

23/29-03A RETROACTIVE 5929 Sundown Road
Laytonsville

(Master Plan Site #23/29 Fair Hill II)

APRIL 2003,

HEARING #23/29-03A Retroactive Historic Preservation Commission

To whom it may concern:

After I received the papers on the hearing scheduled for the windows and door replacement at Fairhill farm, I felt I must tell you why I agree with the recommendation of your staff.

It is wonderful for the owners to want to improve their historic home, Fairhill, but I hope they do it in a way that preserves the integrity of their historic home. Fairhill was occupied by Adam Bell, the first wheelwright of Cracklintown, the town now named Laytonsville. Mr. Bell, his family, and successive generations saw the view from the original windows, and they greeted friends, civil war soldiers, and the like through the original door. Fairhill was a general store and local meeting place. It was here where decisions about the first Hawlings River Chapel would be made. This church now plays an important part of history in Laytonsville as St. Bartholemew's Epsicopal Church. Fairhill is a rare example of a farmhouse in this area, and as this area has lost much original architectural history over the course of the last twenty years, this event would erase even more.

The west end of the front of the house (as the Historic Preservation Report shows) describes the original windows intact. The front door and eastern windows have been replaced because of damage. They have been removed and replaced by one over one windows with snap in mullions instead of the original six over six glass panes. The original style windows and doors should remain in Fairhill. As eyes are the windows of the soul, this home now has one blue eye and one brown eye. The architect and twentieth century designer, Frank Lloyd Wright would not have approved of his designs to be changed with parts not in keeping with his intended structure, and in turn this 1800's home should also reflect its architecture that its architect created.

There are resources such as Old House Parts in Montgomery County and numerous shops in Frederick County that carry the same style windows, glass, and doors that would aid in keeping its historic appearancc. I could help by referring the owners to these places.

Fairhill has survived in Montgomery County for two hundred years and hopefully will continue to be respected and cared for as an unique living record of Laytonsville and architectural history.

Sincerely,


Amanda Becker

HISTORIC PRESERVATION COMMISSION STAFF REPORT

Address:	5929 Sundown Road, Laytonsville	Meeting Date:	05/28/03
Resource:	Master Plan Site # 23/29 Fair Hill II	Report Date:	05/21/03
Review:	HAWP	Public Notice:	05/14/03
Case Number:	23/29-03A RETROACTIVE	Tax Credit:	None
Applicant:	Jack and Wendy Mettee	Staff:	Michele Naru

PROPOSAL: Window Replacement

RECOMMEND: Denial

PROJECT DESCRIPTION

SIGNIFICANCE: Master Plan Site # 23/29, Fair Hill II
STYLE: Vernacular, Federal
DATES OF CONSTRUCTION: c1800-10; 1820

Fair Hill consists of a c1800 commercial block, an eastern extension built c1820, and a rear addition. Known as the Bowman's Store, the commercial block on the west end, was a log structure that became an important early meeting place in the Laytonsville area. Built between c1800 and 1800, it is one of the few remaining commercial buildings that survive from that era. The 1820 east wing is of frame construction with brick nogging. A one-story porch and pebble dashed stucco siding was added in later years to unite the front façade. The property also contains a stone dairy, which has a projecting front gable roof.

PROPOSAL

In late 2002, the applicant removed four of the original windows from the front façade of the c1820s section of the building and replaced them with Anderson "Narroline" windows. These windows are wood 1/1 windows with exterior vinyl cladding and snap-in muntins (see Circle). The original windows, according to the applicants were "severely deteriorated; the wood was split and several of the panes of glass were cracked". The old windows were thrown away and are not retrievable. The applicant is requesting retroactive approval from the Historic Preservation Commission (HPC) for this window replacement project.

BACKGROUND

In early November 2002, staff was notified by a Laytonsville resident that the windows at 5929 Sundown Road were in the process of being removed. Staff immediately called the

Department of Permitting Services (DPS), and requested inspector Pete Hrycak to assess the property. Mr. Hrycak noted that the new windows were already installed and additionally noted that the front door had also been replaced. A notice of violation was issued for these transgressions on November 19, 2002 (see Circle 10).

STAFF DISCUSSION

Proposed alterations and new construction to Master Plan individually designated resources are reviewed under the Secretary of Interior's Standards for Rehabilitation. Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features, which convey its historical, cultural, or architectural values.

The Secretary of Interior's Standards for Rehabilitation that pertain to this project are as follows:

Guideline #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.

Guideline #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.

In addition to the above guidelines, the U.S. Department of the Interior publishes information on how to care for historic windows, listed in the U.S. Department of the Interior's *Standards for Rehabilitation* in addition to "Preservation Brief 9: The Repair of Historic Wooden Windows" (see Circles 11-17).

