BAR Review Levels

These levels of review are applicable in most cases. Please note that during the administrative review process, Staff may determine that a project must be reviewed by the Board. Contact Staff at 703.746.3833 to confirm which level of review is required for your project.

NO BAR REVIEW	ADMINISTRATIVE (STAFF) REVIEW	BOARD REVIEW
Painting masonry that is currently painted	Repointing	Painting, staining, or limewashing unpainted masonry on any portion of a building
	Paint removal and cleaning	Demolition of masonry over 25 square feet in area, including inappropriate repointing
	Repair or replacement of any masonry wall over 2 feet in height	Application of sealants to masonry
		Application of stucco or other finishes to masonry

Introduction

Masonry building and garden walls are character-defining features that help define a property's architectural style and age. In the 18th and early 19th Centuries, many buildings in Alexandria were constructed with red bricks made from local clay. This early brick was laid with a mortar made with local sand, water, and lime. From the middle to the end of the 19th Century, advances in brick manufacturing led to the creation of stronger bricks and more experimentation with brick color, size, and shapes. It is common in all periods to find high-quality decorative face brick on the front and more common less expensive brick on the side and rear. Beginning around 1920, modern hard-fired bricks were laid with a rigid impervious mortar containing varying degrees of Portland cement. This ingredient was an important structural improvement for modern construction but its use on historic brick walls can irreversibly damage the brick and exacerbate moisture problems. Although brick is one of the most durable and historic building materials, it still requires appropriate care to ensure its longevity. Unpainted masonry is durable and low-maintenance, usually requiring repointing only every 75 to 100 years.

The foundations of 18th-century buildings in Alexandria were typically constructed with Potomac River granite fieldstone. With rare exception, this stone was always installed below grade; where it is exposed today, it often indicates the original sidewalk elevation. A notable example of these stone foundations can be seen on the Ramsay House. The Carlyle House is the only building in Alexandria that was originally constructed of Aquia Creek sandstone, although it was later refinished with Indiana limestone in the 1970s. Sandstone and limestone were commonly used for stoops throughout the 18th and 19th Centuries. Precast concrete was not used as a building material until the early 20th Century.

The stone foundation of the 18th-century Ramsay House shows the original height before King Street was regraded.


The Carlyle House was originally constructed in the 18th Century with Aquia Creek sandstone.

The color of a building can enhance or detract from its own architectural characteristics as well as its neighboring structures. The Board always reviews material and factory-applied finish colors. All requests to paint, stain, or limewash unpainted masonry require Board review, but the Board generally does not review field-applied paint colors. However, the Board strongly encourages using paint colors that are historically appropriate to the style of the building. Staff can provide a color chart of historically appropriate paint colors. This chart identifies historically accurate paint colors for the body, trim, doors, and roof colors of historic buildings for the different periods of architecture found in the historic districts.

Guidelines

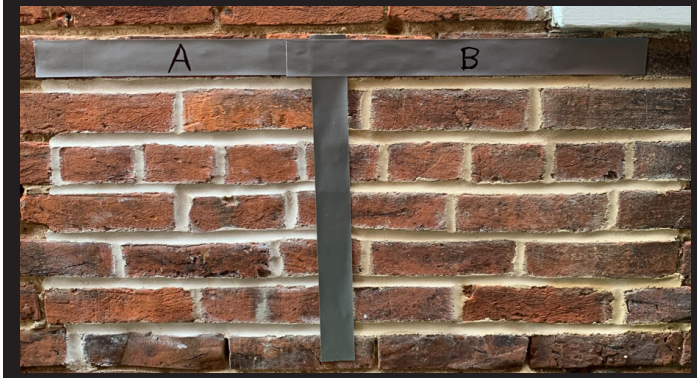
- Stone repairs should match the density and porosity of the original stone.
- Stone features that cannot be repaired should be replaced with matching genuine stone rather than cast stone.
- Brick and stone should be installed to replicate the appearance of traditional load-bearing masonry.
- Appropriate repairs must be made to a masonry wall regardless of whether it is presently painted or not.
- Before repointing a masonry wall, Staff will review a sample portion of the proposed work in the field to confirm that the appropriate tools and mortar were used and the masonry units were not damaged. See additional information section for more details on preparing a mock-up.
- Any repointing should match the historic mortar in color, composition, texture, and joint profile.
- Mortar should be softer than the masonry unit; only lime-based mortar is appropriate on masonry portions of buildings constructed before 1932 (Early buildings). See additional information section for more details on mortar types.
- Mortar should only be removed using hand tools. The use of power tools is inappropriate for the removal of mortar on Early buildings.
- Masonry should be cleaned using the gentlest means possible. Abrasive cleaning, including sandblasting, and high pressure powerwashing are inappropriate.
- Character-defining architectural features should not be obscured, including but not limited to patterned brick- and stonework, textured or embossed brick, and polychrome brick or mortar.
- **The Board strongly discourages painting or staining currently unpainted masonry. Because of its non-permanent nature, the Board strongly prefers limewashing over painting or staining.**
- **Before any request to stain unpainted masonry is reviewed by the Board, Staff will inspect a mock-up in the field that shows the level of opacity. The mock-up should be located on a minimally visible wall.**
- **If painting of unpainted masonry is approved by the Board, high-quality, porous, mineral-based paints should be used. Acrylic latex paints are not appropriate.**

