Chapter 2

Windows and Doors

In most historic buildings in New York City, windows, doors, and the architectural details surrounding them were carefully designed as integral components of the building's character and design. Their historic appearance and relationship to the building serve as the basis for LPC's rules for work involving the replacement and modification of windows and doors (see **LPC Rules**, Section 2-14, available on our website, **www.nyc.gov/landmarks**).

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LPC encourages repairing or upgrading your historic windows.
This chapter primarily covers the replacement of windows and doors. If you are looking for guidance on repairing or upgrading your historic windows, which LPC encourages, please see page 2.34 for best practices.

In This Chapter, You Will Find:

This chapter explains LPC's rules for the replacement and modification of windows and doors. Our goal is to help you submit a fully completed permit application for work that conforms to the LPC Rules so you can get your permit more quickly.

Section A
How to Get Started

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Before applying for your permit, you should:

Find Information About Your Building

This will help you determine how the LPC Rules apply.

What type of building is it?
Search for your building on the **Discover NYC Landmarks map** to determine if it is a designated landmark or located within a designated historic district.

Click on your building to find **construction date, architect and style, building and landmark type,** and a link to the **LPC designation report** with additional historical background.

What did it look like?
Find **historic tax photos** from the 1940s and 1980s, available through the NYC Department of Records & Information Services NYC Municipal Archives Collections.

Additional information, including guidance on finding **historic maps**, can be found in the **LPC Resource Guide**, Researching Historic Buildings in New York City, available at www.nyc.gov/landmarks.

How big is it?
Verify **height and street frontage** to determine the size of your building. Requirements for replacement materials vary depending on building size.

See if Your Work Requires an LPC Permit

Maybe you don't need a permit.
A permit is not required for ordinary maintenance, repair, and retrofitting, including:

- Replacing window/door screens and glazing (panes of glass)
- Installing interior storm windows or clear films
- Repainting windows or doors their existing color
- Installing perimeter caulking, sealants, and weatherstripping
- Repairing or replacing hardware such as hinges, knobs, pulley chains, locks and handles
- Patching or straightening metal components and patching or partially rebuilding wood components; partially rebuilding wood window or door components

Unsure whether your work requires a permit?
Contact LPC at 212-669-7817 or info@lpc.nyc.gov.

Consider Establishing a Master Plan

If you plan to install replacement windows incrementally or in phases over time, apply for a master plan. A master plan provides the opportunity to incrementally perform work. Once you have a master plan, future applications that conform to it can be quickly reviewed since specific work standards are established and approved. This type of permit generally does not expire.

What You Will Need

All LPC permit applications and supporting materials are now filed and processed through Portico, the agency's web-based permit application portal. A complete application typically requires the materials listed below, but additional materials may be required depending on the work type. See *Section B* for a list of all materials required for your work type.

Basic Application Materials

- ☐ **LPC permit application** filed on Portico
- ☐ **Color photos** of the entire building and close-ups of the windows / doors / openings that show location and context of proposed replacement or modification work
- ☐ **Comparative drawings:**
  - Elevation of existing (if historic) and proposed windows and doors
  - Floor plans of locations of existing and proposed windows and doors
  - Section (horizontal and vertical) of existing (if historic) and proposed windows and doors at primary facades only
  - Details of existing (if historic) and proposed windows and doors at primary facades only
  - Comparative drawings that show any changes to the size of existing window and door openings or creation of new openings
- ☐ **Color specifications/ paint cards at visible facades only**
- ☐ **Material specifications** at primary facades and special windows only
- ☐ **If available, documentation to support matching historic windows and doors at visible facades only,** including historic photographs or drawings of your building or similar buildings
- ☐ **An assessment of deteriorated conditions** is required for replacement of historic front doors, special windows / doors, and at individual landmarks only.
- ☐ **Department of Buildings (DOB) filing drawings** if the proposed work requires a DOB permit

Section B
LPC Rules and Criteria

This is how the Landmarks Preservation Commission works:

The LPC Rules establish criteria that allow staff to review and approve proposals for certain types of work at landmark properties. Permit applications for work that meets the LPC Rules can be approved faster. If the work does not meet the rules, staff may suggest alternatives that do meet the rules — or your proposal may be presented to the LPC Commissioners for review at a public hearing. LPC staff can guide you through this process. Visit www.nyc.gov/landmarks for more information.

This section explains and illustrates the rules and criteria for the most common types of work involving windows and doors. See LPC Rules, Section 2-14, for more information.

In This Section:

Windows

Replacing Windows at Primary Facades

Staff can issue permits approving new windows at primary facades if they match original or historic windows in terms of configuration, operation, details, materials, and finish. However, variations are permitted in certain situations. See *Acceptable Variations* on page 2.8.

Configuration

New windows must match the original design in terms of number, shape, organization, and relationship of panes (lights) of glass, mullions, and muntins. Check historic tax photos to determine historic window configuration.

Operation

New windows must open, close, and function generally in the same manner as historic windows, e.g., casement or double-hung. Variations are acceptable, depending on type. See *Acceptable Variations* below.

Details

New window details — the dimensions and contours of stationary and movable portions of windows and moldings — must be as dimensionally close to historic window details as possible.

Materials

New windows must generally match historic windows. Exceptions are allowed based on the size of the building and window type:

For small buildings classified by LPC as six stories or less with street frontage of 40 feet or less, if original windows had a one-over-one configuration, replacements may be made of other alternative materials.

Other materials, including wood, metal, or fiberglass (but not vinyl), may be used for windows and brick molds.

For large buildings, classified by LPC as seven or more stories or with street frontage of more than 40 feet, replacement windows may be made of other alternative materials.

Other materials, including wood, metal, or fiberglass (but not vinyl), may be used for windows and brick molds.

Required Application Materials

- ☐ **Photos** of building facades
- ☐ **Photos** of windows to be replaced
- ☐ **Historic 1940s tax photos,** if available
- ☐ **Existing and proposed annotated floor plans or elevations** showing location of windows
- ☐ **Comparative window elevation** for each proposed window type, and historic windows, if they exist, to show configuration
- ☐ **Comparative vertical and horizontal section drawings** of proposed windows, and historic windows, if they exist, to show details
  - – Large-scale detail drawings of heads, jambs, sills, meeting rails, mullions, muntins, and brick molds
  - – Glazing calculations may be required to ensure historic framing and glazing proportions are maintained. See *Technical Guidance and Resources* for more on how to calculate glazing
- ☐ **Material specifications on drawings**
- ☐ **Color samples**
- ☐ **Conditions assessment** for special windows and historic windows at individual landmarks (See *Technical Guidance and Resources* for how to conduct a conditions assessment.)

If LPC requires additional materials after your application is reviewed, you will receive a Materials Checklist from LPC staff.

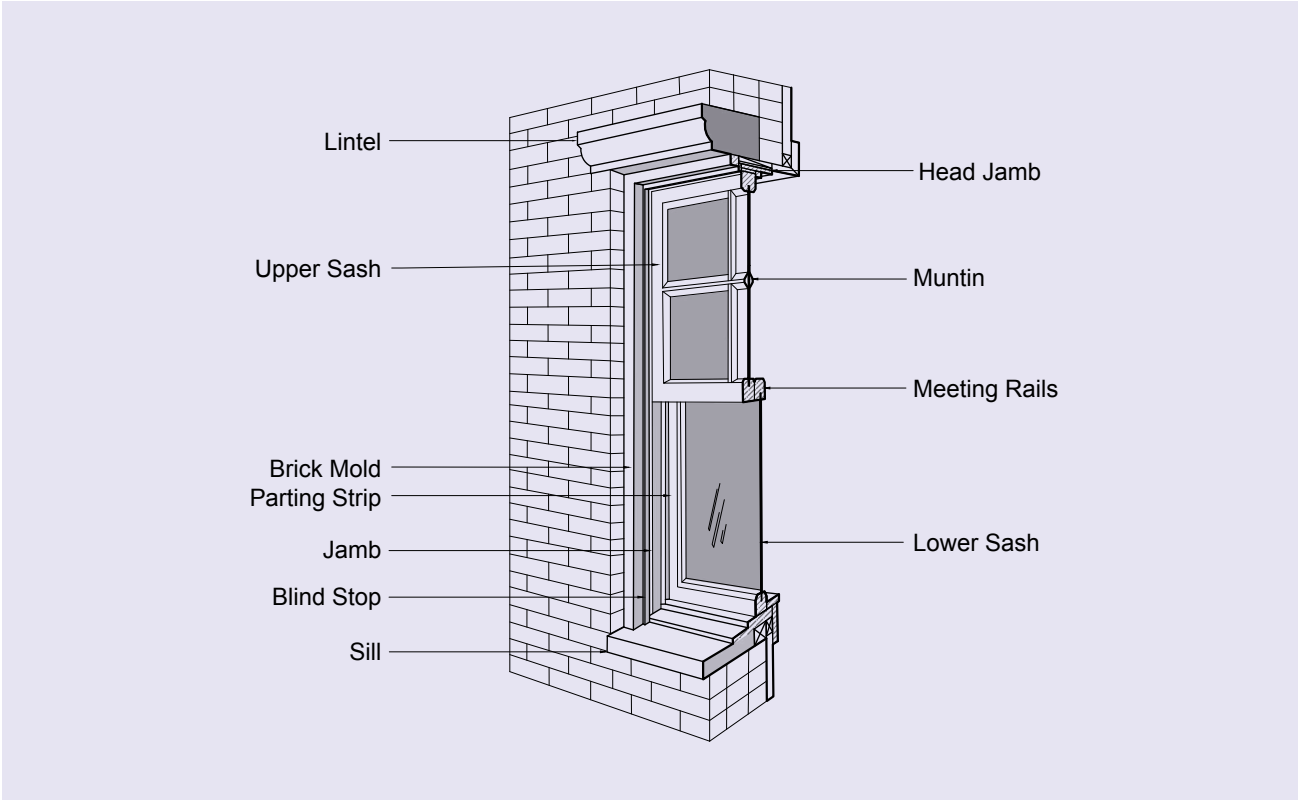


Diagram showing the individual elements that make up a double-hung window within a masonry opening.