Window replacement in historic structures is a difficult issue, which the HPC has faced on numerous occasions. Replacement of original windows is typically not permitted because windows are an essential part of the architectural fabric of a building. The goal of historic preservation is not only to keep the general massing of the historic building intact, but also to preserve original building materials.

Staff notes that the original windows are not recoverable and that the integrity of the resource has been altered due to the loss of this original fabric. This change is not reversible. Therefore, this HAWP application as presented is asking the HPC to determine if the windows that have been installed are compatible with the existing historic resource. The original windows were 6/6, true-divided light wood, single pane windows. In order to be in compliance with the above Secretary of Interior's Standards, the proposed windows must "match the old in design, color, texture, and other visual qualities and, where possible, materials." Staff

recommends denial of the retroactive application since the new vinyl clad windows are not in compliance with the Secretary of Interior's Standards and suggests that the Commission recommend that the applicant replace the existing vinyl clad windows with wood, 6/6, true-divided light windows.

STAFF RECOMMENDATION

Staff recommends that the Historic Preservation Commission *deny* the proposal to approve the replacement of the windows at 5929 Sundown Road based on Chapter 24A-8(a)

The Commission shall instruct the director to deny a permit if it finds, based on the evidence and information presented to or before the commission that the alteration for which the permit is sought would be inappropriate or inconsistent with, or detrimental to the preservation, enhancement or ultimate protection of the historic site, or historic resource within an historic district, and to the purposes of this chapter.



RETURN TO: DEPARTMENT OF PERMITTING SERVICES
288 ROCKVILLE PIKE, 2nd FLOOR, ROCKVILLE, MD 20850
240/777-6370

DPS - #8

23/29

HISTORIC PRESERVATION COMMISSION
301/563-3400

APPLICATION FOR HISTORIC AREA WORK PERMIT

Contact Person: WENDY METTEE
Daytime Phone No.: 301 926 2026

Tax Account No.: 02949894

Name of Property Owner: JACK METTEE Daytime Phone No.: _____

Address: 5929 SUNDOWN RD LAYTONSVILLE, MD 20882
Street Number City State Zip Code

Contractor: N/A Phone No.: _____

Contractor Registration No.: _____

Agent for Owner: _____ Daytime Phone No.: _____

Address: _____

LOCATION OF BUILDING/PREMISE

House Number: 5929 Street: SUNDOWN RD

Town/City: LAYTONSVILLE Nearest Cross Street: RT 108

Lot: 4 Block: B Subdivision: FAIRHILL

Lot: 10085 Folio: 0472 Parcel: 000

PART ONE: TYPE OF PERMIT ACTION AND USE

1A. CHECK ALL APPLICABLE:

- Construct
- Extend
- Alter/Renovate
- Move
- Install
- Wreck/Raze
- Revision
- Repair
- Revocable

CHECK ALL APPLICABLE:

- A/C
- Slab
- Room Addition
- Porch
- Deck
- Shed
- Solar
- Fireplace
- Woodburning Stove
- Single Family
- Fence/Wall (complete Section 4)
- Other: REPLACE WINDOWS

1B. Construction cost estimate: \$ _____

1C. If this is a revision of a previously approved active permit, see Permit # _____

PART TWO: COMPLETE FOR NEW CONSTRUCTION AND EXTEND/ADDITIONS

2A. Type of sewage disposal: 01 WSSC 02 Septic 03 Other: _____

2B. Type of water supply: 01 WSSC 02 Well 03 Other: _____

PART THREE: COMPLETE ONLY FOR FENCE/RETAINING WALL

3A. Height _____ feet _____ inches

3B. Indicate whether the fence or retaining wall is to be constructed on one of the following locations:

- On party line/property line
- Entirely on land of owner
- On public right of way/easement

I hereby certify that I have the authority to make the foregoing application, that the application is correct, and that the construction will comply with plans approved by all agencies listed and I hereby acknowledge and accept this to be a condition for the issuance of this permit.

[Signature]
Signature of owner or authorized agent

2-20-03
Date

Approved: _____ For Chairperson, Historic Preservation Commission

Disapproved: _____ Signature: _____ Date: _____

Application/Permit No.: _____ Date Filed: _____ Date Issued: _____

THE FOLLOWING ITEMS MUST BE COMPLETED AND THE
REQUIRED DOCUMENTS MUST ACCOMPANY THIS APPLICATION.

