Exterior—Storefronts. Jack E. Boucher, HABS.

Building Interior—Structural Systems. Cervin Robinson, HABS.

Building Interior—Spaces, Features and Finishes. Brooks Photographers, HABS Collection.

Building Interior—Mechanical Systems. National Park Service Files.

Building Site. Jack E. Boucher, HABS.

Setting (District or Neighborhood). Charles Ashton.

Energy Conservation. Laura A. Muckenfuss.

New Additions to Historic Buildings. Rodney Gary.

Accessibility Considerations. Department of Cultural Resources, Raleigh, North Carolina.

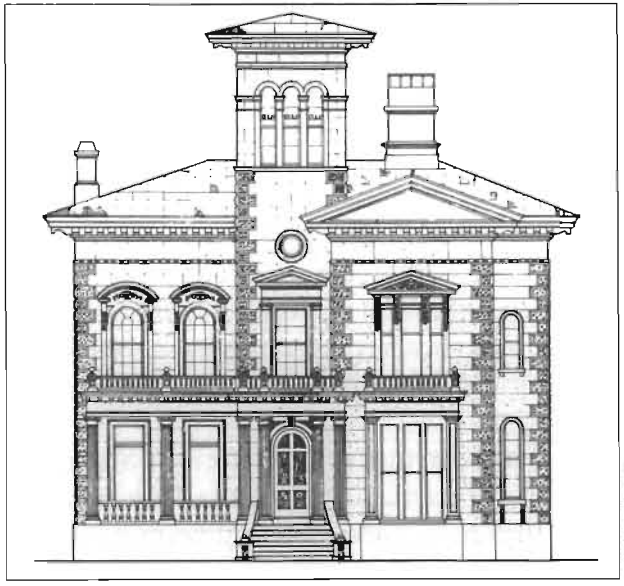
Health and Safety Considerations. National Park Service Files.



Acknowledgements

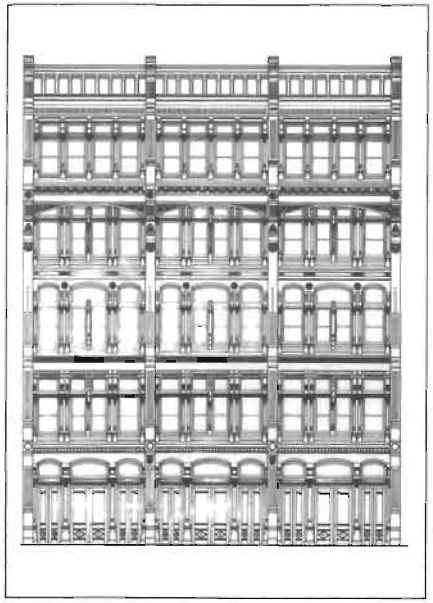
The illustrated version of the Standards and Guidelines for Rehabilitation was developed by the Technical Preservation Services Branch, Preservation Assistance Division of the National Park Service. Project Directors Anne E. Grimmer and Kay D. Weeks wish to thank those professional staff members who assisted in the book's preparation by providing technical review of the text, conducting photo research, and taking photographs. They include Michael J. Auer, Charles E. Fisher, Thomas C. Jester, Lauren G. Meier, ASLA, and Sharon C. Park, AIA. Tim Buehner prepared several technical drawings. Special thanks go to Jack E. Boucher and Catherine LaVoie of the Historic American Buildings Survey (HABS) who were especially helpful in conducting photographic research. Boucher's work appears throughout the book. Mary Randlett's photograph of ongoing rehabilitation work is featured on the cover.

All photographs and drawings included in this publication not individually credited have been selected from National Park Service Files.



HABS Collection

Foreword



HABS Collection

A banner year, 1991 marks the 75th anniversary of the National Park Service as well as 25 years of preservation achievements resulting from passage of the National Historic Preservation Act of 1966. Publication of the *illustrated* Guidelines for Rehabilitating Historic Buildings fittingly coincides with the celebration of this important Act that created our National Register programs and established a solid Federal/State partnership nationwide. Since 1966, over 800,000 properties have been placed in the National Register of Historic Places through the joint efforts of State Historic Preservation Offices, Federal agencies, Certified Local Governments, and the private sector. Over the past quarter century, historic preservation grants to the States for survey, planning and rehabilitation have amounted to nearly $600 million, an investment totaling close to $1.2 billion with the inclusion of matching non-Federal funds. Additionally, the Preservation Tax Incentives, now in their 14th year, have contributed to the rehabilitation of nearly 22,000 historic properties, representing an investment of almost $15 billion in private funds.

The Secretary of the Interior's Standards are of particular relevance here because they have been used to determine the appropriateness of work treatments for *every* grant-in-aid and Tax Act project over a 25-year period. By emphasizing repair over replacement, and limited rather than wholesale change to accommodate new uses, the Standards and their accompanying Guidelines seek to ensure the preservation of those qualities for which each property was listed in the National Register.

Finally, this illustrated version of the Guidelines for Rehabilitating Historic Buildings has been designed to enhance overall understanding of basic preservation principles. Showing specific examples of appropriate treatments as well as the consequences of inappropriate treatments is just another aspect of a sustained effort to encourage the most respectful approaches possible in rehabilitating our nation's irreplaceable historic properties.

The Secretary of the Interior's Standards for Rehabilitation

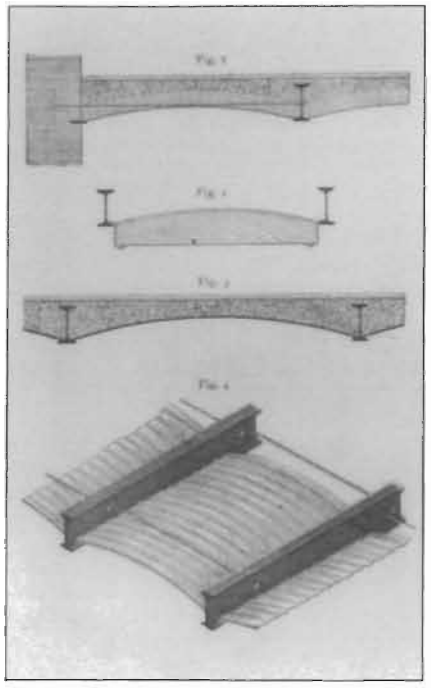
Introduction to the Standards

The Secretary of the Interior is responsible for establishing standards for all programs under Departmental authority and for advising Federal agencies on the preservation of historic properties listed in or eligible for listing in the National Register of Historic Places. In partial fulfillment of this responsibility, the Secretary of the Interior's Standards for Historic Preservation Projects have been developed to guide work undertaken on historic buildings; there are separate standards for acquisition, protection, stabilization, preservation, rehabilitation, restoration, and reconstruction. **The Standards for Rehabilitation** (codified in 36 CFR 67) comprise that section of the overall preservation project standards and addresses the most prevalent treatment. "Rehabilitation" is defined as "the process of returning a property to a state of utility, through repair or alteration, which makes possible an efficient contemporary use while preserving those portions and features of the property which are significant to its historic, architectural, and cultural values."

Initially developed by the Secretary of the Interior to determine the appropriateness of proposed project work on registered properties within the Historic Preservation Fund grant-in-aid program, the **Standards for Rehabilitation** have been widely used over the years — particularly to determine if a rehabilitation qualifies as a Certified Rehabilitation for Federal purposes. In addition, the Standards have guided



Federal agencies in carrying out their historic preservation responsibilities for properties in Federal ownership or control; and State and local officials in reviewing



both Federal and nonfederal rehabilitation proposals. They have also been adopted by historic district and planning commissions across the country.

The intent of the Standards is to assist the long-term preservation of a property's significance through the preservation of historic materials and features. The Standards pertain to historic buildings of all materials, construction types, sizes, and occupancy and encompass the exterior and interior of the buildings. They also encompass related landscape features and the building's site and environment, as well as attached, adjacent, or related new construction. To be certified for Federal tax purposes, a rehabilitation project must be determined by the Secretary to be consistent with the historic character of the structure(s), and where applicable, the district in which it is located.

As stated in the definition, the treatment "rehabilitation" assumes that at least some repair or alteration of the historic building will be needed in order to provide for an efficient contemporary use; however, these repairs and alterations must not damage or destroy materials, features or finishes that are important in defining the building's historic character. For example, certain treatments —if improperly applied—may cause or accelerate physical deterioration of the historic building. This can include using improper repointing or exterior masonry cleaning techniques, or introducing insulation that damages historic fabric. In almost all of these situations, use of these materials and treatments will result in a project that does not meet the Standards. Similarly, exterior additions that duplicate the form, material, and detailing of the structure to the extent that they compromise the historic character of the structure will fail to meet the Standards.

The Secretary of the Interior's Standards for Rehabilitation

The Standards (Department of Interior regulations, 36 CFR 67) pertain to historic buildings of all materials, construction types, sizes, and occupancy and encompass the exterior and the interior, related landscape features and the building's site and environment as well as attached, adjacent, or related new construction. The Standards are to be applied to specific rehabilitation projects in a reasonable manner, taking into consideration economic and technical feasibility.

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 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.



Guidelines for Rehabilitating Historic Buildings

Introduction to the Guidelines

The Guidelines for Rehabilitating Historic Buildings were initially developed in 1977 to help property owners, developers, and Federal managers apply the Secretary of the Interior's "Standards for Rehabilitation" during the project planning stage by providing general design and technical recommendations. Unlike the Standards, the Guidelines are *not* codified as program requirements. Together with the "Standards for Rehabilitation," they provide a model process for owners, developers, and Federal agency managers to follow.



Drawing: Nicholas Satterlee

The Guidelines are intended to assist in applying the Standards to projects generally; consequently, they are not meant to give case-specific advice or address exceptions or rare instances. For example, they cannot tell owners or developers which features of their own historic building are important in defining the historic character and must be preserved—although examples are provided in each section—or which features could be altered, if necessary, for the new use. This kind of careful case-by-case decision-making is best accomplished by seeking assistance from qualified historic preservation professionals in the planning stage of the project. Such professionals include architects, architectural historians, historians, archeologists, and others who are skilled in the preservation, rehabilitation, and restoration of the historic properties.

The Guidelines pertain to historic buildings of all sizes, materials, occupancy, and construction types; and apply to interior and exterior work as well as new exterior additions. Those approaches, treatments, and techniques that are consistent with the Secretary of the Interior's "Standards for Rehabilitation" are listed in the "**Recommended**" column on the left; those approaches, treatments, and techniques which could adversely affect a building's historic character are listed in the "**Not Recommended**" column on the right.

To provide clear and consistent guidance for owners, developers, and Federal agency managers to follow, the "Recommended" courses of action in each section are listed in order of historic preservation concerns so that a rehabilitation project may be successfully planned and completed—one that, first, assures the preservation of a building's important or "character-defining" architectural materials and features and, second, makes possible an efficient contemporary use. Rehabilitation guidance in each section begins with protection and maintenance, that work which should be maximized in every project to enhance overall preservation goals. Next, where some deterioration is present, repair of the building's historic materials and features is recommended. Finally, when deterioration is so extensive that repair is not possible, the most problematic area of work is considered: replacement of historic materials and features with new materials.

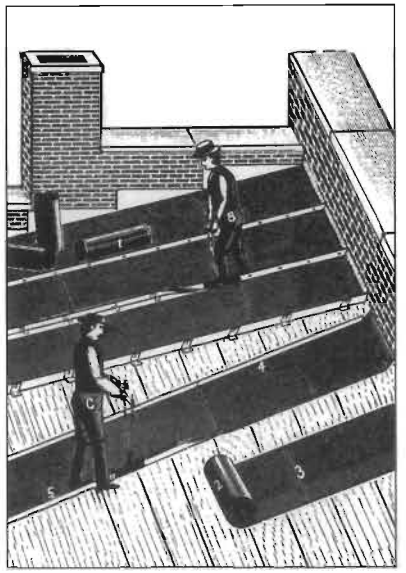
To further guide the owner and developer in planning a successful rehabilitation project, those complex design issues dealing with new use requirements such as alterations and additions are highlighted at the end of each section to underscore the need for particular sensitivity in these areas.

Identify, Retain, and Preserve

The guidance that is basic to the treatment of all historic buildings—*identifying, retaining, and preserving* the form and detailing of those architectural materials and features that are important in *defining the historic character*—is always listed first in the "Recommended" column. The parallel "Not Recommended" column lists the types of actions that are most apt to cause the diminution or even loss of the building's historic character. It should be remembered, however, that such loss of character is just as often caused by the cumulative effect of a series of actions that would seem to be minor interventions. Thus, the guidance in *all* of the "Not Recommended" columns must be viewed in that larger context, e.g., for the total impact on a historic building.

Protect and Maintain

After identifying those materials and features that are important and must be retained in the process of rehabilitation work, then *protecting and maintaining* them are addressed. Protection generally involves the least degree of intervention and is preparatory to other work. For example, protection includes the maintenance of historic material through treat-



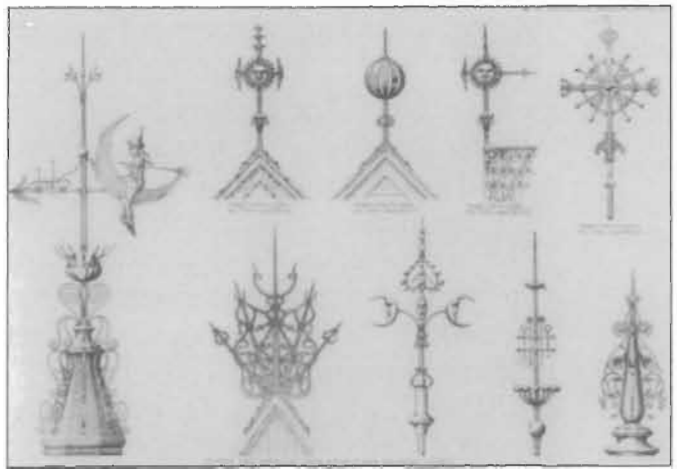
ments such as rust removal, caulking, limited paint removal, and re-application of protective coating; the cyclical cleaning of roof gutter systems; or installation of fencing, protective plywood, alarm systems and other temporary protective measures. Although a historic building will usually require more extensive work, an overall evaluation of its physical condition should always begin at this level.