Note: The exceptions above do not apply to individual landmarks or buildings with special windows.

Finish

New windows must be painted to match visual characteristics of historic windows, including color, texture, and reflectivity of all exterior materials. See *Chapter 1, Restoration*, for a chart of historically accurate colors by building style.

Acceptable Variations

Variations in operation, details, and materials may be permitted in certain situations. This provides some flexibility when matching historic windows.

Operation

The following are acceptable variations in operation:

The upper sash of a double-hung window or transom window may be fixed or non-operable, even if it was historically operable. The direction of the swing (i.e., outward or inward) of a casement, awning, or hopper window may be changed.

A pivot window may be changed to hinged operation if it matches orientation of the pivot operation (i.e., outward or inward), except at individual landmarks.

Installation of high-performance simulated double-hung windows (passive house windows) at buildings in historic districts is another acceptable variation. This type of window is typically part of an intensive building-wide energy efficiency program, using energy-efficient frames and sashes with triple glazing, high insulation values, and minimal air leakage. Typical modern double-hung windows and retrofitted older windows cannot match their performance.

Appearance of the window must simulate a double-hung window, but operation of the upper sash is fixed and lower sash changed to hinged operation for ventilation.

Details must closely match the historic double-hung window, but additional dimensional tolerances (typically deeper sashes and frames) are permitted to accommodate thicker insulated glazing and a change in operation at the lower sash.

Since this type of window slightly differs in appearance from historic windows, all windows on a primary facade (excluding special windows) must be replaced at the same time to ensure a uniform aesthetic.

Details (including muntins, mullions, and brick molds)

The following are acceptable variations in details:

Variations that do not significantly affect appearance. New windows, however, must be installed in approximately the same plane as historic windows.

Due to variations in materials and details, the glazing area of new windows can be decreased by up to 10 percent for historic metal windows and 6 percent for historic wood windows (see *Technical Guidance and Resources* on how to calculate a glazing decrease). Further variations in percentages exist for certain window types due to their small size or muntin pattern, or due to code requirements (see *Section C* for more information on how to calculate glazing diminution).

Simulated divided light (SDL) muntins can be used instead of true divided light muntins, as long as exterior muntins match materials and are permanently secured to the frame, and spacers

The operation of a pivot window may be changed to hinged.

A high-performance simulated double-hung window with its lower sash tilted in is an acceptable variation in window operation.

A double-hung replacement window with simulated divided light muntins, featuring exterior and interior muntins, and spacers within the double glazing.

exist between multiple layers of glass and interior muntins.

Large residential and commercial buildings in historic districts only require exterior muntins.

Materials

The following are acceptable variations in materials:

A historic wood window can be replaced with wood of any species.

A historic metal window can be replaced in a different metal, including a metal-clad window with a non-metal substrate. Staff will determine whether special windows require an exact match with original materials.

A steel casement window (left) and a fiberglass replacement window (right).

If a historic transom window originally or historically had stained or leaded glass but was removed prior to historic district designation, the replacement can be clear glass or recall the stained/leaded glass window.

What if an opening at the primary facade has been altered from its historic condition?

While a majority of windows on primary facades are installed in existing historic openings, some single and multiple openings have been modified, e.g., removal of a stoop and installation of a window within a modified opening; window openings related to fire escapes.

New windows at these locations must be designed to follow the general criteria for primary facades. This includes modifying the height and width of existing non-original openings or introducing new architectural features surrounding openings, such as moldings around lintels and sills (except at individual landmarks).

Staff determines whether the proposed window is harmonious with the existing fenestration and facade.

Historic photos and existing physical evidence at the building or other buildings within a row must be reviewed to determine how and when the facade was altered.

Before, left: A multi-light casement window in a non-original opening.

After, right: A replacement double-hung one-over-one window that is harmonious with the existing fenestration.

Replacing Windows at Visible Secondary Facades

Criteria for replacing windows at a visible secondary facade are less restrictive. For staff to issue a permit for new windows, the new windows proposed are only required to match the **configuration and finish of historic windows at the facade**. This ensures a consistent appearance at visible building facades. Thus, new windows do not have to match the material, operation, or detail of the historic windows.

Required Application Materials

- ☐ **Photos** of building facades
- ☐ **Photos** of windows to be replaced
- ☐ **Existing or proposed annotated floor plans and elevations** that show window locations
- ☐ **Comparative window elevations** for each proposed window type and historic windows, if they exist
- ☐ **Color samples**

If LPC requires additional materials after your application is reviewed, you will receive a Materials Checklist from LPC staff.

Replacing Windows at Non-Visible Secondary Facades

If the facade is minimally or non-visible and the window is not a special window, staff can issue a permit for new windows of any configuration, operation, material, or finish installed within the existing opening without reviewing details.

New windows can also be installed in conjunction with reducing or enlarging an opening. See *Modifying Window Openings and Creating New Window Openings at Visible Secondary Facades* below.

Required Application Materials

- ☐ **Photos** of building facades
- ☐ **Photos** of window to be replaced
- ☐ **Existing and proposed annotated floor plans or site plans** to show that the location is not visible
- ☐ **Window elevations or catalog cut sheets** for each proposed window type

If LPC requires additional materials after your application is reviewed, you will receive a Materials Checklist from LPC staff.

What does "minimally visible" mean when replacing or modifying windows and doors?

A window or door is considered minimally visible if it is seen at such an angle that its configuration cannot be recognized, or only a small portion of the facade can be seen through a gap in the street wall and is visually disconnected from the building's primary facade.

The windows indicated, located deep in the block at an oblique angle, would be considered "minimally visible".

Modifying Window Openings and Creating New Window Openings at Visible Secondary Facades

Staff can issue a permit for modifying or creating new window openings at visible secondary facades if they meet the following criteria:

New or modified openings must match the same general shape and pattern of existing window openings on the facade.

If there are no existing openings, new openings must be a size and shape that forms the basis for a consistent pattern.

Number, size, and placement of new window openings must maintain the high solid-to-void ratio typically found at secondary facades of historic buildings, where sizeable areas of masonry separate window openings without large expanses of glazing.

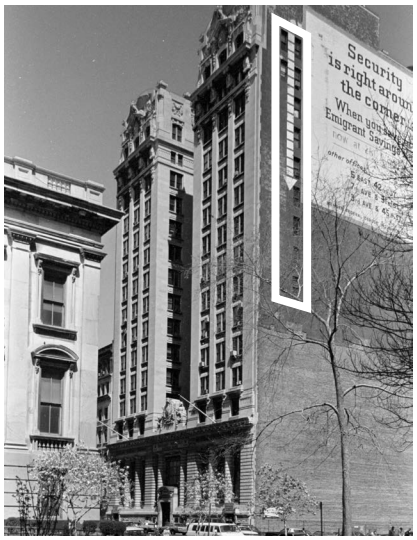
If the building is a rowhouse, mansion, detached house, semi-detached house, or carriage house, new window openings at secondary facades can only be approved if, together with existing openings:

No more than one window opening exists on a secondary facade of less than 20 feet

Up to two window openings if the facade is 21–40 feet

Up to three window openings if the facade is more than 40 feet

New window openings created at the secondary facade match the shape, size, and pattern of the existing windows and openings.



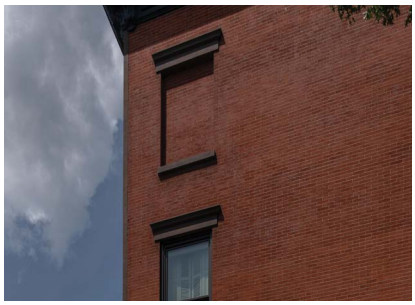
Required Application Materials

- ☐ **Photos** of building facades
- ☐ **Photos** of windows to be modified
- ☐ **Existing and proposed annotated floor plans and elevations** that show locations
- ☐ **Comparative window elevations** for each proposed window type to be modified and the historic window, if it exists
- ☐ **Color samples**

If LPC requires additional materials after your application is reviewed, you will receive a Materials Checklist from LPC staff.

Can window openings be filled in at a secondary facade?