1. WRITTEN DESCRIPTION OF PROJECT

- a. Description of existing structure(s) and environmental setting, including their historical features and significance:

THIS FEDERAL STYLE BUILDING WAS CONSTRUCTED
IN SEVERAL SECTIONS IN THE EARLY 19TH CENTURY.
THE ORIGINAL BLOCK, ON THE WEST END IS LOG
AND WAS BUILT IN C. 1800. THE EASTERN FRAME
SECTION WAS BUILT IN C. 1820 AND CONTAINS
BRICK NOGGING. THE ONE STORY PORCH AND
REBBLEDASH STUCCO SIDING WAS ADDED IN LATER
YEARS.

- b. General description of project and its effect on the historic resource(s), the environmental setting, and, where applicable, the historic district:

THE PROPOSAL IS TO REMOVE 4 ORIGINAL
WINDOWS IN THE C1820'S EXTENSION AND REPLACE
THEM WITH ANDERSON NARROWLINE WINDOWS. THESE
WINDOWS ARE VINYL CLAD ON THE EXTERIOR AND
FEATURE REMOVABLE INTERIOR GRILLS.

2. SITE PLAN SEE ATTACHED.

Site and environmental setting, drawn to scale. You may use your plat. Your site plan must include:

- the scale, north arrow, and date;
- dimensions of all existing and proposed structures; and
- site features such as walkways, driveways, fences, ponds, streams, trash dumpsters, mechanical equipment, and landscaping.

3. PLANS AND ELEVATIONS N/A

You must submit 2 copies of plans and elevations in a format no larger than 11" x 17". Plans on 8 1/2" x 11" paper are preferred.

- Schematic construction plans, with marked dimensions, indicating location, size and general type of walls, window and door openings, and other fixed features of both the existing resource(s) and the proposed work.
- Elevations (facades), with marked dimensions, clearly indicating proposed work in relation to existing construction and, when appropriate, context. All materials and fixtures proposed for the exterior must be noted on the elevations drawings. An existing and a proposed elevation drawing of each facade affected by the proposed work is required.

4. MATERIALS SPECIFICATIONS SEE ATTACHED.

General description of materials and manufactured items proposed for incorporation in the work of the project. This information may be included on your design drawings.

5. PHOTOGRAPHS ALREADY SENT TO HPC STAFF.

- Clearly labeled photographic prints of each facade of existing resource, including details of the affected portions. All labels should be placed on the front of photographs.
- Clearly label photographic prints of the resource as viewed from the public right-of-way and of the adjoining properties. All labels should be placed on the front of photographs.

6. TREE SURVEY N/A

If you are proposing construction adjacent to or within the dripline of any tree 6" or larger in diameter (at approximately 4 feet above the ground), you must file an accurate tree survey identifying the size, location, and species of each tree of at least that dimension.

7. ADDRESSES OF ADJACENT AND CONFRONTING PROPERTY OWNERS SEE ATTACHED.

For ALL projects, provide an accurate list of adjacent and confronting property owners (not tenants), including names, addresses, and zip codes. This list should include the owners of all lots or parcels which adjoin the parcel in question, as well as the owner(s) of lot(s) or parcel(s) which lie directly across the street/highway from the parcel in question. You can obtain this information from the Department of Assessments and Taxation, 51 Monroe Street, Rockville, (301/279-1355).

HAWP APPLICATION: MAILING ADDRESSES FOR NOTICING
 [Owner, Owner's Agent, Adjacent and Confronting Property Owners]

