

37/03-06F 511 Philadelphia Ave

Takoma Park Historic District, 37/03

## Tully, Tania

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**Subject:** 511 Philadelphia Avenue - window survey  
**Location:** Takoma Park  
**Start:** Tue 3/14/2006 9:30 AM  
**End:** Tue 3/14/2006 10:00 AM  
**Recurrence:** (none)  
**Categories:** Site Visit

Tim Allen and Mike Weisberg, from Pella Windows

I can be reached during the day at 202-395-7761. Jennifer Hanson-Kilbride

Routine Maintenance: paint removal, reglazing, weatherstripping, caulking, and repainting Stabilization: where there is a small degree of physical deterioration that can be repaired in place by patching, waterproofing, consolidating, and regluing the existing material Partial Replacement: when there is localized deterioration in specific areas these members are totally removed and new ones are spliced into the existing fabric Total Replacement: the entire fabric of the window has deteriorated

Only three windows at the rear of the property - as shown on Circle 20 - plus any others that cannot be viably restored as approved by staff are approved for replacement.

If the HPC approves replacement, only the sashes may be replaced; the new sashes will fit within the existing frames, each replacement sash will be individually measured and fit to the existing openings, and the muntins will match those in the historic windows.

All exterior trim and historic jambs will be retained.

Additionally, replacement sashes will be simulated divided light wood windows, which contain muntins that are permanently bonded to the interior and exterior of the insulating glass simulating a divided light appearance.

*The applicants  
have chosen not to  
pursue replacement at  
this time.*

**Tully, Tania**

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**From:** Hanson-Kilbride, Jennifer [Jennifer\_Hanson-Kilbride@omb.eop.gov]  
**Sent:** Tuesday, February 28, 2006 3:10 PM  
**To:** Tully, Tania  
**Cc:** Eric Kilbride; Weisberg, Mike; Allen, Tim; Wright, Gwen  
**Subject:** RE: Historic Area Work Permit Application #410740

Tania,

Thank you for the detailed information about the next steps. I did receive the HPC memo. Tuesday, March 14 at 9:30 works for us. We'll plan to meet you at our house at that time. Thank you, Jennifer

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**From:** Tully, Tania [mailto:Tania.Tully@mncppc-mc.org]  
**Sent:** Tuesday, February 28, 2006 11:08 AM  
**To:** Hanson-Kilbride, Jennifer  
**Cc:** Eric Kilbride; Weisberg, Mike; Allen, Tim; Wright, Gwen  
**Subject:** RE: Historic Area Work Permit Application #410740

Jennifer -

I am available the morning of the 14th as early as 9:30.

What we will need to do is an inventory of all the windows proposed for replacement that have not already been approved for replacement. Each of the windows should be assigned a number that is noted on a photograph such as those submitted for the HAWP application. Then, in a list or on a chart, the condition of each window should be recorded. Notations should be made regarding the frames, sashes and sills. A close-up photograph should be taken of each window. A standard ranking system for the condition of the window parts follows:

- Routine Maintenance: paint removal, reglazing, weatherstripping, caulking, and repainting
- Stabilization: where there is a small degree of physical deterioration that can be repaired in place by patching, waterproofing, consolidating, and regluing the existing material
- Partial Replacement: when there is localized deterioration in specific areas these members are totally removed and new ones are spliced into the existing fabric
- Total Replacement: the entire fabric of the window has deteriorated

You should have received the HPC Memo already, but if you haven't yet, the standard the Commission set is "Only three windows at the rear of the property and any others that the applicant can demonstrate to staff are beyond repair are approved for replacement."

I will not be making any decisions onsite, but facilitating the inspection of the windows. Let me know what time works best for you on the 14th.

-Tania Tully

Tania Georgiou Tully  
Historic Preservation Planner  
Montgomery County Department of Park and Planning  
8787 Georgia Avenue  
Silver Spring, MD 20910  
301-563-3400

2/28/2006

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www.mc-mncppc.org

-----Original Message-----

From: Hanson-Kilbride, Jennifer [[mailto:Jennifer\\_Hanson-Kilbride@omb.eop.gov](mailto:Jennifer_Hanson-Kilbride@omb.eop.gov)]  
Sent: Monday, February 27, 2006 2:11 PM  
To: Tully, Tania  
Cc: Eric Kilbride; Weisberg, Mike; Allen, Tim  
Subject: Historic Area Work Permit Application #410740

Tania,

Thank you for your assistance with the application process for the Historic Preservation Commission. As follow-up from last week's hearing, it's my understanding that we would meet again to review the other windows in order to determine whether they could be replaced. Would you be available the week of March 13th for a follow-up visit? As we had discussed after last week's meeting, Tim Allen and Mike Weisberg, from Pella Windows, would also like to be present for the meeting. Would the morning of 3/14 or 3/16 work for you? If you would like to discuss this issue, I can be reached during the day at 202-395-7761. I look forward to hearing from you.

Thank you,  
Jennifer Hanson-Kilbride  
511 Philadelphia Avenue, Takoma Park

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THE MARYLAND-NATIONAL CAPITAL PARK & PLANNING COMMISSION  
HISTORIC PRESERVATION COMMISSION

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HISTORIC AREA WORK PERMIT - : HPC Case No. 31/07-06C  
1019 Grant Avenue :  
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:  
HISTORIC AREA WORK PERMIT - : HPC Case No. 35/13-06C  
5 Oxford Street :  
6 :

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-----X  
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HISTORIC AREA WORK PERMIT - : HPC Case No. 31/07-06D  
9717 Capital View Avenue :  
8 :

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-----X  
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HISTORIC AREA WORK PERMIT - : HPC Case No. 37/03-06E  
7102 Poplar Avenue :  
10 :

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HISTORIC AREA WORK PERMIT - : HPC Case No. 37/03-06F  
511 Philadelphia Avenue :  
12 :

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:  
HISTORIC AREA WORK PERMIT - : HPC Case No. 37/03-06G  
7318 Piney Branch Road :  
15 :

14

-----X  
:  
HISTORIC AREA WORK PERMIT - : HPC Case No. 25/2-1-06A  
15021 Duffer Mill Road : (Master Plan Site 25/2-1)  
16 :  
Maple Spring Barn

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:  
HISTORIC AREA WORK PERMIT - : HPC Case No. 25/2-1-06A  
15021 Duffer Mill Road : (Master Plan Site 25/2-1)  
17 :  
Maple Spring Barn

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20 A meeting in the above-entitled matters was held on Wednesday, February 22, 2006,  
commencing at 7:38 p.m., in the MRO Auditorium at 8787 Georgia Avenue, Silver Spring, Maryland 20910,

before: 22

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COMMITTEE CHAIRMAN

Julia O'Malley

COMMITTEE MEMBERS

Caroline Anderson, Takoma Park  
Nuray Anahtar, Bethesda  
Timothy Duffy, Potomac  
Warren Fleming, Damascus  
Jeff Fuller, Brookeville  
Thomas Jester, Chevy Chase  
David Rotenstein, Silver Spring  
Lee Burstyn, Rockville

ALSO PRESENT:

Gwen Wright, HPC Supervisor  
Anne Fothergill, HPC Planner  
Michele Oaks, HPC Planner  
Tania Tully, HPC Planner

PROCEEDINGS

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MS. O'MALLEY: Good evening. Welcome to the February 22nd meeting of the Historic Preservation Commission. I am Julia O'Malley, and I am the Chair of the Commission, and I will have the other Commissioners and the staff introduce themselves starting with the Commissioners on my left.

MS. ANAHTAR: Nuray Anahtar, Bethesda.

MR. JESTER: Tom Jester, Chevy Chase.

MR. FLEMING: Warren Fleming, Damascus.

MR. ROTENSTEIN: David Rotenstein, Silver Spring.

MR. DUFFY: Tim Duffy, Potomac.

1 MS. ALDERSON: Caroline Alderson, Takoma Park.

2 MR. BURSTYN: Lee Burstyn, Rockville.

3 MR. FULLER: Jeff Fuller, Brookeville.

4 MS. WRIGHT: Gwen Wright, Historic Preservation Supervisor.

5 MS. OAKS: Michele Oaks, Historic Preservation Planner.

6 MS. TULLY: Tania Tully, Historic Preservation Planner.

7 MS. O'MALLEY: Anne?

8 MS. FOTHERGILL: Anne Fothergill, Historic Preservation Planner.

9

10 MS. O'MALLEY: And the next case that we are hearing is 511 Philadelphia  
11 Avenue. Can we have a Staff Report, please?

12 MS. TULLY: Yes, we do. 511 Philadelphia Avenue in Takoma Park is a  
13 contributing resource within the historic district. It's a 1920s Craftsman-style bungalow, as seen in  
14 your packet. In Takoma Park, with its contributing resources, they do receive a more lenient  
15 review than outstanding resources, and with special emphasis placed on changes that are visible  
16 from the public right-of-way, as if there were no trees or vegetation, meaning that what happens  
17 on the rear is where the most leniency can occur. There are also some additional factors  
18 mentioned in the Takoma Park Historic District Guidelines that mention that preserving the  
19 predominant architectural features of the resource should be encouraged, as well as, and that  
20 replacement and damage of original architectural features is discouraged.

21 The applicants are proposing to replace 16 of their historic six-over-one, double-  
22 hung windows, with the mountings being quite narrow, with a goal of increasing the energy  
23 efficiency of their home. Replacing windows and window sashes in historic resources should not  
24 be taken lightly. Windows are one of the primary characteristics of a home, often, you know,  
25 referred to as the eyes of the house, and so the Staff took that in mind in this Report. It is also

1 important to be clear that when Staff is discussing window replacement, we are talking about just  
2 the sash replacements, including retention of exterior trim and historic jam. Now, keeping in mind  
3 specific guidance from the Takoma Park Guidelines, the Staff recommends flexibility in  
4 replacements are proposed at the rear of the property, and it is for this reason that replacement of  
5 three windows, as shown on circle one, I think, that they should be allowed to be replaced. It is to  
6 the applicants' credit that replacement of all windows is not proposed. However, and  
7 unfortunately, the remaining 13 windows proposed for replacement have the significant and  
8 characteristic six-over-one mutton pattern, and are visible from the public right-of-way. Even if  
9 Staff were to recommend replacement, which we are not, the replacement sashes will need to be  
10 single-paned, in order to retain the thin, mutton profile. The current proposed mutton profile  
11 replacements would be 7/8" wide with -- well, let me -- I have a couple shots of the window. Staff  
12 did the ride on-site saw all the windows. And, in addition to the fact that these windows are six-  
13 over-one, they are also in a lot better condition than we typically see, although are showing some  
14 of the issues that do exist, including quite a bit -- there is some new glazing -- and, you can't see it  
15 all here, but there is a gap, so I circled it. There are issue. However, in many cases, the sash  
16 ropes still exist, although when we rehabilitate, typically those are replaced. But, they are, for the  
17 most part, functioning windows. There are -- and this is just a shot also showing the jam and the  
18 exterior. So, you know, we are not denying that they are old windows, and that they need some  
19 work. However, Staff research indicates that rehabilitation and proper maintenance of historic  
20 windows combined with proper installation and maintenance of storage windows, is as energy  
21 efficient and cost effective as replacement windows. In the past ten years there has been a lot of  
22 discussions surrounding the efficiency of historic windows, and you know, time and again, it has  
23 been shown that replacement windows are not the panacea that property owners are seeking.  
24 And I will just --

25 In my Staff Report, I had a few excerpts, and I am going to even shorten that



1 even more for this verbal report. From the testing of the energy performance of wood windows in  
2 cold climates, the report to the State of Vermont, Division of Historic Preservation, they assert that  
3 replacing a historic window does not necessarily result in greater energy saving than upgrading  
4 that same window. From the National Park Service's Preservation Brief 9, Repair of Historic  
5 Wooden Windows, appropriate contemporary weatherstripping should be considered an integral  
6 part of the repair process for windows. The use of exterior storm windows should be investigated  
7 whenever feasible, because they are thermally efficient, cost effective, reversible, and allow the  
8 retention of historic windows. And finally, the Virginia Energy Savers Handbook, Chapter 4, states  
9 that storm windows reduce heat loss through single-glazed windows of more than 50 percent by  
10 doubling the R value and reducing air leakage. And there is lots more that can be read regarding  
11 that.

12 Therefore, it is Staff's recommendation, taking all of this into consideration, that  
13 we are recommending replacement of the three windows, as shown on circle 20, with the  
14 condition that -- well, approval with the condition that only three are replaced; that if the  
15 Commission even agrees with those three, that the new sashes fit within the existing frames; each  
16 replacement will be individually measured to fit the existing openings; the muttoms will match the  
17 new historic windows, historic frame; and any historic exterior trim and jams will be retained. And  
18 additionally -- well, I just don't want to talk more about the specifics of the window, and I have just  
19 added in -- encourage that the applicant learn a little bit more about the energy efficiency of  
20 existing windows. And, we recommend that the applicant rehabilitate the windows, placing storm  
21 windows, and to take advantage of the available historic preservation tax incentives. Do you have  
22 any questions?

23 MS. O'MALLEY: Well, I'll just mention on this one then, in this case, we are  
24 looking at the Takoma Park Historic District Guidelines, as well as the Secretary of Interior's  
25 Guidelines.

1 MS. TULLY: Correct. And that's what I was quoting from earlier.

2 MS. O'MALLEY: Could the applicant come up, please.

3 MS. ALDERSON: I have just one other question. On the credit permit, would the  
4 credit be available for a rehabilitation that included storm windows?

5 MS. TULLY: Yes.

6 MS. ALDERSON: What?

7 MS. TULLY: Yes.

8 MR. JEFFERS: One more question. Did the Staff determine that all the windows  
9 are in this poor condition?

10 MS. TULLY: We walked around, and not all of them were attempted to be  
11 opened, but those that are proposed to be replaced seem to be all in the same condition, and  
12 that's what the property owners said as well. I, you know, again did observe some cracked pains,  
13 and some failing weatherstripping, as well as at least one, the sash board is broken. But, for the  
14 most part, they seemed in really good shape, compared to what we usually see.

15 MS. O'MALLEY: Could you state your name for the record, please?

16 MS. KILBRIDE: Hello. I am Jennifer Kilbride. I am representing myself and Eric  
17 Kilbride, my husband. And I also have Tim Allen from Pella, and Michael Weisberg from Pella as  
18 well. They have some specific materials to provide that will show you the window and how we are  
19 requesting approval of replacing the window with a wooden window that's a six-over-one. As Ms.  
20 Tully indicated, we are concerned about energy efficiency, also the noise. We are on Philadelphia  
21 Avenue. We do have rattling with the windows as well. In order to not have the rattling, most of  
22 them are painted, some of them are painted, in order to shut. That's obviously a safety issue, so  
23 we are concerned with that.

24 In Takoma Park, in the district, the historic district, Pella is actually, has renovated  
25 or has replaced windows for 248 Park Avenue, and that's a very similar to six-over-one, so that is

1 one of the homes. In fact, we have some other materials that will show that home and how that's  
2 a very similar to what we are requesting be replaced. The other issue is with the gap. That's  
3 certainly an issue, as Ms. Tully indicated, and from the picture, you can see that, a lot of energy  
4 lost there. We were concerned with storm windows. We do like the appearance of our windows  
5 very much, and we are concerned that the storm windows actually detract from the view that we  
6 have and the look of our current windows. So we were pleased that Pella had a window that's  
7 nearly identical with what we have. The mutton, as it was mentioned, is not as narrow, although  
8 we do have in our basement windows, muttons that are exactly the same measurement. So, in  
9 some ways, we have actually two different measurements for muttons on our home. And if you  
10 can provide me with some of the materials for you. I apologize we don't have enough for  
11 everyone, but you'll see in here --

12 MR. ALLEN: Well -- let me make a comment. Is that possible?

13 MS. KILBRIDE: Yes. Oh, I am sorry. Yes.

14 MS. O'MALLEY: Certainly.

15 MR. ALLEN: I'm Tim Allen. I am not the famous one. We actually went out, and  
16 from the photograph, you can see there is more than just gaps there. There is also rot that is  
17 occurring on some of these windows. On operation, I think you will find chatter. I think you will find  
18 that the existing jams are actually bowed in some cases. So even refurbishing the sashes -- we  
19 put the square sashes in -- and then putting storm windows over those particular mutton that are  
20 on the home, I think that once you look at the photographs and look at curb appearance, if you  
21 need those, basically what we are deciphering here, we have a .5 mutton in some cases, and we  
22 have a .75 mutton in some cases. Pella has a .878 mutton. So, I guess our point would be is that  
23 we are focusing in on the size of the mutton. But if we are putting a storm window over the  
24 mutton, and in some cases, if you look at the top of properties around where a storm window has  
25 been placed over an existing window, it really defers from the aesthetics of the property. Also, we

1 have a situation of where we have the color, the aesthetics. We plan on painting the windows to  
2 keep the color scheme of the home. So, what we are really analyzing here, we are analyzing a  
3 .25 difference in some cases, and we are analyzing a .03, okay, which, to the human eye, I think  
4 is, I think you would agree that is possible for the most functional curb appearance of the site.  
5 The windows from the photograph, I would like to use the Staff's, you know, photographs for, you  
6 know, it's a closer shot. I think that -- you don't have to be in the window business -- it kind of  
7 speaks for itself, that refurbishing it would require the homeowner quite a bit of refurbishing, okay?  
8 And it would require the exterior trim, in some cases, be taken off, which we think would be  
9 affecting other issues on the outside of the home. So we ask for your consideration and your  
10 approval. I think, from prior -- if there is any relation to history, I think what was determined, are  
11 we actually causing harm or zoning-type of downgrading to this particular property, and I would  
12 hope your consideration would be that we are not.

13 MS. KILBRIDE: The pictures in there are all of the other areas in Takoma Park  
14 that have Pella windows. The one -- 248 Park I believe is the third picture in there. Our home is  
15 the first two. Those are the ones where the lower two Pella windows, six-over-one.

16 MR. WASHBURG: And then, you have approved in the past both 49 and 59 Elm  
17 Avenue.

18 MR. ALLEN: But there are no mutttons on those particular houses.

19 MR. WASHBURG: Actually I think we are okay.

20 MR. ALLEN: At 49 there is -- at the very top -- and you have -- and there is a  
21 storm I believe over those, and that's in the photograph. And it kind of gives you an idea of what a  
22 storm would look like over a mutton situation.

23 MR. O'MALLEY: Yes, Commissioner?

24 MR. JEFFERS: I think generally the starting place for window replacement has to  
25 be with the condition of the existing windows, and if the windows are original and they are deemed

1 to be contributing elements to the character of the property, the general approach that is  
2 recommended is repairing/refurbishing the windows. In this case, that's why I asked the question  
3 about the overall conditions. There are only a few photos, but the indication seems to be that,  
4 generally speaking, they are all, you know, let's say [REDACTED] repairable conditions, or serviceable condition,  
5 as opposed to being beyond repair. I mean, there are plenty of cases where windows are beyond  
6 repair, and in those cases, I think it is appropriate to look at replacement that will match the visual  
7 characteristics and site lines and profiles. So, I think the Staff's Report is appropriate, and the  
8 idea of installing storm windows is not going to dramatically change the visual characteristics. I  
9 mean, yes, it is a slightly different appearance from the exterior, but it is also preserving the  
10 historic fabric. And, unless we can get an insulated glass unit in, it also adds a pane of glass, as any  
11 storm window does. I don't think you can argue that by putting in that type of window, you are  
12 going to dramatically improve the appearance versus putting a storm window in. It is different  
13 than leaving a single-glazed window. I think I am concerned about replacing what would appear  
14 to be windows could be retained and true to the character of this property and the district.

15 MR. ALLEN: They -- I am sorry.

16 MR. ROTENSTEIN: I was just going to add real quickly to that. By adding the  
17 storm windows you are essentially adding something that is reversible and retaining the root of the  
18 materials that contribute to the significance of the property. By removing the window sashes,  
19 replacing them, you are permanently removing parts of the fabric of the original house, and that's  
20 not reversible.

21 MR. ALLEN: May I ask that we put the photograph back up, please? Is that  
22 possible?

23 MS. TULLY: Yes.

24 MR. ALLEN: And while the photograph is coming up, a close-up shot, in relation  
25 to just the energy efficiency I believe we were talking about, basically what you are doing, in this

1 particular case, I mean, you have some [REDACTED] substantial repair there. I mean, and we don't know what  
2 we are getting into once we start ripping out that particular piece of wood there. We have a cavity  
3 within the house -- we have a [REDACTED] profile of the sash that is virtually matching in the existing, as far as  
4 the sash profile goes. We are providing the light pattern that goes with the character of the  
5 house. We are within .03 in some cases of providing the same size mutton that goes with the  
6 property. I guess it could be debated, you know to, you know -- my experience has been, I have  
7 been Washington Gas for a certain amount of years, and in relation to the energy comments from  
8 the Staff, which I appreciate, we went through and actually encouraged homeowners to replace  
9 with sealed, insulated glass, because it was determined by the Washington Gas people at that  
10 particular time that you were actually applying something on top of an existing window, instead of  
11 it being integrated and engineered, as far as a part of the window. And the energy efficiency was  
12 not there. It actually would penetrate through the window, and if the sashes were following the  
13 line of a bowed frame in place, there would be no value of putting a storm window, because air  
14 infiltration can come through the storm window and still, a square, a perfectly square sash,  
15 [REDACTED] mounted in a frame that is bowed, you will still have gaps of air infiltration, noise, and other things  
16 that our customer here is looking for. So, there are other issues, and we feel that we are not  
17 causing harm to this property. And, please, I beg you to look at the difference in between the size  
18 of the mutton, which I think is why we are here, along with these other issues. And, please  
19 [REDACTED] consider what is there, as far as repair, the amount of repair that would have to be done.

20 MS. O'MALLEY: Do you do window restorations?

21 MR. ALLEN: No, we do not. Pella does not -- we are not in that business. We  
22 have 40-some carpenters that we do have a company that we own. It's called Window Pro. It is  
23 part of --

24 MR. FULLER: You also don't do sash replacements?

25 MR. ALLEN: We do [REDACTED] we have another company that we own that we could do

1 [redacted] sash replacements. So we know the business. We call it Window Pro. And that is part of the  
2 [redacted] K.C. Company, Kassidy Company. We are the distributor of Pella, so we have the Pella windows.  
3 And we also have another company, because of service issues from our competitors, that they  
4 cannot service their own product. We found a little market that we would go around and service  
5 other people's windows.

6 MR. FULLER: Pella does not custom-make a sash to fit in the existing openings?

7 MR. ALLEN: We could make a sash to fit within those existing openings and  
8 [redacted] charge the customer for that particular sash, but my 23 years in this business is telling me that I  
9 am not adding value to that particular home, as far as energy efficiency.

10 MR. FULLER: No, but you may be preserving it

11 MR. ALLEN: Well that's, that's debatable.

12 MR. FULLER: That's what we are here to talk about tonight.

13 MS. ALDERSON: Can we have identified the locations where we have a jam that  
14 [redacted] is mis-shapen, that particular condition that was being discussed a moment ago?

15 MS. TULLY: Umm --

16 MS. ALDERSON: There was a --

17 MS. TULLY: Oh, I know. What is the question you have?

18 MS. ALDERSON: You are pointing to, in the  
19 image --

20 MR. FULLER: We are talking about 22 windows.

21 MS. TULLY: I have not -- I did not specifically  
22 -- I do not know which window he is talking about that has the bow.

23 MS. ALDERSON: Where are those gaps between the actual structure of the wall  
24 and the --

25 MS. TULLY: That's -- I mean, I cannot say that there may not be there. Typically

1       though, from what I know in rehabilitating windows, if it's just bowed in one direction, it's fine. It's  
2       when it is starting to get twisting and, you know, going in several directions --

3                   MS. WRIGHT: So, is it your statement that all 16 windows have bowed jams?

4                   MR. ALLEN: No, it is not. We went through the --

5                   MS. WRIGHT: Okay. How many do have bowed jams?

6                   MR. ALLEN: Well, we were -- when we were out there we went through the same  
7       as I guess the Staff. We went through a few of them and determined that this was going to be a  
8       continued situation throughout the property. We did not do all --

9                   MS. WRIGHT: So, the answer is, you don't know, exactly know?

10                  MR. ALLEN: We don't know exactly. That is the answer. I mean, we are

11       welcome to go put a level on every one of them, but I think it will be, you know, continuous

12       throughout the property. I mean, the windows are the same age and they are chattering --

13                  MS. KILBRIDE: Yes.

14                  MR. ALLEN: -- throughout.

15                  MR. FULLER: But I mean, you can add weatherstripping to the sashes as well.

16       There are a number of things you can do to improve the sashes. And this is less than 80 years

17       old?

18                  MS. KILBRIDE: It's 80. It's almost 80, but not 80. 80 this year actually.

19                  MR. FULLER: It's not a particularly old window.

20                  MR. ALLEN: And that's maybe, you know, something to consider as well. I

21       mean, you know, we are replacing windows that are over 100 years old in some cases. And

22       actually -- this is 80?

23                  MS. KILBRIDE: 80, yes.

24                  MR. ALLEN: 80.

25                  MS. KILBRIDE: We had concerns about the overall feasibility of addressing all of



1 these different issues, in addition to the energy efficiency, in addition to the noise issues, all these  
2 combined. That's why we thought this window that Pella offered, six-over-one, was an ideal

3 situation given everything considered, and all of the different aspects that we have to address...

4 And, I know Ms. Tully provided some different information on restoration, and that was very

5 helpful. Some of the information was, many of it, most of it was different companies outside of the  
6 area. And so that's also another challenge that we have is the ability to restore here. From what

7 we understand, there is quite a waiting list. So that, if that is the direction which, you know, we are

8 obviously requesting that that not be, but if that is, that is something that would be, as a citizen of

9 this area, significantly helpful, to have a better understanding of restoration in this area.

10 MR. JESTER: Let me try to understand this. The proposal is to put in the Pella

11 window, but it's not just the sash replacement? So you are going to have to remove casings and,

12 in order to get the same sight lines, you have to -- unless you are going to insert it into the same

13 opening, which would change the window opening size considerably, you would be ripping out a

14 lot of materials to install these windows. This would be incredibly disruptive to your interior --

15 MR. DUFFY: Exterior.

16 MR. JESTER: -- exterior and interior.

17 MR. ALLEN: Umm --

18 MR. JESTER: I think there are some -- I mean, from just -- I think Commissioner

19 Fuller said ahead, there are some -- yes, there is a need, we have to have energy efficiency, but

20 that has to be balanced with the mandate that we have to preserve buildings in this historic

21 district. The starting point, from my perspective, is the condition of the original windows. We don't

22 have conclusive evidence at this point that all of these windows are beyond repair. If that was the

23 starting point, then we could talk about what the replacement should be. There seems to be

24 viable alternatives, storm windows. Or, if there was evidence that these windows were beyond

25 repair, we would talk about an appropriate sash replacement to match the exact profiles and

1 [REDACTED] of the original windows. So, I am not in support of the proposal. I  
2 concur with the Staff's recommendations.

3 MR. DUFFY: Let me put Commissioner Jester's points in a question form. Are  
4 you proposing to replace the existing windows with windows of identical size, which would require  
5 the kind of demolition on the exterior and interior, and replacement of siding, exterior, to match --

6 MR. WASHBURG: We are not.

7 MR. ALLEN: No. That would be what we would  
8 call --

9 MR. DUFFY: Excuse me.

10 MR. ALLEN: I am sorry.

11 MR. DUFFY: So you are proposing to change the window sizes?

12 MR. ALLEN: No. We are driven by glass size, okay, and aesthetics. So --

13 MR. DUFFY: Are you proposing to put in windows that are the same size as the  
14 existing, or that are smaller?

15 MR. ALLEN: I am proposing, I could put in the same exact size, glass size, sash  
16 size, okay? Because, what happens, there is a pocket where the current rope is following right  
17 now, and we have a half-inch frame that fits within that particular pocket, okay? So, you are  
18 taking up that dead space that the cord -- there is also weights in the wall -- so we also did an  
19 architectural drawing, to show you how we would do the installation, and also some profiles, if you  
20 would like to see that, because it is not a full frame tear-out at all, if you would like to --

21 MS. O'MALLEY: Yes.

22 MR. ALLEN: We brought six of them. We didn't --

23 MS. O'MALLEY: You can pass them around.

24 MR. ALLEN: We did a before and after. And at the bottom left-hand -- this is  
25 from our people inside -- Mike, if you kind of give the Commissioner Chair -- down at the bottom

1 left-hand is the before existing profile of scenario. We can also take out the inside pocket and  
2 gain additional space, if necessary. So we have a couple of solutions, but we do not plan on  
3 touching the exterior trim and doing a full tear.

4 MR. BURSTYN: I have a question for the applicant, specifically. So, the main  
5 reason you are before us, or that you want to perform the window replacement is energy  
6 efficiency?

7 MS. KILBRIDE: Energy efficiency followed by noise reduction as well, and  
8 obviously to address the fact that we have windows that don't open, windows that rattle, and such,  
9 and so we would be looking at extensive renovation and storm windows. And therefore we  
10 thought this other option was the best out of avenue as well to address of those.

11 MR. BURSTYN: So we have, but I am noticing you have, let's see, lived in the  
12 house since what, 1994?

13 MS. KILBRIDE: For three years, actually for three years. That's the previous  
14 owners. That's probably the old -- that doesn't include --

15 MR. BURSTYN: Oh, I see.

16 MS. KILBRIDE: Uh-huh.

17 MR. BURSTYN: Okay. So you have been there three years?

18 MS. KILBRIDE: Right.

19 MR. BURSTYN: And so, what was your experience with energy costs that led  
20 you to the conclusion that you had to take some action? I mean, was --

21 MS. KILBRIDE: We spend \$2,400 on heating --

22 MR. BURSTYN: Yes.

23 MS. KILBRIDE: -- natural gas heating. I think that's -- even though -- and I work  
24 on energy issues, so that seems relatively high to me.

25 MR. BURSTYN: So how old is the -- I mean, did you replace the furnace to --

1 MS. KILBRIDE: The furnace is -- well actually, the furnace is newer. It was  
2 replaced by the previous owners, from my understanding. You can --

3 MR. BURSTYN: Yes. You didn't take any other energy measures?

4 MS. KILBRIDE: We have. We actually have on, not our original windows, but we  
5 have a back porch area that has all windows that are also relatively old, but we have covered  
6 those all with plastic surroundings. We obviously didn't want to hurt our windows. We have done  
7 some stripping with kind of like the styrofoam. Unfortunately, of course, that touches the wood  
8 part, and so that was a concern. But we have done that in many of the areas.

9 MR. BURSTYN: Because I was thinking that windows are only just one part of  
10 the whole energy package. So --

11 MS. KILBRIDE: Sure. We have significant --

12 MS. O'MALLEY: I think the ceiling, the attic area, the ceiling insulation is the  
13 biggest loss.

14 MR. BURSTYN: Did you do anything there?

15 MS. KILBRIDE: We haven't specifically done anything in that area. We have --

16 MR. FULLER: Excuse me. Something else, these really don't reflect existing  
17 conditions do they?

18 MR. ALLEN: Well, we actually went out and measured --

19 MR. FULLER: I mean, you've got a jam condition that shows existing, as if there  
20 was no depth to it, so there is no way you have weights or other things like that dropping down?

21 MR. ALLEN: We are not showing the weights or the cords, but there is -- it  
22 should be showing a pocket there.

23 MR. FULLER: So this -- I am wondering, how much do you think you are  
24 demolishing to be able to put your jams, so that certain --

25 MR. ALLEN: Actually, you take out the cord, the weights, and actually stay within

1 the wall. There is about a two-inch dead-air space in the wall area, and that's another relation that  
2 a storm window, you know, is not going to address. Airs will go around the window. This  
3 particular sample here happens to have a brick mold that would not be on the window, okay?

4 MR. FULLER: I guess what I am wondering is, to the exterior of the house, in  
5 order to get something in the way you are showing it, I am assuming you are taking off some of  
6 the sidings and definitely all of the trim?

7 MR. ALLEN: No, we are not.

8 MR. WASHBURG: Uh-huh.

9 MS. KILBRIDE: No.

10 MR. ALLEN: No. That would be -- your sub-sills and everything would have to be  
11 coming out at that point, which in those drawings, show the existing sub-sills. And down in the -- I  
12 am not sure -- down in the left-hand corner, they are showing existing and the new protocol.

13 MS. WRIGHT: I think one thing I would like to just do for the Commission, I  
14 guess I would like to rely on some of the Commissioners who maybe haven't been on -- this is not  
15 a new issue. These kinds of, the Commission has addressed applications of this kind on multiple  
16 occasions. And it's always very hard, but I think in terms of preservation it comes down to, I  
17 always the example, but what exactly are we preserving? What makes up an old house? If you  
18 could say, okay, we are going to take out all the windows. We are going to put in new windows  
19 that look exactly like the old ones. And then we are going to take all the siding off, and we are  
20 going to put the new siding on that looks exactly like the old siding. Then, on the roof we are  
21 going to take off the old roof and put on a new one that looks exactly like it. And, tear off the front  
22 porch, but put a new one on that looks exactly like it, maybe using, you know, some other material  
23 doesn't rot, but it looks exactly the same. And I think that the issue is, and this is, you know, it has  
24 nothing to do with energy efficiency, it really is a preservation, is, you know, when do you get to a  
25 point where you might as well create a whole new house? I mean, you create beautiful houses

1 that look historic. We have seen that happen in the Kentlands, and in many other communities  
2 around the County. You know, what is it that makes a house historic? It is all component parts. It  
3 is the windows, the wood siding, the original roof, the doors, the front porch. I have made the  
4 comparison, it's like a Tiffany lamp. If you had an original Tiffany lamp, it would be worth \$10,000.  
5 But, if every time a piece of the glass in that Tiffany lamp cracked or looked a little dirty and you  
6 said, oh, replace that piece of glass, and eventually you would replace every piece of glass, and  
7 eventually it would be a lamp that would be \$100 instead of, you know, \$10,000, because it would  
8 be a completely new lamp. And so, again, this is pure preservation philosophy. Windows are an  
9 integral part of the historic fabric of the building. And, we understand there is lots of, you know,  
10 reasons and ideas why folks today may want to replace them, but it has been this Commission's  
11 policy that they are integral to the historical character of the building. It has been pretty much a  
12 pretty standard policy.

13 MS. KILBRIDE: Excuse me.

14 MR. FULLER: This is what I was going to propose as one sort of modification to  
15 the Staff recommendation, is I agree with the approach that basically that it is rehabilitation,  
16 adding storm windows and replacement of the hardware, but if some of the other windows,  
17 specifically the sashes are so warped that Staff believes that they are not in a position to be  
18 repaired, I wouldn't mind if those three gets extended to the ones that can be demonstrated that  
19 the sash could not be reasonably repaired. And that way we could end up with something that we  
20 would leave in your hands, rather than having to have to come back to us.

21 MS. O'MALLEY: No. I think it would have to come back to the Commission,  
22 since we would have to see that these are windows that cannot be repaired.

23 MR. FULLER: Well, we are going to be relying on the Staff's judgment anyhow at  
24 that point. We are not going to physically go examine each window, so.

25 MS. O'MALLEY: It would come back only if the applicants disagreed with Staff's

1 recommendation.

2 MS. ALDERSON: Provided that they provide documentation showing additional  
3 condition information. We are not denying them now.

4 MR. JESTER: As well as documentation to show that the replacement sash  
5 matches the original sash.

6 MS. ALDERSON: Yes. I mean --

7 MR. FULLER: What is written here is a sash replacement, not an insert.

8 MR. JESTER: I am comfortable with that. I wouldn't be comfortable if they were  
9 proposing a full window replacement.

10 MS. ALDERSON: Yes. I am comfortable with the slide-ins. One other approach  
11 that is worth looking at, the exterior is not the only alternative for storms that, you know, they can't  
12 fix. They are more troublesome than a new window, I mean, admittedly. I mean, they come off,  
13 they come off, that's a job. But, you can put them on the inside, so it doesn't affect the outside,  
14 that's an option. It keeps them cleaner. And the other is that, and it is playing in an old window, I  
15 mean, there is no getting around that. And, no matter what, they were meant to have play, but  
16 that's another reason that, for a storm, you might want to consider an interior as the interior  
17 addresses the sound issue. In the federal buildings, we use the interior not exterior storms for  
18 that reason, the street noise. And that the other -- one is sound, and the other is that, for dealing  
19 with the gaps, it is true that you still have the inner pocket where the weights are, and that requires  
20 a sealant, and you need to figure out if the caulking needs to be replaced. So, if you are looking  
21 at an interior storm, resealing around those gaps would be part of that, but could address that  
22 problem, and in a way that is aesthetic. And the one other size, and certainly, you know, Pella has  
23 taken replication, you know, as far as it humanly can be taken, but, you know, I work for GSA, and  
24 we work with Pella, and it is amazing what you have accomplished over the last ten years. But we  
25 can have the old window. I have 115-year-old windows. You can't beat the density of the wood.

1 [redacted] That old growth wood is not available. So that's the one thing that you do get in keeping the  
2 window, that, and the sashes, I mean, they are kind of indestructible, also the heaviest, and one of  
3 the benefits of the old sash is that [redacted] nothing can replace the quality of that wood, unless it has really  
4 been abused. So, maybe, I am sure may be better than it looks.

5 MR. FULLER: Let me try to make the recommendation then that we approve [redacted]  
6 Case 37/03-06F, with the modification to condition one, being the three windows at the rear of the  
7 property, and any others that can be demonstrated to the Staff that can't be viably restored, are  
8 approved for sash replacement, and then conditions two through five, as stated.

9 MS. O'MALLEY: Is there a second?

10 MR. DUFFY: Second.

11 MS. O'MALLEY: Is there more discussion?

12 (No audible response.)

13 MS. O'MALLEY: All in favor, raise your right hand. All right. That's a unanimous  
14 approval.

15 MR. ALLEN: Thank you.

16 MR. O'MALLEY: You might want to consider also that several of the homes in  
17 Kensington, they have been putting wood storm windows up, and painting them the same color as  
18 the trim, and they look gorgeous.

19 MR. ALLEN: Thank you.

20 (Whereupon, at 10:00 p.m., the meeting is adjourned.)

21



## WINDOW REPLACEMENT

Property owners and developers undertaking rehabilitation projects for both Tax Act Certification and Section 106 Compliance are encouraged to repair and retain existing historic windows. However, in some cases, the windows may have deteriorated and may need to be replaced. In order to show a need for total window replacement, the condition of the existing windows must be documented and their replacements must conform to the Secretary of Interior's *Standards for Rehabilitation*.

### Survey

Before windows can be replaced in a rehabilitation project, the existing condition of each window should be documented. This should be undertaken in the form of a window survey. The survey is intended to identify the extent of deterioration in each window and to provide a decision base as to whether the windows should be repaired or replaced. It is recommended that the survey be conducted and completed by someone who is knowledgeable in the field of architectural conservation or building conservation.

In order to complete a window survey the following information is needed:

- Drawings
- Clear, color, detailed, photographs or representative windows (all major window types, all elevations, and windows in varying conditions of deterioration), numbered to coincide with the elevation drawings. Including the following:
  1. full frame photographs of individual windows of the exterior.
  2. close-up views of intersections of sills and frames (exterior)
  3. close up views of sash focusing on bottom rail and muntins (if existing)
  4. full frame photographs of individual windows from the interior
  5. close-up views of sills and bottom rails from the interior.
- A completed survey form. (see enclosed)

The survey form documents the existing condition of the windows and identifies which windows will be repaired, which windows will possibly be replaced, and what the proposed new window treatment will be. The form indicates what the number on the drawing is and its corresponding photograph number. The existing type denotes the material of the window/door and the type of window/door that it is. For example, WD DH would be wooden, double hung and MTL CASE would indicate that the window would be a metal casement. The configuration would be the number of lights in the sash. Possible examples could include, twelve over twelve (12/12), six over six (6/6, or one over one (1/1). There is also space for additional remarks when necessary.

A four level classification system is used to document the existing condition of each of the windows. This classification is based upon the system identified in the National Park Service publication, Preservation Brief #9, "The Repair of Historic Wooden Windows." Class One,

"Routine Maintenance," is associated with small repairs, which are usually performed as a part of a building's annual maintenance program. This may include paint removal, reglazing, weather-stripping, caulking, and repainting. Class Two, "Stabilization," shows a small degree of physical deterioration but can be repaired in place by patching, waterproofing, consolidating, and regluing the existing material. Class Three, "Partial Replacement," has localized deterioration in specific areas. These members are totally removed and new ones are spliced into the existing fabric. In Class Four, "Total Replacement," if the entire fabric of the window has deteriorated, then the only feasible alternative is total replacement.

On the survey form under "Existing Conditions," each sill, frame and sash is rated as to whether it is Class I, II, III, or IV. After all the windows have been rated, they are totaled by class for each of the window elements: sill, frame, and sash are compared. Those windows in Class I, II, and III, should be repaired and those in Class IV should be repaired with exact duplicates. If the number of Class IV windows exceeds 75%, then total replacement may be approved.

