



The Borough of Newtown

Historic Architectural Review Board

GUIDELINES FOR ROOFING



The roof's form, features and materials help define the style.

These guidelines were developed in conjunction with Newtown's Historic Architectural Review Board (HARB). The HARB reviews Certificate of Appropriateness (COA) applications for proposed exterior alterations to properties within the historic districts visible from a public way. The applicant is responsible for complying with the provisions of the Zoning and Building Codes at the time of application. The applicant must obtain a Certificate of Appropriateness (COA) as well as all necessary permits prior to proceeding with any work. For more information, or to obtain permit applications, please call the COA Administrator at (215) 860-8859.

Please review this information during the early stages of planning your project. Familiarity with this material can assist in moving a project quickly through the approval process, saving applicants both time and money.

PURPOSE

These guidelines were prepared to assist property owners with information when considering the repair, alteration or installation of roofing. They are not intended to replace consultation with qualified architects, contractors and the HARB.



The varied roof forms suggest interior functions.

ROOFS

A building's roof provides the first line of defense against the elements and its design greatly affects the overall appearance of a building. Therefore, the following functional and aesthetic concerns should be considered when considering roof alteration.

- Weather-tight roofing preserves a building
- Provide shelter from rain, wind, sun and snow
- Affected by temperature variation and building movement
- Help define the building's character and silhouette
- Form, color and texture of roof and roof penetrations affect scale and massing of the building
- Relate to a building's architectural style
- Add visual interest to the streetscape

ROOF FORMS

There are six general roof forms in Newtown. The roof forms can have various pitches and be combined in different manners to provide numerous roof types.

- **Gable Roofs** include front, side and cross-gable configurations. Gable roofs generally have two equally angled inclined planes that meet at a central ridge and represent one of the most common roof forms for their ability to shed water and relative ease of construction. Most vernacular or traditional buildings in the area utilize this roof form.

In the side gable configuration, the primary entrance is located below the sloping side eaves of the roof. In the front gable configuration, the main entrance is located at a gable end. A cross-gable roof refers to a combined front and side gable form that intersect perpendicularly, with the primary entrance at either the front or side gable.

- **Shed Roof**, also known as a pent roof or lean-to, is a roof with a single slope, essentially forming a half gable, with rafters spanning between one exterior wall and a secondary wall. Shed roofs are typically utilized for additions to existing buildings.
- **Gambrel Roofs**, also known as Dutch roofs, include a pair of shallow pitched slopes above a pair of steeply pitched roofs on each side of a center ridge.
- **Hipped Roofs** slope inward from exterior walls, either meeting at a ridge or a point, as in pyramidal roofs.
- **Mansard Roofs** include a steeply pitched lower slope beginning at the building cornice, and a nearly flat upper slope that might not be visible from the ground. The lower slope can be straight, concave or convex.
- **Flat Roofs** might be a true horizontal plane or have a low pitch to allow for drainage. Flat roofs often terminate at a parapet, generally an extension of the building's exterior walls.



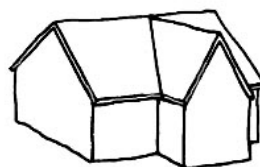
This flat roof terminates at a decorative parapet.



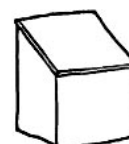
Front Gable



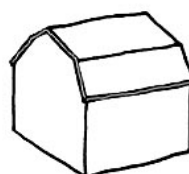
Side Gable



Cross Gable



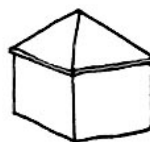
Shed



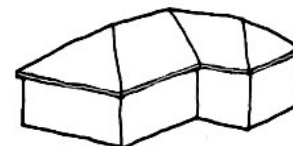
Gambrel



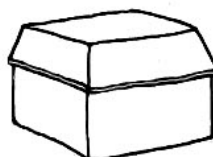
Ridged Hip



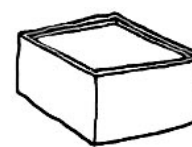
Pyramidal Hip



Cross Hipped



Mansard



Flat with Parapet

ROOF PITCH AND MATERIALS

The pitch or slope of a roof helps define the appropriate materials for the roof. Low-pitched to flat roofs depend on a continuous or nearly continuous roof surface to minimize moisture infiltration. Material options for low-pitched roofs include built-up hot tar roofing; roll roofing, and soldered flat seam metal. Possibilities for moderately to steeply sloped roofs include unit materials such as slate, wood shingles, standing seam metal and asphalt shingles.

ROOF FORM, PITCH AND STYLE

The following table can be used as a guideline to better understand how a roof's form and pitch can provide an indication of its style in Newtown.

Roof Form	Pitch	Possible Style
Side-gable	steep pitch	Queen Anne, Gothic Revival, Stick
	moderate pitch	Georgian, Adam, Colonial Revival, Neoclassical, Shingle, Vernacular
	low pitch	Greek Revival, Italianate, Craftsman, Adam
Front-gable	steep pitch	Queen Anne, Gothic Revival, Stick
	moderate pitch	Shingle, Vernacular, Neoclassical
	low pitch	Greek Revival, Italianate, Craftsman
Cross-gable	steep pitch	Queen Anne, Gothic Revival
	moderate pitch	Shingle, Vernacular
	low pitch	Greek Revival, Craftsman
Gambrel	n/a	Dutch Colonial, Colonial Revival, Shingle
Hipped [with ridge]	steep pitch	French Eclectic
	moderate pitch	Georgian, Adam, Colonial Revival, Neoclassical, Vernacular
	low pitch	Greek Revival, Italianate, Adam
Hipped [pyramidal]	steep pitch	French Eclectic
	moderate pitch	Colonial Revival, Neoclassical, Vernacular
	low pitch	Italianate
Mansard	n/a	Second Empire
Flat	n/a	Town House, Row House, 19 th -20 th c. Commercial
Pent	n/a	Colonial Revival, Georgian
Hipped with cross gables	n/a	Queen Anne, Shingle

ROOFING MATERIALS

Historically, roofing materials were selected based upon practical and aesthetic criteria including pitch, weather conditions, and availability of materials and craftsmen.

In Newtown, historic roof materials were generally wood shingles, slate, metal roofing, and later asphalt shingles. Each material provides a specific color, texture and pattern to a roof surface. Slate and wood shingles provide a modulated surface with variations in color, texture veining or graining and thickness. Decorative slate shingles were also utilized, particularly in the second half of the nineteenth century, to add additional colors or shapes to roof surfaces. A standing seam metal roof provides distinct shadow lines that establish a rhythm or scale to the building.

With industrialization at the turn of the century, new roofing materials were introduced including asbestos and asphalt based shingles, as well as varieties of rolled or built-up roofing for flat installations. The variety of metal roofing was also expanded including copper, galvanized sheet steel and aluminum. More recently, a larger variety of substitute roofing materials intended to simulate historic materials have been developed, with some being more successful than others. These include “dimensional” or “architectural” asphalt-composition or fiberglass shingles intended to evoke the appearance of wood or slate and recycled rubber faux slates.

INVESTIGATING HISTORIC ROOFING

Some investigation is needed to determine the historic roof material for a building. A good place to start is in the attic space. New roofs are often laid atop older roof surfaces. By looking between rafters, older roofs can sometimes be seen. Another area of review is the roof framing, lath and sheathing. Because of their weight, slate requires more substantial roof framing, tending towards larger rafters with narrower spacing than wood shingle framing. If the original lath is visible, there are variations in lath spacing that relate to standard sizes for slate and wood shingles. Finally, wood sheathing was often needed in metal roof installations while lath was utilized in wood and slate shingle installations.

If physical evidence is not available, documentary evidence such as historic photographs, speaking to neighbors or looking at similar buildings in the community might provide clues about original materials.



