29/6-1-97A 11231 River View Drive
Potomac (MP Site #29/6-1)

Allen
+ Associates, PA

Architecture

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President

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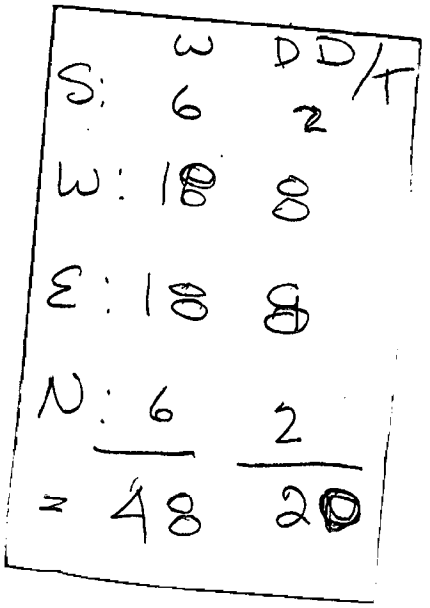
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Do I need to mention mahogany, replicate, custom-milled

Flash * 7

HISTORIC PRESERVATION COMMISSION

of

MONTGOMERY COUNTY

8787 Georgia Avenue
Silver Spring, Maryland 20910

301-495-4570

Case No: 29/6-1-97A Received December 19, 1996

Public Appearance: January 8, 1997

Before the Montgomery County Historic Preservation Commission

Application of Dr. Yonus Zegeye

11231 River View Drive, Potomac

DECISION AND OPINION OF THE COMMISSION

Decision of the Commission: DENY the Applicant's proposal to replace all existing windows and doors with new custom-milled double-glazed windows and doors.

Commission Motion: At the January 8, 1997 meeting of the Historic Preservation Commission, Commissioner Jordan presented a motion to deny the application to replace all existing windows and doors with new double-glazed windows and doors. Commissioner Trumble seconded the motion. Commissioners Kousoulas, Lanigan, Jordan, Trumble, Eig, Bienenfeld, Reed, Clemmer, and Soderberg voted in favor of the motion. The motion was passed 8 - 0.

BACKGROUND:

The following terms are defined in Section 24A-2 of the Code:

> Appurtenances and environmental setting: The entire parcel, as of the date on which the historic resource is designated on the Master Plan, and structures thereon, on which is located a historic resource, unless reduced by the District Council or the commission, and to which it relates physically and/or visually. Appurtenances and environmental settings

shall include, but not be limited to, walkways and driveways (whether paved or not), vegetation (including trees, gardens, lawns), rocks, pasture, cropland and waterways.

Board: The county board of appeals of Montgomery County, Maryland.

Director: The director of the department of permitting services of Montgomery County, Maryland or his designee.

Exterior features: The architectural style, design and general arrangement of the exterior of an historic resource, including the color, nature and texture of building materials and the type or style of all windows, doors, light fixtures, signs or other similar items found on or related to the exterior of an historic resource.

Historic resource: A district, site, building, structure or object, including its appurtenances and environmental setting, which is significant in national, state or local history, architecture, archeology or culture. This includes, but is not limited to, all properties on the "Locational Atlas and Index of Historic Sites in Montgomery County".

Historic site: Any individual historic resource that is significant and contributes to the historical, architectural, archeological or cultural values within the Maryland-Washington Regional District and which has been so designated in the Master Plan for Historic Preservation.

Permit: An historic area work permit issued by the director authorizing work on an historic site or an historic resource located within an historic district.

Marwood was designated in 1993 as an individual historic site in the Master Plan for Historic Preservation both for its architectural distinction and for its historic significance. The estate was subdivided in the early 1990's. Large houses are now under construction on 40,000-70,000 square foot lots in the woods around the historic site. The mansion is now situated on a 13.13 acre environmental setting including lawns, a sunken garden, handball court, pool, and pool house (added in 1952) with a circular paved driveway. The historic site is surrounded by second growth forest. The house is beautifully sited on a high bluff with a magnificent view of the Potomac River and Virginia. The original 1931 gatehouse, which included four garage ports, is located at the end of the original driveway near River Road and has been subdivided as a separate property. It is now a separate individual Master Plan site.

Marwood meets the historic preservation ordinance criteria for historic and cultural significance under:

1.A. The historic resource has character, interest, or value as part of the development, heritage or cultural characteristics of the County, State, or Nation;

1C. The historic resource is identified with a person or a group of persons who influenced society;

1D. The historic resource exemplifies the cultural economic, social, political or historic heritage of the County and its communities.

In 1930, Samuel K. Martin, grandson and heir of Otto Young, a Chicago real estate entrepreneur, and Martin's wife, Jane Catherine Martin, bought a 192 acre farm in Montgomery County, near Potomac. The property included a tract of land overlooking a giant bend in the Potomac River. The Martins chose John J. Whelan as the architect for their country estate. Whelan was already well known for his designs of various styles of grand urban homes and embassies in the Kalorama area of the District of Columbia in the late 1920's. The Martins particularly admired the new Georgian style Norwegian Legation, 3401 Massachusetts Avenue, that Whelan had completed in 1930.

The house, Marwood, was completed in 1931; however, the estate was occupied by the Martin family for only two years. In 1934, it was leased as a summer home to Joseph P. Kennedy, the first Chairman of the Securities and Exchange Commission, for the use of his family, including John, Robert and Edward Kennedy. After the death of Martin, his widow sold the property in 1943 to H. Grady Gore. Gore's family owned the farm until 1995. Franklin Delano Roosevelt was a frequent visitor and it was for him that an elevator was installed. In later years, members of the Eisenhower, Nixon and Reagan administrations were entertained on a regular basis.

Active participants and officeholders in county, state and national Republican party politics, the Gore family were first cousins to U. S. Senator Albert Gore from Tennessee and Vice President Albert Gore, both Democrats, who visited Marwood during the fifty years of Gore family ownership.

Marwood meets the historic preservation ordinance criteria for architectural and design significance under:

2C. The historic resource possesses high artistic values;

2D. The historic resource represents a significant and distinguishable entity whose components may lack individual distinction.

Built in 1931, the French Renaissance style mansion is an outstanding example of the principles of l'Ecole des Beaux Arts being employed by the architect, John J. Whelan, in the design of an American country house. Marwood is an important example of the Beaux-Arts teaching of formal symmetry where context was all important. Virginia and Lee McAlester, in A Field Guide to American Houses, comment:

> This [the Beaux Arts style] is based on classical precedents elaborated by lavish decorative detailing, and was perhaps the most typical of the many styles inspired by study at the Ecole. More than any other style

(except perhaps the Chateauesque), the Beaux Arts expressed the taste and values of America's industrial barons of the turn of the century. In those pre-income tax days, great fortunes were proudly displayed in increasingly ornate and expensive houses.

Marwood is an extremely intact remnant of architectural history with clearly executed design themes. Among the major architectural themes are:

- The building is closely connected to its natural setting by the series of tall windows and doors opening directly from the principal rooms to the outside. The ground floor from the outside looks like a pavilion with long glass doors opening directly into all the rooms on both sides. The windows and doors are an integral part of the design, giving the otherwise massive building an airiness and openness appropriate to the woodland setting on 13.13 acres of lawns and deep forest.

- Both the east (land) and west (river) facades of the Marwood mansion are of equal importance. The building was designed with two "front" facades that are substantially identical in design. The original twenty-seven matching windows and doors on each facade are a significant component of this distinctively symmetrical design.

- Marwood is clearly differentiated from its urban Beaux Arts counterparts in nearby Washington. The building has a simplicity of detailing that is consistent with its role as a country estate built in a style and a period both known for their extravagant detail. Mascarons above all the windows and doors, a projecting center bay, two statue niches, wrought iron mezzanine balconies and front doors, chimney scrolls, and quoins at the four corners are the extent of the exterior decoration. The enormous restraint in use of detail makes each component of the overall design take on particular importance as being part of a carefully integrated whole. The red tile roof, the use of stucco for exterior facing, and the elegantly simple wooden casement windows and doors are significant stylistic decisions that make an important statement as to the rusticity of the estate. All the original components of this carefully designed remnant of architectural history are substantially in place and intact.

In the U. S. Department of the Interior Preservation Brief #9, "The Repair of Historic Wooden Windows," it states:

> ...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.

The windows and doors at Marwood meet the first, second, third, and fifth criteria for significance. Built of an excellent wood, mahogany, the craftsmanship is sufficiently fine that the windows are still in place and intact after years of neglect. The workmanship and design of

the muntins is particularly fine and unique to Marwood. Much of the metal hardware, which reflects the French Renaissance styling crafted in period metals, is also in place.

EVIDENCE IN THE RECORD:

On December 19, 1996, Dr.Yonus Zegeye completed an application for a Historic Area Work Permit (HAWP) at "Marwood", 11231 River View Drive, Potomac, to replace the forty-eight existing double casement mahogany frame windows on two levels and the twenty existing double casement mahogany frame doors and transoms on the ground level with double-glazed windows and doors.

A written staff recommendation on this case was prepared and sent to the Commission on December 31, 1996. At the January 8, 1997 Historic Preservation Commission meeting, staff person Perry Kephart showed 35MM slides of the site and presented an oral report on the staff recommendation. Staff recommended denial of the proposed window and door replacement, as it was not consistent with, and was detrimental to, the preservation or ultimate protection of an individually designated site on the Montgomery County Master Plan for Historic Preservation.

Staff's specific concerns about the proposed replacement of the 48 wood double casement windows and 20 wood double casement doors that constituted reasons for denial were:

1. The Historic Preservation Commission's consistent policy has been that total replacement of original windows in a historic structure should not be permitted unless the existing windows are so deteriorated that renovation of them is impossible. This is particularly true for individually-designated Master Plan sites of the obvious significance and quality of Marwood - these resources should be held to the highest standards for preservation. The HPC has consistently recommended that other options - including interior or exterior storm windows - be the preferred alternative to achieve energy efficiency goals. In addition, the HPC has approved Historic Preservation Property Tax Credits for the appropriate installation of storm windows and doors.

2. Replacement of windows and doors is typically not permitted because windows and doors are an essential part of the architectural fabric of a building. The goal of historic preservation is not to only keep the general exterior appearance of the historic building intact, but also to **preserve** the actual materials and architectural components of a structure so that future generations can appreciate the original building - not a substantially replicated building.

3. The Commission and staff members visited Marwood on December 30, 1996 in order to inspect each individual window and door. At that time they were provided with a written survey in which the architect for Marwood, Scott Allen, assessed the condition of each window and door. It was empirically clear, both from the survey or from physical inspection, that the historic windows and doors are, with the exception of two missing windows, reparable and do not need to be replaced. It is clear that substantially all of them are in need of varying degrees of

maintenance. It should also be noted that four first floor doors were kicked in by vandals and may need to be replaced in kind if they cannot be repaired. The two missing windows will also need to be replicated. With these exceptions, all the wood frames, and much of the hardware and glass are intact and can be retained.

4. Removal of the historic windows is not justified in order to prevent energy loss. Historic windows, stripped of extra layers of paint, reworked to fit tightly in their frames, and provided with storm windows, perform well within the ranges for thermal efficiency of modern windows. In the case of Marwood, custom-made exterior storm windows could be placed on the 1st and 3rd floors. By designing the storm windows to match the existing screen doors on the 1st floors and the basic window design on the 3rd floor, the architectural integrity and beauty of Marwood would not be diminished.

5. The windows and doors are not only intact, but also operational. New windows and doors are not required in order to allow access to the house. Although recent neglect has lessened the ability of the windows and doors to open and close, all could be made functional by paint stripping and repainting, rehanging the hinges, and repair of the sills. This work is substantially less costly than total replacement.

The written staff report, which staff had also entered into the record, included attachments related to historic windows: U.S. Department of the Interior Preservation Brief #9, "The Repair of Historic Wooden Windows" and an article summarizing a report to the State of Vermont, Division for Historic Preservation, by the Vermont Energy Investment Corporation.

Preservation Brief #9 points out that energy efficiency is possible by the use of appropriate weatherstripping and tight sash locks. The Brief also states that "...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." The Brief goes on to say,

> 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)...When comparing thermal performance, the lower the U-value the better the performance. According ASHRAE (American Society of Heating, Refrigerating and Air-conditioning Engineers) 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 0.60.

A report to the State of Vermont, Division for Historic Preservation, by the Vermont Energy Investment Corporation on the testing of the energy performance of wood windows in cold climates concluded that, "...the decision to rehabilitate or replace a window generally should be

made on the basis of considerations other than energy cost savings." In this study, the savings were found to be small and significantly less that the cost of installing the new windows.

The attorney for the applicant, Jody Kline, came forward to testify. He expressed appreciation that the Commission had taken time to visit the site and explained that the essence of the situation was that the historic site in question is a private house not accessible to and in effect invisible to the general public. He did not agree that the original windows and doors will give the same energy efficiency as new windows and doors. He also felt that it made sense in terms of the architectural appearance of the house to do a comprehensive replacement of the windows rather than have the appearance of storm windows on the outside. Finally he stated that because of the location of the house, there was no streetscape appearance to be considered.

The architect for the applicant, Scott Allen, then came forward to testify. He pointed out that four of the twenty doors would need, in his opinion, to be replicated as they had been damaged by vandals. He also felt that four or five of the forty-eight windows would also need to be completely replaced because they were missing or heavily damaged. He also explained that the operation or the useability of the windows would be more difficult with the addition of storm windows. He presented a full size model of the proposed double-glazed window frame for the third floor and explained the differences in design, including thicker muntins, needed to achieve double-glazing.

Commissioner Clemmer asked if staff agreed with the numbers of doors and windows that needed full replacement. Staff agreed that four doors had been vandalized, but was not of the opinion that the replacement would be as extensive as described.

Commissioner Soderberg expressed the reassurance that with proper retro-fitting and weatherstripping of original windows and doors, appropriate energy efficiency was possible and could be increased even more with the use of well-fitted storm windows.

The architect responded that, in his opinion, covering up the windows with exterior storm windows would damage the look of the house, and that interior storm windows would be impossible because the door and windows open inward. He also noted that they would not be using exterior screens on the house.

Commissioner Lanigan and Commissioner Eig stated that they supported the recommendations stated in the staff report.

The applicant, Dr. Zegeye, came forward and requested clarification as to whether glass from 1931 would have to be used where glazing repairs were needed.

Commissioner Kousoulas assured him that modern glass could be used to replace broken or missing panes. He went on to express his concern that, because the application was to use two layers of glass, the new windows would require thicker muntins and would lose the design

characteristics of the original woodwork.

Commissioner Eig also expressed concern that the double-glazed design as proposed would require thicker muntins, substantially different from those now in place. She noted that the existing windows were of particularly fine craftsmanship, with very thin muntins.

Commissioner Reed said that she had visited the site and looked at the existing windows and doors and that they did not need replacement. However, she was concerned that there not be a "hodge podge" of design if the doors and windows that needed to be replicated were to be replaced with a double-glazed window with thicker muntins and the intact windows and doors would be single-glazed with thinner, original muntins.

Commissioner Eig pointed out that the craftsmen skillful enough to design a close replication as seen in the model was also skillful enough to produce an effective design for storm windows.

Historic Preservation Coordinator, Gwen Wright, asked the architect if he had done any specific study comparing the R factor and energy efficiency of existing windows with storm windows versus new double-glazed windows. The architect, Scott Allen, stated that he did not have figures available to compare the R factor of the proposed new windows versus that of renovated original windows with storm windows added. He also suggested that the original windows and doors could be removed, repaired and stored in a safe place during the tenancy of the applicant.

Commissioner Kousoulas explained that original materials are important in maintaining the integrity of historic structures and that is why the original windows are valuable; that if the original windows and doors were in good enough shape to save and store, they were in good enough shape to be restored and kept in place.

Commissioner Eig again pointed out the very fine craftsmanship of the existing windows. She underscored the remarks of Commissioner Kousoulas reiterating that the proposed replacement windows are not the same as the historic windows; that in her opinion the new windows are very different from the old.

The applicant, Dr. Zegeye, explained that he knew tax credits may be provided for the installation of appropriate storm windows; however, he did not buy the house for the tax credits. He is asking for a change in the windows to fit the way he will be living in the house. He feels that storm windows will not fit the family's way of living. He appreciated historic structures having gone to school in Oxford, England where buildings are 700 years old, but was having difficulty understanding why these windows had to be retained.

Commissioner Eig referred to studies by the Canadian government that have shown that insulated glass is not as energy efficient as original materials properly fitted. She also noted that the General Services Administration has denied permission to government agencies to replace original windows on federally-owned historic buildings as the energy efficiency is not sufficient

to justify the cost.

Commissioner Trumble reiterated that it should be understood that the windows and doors needing repair because of vandalism must be exactly replicated if they were to be replaced.

CRITERIA FOR APPROVAL AND FINDINGS OF THE COMMISSION:

The criteria which the Commission must evaluate in determining whether to deny a Historic Area Work Permit application are found in Section 24A-8(a) of the Montgomery County Code, 1984, as amended.

> Section 24A-8(a) provides that:
>
> The Commission shall instruct the director to deny a permit if it finds, based on the evidence and information presented to or before the commission that the alteration for which the permit is sought would be inappropriate or inconsistent with, or detrimental to the preservation enhancement or ultimate protection of the historic site, or historic resource within an historic district, and to the purposes of this chapter.

In analyzing whether the criteria for issuance of a Historic Area Work Permit have been met, the Commission also evaluates the evidence in the record in light of generally accepted principles of historic preservation, including the Secretary of the Interior's Standards for Rehabilitation and Guidelines, adopted by the Commission on February 5, 1987. In particular Standards #1, #2, #5, #6, #9, and #10 are applicable in this case, with Standard #6 being particularly important:

> Standard 1: A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.
>
> Standard 2: The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
>
> Standard 5: Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.
>
> Standard 6: **Deteriorated historic features shall be repaired rather than replaced** (emphasis added). Where the severity of deterioration requires replacement of a distinctive feature, the new feature hall 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 historic materials that characterize the property...

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

Based on this, the Commission finds that:

1. Marwood, at 11231 River View Drive, Potomac, is designated as an individual historic site on the Montgomery County Master Plan for Historic Preservation and as such is subject to the highest level of design review. As an individual historic site that contributes to the historical and architectural values within the Maryland-Washington Regional District, it is essential to preserve the historic character of this resource and maintain its integrity.

2. Marwood is characterized by a series of tall windows and doors opening directly from the principal rooms to the outside. The windows and doors are an integral part of the design, giving the otherwise massive building an airiness and openness appropriate to the woodland setting. The windows and doors make an integral and irreplaceable contribution to the historic character and architectural values of the historic resource.

3. The proposal to replace all the original and historic windows and doors constitutes a change that significantly impairs Marwood's significant architectural features. Total replacement of windows and doors is typically not permitted because windows and doors are an essential part of the architectural fabric of a building. The goal of historic preservation is not to only keep the general exterior appearance of the historic building intact, but also to **preserve** the actual materials and architectural components of a structure so that future generations can appreciate the original building - not a substantially replicated building.

4. The Historic Preservation Commission's consistent policy has been that total replacement of original windows in a historic structure should not be permitted unless the existing windows are so deteriorated that renovation of them is impossible. The Commission and staff members visited Marwood on December 30, 1996 in order to inspect each individual window and door. At that time they were provided with a written survey in which the architect for Marwood, Scott Allen, assessed the condition of each window and door. It was empirically clear, both from the survey or from physical inspection, that the historic windows and doors are, with the exception of two missing windows (out of a total of 48 windows), reparable and do not need to be replaced.

5. Removal of the historic windows is not justified in order to prevent energy loss. Historic windows, stripped of extra layers of paint, reworked to fit tightly in their frames, and provided with storm windows, perform well within the ranges for thermal efficiency

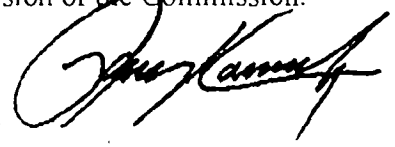
of modern windows. In the case of Marwood, custom-made exterior storm windows could be placed on the 1st and 3rd floors. By designing the storm windows to match the existing screen doors on the 1st floors and the basic window design on the 3rd floor, the architectural integrity and beauty of Marwood would not be diminished.

CONCLUSION:

The Commission was guided in its decision by Chapter 24A and by the Secretary of the Interior's Standards for Rehabilitation.

Based on the evidence in the record and the Commission's findings, as required by Section 24A-8(a) of the Montgomery County Code, 1984, as amended, the Commission must **deny** the application of Dr. Yonus Zegeye for a Historic Area Work Permit (HAWP) to replace the twenty doors and forty-eight windows at 11231 River View Drive, Potomac (Marwood).

If any party is aggrieved by the decision of the Commission, pursuant to Section 24A-7(h) of the Montgomery County Code, an appeal may be filed within thirty (30) days with the Board of Appeals, which will review the Commission's decision de novo. The Board of Appeals has full and exclusive authority to hear and decide all appeals taken from the decision of the Commission. The Board of Appeals has the authority to affirm, modify, or reverse the order or decision of the Commission.



George Kousoulas, Chairperson
Montgomery County
Historic Preservation Commission

January 23, 1997
Date

Where
What are they planning to put screens?

JK. don't agree that ~~re~~ integrity of resource.

SS- it is imp.

GK - original content has importance that is why original windows are valuable)

Ex - very fine craftsmanship on existing windows
exceptionally beautiful windows
not the same as Mr K. says.
are very dif from new.

D+Z didn't buy for tc. - want to change for living - S windows will not
to make it liveable in 1996 -
Can appreciate - school in Oxford -
Having difficulty that.

all things should be considered

MR – Since this is not public bldg – only private folks will see –
– would like to see R-Factor rpt
– not w expert but would see rpt

TT Be sure understand that ques is that w/d needing to ~~be~~ be repaired ~~are~~ would be replicated

HJ Motion to deny
TT Second.

CC. Deny HAWP to replace or do we tell ~~you~~ what to do?

GW - only can act on HAWP.
Gp could come back.

10-0-0

1/ Jody.
Dr. Z.
Scott

J. Objectives
1) Essence of condition
office the visit ≠ that the condition
private home - ≠ not access. ≠
invisible to general public.

a) ✓ don't agree that will give same
energy effic as new windows

b) ✓ from our pov - makes sense
to do comprehensive replace -
instead of each appearance of
storm windows on instead ≠
outside -

c) ✓ Siding - no streetscape.

SA voted 25 % of 1st flr. } replace because
10 % of 2nd flr. } of vandalism

operation - ~~ease of~~ operability
much more difficult to ~~have use~~
w/ storm windows.

4 more windows on 1st flr have
been broken since visit.

Screens?

Greg - Do I agree w/ # - 70 yrs.

Susan - How will energy efficiency will increase.

SA - will w/ shipping etc.
low E & high efficiency
Can do ~~it~~ w/ ~~storm~~ windows

SA - Cover up damages the look.
Don't want screens.
Interior storms would damage.

ML - agree w/ ~~SA~~.
EE - " " ML.

DrZ - do w/ do 1 instead of 2 layers 6 yes
~~EE~~ - 1996 glass.

GK - use modern that replicates orig.
- Using 2 layers makes mullion thicker
EE - 2 layers makes mullion heavier.

MR - visited site. - ~~to~~ are in condition where don't need replacement - Mixed emotion - re hodge podge - reminded of +c.

EE - still enuf to design for bldg and ~~stuff~~ enuf to design sw

SS.

GW. Have you considered R factor of new V. R of renov w/ storm.

SA. not available yet.
can match the size of mullion of original for new windows.
but that's not the issue -

Is the original what we're to save
Could take off & save but if
have to stay in place.

GK That is the issue - Original in is in good enuf ~~no hope to save~~.

MR. when will R(F) comp be available.

EE Canadian govt has shown that insulated glass is not effic.
Requests in US govt for replacement was denied as not worth the money. (You're in good company).

GK. SR says in the range - not saying will be at the top w/ SW & EW. but in the range.

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION
8787 Georgia Avenue • Silver Spring, Maryland 20910-3760

DATE: 1-9-97

MEMORANDUM

TO: Robert Hubbard, Acting Director
Department of Permitting Services

FROM: Gwen Wright, Historic Preservation Coordinator
Montgomery County Department of Park and Planning

SUBJECT: Historic Area Work Permit

The Montgomery County Historic Preservation Commission has reviewed the attached application for a Historic Area Work Permit. The application was:

_____ Approved X Denied

_____ Approved with Conditions: _____

THE BUILDING PERMIT FOR THIS PROJECT SHALL BE ISSUED CONDITIONAL UPON ADHERENCE TO THE APPROVED HISTORIC AREA WORK PERMIT (HAWP).

Applicant: Dr Yonus Zegeye c/o Jody Kline

Address: 11231 River View Drive, Potomac

THE APPLICANT MUST ARRANGE FOR A FIELD INSPECTION BY CALLING THE DEPARTMENT OF PERMITTING SERVICES AT 217-6240 FIVE DAYS PRIOR TO COMMENCEMENT OF WORK AND WITHIN TWO WEEKS FOLLOWING COMPLETION OF WORK.

HISTORIC PRESERVATION COMMISSION STAFF REPORT

Address: 11231 River View Drive

Meeting Date: 1/08/97

Resource: Marwood (Master Plan Site #29/6-1)

Review: HAWP

Case Number: 29/6-1-97A

Tax Credit: None

Public Notice: 12/24/96

Report Date: 12/31/96

Applicant: Dr. Yonus Zegeye

Staff: Perry Kephart

PROPOSAL: Replace windows and doors.

RECOMMEND: Deny

BACKGROUND

Marwood was designated in 1993 as an individual Master Plan site both for its architectural distinction and for its historic significance. The resource was the subject of a Preliminary Consultation on December 2, 1996 and December 18, 1996.

Review of Architectural/Historical Information:

Built in 1931, the French Renaissance style mansion is an outstanding example of the principles of l'Ecole des Beaux Arts being employed in the design of an American country house. The architect, John J. Whelan, graduated from Princeton with a B.S. in architecture in 1925. There, and in Paris and Rome, Whelan studied what came to be known as Academic Eclecticism wherein "the best architecture of the past was integrated with modern uses, needs, materials, and technology" (Massey and Maxwell, House Styles In America).

In 1930, Samuel K. Martin, grandson and heir of Otto Young, a Chicago real estate entrepreneur, and his wife, Jane Catherine Martin, bought a 192 acre farm in Montgomery County, near Potomac. The property included a tract of land overlooking a giant bend in the Potomac River. The Martins chose John J. Whelan as the architect for their country estate. Whelan was already well known for his designs of various styles of grand urban homes and embassies in the Kalorama area of the District of Columbia in the late 1920's. The Martins particularly admired the new Georgian style Norwegian Legation, 3401 Massachusetts Avenue, that Whelan had completed in 1930.

The estate was occupied by the Martin family for only two years. In 1934, it was leased as a summer home to Joseph P. Kennedy, the first Chairman of the Securities and Exchange Commission, for the use of his family, including John, Robert and Edward Kennedy. After the

death of Martin, his widow sold the property in 1943 to H. Grady Gore. Gore's family owned the farm until 1995. Franklin Delano Roosevelt was a frequent visitor and it was for him that an elevator was installed. In later years, members of the Eisenhower, Nixon and Reagan administrations were entertained on a regular basis.

Staff would note that Marwood is an important example of the Beaux-Arts teaching of formal symmetry; and of being able to discern the entrance. Context was all important. Virginia and Lee McAlester, in A Field Guide to American Houses, comment:

> The term "Beaux Arts" is used by architectural historians in two different senses. Some use it to describe the entire 1885-1920 period of elaborate eclectic styles because these tended to be advocated by Americans who studied at France's l'Ecole des Beaux-Arts. A more limited meaning, followed here, stresses only one eclectic tradition among the many that were then popular. This is based on classical precedents elaborated by lavish decorative detailing, and was perhaps the most typical of the many styles inspired by study at the Ecole. More than any other style (except perhaps the Chateauesque), the Beaux Arts expressed the taste and values of America's industrial barons of the turn of the century. In those pre-income tax days, great fortunes were proudly displayed in increasingly ornate and expensive houses.

Marwood is an extremely intact remnant of architectural history. It is also, in staff's opinion, a clearly thought out design. It is of vital importance that the statements which the architect made so clearly be preserved. These major architectural themes appear to be that:

- Both the east (driveway) and west (river) facades are of **equal** importance. The building was designed with two "front" facades that are substantially identical in design. The river front is given two extra chimney pieces in mid-roof. (One of the chimneys serves the library and master bedroom, the other chimney piece is fake, in the interests of symmetry.) These serve to anchor the building to the high bluff on which the house is built. When seen from the river, the four chimneys add visual weight to the facade. Major alteration of either facade would destroy the balance of the design.

  The statement of symmetry by the architect is, in effect, underlined by the lack of attention to symmetry between the two side facades, which, though symmetrical in themselves, do not match each other or the principal sides.

- The building is closely connected to its natural setting by the series of openings to the outside. The ground floor from the outside looks like a pavilion with long glass doors opening directly into all the rooms on both sides. The proportions of the windows are long and narrow. Because the windows are on both sides of large, open interior spaces - particularly the central entry hall - one can see from one side of the building through to the other, giving the otherwise massive building an airiness and openness.