Additional Information

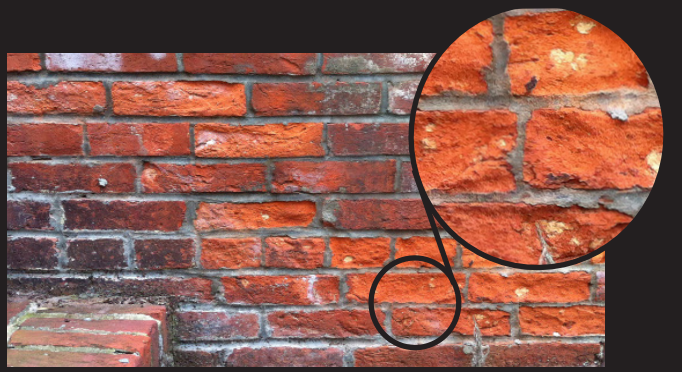
Preparing a Repointing Mock-up

In masonry walls, mortar is intended to be softer and more porous than the adjacent masonry. The use of an incorrect mortar that is harder than the brick or stone units impedes their normal expansion and contraction. This can cause irreparable damage, resulting in the full or partial loss of the individual masonry units. Using incorrect mortar is considered a demolition. When repointing a historic masonry wall, a lime-based mortar should be used to prevent this damage. Only buildings constructed of hard-fired brick in the 20th Century or later can use a high percentage of Portland cement in the mortar mix without risking damage to the masonry units.

A mock-up is required before repointing a masonry wall. Staff will evaluate the mock-up in the field to confirm that the appropriate tools and mortar were used and the masonry units were not damaged. The mock-up should match the historic mortar in color, composition, texture, and joint profile. Repointing should not take place if the temperature is less than 40 degrees Fahrenheit during application and curing. Additional mock-ups may be needed if the mortar is not correctly replicated. Allow extra time for this review so that mortar samples are dry enough to represent their final color. When repairing or replacing historic masonry surfaces, limit the repairs to the damaged areas only. It is often unnecessary and potentially damaging to repoint intact areas.



An example of a mock-up that Staff will evaluate. In this photo, sample B more closely matches the existing mortar in color and profile.

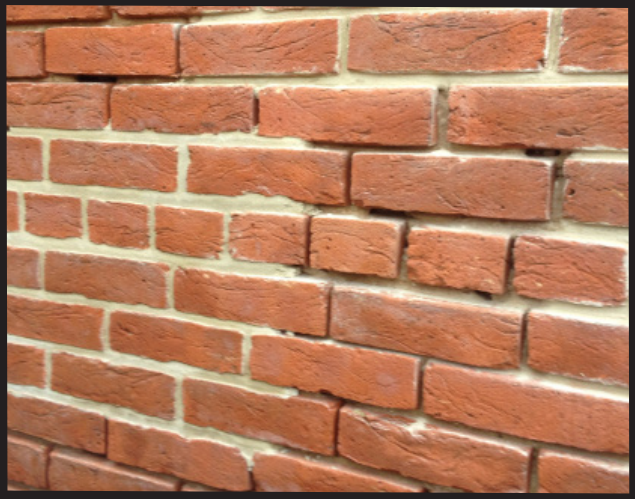


In this example, repointing with a Portland cement mortar has irreversibly damaged the historic brick, causing spalling. Spalling is when the hard-fired face of the brick breaks off due to an impermeable mortar joint.

Mortar Removal

Power tools should only be used to remove mortar from horizontal joints by scoring the middle of the joint and using hand tools to remove the remaining mortar. Only hand tools should be used on horizontal joints less than 3/8 inches tall and on all vertical joints. Mortar should be removed to a depth of 2 and 1/2 times the height of the joint. Masonry damaged by improper mortar removal is considered a demolition.