Wood shingles provide varied shadow lines.

WOOD SHINGLES

Wood shingles are typically made from cedar, cypress, redwood, oak, elm or white pine. They represent a common historic roofing material in Newtown due to availability of material and relative ease of installation.

A wood shingle roof can last 30 to 60 years depending on the roof pitch, quality of materials and installation. However, like all exterior wood installations a shingle roof is subject to deterioration including rot, splitting, warping and eroding.

In many cases, wood shingle roofs are replaced at the first indication of a localized problem when regular maintenance or a less intensive repair would be sufficient. Common locations of failure are the roof accessories including the fasteners, flashing and gutters, which might have a shorter life span than the roofing surface. To extend the serviceable life of a roof, property owners are encouraged to address localized problems as they become apparent.

Typical localized problems and possible repairs for wood shingles:

- Loosening or corrosion of fasteners for shingles or accessories – *Reattach or replace fastener*
- Split or punctured shingle – *Install sheet metal under shingle, fill split or hole with roofing cement*
- Moss or fungi on surface – *Trim back adjacent trees allowing sun to dry-out roof surface, investigate fungicide application, check attic for adequate ventilation*
- Missing or damaged shingles or roof accessories – *Replace to match original*

If over 20% of the wood shingles on a roof slope are damaged or missing, replacement of the roofing might be warranted.

Wood Shingles vs. Wood Shakes: A wood shingle is sawn while a wood shake is split, historically by hand, resulting in more variable thickness. In this brochure, the term wood shingle is utilized to refer to either wood shingles or shakes.

SLATE

Slate was a popular roofing material at the turn of the century, providing a durable, fireproof and attractive surface, and in certain conditions, capable of lasting for centuries. It was often used in Victorian architecture where the variety of shapes and colors for slates, including gray, black, red, green and purple made the roof surface a visually important feature of the building.

A slate roof can last 60 to 125 years depending on the stone properties, fabrication, installation quality and regularity of maintenance. A failing slate slowly delaminates, chips and absorbs moisture, causing the deterioration process to accelerate over time.

Even more often than wood roofing, problems with slate roofs are typically the result of localized failure since many of the roof accessories and fasteners do not have the same 100-year life span as the slate itself. To extend the serviceable life of a roof, property owners are encouraged to address localized problems as they become apparent, using a qualified slate roofer.

Typical localized problems and possible repairs for slate:

- Loosening or corrosion of fasteners for slate or accessories – *Reattach or replace fastener*
- Split or cracked slate – *Install sheet metal under shingle, fill split or hole with roofing cement*
- Missing or damaged slates or roof accessories – *Replace to match original*

If over 20% of the slates on a roof slope are damaged or missing, replacement of the roofing might be warranted, although applicants are strongly encouraged to make every attempt to match decorative colors and patterns with replacement materials. Ceramic tile, rubber and other materials are used to simulate slate, although many have not been on the market for very long.



Natural slates differ in color providing a variegated appearance.



Flat seam metal roofing is common at porch roofs.

METAL

Metal was popularized for roofing after sheet metal production was expanded following the Civil War. Traditional sheet roofing metals include lead, copper, zinc, tin plate, tern plate, and galvanized iron. Many metal roofs require painting with traditional colors including red, silver, green or black. On shallow pitch roofs like porches, cupolas or domes, small rectangular pieces of flat seam metal roofing were installed with edges crimped together and soldered to form a weather-tight surface. On steeper pitched roofs, long continuous seam were used, either in a standing seam or batten seam configuration, providing regular ridges down roof slopes.

A well-installed and maintained metal roof is very durable and can last well over a century. However, metal roofing is subject to expansion and contraction with changes in temperature, resulting in buckling and warping if not properly installed. Similar to slate roofing, metal roofing should be undertaken by a specialist.

Deterioration of the metal surface tends to occur from wearing of the protective painted or galvanized surface, chemical action, pitting or streaking, airborne pollutants, rain or material acids, or galvanic action. Galvanic action occurs when dissimilar metals chemically react against each other and corrode. It is possible from adjacent metals, such as fasteners and non-adjacent metals, such as roof cresting via rainwater.

Typical localized problems and possible repairs for metal:

- Worn paint, galvanizing or coating – *Repaint*
- Slipping sheet, open seam or solder joint – *Refasten and re-solder*
- Isolated rusting or holes – *Replace to match original*

If the roof is generally rusting, splitting or pitted, severely buckled or warped, or many of the seams or edges are open or disfigured, replacement of the roofing might be warranted, although applicants are encouraged to make every attempt to match seam patterns and color with the replacement material.

ASPHALT

Asphalt became a popular roofing material at the turn of the century providing a relatively inexpensive and easily installed roofing material. Early roofing was generally made of asphalt-saturated felts in a variety of shapes, styles, textures and colors. Today, asphalt shingles are made with fiberglass, generally as 3-tab or “architectural” or “dimensional” shingles, which include multiple layers of material with simulated shadows suggesting wood or slate.

An asphalt shingle roof can be expected to last from 15 to 25 years with “architectural” or “dimensional” shingles lasting longer due to their multiple layers. Over time, asphalt shingles can curl, lose their mineral coating, be dislodged by wind or ice, or become brittle.

Typical localized problems and possible repairs for asphalt:

- Split or puncture – *Install sheet metal under shingle, fill split or hole with roofing cement*
- Moss or fungi on surface – *Trim back adjacent trees allowing sun to dry-out roof surface*
- Missing or damaged shingles or roof accessories – *Replace to match original*

If over 20% of the asphalt shingles on a roof slope are damaged or missing, replacement of the roofing might be warranted. Some historic styles and colors for asphalt shingles are still available. Property owners are encouraged to replace historic asphalt in-kind.

ALTERNATE MATERIALS

When considering installing alternate roofing materials, it is important to balance installation costs with the roof's design, long-term durability and aesthetics.

The HARB encourages:

- Maintaining historic appearance of roofs when replacing with an alternate material, including size, shape, texture, pattern, color and other visual characteristics of original
- Installing a variegated or blended color
- Visiting a completed installation rather than relying on brochure photographs
- Verifying proposed material is appropriate for pitch
- Understanding the substrate and attic ventilation appropriate for each material
- Understanding some artificial materials might fade or change appearance over time

ROOF ACCESSORIES

In addition to the roofing surface, roof accessories are also functional and influence a roof's appearance. Roof accessories include flashing, gutters, downspouts and snow birds.

Flashing is made of thin sheet metal formed to prevent water from entering a building at joints, intersections and changes of pitch. It is typically installed around chimneys, parapet walls, dormer windows, roof valleys, vents, and intersections of porches, additions or bay windows.

Flashing often fails before roof surfaces, particularly with more durable roofing such as slate, resulting in interior leaking. If the flashing deteriorates, it is possible to replace it without replacing the entire roof.

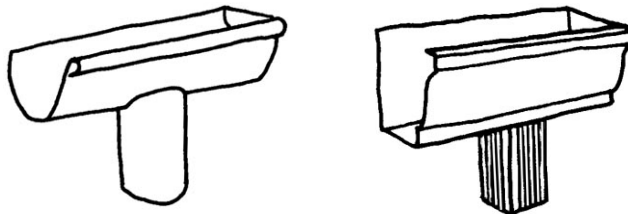
When replacing flashing or installing a new roof, it is important to select a flashing material that has an anticipated life span similar to the roofing. Copper, terne, steel, lead and aluminum are all used for flashing. The longevity of each material is based upon its thickness and whether it is galvanized, treated or coated. Generally speaking, copper has the longest life span, followed by steel, with aluminum being highly susceptible to punctures, tears and a galvanic reaction to other metals and some roofing materials. It is important to verify flashing materials are sympathetic to existing roofing materials.



The arrows indicate areas where flashing is typically located.

