HISTORIC PRESERVATION COMMISSION

Agenda

November 19, 2018

1001 11th Avenue
City Council Chambers, City Center
4:00 p.m.

I. **Call to Order**

II. **Approval of Minutes**

III. **Public Input**

IV. **Resolution Commending Mark Markley for his service on the Historic Preservation Commission**

V. **Presentation of Greeley Historic Register Plaque for the Greeley Elevator Building to Heather Bean**

VI. **Continuation of Request for Certificate of Approval: Façade Alterations, 806 9th Street (Applicant: Ely Corliss and Brian Seifried, on behalf of owner LASI LLC)**

VII. **Request for Certificate of Approval: Window Replacement, 814 19th Street (Applicant: Jane Fisher, on behalf of owner alpha Phi International Fraternity National Housing Corporation)**

VIII. **Elections for Chair and Vice-Chair**

IX. **Historic Preservation Commission Member Reports**

X. **Staff Reports**

XI. **Adjournment**

UPCOMING MEETINGS AND IMPORTANT DATES:

November 19, 2018 4:00 p.m., Historic Preservation Commission, City Council Chambers, City Center, 1001 11th Avenue. (Note: new permanent location)

December 3, 2018 4:00 p.m., Historic Preservation Commission, City Council Chambers, City Center, 1001 11th Avenue. (Note: new permanent location)

December 17, 2018 4:00 p.m., Historic Preservation Commission, City Council Chambers, City Center, 1001 11th Avenue. (Note: new permanent location)

January 7, 2019 4:00 p.m., Historic Preservation Commission, City Council Chambers, City Center, 1001 11th Avenue. (Note: new permanent location)

January 21, 2019 4:00 p.m., Historic Preservation Commission, City Council Chambers, City Center, 1001 11th Avenue. (Note: new permanent location)

Historic Preservation Public Hearing Procedure

A. Public Hearing to…

1. Chair introduce public hearing item
2. Historic Preservation Staff report
3. Applicant Presentation
4. Commission questions
5. Chair opens public hearing
6. Chair closes public hearing
7. Applicant rebuttal
8. Commission discussion and vote

HISTORIC PRESERVATION COMMISSION

Proceedings
October 1, 2018

1025 9th Avenue
School District 6 School Board Meeting Room
4:00 p.m.

I. Call to Order

Chair Scott called the meeting to order at 4:00 p.m. Commissioners Anschutz, Zasada, Bator, Thompson, and Brunswig were present. (Commissioner Markley was absent.)

Chair Scott welcomed new Commissioner Brunswig and stated that today he will not be a voting member and his first meeting will serve as orientation.

II. Approval of Minutes for the meeting held on September 17, 2018.

Commissioner Anschutz moved to approve the minutes from September 17, 2018. Commissioner Bator seconded the motion. The motion carried 4-0. (Commissioner Markley was absent, Commissioner Brunswig was not a voting member today, and Commissioner Zasada arrived after the Approval of Minutes.)

III. Public Input

There was no public input today.

IV. Request for Certificate of Approval: Reconsideration of COA Application for wall signs, 1214 9th Avenue (Applicant: Shawn Mander)

Chair Scott introduced the case, explained the public hearing process and asked whether there was a conflict of interest by any Commissioner. There being no conflict, Chair Scott called for the staff report.

Commissioner Zasada arrived at 4:02 p.m.

Betsy Kellums, Historic Preservation Specialist, addressed the Commission and entered the staff report into the record. She gave a brief summary of the previous hearing when this request was denied without the applicant present and explained to the Commission that the Code states that the Commission and Staff need to work with applicant to come up with a solution for the denied item.

Ms. Kellums presented and explained the definitions of certificate of approval and permit as it applies to this proposal.

Ms. Kellums continued that the property is a non-contributing property and the only reason that the project is being reviewed is because of its physical presence in the Monroe Historic District. She added that the property will never contribute to the district as a contributing property because the structure is a 1950's era building and the area of significance for the district is 1870 to 1926; anything built outside of that timeframe is considered non-contributing.

Ms. Kellums explained that the permit was approved by Planning and issued by the Building Inspection in 2017, and the historic preservation review was not requested as it usually is for buildings 40 years and older.

(Interruption to fix monitors)

She continued that the applicant realized that he needed approval from the Commission after the permit was issued, and then he was out of town for the last hearing when the case was presented. Ms. Kellums added that she sent the applicant a letter after that hearing with the Commission's denial, and the applicant replied with a statement and photos of other buildings in the district with non-compliant signs, as reason why he should keep the signs.

Ms. Kellums explained she contacted the applicant and proposed different options to remediate the situation of the non-compliant signs: take down both wall signs, take down one sign and possibly add a wood background or request a reconsideration of original proposal. The applicant chose to have a reconsideration hearing to explain his project. Ms. Kellums showed pictures of the previous business in the building and compared the amount of signage that was previously there to the current proposal.

Additionally, she showed pictures sent by the applicant of other businesses in the district with signs that are not compliant and are both contributing and non-contributing properties. One of the examples she focused on was the Resource Center's sign that was previously approved by the Commission years ago and was not required to have wood signs. It is a non-contributing building in the district. She also confirmed that there are no wood signs anywhere in the district.

Staff reviewed the application according to the criteria in Section 16.60.110 of the Greeley Municipal Code and recommended approval. Ms. Kellums concluded that the signs have a neutral effect on the property as they do not affect the character of the district and are reversible. They are not obtrusive to the building and have a positive effect on the building use, and wood signs are not appropriate for a 1950s era building.

Commissioner Anschutz asked if the era of building and design of the building take precedence over its physical presence in the historic district concerning the district's signage guidelines. Ms. Kellums responded that the building is a non-contributing building, and it does not fit the criteria, but it is still important to consider.

Commissioner Anschutz asked since the building is a non-contributing structure does that affect the amount of signage allowed. Ms. Kellums replied that 32 sf. is the maximum amount of signage for the district. She added that the signs being discussed met the developmental code allowance requirements and therefore, the applicant was able to obtain a permit.

Chair Scott commented if old signs were grandfathered in, these signs are almost a replacement. She gave the example of Key Bank where the business that came after them was allowed to replace signage that was already there without having to go through the approval process.

Commissioner Bator agreed with Chair Scott's comment and mentioned that the previous business, Bennett's, used to have signage on five of its walls and the current signs are modest in comparison to the ones before.

Chair Scott invited the applicant to talk about the project.

Applicant Shawn Mander, 1214 9th Avenue, addressed the Commission and stated that he did not have anything to add, but would be happy to answer any questions from the Commission.

Commissioner Bator asked where the photos of Bennett's were found. Mr. Mander replied that some were found on a real estate listing and some were provided by Ms. Kellums.

Commissioner Anschutz commented to the applicant that the design of the signs was a good choice.

Commissioner Zasada stated, based on this case, that if the City missed this, then it is not fair to expect the public to catch it, as that would set a bad precedent. She understands that it does not meet the guidelines, but based on that she would approve it. She asked if it was possible to review the Monroe Historic District guidelines, and maybe modify them since there are no wood signs in the area and this is a requirement in the code.

Chair Scott opened the public hearing at 4:28 p.m.

Marshall Clough, Historic Greeley Inc., 1619 15th Street, addressed the Commission and expressed his concern about the integrity of the Monroe District being jeopardized. He stated there is an issue of process and lack of communication in recent cases brought to the Commission for review. He continued, using the current presentation as an example of others, that the Commission is not aware of the work of some proposed projects until they are completed and reviews after. He stated that reviewing something after it is completed is a concern for Historic Greeley Inc. and other interested bodies. He added he was the chair of this Commission previously and experienced similar situations where completed projects were presented for approval and does not agree that this is good practice. He urged a change in the process where the Historic Preservation Office reviews and approves before Planning or Building Inspection and that the applicant be provided with a checklist of all requirements before turning a project in for review.

There being no public comment, the hearing closed at 4:31 p.m.

Commissioner Bator made a motion that, based on the application received and the preceding analysis, the Commission finds that the proposed wall signs at 1214 9th Avenue meet (1) Criteria a, c, e, and f and (2) Standard f of Section 16.60.110 of the Greeley Municipal Code. Based on these findings, and the Commission approves the Certificate of Approval for wall signs, with the condition that the required permit be obtained and approved by Building Inspection if needed. Commissioner Thompson seconded the motion. The motion carried 5-0. (Commissioner Markley was absent and Commissioner Brunswig was not a voting member today.)

V. Request for Certificate of Approval: Façade Alterations, 806 9th Street (Applicant: Ely Corliss and Brian Seirfried, on behalf of owner LASI LLC)

Ms. Kellums stated that this case will be continued for a future meeting and will reschedule once she has more information on the application.

Chair Scott if there needs to be a motion on the continuation of this item.

There was a brief discussion between Ms. Kellums; Mike Garrott, Planning Manager; and Brad Mueller, Community Development Director, concerning the continuation of this item and whether it needs to be rescheduled today.

Mr. Mueller addressed the Commission and instructed that the item can be continued because it was legally noticed properly, but a date does need to be set today, otherwise it will need to be re-noticed.

Ms. Kellums rescheduled this item for November 19, 2018.

Chair Scott called for a motion.

Commissioner Zasada made a motion to continue this agenda item to November 19th. Commissioner Anschutz seconded the motion.

VI. Historic Preservation Commission Member Reports

There were no Commission reports today.

VII. Staff Reports

Ms. Kellums polled the Commission for the method of delivery for packets: electronically or paper. There was a brief discussion between the Commissioners. No definite answer at this time.

Mr. Garrott asked Ms. Kellums if there were any updates on the upcoming conference. Ms. Kellums replied that the Saving Places conference will be in Denver February 4th to February 7, 2019.

Ms. Kellums added that the City received a grant to host CAMP training and there are ten spots available for Greeley Commission and Staff.

Ms. Kellums stated that she learned about a conference concerning preserving post World War II buildings, and that it will take place March 13 to March 16, 2019 in Los Angeles, California.

VIII. Adjournment

There being no more business, the meeting adjourned at 4:44 p.m.

_____

Sandra Scott, Chair

_____

Betsy Kellums, Secretary

This page intentionally left blank.

CITY OF GREELEY HISTORIC PRESERVATION COMMISSION
RESOLUTION NO. 3
SERIES 2018

A RESOLUTION COMMENDING MARK MARKLEY FOR HIS SERVICE ON THE CITY OF GREELEY HISTORIC PRESERVATION COMMISSION.

WHEREAS, Mark Markley has served the City of Greeley through his membership as a commissioner of the City of Greeley Historic Preservation Commission from December 2014 to October 2018; and

WHEREAS, Mr. Markley showed an active interest in every topic of discussion, bringing to such discussions a valuable perspective as an architect; and

WHEREAS, during his tenure, Mr. Markley expended many hours in the consideration of historic property designation applications and certificate of approval applications, state historic preservation income tax credit applications, and policy discussions; and

WHEREAS, during this time, Mr. Markley helped plan and support various historic preservation events;

NOW, THEREFORE, BE IT RESOLVED that the City of Greeley Historic Preservation Commission members and the Community Development staff express their sincere appreciation for, recognition of, and contributions made by Mark Markley in service to the City of Greeley**.**

Signed and approved this 19th day of November 2018.

_____
Sandra Scott, Chair

ATTEST:

_____
Sue Anschutz

_____
Betsy Kellums,
Secretary, Historic Preservation Commission

_____
Tannis Bator

_____
Scott McLean

_____
Margaret Thompson

_____
Kristin Zasada

This page intentionally left blank.

Community Development Department
MEMORANDUM

TO:	Historic Preservation Commission
FROM:	Betsy Kellums, Historic Preservation Specialist
RE:	Request for Continuance for Public Hearing for 806 9th Street COA
DATE:	November 12, 2018

The applicant requests a continuance of this agenda item to the March 4, 2019 Historic Preservation Commission meeting. The applicants and staff are working together toward a solution on this complicated project.

This page intentionally left blank.

HISTORIC PRESERVATION COMMISSION SUMMARY

ITEM: Certificate of Approval

PROJECT: Window Replacement

CASE NUMBER: HPDR2018-0027

LOCATION: 814 19th Street, Camfield House

APPLICANT: Jane Fisher, on behalf of owner Alpha Phi International Fraternity National Housing Corporation

HISTORIC PRESERVATION COMMISSION HEARING DATE: November 19, 2018

HISTORIC PRESERVATION COMMISSION FUNCTION:

Review the proposal for compliance with Chapter 16.60.110 of the City of Greeley Municipal Code Criteria and Standards for altering designated properties or contributing properties in an historic district, and approve or deny the request.

PROJECT OVERVIEW AND BACKGROUND:

Proposed Project

On August 29, 2018, applicant Jane Fisher submitted part of an application for a Certificate of Approval on behalf of property owner the Alpha Phi International Fraternity National Housing Corporation for replacement of windows at 814 19th Street to the Historic Preservation Office. Ms. Fisher submitted the remainder of the application by October 4, 2018. Please see the Application and Narrative for a Certificate of Approval (Attachment A), the Current Photographs (Attachment B), October 2016 Photos (Attachment C), Estimates for Window Replacement (Attachment D), the Existing Site Map (Attachment E), and Email correspondence related to the windows at 814 19th Street (Attachment F).

Existing Conditions

The house is in good condition. Seven historic wood frame windows on the east side on the second story and seven wood windows on the south side on the second story and three historic wood frame windows in the detached garage were replaced with vinyl sash windows. The windows are currently being stored in a shed on the property.

Background

The Historic Preservation Commission designated the Camfield House on the Greeley Historic Register in January 1997. As an individually designated property outside of a historic district, the house is subject to the Historic Preservation General Design Review Guidelines. Ms. Kellums met with the applicant Jane Fisher on October 5, 2016 about replacing the windows.

Ms. Fisher took Ms. Kellums inside the south room and the east bedroom where they were interested in replacing the windows. For email information about this meeting and other email about the windows, see Attachment F. Ms. Kellums emailed her information about windows and weatherization of historic windows, including Preservation Brief #9 (See Attachment G), the National Trust for Historic Preservation Windows Tip Sheet (See Attachment H), and the National Trust for Historic Preservation Weatherization Guide (See Attachment I). They discussed the requirement for Commission approval and that the south windows might be okay because they are on the south side and not as important. Ms. Kellums also spoke with Ms. Fisher during the summer of 2018 about replacing windows and indicated they would require Historic Preservation Commission approval to replace windows and that it was a violation of the Municipal Code to do it without approval. The applicant did not indicate if they had investigated the option of repairing the windows and installing new storm windows.

Building History
Lottie and Daniel Camfield purchased this property in February 1907 and hired Roeschlaub & Son of Denver to design the house in 1911 and 1912. Daniel lived in the house until his death in November 1914. Daniel A. Camfield was a very significant citizen of Greeley, having involved himself in irrigation and downtown Greeley commerce and being known as an "Empire Builder."

He arrived in Greeley in 1881, when he was eighteen years of age, coming from Providence, Rhode Island. When he was old enough, he began purchasing land, eventually holding nearly 50,000 acres. He was actively involved in the development of irrigation in the area, including the Platte Valley from Greeley to Nebraska. In a June 12, 1909 article, the Greeley Tribune gave him the title of "Empire Builder" and said his work had created "the largest body of irrigated land in the country... at an average cost of $24.23 per acre, this work of private reclamation takes on the aspect of the most marvelous victory recorded in the peaceful conquest of the great West." His obituary described his involvement in irrigation development. "The irrigation enterprises with which he has been connected, and in which he has been the moving spirit, would probably amount to from $10,000,000 to $15,000,000. They covered not only parts of Colorado, but Wyoming, Utah and New Mexico as well." The obituary further indicates that he was involved in other interests besides irrigation, such as remodeling and adding to the Oasis Hotel and renaming it the Camfield Hotel, building the Camfield Court Building, helping organize the City National Bank and being a part owner of the Tribune-Republican Publishing Company.

He married Lottie Atkinson in 1887 and they had several children. He founded the town of Camfield in 1907, which was located directly east of Ault, and which existed until 1943. He died at age fifty-one in 1914, while on an extended trip to New York. A tribute to him in the November 10, 1914 Greeley Tribune states, "Primarily, D.A. Camfield was a builder, one of the greatest in Colorado's history. In this respect his name deserves to rank with that of Moffat, Evans, Tabor, Stratton, Walsh and others. In the history of northern Colorado development he stands alone, the only other men who at all approached him as builder of irrigation enterprises were B.H. Eaton and B.D. Sandborn, both of whom have gone before. In the City of Greeley the only other man that ever approached him as a city builder was S.D. Hunter."

The house was designated on the Greeley Historic Register for historical, architectural and geographical significance. The house is associated with Daniel Camfield, significant for his

contributions to the development of irrigation and the organization and development of the City National Bank and the Tribune-Republican Publishing Company. The house is an example of an American Foursquare type with characteristics of Craftsman style architecture and it is an example of the work of State renowned architect Robert S. Roeschlaub & Son. Finally, it is significant for its location near the historic campus of the University of Northern Colorado and near the historic 8th Avenue corridor.

Sources: Greeley Tribune, Nov. 9, 10, 13, 14, 1914; Museum Scrapbook #28, page 91; History of Larimer County, page 346; Stone, History of Colorado, Vol. II, Chicago: The S.J. Clark Publishing Company, 1918; Weld County Old & New: People & Places, page 57-58; property abstract; City directories; Certificate of Designation memo from Ben Fogelberg to Historic Preservation Commission, Jan. 18, 1997.

Architectural Description
This American Foursquare residence is a roughly rectangular, two story, brick structure with an asphalt shingle, hipped roof. Roof features include dormers, exposed rafter ends and wide overhanging eaves. The main façade has an entrance with two wood frame sidelights. The one-story, full-width porch has square posts and a central pediment matching the front gabled dormer. It has a brick wall surrounding the porch, which wraps partially around the side of the house. The house has stained glass windows and wood frame sash windows.

A detached garage of brick matching the house with a hipped roof and dormers and windows sits behind the house. It appears to have been converted into an apartment.

SITE DATA:

Legal Description:	GR3544 W91.5' L1 to 6 BLK1 NORMAL SCHOOL ADD, City of Greeley, County of Weld, State of Colorado
Neighborhood:	Normal School Addition to the City of Greeley
Designation:	Individually designated on the Greeley Historic Register, January 1997
Year Property Built:	1912 (Source: Greeley City Directories, Weld County Assessor)
Architectural Style:	Foursquare
Zoning:	R-H (Residential – High Density) the current and historic use is residential; currently it is used as a sorority house with girls living in it and in the detached garage.
Dates of Significant Renovations:	Permit to replace roof and install 20 year 3 tab asphalt shingles; Owner: Steve Foust; Contractor:

Bob Behrends Roofing LLC; Permit #04080010; Date: 8/2/2004.

Permit to remodel existing apartment of existing building; Owner/Contractor: Steve Foust; Permit #B890458; Date: 7/7/1989; Final Inspection: 8/17/1989.

Certificate of Occupancy Approval for rental/sorority house; Owner: Steve, Neil, Annette Foust; Permit #870975; Date: 8/19/1988.

Permit to remodel interior of existing apartment house mainly clean up; Owner/Contractor: Steve Foust; Permit #870975; Electrical Contractor: Front Range Elec; Plumbing and Heating Contractor: Corman Mech.

Certificate of Occupancy Approval for Sigma Alpha Epsilon Fraternity; Owner: John Watson-Opdyke Agency; Date: 4/2/1987.

Permit to add 6’ wall with door to enclose furnace room; Owner: Glen Murphy (SAE Fraternity); Contractor: Doug Kendel; Permit #810576; Date: 10/5/1981.

Permit to build 7’ high engineered fence on existing lot 5’ from side property line; Owner/Contractor: Sigma Alpha Epsilon Fraternity; Permit #820445; Date: 8/30/1982; Final inspection not approved, CO not issued: 6/25/1984.

Certificate of Occupancy for owner/occupant: Greeley Area Sigma Alpha Epsilon Alumni; Date: 10/17/1972.

Permit to remodel property and convert into fraternity house; Owner: Mike Lehan; Contractor: Weld County Lumber; Plumbing Contractor: Ernie’s Plumbing and Heating; Electrical Contractor: Fletcher electric; Permit #720291; Date: 7/10/1972.

Permit for Sprinkling system; Owner: Bonnie Houtsen; Contractor: Sam Schlagel; Permit #650520; Date: 8/9/1965.

Source: Building Permit File, 814 19th Street

KEY ISSUES AND ANALYSIS:
The proposed work is evaluated according to the relevant criteria for alteration of designated properties, defined in Section 16.60.110, as follows in the staff analysis. Only the applicable criteria and standards are listed.

City of Greeley Code, Section 16.60.110 (1) Criteria

a. The effect of the alteration or construction upon the general historical or architectural character of the designated property.

c. The effects of the proposed work in creating, changing or destroying the exterior architectural features and details of the structure upon which the work shall be done.

e. The effect of the proposed work upon the protection, enhancement, perpetuation and use of the landmark or landmark district.

f. Compliance with the Secretary of the Interior's current standards for rehabilitation of historic properties as defined in Section 16.60.020 of this Chapter.

Secretary of the Interior's Standards for Rehabilitation

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

Standard #6: Deteriorated original 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.

Standard #9: New additions, exterior alterations, or related new construction shall not destroy original 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.

City of Greeley Code, Section 16.60.110 (2) Standards

b. The historic character of the property shall be retained by avoiding the removal of, or alteration of, features and spaces important to the character.

c. Each property shall be recognized as a physical record of its time. The use of original materials shall be encouraged. Distinctive and unique features, finishes, materials and examples of craftsmanship should be retained and preserved. If deteriorated, they should be repaired. Repairs and replacement of such features should match the original in color, shape, texture and design. Replacements should be fully documented with pictorial or physical evidence and a copy of such evidence filed with the Commission.

g. Other requirements for alterations of a designated property or contributing property in a district as are required by the procedures and bylaws established by the Commission.

Applicable Guidelines from the General Design Review Guidelines

Windows

Windows, the elements that surround them, and their relationship to one another are among the most important character-defining elements of a historic structure. The basic elements of windows are their operation, proportions, number of divisions, and the dimensions of the frame. Historic windows should be preserved wherever feasible; this is especially important for individually designated properties.

18. Preserve the functional and decorative features of original windows.

a. Features important to the character of windows include frames, sash, muntins, mullions, glazing, sills, heads, jambs, moldings, operation, and groupings of windows.

b. Stained and leaded glass are often found in windows and doors of historic buildings and houses, and special care should be taken to preserve and protect these windows.

c. Typically, houses feature a front window or grouping of windows. The proportions, type, relationship, decorative glass, and surrounding detail should be preserve.

d. Repair frames and sash by patching, splicing or reinforcing, rather than replacing.

e. If replacement of any original window is necessary, match it as closely as possible.

19. Retain the position, type, number, and groupings of windows, especially on significant facades.

20. Maintain original window proportions.

a. Preserve the vertical emphasis typical of historic windows.

b. Do not reduce an original opening to accommodate a smaller window. Likewise, do not enlarge an opening to accommodate a larger window. If enlargement is necessary for emergency egress, do so on a minor elevation (rear or side).