### **Replacement**

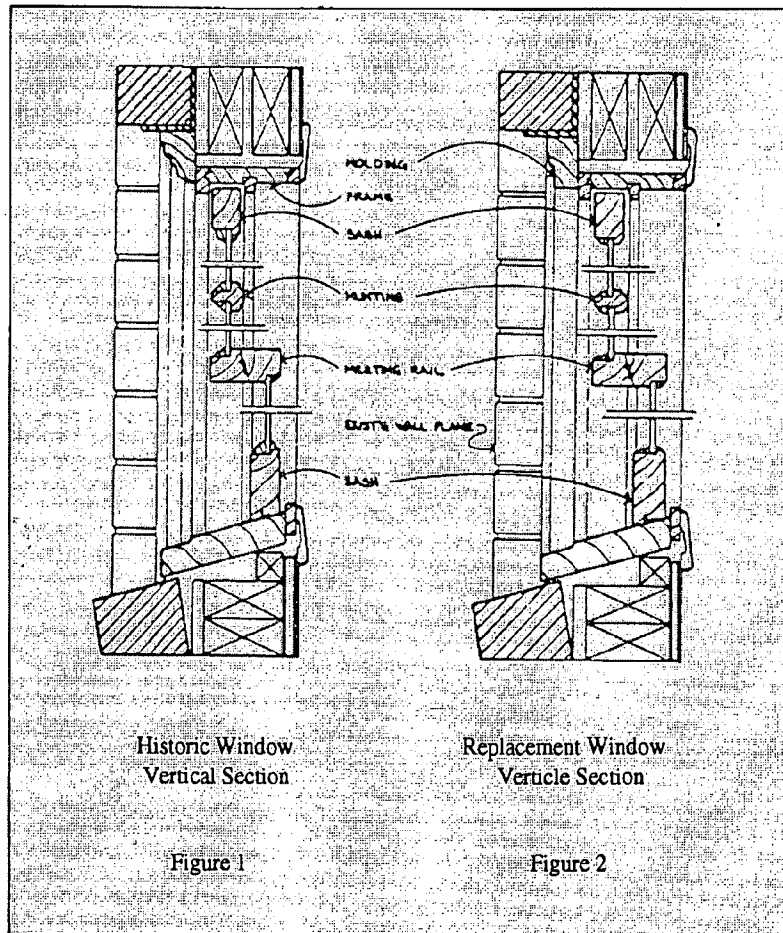
The selection of replacement windows should not begin with what is commercially available, but rather with what is being replaced. A major concern with most replacement windows is that they do not accurately replicate the historic appearance of the existing windows. Replacement sash should match the historic sash in pane size and configuration, glazing, muntin detailing and profile and historic color and trim. Frequently, the profiles of replacement elements, such as muntins, sash, frames, and moldings, are flatter and wider or narrower and thinner than the historic profiles. A stock window may duplicate the exact number of original panes, but a change in relief affects the character of the historic window, which in turn alters the overall appearance of the entire building.

Therefore, window sections will be required for all projects involving total window replacement. In order to compare the original and new profiles, the following information is needed:

- Full horizontal and vertical sections of the existing windows (3"=1'0")
- Full horizontal and vertical sections of the proposed replacement windows (3"=1'0"). If historic windows do not exist in the building and no evidence of the historic appearance can be located, then only proposed sections are required.

Window sections must be carefully detailed so that all parts of the window are shown and materials are specified. A section must show the profiles of muntins, meeting rails, sash, frames, and moldings. It should also show the window's relationship to the existing wall. Below are examples of vertical window sections of both a historic and a replacement window. The new window's profile closely resembles that of the existing window and therefore meets the Secretary of Interior's *Standards for Rehabilitation*.

Example:



To summarize, owners are encouraged to repair the existing windows rather than replace them. If the existing condition of the window, as documented by a window survey, indicates that the window has deteriorated, then the windows may be replaced. All replacement windows will match the originals as closely as possible and must conform to the Secretary of Interior's *Standard for Rehabilitation*.

## **Replacements where there are no historic windows**

Historic windows make a significant contribution to the character of most historic buildings, but many rehabilitation projects begin with a building that has no historic windows. Whether new windows will replace ones that have been previously replaced or will fill openings where windows are entirely missing, the new windows must be consistent with the historic character of the building. The existence of inappropriate replacement windows does not justify further replacements that are not compatible with the building.

The ideal basis for the design of a replacement window is the original historic window. Information on the appearance of the historic window can come from physical evidence that survives in the building or from historic photographs. Evidence of missing historic windows can be misinterpreted, however, and can lead to an inappropriate choice of replacement windows. Especially when working from information on a limited portion of the building, it is important to understand that all windows in a building may historically not have been the same.

Just as the quality and refinement of masonry may differ between the façade and the rear or side elevation, reflecting a hierarchy in the design of the building, the details of the windows may also vary, similarly reflecting issues of cost and appearance. It is obvious that refined face brick with tooled, tinted mortar is more costly masonry than common brick with coarse joints of plain mortar. It may be less obvious that until the 1920's a large-paned, 1/1 window was more costly than a 2/2 or 6/6 window. Prior to the mechanization of glass manufacturing, the added cost of a large piece of glass exceeded the cost of the wooden muntin structure that supported multiple smaller pieces of glass. Thus, a large, mid-19<sup>th</sup> century house might have 2/2 windows on major elevations yet have 6/6 windows on a rear wing; or a turn-of-the-century office block might have 1/1 plate glass windows on street facades, but 2/2 windows on an alley elevation. Glass size is not the only aspect of windows that may differ from one part of the building to another. In urban areas where the spread of fire was a concern, windows in close proximity to other buildings such as those that faced a narrow alley were often metal, instead of wood as would be typical on the primary façade.

Though a single surviving historic window can provide the basis for replacement windows that can significantly improve the overall historic character of a building, such evidence must be evaluated in the context of the design of the building itself. The more that is understood about the factors affecting the choice of windows, the more likely limited historical evidence can be correctly interpreted.





## HISTORIC PRESERVATION COMMISSION

Douglas M. Duncan  
County Executive

Julia O'Malley  
Chairperson

Date: 2/23/2006

### MEMORANDUM

TO: Eric & Jennifer Kilbride  
511 Philadelphia Ave, Takoma Park

FROM: Tania Tully, Senior Planner (BT)  
Historic Preservation Section  
Maryland-National Capital Park & Planning Commission

SUBJECT: Historic Area Work Permit Application #410740

Your Historic Area Work Permit application for window replacement was **Approved with Conditions** by the Historic Preservation Commission at its 2/22/2006 meeting.

The conditions of approval were:

1. Only three windows at the rear of the property and any others that the applicant can demonstrate to staff are beyond repair are approved for replacement.
2. If the HPC approves replacement, only the sashes may be replaced; the new sashes will fit within the existing frames, each replacement sash will be individually measured and fit to the existing openings, and the muntins will match those in the historic windows.
3. All exterior trim and historic jambs will be retained.
4. Additionally, replacement sashes will be simulated divided light wood windows, which contain muntins that are permanently bonded to the interior and exterior of the insulating glass simulating a divided light appearance.
5. The applicant will learn more about rehabilitating the remaining historic windows and install staff-approved storm windows in order to take advantage of the available tax credit incentives.

Prior to applying for a county building permit, if applicable, from the Montgomery County Department of Permitting Services, you must contact your assigned staff person to arrange for your three (3) sets of final permit drawings to be stamped at the Historic Preservation Office at 1109 Spring Street. Please note that although the Historic Preservation Commission has approved your work, it may also need to be approved by DPS or another town government agency before work can begin.

When you file for your building permit at DPS, you must take with you stamped drawings and the official approval memo (given at the time of drawing stamping). These forms are proof that the Historic Preservation Commission has reviewed your project. For further information about filing procedures or materials for your county building permit review, please call DPS at 240-777-6370.

If your project changes in any way from the approved plans, either before you apply for your building permit or even after the work has begun, you must contact the Historic Preservation Commission staff at 301-563-3400. After your project is completed, please send photos of the finished work to HPC staff.

Thank you very much for your patience and good luck with your project!





## HISTORIC PRESERVATION COMMISSION

Douglas M. Duncan  
County Executive

Julia O'Malley  
Chairperson

Date: 2/23/2006

### MEMORANDUM

TO: Robert Hubbard, Director  
Department of Permitting Services

FROM: Tania Tully, Senior Planner *JGT*  
Historic Preservation Section  
Maryland-National Capital Park & Planning Commission

SUBJECT: Historic Area Work Permit #410740, window replacement

The Montgomery County Historic Preservation Commission (HPC) has reviewed the attached application for a Historic Area Work Permit (HAWP). This application was Approved with Conditions at the 2/22/2006 meeting.

1. Only three windows at the rear of the property and any others that the applicant can demonstrate to staff are beyond repair are approved for replacement.
2. If the HPC approves replacement, only the sashes may be replaced; the new sashes will fit within the existing frames, each replacement sash will be individually measured and fit to the existing openings, and the muntins will match those in the historic windows.
3. All exterior trim and historic jambs will be retained.
4. Additionally, replacement sashes will be simulated divided light wood windows, which contain muntins that are permanently bonded to the interior and exterior of the insulating glass simulating a divided light appearance.
5. The applicant will learn more about rehabilitating the remaining historic windows and install staff-approved storm windows in order to take advantage of the available tax credit incentives.

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

Applicant: Eric & Jennifer Kilbride  
Address: 511 Philadelphia Ave, Takoma Park

This HAWP approval is subject to the general condition that the applicant will obtain all other applicable Montgomery County or local government agency permits. After the issuance of these permits the applicant must contact this Historic Preservation Office if any changes to the approved plan are made.





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

DPS-#8

HISTORIC PRESERVATION COMMISSION  
301/668-3400

CONTRIBUTING

# APPLICATION FOR HISTORIC AREA WORK PERMIT

Contact Person: ERIC KILBRIDE  
Daytime Phone No.: 202 374 3170

Tax Account No.: 1161301077351

Name of Property Owner: ERIC + JENNIFER KILBRIDE Daytime Phone No.: 202-374-3170

Address: 511 PHILADELPHIA AVENUE TAKOMA PARK, MD 20912  
Street Number City Street Zip Code

Contractor: K. C. COMPANY, INC. Phone No.: 301-654-9740

Contractor Registration No.: 116048262

Agent for Owner: Michael Weisberg Daytime Phone No.: 202-285-8798

**LOCATION OF BUILDING/PREMISE**

House Number: 511 Street: PHILADELPHIA AVENUE  
Town/City: TAKOMA PARK Nearest Cross Street: PINEY BRANCH / PHILADELPHIA AVENUE  
Lot: P8 Block: 72 Subdivision:  
Liber: 12447 Folio: 4162 Parcel:

**PART ONE: TYPE OF PERMIT ACTION AND USE**

1A. CHECK ALL APPLICABLE:

<input type="checkbox"/> Construct	<input type="checkbox"/> Extend	<input type="checkbox"/> Alter/renovate	<input type="checkbox"/> AC	<input type="checkbox"/> Slab	<input type="checkbox"/> Room Addition	<input type="checkbox"/> Porch	<input type="checkbox"/> Deck	<input type="checkbox"/> Shed
<input type="checkbox"/> Move	<input checked="" type="checkbox"/> Install	<input type="checkbox"/> Wreck/Raze	<input type="checkbox"/> Solar	<input type="checkbox"/> Fireplace	<input type="checkbox"/> Woodburning Stove	<input type="checkbox"/> Single Family		
<input type="checkbox"/> Revision	<input type="checkbox"/> Repair	<input type="checkbox"/> Revokeable	<input type="checkbox"/> Fence/Wall (complete Section 4)		<input checked="" type="checkbox"/> Other: <u>WINDOWS</u>			

1B. Construction cost estimate: \$: 23,000

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

**PART TWO: COMPLETE FOR NEW CONSTRUCTION AND EXTEND/ADDITIONS**

2A. Type of sewage disposal: 01  WSSC 02  Septic 03  Other:  
2B. Type of water supply: 01  WSSC 02  Well 03  Other:

**PART THREE: COMPLETE ONLY FOR FENCE/RETAINING WALL**

3A. Height: \_\_\_\_\_ feet \_\_\_\_\_ inches  
3B. Indicate whether the fence or retaining wall is to be constructed on one of the following locations:  
 On party line/property line  Entirely on land of owner  On public right of way/easement

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

[Signature]  
Signature of owner or authorized agent

2-1-06  
Date

Approved: WITH CONDITIONS For Chairperson, Historic Preservation Commission  
Disapproved: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: 2/22/2006  
Application/Permit No.: 410740 Date Filed: \_\_\_\_\_ Date Issued: \_\_\_\_\_



Window Pro  
Pella Windows  
Window

JEF } Unanimous  
Tom }

HISTORIC PRESERVATION COMMISSION STAFF REPORT

Address: 511 Philadelphia Ave, Takoma Park Meeting Date: 2/22/2006  
 Resource: Contributing Resource Report Date: 2/15/2006  
 Takoma Park Historic District  
 Applicant: Eric & Jennifer Kilbride Public Notice: 2/8/2006  
 Review: HAWP Tom - condition of window Tax Credit: None  
 Case Number: 37/03-06F Staff: Tania Tully  
 PROPOSAL: window replacement storm does not visibly change

RECOMMENDATION: Approve with Conditions

David - Storms are ~~reversible~~ reversible & keep historic fabric

STAFF RECOMMENDATION:

Staff is recommending that the HPC approve this HAWP application with the following conditions:

and any others that the applicant can demonstrate to staff are beyond repair. approved by staff.

1. Only three windows at the rear of the property - as shown on Circle 20 - are approved for replacement. ~~any others that cannot be visibly restored as approved by staff.~~
2. If the HPC approves replacement, only the sashes may be replaced; the new sashes will fit within the existing frames, each replacement sash will be individually measured and fit to the existing openings, and the muntins will match those in the historic windows.
3. All exterior trim and historic jambs will be retained.
4. Additionally, replacement sashes will be simulated divided light wood windows, which contain muntins that are permanently bonded to the interior and exterior of the insulating glass simulating a divided light appearance.
5. The applicant will learn more about rehabilitating the remaining historic windows and install staff-approved storm windows in order to take advantage of the available tax credit incentives.

Lee - Energy is more ~~cost~~ than just windows

ARCHITECTURAL DESCRIPTION

SIGNIFICANCE: Contributing Resource within the Takoma Park Historic District  
 STYLE: Craftsman  
 DATE: 1920s *Bungalow*

511 Philadelphia is a 1 1/2 story side gable Craftsman Bungalow with front shed gable, hipped roof porch, and battered brick porch piers. The house has wood shingle siding, wide eaves, and exposed rafter tails. The house also has original wood, single pane 6/1 double-hung windows.

also w/ nose

248 Park Avenue

49 Elm Ave  
55 Elm Ave

receipt already replaced

Tim Allen w/ Pella  
bowed jambs  
packet insert

## HISTORIC CONTEXT

The following are excerpts from *Places from the Past: The Tradition of Gardez Bien in Montgomery County, Maryland*.

“Takoma Park is historically significant as both an early railroad suburb and a streetcar community. It was the second railroad suburb of Washington, platted ten years after Linden. The opening of streetcar lines led to the development of new subdivisions, expanding the Takoma Park community in the early 20th century.”

“Takoma Park was platted in 1883. Developer Benjamin Franklin Gilbert promoted the property for its natural environment and healthy setting. The site offered fresh water, trees, and a high elevation to escape the malaria-ridden District of Columbia. In 1883, Gilbert purchased a 90-acre farm and platted a subdivision with picturesque, winding streets named for native trees, including Sycamore, Chestnut, Hickory, and Oak. Equally reflective of Gilbert’s promotion of the natural setting is the use of the Native American “Takoma”, meaning “exalted” or “near heaven.” Later he added the “Park” appellation to draw attention to its healthy environment.

Takoma Park houses built between 1883 and 1900 were fanciful, turreted, multi-gabled affairs of Queen Anne, Stick Style, and Shingle Style influence. Some of the earliest architect-designed houses in the county are in Takoma Park. Leon Dessez, later the Chevy Chase Land Company architect, designed the Cady-Lee House (1887), 7315 Piney Branch Road. These first houses were substantial residences with spacious settings. The lots were deep, typically 50 feet by 200-300 feet and had 40-foot setback requirements. Extensive numbers of these first houses remain, constructed between 1883 and 1900.”

“By 1893, the town’s population quadrupled. Four subdivisions had expanded the town, which was incorporated in 1890. Takoma Avenue, Pine Avenue, and Holly Avenue were among the streets to develop during this period.”

“The start of streetcar service along Carroll Avenue in 1897, operated by the Baltimore and Washington Transit Company, made the adjacent areas more attractive for residential development, leading to new subdivisions. This line, supplemented in 1910 by the Washington and Maryland line (1910-27), led to the creation of eight additional subdivisions extending out from the trolley lines. The inexpensive electric streetcar, the availability of low-cost house plans and kit houses in combination with smaller lot sizes made home ownership in Takoma Park possible for individuals of more modest income levels than during the previous period. By 1922, the population soared to 4,144, making Takoma Park the tenth largest incorporated town in Maryland. Among the streets, which developed during the 1910s and 1920s in response to the establishment of streetcar, lines are Willow, Park, Philadelphia, and Carroll Avenues.

The appearance today of much of the Takoma Park historic district is formed by the large numbers of dwellings constructed from 1900 into the 1920s. The houses built in Takoma Park during this period reveal changing American tastes in house design from the elaborate ornamentation of the late 19th century dwellings to more practical, simplified designs. Many of these early twentieth century houses reflect the aesthetics of the Arts and Crafts Movement, which emphasized the inherent nature of the building materials and structural elements for ornamentation. Similarly, they reflect a social trend towards a more informal, unpretentious style of living. Residences put up in the American Four Square, Craftsman, Bungalow, and Colonial Revival designs continued the pattern of suburban development previously established – detached, wood frame single-family residences with uniform setbacks from the streets, though at a smaller scale. Entire streetscapes of these houses, particularly the Bungalow and Craftsman designs, are found along Willow, Park, Philadelphia, and Westmoreland Avenues.

Scores of Bungalows, and Craftsman-style houses and catalog-order houses were built in this era. Advertisements from 1914 for bungalows on Willow Avenue promoted their accessibility – just “three minutes to car line” – and individuality – “no two are alike in design.” At least fifteen models of Sears kit houses have been identified in the proposed historic district, including the turreted 7303 Takoma Avenue.”

“Takoma Park continues to thrive today, with a population of 20,000. Though the train no longer stops there, the town’s close relationship with mass transportation continues. The Metro enables residents to continue the tradition, started with the railroad and extended with the streetcars, of living in the suburbs and commuting to the District using mass transit. Two sections of the Montgomery County portion of Takoma Park have been listed on the National Register of Historic Places as the Takoma Park Historic District since 1976.”

PROPOSAL:

The applicants are proposing to replace sixteen (16) historic windows with 6/1 double-hung Pella, wood, Architect Series Luxury Edition replacement window units in order to increase the energy efficiency of their home. This model of window is wood, has simulated divided lights (called Integral Light Technology) with wood muntins permanently adhered to the interior and exterior in conjunction with an internal spacer. The muntins would be 7/8" wide. All of the windows proposed for replacement are 6/1 wood double-hung units. Circles 9-13 indicate which windows are proposed for replacement. The window specifications begin on Circle 14 – staff has only included the essential pages

APPLICABLE GUIDELINES:

When reviewing alterations and new construction within the Takoma Park Historic District several documents are to be utilized as guidelines to assist the Commission in developing their decision. These documents include the historic preservation review guidelines in the approved and adopted amendment for the **Takoma Park Historic District (Guidelines)**, *Montgomery County Code Chapter 24A (Chapter 24A)*, and the *Secretary of the Interior's Standards for Rehabilitation (Standards)*. The pertinent information in these documents is outlined below.

**Takoma Park Historic District Guidelines**

There are two very general, broad planning and design concepts which apply to all categories. These are:

The design review emphasis will be restricted to changes that are at all visible from the public right-of-way, irrespective of landscaping or vegetation (it is expected that the majority of new additions will be reviewed for their impact on the overall district), and,

The importance of assuring that additions and other changes to existing structures act to reinforce and continue existing streetscape, landscape, and building patterns rather than to impair the character of the district.

2

Contributing Resources should receive a more lenient review than those structures that have been classified as Outstanding. This design review should emphasize the importance of the resource to the overall streetscape and its compatibility with existing patterns rather than focusing on a close scrutiny of architectural detailing. In general, however, changes to Contributing Resources should respect the predominant architectural style of the resource. As stated above, the design review emphasis will be restricted to changes that are at all visible from the public right-of-way, irrespective of landscaping or vegetation.

Some of the factors to be considered in reviewing HAWPs on Contributing Resources include:

→ All exterior alterations, including those to architectural features and details, should be generally consistent with the predominant architectural style and period of the resource and should preserve the predominant architectural features of the resource; exact replication of existing details and features is, however, not required

→ Minor alterations to areas that do not directly front on a public right-of-way such as vents, metal stovepipes, air conditioners, fences, skylights, etc. – should be allowed as a matter of course; alterations to areas that do not directly front on a public way-of-way which involve the replacement of or damage to original ornamental or architectural features are discouraged, but may be considered and approved on a case-by-case basis

Original size and shape of window and door openings should be maintained, where feasible

**Montgomery County Code; Chapter 24A**

- A HAWP permit should be issued if the Commission finds that:
  1. The proposal will not substantially alter the exterior features of a historic site or historic resource within a historic district.
  2. The proposal is compatible in character and nature with the historical archaeological, architectural or cultural features of the historic site or the historic district in which a historic resource is located and would not be detrimental thereto or to the achievement of the purposes of this chapter.

**Secretary of the Interior's Standards for Rehabilitation:**

- #2 The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, space and spatial relationships that characterize a property will be avoided.
- #6 Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.

**STAFF DISCUSSION**

**Overview**

The applicants are proposing to replace sixteen (16) of the historic 6/1 double hung windows in order to increase the energy efficiency of their home. Staff visually inspected the windows proposed for replacement and found them all to be in about the same condition. There are some broken panes, some deterioration of wood, and most need reglazing. Unlike many windows staff has seen, most of these have sash cords and still function. Past attempts to add weather-stripping are failing, and there are no storm windows in place. Because the muntins are very narrow - 1/2" or less, because of the lack of storm windows, and based on the applicants inspection during painting, it is likely that the exterior muntins are less intact than those on the interior. Staff has provided the applicant with information regarding rehabilitation of windows, storm windows and the comparison of replacement sashes versus single-pane windows with storms.

3

Condition

narrow muntins

**Specific Proposal**

Replacing windows and window sashes in historic resources is not to be taken lightly. Taken as a whole, they play large part in defining the architectural character of a house. Multi-paned and decorative windows are often features and focal points and knowing the number of lights and muntin sizes can help date a resource. The Secretary's Standards promote leaving features unaltered and recommend repair over replacement. In the Takoma Park Historic District, contributing resources are to receive a more lenient review with the focus on impacts to the district as a whole. However, applicants are encouraged to preserve the predominant architectural features of the resource and the replacement of or damage to original ornamental or architectural features are discouraged.

When staff discusses window replacement, it is in fact only sash replacements that are meant, and it includes retention of all exterior trim and historic jambs. Keeping in mind specific guidance from the *Guidelines*, staff recommends flexibility when replacements are proposed at the rear of a property. It is for this reason that staff is recommending approval of the replacement of the rear window shown on Circle 13. Staff is also comfortable recommending approval of replacement of the two windows on the bottom right of Circle 12. The proposed replacements are units consisting of a frame and sashes and although the Luxury Series features a wide bottom rail, narrow check rail, and a wood jambliner, staff is concerned that

inserting a frame into the existing frame will visibly reduce the sizes and proportions of the lights. Therefore, only the sashes may be replaced; the new sashes will fit within the existing frames; and each replacement sash will be individually measured and fit to the existing openings. Additional conditions of approval are listed on Circle 1.

It is to the applicant's credit that replacement is not sought for all of the windows in the house. However, the remaining 13 windows proposed for replacement have the significant and characteristic 6/1 muntin pattern and are visible from the public right-of-way. Even if staff were to recommend replacement (which we are not) the replacement sashes would need to be single pane in order to retain the thin muntin profile. The proposed replacement muntins would be 7/8" wide.

#### ***Rehabilitation is as effective as Replacement***

Staff research indicates that rehabilitation and proper maintenance of historic windows combined with proper installation of well fitting storm windows is as energy efficient and cost effective as replacement windows. Because the windows are a primary architectural and character defining feature of this house, we cannot recommend approving replacement when the windows are not too deteriorated to repair or rehabilitate. The National Park Service's Preservation Brief 9 states: "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 the past 10 years there has been much discussion and research surrounding the energy efficiency of historic windows. What has been found again and again is that replacement windows are not the panacea property owners are seeking. Rather than re-debate the issue in this staff report select excerpts from prominent and respected sources are included in the text and beginning on Circle 22.

The conclusion of "Testing the Energy Performance of Wood Windows in Cold Climates: A Report to The State of Vermont Division for Historic Preservation" states the following (emphasis added):

Over the course of the study, it became apparent *that replacing an historic window does not necessarily result in greater energy savings than upgrading that same window.* The decision to renovate or replace a window should not be based solely on energy considerations, as the differences in estimated first year savings between the upgrade options are small. Other factors to consider include life cycle costs, the historical significance of a window and its role in a building's character, occupant comfort, ease of operation, and life-cycle costing, none of which were subjects of this study.

The Executive Summary of the Report is included beginning at Circle 22 and the entire document can be found online at [www.ncptt.nps.gov/PDFfiles/1996-08.pdf](http://www.ncptt.nps.gov/PDFfiles/1996-08.pdf).

From Preservation Brief #9 "The Repair of Historic Wooden Windows:" (Circle 28) ([www.cr.nps.gov/hps/tps/briefs/brief09.htm](http://www.cr.nps.gov/hps/tps/briefs/brief09.htm))

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.

From "The Virginia Energy Savers Handbook Chapter 4" ([www.mme.state.va.us/de/hbchap4.html](http://www.mme.state.va.us/de/hbchap4.html))

Storm windows reduce heat loss through single-glazed windows by more than 50% by doubling the R-value and reducing air leakage. Storm windows can be mounted either on the inside or outside of the existing window. The choice between interior and exterior storm windows is largely one of personal preference and cost. From an energy standpoint, they perform about the same.

Tight-fitting old-style wooden storm windows perform slightly better than the modern aluminum-framed combination storm/screen storm windows

#### Recommendation

Taking everything into consideration, staff recommends conditional approval of the replacement of three window sashes as shown on Circle 20. Staff strongly recommends that the applicant rehabilitate and place storm windows on the remaining historic windows and to take advantage of the available tax credit incentives.

then conditions

#### STAFF RECOMMENDATION:

Staff recommends that the Commission **approve** the HAWP application **with the conditions specified on Circle 1** as being consistent with Chapter 24A-8(b)(1) & (2);

and with the *Secretary of the Interior's Standards for Rehabilitation*;

and with the general condition that the applicant shall present the **3 permit sets of drawings, if applicable, to Historic Preservation Commission (HPC) staff for review and stamping** prior to submission for the Montgomery County Department of Permitting Services (DPS) building permits.



RETURN TO: DEPARTMENT OF PERMITTING SERVICES  
255 ROCKVILLE PIKE, 2nd FLOOR, ROCKVILLE, MD 20850  
301-777-6370

OPS-#8

HISTORIC PRESERVATION COMMISSION  
301/563-3400

CONTRIBUTING

# APPLICATION FOR HISTORIC AREA WORK PERMIT

Contact Person: ERIC KILBRIDE  
Daytime Phone No.: 202 374 3170

Tax Account No.: 161301077-351  
Name of Property Owner: ERIC + JANIFOR KILBRIDE Daytime Phone No.: 202-374-3170  
Address: 511 PHILADELPHIA AVENUE TAKOMA PARK, MD 20912  
Street Number City State Zip Code  
Contractor: K. C. COMPANY, INC. Phone No.: 301-654-9740  
Contractor Registration No.: 116048262  
Agent for Owner: Michael Weisberg Daytime Phone No.: 202-285-8798

**LOCATION OF BUILDING/PREMISE**

House Number: 511 Corner: PHILADELPHIA AVENUE  
Town/City: TAKOMA PARK Nearest Cross Street: PINEY BRANCH / PHILADELPHIA AVENUE  
Lot: P8 Block: 72 Subdivision:  
Liber: 12447 Page: 4102 Block:

**PART ONE: TYPE OF PERMIT ACTION AND USE**

- 1A. CHECK ALL APPLICABLE:
- |                                   |   |   |  |   |  |  |                               |                               |
|-----------------------------------|---|---|--|---|--|--|-------------------------------|-------------------------------|
| <input type="checkbox"/> Addition | <input type="checkbox"/> Erection           | <input type="checkbox"/> Alter/renovate | <input type="checkbox"/> MV                              | <input type="checkbox"/> Stab                             | <input type="checkbox"/> Room Addition     | <input type="checkbox"/> Porch         | <input type="checkbox"/> Deck | <input type="checkbox"/> Shed |
| <input type="checkbox"/> Move     | <input checked="" type="checkbox"/> Install | <input type="checkbox"/> Wreck/Rem      | <input type="checkbox"/> Solar                           | <input type="checkbox"/> Fireplace                        | <input type="checkbox"/> Woodburning Stove | <input type="checkbox"/> Septic Family |                               |                               |
| <input type="checkbox"/> Revision | <input type="checkbox"/> Repair             | <input type="checkbox"/> Renewable      | <input type="checkbox"/> Fence/Wall (complete Section 4) | <input checked="" type="checkbox"/> Other: <u>WINDOWS</u> |  |  |                               |                               |

1B. Construction cost estimate: 23,000  
1C. If this is a revision of a previously approved active permit, give Permit #: N/A

**PART TWO: COMPLETE FOR NEW CONSTRUCTION AND EXTEND/ADDITIONS**

2A. Type of sewage disposal: 01  WSSO 02  Septic 03  Other  
2B. Type of water supply: 01  WSSO 02  Well 03  Other

**PART THREE: COMPLETE ONLY FOR FENCE/RETAINING WALL**

3A. Height: \_\_\_\_\_ feet  
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 the permit.

Signature of owner or authorized agent: [Signature] Date: 2-1-06

Approved: \_\_\_\_\_ For Chairperson, Historic Preservation Commission  
Disapproved: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Application/Permit No.: 410740 Date Filed: \_\_\_\_\_ Date Issued: \_\_\_\_\_

**SEE REVERSE SIDE FOR INSTRUCTIONS**

(7)

**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:

~~SEE ATTACHMENT A~~ SEE ATTACHMENT A  
HISTORIC IA 3700 3571A

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

SEE ATTACHMENT B

**2. SITE PLAN**

Site and environmental setting, drawn to scale. You may use your plot. 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 6 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 features 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**

ATTACHMENT C

- 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 canopy 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 is directly across the street/highway from the parcel in question. You can obtain this information from the Department of Assessments and Taxation, 51 Monroe Street, Rockville, (301) 779-1355.

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.

8



ATTACHMENT

# 511 PHILADELPHIA AVENUE

Replace these two windows



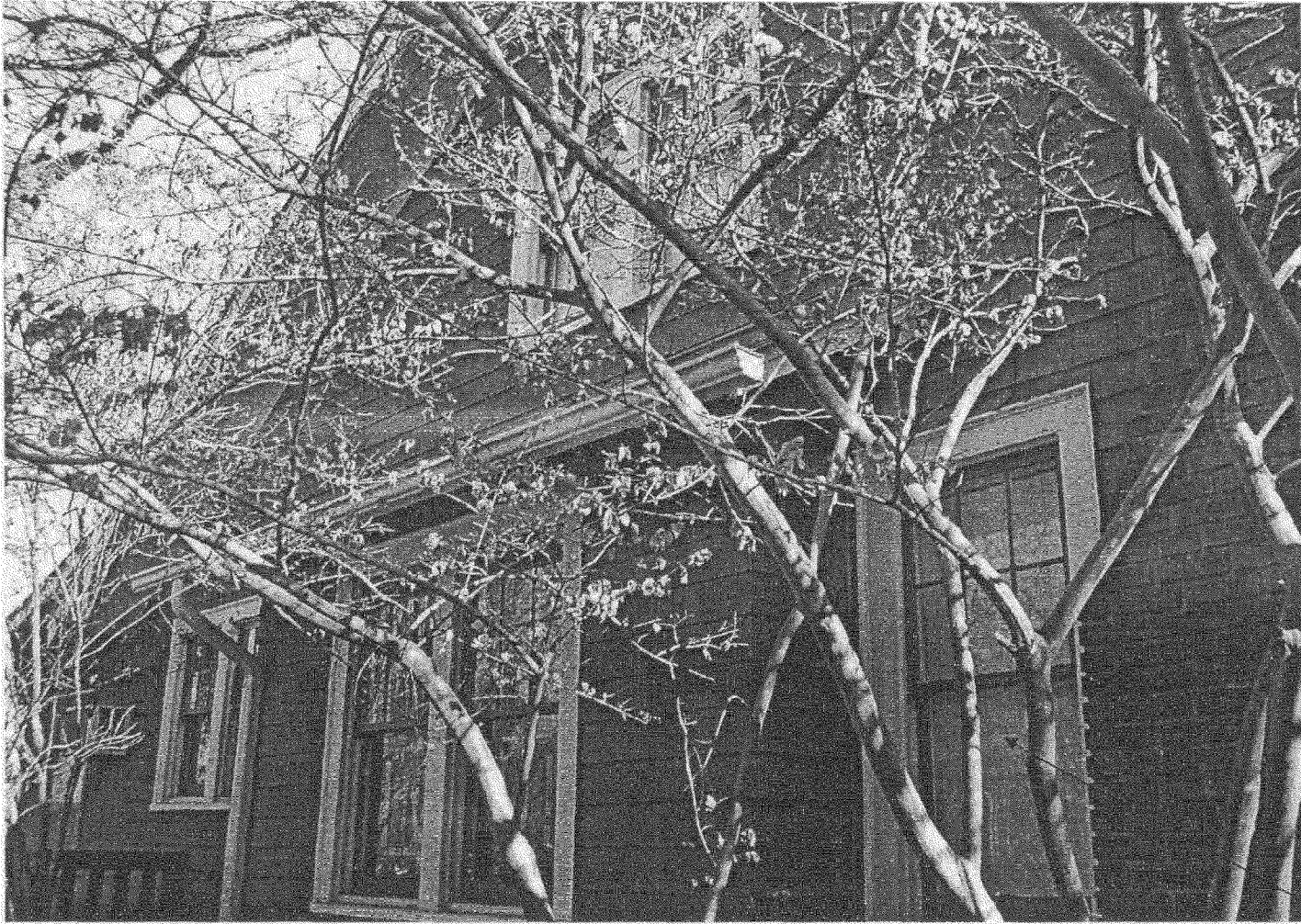
Replace these two windows

Replace these two windows

9

511 PHILADELPHIA AVENUE

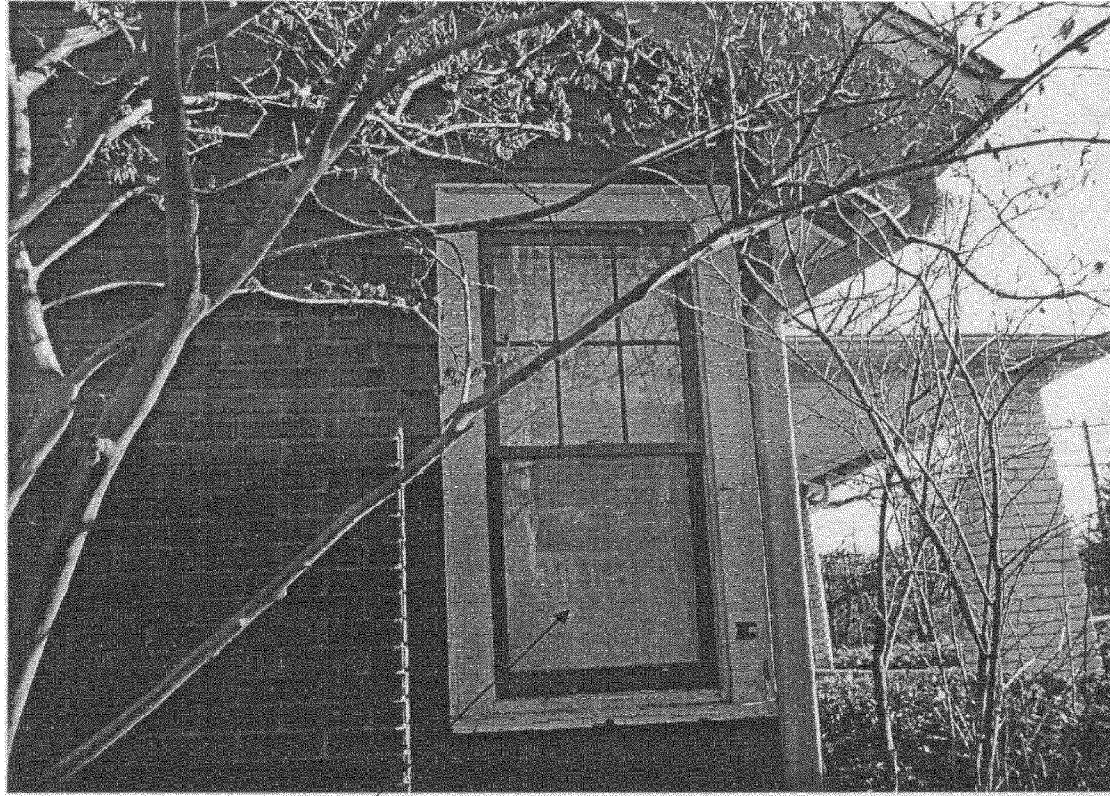
Replace these two windows



Replace this window

19

511 PHILADELPHIA AVENUE



Replace this window

# 511 PHILADELPHIA AVENUE

12

Replace these two windows



Replace this window

Replace this window

Replace this window

12

511 PHILADELPHIA AVENUE

13



13

Replace this window



## DOUBLE-HUNG WINDOWS

### Architect Series® Wood LX Detailed Product Descriptions



#### Frame

- Select softwood, water-repellent, preservative-treated in accordance with WDMA I.S.-4.
- Interior exposed surfaces are of clear pine (rectangular windows only). Any curved member may have visible finger-jointed surfaces.
- All exterior surfaces primed.
- Overall frame depth is 4-3/8" (111 mm).
- Jamb liner shall be wood/clad insert.

#### Sash

- Select softwood, water-repellent, preservative-treated in accordance with WDMA I.S.-4.
- Interior exposed surfaces are of clear pine (rectangular windows only). Any curved member may have visible finger-jointed surfaces.
- All exterior surfaces are factory-primed.
- Corners mortised and tenoned, glued and secured with metal fasteners.
- Sash thickness is 1-3/4" (44 mm).
- Upper sash has surface-mounted wash locks.
- Lower sash has concealed wash locks in lower check rail.

#### Glazing System

- Quality float glass complying with ASTM C1036.
- Silicone-glazed 5/8" [clear] [InsulShield® argon-filled, multi-layer Low-E coated] [bronze InsulShield® air-filled multi-layer Low-E coated] [gray InsulShield® air-filled multi-layer Low-E coated] [green InsulShield® air-filled multi-layer Low-E coated] dual-seal insulating glass.
- Custom and high altitude glazing also available.
- Units with Integral Light Technology® only:
  - ◆ Insulating glass contains a foam muntin grid between two panes of glass. Foam grid shall be adhered to glass.
  - ◆ Muntin bars shall be solid [7/8"] [1-1/4"] wide pine, water-repellent, preservative-treated in accordance with WDMA I.S.-4.
  - ◆ Bars shall be adhered to both sides of insulating glass with VHB acrylic adhesive tape and aligned with the foam grid.
  - ◆ Exterior surfaces primed; interior surfaces unfinished, ready for site finishing.

#### Weather Stripping

- Foam with 3 mil skin at head. Water-stop santoprene-wrapped foam at sill; thermal-plastic elastomer bulb with slip-coating set into lower sash for tight contact at check rail.
- Vinyl-wrapped foam inserted into jamb liner or jamb liner components to seal to sides of sash.

#### Optional Products

The following specify optional products sold separately.

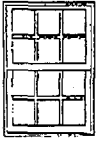
- Insect Screen: Standard:
  - ◆ [Half-] [Full-] size with black vinyl-coated 18/16 mesh fiberglass screen cloth complying with ASTM D 3656 and SMA 1201.
  - ◆ Screen set in aluminum frame and fitted to outside of window, supplied complete with all necessary hardware.
  - ◆ Screen frame finish shall be baked enamel, white.
- or –
- Insect Screen: Vivid View™:
  - ◆ [Half-] [Full-] PVDF 21/17 mesh minimum 78 percent light transmissivity screen cloth complying with ASTM D 3656 and SMA 1201, set in aluminum frame fitted to outside of window, supplied complete with all necessary hardware.
  - ◆ Screen frame finish shall be baked enamel, color to match window cladding
- Removable Muntin Bars (for units without integral muntin bars)
  - ◆ [3/4" profile] [1-1/4" profile] removable solid wood bars steel-pinned at joints and fitted to sash with steel clips and tacks.
  - ◆ Surfaces unfinished, ready for site finishing.

