

**NOT RECOMMENDED**

Removing original, historic windows.

Fixing existing operable window sashes in place so they do not operate.

Using vinyl, aluminum, aluminum-clad or other materials that do not match the original.

Using standard, manufactured products for replacement that do not match the existing windows in all visible profiles. Matching the appearance of the existing (or original) likely will require custom-fabricated windows produced by a mill-work house. Manufacturers' "historic" windows are not necessarily appropriate.



Using any product with fake muntins, whether they are applied at the exterior, interior or between lights of glass.

Using insulating glass at windows that originally had divided lights, unless separate insulating units are fabricated for each light condition.

Tinted or highly reflecting glass.

Installing complete, new replacement units within the existing window frame. If replacement windows must be used, remove the existing frame completely so as to not reduce the sightlines and increase the overall appearance of the frame width.



Removing existing windows (whether original or replacement) for purposes of locating mechanical devices such as louvers or air conditioners in original masonry openings. (Note, however, that where louvers must be added, utilizing existing masonry openings might be preferable to creating new openings in a way that detracts from the overall pattern of masonry openings in the building.)

METAL WINDOWS



RECOMMENDED PRACTICES

Identify, retain and preserve existing metal windows.

Remove any light rust or flaking paint using brushes, and wipe any bare metal clean with a cleaning solvent such as denatured alcohol. Dry immediately and prime exposed metal with a rust-inhibiting primer, following the manufacturer's instructions for application. Recommended methods for removing light rust include manual and mechanical abrasion using a wire brush, aluminum oxide sandpaper, or a variety of power tools adapted for abrasive cleaning such as an electric drill with a wire brush or a rotary whip attachment. Adjacent sills and window jambs may need protective shielding.

Provide additional weather protection and energy conservation to the existing windows by adding, as determined on a case-by-case basis, either interior or exterior storm windows. Take care in detailing so as to avoid potential condensation damage to the sill inside the cavity between glass layers. Window assemblies should vent to the exterior.

Improve weathertightness of existing (or new) windows through the use of weatherstripping. Interlocking bronze or compression weatherstripping that is not visible when windows are closed.

Provide insect screening for existing windows that have no screens by installing them at the interior rather than the exterior in order to retain the appearance of the windows at the exterior.

Replace sashes only – retain frames and reuse hardware.

For replacement windows, use those that have true divided lights, matching the light configurations of the original windows. Match the sightlines and dimensions of all components. Of primary importance are the dimensions in elevation (the widths of muntins, widths of frames, and clear glass dimensions). If for durability and added energy or other considerations replacement windows need to have a deeper section than the original, this is acceptable.

If insulating glass must be used, use the thinnest possible panel so as to best allow for matching of the muntin width. Use a matching colored spacer so as to avoid a distracting metal appearance at the glass edge.

At locations where incompatible replacement windows have been introduced, when it is time for their replacement, provide windows that are a better match to the documented, historical original in terms of material, operation, light configuration, true divided lights, etc.

Reintroduce windows where original windows have had masonry openings filled in with brick, wood, air-conditioning units, etc.

Metal windows were available as early as 1860, but became popular after 1890 with the introduction of mass production of rolled steel windows. Their use was particularly suited to industrial buildings where fire prevention was a significant issue.

Metal frames permitted the installation of larger windows and windows in series, resulting in a distinctive look of expanses of glass that was used in late 19th and early 20th century commercial and industrial buildings. The popularity extended to institutional and residential buildings as well. After WWII, cheaper, non-corroding aluminum windows became increasingly popular.

Several of the industrial buildings at Fort Monroe have metal windows. Some original steel units still remain in place, but others have been replaced with aluminum.

NOT RECOMMENDED

Demolishing original windows without a determination of adverse effect on the building's historical appearance and integrity.

Preserving existing replacement windows to the same standard as original, historic windows.

Burning off rust with an oxyacetylene or propane torch, or an inert gas welding gun, should never be attempted because the heat can distort the metal. In addition, such intense heat (often as high as 3800 deg. F) vaporizes the lead in old paint, resulting in highly toxic fumes. Furthermore, such high temperatures will likely result in broken glass.

Using hydrochloric acid to chemically remove corrosion. It can leave chloride deposits, which would lead to future corrosion.

Fixing existing operable window sashes in place so they do not operate.

Using any product with fake muntins, whether they are applied at the exterior, interior or between lights of glass.

Using insulating glass at windows that originally had divided lights. (Unless separate insulating units are fabricated for each light condition.)

Using tinted or highly reflective glass.

Removing existing windows (whether original or replacement) for purposes of locating mechanical devices such as louvers or air conditioners in original masonry openings. (Note, however, that where louvers must be added, utilizing existing masonry openings might be preferable to creating new openings in a way that detracts from the overall pattern of masonry openings in the building.)