21. Use materials that appear similar to the original when replacement is necessary.

a. Replacing a wood window with another wood window is preferred; however, other materials may be considered if the operation, dimension, profile, and finish are similar.
b. Glass block should be avoided unless it was typical of the style or period. If used, the opening size should not be altered.

22. Consider storm windows as an alternative to window replacement.
a. Install storm windows on the interior when feasible.
b. Match the sash of the original windows if storm windows are installed on the exterior.
c. Metal storm windows may be appropriate if the frames match the proportions and profile of the original windows and if the frames are anodized or painted so that raw metal is not visible.

Staff Analysis:
The proposed replacement of windows does not comply with the applicable criteria and standards for the following reasons:

The removal of historic wood windows and replacement with vinyl sash windows would have an adverse effect on the historical and architectural character of the house and garage because historic wood sash windows are a significant character-defining feature of the house and garage. The windows on the front of the house and those with decorative features, such as stained or leaded glass, are the most important windows. The windows on the sides are not as significant. The windows on the rear are the least significant windows on the house, unless they have significant features, such as stained glass. The removal and replacement with vinyl windows is not the appropriate treatment because windows can usually be repaired and with the addition of wood storm windows, wood sash windows can last significantly longer with the energy and financial saving with the added security of storm windows. If windows are determined to be beyond repair, wood sash windows would be the appropriate replacement. The previous owner replaced the first floor windows on the rear with vinyl sash windows at an unknown date without approval from the Historic Preservation Commission.

The proposed replacement windows on the rear second floor match those windows on the rear first floor that the previous owner replaced. The wood windows that were replaced were not original to the construction of the house, as that section was added and/or enclosed at an unknown date. That rear portion of the house was very likely added or enclosed later at an unknown date, as suggested by the wood shingle siding and change in roofline. Those windows might have been significant, depending on when they were installed. If they were installed within a few years of the house being constructed, they would be significant. If they were installed considerably later, within the last 40-50 years or so, they would be less significant if at all. The rear windows proposed for replacement on the rear are shorter than the original windows and don't match the original window openings on other parts of the house. It is likely that they were added considerably later than the construction of the house. The replacement of the rear windows has a minimal effect on the integrity of the house. The use of vinyl is not an appropriate replacement material and does detract from the house as the windows visibly stand out more than the original windows, however, the impact on the house is lessened since the

windows are on the rear on an addition or porch enclosure and are not very visible from the street.

The detached garage was built at the same time the house was constructed, and the proposed replacement of windows on the garage would detract from the character of the garage. However, the garage is not visible from the street and has several significant alterations, including the infill of several windows and large car/carriage openings on the north side. The window replacement on the garage would have a minimal adverse impact on the property.

The proposed removal of all the windows proposed for replacement, including on the east side of the house, the south side of the house and the detached garage, would have an adverse impact on the exterior features and details because it would remove historic fabric and replace with new vinyl windows. The proposed replacement of the character-defining multi-light wood sash windows on the east side of the house would have the strongest adverse effect on the integrity of the house. The proposed replacement windows do not match the historic windows in materials, design, or profile. The historic windows have wood muntins with true divided lights on the upper and lower wood sashes. The proposed replacement windows have one-over-one vinyl sashes that cannot convey the same character. For these reasons, the proposed replacement of the windows, primarily the windows on the east, would have an adverse impact on the exterior features and details.

The proposed replacement of the windows on the second floor of the east side bay, which was likely a later enclosure, perhaps of a sleeping porch, would adversely impact the house. The enclosure was done at an unknown date. The windows that were replaced were historically appropriate wood windows with vertical divided lights on the top and bottom sashes. The wood sash windows do not appear to be deteriorated very much, based on documentation provided by the applicant. They likely could be repaired and new storm windows installed to provide the needed improvement in climate control and fire egress. Replacing windows that can be repaired and reused is an inappropriate treatment for a historic property, particularly an individually designated historic property. The use of vinyl as the replacement material is inappropriate because vinyl does not match wood in finish and the profile does not appear to match.

The proposed project does not enhance or protect the integrity of the house. According to the applicant, the proposed window replacement would make the house more comfortable for the residents, but that could have been potentially possible with repair of wood windows and replacement and/or addition of storm windows.

The proposed project does not meet Secretary of the Interior's Standard #2 because the proposed project removes character-defining wood windows on the east. The wood windows on the south were not as character-defining, as they were not visible from the street. The proposed project does not meet Standard #6 because the proposed replacement windows are vinyl and the applicant did not provide information about possibly repairing the windows and determining if they required replacement. They did not provide the option for replacing with wood windows, which would be the most appropriate replacement. Primarily, they did not provide evidence that the windows were deteriorated to the point of being beyond repair. The windows on the south were not distinctive and replacement with vinyl windows that match the existing vinyl windows

would not strongly affect the character and integrity. The windows on the east were distinctive and removal of them and replacement with vinyl windows does not meet Standard #6. The east windows should be preserved and repaired with storm windows added to meet the Standard. The proposed project to remove historic windows on the east that are character-defining and replacement with vinyl windows does not meet Standard #9. The south windows are not character-defining and replacement with vinyl would be acceptable in the circumstance that the windows are not character-defining and are on the rear and not very easily visible from the street.

For these reasons the proposed project to replace the windows on the east with vinyl windows do not meet criteria a, c, e and f, Secretary's Standards #2, #6, and #9 or Standards b and c in Section 16.60.110.

The proposed project to replace the windows on the east side doesn't meet the guideline to preserve and repair windows rather than replace, guideline #18. The proposed project does not use similar materials, as vinyl is not a similar material to wood. The proposed project does not consider the use of storm windows, which would have met the guideline.

In summary, for these reasons, the proposed window replacement of the east windows and garage windows does not meet the criteria and standards in Section 16.60.110, including the Secretary of the Interior's Standards and the General Historic Preservation Commission Design Review Guidelines. The proposed window replacement of the south windows meet the criteria and standards in Section 16.60.110, including the Secretary of the Interior's Standards and the General Historic Preservation Commission Design Review Guidelines.

16.60.110 (1) Criteria Addressed: **a, b, c, d, e, and f (Secretary's Std #2, 6, 9)**

16.60.110 (2) Standards Addressed: **b, c, and g (Historic Preservation General Design Review Guidelines for Windows)**

NOTICE:
The Municipal Code does not specify public notification requirements for Certificate of Approval applications. A notification letter with the date, time and location of the public hearing was sent to the property owner on Monday, October 8, 2018 and a sign was posted at the property on Friday, November 9, 2018.

STAFF RECOMMENDATIONS:
Approval of windows on the south side; denial of windows on the east side and on the garage.

RECOMMENDED MOTIONS:
Motion for Denial:
A motion for denial that, based on the application received and the preceding analysis, the Commission finds that the proposal to replace the wood windows on the east side of the house and on the detached garage of the Camfield House at 814 19th Street does not meet (1) Criteria a,

b, c, d, e, and f and (2) Standards b, c, and g of Section 16.60.110 of the Greeley Municipal Code, and therefore denies the Certificate of Approval.

Motion for Approval:
A motion for approval that, based on the application received and the preceding analysis, the Commission finds that the proposal to replace the wood windows on the second floor of the south side of the Camfield House at 814 19th Street does meet (1) Criteria a, c, e, and f and (2) Standards b, c, and g of Section 16.60.110 of the Greeley Municipal Code, and therefore approves a Certificate of Approval for the replacement of the south windows only.

ATTACHMENTS:
Attachment A – Application & Narrative for Certificate of Approval
Attachment B – Current Photographs
Attachment C – October 2016 Photos
Attachment D – Window Replacement Estimates
Attachment E – Existing Site Map
Attachment F – Email correspondence related to 814 19th Street windows
Attachment G – Preservation Brief #9
Attachment H – National Trust for Historic Preservation Windows Tip Sheet
Attachment I – National Trust for Historic Preservation Weatherization Guide

814 19th St. GHPO rec'd 8/29/18
→ still needs owner signature as of 8/29/18
→ photos submitted via email

City of Greeley Community Development Department, Historic Preservation Office, 1100 10th Street, Ste. 201, Greeley, CO 80631
970.350.9222 www.greeleygov.com/hp

APPLICATION FORM FOR CERTIFICATE OF APPROVAL

ALTERATIONS

The City of Greeley's Historic Preservation Ordinance, Chapter 16.60 of the Municipal Code, requires that no exterior alteration is permitted of any designated historic property or property within a designated historic district without a Certificate of Approval issued by the Historic Preservation Commission.

PROPERTY OWNER(S)

Name: Alpha Phi International Fraternity National Housing Corporation
Address: 1930 Sherman Ave.
Evanston, Illinois 60201
Phone:
Cell phone:
Email: info@nhc.alphaphi.org

APPLICANT (if different From property owner)

Name: Jane Fisher
Address: 2598 54th Ave
Greeley CO
Phone: 970-302-9067
Cell phone:
Email: ctlc1@hotmail.com

HISTORIC PROPERTY

Name: Alpha Phi House
Address: 814 19th St.
Historic District (if applicable):
Legal Description:

Certification: I certify that the information and exhibits herewith submitted are true and correct to the best of my knowledge.

Applicant (Print): Jane Fisher Telephone: 970-302-9067

Signature: Jane E Fisher Date: 8/29/2018

Property owner's signature required. If applicant is other than property owner, property owner approves of the applicant's proposed project.

Owner (Print): Kary Huffman Telephone: 847-316-8972

Signature: Kary Huffman Date: 9/24/18

CITY OF GREELEY HISTORIC PRESERVATION OFFICE
PRE-APPLICATION CONFERENCE INFORMATION SHEET

Date: 8/29/2018 **GHR Property Address:** 814 19th St.

Applicant/Representative(s): Jane Fisher President of House Corporation Board for the Alph Phi Serority

Is the Applicant/Representative the owner? No

Proposed Project Description: Replace windows on south and east side of the building

Location/Address of Proposed Project: 814 19th St

Comments: The windows on the property are single pane. Some have aluminum storm windows. Since this is a serority house, the safety & comfort of the girls is important. Many windows could not be opened and screens did not fit. Fire escapes was a concern.

The following offices might be required to review the application or have an interest in the project. The Historic Preservation Specialist will indicate the offices that are relevant for the proposal.

____ Planning
____Natural Resources Planning
____Code Compliance
____Neighborhood Planning
____Building Inspection (Building Permits)

Staff Contact information:
Betsy Kellums, Historic Preservation Specialist
1100 10th Street, Ste. 201
Greeley, CO 80631
(P) 970.350.9222; (F) 970.350.9895
Betsy.kellums@greeleygov.com
www.greeleygov.com/historicpreservation

ALTERATIONS CERTIFICATE OF APPROVAL SUBMITTAL CHECKLIST

Include all pertinent information identified on the following page(s), as well as special information requested by Historic Preservation Staff. Additional copies may be requested by Staff, if required for use by persons or groups providing advisory assistance.

The need for additional documents, as listed below, will be determined in a consultation with Historic Preservation Staff and may include:

ALTERATIONS

☐ **Pre-application Conference (in person or phone)** _____ Date

☐ **Application Form signed by applicant and owner (if different)**

☐ **For projects involving architectural drawings, one set 11"x17" (and larger if requested) scaled project drawing(s), including name, date, project address, north arrow, graphic scale, date of drawings, and name, address & phone of owner and designer (if drawings are needed); or**

☒ N/A **Mock-Up of signs or awnings, as needed**

☐ **Product literature, if applicable, such as for window, roof projects, etc.**

☐ **If the proposal is for replacement of historic material, such as windows or siding, provide estimates from qualified contractors for repair and restoration and for replacement.**

☑ **Digital photos accurately representing existing materials, colors, and textures of each side of the building, site or structure to be affected. Date the photographs. Provide information about the view (such as view looking to the north), name of the photographer and about the subject of the photo.**

☑ **<u>Narrative of the proposed project (please type or print legibly on a separate page) Please include responses to the following:</u>**

a. **What is the proposed project?**

Replace windows on second floor south bedroom.
Replace windows in Kitchen main floor south.
Replace windows in second floor east bedroom

b. **Time constraints on the project/Project urgency?**

1st floor Kitchen windows were replaced about 10 years ago
2nd floor south bedroom windows were replaced in March 2018
2nd floor east bedroom windows replaced Aug. 2018

GHPO rec'd
10/4/18

c. Identify which design guidelines relate to the project.

Guidelines are available for download on the City's historic preservation website,
http://greeleygov.com/services/historic-preservation/documents
General guidelines are relevant for individually designated properties. District guidelines are also available for properties located with Greeley Historic Register designated districts.

Contact the Historic Preservation Office at 970.350.9222 or betsy.kellums@greeleygov.com for more information or for assistance.

P. 18 + 19

Windows

#19 Retain position, type, number & groupings of windows, especially on significant facades

#20 Maintain original window proportions

#18 e If replacement is necessary, match it as closely as possible

My name is Jane Fisher. I am the President of the House Corporation Board of the Alpha Phi Sorority. The house we are renting from Alpha Phi International Fraternity National Housing Corporation is located at 814 19th St.

The house was built in 1912. It was a private residence for many years. It was then converted to a Fraternity House. I have no information about those years. About 20 years ago the house was purchased by Steve & Annette Foust and rented to the Alpha Phi Sorority. During this time the maintenance of the exterior was done by Steve Foust. He replaced the Kitchen windows on the south side of the main floor. I did find out the UNI Design sold him the windows. There are 5 of them. I took over this volunteer position about 7 years ago. About that time, we thought it would be a good idea to see if we could register the home as a Historical Home since it is beautiful inside and has many stained glass windows. I contacted the Historical Society and a placque was put by the front door.

Every year when I meet with the girls, there is complaining about how the windows are hard to open and it is very cold in the winter. I contacted a couple of window companies to get bids on replacing or fixing the windows. One company wouldn't even come out when I told them that it was a Historical Home. He said that he had tried to work on one and that he never would again. That was my first inclination that replacing the windows would be difficult. I called the Historical Society and someone came out to look at the windows. I don't recall who it was. I was informed that it would be best to fix the windows, especially on the front of the house. We looked at the Kitchen windows and I was told that they were probably ok since they were on the back of the house & probably that was an open porch. The new windows had probably been put in a few years back.

Years went by, more complaining from girls & I kept telling them that we couldn't replace them. The south upstairs bedroom windows had some screens on them, but

the screens were not tight. Bugs were coming in and girls complained about not being able to sleep. I called UNI Design. We decided to replace the 7 windows on the back of the house to match the ones below in the Kitchen. That was completed in March of 2018. I didn't contact the Historical Society because they were on the back of the house.

In April, someone completely broke out one of the windows in our back garage. It has been converted to a couple of apartments for our girls. We decided to replace 3 windows instead of fix the existing ones because of safety.

When we talked about projects to get completed during the summer, the east bedroom windows came up again. That room is extremely cold in the winter because of the single pane windows. They are very hard if not impossible to open. Some had aluminum storm windows nailed to the outside. We determined that is was a fire escape hazard. The outside fire escape is on the west side of the building, so the girl in the east bedroom might get trapped.

(4)

I called UNI Design. Robin bid 3 different kinds of windows, but since these matched the ones in the back, we decided on them. After they were ordered, I received a complaint from a member. We tried to stop the order, but the windows had already been shipped. Since the girls were moving in soon, I decided to go ahead with the installation of the windows. The installer painted the trim to match what was there. We did not change the number or size of the original windows.

I contacted Alpha Phi International about giving up our Historical Home placque. I was told that the safety & comfort of the girls is more important than the placque.

We have installed spotlights and cameras on our property to help keep our girls safe, but it is a dangerous neighborhood. There is an alley on the west and several questionable apartments in the area. We feel that we need secure windows for their safety.

Jane Fisher
970-302-9067

814 19th Street, Camfield House

South windows, replaced April 2018

South windows, 2nd floor replaced April 2018; 1st floor replaced date unknown

Interior view of Southwest windows, replaced April 2018

2nd floor East side windows, replaced August 2018

Before replacement:

Interior photos of east side second floor windows, replaced in August 2018.

After replacement:

On east side

Garage

East side of the garage with two new windows

North side of the garage with new window

North and west side of garage; new window on far left of the building (see previous picture)

This page intentionally left blank.

Camfield House Photos taken by Betsy Kellums, October 5, 2016

North side

North and east corner

South side and part of east side

South side

South side

East side

East side

East Bedroom Windows

UNI DESIGN

UNI Design
2108 35 Ave -" D"
Greeley, CO 80634

associates@uni-design.com

Jane Fisher
814 19 St
Greeley CO 80631
970-302-9067

(970) 356-1398
(970) 669-7943
(970) 495-0445
(970) 356-1399 (FAX)

July 9, 2018 Owner's Email: ctlc1@hotmail.com

This proposal is to install new Sunrise Vinyl casement and double hung windows in the color white on the exterior and white on the interior. The grids will be between the glass and will be white inside and out. All windows will come with Latitude Glass with Summit Technology. We will install the new windows into the existing wood window frames with foam insulation between the 2 frames.

Total for 3 windows in the attic bedroom north side $ 2,257.00 ~~$ 2,052.00~~
Total for 6 windows on the east facing bedroom $ 6,427.00 ~~$ 5,843.00~~

We actually didn't do the grids.

Total Estimated Contract: $ 7,895.00

All work will be carried out in a workmanlike manner. UNI provides all jobsite Liability and Workman's Compensation Insurance.

South Bedroom Windows

UNI DESIGN

Showroom Located 2108
35 "D" Ave., Greeley, CO

Office & Warehouse 2723 9th Ave.,
Greeley, CO 80631

Jane Fisher
814 19th St.
Greeley, CO 80631
970-302-9067

(970) 356-1398
(970) 669-7943
(970) 495-0445
(970) 356-1399 (FAX)

associates@uni-design.com

email: ctlc1@hotmail.com

December 12, 2017

Work and Material Description:

This Proposal is to install 7 new Amerimax Master Grande Double Hung Window in the color white. All windows will come with Low E 366 glass, Argon Gas and Fiber Screens. We will install all windows into the existing wood opening. All windows will be caulked and cleaned for complete job.

	Cost	10% Disc
7 Amerimax Windows:	$ 4,734.00	$ 4,304.00

Install 1 Amerimax Master Grande Double Sliding Window in the Attic. This window is on the South side. This window can be replaced at the same time as the bedroom windows. Window will come with Low E 366 glass, Argon Gas and Fiber Screen. $ 693.00 $ 630.00

Estimated Total $ 4,934.00

All work will be carried out in a workmanlike manner. UNI provides all jobsite Liability and Workman's Compensation Insurance.

Spring Break 2018

Windows on back garage

UNI DESIGN

Showroom Located 2108
35 "D" Ave., Greeley, CO

Office & Warehouse 2723 9th Ave.,
Greeley, CO 80631

associates@uni-design.com

Jane Fisher
814 19th St.
Greeley, CO 80631
970-302-9067

(970) 356-1398
(970) 669-7943
(970) 495-0445
(970) 356-1399 (FAX)

email: ctlc1@hotmail.com

April 11, 2018

Work and Material Description:

This Proposal is to install 3 new Amerimax Master Grande Double Hung Window in the color white. All windows will come with Low E 366 glass, Argon Gas and Fiber Screens. We will install all windows into the existing wood opening. All windows will be caulked and cleaned for complete job.

	Cost	10% Disc
3 Amerimax Windows:	$ 2,268.00	$ 2,062.00

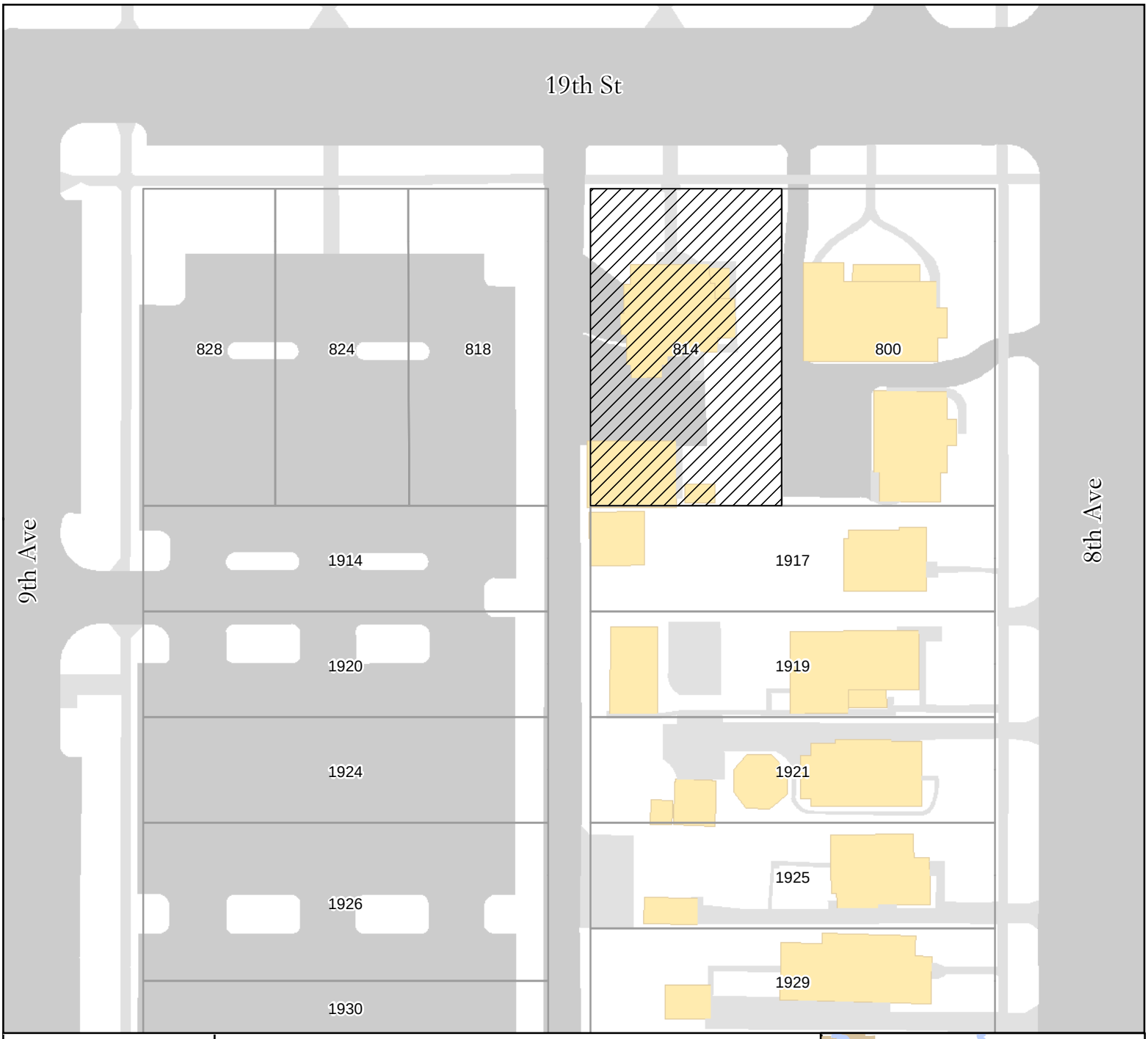
Estimated Total $ 2,062.00

All work will be carried out in a workmanlike manner. UNI provides all jobsite Liability and Workman's Compensation Insurance.