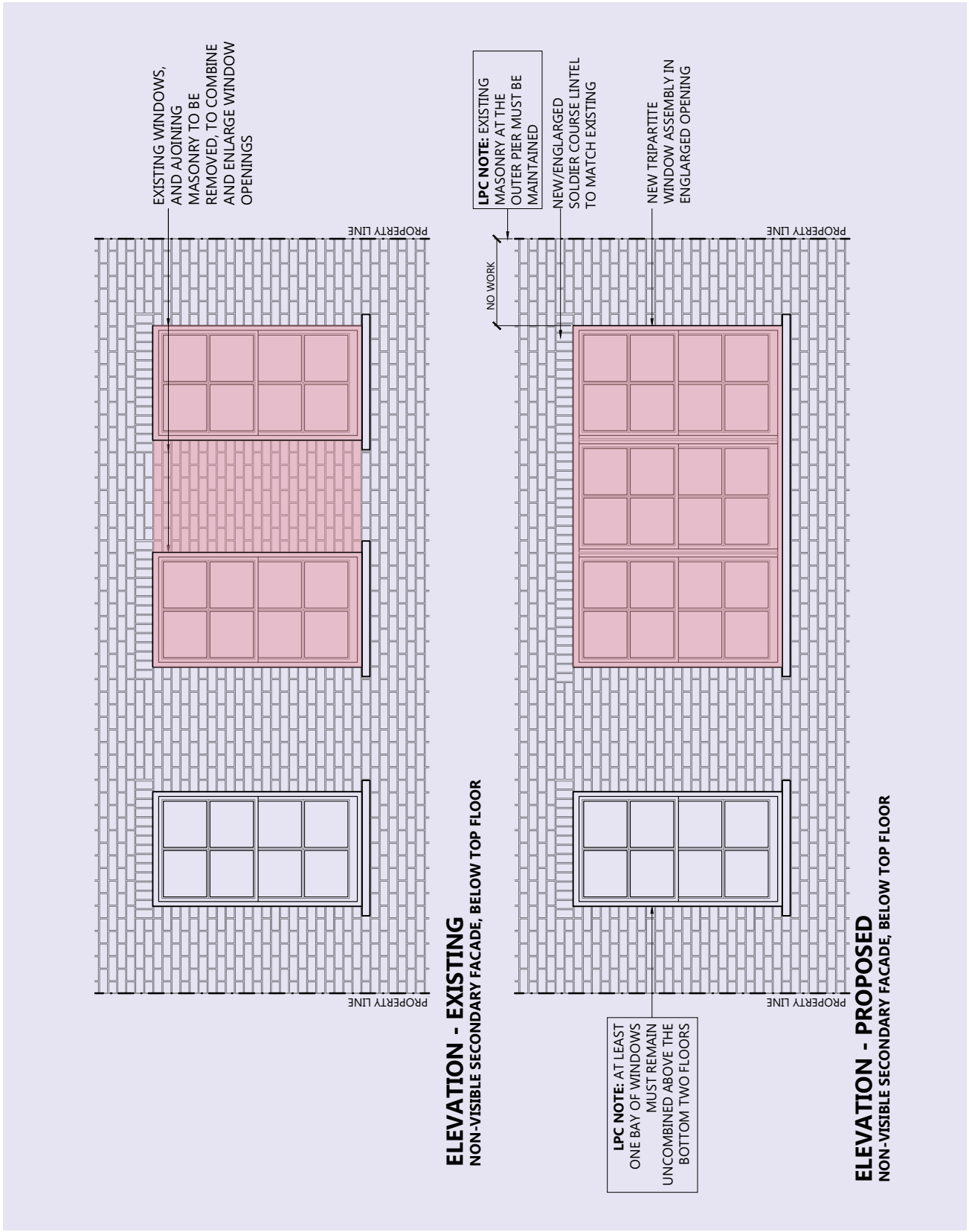
Window openings at most locations can be filled in with a material that matches the surrounding material. For example, if the facade is brick, stucco, or wood, the window must be infilled with matching brick, stucco, or wood.



A filled-in window opening at a secondary facade.

If an original or historic window opening at a masonry facade is being filled in at a visible location, the presence of the former opening must be maintained by retaining the lintel and sill and infilling new masonry flush with or set slightly back from the plane of the facade. At a wood facade, simple trim work around the opening can be removed and the opening infilled with wood cladding to match the wood facade.

A sample drawing for combining window openings below the top floor at a non-visible secondary facade.



A sample drawing for combining window openings horizontally and vertically at the bottom two floors of a non-visible secondary facade.

Modifying Window Openings and Creating New Window Openings at Non-Visible Secondary Facades

Staff can issue permits approving the modification or creation of new window openings at non-visible secondary facades if they meet the following criteria:

Windows and doors on non-visible facades on the same floor, with the exception of the top floor, can be enlarged or reduced in height and width.

Adjacent openings can be horizontally (but not vertically) combined, provided at least one bay of windows is not combined, with the exception of the top floor. For example, if the facade has three window or door openings, only two may be combined.

Outer masonry piers must be maintained and other mullions or muntins must subdivide the combined window. There must be at least 18 inches between the enlarged opening and windows above and below.

At the bottom two floor levels, all windows and doors can be combined and vertically span floors to create a single large opening.

The new combined opening at the bottom two floor levels must be designed to include the following:

At least 24 inches of masonry or wall cladding at outer piers

A spandrel or horizontal element of at least 12 inches that marks the location between floors

Mullions or muntins that subdivide and break down the scale of the window assembly

Required Application Materials

- ☐ **Photos** of building facades
- ☐ **Photos** of windows to be modified
- ☐ **Existing and proposed annotated floor plans or site plans** that show location is not visible
- ☐ **Comparative elevation** of existing conditions and proposed window type to be created
- ☐ **Color samples,** if visible

If LPC requires additional materials after your application is reviewed, you will receive a Materials Checklist from LPC staff.

Can windows at upper floors of a rear facade be modified or combined?

As a general rule, top floor windows cannot be changed.

However, **one original window opening at the top floor of a rowhouse** can be lowered or widened to provide access to an approved balcony, terrace, or deck, or one that existed before designation.

If openings have previously been altered, they can be enlarged or reduced to restore or more closely match the size of original top floor openings.

Doors

Replacing Doors at Primary Facades

Staff can issue permits approving new doors at primary facades if they meet the following criteria:

For a historic or special door, you must include a conditions assessment or report that confirms that the existing door is deteriorated beyond reasonable repair. Once staff has reviewed and accepted findings, a new door can be approved if it matches the historic door's **materials, operation, configuration, details, and finish.**

If the existing door is non-historic, the new door can be approved if it matches the historic door's **materials, operation and finish, and recalls but does not necessarily match the configuration and details of the historic door.** Look at historic doors on similar buildings for guidance.

If the door is at a large residential building, the new door must satisfy the above criteria. However, an alternative material can be used.

This replacement door recalls, but does not match, the historic door.

Required Application Materials

- ☐ **Photos** of the building facade
- ☐ **Photos** of doors proposed for replacement
- ☐ **Historic 1940s tax photos,** if available
- ☐ **Comparative door elevation for each proposed door type and historic door,** if it exists
- ☐ **Comparative vertical and horizontal section drawings of proposed door and historic door,** if it exists
  - Large-scale detail drawings of head, jamb, sill, glazing, paneling, and molding
- ☐ **Material specifications**
- ☐ **Color samples**
- ☐ **Conditions assessment** for historic or special doors (See *Technical Guidance and Resources* for more on how to conduct a conditions assessment.)

If LPC requires additional materials after your application is reviewed, you will receive a Materials Checklist from LPC staff.

Replacing Doors, Modifying Door Openings, and Creating New Door Openings at Secondary Facades

Staff can issue permits approving the replacement of doors, the modification of existing door openings, and the creation of new door openings at visible and non-visible secondary facades consistent with windows criteria laid out in this chapter.

Required Application Materials

- ☐ **Photos** of building facades
- ☐ **Photos** of door to be replaced or modified
- ☐ **Existing and proposed annotated floor plans and elevations** that show locations
- ☐ **Comparative elevations** for each door to be replaced (if visible) or modified, showing the existing condition and proposed change
- ☐ **Color samples**

If LPC requires additional materials after your application is reviewed, you will receive a Materials Checklist from LPC staff.

Entrances

Replacing Entrance Infill

Staff can issue permits approving the replacement of entrance infill — the assembly of doors, transoms, sidelights, spandrels, and other framing elements — at existing entrance openings that include more than a single or paired door. This applies to primary and secondary entries for lobbies, vestibules, service areas, and egress at buildings in historic districts where no significant historic materials exist. For replacement of storefront infill, please refer to Section 2-12 of the LPC Rules since different rules and criteria apply to storefronts.

New entrance infill must meet the following criteria:

Design

Materials, details, finish, and configuration must be based on historic entrance prototypes and details within the specific historic district for buildings of similar age, type, and style.

If your application includes removal of modern cladding (non-historic materials and finishes) at the entrance surround and/or infill, probes must be performed to see if historic materials, such as original wood or metal moldings or stone, or cast iron elements, exist behind modern cladding. Probes entail removing portions of cladding to expose underlying elements for evaluation.

If a significant portion of the historic entrance surround exists underneath cladding, the entrance surround must be restored according to criteria in Section 2-11 of the LPC Rules as part of your application. Staff makes this determination.

Proportions and framing details of doors, sidelights, and transoms must be consistent with historic entrance infill or Commission-approved entrance infill at your building.