Owner's mailing address

MR + MRS. METTEE
 5929 SUNDOWN RD
 LAYTONSVILLE, MD
 20882

Owner's Agent's mailing address

Adjacent and confronting Property Owners mailing addresses

AMY LEEGER
 C/O ALEXANDER ADAMS PR
 8808 CENTER PARK DR.
 STE 205
 COLUMBIA, MD 21045

OWNER @
 6121 SUNDOWN RD
 LAYTONSVILLE, MD
 20882

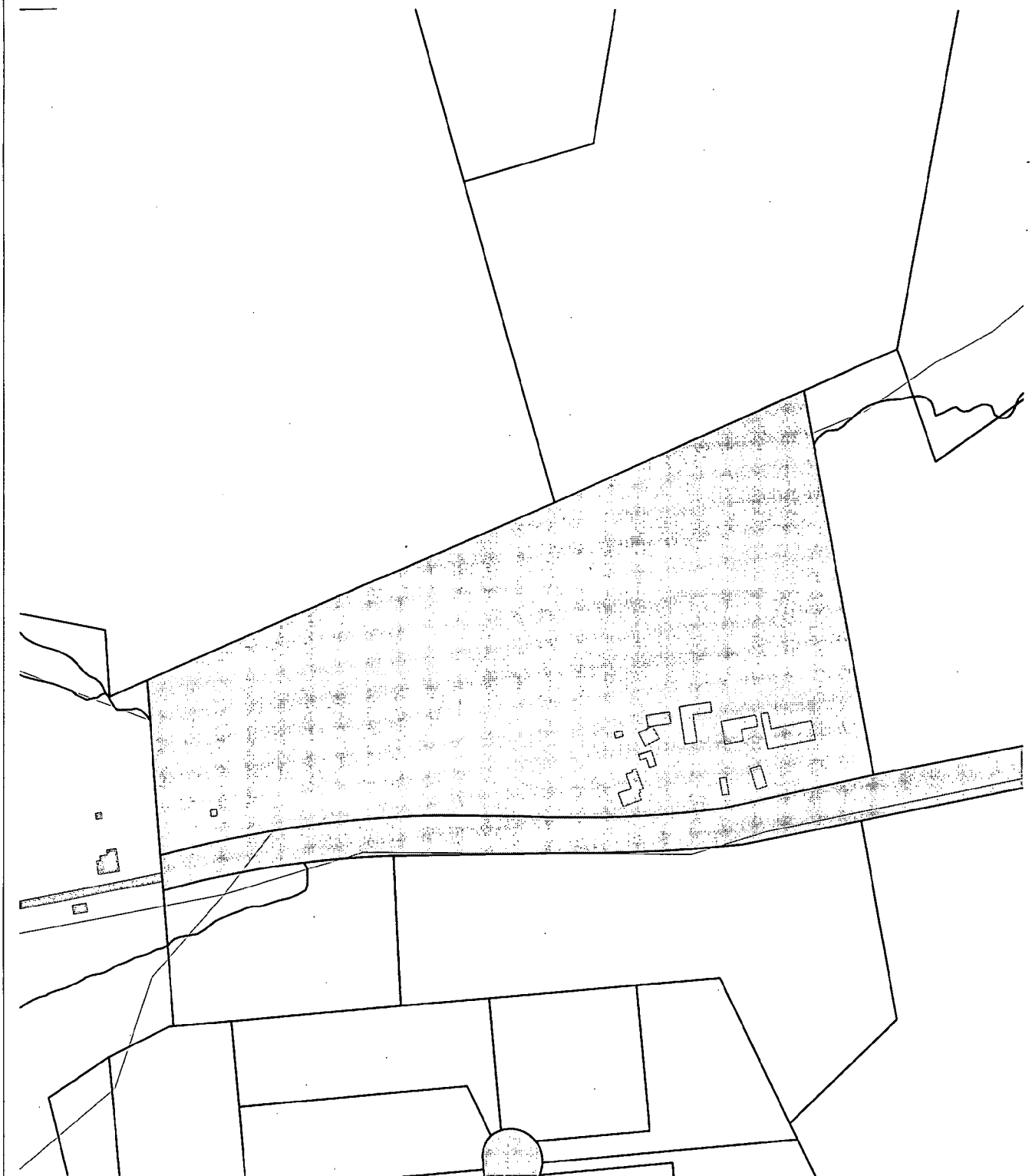
OWNER @
 6411 SUNDOWN RD
 LAYTONSVILLE, MD
 20882

KENNETH PARKER
 5901 SUNDOWN RD
 LAYTONSVILLE, MD
 20882

PETER GODWIN
 6408 OLNEY / LAYTONSVILLE RD
 LAYTONSVILLE, MD
 20882

MR + MRS. BECKER
 4920 GRIFFITH RD
 GATHERSBURG, MD
 20882

FAIR HILL II



Notice:
The planimetric, property, and topographic information shown on this map is based on copyrighted Map Products from Montgomery County Department of Park and Planning of the Maryland-National Capital Park and Planning Commission, and may not be copied or reproduced without permission from M-NCPPC. Property lines are compiled by adjusting the property lines to topography created from aerial photography and should not be interpreted as actual field surveys. Planimetric features were compiled from 1:14400 scale aerial photography using stereo photogrammetric methods. This map is created from a variety of data sources, and may not reflect the most current conditions in any one location and may not be completely accurate or up to date. All map features are approximately within five feet of their true location. This map may not be the same as a map of the same area plotted at an earlier time as the data is continuously updated. Use of this map, other than for general planning purposes is not recommended.
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Casual User Application