- In comparison with urban examples of the Beaux Arts style, Marwood has a simplicity of detailing which is consistent with its role as a country estate. The mascarons above all the windows and doors, the projecting center bay, two statue niches, wrought iron mezzanine balconies, and quoins are the extent of the decoration - somewhat restrained for a period and style of extravagant detail.

Fashioned after Malmaison (Josephine's retreat near Versailles), Marwood is clearly differentiated from its urban Beaux Arts counterparts in nearby Washington. The often extravagant entryways that pull the visitor inside the edifice, such as seen on the Norwegian Legation, are absent at Marwood. For a city dwelling, rusticating the ground floor facade, and placing the principal window treatments on the second level, pulled attention away from the street level and to the importance of the socializing areas high, as it were, above and away from the street life outside. At Marwood, the ground floor is given principal treatment. Access to the country setting is emphasized with french doors opening out on all sides, no exterior stairways or porches and an entrance, which, though articulated, does not dominate the other entry points. Also, at Marwood, the ground floor facade is not rusticated. Finally, the elegant limestone surfaces of elegant Beaux Arts townhouses are replaced with rather modest stucco.

The estate was subdivided in the early 1990's. Large houses are now under construction on 40,000-70,000 square foot lots in the woods around the historic resource. The mansion is now situated on a 13.13 acre environmental setting including lawns, a sunken garden, handball court, pool, and pool house (added in 1952) with a circular paved driveway. The historic site is surrounded by second growth forest. The house is beautifully sited on a high bluff with a magnificent view of the Potomac River and Virginia. The original 1931 gatehouse, which included four garage ports, is located at the end of the original driveway near River Road and has been subdivided as a separate property. It is now a separate individual Master Plan site.

On December 30, 1996, the Historic Preservation Commissioners and Staff visited Marwood in order to examine the windows and doors that are the subject of this HAP. A Door and Window Survey was provided by Scott Allen, the architect for the Marwood restoration. A copy of the Survey is attached to this Staff Report

PROPOSAL

The applicant proposes to replace all existing windows and doors with custom-milled double-glazed windows and doors constructed from mahogany wood and designed as closely as possible to replicate existing windows and doors. The major difference in the new windows would be that the muntins would have to be thicker/wider than the originals to contain the double-glazed glass panes.

The applicant's stated desire to replace the windows and doors is to achieve greater energy efficiency. Work on installation of the HVAC system for the house has been delayed until a determination is made as to whether total window/door replacement will be permitted or not.

Although other proposals for the Marwood property were discussed during the two previous preliminary consultations, the only issue before the HPC on 1/8/97 is the replacement of all existing windows and doors. Other proposals may be brought before the HPC at future meetings.

STAFF DISCUSSION

It should be noted that on the first and second floor, the window openings contain french doors opening inwardly. Those on the first floor have a transom overhead. Those on the second floor have an exterior wrought iron railing across the base. On the third floor there are casement windows, also opening inwardly. For the sake of simplicity, all of these architectural elements are referred to as windows in this discussion.

Window replacement in historic structures is a difficult issue which the HPC has faced on numerous occasions. This applicant has clearly thought through their proposal, and staff appreciates the meticulous attention to detail in the window survey prepared by the applicant. In addition, the applicant is specifying a high level of quality in the window units being proposed for replacement of the historic architectural features.

1) However, the HPC's consistent policy has been that total replacement of original windows in a historic structure should not be permitted unless the existing windows are so deteriorated that renovation of them is impossible. This is particularly true for individually-designated Master Plan sites of the obvious significance and quality of Marwood - these resources should be held to the highest standards for preservation. The HPC has consistently recommended that other options - including interior or exterior storm windows - be the preferred alternative to achieve energy efficiency goals. In addition, the HPC has approved Historic Preservation Property Tax Credits for the appropriate installation of storm windows and doors.

2) Replacement of windows is typically not permitted because windows are an essential part of the architectural fabric of a building. The goal of historic preservation is not ~~to only~~ only to keep the general exterior appearance of the historic building intact, but also to **preserve** the materials and architectural components of a structure so that future generations can appreciate the original building - not a substantially replicated building. This same philosophy is why preservation commissions generally discourage the use of replacement building materials of all kinds: artificial siding, columns and architectural details fabricated out of non-historic materials, etc.

3) In carefully looking ~~th~~at the Marwood windows, it is not apparent- either from the survey or from physical inspection - that the historic windows (and doors) are beyond repair and should be replaced. It is clear that substantially all of them are in need of varying degrees of maintenance. It should also be noted that two first floor french doors were kicked in by vandals and may need to be replaced in kind if they cannot be repaired. Also, one set of windows on the third floor were removed at some point in the past and replaced with a plexiglass panel. These windows will need to be replicated. With these exceptions, all the wood frames, the glass, and the hardware are, in staff's opinion, well worth saving.

4) Removal of the historic windows is not justified in order to prevent energy loss. Historic windows that have been stripped of extra layers of paint and reworked to fit tightly in their frames, and provided with storm windows, are well within the performance ranges for thermal efficiency of modern windows. In the case of Marwood, custom-made exterior storm windows could be placed on the 1st and 3rd floors. By designing the storm windows to match the existing

screen doors on the 1st floors and the basic window design on the 3rd floor, the architectural integrity and beauty of Marwood would not be diminished. Custom-made exterior storm windows would, in all likelihood, be equally or less expensive than the custom mahogany replacement windows currently being proposed.

On the 2nd story, exterior storm windows are not feasible because of the wrought iron railings along the base of each opening. However, operable interior storm windows (that would open inward like storm doors) appear to be feasible if placed on the new interior framing, at a sufficient distance from the existing windows to allow both to be operated.

The replacement of the historic windows also cannot be justified because they are currently not operational. The existing windows could feasibly be brought back into use by standard repair methods, once the sashes have been removed from the frames and are accessible. The frames will require the same degree of repair whether the window sashes are replaced or not, so are not a factor to be considered, although their repair is mandatory in order to insure proper fit. Water leakage problems such as mold and rot will continue to occur with new or historic windows if the sills are not reworked to prevent pooling. Much of the deterioration appears to have occurred because the normal maintenance for all wood windows was neglected for a number of years. Some of the damage appears to have occurred while the house was uninhabited and not heated and should not reoccur now that the house is being brought back into use.

Staff would suggest that the U.S. Department of the Interior Preservation Brief #9, "The Repair of Historic Wooden Windows," be consulted by the applicant - it is attached to this report. Also of interest would be the report to the State of Vermont, Division for Historic Preservation, by the Vermont Energy Investment Corporation on the testing of the energy performance of wood windows in cold climates. A summary of their findings is attached to this report.

STAFF RECOMMENDATION

Staff recommends that the Commission deny the proposal to replace all existing historic windows and/or doors based on Chapter 24A-8(a):

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

Staff further recommends that the applicant explore the construction of custom wood storm windows, interior and/or exterior at noted above, and return to the HPC with a HAP for installation of such storm windows.

HAWP APPLICATION: ADDRESSES OF ADJOINING
AND CONFRONTING PROPERTY OWNERS

NAME	ADDRESS	LOT/BLOCK
Potomac Holding Management Group, LLC	P.O. Box 85 Poolesville, MD 20837-0085	Par. "A"
Potomac Marwood, L.L.C. c/o Eastern Realty Corp.	1568 Spring Hill Road 2nd Floor McLean, VA 22102-3016	Lot 54, Lot 55, Lot 56, Lot 57, Parcel "C"
United States of America	CST 18th and 19th Streets N.W. Washington, D.C. 20006	C&O Canal
Tom Courtney	Courtney Development Corp PO Box 580 Sewickley Hgts PA 15143.	Par C

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

1. **WRITTEN DESCRIPTION OF PROJECT**

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

   The "Marwood" Mansion and the surrounding lot (Lot 74) have been designated as an historic resource because of its architectural distinction and for its historical significance.

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

   The owner proposes to replace all existing windows with mill-built windows constructed from mahogany wood (as are the existing windows) and designed as close as possible to the existing windows as modern technology will permit. The owner believes that these improvements will have no adverse affect on the historic integrity or appearance of the main structure of the environmental setting.

2. **SITE PLAN**

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

   a. the scale; north arrow, and date;

   b. dimensions of all existing and proposed structures; and

   c. site features such as walkways, driveways, fences, ponds, streams, trash dumpsters, mechanical equipment, and landscaping.

3. **PLANS AND ELEVATIONS**

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

   a. Schematic construction plans, with marked dimensions, indicating location, size and general type of walls, window and door openings, and other fixed features of both the existing resource(s) and the proposed work.

   b. Elevations (facades), with marked dimensions, clearly indicating proposed work in relation to existing construction and, when appropriate, context. All materials and fixtures proposed for the exterior must be noted on the elevations drawings. **An existing and a proposed elevation drawing of each facade affected by the proposed work is required.**

4. **MATERIALS SPECIFICATIONS**

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

5. **PHOTOGRAPHS**

   a. Clearly labeled photographic prints of each facade of existing resource, including details of the affected portions. All labels should be placed on the front of photographs.

   b. Clearly label photographic prints of the resource as viewed from the public right-of-way and of the adjoining properties. All labels should be placed on the front of photographs.

6. **TREE SURVEY**

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

7. **ADDRESSES OF ADJACENT AND CONFRONTING PROPERTY OWNERS**

(301) 495-4570

APPLICATION FOR HISTORIC AREA WORK PERMIT

CONTACT PERSON Jody Kline (301) 762-5212 or Scott Allen (410) 783-1574

DAYTIME TELEPHONE NO. ( )

TAX ACCOUNT # 10/2960050

NAME OF PROPERTY OWNER Dr. Yonus Zegeye DAYTIME TELEPHONE NO. c/o (301) 762-5212

ADDRESS c/o 200-B Monroe Street, Rockville, Maryland 20850
CITY STATE ZIP CODE

CONTRACTOR Dr. Yonus Zegeye TELEPHONE NO. ( )

CONTRACTOR REGISTRATION NUMBER N/A

AGENT FOR OWNER Jody Kline (301) 762-5212 Scott Allen (410) 783-1574 DAYTIME TELEPHONE NO. ( )

LOCATION OF BUILDING/PREMISE

HOUSE NUMBER 11231 STREET River View Drive

TOWN/CITY Potomac NEAREST CROSS STREET River Road

LOT 74 BLOCK ____ SUBDIVISION MARWOOD

LIBER 3278 FOLIO 157 PARCEL ____

PART ONE: TYPE OF PERMIT ACTION AND USE

1A. CIRCLE ALL APPLICABLE: Construct Extend Alter/Renovate Repair Move Wreck/Raze Install Revocable Revision

CIRCLE ALL APPLICABLE: A/C Slab Room Addition Porch Deck Fireplace Shed Solar Woodburning Stove Fence/Wall *(complete Section 4)* Single Family Other Replace windows

1B. CONSTRUCTION COST ESTIMATE $ 119,000.00

1C. IF THIS IS A REVISION OF A PREVIOUSLY APPROVED ACTIVE PERMIT SEE PERMIT # 9610150207

PART TWO: COMPLETE FOR NEW CONSTRUCTION AND EXTEND/ADDITIONS

2A. TYPE OF SEWAGE DISPOSAL 01 (x) WSSC 02 ( ) SEPTIC 03 ( ) OTHER ____

2B. TYPE OF WATER SUPPLY 01 (x) WSSC 02 ( ) WELL 03 ( ) OTHER ____

PART THREE: COMPLETE ONLY FOR FENCE/RETAINING WALL

3A. HEIGHT ____ feet ____ inches

3B. INDICATE WHETHER THE FENCE OR RETAINING WALL IS TO BE CONSTRUCTED ON ONE OF THE FOLLOWING LOCATIONS:

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

I HEREBY CERTIFY THAT I HAVE THE AUTHORITY TO MAKE THE FOREGOING APPLICATION, THAT THE APPLICATION IS CORRECT, AND THAT THE CONSTRUCTION WILL COMPLY WITH PLANS APPROVED BY ALL AGENCIES LISTED AND I HEREBY ACKNOWLEDGE AND ACCEPT THIS TO BE A CONDITION FOR THE ISSUANCE OF THIS PERMIT.

DR. YONUS ZEGEYE Jody S. Kline December 19, 1996
Signature of owner or authorized agent Date

Jody S. Kline

APPROVED ____ For Chairperson, Historic Preservation Commission

DISAPPROVED ____ Signature ____ Date ____

APPLICATION/PERMIT NO: 961219 00063 DATE FILED: 12/19/96 DATE ISSUED: ____

SEE REVERSE SIDE FOR INSTRUCTIONS

6

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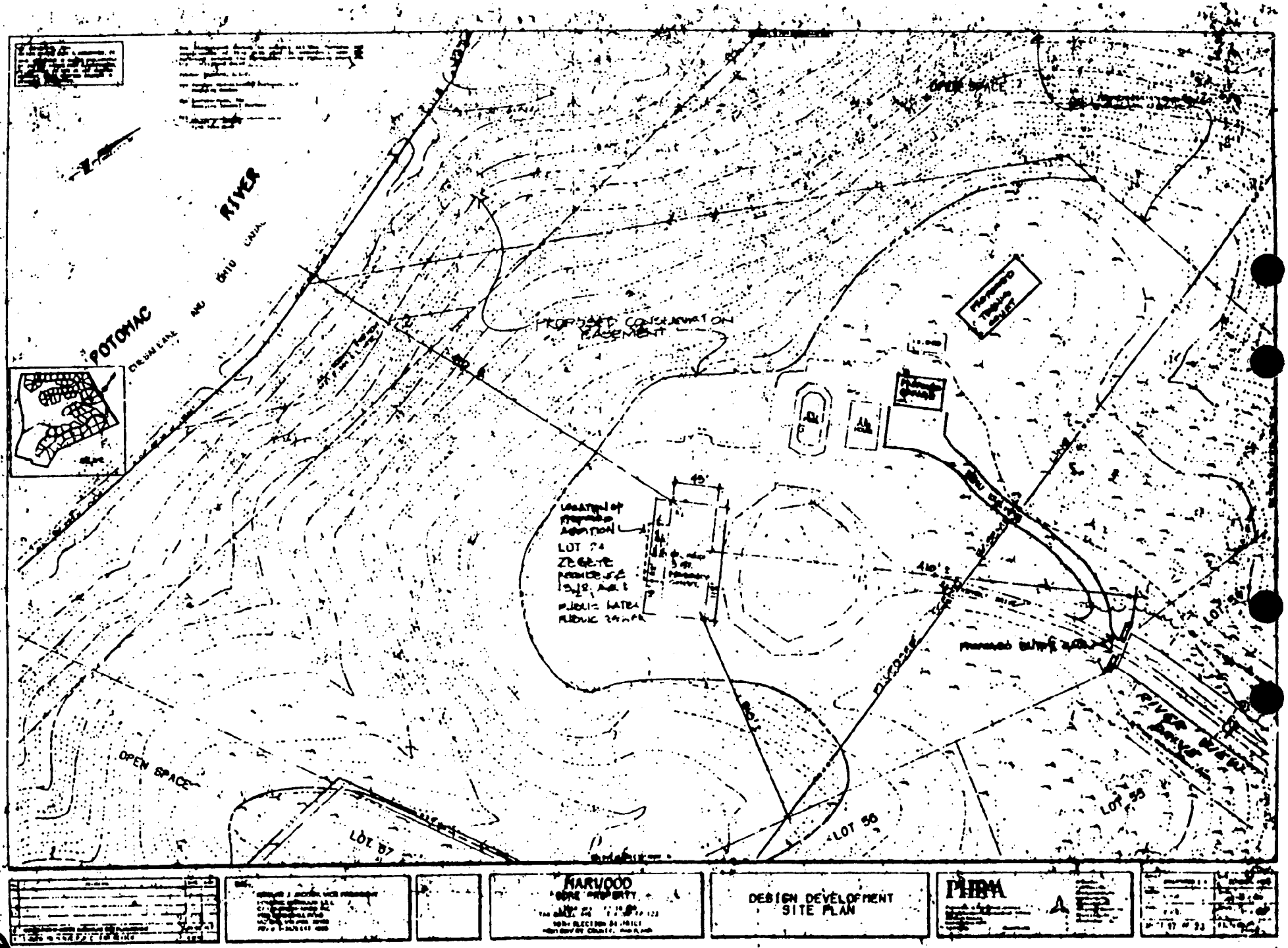
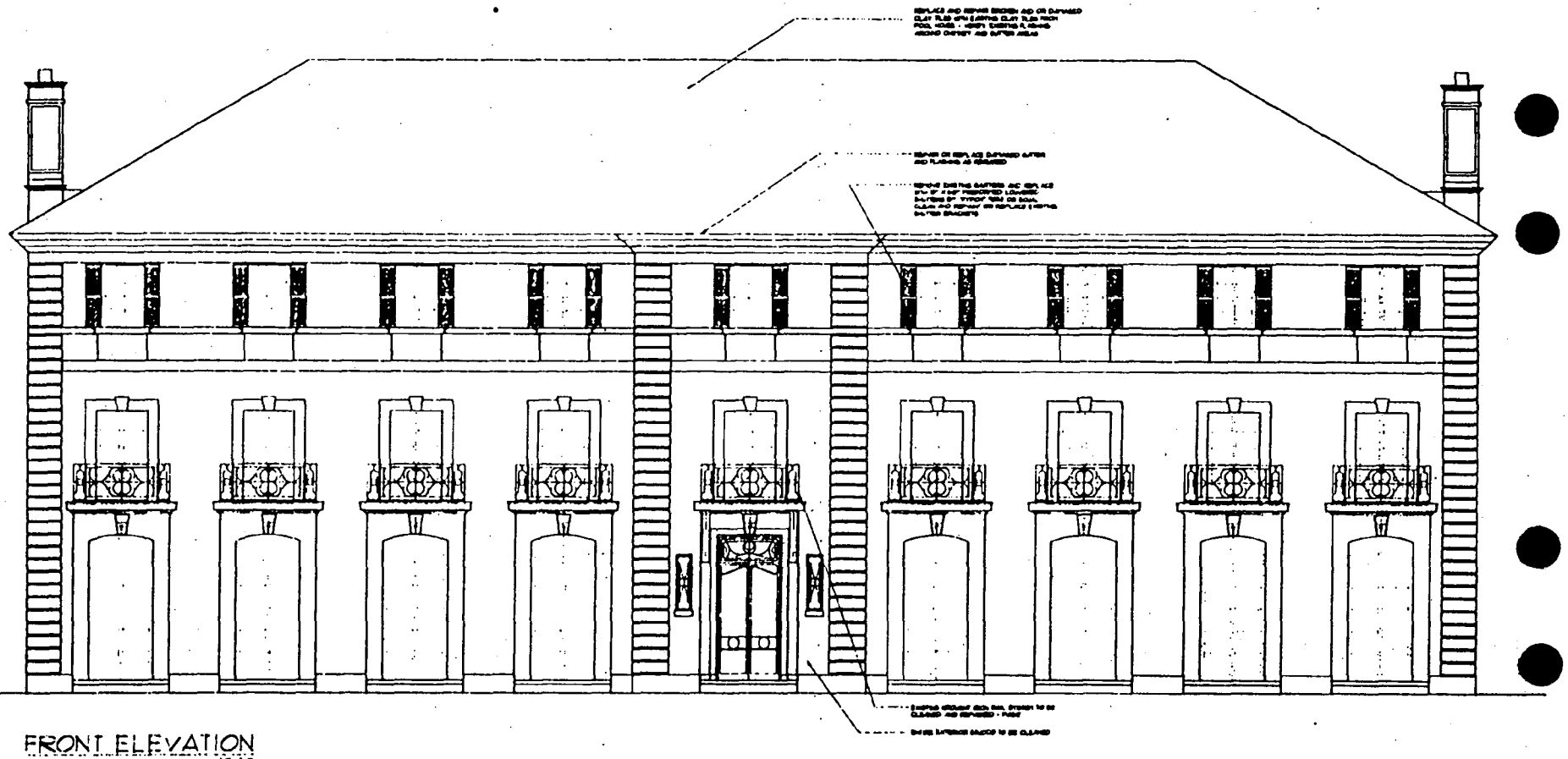
Potomac Marwood, L.L.C. c/o Eastern Realty Corp.	1568 Spring Hill Road 2nd Floor McLean, VA 22102-3016	Lot 54, Lot 55, Lot 56, Lot 57, Parcel "C"
United States of America	CST 18th and 19th Streets N.W. Washington, D.C. 20006	C&O Canal

8


POTOMAC
RIVER
OPEN SPACE
PROPOSED CONSERVATION EASEMENT
LOCATION OF PROPOSED ADDITION
LOT 94
LOT 95
LOT 87
LOT 88
OPEN SPACE
HARWOOD
DESIGN DEVELOPMENT
SITE PLAN
PHBA

(9)



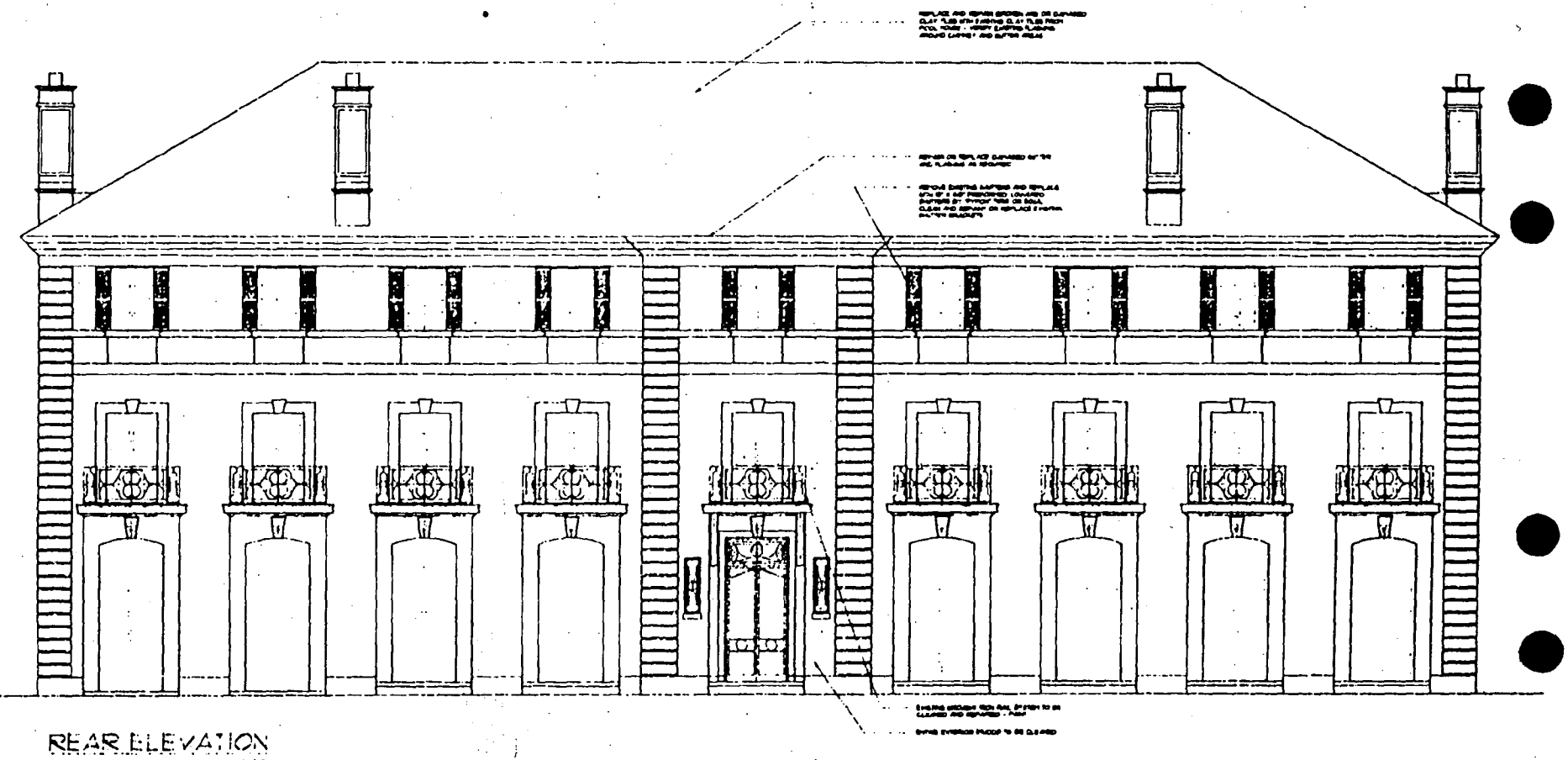
FRONT ELEVATION
(East)

Existing

MARWOOD MANSION
FRONT ELEVATION

ALLEN + ASSOC., P.A.
ARCHITECTURE
1201 LIGHT ST. BALTIMORE MD.

10



REAR ELEVATION
(West)

Existing

MARWOOD MANSION
REAR ELEVATION

ALLEN + ASSOC., P.A.
ARCHITECTURE
1201 LIGHT ST. BALTIMORE MD.

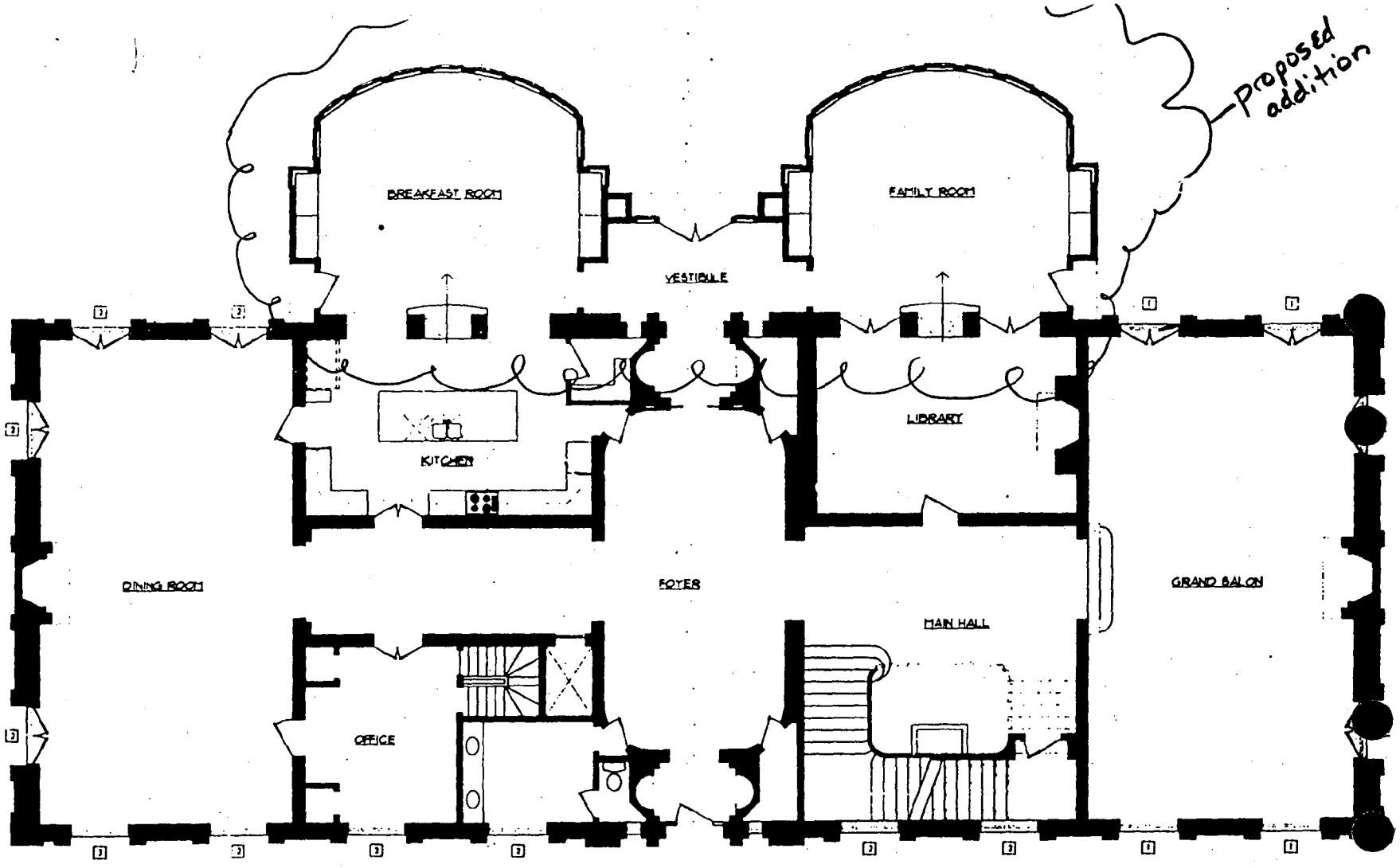
Proposed

WOOD MANSION

ELEVATION / WEST

ALLEN + ASSOC., P.A.
ARCHITECTURE
[illegible] LIGHT ST. BALTIMORE, MD.
TEL/ [illegible]
FAX/ [illegible]

(12)