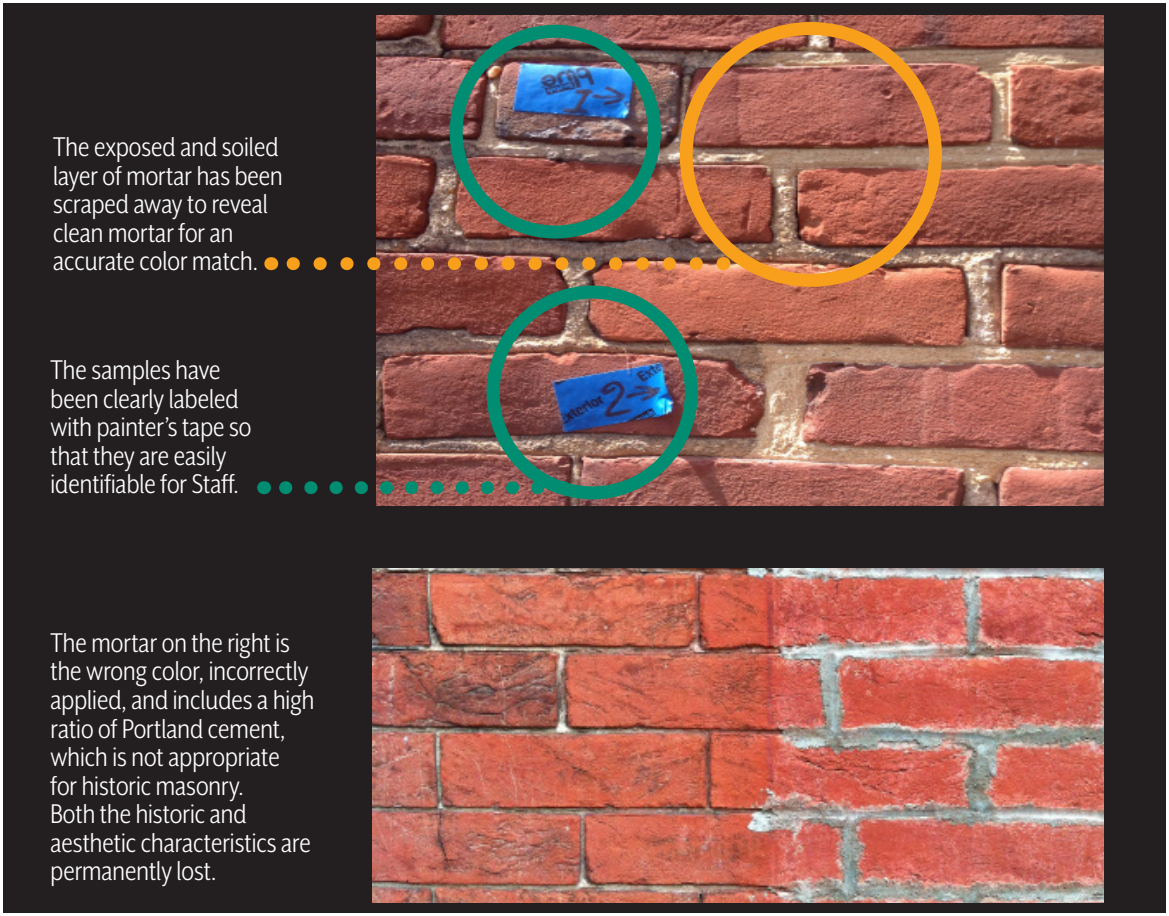
The result of using power tools on mortar joints - the grinders sliced off 1/4 inch sections of brick. The facade is irreversibly damaged, resulting in the loss of the original, handmade bricks. The aesthetic and historic character of the building is lost, as the joints are now twice the original width. In addition, the softer and more absorbant interior of the brick is exposed, leading to future deterioration.



An example of appropriate mortar removal using hand chisels. The width of the original joint and the integrity of the brick are maintained.

Color Matching

New mortar should match the color and texture of the original historic mortar. It may be necessary to look in a protected area where the original mortar has not been repointed, such as behind a shutter or under a cornice. If the wall was previously repointed, it may be necessary to scrape off the outer layer of mortar to reveal the historic mortar's color and texture. Subsequent property owners often choose to remove paint and therefore it is important to color match mortar on painted buildings as well.



