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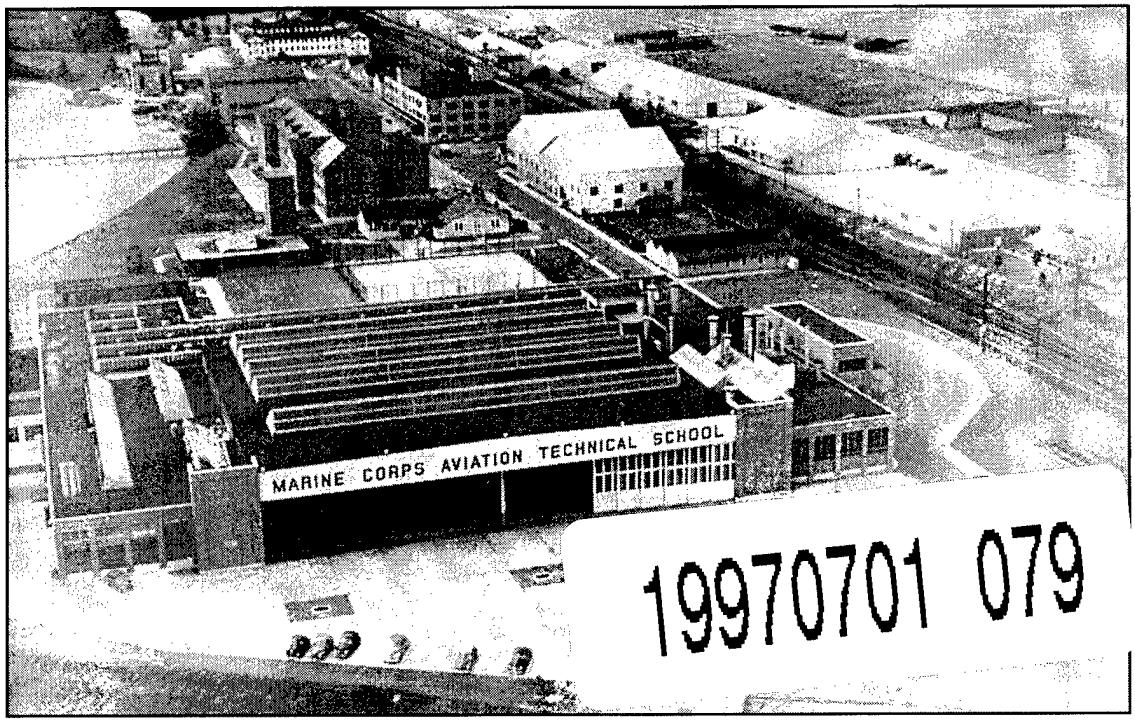
Design and Replacement Guidelines for Historic Properties at Marine Corps Base Quantico, Virginia

by Amy J. Lamb and Don Kermath



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This report compiles preservation guidelines for Quantico personnel involved in any facility specification, expansion, or retrofit that may affect historic character. In general, repair is preferred over replacement. Where historic features are missing or irreparable, guidelines are specified for replacement of historically compatible items, materials, and colors.

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13. ABSTRACT (Maximum 200 words)

The architecture of U.S. Marine Corps Base Quantico, Virginia (Quantico) comprises a unique cultural resource for the Department of Defense. Quantico employs a large number of historically significant facilities in its daily operations. Within the installation, historic districts have been identified under historic themes: Aviation, Education, First Permanent Construction, Lustron Housing, Naval Clinic Complex, and African-American Barracks. Quantico's historic facilities and districts are subject to provisions of *The National Historic Preservation Act of 1966* that require all Federal agencies to duly consider the effects of any proposed action on properties listed or eligible for listing in the National Register of Historic Places. To maintain the integrity of Quantico's historic properties, maintenance, repair, alterations, and required retrofits should follow *The Secretary of the Interior's Standards for the Treatment of Historic Properties*. Retrofits for accessibility must conform to passages of the *Americans With Disabilities Act* and *Uniform Federal Accessibility Standards* pertaining to historic properties.

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Foreword

This study was conducted for the Natural Resources and Environmental Affairs (NREA) Branch, Facilities Division of the U.S. Marine Corps Combat Development Command (MCCDC) under Military Interdepartmental Purchase Request (MIPR) M9301594MP34007, dated 16 May 1994. The technical monitor was Jeff Shrum, MCCDC NREA Branch, Facilities Division.

The work was performed by the Maintenance Management and Preservation Division (FL-P) of the Facilities Technology Laboratory (FL), U.S. Army Construction Engineering Research Laboratories (USACERL). The USACERL Principal Investigator was Don Kermath, CECER-FL-P. Dr. Simon S. Kim is Chief, CECER-FL-P, and Donald F. Fournier is Acting Operations Chief, CECER-FL. The USACERL technical editor was Gordon L. Cohen, Technical Information Team.

Dr. Michael J. O'Connor is Director of USACERL.

Contents

1 Introduction

Background

The *National Historic Preservation Act of 1966* (Public Law [PL] 89-665, sec 106, as amended) and supporting Executive Orders require all Federal agencies to duly consider the consequences of any proposed actions on properties listed on, or eligible for, the National Register of Historic Places. The Department of Defense (DoD) is obligated by law and regulation to ensure that such historic properties are not inadvertently transferred, sold, demolished, altered substantially, or allowed to deteriorate significantly.

U.S. Marine Corps Base Quantico, Virginia (Quantico) is the site of numerous historic facilities that fall under the scope of the *National Historic Preservation Act* (NHPA). To ensure compliance with NHPA and supporting regulations, the Quantico Natural Resources and Environmental Affairs (NREA) Branch, Facilities Division tasked the U.S. Army Construction Engineering Research Laboratories (USACERL) to compile design and replacement guidelines for Quantico's historic facilities.

Objective

The objective of this work was to compile a concise summary of design and replacement guidelines to (1) enable Quantico to meet the requirements of NHPA and (2) preserve the integrity of Quantico's historic buildings and districts.

Approach

Guidelines for Quantico were based mostly on *The Secretary of the Interior's Standards for the Treatment of Historic Properties* (National Park Service 1995), which is the principal guidance on this topic published by the U.S. Department of the Interior. The authors adapted the general guidance to specific Quantico properties and historic themes, for use by staff or contractor architects working for Quantico.

Guidelines are provided both for historic district structures (exterior and interior) and landscapes throughout Quantico. Illustrations are included to represent a complete cross-section of all Quantico historic districts and characteristic details found on the buildings there. Compatible replacement parts or materials are offered for common unrepairable exterior elements. Figure 1 is an aerial photograph of the Quantico historic site.

A series of reference-oriented appendices is included. Appendix A is a glossary of historic-preservation terms. Appendix B reprints passages from the *Secretary of the Interior's Standards* pertaining to three building treatments prescribed for Quantico: preservation, rehabilitation, and restoration. Appendix C reprints applicable passages of the *Americans With Disabilities Act* (PL 101-336), and Appendix D reprints applicable passages of the *Uniform Federal Accessibility Standards* (Fed-Std-795, 1 April 1988)—both of which specify ways to reconcile Federal accessibility standards with Federal historic preservation requirements. Appendix E provides a list of vendors who offer compatible replacement parts or restoration services.