Materials

If your building was constructed prior to 1900, the new infill material must match the historic infill, which was in most cases painted wood. If your building was constructed after 1900, the new infill material can be painted wood or metal, or match the historic material.

If the existing entrance opening is not original to your building, proposed work must maintain the existing entrance opening or modify the height and width of the existing opening to better recall the original opening or otherwise harmonize with the facade.

Orientation

New entrance infill must be installed parallel to your building's sidewalk. It must be set back from the face of the existing entrance surround by four or more inches to avoid concealing significant architectural features.

Required Application Materials

- ☐ **Photos** of building facades
- ☐ **Photos** of entrance infill to be replaced
- ☐ **Historic 1940s tax photos,** if available
- ☐ **Existing and proposed annotated floor plans or elevations**
- ☐ **Comparative entrance infill elevations and historic entrance infill,** if it exists
- ☐ **Comparative vertical and horizontal section drawings of proposed and historic entrance infill,** if it exists
  - – Large-scale detail drawings of doors, sidelights, transom, mullions, moldings, and other elements
- ☐ **Material specifications**
- ☐ **Color samples**
- ☐ **Conditions assessment** of historic or special doors and other historic features

If LPC requires additional materials after your application is reviewed, you will receive a Materials Checklist from LPC staff.

Special Windows and Doors

Windows and doors are considered "special" when they possess rare or distinctive features or represent a unique typology, such as stained glass, bronze frames, or curved sashes. All windows dating to 1850 or earlier are also considered special.

Characteristics of Special Windows and Doors

LPC has five categories for special windows and doors, characterized as follows:

A rare shape and distinctive pattern, *including but not limited to square sash with complex arched paneling; diamond, round, and oval sash; sash with intersecting curved muntins; multi-light sash or door leafs with densely gridded window panes of 30 square inches or less; and arch-headed doors*

Distinctive glazing, *including but not limited to leaded, stained, etched, textured, and curved*

Fine craftsmanship and/or distinctive materials, *including bronze, brass, nickel, silver, cast metal, and elaborate carved woodwork*

Unique typology, *including curved sash, bi-folding sash, operable true arch-headed double-hung or casement sash, and monumental window or door assemblies*

Age, *including original windows at buildings constructed prior to 1850*

Not Considered Special Windows and Doors

Unless otherwise classified as a special window or special door, the following window and glass types and materials **are not considered** special windows or special doors:

A square sash with simple arched paneling, e.g., half-round arch, elliptical arch, quarter-round arch, pointed arch; a fixed or operable sash in simple arched transoms; a sash with simply curved muntins; a multi-light sash or door leafs with large panes of more than 30 square inches

Clear or frosted glazing

Copper or other sheet metal, kalamein, rolled steel, or extruded aluminum

A pivot sash, French doors, and casements

Replacing Special Windows and Doors

Special windows and doors must be preserved whenever possible. There are a range of approaches to repairing and retrofitting special windows and doors; these options must be explored prior to proposing replacement

Required Application Materials

- ☐ **Photos** of building facades
- ☐ **Photos** of windows or doors to be replaced
- ☐ **Existing and proposed annotated floor plans or elevations** that show locations
- ☐ **Comparative window elevations** for each proposed window type and the historic window, if it exists
- ☐ **Comparative vertical and horizontal section drawings** of the proposed window and the historic window, if it exists
  - – Large-scale detail drawings of head, jamb, sill, meeting rail, mullions, muntins, and brick molds
  - – Glazing calculations may be required to ensure that historic framing and glazing proportions are maintained. See *Technical Guidance and Resources* for more on how to calculate glazing.
- ☐ **Material specifications**
- ☐ **Color samples**
- ☐ **Conditions assessment** of historic or special doors and other historic features (See *Technical Guidance and Resources* for more on conditions assessments.)

If LPC requires additional materials after your application is reviewed, you will receive a Materials Checklist from LPC staff.

(see *Chapter 2, Restoration*, for more information). Staff can issue permits approving the replacement of special windows and doors if they match original or historic windows and doors in terms of configuration, operation, details, materials, and finish, plus the following criteria:

Your application must include a conditions assessment or report confirming that existing historic special windows or doors are deteriorated beyond reasonable repair.

The report must be prepared by a qualified professional (e.g., a window conservator or preservation architect) or contractor with preservation experience. See *Section C* for more information.

Once staff has reviewed and accepted findings of the assessment or report, new windows or doors can be approved if they match historic special windows and doors in terms of **materials, operation, configuration, details, and finish.**

A window that is special only due to its glazing, such as stained glass, can be removed and the special glazing reinstalled in a new window that matches criteria for replacement of non-special windows.

Special window featuring leaded stained glazing.

Original windows that date from 1850 or earlier are special windows.

Special window featuring an arched casement sash and curved muntins.

Special window featuring curved sash and glazing, an example of a unique typology.

Special door featuring fine craftsmanship and elaborate carved woodwork.

Can a special window at a secondary facade be replaced with a different type of window?

No. Staff is not allowed to approve replacing special windows with another type of window. Even if the window is located at a visible or non-visible secondary facade, special windows must still be retained or replaced in-kind (if deteriorated beyond repair).

Staff can issue permits approving the removal and relocation of distinctive glazing of a special window at a non-visible or minimally visible secondary facade to a new window or new location on the facade.

Special window featuring complex corners at the upper sash.

A monumental special window and door assembly.

Special window featuring densely gridded multi-light and curved glass sashes with stained glass transoms.

Accessories

Installing accessories or add-ons such as interior or exterior storm windows, often in conjunction with repairing and retrofitting existing historic windows, can sometimes be just as effective as modern replacement windows in terms of improved energy efficiency and occupant comfort. Exterior screens and films can also be approved.

Installing Screens, Films, Storm Windows, and Storm Doors at Primary or Visible Secondary Facades

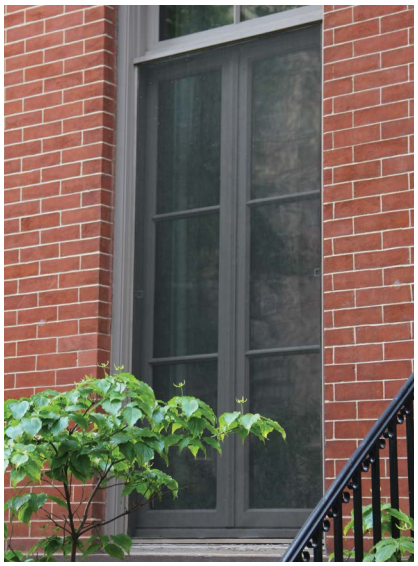
Add-ons such as screens, storm windows, and storm doors must fit tightly within openings without the need for additional panning around the perimeter, and be set as far back from the exterior wall plane as possible.

Add-ons must be made of wood, metal, or fiberglass in a painted finish that matches the color of the primary window or door frame, with clear glass or a screen.

If primary windows have mullions or meeting rails, exterior storm windows should match this configuration if the mullions or meeting rails are needed.

Films can be applied to the interior face of the glass and can be clear or translucent — or tinted in grayscale with no coloration. Only clear films can be used at special windows or doors.

The amount of applied films on a single facade must be limited so the character of the building's overall fenestration is not changed. For example, applied films limited to a bay of bathroom windows could be approved.



This window screen and track are set back from the facade and fit tightly in the window frame.

Required Application Materials

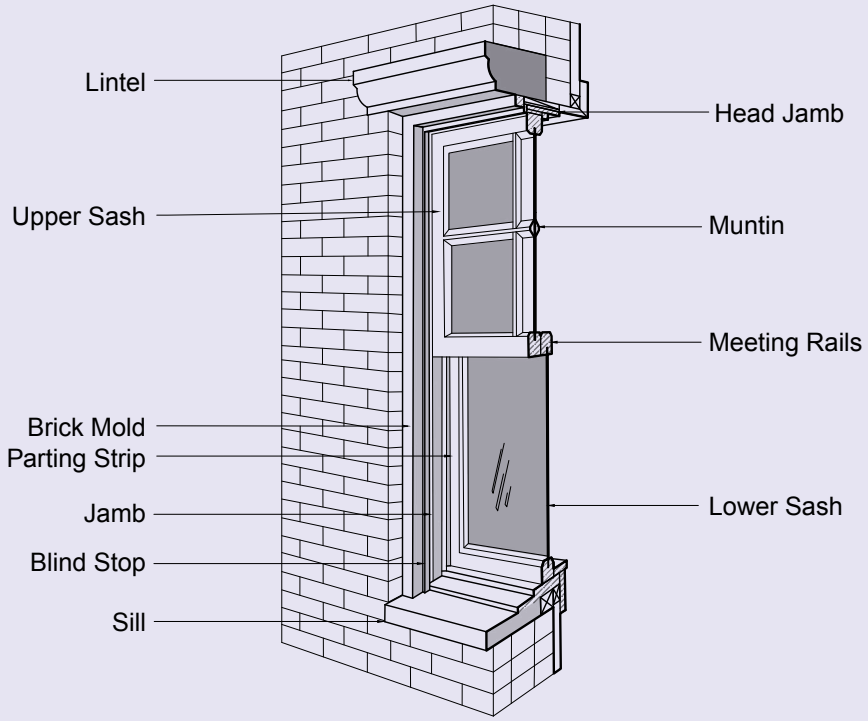
- ☐ **Photos** of primary building facades only
- ☐ **Photos** of windows or doors affected
- ☐ **Existing and proposed annotated floor plans or elevations** that show locations
- ☐ **Elevations** for each proposed type at primary facades only
- ☐ **Vertical and horizontal section drawings** at primary facades only
- ☐ **Catalog cut sheets**
- ☐ **Material specifications**
- ☐ **Color samples at visible facades only**

If LPC requires additional materials after your application is reviewed, you will receive a Materials Checklist from LPC staff.