FIRST FLOOR

Proposed Addition

MARLWOOD MANSION

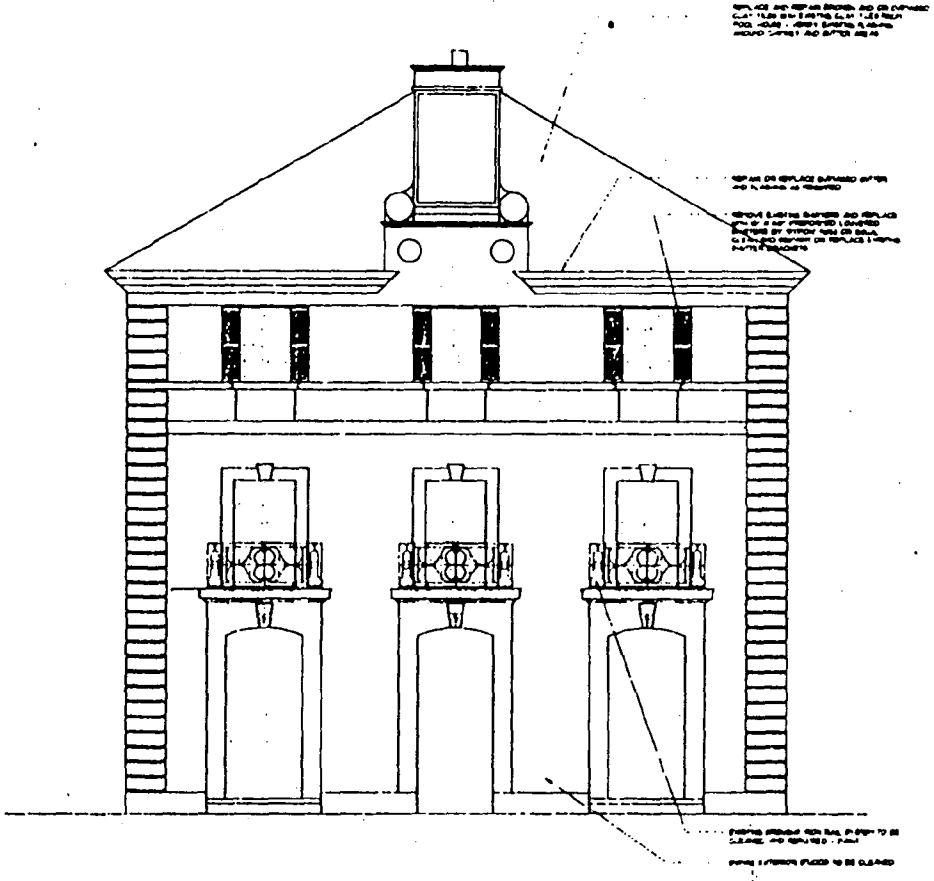
FIRST FLOOR PLAN

P3.1

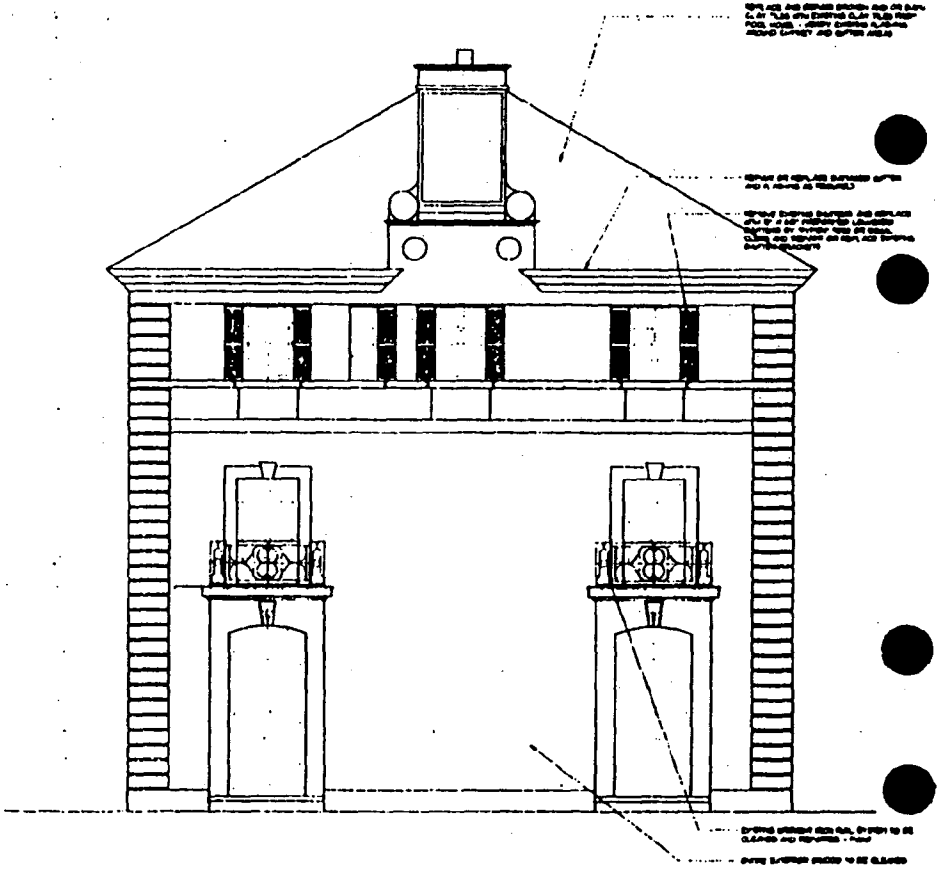
ALLEN + ASSOC., P.A.
ARCHITECTURE

1201 LIGHT ST. BALTIMORE, MD. 21230
TEL. (410) 783-5114

W



RIGHT SIDE ELEVATION
(North)

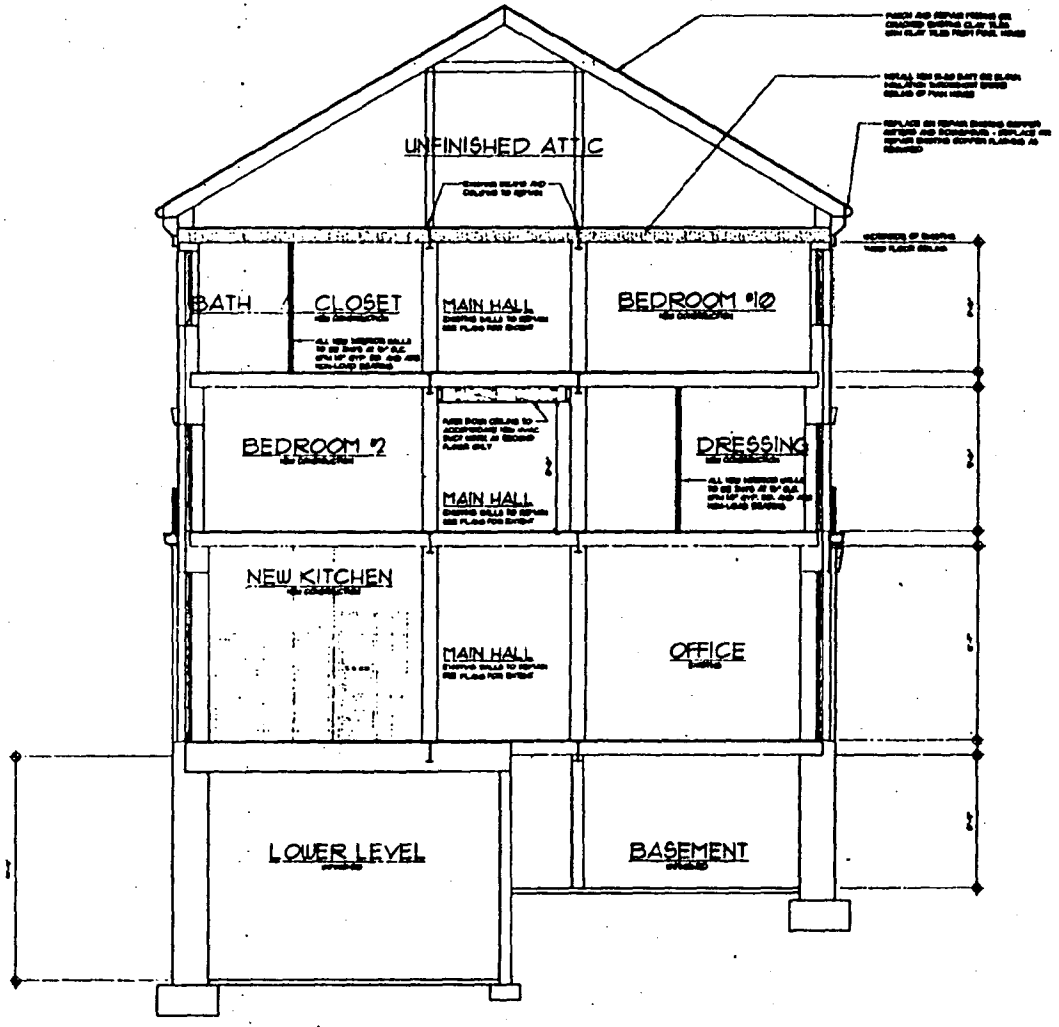


LEFT SIDE ELEVATION
(South)

Existing

	MARWOOD MANSION
	SIDE ELEVATIONS
A2.2	

ALLEN + ASSOC., P.A.
ARCHITECTURE
1101 LIGHT ST. BALTIMORE MD.
TEL/410/783-8114 21230



BUILDING SECTION

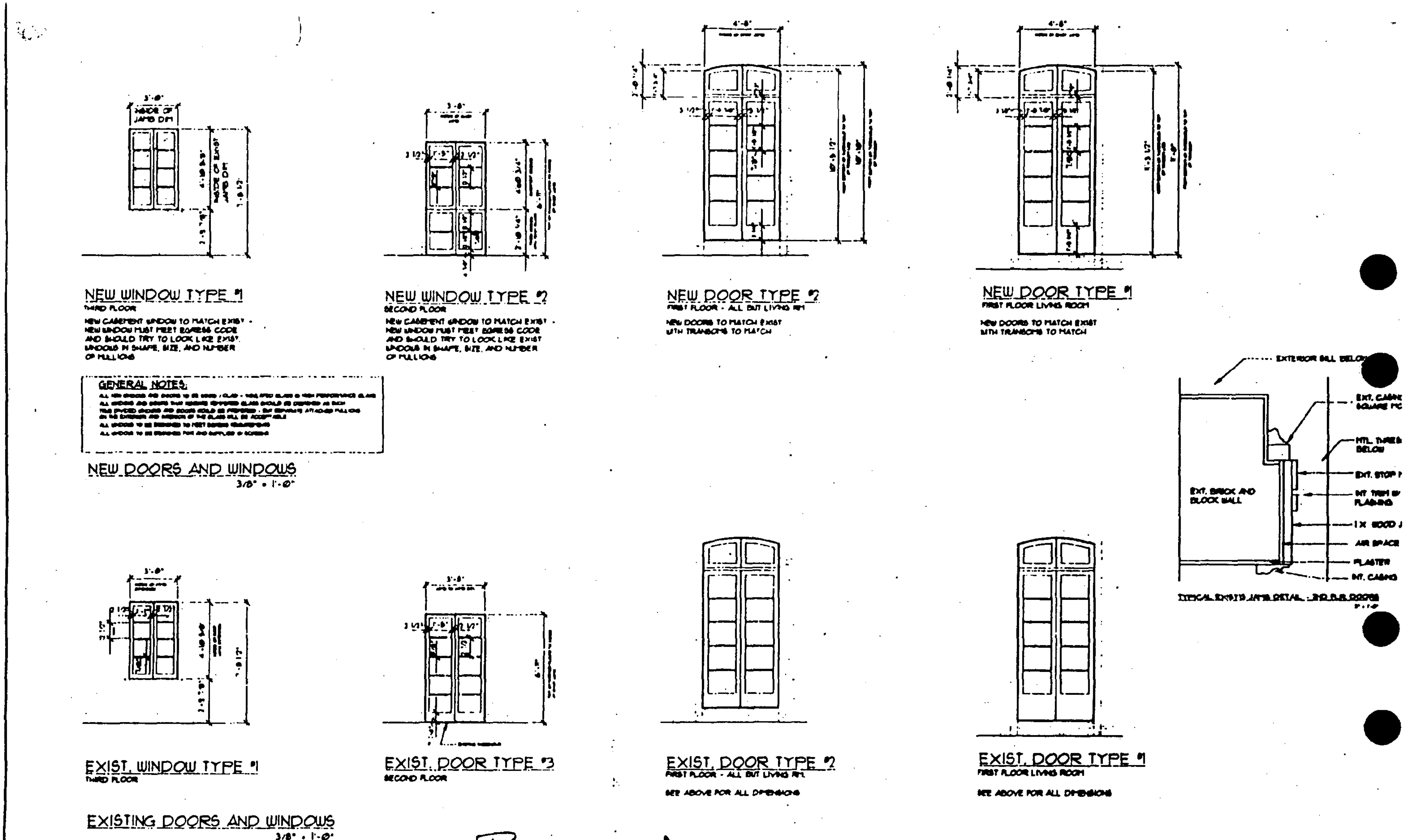
PROPOSED

MARWOOD MANSION

SIDE ELEVATIONS

ALLEN + ASSOC., P.A.
ARCHITECTURE
1701 LIGHT ST. BALTIMORE MD

51



Proposed

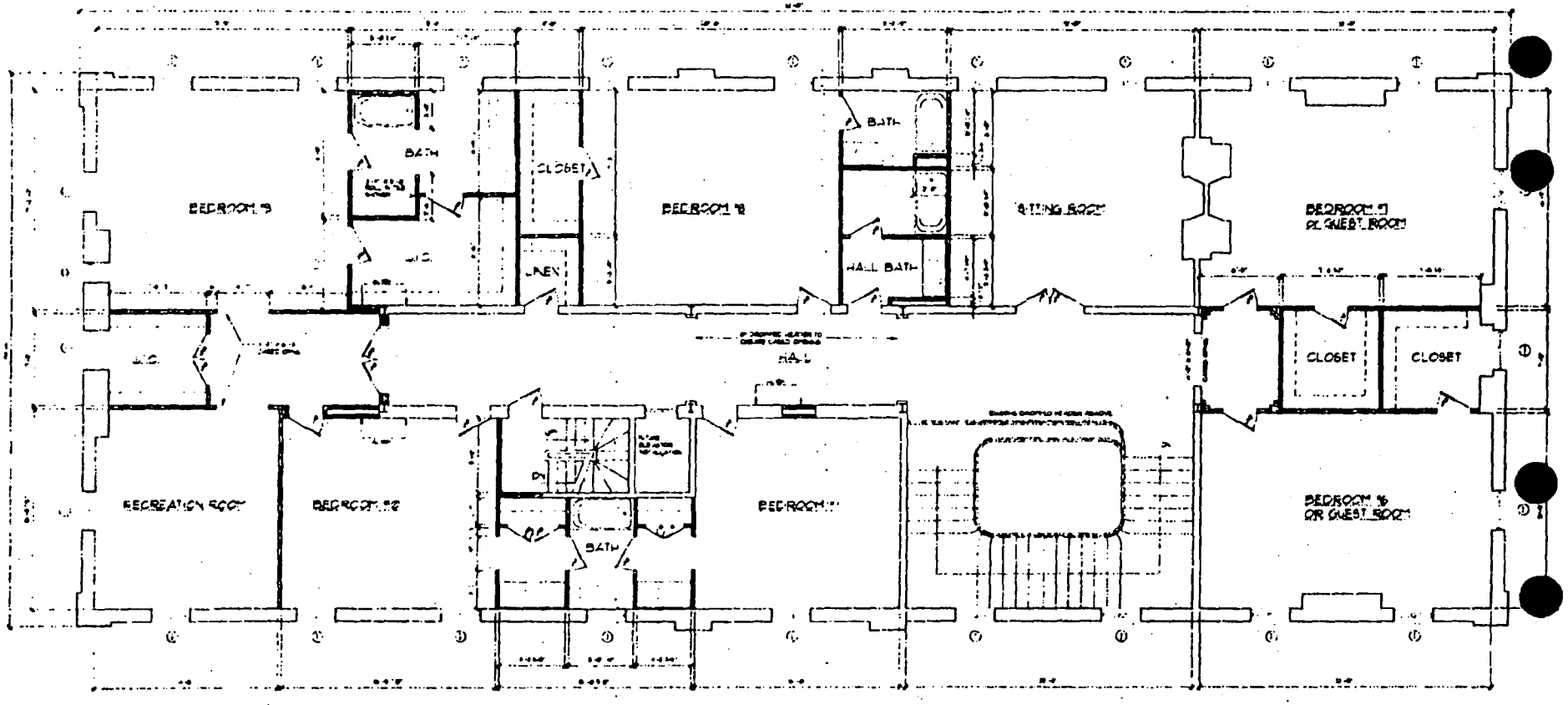
MARWOOD MANSION

WINDOW / DOOR DETAILS

A6.1

ALLEN + ASSOC., P.A.
ARCHITECTURE
1201 LIGHT ST. BALTIMORE MD. 21230
TEL (410) 783-1514
FAX (410) 783-2641

16



THIRD FLOOR PLAN

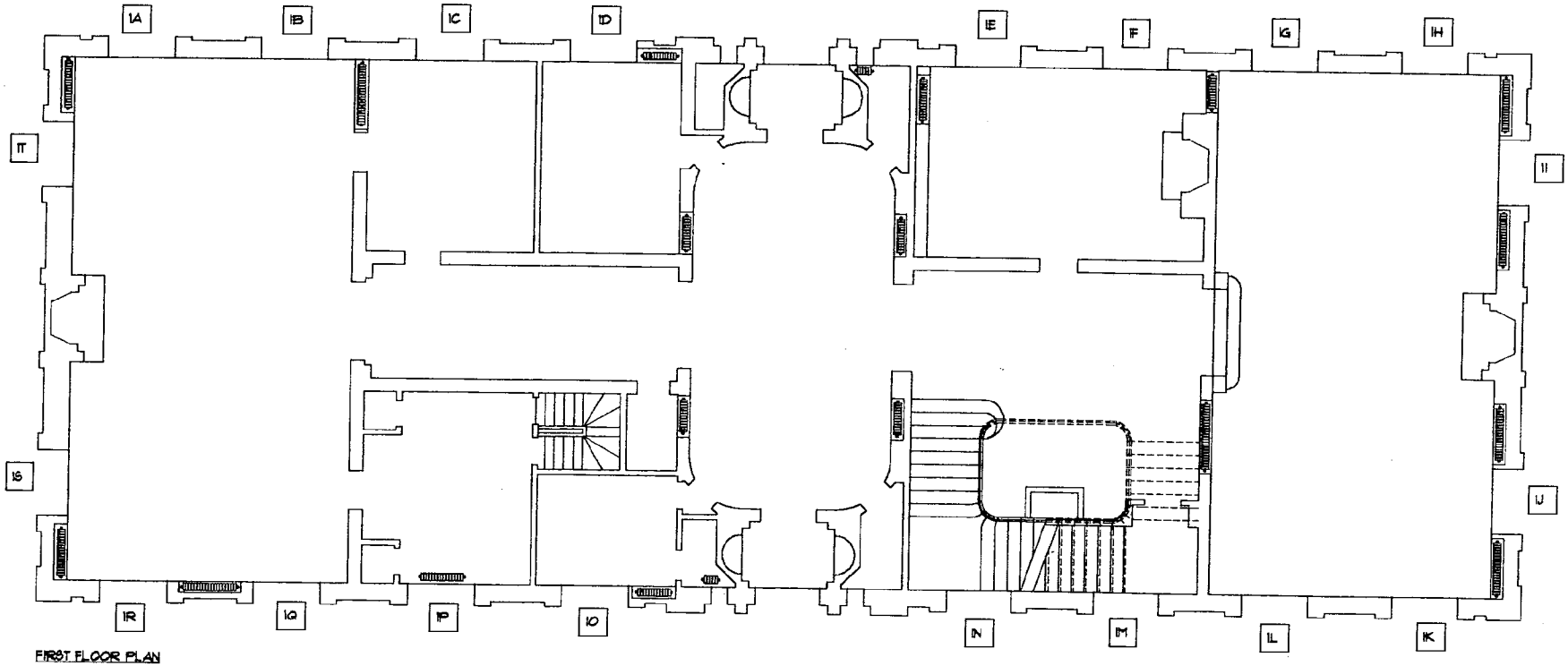
Proposed

HARWOOD MANSION

THIRD FLOOR PLAN

ALLEN + ASSOC., P.A.
ARCHITECTURE

1201 LIGHT ST. BALTIMORE MD.
TEL. (410) 783-1974 21230



FIRST FLOOR PLAN

ALLEN + ASSOCIATES, PA **ARCHITECTURE**

Marwood Mansion Door and Window Survey

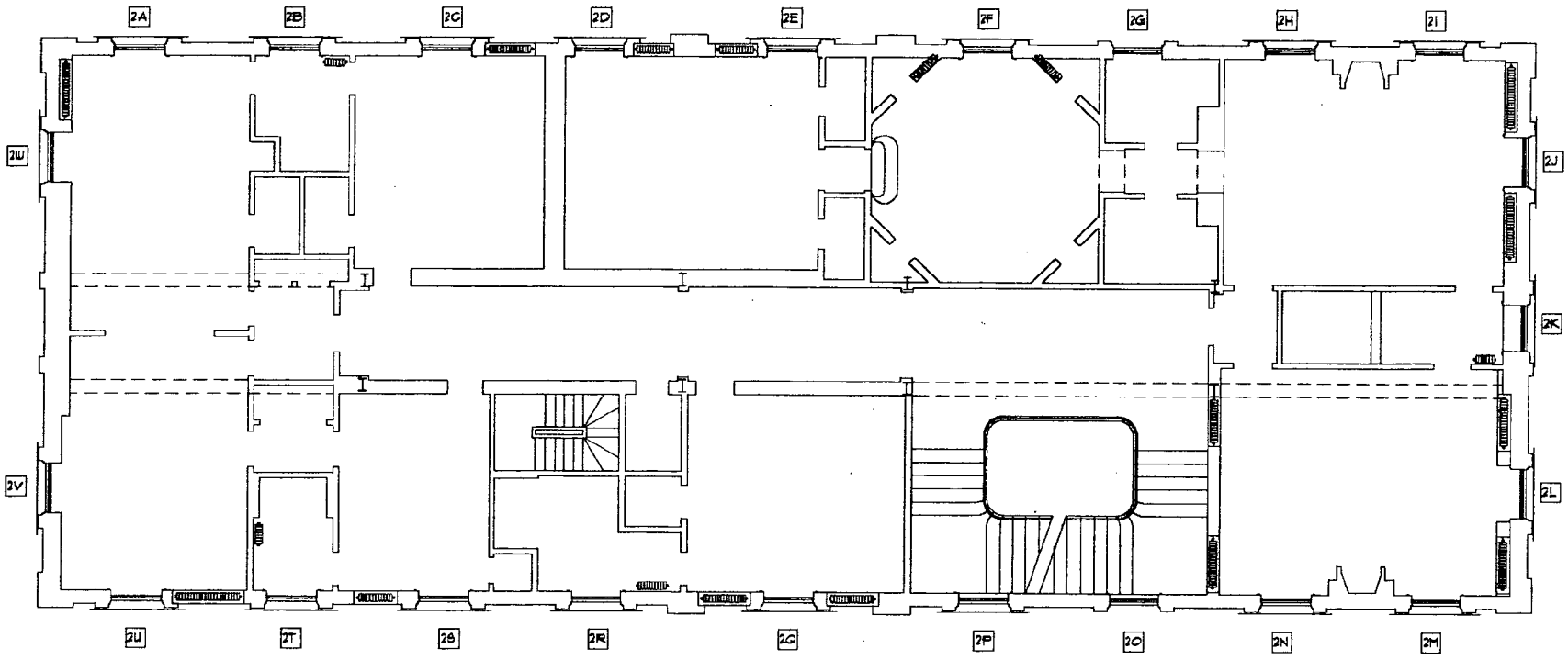
First Floor

Location	Hardware	Glass	Operation	Other
1A	Repair	O.K.	Non Operation	Surface Mold
1B	Repair	O.K.	Non Operation	Surface Mold
1C	Repair	O.K.	Sticks - Non Op	Water Leakage
1D	Repair	O.K.	Operable	Water Leakage - Loose Mullions
1E	Repair	O.K.	Non Operation	
1F				Missing Leaf - Door Broken in to
1G	Repair	O.K.	Non Operation	Surface Mold
1H	Repair	O.K.	Non Operation	Surface Mold
1I	Repair	O.K.	Non Operation	
1J	Repair	O.K.	Non Operation	Surface Mold
1K	Repair	O.K.	Non Operation	
1L	Repair	O.K.	Non Operation	Surface Mold
1M	Non Matching	Broken Pane	O.K.	Rotten Jamb
1N				Unable to Evaluate
1O	To Be Fixed	O.K.	Sticks	Mullions Splitting
1P	Broken	Missing Panes	Broken	Bent / Broken Jamb Etc.
1Q	Repair	O.K.	Non Operation	Surface Mold
1R	Repair	O.K.	Non Operation	
1S	Repair	O.K.	Non Operation	Surface Mold
1T	Repair	O.K.	Non Operation	Surface Mold

Other notes about first floor doors and windows

All Transom windows appear to be fine
Exterior brick mold is rotton at bottom where it meets exterior sill - Typ. all locations
All door hardware does not meet ADA specifications
Existing glass is single pane - non insulated
There is little or no weather stripping on any of the doors
Bottom of door units all appear to have soft wood - Once paint is removed more rot may be found

Notes about comments above
Repair = Hardware will not latch, and or lock properly
O.K. = Glass appears to be original
O.K. = Operation of window is in working condition
New Panes = Refers to possible replacement glass - non orginal



SECOND FLOOR PLAN

ALLEN + ASSOCIATES, PA ARCHITECTURE

Marwood Mansion Door and Window Survey

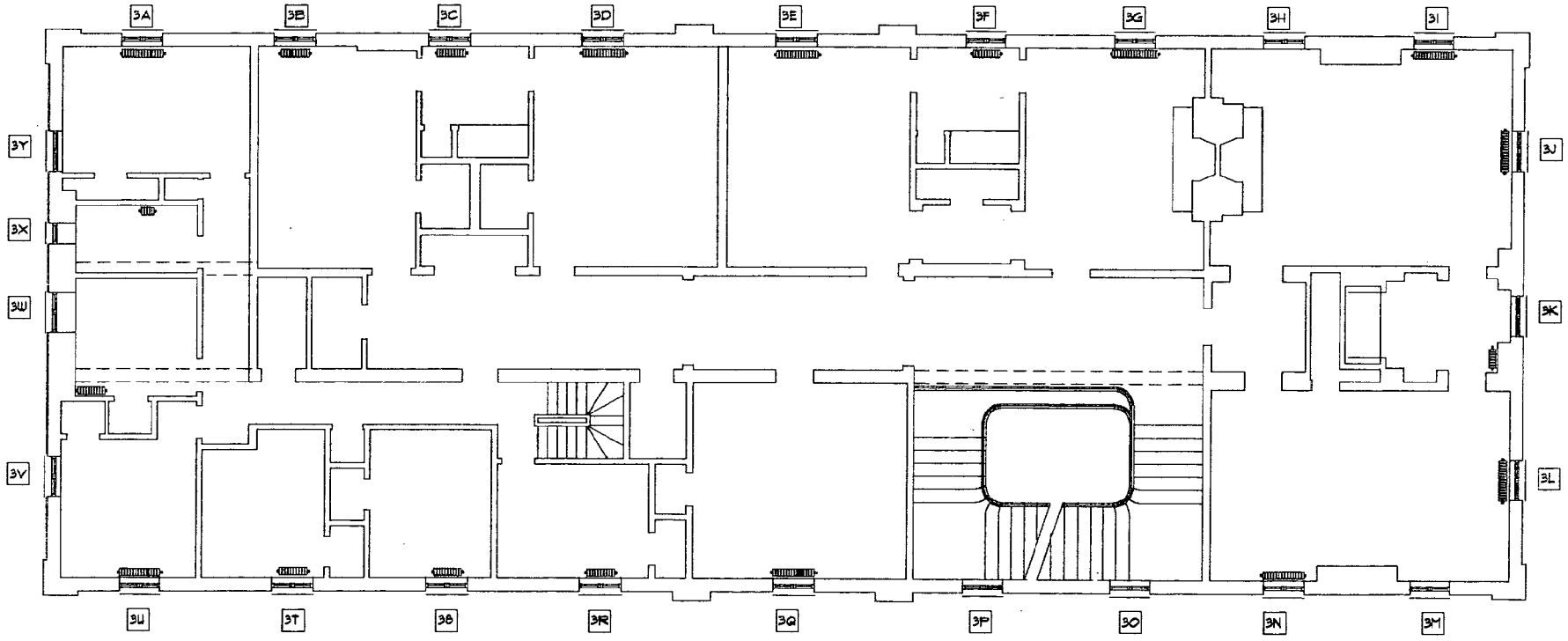
Second Floor

Location	Hardware	Glass	Operation	Other
2A	Repair	O.K.	Sticks	
2B	Repair	O.K.	Non Operation	Wood Rot - Sash Split'g
2C	Repair	2 New Panes	Sticks - Non Op	Wood Rot
2D	Repair	Special - Fix	Poor Operation	Rotten Jambs
2E	Repair	Special - Fix	Poor Operation	Rotten Jambs
2F	Repair	Missing 1 Pan	Tight	Soft Wood - Sash Split'g
2G	Repair	Missing 1 Pan	Sticks - Non Op	Broken Mullion
2H	Missing	O.K.	Tight	Cracked Sash
2I	Repair / Missing	O.K.	Can't Shut	Sash Splitting
2J	Repair	O.K.	O.K.	Soft Wood - Sash Rotten
2K	Repair	O.K.	Tight	Special Size
2L	New Location	O.K.	Non Operation	Soft Wood - Sash Split'g
2M	Repair	O.K.	Tight	Leaf is askew
2N	Repair	O.K.	Can't Close	
2O	O.K.	O.K.	Non Operation	
2P				Unable to Evaluate
2Q	O.K.	O.K.	Non Operation	Sash Split'g - Water Damage
2R	O.K.	O.K.	Can't Close	Sash Splitting
2S	O.K.	3 new Panes	Non Operation	Soft Wood
2T	Repair	1 Broken Pane	Non Operation	
2U	Repair	1 New Pane	Non Operation	
2V				Does not match existing
2W	Repair	1 New Pane	Can't Close	Ext. Mullion is Splitting

Other notes about second floor doors and windows

Exterior brick mold is rotton at bottom where it meets exterior sill - Typ. all locations
All door hardware does not meet ADA specifications
Existing glass is single pane - non insulated
There is little or no weather stripping on any of the doors
It is assumed that all existing paint is lead based
Exterior mullions have heavy paint on them - The mullions are splitting where paint is missing
Bottom of door units all appear to have soft wood - Once paint is removed more rot may be found

Notes about comments above
Repair = Hardware will not latch, and or lock properly
O.K. = Glass appears to be original
O.K. = Operation of window is in working condition
New Panes = Refers to possible replacement glass - non orginal



THIRD FLOOR PLAN

ALLEN + ASSOCIATES, PA ARCHITECTURE

Marwood Mansion Door and Window Survey

Third Floor

Location	Hardware	Glass	Operation	Other
3A	Repair	5 New Panes	Does not close	Wood Rot - Sash & Jamb
3B				All Plexi-glass Window
3C				Unable to Evaluate
3D	Repair	O.K.	Does not close	Wood Rot - Sash & Jamb
3E	O.K.	2 New Panes	Does not close	Wood Rot - Sash & Jamb
3F	Replacement	O.K.	Does not close	Hardware does not lock
3G	Does not lock	O.K.	Has gaps	Ext. mullions loose
3H	Does not lock	2 New Panes	O.K.	Wood Rot - Sash & Jamb
3I	O.K.	3 New Panes	O.K.	Soft Wood - Loose Mullions
3J	Repair	2 New Panes	O.K.	Wood Rot
3K				Unable to Evaluate
3L	Repair	5 New Panes	Does not close	Soft Wd. - Sash Split'g - Rot
3M	Repair	3 New Panes	Gaps at Frame	Wood Rot
3N	Repair	2 New Panes	Can't Close	
3O				Unable to Evaluate
3P				Unable to Evaluate
3Q	Repair	3 New Panes	Does not close	Wood Rot - Loose Mullions
3R	Repair	1 New Pane	Does not close	Ext. Mullions Splitting
3S	O.K.	3 new Panes	Does not close	Soft Wd. - Sash Split'g - Rot
3T	Repair	2 New Panes	O.K.	Soft Wd. - Sash Split'g - Rot
3U	Repair	3 New Pane	Loose	Soft Wd. - Sash Split'g - Rot
3V	O.K.	O.K.	Nailed Shut	
3W	Repair	O.K.	Does not close	Soft Wd. - Sash Split'g - Rot
3X	Replacement	3 New Panes	Can't Open	Special Window
3Y	Repair	O.K.	O.K.	