Repair

Next, when the physical condition of character-defining materials and features warrants additional work *repairing* is recommended. Guidance for the repair of historic materials such as masonry, wood, and architectural metals again begins with the least degree of intervention possible such as patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading them according to recognized preservation methods. Repairing also includes the limited replacement in kind—or with compatible substitute material—of extensively deteriorated or missing *parts* of features when there are surviving prototypes (for example, brackets, dentils, steps, plaster, or portions of slate or tile roofing). Although using the same kind of material is always the preferred option, substitute material is acceptable if the form and design as well as the substitute material itself convey the visual appearance of the remaining parts of the feature and finish.

Replace

Following repair in the hierarchy, guidance is provided for *replacing* an entire



character-defining feature with new material because the level of deterioration or damage of materials precludes repair (for example, an exterior cornice; an interior staircase; or a complete porch or storefront). If the essential form and detailing are still evident so that the physical evidence can be used to re-establish the feature as an integral part of the rehabilitation project, then its replacement is appropriate. Like the guidance for repair, the preferred option is always replacement of the entire feature in kind, that is, with the

same material. Because this approach may not always be technically or economically feasible, provisions are made to consider the use of a compatible substitute material.

It should be noted that, while the National Park Service guidelines recommend the replacement of an entire character-defining feature under certain well-defined circumstances, they *never* recommend removal and replacement with new material of a feature that—although damaged or deteriorated—could reasonably be repaired and thus preserved.

Design for Missing Historic Features

When an entire interior or exterior feature is missing (for example, an entrance, or cast iron facade; or a principal staircase), it no longer plays a role in physically defining the historic character of the building unless it can be accurately recovered in form and detailing through the process of carefully documenting the historical appearance. Where an important architectural feature is missing, its recovery is always recommended in the guidelines as the *first* or preferred, course of action. Thus, if adequate historical, pictorial, and physical documentation exists so that the feature may be accurately reproduced, and if it is desirable to re-establish the feature as part of the building's historical appearance, then designing and constructing a new feature based on such information is appropriate. However, a *second* acceptable option for the replacement feature is a



new design that is compatible with the remaining character-defining features of the historic building. The new design should always take into account the size, scale, and material of the historic building itself and, most importantly, should be clearly differentiated so that a false historical appearance is not created.

Alterations/Additions to Historic Buildings

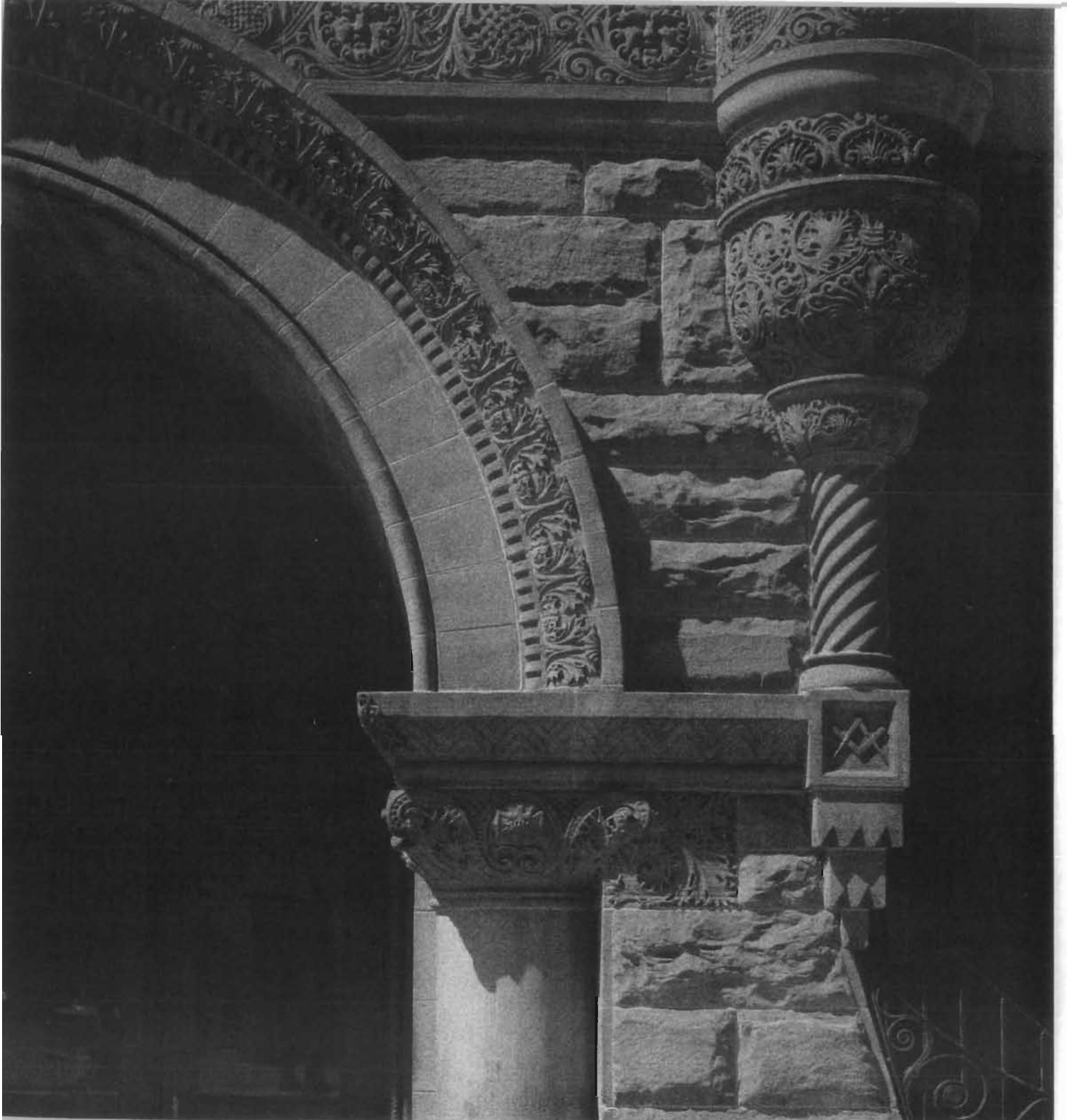
Some exterior and interior alterations to historic building are generally needed to assure its continued use, but it is most important that such alterations do not radically change, obscure, or destroy character-defining spaces, materials, features, or finishes. Alterations may include providing additional parking space on an existing historic building site; cutting new entrances or windows on secondary elevations; inserting an additional floor; installing an entirely new mechanical system; or creating an atrium or light well. Alteration may also include the selective removal of buildings or other features of the environment or building site that are intrusive and therefore detract from the overall historic character.

The construction of an exterior addition to a historic building may seem to be essential for the new use, but it is emphasized in the guidelines that such new additions should be avoided, if possible, and considered *only* after it is determined that those needs cannot be met by altering secondary, i.e., non character-defining interior spaces. If, after a thorough evaluation of interior solutions, an exterior addition is still judged to be the only viable alterative, it should be designed and constructed to be clearly differentiated from the historic building and so that the character-defining features are not radically changed, obscured, damaged, or destroyed.

Additions to historic buildings are referenced within specific sections of the guidelines such as Site, Roof, Structural Systems, etc., but are also considered in more detail in a separate section, New Additions to Historic Buildings.

Energy Conservation/Accessibility Considerations/Health and Safety Code Considerations

These sections of the rehabilitation guidance address work done to meet accessibility requirements and health and safety code requirements; or retrofitting measures to conserve energy. Although this work is quite often an important aspect of rehabilitation projects, it is usually not a part of the overall process of protecting or repairing character-defining features; rather, such work is assessed for it potential negative impact on the building's historic character. For this reason, particular care must be taken not to radically change, obscure, damage, or destroy character-defining materials or features in the process of undertaking work to meet various code requirements.



Building Exterior

Masonry

BRICK

STONE

TERRA COTTA

CONCRETE

ADOBE

STUCCO

MORTAR

Building Exterior

Masonry

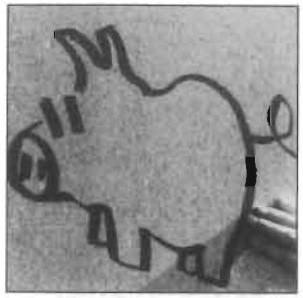
The longevity and appearance of a masonry wall is dependent upon the size of the individual units and the mortar.

Stone is one of the more lasting of masonry building materials and has been used throughout the history of American building construction. The kinds of stone most commonly encountered on historic buildings in the U.S. include various types of sandstone, limestone, marble, granite, slate and fieldstone. Brick varied considerably in size and quality. Before 1870, brick clays were pressed into molds and were often unevenly fired. The quality of brick depended on the type of clay available and the brick-making techniques; by the 1870s—with the perfection of an extrusion process—bricks became more uniform and durable. Terra cotta is also a kiln-dried clay product popular from the late 19th century until the 1930s. The development of the steel-frame office buildings in the early 20th century contributed to the widespread use of architectural terra cotta. Adobe, which consists of sun-dried earthen bricks, was one of the earliest permanent building materials used in the U.S., primarily in the Southwest where it is still popular.

Mortar is used to bond together masonry units. Historic mortar was generally quite soft, consisting primarily of lime and sand with other additives. After 1880, portland cement was usually added resulting in a more rigid and non-absorbing mortar. Like historic mortar, early stucco coatings were also heavily lime-based, increasing in hardness with the addition of portland cement in the late 19th century. Concrete has a long history, being variously made of tabby, volcanic ash and, later, of natural hydraulic cements, before the introduction of portland cement in the 1870s. Since then, concrete has also been used in its precast form.

While masonry is among the most durable of historic building materials, it is also very susceptible to damage by improper maintenance or repair techniques and harsh or abrasive cleaning methods.









Graffiti applied with a felt-tipped marker to polished granite is being removed with a misture of solvents. The slight ghost outline was successfully eliminated using the same solvent mixture in a clay poultice, followed by a thorough detergent and water rinse.

Recommended	Not Recommended
Identify, retain, and preserve	
Identifying, retaining, and preserving masonry features that are important in defining the overall historic character of the building such as walls, brackets, railings, cornices, window architraves, door pediments, steps, and columns and details such as tooling and bonding patterns, coatings, and color.	Removing or radically changing masonry features which are important in defining the overall historic character of the building so that, as a result, the character is diminished.
	Replacing or rebuilding a major portion of exterior masonry walls that could be repaired so that, as a result, the building is no longer historic and is essentially new construction.
	Applying paint or other coatings such as stucco to masonry that has been historically unpainted or uncoated to create a new appearance.
	Removing paint from historically painted masonry.
	Radically changing the type of paint or coating or its color.
Protect and maintain	
Protecting and maintaining masonry by providing proper drainage so that water does not stand on flat, horizontal surfaces or accumulate in curved decorative features.	Failing to evaluate and treat the various causes of mortar joint deterioration such as leaking roofs or gutters, differential settlement of the building, capillary action, or extreme weather exposure.
Cleaning masonry only when necessary to halt deterioration or remove heavy soiling.	Cleaning masonry surfaces when they are not heavily soiled to create a new appearance, thus needlessly introducing chemicals or moisture into historic materials.
Carrying out masonry surface cleaning tests after it has been determined that such cleaning is appropriate. Tests should be observed over a sufficient period of time so that both the immediate and the long range effects are known to enable selection of the gentlest method possible.	Cleaning masonry surfaces without testing or without sufficient time for the testing results to be of value.



Photo: The Old-House Journal

When this brick wall was sandblasted, a downspout (since removed) protected the original smooth surface of the center strip from damage.

Recommended	Not Recommended
Cleaning masonry surfaces with the gentlest method possible, such as low pressure water and detergents, using natural bristle brushes.	Sandblasting brick or stone surfaces using dry or wet grit or other abrasives. These methods of cleaning permanently erode the surface of the material and accelerate deterioration.
	Using a cleaning method that involves water or liquid chemical solutions when there is any possibility of freezing temperatures.
	Cleaning with chemical products that will damage masonry, such as using acid on limestone or marble, or leaving chemicals on masonry surfaces.
	Applying high pressure water cleaning methods that will damage historic masonry and the mortar joints.
Inspecting painted masonry surfaces to determine whether repainting is necessary.	Removing paint that is firmly adhering to, and thus protecting, masonry surfaces.
Removing damaged or deteriorated paint only to the next sound layer using the gentlest method possible (e.g., handscraping) prior to repainting.	Using methods of removing paint which are destructive to masonry, such as sandblasting, application of caustic solutions, or high pressure waterblasting.
Applying compatible paint coating systems following proper surface preparation.	Failing to follow manufacturers' product and application instructions when repainting masonry.
Repainting with colors that are historically appropriate to the building and district.	Using new paint colors that are inappropriate to the historic building and district.



Photo: Jack E. Boucher, HABS

Too hard and inflexible a mortar has caused this soft, 18th century brick to spall.

Recommended	Not Recommended
Evaluating the overall condition of the masonry to determine whether more than protection and maintenance are required, that is, if repairs to the masonry features will be necessary.	Failing to undertake adequate measures to assure the protection of masonry features.
Repair Repairing masonry walls and other masonry features by repointing the mortar joints where there is evidence of deterioration such as disintegrating mortar, cracks in mortar joints, loose bricks, damp walls, or damaged plasterwork.	Removing nondeteriorated mortar from sound joints, then repointing the entire building to achieve a uniform appearance.



Composite patching with a cementitious mixture is being used to repair eroded areas of this sandstone facade.

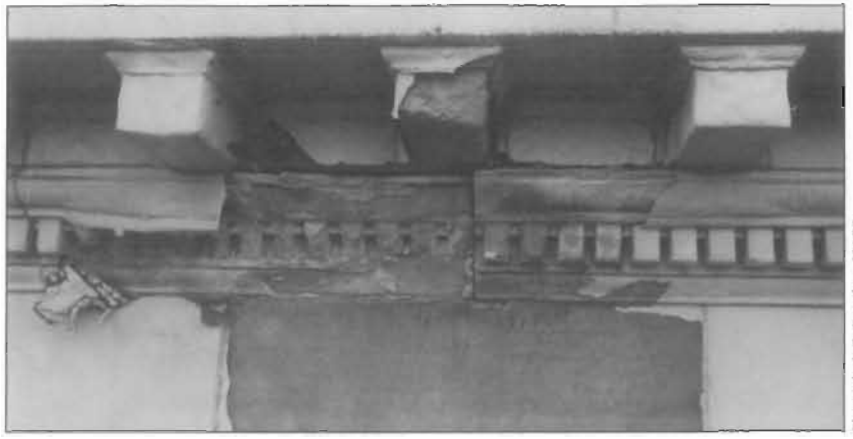


Photo: Jack E. Boucher, HABS

Moisture from a faulty roof and drainage system has been trapped inside this limestone cornice by a waterproof coating, causing severe damage to the stone.