01/29/03



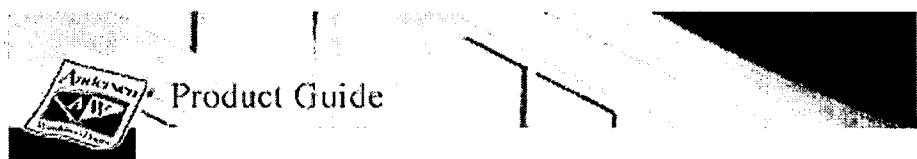
Research & Technology Center

Scale: 1" = 300'



MONTGOMERY COUNTY DEPARTMENT OF PARK AND PLANNING
THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION
8787 Georgia Avenue - Silver Spring, Maryland 20910-3760

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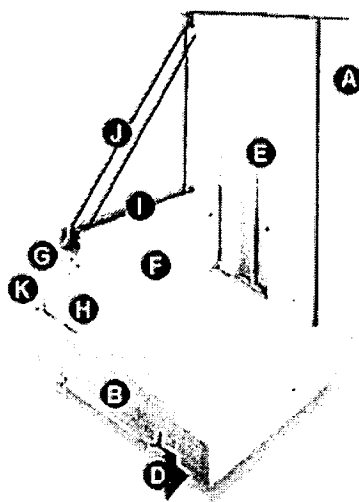
FEATURES SIZES INSTALLATION PRODUCT CARE PRO DETAILS

400 series
Casement Windows
Awning Windows
Double-Hung Windows
Bay & Bow Windows
Sliding Windows
Fixed Windows
Specialty Windows
Storm & Screen Doors
200 series
Casement Windows
Awning Windows
Double-Hung Windows
Bay & Bow Windows
Sliding Windows
Specialty Windows
Patio Doors
Storm & Screen Doors



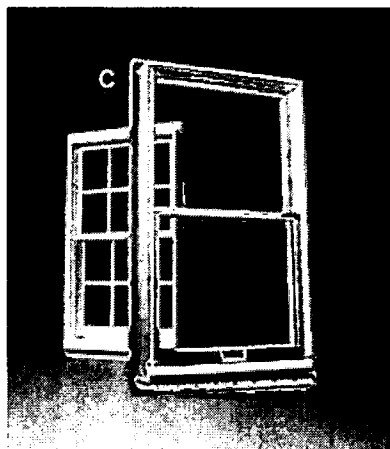
Andersen® 200 Series Narroline® Double-Hung Picture & Specialty Window Features

See 400 Series for more choices.



FRAME

- A** Exterior outer frame members are treated with a water covered with a pre-formed rigid vinyl PVC cladding, m providing an attractive appearance.
- B** Sill members are constructed with a solid wood core, t preservative and covered with a pre-formed rigid vinyl
- C** A factory-applied rigid vinyl anchoring flange on the he helps secure the unit to the structure. Flanges are revl 1/2" (114) and 4-1/8" (105) wall thickness.
- D** A flexible vinyl windbreak, which is factory-applied to t weather seal under the sill.
- E** White rigid vinyl jamb liners provide smooth, easy mov



SASH

- F** A patented white Flexacron® finish is electrostatically surfaces for maximum protections and a lustrous finish
- G** Wood sash members are treated with a water-repellar lasting protection and performance. The interior of the painting.
- H** A variety of weatherstripping, including pile weatherstr wrapped foam weatherstrip between the sash and the weatherstrip on the check rail, maximize weathertightr

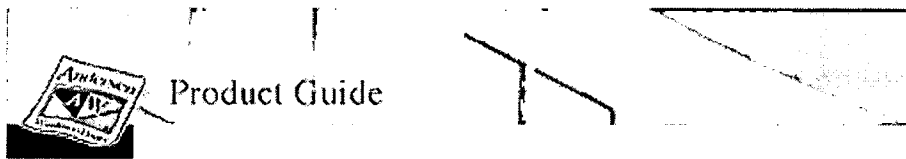
GLAZING

- I** A rigid vinyl or CPVC glazing bead features a flexible l glazing, provides superior weathertightness.
- J** Andersen High-Performance™ and High-Performance optimum insulating performance. (Glazing option must

SILL STOP

- K** Andersen sill stops are available in prefinished white c picture frame trim installations.)