Scope

In addition to the guidelines documented in this report, other Department of the Interior publications will be helpful to Quantico architects working on historic facilities. These include the following:

- Park, Sharon C., *Preservation Briefs 16*, "The Use of Substitute Materials on Historic Building Exteriors" (Preservation Assistance Division, National Park Service, undated).
- Nelson, Lee H., *Preservation Briefs 17*, "Architectural Character: Identifying the Visual Aspects of Historic Buildings as an Aid to Preserving Their Character" (Preservation Assistance Division, National Park Service, undated).
- Jandl, H. Ward, *Preservation Briefs 18*, "Rehabilitating Interiors in Historic Buildings" (Preservation Assistance Division, National Park Service, undated).
- Jester, Thomas C., and Sharon C. Park, *Preservation Briefs 32*, "Making Historic Properties Accessible" (Preservation Assistance Division, National Park Service, September 1993).

Issues pertaining to archeological sites were beyond the scope of this work, but the users of this report should be aware that archeological issues are also covered by Department of the Interior guidance. Installation personnel or officials considering

activities that may affect an archeological site should consult and adhere to *The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation.*

The authors do not intend to imply that the list of vendors provided in Appendix E is exhaustive or is officially endorsed by USACERL. The information is intended to offer a starting point for architects in search of historically compatible building components or restoration services.

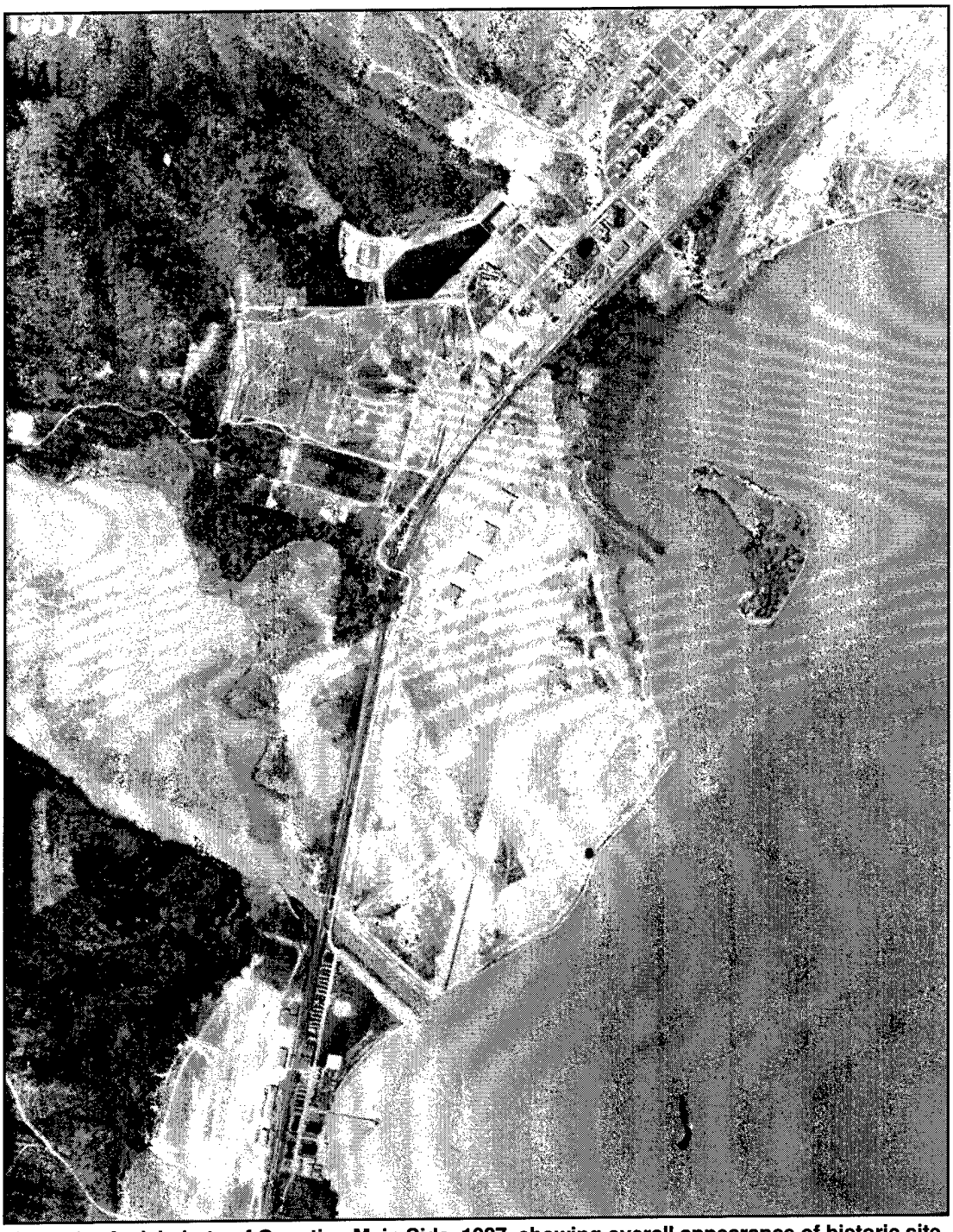


Figure 1. Aerial photo of Quantico Main Side, 1937, showing overall appearance of historic site.

2 Installation-Level Guidelines

Site Conditions

Quantico—originally a sloping terrain, comprising low-lying marshes and hardwood-forested high points—began to form its own appearance through development. Because of the already rolling contours of the land, many of the roads and buildings played a sensitive part in adopting these patterns naturally. As the base changed, many of the marshes were filled and trees struck down, creating open areas and solid ground for permanent construction. These features constructed by the hands of hard working marines are still evident at the base. The Secretary of the Interior's standards address important aspects of site development in historic areas:

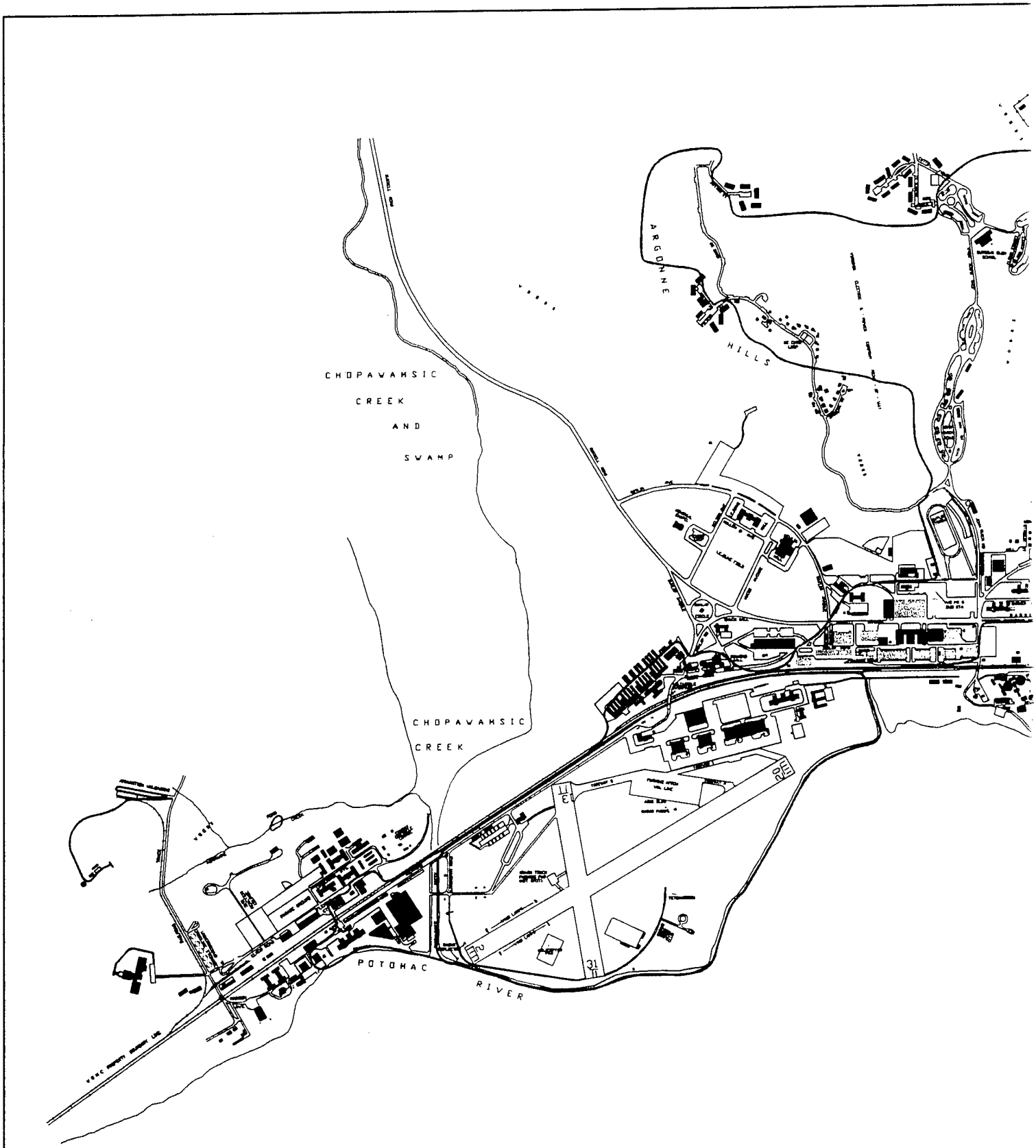
- Preserve the overall appearance and character found throughout the site. See Figure 2.
- Maintain the integrity of the landscape with any new corridors or buildings that should need to be constructed. See Figure 3.
- Retain the boundaries encompassing the historic districts. For development within these areas, see guidelines for historic district site conditions (next section).
- Improve energy-efficiency and ecology by maintaining existing landscape features that moderate the effects of the climate on the setting (e.g., deciduous trees, evergreen windblocks, and lakes or ponds).

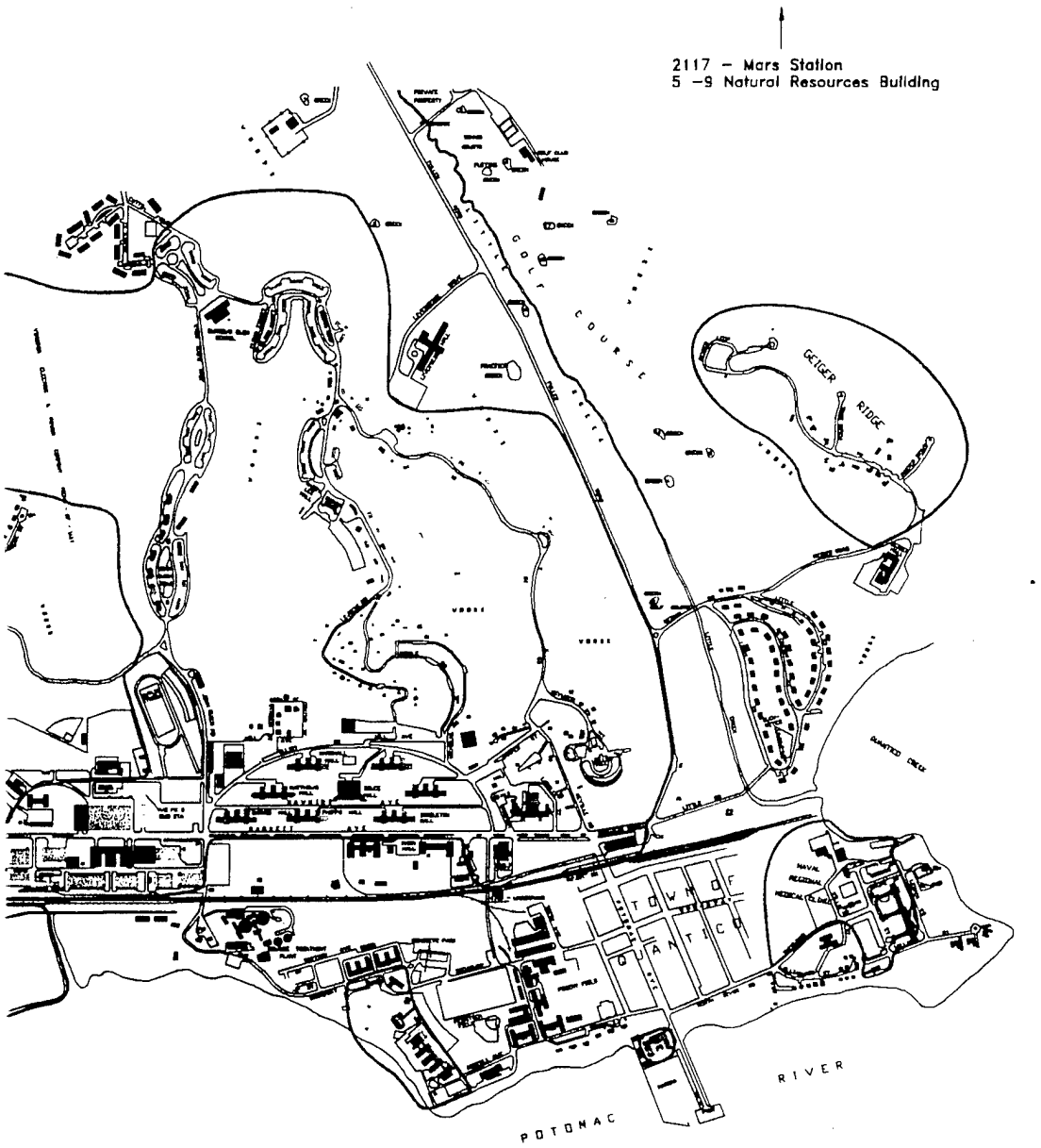
Figure 2. Dark, well-concealed fence helps to maintain site's character.

Figure 3. Outbuilding construction is reversible, but not compatible with site.