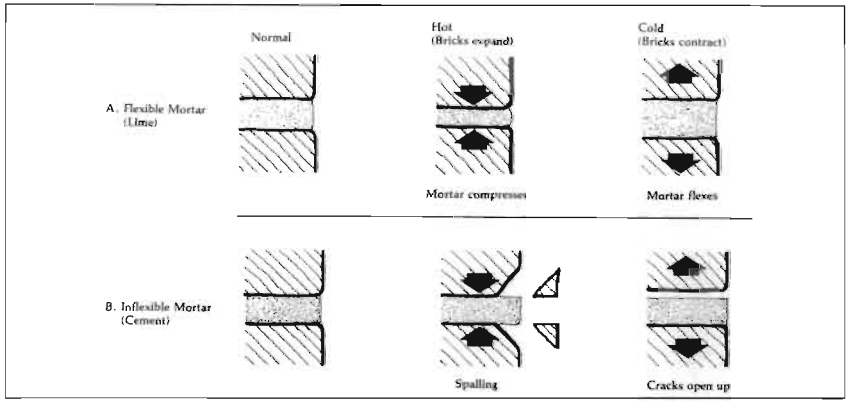


Photo: Jack E. Boucher, HABS

Excessive moisture has damaged not only the stuccoed wall surface, but also the brick substrate.

Recommended	Not Recommended
Removing deteriorated mortar by carefully hand-raking the joints to avoid damaging the masonry.	Using electric saws and hammers rather than hand tools to remove deteriorated mortar from joints prior to repointing.
Duplicating old mortar in strength, composition, color, and texture.	Repointing with mortar of high portland cement content (unless it is the content of the historic mortar). This can often create a bond that is stronger than the historic material and can cause damage as a result of the differing coefficient of expansion and the differing porosity of the material and the mortar.
	Repointing with a synthetic caulking compound.
	Using a "scrub" coating technique to repoint instead of traditional repointing methods.
Duplicating old mortar joints in width and in joint profile.	Changing the width or joint profile when repointing.
Repairing stucco by removing the damaged material and patching with new stucco that duplicates the old in strength, composition, color, and texture.	Removing sound stucco; or repairing with new stucco that is stronger than the historic material or does not convey the same visual appearance.
Using mud plaster as a surface coating over unfired, unstabilized adobe because the mud plaster will bond to the adobe.	Applying cement stucco to unfired, unstabilized adobe. Because the cement stucco will not bond properly, moisture can become entrapped between materials, resulting in accelerated deterioration of the adobe.

Recommended	Not Recommended
Cutting damaged concrete back to remove the source of deterioration (often corrosion on metal reinforcement bars). The new patch must be applied carefully so it will bond satisfactorily with, and match, the historic concrete.	Patching concrete without removing the source of deterioration.
Repairing masonry features by patching, piecing-in, or consolidating the masonry using recognized preservation methods. Repair may also include the limited replacement in kind—or with compatible substitute material—of those extensively deteriorated or missing parts of masonry features when there are surviving prototypes such as terra-cotta brackets or stone balusters.	Replacing an entire masonry feature such as a cornice or balustrade when repair of the masonry and limited replacement of deteriorated or missing parts are appropriate. Using a substitute material for the replacement part that does not convey the visual appearance of the surviving parts of the masonry feature or that is physically or chemically incompatible.
Applying new or non-historic surface treatments such as water-repellent coatings to masonry only after repointing and only if masonry repairs have failed to arrest water penetration problems.	Applying waterproof, water repellent, or non-historic coating such as stucco to masonry as a substitute for repointing and masonry repairs. Coatings are frequently unnecessary, expensive, and may change the appearance of historic masonry as well as accelerate its deterioration.



Flexible mortar expands and contracts with temperature changes. Bricks bonded by inflexible mortar tend to spall at the edges in hot weather and separate from the mortar when it is cold. Temperature fluctuations result in cracks which permit water to enter, causing additional deterioration.

Recommended

Replace

Replacing in kind an entire masonry feature that is too deteriorated to repair—if the overall form and detailing are still evident—using the physical evidence as a model to reproduce the feature. Examples can include large sections of a wall, a cornice, balustrade, column, or stairway. If using the same kind of material is not technically or economically feasible, then a compatible substitute material may be considered.



Not Recommended

Removing a masonry feature that is unrepairable and not replacing it; or replacing it with a new feature that does not convey the same visual appearance.

Design for Missing Historic Features

The following work is highlighted to indicate that it represents the particularly complex technical or design aspects of rehabilitation projects and should only be considered after the preservation concerns listed above have been addressed.

Recommended

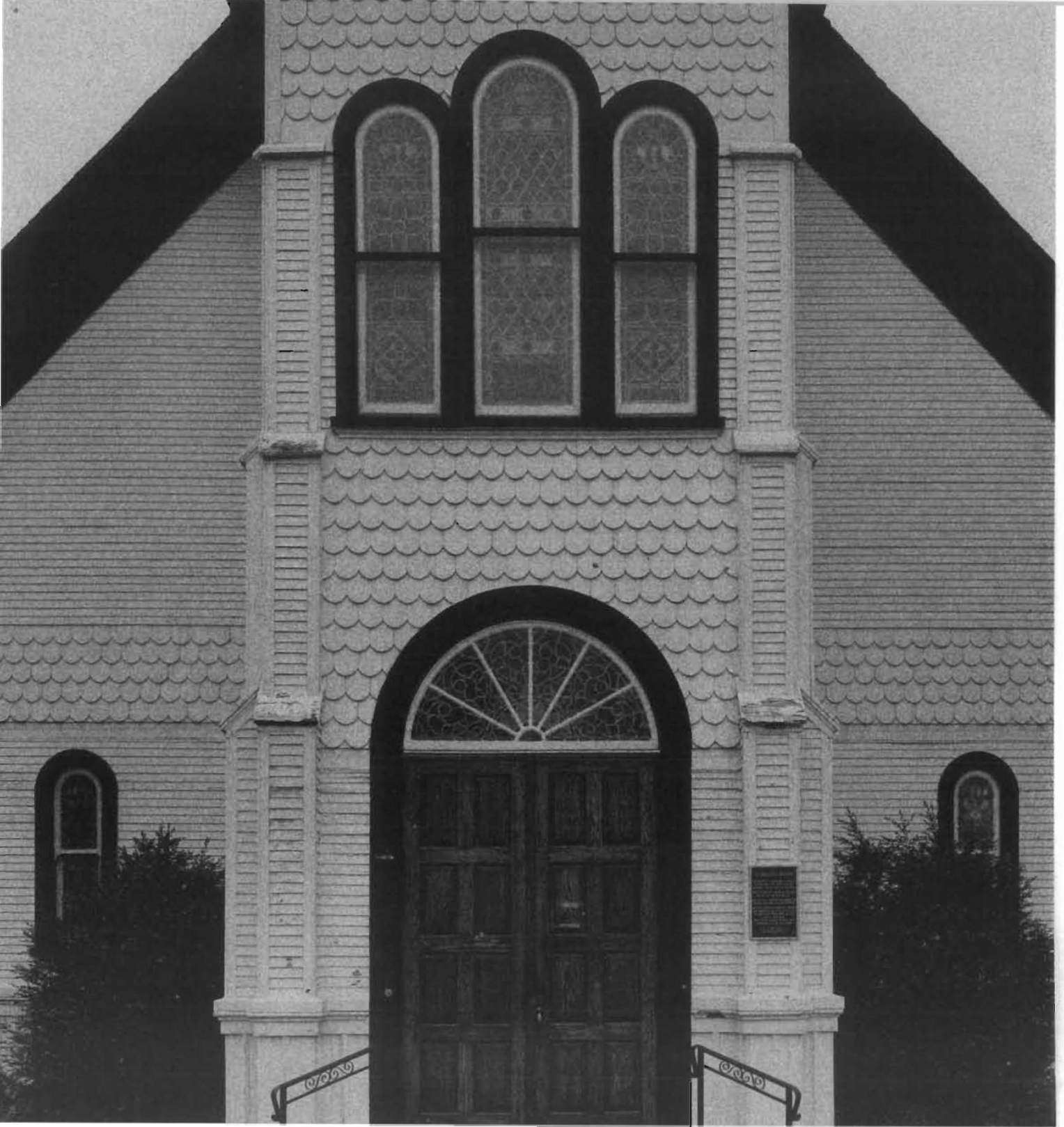
Designing and installing a new masonry feature such as steps or a door pediment when the historic feature is completely missing. It may be an accurate restoration using historical, pictorial, and physical documentation; or be a new design that is compatible with the size, scale, material, and color of the historic building.

Not Recommended

Creating a false historical appearance because the replaced masonry feature is based on insufficient historical, pictorial, and physical documentation.

Introducing a new masonry feature that is incompatible in size, scale, material and color.

Coving—the hollowing out of an adobe wall just above grade—may be caused by standing rainwater, rainwater splash-up from the ground, or by salts deposited in the adobe by moisture evaporation. This adobe wall is being patched in the traditional manner with adobe mud.



Building Exterior

Wood

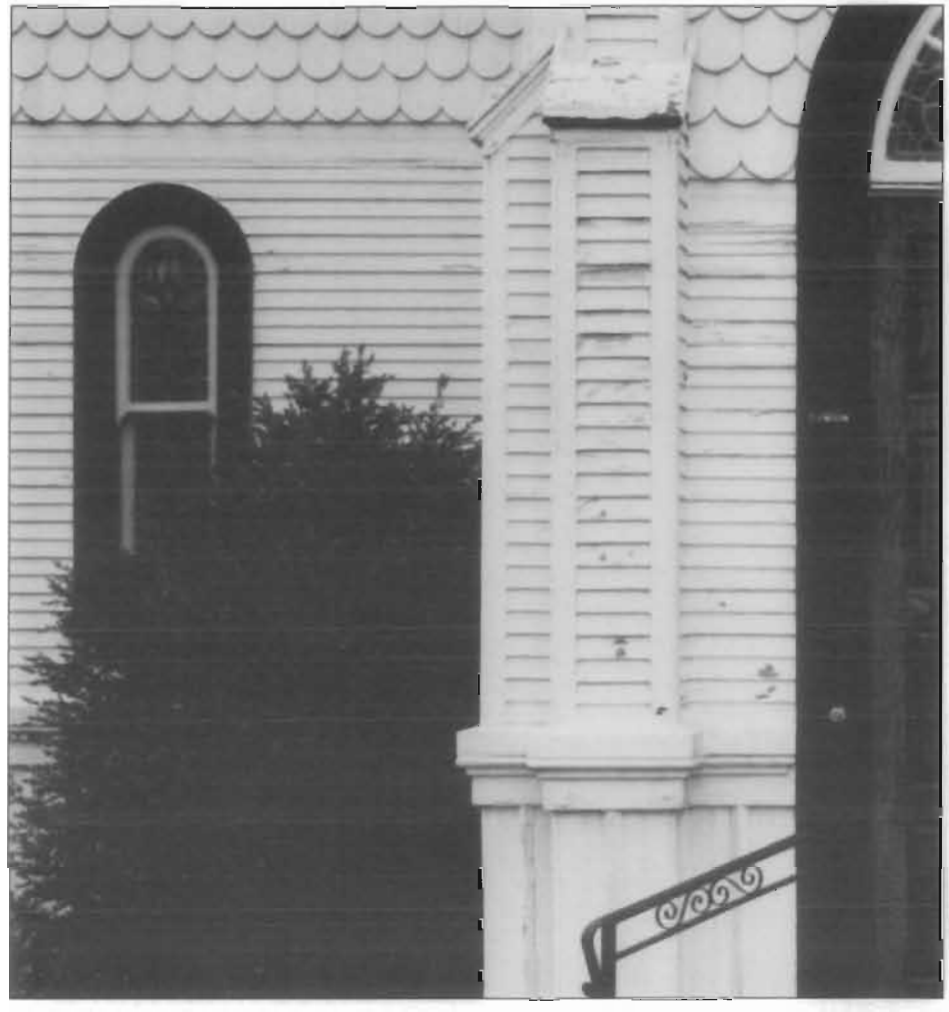
Clapboard
Weatherboard
Shingles and
other Wooden Siding
and Decorative Elements

Building Exterior

Wood

Because it can be easily shaped by sawing, planing, carving, and gouging, wood is used for architectural features such as clapboard, cornices, brackets, entablatures, shutters, columns and balustrades. These wooden features, both functional and decorative, may be important in defining the historic character of the building and thus their retention, protection, and repair are important in rehabilitation projects.

Wood has played a central role in American buildings during every period and in every style. Whether as structural membering, exterior cladding, roofing, interior finishes, or decorative features, wood is frequently an essential component of historic and older buildings.



Recommended

Not Recommended

Identify, retain, and preserve

Identifying, retaining, and preserving wood features that are important in defining the overall historic character of the building such as siding, cornices, brackets, window architraves, and doorway pediments; and their paints, finishes, and colors.

Removing or radically changing wood features which are important in defining the overall historic character of the building so that, as a result, the character is diminished.

Removing a major portion of the historic wood from a facade instead of repairing or replacing only the deteriorated wood, then reconstructing the facade with new material in order to achieve a uniform or "improved" appearance.

Radically changing the type of finish or its color or accent scheme so that the historic character of the exterior is diminished.

Stripping historically painted surfaces to bare wood, then applying clear finishes or stains in order to create a "natural look."

Stripping paint or varnish to bare wood rather than repairing or reapplying a special finish, i.e., a grained finish to an exterior wood feature such as a front door.



Due to lack of maintenance, the paint has peeled to bare wood. In order to survive, this cornice will need to be scraped, sanded, and re-painted together with other essential repairs.

Protect and maintain

Protecting and maintaining wood features by providing proper drainage so that water is not allowed to stand on flat, horizontal surfaces or accumulate in decorative features.