This page intentionally left blank.

Site Map - 814 19th Street

Attachment E



City of Greeley Colorado

Created: 8/31/2018
By: COG Planning, Hist Pres, GIS

* Based on Composite of 2007 Army Corps of Engineers Flood Study and Greeley Areas of Ecological Significance.

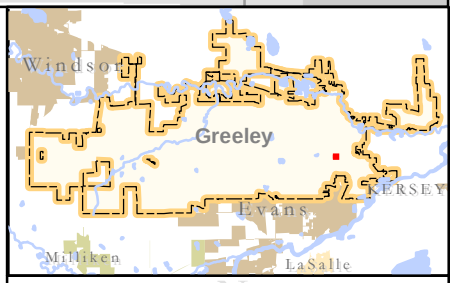
N
W E
S

Legend

814 19th Street

Parcels

Structure



Notes:
All planimetric data was digitized from aerial photographs dated 1987, 1992, 1995, 2000, and 2005. Updates are continual and data representations will change over time. This product is not necessarily accurate to engineering or surveying standards but does meet National Mapping Accuracy Standardds (NMAS). The information contained within this document is not intended to be used for the preperation of construction documents.

This page intentionally left blank.

From: Betsy Kellums
To: "ctlc1@hotmail.com"
Subject: window information
Date: Wednesday, October 05, 2016 10:59:00 AM
Attachments: NTHPWeatherizationGuide.pdf.html
PreservationBrief9_RepairingHistoricWindows.pdf.html
July2008WindowsTipSheet_NTHP.pdf.html

Hi Jane,

Thank you for meeting with me today about the windows at the house at 814 19th Street. The Camfield House is such a beautiful house, thank you for showing me the interior!

I'm providing information about windows and weatherization generally. Here is contact information for a couple of businesses that do storms for or work on historic windows:

Moffat Glass – 970.352.6625
Kevin Murray, Empire Carpentry – 970.493.3499

I would recommend you talk with Historic Greeley, Inc. to get references and resources from people who own historic properties in Greeley. The phone number for HGI is 970.302.8368 and is the phone number for Linde Thompson. She owns historic properties and has dealt with historic windows a lot! You can also reach them at historicgreeleyinc@gmail.com.

I've requested the Historic Register file for 814 19th Street to see if I can find any information about those windows and will let you know if I find anything.

Please let me know if you have any questions or if there is anything I can do for you.

Sincerely,
Betsy

Betsy Kellums
Greeley Historic Preservation Office
1100 10th Street, Ste 201
Greeley, CO 80631
Phone: 970.350.9222
Fax: 970.350.9895
email: betsy.kellums@greeleygov.com
www.greeleygov.com

From: Betsy Kellums
To: ctlc1@hotmail.com
Subject: Certificate of Approval application and design guidelines
Date: Tuesday, July 24, 2018 5:10:32 PM
Attachments: DesignGuidelinesGeneralfinal.pdf.html
COA application packet_Alterations_Nov2017.pdf.html

Hi Jane,

Thank you for calling to ask about replacing the windows. As we discussed please complete the attached application for the windows that were replaced recently (since last fall, I believe you said). I encourage you to contact Historic Greeley, Inc for help with finding someone who can repair the existing windows and for recommendations for storm windows. You can contact them at historicgreeleyinc@gmail.com or 970.302.8368. They have many members who own and deal with historic properties and have experience with contractors for repairing windows as well as installing storms.

If you decide to apply for replacement windows in that east room, please include them in the application. We will need significant evidence that the windows do not work and are not in condition to be repaired effectively. Please include individual pictures of all the windows that you propose to replace as well as description of the condition and what side and what floor they are located on the house.

Thank you very much. Please let me know if you have questions or I can be of assistance.

Cordially,
Betsy

Betsy Kellums
Greeley Historic Preservation Office
1100 10th Street, Ste 201
Greeley, CO 80631
Phone: 970.350.9222
Fax: 970.350.9895
email: betsy.kellums@greeleygov.com
www.greeleygov.com

From: Betsy Kellums
To: "ctlc1@hotmail.com"
Subject: RE: Certificate of Approval application and design guidelines
Date: Wednesday, August 15, 2018 8:06:19 AM

Hi Jane,

Just checking in to see if you have any questions with the Certificate of Approval application. Even if you decide not to apply to replace the windows, you still need to get approval for the windows that were already replaced.

Please let me know if you have any questions.

Cordially,
Betsy

Betsy Kellums
Greeley Historic Preservation Office
1100 10th Street, Ste 201
Greeley, CO 80631
Phone: 970.350.9222
Fax: 970.350.9895
email: betsy.kellums@greeleygov.com
www.greeleygov.com

From: Betsy Kellums
Sent: Tuesday, July 24, 2018 5:11 PM
To: ctlc1@hotmail.com
Subject: Certificate of Approval application and design guidelines

Hi Jane,

Thank you for calling to ask about replacing the windows. As we discussed please complete the attached application for the windows that were replaced recently (since last fall, I believe you said). I encourage you to contact Historic Greeley, Inc for help with finding someone who can repair the existing windows and for recommendations for storm windows. You can contact them at historicgreeleyinc@gmail.com or 970.302.8368. They have many members who own and deal with historic properties and have experience with contractors for repairing windows as well as installing storms.

If you decide to apply for replacement windows in that east room, please include them in the application. We will need significant evidence that the windows do not work and are not in condition to be repaired effectively. Please include individual pictures of all the windows that you propose to replace as well as description of the condition and what side and what floor they are located on the house.

Thank you very much. Please let me know if you have questions or I can be of assistance.

Cordially,
Betsy

Betsy Kellums
Greeley Historic Preservation Office
1100 10th Street, Ste 201
Greeley, CO 80631
Phone: 970.350.9222
Fax: 970.350.9895
email: betsy.kellums@greeleygov.com
www.greeleygov.com

From: Dennis Fisher
To: Betsy Kellums
Subject: Re: windows at 814 19th Street
Date: Wednesday, August 29, 2018 9:13:54 AM

Dear Betsy,

Let me try to answer the questions about the pictures I sent, if not I can send new pictures. The first set of pictures I took of the insides of the upstairs east windows. There were 2 on the north, 4 on the east, & 2 on the south. They had ropes. The girls were not able to open many of them at all. Some had aluminum storm windows nailed to the outside. Some glass was missing and a couple of window panes were cracked. The inside wood was deteriorating.

The next set of pictures was taken of the new upstairs windows on the south. The ones on the main floor are the same. They open and have screens on them.

The 3rd set of pictures is of the outside east windows. Not sure if I captured the aluminum broken storm windows.

You are correct, if you drove by this week, the windows are new on the east. We had already ordered them. We tried to cancel the order, but the windows were already on their way. Since Recruitement for sororities is this weekend, we had them installed last week. We did save the old windows that we could. I will put this in my application, but I was very nervous about fire escape issues for the girl who lives in that east bedroom. There is a fire escape stairway on the west side of the building, but if the girl could not open her windows or a storm window was nailed to the outside, I don't know how she would get out.

Let me know if this covers what you need.

Jane

Sent from my iPad

On Aug 29, 2018, at 8:55 AM, Betsy Kellums <Betsy.Kellums@Greeleygov.com> wrote:

> Dear Jane,
>
> Sorry for the multiple emails, but I forgot to mention. I need a photo log or explanation of each photo, including the location on the house and what you are portraying (such as this photo shows the deterioration of the window, etc.). You can just do that in Word and use the file numbers you provided to me with descriptions of them.
>
> Thank you very much!
>
> Betsy Kellums
> Greeley Historic Preservation Office
> 1100 10th Street, Ste 201
> Greeley, CO 80631
> Phone: 970.350.9222
> Fax: 970.350.9895
> email: betsy.kellums@greeleygov.com
> www.greeleygov.com

From: Dennis Fisher <ctlc1@hotmail.com>
Sent: Wednesday, August 29, 2018 8:53 AM
To: Betsy Kellums <Betsy.Kellums@Greeleygov.com>
Subject: Re: windows at 814 19th Street

Dear Betsy,

I am not very good at technology, so I think I sent about 7 photos of the old windows that are on the east & 4 of the new windows that had already been installed on the south. The ones in the kitchen, bottom floor were installed about 10 years ago. The upper bedroom ones were installed last spring. I don't have pictures of what they looked like before. I think originally that might have been a porch & an open sleeping porch on the south side of the building.

We did also replace 3 windows in the back garage after someone broke in last spring.

Just let me know if you received them, if not, I can try to get them printed. I will send the form soon.

Thanks,
Jane Fisher

Sent from my iPad

On Aug 29, 2018, at 8:05 AM, Betsy Kellums <Betsy.Kellums@Greeleygov.com> wrote:

> Hi Jane,
>
> That sounds good. Thank you for getting back to me quickly. Digital photos are fine. You don't have to get prints made.
>
> Please let me know if I can be of assistance.
>
> Have a good day.
> Betsy
>
> Betsy Kellums
> Greeley Historic Preservation Office
> 1100 10th Street, Ste 201
> Greeley, CO 80631
> Phone: 970.350.9222
> Fax: 970.350.9895
> email: betsy.kellums@greeleygov.com
> www.greeleygov.com

From: Dennis Fisher <ctlc1@hotmail.com>

Sent: Wednesday, August 29, 2018 7:49 AM
To: Betsy Kellums <Betsy.Kellums@Greeleygov.com>
Subject: Re: windows at 814 19th Street

Dear Betsy,
I am in the process of filling out the application. I think I need pictures to submit with the application. This is my hold-up, I need to get them printed.

Thanks,
Jane Fisher

Sent from my iPad

On Aug 29, 2018, at 7:42 AM, Betsy Kellums <Betsy.Kellums@Greeleygov.com> wrote:

> Dear Jane,
>
> I drove by the house at 814 19th Street on Tuesday, August 28, 2018 and saw what appeared to be new windows on the east side of the house. I may be wrong, but they looked new. I also observed the windows on the southwest corner that you indicated were already replaced. Replacing windows on a designated property without Historic Preservation Commission approval is a violation of the Greeley Municipal Code. Please submit a Certificate of Approval application for the window replacements as soon as possible. If the windows on the east side are not replacement, they do not need to be included on the application, but if the owner intends to replace them, approval by the Commission is required. If the Commission does not approve, it would be a misdemeanor offense.
>
> Thank you and please let me know if you have any questions.
>
> Sincerely,
> Betsy
>
> Betsy Kellums
> Greeley Historic Preservation Office
> 1100 10th Street, Ste 201
> Greeley, CO 80631
> Phone: 970.350.9222
> Fax: 970.350.9895
> email: betsy.kellums@greeleygov.com
> www.greeleygov.com

<COA application packet_Alterations_Nov2017.pdf>

From: Betsy Kellums
To: ctlc1@hotmail.com
Subject: windows at 814 19th Street
Date: Wednesday, August 29, 2018 7:42:06 AM
Attachments: COA application packet_Alterations_Nov2017.pdf

Dear Jane,

I drove by the house at 814 19th Street on Tuesday, August 28, 2018 and saw what appeared to be new windows on the east side of the house. I may be wrong, but they looked new. I also observed the windows on the southwest corner that you indicated were already replaced. Replacing windows on a designated property without Historic Preservation Commission approval is a violation of the Greeley Municipal Code. Please submit a Certificate of Approval application for the window replacements as soon as possible. If the windows on the east side are not replacement, they do not need to be included on the application, but if the owner intends to replace them, approval by the Commission is required. If the Commission does not approve, it would be a misdemeanor offense.

Thank you and please let me know if you have any questions.

Sincerely,
Betsy

Betsy Kellums
Greeley Historic Preservation Office
1100 10th Street, Ste 201
Greeley, CO 80631
Phone: 970.350.9222
Fax: 970.350.9895
email: betsy.kellums@greeleygov.com
www.greeleygov.com

From: Betsy Kellums
To: "Dennis Fisher"
Subject: RE: 814 19th Street COA - window replacement application
Date: Tuesday, September 11, 2018 4:27:08 PM

Hi Jane,

The Historic Preservation Commission designated the house on the Greeley Historic Register on January 27, 1997. Is there someone locally who has authority from the owner to sign on the owner's behalf (then you could provide something in writing for that)? If we need to schedule it for November or December due to taking a long time to get a signature from the national office, that is fine.

Thanks,
Betsy

Betsy Kellums
Greeley Historic Preservation Office
1100 10th Street, Ste 201
Greeley, CO 80631
Phone: 970.350.9222
Fax: 970.350.9895
email: betsy.kellums@greeleygov.com
www.greeleygov.com

From: Dennis Fisher <ctlc1@hotmail.com>
Sent: Tuesday, September 11, 2018 3:31 PM
To: Betsy Kellums <Betsy.Kellums@Greeleygov.com>
Subject: Re: 814 19th Street COA - window replacement application

Thanks Betsy,
There are many people at the National Office. Not sure who needs to get it signed. My original email from one of them was that the girls safety & comfort was more important than having the historical plaque on the house. However, I don't think she is the one who needs to sign it. In this day & age, we are having to be very careful to provide a residence that is as safe as possible. Not only are we dealing with the 25 girls, we are dealing with the parents who expect that the girls are safe. I will try again to get a signature. Is there a way that we can get the house off of the historical register? I think it has only been on it for less than 10 years, & I am pretty sure that it is not in a historical district because the house next door has vinal windows. I think the building across the street that belongs to the University has vinal windows also.

Thanks,
Jane

Sent from my iPad

On Sep 11, 2018, at 8:40 AM, Betsy Kellums <Betsy.Kellums@Greeleygov.com> wrote:

Hi Jane,

I do understand that getting a signature from the sorority national office could be challenging, but since they are the owner, it is important that the application include their signature. If you need to share with them that the house is currently in violation of the Greeley Municipal Code because the project was completed without Historic Preservation Commission approval, that might help facilitate or speed up the process.

I know you are working on getting that signature. Please let me know if you have any questions.

Thank you!

Betsy Kellums
Greeley Historic Preservation Office
1100 10th Street, Ste 201
Greeley, CO 80631
Phone: 970.350.9222
Fax: 970.350.9895
email: betsy.kellums@greeleygov.com
www.greeleygov.com

From: Kary Huffman
To: Betsy Kellums
Cc: "Dennis Fisher"
Subject: Alpha Phi House at Northern Colorado
Date: Wednesday, October 17, 2018 12:32:20 PM

Hi Betsy,

We received your letter here at the executive office in Evanston, IL. We wanted to let you know that Jane Fisher will be representing us at the local meeting regarding the windows on our facility there. Please let us know if you need anything further from us.

Kary

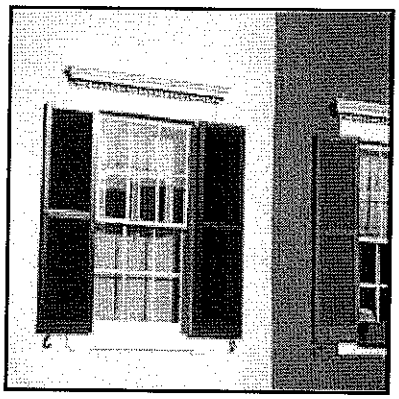
Kary Huffman
Director, Collegiate Housing
Alpha Phi International Fraternity
1930 Sherman Ave., Evanston, IL 60201 | p:847.316.8972 direct line| www.alphaphi.org

9 Preservation Briefs

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

The Repair of Historic Wooden Windows

John H. Myers



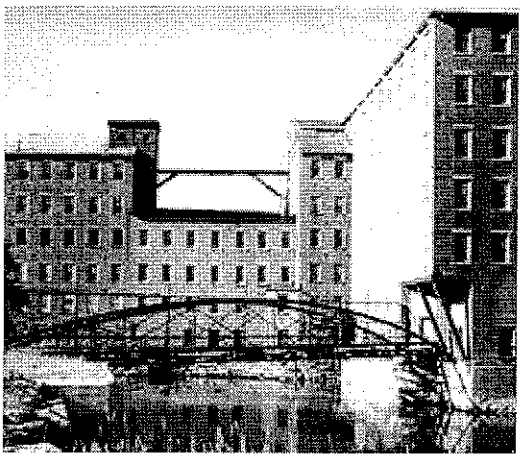
A NOTE TO OUR USERS: The web versions of the **Preservation Briefs** differ somewhat from the printed versions. Many illustrations are new, captions are simplified, illustrations are typically in color rather than black and white, and some complex charts have been omitted.

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

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

Architectural or Historical Significance

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



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

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

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

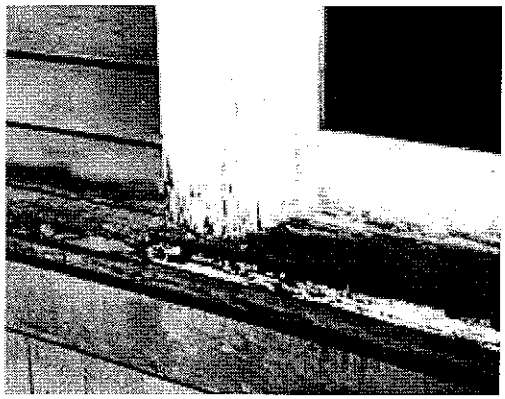
Physical Evaluation

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

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

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

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



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

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

An ice pick or an awl may be used to test wood for soundness. The technique is simply to jab the pick into a wetted wood surface at an angle and pry up a small section of the

wood. Sound wood will separate in long fibrous splinters, but decayed wood will lift up in short irregular pieces due to the breakdown of fiber strength.

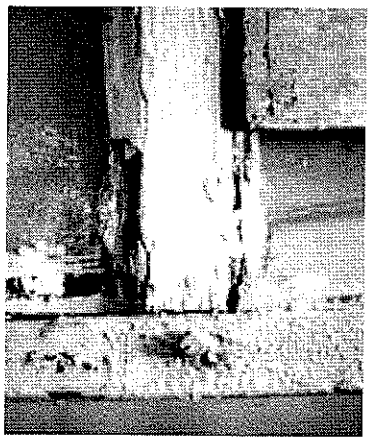
Another method of testing for soundness consists of pushing a sharp object into the wood, perpendicular to the surface. If deterioration has begun from the hidden side of a member and the core is badly decayed, the visible surface may appear to be sound wood. Pressure on the probe can force it through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

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

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

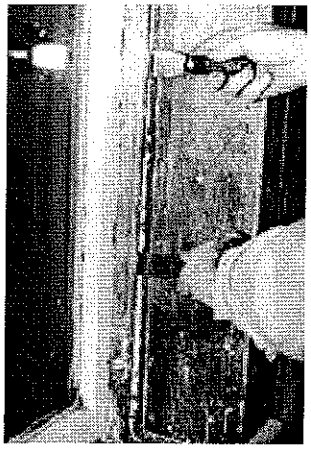
Repair Class I: Routine Maintenance

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



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

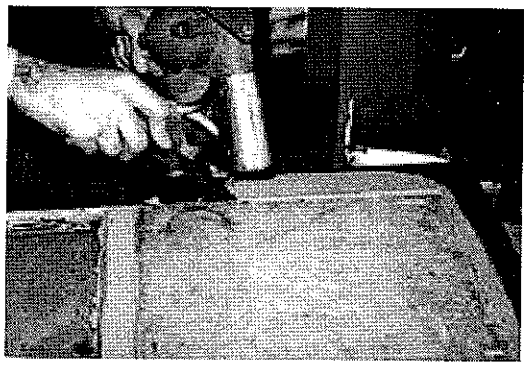
The routine maintenance required to upgrade a window to "like new" condition normally includes the following steps: 1) some degree of interior and exterior paint removal, 2) removal and repair of



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

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, but they may be adapted to other window types and styles as applicable.

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



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

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

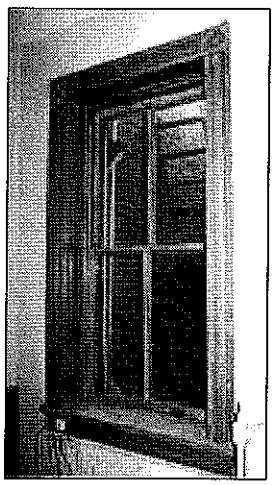
Removal of the upper sash on double-hung units is similar but the parting bead which holds it in place is set into a groove in the center of the stile and is thinner and more delicate than the interior stop. After removing any paint along the seam, the parting bead should be carefully pried out and worked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

The sash can be stripped of paint using appropriate techniques, but if any heat treatment is used, the glass should be removed or protected from the sudden temperature change which can cause breakage. An overlay of aluminum foil on gypsum board or asbestos can protect the glass from such rapid temperature change. It is important to protect the glass because it may be historic and often adds character to the window. Deteriorated putty should be removed manually, taking care not to damage the wood along the rabbet. If the glass is to be removed, the glazing points which hold the glass in place can be extracted and the panes numbered and removed for cleaning and

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

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

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



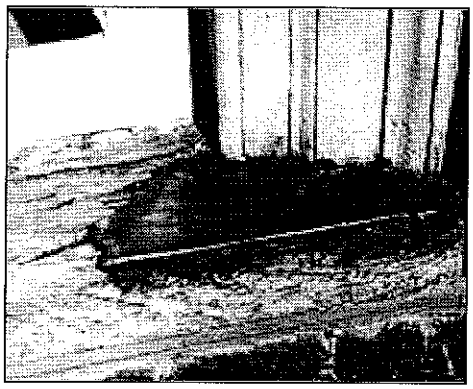
Following the relatively simple repairs, the window is weathertight, like new in appearance, and serviceable for many years to come.Photo: NPS files.

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

Repair Class II: Stabilization

The preceding description of a window repair job focused on a unit which was operationally sound. Many windows will show some additional degree of physical deterioration, especially in the vulnerable areas mentioned earlier, but even badly damaged windows can be repaired using simple processes. Partially decayed wood can be waterproofed, patched, built-up, or consolidated and then painted to achieve a sound condition, good appearance, and greatly extended life. Three techniques for repairing partially decayed or weathered wood are discussed in this section, and all three can be accomplished using products available at most hardware stores.

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



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

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

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

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

Repair Class III: Splices and Parts Replacement

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

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

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

If a rehabilitation project has a large number of windows such as a commercial building or an industrial complex, there may be less of a problem arriving at a solution. Once the evaluation of the windows is completed and the scope of the work is known, there may be a potential economy of scale. Woodworking mills may be interested in the work from a large project; new sash in volume may be considerably less expensive per unit; crews can be assembled and trained on site to perform all of the window repairs; and a few extensive repairs can be absorbed (without undue burden) into the total budget for a

large number of sound windows. While it may be expensive for the average historic home owner to pay seventy dollars or more for a mill to grind a custom knife to duplicate four or five bad muntins, that cost becomes negligible on large commercial projects which may have several hundred windows.