Gutters are typically located near or along the bottom edge of a roof slope to collect rainwater. Built-in gutters are hidden from view from the ground within or behind architectural features such as cornices or parapets. Pole gutters are located near the bottom edge of a roof slope and project perpendicularly to the roof surface. Both built-in gutters and pole gutters are formed of flashing materials. Hanging gutters are attached to the building just under the roof slope edge and are half-round or profiled in cross section. Hanging gutters have been made of wood, copper, galvanized metals, aluminum and recently vinyl.

Similar to flashings, gutter materials have different longevitys. Generally, copper has the longest potential life span, followed by steel, with aluminum being highly susceptible to punctures, tears, dent and galvanic reaction to other metals, and vinyl can become brittle, fracturing in low temperatures.



Half-round gutters with round or rectangular downspouts are preferred to decorative gutters with corrugated downspouts.

Downspouts, also known as rainwater conductors, are generally surface mounted to a building's exterior to conduct a gutter's water down the face of the building to the ground or an underground drainage system. Similar to gutters, downspouts can be fabricated of copper, galvanized metal, aluminum and vinyl with similar characteristics, in a round or rectangular profile.

The HARB encourages:

- Regular cleaning and maintenance of gutters and downspouts
- Retaining original drainage system and appearance
- Installing half-round gutters rather than a profiled K-gutter, which would compete with building features
- Installing plain round or rectangular downspouts which are more appropriate for use at historic buildings than corrugated downspouts



Snow birds, also known as snow guards, are typically a cast metal or bent wire devices attached in a staggered pattern near the eave of the roof utilized to prevent large masses of snow from sliding off a roof. They were typically installed to protect eaves, cornice and gutters, and to take advantage of the insulating effect of snow.

ROOF FEATURES

Roof features are decorative and sometimes functional elements that help to define the profile of a roof against the skyline. Historic rooftop features include chimneys, dormers, cupolas, bell towers, turrets, finials, cresting and weathervanes.

Chimneys were typically designed to compliment the style of a building and period of construction. In Newtown, many are constructed of brick with some stone, some of which have been covered with stucco. Early Federal style and Colonial Revival buildings tend towards square or rectangular chimney shafts, sometimes with molded caps. Victorian chimneys can include decorative detailing including corbelling, varied patterns, undulating and molded surfaces and decorative terra cotta chimney pots.



The standing seam roof provides regular shadow lines across the roof surface. The rectangular chimneys and segmented arch dormers are compatible with the walls and entrance below.

Dormers, also known as dormer windows, protrude from the roof surface with a window at the downward slope, providing light and additional headroom under roof eaves. Dormers can have various roof shapes including gables, shed, hipped, eyebrow, segmented pediment and other shapes.



The varied dormers and bracketed eaves are a distinctive feature of this residence.

Cupolas, also known as monitors or belvederes, are structures that project up from the roof, utilized for ventilation with louvers or as lookouts with windows.



The cupola is a defining element of this outbuilding.

When addressing roof features, it is important to remember they are part of the stylistic composition of the roof and building, and are often difficult to replace.

The HARB encourages:

- Maintaining and repairing of roof features
- Replacing damaged or missing materials with new to match the material, size, shape, texture, color and other visual characteristics of the original

The HARB discourages:

- Removal of rooftop features without appropriate replacement



The varied roof forms, banded slate pattern and the ridge cresting add visual interest to this house.



ROOF REPAIR OR REPLACEMENT

The HARB encourages:

- Maintaining, cleaning or repairing of roofing, roof accessories and rooftop features
- Cleaning of gutters and downspouts regularly, generally every spring and fall
- Inspect attic periodically after a storm or freeze to catch small leaks early to minimize interior damage
- Selectively replace damaged or missing materials with new materials to match the material, size, shape, texture, color and other visual characteristics of the original

- If the level of damage or deterioration is beyond repair, completely replace damaged or missing materials with new materials to match the material, size, shape, texture, pattern, color and other visual characteristics of the original
- If replacement in original material is not possible, replace the damaged or missing materials with new material of similar size, shape, texture, pattern, color and other visual characteristics of the original
- Installation of fasteners and flashings with a similar expected life span to the roofing material

The HARB discourages:

- Removal of roof features such as chimneys, dormers, cupolas, weathervanes, finials, etc.
- Removing or altering drainage system
- Adding or altering rooftop features at areas visible from a public way that change roof configuration including skylights, television antennas or dishes, solar collectors, mechanical equipment, roof decks, chimney stacks and dormer windows
- Adding rooftop features that create a false historical sense without supporting documentary evidence such as weathervanes or wood shingles on an originally slate roof
- Adding new features that are out of character, scale, materials or detailing to the historic building
- Covering, enclosing or removing eaves or cornices

ADDITIONAL AREAS OF CONSIDERATION

- Roofing work is potentially dangerous and should be left to professionals
- All roofers are not experienced in all materials
- Verify extents of warranty and company history
- Verify whether removal of existing roofing is required prior to installation of new roofing; too much weight can damage structural elements
- Verify the condition of substrate for rot or decay and make necessary repairs, including the sheathing or lath, and structural elements
- Use substrate appropriate for roof material and provide adequate ventilation under roof surface
- Limit use of building paper under wood and slate surfaces
- Use a single type of metal compatible to roofing at fasteners, flashing, gutters and downspouts to avoid galvanic action
- Select a flashing material with a comparable life span to the roofing material

This publication was initiated and overseen by the Borough of Newtown and made possible through a grant provided by the Pennsylvania Historical and Museum Commission.

This project has been financed in part with Federal funds from the National Park Service, U.S. Department of the Interior. However, the contents and opinions do not necessarily reflect the views or policies of the Department of the Interior, nor does the mention of trade names or commercial products constitute endorsement or recommendation by the Department of the Interior.

This program receives Federal financial assistance for identification and protection of historic properties. Under Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, and the Age Discrimination Act of 1975, as amended, the U.S. Department of the Interior prohibits discrimination on the basis of race, color, national origin, disability or age in federally assisted programs. If you believe that you have been discriminated against in any program, activity, or facility as described above, or if you desire further information, please write to: Office of Equal Opportunity; National Park Service; 1849 C Street, N.W.; Washington, DC 20240.

Dominique M. Hawkins, AIA, of Preservation Design Partnership in Philadelphia, PA, prepared this publication.



The Borough of Newtown

Historic Architectural Review Board

GUIDELINES FOR SIGNS AND AWNINGS



These guidelines were developed in conjunction with Newtown's Historical Architectural Review Board (HARB). The HARB reviews Certificate of Appropriateness (COA) applications for proposed exterior alterations to properties within the historic districts visible from a public way. The applicant is responsible for complying with the provisions of the Zoning and Building Codes at the time of application. The applicant must obtain a Certificate of Appropriateness (COA) as well as all necessary permits prior to proceeding with any work. For more information, or to obtain permit applications, please call the COA Administrator at (215) 860-8859.

Please review this information during the early stages of planning your project. Familiarity with this material can assist in moving a project quickly through the approval process, saving applicants both time and money.

PURPOSE OF GUIDELINES

- Provide applicants with design assistance for commercial signs and awnings
- Encourage compatibility and provide a visual connection with the historic building and district
- Provide variety and vitality in the district
- Encourage the greatest amount of design flexibility
- Identify those elements that are indisputably detrimental to the historic streetscape
- Encourage the consideration of how proposed signage or awning relates to each property, the streetscape and the historic district

It is not intended to replace consultation with qualified architects, contractors and the HARB, or to make all signs and awnings in the Borough to appear the same.