Failing to identify, evaluate, and treat the causes of wood deterioration, including faulty flashing, leaking gutters, cracks and holes in siding, deteriorated caulking in joints and seams, plant material growing too close to wood surfaces, or insect or fungus infestation.

Applying chemical preservatives to wood features such as beam ends or outriggers that are exposed to decay hazards and are traditionally unpainted.

Using chemical preservatives such as creosote which can change the appearance of wood features unless they were used historically.

Recommended	Not Recommended
Retaining coatings such as paint that help protect the wood from moisture and ultraviolet light. Paint removal should be considered only where there is paint surface deterioration and as part of an overall maintenance program which involves repainting or applying other appropriate protective coatings.	Stripping paint or other coatings to reveal bare wood, thus exposing historically coated surfaces to the effects of accelerated weathering.
Inspecting painted wood surfaces to determine whether repainting is necessary or if cleaning is all that is required.	Removing paint that is firmly adhering to, and thus, protecting wood surfaces. Replacing an entire wood feature such as a cornice or wall when repair of the wood and limited replacement of deteriorated or missing parts are appropriate. Using substitute material for the replacement part that does not convey the visual appearance of the surviving parts of the wood feature or that is physically or chemically incompatible.
Removing damaged or deteriorated paint to the next sound layer using the gentlest method possible (handscraping and handsanding), then repainting.	Using destructive paint removal methods such as a propane or butane torches, sandblasting or waterblasting. These methods can irreversibly damage historic woodwork.



If a character-defining feature is missing, it should be replaced with a matching feature. This shop artisan used traditional tools to replicate a missing porch bracket; after the new bracket is painted, both original and duplicate will be installed on-site.

Deteriorated clapboards are being selectively replaced, thereby maximizing retention of the historic siding.



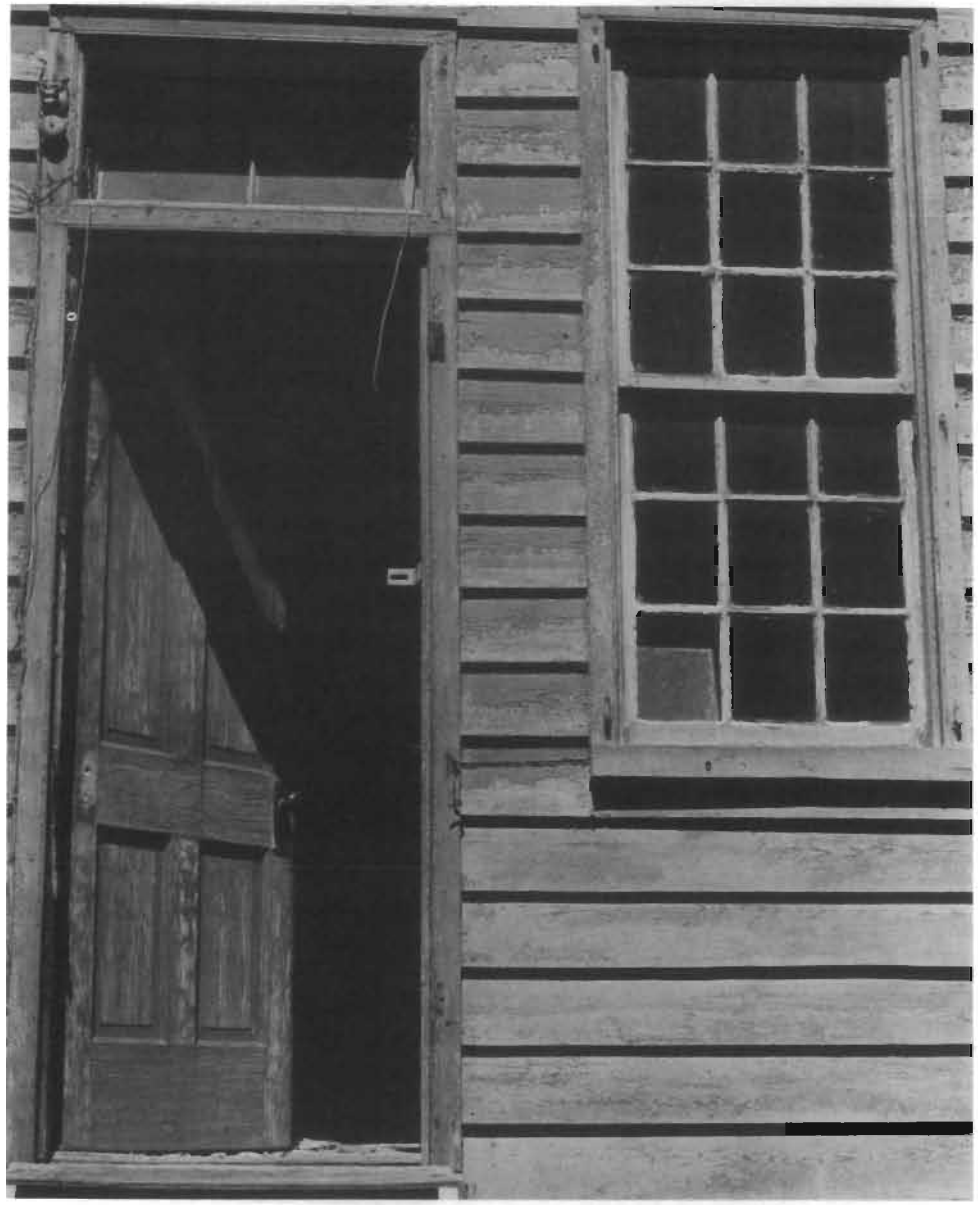
Recommended	Not Recommended
Using with care electric hot-air guns on decorative wood features and electric heat plates on flat wood surfaces when paint is so deteriorated that total removal is necessary prior to repainting.	Using thermal devices improperly so that the historic woodwork is scorched.
Using chemical strippers primarily to supplement other methods such as handscraping, handsanding and the above-recommended thermal devices. Detachable wooden elements such as shutters, doors, and columns may—with the proper safeguards—be chemically dip-stripped.	Failing to neutralize the wood thoroughly after using chemicals so that new paint does not adhere. Allowing detachable wood features to soak too long in a caustic solution so that the wood grain is raised and the surface roughened.
Applying compatible paint coating systems following proper surface preparation.	Failing to follow manufacturers' product and application instructions when repainting exterior woodwork.

Recommended	Not Recommended
Repainting with colors that are appropriate to the historic building and district.	Using new colors that are inappropriate to the historic building or district.
Evaluating the overall condition of the wood to determine whether more than protection and maintenance are required, that is, if repairs to wood features will be necessary.	Failing to undertake adequate measures to assure the protection of wood features.
Repair	
Repairing wood features by patching, piecing-in, consolidating, or otherwise reinforcing the wood using recognized preservation methods. Repair may also include the limited replacement in kind—or with compatible substitute material—of those extensively deteriorated or missing parts of features where there are surviving prototypes such as brackets, molding, or sections of siding.	Replacing an entire wood feature such as a cornice or wall when repair of the wood and limited replacement of deteriorated or missing parts are appropriate. Using substitute material for the replacement part that does not convey the visual appearance of the surviving parts of the wood feature or that is physically or chemically incompatible.
Replace	
Replacing in kind an entire wood feature that is too deteriorated to repair—if the overall form and detailing are still evident—using the physical evidence as a model to reproduce the feature. Examples of wood features include a cornice, entablature or balustrade. If using the same kind of material is not technically or economically feasible, then a compatible substitute material may be considered.	Removing an entire wood feature that is unrepairable and not replacing it; or replacing it with a new feature that does not convey the same visual appearance.





To replace deteriorated portions of the column, strips of new wood were milled to conform to the shape and appearance of the old column framework, glued in place, then back-primed and painted.



As protection from the extremes of weather, paint should be re-applied to exterior wood on a regular basis.

Design for Missing Historic Features

The following work is highlighted to indicate that it represents the particularly complex technical or design aspects of rehabilitation projects and should only be considered after the preservation concerns listed above have been addressed.

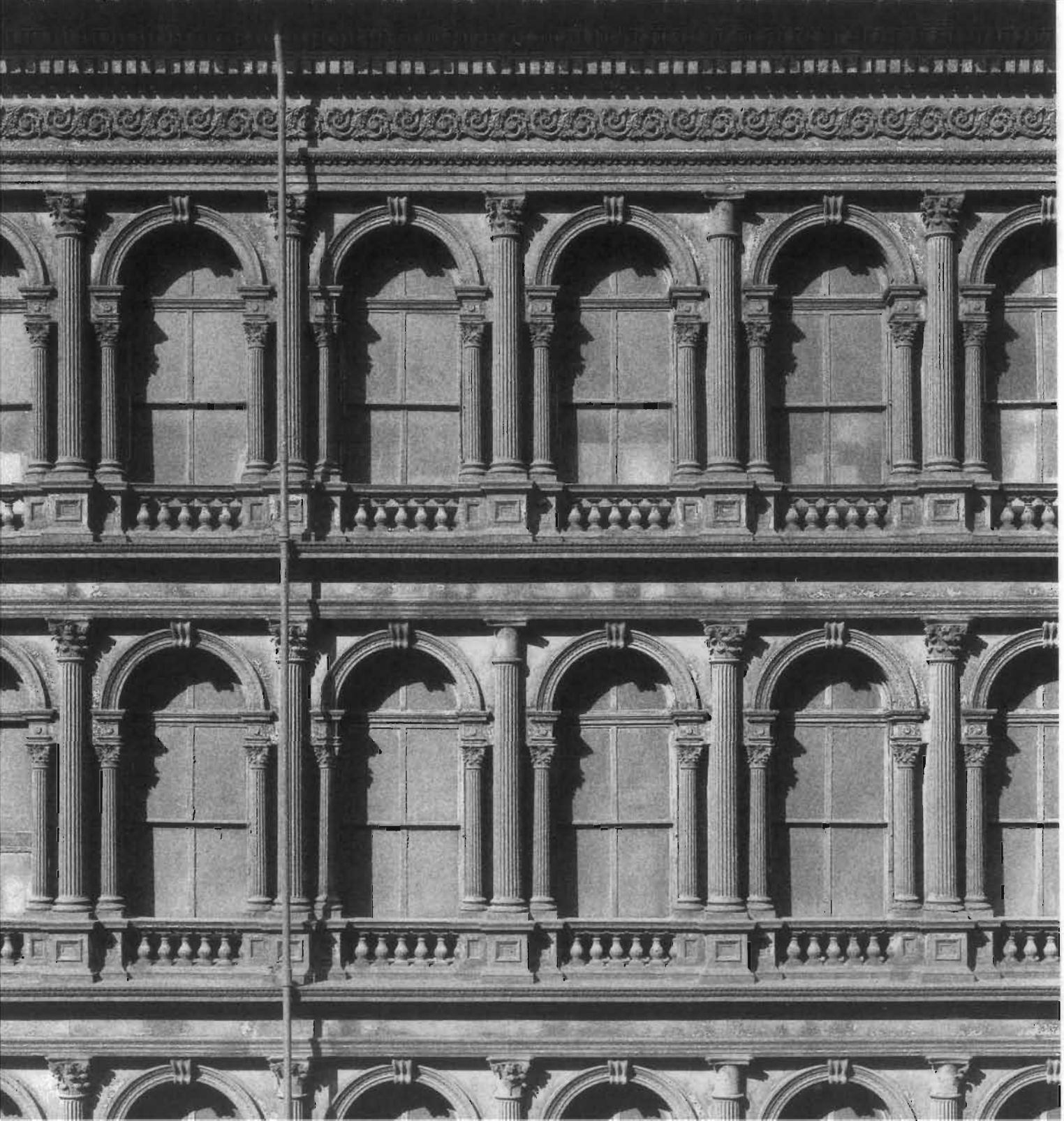
Recommended

Designing and installing a new wood feature such as a cornice or doorway when the historic feature is completely missing. It may be an accurate restoration using historical, pictorial, and physical documentation; or be a new design that is compatible with the size, scale, material, and color of the historic building.

Not Recommended

Creating a false historical appearance because the replaced wood feature is based on insufficient historical, pictorial, and physical documentation.

Introducing a new wood feature that is incompatible in size, scale, material and color.



Building Exterior

Architectural Metals

Cast iron

Steel

Pressed Tin

Copper

Aluminum

Zinc

Building Exterior

Architectural Metals

Architectural metal features—such as cast iron facades, porches, and steps; sheet metal cornices, siding, roofs, roof cresting and storefronts; and cast or rolled metal doors, window sash, entablatures, and hardware—are often highly decorative and may be important in defining the overall historic character of the building.

Metals commonly used in historic buildings include lead, tin, zinc, copper, bronze, brass, iron, steel, and to a lesser extent, nickel alloys, stainless steel and aluminum. Historic metal building components were often created by highly skilled, local artisans, and by the late 19th century, many of these components were prefabricated and readily available from catalogs in standardized sizes and designs.