Historic Districts

To maintain the historic integrity of Quantico, a number of districts have been identified. Areas in Figure 4 (foldout map) have been defined according to density


CHOPAWAMSIC
CREEK
AND
SWAMP
CHOPAWAMSIC
CREEK
ARGONNE
HILLS
POTOMAC
RIVER



Historic Properties at Quantico Marine Corps Base

LEGEND

Thematic Groups

- [illegible] construction
- Aviation
- Naval Clinic
- African–American Marines Barracks
- [illegible]

— Landscape Boundaries

— Proposed Boundary Lines for Historic District

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Historic Properties at Quantico Marine Corps Base

LEGEND

Thematic Groups

First [illegible] Construct [illegible]

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Aviation

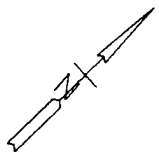
Naval Clinic

African-American Marines Barracks

Education

Landscape Boundaries

Proposed Boundary Lines for Historic District



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3

of contributing buildings from thematic groupings of related structures. Historic themes include Aviation, Education, First Permanent Construction, Lustron Housing, Naval Clinic Complex, African American Barracks, and Industrial. District-level guidelines for retaining the integrity of these historic districts include the following:

- Preserve the relationship between buildings, landscape elements, and open space. If new buildings are provided, they shall be consistent in architectural quality and proportion with the existing buildings of each historic district. See Figure 5.
- Where landscaping has been neglected, improve the landscape character; where there is no landscaping, initiate a program to provide it, especially in designated park areas and in areas of noncommissioned occupancy.
- Maintain grades sloping away from historic structures to retain drainage runoff and topography throughout the entire historic district. See Figure 6.
- Retain site elements that are important in defining the overall historic character of the property. These include elements such as street lighting, street furniture, and fence enclosures.
- Signage and graphics should be consistent with the historic character of the property. Commonly noticed items: name plaques and numbers on houses, numbers on buildings, signs with names of buildings, notation of parking spaces, and street signs. See Figure 7.
- Accommodate parking in designated areas without intruding on the historic district. Also, screen parking from view to reduce its impact on the site.

Figure 5. Butler Stadium, originally carved out of forest, rock, and earth by the Marines.

Figure 6. Retaining wall with drainage on Neville Road maintains site's slope.

Figure 7. Spray-painted signage is noncompatible and can damage bricks, but this bricked-in window maintains its original character-defining elements and is sensitive to the integrity of the original.

Figure 8. Vines should be cut back to avoid damage to stucco and wood.

- Improve energy efficiency by retaining plant materials, trees, and landscape features—especially those that perform passive solar energy functions such as sun shading and wind breaks. Be sure to prune the landscaping so it will not damage the structure. See Figure 8.

3 Exterior Building-Level Guidelines

General Building Treatments

Several building types characterize each Quantico historic district. Individual types represent the sequence of development throughout the history of Quantico. The different building types include Lustron, Bungalow, Dutch Colonial, Georgian Revival, African American Barracks, Hangar, and Industrial. Construction of aviation and medical sectors was prompted by advances in aircraft and medicine. The need for inexpensive housing after World War II spurred new generations of house design. The construction of new environments for Marine Corps learning plan, doctrine, and training was modeled on the university-type atmosphere of the Georgian Revival style. These developmental phases are well illustrated in the styles seen on base today. Guidelines for general building treatments include the following:

- Maintain historic use, or allow new use to maximize the retention of distinctive materials, features, spaces, and spatial relationships. See Figure 9.
- Retain historic character. Alterations to the property shall be physically and visually compatible, but shall be differentiated from the old. New construction shall be reversible.
- Retain elements that are important in defining the overall historic character of the building. These include entrance lighting, name and number signage, ornamentation, and craftsmanship. See Figure 10.
- Preserve and retain architectural changes that have historic significance.

Figure 9. Larson Gymnasium, originally an airplane hangar, retains historic integrity with original elements such as hangar doors.

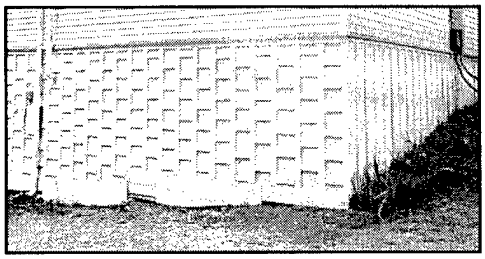


Figure 11. Historic foundation maintains ornamental character of the Bungalow and preserves its craftsmanship.

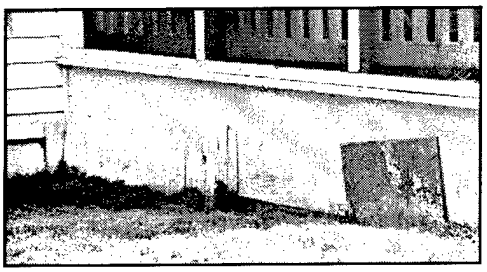


Figure 11. Boards nailed to this foundation cause damage and are visually intrusive.

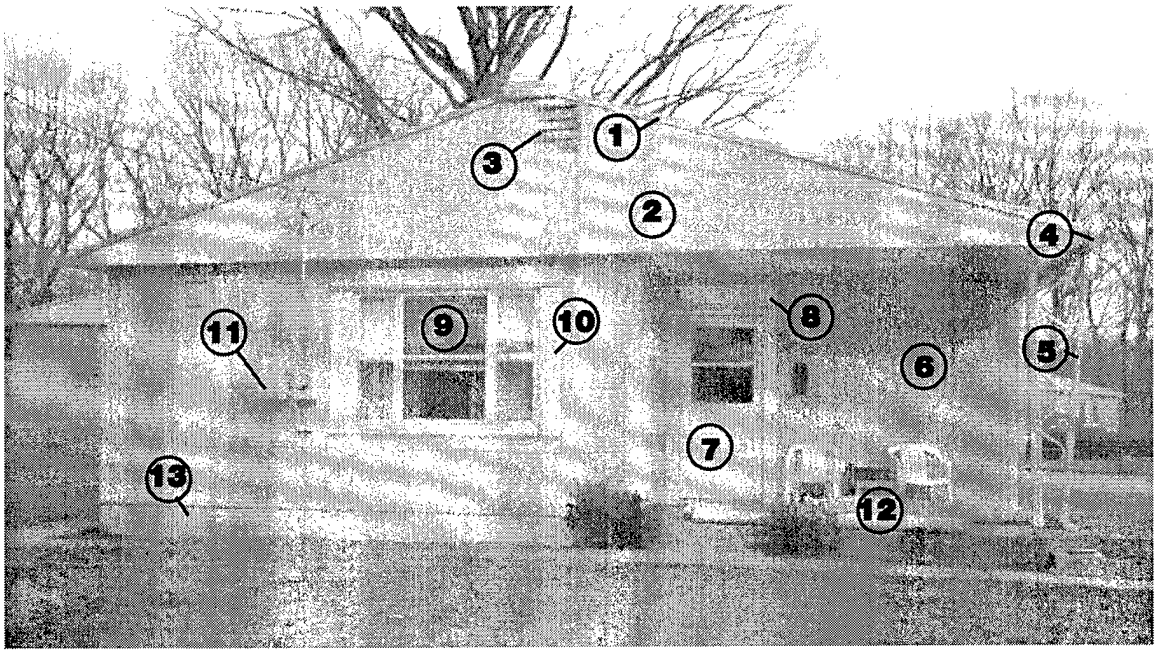
Figure 12. Replacement material and construction of stairs are compatible, but should be painted white to be color-compatible.

- Evaluate the property's level of deterioration to determine the treatment required before taking action.
- Any physical treatment undertaken shall use the least invasive means possible. Those causing damage to the historic material shall not be used. See Figure 11.
- Deteriorated historic features shall be repaired rather than replaced whenever feasible. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and materials where possible. See Figure 12.
- Energy conservation measures shall maintain character-defining features. Executive Order 12902, "Energy Efficiency and Water Conservation at Federal Facilities" requires all measures have a 10-year payback to be funded.