IMPORTANCE OF SIGNS AND AWNINGS

A well designed and well placed sign or awning can make a good impression, attract potential customers and unify a streetscape. By contrast, a confused, poorly designed or poorly placed sign or awning can overwhelm buildings, detract from the area, give an inappropriate impression, turning customers away and potentially damaging historic materials or finishes. Historically, signs and awnings were attached to and placed near buildings. New signs can use similar features to both enhance the character of the building and convey the necessary information to the public.

TYPES OF SIGNS IN NEWTOWN

Generally, there are two types of signs, those that are attached to the building and those that are freestanding. The choice between attached or freestanding signs may be based upon the specific location, needs and the limitations of the Zoning Ordinance. The following illustrations are intended to provide general examples of sign types that can be found within the historic district.

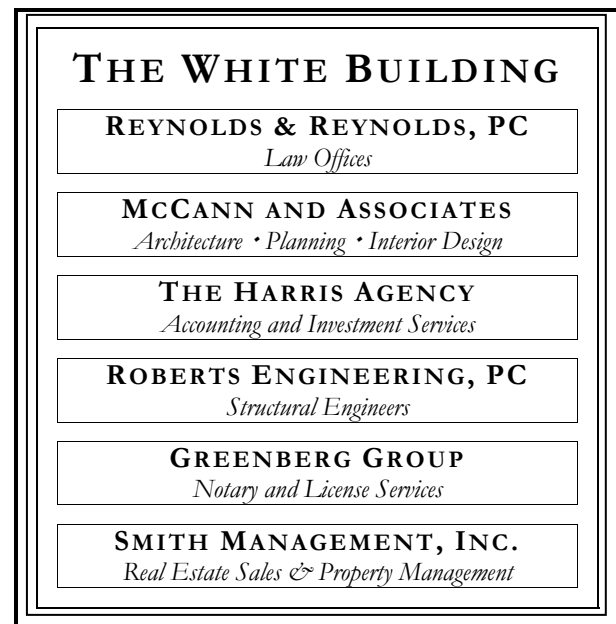


Freestanding Signs [Landscape] are not attached to the building. They typically include information on two sides, spanning between two posts that are set in paving or landscape areas.



Freestanding Signs [Suspended] are not attached to the building. They typically include information on two sides, suspended from a rail or bracket that is supported by one or two posts that are set in paving or landscape areas.

Directory Signs can be either freestanding or attached to the building. They include information about several businesses attached to a single larger sign, with an identifying building address or name.



Directory Signs for professional offices employ small individual signs with matching size panels, colors, letter size, case and styles mounted to a larger sign face.

Directory Signs for retail establishments employing small individual signs with matching size panels and matching colors, with the individual store's letter styles mounted to a larger sign face.



Parallel Projecting Signs are one or two sided signs, generally suspended from an architectural element of the building such as the edge of a porch, mounted parallel to the face of the building.



Perpendicular Projecting Signs are generally two sided signs, suspended from an iron bracket, mounted perpendicular to the face of the building.



Wall Signs are single sided signs mounted parallel to and generally flat against a wall of the building.



Storefront Window Signs include all signs that are attached to glass either at the interior or exterior of the building. These signs are generally painted, vinyl appliques or etched glass, and can include stained glass.



MOUNTING SIGNS AND AWNINGS

Care should be taken in mounting walls signs and awnings to minimize the damage to historic materials. This includes reusing hardware or brackets from previous signs or awnings, or attaching them at previous attachment locations.

If reusing existing hardware or attachment locations is not an option, select mounting locations that can be easily patched if the sign is removed. This includes locating holes in mortar joints rather than directly into bricks or masonry. This will facilitate repair if the sign is removed or relocated in the future.

SIGN MATERIAL

Historically, signs were typically made of wood either attached directly to the building or suspended from wrought iron brackets. As technology advanced and building styles changed, a wider range of materials were used. These included bronze plates attached to buildings, cast iron, stainless steel, etched or painted glass, leaded glass, gold leaf, tile and terrazzo. Each material was popular during particular time periods, and might not be appropriate at all building locations.

Some materials might no longer be practical for signage installations due to limited availability or expense. For example redwood is more durable for exterior installations than other species of wood and is very expensive, and wrought iron, considerably more labor intensive and expensive to manufacture than cast iron.

Available substitutes for redwood include Urethane board and MDO board. Both materials can be painted, carved or routed similar to wood, but are not subject to warping in the same manner as lower grade woods or plywood. Urethane board is compressed, hardened foam, and is generally lighter and thicker than MDO board, which is made of six layers of alternately grained wood material to protect against warping, and has an approximate seven-year life span.

The HARB encourages:

- Using materials that are consistent with the historic character of the building including wood, bronze, brass, gold leaf, etched glass, paint, aluminum, stainless steel, enameled metal, leaded glass, appliqué, tile, and terrazzo
- Mounting individual wood or metal letters to a building or sign board
- Using modern durable materials such as Urethane board or MDO board that are similar in appearance to historic materials
- Using cast iron brackets to hang signs with hanging hardware of a compatible appearance
- Repairing historic signage with materials to match the original whenever possible

The HARB discourages:

- The use of contemporary materials such as plastics or plexiglass, or plastic or glossy coatings, which are incompatible with the building's historic character

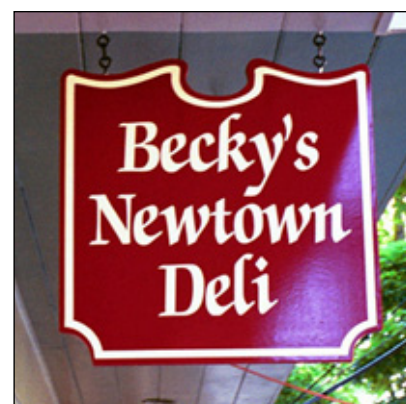
SIGN SHAPE

Most sign shapes are either simple geometric forms, geometric shapes with decorative edges or rounded corners, or shapes that convey the type of business. When considering which sign shape is most appropriate for a specific location, the applicant should consider the sign type, information to be conveyed, size and location of the sign, building style, and other signs at the property or adjacent properties.



Geometric signs are generally appropriate for small signs or signs that use large amounts of text. Geometric signs can include rectangular, square, round or oval shapes and can be utilized for all sign types.

Geometric signs with decorative edges can include scrolled tops and bottoms and are generally appropriate for all sign types including small signs or signs that utilize large amounts of text.



Ornamental signs are generally more appropriate for hanging, freestanding, or window signs and include a distinctive logo.

SIGN ILLUMINATION

In many instances, available ambient street or storefront lighting can illuminate signs, which is preferred to the installation of additional lighting. The use of sign illumination is generally discouraged and limited by the Zoning Ordinance.

The HARB encourages:

- Using existing ambient street light or storefront lighting whenever possible
- Using small scale, indirect or hidden lights such as gooseneck or in-ground mounted lights directed up towards sign
- Using lights that are consistent with the character of the historic building
- Using low wattage bulbs to minimize potential glare to other properties, pedestrians and vehicle operators

The HARB discourages:

- High wattage light sources such as bare spot lights and metal halides



This sign utilizes the ambient light provided by the wall-mounted fixtures for illumination.

NEON

Neon signs, originally developed in the 1920s, are made of narrow, gas filled tubes that are illuminated through electrification. Given the Colonial and Victorian character of Newtown, exterior neon signage is not appropriate nor is it currently permitted within the Borough.

The HARB discourages:

- The use of neon at a building's interior that is highly visible from a public way

SIGN SIZE

Newtown Borough's Zoning Ordinance regulates the size of signage.