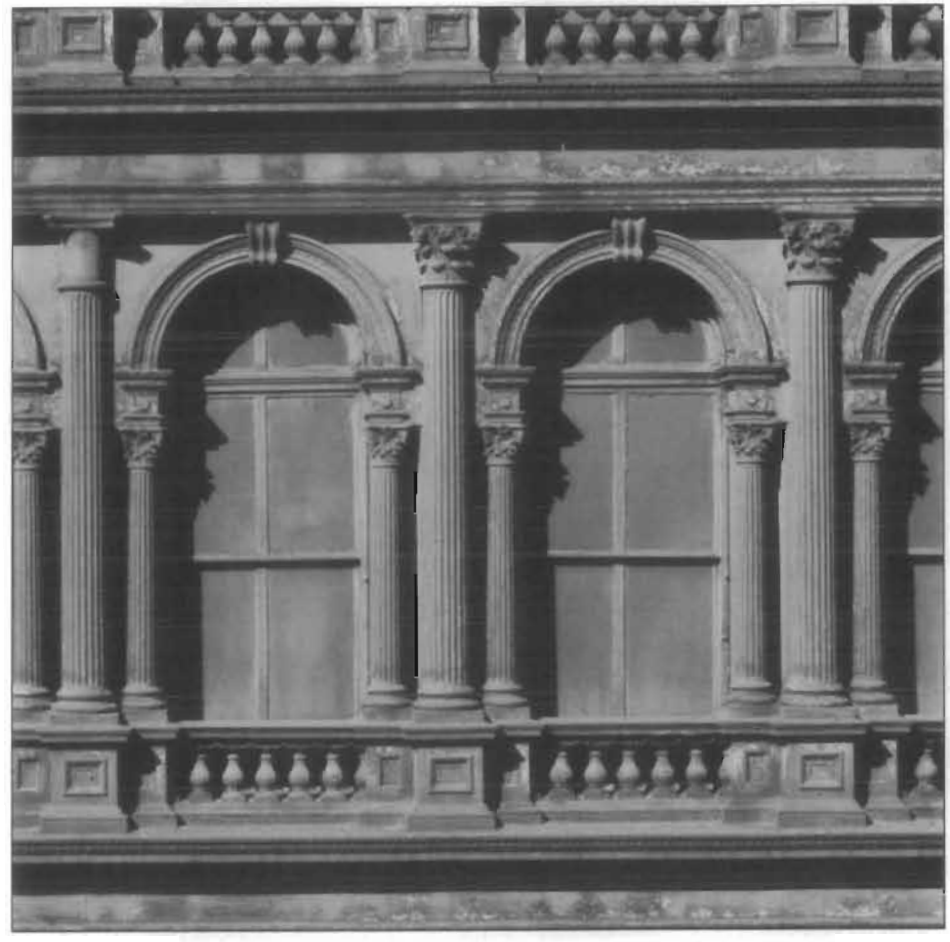


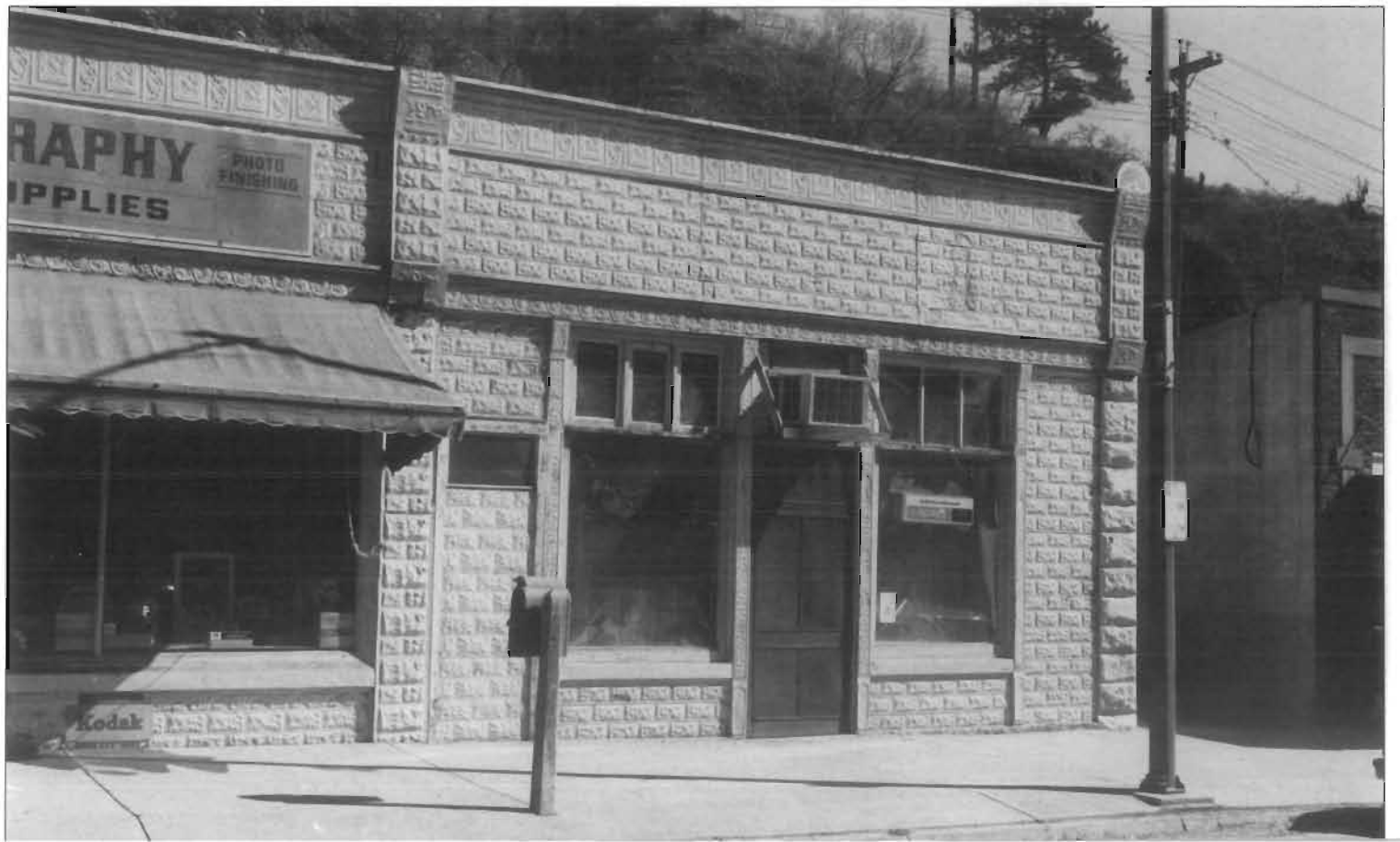


Photo: Jack E. Boucher, HABS.

The decorative cast-iron storefront column was sandblasted in order to remove flaking paint and rust prior to repainting. Unlike soft metals such as copper and tin, which are damaged by abrasive cleaning, sandblasting is an appropriate method for cleaning cast iron, a very hard metal.

Recommended	Not Recommended
Identify, retain, and preserve	
Identifying, retaining, and preserving architectural metal features such as columns, capitals, window hoods, or stairways that are important in defining the overall historic character of the building; and their finishes and colors. Identification is also critical to differentiate between metals prior to work. Each metal has unique properties and thus requires different treatments.	Removing or radically changing architectural metal features which are important in defining the overall historic character of the building so that, as a result, the character is diminished. Removing a major portion of the historic architectural metal from a facade instead of repairing or replacing only the deteriorated metal, then reconstructing the facade with new material in order to create a uniform, or "improved" appearance. Radically changing the type of finish or its historic color or accent scheme.
Protect and maintain	
Protecting and maintaining architectural metals from corrosion by providing proper drainage so that water does not stand on flat, horizontal surfaces or accumulate in curved, decorative features.	Failing to identify, evaluate, and treat the causes of corrosion, such as moisture from leaking roofs or gutters. Placing incompatible metals together without providing a reliable separation material. Such incompatibility can result in galvanic corrosion of the less noble metal, e.g., copper will corrode cast iron, steel, tin, and aluminum.
Cleaning architectural metals, when appropriate, to remove corrosion prior to repainting or applying other appropriate protective coatings.	Exposing metals which were intended to be protected from the environment. Applying paint or other coatings to metals such as copper, bronze, or stainless steel that were meant to be exposed.
Identifying the particular type of metal prior to any cleaning procedure and then testing to assure that the gentlest cleaning method possible is selected or determining that cleaning is inappropriate for the particular metal.	Using cleaning methods which alter or damage the historic color, texture, and finish of the metal; or cleaning when it is inappropriate for the metal. Removing the patina of historic metal. The patina may be a protective coating on some metals, such as bronze or copper, as well as a significant historic finish.

Recommended	Not Recommended
Cleaning soft metals such as lead, tin, copper, terneplate, and zinc with appropriate chemical methods because their finishes can be easily abraded by blasting methods.	Cleaning soft metals such as lead, tin, copper, terneplate, and zinc with grit blasting which will abrade the surface of the metal.
Using the gentlest cleaning methods for cast iron, wrought iron, and steel—hard metals—in order to remove paint buildup and corrosion. If handscraping and wire brushing have proven ineffective, low pressure grit blasting may be used as long as it does not abrade or damage the surface.	Failing to employ gentler methods prior to abrasively cleaning cast iron, wrought iron or steel; or using high pressure grit blasting.



Although these pressed metal storefronts have been well maintained over the years, gaps in the seams between the metal sheets above the door and slight stains along the cornice line indicate a possible roof leak. The roof should be investigated and repaired before the moisture results in rust and more severe metal deterioration.

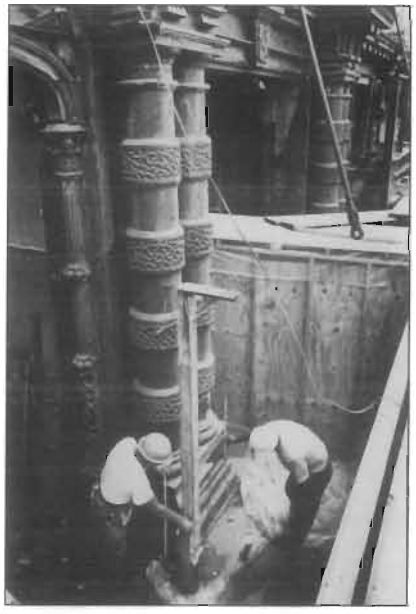
Recommended	Not Recommended
Applying appropriate paint or other coating systems after cleaning in order to decrease the corrosion rate of metals or alloys.	Failing to re-apply protective coating systems to metals or alloys that require them after cleaning so that accelerated corrosion occurs.
Repainting with colors that are appropriate to the historic building or district.	Using new colors that are inappropriate to the historic building or district.



Photo: Jack E. Boucher, HABS.

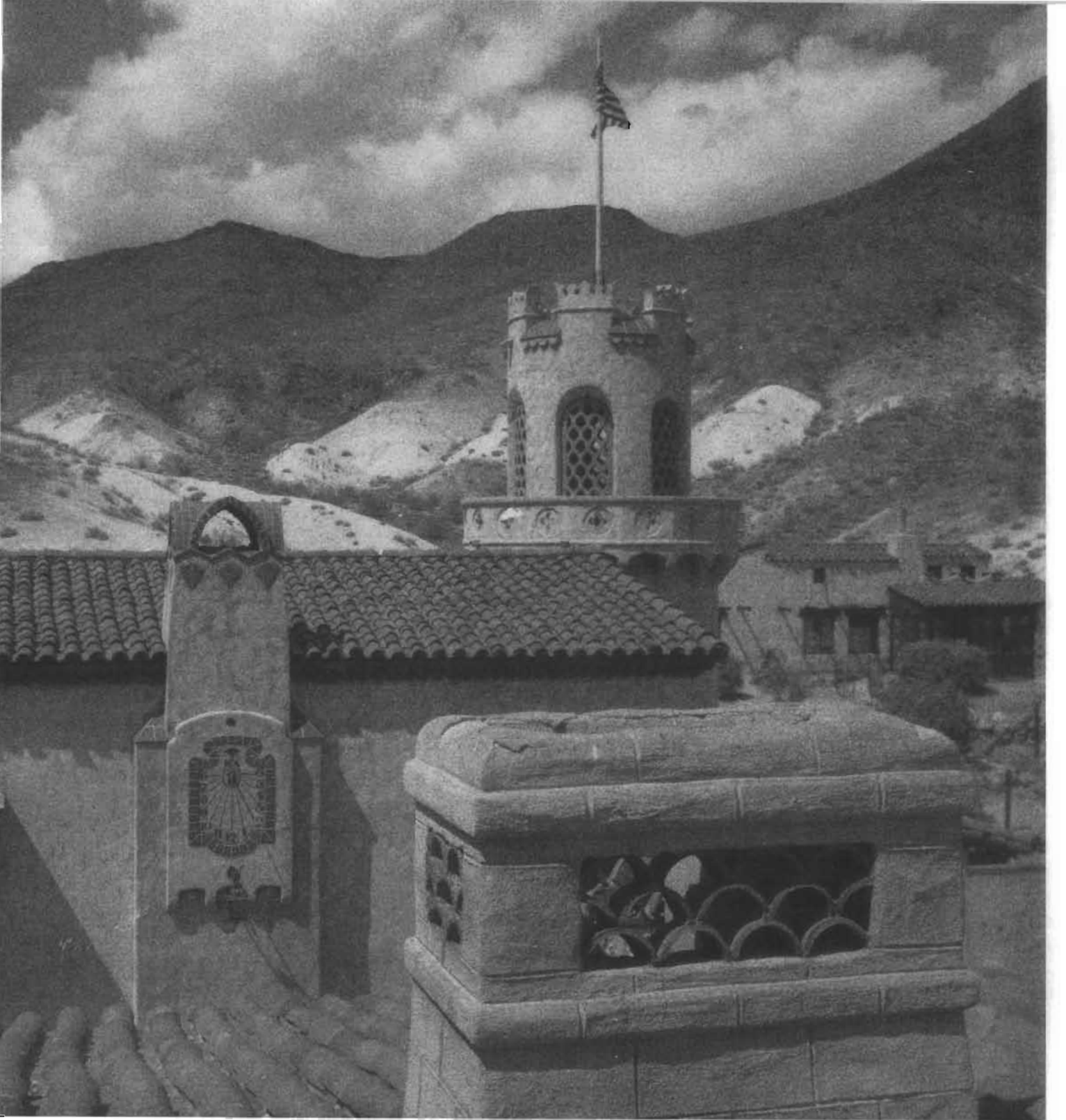
Deteriorated portions of the decorative pressed metal cornice have been inappropriately replaced with non-matching, plain metal sheets, adversely affecting the historic character of this building.

Applying an appropriate protective coating such as lacquer to an architectural metal feature such as a bronze door which is subject to heavy pedestrian use.	Failing to assess pedestrian use or new access patterns so that architectural metal features are subject to damage by use or inappropriate maintenance such as salting adjacent sidewalks.
Evaluating the overall condition of the architectural metals to determine whether more than protection and maintenance are required, that is, if repairs to features will be necessary.	Failing to undertake adequate measures to assure the protection of architectural metal features.



The cast-iron columns of this theater are being repaired during rehabilitation. Some of the cast iron elements such as the smaller, non-structural columns missing from the bay on the right will be replaced with a lightweight substitute material such as cast aluminum, an acceptable alternative according to the Standards.