Paint Removal and Masonry Cleaning

Improper paint removal or cleaning can irreversibly damage masonry. Harsh methods like sandblasting or power washing can remove the hard-fired brick surface, exposing the soft interior of the brick to weather. Milder abrasive cleaning methods like soda or media blasting may only be approved by Staff when a skilled architectural conservator has demonstrated it on a test patch to be the best and safest method. There are several environmentally friendly paint strippers available that can remove multiple layers of paint relatively easily. The use of a paint stripper usually requires the use of low pressure water to remove and neutralize the chemicals and paint residue. It is important that you consult with Staff on the proper water pressure (psi) to prevent mechanical damage to the masonry surface and avoid penetrating the masonry with the water and chemical residue, which can lead to interior damage or damage to the masonry. Control of water runoff and dust may require a separate permit from Transportation & Environmental Services.

The brick on the right side in the photo has been sandblasted, causing the outer hard fired layer to be removed and making it more susceptible to further damage and destroying its historic architectural character. The Board considers this demolition of the masonry.

Graffiti should be removed using the same gentle cleaning methods.

Masonry Repairs

Masonry is often damaged due to water-related issues. Some common causes of water damage include interior water leaks, leaking air conditioning units, pipes, drains, clogged gutters and downspouts, and moisture caused by rising damp from below grade. Masonry can also be damaged by drilling holes into the masonry surface or using silicone glue. Anchors should always be installed in the mortar joint rather than the body of the masonry unit, and should be smaller than the mortar joint, if possible. Like mortar repairs, masonry repairs should use material matching in color and texture. Never use caulk to fill masonry holes.

Holes from prevous signs.

Rising damp (water wicking from below) has caused the face of this early brick to crumble from the freeze-thaw cycle.

Sealants

Sealants are often marketed as water-repellent solutions for historic masonry. While many are advertised as “breathable,” they are seldom necessary and can even cause additional damage because they block the porosity of the brick and mortar, potentially trapping moisture.

Mortar Ingredients and Types

Mortars have different ratios of sand, hydrated lime, and water, and sometimes cements and other additives:

Sand - Defines the color and texture of the mortar.

Water - Should be clean and free of salts or chemicals.

Lime - Acts as binder or "glue." It can also affect the hardness and moisture permeability of the cured mortar.

Additives - Historic additives include oyster shells, clay particles, colorants, fly ash, pozzolans, and animal hair.

Cements - Many natural and factory-made cements, including Portland cement, were used in conjunction with lime after 1890. Portland cement is primarily found locally after the 1920s.

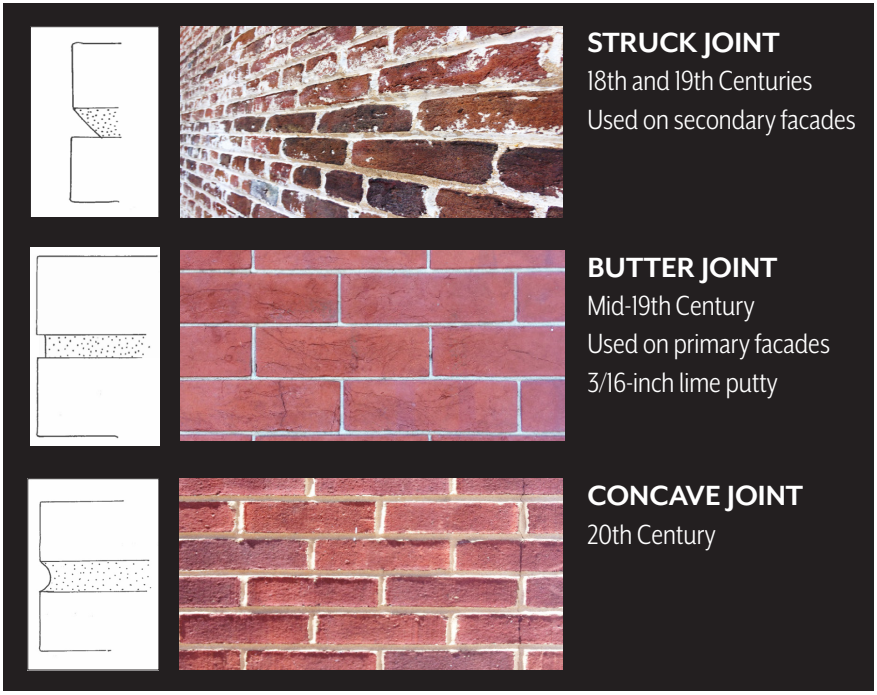
Buildings constructed before the 20th Century generally have a soft and porous brick, which is easily damaged by hard and brittle Portland cement. The mortar types that are appropriate on masonry portions of Early (pre-1932) buildings are: L, O, and K, depending on the location and exposure.

On masonry portions of Later (post-1931) buildings, type N mortar is generally appropriate.