ENTRANCES AND PORCHES



RECOMMENDED PRACTICES

Identify, retain, and preserve entrances and porches – and their functional and decorative features – that are important in defining the overall historical character of the building such as doors, fanlights, sidelights, pilaster, entablatures, columns, balustrades, and stairs.

Evaluate the overall condition of materials to determine whether repairs to entrance and porch features will be necessary.

Protect and maintain the masonry, wood, and architectural metals that comprise entrances and porches through appropriate surface treatments such as cleaning (clear away dirt and other debris by sweeping rather than using pressure from a water hose), rust removal, limited paint removal, and re-application of protective coating systems.

Repair entrances and porches by reinforcing the historical materials. Repair will also generally include the limited replacement in kind of those extensively deteriorated or missing parts of repeated features for which there are surviving prototypes such as balustrades, cornices, entablatures, columns, sidelights, and stairs.

Replace in kind an entire entrance or porch that is too deteriorated to repair – if the form and detailing are still evident – using the physical evidence as a model to reproduce the feature. If using the same kind of material is not technically feasible (i.e., can no longer be manufactured), then a compatible substitute material may be considered.

Design and construct a new entrance or porch when the historical entrance or porch is completely missing. Reconstruction of a missing element, such as a porch, must be based on historical, pictorial, and physical documentation.

Maintain porches and double vestibule entrances so that they can retain heat or block the sun and provide natural ventilation.

SUGGESTED GUIDANCE

“Preservation Brief 32”

Making Historic Properties Accessible

<http://www.nps.gov/history/hps/tps/briefs/brief32.htm>

“Preservation Brief 45”

Preserving Historic Wooden Porches

http://www.nps.gov/history/hps/tps/briefs/brief45_47.htm

Design and install additional entrances or porches when required for the new use in a manner that preserves the historic character of the buildings, i.e., limiting such alteration to non-character-defining elevations. Elevate flower pots on trivets to prevent moisture buildup, and periodically move the pots to different locations.

Porches that have not yet been enclosed should remain open, and where porches have been screened, any framing for non-original screening should be painted a dark color to minimize its visual impact.

“Interpreting the Standards Bulletin 4”
Exterior Doors: Inappropriate Replacement Doors
http://www.nps.gov/history/hps/tps/tax/its/its_o4.pdf

“Interpreting the Standards Bulletin 9”
Porches: Inappropriate Porch Alterations
http://www.nps.gov/history/hps/tps/tax/ITS/its_o9.pdf

Porch styles at Fort Monroe range from the elaborate brick entryways such as those at Buildings 100, 101, 102 or 103, to simple, screened porches like the ones at Building 14, or Buildings 155 and 156.



NOT RECOMMENDED

Removing or radically changing entrances and porches (for example, enclosing an existing, historical porch) which are important in defining the overall historical character of the building so that, as a result, the character is diminished.

Stripping entrances and porches of historical material such as wood, cast iron, terra cotta tile, and brick.

Removing an entrance or porch because the building has been re-oriented to accommodate a new use.

Cutting new entrances on a primary elevation.

Altering utilitarian or service entrances so they appear to be formal entrances by adding paneled doors, fanlights, and/or sidelights.

Failing to provide adequate protection to materials on a cyclical basis so that deterioration of entrances and porches results.

Failing to undertake adequate measures to assure the protection of historical entrances and porches.

Replacing an entire entrance or porch when the repair of materials and limited replacement of parts are appropriate.

Using a substitute material for the replacement parts that does not convey the visual appearance of the surviving parts of the entrance and porch or that is physically or chemically incompatible.

Removing an entrance or porch that is not repairable and then not replacing it; or replacing it with a new entrance or porch that does not convey the same visual appearance.

CONT'D.

ENTRANCES AND PORCHES

NOT RECOMMENDED CONT'D.

Enclosing porches in a manner that results in a diminution or loss of historic character by using solid materials such as wood, stucco, or masonry.

Installing secondary service entrances and porches that are incompatible in size and scale with the historic building, or that obscure, damage, or destroy character-defining features.

Failing to clear away sand or other abrasive materials used to increase traction on icy surfaces when they are no longer needed.

Using salt (sodium chloride) as a de-icing agent, as it can promote corrosion and failure of nails and other fasteners.

Placing rugs, mats or other coverings on wood flooring, as these items can trap moisture underneath and promote decay and rot.

The Secretary of the Interior's Standards for Rehabilitation and the accompanying guidelines call for respecting the significance of original materials and features, repairing and retaining them wherever possible. This includes any paint, colors and finishes. If it is determined that the element cannot be salvaged, then it should be replaced in kind.

If features of the structural system are exposed such as load-bearing brick walls, cast iron columns, roof trusses, posts and beams, or stone foundation walls, they may be important in defining the building's overall historic character. Unexposed structural features that are not character-defining, or even entire structural systems, may nonetheless be significant in the history of building technology. Therefore, the structural system should always be examined and evaluated early in the project planning stage to determine both its physical condition and its importance to the building's historic character or historical significance.