	Recommended	Not Recommended
	Repair Repairing architectural metal features by patching, splicing, or otherwise reinforcing the metal following recognized preservation methods. Repairs may also include the limited replacement in kind—or with a compatible substitute material—of those extensively deteriorated or missing parts of features when there are surviving prototypes such as porch balusters, column capitals or bases; or porch cresting.	Replacing an entire architectural metal feature such as a column or a balustrade when repair of the metal and limited replacement of deteriorated or missing parts are appropriate. Using a substitute material for the replacement part that does not convey the visual appearance of the surviving parts of the architectural metal feature or is that physically or chemically incompatible.
	Replace Replacing in kind an entire architectural metal feature that is too deteriorated to repair—if the overall form and detailing are still evident—using the physical evidence as a model to reproduce the feature. Examples could include cast iron porch steps or steel sash windows. If using the same kind of material is not technically or economically feasible, then a compatible substitute material may be considered.	Removing an architectural metal feature that is unrepairable and not replacing it; or replacing it with a new architectural metal feature that does not convey the same visual appearance.
The following work is highlighted to indicate that it represents the particularly complex technical or design aspects of rehabilitation projects and should only be considered after the preservation concerns listed above have been addressed.	Recommended	Not Recommended
	Design for Missing Historic Features Designing and installing a new architectural metal feature such as a metal cornice or cast iron capital when the historic feature is completely missing. It may be an accurate restoration using historical, pictorial, and physical documentation; or be a new design that is compatible with the size, scale, material, and color of the historic building.	Creating a false historical appearance because the replaced architectural metal feature is based on insufficient historical, pictorial, and physical documentation. Introducing a new architectural metal feature that is incompatible in size, scale, material and color.



Building Exterior

Roofs

Building Exterior

Roofs

The roof—with its shape; features such as cresting, dormers, cupolas, and chimneys; and the size, color, and patterning of the roofing material—is an important design element of many historic buildings. In addition, a weather tight roof is essential to the longterm preservation of the entire structure. Historic roofing reflects availability of materials, levels of construction technology, weather, and cost. For example, throughout the country in all periods of history, wood shingles have been used—their size, shape, and detailing differing according to regional craft practices. European settlers used clay tile for roofing as early as the mid-17th century. In some cities, such as New York and Boston, clay was popularly used as a precaution against fire. The Spanish influence in the use of clay tiles is found in the southern, southwestern and western states. In the mid-19th century, tile roofs were often replaced by sheet-metal, which is lighter and easier to maintain. Evidence of the use of slate for roofing dates from the mid-17th century. Slate has remained popular for its durability, fireproof qualities, and decorative applications. The use of metals for roofing and roof features dates from the 18th century, and includes the use of sheet iron, corrugated iron, galvanized metal, tinplate, copper, lead and zinc. Awareness of these and other traditions of roofing materials and their detailing will contribute to more sensitive treatment.



Recommended

Not Recommended

Identify, retain, and preserve

Identifying, retaining, and preserving roofs—and their functional and decorative features—that are important in defining the overall historic character of the building. This includes the roof's shape, such as hipped, gambrel, and mansard; decorative features such as cupolas, cresting, chimneys, and weathervanes; and roofing material such as slate, wood, clay tile, and metal, as well as its size, color, and patterning.

Radically changing, damaging, or destroying roofs which are important in defining the overall historic character of the building so that, as a result, the character is diminished.

Removing a major portion of the roof or roofing material that is repairable, then reconstructing it with new material in order to create a uniform, or "improved" appearance.

Changing the configuration of a roof by adding new features such as dormer windows, vents, or skylights so that the historic character is diminished.

Stripping the roof of sound historic material such as slate, clay tile, wood, and architectural metal.

Applying paint or other coatings to roofing material which has been historically uncoated.

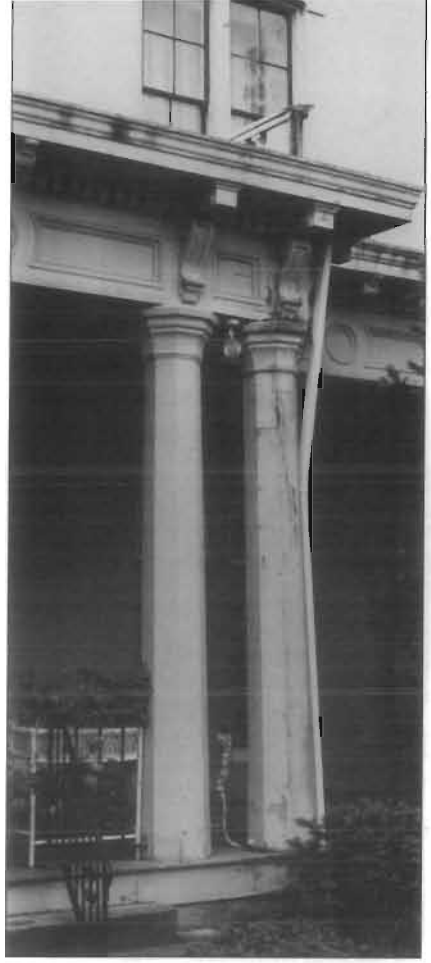


This well-maintained mansard roof displays its handsome and varied decorative detailing—cast-iron cresting, wood shingles, and pedimented dormers.

Protect

Protecting and maintaining a roof by cleaning the gutters and downspouts and replacing deteriorated flashing. Roof sheathing should also be checked for proper venting to prevent moisture condensation and water penetration; and to insure that materials are free from insect infestation.

Failing to clean and maintain gutters and downspouts properly so that water and debris collect and cause damage to roof fasteners, sheathing, and the underlying structure.



The roof drainage system has been neglected for such a long time that, as a result, the wood cornice and a porch column are both severely deteriorated.

Recommended	Not Recommended
Providing adequate anchorage for roofing material to guard against wind damage and moisture penetration.	Allowing roof fasteners, such as nails and clips to corrode so that roofing material is subject to accelerated deterioration.
Protecting a leaking roof with plywood and building paper until it can be properly repaired.	Permitting a leaking roof to remain unprotected so that accelerated deterioration of historic building materials—masonry, wood, plaster, paint and structural members—occurs.
Repair	
Repairing a roof by reinforcing the historic materials which comprise roof features. Repairs will also generally include the limited replacement in kind—or with compatible substitute material—of those extensively deteriorated or missing parts of features when there are surviving prototypes such as cupola louvers, dentils, dormer roofing; or slates, tiles, or wood shingles on a main roof.	Replacing an entire roof feature such as a cupola or dormer when repair of the historic materials and limited replacement of deteriorated or missing parts are appropriate. Failing to reuse intact slate or tile when only the roofing substrate needs replacement. Using a substitute material for the replacement part that does not convey the visual appearance of the surviving parts of the roof or that is physically or chemically incompatible.

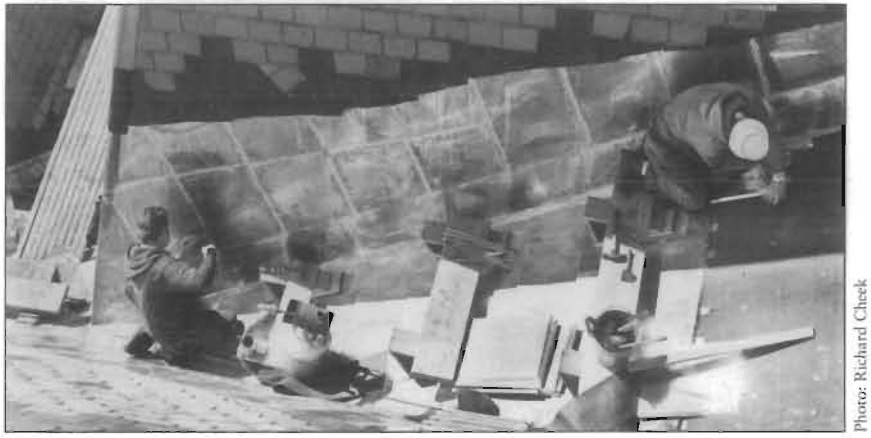


Photo: Richard Cheek

New copper valley flashing is installed as part of overall repairs to the historic slate roof and its drainage system.

Recommended

Replace

Replacing in kind an entire feature of the roof that is too deteriorated to repair—if the overall form and detailing are still evident—using the physical evidence as a model to reproduce the feature. Examples can include a large section of roofing, or a dormer or chimney. If using the same kind of material is not technically or economically feasible, then a compatible substitute material may be considered.



The size, shape, and detailing of the historic shingles as well as the method of fabrication and installation were carefully researched prior to selecting this new wood-shingle roofing.

Not Recommended

Removing a feature of the roof that is unrepairable, such as a chimney or dormer, and not replacing it; or replacing it with a new feature that does not convey the same visual appearance.



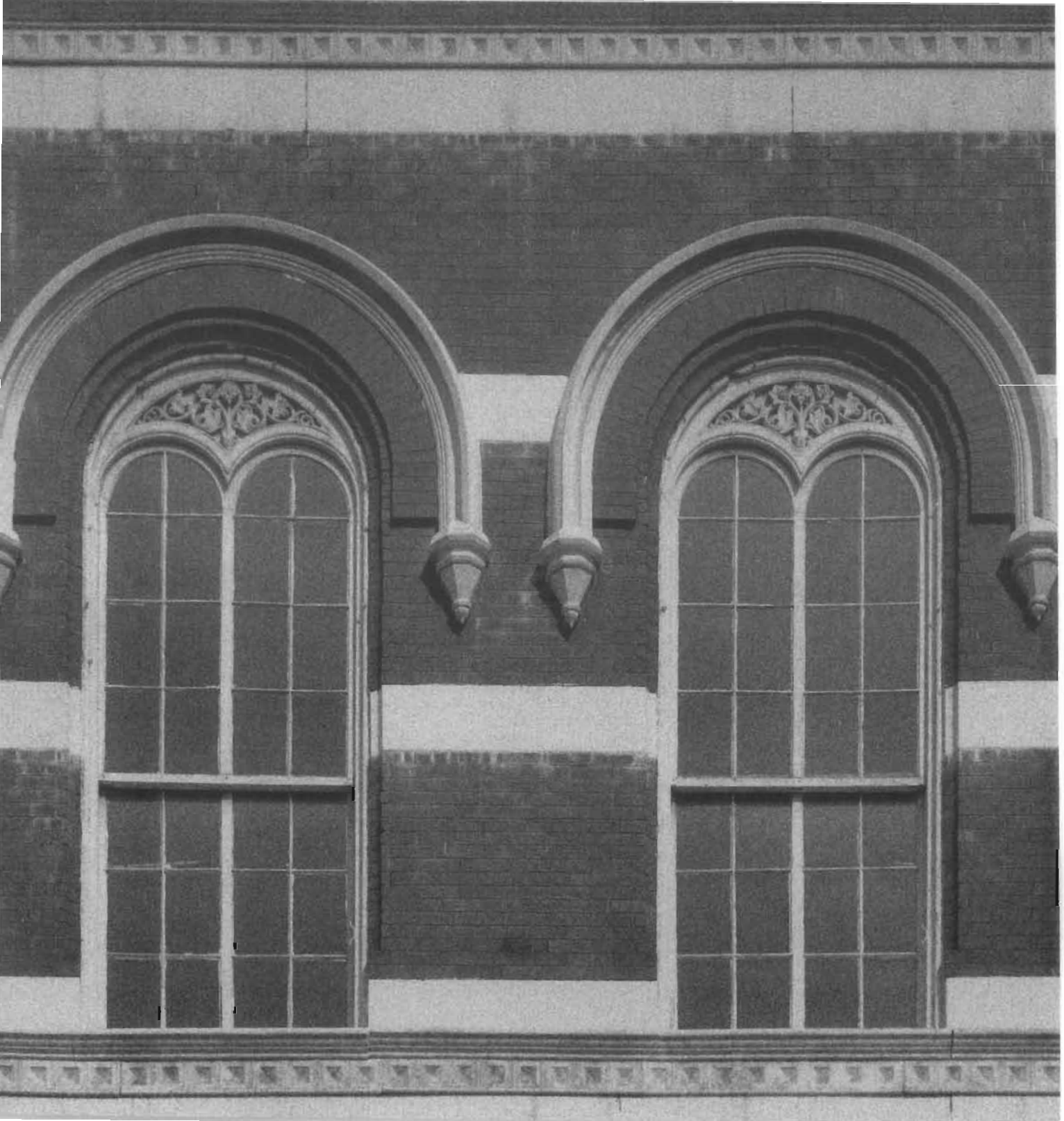
Workmen are in the process of removing deteriorated roofing slates and replacing them with new matching slates.



New galvanized sheet-iron shingles will need to be reproduced using the pattern of the original shingle.

The following work is highlighted to indicate that it represents the particularly complex technical or design aspects of rehabilitation projects and should only be considered after the preservation concerns listed above have been addressed.

Recommended	Not Recommended
Design for Missing Historic Features	
Designing and constructing a new feature when the historic feature is completely missing, such as chimney or cupola. It may be an accurate restoration using historical, pictorial, and physical documentation; or be a new design that is compatible with the size, scale, material, and color of the historic building.	Creating a false historical appearance because the replaced feature is based on insufficient historical, pictorial, and physical documentation. Introducing a new roof feature that is incompatible in size, scale, material and color.
Alterations/Additions for the New Use	
Installing mechanical and service equipment on the roof such as air conditioning, transformers, or solar collectors when required for the new use so that they are inconspicuous from the public right-of-way and do not damage or obscure character-defining features.	Installing mechanical or service equipment so that it damages or obscures character-defining features; or is conspicuous from the public right-of-way.
Designing additions to roofs such as residential, office, or storage spaces; elevator housing; decks and terraces; or dormers or skylights when required by the new use so that they are inconspicuous from the public right-of-way and do not damage or obscure character-defining features.	Radically changing a character-defining roof shape or damaging or destroying character-defining roofing material as a result of incompatible design or improper installation techniques.