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

Weatherization

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

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

Window Replacement

Although the retention of original or existing windows is always desirable and this Brief is intended to encourage that goal, there is a point when the condition of a window may

clearly indicate replacement. The decision process for selecting replacement windows should not begin with a survey of contemporary window products which are available as replacements, but should begin with a look at the windows which are being replaced. Attempt to understand the contribution of the window(s) to the appearance of the facade including: **1)** the pattern of the openings and their size; **2)** proportions of the frame and sash; **3)** configuration of window panes; **4)** muntin profiles; **5)** type of wood; **6)** paint color; **7)** characteristics of the glass; and **8)** associated details such as arched tops, hoods, or other decorative elements. Develop an understanding of how the window reflects the period, style, or regional characteristics of the building, or represents technological development.

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

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

Conclusion

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

Additional Reading

ASHRAE Handbook 1977 Fundamentals. New York: American Society of Heating,

Refrigerating and Air-conditioning Engineers, 1978 (chapter 26).

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

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

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

Phillips, Morgan, and Selwyn, Judith. *Epoxies for Wood Repairs in Historic Buildings.* Washington, DC: Technical Preservation Services, U.S. Department of the Interior (Government Printing Office, Stock No. 024016000951), 1978.

Rehab Right. Oakland, California: City of Oakland Planning Department, 1978 (pp. 7883).

"Sealing Leaky Windows." *Old House Journal* (no. 1, 1973): 5.

Smith, Baird M. "Preservation Briefs: 3 Conserving Energy in Historic Buildings." Washington, DC: Technical Preservation Services, U.S. Department of the Interior, 1978.

Weeks, Kay D. and David W. Look, "Preservation Briefs: 10 Exterior Paint Problems on Historic Woodwork." Washington, DC: Technical Preservation Services, U.S. Department of the Interior, 1982.

Washington, D.C. 1981

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

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

Questions

This page intentionally left blank.

NATIONAL TRUST FOR HISTORIC PRESERVATION

HISTORIC WOOD WINDOWS

A tip sheet from the National Trust for Historic Preservation

National Trust for Historic Preservation
1785 Massachusetts Ave, NW
Washington, DC 20036
(202) 588-6000
(202) 588-6462 (fax)
info@nthp.org
www.PreservationNation.org

This tip sheet on historic wood windows was developed as part of the National Trust for Historic Preservation Sustainability Initiative.

About the Initiative:
Historic preservation can – and should – be an important component of any effort to promote sustainable development. The conservation and improvement of our existing built resources, including re-use of historic and older buildings, greening the existing building stock, and reinvestment in older and historic communities, is crucial to combating climate change.

Learn more about Preservation and Sustainability on the web:
www.preservationnation.org/issues/sustainability

For more information, contact:

Patrice Frey, Director of Sustainability Research
(202) 588-6255
Patrice_Frey@nthp.org

Barbara A. Campagna, AIA, LEED AP, Graham Gund Architect
(202) 588-6291
Barbara_Campagna@nthp.org

Rebecca Williams (author of this publication), Field Representative, Northeast Office
(617) 523-0885
Rebecca_Williams@nthp.org

Introduction

There is an epidemic spreading across the country. In the name of energy efficiency and environmental responsibility, replacement window manufacturers are convincing people to replace their historic wood windows. The result is the rapid erosion of a building's character, the waste of a historic resource, and a potential net ***loss*** in energy conservation. Typically replacement windows are vinyl, aluminum, or a composite with wood, and none will last as long as the original window. Repairing, rather than replacing, wood windows is most likely to be the "greener option" and a more sustainable building practice.

Research shows that most traditionally designed wood-frame buildings lose more heat through the roof and un-insulated walls than through the windows.[1] A historic wood window, properly maintained and fitted with a storm window, can be just as energy efficient as a new window.[2] Replacing a historic single-pane window also may not save you much money in the long run. While the exact figure will vary depending on the type of window installed and whether or not a storm window is used, studies have found that it could take 100 years or more for a replacement window to pay for itself in energy savings.[3] According to information published in a recent ***Old House Journal*** article, it could take 240 years to recoup the cost of replacing a single-pane window-storm window combination with a low-e glass double-pane thermal replacement window.[4] Also, a historic wood window can easily last more than 100 years, while a new window may not last 25.

Not every wood window can be repaired and there are situations where replacement is appropriate. However, many historic wood windows can and should be repaired, especially if the windows were manufactured before about 1940. Wood windows made before this time were constructed with individual parts, each of which can be repaired or replaced. The wood itself is denser and of higher quality than what is grown today, and it is generally more rot- and warp-resistant than modern wood.

These are just some of the practical reasons to repair rather than replace historic wood windows. In addition, repairing the historic window helps maintain a building's authenticity. Once original material is removed from a building, it is gone forever. There are many more benefits to repairing your wood windows, so keep reading.

Courtesy of the Woodlawn Museum

Historic windows are among the most important elements of a building. Simple repairs and routine maintenance coupled with storm windows make for energy efficiency that in most cases matches, if not exceeds, the efficiency of replacement windows. Workshops throughout the region have taught building owners easy ways to care for their historic windows. At the Woodlawn Museum in Ellsworth, ME, a grant from the National Trust for Historic Preservation helped fund a window repair workshop.

1. Rypkema (2006); James ***et al*** (1996); Klems (2002). 2. James ***et al*** (1996); Klems (2002). 3. Sedovic (2005); ***e.g.*** research by Keith Heberern, calculations available at www.historichomeworks.com/hhw/education/windowshandout/windowenergyanalysis.pdf. 4. "Let the Numbers Convince You: Do the Math." Old House Journal 35 no. 5 (September/October 2007).

Wood Window Basics

Using this 12-over-12, double-hung wood window as our example, here are the basic terms used for wood window parts. This window is called 12-over-12 because there are 12 panes of glass in each sash. Both sashes are moveable so it is called double-hung. If only the bottom sash moves, it is called single-hung.

Top Sash (upper section of window, may slide down to open)

Jamb (the wood that frames the window opening)

Light/lite/pane (glass, held in place by glazing putty and metal glazing points)

Rail (horizontal part of sash)

Meeting Rail or **Check Rail** (the rail where the two sash come together)

Stile (vertical part of sash)

Bottom Sash (lower section of window, typically slides up to open)

Sill (exterior, horizontal piece at the bottom of the window frame, commonly wood, stone, or brick)
Stool (interior shelf-like board at the bottom of a window against which the bottom rail of the sash rests)

A c. 1846 wood window in the former Robbins and Lawrence Armory, now the American Precision Museum in Windsor, VT.

Muntin (horizontal, vertical, diagonal, or curved pieces that frame and provide mounting surface for the lights) The shape, or profile, of the muntin provides a clue to the window's age.[1]

1. Garvin (2002).

My Windows Are Old and Drafty, Why Shouldn't I Buy New Ones?

1. **More heat is typically lost though your roof and un-insulated walls than through your windows**. Adding just 3 and 1/2 inches of insulation in your attic can save more energy than replacing your windows.[1]
2. **Replacement windows are called "replacement" for a reason.** Manufacturers often offer lifetime warrantees for their windows. What they don't make clear is that 30% of the time, a replacement window will be replaced within 10 years.[1]
3. **Replacement windows that contain vinyl or PVC are toxic to produce and create toxic by-products.** Installing these in your house is not a 'green' approach.[2]
4. **If your wood windows are 60 years old or older, chances are that the wood they are made of is old growth**—dense and durable wood that is now scarce. Even high-quality new wood windows, except for mahogany, won't last as long as historic wood windows.
5. Studies have demonstrated that **a historic wood window, properly maintained, weatherstripped and with a storm window, can be just as energy efficient as a new window**.[2]
6. According to studies, **it can take 240 years to recoup enough money in energy savings to pay back the cost of installing replacement windows**.[3]
7. **Each year, Americans demolish 200,000 buildings. That is 124 million tons of debris, or enough waste to construct a wall 30 feet high and 30 feet thick around the entire U.S. coastline.**[4] Every window that goes into the dump is adding to this problem.
8. With a little bit of practice, **it can be easy—and inexpensive—to repair and maintain your wood windows.**[5]
9. Not a DIY-er? There are people near you who can do it for you. **Hiring a skilled tradesperson to repair your windows fuels the local economy and provides jobs.**[1]
10. **Historic wood windows are an important part of what gives your older building its character.**

1. Rypkema (2006). 2. Sedovic (2005). 3. ***e.g***. Calculations by Keith Heberern available at www.historichomeworks.com/hhw/education/windowshandout/windowenergyanalysis.pdf. 4. Hadley (2006). 5***. e.g.*** www.historichomeworks.com

Basic Maintenance

There are many good, practical books and magazine articles to guide a handy person in the basic maintenance of wood windows. Several publications are listed in the references section of this tip sheet. To get you started, here are some of the keys to many years—and generations—of life with older wood windows.

1. Keep the exterior surfaces painted, including the glazing putty. Paint protects the wood and putty from water and extends their service life. Be especially attentive to horizontal surfaces where water may collect.
2. Glazing putty will eventually dry out and is meant to be periodically replaced. You can do spot repairs initially, but eventually it will be easier to re-glaze the whole sash.
3. Keep movable surfaces, such as the inside jamb, free of paint build-up so that the sash can slide freely.
4. If your sashes are hung with cord, keep the rope free of paint. This will improve the window's operability. Cord will eventually dry out and break but can be replaced. When replacing the cord you can also re-hang the weights so that the sash will be balanced.

Winter Tips

Most of the heat transfer occurs around the perimeter of the sash rather than through the glass. So the tighter the seal around the window and between the upper and lower sash, the more energy efficient the window will be. Here are some tips to help you save on your heating bills.

- **Check the lock**. Most people think the sash lock is primarily for security. It does help with security, but the lock's most important job is to ensure that the meeting rails are held tightly together. A tight fit greatly reduces air infiltration.
- **Weather stripping**—add it or renew it. Adding weather stripping to your window can increase the window's efficiency by as much as 50%. It's an inexpensive way to boost your window's efficiency. There are many different kinds from which to choose. Refer to the articles listed at the end of this tip sheet. The staff at your local hardware store should also be able to assist you.
- **Storm windows**—use them! There are many styles from which to choose, including storms that can be fitted on the interior of the window. Many studies have shown that a wood window in good condition fitted with a storm window can be just as energy efficient as the more expensive replacement window. Due to the thermal exchange properties of wood, there is also a growing interest in traditional wood-framed storm windows as they transfer less heat than metal-framed storms.
- **Condensation**. If you find condensation on the inside of your primary window, cold air leaking through the storm window is likely the culprit. If the condensation is forming on the inside surface of the storm window, warm air from the building interior is leaking in around the primary window. When warm and cold air are present on opposite sides of glass, condensation forms (think of a cold glass of lemonade on a hot day). When condensation forms on your window glass, water can collect on the horizontal wood parts of the rails, muntins, and sill, which can lead to paint failure and rot. To reduce condensation, you need to limit the amount of leaking air. Add or replace weather stripping, make sure the sash are meeting properly and that the sash lock is tight, and check the seal around the exterior of the storm window and caulk if necessary. When caulking around the perimeter of exterior storms it is important to leave weep holes at the bottom so that any condensation or infiltration that does occur can drain out.

What About Lead?

If your windows retain paint that was applied prior to 1978, chances are there is lead paint on them. Just because there may be lead paint on the windows does not mean they are unsafe or that they need to be replaced. There are steps you can take to protect yourself and others if you suspect lead paint may be present. **Before beginning work, consult your local or state ordinance to determine the legal method for handling and disposing of lead paint in your area.**

- Children and pregnant women should not be allowed in the work area.
- Do not smoke or eat or drink in the area you are working in and wash your hands and face before doing so.
- Wear disposable gloves and eye protection.
- Use a respirator if there is friable paint, or if you are scraping or sanding paint.
- Use a wet sanding technique to minimize dust.
- Vacuum using a HEPA filter.
- Wash your work clothes separately from your household laundry. You can also wear a tyvek suit to protect your clothes. Take it, and your shoes, off before you leave your work area.
- Place tarps under your work surface to collect loose paint. Seal off the work space from other rooms and from HVAC systems. Cover any furniture and other items in the work area with 6 mil plastic taped to the floor.
- Eating a nutritious diet rich in iron and calcium will reduce the amount of lead absorbed by your body if any does happen to be ingested.

(Continued on page 4)

Lead continued

- For more tips on how to work lead-safe, see "Lead Paint Safety: A Field Guide for Painting, Home Maintenance, and Renovation Work" available at www.hud.gov/offices/lead/training/LBPguide.pdf and the National Park Service Brief #37, "Appropriate Methods for Reducing Lead-Paint Hazards in Historic Housing" at www.nps.gov/history/hps/TPS/briefs/brief37.htm.
- John Leeke's website www.historichomeworks.com also has practical tips on lead-safer work practices.

References

This list is a place to start—it is not intended to be comprehensive, nor does the inclusion of a business or organization serve as an endorsement.

American Precision Museum. Windows on Preservation: restoring windows at the American Precision Museum, ed. John C. Leeke. Windsor, VT: American Precision Museum, 2005. Available at www.lulu.com.

Cambridge (MA) Historical Commission. "Window Guide." Available at: www.cambridgema.gov/Historic/windowguide.html

Garvin, James. A Building History of Northern New England. Hanover, NH: University Press of New England, 2002.

Hadley, James. "The Home of the Future?" ArchitectureBoston 10, no. 2 (March/April 2007): 44-47. www.architects.org/documents/publications/ab/marapr2007/HomeOfTheFuture.pdf

Historic Homeworks www.historichomeworks.com

James, Brad, Andrew Shapiro, Steve Flanders, and Dr. David Hemenway. "Testing the Energy Performance of Wood Windows in Cold Climates." A Report to the State of Vermont Division for Historic Preservation. 30 August, 1996. www.ncptt.nps.gov/PDFfiles/1996-08.pdf

Jordan, Steve. "Strips and Storms: Techniques for tuning up sash windows for winter." Old House Journal (November/December 2004): 46-51. www.oldhousejournal.com

Leeke, John C. Save Your Wood Windows: an alternative to vinyl replacement windows and vinyl windows. 2004. Available for sale at www.lulu.com. Sample pages available at www.historichomeworks.com/hhw/reports/reports.htm.

Klems, Joseph H. "Measured winter performance of storm windows." University of California: ***Lawrence Berkeley National Laboratory,*** August 23, 2002. Available at http://repositories.cdlib.org/lbnl/LBNL-51453

Mattinson, Bill, Ross DePaoloa, and Dariush Arasteh. "What Should I Do About My Windows?" Home Energy Magazine (July/August 2002): 24-31. www.homeenergy.com/19-4.html

Myers, John H. "The Repair of Historic Wooden Windows" Preservation Brief Series # 9. The National Park Service, www.cr.nps.gov/hps/tps/briefs/brief09.htm

National Park Service. "The Secretary of the Interior's Standards for Rehabilitation" www.nps.gov/history/hps/tps/tax/rhb/stand.htm

New York Landmarks Conservancy. Repairing Old and Historic Windows: A Manual for Architects and Homeowners. Washington, D.C.: The Preservation Press, 1992.

Rypkema, Donovan D. "Economics, Sustainability, and Historic Preservation.." Forum Journal 20, no. 2 (2006): 27-38.

Sedovic, Walter and Jill H. Gotthelf. "What Replacement Windows Can't Replace: The Real Cost of Removing Historic Windows." APT Bulletin, Journal of Preservation Technology 36, no. 4 (2005): 25-29. www.apti.org/publications/Past-Bulletin-Articles/Sedovic-36-4.pdf

Shapiro, Andrew and Brad James. "Creating Windows of Energy-Saving Opportunity." Home Energy Magazine Online (September/October 1997). www.homeenergy.org/archive/hem.dis.anl.gov/eehem/97/970908.html

Shapiro, Andrew and Brad James. "Retain or Retire? A Field Study of the Energy Impacts of Window Rehab Choices." In Window Rehabilitation Guide for Historic Buildings, edited by Charles Fisher III, Deborah Slaton, and Rebecca Shiffer. Washington, D.C.: Historic Preservation Education Foundation, 1997.

Sullivan, James. "Preserving windows to the past. History-minded vinyl critics say wood remains the best." Boston Globe, 30 July 2006. [Cited July 31, 2006.] www.boston.com/news/local/articles/2006/07/30/preserving_windows_to_the_past?mode+PF7/31/2006.

New England Window Restoration Alliance www.windowrestorationne.org

Additional Resources

This Tip Sheet on historic wood windows is part of our continuing effort to provide information to help you make environmentally responsible and informed decisions about the preservation of historic buildings.

With nearly half of greenhouse gas emissions attributed to the construction and operation of buildings, older and historic buildings are central to our efforts to address climate change. The **National Trust for Historic Preservation's Sustainability Initiative** promotes the reuse of existing buildings, reinvestment in existing communities, and green retrofit of older and historic buildings to help lower carbon emissions. For more information visit www.preservationnation.org/issues/sustainability/.

Additional help may be available from your **State Historic Preservation Office** (SHPO). Find your SHPO at www.ncshpo.org/. Private **statewide and local preservation groups** serve as the network centers and representatives of local preservation activities within their states. Many of them have materials to assist your project. The nine **Regional and Field Offices of the National Trust for Historic Preservation** (NTHP) represent NTHP programs and services by providing assistance to preservationists within their regions. Find your nearest NTHP Regional Office and state and local preservation organizations at www.preservationnation.org/about-us/partners/statewide-local-partners/contacts.html

NATIONAL TRUST FOR HISTORIC PRESERVATION

Weatherization Guide
for Older and Historic Buildings

The National Trust for Historic Preservation has launched an online guide offering homeowners a one-stop resource with the latest information about how to make their home more energy efficient and comfortable – without spending a lot of money or compromising the historic character of their home. Called the "Weatherization Guide for Older and Historic Buildings," the interactive guide can be found at: www.PreservationNation.org/Weatherization.

How to use the Guide

The interactive guide was developed in response to the growing interest in weatherization and energy conservation, in part, generated by the recent federal stimulus package that sets aside an unprecedented amount of funding for weatherization and energy efficiency upgrades. There is a lot of information – not all correct -- out there about weatherization. Some policies and statements, including by the U.S. Department of Energy, actually favor replacing old windows despite studies that show original windows can perform as well as, if not better, than replacements. Being green does not and should not have to translate into buying new and throwing out the old.

The Guide offers an opportunity to engage the media, members and homeowners. Here are tips to help spread the word:

- Share it with your members and offer it to homeowners as a resource. Parts of the Guide can be downloaded to use at old house fairs and workshops, on topics such as repairing old windows or adding insulation. While you are at it, add your organization's upcoming workshop to the growing listing featured as part of the Guide.
- Contact your local media and ask them to feature stories on weatherizing older buildings and share the Guide. Most newspapers offer a Home section and might be looking for good story ideas. A good example comes from *The Denver Post*, http://www.denverpost.com/insideandout/ci_12222598
    - Volunteer to write a newspaper article or column.
    - Keep your message simple, such as, "Older and historic buildings are part of the green solution and can always be made more energy efficient without losing their character."
    - For organizations that are thinking about or already have listed "Windows" on their endangered list, use the Guide to generate a story and highlight local examples of good projects that have rehabilitated buildings while repairing windows.
    - Designate a good media spokesperson from your organization. Pick someone who is articulate, up to speed on the issue, and available when the media calls.
- Develop your own "Love Your Windows" campaign to help build appreciation for and understanding about repairing and retrofitting older windows.
- Offer it to homeowners within your community's local and National Register historic districts. If you have a Historic Preservation Commission or Historical Society, ask them to also spread the word to their members and supporters.
- Share it with your friends, family and other owners of older and historic buildings.

What's in the Guide?

The interactive Guide helps homeowners learn how they can cost-effectively make their older or historic home even more energy efficient without jeopardizing the distinctive character of the home by, for example, replacing old windows with new ones. Older and historic homes are inherently designed for energy conservation - from deep porches and wide roof overhangs, to thick walls and windows strategically placed to help circulate air - both blocking heat gain and preventing heat loss. To help, the Guide offers links to over 200 resources, web sites, articles, reports, case studies, and do-it-yourself checklists.

The Weatherization Guide includes the following:

Whole House Resource Bank - An online portal to five full sections - General Weatherization, Windows, Roofing, Insulation, and Mechanical Systems.

Windows - FAQs and advice on retrofitting old windows and key facts on the question of whether to repair or replace your windows includes:

- **Love Your Windows** photo database
- **10 Reasons to Repair Your Old Windows (PDF)**
- **Repair or Replace Old Windows: a Visual Look at the Impacts (PDF)**
- **Window Types - Residential Field Guide (PDF)**

Insulation - FAQs and explanation of the right and wrong ways to add insulation

Roofing - FAQs and suggestions for ways to go green include:

- **Start with the Roof: A Guide for Keeping Weather Tight (PDF)**

Mechanical Systems - FAQs and advice on active and passive measures

Conversation with an Energy Auditor - Counsel for homeowners from professionals around the country on their experiences

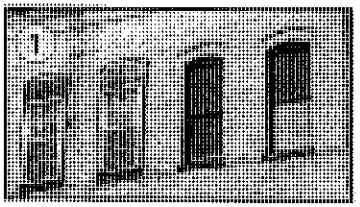
Incentives - Listing of funding resources available for weatherization

The National Trust for Historic Preservation (www.PreservationNation.org) is a nonprofit membership organization bringing people together to protect, enhance and enjoy the places that matter to them. By saving the places where great moments from history - and the important moments of everyday life - took place, the National Trust for Historic Preservation helps revitalize neighborhoods and communities, spark economic development and promote environmental sustainability. With headquarters in Washington, DC, nine regional and field offices, 29 historic sites, and partner organizations in all 50 states, the National Trust for Historic Preservation provides leadership, education, advocacy and resources to a national network of people, organizations and local communities committed to saving places, connecting us to our history and collectively shaping the future of America's stories.

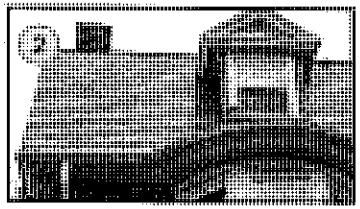
1785 Massachusetts Avenue, NW
Washington, DC 20036
policy@nthp.org

NATIONAL
TRUST
FOR
HISTORIC
PRESERVATION

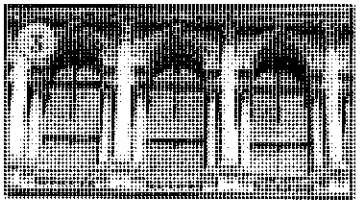
10 Reasons to Repair Your Old Windows



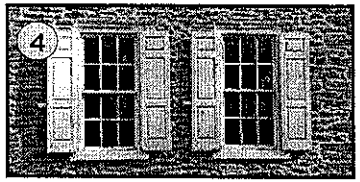
Replacement windows are called "replacement" for a reason. Manufacturers often offer lifetime warrantees for their windows. What they don't make clear is that 30% of the time, a replacement window will be replaced within 10 years. *Rypkema, 2006*



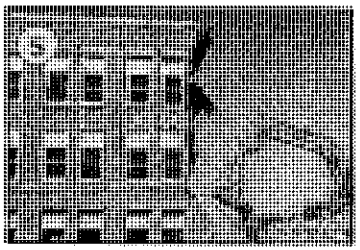
More heat is typically lost though your roof and un-insulated walls than through your windows. Adding just 3 and 1/2 inches of insulation in your attic can save more energy than replacing your windows and will likely cost less. *Rypkema, 2006*



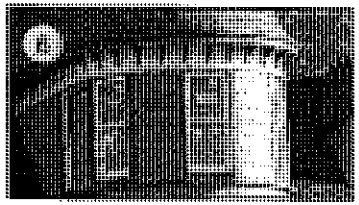
If your wood windows are 60 years old or older, chances are that the wood they are made of is old growth, dense and durable wood that is now scarce. Even high-quality new wood windows, except for mahogany, won't last as long as historic wood windows.