STRUCTURAL SYSTEMS



RECOMMENDED PRACTICES

Identifying, retaining, and preserving structural systems – and individual features of systems – that are important in defining the overall historic character of building, such as post-and-beam systems, trusses, summer beams, cast iron columns, above-grade stone foundation walls, or load-bearing brick or stone walls.

Protecting and maintaining the structural system by cleaning the roof gutters and downspouts; replacing roof flashing; keeping masonry, wood, and architectural metals in a sound condition; and ensuring that structural members are free from insect infestation.

Examining and evaluating the physical condition of the structural system and its individual features using non-destructive techniques such as X-ray photography.

Repairing the structural system by augmenting or upgrading individual parts or features. For example, weakened structural members such as floor framing can be paired with a new member, braced, or otherwise supplemented and reinforced.

Replacing in kind – or with substitute material – those portions or features of the structural system that are either extensively deteriorated or are missing when there are surviving prototypes such as cast iron columns, roof rafters or trusses, or sections of load-bearing walls to be used as a model for the new construction.

Limiting any excavations adjacent to historic foundations to avoid undermining the structural stability of the building or adjacent historic building. Studies should be done to ascertain potential damage to archeological resources.

Correcting structural deficiencies in preparation for a new use in a manner that preserves the structural system and individual character-defining features.

Designing and installing new mechanical or electrical systems, when required for a new use, which minimize the number of cutouts or holes in structural members.

Adding a new floor when required for a new use only if such an alteration does not damage or destroy the structural system, or obscure, damage, or destroy character-defining spaces, features, or finishes.

Structural systems at Fort Monroe are typical for buildings of the 19th Century, featuring masonry bearing walls, heavy timber framing, and post-and-beam construction. Also noteworthy are examples of mid-1800s structural technology, such as the use of decorative cast iron.



NOT RECOMMENDED

Removing, covering, or radically changing features of structural systems which are important in defining the overall historic character of the building so that, as a result, the character is diminished.

Putting a new use into the building which could overload the existing structural system; or installing equipment or mechanical systems which could damage the structure.

Demolishing a load-bearing masonry wall that could be augmented and retained, and replacing it with a new wall (i.e., brick or stone), using the historic masonry only as an exterior veneer.



Leaving known structural problems untreated such as deflection of beams, cracking and bowing of walls, or racking of structural members.

Utilizing treatments or products that accelerate the deterioration of structural material such as introducing urea-formaldehyde foam insulation into frame walls.

Failing to provide proper building maintenance so that deterioration of the structural system results. Causes of deterioration include subsurface ground movement, vegetation growing too close to foundation walls, improper grading, fungal rot, and poor interior ventilation resulting in condensation.

Utilizing destructive probing techniques that will damage or destroy structural material.



Upgrading the building structurally in a manner that diminishes the historic character of the exterior (such as installing strapping channels or removing a decorative cornice), or damages interior features or spaces.

Replacing a structural member or other feature of the structural system when it could be augmented and retained.

CONT'D

STRUCTURAL SYSTEMS

NOT RECOMMENDED CONT'D.

Installing a visible replacement feature that does not convey the same visual appearance, e.g., replacing an exposed wood summer beam with a steel beam.

Using substitute material that does not equal the load-bearing capabilities of the historic material and design or is otherwise physically or chemically incompatible.

Carrying out excavations or re-grading adjacent to or within a historic building which could cause the historic foundation to settle, shift, or fail; could have a similar effect on adjacent historic buildings; or could destroy significant archeological resources.

Radically changing interior spaces or damaging or destroying features or finishes that are character-defining while trying to correct structural deficiencies in preparation for a new use.

Installing new mechanical and electrical systems or equipment in a manner which results in numerous cuts, splices, or alterations to the structural members.

Inserting a new floor when such a radical change damages a structural system or obscures or destroys interior spaces, features, or finishes.

Inserting new floors or furred-down ceilings which cut across the glazed areas of windows so that the exterior form and appearance of the windows are radically changed.



Historic preservation has traditionally focused on building exteriors. While the exterior of a building may be its most prominent visible aspect, or its “public face,” its interior can be even more important in conveying the building’s history and development over time. Rehabilitation within the context of the Secretary of the Interior’s Standards for Rehabilitation calls for the preservation of exterior and interior portions or features of the building that are significant to its historic, architectural and cultural values. Interior components worthy of preservation may include the building’s plan (sequence of spaces and circulation patterns), the building’s spaces (rooms and volumes), individual architectural features, and the various finishes and materials that make up the walls, floors, and ceilings.