Building Exterior

Windows

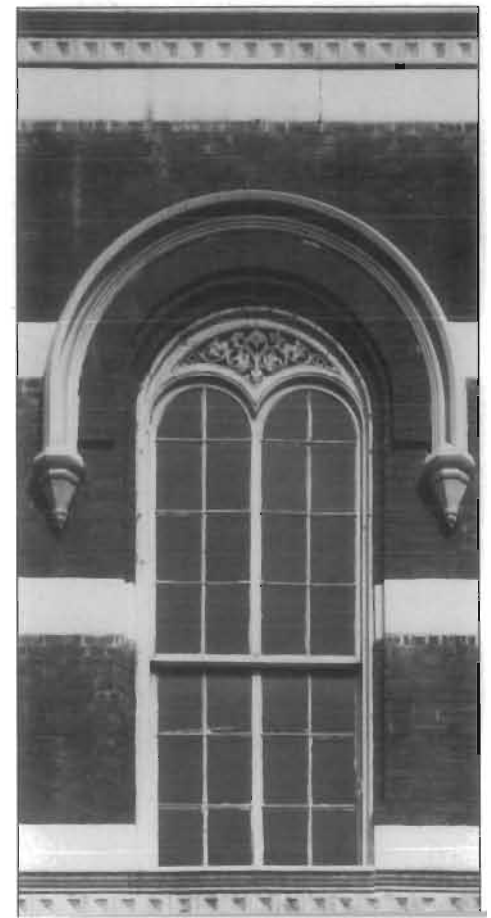
Building Exterior

Windows

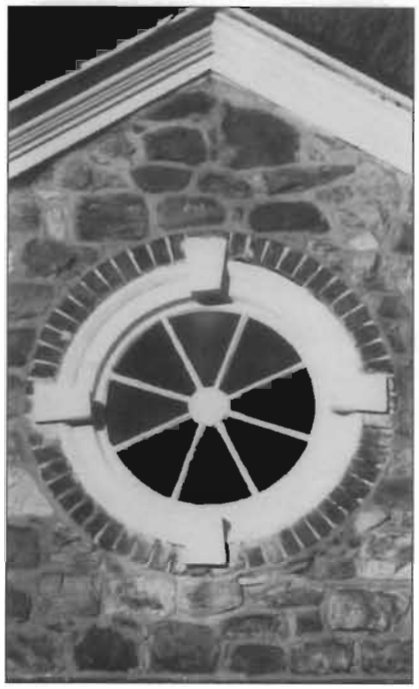
Technology and prevailing architectural styles have shaped the history of windows in the United States starting in the 17th century with wooden casement windows with tiny glass panes seated in lead cames. From the transitional single-hung sash in the early 1700s to the true double-hung sash later in the same century, these early wooden windows were characterized by the small panes, wide muntins, and the way in which decorative trim was used on both the exterior and interior of the window. As the sash thickness increased by the turn of the century, muntins took on a thinner appearance as they narrowed in width but increased in thickness according to the size of the window and design practices. Regional traditions continued to have an impact on the prevailing window design such as with the long-term use of "french windows" in areas of the deep South.

Changes in technology led to the possibility of larger glass panes so that by the mid-19th century, two-over-two lights were common; the manufacturing of plate glass in the United States allowed for dramatic use of large sheets of glass in commercial and office buildings by the late 19th century. With mass-produced windows, mail order distribution, and changing architectural styles, it was possible to obtain a wide range of window designs and light patterns in sash. Popular versions of Arts and Crafts houses constructed in the early 20th century frequently utilized smaller lights in the upper sash set in groups or pairs and saw the re-emergence of casement windows. In the early 20th century, the desire for fireproof building construction in dense urban areas contributed to the growth of a thriving steel window industry along with a market for hollow metal and metal clad wooden windows.

As one of the few parts of a building serving as both an interior and exterior feature, windows are nearly always an important part of the historic character of a building. In most buildings, windows also comprise a considerable amount of the historic fabric of the wall plane and thus are deserving of special consideration in a rehabilitation project.







The distinctive shape and decorative detailing of a building's windows often help establish its architectural style and character.

Recommended	Not Recommended
Identify, retain, and preserve	
Identifying, retaining, and preserving windows — and their functional and decorative features — that are important in defining the overall historic character of the building. Such features can include frames, sash, muntins, glazing, sills, heads, hoodmolds, panelled or decorated jambs and moldings, and interior and exterior shutters and blinds.	Removing or radically changing windows which are important in defining the historic character of the building so that, as a result, the character is diminished.
	Changing the number, location, size or glazing pattern of windows, through cutting new openings, blocking-in windows, and installing replacement sash that do not fit the historic window opening.
	Changing the historic appearance of windows through the use of inappropriate designs, materials, finishes, or colors which noticeably change the sash, depth of reveal, and muntin configuration; the reflectivity and color of the glazing; or the appearance of the frame.
	Obscuring historic window trim with metal or other material.
	Stripping windows of historic material such as wood, cast iron, and bronze.
Conducting an in-depth survey of the conditions of existing windows early in rehabilitation planning so that repair and upgrading methods and possible replacement options can be fully explored.	Replacing windows solely because of peeling paint, broken glass, stuck sash, and high air infiltration. These conditions, in themselves, are no indication that windows are beyond repair.
Protect and maintain	
Protecting and maintaining the wood and architectural metal which comprise the window frame, sash, muntins, and surrounds through appropriate surface treatments such as cleaning, rust removal, limited paint removal, and re-application of protective coating systems.	Failing to provide adequate protection of materials on a cyclical basis so that deterioration of the windows results.

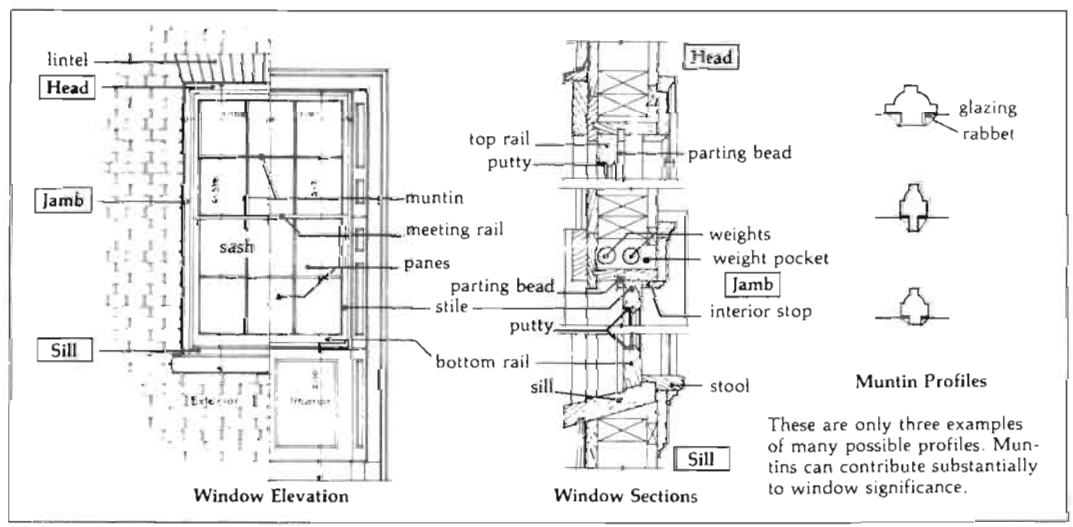


Maintaining a historic window may include work as basic as replacing a sash cord.

Recommended	Not Recommended
Making windows weather tight by re-caulking and replacing or installing weatherstripping. These actions also improve thermal efficiency.	Retrofitting or replacing windows rather than maintaining the sash, frame, and glazing.
Evaluating the overall condition of materials to determine whether more than protection and maintenance are required, i.e. if repairs to windows and window features will be required.	Failing to undertake adequate measures to assure the protection of historic windows.
Repair	
Repairing window frames and sash by patching, splicing, consolidating or otherwise reinforcing. Such repair may also include replacement in kind of those parts that are either extensively deteriorated or are missing when there are surviving prototypes such as architraves, hoodmolds, sash, sills, and interior or exterior shutters and blinds.	Replacing an entire window when repair of materials and limited replacement of deteriorated or missing parts are appropriate. Failing to reuse serviceable window hardware such as brass sash lifts and sash locks. Using substitute material for the replacement part that does not convey the visual appearance of the surviving parts of the window or that is physically or chemically incompatible.



Deterioration of poorly maintained windows usually begins on horizontal surfaces where water collects. Problem areas on this sill are clearly indicated by paint failure due to moisture.

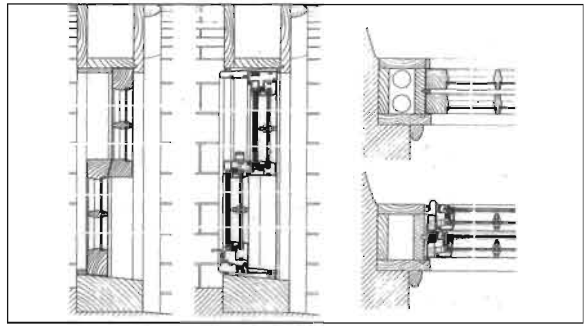


These drawings identify individual parts and fabrication details of a historic wooden double-hung window.

Recommended

Replace

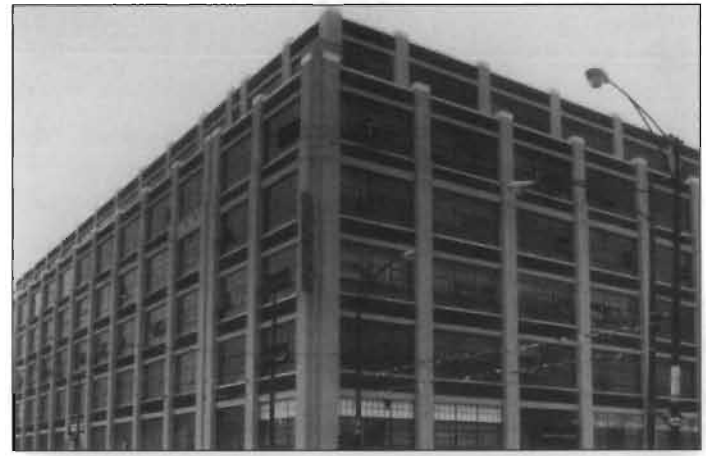
Replacing in kind an entire window that is too deteriorated to repair using the same sash and pane configuration and other design details. If using the same kind of material is not technically or economically feasible when replacing windows deteriorated beyond repair, then a compatible substitute material may be considered. For example, on certain types of large buildings, particularly high-rises, aluminum windows may be a suitable replacement for historic wooden sash provided wooden replacement are not practical and the design detail of the historic windows can be matched. Historic color duplication, custom contour panning, incorporation of either an integral muntin or 5/8" deep trapezoidal exterior muntin grids, where applicable, retention of the same glass to frame ratio, matching of the historic reveal, and duplication of the frame width, depth, and such existing decorative details as arched tops should all be components in aluminum replacements for use on historic buildings.



For some larger buildings, it may be appropriate to replace seriously deteriorated windows with new ones that replicate most of the historic visual qualities.This two-part drawing shows the original windows in a mill and the rehabilitation solution that retained the wood frames, then utilized an aluminum sash with true divided lights and a piggyback interior storm panel.

Not Recommended

Removing a character-defining window that is unrepairable and blocking it in; or replacing it with a new window that does not convey the same visual appearance.





The steel pivot windows in this historic manufacturing building were replaced with new windows which matched the multi-lighted originals.

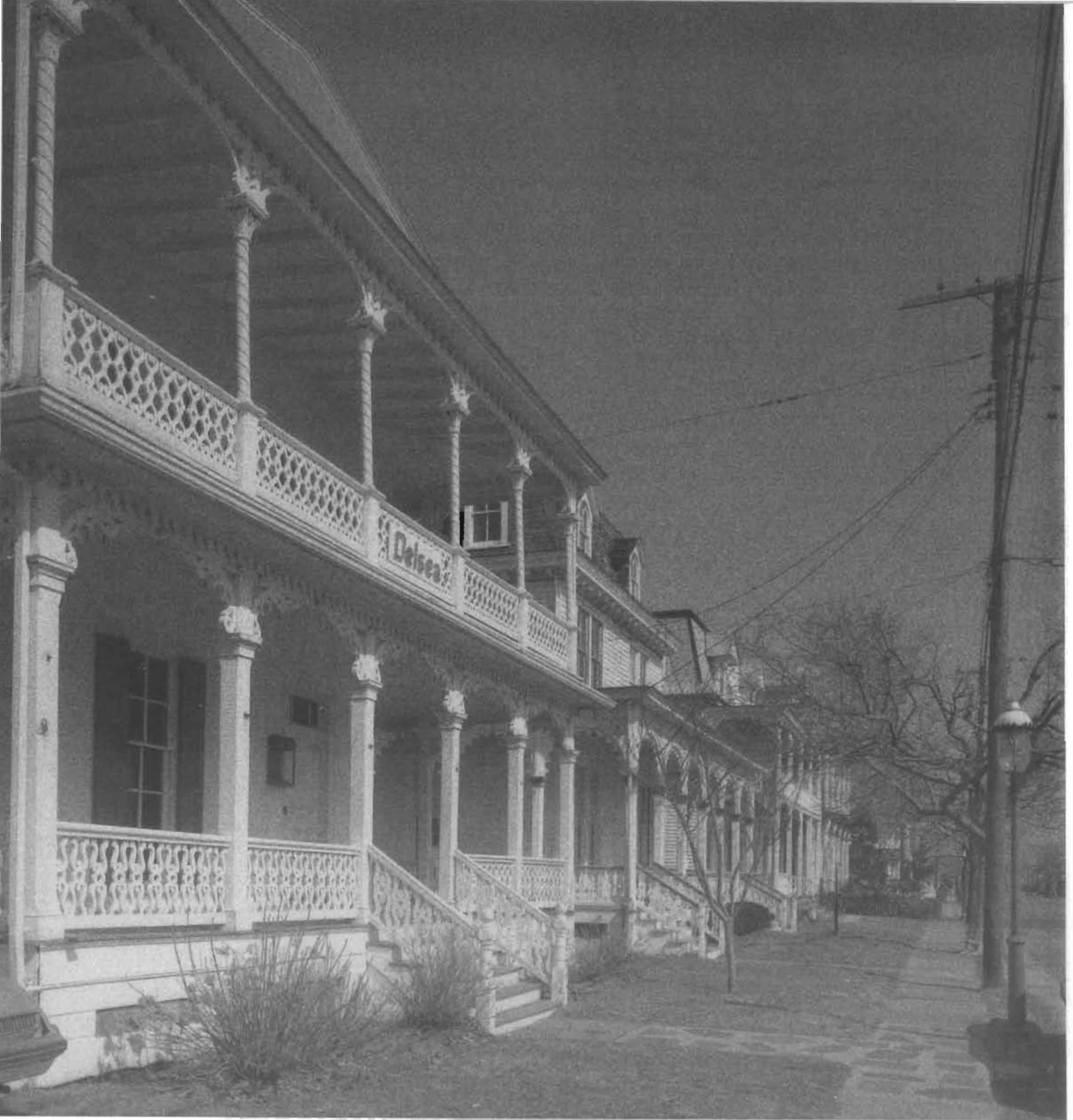
The following work is highlighted to indicate that it represents the particularly complex technical or design aspects of rehabilitation projects and should only be considered after the preservation concerns listed above have been addressed.