#### Hardware

- Painted block-and-tackle balances connected to sash with a polyester cord and concealed within the frame.
- Lock: [Spoon-shaped sash lock] [Self-aligning sash lock]. Two sash locks on units w/lt 37" frame width and greater. Finish shall be [baked enamel, champagne.] [baked enamel, white.] [bright brass.] [satin nickel.] [oil-rubbed bronze.]
- Lift: Sash lift furnished for field installation. Two lifts on units with 37" frame width and greater. Finish shall be [baked enamel, champagne.] [baked enamel, white.] [bright brass.] [satin nickel.] [oil-rubbed bronze.]
- Steady-Tilt™ self-supporting tilt-wash feature on lower sash with linkage arms connecting sash to jambliner.

#### Interior Finish

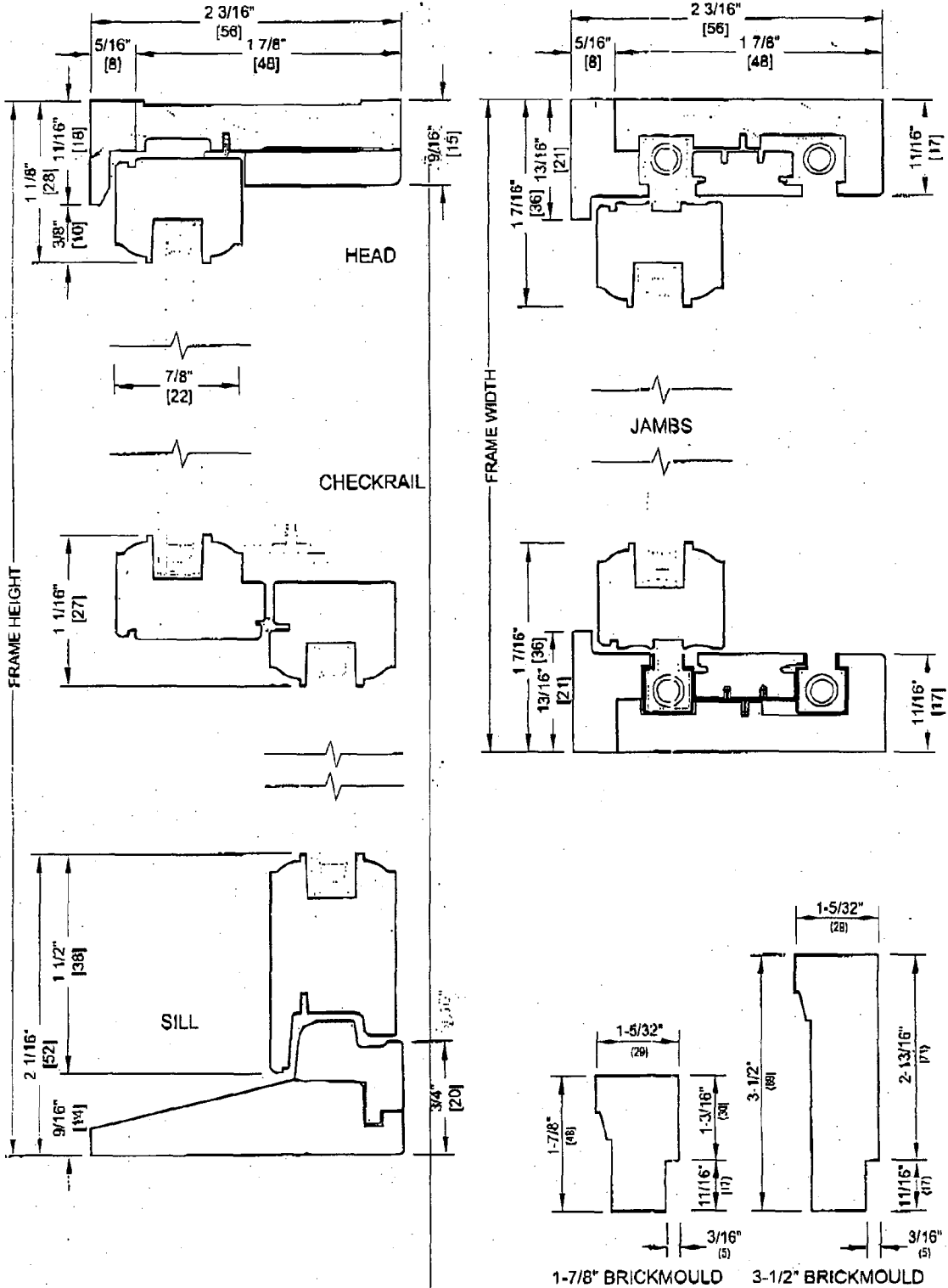
- [Unfinished ready for site finishing.] [Factory-primed with one coat acrylic latex.]



# DOUBLE-HUNG WINDOWS

## Architect Series® Wood LX Rectangular Unit Sections

Scale 3" = 1' 0"



**NOTE:**

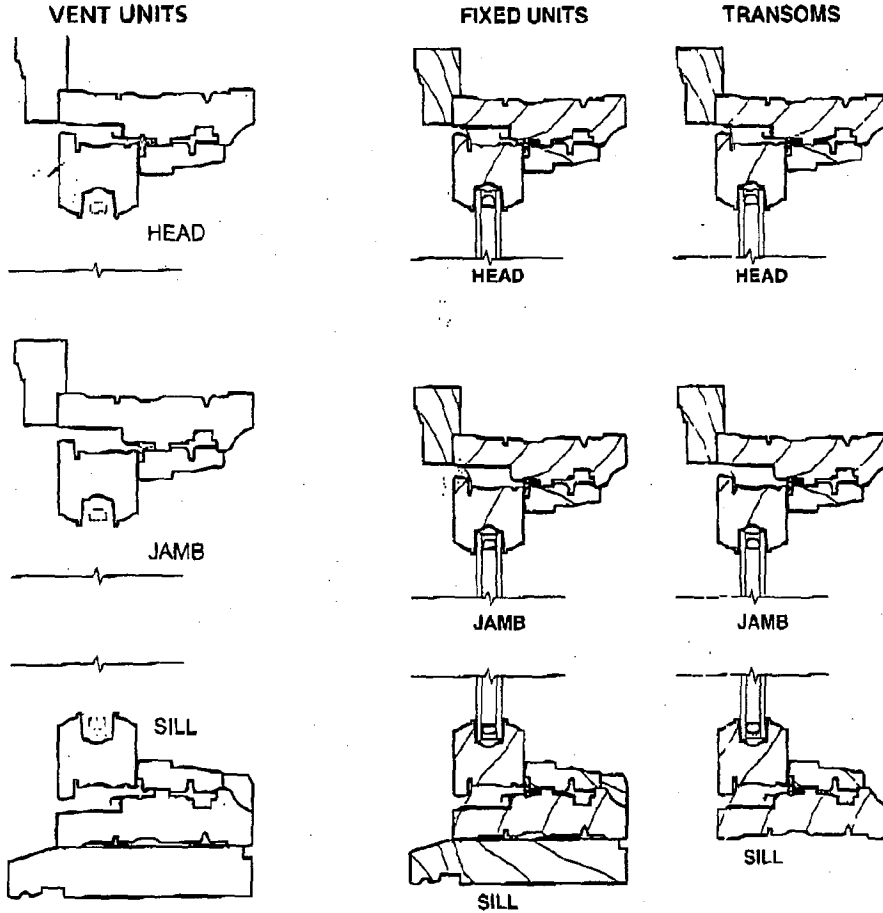
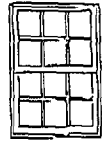
- All unit dimensions are approximate.



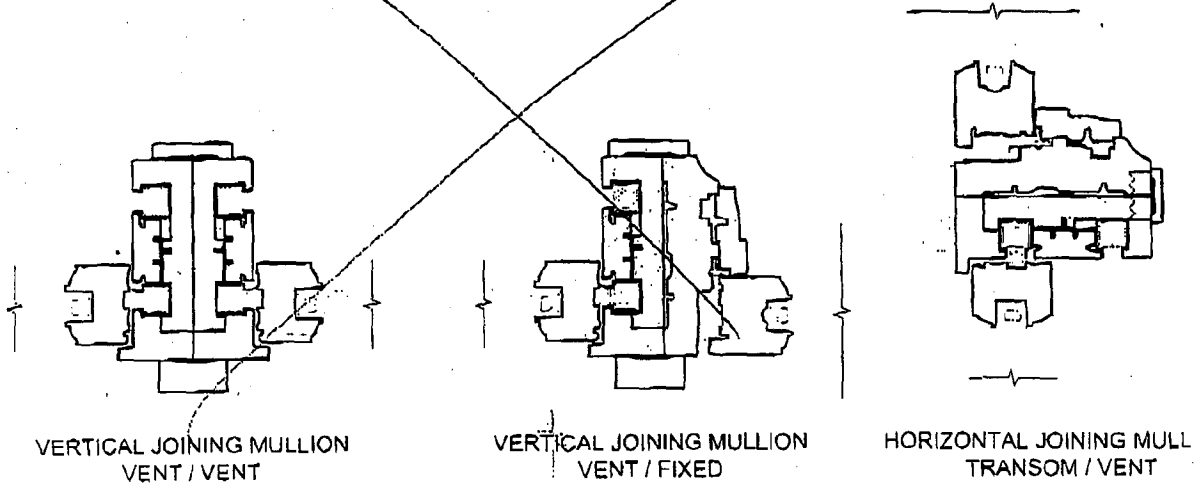
# DOUBLE-HUNG WINDOWS

## Architect Series® Wood LX Rectangular Unit Sections

Scale 3" = 1' 0"



## Architect Series Wood LX Rectangular Typical Joining Mullions



6-DOUBLE-HUNG



~~ATTACHMENT A~~

Metropolitan Regional Information Systems, Inc.

Tax ID#: 161301077351

\*\* PUBLIC RECORD \*\*

Tax ID#: 161301077351 County: MC  
PROPERTY ADDRESS: 511 PHILADELPHIA AVE, TAKOMA PARK, MD 20912-0  
Incorporated City: TAKOMA PARK Legal Subdiv/Neighborhood: TAKOMA PARK  
OWNER: VALERIE CHAMBERS, Phone #: (301) 565-3411 Abs Owner: N  
MAIL ADDRESS: 511 PHILADELPHIA AVE, TAKOMA PARK, MD 20912-4113

LEGAL DESCRIPTION: IMPST P L & T CO

Mag/Dist #: 13 Lot: P8 Block/Square: 72 Tax Map:  
Elec Dist: 13 Legal Unit #: Grid: Map: JN42  
Section: Blk Suffix: Subdiv Ph: Addl Parcel Flag#: /  
Map Suffix: Suffix: Parcel: Sub-Parcel:

TOTAL TAX BILL: \$3,792 State/County Tax: \$1,765 City Tax: \$1,373 Tax Levy Yr: 2001  
Front Foot Fee: \$0 Spec Tax Assmt: \$592 Refuse: \$61 Tax Rate: 0.83  
Tax Class: 74 Homestd/Exempt Status: Exempt Class: 000 Mult. Class:

ASSESSMENT

Year Assessed	Total Tax Value	Land	Improvement	Land Use	Taxable Assessment
2000	\$213,896	\$61,370	\$167,320	\$	State: \$
Previous	\$199,103	\$61,370	\$122,940	\$	Municipal: \$
Early	\$73,720	\$62,750	\$101,190	\$	City: \$

DEED Deed Liber: 12447 Deed Folio: 462 Deed Type:  
Transfer Date Price Grantor Grantee  
23-MAR-1994 \$162,000 WILLIS C & M C SIRK VALERIE CHAMBERS

PROPERTY DESCRIPTION

Year Built: 1926 Zoning: R60 Census Trct/Blck: 701800/3 Irregular Lot:  
Square Feet: 8,750 Acreage: 0.20 Land Use: Residential  
Property Class: R Plat Liber/Folio: 12447/462 Property Card: Quality/Grade: AVERAGE  
Prop Use: RESIDENTIAL Historic ID: 37003571A

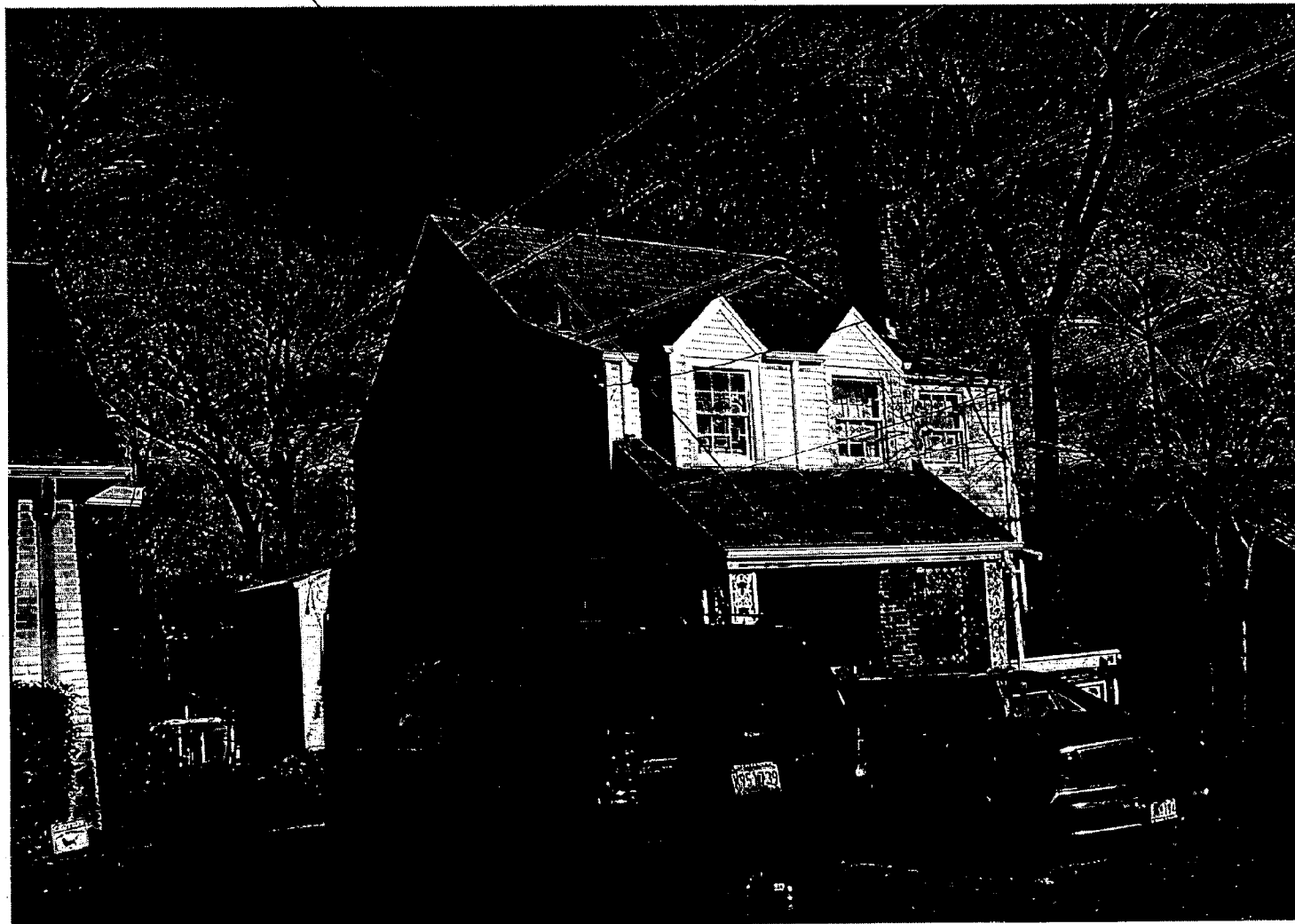
STRUCTURE DESCRIPTION

	Section 1	Section 2	Section 3	Section 4	Section 5
Construction	Frame	Frame			
Story	1.5B	1			
Area	1,404	20			
Ext Wall:		Roofing: Shingle - Composite		Foundation:	
Stories: 1.5B	Units: 1	Style:		Base Sq Ft: 956	Year Remodeled:
Total Building Area:		Living Area: 1,424			Model/Unit Type: SINGLE

FAMILY UNIT  
Patio/Deck Type: DECK Sq Ft: 84 Porch Type: ENCLOSED PORCH Sq Ft: 288  
Rooms: Bsmt Type: Not Specified Fireplaces: 1 Garage Type:  
Bedrooms: Bsmt Tot Sq Ft: 936 Fireplace Type: FRME Garage Sq Ft:  
Full Baths: 1 Bsmt Fin Sq Ft: Attic Type: Gar Constr:  
Half Baths: 0 Bsmt Unfin Sq Ft: Attic Sq Ft: Garage Spaces:  
Baths: 1 Air Cond: Separate System  
Gas: Heat: Hot Water Sewer: Fuel:  
Electric: Water: Underground: Walls:

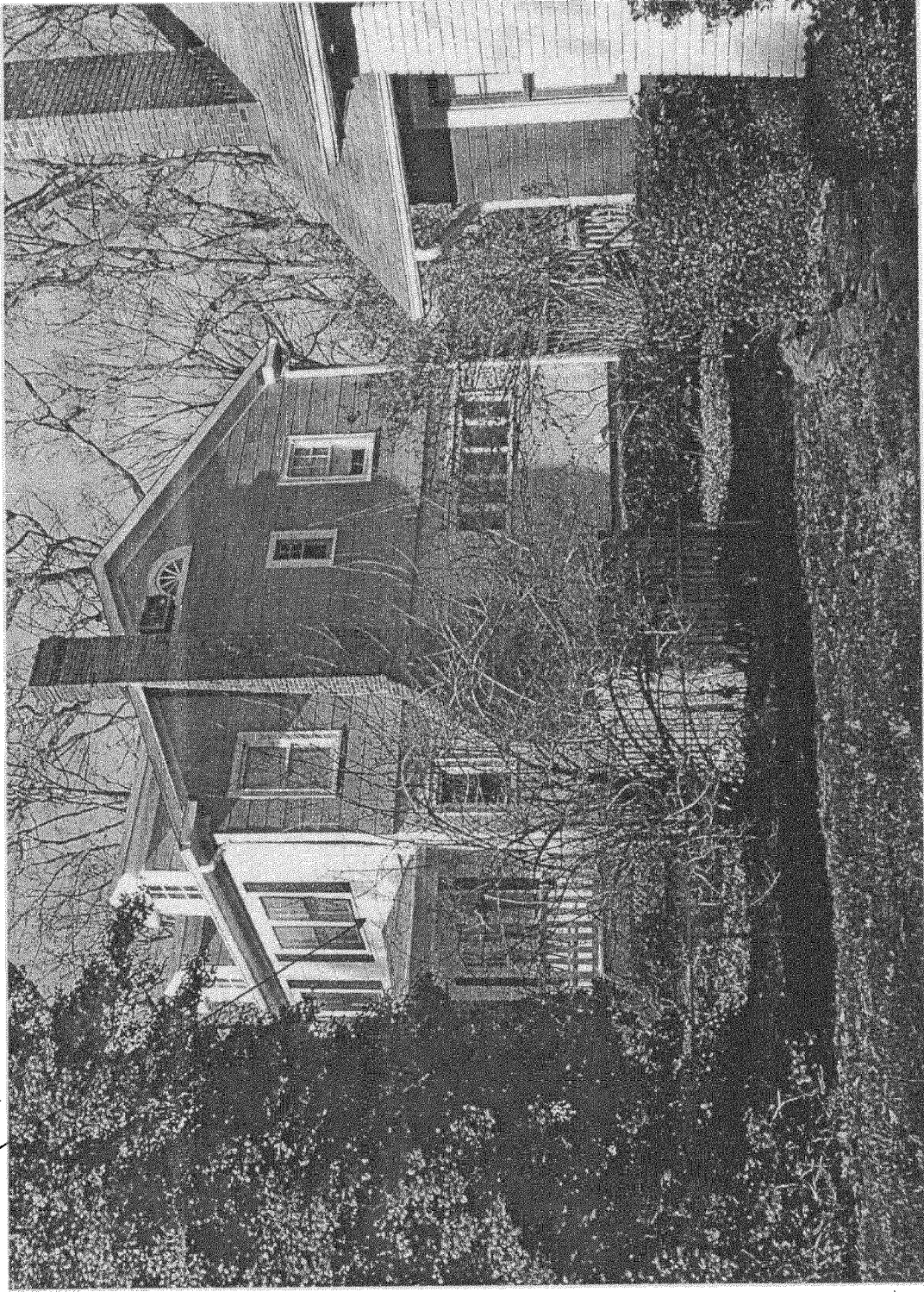
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509 PHILADELPHIA AVENUE – Dorothy Brown



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513 PHILADELPHIA AVENUE - Jim Allen

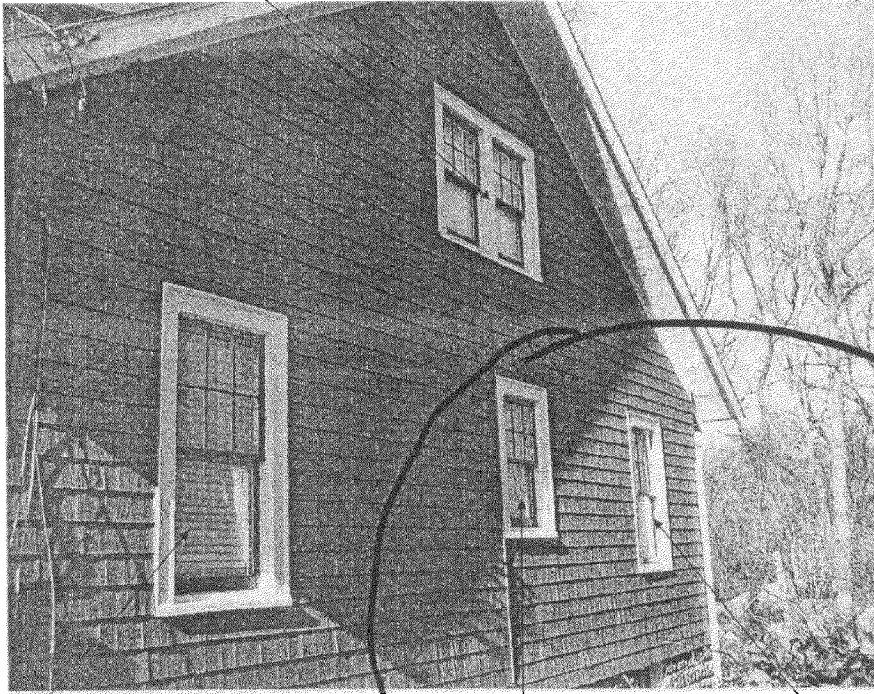


511 PHILADELPHIA AVENUE

Staff Recommended

Condition  
#1

~~Replace the two windows~~



~~Replace this window~~

Replace this window

Replace this window

1

2

511 PHILADELPHIA AVENUE



3

Replace this window

20



(21)

# Testing the Energy Performance of Wood Windows in Cold Climates

A Report to  
The State of Vermont Division for Historic Preservation  
Agency of Commerce and Community Development

August 30, 1996

Brad James<sup>1</sup>  
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Burlington, Vermont 05402

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U.S. Army Cold Regions Research and Engineering Laboratory  
Hanover, New Hampshire 03755

## EXECUTIVE SUMMARY

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, long term maintenance cost reduction, ease of operation, and better assurance of window longevity. 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. This 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.

While upgrades often improved other aspects of windows, including ease of operation, reduction of lead hazard, and occupant comfort, only energy impacts were included in this study. In order to assess energy improvements due to window upgrades, it was necessary to establish first year heating energy costs associated with windows before and after upgrades. Energy costs resulting from thermal losses associated with a window are due to both infiltrative and non-infiltrative losses.

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. Thermal losses also occur due to radiation through the glazing, conduction through the window materials, and convection of the air layer next to the window materials. These latter three methods of heat loss (conduction, convection, and radiation) are considered to be non-infiltrative thermal losses and were modeled using WINDOW 4.1, a computer program simulating fenestration thermal performance.

Infiltrative thermal losses were investigated by field testing 151 windows during 1995 and 1996, primarily in northern and central Vermont. Leakage characteristics of these windows were estimated by fan pressurization. Of these 151 windows, 64 were in original condition and 87 were of various upgrades. A percentage of infiltrative exterior air was estimated during field tests based on temperature differences in the test zone during fan pressurization. Exterior air leakage was summed with sash leakage to estimate a whole window total infiltrative thermal loss rate due to infiltration. Total window leakage rates were correlated with heating season infiltration rates by using a computational model established for estimating whole building infiltration rates. Results for the 64 original windows were used to model typical, tight, and loose original condition windows. Estimated annual energy costs of these assumed windows were used to estimate first year energy cost savings for the various upgrade types.

The significance of exterior air infiltration to the total heat load of a window was observed throughout the study. Thermal loss due to exterior air infiltration can cause the thermal performance of a tight window to approach that of a loose window. The importance of reducing exterior air infiltration during any renovation was noted. Interior storm windows effectively reduced exterior air infiltration as well as reducing sash air infiltration. Exterior storm windows in good condition showed significant reductions in sash infiltration when in the closed position.

One issue in assessing energy performance of windows fitted with storms was if the storm was in the closed position during the heating season, a factor which can change the energy performance significantly. This study did not attempt to quantify how many storms were likely to be open or closed. Therefore, the assumed loose window with no storm allowed comparison of upgrades with storm windows open as well as with windows not fitted storm windows.

First year energy savings for window upgrades and estimated annual energy costs of the assumed windows were based on a typical Vermont climate (7744 degree days). Neither cooling cost savings nor changes in solar heat gain due to window improvements were addressed.

Results of testing and analysis were expressed in a number of ways including:

- effective leakage area (ELA), which may be loosely described as the size of a single orifice with similar air flow characteristics as the sum of the cracks of the window tested;
- sash air leakage rate at 0.30 inches of water pressure differential across the window, expressed in standard cubic feet per minute per linear foot of crack, a standard value given in specifications for new windows, representing a useful point of comparison; and
- first year estimated heating cost savings compared to the three baseline original condition windows described above.

Costs of window upgrades were investigated primarily by interviewing developers of affordable housing in Vermont. Material, installation and mark-up costs are included for the window upgrades studied. Costs for upgrades were considered above those which would be required for routine window maintenance (paint, putty, caulk, and sash balance maintenance). Routine maintenance costs were considered a baseline for any building rehabilitation apart from energy upgrades. Costs for upgrades field tested ranged from a low of \$75 to a high of \$500. The lower cost option included sealing the top sash, installing bronze V-strip weatherstripping and sash locks, and retaining the existing prime and storm windows. If lead abatement was required for an original sash, an additional cost of \$125 was added to the upgrade cost. The larger upgrade cost was for a wood window insert with double-pane insulating glass.

The findings of the study indicated the wide range of window upgrade options and installed



costs resulted in annual heating cost savings that were similar. Within several types of window upgrades tested, there were examples where inappropriate application of an upgrade or an incomplete installation resulted in below average energy performance. However, when installed carefully, virtually all the options studied produced savings in a similar range.

Estimated first year energy savings per window due to field tested upgrades ranged from zero to a high of \$3.60 as compared to an assumed typical window and were slightly lower when compared to an assumed tight window. Estimated savings compared to an assumed loose window ranged from \$12.40 to \$16.60 per window. Estimated savings increased when windows with low-e glazing were modeled using WINDOW 4.1. It should be noted that estimated first year savings as shown should be viewed solely as relative savings when compared to other upgrades within the context of the study and not actual savings realized.

The variability in estimated first year energy savings for all window upgrades was small. A comparison of estimated energy savings per upgrade to costs for upgrade materials and installation revealed energy savings were two orders of magnitude lower than renovative costs. Based on the range of estimated first year energy savings of window upgrades generated by the study as compared to an assumed typical window and those costs associated with upgrade purchase and installation, replacing a window solely due to energy considerations did not appear to be worthwhile. Estimated first year savings of upgrades when compared to an assumed loose window are significantly greater, reflecting the importance of the original window condition in determining first year energy savings. Life-cycle costs of window upgrades were not included as a part of this study and may have a bearing on the decision making process.

As a result of the similarity in savings between upgrade types and the small savings indicated when existing windows were similar in performance to a typical or tight window, 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.

The population served by the housing is another important variable in an upgrade decision. Tenant populations in rental housing have no financial incentive to close storm windows or may be unable to operate them. In such cases, the value of estimated first year savings of an upgrade may be higher than expected if double-glazing is used in the prime window.

Once the decision to upgrade or replace an existing window is made, it is important to select a strategy that not only meets the needs of the building occupants and owners but also utilizes techniques that achieve the highest levels of energy savings and occupant

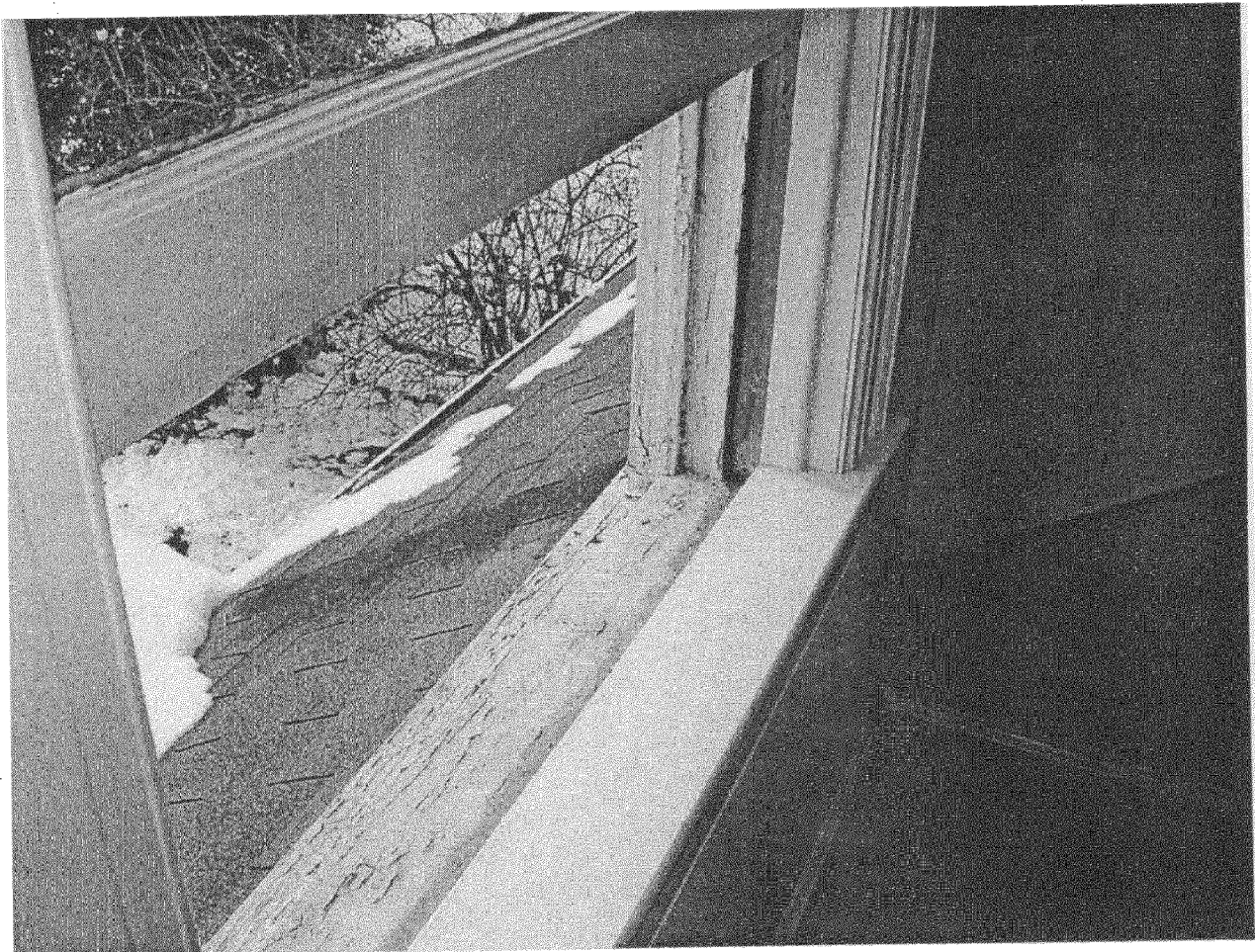
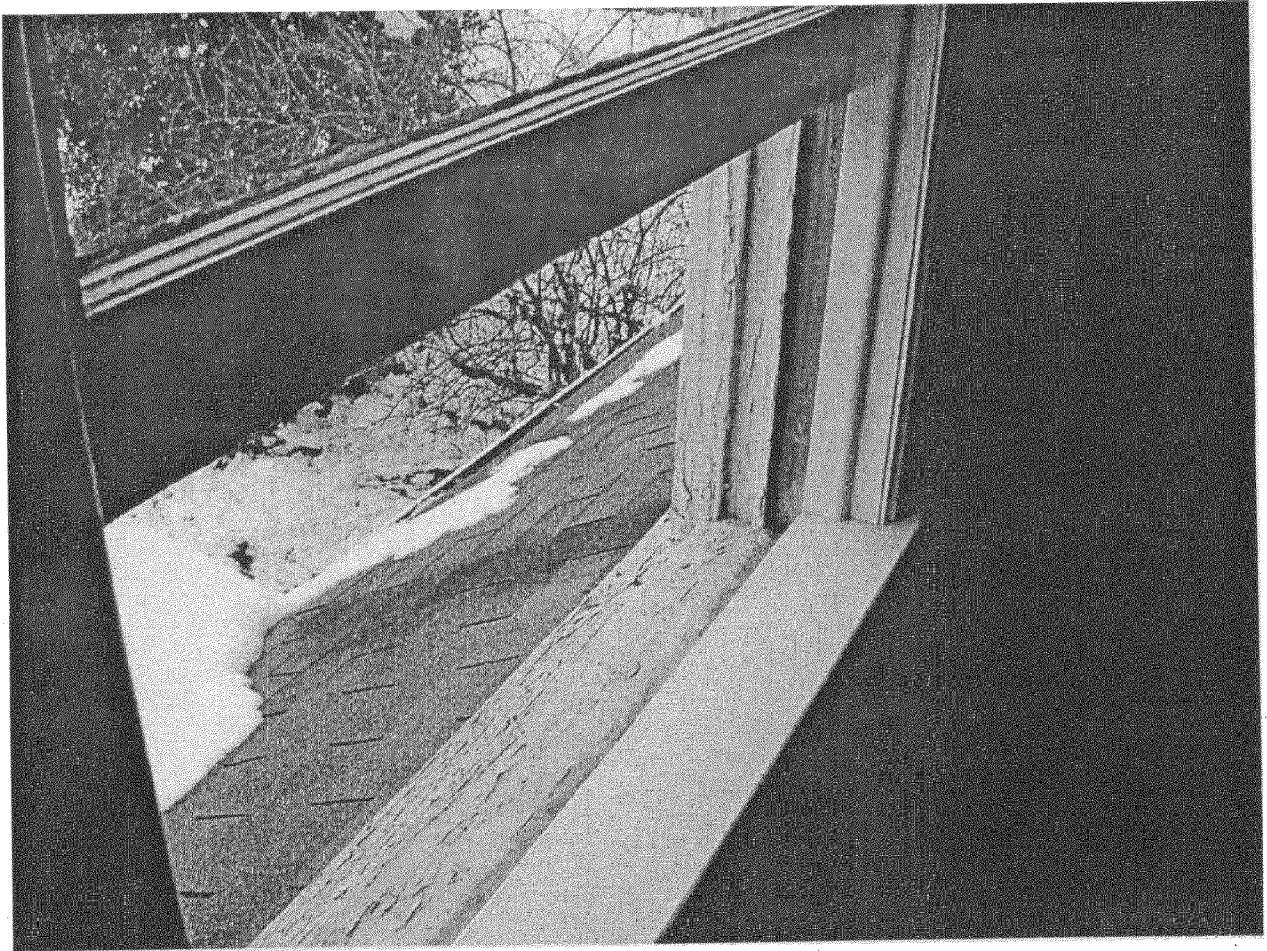
comfort justified by the financial constraints and financing mechanisms of the building rehabilitation project. In general:

- Window upgrades using existing sash can achieve performance indistinguishable from replacement sash but economics of the upgrade depend on the leakiness of the original window.
- If the existing window is loose, it can often be cost-effective to address this leakage, including air leakage between the window and rough opening as well as between an exterior storm window and trim. If the window is already in typical or tight condition, an upgrade is unlikely to be cost-effective regardless of the cost-benefit test used.
- If the windows have single glass, it is worthwhile considering installing a second layer, including the options of storm windows, replacement insulated glass units, energy panels and use of low-emissivity glass (low-E).

While it is tempting to compare first year energy savings to the total installed costs of a window upgrade, it should be noted that some window upgrades may be done for reasons other than energy savings. Therefore, a strict comparison of energy costs to total installed costs may not be appropriate in all cases. In addition, the time frame over which savings may be calculated can vary significantly. Developers of affordable housing, which often includes rehabilitation of historic structures, are often concerned with establishing "perpetually affordable" housing which includes decreased long-term maintenance and energy costs.

Within the decision-making process for deciding to replace or renovate an existing window, energy considerations should not be the primary criteria, but should also not be ignored. The resulting window rehabilitation strategy should result in the most comfort and appropriate degree of energy savings.

The study was funded by the State of Vermont Division for Historic Preservation of the Agency of Commerce and Community Development from a grant received from the National Park Service and the National Center for Preservation, Technology, and Training.



# 9 Preservation Briefs

Technical Preservation Services

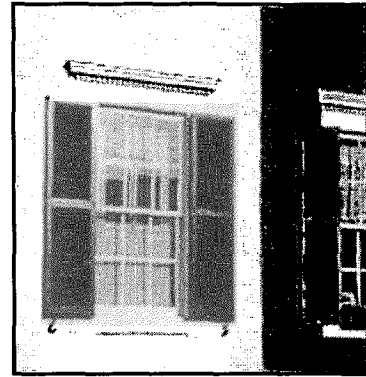
National Park Service  
U.S. Department of the Interior



## The Repair of Historic Wooden Windows

John H. Myers

- » Architectural or Historical Significance
- » Physical Evaluation
- » Repair Class I: Routine Maintenance
- » Repair Class II: Stabilization
- » Repair Class III: Splices and Parts Replacement
- » Weatherization
- » Window Replacement
- » Conclusion
- » Additional Reading



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

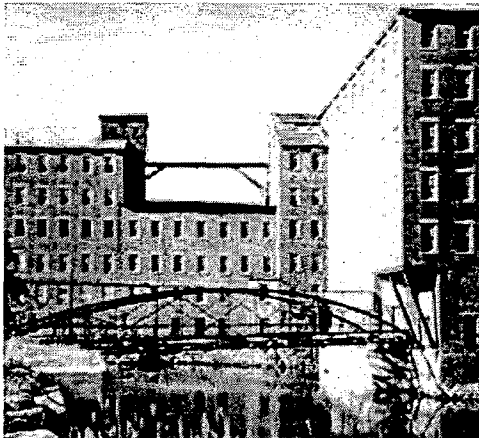
**The windows on many historic buildings are an important aspect of the architectural character of those buildings.** Their design, craftsmanship, or other qualities may make them worthy of preservation. This is self-evident for ornamental windows, but it can be equally true for warehouses or factories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

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

### Architectural or Historical Significance

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



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

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

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

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### Physical Evaluation

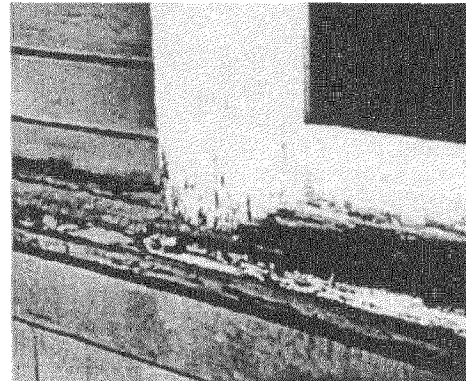
The key to successful planning for window treatments is a careful evaluation of existing physical conditions on a unit-by-unit basis. A graphic or photographic system may be devised to record existing conditions and illustrate the scope of any necessary repairs. Another effective tool is a window schedule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

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

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

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

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



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

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

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

strength.

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

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

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

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### **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



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

needed by the labor force.