VERY DURABLE: **granite, modern brick** (20th Century and later)	**L**
MODERATELY DURABLE: limestone, molded brick	**O**
MINIMALLY DURABLE: soft, handmade brick (18th and early 19th Century)	**K**

Mortar Joint Profiles

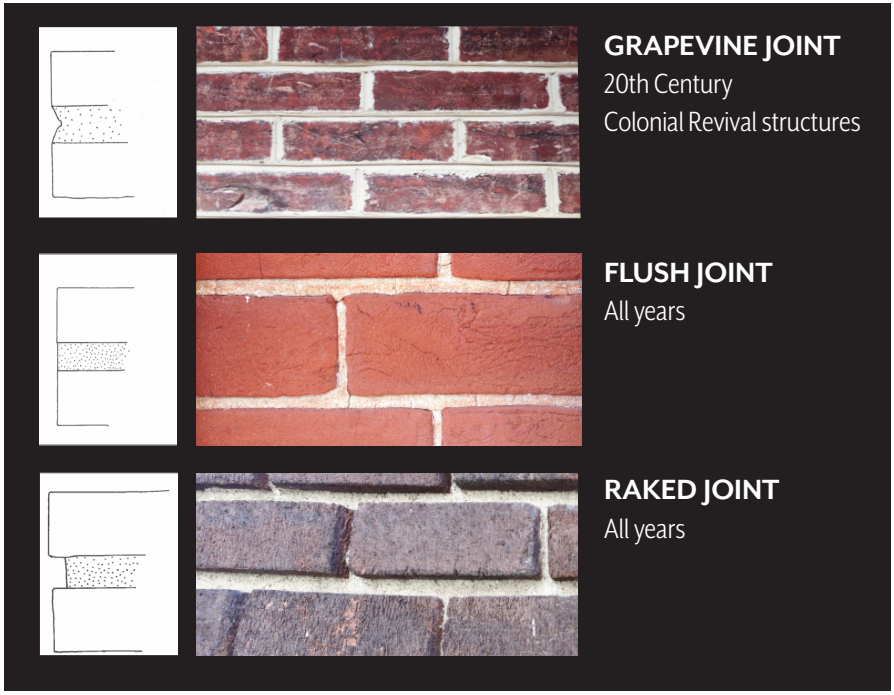
Mortar joints are the spaces between bricks that are filled with mortar. They can be made in a variety of different styles, called joint profiles. Any repointing done on a masonry wall should match the historic mortar joint profile.



STRUCK JOINT
18th and 19th Centuries
Used on secondary facades

BUTTER JOINT
Mid-19th Century
Used on primary facades
3/16-inch lime putty

CONCAVE JOINT
20th Century



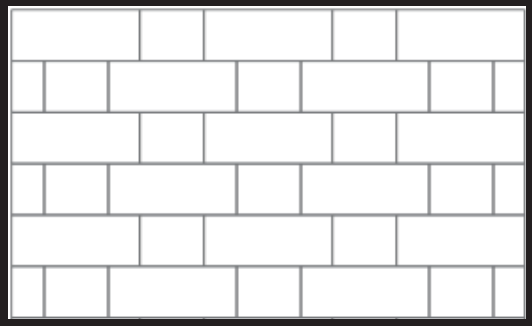
GRAPEVINE JOINT
20th Century
Colonial Revival structures

FLUSH JOINT
All years

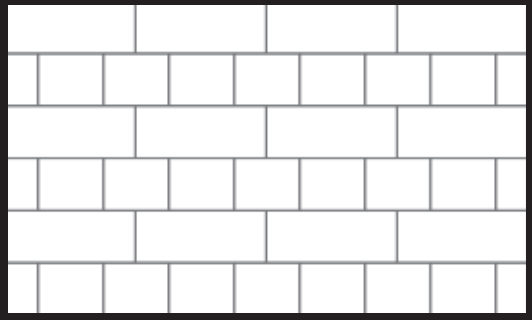
RAKED JOINT
All years

Brick Bond Patterns

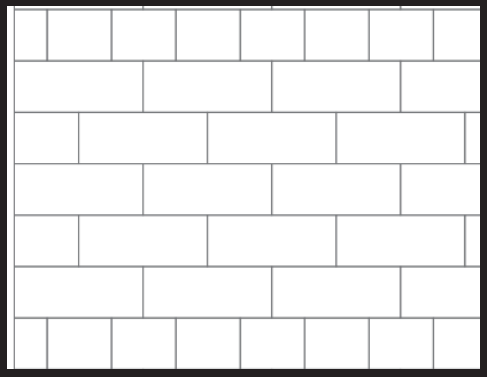
Bonding is the term used for the pattern in which bricks are laid. Headers are bricks which are laid perpendicular to the face of a brick wall. Stretchers are bricks which are laid parallel to the face of a wall. The use of header brick declined as stronger brick and mortar became available. By using a combination of headers and stretchers, a wall not only gains strength but also the possibility of decorative patterns arises. Each row of bricks laid one upon another in a wall is referred to as a course.