8



FEATURES SIZES INSTALLATION PRODUCT CARE PRO DETAILS

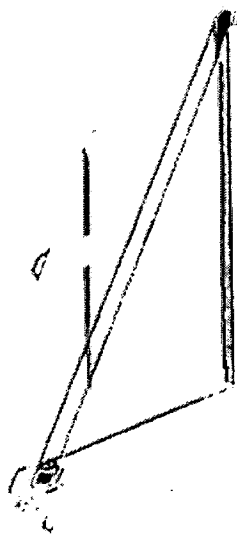
400 Series
Casement Windows
Awning Windows
Double-Hung Windows
Bay & Bow Windows
Sliding Windows
Fixed Windows/Skylights
Specialty Windows
Art Glass
Patio Doors
200 Series
Casement Windows
Awning Windows
Double-Hung Windows
Bay & Bow Windows
Sliding Windows
Specialty Windows
Patio Doors
Storm & Screen Doors



Andersen® 200 Series Narroline® Double-Hung Picture & Specialty Window Accessories

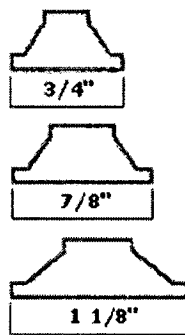
See 400 Series for more choices.

Grilles



Removable Interior Grilles

Polycarbonate or wood interior grilles are available products. Polycarbonate grilles come in prefinished Sandtone colors - or with a stainable Tycote® finish interior side of the grille. Wood grille finish options White or Sandtone color exterior with a natural or prefinished interior. Grilles for Perma-Shield® gliders are available prefinished on both sides, in White color.



Grille widths and profiles

Removable Interior Grilles are available in standard one standard profile for Andersen 400 and 200 series

Custom Patterns

Custom Patterns are available with a natural interior, exterior, or prefinished on both sides. Original pattern can be specified to create a truly unique appearance.



MONTGOMERY COUNTY
DEPARTMENT OF PERMITTING SERVICES
255 Rockville Pike, 2nd Floor
Rockville, Maryland 20850-4166

NOTICE OF VIOLATION

FOR MONTGOMERY COUNTY, MARYLAND the undersigned issuer, being duly authorized, states that

On 11-15-02 the recipient of this NOTICE, JACK WETTEE

who represents the permittee/defendant, JACK WETTEE

is notified that a violation of Montgomery County Code, Section: 29A-612(1)

exists at: 5929 Sundown Rd. Gaithersburg, MD 20882-1725

The violation is described as: did alter the exterior feature of a historic resource (changed windows and front door) without first obtaining a Historic Area Work permit

The following corrective action(s) must be performed immediately as directed, Stop all work on the exterior of the house. Obtain a Historic Area Work permit

21000

See attached inspection Report(s) for additional violations and/or required corrective actions.

An inspection fee of \$ 82.50 is required in addition to any application fee(s).

Compliance Time: 15 days Re-inspection Date(s): _____ Permit Number: _____ Code/Edition: _____

Failure to comply with this notice will result in the issuance of one or more \$500.00 civil citations.

A STOP WORK ORDER is also issued this date at the above referenced project. All construction activities on these premises must cease immediately. Only those activities required to correct violations may continue. Permission is required to resume construction.

ISSUED BY: PEPE HAYEK [Signature] 11-19-02

Phone No. 240-777-5211

RECEIVED BY: _____ [Signature] _____

Phone No. _____ Sent by Registered Mail/Return Receipt On: 11-19-02

RECIPIENT'S SIGNATURE ACKNOWLEDGES RECEIPT OF A COPY OF THIS NOTICE OF VIOLATION

This Notice may be appealed to the Montgomery County Board of Appeals within 30 days of the issue date. The Board of Appeals is located in the Council Office Building, 100 Maryland Ave., Room 217, Rockville, MD 20850, telephone (240) 777-6600

Preservation Briefs: 9

The Repair of Historic Wooden Windows

John H. Myers

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 (see figure 1). 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.

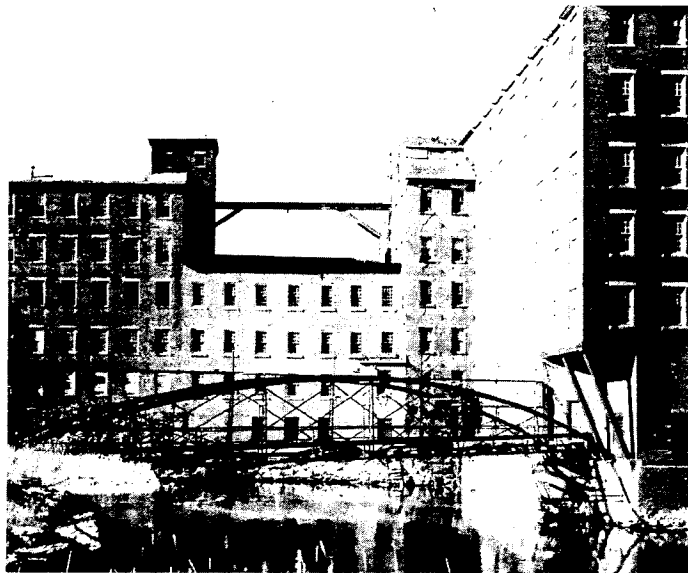


Figure 1. Windows are frequently important visual focal points, especially on simple facades such as this mill building. Replacement of the multi-pane windows here with larger panes could dramatically change the appearance of the building. The areas of missing windows convey the impression of such a change. Photo: John T. Lowe

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.