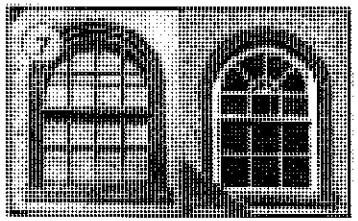
Studies have demonstrated that **a historic wood window, properly maintained, weatherstripped and with a storm window, can be just as energy efficient as a new window.** *Sedovic, 2005*



Each year, Americans demolish 200,000 buildings. That is 124 million tons of debris, or enough waste to construct a wall 30 feet high and 30 feet thick around the entire U.S. coastline. Every window that goes into the dump is adding to this problem. *Hadley, 2006*

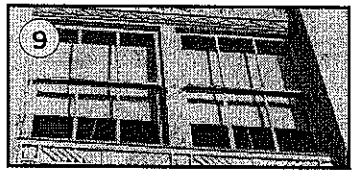


According to studies, **it can take 240 years to recoup enough money in energy savings to pay back the cost of installing replacement windows.** *Calculations by Keith Heberern available at www.historichomeworks.com/hhw/education/windowshandout/windowenergyanalysis.pdf*

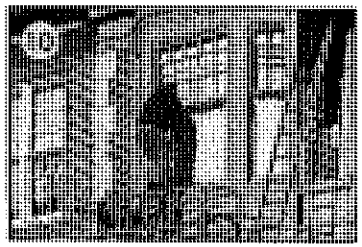


Replacement windows that contain vinyl or PVC are toxic to produce and create toxic by-products. Installing these in your house is not a 'green' approach. *Sedovic, 2005*

Historic windows are an important part of what gives your older building its character.



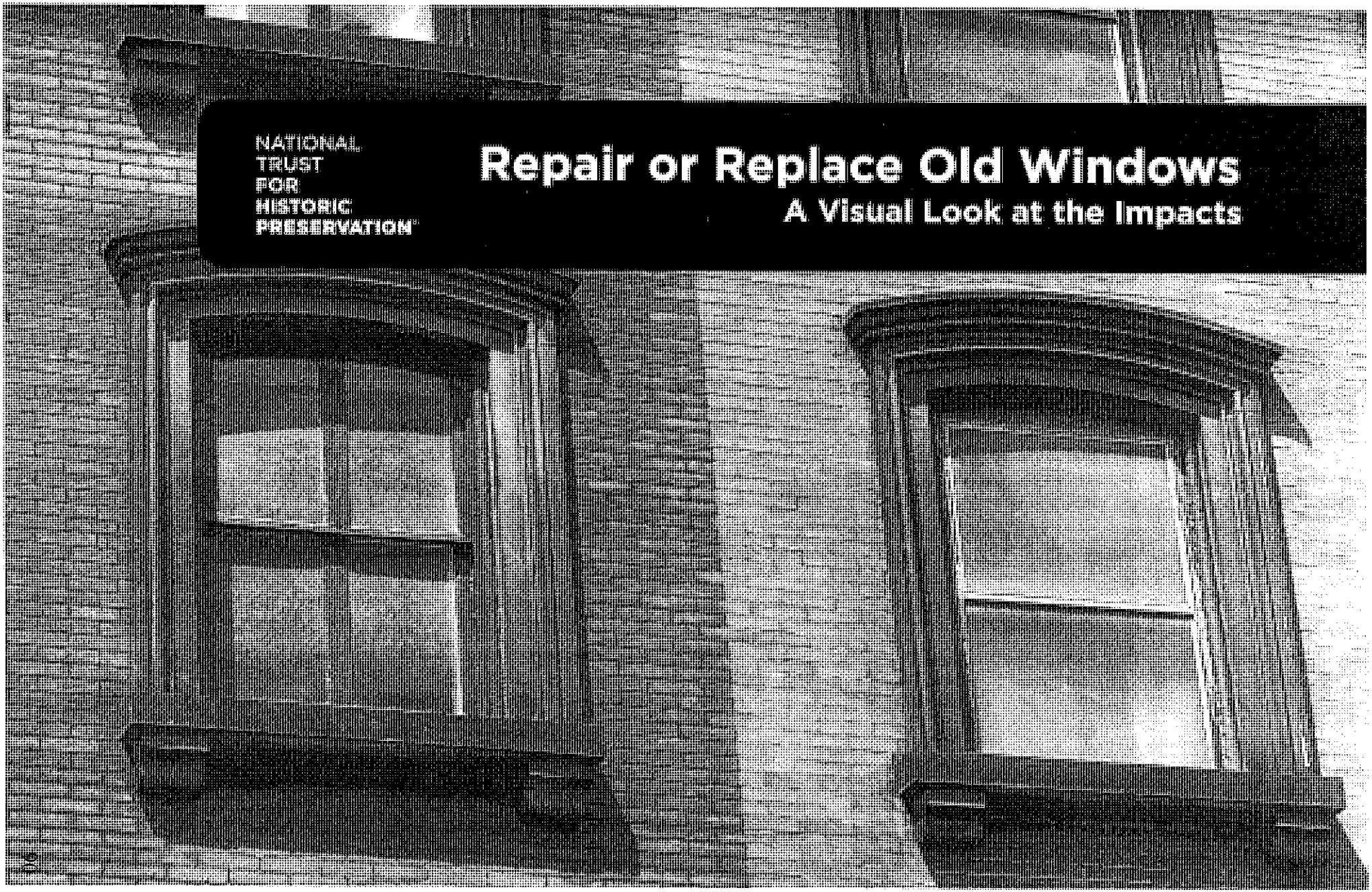
With a little bit of practice, **it can be easy—and inexpensive—to repair and maintain your windows.**



Not a DIY-er? There are people near you who can do it for you. **Hiring a skilled tradesperson to repair your windows fuels the local economy and provides jobs.** *Rypkema, 2006*

For more information...

www.PreservationNation.org


NATIONAL
TRUST
FOR
HISTORIC
PRESERVATION
Repair or Replace Old Windows
A Visual Look at the Impacts

NATIONAL
TRUST
FOR
HISTORIC
PRESERVATION®

Repair or Replace Old Windows

A Visual Look at the Impacts

Windows are a big part of older and historic buildings, from Main Street commercial structures to modernist mid-century residences. Original windows comprise about one quarter of the surface area of exterior walls. Windows often help identify the architectural style, design and give scale to a building. Just as windows define the character of a building, they also contribute to the larger context of neighborhoods and downtowns and their character. The visual impact and appearance of new, replacement windows that do not match or replicate features can be dramatic. Even minor changes to the appearance of windows can alter the way a building looks. Original material is lost and thrown away. And some buildings may no longer be considered 'historic' in terms of integrity and eligibility for historic designation. When choosing between repairing or replacing old windows, a lot needs to be factored in, including the visual impacts. This resource, divided into the following sections, is intended to help you look at your old windows, building and think about all options before making a decision.

Should I Repair My Old Windows?

When are Replacement Windows Necessary?

Do the Benefits Outweigh the Costs?

When Replacing My Windows, What Not To Do?

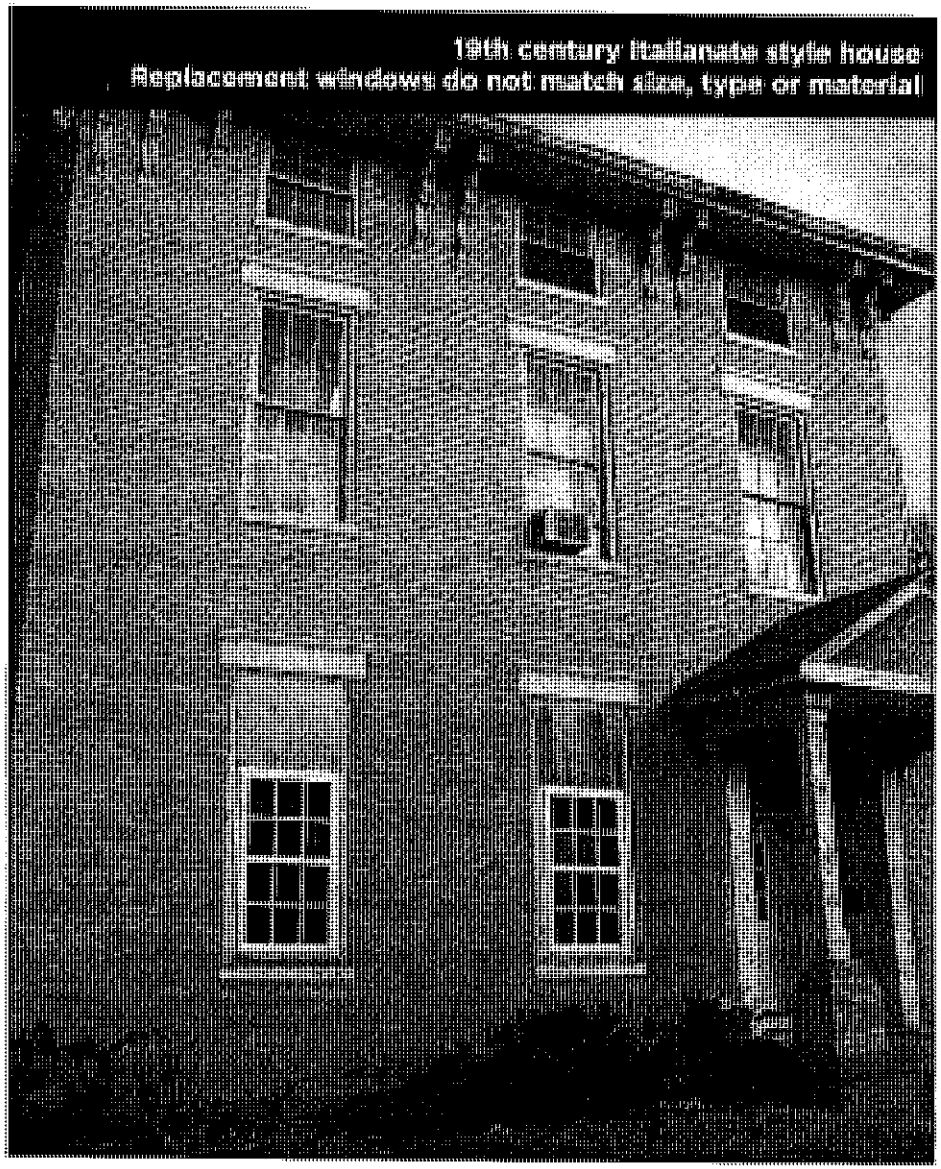
Do Window Details Matter?

Case Studies:

- A Material Issue
- In-Kind Replacement
- Size Matters
- Close, But Not Enough
- A Blurry View
- Impersonating the Original
- A Modern Dilemma
- Authenticity Counts
- One Window, Multiple Replacements
- Putting Windows in Context

For more information...

Go to **www.PreservationNation.org/Weatherization** to find additional resources on windows and much more for your older and historic building.



Historic Landmarks Foundation of Indiana

NATIONAL
TRUST
FOR
HISTORIC
PRESERVATION®

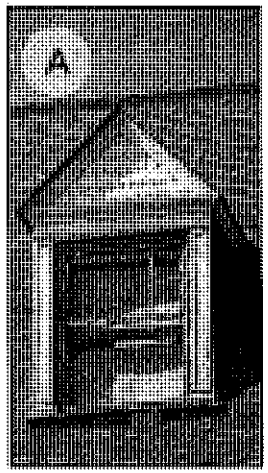
Repair or Replace Old Windows

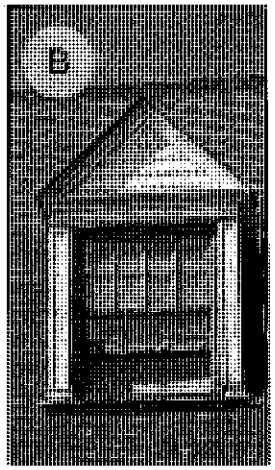
Should I Repair My Old Windows?

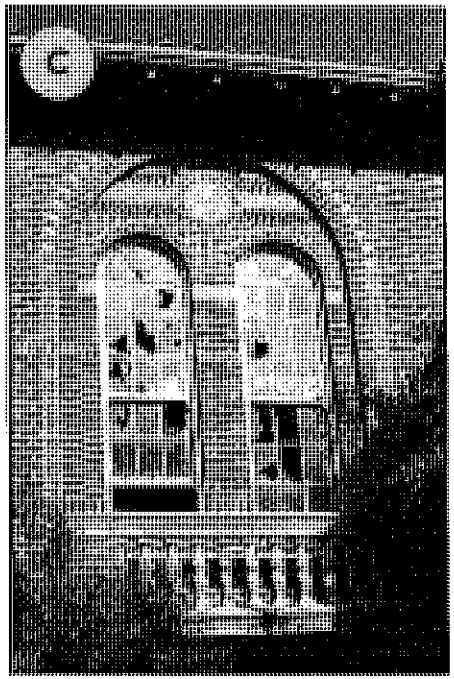
Whenever possible, repair an original window, rather than replace it. Any window over time will deteriorate with the exposure to the elements. Most older windows, especially wood windows, can be easily repaired by a DIY-er or by hiring a qualified contractor. It also will be far more economical than purchasing all new replacement windows. Older windows perform well when maintained. Problems arise from a lack of maintenance, water and condensation damage, and ultra violet light degradation. Layers of paint buildup may also make windows difficult to operate and unattractive. Most older windows can be made more energy efficient by sealing gaps with caulk, replacing glazing compound, fixing broken glass, repairing loose wood parts and installing weather stripping. An appropriate storm window may also help reduce heat loss while retaining original windows.

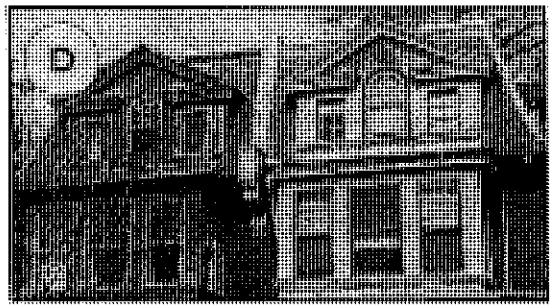
Ask Yourself Two Questions

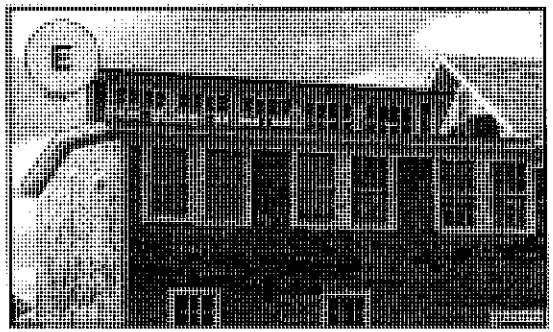
1. How important are windows in terms of architectural significance and the character of my building? Usually windows play an important role, especially those at the front and on sides that are highly visible from the street.
2. Are the windows really beyond repair? Often windows in disrepair look worse than they actually are and can be easily repaired and retrofitted for greater energy efficiency at a significantly lower cost than replacements.

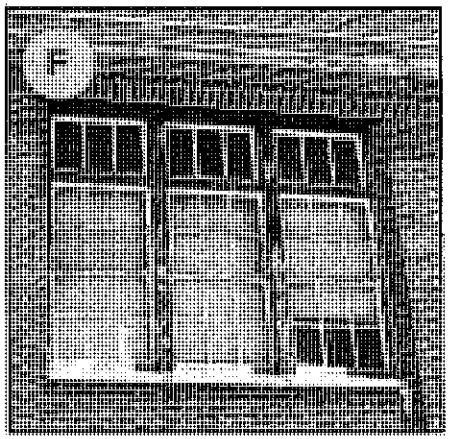












Adrian Scott Fine/NTHP

A, B Two eight-over-eight double-hung sash dormer windows. Both are in disrepair; window A will need to be rebuilt or replaced to match window B.

C Broken glass on these architecturally distinctive windows can be easily replaced and windows repaired.

D A coat of paint and routine and preventive maintenance can restore windows to their original appearance.

E Unique roof monitor with well-maintained and character defining six-over-six double-hung sash windows.

F Group of six-over-six double-hung sash windows with transoms, only needing paint.

NATIONAL
TRUST
FOR
HISTORIC
PRESERVATION®

Repair or Replace Old Windows

When Are Replacement Windows Necessary?

A selling point of replacement windows is that they are maintenance free. In truth, based on their materials, components and relatively short life expectancy, you, and subsequent owners, will probably be looking at replacing your replacement windows in less than 20 years. However, the selling point of old windows is most have been on the job for 50 to 100 years or more, and can continue to do so.

Not every old window should be saved. Sometimes it is necessary to replace a window due to extensive deterioration or missing components. An entire window may need to be replaced or sometimes selectively just components, such as retaining the frame while installing new sashes. When replacing windows, remember to match the originals as closely as possible. New windows should replicate originals, in terms of size, glazing (tint), proportions, width, dimension of components (muntins, frame), profile of sash, depth and materials.

A Six-over-six double-hung sash with loose meeting rail, missing glass — can be repaired.

B Queen Anne windows needing paint, re-glazing — can be repaired.

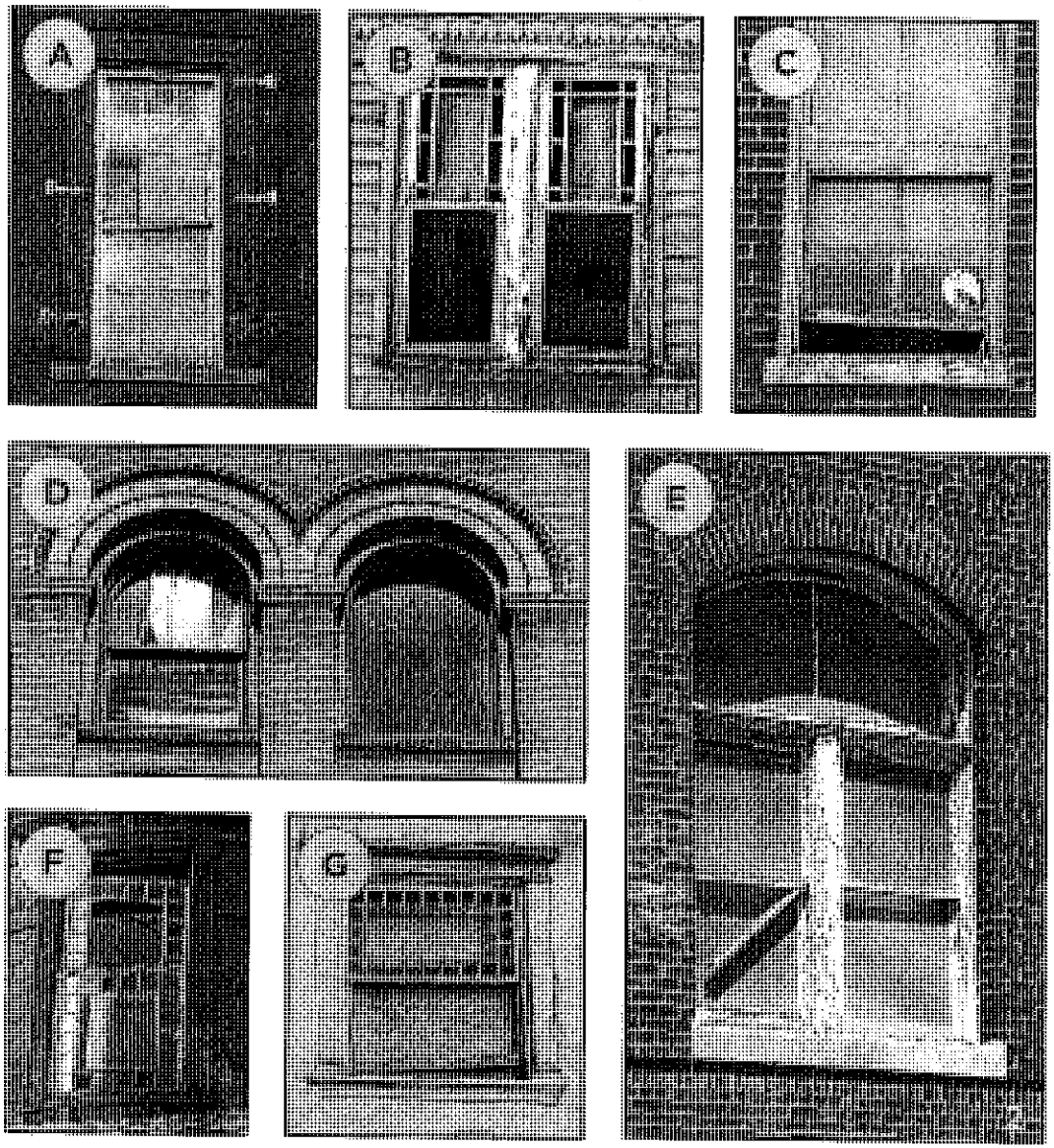
C Two-over-two double-hung sash with loose bottom rail, needing paint, re-glazing — can be repaired.

D Arched double-hung sash windows missing glass and frames — replacement likely.

E One-over-one double-hung sash windows and fixed transoms with detached meeting rail, needing paint and re-glazing — can be repaired.

F Queen Anne window in poor condition, detached from frame and missing glass — borderline, requiring extensive repairs.

G Queen Anne window missing glass and subject to structural settling of the building — borderline, requiring extensive repairs.



Adrian Scott Fine/NTHP

NATIONAL
TRUST
FOR
HISTORIC
PRESERVATION®

Repair or Replace Old Windows

Do the Benefits Outweigh the Costs?

As a homeowner you have to assess the cost-benefit analysis or 'payback' that comes with repairing or replacing your windows. Does replacing windows make economic sense? Can I achieve similar energy savings by repairing windows?