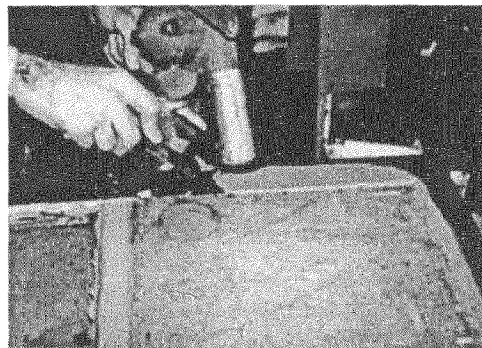


**After removing paint from the seam between the interior stop and the jamb, the stop can be pried out and gradually worked loose using a pair of putty knives as shown. Photo: NPS files.**

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, 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.

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



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

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

The sash can be stripped of paint using appropriate techniques, but if any heat treatment is used, the glass should be removed or protected from the sudden temperature change which can cause breakage. An overlay of aluminum foil on gypsum board or asbestos can protect the glass from such rapid temperature change. It is important to protect the glass because it may be historic and often adds character to the window. Deteriorated putty should be removed manually,

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taking care not to damage the wood along the rabbet. If the glass is to be removed, the glazing points which hold the glass in place can be extracted and the panes numbered and removed for cleaning and reuse in the same openings. With the glass panes out, the remaining putty can be removed and the sash can be sanded, patched, and primed with a preservative primer. Hardened putty in the rabbets may be softened by heating with a soldering iron at the point of removal. Putty remaining on the glass may be softened by soaking the panes in linseed oil, and then removed with less risk of breaking the glass. Before reinstalling the glass, a bead of glazing compound or linseed oil putty should be laid around the rabbet to cushion and seal the glass. Glazing compound should only be used on wood which has been brushed with linseed oil and primed with an oil based primer or paint. The pane is then pressed into place and the glazing points are pushed into the wood around the perimeter of the pane.

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

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

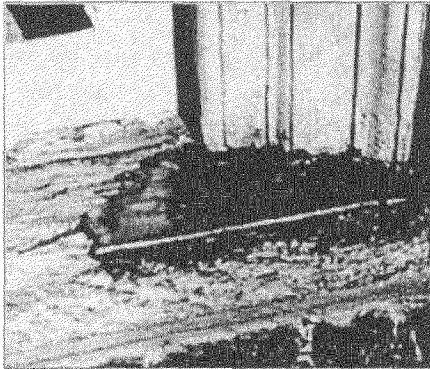


**Following the relatively simple repairs, the window is weathertight, like new in appearance, and serviceable for many years to come. Photo: NPS files.**

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

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

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



**This illustrates a two-part 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: NPS files.**

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

Wood may also be strengthened and stabilized by consolidation, using semirigid epoxies which saturate the porous decayed wood and then harden. The surface of the consolidated wood can then be filled with a semirigid epoxy patching compound, sanded and painted. Epoxy patching compounds can be used to build up missing sections or decayed ends of members. Profiles can be duplicated using hand molds, which are created by pressing a ball of patching

compound over a sound section of the profile which has been rubbed with butcher's wax. This can be a very efficient technique where there are many typical repairs to be done. The process has been widely used and proven in marine applications; and proprietary products are available at hardware and marine supply stores. Although epoxy materials may be comparatively expensive, they hold the promise of being among the most durable and long lasting materials available for wood repair. More information on epoxies can be found in the publication "Epoxies for Wood Repairs in Historic Buildings," cited in the bibliography.

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

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.

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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.

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### **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.

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### **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

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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.

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## 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.

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## 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).

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

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

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

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

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

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

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

### **Washington, D.C. 1981**

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

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

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KDW

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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:

~~SEE ATTACHMENT A~~ SEE ATTACHMENT A  
HISTORIC ID 37003571A

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

SEE ATTACHMENT A

**2. SITE PLAN**

Site and environmental setting, drawn to scale. You may use your plot. 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 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 finishes 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**

ATTACHMENT C

- 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, (301) 779-1355.

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.

~~ATTACHMENT A~~

Metropolitan Regional Information Systems, Inc.

Tax ID#: 161301077351

\*\* PUBLIC RECORD \*\*

Tax ID#: 161301077351 County: MC  
PROPERTY ADDRESS: 511 PHILADELPHIA AVE., TAKOMA PARK, MD 20912-0  
Incorporated City: TAKOMA PARK Legal Subdiv/Neighborhood: TAKOMA PARK  
OWNER: VALERIE CHAMBERS, Phone #: (301) 565-3411 Abs Owner: N  
MAIL ADDRESS: 511 PHILADELPHIA AVE., TAKOMA PARK, MD 20912-4113  
LEGAL DESCRIPTION: IMPST P L & T CO  
Mag/Dist #: 13 Lot: P8 Block/Square: 72 Tax Map:  
Elec Dist: 13 Legal Unit #: Grid: Map: JN42  
Section: Blk Suffix: Subdiv Ph: Addl Parcel Flag/#: /  
Map Suffix: Suffix: Parcel: Sub-Parcel:  
TOTAL TAX BILL: \$3,792 State/County Tax: \$1,765 City Tax: \$1,373 Tax Levy Yr: 2001  
Front Foot Fee: \$0 Spec Tax Assmt: \$592 Refuse: \$61 Tax Rate: 0.83  
Tax Class: 74 Homestd/Exempt Status: Exempt Class: 000 Mult. Class:

**ASSESSMENT**

Year Assessed	Total Tax Value	Land	Improvement	Land Use	Taxable Assessment
2000	\$213,896	\$61,370	\$167,320	\$	State: \$
Previous	\$199,103	\$61,370	\$122,940	\$	Municipal: \$
Early	\$73,720	\$62,750	\$101,190	\$	City: \$

DEED Deed Liber: 12447 Deed Folio: 462 Deed Type:  
Transfer Date Price Grantor Grantee  
23-MAR-1994 \$162,000 WILLIS C & M C SIRK VALERIE CHAMBERS

**PROPERTY DESCRIPTION**

Year Built: 1926 Zoning: R60 Census Trct/Blck: 701800/3 Irregular Lot:  
Square Feet: 8,750 Acreage: 0.20 Land Use: Residential  
Property Class: R Plat Liber/Folio: 12447/462 Property Card: Quality/Grade: AVERAGE  
Prop Use: RESIDENTIAL Historic ID: 37003571A

**STRUCTURE DESCRIPTION**

	Section 1	Section 2	Section 3	Section 4	Section 5
Construction	Frame	Frame			
Story	1.5B	1			
Area	1,404	20			
Ext Wall:		Roofing: Shingle - Composite		Foundation:	
Stories: 1.5B	Units: 1	Style:			Year Remodeled:
Total Building Area:		Living Area: 1,424		Base Sq Ft: 956	Model/Unit Type: SINGLE

FAMILY UNIT  
Patio/Deck Type: DECK Sq Ft: 84 Porch Type: ENCLOSED PORCH Sq Ft: 288  
Rooms: Bsmt Type: Not Specified Fireplaces: 1 Garage Type:  
Bedrooms: Bsmt Tot Sq Ft: 936 Fireplace Type: FRME Garage Sq Ft:  
Full Baths: 1 Bsmt Fin Sq Ft: Attic Type: Gar Constr:  
Half Baths: 0 Bsmt Unfin Sq Ft: Attic Sq Ft: Garage Spaces:  
Baths: 1 Air Cond: Separate System  
Gas: Heat: Hot Water Sewer: Fuel:  
Electric: Water: Underground: Walls:

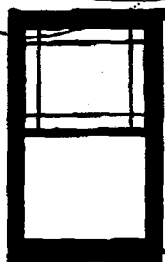


~~ATTACHMENT D~~

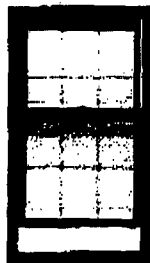
## DOUBLE-HUNG WINDOWS

*Brand Summary*

Pella® double-hung windows are traditional in every detail—with all the Pella innovations you demand. All three brands feature quality select softwood at the sash and frame that is preservative-treated to resist damage from water and insects. The aluminum-clad exterior is protected by Pella EnduraClad® or EnduraClad Plus fluorocarbon-based (Kynar 500), finish system. Upper and lower sash are fully operable and balanced to open to virtually any position. Both sash tilt to the interior without removal for easy cleaning of outside glass. Sash corners are joined three ways (mortise and tenon, adhesive, and metal fasteners) for increased strength. Sash locks are factory-installed. Our wide range of glazing options include custom glazing and obscure glass. Pella maintains its high standards by taking the time to test virtually every vent unit for air infiltration, so you know you're getting a quality product.

**Architect Series®—Pella's "Unsurpassed Architectural Expression™"**

The Architect Series collection offers the look of the most beautiful windows and patio doors of yesterday. Yet the differences are dramatic. Pella's patented Integral Light Technology® combines the traditional look of true divided light with today's energy efficiency. And don't forget the real beauty of Architect Series products—the creative freedom to choose from virtually endless design options including custom exterior colors, muntin patterns and more. Architect Series Double-Hung are available in two options for distinctive detailing including the Luxury Edition (LX) and Style Edition (SE). The Luxury Edition offers a wider range of custom options including a more traditional appearance with a wood jambliner system. The Style Edition provides a more contemporary appearance with a vinyl jambliner system.

**Designer Series®—Pella's "Innovations Others Can't Touch™"**

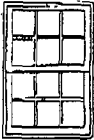
Pella Designer Series windows are a great solution and a good value for any home or building. Our exclusive LifeStyle system features snap-in between-glass blinds, fabric shades and muntins that are easy to change. What's more, Pella's window fashions tucked neatly between panes of glass stay protected from dust, damage and little hands.

- Simplicity of insulated glass with the distinction of exclusive options
- Snap-in between-glass shades and blinds as well as removable between-glass muntins – the ultimate solution for "dressing" a window.
- Hassle free
- Traditional, 9-lite prairie and special muntin patterns
- Exterior Flat screen clad color matching
- Exterior Flat Vivid View™ screen

**ProLine®—Pella's "Basic Done Beautifully™"**

ProLine Double-Hung windows are Pella quality to the core. Our most affordable windows are available in a wide variety of standard sizes and three standard exterior colors. ProLine Double-Hung include options for three different grille styles; Removable Wood Interior Grilles, Grilles-Between-The-Glass, Simulated Divided Light and the option for pre-finished white interiors. By keeping our ProLine offering simple we maximize your value.

(1) Kynar and Kynar 500 are registered trademarks of Elf-Atochem North America, Inc.



# DOUBLE-HUNG WINDOWS



## Product Selection Guide—Size and Performance Data

### DOUBLE-HUNG

SIZES	ARCHITECT SERIES			DESIGNER SERIES®	PROLINE®
	CLAD EXTERIOR	CLAD EXTERIOR	WOOD EXTERIOR	CLAD EXTERIOR	CLAD EXTERIOR
Standard Vent Sizes/ Fixed Sizes	●	●	●	●	●
Transom Sizes	●	●	●	●	●
Egress Sizes	●	●	●	●	●
Arch Top Sizes	●		●		
Contemporary Sizes				●	
Cottage Sash	●	●	●	●	
Special Sizes Available	●	●	●	●	
<b>PERFORMANCE</b>					
Air Infiltration	0.2 cfm <sub>1</sub>	0.2 cfm <sub>1</sub>	0.2 cfm <sub>1</sub>	0.3 cfm <sub>1</sub>	0.3 cfm <sub>2</sub>
Design Pressure	45–50 psf	45–50 psf	40 psf	30–50 psf	30–50 psf
Water Resistance	6–7.5 psf	6–7.5 psf	6 psf	4.5–7.5 psf	4.5 psf
Meets or Exceeds AAMA/NWDA Ratings	H-LC45–LC50 <sub>3</sub>	H-LC45 <sub>3</sub> –LC50	H-LC40 <sub>3</sub>	H-L30–LC50 <sub>3</sub>	H-R30–R50 Hallmark Certified

### SINGLE-HUNG AND DOUBLE-HUNG COMMERCIAL AND MONUMENTAL WINDOWS

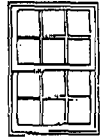
SIZES	ARCHITECT SERIES MONUMENTAL	
	CLAD EXTERIOR	WOOD EXTERIOR
Special Sizes only—Built-to-order on 1/4" increments	●	●
<b>PERFORMANCE</b>		
Air Infiltration	0.3 cfm <sub>1</sub>	0.3 cfm <sub>2</sub>
Design Pressure	30 psf <sub>4</sub>	30 psf <sub>4</sub>
Structural Test Pressure	45 psf	45 psf
Water Resistance	4.5 psf	4.5 psf

(1) cfm/ft<sup>2</sup> of frame at 1.57 psf wind pressure. See Product and Glazing Performance section in Volume I for additional information.  
 (2) Largest available size is Hallmark certified to meet the performance level of 0.1 cfm / ft<sup>2</sup> in AAMA / NWDA 101 / I.S. 2-97 and NAFS for air leakage.  
 (3) Data not available at time of publication for Hallmark Certification. Go to [www.pellaadm.com](http://www.pellaadm.com) for current performance rating.  
 (4) Maximum Design Pressure when glazed with appropriate glass thickness. Refer to the Product and Glazing Performance section in Volume I for more information.



# DOUBLE-HUNG WINDOWS

## Product Selection Guide—Size and Performance Data



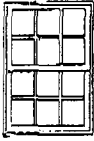
ARCHITECT SERIES			DESIGNER SERIES®	PROLINES
CLADDING	WOOD	GLAZING		

GLAZING	CLADDING	WOOD	GLAZING	DESIGNER SERIES®	PROLINES
InsulShield® Argon-filled, Low-E Insulating Glass	S	S	S	—	O
Clear Insulating Glass	O	O	O	—	S
Double Glazing—Exterior single pane of SolarE™ or clear glass; plus an interior hinged glass panel of Low-E, clear or obscure	—	—	—	O	—
Triple Glazing—Exterior dual pane of Low-E or clear glass; plus an interior hinged glass panel of Low-E, clear or obscure	—	—	—	O	—
Bronze, Gray or Green Tinted	O	O	O	O	—
Obscure Glass	O	O	O	O	—
<b>EXTERIOR/INTERIOR FINISH</b>					
Aluminum EnduraClad® Exterior	S	S	S	S	S
Aluminum EnduraClad Plus Exterior	O	O	O	O	—
Primed Wood Exterior	—	O	—	—	—
Primed Interior	O	O	O	—	O
Interior Finish-White	—	—	—	—	O
<b>CLADDING COLORS</b>					
White, Tan or Brown	S	S	S	S	S
Feature/Special Colors,	O	O	O	O	—
Custom Colors,	O	O	O	O	—
<b>HARDWARE</b>					
Champagne or White Finish	S	S	S	S	S
Bright Brass, Satin Nickel or Oil-Rubbed Bronze Finish	O	O	O	O	O <sub>2</sub>
<b>SASH LOCKS</b>					
Self-aligning (recessed)	—	—	—	S	—
Self-aligning (surface-mounted)	O	O	O	—	S
Spoon-shaped (surface-mounted)	O	O	O	—	—
Sash Lifts	O	O	O	S	O <sub>2</sub>
<b>INSECT SCREEN</b>					
Flat Full Insect Screen	O	O	O	O	O
Flat Half Insect Screen	O	O	O	O	—
Vivid View™ Full Screen	O	O	O	O	—
Vivid View Half Screen	O	O	O	O	—

Should be →

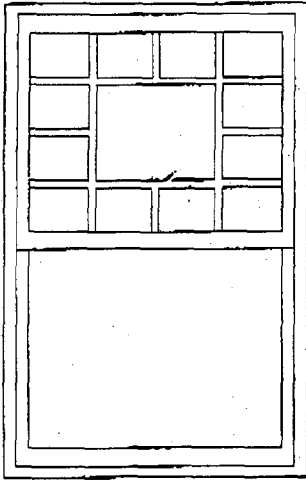
S = Standard; O = Optional; (—) = Not available  
 (1) Contact your local Pella sales representative for current color options.  
 (2) Sold separately.  
 Specifications subject to change without notice.

DOUBLE-HUNG

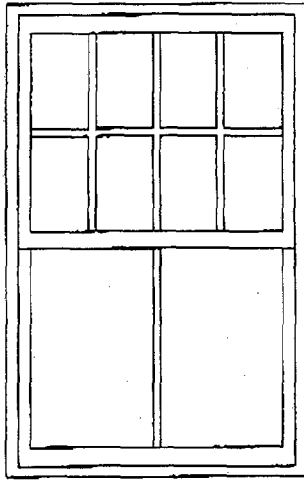


# DOUBLE-HUNG WINDOWS

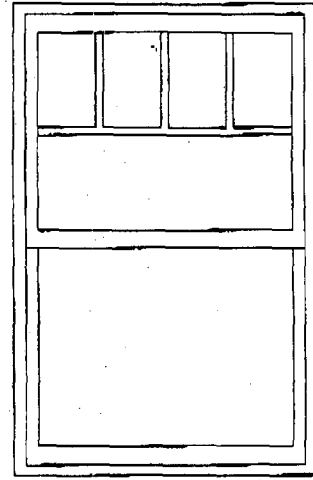
## Architect Series® Clad and Wood Special Muntin Patterns



Victorian Muntin Pattern

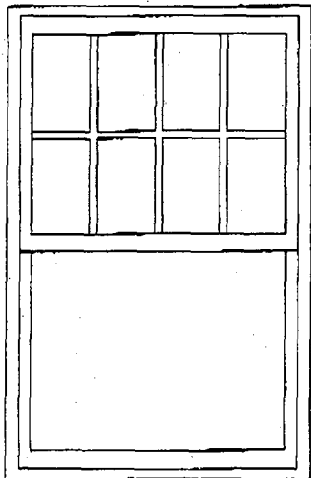


New England Muntin Pattern

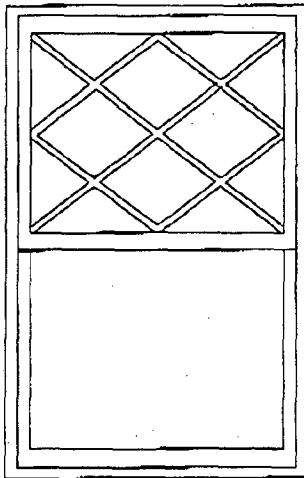


Top Sash Top Row Muntin Pattern

*(we will match existing 6 over 1 pattern)*



Top Sash Muntin Pattern



Diamond Muntin Pattern

**NOTE:**

- Other special patterns are available, contact your local Pella sales representative.



# DOUBLE-HUNG WINDOWS



## Architect Series® LX Clad and Wood Design Data

### VENT UNITS

UNIT	CLEAR OPENING		VENT FRAME FT.	VISIBLE GLASS FT.	VENT FRAME FT.	PERFORMANCE CLASS & GRADE	
	WIDTH (INCHES)	HEIGHT (INCHES)				CLAD LX	WC
2135	18-1/8	12-1/16	1.5	2.8	5.1	LC50	LC40
2141	18-1/8	14-1/16	1.7	3.4	5.9	LC50	LC40
2147	18-1/8	18-1/16	2.2	4.0	6.8	LC50	LC40
2153	18-1/8	20-1/16	2.5	4.7	7.7	LC50	LC40
2157	18-1/8	22-1/16	2.7	5.1	8.3	LC50	LC40
2159	18-1/8	24-1/16	3.0	5.3	8.6	LC50	LC40
2165	18-1/8	26-1/16	3.2	5.9	9.4	LC50	LC40
2171	18-1/8	30-1/16	3.7	6.6	10.3	LC50	LC40
2177	18-1/8	32-1/16	4.0	7.3	11.2	LC50	LC40
2535	22-1/8	12-1/16	1.8	3.5	6.0	LC50	LC40
2541	22-1/8	14-1/16	2.1	4.3	7.1	LC50	LC40
2547	22-1/8	18-1/16	2.7	5.2	8.1	LC50	LC40
2553	22-1/8	20-1/16	3.0	6.0	9.2	LC50	LC40
2557	22-1/8	22-1/16	3.3	6.5	9.8	LC50	LC40
2559	22-1/8	24-1/16	3.7	6.8	10.2	LC50	LC40
2565	22-1/8	26-1/16	4.0	7.6	11.2	LC50	LC40
2571	22-1/8	30-1/16	4.6	8.4	12.3	LC50	LC40
2577	22-1/8	32-1/16	4.9	9.2	13.3	LC50	LC40
2935	26-1/8	12-1/16	2.2	4.3	7.0	LC50	LC40
2941	26-1/8	14-1/16	2.5	5.3	8.2	LC50	LC40
2947	26-1/8	18-1/16	3.2	6.2	9.4	LC50	LC40
2953	26-1/8	20-1/16	3.6	7.2	10.6	LC50	LC40
2957	26-1/8	22-1/16	4.0	7.8	11.4	LC50	LC40
2959	26-1/8	24-1/16	4.3	8.2	11.8	LC50	LC40
2965	26-1/8	26-1/16	4.7	9.1	13.0	LC50	LC40
2971 <sup>⊕</sup>	26-1/8	30-1/16	5.4	10.1	14.2	LC50	LC40
2977 <sup>⊕</sup>	26-1/8	32-1/16	5.8	11.1	15.5	LC50	LC40
3335	30-1/8	12-1/16	2.5	5.0	8.0	LC50	LC40
3341	30-1/8	14-1/16	2.9	6.2	9.3	LC50	LC40
3347	30-1/8	18-1/16	3.7	7.3	10.7	LC50	LC40
3353	30-1/8	20-1/16	4.2	8.4	12.1	LC50	LC40
3357	30-1/8	22-1/16	4.6	9.2	13.0	LC50	LC40
3359 <sup>⊕</sup>	30-1/8	24-1/16	5.0	9.6	13.5	LC50	LC40
3365 <sup>⊕</sup>	30-1/8	26-1/16	5.4	10.7	14.8	LC50	LC40
3371 <sup>⊕</sup>	30-1/8	30-1/16	6.3	11.8	16.2	LC50	LC40
3377 <sup>⊕</sup>	30-1/8	32-1/16	6.7	13.0	17.6	LC50	LC40
3735	34-1/8	12-1/16	2.8	5.8	8.9	LC50	LC40
3741	34-1/8	14-1/16	3.3	7.1	10.5	LC50	LC40
3747	34-1/8	18-1/16	4.2	8.4	12.0	LC50	LC40
3753	34-1/8	20-1/16	4.7	9.7	13.6	LC50	LC40

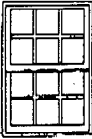
<sup>⊕</sup> Can be used on first floor only where codes permit 5.0 ft<sup>2</sup> (0.46 m<sup>2</sup>).

<sup>⊕</sup> Meets typical egress requirements by raising lower sash.

To convert areas to square meters (m<sup>2</sup>), multiply square feet by 0.0929.

Continued on next page.

DOUBLE-HUNG



# DOUBLE-HUNG WINDOWS

*Architect Series® LX Clad and Wood Design Data*



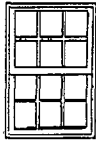
## VENT UNITS (CONT.)

UNIT	CLEAR OPENING		VENT AREA FT <sup>2</sup>	VISIBLE GLASS FT <sup>2</sup>	VENT FRAME FT <sup>2</sup>	PERFORMANCE CLASS & GRADE	
	WIDTH (INCHES)	HEIGHT (INCHES)				CLAD LX	
3757	34-1/8	22-1/16	5.2	10.5	14.6	LC50	LC40
3759 <sup>Ⓢ</sup>	34-1/8	24-1/16	5.7	11.0	15.1	LC50	LC40
3765 <sup>Ⓢ</sup>	34-1/8	26-1/16	6.1	12.3	16.7	LC50	LC40
3771 <sup>Ⓢ</sup>	34-1/8	30-1/16	7.1	13.6	18.2	LC50	LC40
3777 <sup>Ⓢ</sup>	34-1/8	32-1/16	7.6	14.9	19.7	LC50	LC40
4135	38-1/8	12-1/16	3.2	6.5	9.9	LC50	LC40
4141	38-1/8	14-1/16	3.7	8.0	11.6	LC50	LC40
4147	38-1/8	18-1/16	4.7	9.4	13.3	LC50	LC40
4153	38-1/8	20-1/16	5.3	11.0	15.0	LC50	LC40
4157	38-1/8	22-1/16	5.8	11.9	16.2	LC50	LC40
4159 <sup>Ⓢ</sup>	38-1/8	24-1/16	6.3	12.4	16.7	LC50	LC40
4165 <sup>Ⓢ</sup>	38-1/8	26-1/16	6.9	13.8	18.5	LC50	LC40
4171 <sup>Ⓢ</sup>	38-1/8	30-1/16	7.9	15.3	20.2	LC50	LC40
4177 <sup>Ⓢ</sup>	38-1/8	32-1/16	8.5	16.7	21.9	LC50	LC40
4535	42-1/8	12-1/16	3.5	7.2	10.9	LC50	LC40
4541	42-1/8	14-1/16	4.1	8.9	12.8	LC50	LC40
4547	42-1/8	18-1/16	5.3	10.5	14.6	LC50	LC40
4553	42-1/8	20-1/16	5.8	12.1	16.5	LC50	LC40
4557	42-1/8	22-1/16	6.4	13.2	17.8	LC50	LC40
4559 <sup>Ⓢ</sup>	42-1/8	24-1/16	7.0	13.8	18.4	LC50	LC40
4565 <sup>Ⓢ</sup>	42-1/8	26-1/16	7.6	15.4	20.3	LC50	LC40
4571 <sup>Ⓢ</sup>	42-1/8	30-1/16	8.8	17.1	22.1	LC50	LC40
4577 <sup>Ⓢ</sup>	42-1/8	32-1/16	9.3	18.7	24.0	LC45	LC45

<sup>Ⓢ</sup> Can be used on first floor only where codes permit 5.0 ft<sup>2</sup> (0.46 m<sup>2</sup>).

<sup>Ⓢ</sup> Meets typical egress requirements by raising lower sash.

To convert areas to square meters (m<sup>2</sup>), multiply square feet by 0.0929.



# DOUBLE-HUNG WINDOWS

*Architect Series® Clad and Wood Special Sizes*



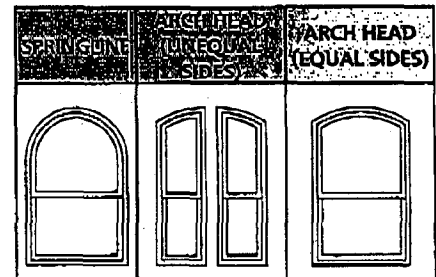
## RECTANGULAR CLAD AND WOOD WINDOW SPECIAL SIZE LIMITATIONS

SASH CONFIGURATION	VENT-EQUAL	40:60	FIXED
Sash Glass Ratio, Top% : Bottom %	50 : 50	40 : 60	NA
Shortest Unit Frame Size	35" (889)	42-1/4" (1 073)	17" (432)
Tallest Unit Frame Size	84" (2 134)	67-1/4" (1 708)	71" (1 803)
Unit Frame Width Range	21" to 84" (533 to 2 134)	21" to 48" (533 to 1 219)	17" to 59" (432 to 1 499)

## MISCELLANEOUS FORMULAS (EQUAL SASH ONLY)

	VENT UNITS	FIXED AND TRANSOM UNITS
<b>VISIBLE GLASS</b>	Width = Frame - 5-3/4" Height = (Frame - 8-7/16") / 2	Width = Frame - 5-3/4" Height = Frame - 5-3/4"
<b>ACTUAL GLASS</b>	Width = Frame - 4-1/2" Height = (Frame - 5-1/2") / 2	Width = Frame - 4-3/4" Height = Frame - 4-3/4"
<b>CLEAR OPENING WIDTH</b>	Frame Width - 2-5/8"	—
<b>CLEAR OPENING HEIGHT</b>	For the window units not listed, use the next shortest standard window unit shown on the Design Data page.	—

## CLAD AND WOOD WINDOW CUSTOM SHAPES<sub>2</sub>



## MONUMENTAL WINDOWS

FRAME DIMENSIONS	FORMULAS - CLAD AND WOOD
<b>MINIMUM</b> 13-3/4" W x 28" H (349 x 711)	Width = Frame - 4-7/8" Height = Frame - 24"
<b>MAXIMUM</b> 60" W x 120" H (1 524 x 3 048)	

## MISCELLANEOUS FORMULAS (EQUAL SASH ONLY)

	CLAD	WOOD
<b>VISIBLE GLASS</b>	Width = Frame - 8-5/16" Height = (Frame - 9-7/16") / 2	Width = Frame - 8-5/16" Height = (Frame - 10-1/8") / 2
<b>ACTUAL GLASS</b>	Width = Frame - 7-5/16" Height = (Frame - 7-7/16") / 2	Width = Frame - 7-5/16" Height = (Frame - 8-1/8") / 2

**NOTES:**

- (1) Actual glass size.
  - (2) Shown are examples of some of the custom shapes available. Contact your local Pella representative for more information.
- Custom sash ratios are also available. See your Pella representative for additional information.

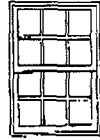
**MONUMENTAL WINDOW-ONLY NOTES:**

- (3) If frame height is less than 50", clear opening will be reduced accordingly.
- Sash weight must be less than 100 pounds.
- Glass width cannot exceed 2.75 times glass height of bottom sash.
- Glass width cannot exceed two times glass height of upper sash.
- Maximum upper and lower glass height is 58".



# DOUBLE-HUNG WINDOWS

## Architect Series® Wood LX Detailed Product Descriptions



### Frame

- Select softwood, water-repellent, preservative-treated in accordance with WDMA I.S.-4.
- Interior exposed surfaces are of clear pine (rectangular windows only). Any curved member may have visible finger-jointed surfaces.
- All exterior surfaces primed.
- Overall frame depth is 4-3/8" (111 mm).
- Jamb liner shall be wood/clad insert.

### Sash

- Select softwood, water-repellent, preservative-treated in accordance with WDMA I.S.-4.
- Interior exposed surfaces are of clear pine (rectangular windows only). Any curved member may have visible finger-jointed surfaces.
- All exterior surfaces are factory-primed.
- Corners mortised and tenoned, glued and secured with metal fasteners.
- Sash thickness is 1-3/4" (44 mm).
- Upper sash has surface-mounted wash locks.
- Lower sash has concealed wash locks in lower check rail.

### Glazing System

- Quality float glass complying with ASTM C1036.
- Silicone-glazed 5/8" [clear] [InsulShield® argon-filled, multi-layer Low-E coated] [bronze InsulShield® air-filled multi-layer Low-E coated] [gray InsulShield® air-filled multi-layer Low-E coated] [green InsulShield® air-filled multi-layer Low-E coated] dual-seal insulating glass.
- Custom and high altitude glazing also available.
- Units with Integral Light Technology® only:
  - ◆ Insulating glass contains a foam muntin grid between two panes of glass. Foam grid shall be adhered to glass.
  - ◆ Muntin bars shall be solid [7/8"] [1-1/4"] wide pine, water-repellent, preservative-treated in accordance with WDMA I.S.-4.
  - ◆ Bars shall be adhered to both sides of insulating glass with VHB acrylic adhesive tape and aligned with the foam grid.
  - ◆ Exterior surfaces primed; interior surfaces unfinished, ready for site finishing.

### Weather Stripping

- Foam with 3 mil skin at head. Water-stop santoprene-wrapped foam at sill; thermal-plastic elastomer bulb with slip-coating set into lower sash for tight contact at check rail.
- Vinyl-wrapped foam inserted into jamb liner or jamb liner components to seal to sides of sash.

### Optional Products

The following specify optional products sold separately.

- Insect Screen: Standard:
  - ◆ [Half-] [Full-] size with black vinyl-coated 18/16 mesh fiberglass screen cloth complying with ASTM D 3656 and SMA 1201.
  - ◆ Screen set in aluminum frame and fitted to outside of window, supplied complete with all necessary hardware.
  - ◆ Screen frame finish shall be baked enamel, white.
- or –
- Insect Screen: Vivid View™:
  - ◆ [Half-] [Full-] PVDF 21/17 mesh minimum 78 percent light transmissivity screen cloth complying with ASTM D 3656 and SMA 1201, set in aluminum frame fitted to outside of window, supplied complete with all necessary hardware.
  - ◆ Screen frame finish shall be baked enamel, color to match window cladding
- Removable Muntin Bars (for units without integral muntin bars)
  - ◆ [3/4" profile] [1-1/4" profile] removable solid wood bars steel-pinned at joints and fitted to sash with steel clips and tacks.
  - ◆ Surfaces unfinished, ready for site finishing.

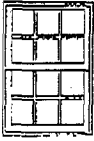
### Hardware

- Painted block-and-tackle balances connected to sash with a polyester cord and concealed within the frame.
- Lock: [Spoon-shaped sash lock] [Self-aligning sash lock]. Two sash locks on units with 37" frame width and greater. Finish shall be [baked enamel, champagne.] [baked enamel, white.] [bright brass.] [satin nickel.] [oil-rubbed bronze.]
- Lift: Sash lift furnished for field installation. Two lifts on units with 37" frame width and greater. Finish shall be [baked enamel, champagne.] [baked enamel, white.] [bright brass.] [satin nickel.] [oil-rubbed bronze.]
- Steady-Tilt™ self-supporting tilt-wash feature on lower sash with linkage arms connecting sash to jambliner.

### Interior Finish

- [Unfinished ready for site finishing.] [Factory-primed with one coat acrylic latex.]

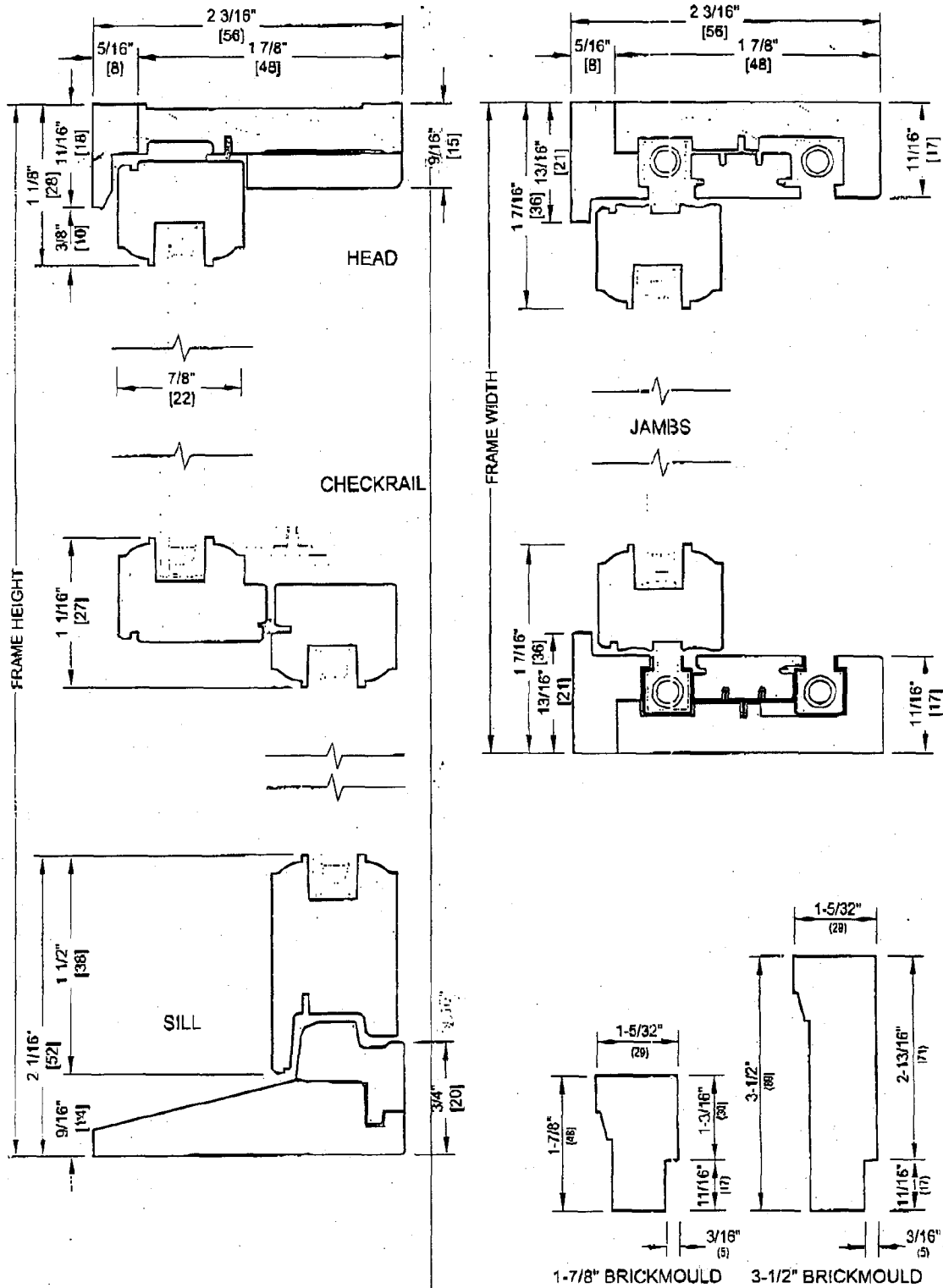




# DOUBLE-HUNG WINDOWS

## Architect Series® Wood LX Rectangular Unit Sections

Scale 3" = 1' 0"



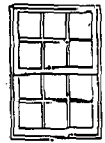
**NOTE:**  
 • All unit dimensions are approximate.