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 (see figure 2).

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 pro-

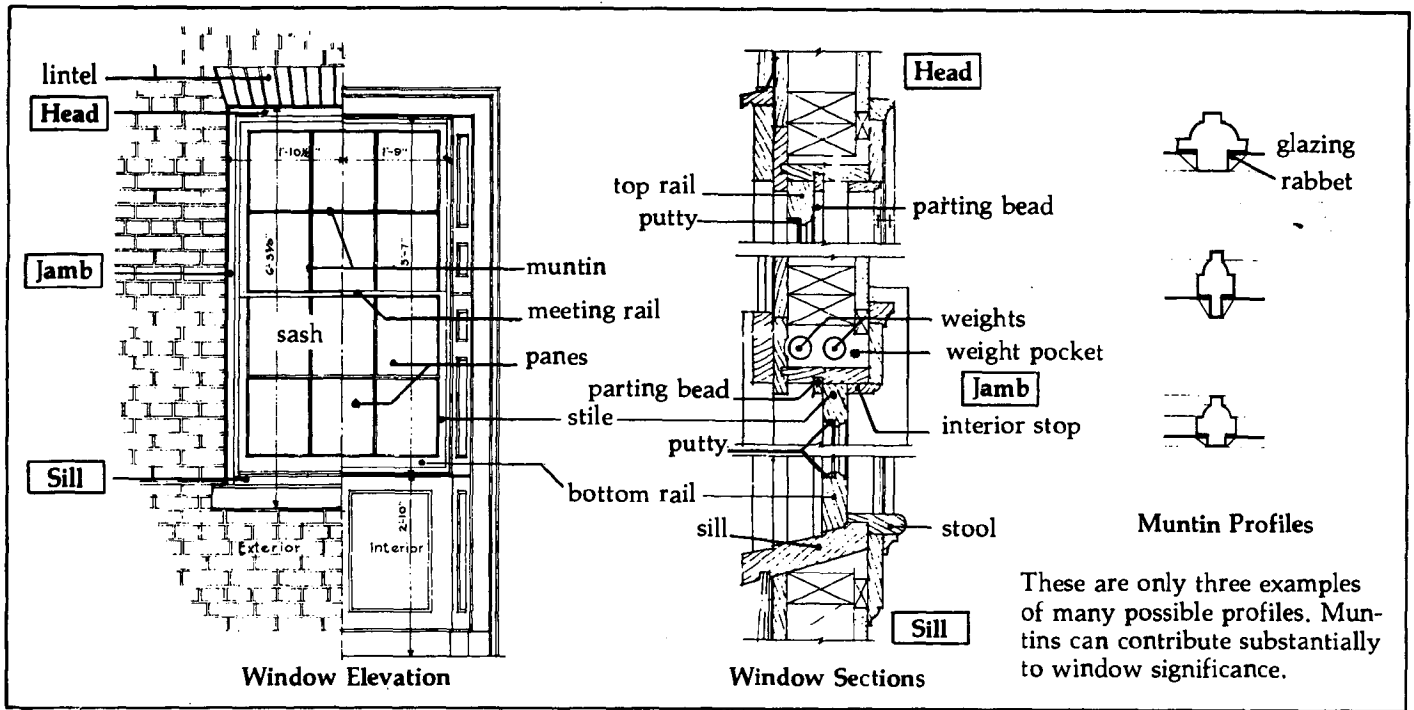


Figure 2. These drawings of window details identify major components, terminology, and installation details for a wooden double-hung window.

ceed 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 run-off, particu-

larly 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.