An interior floor plan, the arrangement and sequence of spaces, and built-in features and applied finishes are individually and collectively important in defining the historic character of the building. Their identification, retention, protection, and repair should be given prime consideration in every rehabilitation project. In evaluating historic interiors prior to rehabilitation, it should be kept in mind that interiors are comprised of a series of primary and secondary spaces. Primary spaces, including entrance halls, parlors, or living rooms, assembly rooms and lobbies, are defined not only by their features and finishes, but by the size and proportion of the rooms themselves—purposely created to be the visual attraction or functioning “core” of the building. Care should be taken to retain the essential proportions of primary interior spaces and not to damage, obscure, or destroy distinctive features and finishes.

Secondary spaces include areas and rooms that “service” the primary spaces and may include kitchens, bathrooms, mail rooms, utility spaces, secondary hallways, fire stairs and office cubicles in a commercial or office space. Changes can often be made in these less important areas without having a detrimental effect on the overall historic character.

SUGGESTED GUIDANCE

“Preservation Brief 17”

Architectural Character: Identifying the Visual Aspects of Historic Buildings as an Aid to Preserving Their Character

<http://www.nps.gov/history/hps/tps/briefs/brief17.htm>

“Preservation Brief 18”

Rehabilitating Interiors in Historic Building: Identifying and Preserving Character-defining Elements

<http://www.nps.gov/history/hps/tps/briefs/brief18.htm>

“Preservation Brief 21”

Repairing Historic Flat Plaster Walls and Ceilings

<http://www.nps.gov/history/hps/tps/briefs/brief21.htm>

“Preservation Brief 23”

Preserving Historic Ornamental Plaster

<http://www.nps.gov/history/hps/tps/briefs/brief23.htm>

“Preservation Brief 28”

Painting Historic Interiors

<http://www.nps.gov/history/hps/tps/briefs/brief28.htm>

“Preservation Brief 37”

Appropriate Methods for Reducing Lead-Paint Hazards in Historic Housing

<http://www.nps.gov/history/hps/tps/briefs/brief37.htm>

“Preservation Brief 32”

Making Historic Properties Accessible

<http://www.nps.gov/history/hps/tps/briefs/brief32.htm>

“Preservation Brief 35”

Understanding Old Buildings: The Process of Architectural Investigation

<http://www.nps.gov/history/hps/tps/briefs/brief35.htm>

“Preservation Brief 40”

Preserving Historic Ceramic Tile Floors

<http://www.nps.gov/history/hps/tps/briefs/brief40.htm>

“Interpreting the Standards Bulletin 4”

Inappropriate Replacement Doors

http://www.nps.gov/history/hps/tps/tax/ITS/its_04.pdf

“Interpreting the Standards Bulletin 5”

Removing Interior Plaster to Expose Brick

http://www.nps.gov/history/hps/tps/tax/ITS/its_05.pdf

“Interpreting the Standards Bulletin 7”

Painting Previously Unpainted Woodwork

http://www.nps.gov/history/hps/tps/tax/ITS/its_07.pdf

“Interpreting the Standards Bulletin 8”

Interior Alterations to Detached Residences to Accommodate New Functions

http://www.nps.gov/history/hps/tps/tax/ITS/its_08.pdf

“Interpreting the Standards Bulletin 15”

Treatment of Interiors in Industrial Buildings

http://www.nps.gov/history/hps/tps/tax/ITS/its_15.pdf

“Interpreting the Standards Bulletin 19”

Deteriorated Plaster Finishes

http://www.nps.gov/history/hps/tps/tax/ITS/its_19.pdf

“Interpreting the Standards Bulletin 24”

Installing New Systems in Historic Corridors

http://www.nps.gov/history/hps/tps/tax/ITS/its_24.pdf

“Interpreting the Standards Bulletin 25”

Altering the Character of Historically Finished Interiors

http://www.nps.gov/history/hps/tps/tax/ITS/its_25.pdf

“Interpreting the Standards Bulletin 31”

Retaining Distinctive Corridor Features

http://www.nps.gov/history/hps/tps/tax/ITS/its_31.pdf

“Preservation Tech Notes 43”

Historic Interior Spaces No. 3: Preserving Historic Corridor Doors and Glazing in High-Rise Buildings

<http://www.nps.gov/history/hps/tps/technotes/ptn43/>

INTERIORS



RECOMMENDED PRACTICES

Identify, retain, and preserve floor plans or interior spaces that are important in defining the overall historic character of the building. This includes the size, configuration, proportion, and relationship of rooms and corridors; the relationship of features to spaces; and the spaces themselves such as lobbies, reception halls, entrance halls, double parlors, theaters, auditoriums, and important industrial or commercial spaces.

Identify, retain, and preserve interior features and finishes that are important in defining the overall historic character of the building. This includes (but is not limited to) columns, cornices, baseboards, fireplaces and mantels, paneling, light fixtures, hardware, and flooring; and wallpaper, plaster, paint, and finishes such as stenciling, marbling, and graining; and other decorative materials that accent interior features and provide color, texture, and patterning to walls, floors, and ceilings.

Protect and maintain masonry, wood, and architectural metals which comprise interior features through appropriate surface treatments such as cleaning, rust removal, limited paint removal, and reapplication of protective coatings systems.