Section C
Technical Guidance and Resources

In This Section:

Glossary



Brick Mold
is the molding, usually wooden, that covers the gap between the window frame and the opening into which the window is set.

Casing
is the molding surrounding the window jamb, usually seen on the exterior on frame buildings.

Configuration
is the number, shape, organization and relationship of panes (lights) of glass, sash, frame, muntins, or tracery.

Details
are the dimensions and contours of both the stationary and moveable portions of a window or door, and moldings.

Dutchman
is a repair technique for replacing small sections of a damaged material with new material that matches the original material.

Existing Windows
are the windows existing at the time of designation or windows that have been changed subsequent to designation pursuant to a permit issued by the Commission.

Finish
refers to the visual characteristics including color, texture and reflectivity of all exterior materials.

French Door or French Window
is a tall casement window that reaches to the floor, usually arranged in two leaves as a double door.

Head
is the upper horizontal part of a window frame or window opening.

Historic Windows
- Windows installed at time of construction of the building; or
- windows of a type installed at time of construction of similar buildings in similar periods and styles; or
- windows installed at time of major facade alterations 30 or more years ago.

Jamb
refers to the side parts of a window.

Leaded Window
is a window composed of small panes, usually diamond-shaped or rectangular, held in place by narrow strips of cast lead.

Lintel
is a horizontal structural element over an opening that carries the weight of the wall above it.

Large Buildings
are seven or more stories in height or have a street frontage of more than 40 feet. This includes large apartment buildings and hotels; large commercial and loft buildings, including cast-iron fronted buildings, department stores, banks and office buildings; and other building types.

Lights / Glazing / Panes
are the glass that makes up the transparent portion of a window.

Match
is either an exact or approximate replication. If not an exact replication, the approximate replication shall be so designed as to achieve a suitable, suitable, harmonious, and balanced result.

Materials
are the substances used to fabricate the various elements and details of a building (e.g., wood, steel).

Minimally Visible
A window or door is considered "minimally visible" if it is located on a secondary facade that is seen at such an angle that the configuration of the window or door is not visible or is very difficult to discern, or only a small portion of the facade is seen through a gap in the streetwall and is visually disconnected from the primary facade of the building.

Meeting Rail
is a sash rail in a double-hung window designed to interlock with an adjacent sash rail. It is the bottom horizontal member of the upper sash and the top member of the lower sash.

Mullion
is the thick vertical divider that separates paired or multiple windows within a single opening.

Muntin
is the narrow horizontal and vertical pieces that subdivide the glazing into individual panes or panels.

Operation
is the manner in which a window unit opens, closes, or functions. If non-operable, a window unit (such as a side light) is identified as "fixed."

- **Awning**
  Window sash that is hinged on the top.

- **Casement**
  A window sash that is hinged on the side.

- **Double-hung**
  A type of window with two sashes, each sliding on a vertical track.

- **French Casement**
  A tall casement window that reaches to the floor, usually arranged in two leaves as a double door.

- **Hopper**
  A window sash that is hinged on the bottom.

- **Pivot**
  A window sash that rotates around a fixed point at or near the center.

- **Tilt and Turn**
  A window sash that is hinged at the side and the bottom.

Panning
is an applied material, usually metal, tis aat covers the front (exterior) surface of an existing window frame or mullion.

Parting Strip
is the small member, usually wood and usually removable, that separates the upper and lower sash pockets in the jamb of a double-hung window.

Primary Facade
can include a facade with a primary entrance to the building; a facade fronting a street or a public thoroughfare that is not a street, such as a mews or court; a visible facade that possesses a level of design or significant architectural features of the same quality as the building's street-fronting facade(s), and faces but does not front a street, such as a setback facade, or is part of a dominant massing element where at least one facade is fronting the street or facing the street, such as a tower element, or a facade with a primary entrance to the building.

Rail
is a horizontal sash member.

Sash
is the frame located inside the jamb that holds the glazing.

Secondary Facade
is all facades not considered Primary Facades (see definition above) are considered secondary facades for purposes of the LPC.

Sill
is the lower horizontal part of a window frame or window opening.

Small Buildings
Small buildings are six stories or less in height and have a street frontage of 40 feet or less. These include rowhouses, townhouses, mansions, detached and semi-detached houses and carriage houses; small apartment buildings, tenements, and hotels; small utilitarian, commercial and loft buildings; and other building types.

Stiles
are the vertical sash members.

Segmental Arch
is an arch that is in the form of a segment of a semicircle

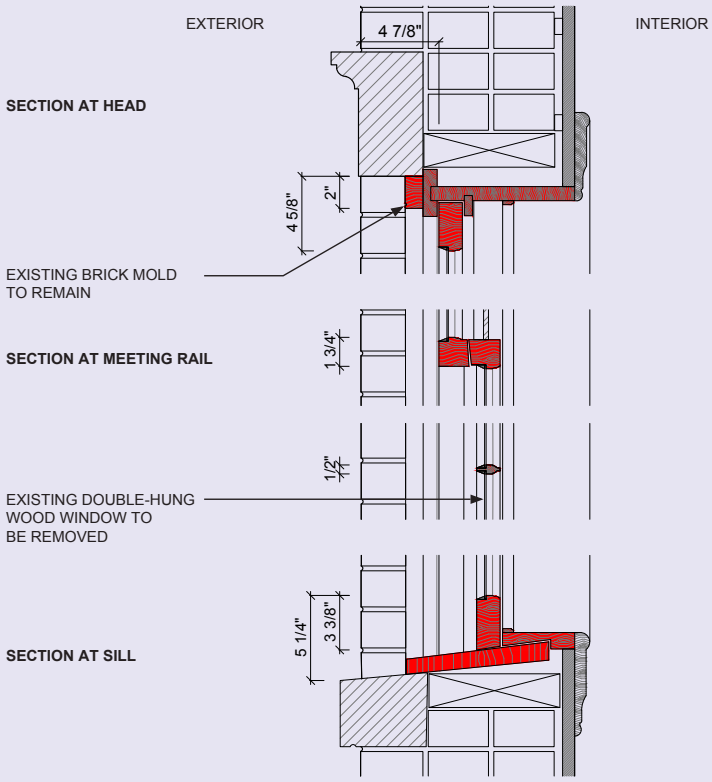
Subframe
is a secondary frame set within a masonry opening.

Surround
is the ornamental frame of a door or window.

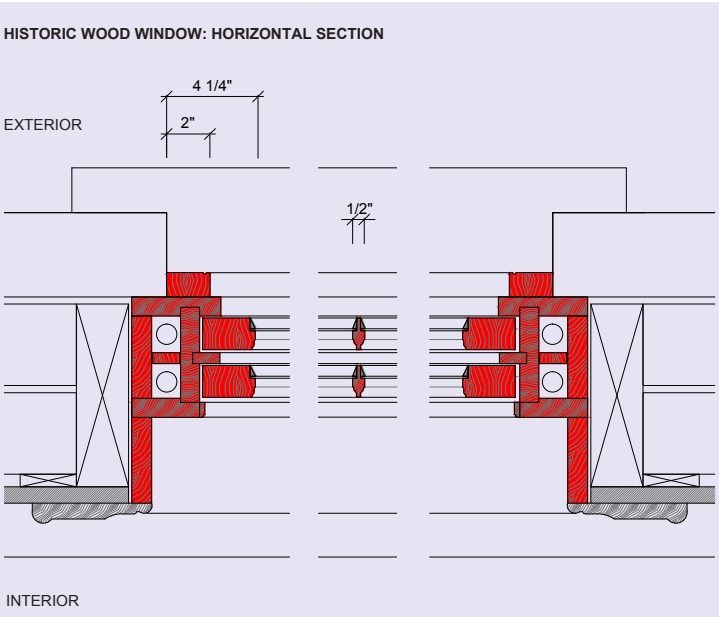
Transom
- A horizontal bar of wood or stone across a window.
- The cross-bar separating a door from the window, panel, or fanlight above it.
- The window above the transom bar of a door.
- The glazed area above a display window or door separated from the main window area or door by a transom bar.

Window Drawings

When applying to replace windows at a primary facade, submit detailed window drawings of existing historic windows and proposed new windows so staff can assess whether replacement windows or doors meet the criteria of the LPC Rules. All elevation, section, and detail drawings must be fully comparative for both existing (if historic) and proposed windows, with each unique type drawn. Existing (non-historic) windows do not need to be drawn. Examples of typical window drawings can be found on the following pages.