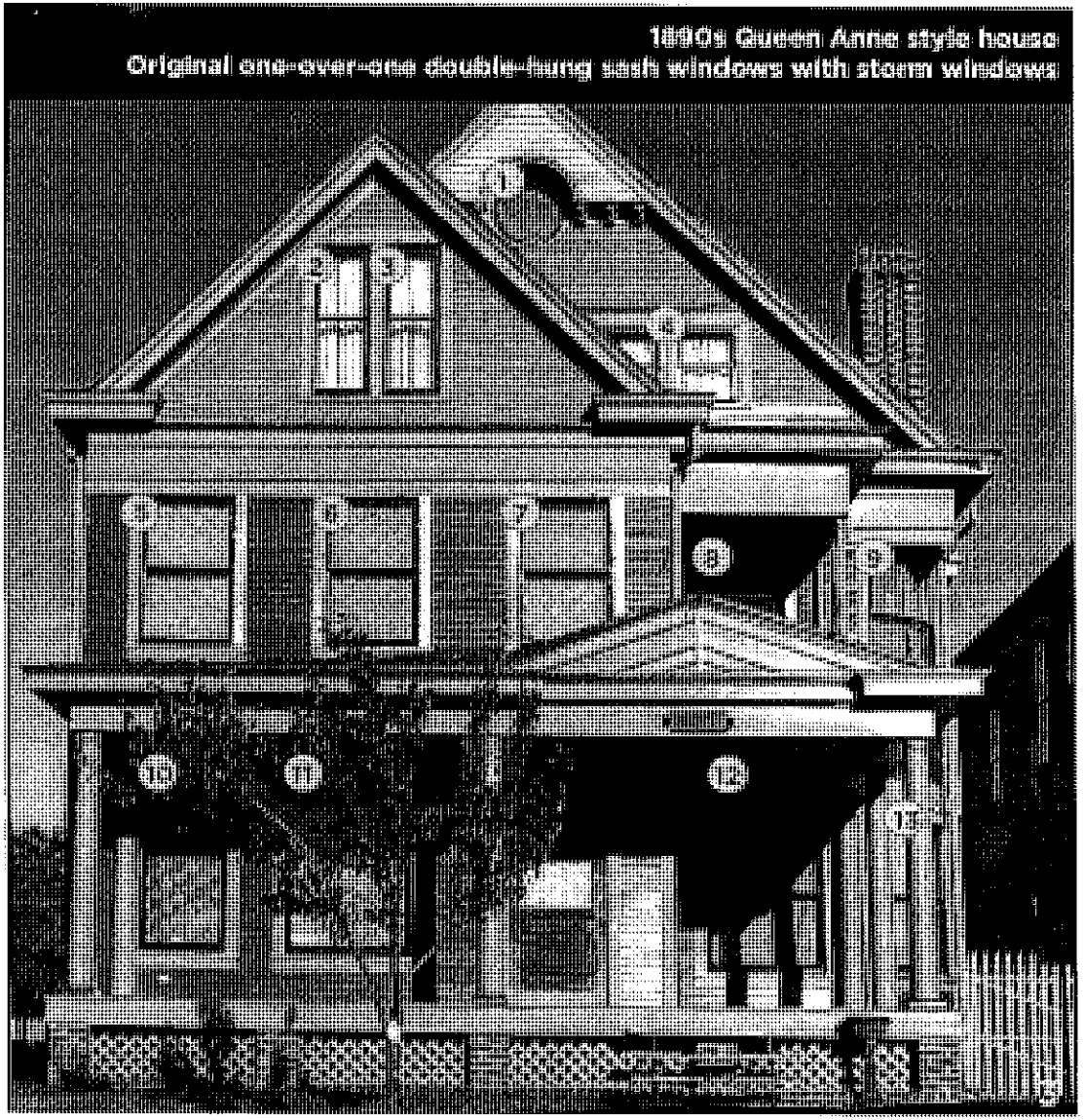
Although data varies, somewhere between 10 and 25% of heat loss is actually attributed to windows. Most heat is typically lost through your roof and un-insulated walls. Given that an average house has between 24 and 30 windows, and a typical replacement window unit costs between $500-1,000 each, does an investment of $12,000 or more make sense? On the flipside, the cost to restore an existing window and add storm windows (where appropriate) will generally be much less (depending on if you do it yourself or hire a contractor), approximately between $125 to 800 each.

Many window replacement manufacturers claim greater savings than actually occur. Since windows account for at most 25% of heat loss, the payback and time to recoup your investment in terms of energy savings could take between 40 and as much as 200 years, based on various studies. A study from Vermont shows the savings gained from replacement windows as opposed to a restored wooden window with a storm is only $.60. The added problem is most replacement windows will not last as long as 40 years, much less over a hundred years. And some are being replaced only after 10 years of service.

Do The Math

- 13 windows on the front of the house (in total 35)
- $500-1,000 for each replacement window unit
- Total costs for new windows: $17,500—35,000
- Average savings gained from replacement windows (in comparison to similar, restored windows with storms): $25.00—50.00 per month
- The payback will take about 60 years

1890s Queen Anne style house
Original one-over-one double-hung sash windows with storm windows



Adrian Scott Fine/NTHP

NATIONAL
TRUST
FOR
HISTORIC
PRESERVATION®

Repair or Replace Old Windows

When Replacing My Windows, What Not To Do?

Original windows were custom designed to fit your older and historic building. You cannot say the same for replacement windows. Often, off-the-shelf replacement window units do not match originals closely enough in design, overall appearance or fit. As original windows play an important role in defining the character of a building, installing windows that do not match — especially in terms of size and shape, type and color of frame, tint of glazing — can make a significant difference in how the building looks.

Changing the Size

Reducing or enlarging the window opening to accommodate a new replacement window is particularly harmful. It completely changes the entire proportions of a building, not to mention reducing daylight and potential air circulation. If you do choose to replace your original windows, do not eliminate window openings, in-fill or alter them to accommodate smaller or larger windows. These examples illustrate the dramatic change in appearance.

A Italianate style row houses, side by side. Building to the right retains original arched one-over-one double-hung sash windows. Building to the left has smaller replacement windows and in-fill panels installed in the original opening.

B Industrial building converted for housing with reduced windows and in-fill openings.

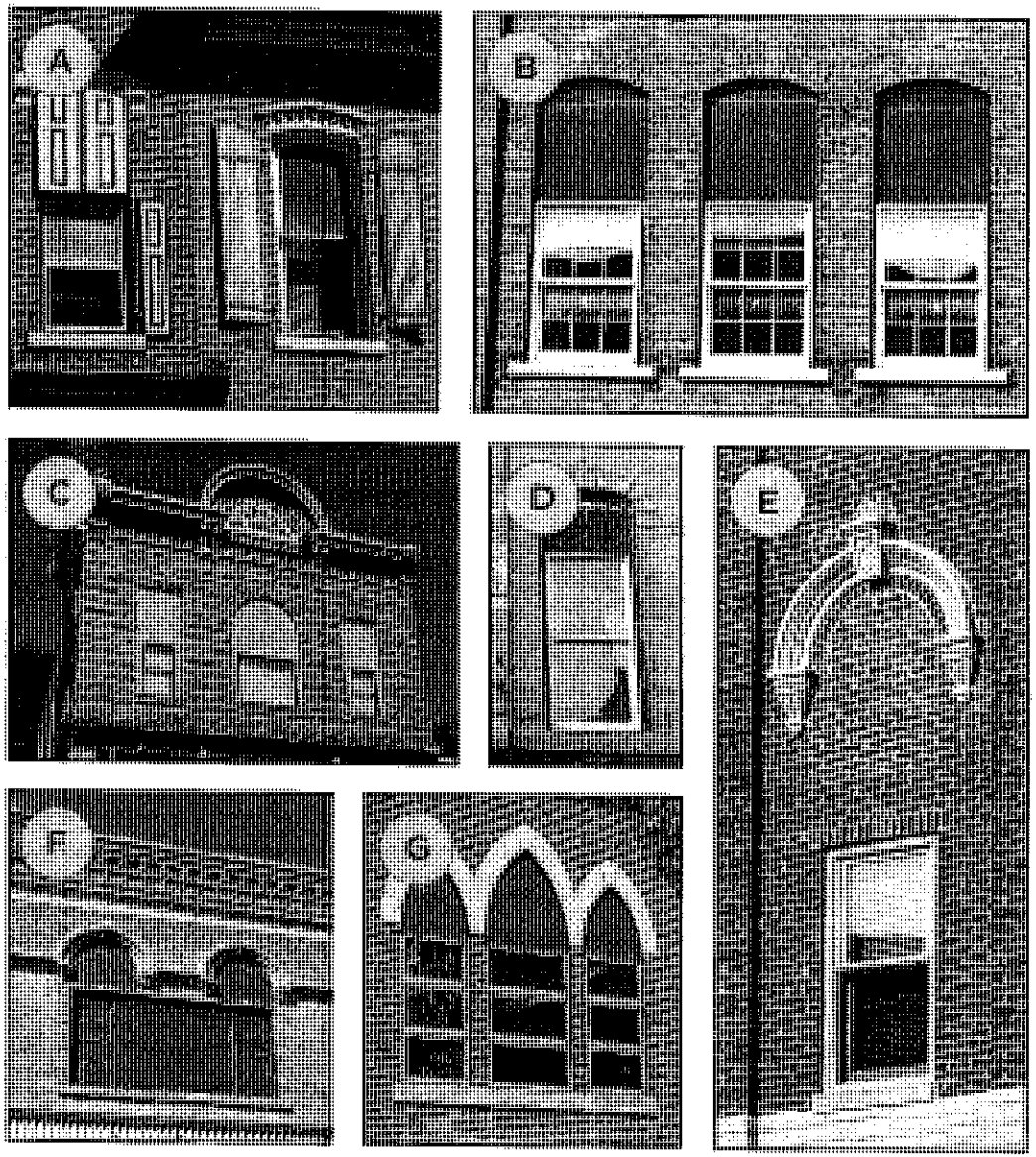
C Main Street commercial building with upper floor windows removed, openings reduced down and much smaller replacement windows that do not match.

D A stock, smaller window unit was used to replace a larger double-hung sash window.

E Brick was used to in-fill the original opening of the round-arched window.

F Two round arched windows were removed and replaced by one larger picture window, completely different in design and period to the historic Main Street building.

G Three vertically-oriented Gothic style windows were reduced and replaced by horizontally-oriented hopper type windows.



Adrian Scott Fine/NTHP

NATIONAL
TRUST
FOR
HISTORIC
PRESERVATION®

Repair or Replace Old Windows

Do Window Details Matter?

Yes. Even when maintaining the original opening and general size of the old windows, replacement windows can sometimes miss the mark when details and overall design are off. To the greatest extent possible, new windows should match originals as closely as possible. These examples of replacement windows show how even subtle differences, even minor changes in design, can have an impact on the overall character of an older and historic building.

A Replacing an original double-hung sash window with a casement and fixed transom dramatically changes the look and architectural character of this historic building.

B Modern interpretation of an arched window alters the pattern and overall design on this monumental civic building. If original windows are no longer intact, this approach may be acceptable as windows clearly reflect their own era.

C Replacing a round arched double-hung sash window is a one-over-one double-hung sash with fixed transom. This illustrates using stock windows to fit an opening that often requires a custom or more costly replacement window.

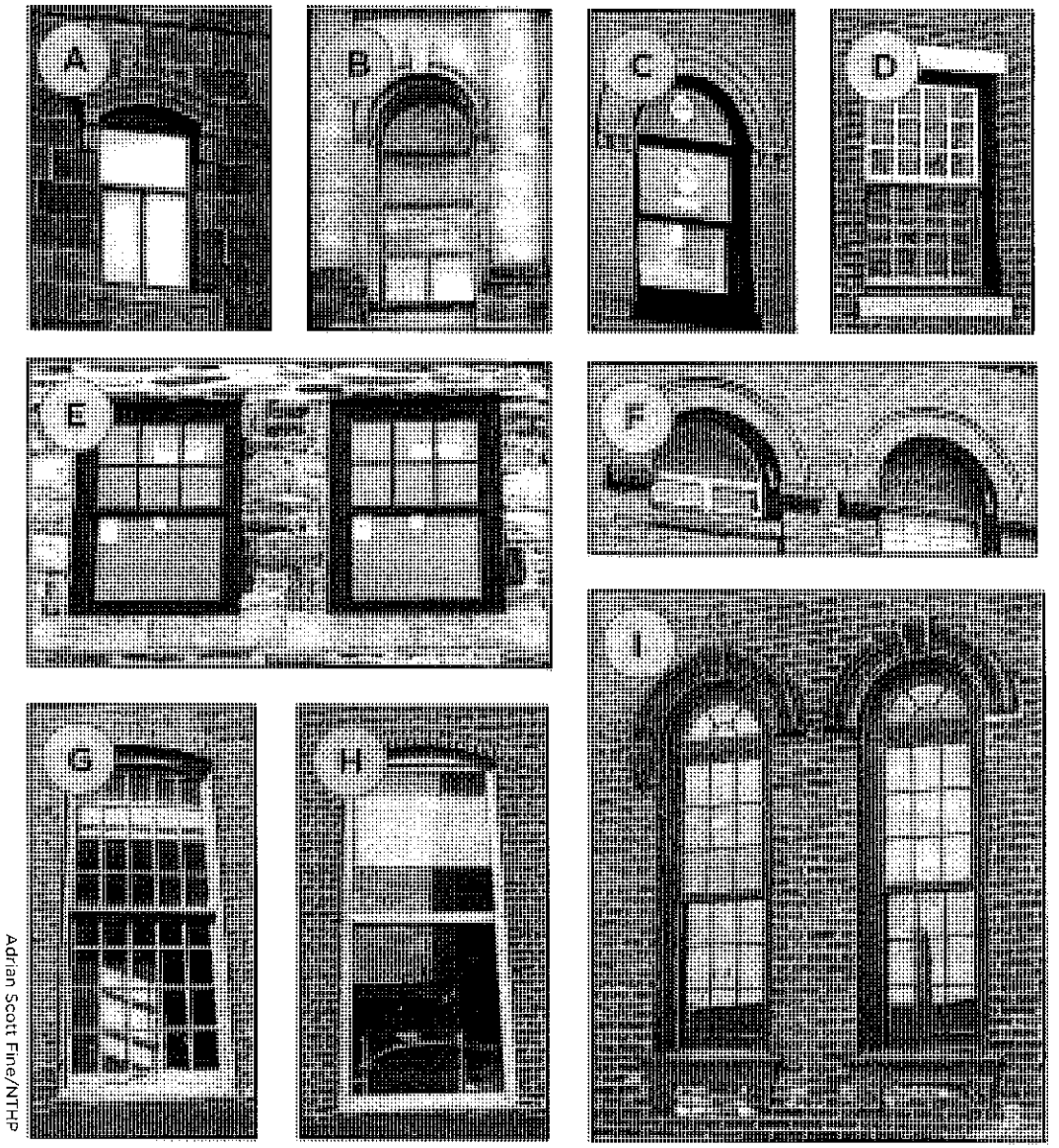
D The thickness of muntins as well as their profile can make a difference. This window is not a true divided-light design, instead featuring applied, flat muntins.

E New windows will often require 'building out' and enlarging the casing and surround to accommodate a stock replacement unit, effectively reducing the size of the window in comparison to the originals.

F The introduction of a hopper window completely alters the look of this window.

G, H Window G features the original twenty-over-twenty double-hung sash window. The replacement, window H, is a fixed one-over-one unit. The design, profile and depth are altered in the process.

I New windows attempt to replicate originals, though the casing and surround is wider and the fixed fanlight does not match originals.



Adrian Scott Fine/NTHP

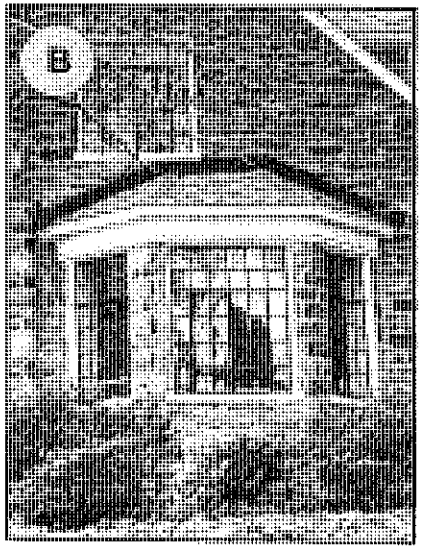
Repair or Replace Old Windows

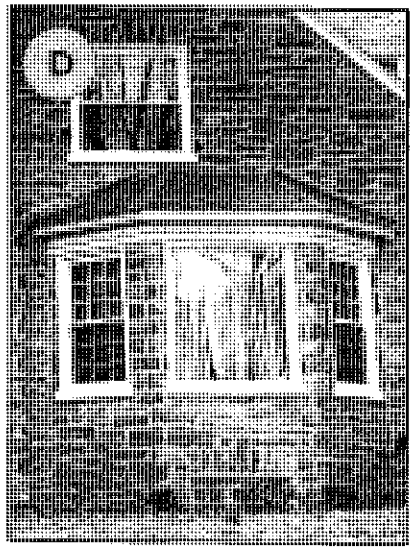
CASE STUDY: A Material Issue

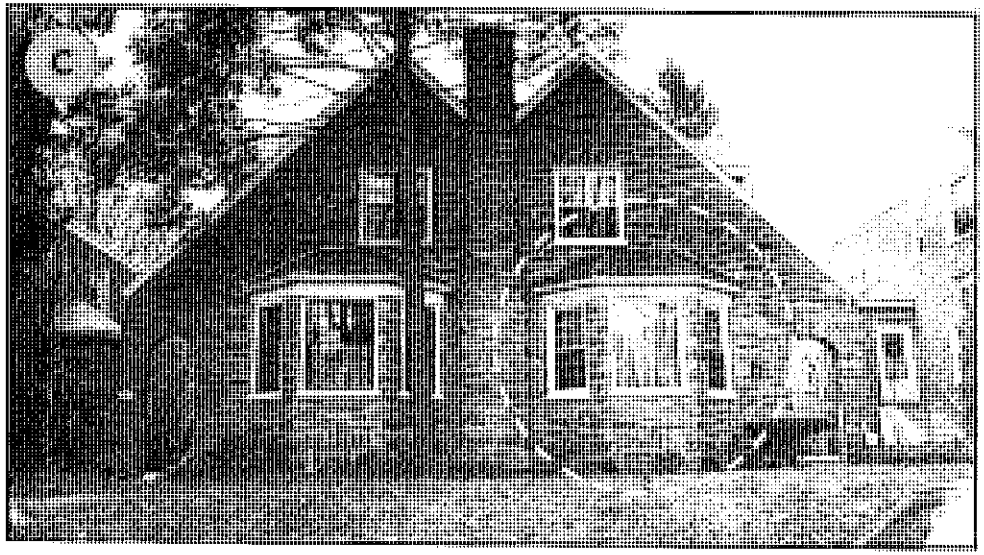
A series of 1930s duplexes in this neighborhood were designed in the Tudor Revival architectural style. Each features large window openings, prominent bays as a central focus, and original steel casement windows. Original windows are a primary character defining feature.

A, B Both sides of this duplex feature original rolled steel casement windows with interior storm window inserts.

C, D Both sides of this duplex have replacement windows. The one to the left more closely mimics the lines and details of the original steel casements, though the new windows are a mixture of fixed and double-hung sash units and the proportions are not an exact match. The unit to the right also features fixed and double-hung sash replacement windows. In this case, the result is less successful with white vinyl casing and a central picture window missing any muntin pattern.





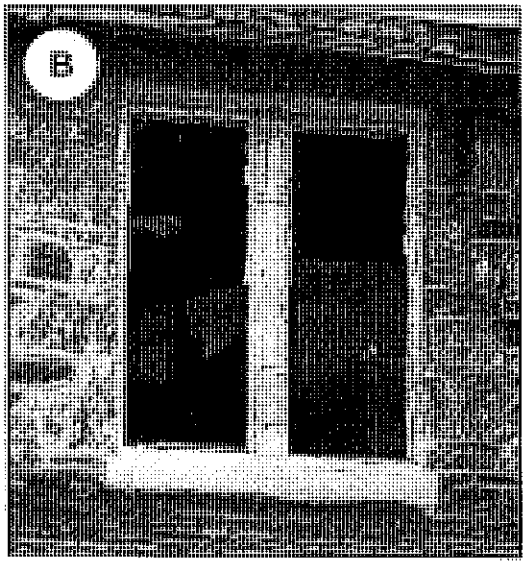


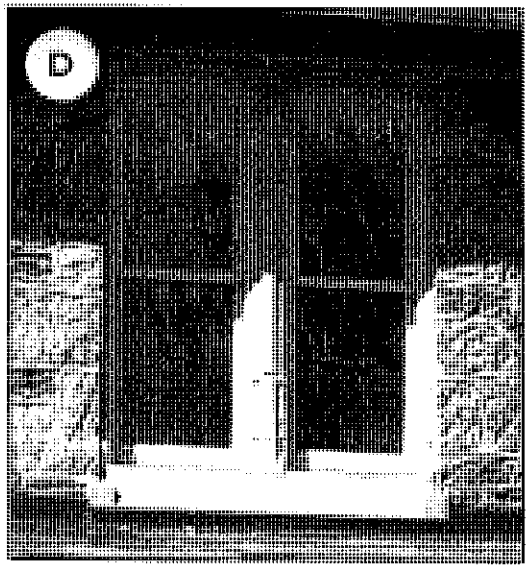
Adrian Scott Fine/NTHP

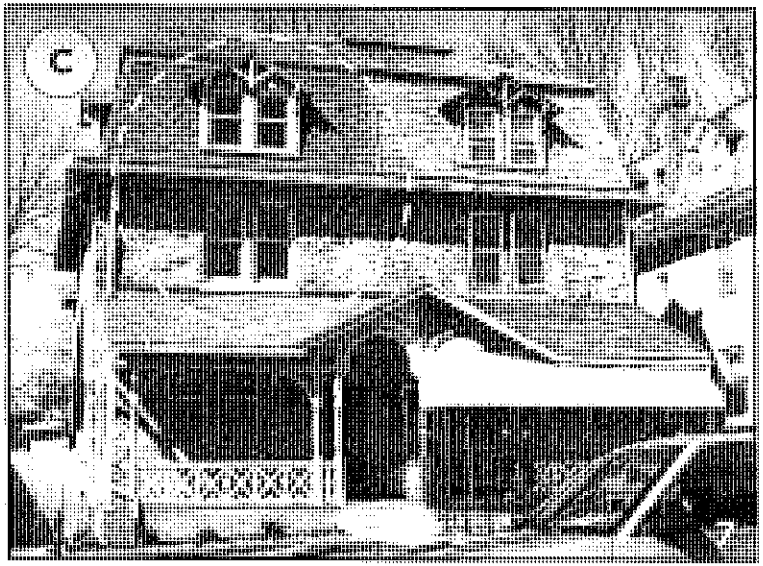
CASE STUDY: In-Kind Replacement

In this dramatic before and after transformation, a severely deteriorated and abandoned duplex was recently rehabilitated. The project preserved important character-defining features, including replicating original windows with new replacement units. The original windows — simple wood one-over-one double-hung sashes — had long disappeared as the building fell into decline and years of vacancy. When replacing a historic window, it is important to retain original window casings and trim when possible. These details often have stylistic features associated with the building's architectural style. In this example, the decorative carved wood casings were intact even though the windows were not.

A, B Original windows are missing but decorative casings and openings remain.
C, D As part of the rehabilitation project, new wood double-hung sash windows were chosen to fit the original openings and the decorative casings were repaired and retained. New windows replicate the originals in terms of size, type, proportion and materials.