Protect interior features and finishes against arson and vandalism before project work begins, erecting protective fencing, boarding-up windows, and installing fire alarm systems that are keyed to local protection agencies.

Protect interior features such as staircases, mantels, or decorative finishes and wall coverings against damage during project work by covering them with heavy canvas or plastic sheets.

Install protective coverings in areas of heavy pedestrian traffic to protect historic features such as wall coverings, parquet flooring and paneling.

Remove damaged or deteriorated paints and finishes to the next sound layer using the gentlest method possible, then repaint or refinish using compatible paint or other coating systems.

Repaint with colors that are appropriate to the historic building.

Evaluate the overall condition of materials to determine whether more than protection and maintenance are required, that is, if repairs to interior features and finishes will be necessary.

Repair interior features and finishes by reinforcing the historic materials.

Repair will also generally include the limited replacement in kind – or with compatible substitute material – of those extensively deteriorated or missing parts of repeated features when there are surviving prototypes such as stairs, balustrades, wood paneling, columns; or decorative wall coverings or ornamental tin or plaster ceilings.

Replace in kind an entire interior feature or finish that is too deteriorated to repair – if the overall form and detailing are still evident – using the physical evidence as a model for reproduction. Examples could include wainscoting, a tin ceiling, or interior stairs. If using the same kind of material is not technically feasible (i.e., it can no longer be manufactured), then a compatible substitute material may be considered.

Use of resources at Fort Monroe has often required that they be adapted to meet the needs of occupancies for which they weren't originally designed. Rooms and building elements have undergone varying degrees of alteration over time in order to serve these new purposes. With some buildings, such as the family housing units, the use has remained consistent and so there is little change. For others, such as the administrative buildings, the use has remained essentially the same but the interiors have been periodically updated and modernized as needed. The general floor plan is usually still intact, and significant elements such as stairs and circulation patterns also remain. There are a few buildings whose purpose has become obsolete, such as the latrines located behind Building #5.

Design and install a new interior feature or finish if the historic feature or finish is completely missing. This could include missing partitions, stairs, elevators, lighting fixtures, and wall coverings; or even entire rooms if all historic spaces, features, and finishes are missing or have been destroyed by inappropriate “renovations” or as a result of fire, flood or other natural disasters/acts of God. The design may be a restoration based on historical, pictorial, and physical documentation; or be a new design that is compatible with the historic character of the building, district, or neighborhood.

Accommodate service functions such as bathrooms, mechanical equipment, and office machines required by the building's new use in secondary spaces such as first floor service areas or on upper floors.

Reuse decorative material or features that have had to be removed during the rehabilitation work including wall and baseboard trim, door molding, paneled doors, and simple wainscoting; and relocating such material or features in areas appropriate to their historic placement.

Install permanent partitions in secondary spaces only; removable partitions that do not destroy the sense of space should be installed when the new use requires the subdivision of character-defining interior space.

Enclose an interior stairway where required by code so that its character is retained. In many cases, glazed fire-rated walls may be used.

Place new code-required stairways or elevators in secondary and service areas of the historic building.

Create an atrium or a light well to provide natural light when required for the new use in a manner that preserves character-defining interior spaces, features, and finishes as well as the structural system.

Add a new floor, if required for the new use, in a manner that preserves character-defining structural features, and interior spaces, features, and finishes.

Accessible spaces:

- » Rest Rooms
- » Egress
- » Elevators

NOT RECOMMENDED

Radically changing a floor plan or interior spaces—including individual rooms—which are important in defining the overall historic character of the building so that, as a result, the character is diminished.

Altering the floor plan by demolishing principal walls and partitions to create a new appearance.

Altering or destroying interior spaces by inserting floors, cutting through floors, lowering ceilings, or adding or removing walls.

Relocating an interior feature such as a staircase so that the historic relationship between features and spaces is altered.

Removing or radically changing features and finishes which are important in defining the overall historic character of the building so that, as a result, the character is diminished.

Installing new decorative material that obscures or damages character-defining interior features or finishes.

Removing paint, plaster, or other finishes from historically finished surfaces to create a new appearance (e.g., removing plaster to expose masonry surfaces such as brick walls or a chimney piece).

Applying paint, plaster, or other finishes to surfaces that have been historically unfinished to create a new appearance.

Stripping paint to bare wood rather than repairing or reapplying grained or marbled finishes to features such as doors and paneling.

Radically changing the type of finish or its color, such as painting a previously varnished wood feature.

Failing to provide adequate protection to materials on a cyclical basis so that deterioration of interior features results.

Permitting entry into historic buildings through unsecured or broken windows and doors so that the interior features and finishes are damaged by exposure to weather or through vandalism.

Stripping interiors of features such as woodwork, doors, windows, light fixtures, copper piping, and radiators; or of decorative materials.