# DOUBLE-HUNG WINDOWS

## Architect Series® Wood LX Rectangular Unit Sections

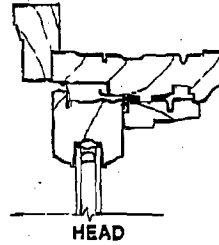
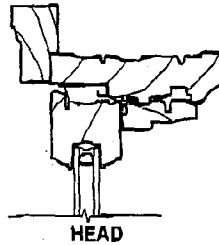
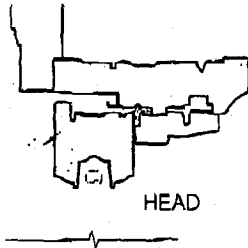
Scale 3" = 1' 0"



VENT UNITS

FIXED UNITS

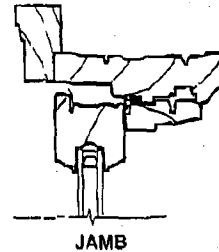
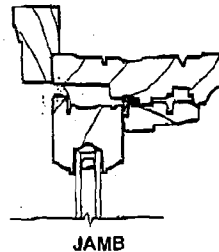
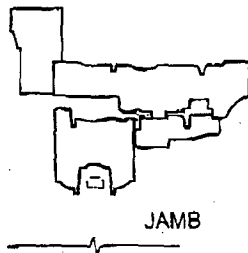
TRANSOMS



HEAD

HEAD

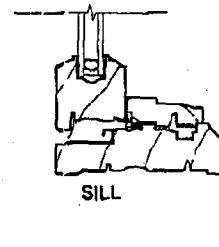
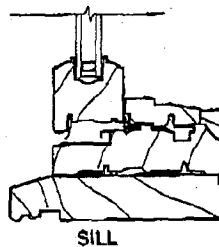
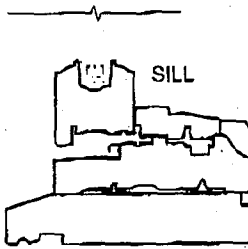
HEAD



JAMB

JAMB

JAMB

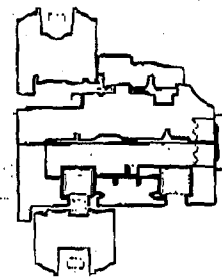
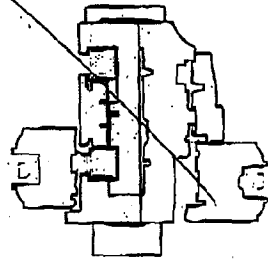
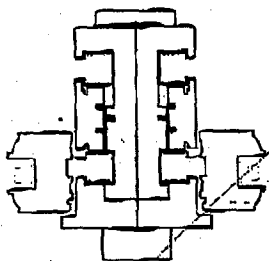


SILL

SILL

SILL

## Architect Series Wood LX Rectangular Typical Joining Mullions



VERTICAL JOINING MULLION  
VENT / VENT

VERTICAL JOINING MULLION  
VENT / FIXED

HORIZONTAL JOINING MULL  
TRANSOM / VENT

6-DOUBLE-HUNG

~~ATTACHMENT 7~~

511 PHILADELPHIA AVENUE

Replace these two windows

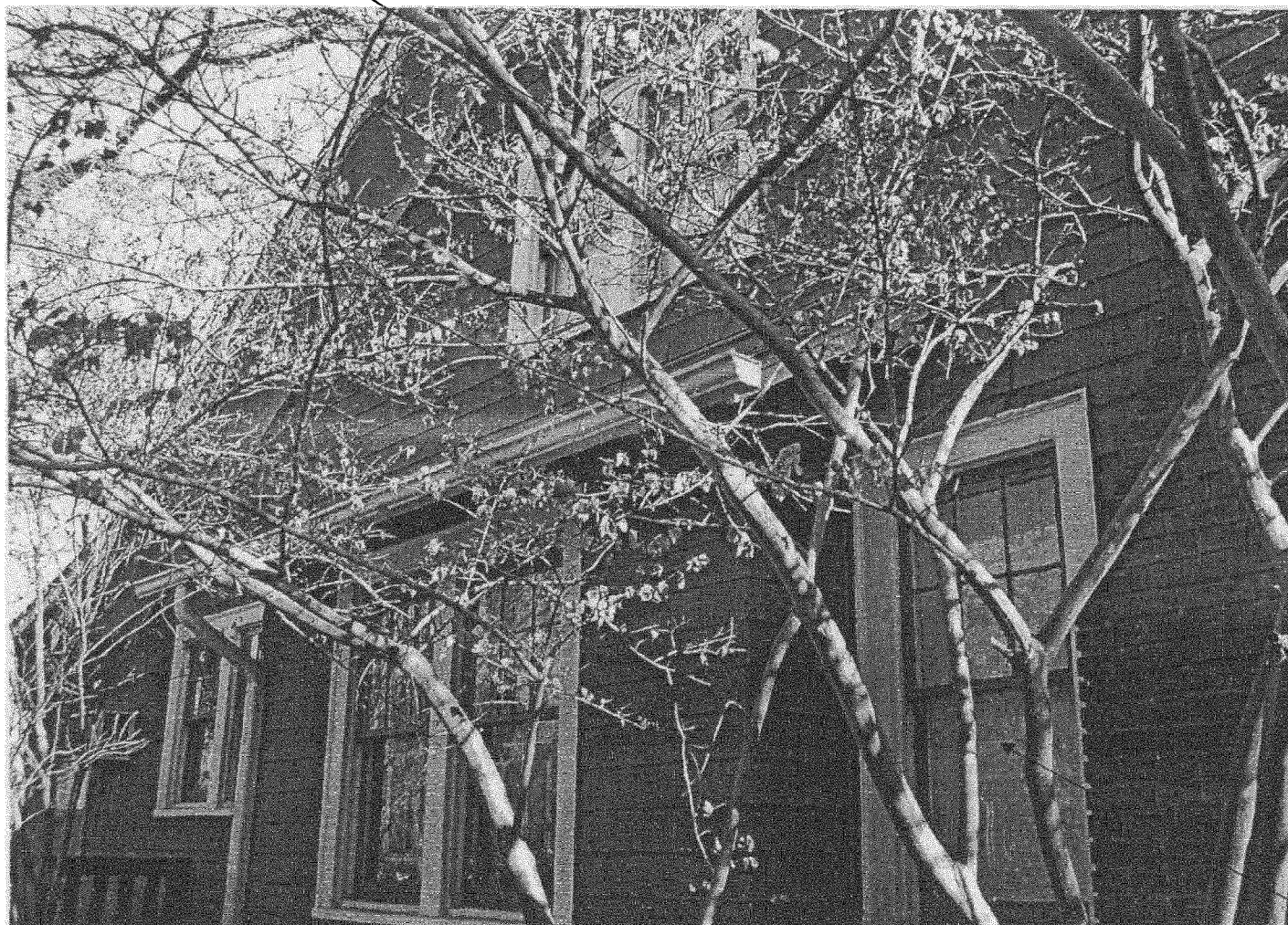


Replace these two windows

Replace these two windows

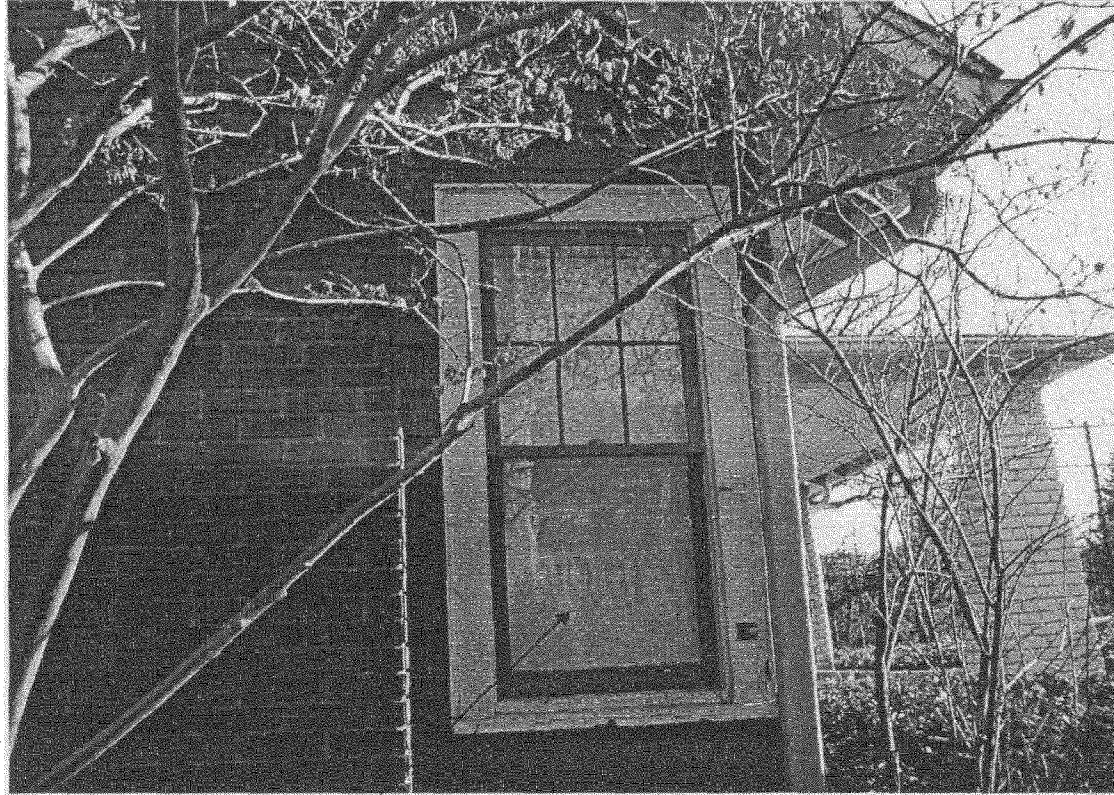
# 511 PHILADELPHIA AVENUE

Replace these two windows



Replace this window

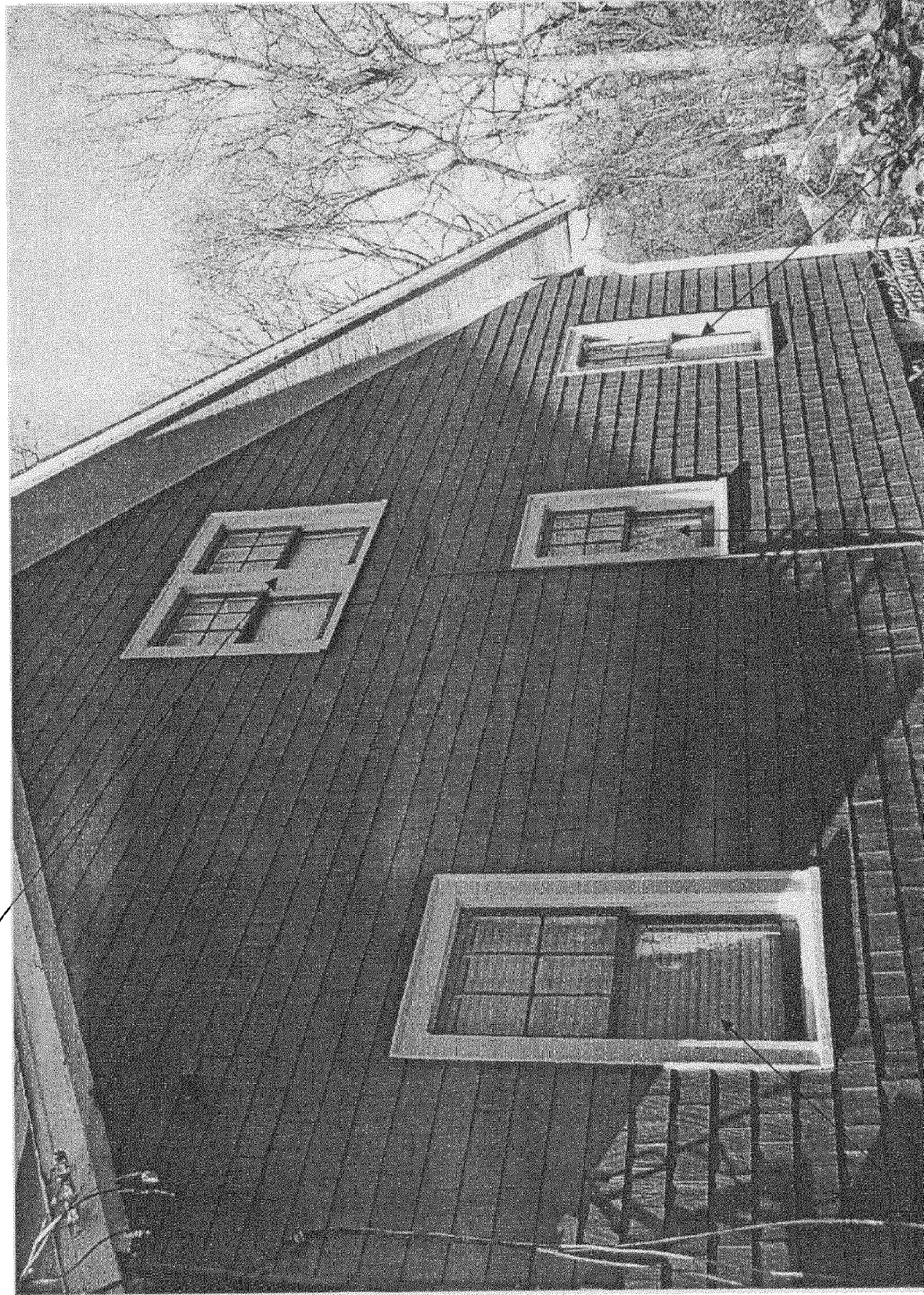
511 PHILADELPHIA AVENUE



Replace this window

511 PHILADELPHIA AVENUE

Replace these two windows



Replace this window

Replace this window

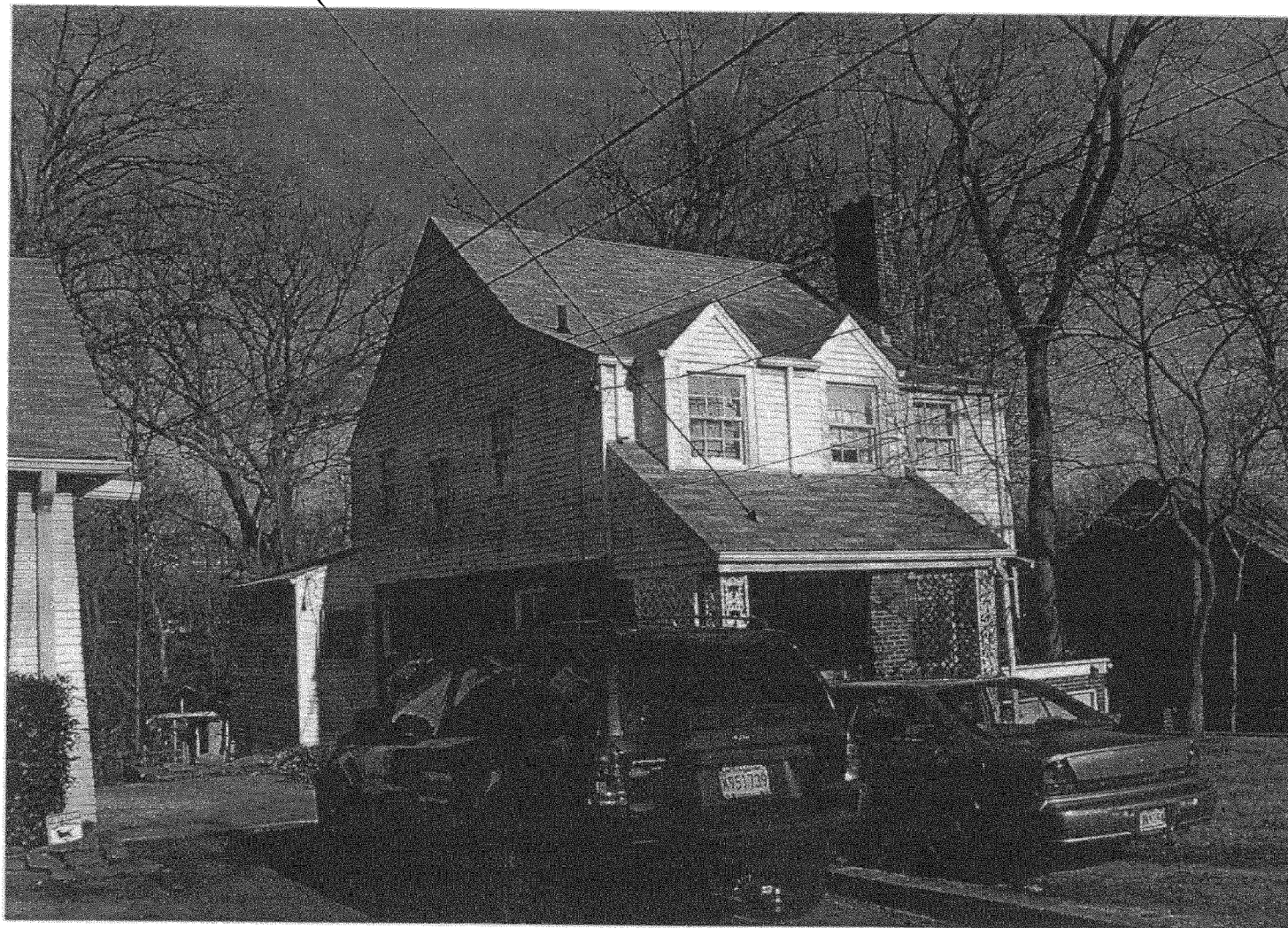
Replace this window

511 PHILADELPHIA AVENUE



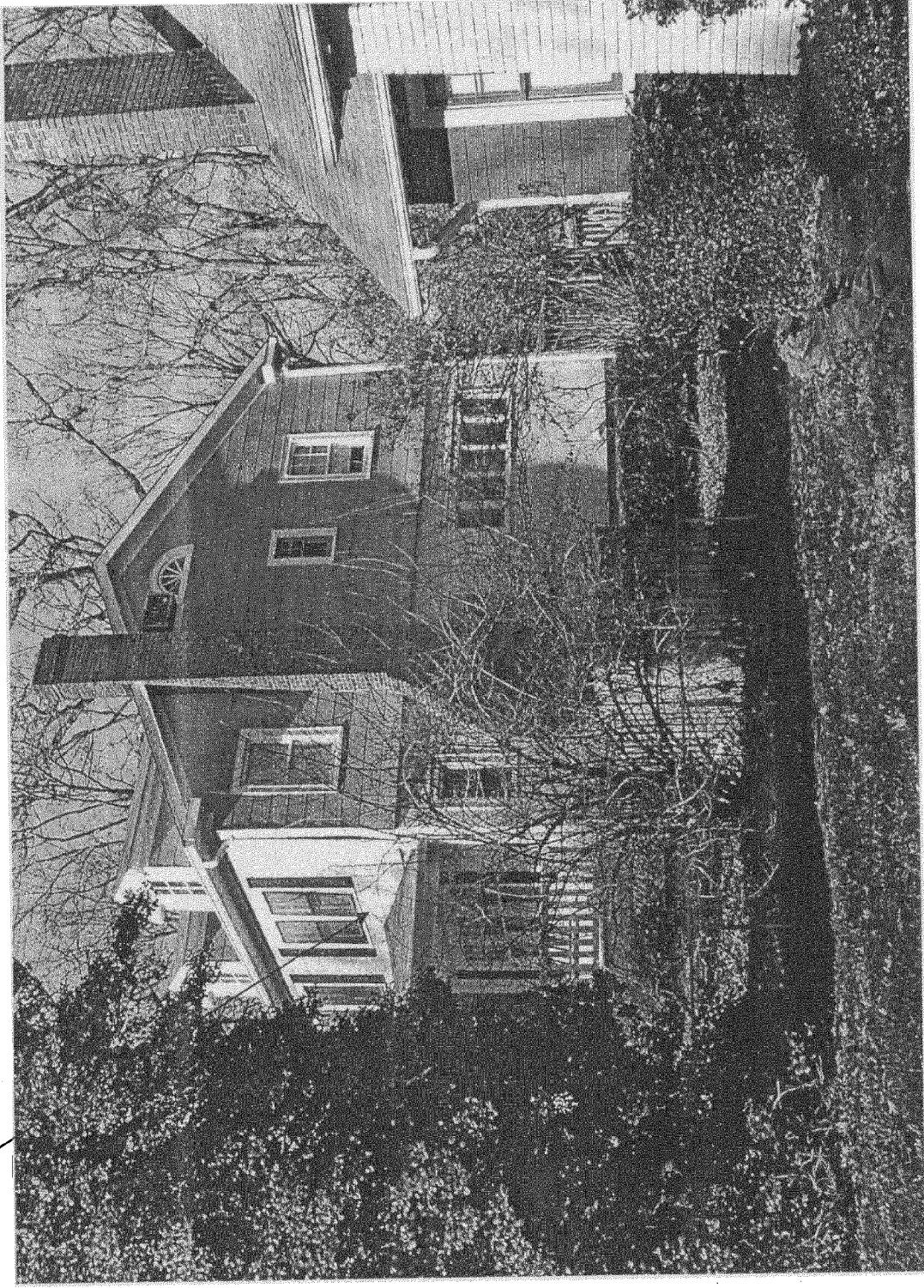
Replace this window

509 PHILADELPHIA AVENUE – Dorothy Brown





513 PHILADELPHIA AVENUE – Jim Allen

























Tax ID#: 161301077351

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\*\* PUBLIC RECORD \*\*

Tax ID#: 161301077351 County: MC  
 PROPERTY ADDRESS: 511 PHILADELPHIA AVE, , TAKOMA PARK, MD 20912-0  
 Incorporated City: TAKOMA PARK Legal Subdiv/Neighborhood: TAKOMA PARK  
 OWNER: VALERIE CHAMBERS, Phone #: (301) 565-3411 Abs Owner: N  
 MAIL ADDRESS: 511 PHILADELPHIA AVE, , TAKOMA PARK, MD 20912-4113

LEGAL DESCRIPTION: IMPST P L & T CO  
 Mag/Dist #: 13 Lot: P8 Block/Square: 72 Tax Map:  
 Elec Dist: 13 Legal Unit #: Grid: Map: JN42  
 Section: Blk Suffix: Subdiv Ph: Addl Parcel Flag/#: /  
 Map Suffix: Suffix: Parcel: Sub-Parcel:  
 TOTAL TAX BILL: \$3,792 State/County Tax: \$1,765 City Tax: \$1,373 Tax Levy Yr: 2001  
 Front Foot Fee: \$0 Spec Tax Assmt: \$592 Refuse: \$61 Tax Rate: 0.83  
 Tax Class: 74 Homestd/Exempt Status: Exempt Class: 000 Mult. Class:

**ASSESSMENT**

Year Assessed	Total Tax Value	Land	Improvement	Land Use	Taxable Assessment
2000	\$213,896	\$61,370	\$167,320	\$	State: \$
Previous	\$199,103	\$61,370	\$122,940	\$	Municipal: \$
Early	\$73,720	\$62,750	\$101,190	\$	City: \$

**DEED**  
 Deed Liber: 12447 Deed Folio: 462 Deed Type:  
 Transfer Date Price Grantor Grantee  
 23-MAR-1994 \$162,000 WILLIS C & M C SIRK VALERIE CHAMBERS

**PROPERTY DESCRIPTION**  
 Year Built: 1926 Zoning: R60 Census Trct/Blck: 701800/3 Irregular Lot:  
 Square Feet: 8,750 Acreage: 0.20 Land Use: Residential  
 Property Class: R Plat Liber/Folio: 12447/462 Property Card: Quality/Grade: AVERAGE  
 Prop Use: RESIDENTIAL Historic ID: 37003571A

**STRUCTURE DESCRIPTION**

	Section 1	Section 2	Section 3	Section 4	Section 5
Construction	Frame	Frame			
Story	1.5B	1			
Area	1,404	20			
Ext Wall:		Roofing: Shingle - Composite		Foundation:	
Stories: 1.5B	Units: 1	Style:			Year Remodeled:
Total Building Area:		Living Area: 1,424		Base Sq Ft: 956	Model/Unit Type: SINGLE

**FAMILY UNIT**  
 Patio/Deck Type: DECK Sq Ft: 84 Porch Type: ENCLOSED PORCH Sq Ft: 288  
 Rooms: Bsmt Type: Not Specified Fireplaces: 1 Garage Type:  
 Bedrooms: Bsmt Tot Sq Ft: 936 Fireplace Type: FRME Garage Sq Ft:  
 Full Baths: 1 Bsmt Fin Sq Ft: Attic Type: Gar Constr:  
 Half Baths: 0 Bsmt Unfin Sq Ft: Attic Sq Ft: Garage Spaces:  
 Baths: 1 Air Cond: Separate System  
 Gas: Heat: Hot Water Sewer: Fuel:  
 Electric: Water: Underground: Walls:

~~ATTACHMENT B~~

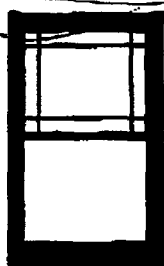
**DOUBLE-HUNG WINDOWS**



*Brand Summary*

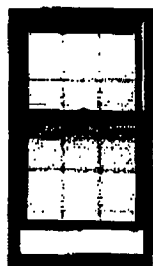
Pella® double-hung windows are traditional in every detail—with all the Pella innovations you demand. All three brands feature quality select softwood at the sash and frame that is preservative-treated to resist damage from water and insects. The aluminum-clad exterior is protected by Pella EnduraClad® or EnduraClad Plus fluorocarbon-based (Kynar 500), finish system. Upper and lower sash are fully operable and balanced to open to virtually any position. Both sash tilt to the interior without removal for easy cleaning of outside glass. Sash corners are joined three ways (mortise and tenon, adhesive, and metal fasteners) for increased strength. Sash locks are factory-installed. Our wide range of glazing options include custom glazing and obscure glass. Pella maintains its high standards by taking the time to test virtually every vent unit for air infiltration, so you know you're getting a quality product.

**Architect Series®—Pella's "Unsurpassed Architectural Expression™"**



The Architect Series collection offers the look of the most beautiful windows and patio doors of yesterday. Yet the differences are dramatic. Pella's patented Integral Light Technology® combines the traditional look of true divided light with today's energy efficiency. And don't forget the real beauty of Architect Series products—the creative freedom to choose from virtually endless design options including custom exterior colors, muntin patterns and more. Architect Series Double-Hung are available in two options for distinctive detailing including the Luxury Edition (LX) and Style Edition (SE). The Luxury Edition offers a wider range of custom options including a more traditional appearance with a wood jambliner system. The Style Edition provides a more contemporary appearance with a vinyl jambliner system.

**Designer Series®—Pella's "Innovations Others Can't Touch™"**



Pella Designer Series windows are a great solution and a good value for any home or building. Our exclusive LifeStyle system features snap-in between-glass blinds, fabric shades and muntins that are easy to change. What's more, Pella's window fashions tucked neatly between panes of glass stay protected from dust, damage and little hands.

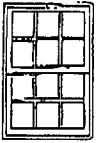
- Simplicity of insulated glass with the distinction of exclusive options
- Snap-in between-glass shades and blinds as well as removable between-glass muntins – the ultimate solution for "dressing" a window.
- Hassle free
- Traditional, 9-lite prairie and special muntin patterns
- Exterior Flat screen clad color matching
- Exterior Flat Vivid View™ screen

**ProLine®—Pella's "Basic Done Beautifully™"**



ProLine Double-Hung windows are Pella quality to the core. Our most affordable windows are available in a wide variety of standard sizes and three standard exterior colors. ProLine Double-Hung include options for three different grille styles; Removable Wood Interior Grilles, Grilles-Between-The-Glass, Simulated Divided Light and the option for pre-finished white interiors. By keeping our ProLine offering simple we maximize your value.

(1) Kynar and Kynar 500 are registered trademarks of Elf-Atochem North America, Inc.



# DOUBLE-HUNG WINDOWS

## Product Selection Guide—Size and Performance Data



### DOUBLE-HUNG

	ARCHITECT SERIES			DESIGNER SERIES®	PROLINE®
	CLAD EXTERIOR	CLAD EXTERIOR	WOOD EXTERIOR	CLAD EXTERIOR	CLAD EXTERIOR
<b>SIZES</b>					
Standard Vent Sizes/ Fixed Sizes	●	●	●	●	●
Transom Sizes	●	●	●	●	●
Egress Sizes	●	●	●	●	●
Arch Top Sizes	●		●		
Contemporary Sizes				●	
Cottage Sash	●	●	●	●	
Special Sizes Available	●	●	●	●	
<b>PERFORMANCE</b>					
Air Infiltration	0.2 cfm <sub>1</sub>	0.2 cfm <sub>1</sub>	0.2 cfm <sub>1</sub>	0.3 cfm <sub>1</sub>	0.3 cfm <sub>2</sub>
Design Pressure	45–50 psf	45–50 psf	40 psf	30–50 psf	30–50 psf
Water Resistance	6–7.5 psf	6–7.5 psf	6 psf	4.5–7.5 psf	4.5 psf
Meets or Exceeds AAMA/WDMA Ratings	H-LC45–LC50 <sub>3</sub>	H-LC45 <sub>3</sub> –LC50	H-LC40 <sub>3</sub>	H-L30–LC50 <sub>3</sub>	H-R30–R50 Hallmark Certified

### SINGLE-HUNG AND DOUBLE-HUNG COMMERCIAL AND MONUMENTAL WINDOWS

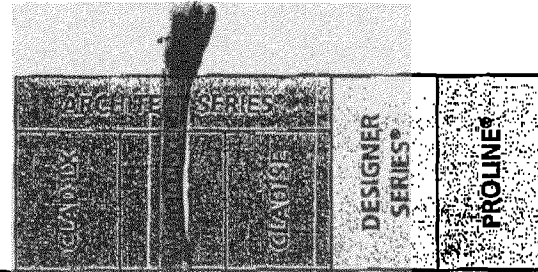
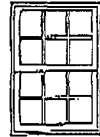
	ARCHITECT SERIES—MONUMENTAL®	
	CLAD EXTERIOR	WOOD EXTERIOR
<b>SIZES</b>		
Special Sizes only—Built-to-order on 1/4" increments	●	●
<b>PERFORMANCE</b>		
Air Infiltration	0.3 cfm <sub>1</sub>	0.3 cfm <sub>2</sub>
Design Pressure	30 psf <sub>4</sub>	30 psf <sub>4</sub>
Structural Test Pressure	45 psf	45 psf
Water Resistance	4.5 psf	4.5 psf

(1) cfm/ft<sup>2</sup> of frame at 1.57 psf wind pressure. See Product and Glazing Performance section in Volume I for additional information.  
 (2) Largest available size is Hallmark certified to meet the performance level of 0.1 cfm / ft<sup>2</sup> in AAMA / NWWDA 101 / I.S. 2-97 and NAFS for air leakage.  
 (3) Data not available at time of publication for Hallmark Certification. Go to [www.pellaadm.com](http://www.pellaadm.com) for current performance rating.  
 (4) Maximum Design Pressure when glazed with appropriate glass thickness. Refer to the Product and Glazing Performance section in Volume I for more information.



# DOUBLE-HUNG WINDOWS

## Product Selection Guide—Size and Performance Data



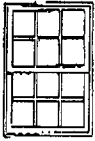
GLAZING	ARCHITE SERIES	ENDURACLAD	DESIGNER SERIES	PROLINE
InsulShield® Argon-filled, Low-E Insulating Glass	S	S	S	O
Clear Insulating Glass	O	O	O	S
Double Glazing—Exterior single pane of SolarE™ or clear glass; plus an interior hinged glass panel of Low-E, clear or obscure	—	—	—	O
Triple Glazing—Exterior dual pane of Low-E or clear glass; plus an interior hinged glass panel of Low-E, clear or obscure	—	—	—	O
Bronze, Gray or Green Tinted	O	O	O	O
Obscure Glass	O	O	O	O
<b>EXTERIOR/INTERIOR FINISH</b>				
Aluminum EnduraClad® Exterior	S	S	S	S
Aluminum EnduraClad Plus Exterior	O	O	O	O
Primed Wood Exterior	—	O	—	—
Primed Interior	O	O	O	O
Interior Finish-White	—	—	—	O
<b>CLADDING COLORS</b>				
White, Tan or Brown	S	S	S	S
Feature/Special Colors, <sup>(1)</sup>	O	O	O	O
Custom Colors, <sup>(1)</sup>	O	O	O	O
<b>HARDWARE</b>				
Champagne or White Finish	S	S	S	S
Bright Brass, Satin Nickel or Oil-Rubbed Bronze Finish	O	O	O	O <sub>2</sub>
<b>SASH LOCKS</b>				
Self-aligning (recessed)	—	—	—	S
Self-aligning (surface-mounted)	O	O	O	—
Spoon-shaped (surface-mounted)	O	O	O	—
Sash Lifts	O	O	O	S
<b>INSECT SCREEN</b>				
Flat Full Insect Screen	O	O	O	O
Flat Half Insect Screen	O	O	O	—
Vivid View™ Full Screen	O	O	O	—
Vivid View Half Screen	O	O	O	—

S = Standard; O = Optional; (—) = Not available

(1) Contact your local Pella sales representative for current color options.

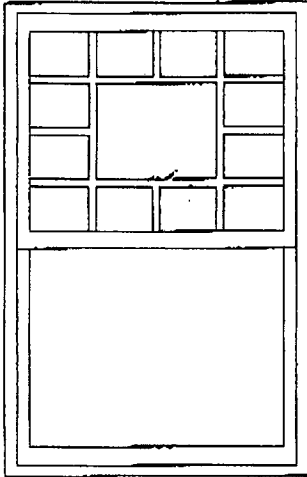
(2) Sold separately.

Specifications subject to change without notice.

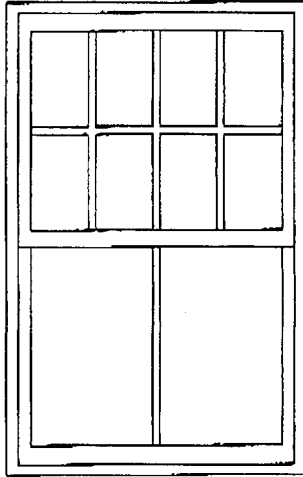


# DOUBLE-HUNG WINDOWS

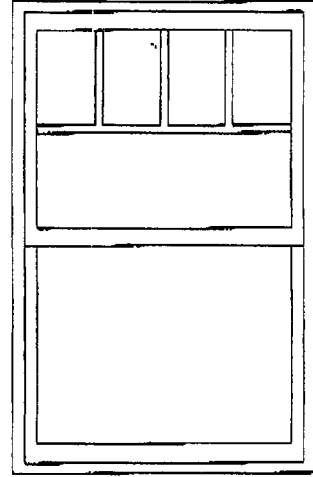
*Architect Series® Clad and Wood Special Muntin Patterns*



Victorian Muntin Pattern

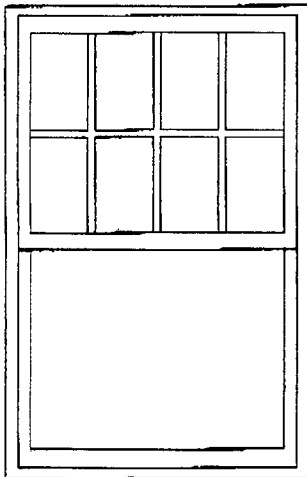


New England Muntin Pattern

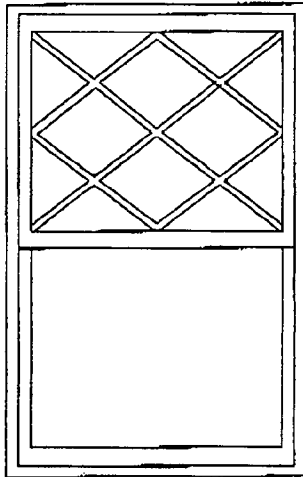


Top Sash Top Row Muntin Pattern

*(we will match existing 6 over 1 pattern)*



Top Sash Muntin Pattern



Diamond Muntin Pattern

**NOTE:**

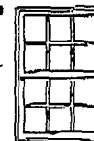
- Other special patterns are available, contact your local Pella sales representative.





# DOUBLE-HUNG WINDOWS

## Architect Series® LX Clad and Wood Design Data



### VENT UNITS

UNIT	CLEAR OPENING		VENT FRAME FT <sup>2</sup>	GLASS FT <sup>2</sup>	VENT FRAME FT <sup>2</sup>	PERFORMANCE CLASS & GRADE	
	WIDTH (INCHES)	HEIGHT (INCHES)				CLAD EX	WC
2135	18-1/8	12-1/16	1.5	2.8	5.1	LC50	LC40
2141	18-1/8	14-1/16	2.1	3.4	5.9	LC50	LC40
2147	18-1/8	18-1/16	2.2	4.0	6.8	LC50	LC40
2153	18-1/8	20-1/16	2.5	4.7	7.7	LC50	LC40
2157	18-1/8	22-1/16	2.7	5.1	8.3	LC50	LC40
2159	18-1/8	24-1/16	3.0	5.3	8.6	LC50	LC40
2165	18-1/8	26-1/16	3.2	5.9	9.4	LC50	LC40
2171	18-1/8	30-1/16	3.7	6.6	10.3	LC50	LC40
2177	18-1/8	32-1/16	4.0	7.3	11.2	LC50	LC40
2535	22-1/8	12-1/16	1.8	3.5	6.0	LC50	LC40
2541	22-1/8	14-1/16	2.1	4.3	7.1	LC50	LC40
2547	22-1/8	18-1/16	2.7	5.2	8.1	LC50	LC40
2553	22-1/8	20-1/16	3.0	6.0	9.2	LC50	LC40
2557	22-1/8	22-1/16	3.3	6.5	9.8	LC50	LC40
2559	22-1/8	24-1/16	3.7	6.8	10.2	LC50	LC40
2565	22-1/8	26-1/16	4.0	7.6	11.2	LC50	LC40
2571	22-1/8	30-1/16	4.63	8.4	12.3	LC50	LC40
2577	22-1/8	32-1/16	4.9	9.2	13.3	LC50	LC40
2935	26-1/8	12-1/16	2.2	4.3	7.0	LC50	LC40
2941	26-1/8	14-1/16	2.5	5.3	8.2	LC50	LC40
2947	26-1/8	18-1/16	3.2	6.2	9.4	LC50	LC40
2953	26-1/8	20-1/16	3.6	7.2	10.6	LC50	LC40
2957	26-1/8	22-1/16	4.0	7.8	11.4	LC50	LC40
2959	26-1/8	24-1/16	4.3	8.2	11.8	LC50	LC40
2965	26-1/8	26-1/16	4.7	9.1	13.0	LC50	LC40
2971 <sup>Ⓢ</sup>	26-1/8	30-1/16	5.4	10.1	14.2	LC50	LC40
2977 <sup>Ⓢ</sup>	26-1/8	32-1/16	5.8	11.1	15.5	LC50	LC40
3335	30-1/8	12-1/16	2.5	5.0	8.0	LC50	LC40
3341	30-1/8	14-1/16	2.9	6.2	9.3	LC50	LC40
3347	30-1/8	18-1/16	3.7	7.3	10.7	LC50	LC40
3353	30-1/8	20-1/16	4.2	8.4	12.1	LC50	LC40
3357	30-1/8	22-1/16	4.6	9.2	13.0	LC50	LC40
3359 <sup>Ⓢ</sup>	30-1/8	24-1/16	5.0	9.6	13.5	LC50	LC40
3365 <sup>Ⓢ</sup>	30-1/8	26-1/16	5.4	10.7	14.8	LC50	LC40
3371 <sup>Ⓢ</sup>	30-1/8	30-1/16	6.3	11.8	16.2	LC50	LC40
3377 <sup>Ⓢ</sup>	30-1/8	32-1/16	6.7	13.0	17.6	LC50	LC40
3735	34-1/8	12-1/16	2.8	5.8	8.9	LC50	LC40
3741	34-1/8	14-1/16	3.3	7.1	10.5	LC50	LC40
3747	34-1/8	18-1/16	4.2	8.4	12.0	LC50	LC40
3753	34-1/8	20-1/16	4.7	9.7	13.6	LC50	LC40

6-DOUBLE-HUNG

<sup>Ⓢ</sup> Can be used on first floor only where codes permit 5.0 ft<sup>2</sup> (0.46 m<sup>2</sup>).

<sup>Ⓢ</sup> Meets typical egress requirements by raising lower sash.

To convert areas to square meters (m<sup>2</sup>), multiply square feet by 0.0929.

Continued on next page.



# DOUBLE-HUNG WINDOWS

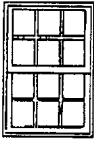
## Architect Series® LX Clad and Wood Design Data



### VENT UNITS (CONT.)

UNIT	CLEAR OPENING		VENT AREA FT <sup>2</sup>	VISIBLE GLASS FT <sup>2</sup>	VENT FRAME FT <sup>2</sup>	PERFORMANCE CLASS & GRADE	
	WIDTH (INCHES)	HEIGHT (INCHES)				CLAD-LX	
3757	34-1/8	22-1/16	5.2	10.5	14.6	LC50	LC40
3759 <sup>⊕</sup>	34-1/8	24-1/16	5.7	11.0	15.1	LC50	LC40
3765 <sup>⊕</sup>	34-1/8	26-1/16	6.1	12.3	16.7	LC50	LC40
3771 <sup>⊕</sup>	34-1/8	30-1/16	7.1	13.6	18.2	LC50	LC40
3777 <sup>⊕</sup>	34-1/8	32-1/16	7.6	14.9	19.7	LC50	LC40
4135	38-1/8	12-1/16	3.2	6.5	9.9	LC50	LC40
4141	38-1/8	14-1/16	3.7	8.0	11.6	LC50	LC40
4147	38-1/8	18-1/16	4.7	9.4	13.3	LC50	LC40
4153	38-1/8	20-1/16	5.3	11.0	15.0	LC50	LC40
4157	38-1/8	22-1/16	5.8	11.9	16.2	LC50	LC40
4159 <sup>⊕</sup>	38-1/8	24-1/16	6.3	12.4	16.7	LC50	LC40
4165 <sup>⊕</sup>	38-1/8	26-1/16	6.9	13.8	18.5	LC50	LC40
4171 <sup>⊕</sup>	38-1/8	30-1/16	7.9	15.3	20.2	LC50	LC40
4177 <sup>⊕</sup>	38-1/8	32-1/16	8.5	16.7	21.9	LC50	LC40
4535	42-1/8	12-1/16	3.5	7.2	10.9	LC50	LC40
4541	42-1/8	14-1/16	4.1	8.9	12.8	LC50	LC40
4547	42-1/8	18-1/16	5.3	10.5	14.6	LC50	LC40
4553	42-1/8	20-1/16	5.8	12.1	16.5	LC50	LC40
4557	42-1/8	22-1/16	6.4	13.2	17.8	LC50	LC40
4559 <sup>⊕</sup>	42-1/8	24-1/16	7.0	13.8	18.4	LC50	LC40
4565 <sup>⊕</sup>	42-1/8	26-1/16	7.6	15.4	20.3	LC50	LC40
4571 <sup>⊕</sup>	42-1/8	30-1/16	8.8	17.1	22.1	LC50	LC40
4577 <sup>⊕</sup>	42-1/8	32-1/16	9.3	18.7	24.0	LC45	LC45

⊕<sub>3</sub> Can be used on first floor only where codes permit 5.0 ft<sup>2</sup> (0.46 m<sup>2</sup>).  
 ⊕<sub>4</sub> Meets typical egress requirements by raising lower sash.  
 To convert areas to square meters (m<sup>2</sup>), multiply square feet by 0.0929.