Adrian Scott Fine/NTHP

NATIONAL
TRUST
FOR
HISTORIC
PRESERVATION®

Repair or Replace Old Windows

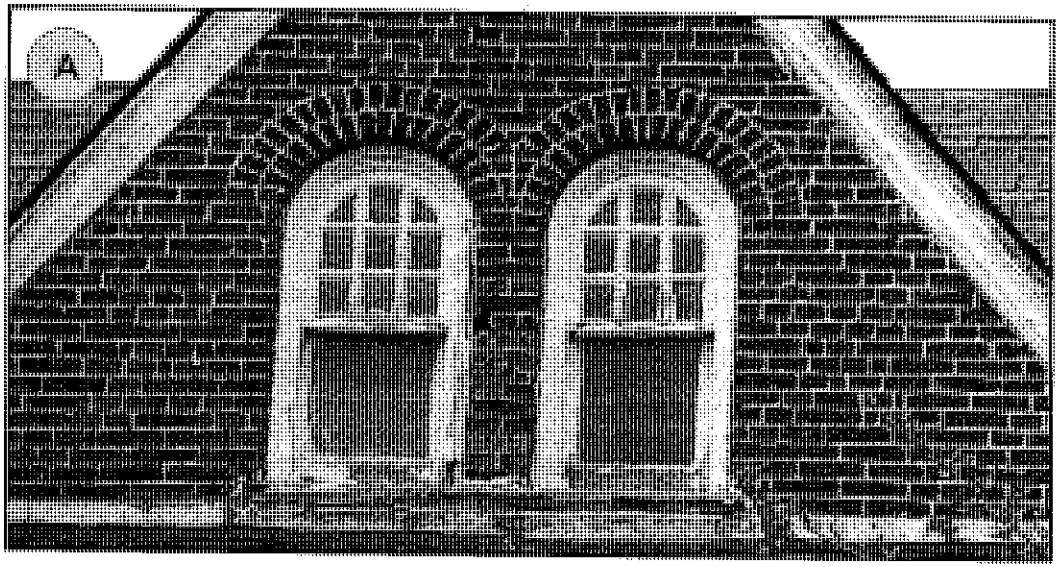
CASE STUDY: Size Matters

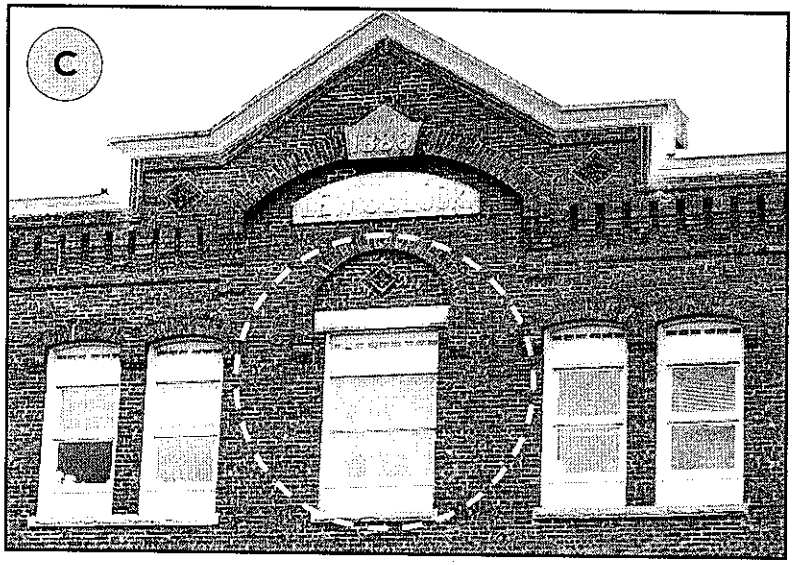
In these two examples, original windows were replaced and the openings were reduced to accommodate a much smaller replacement window.

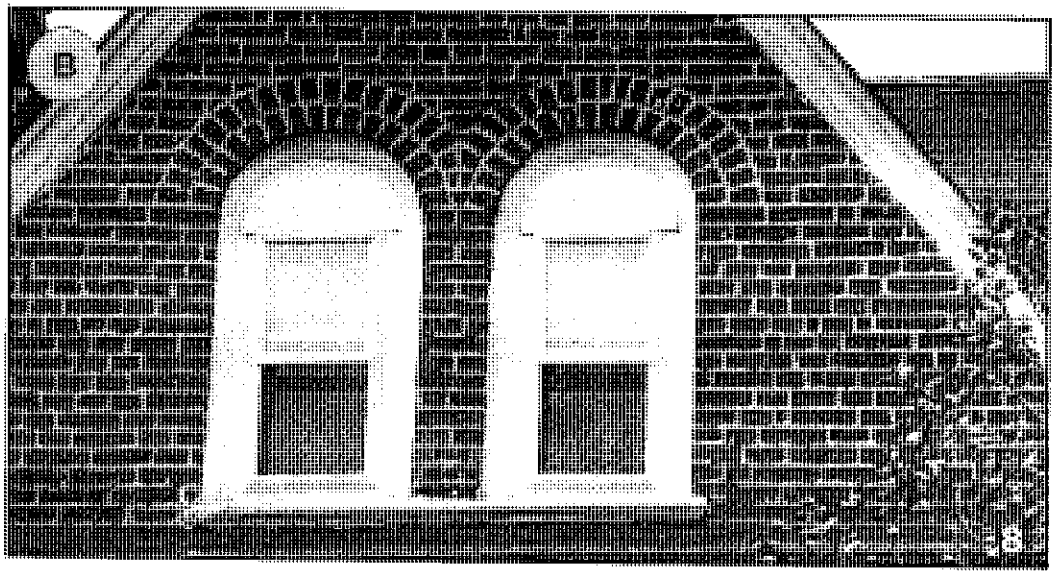
A Two, arched nine-over-one double-hung sash windows are in disrepair with loose meeting rails and paint build up. They can be easily repaired and still maintain the character of the building.

B An identical building with replacement windows. Stock units were used with aluminum in-fill around the opening. The difference in character between A and B is dramatic.

C The upper story windows of this Main Street commercial structure were replaced with stock units with in-fill at the top and bottom.







Adrian Scott Fine/NTHP

NATIONAL
TRUST
FOR
HISTORIC
PRESERVATION®

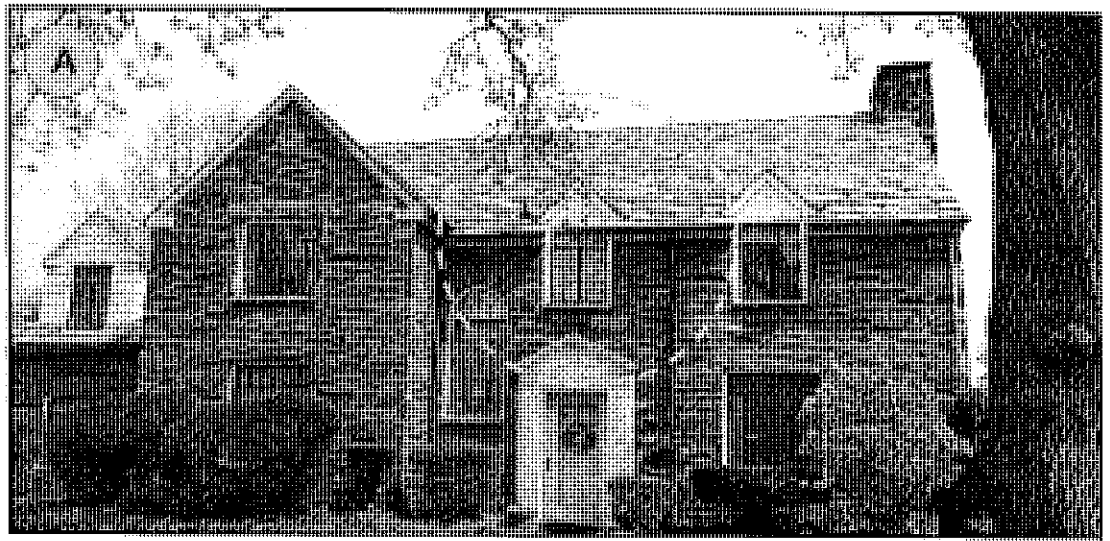
Repair or Replace Old Windows

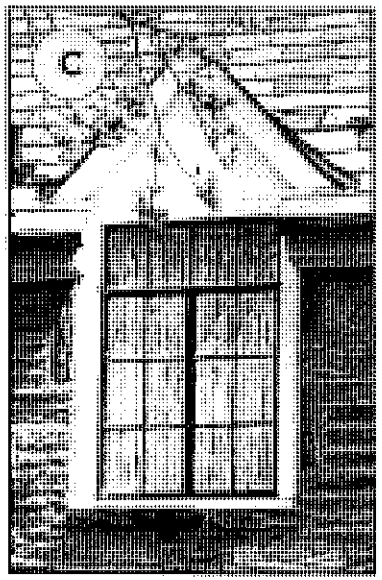
CASE STUDY: Close, But Not Enough
Two similar houses, both Tudor Revival style and dating to the 1920s or early 30s. Both featured steel casement windows, whereas only one retains the original windows today.

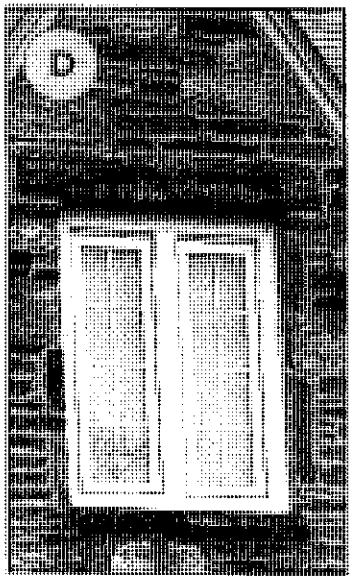
A Steel casement windows with fixed transoms and side-lights, featuring interior storm windows. These windows are a character defining feature of the house.

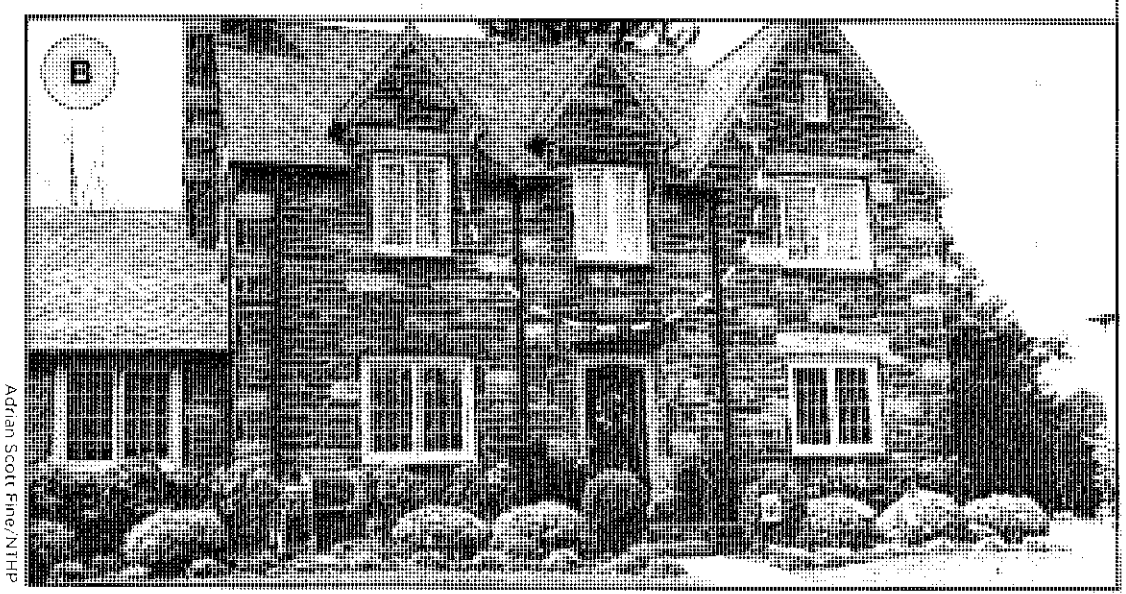
B Replacement windows attempt to match with casement style units yet the proportion, pattern, width and lack of a true divided-light miss the mark.

C, D The differences between the original and replacement are readily seen, where the wider casing and surround are much prominent on the replacement windows.







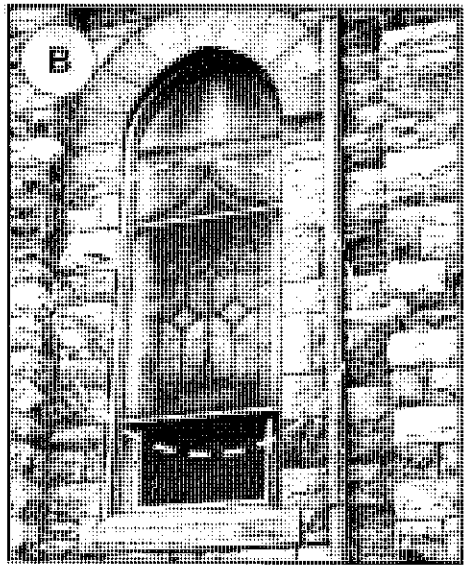


Adrian Scott Fine/NTHP

CASE STUDY: A Blurry View

Stained, leaded, slag and other types of decorative glass were meant to be seen from the inside and out-of-doors. In efforts to protect the fragile glass from vandalism and exposure to the elements, protective glazing systems are sometimes used, especially on religious properties. When improperly installed and inappropriate materials used, these systems can not only distort and obscure the look of the windows but also cause more damage than if left exposed. When unvented, moisture from condensation is trapped leading to wood rot and often severe deterioration of the window frames.

A Exposed original one-over-one double-hung slag glass window .
B Plastics (Lexan or Plexiglass) are impact-resistant and nearly shatterproof but tend to yellow and get hazy over time.
C Windows are obscured and the pattern is dramatically altered with new aluminum rails as part of this protective glazing system.



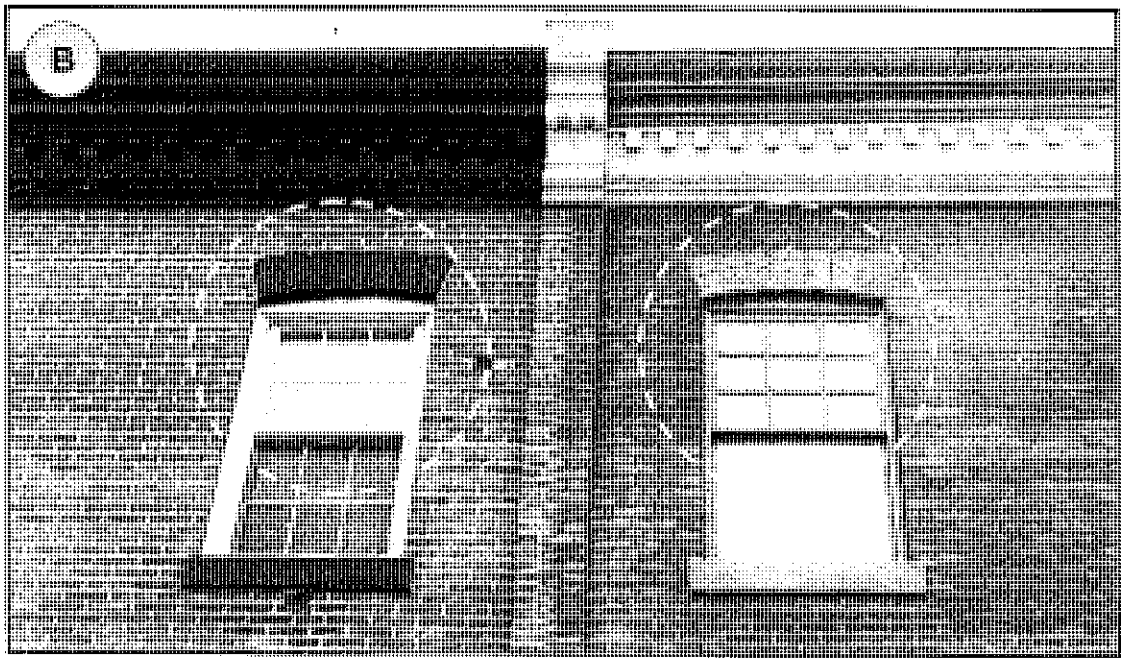
Adrian Scott Fine/NTHP

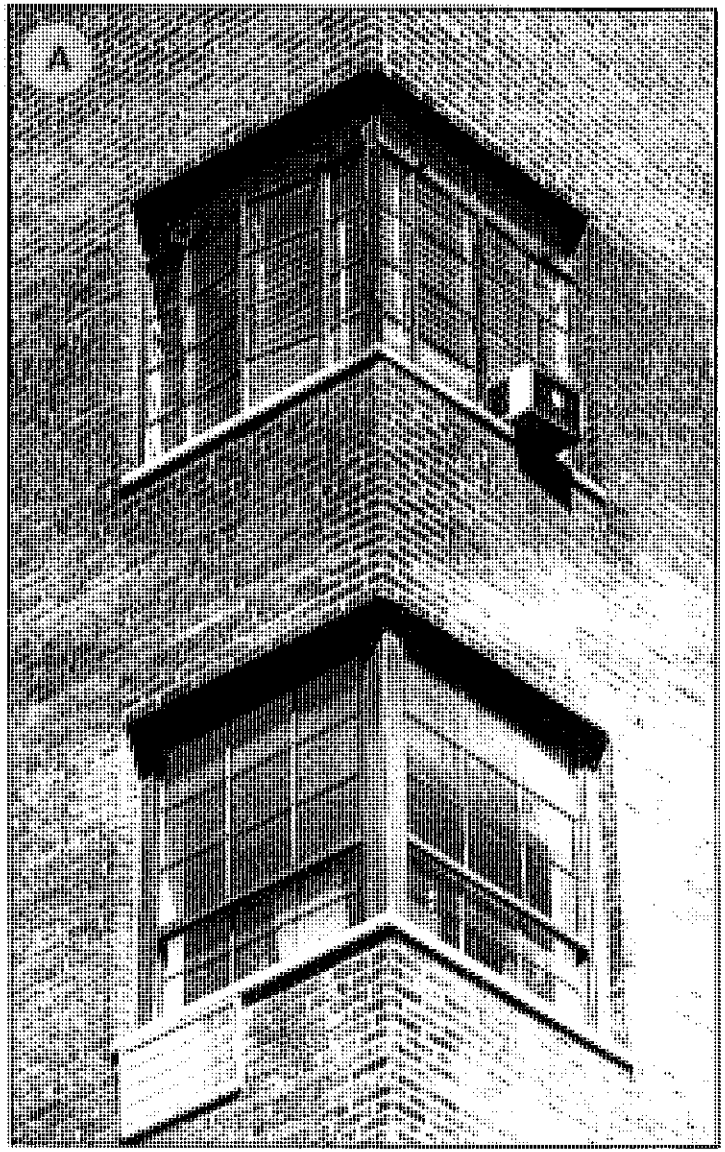
CASE STUDY: Impersonating the Original

Some window manufacturers claim they can replicate and closely match the details of original windows. Most often, replacement windows fall short of duplicating the look and rich detailing of original windows. These examples clearly illustrate this problem.

A An early 1940s apartment building designed in the Art Deco style features corner, steel casement windows. The slender profile of the muntins and casing is a character defining feature. The replacement double-hung sash window, at the bottom, attempts to match the lines of the original, yet the muntin pattern and width of casing are much different.

B Two double-hung sash replacement windows on side-by-side row houses demonstrate the subtle, but noticeable differences in design. While original windows were identical, these are different in terms of depth, muntin size and pattern and width of casing.





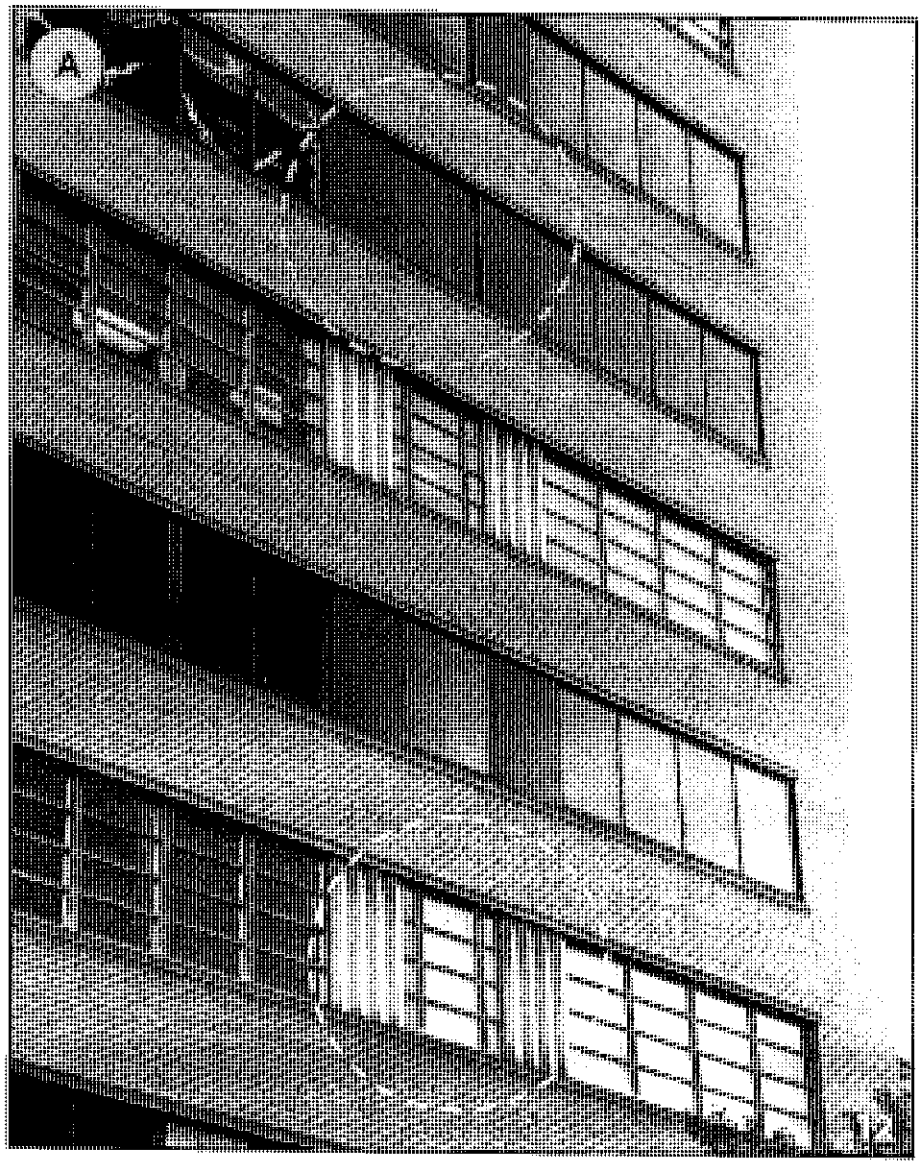
Adrian Scott Fine/NTHP

CASE STUDY: A Modern Dilemma

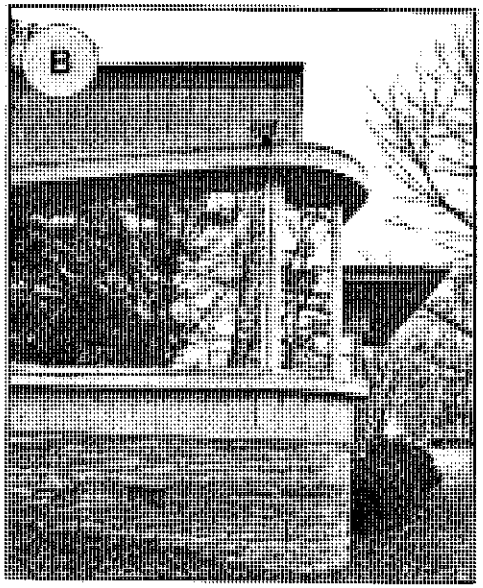
Buildings dating to the second half of the 20th century challenged earlier architectural practices and design, featuring experimental materials and introducing new concepts, such as the 'picture window.' Today, some of these materials are failing, difficult to maintain, and may fall short of optimal energy efficiency goals. As important character-defining features, repair is optimal as finding replacements that match will be difficult. These examples illustrate the challenges.