Building Anatomy

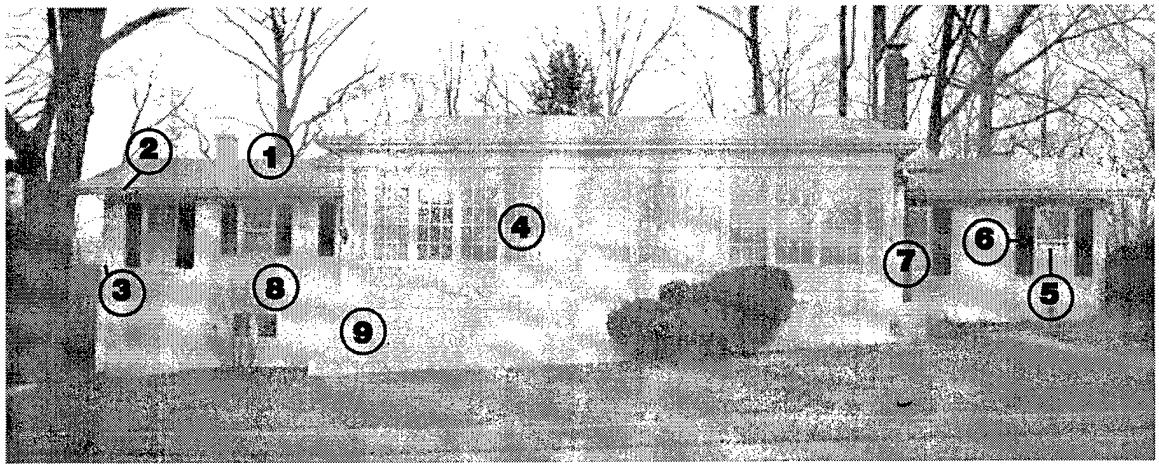
Figures 13–19 show a representative example of each building type. Individual components are called out and labeled. The major historic building types at Quantico are:

- Lustron (Figure 13)
- Bungalow (Figure 14)
- Dutch Colonial (Figure 15)
- Georgian Revival (Figure 16)
- African American Barracks (Figure 17)
- Hangars (Figures 18 and 19)
- Industrial (Figure 20).



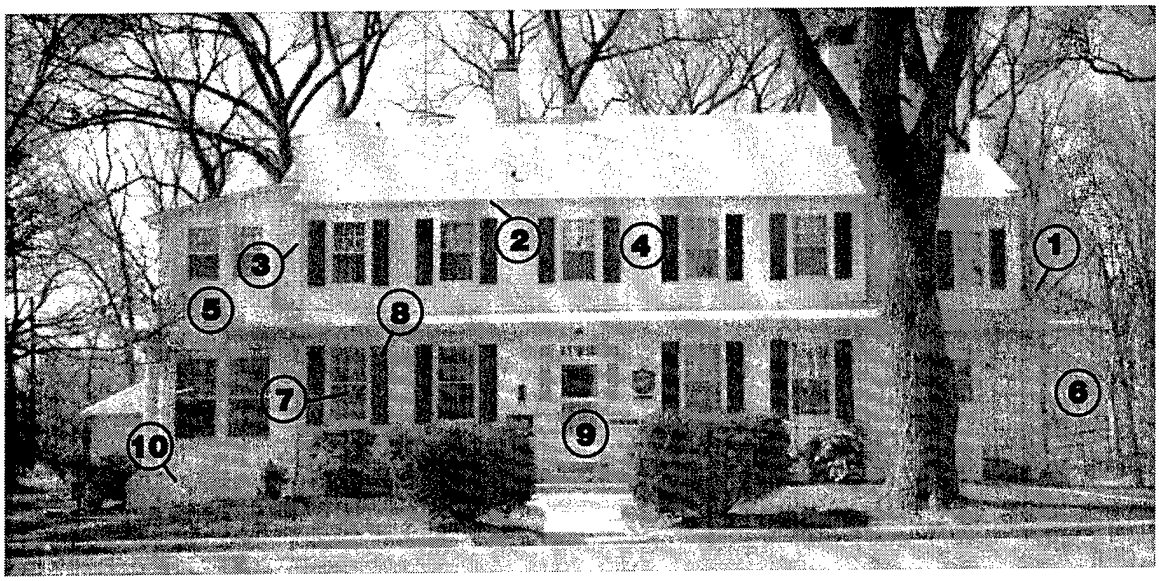
1. overlapping metal porcelain enamel panel gable roof
2. gable end
3. attic vent
4. gutter
5. downspout
6. 2'x2' metal porcelain enamel panel exterior wall covering
7. door with window & screen/storm door
8. door surround
9. compatible double hung window
10. window surround
11. utility service
12. open porch
13. concrete slab foundation

Figure 13. Lustron house anatomy (Building 2748).



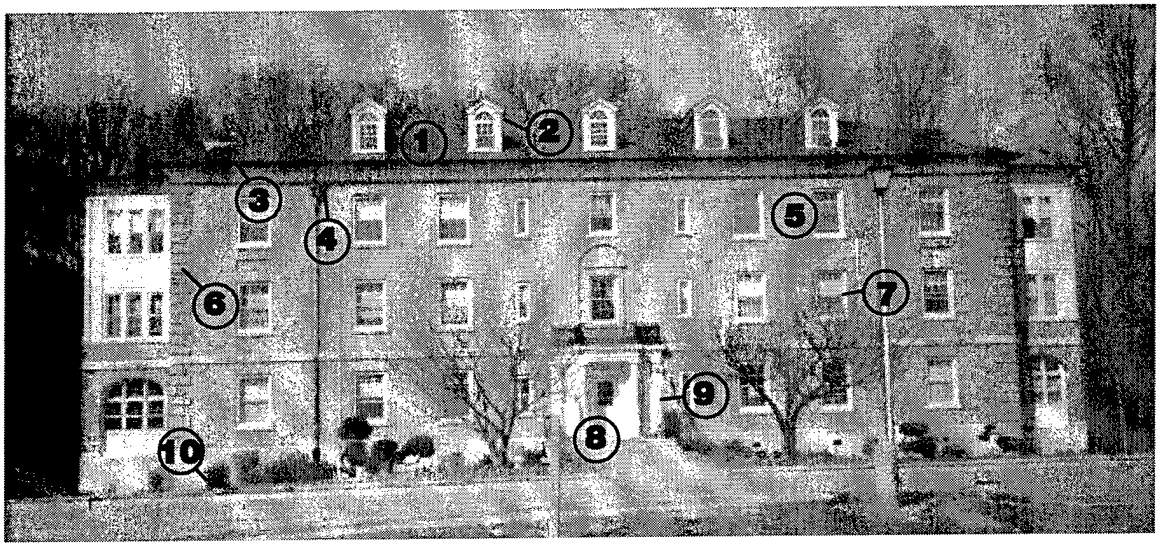
1. gable roof
2. gutter
3. downspout
4. enclosed porch
5. 6/6 double hung window
6. shutters
7. 1 light, 1 panel wood door (on side)
8. wood sided exterior wall covering
9. concrete foundation

Figure 14. Bungalow house anatomy (Building 122).