Other notes about third floor doors and windows

All window hardware does not meet ADA specifications
Existing glass is single pane - non insulated
There is little or no weather stripping on any of the doors
It is assumed that all existing paint is lead based
Exterior mullions have heavy paint on them - The mullions are splitting where paint is missing
Bottom of window units all appear to have soft wood - Once paint is removed more rot may be found

Notes about comments above
Repair = Hardware will not latch, and or lock properly
O.K. = Glass appears to be original
O.K. = Operation of window is in working condition
New Panes = Refers to possible replacement glass - non orginal

South Facade

North Facade

East Facade

West Facade

U.S. Department of the Interior

National Park Service
Preservation Assistance Division
Technical Preservation Services

Preservation Briefs: 9

The Repair of Historic Wooden Windows

John H. Myers

The windows on many historic buildings are an important aspect of the architectural character of those buildings. Their design, craftsmanship, or other qualities may make them worthy of preservation. This is self-evident for ornamental windows, but it can be equally true for warehouses or factories where the windows may be the most dominant visual element of an otherwise plain building (see figure 1). Evaluating the significance of these windows and planning for their repair or replacement can be a complex process involving both objective and subjective considerations. The *Secretary of the Interior's Standards for Rehabilitation*, and the accompanying guidelines, call for respecting the significance of original materials and features, repairing and retaining them wherever possible, and when necessary, replacing them in kind. This Brief is based on the issues of significance and repair which are implicit in the standards, but the primary emphasis is on the technical issues of planning for the repair of windows including evaluation of their physical condition, techniques of repair, and design considerations when replacement is necessary.

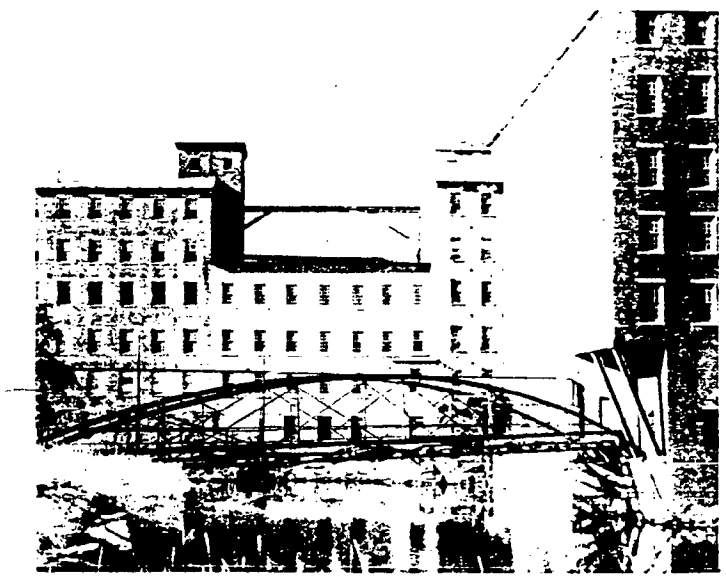


Figure 1. *Windows are frequently important visual focal points, especially on simple facades such as this mill building. Replacement of the multipane windows here with larger panes could dramatically change the appearance of the building. The areas of missing windows convey the impression of such a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

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

Architectural or Historical Significance

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

Historically, the first windows in early American houses were casement windows; that is, they were hinged at the side and opened outward. In the beginning of the eighteenth century single- and double-hung windows were introduced. Subsequently many styles of these vertical sliding sash windows have come to be associated with specific building periods or architectural styles, and this is an important consideration in determining the significance of windows, especially on a local or regional basis. Site-specific, regionally oriented architectural comparisons should be made to determine the significance of windows in question. Although such comparisons may focus on specific window types and their details, the ultimate determination of significance should be made within the context of the whole building, wherein the windows are one architectural element (see figure 2).

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

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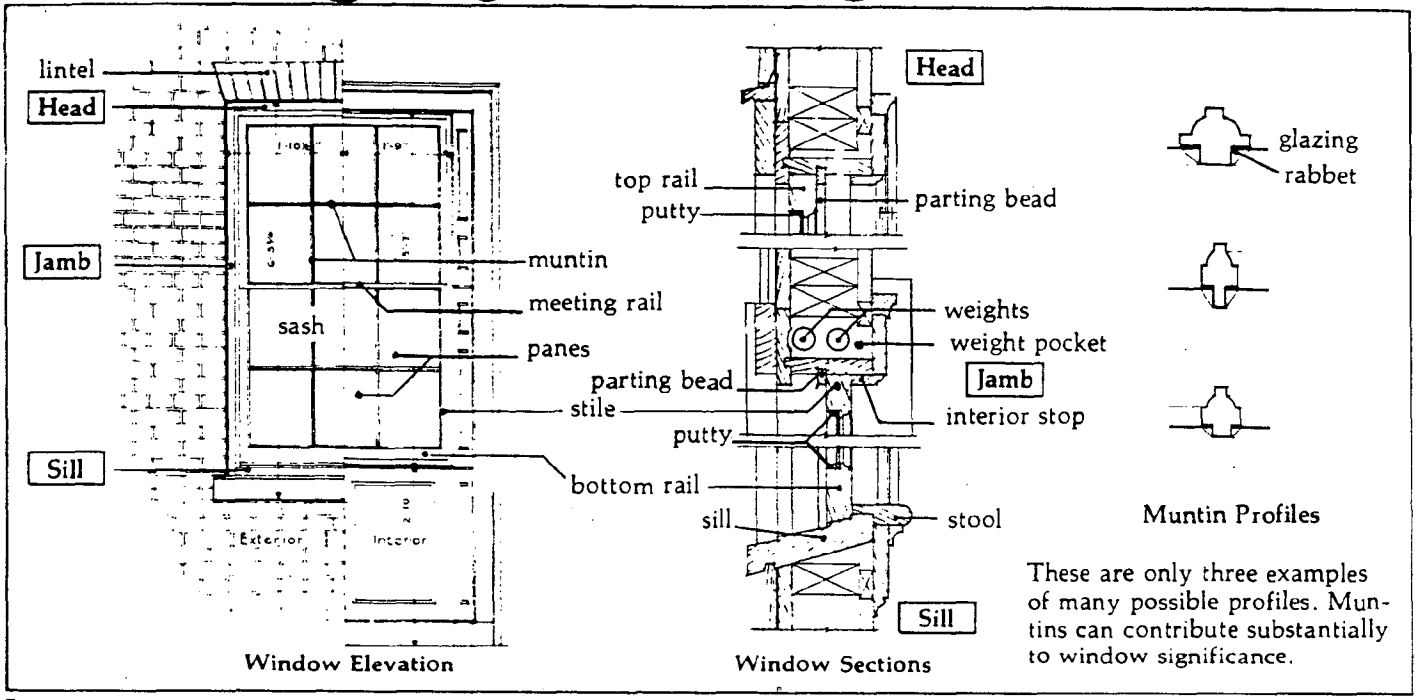

Figure 2. *These drawings of window details identify major components, terminology, and installation details for a wooden double-hung window.*

ceed with planning appropriate treatments, beginning with an investigation of the physical condition of the windows.

Physical Evaluation

The key to successful planning for window treatments is a careful evaluation of existing physical conditions on a unit-by-unit basis. A graphic or photographic system may be devised to record existing conditions and illustrate the scope of any necessary repairs. Another effective tool is a window schedule which lists all of the parts of each window unit. Spaces by each part allow notes on existing conditions and repair instructions. When such a schedule is completed, it indicates the precise tasks to be performed in the repair of each unit and becomes a part of the specifications. In any evaluation, one should note at a minimum, 1) window location, 2) condition of the paint, 3) condition of the frame and sill, 4) condition of the sash (rails, stiles and muntins), 5) glazing problems, 6) hardware, and 7) the overall condition of the window (excellent, fair, poor, and so forth).

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

Each window should be examined for operational soundness beginning with the lower portions of the frame and sash. Exterior rainwater and interior condensation can flow downward along the window, entering and collecting at points where the flow is blocked. The sill, joints between the sill and jamb, corners of the bottom rails and muntin joints are typical points where water collects and deterioration begins (see figure 3). The operation of the window (continuous opening and closing over the years and seasonal temperature changes) weakens the joints, causing movement and slight separation. This process makes the joints more vulnerable to water which is readily absorbed into the end-grain of the wood. If severe deterioration exists in these areas, it will usually be apparent on visual inspection, but other less severely deteriorated areas of the wood may be tested by two traditional methods using a small ice pick.

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

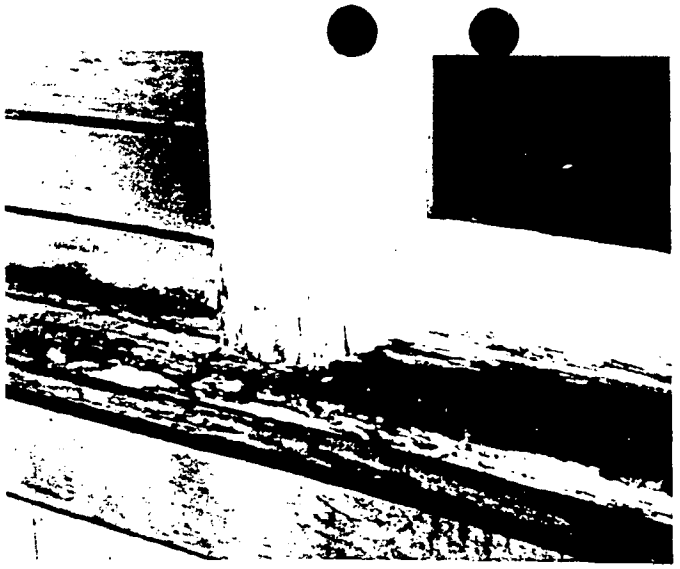

Figure 3. *Deterioration of poorly maintained windows usually begins on horizontal surfaces and at joints where water can collect and saturate the wood. The problem areas are clearly indicated by paint failure due to moisture. Photo: Baird M. Smith, AIA*

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

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

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

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

Repair Class I: Routine Maintenance

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

The routine maintenance required to upgrade a window to "like new" condition normally includes the following steps: 1) some degree of interior and exterior paint removal, 2) removal and repair of sash (including reglazing where necessary), 3) repairs to the frame, 4) weatherstripping and reinstallation of the sash, and 5) repainting. These operations are illustrated for a typical double-hung wooden window (see figures 4a-f), but they may be adapted to other window types and styles as applicable.

Historic windows have usually acquired many layers of paint over time. Removal of excess layers or peeling and flaking paint will facilitate operation of the window and restore the clarity of the original detailing. Some degree of paint removal is also necessary as a first step in the proper surface preparation for subsequent refinishing (if paint color analysis is desired, it should be conducted prior to the onset of the paint removal). There are several safe and effective techniques for removing paint from wood, depending on the amount of paint to be removed. Several techniques such as scraping, chemical stripping, and the use of a hot air gun are discussed in "Preservation Briefs: 10 Paint Removal from Historic Woodwork" (see Additional Reading section at end).

Paint removal should begin on the interior frames, being careful to remove the paint from the interior stop and the parting bead, particularly along the seam where these stops meet the jamb. This can be accomplished by running a utility knife along the length of the seam, breaking the paint bond. It will then be much easier to remove the stop, the parting bead and the sash. The interior stop may be initially loosened from the sash side to avoid visible scarring of the wood and then gradually pried loose using a pair of putty knives, working up and down the stop in small increments (see figure 4b). With the stop removed, the lower or interior sash may be withdrawn. The sash cords should be detached from the sides of the sash and their ends may be pinned with a nail or tied in a knot to prevent them from falling into the weight pocket.

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

The sash can be stripped of paint using appropriate techniques, but if any heat treatment is used (see figure 4c), the glass should be removed or protected from the sudden temperature change which can cause breakage. An

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

Figure 4b. *After removing paint from the seam between the interior stop and the jamb, the stop can be pried out and gradually worked loose using a pair of putty knives as shown. To avoid visible scarring of the wood, the sash can be raised and the stop pried loose initially from the outer side. Photo: John H. Myers*

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

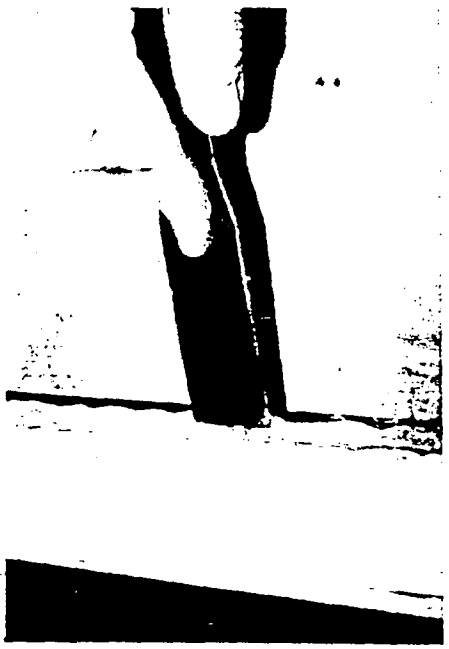

Figure 4d. *Reglazing or replacement of the putty requires that the existing putty be removed manually, the glazing points be extracted, the glass removed, and the back putty scraped out. To reglaze, a bed of putty is laid around the perimeter of the rabbet, the pane is pressed into place, ng points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

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

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

overlay of aluminum foil on gypsum board or asbestos can protect the glass from such rapid temperature change. It is important to protect the glass because it may be historic and often adds character to the window. Deteriorated putty should be removed manually, taking care not to damage the wood along the rabbet. If the glass is to be removed, the glazing points which hold the glass in place can be extracted and the panes numbered and removed for cleaning and reuse in the same openings. With the glass panes out, the remaining putty can be removed and the sash can be sanded, patched, and primed with a preservative primer. Hardened putty in the rabbets may be softened by heating with a soldering iron at the point of removal. Putty remaining on the glass may be softened by soaking the panes in linseed oil, and then removed with less risk of breaking the glass. Before reinstalling the glass, a bead of glazing compound or linseed oil putty should be laid around the rabbet to cushion and seal the glass. Glazing compound should only be used on wood which has been brushed with linseed oil and primed with an oil based primer or paint. The pane is then pressed into place and the glazing points are pushed into the wood around the perimeter of the pane (see figure 4d). The final glazing compound or putty is applied and beveled to complete the seal. The sash can be refinished as desired on the inside and painted on the outside as soon as a "skin" has formed on the putty, usually in 2 or 3 days. Exterior paint should cover the beveled glazing compound or putty and lap over onto the glass slightly to complete a weathertight seal. After the proper curing times have elapsed for paint and putty, the sash will be ready for reinstallation.

While the sash are out of the frame, the condition of the wood in the jamb and sill can be evaluated. Repair and refinishing of the frame may proceed concurrently with repairs to the sash, taking advantage of the curing times for the paints and putty used on the sash. One of the most common work items is the replacement of the sash cords with new rope cords or with chains (see figure 4e). The weight pocket is frequently accessible through a door on the face of the frame near the sill, but if no door exists, the trim on the interior face may be removed for access. Sash weights may be increased for easier window operation by elderly or handicapped persons. Additional repairs to the frame and sash may include consolidation or replacement of deteriorated wood. Techniques for these repairs are discussed in the following sections.

The operations just discussed summarize the efforts necessary to restore a window with minor deterioration to "like new" condition (see figure 4f). The techniques can be applied by an unskilled person with minimal training and experience. To demonstrate the practicality of this approach, and photograph it, a Technical Preservation Services staff member repaired a wooden double-hung, two over two window which had been in service over ninety years. The wood was structurally sound but the window had one broken pane, many layers of paint, broken sash cords and inadequate, worn-out weatherstripping. The staff member found that the frame could be stripped of paint and the sash removed quite easily. Paint, putty and glass removal required about one hour for each sash, and the reglazing of both sash was accomplished in about one hour. Weatherstripping of the sash and frame, replacement of the sash cords and reinstallation of the sash, parting bead, and stop required an hour and a half. These times refer only to individual operations: the entire 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.

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 semi-rigid epoxies which saturate the porous decayed wood and then harden. The surface of the consolidated wood can then be filled with a semi-rigid epoxy patching compound, sanded and painted (see figure 5). Epoxy patching compounds can be used to build up

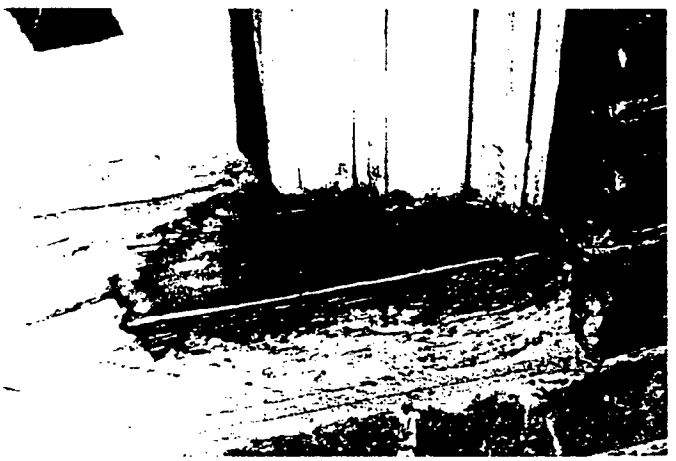

Figure 5. *This illustrates a two-part epoxy patching compound used to fill the surface of a weathered sill and rebuild the missing edge. When the epoxy cures, it can be sanded smooth and painted to achieve a durable and waterproof repair. Photo: John H. Myers*

missing sections or decayed ends of members. Profiles can be duplicated using hand molds, which are created by pressing a ball of patching compound over a sound section of the profile which has been rubbed with butcher's wax. This can be a very efficient technique where there are many typical repairs to be done. Technical Preservation Services has published *Epoxies for Wood Repairs in Historic Buildings* (see Additional Reading section at end), which discusses the theory and techniques of epoxy repairs. The process has been widely used and proven in marine applications; and proprietary products are available at hardware and marine supply stores. Although epoxy materials may be comparatively expensive, they hold the promise of being among the most durable and long lasting materials available for wood repair.

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

Repair Class III: Splices and Parts Replacement

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

The repairs discussed in this section involve window frames which may be in very deteriorated condition, possibly requiring removal; therefore, caution is in order. The actual construction of wooden window frames and sash is not complicated. Pegged mortise and tenon nits can be disassembled easily, *if* the units are out of the uilding. 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.

Look, David W. "Preservation Briefs: 10 Paint Removal from Historic Woodwork." Washington, DC: Technical Preservation Services, U.S. Department of the Interior, forthcoming.

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. 024-016-00095-1), 1978.

Rehab Right. Oakland, California: City of Oakland Planning Department, 1978 (pp. 78-83).

"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.

NCPTT Notes, US Dept of the Interior, NPS

Testing the energy performance of wood windows in cold climates

During rehabilitation of historic buildings, the question of how to treat the windows is inevitably raised. The desire to retain the historic character of the windows and the actual historic material of which the windows are made is seen as competing with the desire to improve energy performance and decrease long term window maintenance costs. Replacement of window sash, the use of windows inserted inside existing jambs or whole window replacement is often advocated in the name of energy efficiency. Other approaches to improve the energy efficiency of historic windows retain all or part of the existing sash and balance system and typically include exterior triple-track storm window rehabilitation or replacement. Some building renovations only include storm window repair or replacement and prime window maintenance. To date there is little data quantifying the impact on annual heating costs of these varied upgrade options or comparing estimated first year energy savings to installed costs. A recent study was undertaken to test the assumption that historic windows can be retained and upgraded to approach the thermal efficiency of replacement sash or window inserts.

First-year heating energy costs associated with windows before and after upgrades were used to assess energy improvements. Energy costs resulting from thermal losses associated with a window are due to both non-infiltrative and infiltrative losses. Non-infiltrative thermal losses are due to radiation through the glazing, conduction through the window materials and convection of the air layer next to the window materials. These losses were modeled using WINDOW 4.1, a computer program simulating window thermal performance.

> "the decision to rehabilitate or replace a window generally should be made on the basis of considerations other than energy cost savings"

Infiltrative thermal losses through a window arise from air moving around the sash and jamb as well as through any cracks or gaps associated with the window. These losses were investigated by testing 151 windows in northern and central Vermont during 1995 and 1996. Of the 151 windows tested, 64 were in original condition and 87 were of various upgrades. The windows were characterized using standard fan pressurization techniques to obtain the effective leakage area and sash air leakage rate. Data obtained from tests conducted on the 64 windows in original condition was used to model the energy performance of tight and loose fitting windows as well as "typical" windows prior to up-grade. The estimated annual energy costs of these windows were used to estimate first year energy cost savings for the various upgrade types.

Costs of window upgrades were determined primarily by interviewing developers of affordable housing in Vermont.

The study found that the savings of annual heating costs were similar for a wide range of window upgrade options and installation costs. If properly installed, virtually all upgrade options studied produced savings in a similar range. In general, savings were small, and significantly less than the cost of installing the upgrade, particularly when the energy performance of the existing window was similar to a typical or tight fitting window.

Preparing exterior windows for fan pressurization test.

Given the above, the decision to rehabilitate or replace a window generally should be made on the basis of considerations other than energy cost savings. It should be noted that this decision is not clear cut. Some upgrades that retain the original sash make major sash modifications while some replacement upgrades mimic historic windows effectively. There is a continuum between replacing and rehabilitating windows where the developer must find a solution appropriate to the particular context while considering non-energy issues such as maintenance, ease of operation, historic character, and lead abatement.

This article summarizes a report to the State of Vermont, Division for Historic Preservation, by the Vermont Energy Investment Corporation. The project was supported by the 1994 PTT Grant program. Copies of the report may be obtained from Mark Gilberg, Research Coordinator, NCPTT.

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Montgomery County Government

RETURN TO: Department of Environmental Protection
Division of Development Services and Regulation
250 Hungerford Drive, Rockville, Maryland 20850
(301) 217-6370

Historic Preservation Commission
(301) 495-4570

APPLICATION FOR HISTORIC AREA WORK PERMIT

CONTACT PERSON Jody Kline (301) 762-5212 or Scott Allen (410) 783-1574

DAYTIME TELEPHONE NO. ( )

TAX ACCOUNT # 10/2960050

NAME OF PROPERTY OWNER Dr. Yonus Zegeye DAYTIME TELEPHONE NO. c/o (301) 762-5212

ADDRESS c/o 200-B Monroe Street, Rockville, Maryland 20850
CITY STATE ZIP CODE

CONTRACTOR Dr. Yonus Zegeye TELEPHONE NO. ( )

CONTRACTOR REGISTRATION NUMBER N/A

AGENT FOR OWNER Jody Kline (301) 762-5212 Scott Allen (410) 783-1574 DAYTIME TELEPHONE NO. ( )

LOCATION OF BUILDING/PREMISE

HOUSE NUMBER 11231 STREET River View Drive

TOWN/CITY Potomac NEAREST CROSS STREET River Road

LOT 74 BLOCK ____ SUBDIVISION MARWOOD

LIBER 3278 FOLIO 157 PARCEL ____

PART ONE: TYPE OF PERMIT ACTION AND USE

1A. CIRCLE ALL APPLICABLE:

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

CIRCLE ALL APPLICABLE:

A/C Slab Room Addition Porch Deck Fireplace Shed Solar Woodburning Stove Fence/Wall *(complete Section 4)* Single Family Other Replace windows

1B. CONSTRUCTION COST ESTIMATE $ 119,000.00

1C. IF THIS IS A REVISION OF A PREVIOUSLY APPROVED ACTIVE PERMIT SEE PERMIT # 9610150207

PART TWO: COMPLETE FOR NEW CONSTRUCTION AND EXTEND/ADDITIONS

2A. TYPE OF SEWAGE DISPOSAL 01 (x) WSSC 02 ( ) SEPTIC 03 ( ) OTHER ____

2B. TYPE OF WATER SUPPLY 01 (X) WSSC 02 ( ) WELL 03 ( ) OTHER ____

PART THREE: COMPLETE ONLY FOR FENCE/RETAINING WALL

3A. HEIGHT ____ feet ____ inches

3B. INDICATE WHETHER THE FENCE OR RETAINING WALL IS TO BE CONSTRUCTED ON ONE OF THE FOLLOWING LOCATIONS:

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

I HEREBY CERTIFY THAT I HAVE THE AUTHORITY TO MAKE THE FOREGOING APPLICATION, THAT THE APPLICATION IS CORRECT, AND THAT THE CONSTRUCTION WILL COMPLY WITH PLANS APPROVED BY ALL AGENCIES LISTED AND I HEREBY ACKNOWLEDGE AND ACCEPT THIS TO BE A CONDITION FOR THE ISSUANCE OF THIS PERMIT.

DR. YONUS ZEGEYE Jody S. Kline December 19, 1996
Signature of owner or authorized agent Date

Jody S. Kline

APPROVED ____ For Chairperson, Historic Preservation Commission

DISAPPROVED X Signature [signature] Date 1/8/97

APPLICATION/PERMIT NO: 961219 0063 DATE FILED: 12/19/96 DATE ISSUED: ____

SEE REVERSE SIDE FOR INSTRUCTIONS

12/6-1-97A

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

1. **WRITTEN DESCRIPTION OF PROJECT**

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

   The "Marwood" Mansion and the surrounding lot (Lot 74) have been designated as an historic resource because of its architectural distinction and for its historical significance.

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

   The owner proposes to replace all existing windows with mill-built windows constructed from mahogany wood (as are the existing windows) and designed as close as possible to the existing windows as modern technology will permit. The owner believes that these improvements will have no adverse affect on the historic integrity or appearance of the main structure of the environmental setting.

2. **SITE PLAN**

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

   a. the scale, north arrow, and date;

   b. dimensions of all existing and proposed structures; and

   c. site features such as walkways, driveways, fences, ponds, streams, trash dumpsters, mechanical equipment, and landscaping.