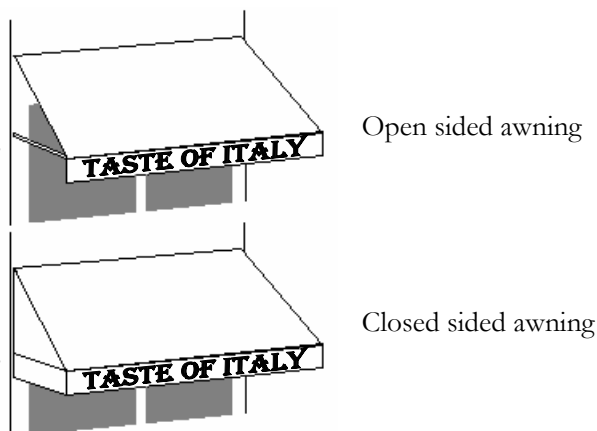
- Signage should be compatible to scale of the building, adjacent buildings, the streetscape and adjacent signage. Small scale signs are appropriate to smaller scale buildings.
- Small scale signs are also appropriate for building with several signs.
- A well-designed smaller sign can have more of an impact than larger signs. This is particularly true in Newtown where the means of travel is by foot or slow moving vehicles.



Large scale signs are generally more appropriate for larger scale buildings with more surrounding open space that are primarily accessed by vehicles. Note ground mounted indirect illumination.

AWNINGS

Awnings are a historically popular means of sheltering pedestrians, advertising a business, and protecting window merchandise from sun damage. Historically, awnings project at a continuous angle away from the face of the building on a metal frame, terminating at a skirt or valance.



The HARB encourages:

- Locating awnings over the length of the storefront display or individual display windows or entrances
- Solid or canvas fixed or retractable awnings, whose color, style and location are compatible with the building's historic character
- Awnings that project approximately three feet from the face of the building in a continuous angle with a ten to twelve inch straight or scalloped valance
- Limiting lettering and logos to awning valances
- Installing awning hardware in a manner that minimizes damage to historic building materials

The HARB discourages:

- The use contemporary or glossy awning materials such as metal, plastics or leatherette, which are incompatible with the building's historic character
- Internally lit awnings
- The use of contemporary awning shapes or use of awning materials at typical sign locations such as rounded balloon awnings or flat mounted wall awnings
- The installation of awnings at historically inappropriate locations

SIGN AND AWNING COLORS

In considering appropriate colors for signs and awnings, applicants must balance the need to make them legible, convey the business identity or logo, and complement the historic character of the building and environment.



Legibility: The contrast between the logo or lettering and background color can greatly increase the overall legibility of the sign or awning. In many instances limiting the number of colors to those necessary to convey the information also increases the legibility.



Color tones: Bright colors tend to be incompatible with the historic character of the buildings and environment as well as overwhelm the viewer. Simple designs with muted, simple color combinations are encouraged.

SIGN AND AWNING LETTERING

Similar to selecting a color, when considering letter style for signs and awnings, applicants must balance the need to make them legible, convey the business identity or logo, and complement the historic character of the building and environment. Excessive amounts of text or highly stylized type styles can overwhelm a viewer and make the message effectively illegible.

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Serif Alphabet

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Non-Serif Alphabet

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Script Alphabet

In general, there are three styles of lettering available, serif, non-serif and script. Within each general style are numerous typefaces available, many of which can be varied by making them bold or italicized. Similar to materials, different styles of lettering were typically utilized for specific periods. Applicants are encouraged to utilize lettering and materials that complement their particular property.

SIGN AND AWNING LOGOS

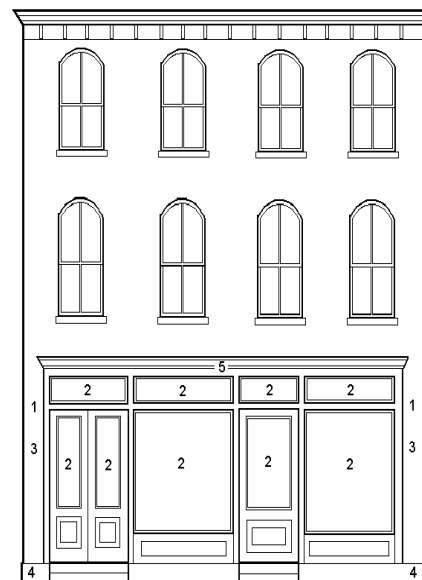
Logos can be an important identifying feature for any business, and generally, applicants are encouraged to utilize a logo or symbol that identifies their business. However, HARB is not obligated to accept a sign or awning design that is based upon a national or regional image required by a corporation or franchise.



LOCATIONS OF SIGNS AND AWNINGS

The diagrams below are intended to provide general guidance for appropriate sign and awning locations for commercial and former residential buildings in Newtown Borough. It is important to note all sign types might not be appropriate for all buildings.

Signs should not extend above the eaves of a sloping roof or the roof line of a flat roof, nor should they obscure distinctive architectural elements or features. The Zoning Ordinance identifies allowable sign and awning locations as well as the size and number of allowable signs for each property. Applicants are encouraged to contact the Zoning Officer early in the design process to verify size, quantity and location requirements.

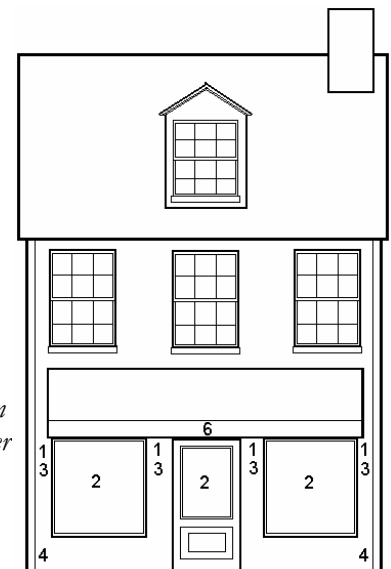


Commercial Building

(1) hanging from bracket perpendicular to front wall; (2) paint, vinyl or etching on window(s); (3) flush mounted wall sign; (4) freestanding sign when permitted; (5) under storefront cornice; (signs may also appear on the lower flap of an awning)

Adaptive Reuse of Former Residential Building

(1) hanging from bracket perpendicular to front wall; (2) paint, vinyl or etching on window(s); (3) flush mounted wall sign; (4) freestanding sign when permitted; (6) on the lower flap of an awning (signs may also appear under a storefront cornice)



HARB SIGN AND AWNING REVIEW

The HARB reviews all signs, awnings, mountings and brackets, and illumination at the exterior of the building or window signs that are visible from a public way.

In its review of signs and awnings, the HARB utilizes *The Secretary of the Interior's Standards for the Treatment of Historic Properties*; the same national standards utilized in all HARB reviews. When reviewing applications, HARB considers the appropriateness of the components of the sign or awning installation and design in relationship to the building and streetscape for which it is proposed. What might be appropriate at one location might not be appropriate at another.

CERTIFICATE OF APPROPRIATENESS REVIEW PROCEDURE

Typically, a minimum of four to six weeks is required from the submission date of the COA application to the issuing of a sign or building permit. However, this process could take several months if the application is incomplete, the HARB requests a modification, or all required Borough deadlines are not met.

The Newtown HARB generally meets at 7:30 p.m. on the fourth Wednesday of each month. Applicants are strongly encouraged to attend HARB meetings to provide any necessary clarification. To be placed on HARB agenda, all submission materials must be delivered to the COA Administrator at the Borough Office a minimum of fifteen days prior to the HARB meeting. For specific meeting times and deadline requirements, please contact the COA Administrator at [215] 860-8859.

Once the HARB reviews the COA application, it forwards a recommendation to the Borough Council that a Certificate of Appropriateness be issued or denied for the proposed work. If the applicant concurs with HARB's recommendation, it is not necessary to attend the Borough Council Meeting. If the applicant wishes to challenge the recommendation, they are encouraged to attend the Borough Council Meeting. Contact the COA Administrator for meeting schedule.