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 (see figure 3). 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 end-grain 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 sec-

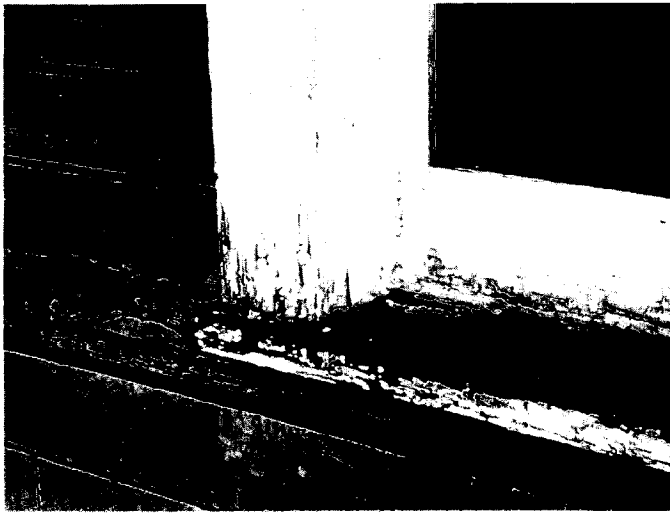


Figure 3. Deterioration of poorly maintained windows usually begins on horizontal surfaces and at joints where water can collect and saturate the wood. The problem areas are clearly indicated by paint failure due to moisture. Photo: Baird M. Smith, AIA

tion 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.

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 double-hung wooden window (see figures 4a-f), 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. Several techniques such as scraping, chemical stripping, and the use of a hot air gun are discussed in "Preservation Briefs: 10 Paint Removal from Historic Woodwork" (see Additional Reading section at end).

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 (see figure 4b). 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 (see figure 4c), the glass should be removed or protected from the sudden temperature change which can cause breakage. An



Figure 4a. The following series of photographs of the repair of a historic double-hung window use a unit which is structurally sound but has many layers of paint, some cracked and missing putty, slight separation at the joints, broken sash cords, and one cracked pane. Photo: John H. Myers



Figure 4b. 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. To avoid visible scarring of the wood, the sash can be raised and the stop pried loose initially from the outer side. Photo: John H. Myers



Figure 4c. Sash can be removed and repaired in a convenient work area. Paint is being removed from this sash with a hot air gun while an asbestos sheet protects the glass from sudden temperature change. Photo: John H. Myers



Figure 4d. Reglazing or replacement of the putty requires that the existing putty be removed manually, the glazing points be extracted, the glass removed, and the back putty scraped out. To reglaze, a bed of putty is laid around the perimeter of the rabbet, the pane is pressed into place, glazing points are inserted to hold the pane (shown), and a final seal of putty is beveled around the edge of the glass. Photo: John H. Myers



Figure 4e. A common repair is the replacement of broken sash cords with new cords (shown) or with chains. The weight pocket is often accessible through a removable plate in the jamb, or by removing the interior trim. Photo: John H. Myers



Figure 4f. Following the relatively simple repairs, the window is weathertight, like new in appearance, and serviceable for many years to come. Both the historic material and the detailing and craftsmanship of this original window have been preserved. Photo: John H. Myers

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 (see figure 4d). 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 weathertight 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 (see figure 4e). 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:

The operations just discussed summarize the efforts necessary to restore a window with minor deterioration to "like new" condition (see figure 4f). 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 proc-

ess 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 water-proofed, 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) water-proof 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.

When sills or other members exhibit surface weathering they may also be built-up using wood putties or home-made mixtures such as sawdust and resorcinol glue, or whitening 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 semi-rigid epoxies which saturate the porous decayed wood and then harden. The surface of the consolidated wood can then be filled with a semi-rigid epoxy patching compound, sanded and painted (see figure 5). Epoxy patching compounds can be used to build up

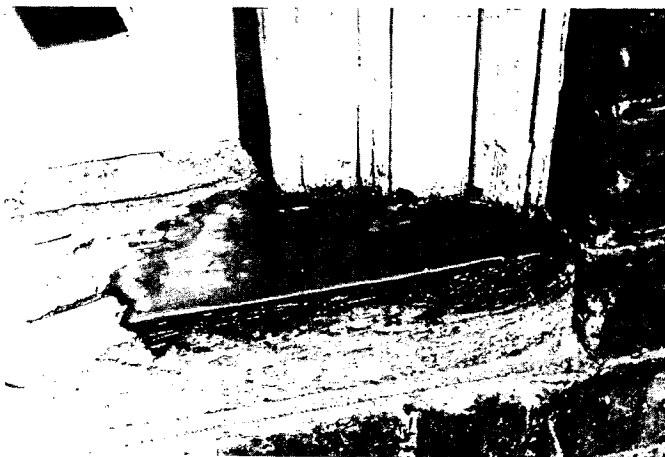


Figure 5. This illustrates a two-part epoxy patching compound used to fill the surface of a weathered sill and rebuild the missing edge. When the epoxy cures, it can be sanded smooth and painted to achieve a durable and waterproof repair. Photo: John H. Myers

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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. Technical Preservation Services has published *Epoxies for Wood Repairs in Historic Buildings* (see Additional Reading section at end), which discusses the theory and techniques of epoxy repairs. 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.

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

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