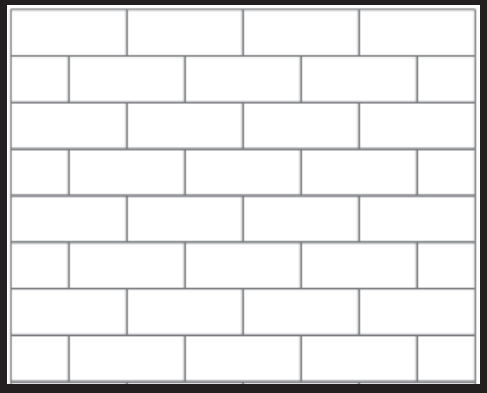
FLEMISH BOND
Flemish bond was primarily used in the mid-18th Century in Virginia and was typically used on more "high-style" primary façades.



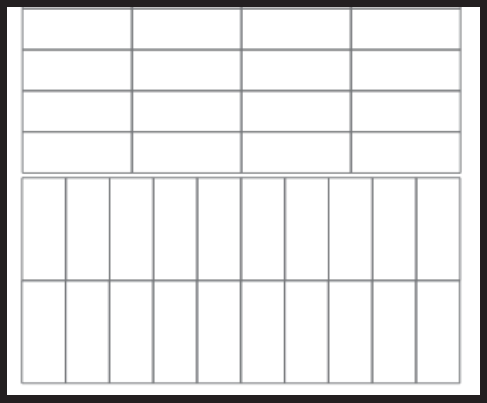
ENGLISH BOND
English bond was primarily used in the mid-18th Century in Virginia on foundations, but was rarely used in Alexandria.



COMMON BOND
Common bond used a header course every 4th, 6th, or 7th courses and was used in Alexandria on secondary elevations from the 18th to early 20th Centuries.



RUNNING BOND
Running bond was first used in Alexandria on the primary façade of Greek Revival structures in the 1840s, and is the bond pattern most commonly used today.



STACK BOND
Stack bond was first used in the mid-20th Century. It is a non-structural bond, typically used in decorative applications such as veneers.

Additional Resources

Association for Preservation Technology International Bulletins on Mortar

National Park Service Preservation Brief #1: Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Buildings

National Park Service Preservation Brief #2: Repointing Mortar Joints in Historic Buildings

National Park Service Preservation Brief #6: Dangers of Abrasive Cleaning to Historic Buildings

National Park Service Preservation Brief #38: Removing Graffiti from Historic Masonry

National Park Service Preservation Brief #42: The Maintenance, Repair and Replacement of Historic Cast Stone

U.S. Heritage Group

ASTM International Masonry Standards

The Brick Industry Association

Historic Alexandria: Brick by Brick (Alexandria Times)

Required Approvals

There are different levels of review for buildings constructed before 1932 (Early buildings) and after 1931 (Later buildings). These levels are applicable in most cases. Please note that during the administrative review process, Staff may determine that a project must be reviewed by the Board. Contact Staff at 703.746.3833 to confirm which level of review is required for your project

Early Buildings (pre-1932)

NO REVIEW	ADMINISTRATIVE (STAFF) REVIEW	BOARD REVIEW
Installation of storm windows	Replacement of non-historic windows	Changing window location, operation, or light configuration
Replacement of windows that are entirely below grade	Installation or replacement of shutters	Use of tinted, reflective, or stained glass
Removal of shutters		Removing or enclosing windows
		Installation of security bars

Later Buildings (post-1931)

NO REVIEW	ADMINISTRATIVE (STAFF) REVIEW	BOARD REVIEW
Installation of storm windows	Replacement of windows less than 15 feet from property line on street-facing sides	Changing window location, operation, or light configuration
Replacement of windows 15 feet or more from property line on street-facing sides		Use of tinted, reflective, or stained glass
Replacement of windows on non-street facing sides		Removing or enclosing windows
Replacement of windows that are entirely below grade		Installation of security bars
Installation, replacement, or removal of shutters		

Introduction

Windows are a principal character-defining feature of a building and serve both functional and aesthetic purposes. The size, location, type, material, and trim of windows are a defining element of a building's style and changes to them can have a dramatic impact on the historic appearance of a structure.