# DOUBLE-HUNG WINDOWS

*Architect Series® Clad and Wood Special Sizes*



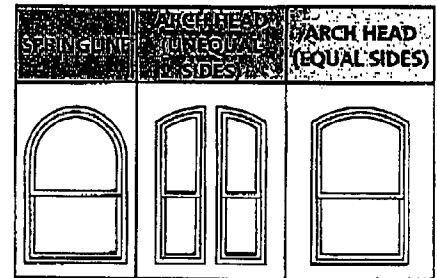
## RECTANGULAR CLAD AND WOOD WINDOW SPECIAL SIZE LIMITATIONS

SASH CONFIGURATION	VENT-EQUAL	OUT-GE	FIXED
Sash Glass Ratio, Top% : Bottom %	50 : 50	40 : 60	NA
Shortest Unit Frame Size	36" (914)	42-1/4" (1 073)	47" (1 193)
Tallest Unit Frame Size	84" (2 134)	67-1/4" (1 708)	71" (1 803)
Unit Frame Width Range	21" to 84" (533 to 2 134)	21" to 48" (533 to 1 219)	17" to 59" (432 to 1 499)

## MISCELLANEOUS FORMULAS (EQUAL SASH ONLY)

	VENT UNITS	FIXED AND TRANSOM UNITS
<b>VISIBLE GLASS</b>	Width = Frame - 5-3/4" Height = (Frame - 8-7/16") / 2	Width = Frame - 5-3/4" Height = Frame - 5-3/4"
<b>ACTUAL GLASS</b>	Width = Frame - 4-1/2" Height = (Frame - 5-1/2") / 2	Width = Frame - 4-3/4" Height = Frame - 4-3/4"
<b>CLEAR OPENING WIDTH</b>	Frame Width - 2-5/8"	—
<b>CLEAR OPENING HEIGHT</b>	For the window units not listed, use the next shortest standard window unit shown on the Design Data page.	—

## CLAD AND WOOD WINDOW CUSTOM SHAPES<sub>2</sub>



## MONUMENTAL WINDOWS

FRAME DIMENSIONS	BASE FORMULAS—CLAD AND WOOD
<b>MINIMUM</b> 13-3/4" W x 28" H (349 x 711)	Width = Frame - 4-7/8" Height = Frame - 24"
<b>MAXIMUM</b> 60" W x 120" H (1 524 x 3 048)	

## MISCELLANEOUS FORMULAS (EQUAL SASH ONLY)

	CLAD	WOOD
<b>VISIBLE GLASS</b>	Width = Frame - 8-5/16" Height = (Frame - 9-7/16") / 2	Width = Frame - 8-5/16" Height = (Frame - 10-1/8") / 2
<b>ACTUAL GLASS</b>	Width = Frame - 7-5/16" Height = (Frame - 7-7/16") / 2	Width = Frame - 7-5/16" Height = (Frame - 8-1/8") / 2

**NOTES:**

- (1) Actual glass size.
- (2) Shown are examples of some of the custom shapes available. Contact your local Pella representative for more information. Custom sash ratios are also available. See your Pella representative for additional information.

**MONUMENTAL WINDOW-ONLY NOTES:**

- (3) If frame height is less than 50", clear opening will be reduced accordingly.
- Sash weight must be less than 100 pounds.
- Glass width cannot exceed 2.75 times glass height of bottom sash.
- Glass width cannot exceed two times glass height of upper sash.
- Maximum upper and lower glass height is 58".



## DOUBLE-HUNG WINDOWS

### Architect Series® Wood LX Detailed Product Descriptions



#### Frame

- Select softwood, water-repellent, preservative-treated in accordance with WDMA I.S.-4.
- Interior exposed surfaces are of clear pine (rectangular windows only). Any curved member may have visible finger-jointed surfaces.
- All exterior surfaces primed.
- Overall frame depth is 4-3/8" (111 mm).
- Jamb liner shall be wood/clad insert.

#### Sash

- Select softwood, water-repellent, preservative-treated in accordance with WDMA I.S.-4.
- Interior exposed surfaces are of clear pine (rectangular windows only). Any curved member may have visible finger-jointed surfaces.
- All exterior surfaces are factory-primed.
- Corners mortised and tenoned, glued and secured with metal fasteners.
- Sash thickness is 1-3/4" (44 mm).
- Upper sash has surface-mounted wash locks.
- Lower sash has concealed wash locks in lower check rail.

#### Glazing System

- Quality float glass complying with ASTM C1036.
- Silicone-glazed 5/8" [clear] [InsulShield® argon-filled, multi-layer Low-E coated] [bronze InsulShield® air-filled multi-layer Low-E coated] [gray InsulShield® air-filled multi-layer Low-E coated] [green InsulShield® air-filled multi-layer Low-E coated] dual-seal insulating glass.
- Custom and high altitude glazing also available.
- Units with Integral Light Technology® only:
  - ◆ Insulating glass contains a foam muntin grid between two panes of glass. Foam grid shall be adhered to glass.
  - ◆ Muntin bars shall be solid [7/8"] [1-1/4"] wide pine, water-repellent, preservative-treated in accordance with WDMA I.S.-4.
  - ◆ Bars shall be adhered to both sides of insulating glass with VHB acrylic adhesive tape and aligned with the foam grid.
  - ◆ Exterior surfaces primed; interior surfaces unfinished, ready for site finishing.

#### Weather Stripping

- Foam with 3 mil skin at head. Water-stop santoprene-wrapped foam at sill; thermal-plastic elastomer bulb with slip-coating set into lower sash for tight contact at check rail.
- Vinyl-wrapped foam inserted into jamb liner or jamb liner components to seal to sides of sash.

#### Optional Products

The following specify optional products sold separately.

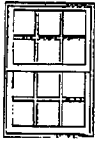
- Insect Screen: Standard:
  - ◆ [Half-] [Full-] size with black vinyl-coated 18/16 mesh fiberglass screen cloth complying with ASTM D 3656 and SMA 1201.
  - ◆ Screen set in aluminum frame and fitted to outside of window, supplied complete with all necessary hardware.
  - ◆ Screen frame finish shall be baked enamel, white.
- or –
- Insect Screen: Vivid View™:
  - ◆ [Half-] [Full-] PVDF 21/17 mesh minimum 78 percent light transmissivity screen cloth complying with ASTM D 3656 and SMA 1201, set in aluminum frame fitted to outside of window, supplied complete with all necessary hardware.
  - ◆ Screen frame finish shall be baked enamel, color to match window cladding
- Removable Muntin Bars (for units without integral muntin bars)
  - ◆ [3/4" profile] [1-1/4" profile] removable solid wood bars steel-pinned at joints and fitted to sash with steel clips and tacks.
  - ◆ Surfaces unfinished, ready for site finishing.

#### Hardware

- Painted block-and-tackle balances connected to sash with a polyester cord and concealed within the frame.
- Lock: [Spoon-shaped sash lock] [Self-aligning sash lock]. Two sash locks on units with 37" frame width and greater. Finish shall be [baked enamel, champagne.] [baked enamel, white.] [bright brass.] [satin nickel.] [oil-rubbed bronze.]
- Lift: Sash lift furnished for field installation. Two lifts on units with 37" frame width and greater. Finish shall be [baked enamel, champagne.] [baked enamel, white.] [bright brass.] [satin nickel.] [oil-rubbed bronze.]
- Steady-Tilt™ self-supporting tilt-wash feature on lower sash with linkage arms connecting sash to jambliner.

#### Interior Finish

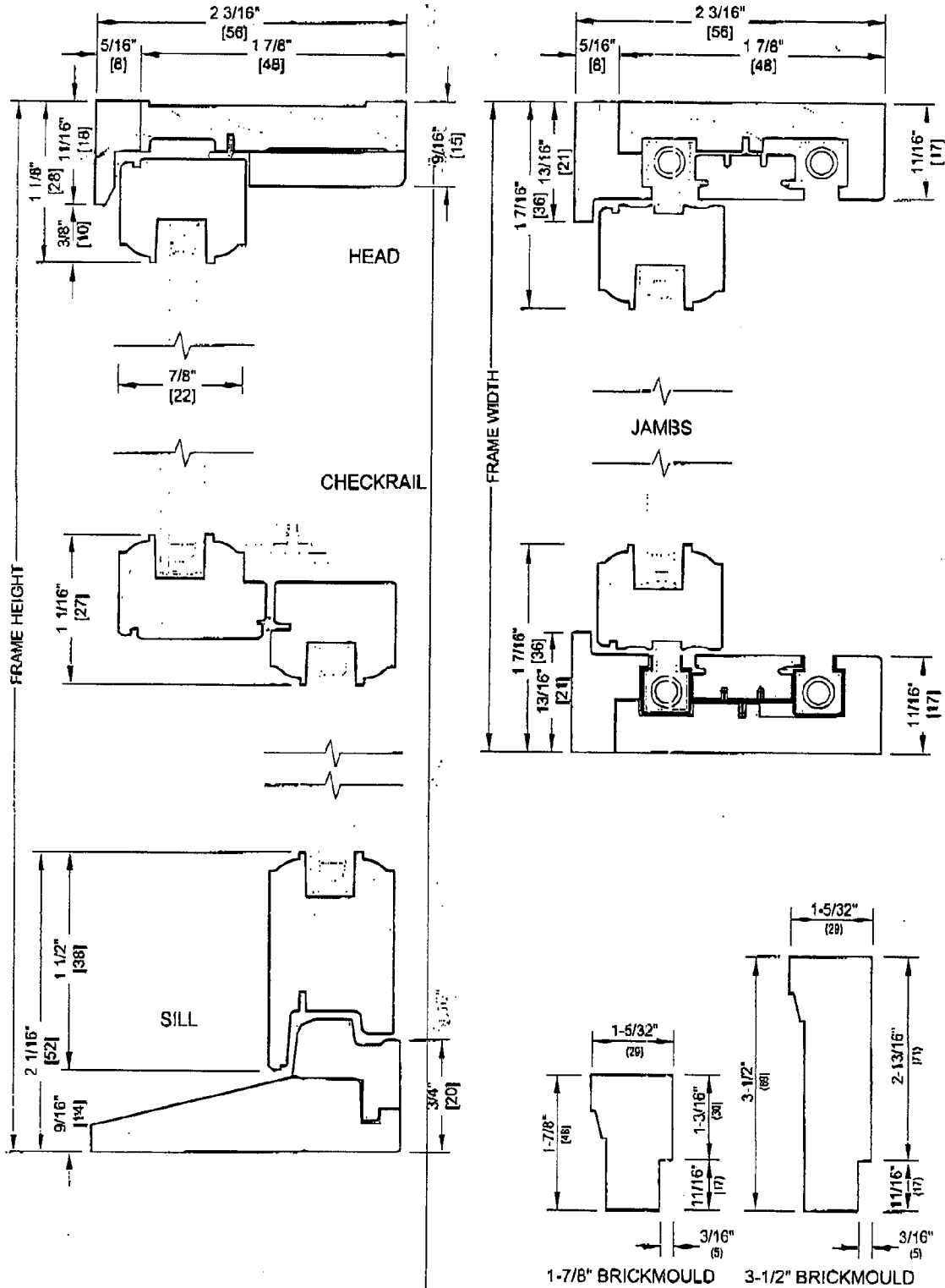
- [Unfinished ready for site finishing.] [Factory-primed with one coat acrylic latex.]



# DOUBLE-HUNG WINDOWS

## Architect Series® Wood LX Rectangular Unit Sections

Scale 3" = 1' 0"



**NOTE:**

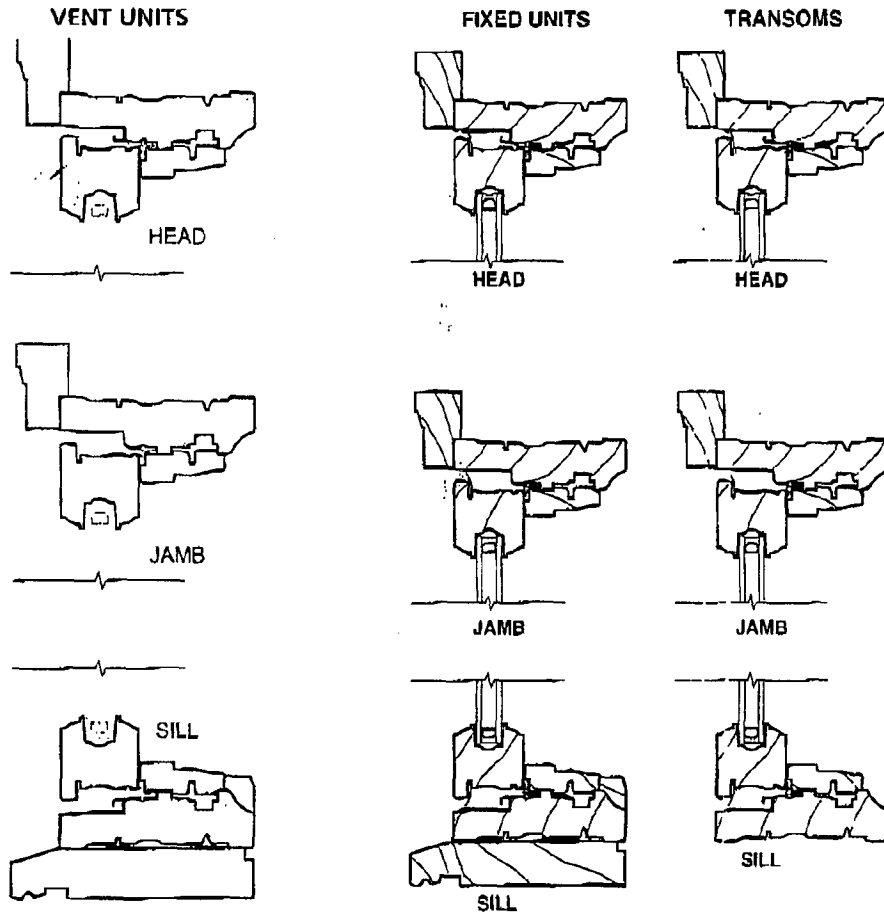
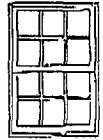
• All unit dimensions are approximate.



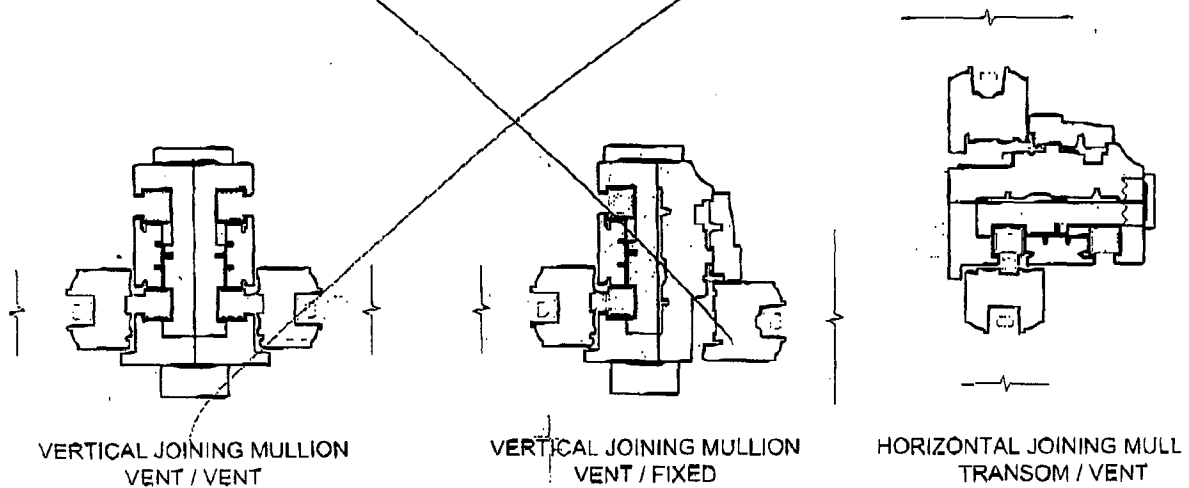
# DOUBLE-HUNG WINDOWS

## Architect Series® Wood LX Rectangular Unit Sections

Scale 3" = 1' 0"



## Architect Series Wood LX Rectangular Typical Joining Mullions



6-DOUBLE-HUNG

~~ATTACHMENT~~

# 511 PHILADELPHIA AVENUE

Replace these two windows

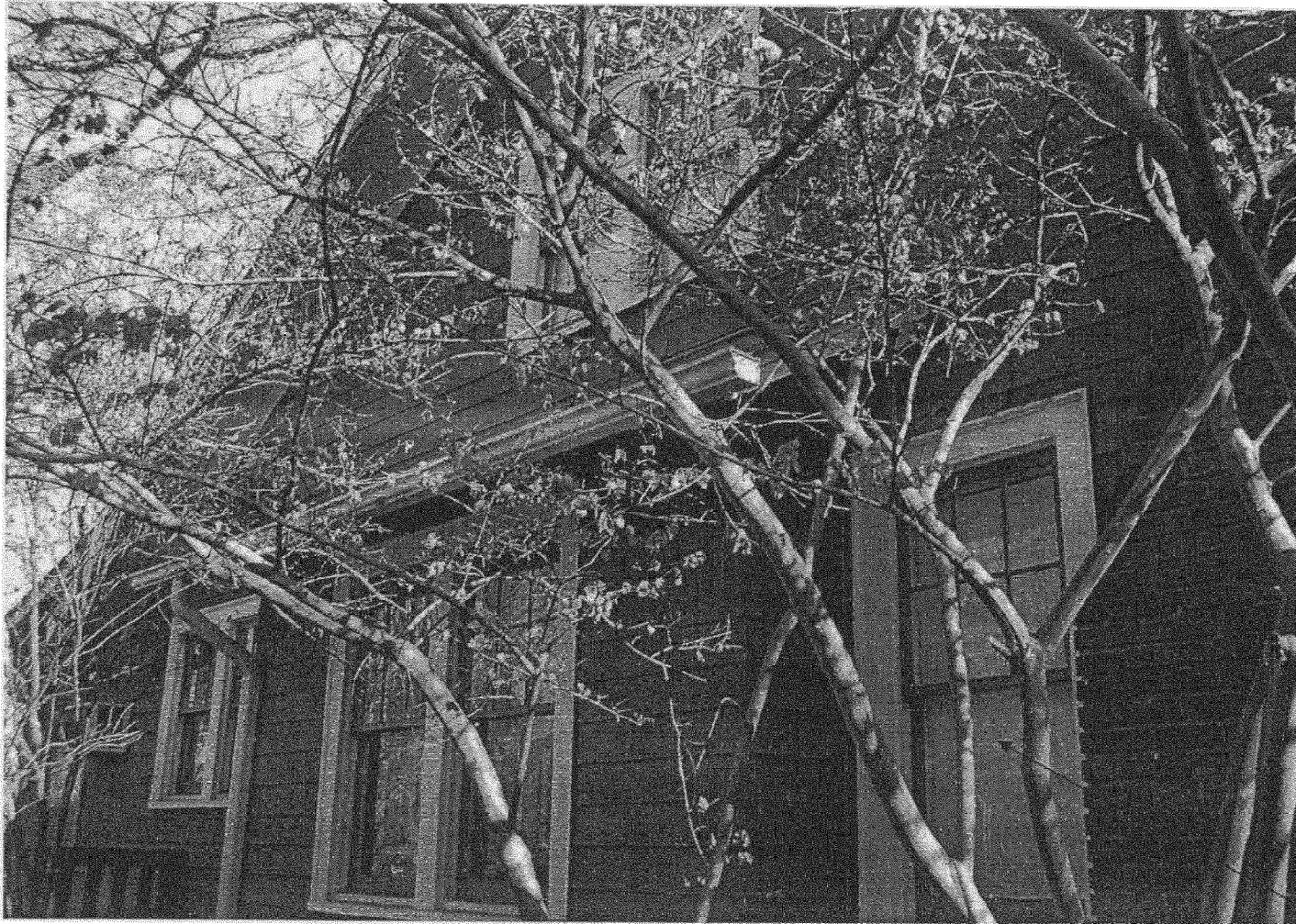


Replace these two windows

Replace these two windows

# 511 PHILADELPHIA AVENUE

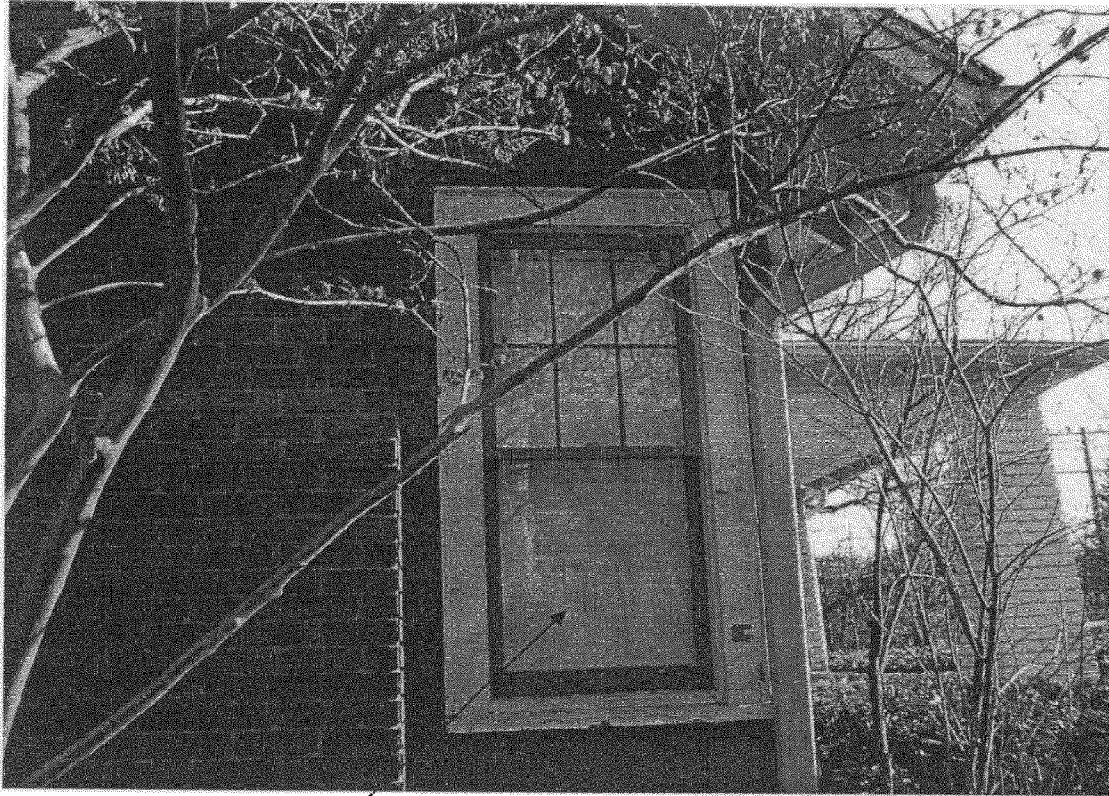
Replace these two windows



Replace this window



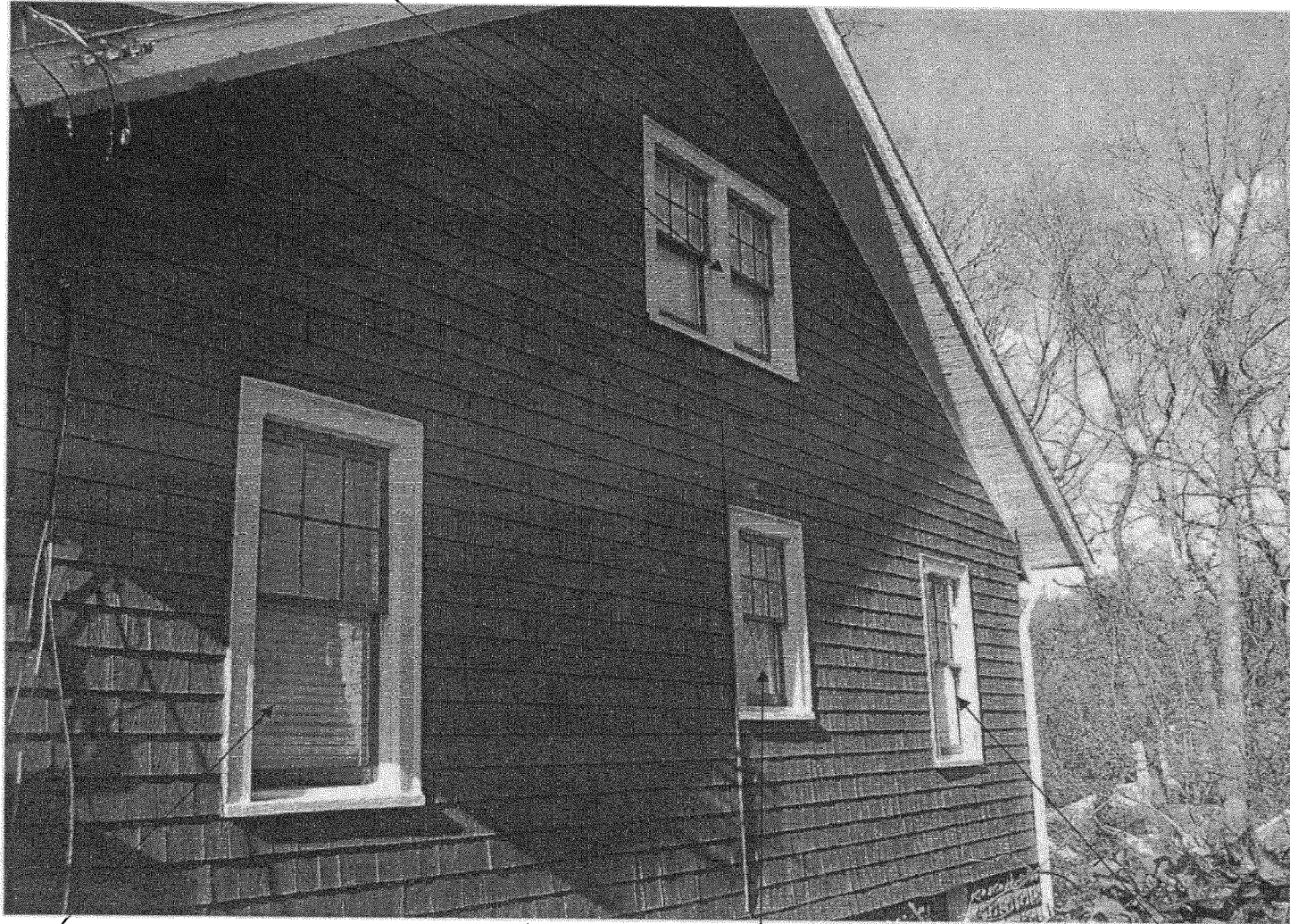
511 PHILADELPHIA AVENUE



Replace this window

# 511 PHILADELPHIA AVENUE

Replace these two windows



Replace this window

Replace this window

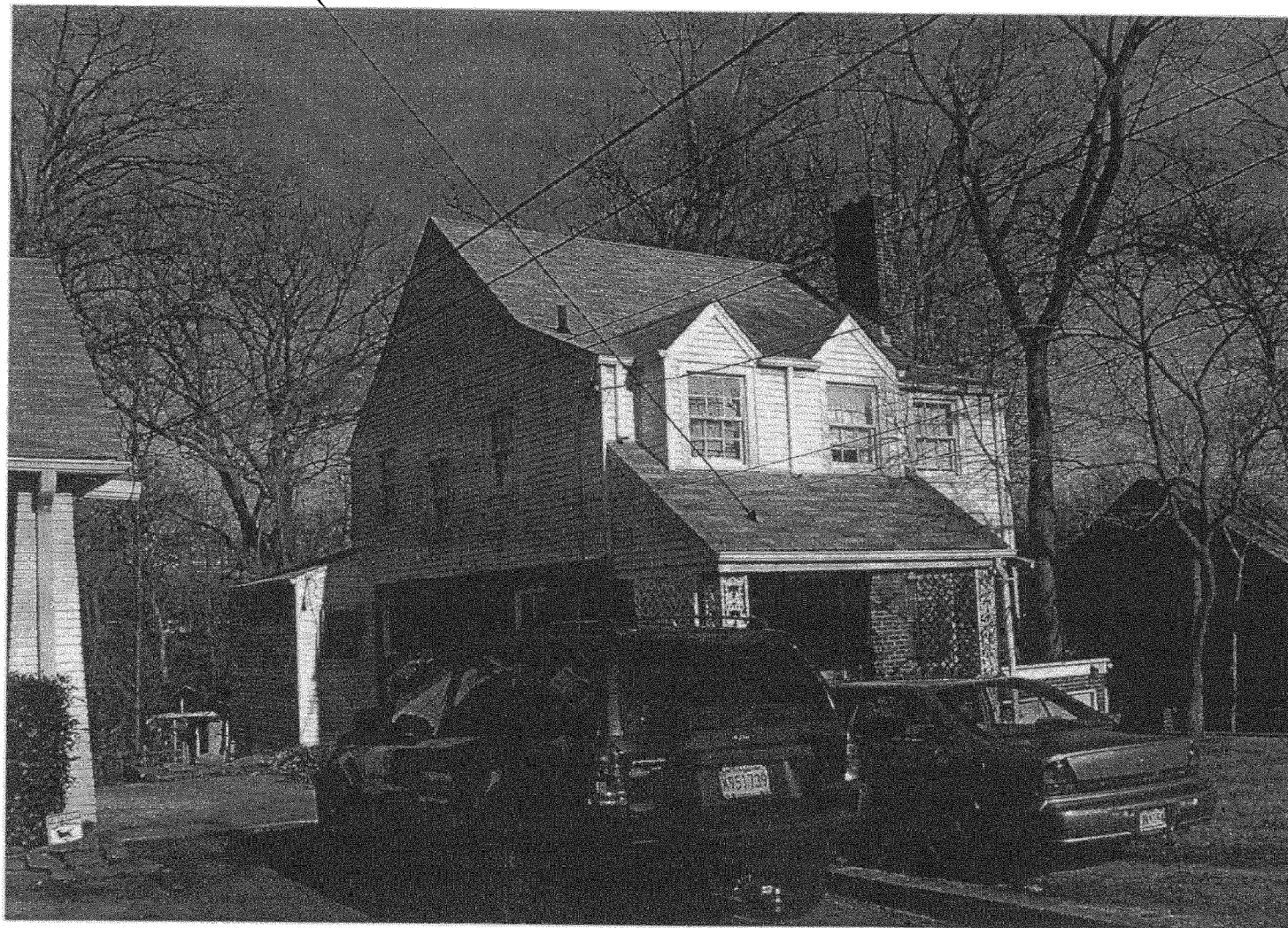
Replace this window

511 PHILADELPHIA AVENUE



Replace this window

509 PHILADELPHIA AVENUE – Dorothy Brown



513 PHILADELPHIA AVENUE – Jim Allen



# ATTACHMENT B

## DOUBLE-HUNG WINDOWS



### Brand Summary



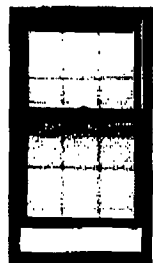
Pella® double-hung windows are traditional in every detail—with all the Pella innovations you demand. All three brands feature quality select softwood at the sash and frame that is preservative-treated to resist damage from water and insects. The aluminum-clad exterior is protected by Pella EnduraClad® or EnduraClad Plus fluorocarbon-based (Kynar 500), finish system. Upper and lower sash are fully operable and balanced to open to virtually any position. Both sash tilt to the interior without removal for easy cleaning of outside glass. Sash corners are joined three ways (mortise and tenon, adhesive, and metal fasteners) for increased strength. Sash locks are factory-installed. Our wide range of glazing options include custom glazing and obscure glass. Pella maintains its high standards by taking the time to test virtually every vent unit for air infiltration, so you know you're getting a quality product.

#### Architect Series®—Pella's "Unsurpassed Architectural Expression™"



The Architect Series collection offers the look of the most beautiful windows and patio doors of yesterday. Yet the differences are dramatic. Pella's patented Integral Light Technology® combines the traditional look of true divided light with today's energy efficiency. And don't forget the real beauty of Architect Series products—the creative freedom to choose from virtually endless design options including custom exterior colors, muntin patterns and more. Architect Series Double-Hung are available in two options for distinctive detailing including the Luxury Edition (LX) and Style Edition (SE). The Luxury Edition offers a wider range of custom options including a more traditional appearance with a wood jambliner system. The Style Edition provides a more contemporary appearance with a vinyl jambliner system.

#### Designer Series®—Pella's "Innovations Others Can't Touch™"



Pella Designer Series windows are a great solution and a good value for any home or building. Our exclusive LifeStyle system features snap-in between-glass blinds, fabric shades and muntins that are easy to change. What's more, Pella's window fashions tucked neatly between panes of glass stay protected from dust, damage and little hands.

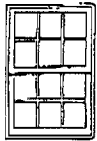
- Simplicity of insulated glass with the distinction of exclusive options
- Snap-in between-glass shades and blinds as well as removable between-glass muntins – the ultimate solution for "dressing" a window.
- Hassle free
- Traditional, 9-lite prairie and special muntin patterns
- Exterior Flat screen clad color matching
- Exterior Flat Vivid View™ screen

#### ProLine®—Pella's "Basic Done Beautifully™"



ProLine Double-Hung windows are Pella quality to the core. Our most affordable windows are available in a wide variety of standard sizes and three standard exterior colors. ProLine Double-Hung include options for three different grille styles; Removable Wood Interior Grilles, Grilles-Between-The-Glass, Simulated Divided Light and the option for pre-finished white interiors. By keeping our ProLine offering simple we maximize your value.

(1) Kynar and Kynar 500 are registered trademarks of Elf-Atochem North America, Inc.



# DOUBLE-HUNG WINDOWS

## Product Selection Guide—Size and Performance Data



### DOUBLE-HUNG

	ARCHITECT SERIES			DESIGNER SERIES®	PROLINE®
	CLAD EXTERIOR	CLAD EXTERIOR	WOOD EXTERIOR	CLAD EXTERIOR	CLAD EXTERIOR
<b>SIZES</b>					
Standard Vent Sizes/ Fixed Sizes	●	●	●	●	●
Transom Sizes	●	●	●	●	●
Egress Sizes	●	●	●	●	●
Arch Top Sizes	●		●		
Contemporary Sizes				●	
Cottage Sash	●	●	●	●	
Special Sizes Available	●	●	●	●	
<b>PERFORMANCE</b>					
Air Infiltration	0.2 cfm <sub>1</sub>	0.2 cfm <sub>1</sub>	0.2 cfm <sub>1</sub>	0.3 cfm <sub>1</sub>	0.3 cfm <sub>2</sub>
Design Pressure	45–50 psf	45–50 psf	40 psf	30–50 psf	30–50 psf
Water Resistance	6–7.5 psf	6–7.5 psf	6 psf	4.5–7.5 psf	4.5 psf
Meets or Exceeds AAMA/WDMA Ratings	H-LC45–LC50 <sub>3</sub>	H-LC45 <sub>3</sub> –LC50	H-LC40 <sub>3</sub>	H-L30–LC50 <sub>3</sub>	H-R30–R50 Hallmark Certified

### SINGLE-HUNG AND DOUBLE-HUNG COMMERCIAL AND MONUMENTAL WINDOWS

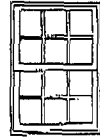
	ARCHITECT SERIES MONUMENTAL	
	CLAD EXTERIOR	WOOD EXTERIOR
<b>SIZES</b>		
Special Sizes only—Built-to-order on 1/4" increments	●	●
<b>PERFORMANCE</b>		
Air Infiltration	0.3 cfm <sub>1</sub>	0.3 cfm <sub>2</sub>
Design Pressure	30 psf <sub>4</sub>	30 psf <sub>4</sub>
Structural Test Pressure	45 psf	45 psf
Water Resistance	4.5 psf	4.5 psf

(1) cfm/ft<sup>2</sup> of frame at 1.57 psf wind pressure. See Product and Glazing Performance section in Volume I for additional information.  
 (2) Largest available size is Hallmark certified to meet the performance level of 0.1 cfm / ft<sup>2</sup> in AAMA / NWWDA 101 / I.S. 2-97 and NAFS for air leakage.  
 (3) Data not available at time of publication for Hallmark Certification. Go to [www.pellaadm.com](http://www.pellaadm.com) for current performance rating.  
 (4) Maximum Design Pressure when glazed with appropriate glass thickness. Refer to the Product and Glazing Performance section in Volume I for more information.



# DOUBLE-HUNG WINDOWS

## Product Selection Guide—Size and Performance Data



	ARCHITECT SERIES			DESIGNER SERIES®	PROLINE®
	GLAZING	WOODGRAIN	GLAZING		
<b>GLAZING</b>					
InsulShield® Argon-filled, Low-E Insulating Glass	S	S	S	—	O
Clear Insulating Glass	O	O	O	—	S
Double Glazing—Exterior single pane of SolarE™ or clear glass; plus an interior hinged glass panel of Low-E, clear or obscure	—	—	—	O	—
Triple Glazing—Exterior dual pane of Low-E or clear glass; plus an interior hinged glass panel of Low-E, clear or obscure	—	—	—	O	—
Bronze, Gray or Green Tinted	O	O	O	O	—
Obscure Glass	O	O	O	O	—
<b>EXTERIOR/INTERIOR FINISH</b>					
Aluminum EnduraClad® Exterior	S	S	S	S	S
Aluminum EnduraClad Plus Exterior	O	O	O	O	—
Primed Wood Exterior	—	O	—	—	—
Primed Interior	O	O	O	—	O
Interior Finish-White	—	—	—	—	O
<b>CLADDING COLORS</b>					
White, Tan or Brown	S	S	S	S	S
Feature/Special Colors,	O	O	O	O	—
Custom Colors,	O	O	O	O	—
<b>HARDWARE</b>					
Champagne or White Finish	S	S	S	S	S
Bright Brass, Satin Nickel or Oil-Rubbed Bronze Finish	O	O	O	O	O <sub>2</sub>
<b>SASH LOCKS</b>					
Self-aligning (recessed)	—	—	—	S	—
Self-aligning (surface-mounted)	O	O	O	—	S
Spoon-shaped (surface-mounted)	O	O	O	—	—
Sash Lifts	O	O	O	S	O <sub>2</sub>
<b>INSECT SCREEN</b>					
Flat Full Insect Screen	O	O	O	O	O
Flat Half Insect Screen	O	O	O	O	—
Vivid View™ Full Screen	O	O	O	O	—
Vivid View Half Screen	O	O	O	O	—

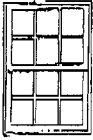
S = Standard; O = Optional; (—) = Not available

(1) Contact your local Pella sales representative for current color options.

(2) Sold separately.

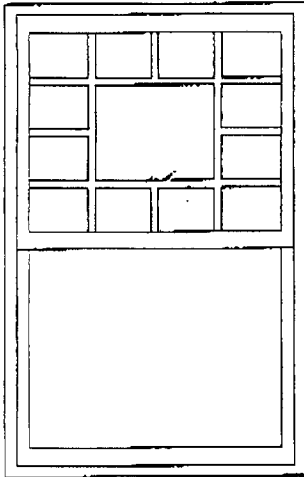
Specifications subject to change without notice.



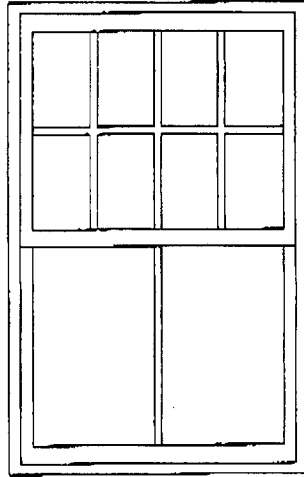


# DOUBLE-HUNG WINDOWS

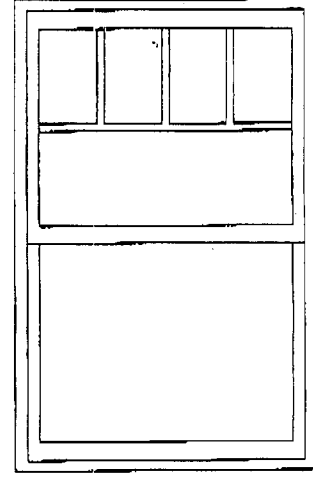
## Architect Series® Clad and Wood Special Muntin Patterns



Victorian Muntin Pattern

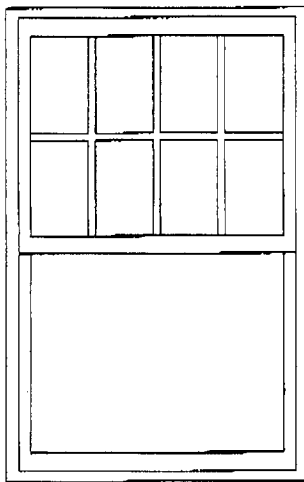


New England Muntin Pattern

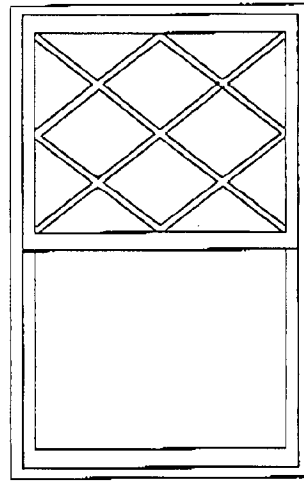


Top Sash Top Row Muntin Pattern

*(we will match existing  
6 over 1 pattern)*



Top Sash Muntin Pattern



Diamond Muntin Pattern

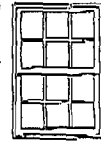
**NOTE:**

- Other special patterns are available, contact your local Pella sales representative.