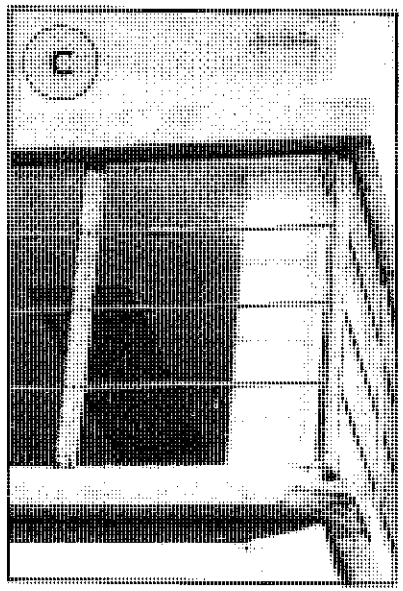
A Original, character defining windows and corrugated stainless steel detail are being removed on this 1950s office building, replaced by dark tinted fixed windows that do not match.

B, C Large spans of single pane and plate glass require innovative solutions, such as custom designed storm windows.



Adrian Scott Fine/NTHP





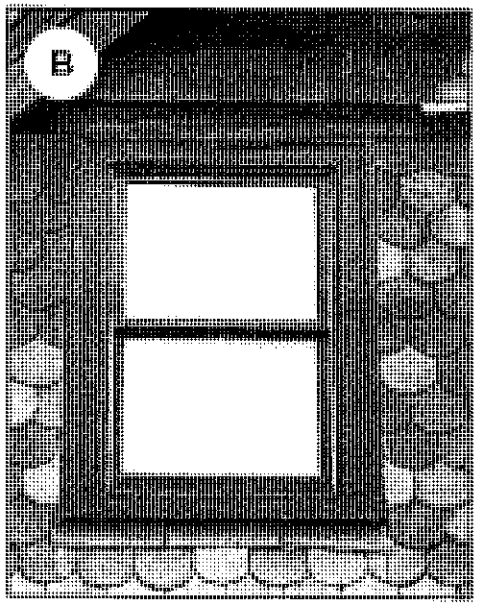
CASE STUDY: Authenticity Counts

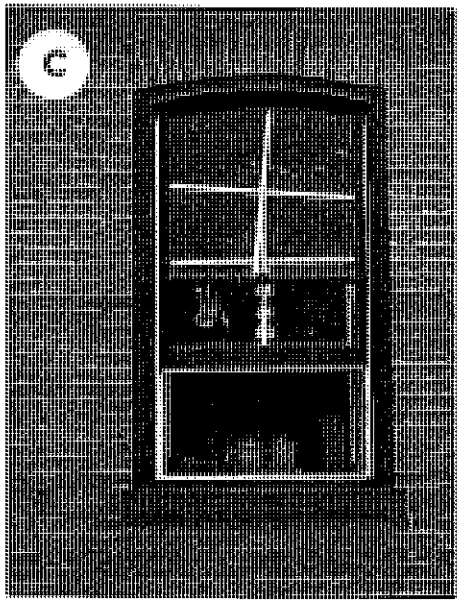
Most older windows are true divided-light, with muntins that are solid, dividing the individual panes of glass. As opposed to a solid piece of glass, a true divided-light window is much more rich in detail and architectural character. Many replacement windows, however, are not true divided light and instead feature muntins that are applied, 'sandwiched' in between glass or clipped on from the inside. This example illustrates.

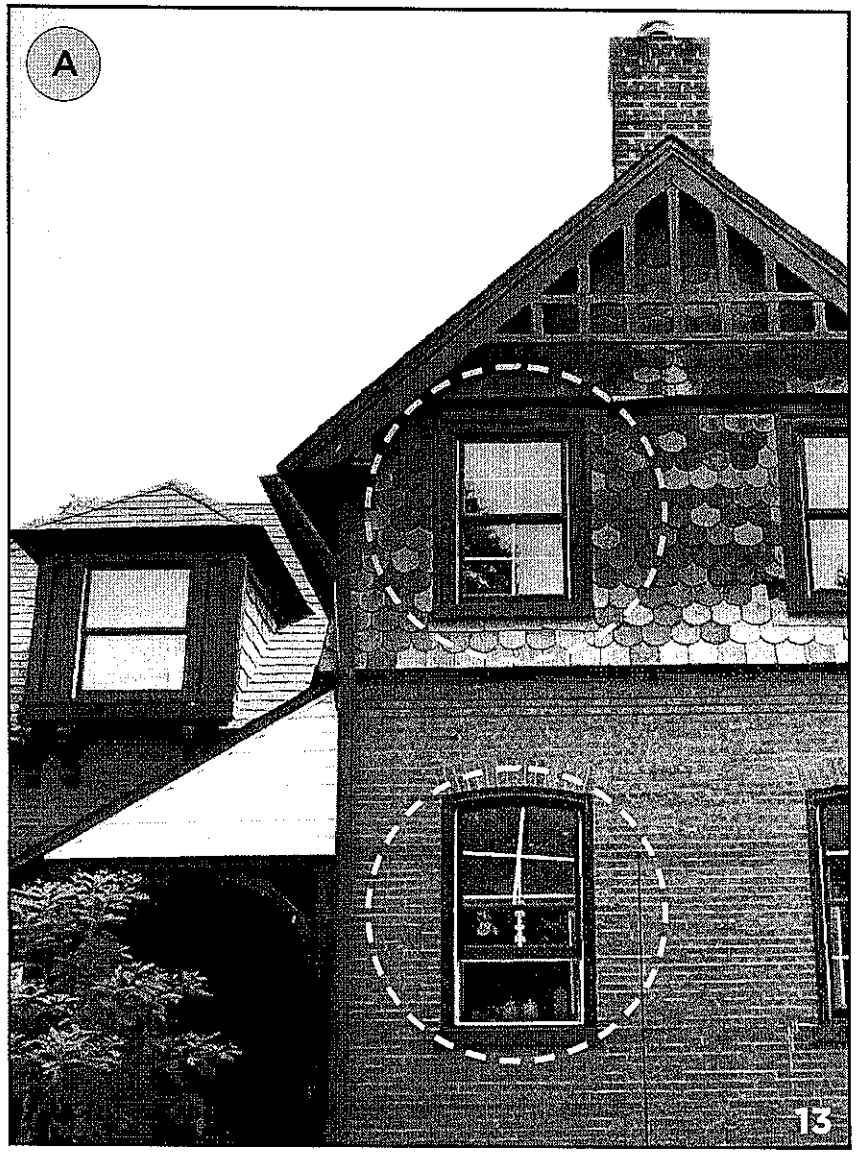
A A former carriage house, rehabilitated and preserved for a new use, features replacement windows that attempt to look like true divided-light windows.

B This four-over-four double-hung sash still has its original wood casing with a replacement window with clipped on interior muntins. There is little dimension or depth with this design and instead looks like a one-over-one sash.

C This shows how clipped on interior muntins can loosen or fall off.







Adrian Scott Fine/NTHP

NATIONAL
TRUST
FOR
HISTORIC
PRESERVATION®

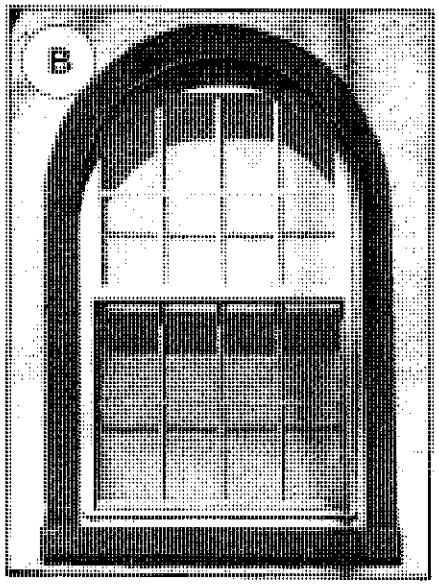
CASE STUDY: One Window, Multiple Replacements

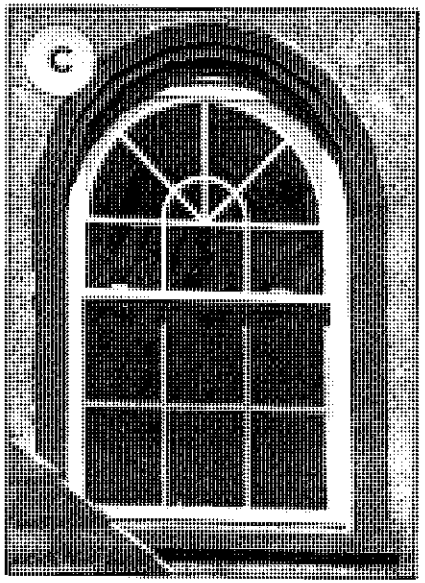
Most older and historic neighborhoods were built, at least in part, by a few developers often employing similar architectural designs and features, such as windows. This example of a simple round arched, wood window clearly shows how different replacement windows can be from one another.

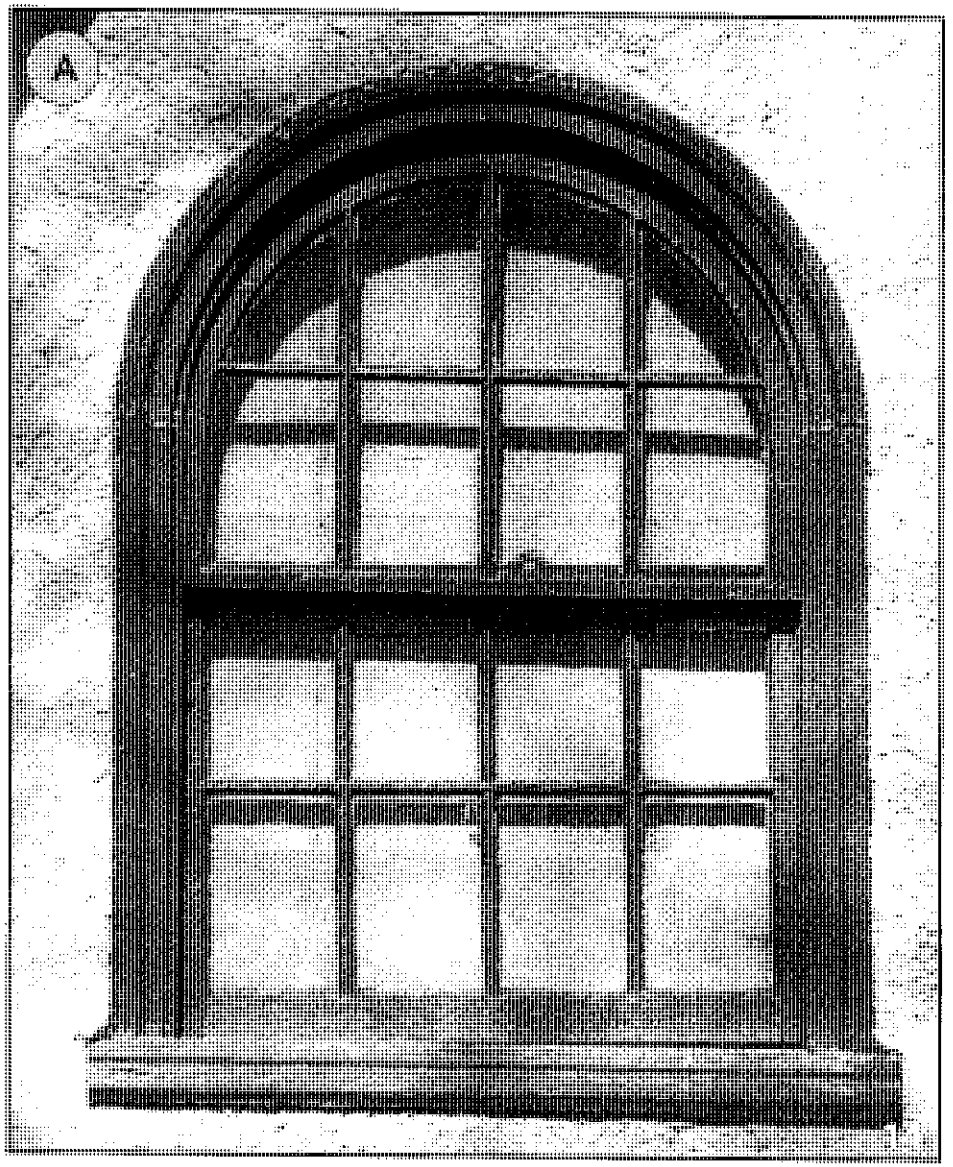
A This eight-over-eight double-hung sash window with wood casing and sill is a common feature on houses in this neighborhood.

B This replacement window attempts to replicate details of the original. However, it is not a true divided-light, the casing is wrapped in aluminum and the upper sash is flat and not round arched.

C. This replacement tries to look like a round arched window but is instead flat, features a completely different muntin pattern, has casing wrapped in aluminum and is not a true divided-light.







Adrian Scott Fine/NTHP

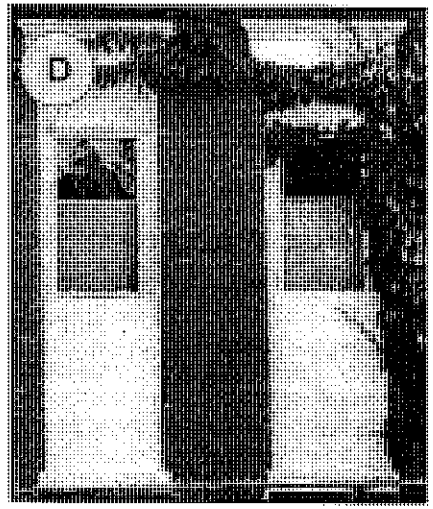
CASE STUDY: Putting Windows in Context

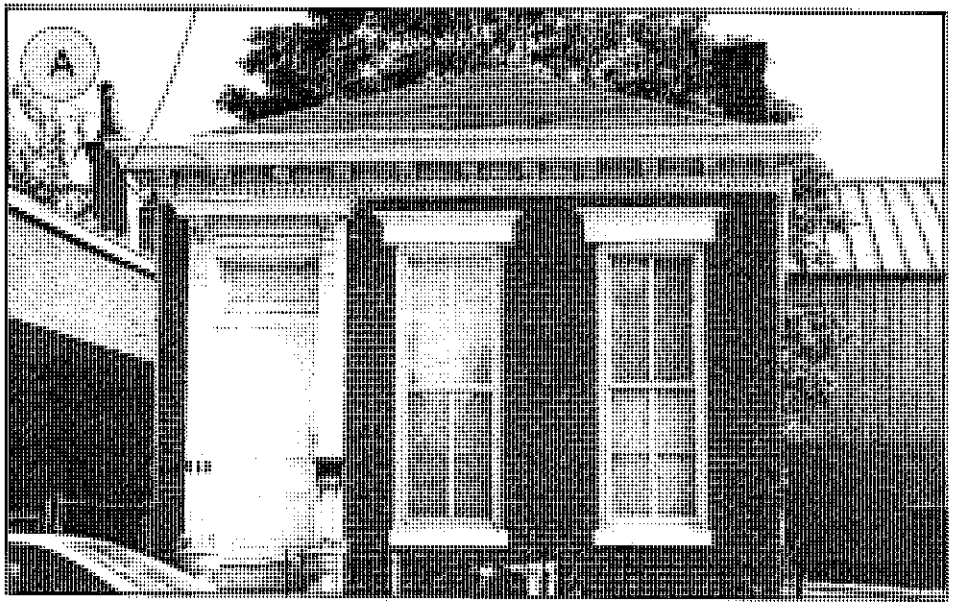
When a homeowner chooses to alter features, such as replacing windows, this may inadvertently also change the character of the larger neighborhood and context, especially when it happens in a domino pattern. Over time, as changes take place house-by-house, the distinctive character of the neighborhood can be diminished.

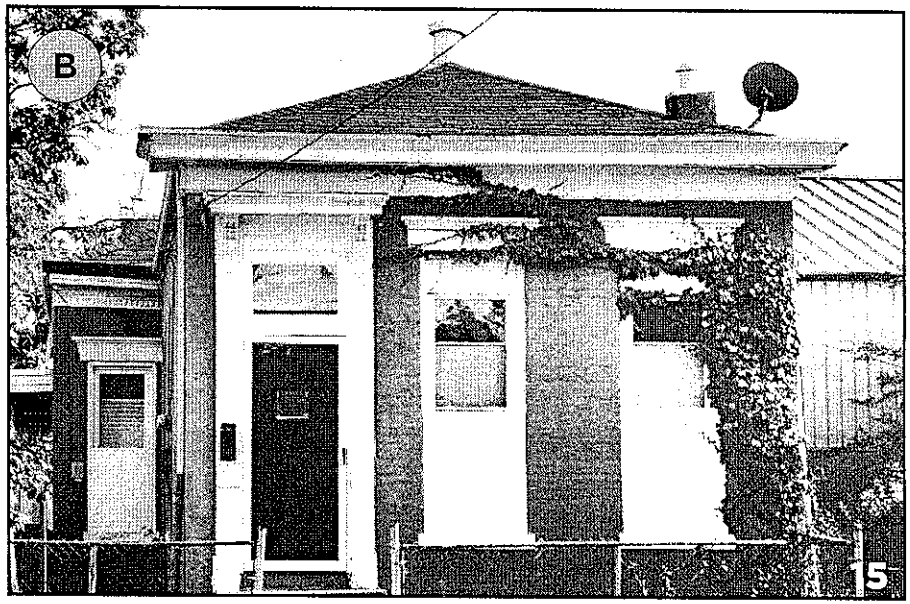
A, B Two simple Shotgun style homes that were once nearly identical, to each other, and throughout the neighborhood.

C Original two-over-two double-hung windows are a very prominent feature of these homes, directly relating to the size of the main entrance.

D. The original windows were replaced, the openings reduced, and stock windows installed that are no longer in scale to the proportions of the house.







Adrien Scott Fine/NTHP

NATIONAL
TRUST
FOR
HISTORIC
PRESERVATION®

The National Trust for Historic Preservation (www.PreservationNation.org) is a non-profit membership organization bringing people together to protect, enhance and enjoy the places that matter to them. By saving the places where great moments from history—and the important moments of everyday life—took place, the National Trust for Historic Preservation helps revitalize neighborhoods and communities, spark economic development and promote environmental sustainability. With headquarters in Washington, DC, nine regional and field offices, 29 historic sites, and partner organizations in all 50 states, the National Trust for Historic Preservation provides leadership, education, advocacy and resources to a national network of people, organizations and local communities committed to saving places, connecting us to our history and collectively shaping the future of America's stories.

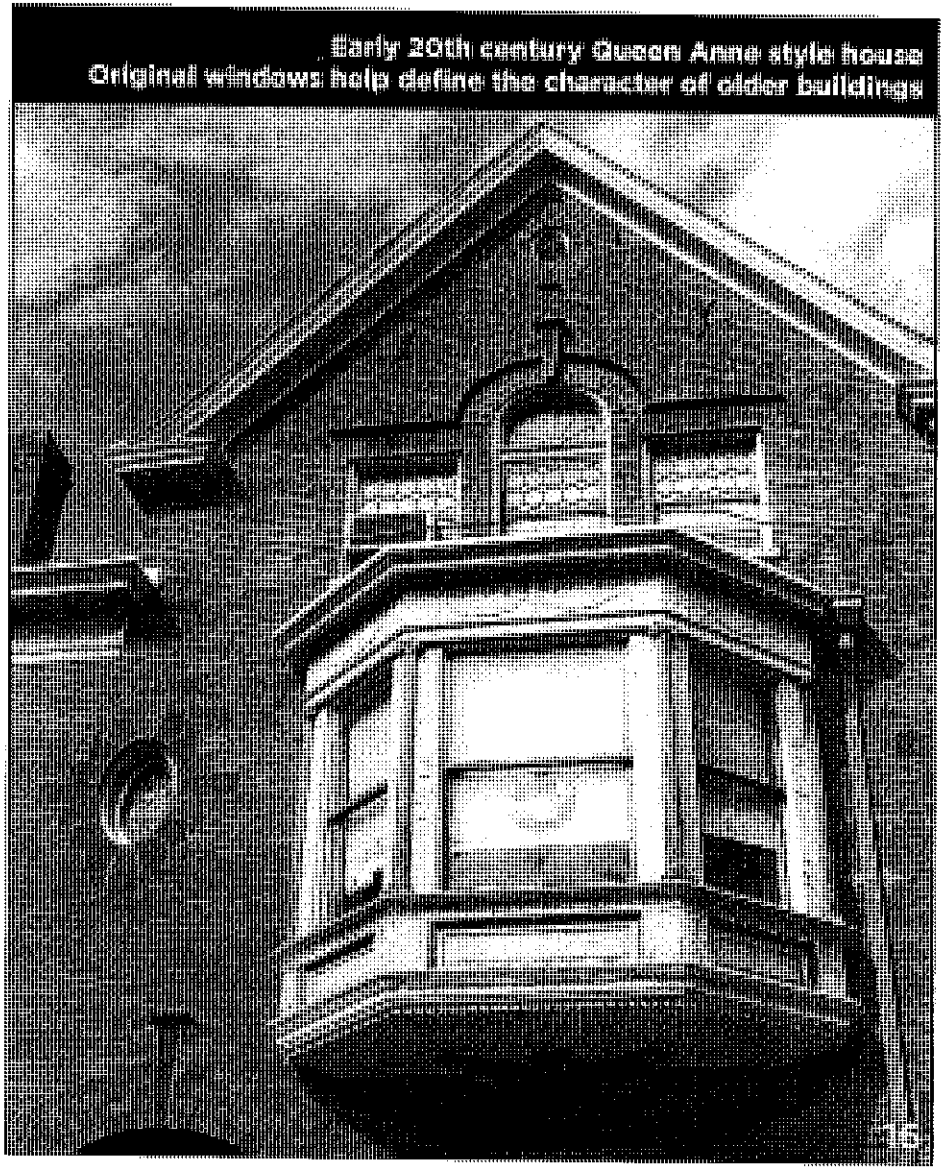
1785 Massachusetts Avenue, NW
Washington, DC 20036

www.PreservationNation.org/Weatherization

8/09

Repair or Replace Old Windows

Early 20th century Queen Anne style house
Original windows help define the character of older buildings



Adrian Scott Fine/NTHP