Once the Borough Council has approved an application for a Certificate of Appropriateness, the applicant must still comply with all necessary Borough zoning, building and safety code reviews prior to the issuance of a permit to commence work. In some instances, other necessary reviews can occur concurrently with HARB reviews. Applicants are encouraged to contact the COA Administrator for further clarification.

APPLICATION SUBMISSION INFORMATION

The HARB must have all required information to review a COA application. If information is incomplete the application may not be forwarded to HARB for review, recommended for denial or tabled until all the information is received. The following checklist is provided for information purposes only. Please verify submission requirements with the COA Administrator.

- ☐ Completed original Certificate of Appropriateness Application for Signs with 9 copies
- ☐ 4"x6" [or larger] labeled photographs showing all public views of the property plus 9 copies of each
- ☐ 10 copies of catalog cuts for hangers, posts and finials, and light fixtures [if applicable]
- ☐ Original and 9 copies of scaled drawings indicating:
 - a. façade elevation with proposed sign or awning
 - b. dimensioned elevation of sign or awning with letter style, logo and layout
 - c. detail of attachment to building
 - d. detail of illumination [if applicable]
 - e. detail of edge treatment [if exposed]
- ☐ Original and 9 copies of scaled plot plan
- ☐ Samples of colors to be used
- ☐ Any additional information required by the HARB after an initial consultation or review

This publication was initiated and overseen by the Borough of Newtown and made possible through a grant provided by the Pennsylvania Historical and Museum Commission.

This project has been financed in part with Federal funds from the National Park Service, U.S. Department of the Interior. However, the contents and opinions do not necessarily reflect the views or policies of the Department of the Interior, nor does the mention of trade names or commercial products constitute endorsement or recommendation by the Department of the Interior.

This program receives Federal financial assistance for identification and protection of historic properties. Under Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, and the Age Discrimination Act of 1975, as amended, the U.S. Department of the Interior prohibits discrimination on the basis of race, color, national origin, disability or age in federally assisted programs. If you believe that you have been discriminated against in any program, activity, or facility as described above, or if you desire further information, please write to: Office of Equal Opportunity; National Park Service; 1849 C Street, N.W.; Washington, DC 20240.

Dominique M. Hawkins, AIA, of Preservation Design Partnership in Philadelphia, PA, prepared this publication.



The Borough of Newtown

Historic Architectural Review Board

GUIDELINES FOR WOOD WINDOWS



Older windows tend to have smaller panes of glass such as these twelve-over-eight double-hung windows.

PURPOSE

These guidelines were prepared to assist property owners with information when considering the repair, replacement or installation of wood windows. They are not intended to replace consultation with qualified architects, contractors and the HARB.

These guidelines were developed in conjunction with Newtown's Historical Architectural Review Board (HARB). The HARB reviews Certificate of Appropriateness (COA) applications for proposed exterior alterations to properties within the historic districts visible from a public way. The applicant is responsible for complying with the provisions of the Zoning and Building Codes at the time of application. The applicant must obtain a Certificate of Appropriateness (COA) as well as all necessary permits prior to proceeding with any work. For more information, or to obtain permit applications, please call the COA Administrator at (215) 860-8859.

Please review this information during the early stages of planning your project. Familiarity with this material can assist in moving a project quickly through the approval process, saving applicants both time and money.

WINDOWS

- Define the character of a building and streetscape
- Act as interior and exterior building features
- Typically comprise approximately one quarter of the surface area of exterior walls
- Can identify architectural style
- Can retain connections to the past
- Help define the architectural building period
- Can display craftsmanship and durable construction



The nine-over-nine double-hung windows create a unique bowed oriel window.

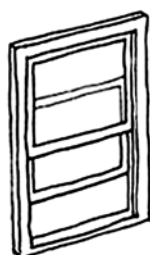
COMMON WINDOW TYPES

All of the identified window types can have different muntin patterns or configurations. Muntin patterns are defined in terms of the number of panes or lights. For example, a 6/1 double-hung window indicates there are 6 panes in the upper sash and 1 pane in the lower sash.

- a. **Fixed:** Non-operable framed glazing
- b. **Single-hung:** Fixed upper sash above a vertically rising lower sash
- c. **Double-hung:** Two sashes that can be raised and lowered vertically
- d. **Sliding:** Either a fixed panel with a horizontally sliding sash or overlapping horizontally sliding sash
- e. **Casement:** Hinged on one side and swinging in or out
- f. **Awning:** Hinged at the top and projecting out at an angle
- g. **Hopper:** Hinged at the bottom and projecting in at an angle
- h. **Vertical pivot:** Pivots vertically along a central axis
- i. **Horizontal pivot:** Pivots horizontally along a central axis



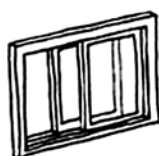
a. Fixed



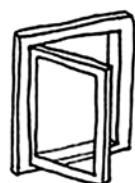
b. Single-hung



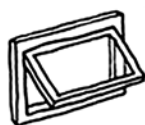
c. Double-hung



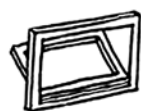
d. Sliding



e. Casement



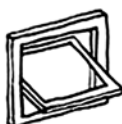
f. Awning



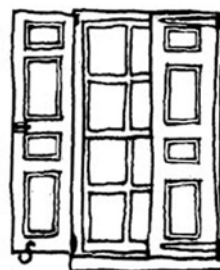
g. Hopper



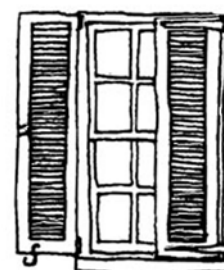
h. Vertical pivot



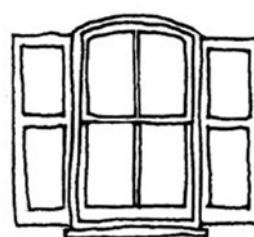
i. Horizontal pivot



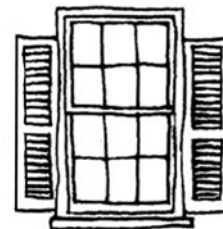
Six-over-six double-hung window with 4-panel shutters



Six-over-six double-hung window with louvered shutters



*The 2-panel shutters do not fit the arched opening
Not Recommended*



*The louvered shutters are the incorrect size for the window
Not Recommended*

SHUTTERS

Historically, exterior shutters were utilized as shielding devices. Paneled shutters were typically located on the ground floor to provide protection and louvered shutters at upper floors to regulate light and air. Shutters were not used on all historic buildings or in all locations.