# DOUBLE-HUNG WINDOWS

## Architect Series® LX Clad and Wood Design Data



### VENT UNITS

UNIT	CLEAR OPENING		VENT FRAME FT <sup>2</sup>	VISIBLE GLASS FT <sup>2</sup>	VENT FRAME FT <sup>2</sup>	PERFORMANCE CLASS & GRADE	
	WIDTH (INCHES)	HEIGHT (INCHES)				CLAD LX	WOOD LX
2135	18-1/8	12-1/16	1.5	2.8	5.1	LC50	LC40
2141	18-1/8	14-1/16	1.7	3.4	5.9	LC50	LC40
2147	18-1/8	18-1/16	2.2	4.0	6.8	LC50	LC40
2153	18-1/8	20-1/16	2.5	4.7	7.7	LC50	LC40
2157	18-1/8	22-1/16	2.7	5.1	8.3	LC50	LC40
2159	18-1/8	24-1/16	3.0	5.3	8.6	LC50	LC40
2165	18-1/8	26-1/16	3.2	5.9	9.4	LC50	LC40
2171	18-1/8	30-1/16	3.7	6.6	10.3	LC50	LC40
2177	18-1/8	32-1/16	4.0	7.3	11.2	LC50	LC40
2535	22-1/8	12-1/16	1.8	3.5	6.0	LC50	LC40
2541	22-1/8	14-1/16	2.1	4.3	7.1	LC50	LC40
2547	22-1/8	18-1/16	2.7	5.2	8.1	LC50	LC40
2553	22-1/8	20-1/16	3.0	6.0	9.2	LC50	LC40
2557	22-1/8	22-1/16	3.3	6.5	9.8	LC50	LC40
2559	22-1/8	24-1/16	3.7	6.8	10.2	LC50	LC40
2565	22-1/8	26-1/16	4.0	7.6	11.2	LC50	LC40
2571	22-1/8	30-1/16	4.6	8.4	12.3	LC50	LC40
2577	22-1/8	32-1/16	4.9	9.2	13.3	LC50	LC40
2935	26-1/8	12-1/16	2.2	4.3	7.0	LC50	LC40
2941	26-1/8	14-1/16	2.5	5.3	8.2	LC50	LC40
2947	26-1/8	18-1/16	3.2	6.2	9.4	LC50	LC40
2953	26-1/8	20-1/16	3.6	7.2	10.6	LC50	LC40
2957	26-1/8	22-1/16	4.0	7.8	11.4	LC50	LC40
2959	26-1/8	24-1/16	4.3	8.7	11.8	LC50	LC40
2965	26-1/8	26-1/16	4.7	9.1	13.0	LC50	LC40
2971 <sup>⊕</sup>	26-1/8	30-1/16	5.4	10.1	14.2	LC50	LC40
2977 <sup>⊕</sup>	26-1/8	32-1/16	5.8	11.1	15.5	LC50	LC40
3335	30-1/8	12-1/16	2.5	5.0	8.0	LC50	LC40
3341	30-1/8	14-1/16	2.9	6.2	9.3	LC50	LC40
3347	30-1/8	18-1/16	3.7	7.3	10.7	LC50	LC40
3353	30-1/8	20-1/16	4.2	8.4	12.1	LC50	LC40
3357	30-1/8	22-1/16	4.6	9.2	13.0	LC50	LC40
3359 <sup>⊕</sup>	30-1/8	24-1/16	5.0	9.6	13.5	LC50	LC40
3365 <sup>⊕</sup>	30-1/8	26-1/16	5.4	10.7	14.8	LC50	LC40
3371 <sup>⊕</sup>	30-1/8	30-1/16	6.3	11.8	16.2	LC50	LC40
3377 <sup>⊕</sup>	30-1/8	32-1/16	6.7	13.0	17.6	LC50	LC40
3735	34-1/8	12-1/16	2.8	5.8	8.9	LC50	LC40
3741	34-1/8	14-1/16	3.3	7.1	10.5	LC50	LC40
3747	34-1/8	18-1/16	4.2	8.4	12.0	LC50	LC40
3753	34-1/8	20-1/16	4.7	9.7	13.6	LC50	LC40

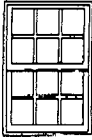
DOUBLE-HUNG

<sup>⊕</sup> Can be used on first floor only where codes permit 5.0 ft<sup>2</sup> (0.46 m<sup>2</sup>).

<sup>⊕</sup> Meets typical egress requirements by raising lower sash.

To convert areas to square meters (m<sup>2</sup>), multiply square feet by 0.0929.

Continued on next page.



# DOUBLE-HUNG WINDOWS

## Architect Series® LX Clad and Wood Design Data



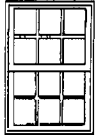
### VENT UNITS (CONT.)

UNIT	CLEAR OPENING		VENT AREA FT <sup>2</sup>	VISIBLE GLASS FT <sup>2</sup>	VENT FRAME FT <sup>2</sup>	PERFORMANCE CLASS & GRADE	
	WIDTH (INCHES)	HEIGHT (INCHES)				CLAD-LX	WOOD-LX
3757	34-1/8	22-1/16	5.2	10.5	14.6	LC50	LC40
3759 <sup>Ⓢ</sup>	34-1/8	24-1/16	5.7	11.0	15.1	LC50	LC40
3765 <sup>Ⓢ</sup>	34-1/8	26-1/16	6.1	12.3	16.7	LC50	LC40
3771 <sup>Ⓢ</sup>	34-1/8	30-1/16	7.1	13.6	18.2	LC50	LC40
3777 <sup>Ⓢ</sup>	34-1/8	32-1/16	7.6	14.9	19.7	LC50	LC40
4135	38-1/8	12-1/16	3.2	6.5	9.9	LC50	LC40
4141	38-1/8	14-1/16	3.7	8.0	11.6	LC50	LC40
4147	38-1/8	18-1/16	4.7	9.4	13.3	LC50	LC40
4153	38-1/8	20-1/16	5.3	11.0	15.0	LC50	LC40
4157	38-1/8	22-1/16	5.8	11.9	16.2	LC50	LC40
4159 <sup>Ⓢ</sup>	38-1/8	24-1/16	6.3	12.4	16.7	LC50	LC40
4165 <sup>Ⓢ</sup>	38-1/8	26-1/16	6.9	13.8	18.5	LC50	LC40
4171 <sup>Ⓢ</sup>	38-1/8	30-1/16	7.9	15.3	20.2	LC50	LC40
4177 <sup>Ⓢ</sup>	38-1/8	32-1/16	8.5	16.7	21.9	LC50	LC40
4535	42-1/8	12-1/16	3.5	7.2	10.9	LC50	LC40
4541	42-1/8	14-1/16	4.1	8.9	12.8	LC50	LC40
4547	42-1/8	18-1/16	5.3	10.5	14.6	LC50	LC40
4553	42-1/8	20-1/16	5.8	12.1	16.5	LC50	LC40
4557	42-1/8	22-1/16	6.4	13.2	17.8	LC50	LC40
4559 <sup>Ⓢ</sup>	42-1/8	24-1/16	7.0	13.8	18.4	LC50	LC40
4565 <sup>Ⓢ</sup>	42-1/8	26-1/16	7.6	15.4	20.3	LC50	LC40
4571 <sup>Ⓢ</sup>	42-1/8	30-1/16	8.8	17.1	22.1	LC50	LC40
4577 <sup>Ⓢ</sup>	42-1/8	32-1/16	9.3	18.7	24.0	LC45	LC45

<sup>Ⓢ</sup> Can be used on first floor only where codes permit 5.0 ft<sup>2</sup> (0.46 m<sup>2</sup>).

<sup>Ⓢ</sup> Meets typical egress requirements by raising lower sash.

To convert areas to square meters (m<sup>2</sup>), multiply square feet by 0.0929.



# DOUBLE-HUNG WINDOWS

*Architect Series® Clad and Wood Special Sizes*



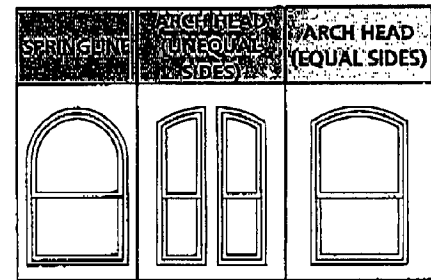
## RECTANGULAR CLAD AND WOOD WINDOW SPECIAL SIZE LIMITATIONS

SASH CONFIGURATION	VENT-EQUAL	BOYCE	FIXED
Sash Glass Ratio, Top% : Bottom %	50 : 50	40 : 60	NA
Shortest Unit Frame Size	36" (890)	42-1/4" (1 073)	17" (432)
Tallest Unit Frame Size	84" (2 134)	67-1/4" (1 708)	71" (1 803)
Unit Frame Width Range	21" to 84" (533 to 2 119)	21" to 48" (533 to 1 219)	17" to 59" (432 to 1 499)

## MISCELLANEOUS FORMULAS (EQUAL SASH ONLY)

	VENT UNITS	FIXED AND TRANSOM UNITS
<b>VISIBLE GLASS</b>	Width = Frame - 5-3/4" Height = (Frame - 8-7/16") / 2	Width = Frame - 5-3/4" Height = Frame - 5-3/4"
<b>ACTUAL GLASS</b>	Width = Frame - 4-1/2" Height = (Frame - 5-1/2") / 2	Width = Frame - 4-3/4" Height = Frame - 4-3/4"
<b>CLEAR OPENING WIDTH</b>	Frame Width - 2-5/8"	—
<b>CLEAR OPENING HEIGHT</b>	For the window units not listed, use the next shortest standard window unit shown on the Design Data page.	—

## CLAD AND WOOD WINDOW CUSTOM SHAPES<sub>2</sub>



## MONUMENTAL WINDOWS

FRAME DIMENSIONS	ACCESS FORMULAS - CLAD AND WOOD
<b>MINIMUM</b> 13-3/4"W x 28"H (349 x 711)	Width = Frame - 4-7/8" Height = Frame - 24"
<b>MAXIMUM</b> 60"W x 120"H (1 524 x 3 048)	

## MISCELLANEOUS FORMULAS (EQUAL SASH ONLY)

	CLAD	WOOD
<b>VISIBLE GLASS</b>	Width = Frame - 8-5/16" Height = (Frame - 9-7/16") / 2	Width = Frame - 8-5/16" Height = (Frame - 10-1/8") / 2
<b>ACTUAL GLASS</b>	Width = Frame - 7-5/16" Height = (Frame - 7-7/16") / 2	Width = Frame - 7-5/16" Height = (Frame - 8-1/8") / 2

**NOTES:**

- (1) Actual glass size.
- (2) Shown are examples of some of the custom shapes available. Contact your local Pella representative for more information.
- Custom sash ratios are also available. See your Pella representative for additional information.

**MONUMENTAL WINDOW-ONLY NOTES:**

- (3) If frame height is less than 50", clear opening will be reduced accordingly.
- Sash weight must be less than 100 pounds.
- Glass width cannot exceed 2.75 times glass height of bottom sash.
- Glass width cannot exceed two times glass height of upper sash.
- Maximum upper and lower glass height is 58".

**HISTORIC PRESERVATION COMMISSION STAFF REPORT**

<b>Address:</b>	511 Philadelphia Ave, Takoma Park	<b>Meeting Date:</b>	2/22/2006
<b>Resource:</b>	Contributing Resource Takoma Park Historic District	<b>Report Date:</b>	2/15/2006
<b>Applicant:</b>	Eric & Jennifer Kilbride	<b>Public Notice:</b>	2/8/2006
<b>Review:</b>	HAWP	<b>Tax Credit:</b>	None
<b>Case Number:</b>	37/03-06F	<b>Staff:</b>	Tania Tully

**PROPOSAL:** window replacement

**RECOMMENDATION:** Approve with Conditions

**STAFF RECOMMENDATION:**

Staff is recommending that the HPC approve this HAWP application with the following conditions:

1. Only three windows at the rear of the property – as shown on Circle 20 – are approved for replacement.
2. If the HPC approves replacement, only the sashes may be replaced; the new sashes will fit within the existing frames, each replacement sash will be individually measured and fit to the existing openings, and the muntins will match those in the historic windows.
3. All exterior trim and historic jambs will be retained.
4. Additionally, replacement sashes will be simulated divided light wood windows, which contain muntins that are permanently bonded to the interior and exterior of the insulating glass simulating a divided light appearance.
5. The applicant will learn more about rehabilitating the remaining historic windows and install staff-approved storm windows in order to take advantage of the available tax credit incentives.

**ARCHITECTURAL DESCRIPTION**

**SIGNIFICANCE:** Contributing Resource within the Takoma Park Historic District  
**STYLE:** Craftsman  
**DATE:** 1920s

511 Philadelphia is a 1 ½ story side gable Craftsman Bungalow with front shed gable, hipped roof porch, and battered brick porch piers. The house has wood shingle siding, wide eaves, and exposed rafter tails. The house also has original wood, single pane 6/1 double-hung windows.

## HISTORIC CONTEXT

The following are excerpts from *Places from the Past: The Tradition of Gardez Bien in Montgomery County, Maryland*.

“Takoma Park is historically significant as both an early railroad suburb and a streetcar community. It was the second railroad suburb of Washington, platted ten years after Linden. The opening of streetcar lines led to the development of new subdivisions, expanding the Takoma Park community in the early 20th century.”

“Takoma Park was platted in 1883. Developer Benjamin Franklin Gilbert promoted the property for its natural environment and healthy setting. The site offered fresh water, trees, and a high elevation to escape the malaria-ridden District of Columbia. In 1883, Gilbert purchased a 90-acre farm and platted a subdivision with picturesque, winding streets named for native trees, including Sycamore, Chestnut, Hickory, and Oak. Equally reflective of Gilbert’s promotion of the natural setting is the use of the Native American “Takoma”, meaning “exalted” or “near heaven.” Later he added the “Park” appellation to draw attention to its healthy environment.

Takoma Park houses built between 1883 and 1900 were fanciful, turreted, multi-gabled affairs of Queen Anne, Stick Style, and Shingle Style influence. Some of the earliest architect-designed houses in the county are in Takoma Park. Leon Dessez, later the Chevy Chase Land Company architect, designed the Cady-Lee House (1887), 7315 Piney Branch Road. These first houses were substantial residences with spacious settings. The lots were deep, typically 50 feet by 200-300 feet and had 40-foot setback requirements. Extensive numbers of these first houses remain, constructed between 1883 and 1900.”

“By 1893, the town's population quadrupled. Four subdivisions had expanded the town, which was incorporated in 1890. Takoma Avenue, Pine Avenue, and Holly Avenue were among the streets to develop during this period. “

“The start of streetcar service along Carroll Avenue in 1897, operated by the Baltimore and Washington Transit Company, made the adjacent areas more attractive for residential development, leading to new subdivisions. This line, supplemented in 1910 by the Washington and Maryland line (1910-27), led to the creation of eight additional subdivisions extending out from the trolley lines. The inexpensive electric streetcar, the availability of low-cost house plans and kit houses in combination with smaller lot sizes made home ownership in Takoma Park possible for individuals of more modest income levels than during the previous period. By 1922, the population soared to 4,144, making Takoma Park the tenth largest incorporated town in Maryland. Among the streets, which developed during the 1910s and 1920s in response to the establishment of streetcar, lines are Willow, Park, Philadelphia, and Carroll Avenues.

The appearance today of much of the Takoma Park historic district is formed by the large numbers of dwellings constructed from 1900 into the 1920s. The houses built in Takoma Park during this period reveal changing American tastes in house design from the elaborate ornamentation of the late 19th century dwellings to more practical, simplified designs. Many of these early twentieth century houses reflect the aesthetics of the Arts and Crafts Movement, which emphasized the inherent nature of the building materials and structural elements for ornamentation. Similarly, they reflect a social trend towards a more informal, unpretentious style of living. Residences put up in the American Four Square, Craftsman, Bungalow, and Colonial Revival designs continued the pattern of suburban development previously established – detached, wood frame single-family residences with uniform setbacks from the streets, though at a smaller scale. Entire streetscapes of these houses, particularly the Bungalow and Craftsman designs, are found along Willow, Park, Philadelphia, and Westmoreland Avenues.

Scores of Bungalows, and Craftsman-style houses and catalog-order houses were built in this era. Advertisements from 1914 for bungalows on Willow Avenue promoted their accessibility – just “three minutes to car line” – and individuality – “no two are alike in design.” At least fifteen models of Sears kit houses have been identified in the proposed historic district, including the turreted 7303 Takoma Avenue.”

“Takoma Park continues to thrive today, with a population of 20,000. Though the train no longer stops there, the town's close relationship with mass transportation continues. The Metro enables residents to continue the tradition, started with the railroad and extended with the streetcars, of living in the suburbs and commuting to the District using mass transit. Two sections of the Montgomery County portion of Takoma Park have been listed on the National Register of Historic Places as the Takoma Park Historic District since 1976.”

## **PROPOSAL:**

The applicants are proposing to replace sixteen (16) historic windows with 6/1 double-hung Pella, wood, Architect Series Luxury Edition replacement window units in order to increase the energy efficiency of their home. This model of window is wood, has simulated divided lights (called Integral Light Technology) with wood muntins permanently adhered to the interior and exterior in conjunction with an internal spacer. The muntins would be 7/8" wide. All of the windows proposed for replacement are 6/1 wood double-hung units. Circles 9-13 indicate which windows are proposed for replacement. The window specifications begin on Circle 14 – staff has only included the essential pages

## **APPLICABLE GUIDELINES:**

When reviewing alterations and new construction within the Takoma Park Historic District several documents are to be utilized as guidelines to assist the Commission in developing their decision. These documents include the historic preservation review guidelines in the approved and adopted amendment for the *Takoma Park Historic District (Guidelines)*, *Montgomery County Code Chapter 24A (Chapter 24A)*, and the *Secretary of the Interior's Standards for Rehabilitation (Standards)*. The pertinent information in these documents is outlined below.

### ***Takoma Park Historic District Guidelines***

There are two very general, broad planning and design concepts which apply to all categories. These are:

The design review emphasis will be restricted to changes that are at all visible from the public right-of-way, irrespective of landscaping or vegetation (it is expected that the majority of new additions will be reviewed for their impact on the overall district), and,

The importance of assuring that additions and other changes to existing structures act to reinforce and continue existing streetscape, landscape, and building patterns rather than to impair the character of the district.

Contributing Resources should receive a more lenient review than those structures that have been classified as Outstanding. This design review should emphasize the importance of the resource to the overall streetscape and its compatibility with existing patterns rather than focusing on a close scrutiny of architectural detailing. In general, however, changes to Contributing Resources should respect the predominant architectural style of the resource. As stated above, the design review emphasis will be restricted to changes that are *at all visible from the public right-of-way*, irrespective of landscaping or vegetation.

Some of the factors to be considered in reviewing HAWPs on Contributing Resources include:

All exterior alterations, including those to architectural features and details, should be generally consistent with the predominant architectural style and period of the resource and should *preserve the predominant architectural features of the resource*; exact replication of existing details and features is, however, not required

Minor alterations to areas that do not directly front on a public right-of-way such as vents, metal stovepipes, air conditioners, fences, skylights, etc. – should be allowed as a matter of course; alterations to areas that do not directly front on a public way-of-way which involve the *replacement of or damage to original ornamental or architectural features are discouraged*, but may be considered and approved on a case-by-case basis

Original size and shape of window and door openings should be maintained, where feasible

**Montgomery County Code; Chapter 24A**

- A HAWP permit should be issued if the Commission finds that:
  1. The proposal will not substantially alter the exterior features of a historic site or historic resource within a historic district.
  2. The proposal is compatible in character and nature with the historical archaeological, architectural or cultural features of the historic site or the historic district in which a historic resource is located and would not be detrimental thereto or to the achievement of the purposes of this chapter.

***Secretary of the Interior's Standards for Rehabilitation:***

- #2 The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, space and spatial relationships that characterize a property will be avoided.
- #6 Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.

**STAFF DISCUSSION**

***Overview***

The applicants are proposing to replace sixteen (16) of the historic 6/1 double hung windows in order to increase the energy efficiency of their home. Staff visually inspected the windows proposed for replacement and found them all to be in about the same condition. There are some broken panes, some deterioration of wood, and most need reglazing. Unlike many windows staff has seen, most of these have sash cords and still function. Past attempts to add weather-stripping are failing, and there are no storm windows in place. Because the muntins are very narrow – ½” or less, because of the lack of storm windows, and based on the applicants inspection during painting, it is likely that the exterior muntins are less intact than those on the interior. Staff has provided the applicant with information regarding rehabilitation of windows, storm windows and the comparison of replacement sashes versus single-pane windows with storms.

***Specific Proposal***

Replacing windows and window sashes in historic resources is not to be taken lightly. Taken as a whole, they play large part in defining the architectural character of a house. Multi-paned and decorative windows are often features and focal points and knowing the number of lights and muntin sizes can help date a resource. The *Secretary's Standards* promote leaving features unaltered and recommend repair over replacement. In the Takoma Park Historic District, contributing resources are to receive a more lenient review with the focus on impacts to the district as a whole. However, applicants are encouraged to preserve the predominant architectural features of the resource and the replacement of or damage to original ornamental or architectural features are discouraged.

When staff discusses window replacement, it is in fact only sash replacements that are meant, and it includes retention of all exterior trim and historic jambs. Keeping in mind specific guidance from the *Guidelines*, staff recommends flexibility when replacements are proposed at the rear of a property. It is for this reason that staff is recommending approval of the replacement of the rear window shown on Circle 13. Staff is also comfortable recommending approval of replacement of the two windows on the bottom right of Circle 12. The proposed replacements are units consisting of a frame and sashes and although the Luxury Series features a wide bottom rail, narrow check rail, and a wood jambliner, staff is concerned that



inserting a frame into the existing frame will visibly reduce the sizes and proportions of the lights. Therefore, only the sashes may be replaced; the new sashes will fit within the existing frames; and each replacement sash will be individually measured and fit to the existing openings. Additional conditions of approval are listed on Circle 1.

It is to the applicant's credit that replacement is not sought for all of the windows in the house. However, the remaining 13 windows proposed for replacement have the significant and characteristic 6/1 muntin pattern and are visible from the public right-of-way. Even if staff were to recommend replacement (which we are not) the replacement sashes would need to be single pane in order to retain the thin muntin profile. The proposed replacement muntins would be 7/8" wide.

### ***Rehabilitation is as effective as Replacement***

Staff research indicates that rehabilitation and proper maintenance of historic windows combined with proper installation of well fitting storm windows is as energy efficient and cost effective as replacement windows. Because the windows are a primary architectural and character defining feature of this house, we cannot recommend approving replacement when the windows are not too deteriorated to repair or rehabilitate. The National Park Service's Preservation Brief 9 states: "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 the past 10 years there has been much discussion and research surrounding the energy efficiency of historic windows. What has been found again and again is that replacement windows are not the panacea property owners are seeking. Rather than re-debate the issue in this staff report select excerpts from prominent and respected sources are included in the text and beginning on Circle 22.

The conclusion of "Testing the Energy Performance of Wood Windows in Cold Climates: A Report to The State of Vermont Division for Historic Preservation" states the following (emphasis added):

Over the course of the study, it became apparent *that replacing an historic window does not necessarily result in greater energy savings than upgrading that same window.* The decision to renovate or replace a window should not be based solely on energy considerations, as the differences in estimated first year savings between the upgrade options are small. Other factors to consider include life cycle costs, the historical significance of a window and its role in a building's character, occupant comfort, ease of operation, and life-cycle costing, none of which were subjects of this study.

The Executive Summary of the Report is included beginning at Circle 22 and the entire document can be found online at [www.ncptt.nps.gov/PDFfiles/1996-08.pdf](http://www.ncptt.nps.gov/PDFfiles/1996-08.pdf).

From Preservation Brief #9 "The Repair of Historic Wooden Windows:" (Circle 28)  
([www.cr.nps.gov/hps/tps/briefs/brief09.htm](http://www.cr.nps.gov/hps/tps/briefs/brief09.htm))

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.

From "The Virginia Energy Savers Handbook Chapter 4" ([www.mme.state.va.us/de/hbchap4.html](http://www.mme.state.va.us/de/hbchap4.html))

Storm windows reduce heat loss through single-glazed windows by more than 50% by doubling the R-value and reducing air leakage. Storm windows can be mounted either on the inside or outside of the existing window. The choice between interior and exterior storm windows is largely one of personal preference and cost. From an energy standpoint, they perform about the same.

Tight-fitting old-style wooden storm windows perform slightly better than the modern aluminum-framed combination storm/screen storm windows

***Recommendation***

Taking everything into consideration, staff recommends conditional approval of the replacement of three window sashes as shown on Circle 20. Staff strongly recommends that the applicant rehabilitate and place storm windows on the remaining historic windows and to take advantage of the available tax credit incentives.

**STAFF RECOMMENDATION:**

Staff recommends that the Commission **approve** the HAWP application **with the conditions specified on Circle 1** as being consistent with Chapter 24A-8(b)(1) & (2);

and with the *Secretary of the Interior's Standards for Rehabilitation*;

and with the general condition that the applicant shall present the **3 permit sets of drawings, if applicable, to Historic Preservation Commission (HPC) staff for review and stamping** prior to submission for the Montgomery County Department of Permitting Services (DPS) building permits.



RETURN TO: DEPARTMENT OF PERMITTING SERVICES  
255 ROCKVILLE PIKE 2nd FLOOR, ROCKVILLE, MD 20859  
240/777-6370

DPS - #8

HISTORIC PRESERVATION COMMISSION  
301/563-3400

CONTRIBUTING

# APPLICATION FOR HISTORIC AREA WORK PERMIT

Contact Person: ERIC KILBRIDE  
Daytime Phone No.: 202 374 3170

Tax Account No.: 1161301077-351

Name of Property Owner: ERIC + JENNIFER KILBRIDE Daytime Phone No.: 202-374-3170

Address: 511 PHILADELPHIA AVENUE TAKOMA PARK, MD 20912  
Street Number City State Zip Code

Contractor: K. C. COMPANY, INC. Phone No.: 301-654-9740

Contractor Registration No.: 116048262

Agent for Owner: Michael Weisberg Daytime Phone No.: 202-285-8798

### LOCATION OF BUILDING/PREMISE

House Number: 511 Street: PHILADELPHIA AVENUE  
Town/City: TAKOMA PARK Nearest Cross Street: PINEY BRANCH / PHILADELPHIA AVENUE  
Lot: P8 Block: 72 Subdivision:  
Liber: 12447 Folio: 4102 Parcel:

### PART ONE: TYPE OF PERMIT ACTION AND USE

- 1A. CHECK ALL APPLICABLE:
- |                                      |   |   |  |                                    |   |  |                               |                               |
|--------------------------------------|---|---|--|------------------------------------|---|--|-------------------------------|-------------------------------|
| <input type="checkbox"/> Construct   | <input type="checkbox"/> Expand             | <input type="checkbox"/> Alter/renovate | <input type="checkbox"/> A/C                             | <input type="checkbox"/> Slab      | <input type="checkbox"/> Room Addition                    | <input type="checkbox"/> Porch         | <input type="checkbox"/> Deck | <input type="checkbox"/> Shed |
| <input type="checkbox"/> Move        | <input checked="" type="checkbox"/> Install | <input type="checkbox"/> Wreck/Raze     | <input type="checkbox"/> Solar                           | <input type="checkbox"/> Fireplace | <input type="checkbox"/> Woodburning Stove                | <input type="checkbox"/> Single Family |                               |                               |
| <input type="checkbox"/> Restoration | <input type="checkbox"/> Repair             | <input type="checkbox"/> Revocable      | <input type="checkbox"/> Fence/Wall (complete Section 4) |                                    | <input checked="" type="checkbox"/> Other: <u>WINDOWS</u> |  |                               |                               |

1B. Construction cost estimate: \$ 23,000

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

### PART TWO: COMPLETE FOR NEW CONSTRUCTION AND EXTEND/ADDITIONS

- 2A. Type of sewage disposal: 01  WSSC 02  Septic 03  Other
- 2B. Type of water supply: 01  WSSC 02  Well 03  Other

### PART THREE: COMPLETE ONLY FOR FENCE/RETAINING WALL

- 3A. Height: \_\_\_\_\_ feet \_\_\_\_\_ inches
- 3B. Indicate whether the fence or retaining wall is to be constructed on one of the following locations:
- On party line/property line     Entirely on land of owner     On public right of way/assessment

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

[Signature]  
Signature of owner or authorized agent

2-1-06  
Date

Approved: \_\_\_\_\_ For Chairperson, Historic Preservation Commission

Disapproved: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Application/Permit No.: 410740 Date Filed: \_\_\_\_\_ Date Issued: \_\_\_\_\_

SEE REVERSE SIDE FOR INSTRUCTIONS



**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:

~~SEE ATTACHMENT A~~ SEE ATTACHMENT A  
HISTORIC IA 3700 3571A

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

SEE ATTACHMENT A

**2. SITE PLAN**

Site and environmental setting, drawn to scale. You may use your plot. 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**

ATTACHMENT C

- 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 drip line 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, (301/279-1355).

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.

8

ATTACHMENT

511 PHILADELPHIA AVENUE

Replace these two windows



Replace these two windows

Replace these two windows

6

# 511 PHILADELPHIA AVENUE

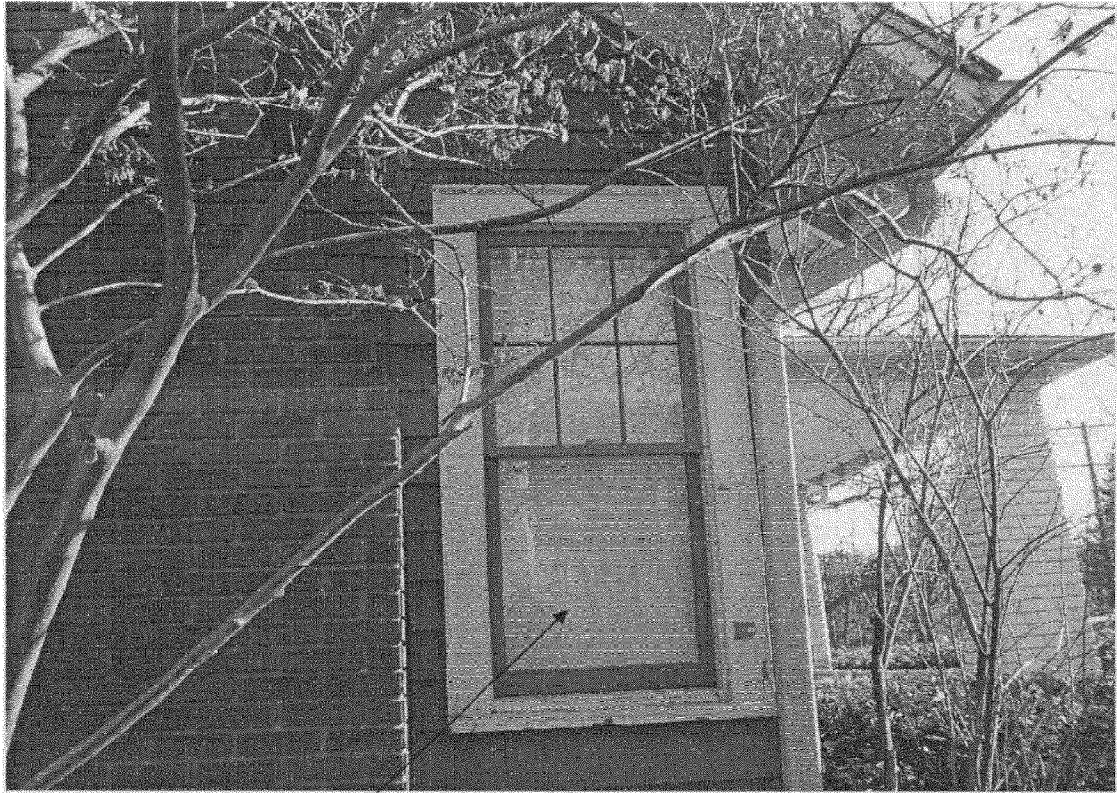
Replace these two windows



Replace this window

19

511 PHILADELPHIA AVENUE



Replace this window



# 511 PHILADELPHIA AVENUE

12

Replace these two windows



Replace this window

Replace this window

Replace this window

12



511 PHILADELPHIA AVENUE

13



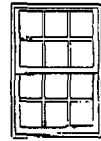
Replace this window

13



## DOUBLE-HUNG WINDOWS

### Architect Series® Wood LX Detailed Product Descriptions



#### Frame

- Select softwood, water-repellent, preservative-treated in accordance with WDMA I.S.-4.
- Interior exposed surfaces are of clear pine (rectangular windows only). Any curved member may have visible finger-jointed surfaces.
- All exterior surfaces primed.
- Overall frame depth is 4-3/8" (111 mm).
- Jamb liner shall be wood/clad insert.

#### Sash

- Select softwood, water-repellent, preservative-treated in accordance with WDMA I.S.-4.
- Interior exposed surfaces are of clear pine (rectangular windows only). Any curved member may have visible finger-jointed surfaces.
- All exterior surfaces are factory-primed.
- Corners mortised and tenoned, glued and secured with metal fasteners.
- Sash thickness is 1-3/4" (44 mm).
- Upper sash has surface-mounted wash locks.
- Lower sash has concealed wash locks in lower check rail.

#### Glazing System

- Quality float glass complying with ASTM C1036.
- Silicone-glazed 5/8" [clear] [InsulShield® argon-filled, multi-layer Low-E coated] [bronze InsulShield® air-filled multi-layer Low-E coated] [gray InsulShield® air-filled multi-layer Low-E coated] [green InsulShield® air-filled multi-layer Low-E coated] dual-seal insulating glass.
- Custom and high altitude glazing also available.
- Units with Integral Light Technology® only:
  - ◆ Insulating glass contains a foam muntin grid between two panes of glass. Foam grid shall be adhered to glass.
  - ◆ Muntin bars shall be solid [7/8"] [1-1/4"] wide pine, water-repellent, preservative-treated in accordance with WDMA I.S.-4.
  - ◆ Bars shall be adhered to both sides of insulating glass with VHB acrylic adhesive tape and aligned with the foam grid.
  - ◆ Exterior surfaces primed; interior surfaces unfinished, ready for site finishing.

#### Weather Stripping

- Foam with 3 mil skin at head. Water-stop santoprene-wrapped foam at sill; thermal-plastic elastomer bulb with slip-coating set into lower sash for tight contact at check rail.
- Vinyl-wrapped foam inserted into jamb liner or jamb liner components to seal to sides of sash.

#### Optional Products

The following specify optional products sold separately.

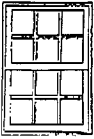
- Insect Screen: Standard:
  - ◆ [Half-] [Full-] size with black vinyl-coated 18/16 mesh fiberglass screen cloth complying with ASTM D 3656 and SMA 1201.
  - ◆ Screen set in aluminum frame and fitted to outside of window, supplied complete with all necessary hardware.
  - ◆ Screen frame finish shall be baked enamel, white.
- or –
- Insect Screen: Vivid View™:
  - ◆ [Half-] [Full-] PVDF 21/17 mesh minimum 78 percent light transmissivity screen cloth complying with ASTM D 3656 and SMA 1201, set in aluminum frame fitted to outside of window, supplied complete with all necessary hardware.
  - ◆ Screen frame finish shall be baked enamel, color to match window cladding
- Removable Muntin Bars (for units without integral muntin bars)
  - ◆ [3/4" profile] [1-1/4" profile] removable solid wood bars steel-pinned at joints and fitted to sash with steel clips and tacks.
  - ◆ Surfaces unfinished, ready for site finishing.

#### Hardware

- Painted block-and-tackle balances connected to sash with a polyester cord and concealed within the frame.
- Lock: [Spoon-shaped sash lock] [Self-aligning sash lock]. Two sash locks on units with 37" frame width and greater. Finish shall be [baked enamel, champagne.] [baked enamel, white.] [bright brass.] [satin nickel.] [oil-rubbed bronze.]
- Lift: Sash lift furnished for field installation. Two lifts on units with 37" frame width and greater. Finish shall be [baked enamel, champagne.] [baked enamel, white.] [bright brass.] [satin nickel.] [oil-rubbed bronze.]
- Steady-Tilt™ self-supporting tilt-wash feature on lower sash with linkage arms connecting sash to jambliner.

#### Interior Finish

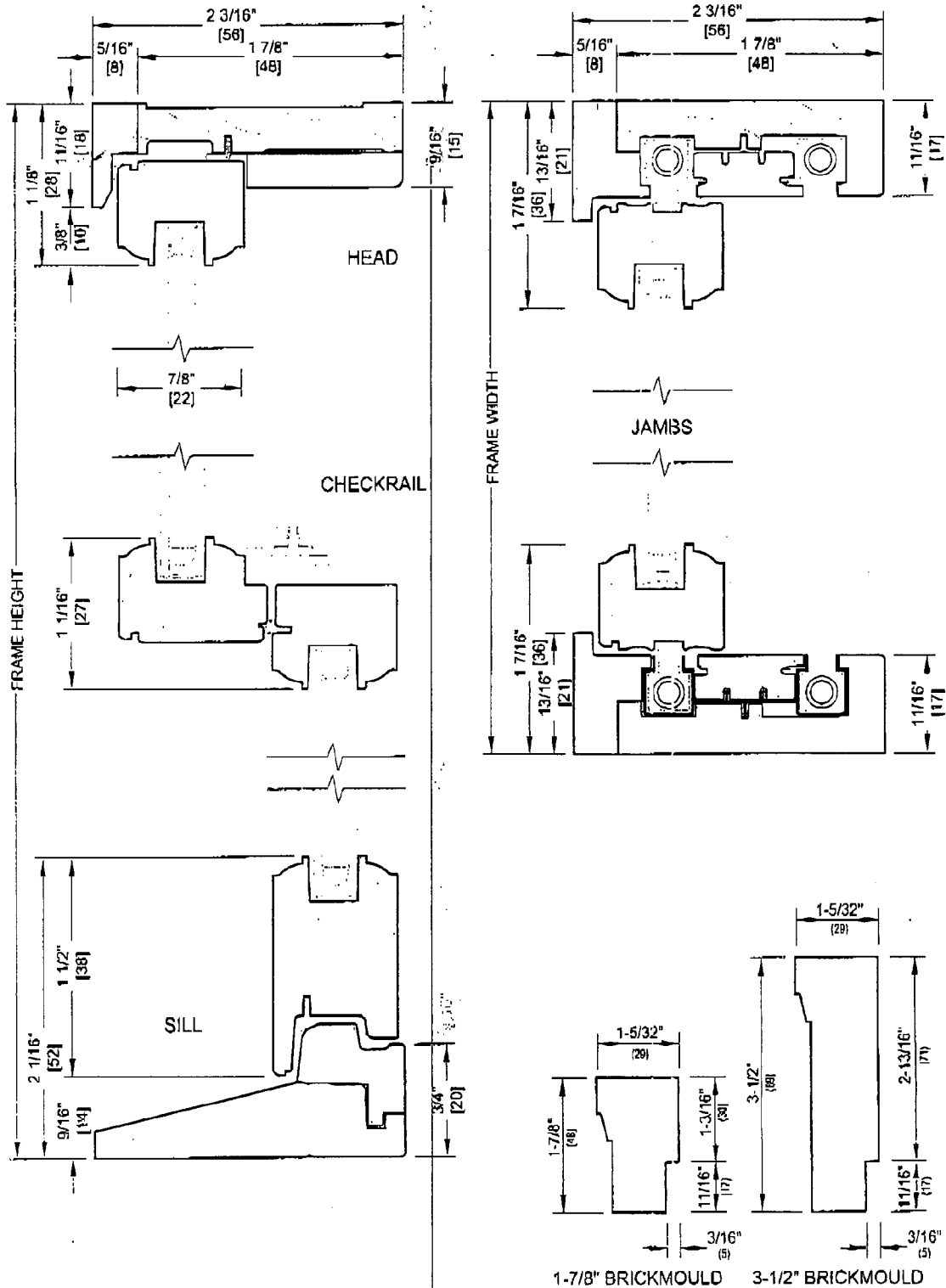
- [Unfinished ready for site finishing.] [Factory-primed with one coat acrylic latex.]



# DOUBLE-HUNG WINDOWS

## Architect Series® Wood LX Rectangular Unit Sections

Scale 3" = 1' 0"



**NOTE:**

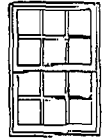
• All unit dimensions are approximate.