Failing to provide proper protection of interior features and finishes during work so that they are gouged, scratched, dented, or otherwise damaged.

Failing to take new use patterns into consideration so that interior features and finishes are damaged.

Using destructive methods such as propane/butane torches or sandblasting to remove paint or other coatings. These methods can irreversibly damage the historic materials that comprise interior features.

Using new paint colors which are inappropriate to the historical character of the building.

Changing the texture and patina of character-defining features through sandblasting or use of abrasive methods to remove paint, discoloration or plaster. This includes both exposed wood (including structural members) and masonry.

Failing to undertake adequate measures to assure the protection of interior features and finishes.

Replacing an entire interior feature such as a staircase, paneled wall, parquet floor, or cornice; or finish such as a decorative wall covering or ceiling when repair of materials and limited replacement of such parts are appropriate.



Using a substitute material for the replacement part that does not convey the visual appearance of the surviving parts or portions of the interior feature or finish or that is physically or chemically incompatible.

Removing a character-defining feature or finish that is not repairable and then not replacing it; or replacing it with a new feature or finish that does not convey the same visual appearance.

Creating a false historical appearance because the replicated feature is based on insufficient physical, historical, and pictorial documentation or on information derived from another building.

Introducing a new interior feature or finish that is incompatible with the scale, design, materials, color, and texture of the surviving interior features and finishes.



Dividing rooms, lowering ceilings, and damaging or obscuring character-defining features such as fireplaces, niches, stairways or alcoves, so that a new use can be accommodated in the building.

Discarding historic material when it can be reused within the rehabilitation project, or relocating it to historically inappropriate locations.

Installing permanent partitions that damage or obscure character-defining spaces, features, or finishes.

Enclosing an interior stairway with fire-rated construction so that the stairwell space or any character-defining features are destroyed.



Radically changing, damaging, or destroying character-defining spaces, features, or finishes when adding new code-required stairways and elevators.

Destroying character-defining interior spaces, features, or finishes; or damaging the structural system in order to create an atrium or light well.

Inserting a floor within a building that alters or destroys the fenestration; radically changes a character-defining interior space; or obscures, damages, or destroys decorative detailing.

The Secretary of the Interior's Standards for Rehabilitation and the accompanying guidelines call for respecting the significance of original materials and features, repairing and retaining them wherever possible. This includes any paint, colors and finishes. In some cases, radiators, grilles and registers are quite ornate and comprise part of the building's design. Every effort shall be made to salvage these pieces, and where appropriate to reuse them as part of the new mechanical system. If it is determined that the element cannot be salvaged, then it should be replaced in kind.

Any installation of new building systems also must be reconciled with efforts to preserve historical finish materials. The amount of material that is demolished to make way for the system upgrades must be minimized whenever possible. Most mechanical systems require upgrading or replacement within 15-30 years due to wear and tear or the availability of improved technology; therefore, historic buildings should not be greatly altered or otherwise sacrificed in an effort to meet short-term mechanical system needs.

MECHANICAL AND ELECTRICAL SYSTEMS



RECOMMENDED PRACTICES

Identifying, retaining, and preserving visible features of early mechanical systems that are important in defining the overall historic character of the building. This may include radiators, vents, fans, grilles, plumbing fixtures, switch plates, and lights.

Protecting and maintaining mechanical, plumbing, and electrical systems and their features through cyclical cleaning and other appropriate measures.

Preventing accelerated deterioration of mechanical systems by providing adequate ventilation of attics, crawlspaces, and cellars so that moisture problems are avoided.

Improving the energy efficiency of existing mechanical systems to help reduce the need for elaborate new equipment. Consideration should be given to installing storm windows, insulating attic crawl space, or adding awnings, if appropriate.

Repairing mechanical systems by augmenting or upgrading system parts, such as installing new pipes and ducts; rewiring; or adding new compressors or boilers.

Replacing in kind – or with compatible substitute material – those visible features of mechanical systems that are either extensively deteriorated or are prototypes such as ceiling fans, switch plates, radiators, grilles, or plumbing fixtures.

Installing a completely new mechanical system if required for a new use so that it causes the least alteration possible to the building's floor plan, the exterior elevations, and the least damage to the historic building material.

Providing adequate structural support for new mechanical equipment.

Installing the vertical runs of ducts, pipes, and cables in closets, service rooms, and wall cavities.

Installing air conditioning units if required by the new use in such a manner that historic features are not damaged or obscured and excessive moisture is not generated that will accelerate deterioration of historic materials.

Installing heating/air conditioning units in the window frames in such a manner that the sash and frames are protected. Window installations should be considered only when all other viable heating/cooling systems would result in significant damage to historic materials.

NOT RECOMMENDED



Removing or radically changing features of mechanical systems that are important in defining the overall historic character of the building so that, as a result, the character is diminished.

Failing to provide adequate protection of materials on a cyclical basis so that deterioration of mechanical systems and their visible features results.