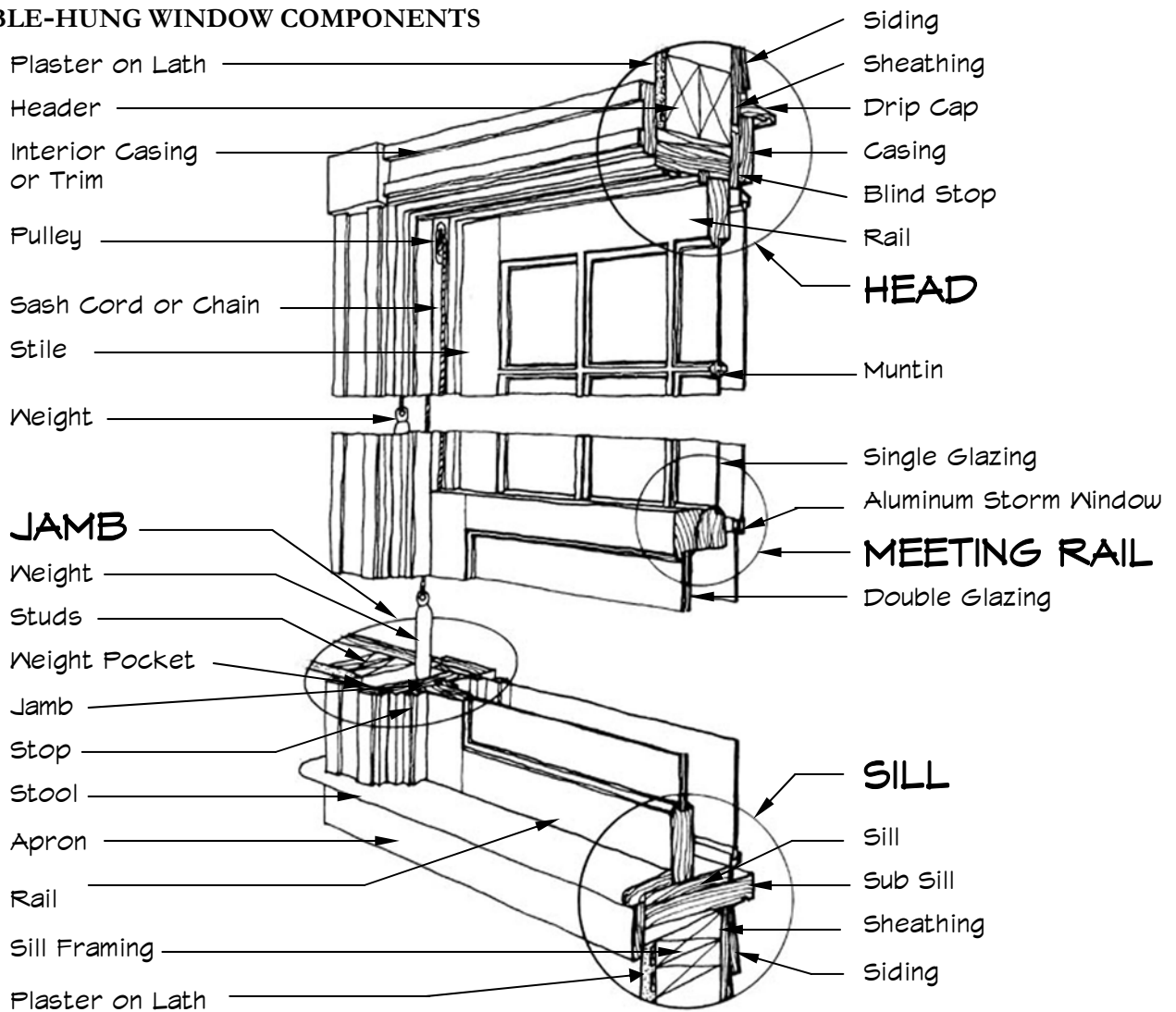
The HARB encourages:

- Shutters where they existed historically
- Operable wood shutters with appropriate hardware
- Shutters of the appropriate style for the house and location
- Appropriately sized and shaped shutters for the window opening, fitted to cover the window when closed
- Refurbished historic shutter hardware

The HARB discourages:

- Installing shutters where they did not exist historically
- Screwing shutters to the face of the building
- Installing vinyl or aluminum shutters
- Inappropriately sized or shaped shutters

DOUBLE-HUNG WINDOW COMPONENTS



WINDOW CONFIGURATIONS

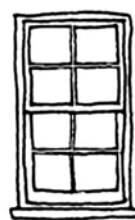
Different window configurations are appropriate for each architectural period or style. Altering the window type, style, shape, material, size, component dimension, muntin pattern or location can dramatically alter the appearance of the building.

The HARB encourages:

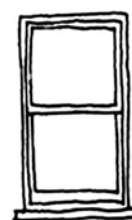
- Utilizing the historically appropriate window configuration
- Utilizing the exterior muntin pattern, profile and size appropriate for the historic period
- Installing true divided-light windows rather than snap-in muntin grids

The HARB discourages:

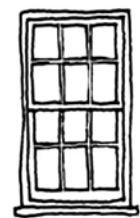
- Use of internal muntins between glazing layers
- Use of interior muntins



4/4 Window



1/1 Window



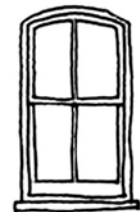
6/6 Window



1/1 Window
with round head



6/1 Window



2/2 Window
with arched head



The sill and bottom of the casing have peeling paint and some checking or splitting.



Repairing and repainting deteriorated shutters will extend their life span, postponing costly replacement.

HISTORIC WINDOW PROBLEM SOLVING

Property owners generally do not notice their windows until a problem occurs. Typical concerns include operation, reducing air infiltration, maintenance and improving the appearance.

Generally, the appearance of a window that has not been properly maintained can seem significantly worse than its actual condition. There is no need to replace an entire window or all windows because of a deteriorated component, typically the sill or bottom rail.

In many instances, selective repair or replacement of damaged parts, and the implementation of a regular maintenance program is all that is required. It is generally possible to upgrade windows in fair or good condition relatively economically. Full window replacement is rarely necessary and should be avoided when possible.

To improve operation

- Verify that sash cords and weights are operational
- Remove built-up paint at jambs
- Repair or replace deteriorated components such as parting beads

To reduce air infiltration

- Install snug weather-stripping between all moving parts (quality metal weather-stripping can last 20 years)
- Replace broken glass (glazing)
- Re-caulk perimeter joints
- Remove and replace missing glazing putty
- Add sash locks to tighten windows
- Add an interior or exterior storm sash (installing a secondary glazing system can achieve similar R-values to a new thermal window)
- Insulate sash pockets

To reduce solar heat gain or heat loss

- Install interior or exterior shutters
- Install interior blinds or curtains
- Plant deciduous trees at south and west elevations to block summer sun and not winter sun
- Install UV filters on glazing

Maintenance

- Regular review and repair
- Re-paint, particularly horizontal elements

STORM WINDOWS

There are several types of storm windows available for both interior and exterior installation, some of which include screen inserts. Storm sash should conceal as little of the historic window as possible and should be selected to complement each window type.

The HARB encourages:

- Interior storms to minimize the change to the exterior appearance
- Retaining wood storm frames rather than replacement with aluminum or vinyl. Wood storm windows can be custom made to fit any size or shaped opening, and lose less heat through the frame than aluminum.
- Matching the shape of the opening
- Aligning the divisions of the storm window with the divisions of the window, revealing as much of the historic window as possible



The louvered shutters at the second floor windows and paneled shutters at the first floor windows help define the rhythm of the window openings across the façade. The storm windows match the color of the window trim and the meeting rails align, minimizing the visual impact.



- Utilizing glass rather than Plexiglas, which can discolor and alligator
- Painting the storm window frame to match the window trim
- Minimizing damage to historic windows and frames during the installation of storm windows
- Caulking and weather-stripping the storm window in accordance with manufacturer's instructions allowing for exterior drainage at the sill
- Removable storm sash to facilitate maintenance of historic window

The HARB discourages:

- Stock storm units that require in-fill panels within an existing window opening
- Triple track exterior aluminum storm sash at visible street elevations
- Fixed storm sash



An exterior storm window has not been installed at this opening, allowing the historic window details to be clearly visible by pedestrians. Custom storm sash are generally necessary for most oversized openings as well as unusual configurations. When selecting storm sash, it is prudent to determine if the window will remain operable and whether insect screens are desired.

Lancet windows, with sharply pointed heads, can be found in many historic churches and some Victorian buildings. Because of their unusual shape, finding pre-manufactured storm windows would be unlikely.



The variety of window types, sizes and configurations adds visual interest to this façade. Replacement of each window in-kind would be costly. Maintenance of existing windows is encouraged.

COMPARING WINDOW REPAIR AND REPLACEMENT

When considering repair and retention of existing windows versus installation of replacement windows, HARB generally encourages applicants to retain their existing wood windows. However, HARB does recognize that it is sometimes necessary to replace window components or an entire window because of extensive deterioration.