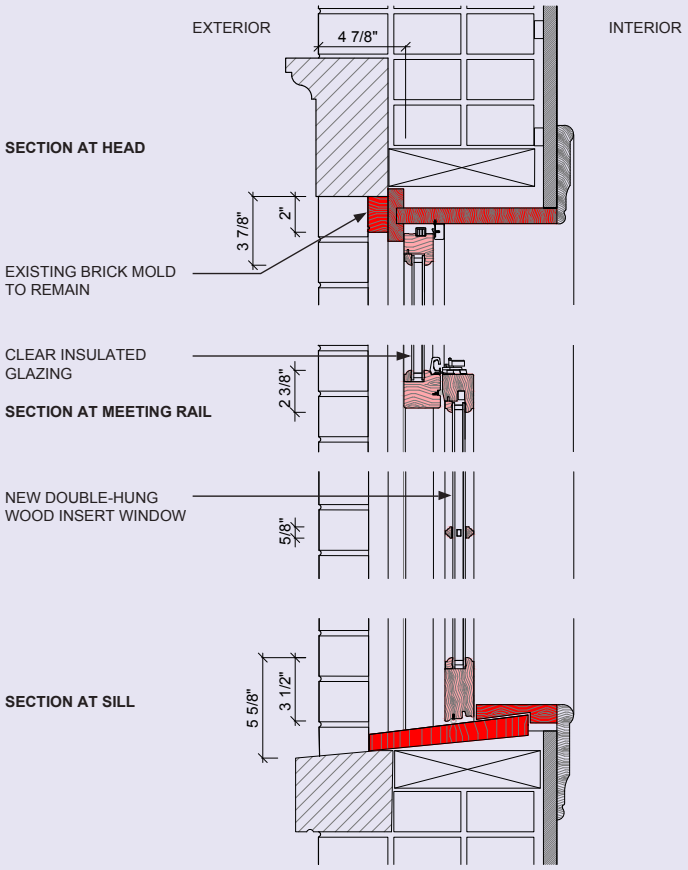


Vertical section drawing of a historic wood double-hung window and brick mold, with all required dimensions.



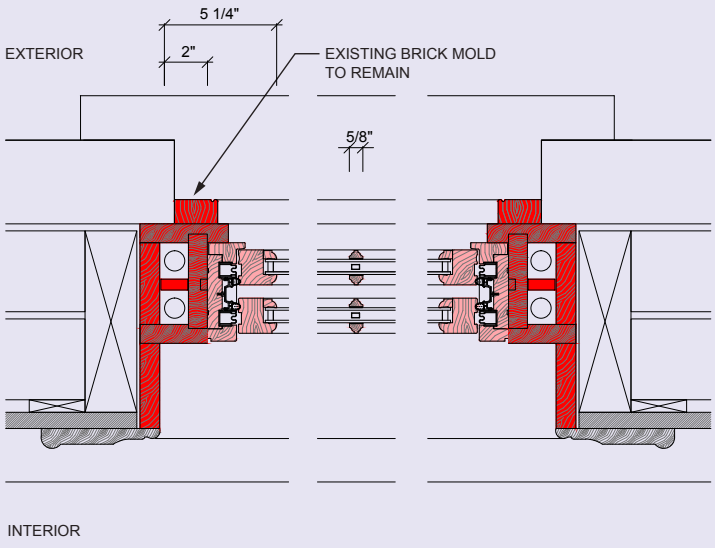
Horizontal section drawing at the jamb of a historic wood double-hung window and brick mold, with all required dimensions.

NEW WOOD INSERT WINDOW (HISTORIC WINDOW FRAME RETAINED): VERTICAL SECTION

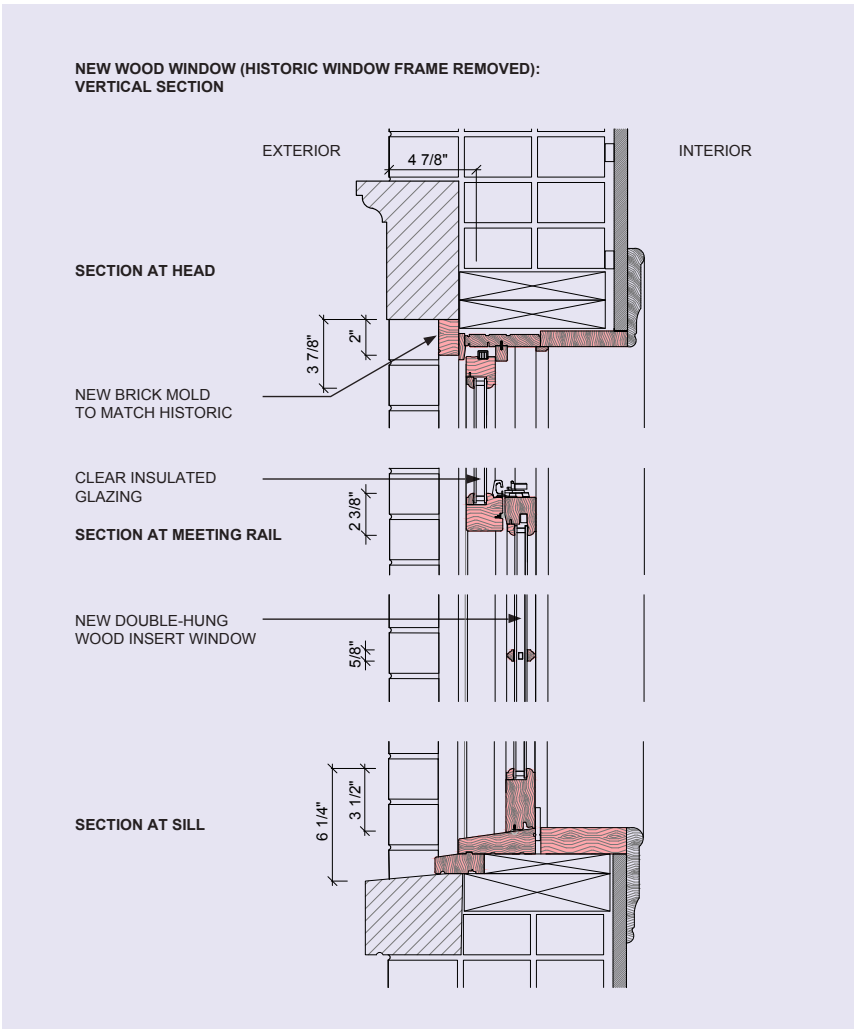


Vertical section drawing of a new wood insert double-hung window with new wood brick mold to match the historic profile, with all required dimensions.

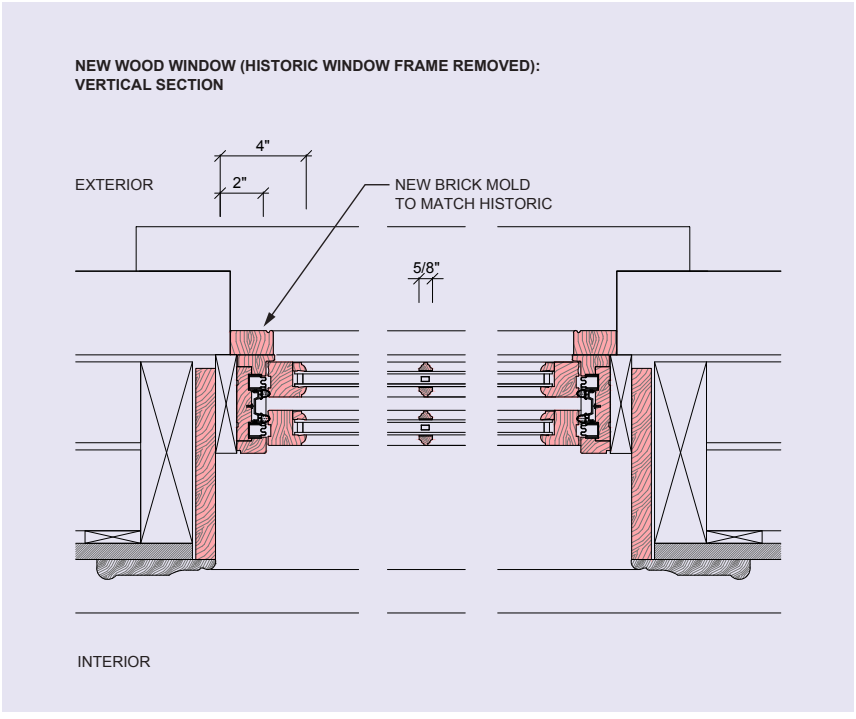
NEW WOOD INSERT WINDOW (HISTORIC WINDOW FRAME RETAINED): HORIZONTAL SECTION



Horizontal section drawing at the jamb of a new wood insert double-hung window with new wood brick mold to match the historic profile, with all required dimensions.