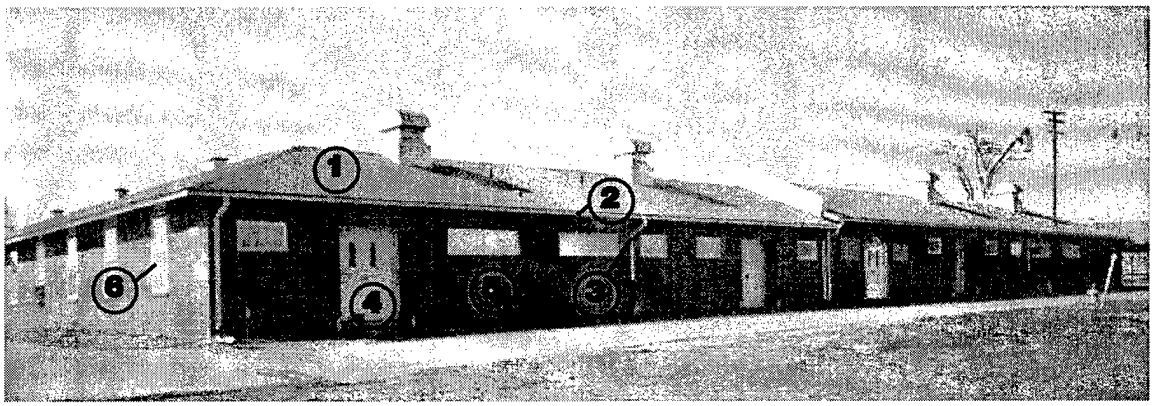
1. gambrel roof
2. gutter
3. downspout
4. dormer
5. wood sided exterior wall covering
6. enclosed porch (on backside)
7. 6/6 double hung window
8. shutters
9. 9 light, 1 panel, 3 light transom & side lights with screen/ storm door
10. concete foundation

Figure 15. Dutch Colonial house anatomy (Building 11).



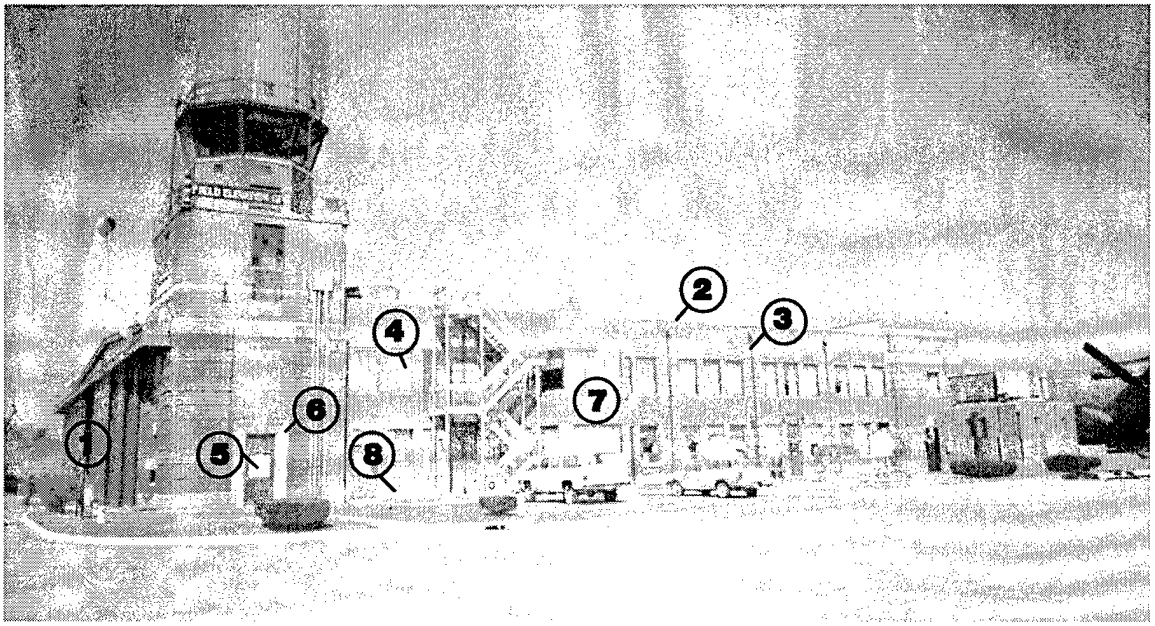
1. hip roof
2. dormer
3. half round copper gutter
4. downspout with scupper
5. American bond brick exterior wall covering
6. quoins
7. 6/6 double hung window
8. 9 light, 2 panel door
9. door surround
10. concrete foundation

Figure 16. Georgian Revival anatomy (Building L).



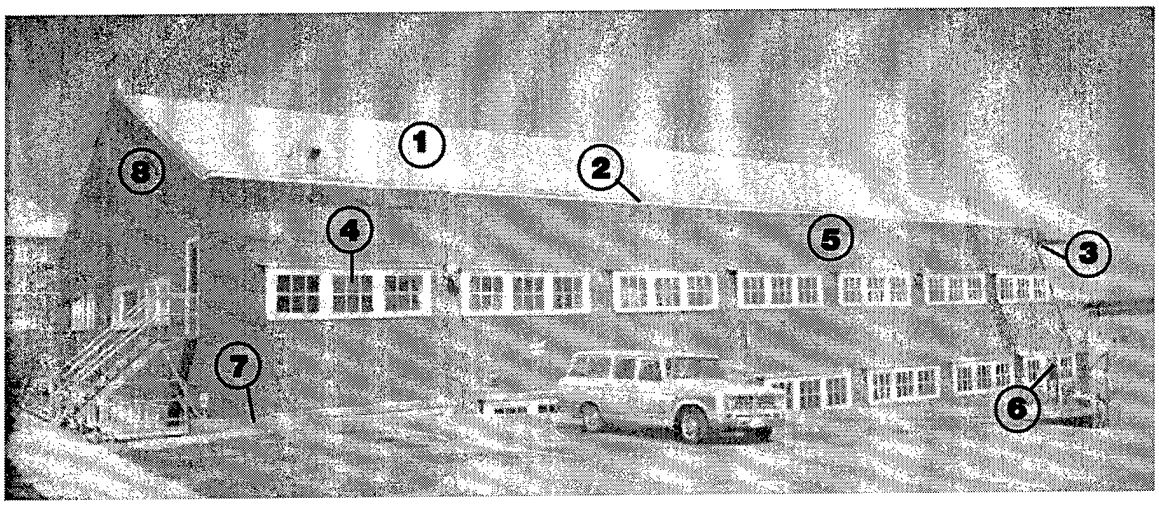
1. combination hip/gable roof (gable ends not shown)
2. gutter
3. downspout
4. narrow light double doors
5. structural terra cotta exterior wall covering
6. 1/1 double hung window

Figure 17. African American Barracks anatomy (Building 3086).