The HARB discourages:

- Replacing a window component or unit if repair and maintenance will improve its performance and preserve historic elements

It is important to remember that because a portion of the window is deteriorated, replacement of the entire component or unit might not be necessary. A simple means of testing wood window deterioration is to stab the element with an awl or ice pick. Stab the element perpendicularly and measure the penetration depth and damp wood at an angle for the type of splintering.

- If the penetration is less than ¼ inch, the component does not need replacement
- If the penetration is more than ½ inch, the component might need replacement
- If long splinters are produced, the component does not need replacement
- If short sections broken across the grain are produced, the component might need replacement

When evaluating window repair or replacement, the following guidelines can be helpful:

1. **Perform routine maintenance:** Replace broken or missing components such as glazing or sash cords. Verify that caulking, glazing putty and weather-stripping is securely applied, and repaint.
2. **Treat or repair deteriorated components:** At the earlier stages of wood deterioration, it is possible to complete in-place treatments that do not necessitate component replacement. This includes treating wood for insects or fungus, epoxy consolidation, applying putty at holes and cracks, and painting.
3. **Replace Deteriorated Components:** Replace either the deteriorated portion of the component with a “Dutchman” or the entire component if the majority is deteriorated. A Dutchman is a repair with a piece of the same material in a sharp-edged mortise. The replacement pieces should match the original in design, shape, profile, size, material and texture. New sills are usually easily installed while complete sash replacement might solve problems of broken muntins and deteriorated rails.
4. **Replace Window:** If the majority of the window components is deteriorated or missing and in need of replacement, replacement of the window unit might be warranted.

IF REPLACEMENTS ARE NECESSARY

The HARB encourages:

- Replacing only components or windows that are deteriorated beyond repair
- Relocating historic windows to the publicly visible elevations and installing replacement windows at less visible areas
- Matching the original size, shape, operation, muntin pattern, profiles and detailing to the greatest extent possible
- Selecting true divided-light windows
- Re-using serviceable historic hardware or components
- Choosing window style or configuration based upon historical or physical documentation

The HARB discourages:

- Decreasing window size or shape with in-fill to allow for installation of stock window size
- Increasing window sizes or altering the shape to allow for picture or bay windows
- New window openings at publicly visible elevations

WINDOW MATERIALS PAST AND PRESENT

Wood windows were historically manufactured from durable, close, straight-grain hardwood of a quality uncommon in today's market. The quality of the historic materials and relative ease for repairs allows many well-maintained old windows to survive from the nineteenth century or earlier.

Replacement windows and their components tend to have significantly shorter life spans than historic wood windows. Selecting replacement windows is further complicated by manufacturers who tend to offer various grades of windows, with varying types and qualities of materials and warranties.

Today, lower cost wood windows are typically made from new growth timber, which is much softer and more susceptible to deterioration than hardwoods of the past. Vinyl and PVC materials, now common for replacement windows, breakdown in ultraviolet light, and have a life expectancy of approximately twenty-five years. Because of the great variety of finishes for aluminum windows, they continue to be tested to determine projected life spans.

A greater problem with replacement windows than the construction materials utilized in the frame and sash is the types and quality of the glazing, seals, fabrication and installation.

Double glazing or insulated glass, utilized in most new window systems, is made up of an inner and outer pane of glass with a sealed air space in between. The air space is typically filled with argon gas with a perimeter seal. This perimeter seal can fail in as few as ten years, resulting in condensation between the glass layers, necessitating replacement. Many of the gaskets and seals that hold the glass in place also have a limited life span and deteriorate in ultraviolet light.

Significant problems with replacement windows also result from poor manufacturing or installation. Twisted or crooked frames can make windows difficult to operate. Open joints allow air and water infiltration into the wall cavity or building interior.

The HARB encourages:

- Installing quality wood windows when replacement is deemed necessary
- Review of various grades of windows offered by manufacturers
- Utilizing quality materials throughout the installation process

- Understanding the limits of the warranties for all components and associated labor
- Selecting a reputable manufacturer and installer who is likely to be in business and respond if there is a future problem

MAINTAINING REPLACEMENT WINDOWS

One of the selling points of replacement windows is that they do not require maintenance. With the relatively short life expectancy of many of the materials and components, this is usually an optimistic viewpoint.

As joints or seals in replacement windows deteriorate, openings can be formed that allow air and water to enter into the window frame, wall cavity, and/or building interior, causing additional damage. Repair of these openings typically requires replacement of the deteriorated parts. This can present a problem if the manufacturer has modified their designs or is no longer in business, necessitating custom fabrication of deteriorated elements or replacement of the window.

As previously described, the double-glazing has similar problems over time with the deterioration of the perimeter seal. In addition, if the glazing unit is cracked or broken, it will require full replacement. This is further complicated when the double-glazing includes an internal muntin grid.

By contrast, a good carpenter can generally repair a historic wood window with single pane glazing.

REPLACEMENT WINDOW COSTS

- Labor to remove and disposal fee for old windows
- Purchase price and delivery of new windows
- Labor and materials to modify existing frames for new windows
- Labor to install new windows
- Life-cycle costs associated with more frequent replacement of deteriorated components

QUALITY REPLACEMENT WINDOWS

Reputable lumberyards typically provide a better selection and higher quality replacement window options than discounted home center stores. Each manufacturer also provides various grades of replacement window options. Manufacturer's information can be found on the Internet.

WINDOW REPAIR AND REPLACEMENT OPTIONS

Repair or replacement of existing components:

Deteriorated sills, sash and muntins are repairable by craftsmen with wood consolidant or replacement parts, retaining original fabric and function. In-kind replacement sash and sills can be custom-made to replace deteriorated sections if necessary.

Tilt-sash package: Some manufacturers offer replacement jamb liners and sash for installation within existing window frames. The system allows installation of new thermal sash of various muntin patterns within existing frames that can tilt to facilitate cleaning.

The benefits of the tilt-sash package:

- Original muntin pattern can be duplicated
- Maintains the original surround and opening
- Thermal glazing provides greater energy efficiency

The negatives of the tilt-sash package:

- Historic sash is removed
- Modification of the jambs is necessary
- Out-of-plumb openings can be difficult to fit
- Perimeter seals might not be tight

Frame and sash replacement unit: A complete frame with pre-installed sash of various muntin patterns for installation within an existing window frame opening.

The benefits of the frame and sash replacement unit:

- Manufactured as a unit to be weather tight
- Original muntin pattern can be duplicated
- Thermal glazing provides greater energy efficiency

The negatives of the frame and sash replacement unit:

- Historic sash is removed and frame modified
- The size of the window sash and glass openings are reduced due to the frame within a frame
- In-fill might be required for non-standard sizes
- Alteration of built-in surrounds might be required
- Both frames and sills typically visible at exterior



Matching the proportions of this six-over-nine double-hung window and wider muntins with a pre-manufactured window is unlikely. Maintaining the existing window is encouraged.

This publication was initiated and overseen by the Borough of Newtown and made possible through a grant provided by the Pennsylvania Historical and Museum Commission.

This project has been financed in part with Federal funds from the National Park Service, U.S. Department of the Interior. However, the contents and opinions do not necessarily reflect the views or policies of the Department of the Interior, nor does the mention of trade names or commercial products constitute endorsement or recommendation by the Department of the Interior.

This program receives Federal financial assistance for identification and protection of historic properties. Under Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, and the Age Discrimination Act of 1975, as amended, the U.S. Department of the Interior prohibits discrimination on the basis of race, color, national origin, disability or age in federally assisted programs. If you believe that you have been discriminated against in any program, activity, or facility as described above, or if you desire further information, please write to: Office of Equal Opportunity; National Park Service; 1849 C Street, N.W.; Washington, DC 20240.

Dominique M. Hawkins, AIA, of Preservation Design Partnership in Philadelphia, PA, prepared this publication.