In general, the windows on 18th-century Federal and Georgian style buildings in Alexandria were small, with multiple small sized panes of glass and thin muntins. Cylinder glass was used from 1840 to the early 1900s. Molten glass was blown into a cylinder, halved, and then reheated to create larger, uniform sheets of glass. It typically has small imperfections from blowing bubbles or reams (fold marks or a wave in the glass). By the middle of the 19th Century, technology permitted the manufacture of large size panes of glass with wider muntins. This enabled windows on Victorian era structures to have large expanses of glass, some without muntins. Victorian style buildings dating from the mid-19th to early 20th Centuries typically have windows in a two-over-two or one-over-one configuration. Bay windows began to be used starting in the mid-19th Century and can be seen on Victorian and Colonial Revival style buildings. Colonial Revival style buildings from the mid-20th Century generally have multi-light windows with small panes of glass, often with a single light below.

The mid- to late 20th Century saw an increase in the use of non-wood window materials in new construction. Wood composite windows became commercially available in the 1960s; they use a material that is made of polymers and wood fibers. Aluminum-clad windows became commercially available in the 1970s; they combine a wood interior with an aluminum exterior. Fiberglass windows became commercially available in the 1980s; they use a composite material that is made of polymers and extruded glass fibers.

The repair or replacement of windows that are visible from a public right-of-way generally requires BAR approval. There are different regulations for buildings constructed before 1932 (Early buildings) and after 1931 (Later buildings). Window manufacturer technical specification sheets, or "cut sheets", must be submitted to BAR Staff to confirm compliance with these guidelines. If Staff is unable to verify that a window complies with the guidelines, the Board will review the request. Where Staff makes a written finding that a window is not visible from a public right-of-way, the window is not regulated by the BAR and may be replaced with any suitable window allowed by the Virginia Unified Statewide Building Code (USBC).

WINDOWS + SHUTTERS

Shutters are an important visual detail of the overall composition of a building and serve both functional and decorative purposes. Shutters can be an important means of regulating temperature and ventilation and protecting the interior of a structure during severe weather. In addition, shutters serve as a means of clearly defining the openings in a building facade. Inappropriate shutters can detract from the design integrity of a building and create a false impression of the architectural character of a structure.

Guidelines

All Buildings

- Shutters should be operable and appropriately sized to fit the window opening when closed.
- Shutters may be made of wood or a solid, paintable composite material, but not vinyl or aluminum.
- Replacement window materials, operation, and configuration should be appropriate to the architectural style of the building.
- Double-paned (insulated) windows may be used for any configuration.
- Replacement windows should fit the original window opening; full frame replacement or unframed sash replacement kits are acceptable.
- The Board discourages removing historic features of windows, such as decorative rails.
- The Board discourages vinyl windows because they decrease the glass area, making the window appear smaller than the original opening; the muntins between the glass are also historically incorrect. Additionally, vinyl is not paintable and its bright white color is subject to rapid UV deterioration.
- The Board discourages cladding wood jambs, sills, or trim with vinyl or PVC.
- Glazing should be clear glass, non-reflective and without tint. Low-E (low emissivity) glass is encouraged for energy conservation, but the glass must have a minimum 72% visible light transmission (VLT) with a shading coefficient between 0.87 – 1.0 and a reflectance of less than 10%. Low-E 272 glass meets these requirements.
- Exterior sash muntins must have a putty-glazed profile; interior sash muntins may have an ogee profile.
- Multi-light windows may have permanently fixed muntins on both the interior and exterior of the glass, with spacer bars between the glass. These are typically referred to as Simulated Divided Light (SDL) windows.
- Multi-light windows may also have multiple pieces of glass separated by muntin bars. These are typically referred to as True Divided Light (TDL) windows.
- The Board discourages the use of sandwich muntins, otherwise known as Grilles Between Glass (GBG).

WINDOWS + SHUTTERS

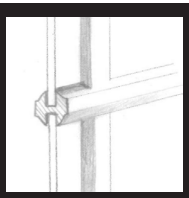
Early Buildings (pre-1932)

- Historic shutter hardware should be retained rather than removed or replaced.
- Historic window frames, sashes, and glass, if reasonably repairable as determined in the field by Staff, should be retained rather than replaced. This includes windows with either wood-pegged mortise and tenon sash joinery or with cylinder ("wavy") glass.
- When restoring the appearance of historic cylinder glass in original window sash, only restoration glass with the minimum amount of visible distortion should be used. Restoration glass should not be used on new windows.
- If historic windows are too deteriorated to repair, as determined by Staff in the field and confirmed in writing, they may be replaced according to the specifications in these guidelines.
- The exterior dimensions and proportions of the window rails, stiles, muntins, frame, sill, and exterior trim must match historically appropriate window proportions. Exterior trim may not be mitered at the corners.
- On street facing sides, windows should be made of wood. Multi-light windows should be single glazed; double glazing may be used for windows that are in a one-over-one or two-over-two configuration.
- On non-street facing sides, windows may be made of modern materials such as wood composite, aluminum clad wood, or fiberglass, but not hollow vinyl or vinyl cladding.
- The Board discourages insert windows (pocket-style replacements) because they decrease the glass area and expand the surrounding trim.