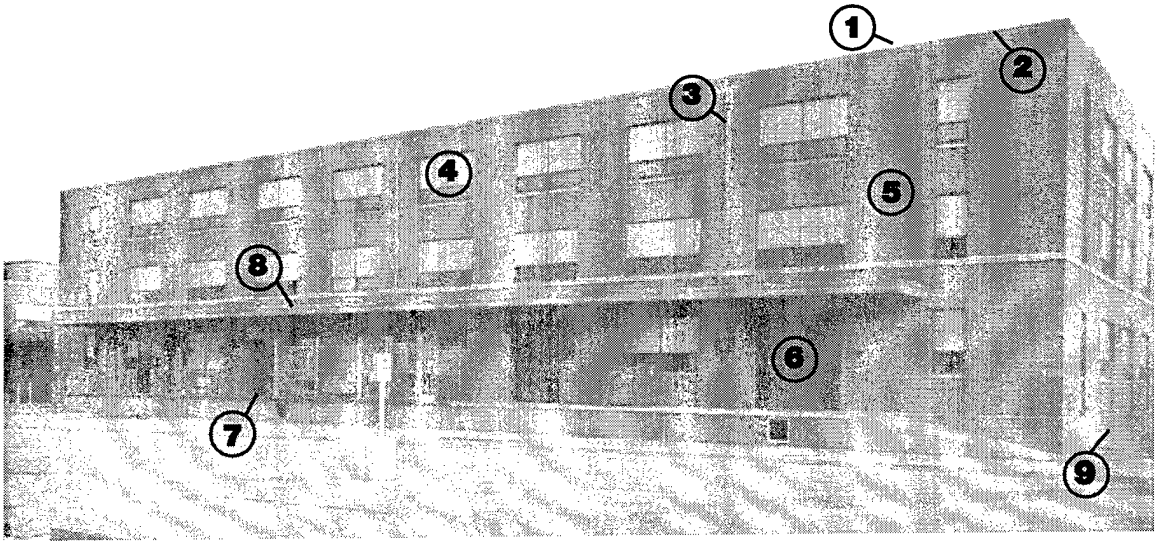
1. sliding hangar doors
2. flat roof with parapit
3. downspourt with scupper covering
4. 6/6 double hung window
5. door
6. door surround
7. American bond brick exterior wall
8. concrete foundation

Figure 18. Georgian Airplane Hangar anatomy (Building 2105).



1. gable roof
2. fascia with metal drip edge
3. sliding hangar doors (on side)
4. 6,6,6 awining dormer windows
5. layered rolled asphalt exterior wall covering
6. 1 light, 1 panel door
7. trench & concrete foundation
8. gable roof end

Figure 19. Seaplane Hangar anatomy (Building 4).



1. flat roof (behind parapet)
2. parapet
3. downspout with scupper
4. window (varies: awning, fixed, casement)
5. running bond brick exterior wall covering
6. overhead door
7. loading dock
8. awning
9. concrete foundation

Figure 20. Industrial Building anatomy (Building 2011).

Exterior Building Components

Each type of historic building at Quantico has specific maintenance, repair, and renovation needs according to construction method, material composition, and characteristic features. Guidelines are provided for key external building materials, elements, and systems.

Masonry

- Maintain sound masonry elements that are important in defining the overall historic character of the building. Remove and replace masonry inconsistent with the original with stone, brick, and mortar to match the original. See Figure 21.
- Analyze existing mortar to specify a compatible mix for repairs. New mortar shall match the old in color, texture, workmanship, and strength. See Figure 22.
- Retain correct joint size and profile for appropriate pointing of historic brick walls.
- Size and orientation of bricks shall replicate the original layout and bond pattern.
- Retain the existing texture and color of masonry surfaces. Maintain any coatings included on the original materials to protect elements that were not intended to be exposed.
- Masonry surfaces shall not be removed. When repair is not practical, replacement of elements shall match the original. See Figure 23.

Figure 21. Stone and mortar joint size, proportion, and workmanship of foundation, Harry Lee Hall.

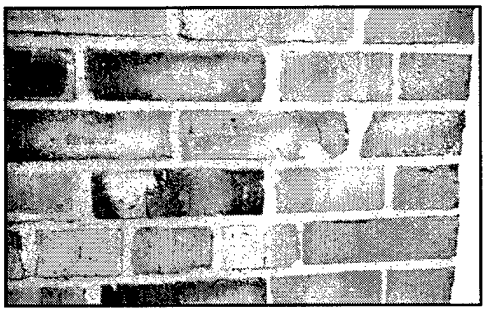


Figure 22. Correct mortar mix is crucial in repointing; stronger cements trap water within brick, causing spalling.

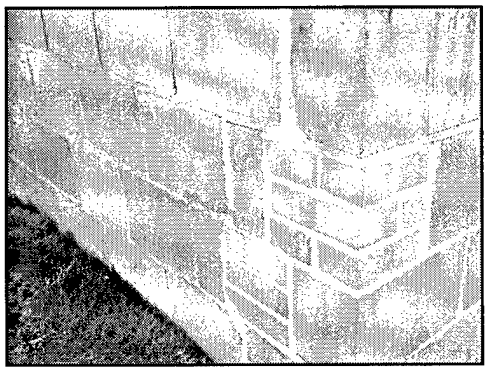


Figure 23. Incompatible masonry units and mortar adversely affect character.

Concrete

- Analyze existing concrete so that a compatible mix can be made for repairs. New concrete mixtures should be composed with ingredients of the same character. Aggregate size, color, and strength shall match that of the old. See Figure 24.

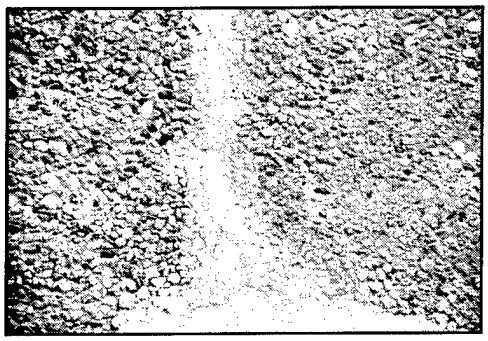


Figure 24. Inappropriate repairs to Georgian foundation walls cause an adverse effect to historic character.

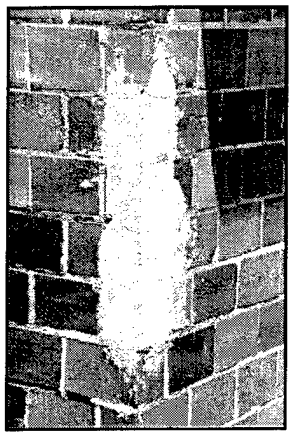


Figure 25. Concrete is stronger than terra cotta and can cause damage; a more visually and structurally compatible material should be used.

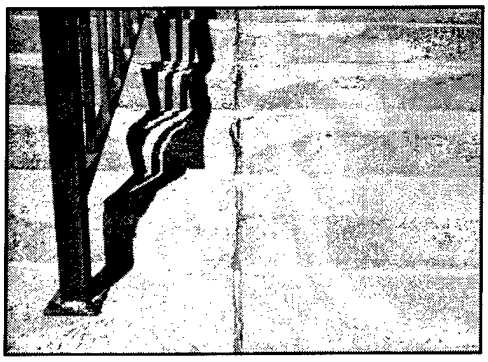


Figure 26. These deteriorated stairs are aesthetically damaging and a safety hazard; they must be repaired with a compatible concrete mixture.

- Point where spalling has occurred. Retain correct joint size and profile for appropriate pointing of historic structural material. See Figure 25.
- Repair concrete steps and stoops where rust damage from ironwork has occurred. See Figure 26.

Metals

- Metal elements that contribute to the archi tectural character of the building shall be retained and preserved. Also, retain and preserve the type of finish, its historic color, and accent scheme. See Figure 27.
- Copper and bronze should not be painted or coated. Other metals should be painted to protect them from weathering. See Figure 28.
- Retain rather than replace deteriorated architectural metal elements when repair and limited replacements can be accomplished. See Figure 29.

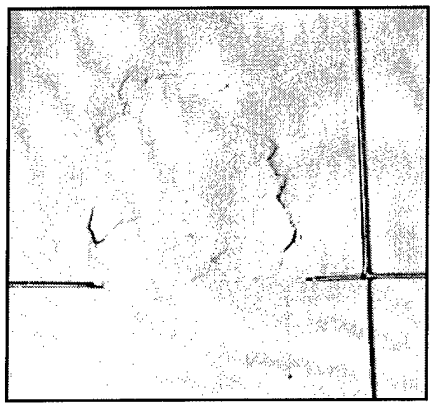


Figure 27. Grout is an inappropriate repair material for Lustron steel panels, which typically are repaired and refinished with auto-body filling compound and spray-on lacquer.