Enclosing mechanical systems in areas that are not adequately ventilated so that deterioration of the systems results.

Installing unnecessary air conditioning or climate control systems which can add excessive moisture to the building. This additional moisture can either condense inside, damaging interior surfaces, or pass through interior walls to the exterior, potentially damaging adjacent materials as it migrates.



Replacing a mechanical system or its functional parts when it could be upgraded and retained.

Installing a replacement feature that does not convey the same visual appearance.

Installing a new mechanical system so that character-defining structural or interior features are radically changed, damaged, or destroyed.

Failing to consider the weight and design of new mechanical equipment so that, as a result, historic structural members or finished surfaces are weakened or cracked.

Installing vertical runs of ducts, pipes, and cables in places where they will obscure character-defining features.

Concealing mechanical equipment in walls or ceilings in a manner that requires the removal of historic building material.

Installing a “dropped” acoustical ceiling to hide mechanical equipment when this destroys the proportions of character-defining interior spaces.

Cutting through features such as masonry walls in order to install air conditioning units.

Radically changing the appearance of the historic building or damaging or destroying windows by installing heating/air conditioning units in historic window frames.



Sustainable design practice for existing buildings means making choices that lessen impact on the environment. Historic buildings typically have inherent sustainable design features, such as operable windows for natural ventilation and made of more durable materials that can be repaired rather than replaced. However, buildings are the largest user of energy and electricity and largest contributor to greenhouse gas emissions. This section of the Design Standards focuses on appropriate sustainable design and historic preservation. This includes recommendations to improve energy efficiency, reduce water consumption, recycle materials, reduce waste that would go to landfills, and extend the useful life of buildings which, in turn, extends the benefit of the energy and material resources embodied in them.

This section includes:

- » Energy Efficiency
- » Energy Conservation
- » Water Conservation
- » Inherent Technology
- » Materials and Resources

ENERGY EFFICIENCY (HEATING AND COOLING)



RECOMMENDED PRACTICES

Insulate attics, crawl spaces and under floor spaces. Provide additional insulation to achieve an R38 in attics and R25 under floor where the insulation can be installed without destroying historic building fabric.

Seal joints around windows, doors, plumbing penetrations, electrical penetrations, and other openings to reduce air infiltration. Joint sealants should match an adjacent material color or be paintable.

Weatherstrip doors and windows and maintain operable hardware to maximize performance and maintain weathertightness.

Storm Windows shall have the same sash configuration as the historic window, shall be operable and prefinished or painted to match the historic window.

Storm or Screen Doors shall have a narrow profile with a full vision light so as to not obscure the historic door and shall be painted the same color as the historic door.

Maintain Historic Windows – Historic windows with proper maintenance, weatherstripping and storm windows have been proven to perform as well, thermally, as replacement windows. Historic windows can be repaired instead of replaced, saving material from landfills.

Maintain Operable Shutters – Keep shutters and hardware in operable condition and encourage their use to control heat gain in the summer and heat loss in the winter.

Equipment – Zone HVAC systems for efficiency and use programmable thermostats.



Buildings are the largest user of energy and contributor to greenhouse gas emissions. Making buildings energy efficient can save up to 30 percent in energy savings and 35 percent savings on carbon emissions.

NOT RECOMMENDED

Removing historic finishes and/or features to add insulation to concealed spaces such as wall cavities.

Adding insulation to the exterior of buildings.

Sealants that are incompatible with substrates, sealants that do not match a substrate or can not be painted (such as clear sealants).

Replacing hardware when the existing hardware can be repaired.

Storm windows that do not match the configuration/operation of the historic window. Bare/unfinished aluminum storm windows.

Storm doors that detract from the historic appearance of the door opening by obscuring it with an inappropriate design or style.

Replacing windows with “energy efficient” windows.



ENERGY CONSERVATION (POWER AND LIGHTING)

RECOMMENDED PRACTICES

Daylighting: Take advantage of existing windows to provide daylighting to reduce artificial lighting loads.

Lighting: Retrofit or relamp existing light fixtures for energy efficient fluorescent bulbs.

Appliances: When replacement becomes necessary, replace appliances, water heaters, mechanical equipment with energy efficient units.



WATER CONSERVATION

RECOMMENDED PRACTICES

Plumbing Fixtures: When replacement becomes necessary, replace plumbing fixtures with low-flow, water-saving devices.