Recommended	Not Recommended
Design for Missing Historic Features	
Designing and installing new windows when the historic windows (frames, sash and glazing) are completely missing. The replacement windows may be an accurate restoration using historical, pictorial, and physical documentation; or be a new design that is compatible with the window openings and the historic character of the building.	Creating a false historical appearance because the replaced window is based on insufficient historical, pictorial, and physical documentation. Introducing a new design that is incompatible with the historic character of the building.
Alterations/Additions for the New Use	
Designing and installing additional windows on rear or other non-character-defining elevations if required by the new use. New window openings may also be cut into exposed party walls. Such design should be compatible with the overall design of the building, but not duplicate the fenestration pattern and detailing of a character-defining elevation.	Installing new windows, including frames, sash, and muntin configuration that are incompatible with the building's historic appearance or obscure, damage, or destroy character-defining features.
Providing a setback in the design of dropped ceilings when they are required for the new use to allow for the full height of the window openings.	Inserting new floors or furred-down ceilings which cut across the glazed areas of windows so that the exterior form and appearance of the windows are changed.





When the six-over-six windows were replaced with inappropriate single sheets of tinted glass, the historic industrial character of this building was lost.



Building Exterior

Entrances and Porches

Building Exterior

Entrances and Porches

Entrances and porches are quite often the focus of historic buildings, particularly on primary elevations. Together with their functional and decorative features such as doors, steps, balustrades, pilasters, and entablatures, they can be extremely important in defining the overall character of a building. In many cases, porches were energy-saving devices, shading southern and western elevations. Usually entrances and porches were integral components of a historic building's design; for example, porches on Greek Revival houses, with Doric or Ionic columns and pediments, echoed the architectural elements and features of the larger building. Central one-bay porches or arcaded porches are evident in Italianate style buildings of the 1860s. Doors of Renaissance Revival style buildings frequently supported entablatures or pediments. Porches were particularly prominent features of Eastlake and Stick Style houses; porch posts, railings, and balusters were characterized by a massive and robust quality, with members turned on a lathe. Porches of bungalows of the early 20th century were characterized by tapered porch posts, exposed post and beams, and low pitched roofs with wide overhangs. Art Deco commercial buildings were entered through stylized glass and stainless steel doors.









Photos: Jack Boucher, HABS.

A variety of historic entrances and porches is illustrated here, ranging from the elegance of a Georgian-style entrance, to the more vernacular nature of a 19th century wood porch, to the utilitarian, yet romantic Mediterranean-style loggia.

Recommended	Not Recommended
Identify, retain, and preserve	
Identifying, retaining, and preserving entrances—and their functional and decorative features—that are important in defining the overall historic character of the building such as doors, fanlights, sidelights, pilasters, entablatures, columns, balustrades, and stairs.	Removing or radically changing entrances and porches which are important in defining the overall historic character of the building so that, as a result, the character is diminished. Stripping entrances and porches of historic material such as wood, cast iron, terra cotta tile, and brick. Removing an entrance or porch because the building has been re-oriented to accommodate a new use. Cutting new entrances on a primary elevation. Altering utilitarian or service entrances so they appear to be formal entrances by adding panelled doors, fanlights, and sidelights.
Protect and maintain	
Protecting and maintaining the masonry, wood, and architectural metal that comprise entrances and porches through appropriate surface treatments such as cleaning, rust removal, limited paint removal, and re-application of protective coating systems.	Failing to provide adequate protection to materials on a cyclical basis so that deterioration of entrances and porches results.
Evaluating the overall condition of materials to determine whether more than protection and maintenance are required, that is, if repairs to entrance and porch features will be necessary.	Failing to undertake adequate measures to assure the protection of historic entrances and porches.

Recommended

Repair

Repairing entrances and porches by reinforcing the historic materials. Repair will also generally include the limited replacement in kind—or with compatible substitute material—of those extensively deteriorated or missing parts of repeated features where there are surviving prototypes such as balustrades, cornices, entablatures, columns, sidelights, and stairs.

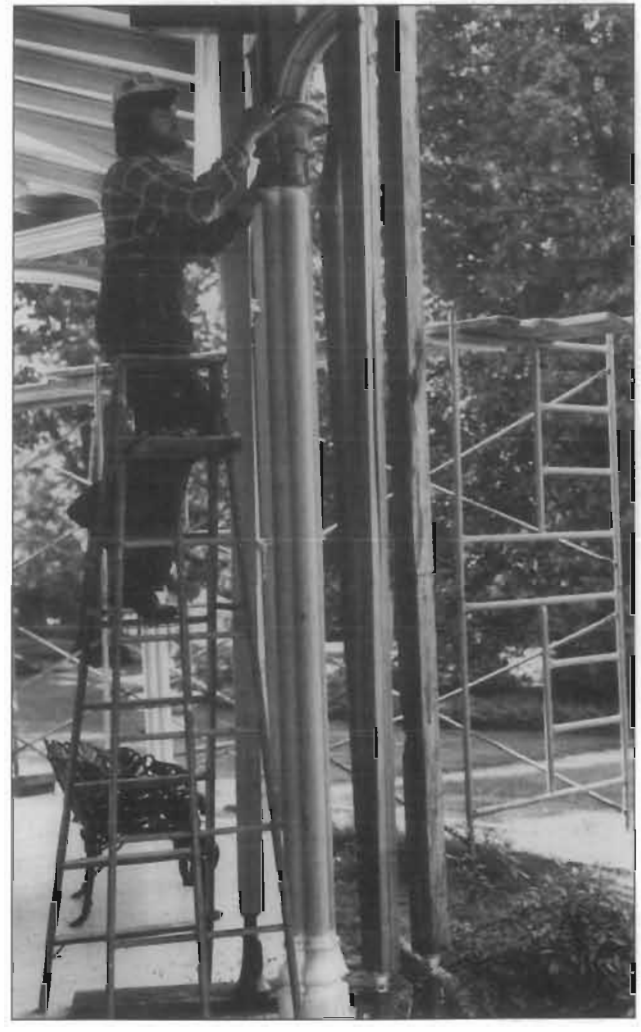


In the 19th century some cast-iron porches could be purchased by mail, such as this made-to-order veranda which was featured in an 1870 foundry catalog.

Not Recommended

Replacing an entire entrance or porch when the repair of materials and limited replacement of parts are appropriate.

Using a substitute material for the replacement parts that does not convey the visual appearance of the surviving parts of the entrance and porch or that is physically or chemically incompatible.



Careful inspection of porch features such as these column capitals is necessary before initiating a rehabilitation project.

Recommended

Not Recommended

Replace

Replacing in kind an entire entrance or porch that is too deteriorated to repair—if the form and detailing are still evident—using the physical evidence as a model to reproduce the feature. If using the same kind of material is not technically or economically feasible, then a compatible substitute material may be considered.

Removing an entrance or porch that is unrepairable and not replacing it; or replacing it with a new entrance or porch that does not convey the same visual appearance.







A 1910 wrap-around porch was removed from this 1830 house during rehabilitation. Although a later addition, the porch should not have been removed because it had acquired significance over time and was thus an important feature in defining the character of this historic structure.

The following work is highlighted to indicate that it represents the particularly complex technical or design aspects of rehabilitation projects and should only be considered after the preservation concerns listed above have been addressed.

Recommended	Not Recommended
Design for Missing Historic Features	
Designing and constructing a new entrance or porch when the historic entrance or porch is completely missing. It may be a restoration based on historical, pictorial, and physical documentation; or be a new design that is compatible with the historic character of the building.	Creating a false historical appearance because the replaced entrance or porch is based on insufficient historical, pictorial, and physical documentation. Introducing a new entrance or porch that is incompatible in size, scale, material, and color.
Alterations/Additions for the New Use	
Designing enclosures for historic porches when required by the new use in a manner that preserves the historic character of the building. This can include using large sheets of glass and recessing the enclosure wall behind existing scrollwork, posts, and balustrades.	Enclosing porches in a manner that results in a diminution or loss of historic character such as using solid materials such as wood, stucco, or masonry.
Designing and installing additional entrances or porches when required for the new use in a manner that preserves the historic character of the buildings, i.e., limiting such alteration to non-character-defining elevations.	Installing secondary service entrances and porches that are incompatible in size and scale with the historic building or obscure, damage, or destroy character-defining features.

This rehabilitation connected two separate porches, resulting in the creation of a large continuous porch that obscures the historic twin porch design; it is thus incompatible with the historic character of the house.







Building Exterior

Storefronts

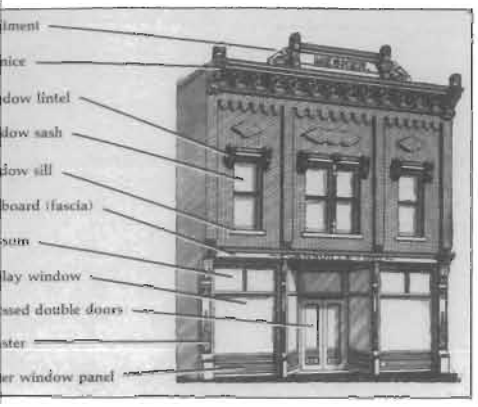
Building Exterior

Storefronts

The storefront is usually the most prominent feature of a historic commercial building, playing a crucial role in a store's advertising and merchandising strategy. Although a storefront normally does not extend beyond the first story, the rest of the building is often related to it visually through a unity of form and detail. Planning should always consider the entire building; window patterns on the upper floors, cornice elements, and other decorative features should be carefully retained, in addition to the storefront itself.

The earliest extant storefronts in the U.S., dating from the late 18th and early 19th centuries, had bay or oriel windows and provided limited display space. The 19th century witnessed the progressive enlargement of display windows as plate glass became available in increasingly larger units. The use of cast iron columns and lintels at ground floor level permitted structural members to be reduced in size. Recessed entrances provided shelter for sidewalk patrons and further enlarged display areas. In the 1920s and 1930s, aluminum, colored structural glass, stainless steel, glass block, neon, and other new materials were introduced to create Art Deco storefronts.





These architectural details are typical of historic commercial buildings (this particular one is No. 4016 in the George L. Mesker and Company catalog of 1905). The design utilized both cast and galvanized iron.

Recommended	Not Recommended
Identify, retain, and preserve	
Identifying, retaining, and preserving storefronts—and their functional and decorative features—that are important in defining the overall historic character of the building such as display windows, signs, doors, transoms, kick plates, corner posts, and entablatures. The removal of inappropriate, nonhistoric cladding, false mansard roofs, and other later alterations can help reveal the historic character of a storefront.	Removing or radically changing storefronts—and their features—which are important in defining the overall historic character of the building so that, as a result, the character is diminished. Changing the storefront so that it appears residential rather than commercial in character. Removing historic material from the storefront to create a recessed arcade. Introducing coach lanterns, mansard designs, wood shakes, nonoperable shutters, and small-paned windows if they cannot be documented historically. Changing the location of a storefront's main entrance.
Protect	
Protecting and maintaining masonry, wood, and architectural metals which comprise storefronts through appropriate treatments such as cleaning, rust removal, limited paint removal, and reapplication of protective coating systems.	Failing to provide adequate protection of materials on a cyclical basis so that deterioration of storefront features results.
Protecting storefronts against arson and vandalism before work begins by boarding up windows and installing alarm systems that are keyed into local protection agencies.	Permitting entry into the building through unsecured or broken windows and doors so that interior features and finishes are damaged through exposure to weather or through vandalism. Stripping storefronts of historic material such as wood, cast iron, terra cotta, carrara glass, and brick.

Recommended

Evaluating the overall condition of storefront materials to determine whether more than protection and maintenance are required, that is, if repairs to features will be necessary.

Not Recommended

Failing to undertake adequate measures to assure the preservation of the historic storefront.



Photo: Jack E. Boucher, HABS.

A false-fronted wood store is now used as a museum. Although the weathered wood is part of its charm, repainting is recommended as a good maintenance practice to protect the wood.

Repair

Repairing storefronts by reinforcing the historic materials. Repairs will also generally include the limited replacement in kind—or with compatible substitute materials—of those extensively deteriorated or missing parts of storefronts where there are surviving prototypes such as transoms, kick plates, pilasters, or signs.

Replacing an entire storefront when repair of materials and limited replacement of its parts are appropriate.

Using substitute material for the replacement parts that does not convey the same visual appearance as the surviving parts of the storefront or that is physically or chemically incompatible.

This sleek red and black Moderne storefront was added to a more staid late-19th century commercial building in the 1930s—both are now in need of repair. According to the Standards, later storefronts that have acquired significance over time should generally be retained in rehabilitation.





This appropriate new storefront replaces an old one that was too deteriorated to save. It features a recessed doorway based on the historic design and respects the scale and proportion of the existing building.

Recommended

Replace

Replacing in kind an entire storefront that is too deteriorated to repair—if the overall form and detailing are still evident—using the physical evidence as a model. If using the same material is not technically or economically feasible, then compatible substitute materials may be considered.

Not Recommended

Removing a storefront that is unrepairable and not replacing it; or replacing it with a new storefront that does not convey the same visual appearance.



The following work is highlighted to indicate that it represents the particularly complex technical or design aspects of rehabilitation projects and should only be considered after the preservation concerns listed above have been addressed.

Recommended

Design for Missing Historic Features

Designing and constructing a new storefront when the historic storefront is completely missing. It may be an accurate restoration using historical, pictorial, and physical documentation; or be a new design that is compatible with the size, scale, material, and color of the historic building.

Not Recommended

Creating a false historical appearance because the replaced storefront is based on insufficient historical, pictorial, and physical documentation.

Introducing a new design that is incompatible in size, scale, material, and color.

Using inappropriately scaled signs and logos or other types of signs that obscure, damage, or destroy remaining character-defining features of the historic building.