3. **PLANS AND ELEVATIONS**

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

   a. Schematic construction plans, with marked dimensions, indicating location, size and general type of walls, window and door openings, and other fixed features of both the existing resource(s) and the proposed work.

   b. Elevations (facades), with marked dimensions, clearly indicating proposed work in relation to existing construction and, when appropriate, context. All materials and fixtures proposed for the exterior must be noted on the elevations drawings. **An existing and a proposed elevation drawing of each facade affected by the proposed work is required.**

4. **MATERIALS SPECIFICATIONS**

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

5. **PHOTOGRAPHS**

   a. Clearly labeled photographic prints of each facade of existing resource, including details of the affected portions. All labels should be placed on the front of photographs.

   b. Clearly label photographic prints of the resource as viewed from the public right-of-way and of the adjoining properties. All labels should be placed on the front of photographs.

6. **TREE SURVEY**

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

7. **ADDRESSES OF ADJACENT AND CONFRONTING PROPERTY OWNERS**

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

   Please print (in blue or black ink) or type this information on the following page. Please stay within the guides of the template, as this will be photocopied directly onto mailing labels.

HISTORIC PRESERVATION COMMISSION STAFF REPORT

Address: 11231 River View Drive

Meeting Date: 1/08/97

Resource: Marwood (Master Plan Site #29/6-1)

Review: HAWP

Case Number: 29/6-1-97A

Tax Credit: None

Public Notice: 12/24/96

Report Date: 12/31/96

Applicant: Dr. Yonus Zegeye

Staff: Perry Kephart

PROPOSAL: Replace windows and doors.

RECOMMEND: Deny

BACKGROUND

Marwood was designated in 1993 as an individual Master Plan site both for its architectural distinction and for its historic significance. The resource was the subject of a Preliminary Consultation on December 2, 1996 and December 18, 1996.

importance of windows ship

Review of Architectural/Historical Information:

Built in 1931, the French Renaissance style mansion is an outstanding example of the principles of l'Ecole des Beaux Arts being employed in the design of an American country house. The architect, John J. Whelan, graduated from Princeton with a B.S. in architecture in 1925. There, and in Paris and Rome, Whelan studied what came to be known as Academic Eclecticism wherein "the best architecture of the past was integrated with modern uses, needs, materials, and technology" (Massey and Maxwell, House Styles In America).

In 1930, Samuel K. Martin, grandson and heir of Otto Young, a Chicago real estate entrepreneur, and his wife, Jane Catherine Martin, bought a 192 acre farm in Montgomery County, near Potomac. The property included a tract of land overlooking a giant bend in the Potomac River. The Martins chose John J. Whelan as the architect for their country estate. Whelan was already well known for his designs of various styles of grand urban homes and embassies in the Kalorama area of the District of Columbia in the late 1920's. The Martins particularly admired the new Georgian style Norwegian Legation, 3401 Massachusetts Avenue, that Whelan had completed in 1930.

The estate was occupied by the Martin family for only two years. In 1934, it was leased as a summer home to Joseph P. Kennedy, the first Chairman of the Securities and Exchange Commission, for the use of his family, including John, Robert and Edward Kennedy. After the

death of Martin, his widow sold the property in 1943 to H. Grady Gore. Gore's family owned the farm until 1995. Franklin Delano Roosevelt was a frequent visitor and it was for him that an elevator was installed. In later years, members of the Eisenhower, Nixon and Reagan administrations were entertained on a regular basis.

Staff would note that Marwood is an important example of the Beaux-Arts teaching of formal symmetry; and of being able to discern the entrance. Context was all important. Virginia and Lee McAlester, in A Field Guide to American Houses, comment:

> The term "Beaux Arts" is used by architectural historians in two different senses. Some use it to describe the entire 1885-1920 period of elaborate eclectic styles because these tended to be advocated by Americans who studied at France's l'Ecole des Beaux-Arts. A more limited meaning, followed here, stresses only one eclectic tradition among the many that were then popular. This is based on classical precedents elaborated by lavish decorative detailing, and was perhaps the most typical of the many styles inspired by study at the Ecole. More than any other style (except perhaps the Chateauesque), the Beaux Arts expressed the taste and values of America's industrial barons of the turn of the century. In those pre-income tax days, great fortunes were proudly displayed in increasingly ornate and expensive houses.

Marwood is an extremely intact remnant of architectural history. It is also, in staff's opinion, a clearly thought out design. It is of vital importance that the statements which the architect made so clearly be preserved. These major architectural themes appear to be that:

- Both the east (driveway) and west (river) facades are of **equal** importance. The building was designed with two "front" facades that are substantially identical in design. The river front is given two extra chimney pieces in mid-roof. (One of the chimneys serves the library and master bedroom, the other chimney piece is fake, in the interests of symmetry.) These serve to anchor the building to the high bluff on which the house is built. When seen from the river, the four chimneys add visual weight to the facade. Major alteration of either facade would destroy the balance of the design.

  The statement of symmetry by the architect is, in effect, underlined by the lack of attention to symmetry between the two side facades, which, though symmetrical in themselves, do not match each other or the principal sides.

- The building is closely connected to its natural setting by the series of openings to the outside. The ground floor from the outside looks like a pavilion with long glass doors opening directly into all the rooms on both sides. The proportions of the windows are long and narrow. Because the windows are on both sides of large, open interior spaces - particularly the central entry hall - one can see from one side of the building through to the other, giving the otherwise massive building an airiness and openness.

- In comparison with urban examples of the Beaux Arts style, Marwood has a simplicity of detailing which is consistent with its role as a country estate. The mascarons above all the windows and doors, the projecting center bay, two statue niches, wrought iron mezzanine balconies, and quoins are the extent of the decoration - somewhat restrained for a period and style of extravagant detail.

Fashioned after Malmaison (Josephine's retreat near Versailles), Marwood is clearly differentiated from its urban Beaux Arts counterparts in nearby Washington. The often extravagant entryways that pull the visitor inside the edifice, such as seen on the Norwegian Legation, are absent at Marwood. For a city dwelling, rusticating the ground floor facade, and placing the principal window treatments on the second level, pulled attention away from the street level and to the importance of the socializing areas high, as it were, above and away from the street life outside. At Marwood, the ground floor is given principal treatment. Access to the country setting is emphasized with french doors opening out on all sides, no exterior stairways or porches and an entrance, which, though articulated, does not dominate the other entry points. Also, at Marwood, the ground floor facade is not rusticated. Finally, the elegant limestone surfaces of elegant Beaux Arts townhouses are replaced with rather modest stucco.

The estate was subdivided in the early 1990's. Large houses are now under construction on 40,000-70,000 square foot lots in the woods around the historic resource. The mansion is now situated on a 13.13 acre environmental setting including lawns, a sunken garden, handball court, pool, and pool house (added in 1952) with a circular paved driveway. The historic site is surrounded by second growth forest. The house is beautifully sited on a high bluff with a magnificent view of the Potomac River and Virginia. The original 1931 gatehouse, which included four garage ports, is located at the end of the original driveway near River Road and has been subdivided as a separate property. It is now a separate individual Master Plan site.

On December 30, 1996, the Historic Preservation Commissioners and Staff visited Marwood in order to examine the windows and doors that are the subject of this HAP. A Door and Window Survey was provided by Scott Allen, the architect for the Marwood restoration. A copy of the Survey is attached to this Staff Report

PROPOSAL

The applicant proposes to replace all existing windows and doors with custom-milled double-glazed windows and doors constructed from mahogany wood and designed as closely as possible to replicate existing windows and doors. The major difference in the new windows would be that the muntins would have to be thicker/wider than the originals to contain the double-glazed glass panes.

The applicant's stated desire to replace the windows and doors is to achieve greater energy efficiency. Work on installation of the HVAC system for the house has been delayed until a determination is made as to whether total window/door replacement will be permitted or not.

Although other proposals for the Marwood property were discussed during the two previous preliminary consultations, the only issue before the HPC on 1/8/97 is the replacement of all existing windows and doors. Other proposals may be brought before the HPC at future meetings.

STAFF DISCUSSION

It should be noted that on the first and second floor, the window openings contain french doors opening inwardly. Those on the first floor have a transom overhead. Those on the second floor have an exterior wrought iron railing across the base. On the third floor there are casement windows, also opening inwardly. For the sake of simplicity, all of these architectural elements are referred to as windows in this discussion.

Window replacement in historic structures is a difficult issue which the HPC has faced on numerous occasions. This applicant has clearly thought through their proposal, and staff appreciates the meticulous attention to detail in the window survey prepared by the applicant. In addition, the applicant is specifying a high level of quality in the window units being proposed for replacement of the historic architectural features.

However, the HPC's consistent policy has been that total replacement of original windows in a historic structure should not be permitted unless the existing windows are so deteriorated that renovation of them is impossible. This is particularly true for individually-designated Master Plan sites of the obvious significance and quality of Marwood - these resources should be held to the highest standards for preservation. The HPC has consistently recommended that other options - including interior or exterior storm windows - be the preferred alternative to achieve energy efficiency goals. In addition, the HPC has approved Historic Preservation Property Tax Credits for the appropriate installation of storm windows and doors.

Replacement of windows is typically not permitted because windows are an essential part of the architectural fabric of a building. The goal of historic preservation is not to only keep the general exterior appearance of the historic building intact, but also to **preserve** the materials and architectural components of a structure so that future generations can appreciate the original building - not a substantially replicated building. This same philosophy is why preservation commissions generally discourage the use of replacement building materials of all kinds: artificial siding, columns and architectural details fabricated out of non-historic materials, etc.

In carefully looking that the Marwood windows, it is not apparent- either from the survey or from physical inspection - that the historic windows (and doors) are beyond repair and should be replaced. It is clear that substantially all of them are in need of varying degrees of maintenance. It should also be noted that two first floor french doors were kicked in by vandals and may need to be replaced in kind if they cannot be repaired. Also, one set of windows on the third floor were removed at some point in the past and replaced with a plexiglass panel. These windows will need to be replicated. With these exceptions, all the wood frames, the glass, and the hardware are, in staff's opinion, well worth saving.

Removal of the historic windows is not justified in order to prevent energy loss. Historic windows that have been stripped of extra layers of paint and reworked to fit tightly in their frames, and provided with storm windows, are well within the performance ranges for thermal efficiency of modern windows. In the case of Marwood, custom-made exterior storm windows could be placed on the 1st and 3rd floors. By designing the storm windows to match the existing

screen doors on the 1st floors and the basic window design on the 3rd floor, the architectural integrity and beauty of Marwood would not be diminished. Custom-made exterior storm windows would, in all likelihood be equally or less expensive than the custom mahogany replacement windows currently being proposed.

On the 2nd story, exterior storm windows are not feasible because of the wrought iron railings along the base of each opening. However, operable interior storm windows (that would open inward like storm doors) appear to be feasible if placed on the new interior framing, at a sufficient distance from the existing windows to allow both to be operated.

The replacement of the historic windows also cannot be justified because they are currently not operational. The existing windows could feasibly be brought back into use by standard repair methods, once the sashes have been removed from the frames and are accessible. The frames will require the same degree of repair whether the window sashes are replaced or not, so are not a factor to be considered, although their repair is mandatory in order to insure proper fit. Water leakage problems such as mold and rot will continue to occur with new or historic windows if the sills are not reworked to prevent pooling. Much of the deterioration appears to have occurred because the normal maintenance for all wood windows was neglected for a number of years. Some of the damage appears to have occurred while the house was uninhabited and not heated and should not reoccur now that the house is being brought back into use.

Staff would suggest that the U.S. Department of the Interior Preservation Brief #9, "The Repair of Historic Wooden Windows," be consulted by the applicant - it is attached to this report. Also of interest would be the report to the State of Vermont, Division for Historic Preservation, by the Vermont Energy Investment Corporation on the testing of the energy performance of wood windows in cold climates. A summary of their findings is attached to this report.

STAFF RECOMMENDATION

Staff recommends that the Commission deny the proposal to replace all existing historic windows and/or doors based on Chapter 24A-8(a):

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

Staff further recommends that the applicant explore the construction of custom wood storm windows, interior and/or exterior at noted above, and return to the HPC with a HAP for installation of such storm windows.

(301) 495-4570

APPLICATION FOR HISTORIC AREA WORK PERMIT

CONTACT PERSON Jody Kline (301) 762-5212 or Scott Allen (410) 783-1574

DAYTIME TELEPHONE NO. ( )

TAX ACCOUNT # 10/2960050

NAME OF PROPERTY OWNER Dr. Yonus Zegeye DAYTIME TELEPHONE NO. c/o (301) 762-5212

ADDRESS c/o 200-B Monroe Street, Rockville, Maryland 20850
CITY STATE ZIP CODE

CONTRACTOR Dr. Yonus Zegeye TELEPHONE NO. ( )

CONTRACTOR REGISTRATION NUMBER N/A

AGENT FOR OWNER Jody Kline (301) 762-5212 Scott Allen (410) 783-1574 DAYTIME TELEPHONE NO. ( )

LOCATION OF BUILDING/PREMISE

HOUSE NUMBER 11231 STREET River View Drive

TOWN/CITY Potomac NEAREST CROSS STREET River Road

LOT 74 BLOCK ____ SUBDIVISION MARWOOD

LIBER 3278 FOLIO 157 PARCEL ____

PART ONE: TYPE OF PERMIT ACTION AND USE

1A. CIRCLE ALL APPLICABLE: Construct Extend Alter/Renovate Repair Move Wreck/Raze Install Revocable Revision

CIRCLE ALL APPLICABLE: A/C Slab Room Addition Porch Deck Fireplace Shed Solar Woodburning Stove Fence/Wall *(complete Section 4)* Single Family Other Replace windows

1B. CONSTRUCTION COST ESTIMATE $ 119,000.00

1C. IF THIS IS A REVISION OF A PREVIOUSLY APPROVED ACTIVE PERMIT SEE PERMIT # 9610150207

PART TWO: COMPLETE FOR NEW CONSTRUCTION AND EXTEND/ADDITIONS

2A. TYPE OF SEWAGE DISPOSAL 01 (x) WSSC 02 ( ) SEPTIC 03 ( ) OTHER ____

2B. TYPE OF WATER SUPPLY 01 (x) WSSC 02 ( ) WELL 03 ( ) OTHER ____

PART THREE: COMPLETE ONLY FOR FENCE/RETAINING WALL

3A. HEIGHT ____ feet ____ inches

3B. INDICATE WHETHER THE FENCE OR RETAINING WALL IS TO BE CONSTRUCTED ON ONE OF THE FOLLOWING LOCATIONS:

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

I HEREBY CERTIFY THAT I HAVE THE AUTHORITY TO MAKE THE FOREGOING APPLICATION, THAT THE APPLICATION IS CORRECT, AND THAT THE CONSTRUCTION WILL COMPLY WITH PLANS APPROVED BY ALL AGENCIES LISTED AND I HEREBY ACKNOWLEDGE AND ACCEPT THIS TO BE A CONDITION FOR THE ISSUANCE OF THIS PERMIT.

DR. YONUS ZEGEYE Jody S. Kline December 19, 1996
Signature of owner or authorized agent Date

APPROVED ____ For Chairperson, Historic Preservation Commission

DISAPPROVED ____ Signature ____ Date ____

APPLICATION/PERMIT NO: 9612190063 DATE FILED: 12/19/96 DATE ISSUED: ____

SEE REVERSE SIDE FOR INSTRUCTIONS

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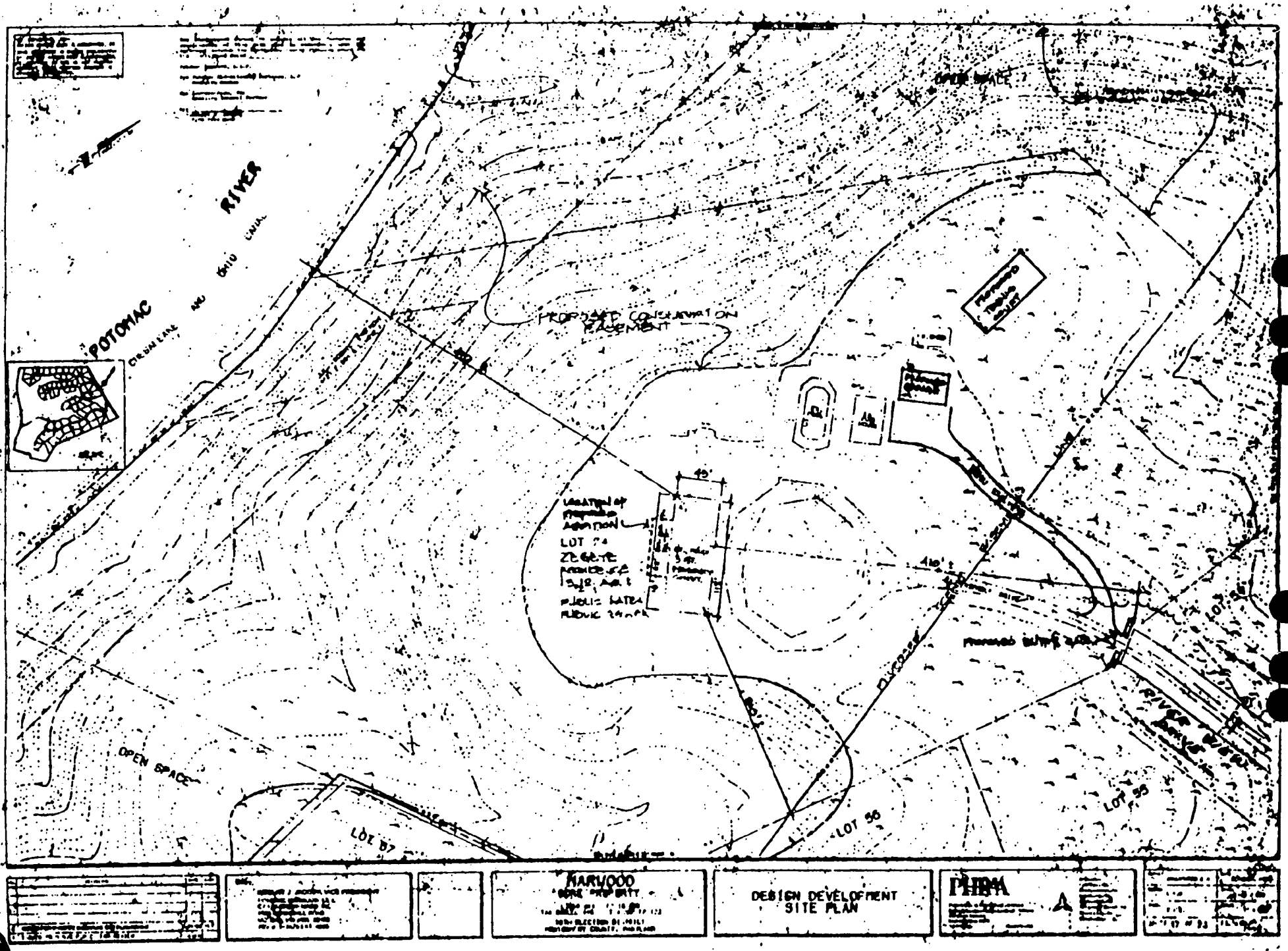
POTOMAC
RIVER
PROPOSED CONSERVATION EASEMENT
OPEN SPACE
LOT 87
LOT 86
LOT 85
LOCATION OF PROPOSED ADDITION
LOT 84
PUBLIC WATER
PUBLIC SEWER
MARWOOD
DESIGN DEVELOPMENT SITE PLAN
PHPA

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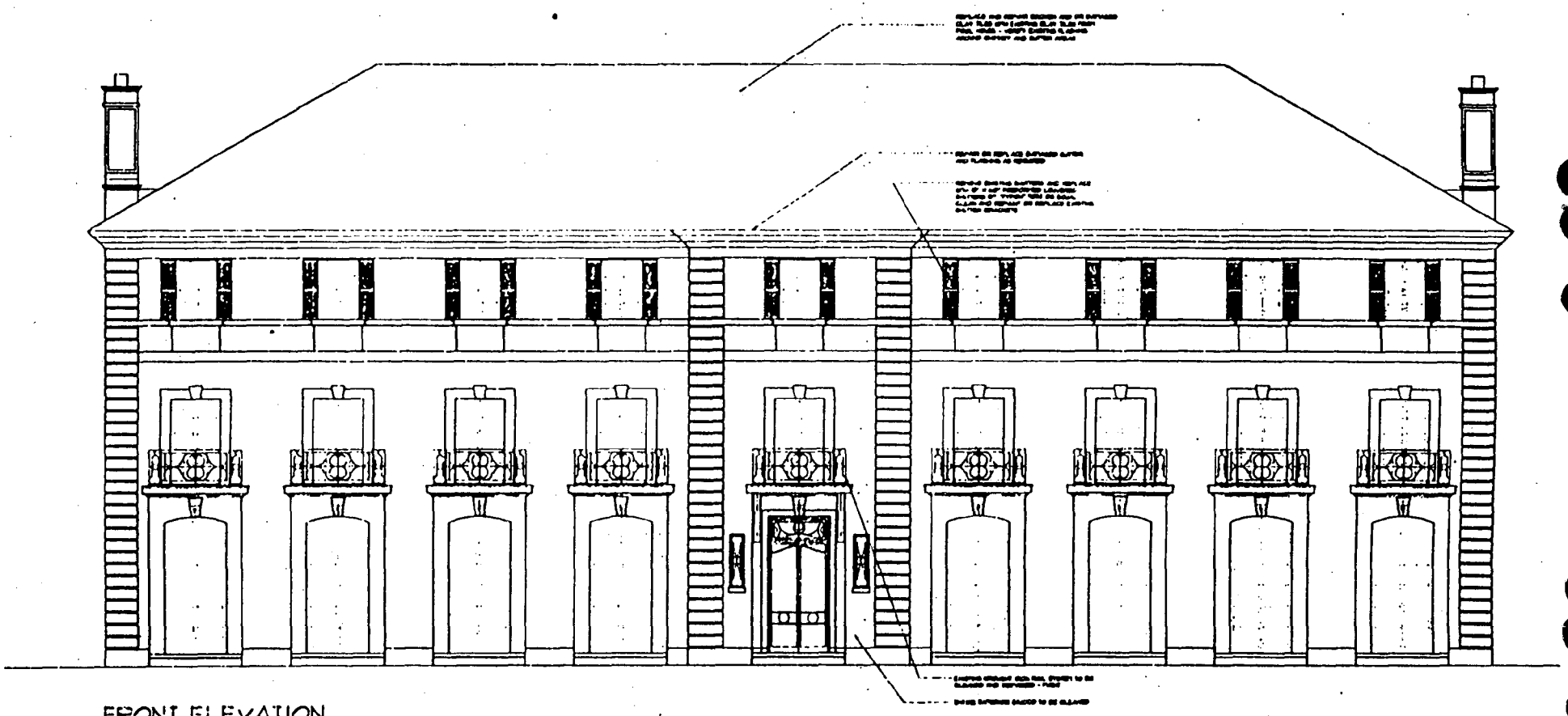

FRONT ELEVATION
(East)

Existing

MARWOOD MANSION
FRONT ELEVATION

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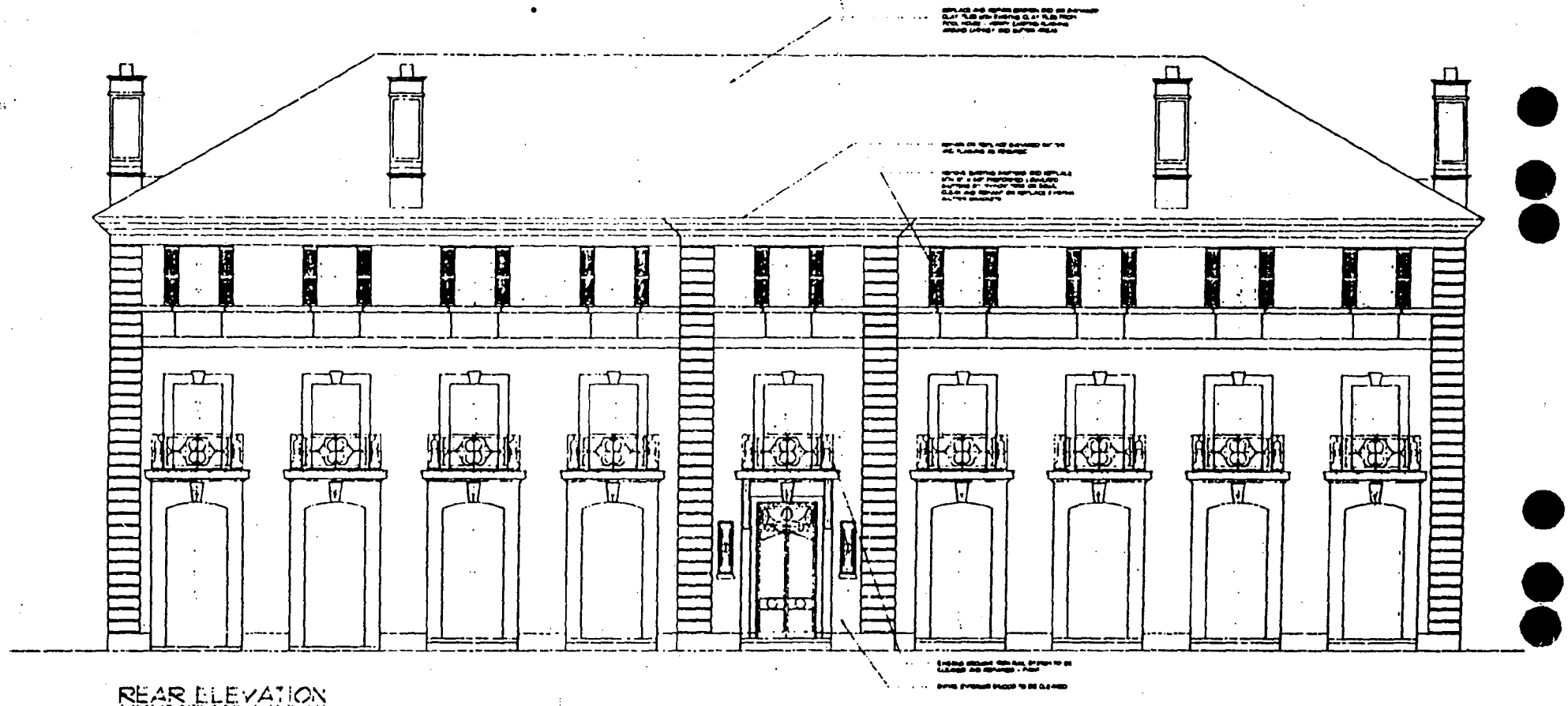

REAR ELEVATION
(West)

Existing

MARWOOD MANSION
REAR ELEVATION

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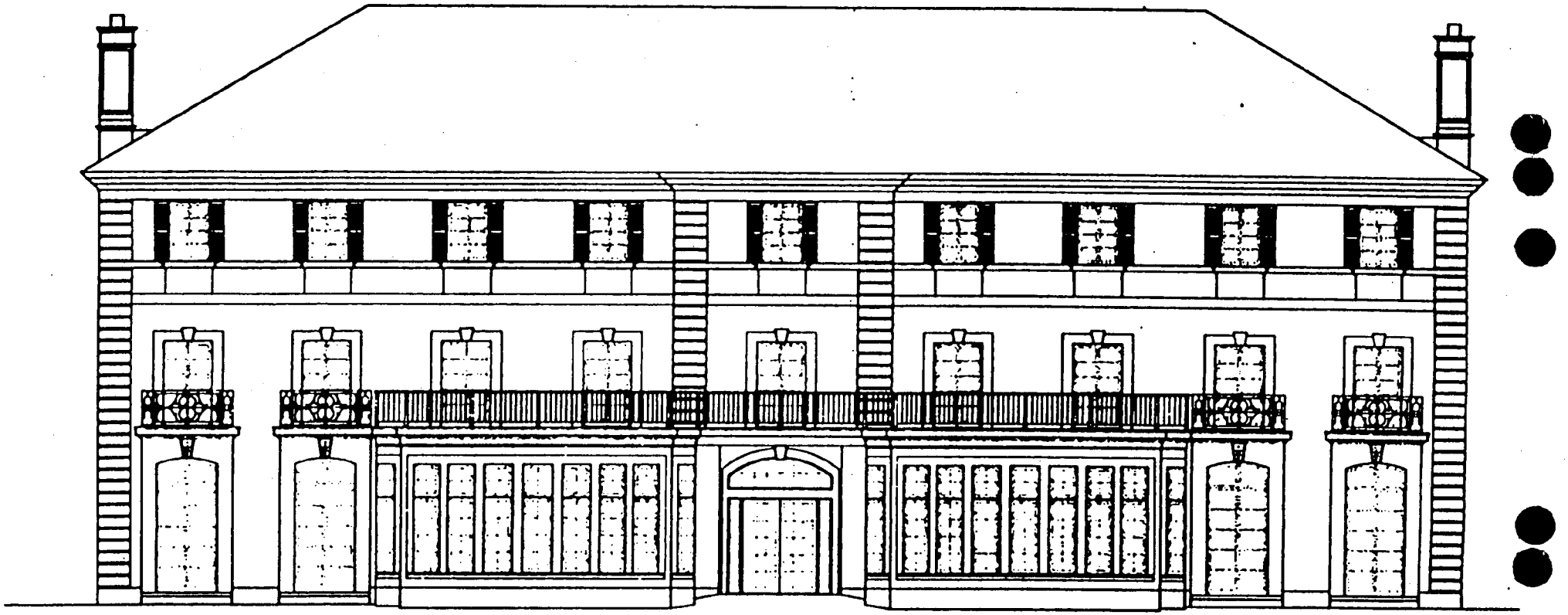
ARCHITECTURE
1201 LIGHT ST. BALTIMORE MD