# DOUBLE-HUNG WINDOWS

## Architect Series® Wood LX Rectangular Unit Sections

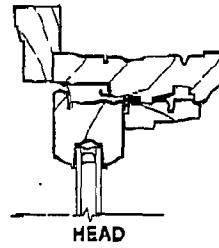
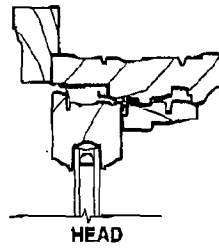
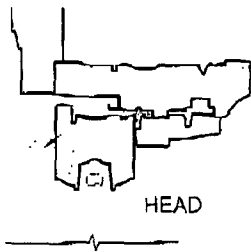
Scale 3" = 1' 0"



VENT UNITS

FIXED UNITS

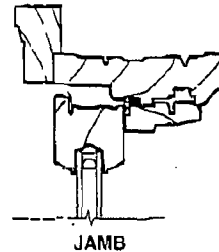
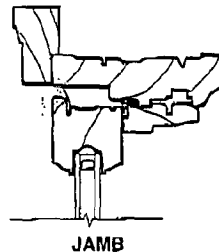
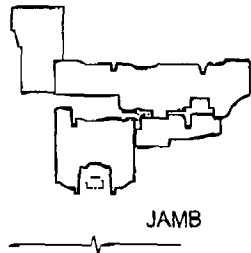
TRANSOMS



HEAD

HEAD

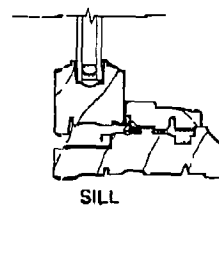
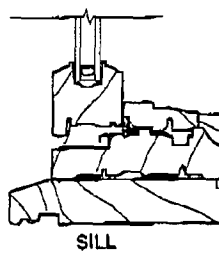
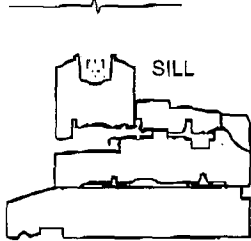
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JAMB

JAMB

JAMB

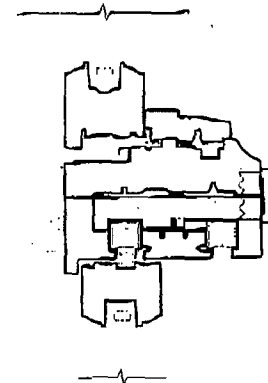
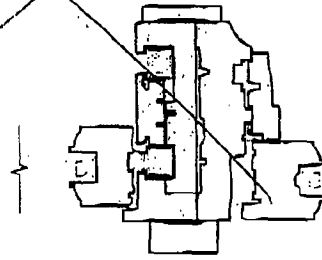
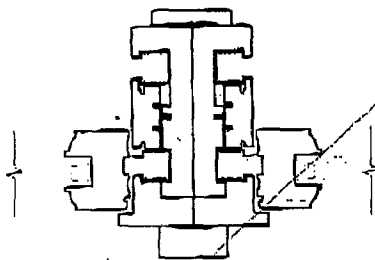


SILL

SILL

SILL

## Architect Series Wood LX Rectangular Typical Joining Mullions



VERTICAL JOINING MULLION  
VENT / VENT

VERTICAL JOINING MULLION  
VENT / FIXED

HORIZONTAL JOINING MULL  
TRANSOM / VENT

6-DOUBLE-HUNG

Tax ID#: 161301077351

\*\* PUBLIC RECORD \*\*

Tax ID#: 161301077351 County: MC  
 PROPERTY ADDRESS: 511 PHILADELPHIA AVE, , TAKOMA PARK, MD 20912-0  
 Incorporated City: TAKOMA PARK Legal Subdiv/Neighborhood: TAKOMA PARK  
 OWNER: VALERIE CHAMBERS, Phone #: (301) 565-3411 Abs Owner: N  
 MAIL ADDRESS: 511 PHILADELPHIA AVE, , TAKOMA PARK, MD 20912-4113  
 LEGAL DESCRIPTION: IMPST P L & T CO  
 Mag/Dist #: 13 Lot: P8 Block/Square: 72 Tax Map:  
 Elec Dist: 13 Legal Unit #: Grid: Map: JN42  
 Section: Blk Suffix: Subdiv Ph: Addl Parcel Flag#: /  
 Map Suffix: Suffix: Parcel: Sub-Parcel:  
 TOTAL TAX BILL: \$3,792 State/County Tax: \$1,765 City Tax: \$1,373 Tax Levy Yr: 2001  
 Front Foot Fee: \$0 Spec Tax Assmt: \$592 Refuse: \$61 Tax Rate: 0.83  
 Tax Class: 74 Homestd/Exempt Status: Exempt Class: 000 Mult. Class:

**ASSESSMENT**

Year Assessed	Total Tax Value	Land	Improvement	Land Use	Taxable Assessment
2000	\$213,896	\$61,370	\$167,320	\$	State: \$
Previous	\$199,103	\$61,370	\$122,940	\$	Municipal: \$
Early	\$73,720	\$62,750	\$101,190	\$	City: \$

DEED Deed Liber: 12447 Deed Folio: 462 Deed Type:  
 Transfer Date Price Grantor Grantee  
 23-MAR-1994 \$162,000 WILLIS C & M C SIRK VALERIE CHAMBERS

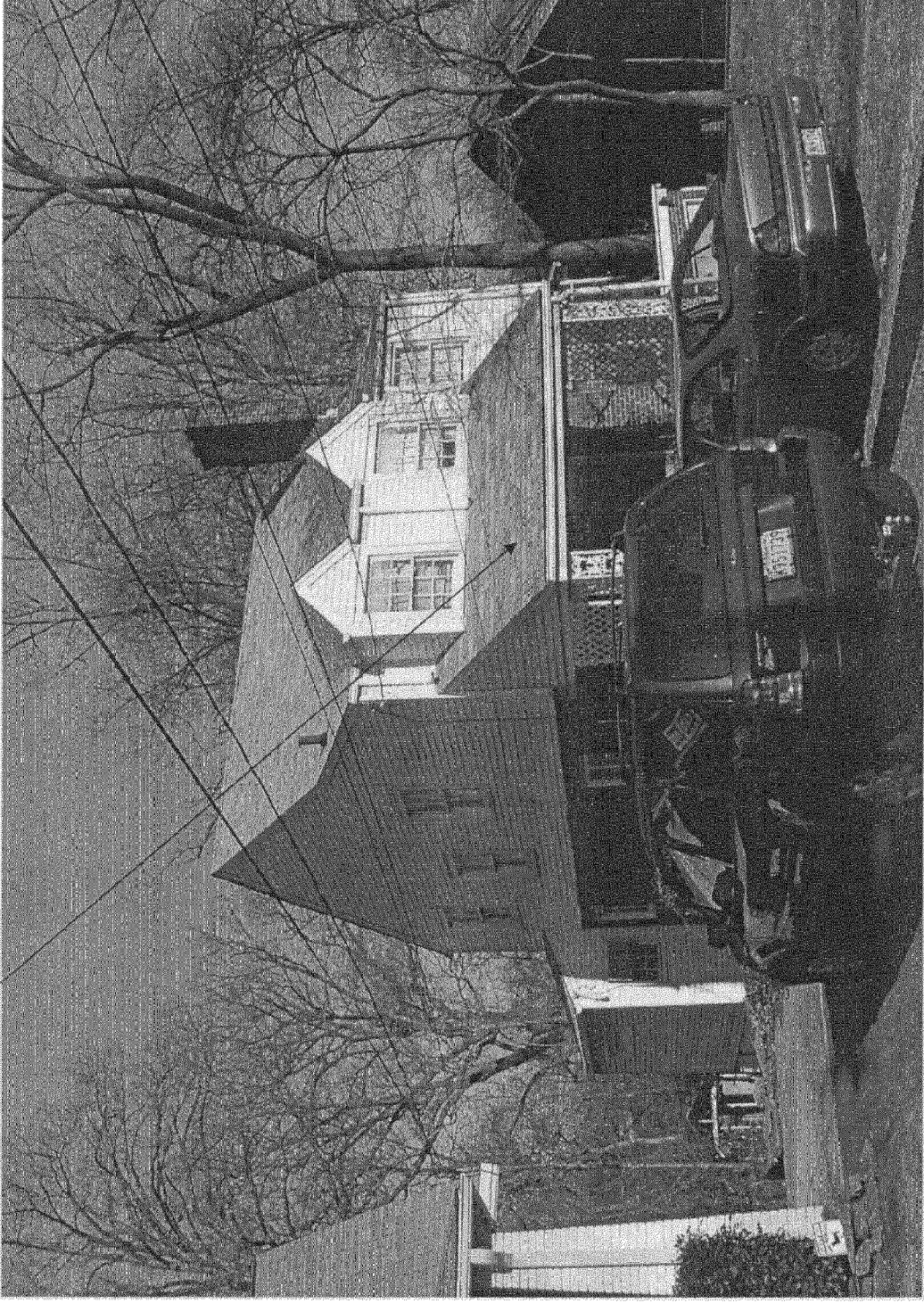
**PROPERTY DESCRIPTION**

Year Built: 1926 Zoning: R60 Census Trct/Blck: 701800/3 Irregular Lot:  
 Square Feet: 8,750 Acreage: 0.20 Land Use: Residential  
 Property Class: R Plat Liber/Folio: 12447/462 Property Card: Quality/Grade: AVERAGE  
 Prop Use: RESIDENTIAL Historic ID: 37003571A

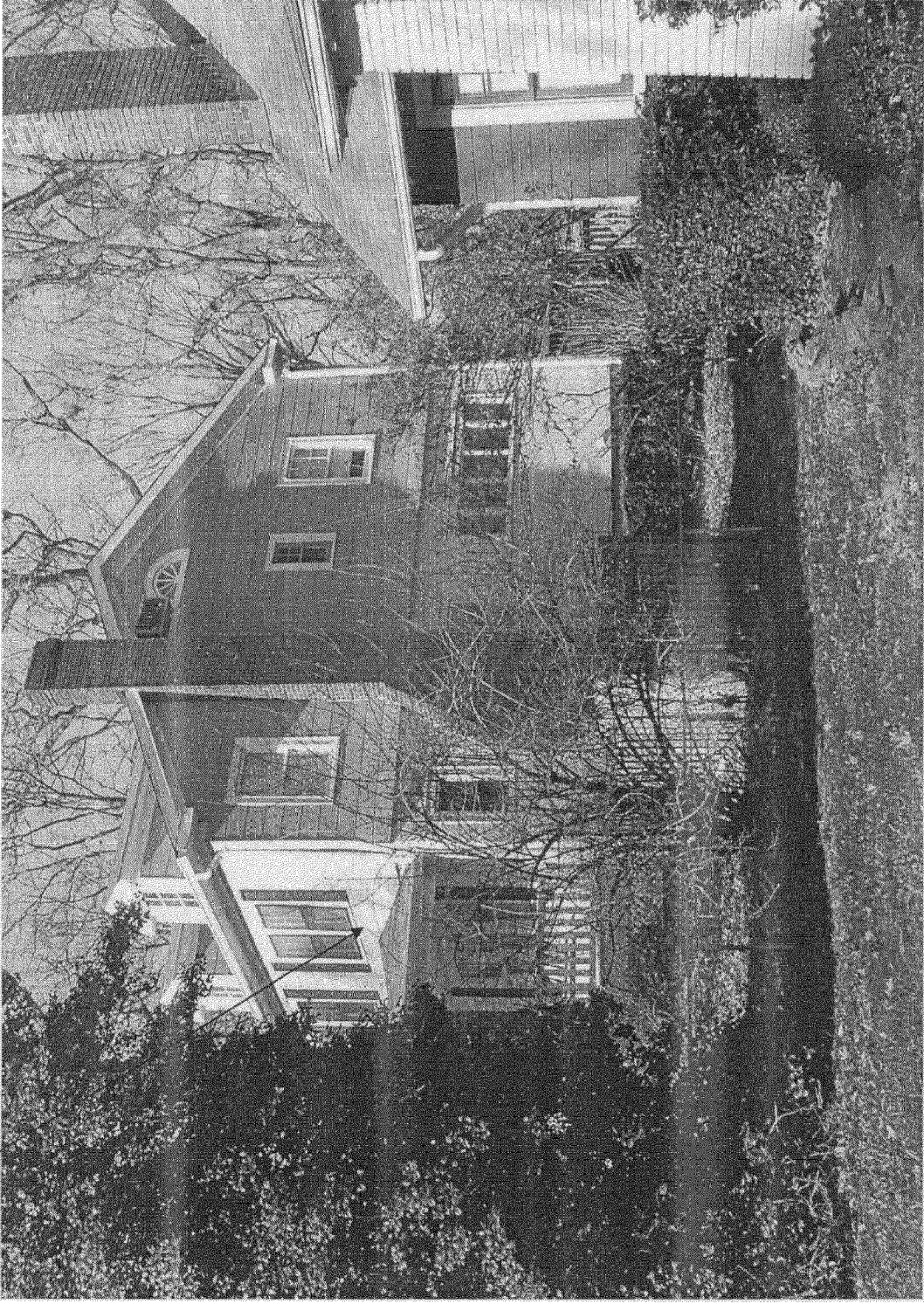
**STRUCTURE DESCRIPTION**

	Section 1	Section 2	Section 3	Section 4	Section 5
Construction	Frame	Frame			
Story	1.5B	1			
Area	1,404	20			
Ext Wall:		Roofing: Shingle - Composite		Foundation:	
Stories: 1.5B	Units: 1	Style:			Year Remodeled:
Total Building Area:		Living Area: 1,424		Base Sq Ft: 956	Model/Unit Type: SINGLE
FAMILY UNIT					
Patio/Deck Type: DECK		Sq Ft: 84	Porch Type: ENCLOSED PORCH		Sq Ft: 288
Rooms:	Bsmt Type: Not Specified		Fireplaces: 1		Garage Type:
Bedrooms:	Bsmt Tot Sq Ft: 936		Fireplace Type: FRME		Garage Sq Ft:
Full Baths: 1	Bsmt Fin Sq Ft:		Attic Type:		Gar Constr:
Half Baths: 0	Bsmt Unfin Sq Ft:		Attic Sq Ft:		Garage Spaces:
Baths: 1	Air Cond: Separate System				
Gas:	Heat: Hot Water		Sewer:	Fuel:	
Electric:	Water:		Underground:	Walls:	

509 PHILADELPHIA AVENUE – Dorothy Brown



513 PHILADELPHIA AVENUE -- Jim Allen

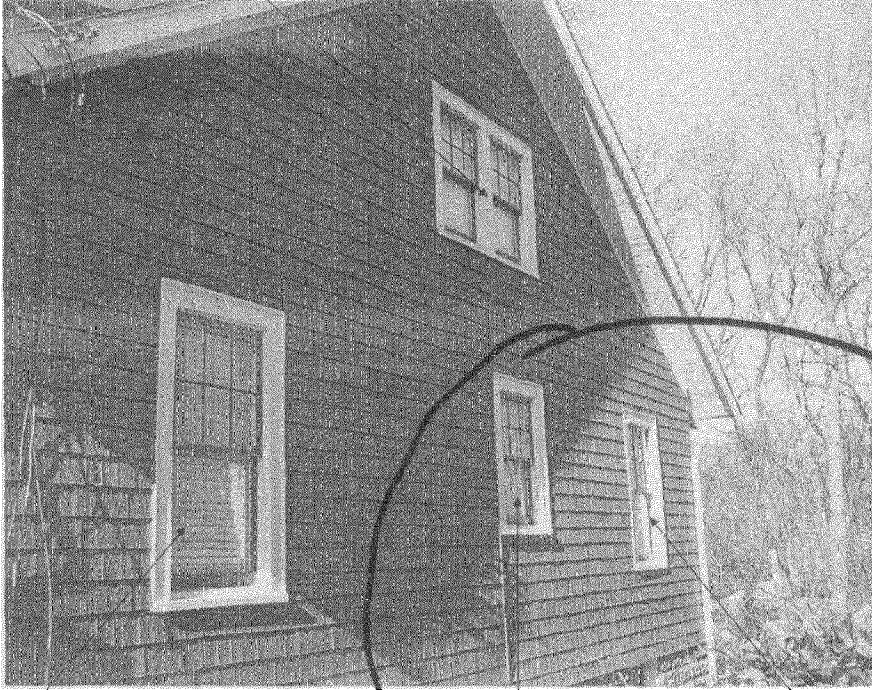


511 PHILADELPHIA AVENUE

Staff Recommended

Condition  
#1

~~Replace this window~~



~~Replace this window~~

Replace this window

Replace this window

1

2

511 PHILADELPHIA AVENUE

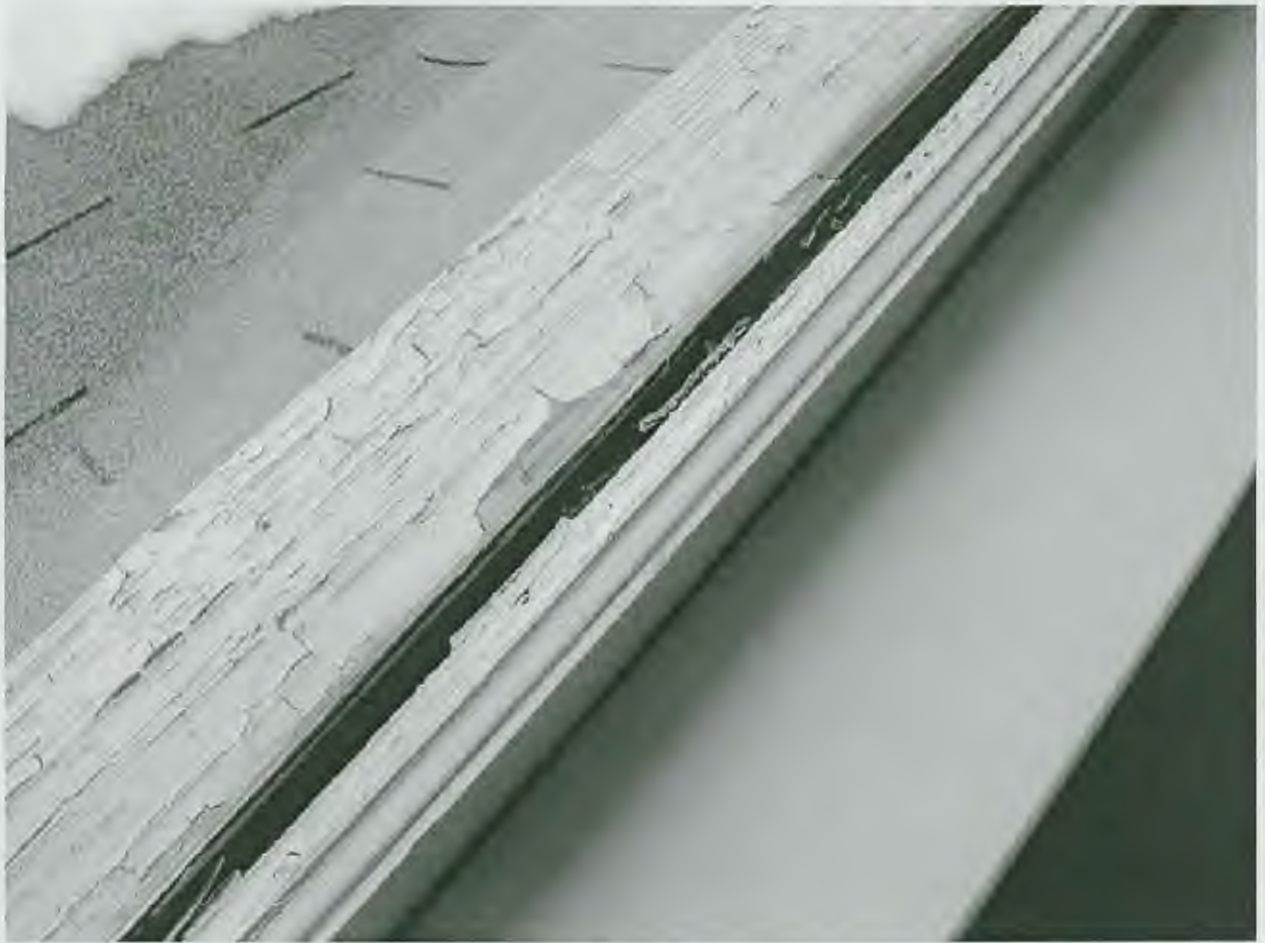


3

Replace this window

20





# Testing the Energy Performance of Wood Windows in Cold Climates

A Report to  
The State of Vermont Division for Historic Preservation  
Agency of Commerce and Community Development

August 30, 1996

Brad James<sup>1</sup>  
Andrew Shapiro<sup>2</sup>  
Steve Flanders<sup>3</sup>  
Dr. David Hemenway<sup>1</sup>

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University of Vermont  
Burlington, Vermont 05405

<sup>2</sup>Energy Engineer  
Vermont Energy Investment Corporation  
Burlington, Vermont 05402

<sup>3</sup>Research Civil Engineer  
U.S. Army Cold Regions Research and Engineering Laboratory  
Hanover, New Hampshire 03755

## EXECUTIVE SUMMARY

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, long term maintenance cost reduction, ease of operation, and better assurance of window longevity. 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. This 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.

While upgrades often improved other aspects of windows, including ease of operation, reduction of lead hazard, and occupant comfort, only energy impacts were included in this study. In order to assess energy improvements due to window upgrades, it was necessary to establish first year heating energy costs associated with windows before and after upgrades. Energy costs resulting from thermal losses associated with a window are due to both infiltrative and non-infiltrative losses.

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. Thermal losses also occur due to radiation through the glazing, conduction through the window materials, and convection of the air layer next to the window materials. These latter three methods of heat loss (conduction, convection, and radiation) are considered to be non-infiltrative thermal losses and were modeled using WINDOW 4.1, a computer program simulating fenestration thermal performance.

Infiltrative thermal losses were investigated by field testing 151 windows during 1995 and 1996, primarily in northern and central Vermont. Leakage characteristics of these windows were estimated by fan pressurization. Of these 151 windows, 64 were in original condition and 87 were of various upgrades. A percentage of infiltrative exterior air was estimated during field tests based on temperature differences in the test zone during fan pressurization. Exterior air leakage was summed with sash leakage to estimate a whole window total infiltrative thermal loss rate due to infiltration. Total window leakage rates were correlated with heating season infiltration rates by using a computational model established for estimating whole building infiltration rates. Results for the 64 original windows were used to model typical, tight, and loose original condition windows. Estimated annual energy costs of these assumed windows were used to estimate first year energy cost savings for the various upgrade types.

The significance of exterior air infiltration to the total heat load of a window was observed throughout the study. Thermal loss due to exterior air infiltration can cause the thermal performance of a tight window to approach that of a loose window. The importance of reducing exterior air infiltration during any renovation was noted. Interior storm windows effectively reduced exterior air infiltration as well as reducing sash air infiltration. Exterior storm windows in good condition showed significant reductions in sash infiltration when in the closed position.

One issue in assessing energy performance of windows fitted with storms was if the storm was in the closed position during the heating season, a factor which can change the energy performance significantly. This study did not attempt to quantify how many storms were likely to be open or closed. Therefore, the assumed loose window with no storm allowed comparison of upgrades with storm windows open as well as with windows not fitted storm windows.

First year energy savings for window upgrades and estimated annual energy costs of the assumed windows were based on a typical Vermont climate (7744 degree days). Neither cooling cost savings nor changes in solar heat gain due to window improvements were addressed.

Results of testing and analysis were expressed in a number of ways including:

- effective leakage area (ELA), which may be loosely described as the size of a single orifice with similar air flow characteristics as the sum of the cracks of the window tested;
- sash air leakage rate at 0.30 inches of water pressure differential across the window, expressed in standard cubic feet per minute per linear foot of crack, a standard value given in specifications for new windows, representing a useful point of comparison; and
- first year estimated heating cost savings compared to the three baseline original condition windows described above.

Costs of window upgrades were investigated primarily by interviewing developers of affordable housing in Vermont. Material, installation and mark-up costs are included for the window upgrades studied. Costs for upgrades were considered above those which would be required for routine window maintenance (paint, putty, caulk, and sash balance maintenance). Routine maintenance costs were considered a baseline for any building rehabilitation apart from energy upgrades. Costs for upgrades field tested ranged from a low of \$75 to a high of \$500. The lower cost option included sealing the top sash, installing bronze V-strip weatherstripping and sash locks, and retaining the existing prime and storm windows. If lead abatement was required for an original sash, an additional cost of \$125 was added to the upgrade cost. The larger upgrade cost was for a wood window insert with double-pane insulating glass.

The findings of the study indicated the wide range of window upgrade options and installed

costs resulted in annual heating cost savings that were similar. Within several types of window upgrades tested, there were examples where inappropriate application of an upgrade or an incomplete installation resulted in below average energy performance. However, when installed carefully, virtually all the options studied produced savings in a similar range.

Estimated first year energy savings per window due to field tested upgrades ranged from zero to a high of \$3.60 as compared to an assumed typical window and were slightly lower when compared to an assumed tight window. Estimated savings compared to an assumed loose window ranged from \$12.40 to \$16.60 per window. Estimated savings increased when windows with low-e glazing were modeled using WINDOW 4.1. It should be noted that estimated first year savings as shown should be viewed solely as relative savings when compared to other upgrades within the context of the study and not actual savings realized.

The variability in estimated first year energy savings for all window upgrades was small. A comparison of estimated energy savings per upgrade to costs for upgrade materials and installation revealed energy savings were two orders of magnitude lower than renovative costs. Based on the range of estimated first year energy savings of window upgrades generated by the study as compared to an assumed typical window and those costs associated with upgrade purchase and installation, replacing a window solely due to energy considerations did not appear to be worthwhile. Estimated first year savings of upgrades when compared to an assumed loose window are significantly greater, reflecting the importance of the original window condition in determining first year energy savings. Life-cycle costs of window upgrades were not included as a part of this study and may have a bearing on the decision making process.

As a result of the similarity in savings between upgrade types and the small savings indicated when existing windows were similar in performance to a typical or tight window, 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.

The population served by the housing is another important variable in an upgrade decision. Tenant populations in rental housing have no financial incentive to close storm windows or may be unable to operate them. In such cases, the value of estimated first year savings of an upgrade may be higher than expected if double-glazing is used in the prime window.

Once the decision to upgrade or replace an existing window is made, it is important to select a strategy that not only meets the needs of the building occupants and owners but also utilizes techniques that achieve the highest levels of energy savings and occupant

comfort justified by the financial constraints and financing mechanisms of the building rehabilitation project. In general:

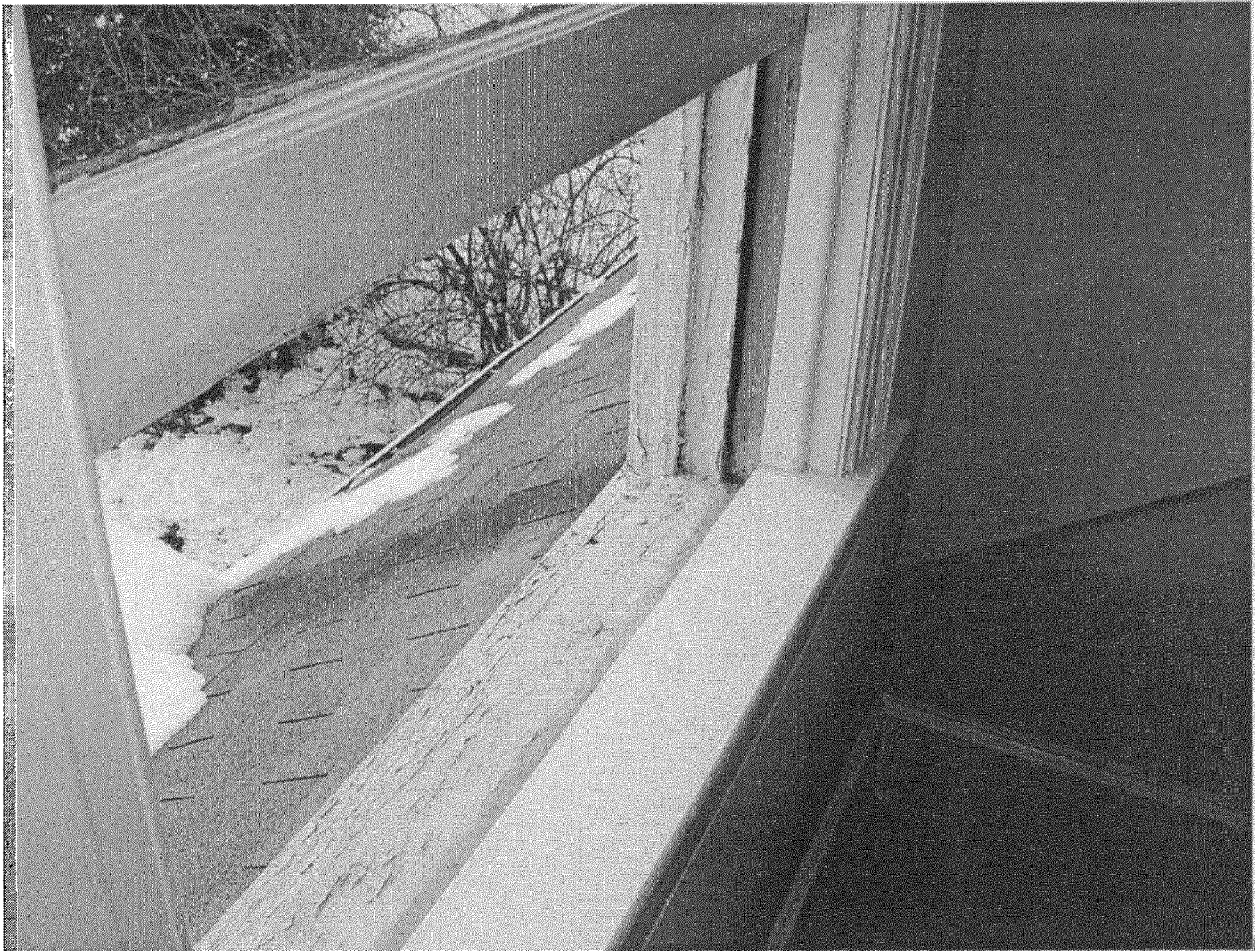
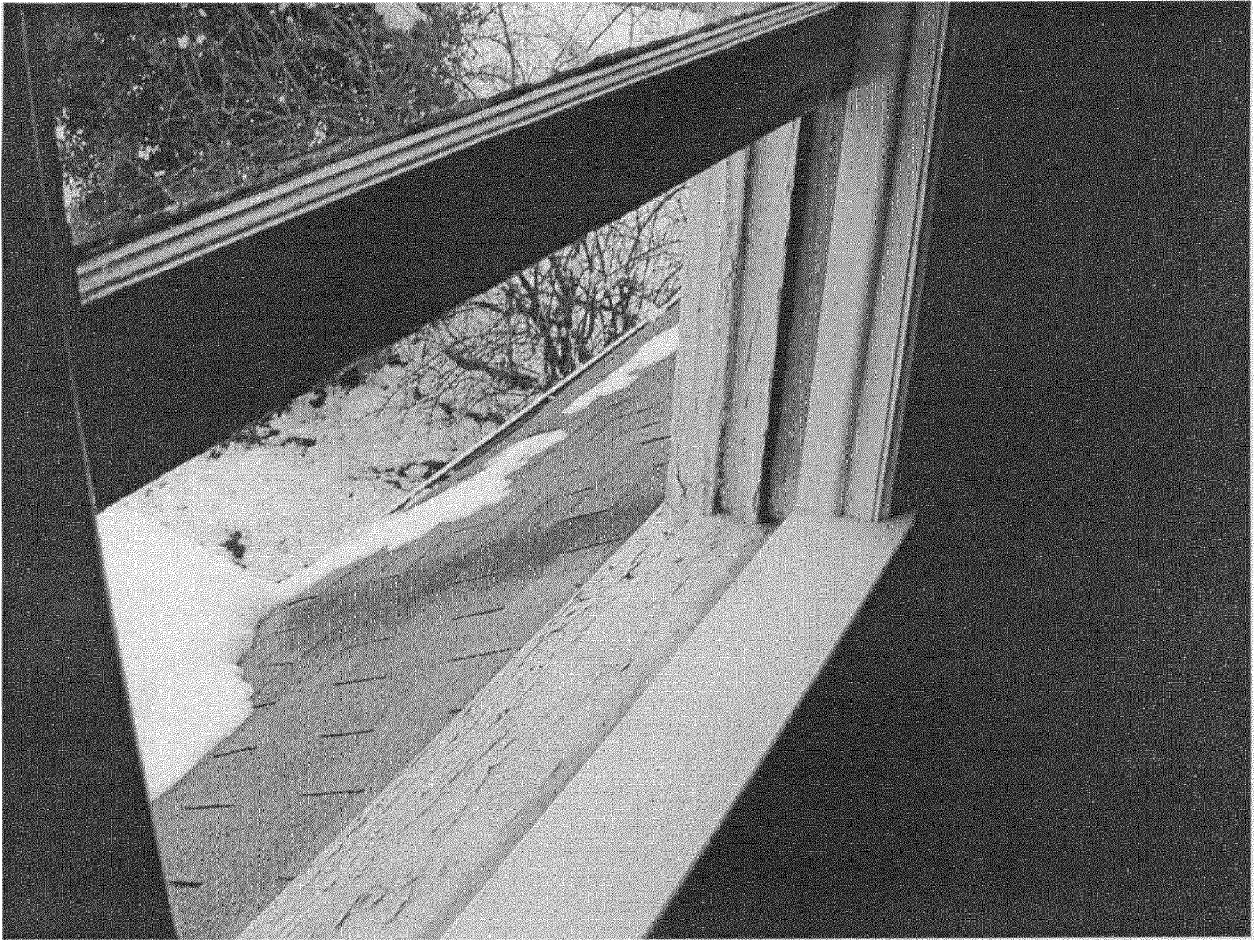
- Window upgrades using existing sash can achieve performance indistinguishable from replacement sash but economics of the upgrade depend on the leakiness of the original window.
- If the existing window is loose, it can often be cost-effective to address this leakage, including air leakage between the window and rough opening as well as between an exterior storm window and trim. If the window is already in typical or tight condition, an upgrade is unlikely to be cost-effective regardless of the cost-benefit test used.
- If the windows have single glass, it is worthwhile considering installing a second layer, including the options of storm windows, replacement insulated glass units, energy panels and use of low-emissivity glass (low-E).

While it is tempting to compare first year energy savings to the total installed costs of a window upgrade, it should be noted that some window upgrades may be done for reasons other than energy savings. Therefore, a strict comparison of energy costs to total installed costs may not be appropriate in all cases. In addition, the time frame over which savings may be calculated can vary significantly. Developers of affordable housing, which often includes rehabilitation of historic structures, are often concerned with establishing "perpetually affordable" housing which includes decreased long-term maintenance and energy costs.

Within the decision-making process for deciding to replace or renovate an existing window, energy considerations should not be the primary criteria, but should also not be ignored. The resulting window rehabilitation strategy should result in the most comfort and appropriate degree of energy savings.

The study was funded by the State of Vermont Division for Historic Preservation of the Agency of Commerce and Community Development from a grant received from the National Park Service and the National Center for Preservation, Technology, and Training.





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# 9 Preservation Briefs

Technical Preservation Services

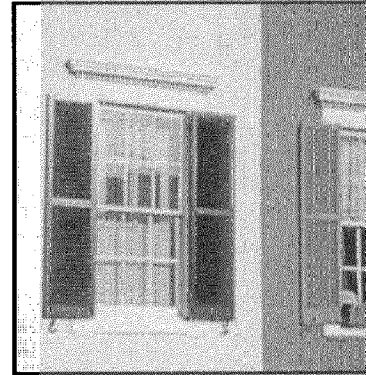
National Park Service  
U.S. Department of the Interior



## The Repair of Historic Wooden Windows

**John H. Myers**

- » Architectural or Historical Significance
- » Physical Evaluation
- » Repair Class I: Routine Maintenance
- » Repair Class II: Stabilization
- » Repair Class III: Splices and Parts Replacement
- » Weatherization
- » Window Replacement
- » Conclusion
- » Additional Reading



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

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

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

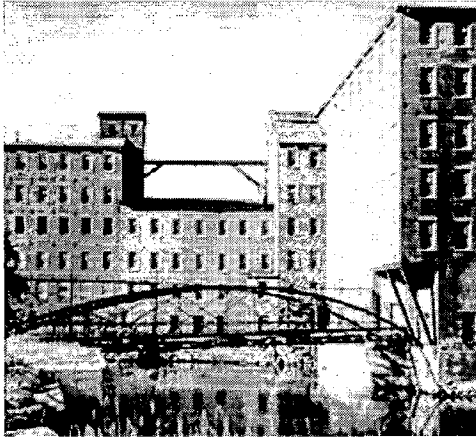
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### Architectural or Historical Significance

28



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



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

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

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

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## Physical Evaluation

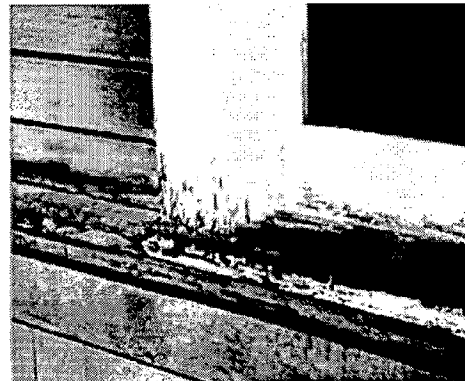
The key to successful planning for window treatments is a careful evaluation of existing physical conditions on a unit-by-unit basis. A graphic or photographic system may be devised to record existing conditions and illustrate the scope of any necessary repairs. Another effective tool is a window schedule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

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

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

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

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



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

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

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

strength.

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

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

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

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### **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



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

needed by the labor force.

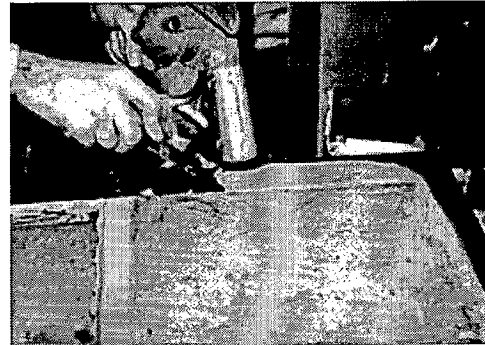


**After removing paint from the seam between the interior stop and the jamb, the stop can be pried out and gradually worked loose using a pair of putty knives as shown. Photo: NPS files.**

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, 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.

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



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

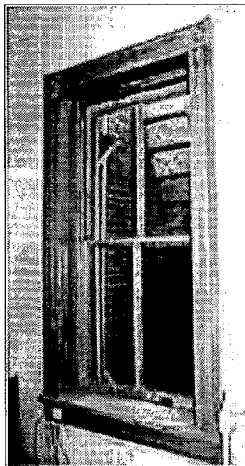
Removal of the upper sash on double-hung units is similar but the parting bead which holds it in place is set into a groove in the center of the stile and is thinner and more delicate than the interior stop. After removing any paint along the seam, the parting bead should be carefully pried out and worked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

The sash can be stripped of paint using appropriate techniques, but if any heat treatment is used, the glass should be removed or protected from the sudden temperature change which can cause breakage. An overlay of aluminum foil on gypsum board or asbestos can protect the glass from such rapid temperature change. It is important to protect the glass because it may be historic and often adds character to the window. Deteriorated putty should be removed manually,

taking care not to damage the wood along the rabbet. If the glass is to be removed, the glazing points which hold the glass in place can be extracted and the panes numbered and removed for cleaning and reuse in the same openings. With the glass panes out, the remaining putty can be removed and the sash can be sanded, patched, and primed with a preservative primer. Hardened putty in the rabbets may be softened by heating with a soldering iron at the point of removal. Putty remaining on the glass may be softened by soaking the panes in linseed oil, and then removed with less risk of breaking the glass. Before reinstalling the glass, a bead of glazing compound or linseed oil putty should be laid around the rabbet to cushion and seal the glass. Glazing compound should only be used on wood which has been brushed with linseed oil and primed with an oil based primer or paint. The pane is then pressed into place and the glazing points are pushed into the wood around the perimeter of the pane.

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

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

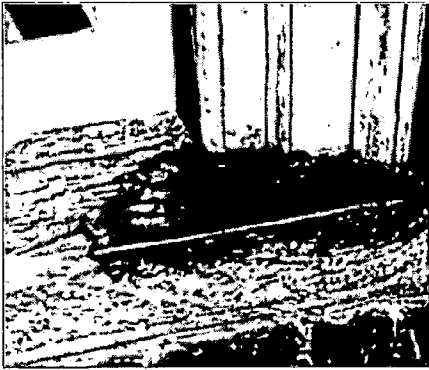


**Following the relatively simple repairs, the window is weathertight, like new in appearance, and serviceable for many years to come. Photo: NPS files.**

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

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

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



**This illustrates a two-part 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: NPS files.**

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

Wood may also be strengthened and stabilized by consolidation, using semirigid epoxies which saturate the porous decayed wood and then harden. The surface of the consolidated wood can then be filled with a semirigid epoxy patching compound, sanded and painted. Epoxy patching compounds can be used to build up missing sections or decayed ends of members. Profiles can be duplicated using hand molds, which are created by pressing a ball of patching

compound over a sound section of the profile which has been rubbed with butcher's wax. This can be a very efficient technique where there are many typical repairs to be done. The process has been widely used and proven in marine applications; and proprietary products are available at hardware and marine supply stores. Although epoxy materials may be comparatively expensive, they hold the promise of being among the most durable and long lasting materials available for wood repair. More information on epoxies can be found in the publication "Epoxies for Wood Repairs in Historic Buildings," cited in the bibliography.

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

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.

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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.

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## **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.

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## **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

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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.

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## 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.

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## Additional Reading

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### **Washington, D.C. 1981**

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

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

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