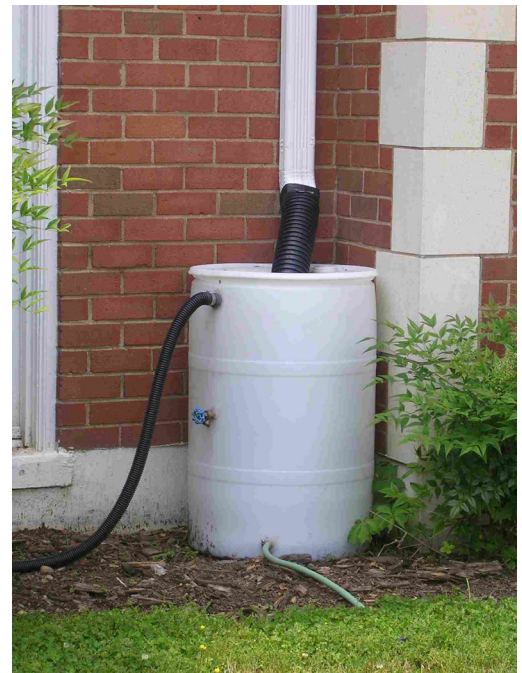
Fixtures: Use aerators on sink faucets, use water saving shower heads.

Landscaping: Use native plant species and drought tolerant plant species for landscaping to reduce water consumption for irrigation and re-establish natural environments.

Irrigation: Use efficient irrigation systems, irrigation systems that are set on timers or are programmable.

Recycled Water: Consider capturing rain water for irrigation if rain barrels do not detract from the historic character of the building or neighborhood.

Gray Water Recycling: Consider installing gray water recycling systems to supplement the water demand of irrigation systems.



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WATER CONSERVATION



Using sustainable practices can reduce water consumption by up to 30 percent. However, reducing water usage may have a negative impact on historic landscape features. Sustainable practices for water conservation should include both a reduction in use and incorporating both historic and modern methods of recycling water.

NOT RECOMMENDED

Water dependent landscape planting and planting prohibited by the Design Standards.

Restricting water for irrigation that may irreparably change the character of a historic landscape or alter the relationship between a building and its surrounding landscape.

INHERENT TECHNOLOGIES



RECOMMENDED PRACTICES

Operable Windows: Maintain operable windows to reduce heating and ventilation demands during temperate seasons.

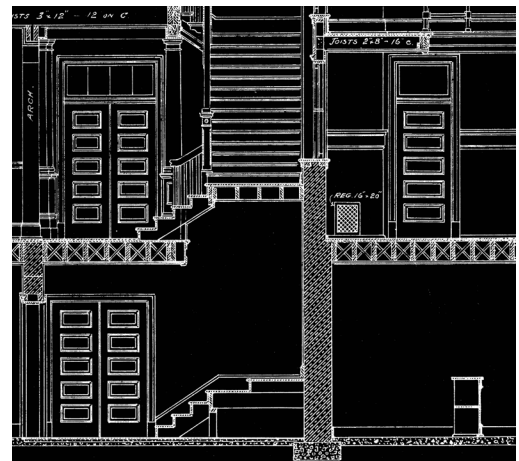
Transom Windows: Maintain the operability of transom windows over doors for cross ventilation. Transom windows also decrease the need for artificial lighting by allowing “borrowed light” into interior spaces.

High Ceilings – Preserve high ceilings to allow air to circulate and light to enter.

Porches – Retain porches for shading protection and ventilation.

Mature Trees/Planting – Maintain mature deciduous tree cover that provides shade/sun protection in the summer and allows sunlight to enter during the winter. Consider additional planting for summer shading if allowed by other sections of the Design Standards.

Durable Materials – Maintain durable materials such as brick masonry walls that inherently provide thermal protection due to retention, insulation and release through the material.



Historic buildings have design features that typically respond to climate and site. When these features are maintained, restored, or reinstated, they can bring about substantial energy savings without compromising historic character.

NOT RECOMMENDED

Sealing operable window units shut.

Enclosing porches, infilling porches with glass to create “sunrooms”.

Removing mature trees/landscaping that will alter the established landscaping.

Removing or covering transom windows unless required by life safety codes for fire ratings. If fire ratings are required, maintain the transom window and provide the rated separation independent of the window.

Lowering high ceilings by installing “dropped” ceilings.

Replacement material of lesser quality that does not perform in a comparable manner or less durable replacement materials.



MATERIALS AND RESOURCES

RECOMMENDED PRACTICES

Maintenance: Maintain historic building fabric and repair as necessary.

Recycled Materials: Use recycled content insulation materials such as cotton insulation in crawl spaces and attics that are 95 percent recycled from post-industrial cotton fibers.

Recyclable Materials: Retain historic materials or building features and reuse in other building rehabilitations.

Salvaged Materials – Consider the use of appropriate salvaged materials for building rehabilitation.

Renewable Resources: For replacement or new construction, use natural, durable materials that are less energy intensive to produce. Use materials made from renewable resources and recycled resources that can also be recycled at the end of their serviceable life.

Reuse historic buildings to assist in their preservation, contribute to the special quality of Fort Monroe, and to extend the payback of their embodied energy and materials.

NOT RECOMMENDED

Use of salvaged materials that are not appropriate to the character of the historic structure or would alter the character. For example: using salvaged material that predates the original construction thus creating a false interpretation or false historicism.

Disposal of materials, fixtures or features that can be upgraded or repaired and reused.