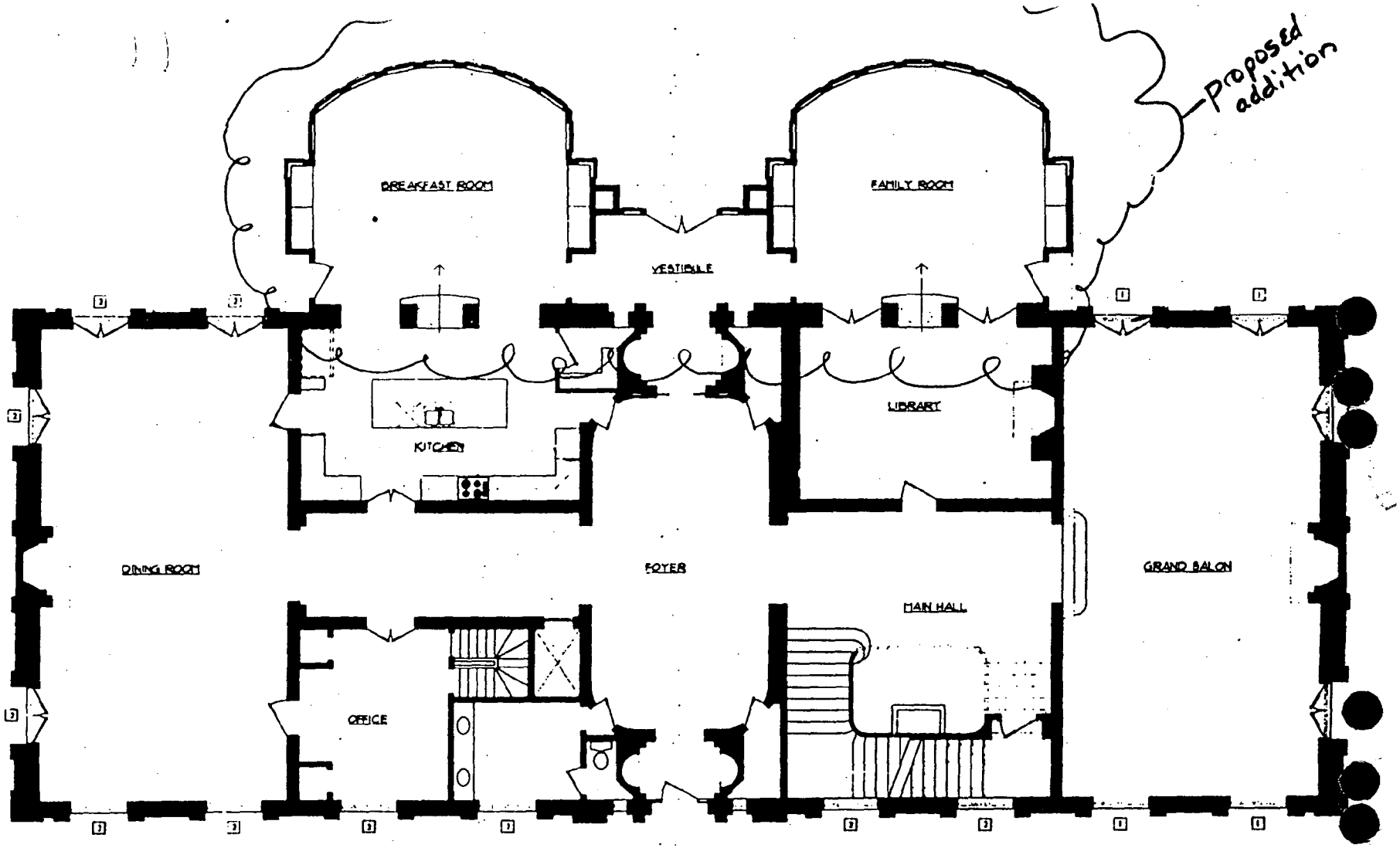
Proposed

ID MANSION

ELVATION 1/WEST

ALLEN + ASSOC., P.A.
ARCHITECTURE
[illegible] LIGHT ST. BALTIMORE, MD. 2120
TEL: (410) 783-[illegible]
FAX: (410) 783-2641

12



FIRST FLOOR

Proposed Addition
MARLWOOD MANSION
FIRST FLOOR PLAN
A3.1

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ARCHITECTURE
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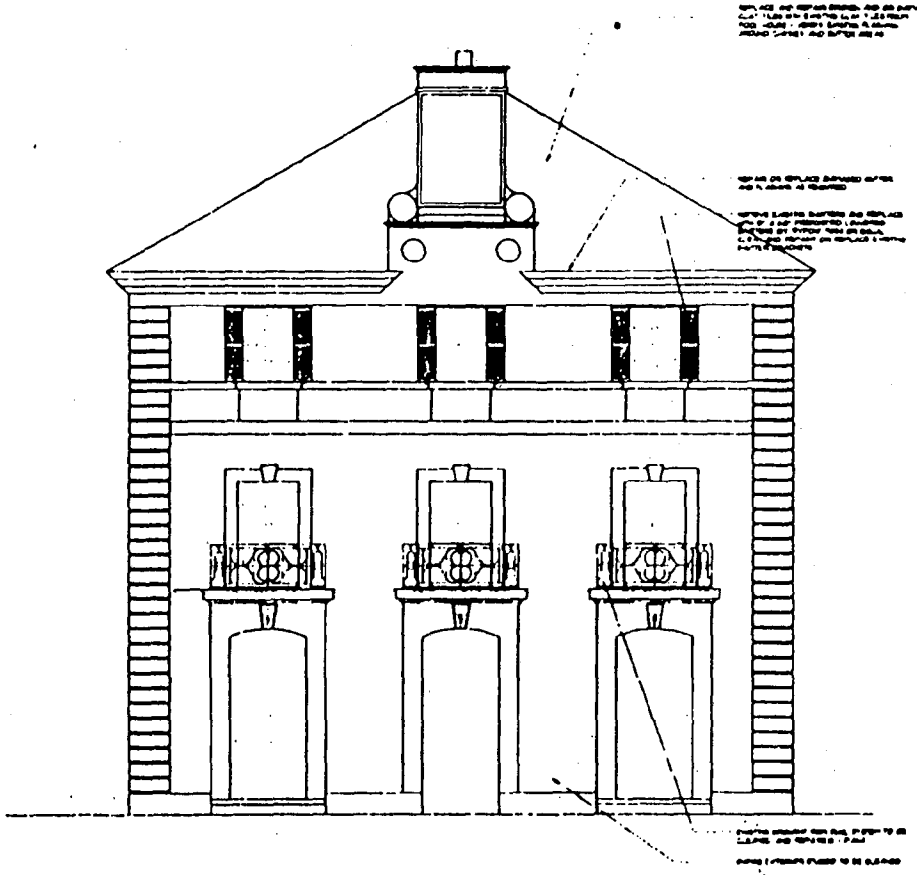
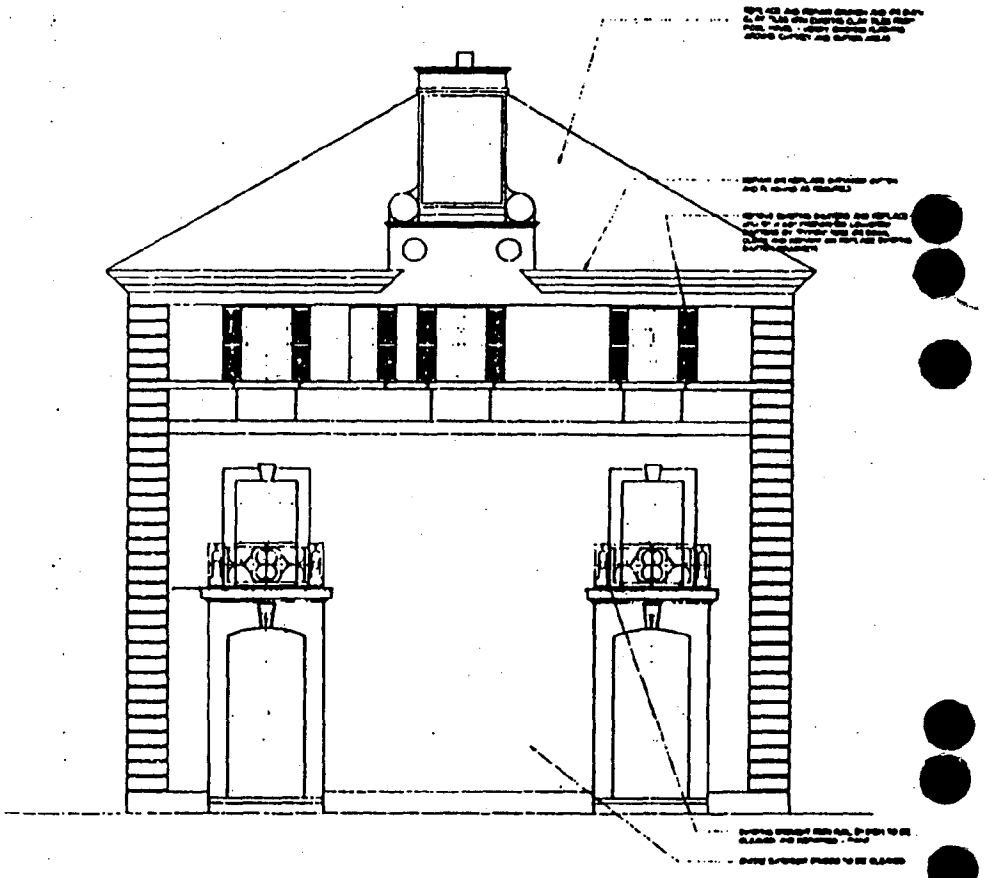


RIGHT SIDE ELEVATION
(North)



LEFT SIDE ELEVATION
(South)

Existing

MARWOOD MANSION
SIDE ELEVATIONS

2

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ARCHITECTURE
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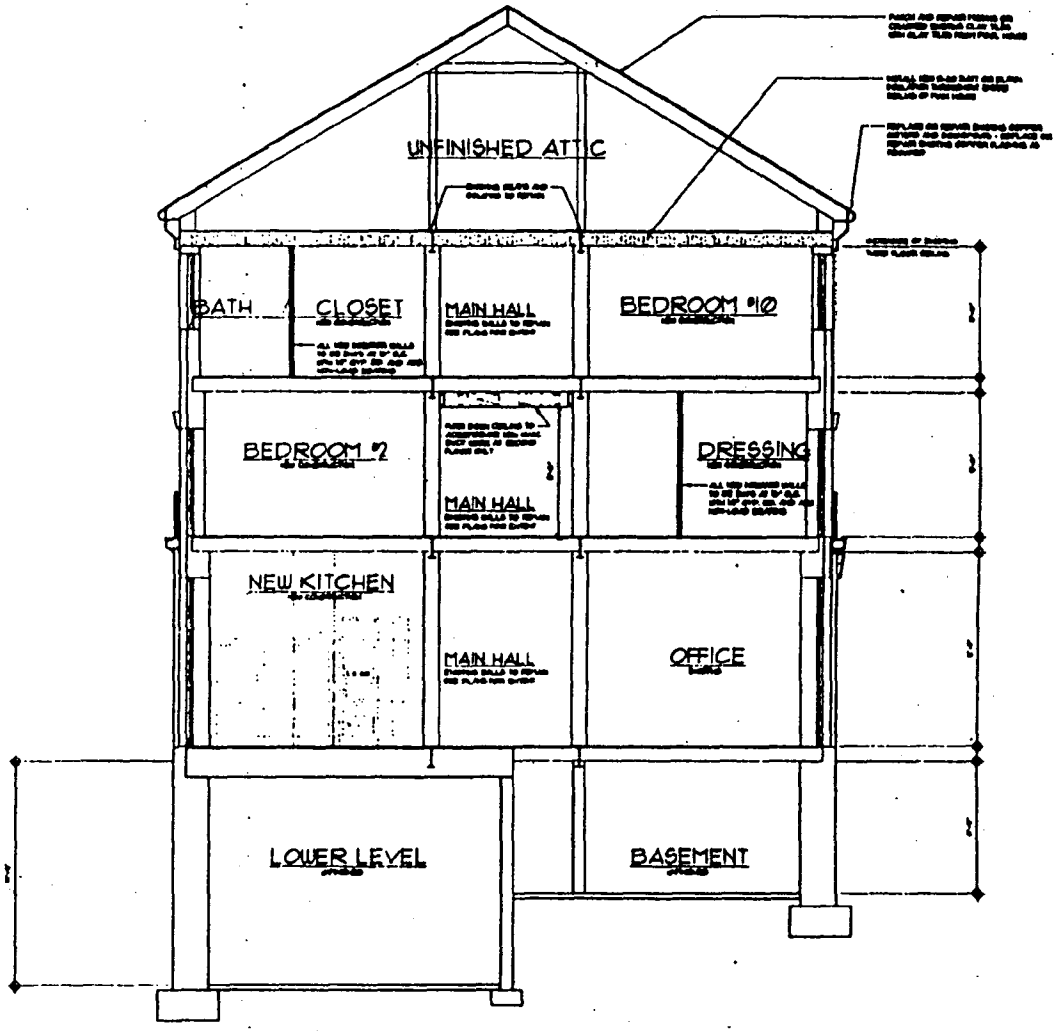
TEL/410/783-8714 21230



BUILDING SECTION

PROPOSED

MARWOOD MANSION

SIDE ELEVATIONS

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ARCHITECTURE
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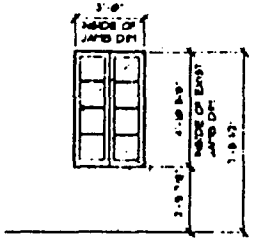
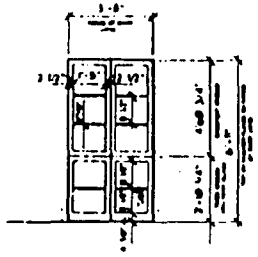


NEW WINDOW TYPE #1

THIRD FLOOR

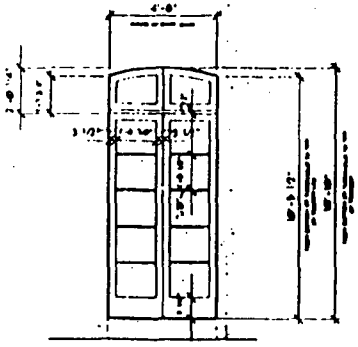
NEW CASEMENT WINDOW TO MATCH EXIST - NEW WINDOW MUST MEET BOMBAY CODE AND SHOULD TRY TO LOOK LIKE EXIST. WINDOWS IN SHAPE, SIZE, AND NUMBER OF MULLIONS



NEW WINDOW TYPE #2

SECOND FLOOR

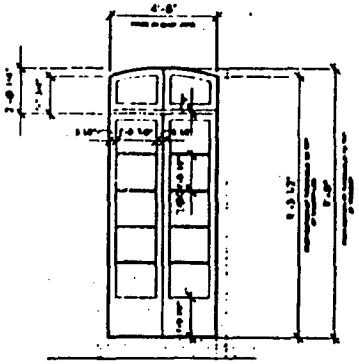
NEW CASEMENT WINDOW TO MATCH EXIST - NEW WINDOW MUST MEET BOMBAY CODE AND SHOULD TRY TO LOOK LIKE EXIST WINDOWS IN SHAPE, SIZE, AND NUMBER OF MULLIONS



NEW DOOR TYPE #2

FIRST FLOOR - ALL BUT LIVING RM

NEW DOORS TO MATCH EXIST WITH TRANSOMS TO MATCH



NEW DOOR TYPE #1

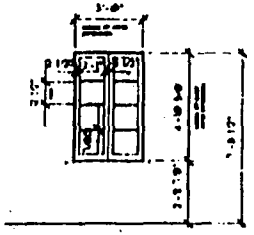
FIRST FLOOR LIVING ROOM

NEW DOORS TO MATCH EXIST WITH TRANSOMS TO MATCH

GENERAL NOTES:

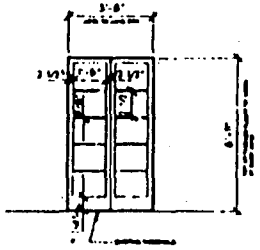
NEW DOORS AND WINDOWS

3/8" = 1'-0"



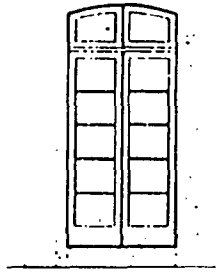
EXIST. WINDOW TYPE #1

THIRD FLOOR



EXIST. DOOR TYPE #3

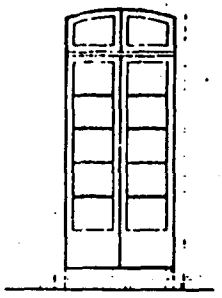
SECOND FLOOR



EXIST. DOOR TYPE #2

FIRST FLOOR - ALL BUT LIVING RM.

SEE ABOVE FOR ALL DIMENSIONS



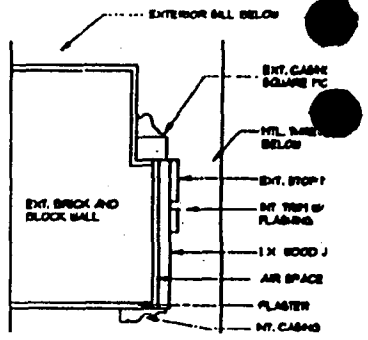
EXIST. DOOR TYPE #1

FIRST FLOOR LIVING ROOM

SEE ABOVE FOR ALL DIMENSIONS

EXISTING DOORS AND WINDOWS

3/8" = 1'-0"

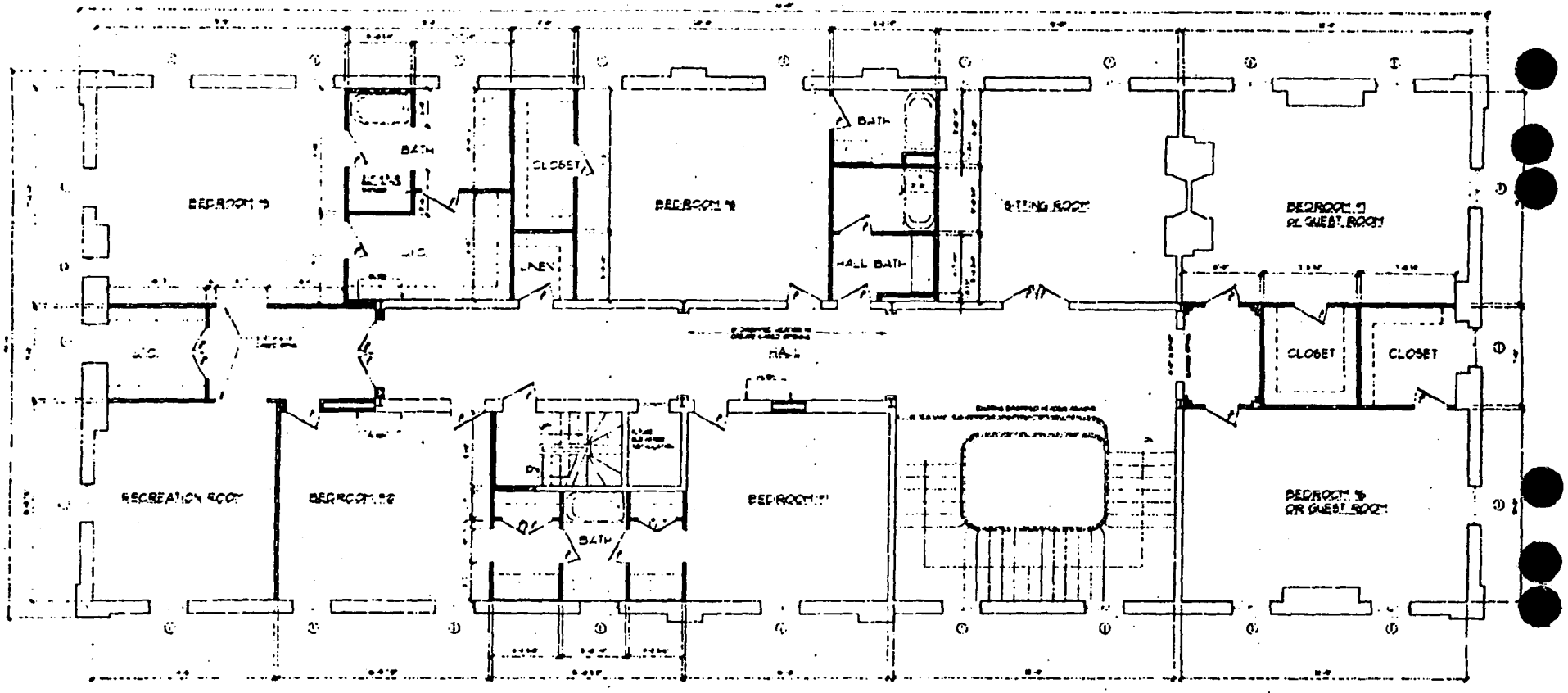


Proposed

MARWOOD MANSION

WINDOW / DOOR DETAILS

ALLEN + ASSOC., P.A.
ARCHITECTURE
801 LIGHT ST. BALTIMORE MD. 21230
TEL/410/783-1514
FAX/410/783-7641



THIRD FLOOR PLAN

Proposed

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ARCHITECTURE

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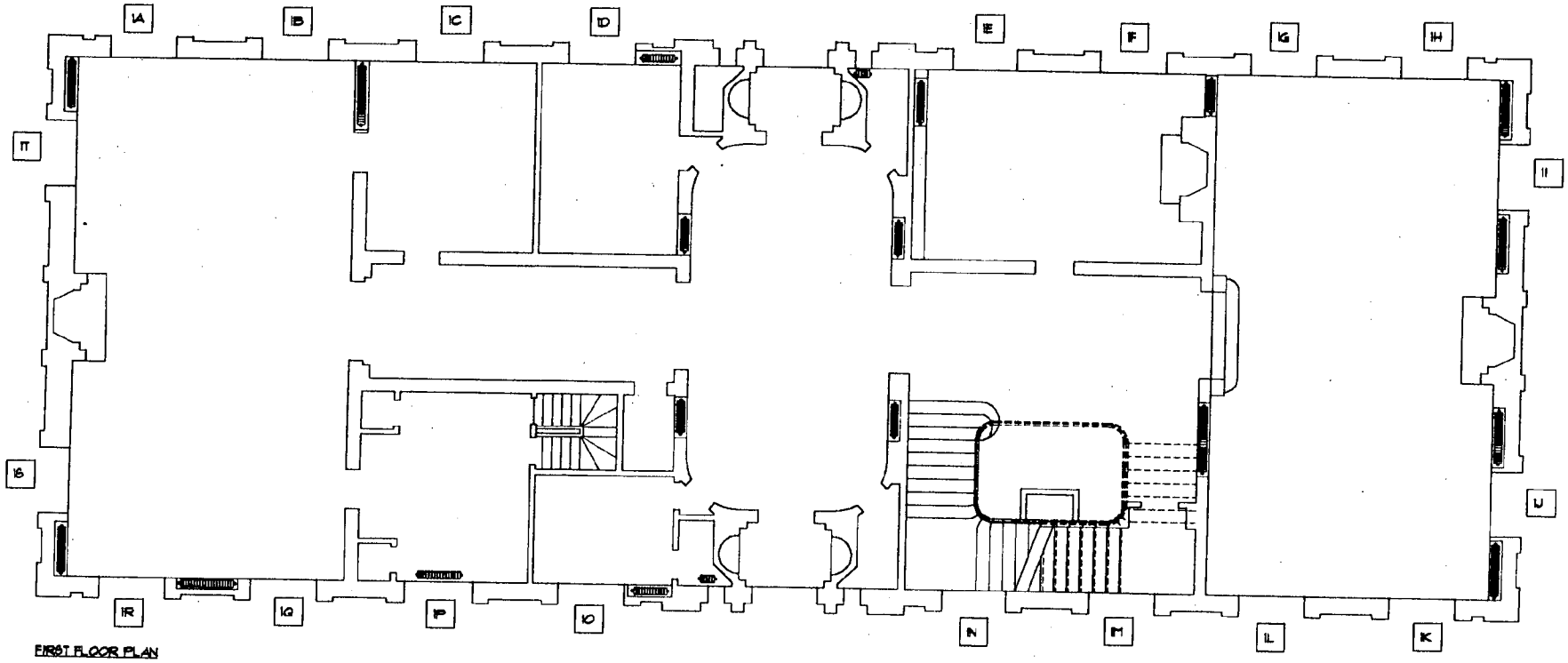


FIRST FLOOR PLAN

ALLEN + ASSOCIATES, PA ARCHITECTURE

Marwood Mansion Door and Window Survey

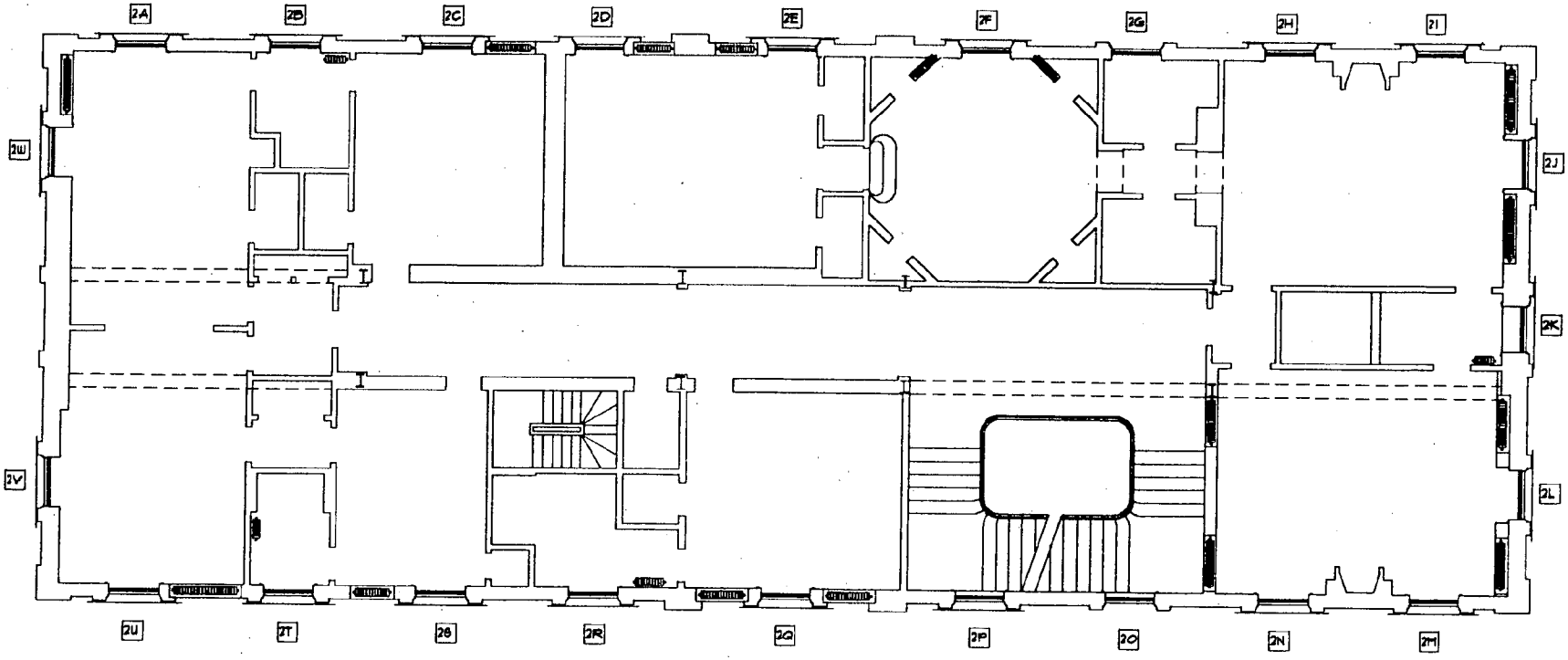
First Floor

Location	Hardware	Glass	Operation	Other
1A	Repair	O.K.	Non Operation	Surface Mold
1B	Repair	O.K.	Non Operation	Surface Mold
1C	Repair	O.K.	Sticks - Non Op	Water Leakage
1D	Repair	O.K.	Operable	Water Leakage - Loose Mullions
1E	Repair	O.K.	Non Operation	
1F				Missing Leaf - Door Broken in to
1G	Repair	O.K.	Non Operation	Surface Mold
1H	Repair	O.K.	Non Operation	Surface Mold
1I	Repair	O.K.	Non Operation	
1J	Repair	O.K.	Non Operation	Surface Mold
1K	Repair	O.K.	Non Operation	
1L	Repair	O.K.	Non Operation	Surface Mold
1M	Non Matching	Broken Pane	O.K.	Rotten Jamb
1N				Unable to Evaluate
1O	To Be Fixed	O.K.	Sticks	Mullions Splitting
1P	Broken	Missing Panes	Broken	Bent / Broken Jamb Etc.
1Q	Repair	O.K.	Non Operation	Surface Mold
1R	Repair	O.K.	Non Operation	
1S	Repair	O.K.	Non Operation	Surface Mold
1T	Repair	O.K.	Non Operation	Surface Mold