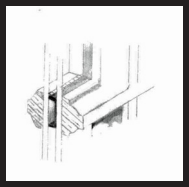
Later Buildings (post-1931)

- On street facing sides, windows less than 15 feet from the property line may use modern materials such as wood composite, aluminum clad wood, and fiberglass, but not hollow vinyl or vinyl cladding. Windows 15 feet or more from the property line may be any material, operation or configuration.
- On non-street facing sides, windows may be any material, operation or configuration.
- Single horizonal metal muntin and metal casement windows may be appropriate for buildings dating from the late 1940s or early 1950s.
- Fiberglass windows may generally replace steel sash windows on any building when using the same light configuration, color, and operation, except where Staff believes an architecturally significant building has existing intact and restorable steel sash.
- Insert windows (pocket-style replacements) may be used.

WINDOWS + SHUTTERS

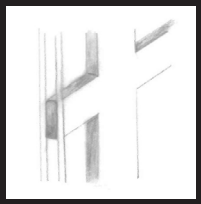


True Divided Light (TDL) muntins



Simulated Divided Light (SDL) muntins

The replacement window shown above fits the opening size, has permanently adhered interior and exterior muntins, clear and non-reflective glass, and is an appropriate style for this mid-19th century rowhouse.



Interior between - the-glass or sandwich muntins

Sandwich muntins, such as the example shown above, are not appropriate in the historic district.

^ BEFORE

^ AFTER

The windows on the right are an example of an inapropriate replacement of original metal casement windows, such as those shown on the left. The replacement windows are inappropriate because they are vinyl with sandwich muntins and are a different operation and style than the original. Property owners should be aware that suitable replacement options exist for metal casement windows using modern materials that match the historic muntin configuration and style.

The shutters on the left are correctly sized to the opening and operable, with appropriate hardware. The shutters on the right are too tall for the opening, the wrong shape, and are bolted to the wall.

Additional Information

- For guidelines on dormer windows, refer to chapter on dormers.
- A building permit is required from Code Administration for all window replacements in the historic districts, except for sash kits, pursuant to § 15.2-2306 of the Code of Virginia.
- Bay and other types of projecting windows must comply with applicable yard setback requirements in residential zones; refer to the Zoning Ordinance. If they encroach into the public right-of-way, they must comply with § 5-2-29 of the City Code.
- Windows that are used to satisfy emergency egress requirements must meet the requirements of the Virginia Uniform Statewide Building Code (USBC).
- Sash replacement kits help preserve historic frames and trim.
- Regular painting and weather stripping of windows helps ensure longevity and promote sustainability.
- Modern window materials such as wood composite, aluminum-clad wood, and fiberglass are more durable than vinyl and have a lower maintenance requirement.
- Storm windows provide a cost-effective and thermally efficient means of energy conservation. They reduce exterior noise and reduce maintenance of historic windows. They can be installed on the exterior or interior. Because they protect historic windows, they are not regulated by the BAR and do not require review, as long as the glass is clear and non-reflective.

Installation of an exterior storm window.

Additional Resources

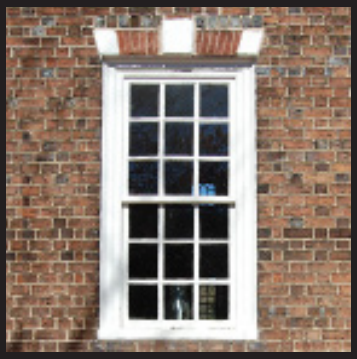
National Park Service Preservation Brief #9: The Repair of Historic Wooden Windows

National Park Service Preservation Brief #13: The Repair and Thermal Upgrading of Historic Steel Windows

WINDOWS

WINDOW CONFIGURATIONS FOUND THROUGHOUT THE DISTRICTS

^ 12/12 GEORGIAN



^ 9/9 GEORGIAN

^ 6/6 FEDERAL / GREEK REVIVIAL

^ 6/9 GREEK REVIVIAL

^ 4/4 LATE GREEK / EARLY VICTORIAN

^ 2/2 VICTORIAN

^ 1/1 VICTORIAN

^ GOTHIC REVIVAL

^ COLONIAL REVIVAL / CRAFTSMAN