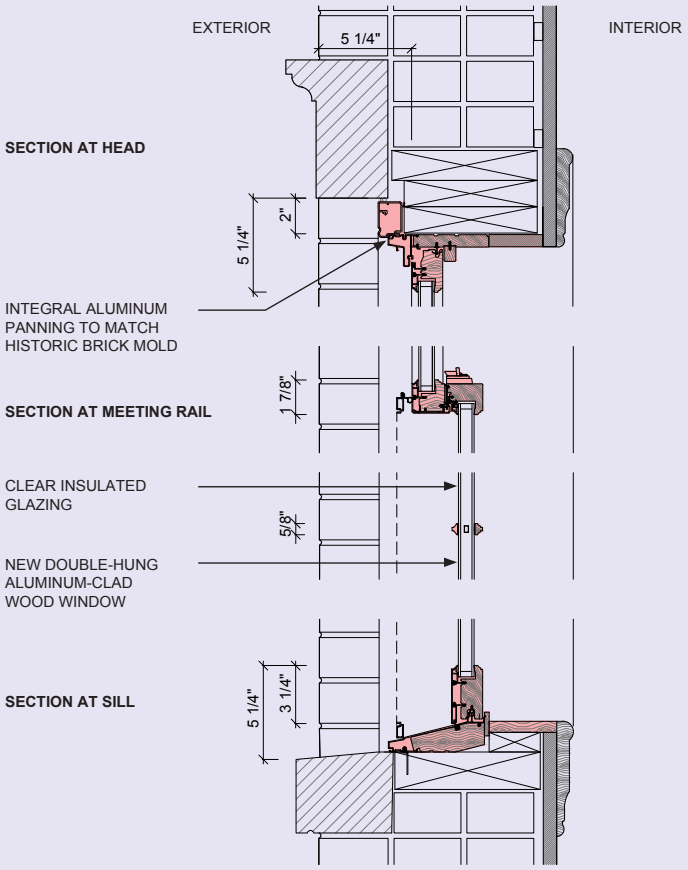


Vertical section drawing of a new wood double-hung window with new wood brick mold to match the historic profile, with all required dimensions.



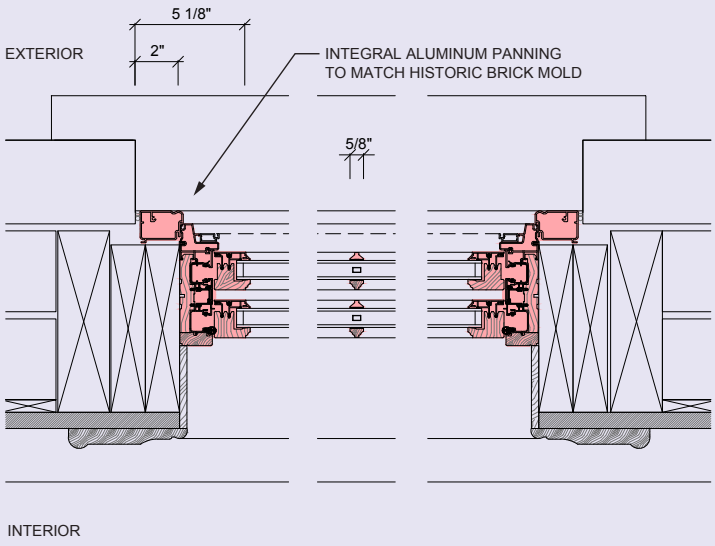
Horizontal section drawing at the jamb of a new wood double-hung window with new wood brick mold to match the historic profile, with all required dimensions.

NEW ALUMINUM-CLAD WOOD WINDOW (HISTORIC WINDOW FRAME REMOVED): VERTICAL SECTION



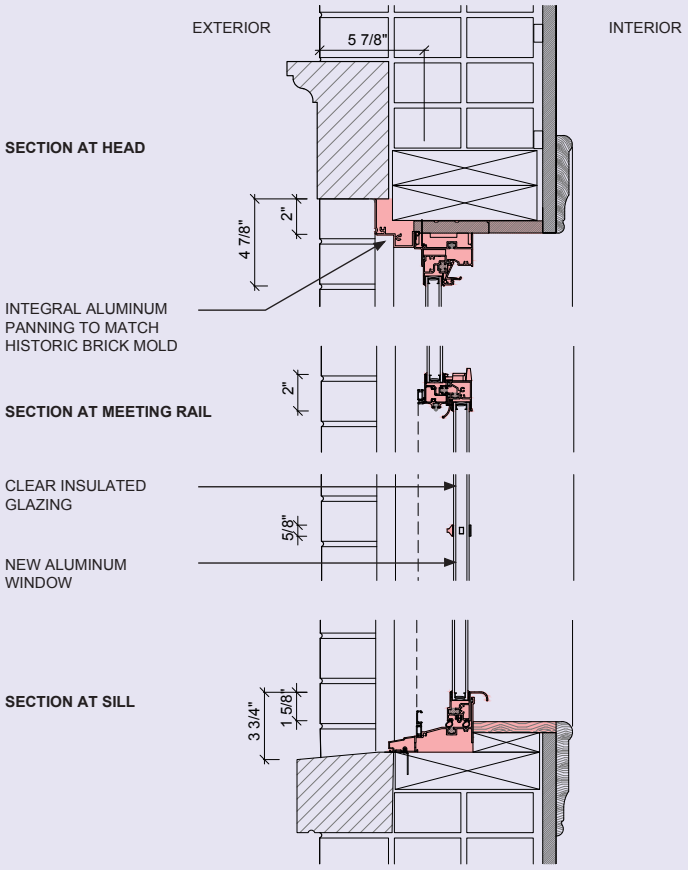
Vertical section drawing of a new aluminum-clad wood double-hung window with new aluminum brick mold to match the historic profile, with all required dimensions.

NEW ALUMINUM-CLAD WOOD WINDOW (HISTORIC WINDOW FRAME REMOVED): HORIZONTAL SECTION



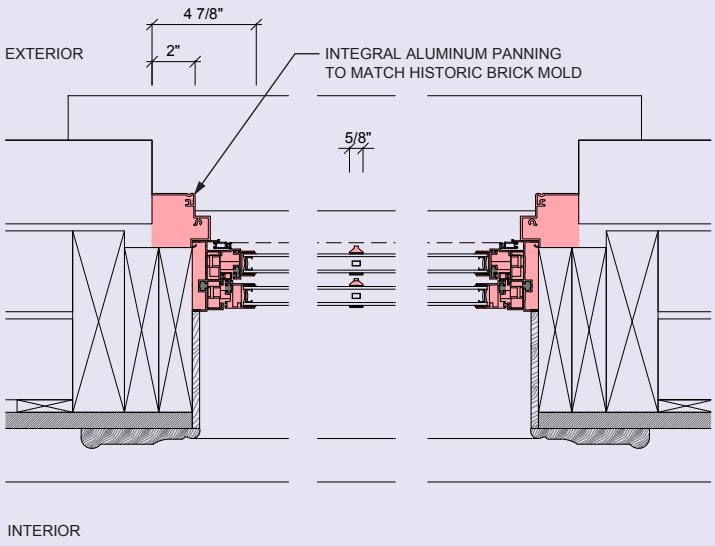
Horizontal section drawing at the jamb of a new aluminum-clad wood double-hung window with new aluminum brick mold to match the historic profile, with all required dimensions.

NEW ALUMINUM WINDOW (HISTORIC WINDOW FRAME REMOVED): VERTICAL SECTION



Vertical section drawing of a new aluminum double-hung window with new aluminum brick mold to match the historic profile, with all required dimensions.

NEW ALUMINUM WINDOW (HISTORIC WINDOW FRAME REMOVED): HORIZONTAL SECTION



Horizontal section drawing at the jamb of a new aluminum double-hung window with new aluminum brick mold to match the historic profile, with all required dimensions.

Window Glazing Calculations

When replacing a historic window at a primary facade, you may be required to provide glazing calculations that compare the original amount of glazed surface with the new amount. The LPC Rules allow a decrease of up to 10 percent of the glazed area for metal windows and up to 6 percent for wood windows. However, the smallest increase possible must be the goal. Following are step-by-step instructions on how to calculate this percentage.

Step 1

Obtain measurements (in inches) of the height and width of the glass in one sash of the existing window and one sash of the proposed window. Measure the daylight opening only, that is, the portion of the sash that is transparent (glass).

Example

The daylight opening of the existing window sash on my building is 32 × 27 inches.
The daylight opening of the sash of the window I propose to replace it with is 31.5 × 26 inches.

Step 2

Multiply sash height by width to determine the square inches of each window.

Example

32 × 27 inches = 864 sq. in. (existing window)

31.5 × 26 inches = 819 sq. in. (proposed window)

Step 3

Subtract the lesser number of square inches from the greater number. The result is the difference in glazed area, which can either be a decrease or an increase.