Other notes about first floor doors and windows

All Transom windows appear to be fine
Exterior brick mold is rotton at bottom where it meets exterior sill - Typ. all locations
All door hardware does not meet ADA specifications
Existing glass is single pane - non insulated
There is little or no weather stripping on any of the doors
Bottom of door units all appear to have soft wood - Once paint is removed more rot may be found

Notes about comments above
Repair = Hardware will not latch, and or lock properly
O.K. = Glass appears to be original
O.K. = Operation of window is in working condition
New Panes = Refers to possible replacement glass - non orginal



SECOND FLOOR PLAN

ALLEN + ASSOCIATES, PA **ARCHITECTURE**

Marwood Mansion Door and Window Survey

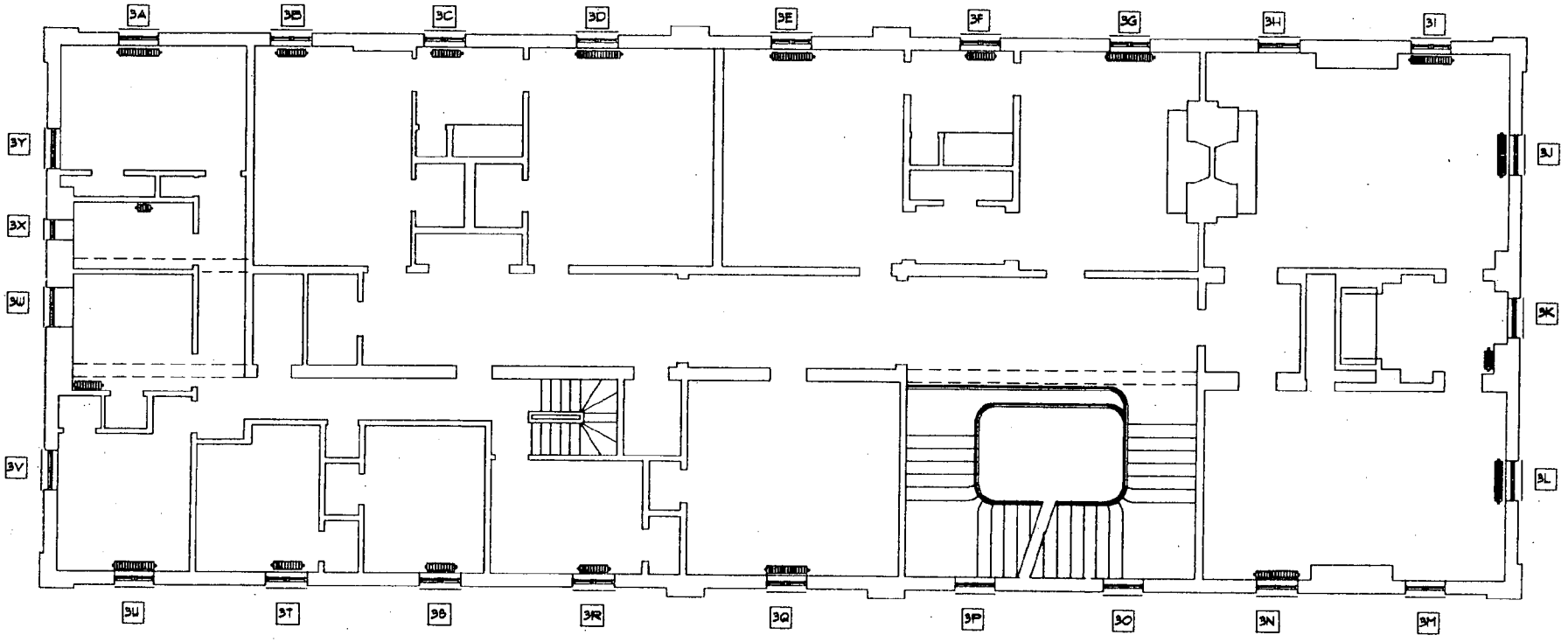
Second Floor

Location	Hardware	Glass	Operation	Other
2A	Repair	O.K.	Sticks	
2B	Repair	O.K.	Non Operation	Wood Rot - Sash Split'g
2C	Repair	2 New Panes	Sticks - Non Op	Wood Rot
2D	Repair	Special - Fix	Poor Operation	Rotten Jambs
2E	Repair	Special - Fix	Poor Operation	Rotten Jambs
2F	Repair	Missing 1 Pan	Tight	Soft Wood - Sash Split'g
2G	Repair	Missing 1 Pan	Sticks - Non Op	Broken Mullion
2H	Missing	O.K.	Tight	Cracked Sash
2I	Repair / Missing	O.K.	Can't Shut	Sash Splitting
2J	Repair	O.K.	O.K.	Soft Wood - Sash Rotten
2K	Repair	O.K.	Tight	Special Size
2L	New Location	O.K.	Non Operation	Soft Wood - Sash Split'g
2M	Repair	O.K.	Tight	Leaf is askew
2N	Repair	O.K.	Can't Close	
2O	O.K.	O.K.	Non Operation	
2P				Unable to Evaluate
2Q	O.K.	O.K.	Non Operation	Sash Split'g - Water Damage
2R	O.K.	O.K.	Can't Close	Sash Splitting
2S	O.K.	3 new Panes	Non Operation	Soft Wood
2T	Repair	1 Broken Pane	Non Operation	
2U	Repair	1 New Pane	Non Operation	
2V				Does not match existing
2W	Repair	1 New Pane	Can't Close	Ext. Mullion is Splitting

Other notes about second floor doors and windows

Exterior brick mold is rotton at bottom where it meets exterior sill - Typ. all locations
All door hardware does not meet ADA specifications
Existing glass is single pane - non insulated
There is little or no weather stripping on any of the doors
It is assumed that all existing paint is lead based
Exterior mullions have heavy paint on them - The mullions are splitting where paint is missing
Bottom of door units all appear to have soft wood - Once paint is removed more rot may be found

Notes about comments above
Repair = Hardware will not latch, and or lock properly
O.K. = Glass appears to be original
O.K. = Operation of window is in working condition
New Panes = Refers to possible replacement glass - non orginal



THIRD FLOOR PLAN

ALLEN + ASSOCIATES, PA ARCHITECTURE

Marwood Mansion Door and Window Survey

Third Floor

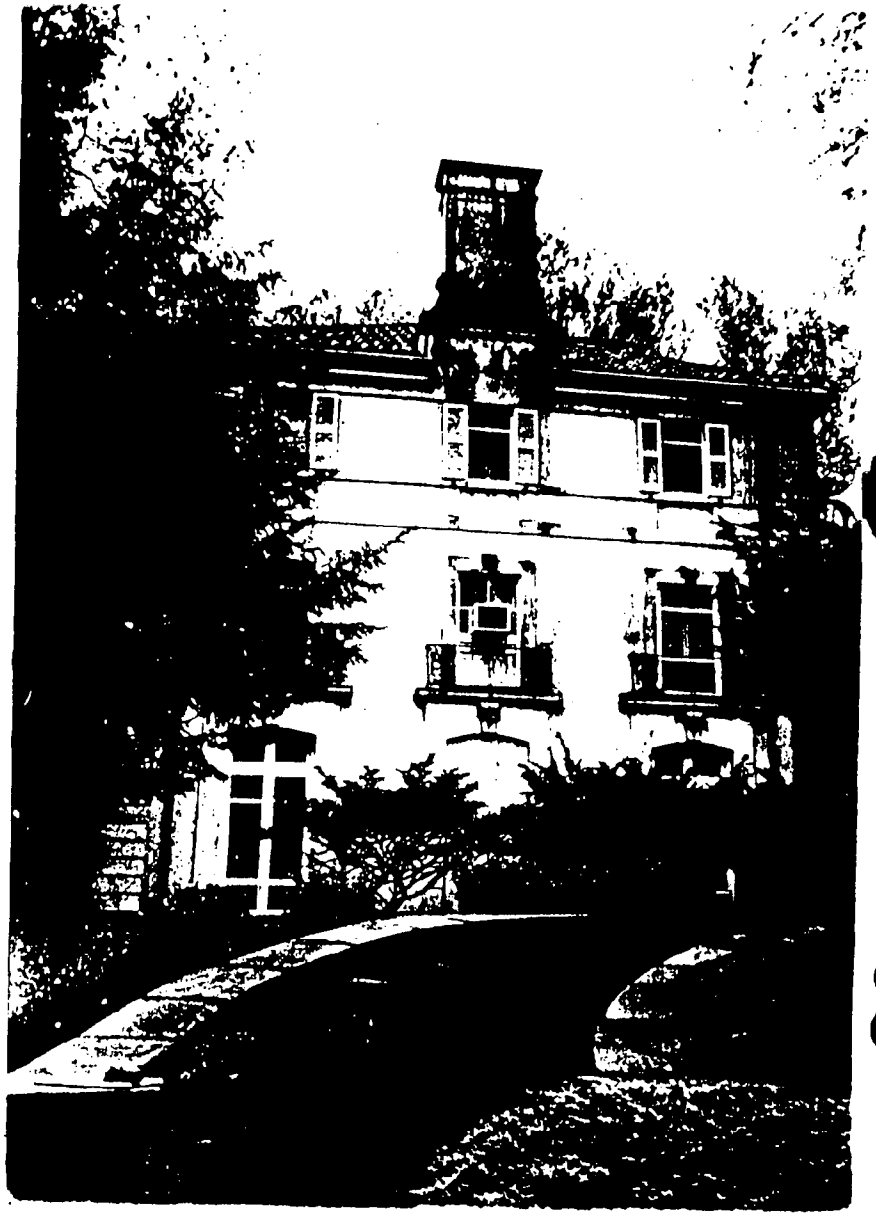
Location	Hardware	Glass	Operation	Other
3A	Repair	5 New Panes	Does not close	Wood Rot - Sash & Jamb
3B				All Plexi-glass Window
3C				Unable to Evaluate
3D	Repair	O.K.	Does not close	Wood Rot - Sash & Jamb
3E	O.K.	2 New Panes	Does not close	Wood Rot - Sash & Jamb
3F	Replacement	O.K.	Does not close	Hardware does not lock
3G	Does not lock	O.K.	Has gaps	Ext. mullions loose
3H	Does not lock	2 New Panes	O.K.	Wood Rot - Sash & Jamb
3I	O.K.	3 New Panes	O.K.	Soft Wood - Loose Mullions
3J	Repair	2 New Panes	O.K.	Wood Rot
3K				Unable to Evaluate
3L	Repair	5 New Panes	Does not close	Soft Wd. - Sash Split'g - Rot
3M	Repair	3 New Panes	Gaps at Frame	Wood Rot
3N	Repair	2 New Panes	Can't Close	
3O				Unable to Evaluate
3P				Unable to Evaluate
3Q	Repair	3 New Panes	Does not close	Wood Rot - Loose Mullions
3R	Repair	1 New Pane	Does not close	Ext. Mullions Splitting
3S	O.K.	3 new Panes	Does not close	Soft Wd. - Sash Split'g - Rot
3T	Repair	2 New Panes	O.K.	Soft Wd. - Sash Split'g - Rot
3U	Repair	3 New Pane	Loose	Soft Wd. - Sash Split'g - Rot
3V	O.K.	O.K.	Nailed Shut	
3W	Repair	O.K.	Does not close	Soft Wd. - Sash Split'g - Rot
3X	Replacement	3 New Panes	Can't Open	Special Window
3Y	Repair	O.K.	O.K.	

Other notes about third floor doors and windows

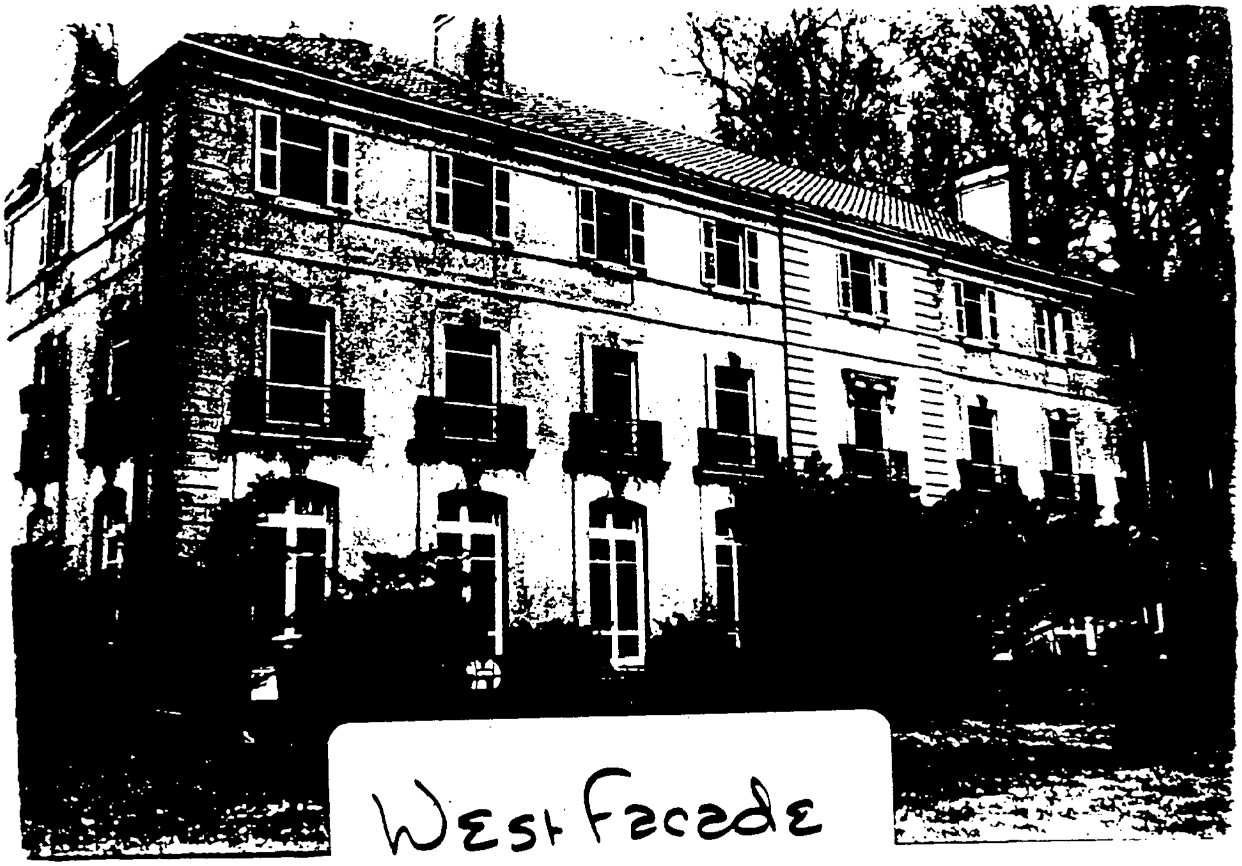
All window hardware does not meet ADA specifications
Existing glass is single pane - non insulated
There is little or no weather stripping on any of the doors
It is assumed that all existing paint is lead based
Exterior mullions have heavy paint on them - The mullions are splitting where paint is missing
Bottom of window units all appear to have soft wood - Once paint is removed more rot may be found

Notes about comments above
Repair = Hardware will not latch, and or lock properly
O.K. = Glass appears to be original
O.K. = Operation of window is in working condition
New Panes = Refers to possible replacement glass - non orginal

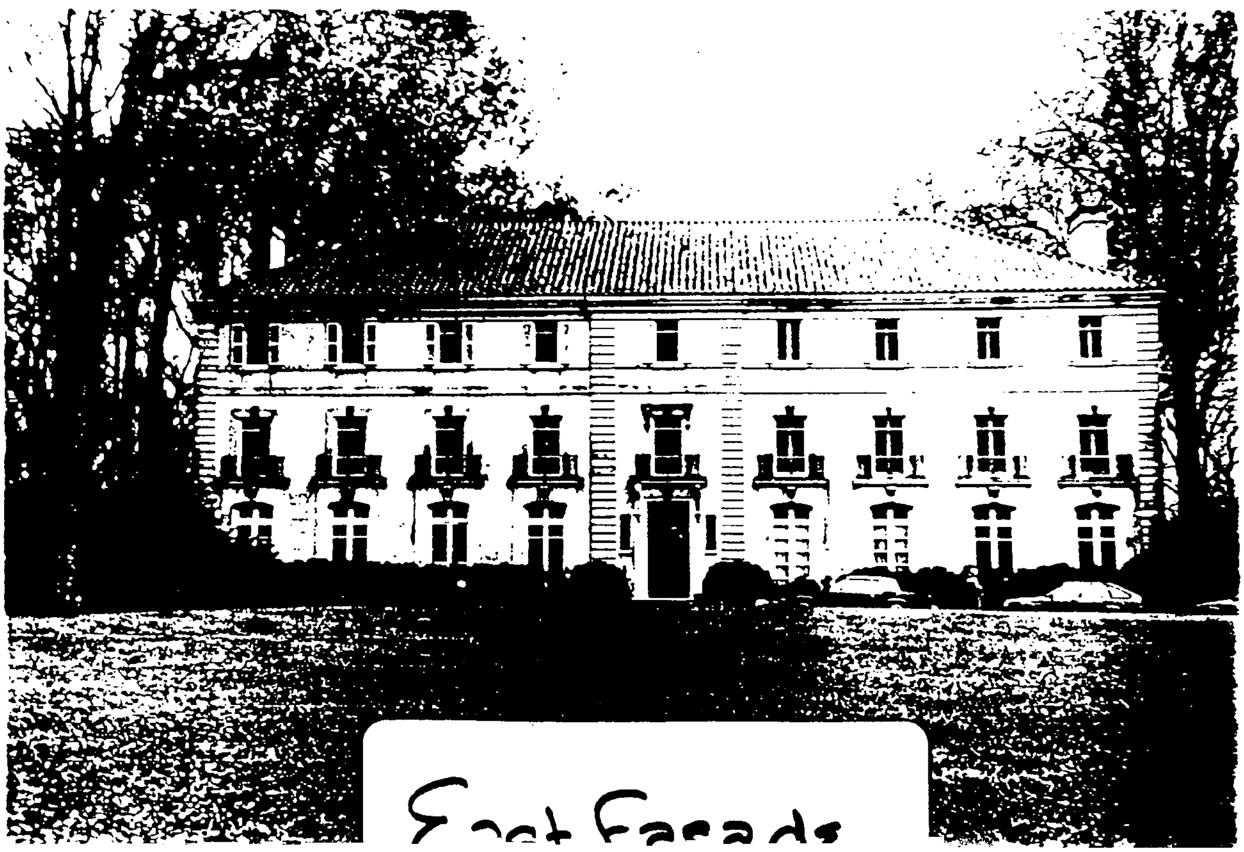
South Facade



North Facade



West Facade



East Facade

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U.S. Department of the Interior

National Park Service
Preservation Assistance Division
Technical Preservation Services

Preservation Briefs: 9

The Repair of Historic Wooden Windows

John H. Myers

The windows on many historic buildings are an important aspect of the architectural character of those buildings. Their design, craftsmanship, or other qualities may make them worthy of preservation. This is self-evident for ornamental windows, but it can be equally true for warehouses or factories where the windows may be the most dominant visual element of an otherwise plain building (see figure 1). Evaluating the significance of these windows and planning for their repair or replacement can be a complex process involving both objective and subjective considerations. The *Secretary of the Interior's Standards for Rehabilitation* and the accompanying guidelines, call for respecting the significance of original materials and features, repairing and retaining them wherever possible, and when necessary, replacing them in kind. This Brief is based on the issues of significance and repair which are implicit in the standards, but the primary emphasis is on the technical issues of planning for the repair of windows including evaluation of their physical condition, techniques of repair, and design considerations when replacement is necessary.

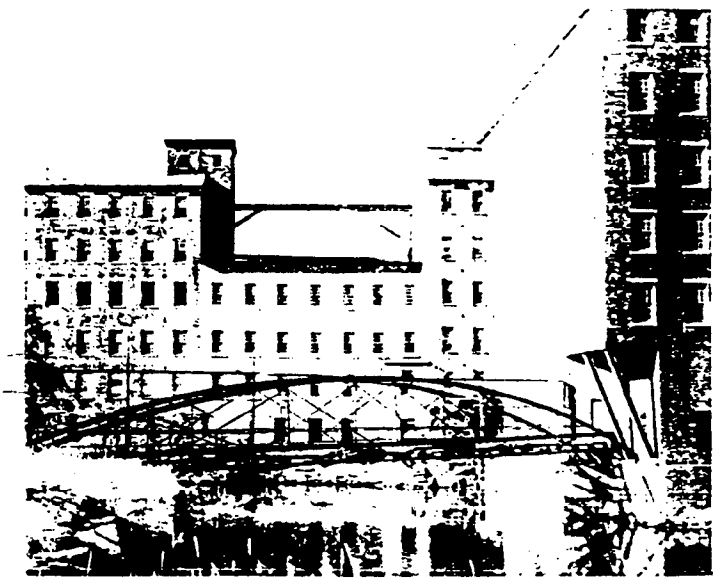

Figure 1. *Windows are frequently important visual focal points, especially on simple facades such as this mill building. Replacement of the multi-pane windows here with larger panes could dramatically change the appearance of the building. The areas of missing windows convey the impression of such a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

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

Architectural or Historical Significance

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

Historically, the first windows in early American houses were casement windows: that is, they were hinged at the side and opened outward. In the beginning of the eighteenth century single- and double-hung windows were introduced. Subsequently many styles of these vertical sliding sash windows have come to be associated with specific building periods or architectural styles, and this is an important consideration in determining the significance of windows, especially on a local or regional basis. Site-specific, regionally oriented architectural comparisons should be made to determine the significance of windows in question. Although such comparisons may focus on specific window types and their details, the ultimate determination of significance should be made within the context of the whole building, wherein the windows are one architectural element (see figure 2).

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

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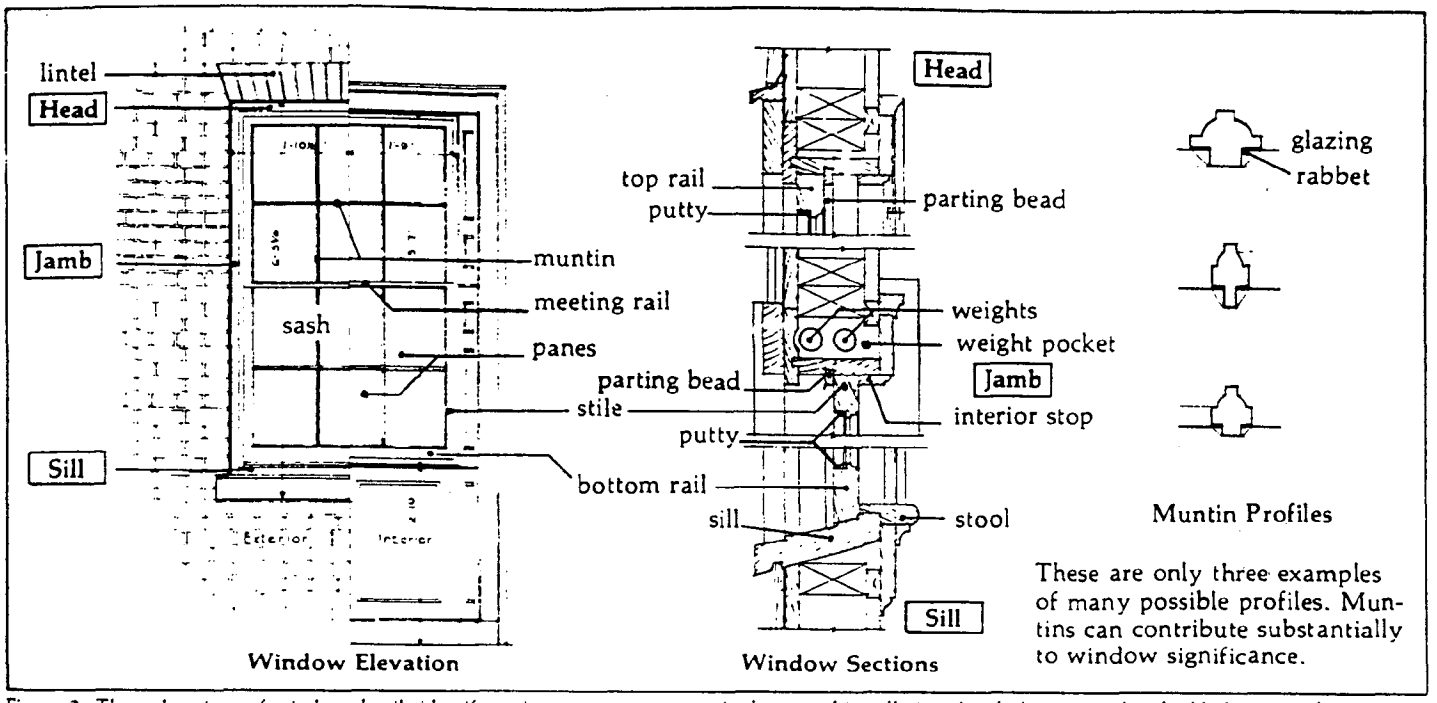

Figure 2. *These drawings of window details identify major components, terminology, and installation details for a wooden double-hung window.*

ceed with planning appropriate treatments, beginning with an investigation of the physical condition of the windows.

Physical Evaluation

The key to successful planning for window treatments is a careful evaluation of existing physical conditions on a unit-by-unit basis. A graphic or photographic system may be devised to record existing conditions and illustrate the scope of any necessary repairs. Another effective tool is a window schedule which lists all of the parts of each window unit. Spaces by each part allow notes on existing conditions and repair instructions. When such a schedule is completed, it indicates the precise tasks to be performed in the repair of each unit and becomes a part of the specifications. In any evaluation, one should note at a minimum, 1) window location, 2) condition of the paint, 3) condition of the frame and sill, 4) condition of the sash (rails, stiles and muntins), 5) glazing problems, 6) hardware, and 7) the overall condition of the window (excellent, fair, poor, and so forth).

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

Each window should be examined for operational soundness beginning with the lower portions of the frame and sash. Exterior rainwater and interior condensation can flow downward along the window, entering and collecting at points where the flow is blocked. The sill, joints between the sill and jamb, corners of the bottom rails and muntin joints are typical points where water collects and deterioration begins (see figure 3). The operation of the window (continuous opening and closing over the years and seasonal temperature changes) weakens the joints, causing movement and slight separation. This process makes the joints more vulnerable to water which is readily absorbed into the end-grain of the wood. If severe deterioration exists in these areas, it will usually be apparent on visual inspection, but other less severely deteriorated areas of the wood may be tested by two traditional methods using a small ice pick.

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

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

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

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

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

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

Repair Class I: Routine Maintenance

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

The routine maintenance required to upgrade a window to "like new" condition normally includes the following steps: 1) some degree of interior and exterior paint removal, 2) removal and repair of sash (including reglazing where necessary), 3) repairs to the frame, 4) weatherstripping and reinstallation of the sash, and 5) repainting. These operations are illustrated for a typical double-hung wooden window (see figures 4a-f), but they may be adapted to other window types and styles as applicable.

Historic windows have usually acquired many layers of paint over time. Removal of excess layers or peeling and flaking paint will facilitate operation of the window and restore the clarity of the original detailing. Some degree of paint removal is also necessary as a first step in the proper surface preparation for subsequent refinishing (if paint color analysis is desired, it should be conducted prior to the onset of the paint removal). There are several safe and effective techniques for removing paint from wood, depending on the amount of paint to be removed. Several techniques such as scraping, chemical stripping, and the use of a hot air gun are discussed in "Preservation Briefs: 10 Paint Removal from Historic Woodwork" (see Additional Reading section at end).

Paint removal should begin on the interior frames, being careful to remove the paint from the interior stop and the parting bead, particularly along the seam where these stops meet the jamb. This can be accomplished by running a utility knife along the length of the seam, breaking the paint bond. It will then be much easier to remove the stop, the parting bead and the sash. The interior stop may be initially loosened from the sash side to avoid visible scarring of the wood and then gradually pried loose using a pair of putty knives, working up and down the stop in small increments (see figure 4b). With the stop removed, the lower or interior sash may be withdrawn. The sash cords should be detached from the sides of the sash and their ends may be pinned with a nail or tied in a knot to prevent them from falling into the weight pocket.

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

The sash can be stripped of paint using appropriate techniques, but if any heat treatment is used (see figure 4c), the glass should be removed or protected from the sudden temperature change which can cause breakage. An

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

Figure 4b. *After removing paint from the seam between the interior stop and the jamb, the stop can be pried out and gradually worked loose using a pair of putty knives as shown. To avoid visible scarring of the wood, the sash can be raised and the stop pried loose initially from the outer side. Photo: John H. Myers*

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

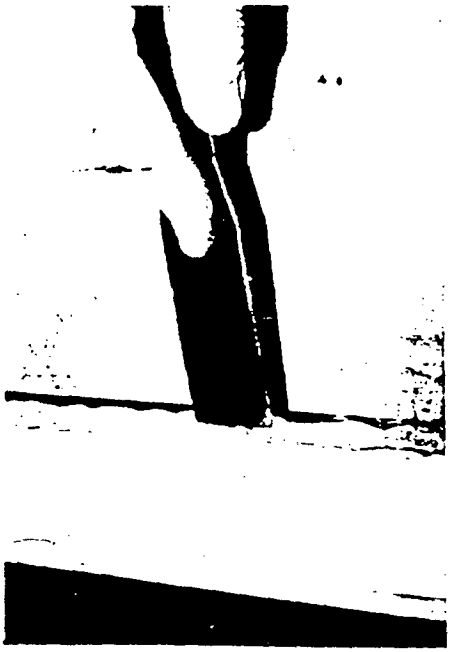

Figure 4d. *Reglazing or replacement of the putty requires that the existing putty be removed manually, the glazing points be extracted, the glass removed, and the back putty scraped out. To reglaze, a bed of putty is laid around the perimeter of the rabbet, the pane is pressed into place, ng points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

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

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

overlay of aluminum foil on gypsum board or asbestos can protect the glass from such rapid temperature change. It is important to protect the glass because it may be historic and often adds character to the window. Deteriorated putty should be removed manually, taking care not to damage the wood along the rabbet. If the glass is to be removed, the glazing points which hold the glass in place can be extracted and the panes numbered and removed for cleaning and reuse in the same openings. With the glass panes out, the remaining putty can be removed and the sash can be sanded, patched, and primed with a preservative primer. Hardened putty in the rabbets may be softened by heating with a soldering iron at the point of removal. Putty remaining on the glass may be softened by soaking the panes in linseed oil, and then removed with less risk of breaking the glass. Before reinstalling the glass, a bead of glazing compound or linseed oil putty should be laid around the rabbet to cushion and seal the glass. Glazing compound should only be used on wood which has been brushed with linseed oil and primed with an oil based primer or paint. The pane is then pressed into place and the glazing points are pushed into the wood around the perimeter of the pane (see figure 4d). The final glazing compound or putty is applied and beveled to complete the seal. The sash can be refinished as desired on the inside and painted on the outside as soon as a "skin" has formed on the putty, usually in 2 or 3 days. Exterior paint should cover the beveled glazing compound or putty and lap over onto the glass slightly to complete a weathertight seal. After the proper curing times have elapsed for paint and putty, the sash will be ready for reinstallation.

While the sash are out of the frame, the condition of the wood in the jamb and sill can be evaluated. Repair and refinishing of the frame may proceed concurrently with repairs to the sash, taking advantage of the curing times for the paints and putty used on the sash. One of the most common work items is the replacement of the sash cords with new rope cords or with chains (see figure 4e). The weight pocket is frequently accessible through a door on the face of the frame near the sill, but if no door exists, the trim on the interior face may be removed for access. Sash weights may be increased for easier window operation by elderly or handicapped persons. Additional repairs to the frame and sash may include consolidation or replacement of deteriorated wood. Techniques for these repairs are discussed in the following sections.

The operations just discussed summarize the efforts necessary to restore a window with minor deterioration to "like new" condition (see figure 4f). The techniques can be applied by an unskilled person with minimal training and experience. To demonstrate the practicality of this approach, and photograph it, a Technical Preservation Services staff member repaired a wooden double-hung, two over two window which had been in service over ninety years. The wood was structurally sound but the window had one broken pane, many layers of paint, broken sash cords and inadequate, worn-out weatherstripping. The staff member found that the frame could be stripped of paint and the sash removed quite easily. Paint, putty and glass removal required about one hour for each sash, and the reglazing of both sash was accomplished in about one hour. Weatherstripping of the sash and frame, replacement of the sash cords and reinstallation of the sash, parting bead, and stop required an hour and a half. These times refer only to individual operations; the entire 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.

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 semi-rigid epoxies which saturate the porous decayed wood and then harden. The surface of the consolidated wood can then be filled with a semi-rigid epoxy patching compound, sanded and painted (see figure 5). Epoxy patching compounds can be used to build up

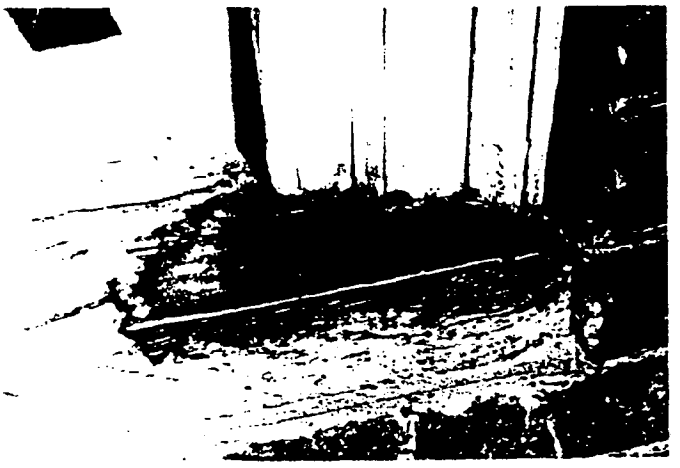

Figure 5. *This illustrates a two-part epoxy patching compound used to fill the surface of a weathered sill and rebuild the missing edge. When the epoxy cures, it can be sanded smooth and painted to achieve a durable and waterproof repair. Photo: John H. Myers*

missing sections or decayed ends of members. Profiles can be duplicated using hand molds, which are created by pressing a ball of patching compound over a sound section of the profile which has been rubbed with butcher's wax. This can be a very efficient technique where there are many typical repairs to be done. Technical Preservation Services has published *Epoxies for Wood Repairs in Historic Buildings* (see Additional Reading section at end), which discusses the theory and techniques of epoxy repairs. The process has been widely used and proven in marine applications; and proprietary products are available at hardware and marine supply stores. Although epoxy materials may be comparatively expensive, they hold the promise of being among the most durable and long lasting materials available for wood repair.

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

Repair Class III: Splices and Parts Replacement

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

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

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

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

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

Weatherization

A window which is repaired should be made as energy efficient as possible by the use of appropriate weatherstripping to reduce air infiltration. A wide variety of products are available to assist in this task. Felt may be fastened to the top, bottom, and meeting rails, but may have the disadvantage of absorbing and holding moisture, particularly at the bottom rail. Rolled vinyl strips may also be tacked into place in appropriate locations to reduce infiltration. Metal strips or new plastic spring strips may be used on the rails and, if space permits, in

the channels between the sash and jamb. Weatherstripping is a historic treatment, but old weatherstripping (felt) is not likely to perform very satisfactorily. Appropriate contemporary weatherstripping should be considered an integral part of the repair process for windows. The use of sash locks installed on the meeting rail will insure that the sash are kept tightly closed so that the weatherstripping will function more effectively to reduce infiltration. Although such locks will not always be historically accurate, they will usually be viewed as an acceptable contemporary modification in the interest of improved thermal performance.

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

Window Replacement

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

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

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

Conclusion

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

Additional Reading

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.

Look, David W. "Preservation Briefs: 10 Paint Removal from Historic Woodwork." Washington, DC: Technical Preservation Services, U.S. Department of the Interior, forthcoming.

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. 024-016-00095-1), 1978.

Rehab Right. Oakland, California: City of Oakland Planning Department, 1978 (pp. 78-83).

"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.

NCPTT Notes, US Dept of the Interior, NPS

Testing the energy performance of wood windows in cold climates

During rehabilitation of historic buildings, the question of how to treat the windows is inevitably raised. The desire to retain the historic character of the windows and the actual historic material of which the windows are made is seen as competing with the desire to improve energy performance and decrease long term window maintenance costs. Replacement of window sash, the use of windows inserted inside existing jambs or whole window replacement is often advocated in the name of energy efficiency. Other approaches to improve the energy efficiency of historic windows retain all or part of the existing sash and balance system and typically include exterior triple-track storm window rehabilitation or replacement. Some building renovations only include storm window repair or replacement and prime window maintenance. To date there is little data quantifying the impact on annual heating costs of these varied upgrade options or comparing estimated first year energy savings to installed costs. A recent study was undertaken to test the assumption that historic windows can be retained and upgraded to approach the thermal efficiency of replacement sash or window inserts.

First-year heating energy costs associated with windows before and after upgrades were used to assess energy improvements. Energy costs resulting from thermal losses associated with a window are due to both non-infiltrative and infiltrative losses. Non-infiltrative thermal losses are due to radiation through the glazing, conduction through the window materials and convection of the air layer next to the window materials. These losses were modeled using WINDOW 4.1, a computer program simulating window thermal performance.

Infiltrative thermal losses through a window arise from air moving around the sash and jamb as well as through any cracks or gaps associated with the window. These losses were investigated by testing 151 windows in northern and central Vermont during 1995 and 1996. Of the 151 windows tested, 64 were in original condition and 87 were of various upgrades. The windows were characterized using standard fan pressurization techniques to obtain the effective leakage area and sash air leakage rate. Data obtained from tests conducted on the 64 windows in original condition was used to model the energy performance of tight and loose fitting windows as well as "typical" windows prior to up-grade. The estimated annual energy costs of these windows were used to estimate first year energy cost savings for the various upgrade types.

Costs of window upgrades were determined primarily by interviewing developers of affordable housing in Vermont.

The study found that the savings of annual heating costs were similar for a wide range of window upgrade options and installation costs. If properly installed, virtually all upgrade options studied produced savings in a similar range. In general, savings were small, and significantly less than the cost of installing the upgrade, particularly when the energy performance of the existing window was similar to a typical or tight fitting window.

Preparing exterior windows for fan pressurization test.

Given the above, the decision to rehabilitate or replace a window generally should be made on the basis of considerations other than energy cost savings. It should be noted that this decision is not clear cut. Some upgrades that retain the original sash make major sash modifications while some replacement upgrades mimic historic windows effectively. There is a continuum between replacing and rehabilitating windows where the developer must find a solution appropriate to the particular context while considering non-energy issues such as maintenance, ease of operation, historic character, and lead abatement.

This article summarizes a report to the State of Vermont, Division for Historic Preservation, by the Vermont Energy Investment Corporation. The project was supported by the 1994 PTT Grant program. Copies of the report may be obtained from Mark Gilberg, Research Coordinator, NCPTT.

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February 23, 1996

Ms. Jan Makinen
W.C. and A.N. Miller
10200 River Road
Potomac, MD 20854

RE: Marwood

Dear Ms. Makinen:

Thank you for letting the Historic Preservation Commission (HPC) know that Marwood, a significant historic property in the County, has been sold to a new family. I also thank you for referring your client's architects to us with their questions.

The County preservation law is designed within the framework of "stewardship" of historic sites. The County recognizes its responsibilities through the review process of the HPC, and also supports the homeowner's efforts through the tax credit program for maintenance work and with technical support which HPC staff can provide.

Please remember that the HPC must review and approve all changes and alterations on the exterior of the house and property before any such work is undertaken. This will include changing roofing material, replacing windows, removal of mature trees, etc. If there are any questions whether something falls under the category of "changes and alterations", please call this office to doublecheck. Staff is always available to assist with questions.

The HPC meets twice a month, and an application for a Historic Area Work Permit (HAWP) has to be in Rockville three weeks prior to the meeting date (March 13, 27; April 10, 24; etc.) The approval from the HPC has no expiration date, so work can be completed in phases once the HPC approvals are in place.

I am enclosing some information for you to pass on to the new owner of Marwood. Please let me know if there are any questions about this material. The proposal to add to the footprint of Marwood poses a difficult problem, as this house was originally designed with essentially two front facades and is highly symmetrical. However, I am sure there is a way to meet the needs of the new family within the limits of Chapter 24A - the County's Historic Preservation ordinance.

I look forward to working with the new owner of Marwood. Should there be any questions, please do not hesitate to call me at 495-4570.

Sincerely,

Robin D. Ziek

Historic Preservation Planner

Notice sent 12/27/96 eps

LAW OFFICES
MILLER, MILLER & CANBY
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200-B MONROE STREET
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FAX (301) 696-1385

JAMES R. MILLER, JR.*
ROBERT L. BURCHETT
PATRICK C. McKEEVER
JAMES L. THOMPSON
LEWIS R. SCHUMANN
JODY S. KLINE
ELLEN S. WALKER
DIANE M. POOLE
JOSEPH P. SUNTUM
SUSAN W. CARTER
SUZANNE L. ROTBERT
BRUCE N. DEAN
LAURIE B. THOMAS
SCOTT N. ALPERIN
*OF COUNSEL

FAX TRANSMITTAL SHEET

FAX SENT:
BY:
TIME:

DATE: 26 DECEMBER 1996

TO: PERRY KEPHART

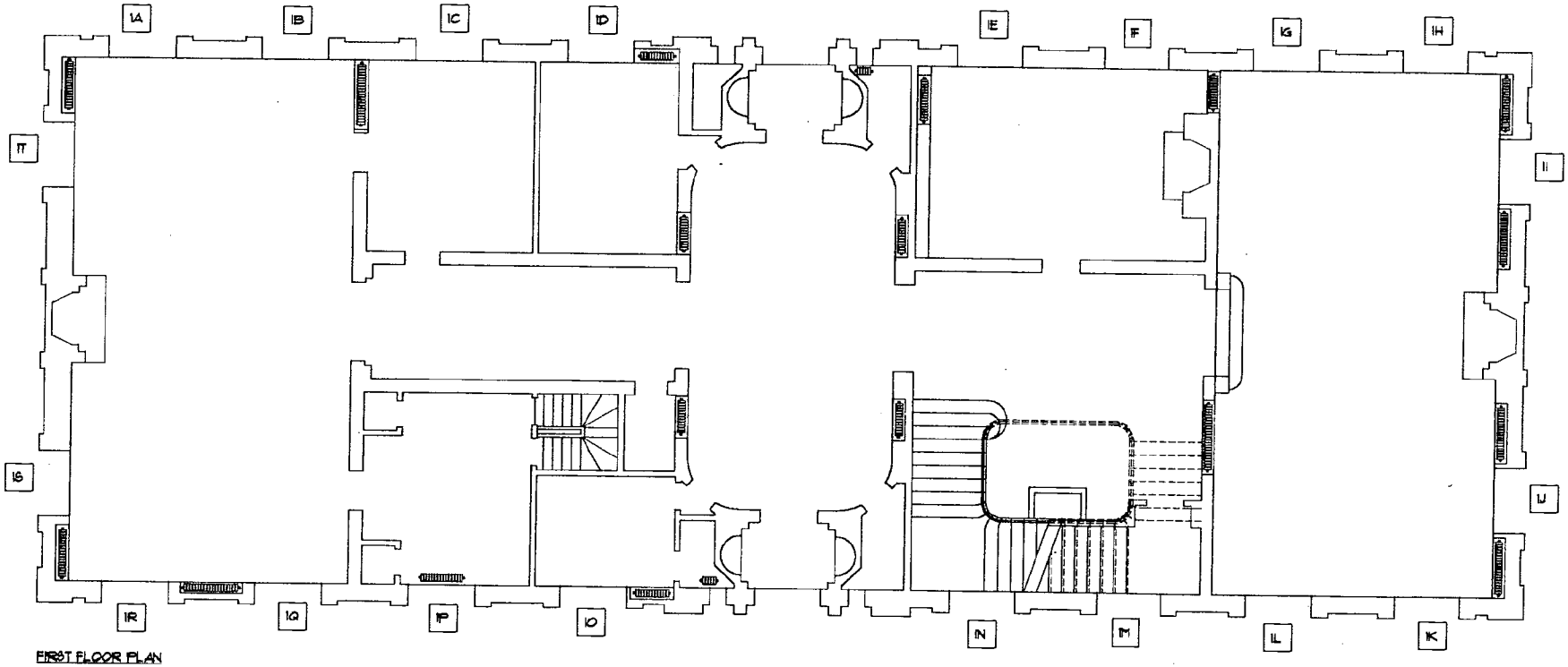
DESIGN, ZONING & PRESERVATION 495-1307

FROM: Jody S. Kline

PAGES SENT (including transmittal sheet): 1

INSTRUCTIONS: PERRY: I was wrong! For some other work we are doing on the MAPLEWOOD subdivision, we just double-checked the tax records and land records. Since the ~~most recent~~ last check, Parcel C adjacent to Lot 74 has been transferred from Potomac Holdings Group to the lender, TOM Courtney. Would you please send a copy of the HPC notice to Courtney Development Corporation, P.O. Box 580, Sewickeley Heights, Pennsylvania, 15143. Thank you.

CLIENT: DR. Y. ZEGEYE



FIRST FLOOR PLAN

ALLEN + ASSOCIATES, PA **ARCHITECTURE**

Marwood Mansion Door and Window Survey

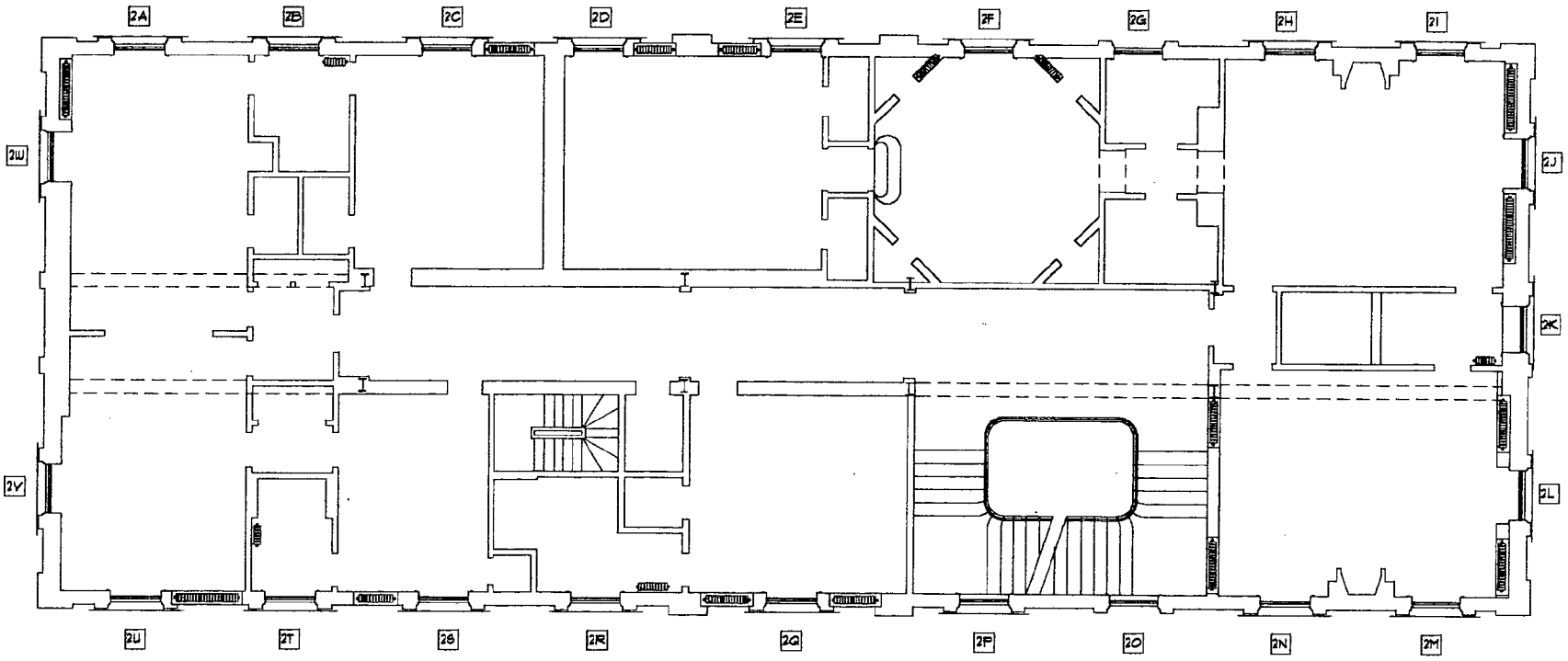
First Floor

Location	Hardware	Glass	Operation	Other
1A	Repair	O.K.	Non Operation	Surface Mold
1B	Repair	O.K.	Non Operation	Surface Mold
1C	Repair	O.K.	Sticks - Non Op	Water Leakage
1D	Repair	O.K.	Operable	Water Leakage - Loose Mullions
1E	Repair	O.K.	Non Operation	
1F				Missing Leaf - Door Broken in to
1G	Repair	O.K.	Non Operation	Surface Mold
1H	Repair	O.K.	Non Operation	Surface Mold
1I	Repair	O.K.	Non Operation	
1J	Repair	O.K.	Non Operation	Surface Mold
1K	Repair	O.K.	Non Operation	
1L	Repair	O.K.	Non Operation	Surface Mold
1M	Non Matching	Broken Pane	O.K.	Rotten Jamb
1N				Unable to Evaluate
1O	To Be Fixed	O.K.	Sticks	Mullions Splitting
1P	Broken	Missing Panes	Broken	Bent / Broken Jamb Etc.
1Q	Repair	O.K.	Non Operation	Surface Mold
1R	Repair	O.K.	Non Operation	
1S	Repair	O.K.	Non Operation	Surface Mold
1T	Repair	O.K.	Non Operation	Surface Mold

Other notes about first floor doors and windows

All Transom windows appear to be fine
Exterior brick mold is rotton at bottom where it meets exterior sill - Typ. all locations
All door hardware does not meet ADA specifications
Existing glass is single pane - non insulated
There is little or no weather stripping on any of the doors
Bottom of door units all appear to have soft wood - Once paint is removed more rot may be found

Notes about comments above
Repair = Hardware will not latch, and or lock properly
O.K. = Glass appears to be original
O.K. = Operation of window is in working condition
New Panes = Refers to possible replacement glass - non orginal



SECOND FLOOR PLAN

ALLEN + ASSOCIATES, PA ARCHITECTURE

Marwood Mansion Door and Window Survey

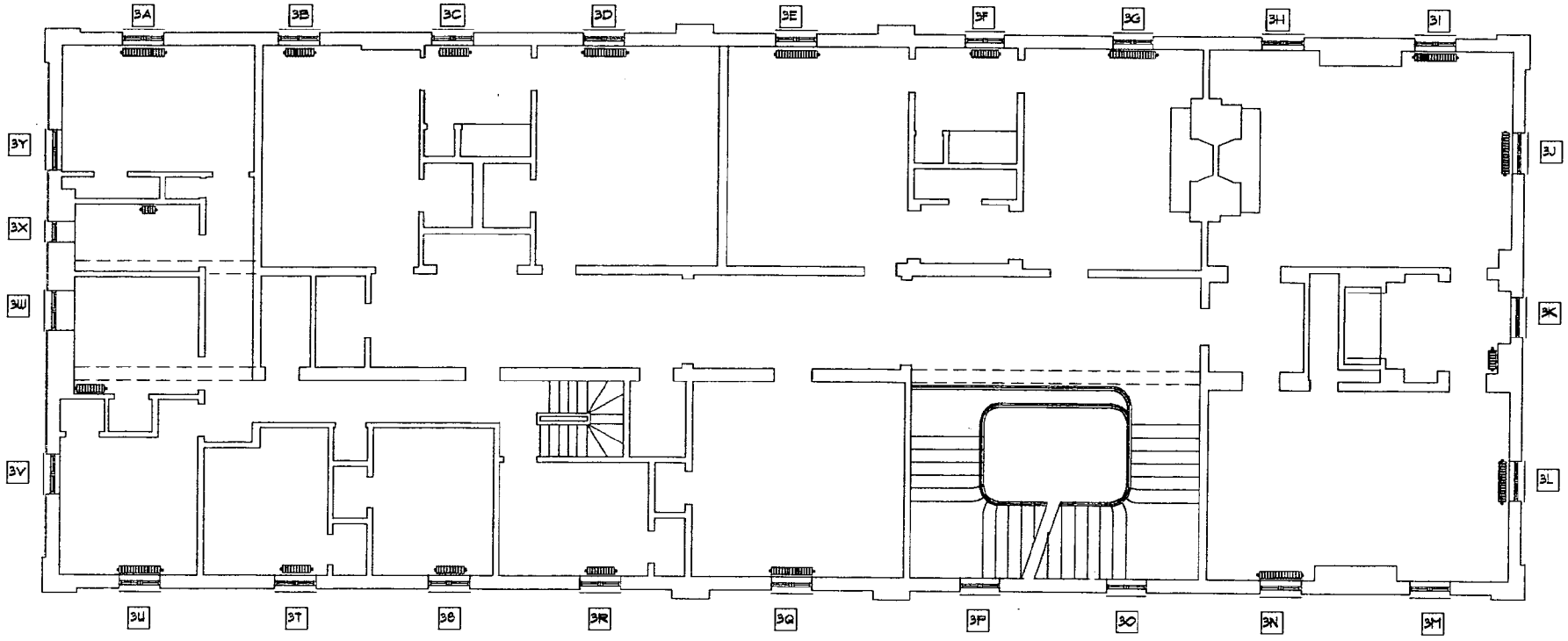
Second Floor

Location	Hardware	Glass	Operation	Other
2A	Repair	O.K.	Sticks	
2B	Repair	O.K.	Non Operation	Wood Rot - Sash Split'g
2C	Repair	2 New Panes	Sticks - Non Op	Wood Rot
2D	Repair	Special - Fix	Poor Operation	Rotten Jambs
2E	Repair	Special - Fix	Poor Operation	Rotten Jambs
2F	Repair	Missing 1 Pan	Tight	Soft Wood - Sash Split'g
2G	Repair	Missing 1 Pan	Sticks - Non Op	Broken Mullion
2H	Missing	O.K.	Tight	Cracked Sash
2I	Repair / Missing	O.K.	Can't Shut	Sash Splitting
2J	Repair	O.K.	O.K.	Soft Wood - Sash Rotten
2K	Repair	O.K.	Tight	Special Size
2L	New Location	O.K.	Non Operation	Soft Wood - Sash Split'g
2M	Repair	O.K.	Tight	Leaf is askew
2N	Repair	O.K.	Can't Close	
2O	O.K.	O.K.	Non Operation	
2P				Unable to Evaluate
2Q	O.K.	O.K.	Non Operation	Sash Split'g - Water Damage
2R	O.K.	O.K.	Can't Close	Sash Splitting
2S	O.K.	3 new Panes	Non Operation	Soft Wood
2T	Repair	1 Broken Pane	Non Operation	
2U	Repair	1 New Pane	Non Operation	
2V				Does not match existing
2W	Repair	1 New Pane	Can't Close	Ext. Mullion is Splitting

Other notes about second floor doors and windows

Exterior brick mold is rotton at bottom where it meets exterior sill - Typ. all locations
All door hardware does not meet ADA specifications
Existing glass is single pane - non insulated
There is little or no weather stripping on any of the doors
It is assumed that all existing paint is lead based
Exterior mullions have heavy paint on them - The mullions are splitting where paint is missing
Bottom of door units all appear to have soft wood - Once paint is removed more rot may be found

Notes about comments above
Repair = Hardware will not latch, and or lock properly
O.K. = Glass appears to be original
O.K. = Operation of window is in working condition
New Panes = Refers to possible replacement glass - non orginal



THIRD FLOOR PLAN

ALLEN + ASSOCIATES, PA ARCHITECTURE

Marwood Mansion Door and Window Survey

Third Floor

Location	Hardware	Glass	Operation	Other
3A	Repair	5 New Panes	Does not close	Wood Rot - Sash & Jamb
3B				All Plexi-glass Window
3C				Unable to Evaluate
3D	Repair	O.K.	Does not close	Wood Rot - Sash & Jamb
3E	O.K.	2 New Panes	Does not close	Wood Rot - Sash & Jamb
3F	Replacement	O.K.	Does not close	Hardware does not lock
3G	Does not lock	O.K.	Has gaps	Ext. mullions loose
3H	Does not lock	2 New Panes	O.K.	Wood Rot - Sash & Jamb
3I	O.K.	3 New Panes	O.K.	Soft Wood - Loose Mullions
3J	Repair	2 New Panes	O.K.	Wood Rot
3K				Unable to Evaluate
3L	Repair	5 New Panes	Does not close	Soft Wd. - Sash Split'g - Rot
3M	Repair	3 New Panes	Gaps at Frame	Wood Rot
3N	Repair	2 New Panes	Can't Close	
3O				Unable to Evaluate
3P				Unable to Evaluate
3Q	Repair	3 New Panes	Does not close	Wood Rot - Loose Mullions
3R	Repair	1 New Pane	Does not close	Ext. Mullions Splitting
3S	O.K.	3 new Panes	Does not close	Soft Wd. - Sash Split'g - Rot
3T	Repair	2 New Panes	O.K.	Soft Wd. - Sash Split'g - Rot
3U	Repair	3 New Pane	Loose	Soft Wd. - Sash Split'g - Rot
3V	O.K.	O.K.	Nailed Shut	
3W	Repair	O.K.	Does not close	Soft Wd. - Sash Split'g - Rot
3X	Replacement	3 New Panes	Can't Open	Special Window
3Y	Repair	O.K.	O.K.	

Other notes about third floor doors and windows

All window hardware does not meet ADA specifications
Existing glass is single pane - non insulated
There is little or no weather stripping on any of the doors
It is assumed that all existing paint is lead based
Exterior mullions have heavy paint on them - The mullions are splitting where paint is missing
Bottom of window units all appear to have soft wood - Once paint is removed more rot may be found

Notes about comments above
Repair = Hardware will not latch, and or lock properly
O.K. = Glass appears to be original
O.K. = Operation of window is in working condition
New Panes = Refers to possible replacement glass - non orginal