Example

864 – 819 sq. in. = 45 sq. in. (the decrease in glazed area from existing to proposed window)

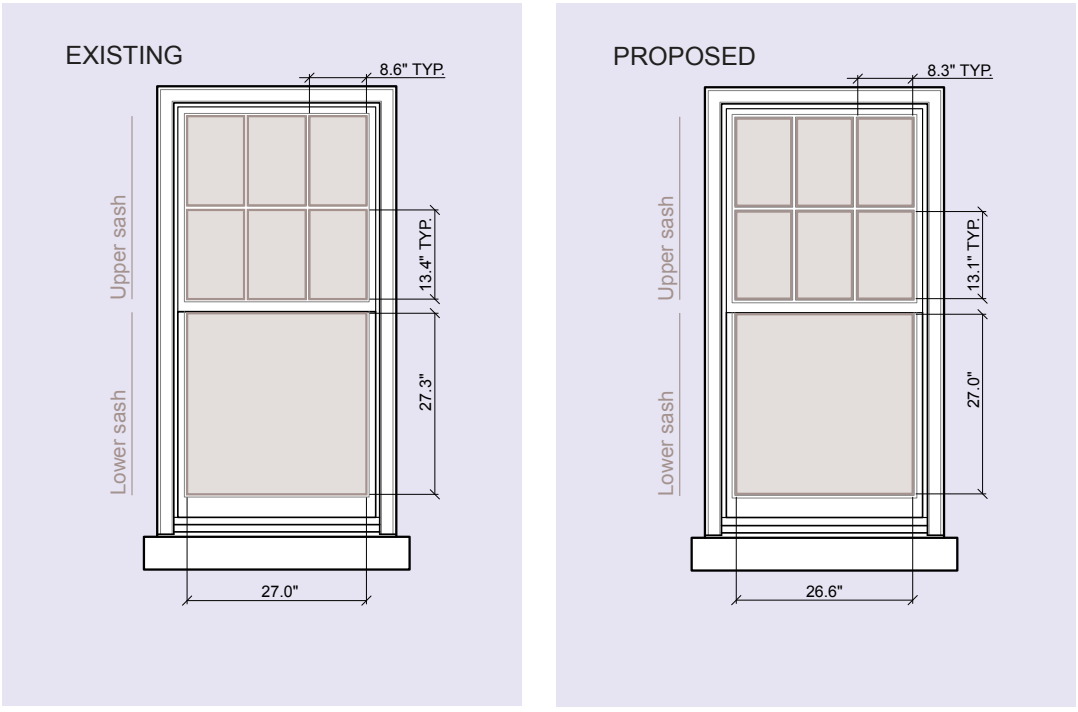
Step 4

To obtain the percentage difference between existing and proposed windows, divide the result from Step 3 by the glazed area of the existing window calculated in Step 2.
Then multiply by 100.

Example

45 sq. in. ÷ 864 sq. in. = .052

.052 × 100 = 5.2 percent (the decrease in glazed area)



How to measure windows to get the required glazing calculations.

Conditions Assessment

A conditions assessment or report documents the deterioration of windows or doors. Staff evaluates the findings to determine if conditions warrant replacement. A conditions assessment must be prepared by a contractor or other professional with preservation experience.

The report must always include:

High-quality color photographs *showing the facade and locations of proposed work, close-ups of windows and doors assessed, and details of deterioration*

Identification of types of materials

Annotated descriptions of deteriorated conditions

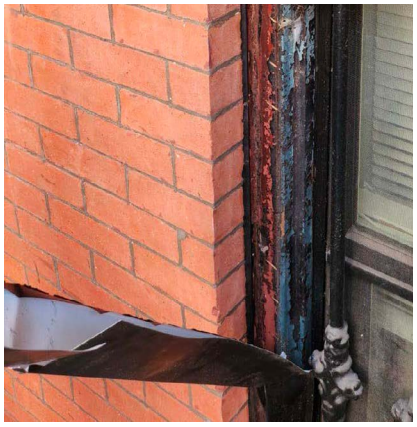
A written narrative *explaining reasons for replacement rather than repair*

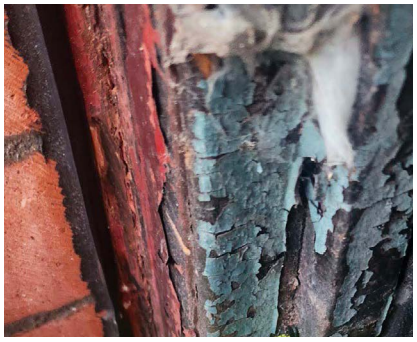
When is a conditions assessment of historic windows or doors required?

If your proposal includes replacing historic doors or special windows and doors at any building, or replacing historic windows at the primary facade of an individual landmark, you must provide a conditions assessment or report to justify replacement.

Investigative Probes

Investigative probes are a way to identify concealed historic materials surrounding a window opening and assess materials for retention or replication. Probes are most commonly used to expose the condition and profile of historic wood brick molds, which are often concealed under modern metal panning. Probes must be performed in an unobtrusive location and remove as little material as possible.





How to conduct a probe to expose the historic wood brick mold:

Probes help uncover the underlying condition and can be used to help make molds for replication. Verify whether the historic wood brickmold still exists under the aluminum panning/metal trim by peeling back a section of the metal along the edge of the window opening using common tools such as a pry bar or hammer and chisel.

The historic brickmold was typically wood and had a contoured profile. If present, this could be kept and refurbished as part of the window replacement or used to replicate a new brickmold. Take a photo of the exposed wood brickmold or other underlying condition for your application.

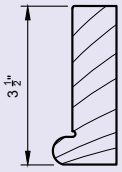
Typical Brick Mold Profiles by Building Style

Brick molds are exterior casing elements installed at the intersection of the outer casing of the window or door frame and the opening in the wall. Historic brick mold profiles varied based on the age and style of the building, and their particular details contribute to the architectural character of the building. At primary facades of buildings, historic brick molds should be retained if feasible, or if replacement is necessary, they should be replicated. If the historic brick molds are covered by modern metal panning, they should be exposed by performing investigative probes. If they are missing, the new brickmolds should be consistent with the profiles of historic brick molds found on buildings of the same style. Examples of common historic brick mold profiles can be found on the following pages.

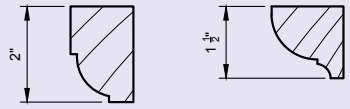
Detail drawing of historic wood window brick molds, with common profiles and typical dimensions

COMMON HISTORIC BRICK MOLD PROFILES

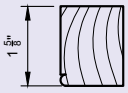
Federal Style



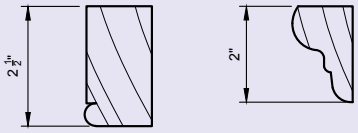
Queen Anne Style



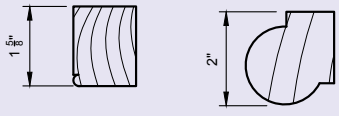
Greek Revival Style



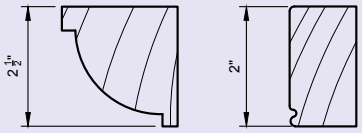
Renaissance Revival Style



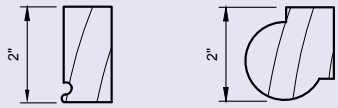
Italianate Style



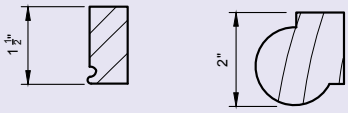
Romanesque Style



Neo-Grec Style



Second Empire Style



Best Practices for Repairing and Retrofitting Windows

Maintenance and repairs to historic windows do not require a permit if certain criteria are met. Windows that have not been well maintained and have minor deterioration can often be repaired and retrofitted rather than replaced. When properly done, functionality and efficiency are improved. The following best practices for maintaining and repairing historic windows do not require a permit, except as noted:

Operation

Poor operation is often due to over-painting that seals window sashes to window jambs and sills, making them difficult to open. Cutting the paint seal at all points of contact usually resolves the issue. Replacing hardware (pulley chains or ropes, hinges, and sash locks), in addition to scraping, sanding, and repainting window jambs, often improves functionality as well.

Deterioration

If a window shows signs of deterioration, it is often the result of moisture penetration. This is preventable by thorough painting, regular maintenance, and prompt repairs. If rot has already occurred, it is best to remove deteriorated sections to a solid material and install a Dutchman that matches original window details. For wood windows, consider using a compatible rot-resistant hardwood.

General Maintenance

To prevent deterioration, it is important to caulk around frames and sills, scrape peeling paint, sand to a smooth finish, prime with an oil-based primer, and repaint window sashes and frames with two coats of exterior-grade paint. To increase longevity, routinely inspect windows every five to seven years and make necessary minor repairs. A permit is only required when painting windows and frames a different color.

Glass

Broken glass and glazing putty failure also contribute to window deterioration. It is important to replace broken glass and failing glazing putty as soon as practical. The affected area must be primed and painted to maintain a waterproof seal.

Retrofitting

Making repairs presents an opportunity to retrofit or upgrade historic windows to improve performance and energy efficiency. All types of historic windows can be retrofitted with appropriate insulation, air sealing, and weatherstripping while minimizing the impact on functionality and aesthetics.

Storm Windows

Installing interior or exterior storm windows, in conjunction with repairing and retrofitting existing historic windows, can be just as effective as modern replacement windows in terms of improving energy efficiency and occupant comfort.

Interior storm windows with clear glazing that require no mullions, muntins, or wide frames, visible from the exterior of the building, do not need an LPC permit.

Exterior storm windows with clear glazing require an LPC permit and must have tightly fit framing within window openings, without the need for sub-frames or panning around the perimeter. Meeting rails are used only in conjunction with double-hung windows in a matching finish.

Master Plans

Master plans, which generally do not have an expiration date, allow you to install windows or doors over time as finances or vacancies permit. (See Section 2-02 of the LPC Rules). Master plans are more efficient because once approved, applications can be processed more quickly.

Master plans can be approved at the staff level or by the Commission, depending on whether the work meets the LPC Rules.

Once established, you may move forward with work covered by the master plan by submitting a completed application to the Commission through Portico, LPC's web-based permit portal, describing the scope of work and stating that it conforms to master plan drawings and other documents.

Staff reviews the application and will issue the applicable permit.