- Reinstall copper guttering to match the original where an incompatible replacement is currently in place.
- Clean and paint steel lintels before pointing. Rework iron railings with fewer penetrations into stone masonry. Remove rust, paint, and reinstall railings.
- Use historic seaming techniques for connections of metal sheets for roofs.
- Choose compatible metal combinations for materials and their connectors. Nails, screws, and bolts can promote corrosion through electrochemical reactions resulting from combining dissimilar metals.

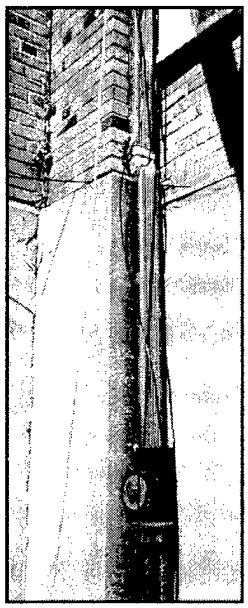


Figure 28. Copper gutter replacement has been left uncoated to allow metal to form proper patina.

Wood

- Wood elements that are important in defining the overall historic character of the building shall be retained and preserved. Similar elements such as original cornices and brackets, architraves, door surrounds, pediments, railings, and moldings shall remain as original fabric with repairs. Replace such elements only if the original is unrepairable. See Figure 30.
- Replace elements that were once part of the original fabric, but are now missing.
- Analyze deteriorated wood sections thoroughly for damage due to water, insects, or fungi. Repairs should eliminate initial causes of damage instead of merely covering rotted wood. See Figure 31.

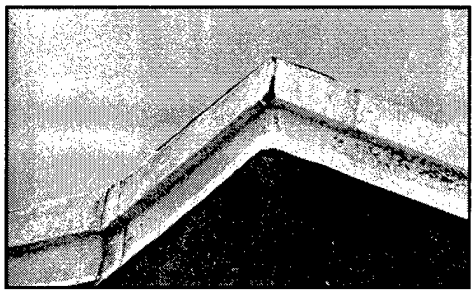


Figure 29. Deterioration will continue if metal is not properly cleaned and coated.

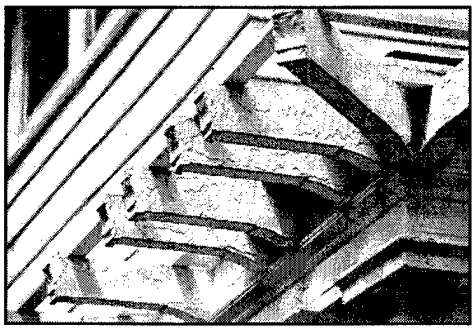


Figure 30. Exposed wood must be properly finished to prevent water damage to historically significant elements.

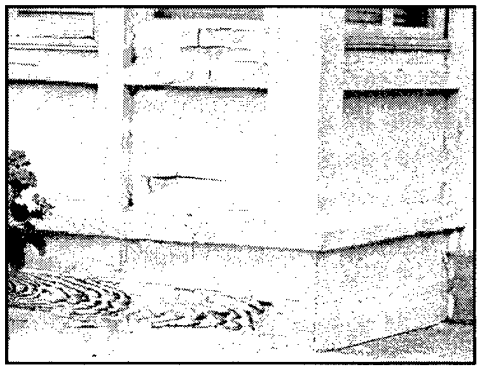


Figure 31. Improperly finished wood will rot if exposed to weather.

Figure 32. Paint buildup can change the historic character of building elements.

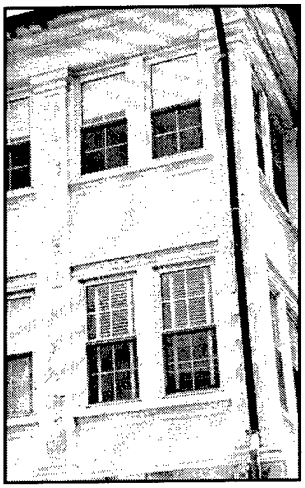


Figure 33. Peeling paint exposes wood to destruction by weathering.

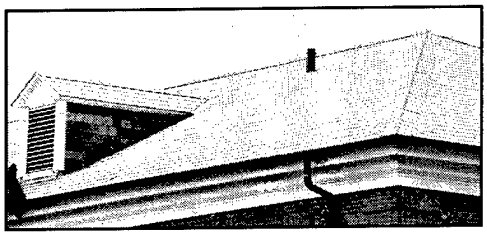


Figure 34. Slate, an extremely durable roofing material that withstands severe weathering, shall be maintained and not replaced with a material of lower quality.

- Repairs shall match the original woodwork in terms of construction technique, coating, grain direction, ornamentation, and if possible, wood species.

Paint

- Retain historic finishes or color schemes to preserve the historic character of the exterior. Paint wood only as needed with colors that are appropriate to the historic building and district.
- Carefully remove paint buildup from woodwork, while taking careful recordings of the various layers of paint from different time periods. See Figure 32.
- The surface should be prepared by cleaning, scraping, sanding, and priming before applying paint. See Figure 33.
- The coating shall match the historic style and texture by using the same workmanship and instrument to apply it with, such as brushes, rollers, or sprayers.

Roofs

- Retain character-defining roof shapes and materials instead of introducing incompatible designs or improper installation techniques. Retain the configuration of existing roofs without the addition of new elements that diminish the historic character. See Figure 34.
- Roofing material shall be appropriate to the style and period of the building and its historic district. Retain original sound historic slate roofing materials and architectural metals. Return nonconforming roofs to compatible when replacement is necessary. See Table 1.*

* Tables can be found at the end of their associated chapter.

- Repairs shall match the original structure. Substitute materials may be considered when the original materials have not performed well, but shall continue to maintain the integrity of the building. See Figure 35.
- Retain roof ventilation to preserve elements of construction. Provide ventilation if there is none or it is inadequate, but locate it in an inconspicuous place away from public view.

Gutters and Downspouts

- Retain original characteristics instead of replacing with incompatible materials. Where repair or replacement is necessary, use gutters and downspouts that have compatible detailing and material. See Figures 36 and 37.
- Replace deteriorated noncompatible gutters and downspouts with those compatible to the original. See Table 2 and Figure 38.

Windows

- Windows and their surrounds that define the historic character of the building shall be retained and preserved. Retain, repair, and maintain historic hardware where it exists. Replacement hardware shall be compatible. See Figure 39.
- Replace deteriorated noncompatible windows with units made to match the original. See Table 3.
- Maintain original operating condition, and locate weatherstripping to facilitate operation.

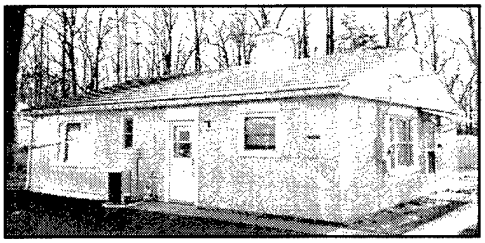


Figure 35. Lustron roofing materials, which are no longer manufactured, shall be preserved.

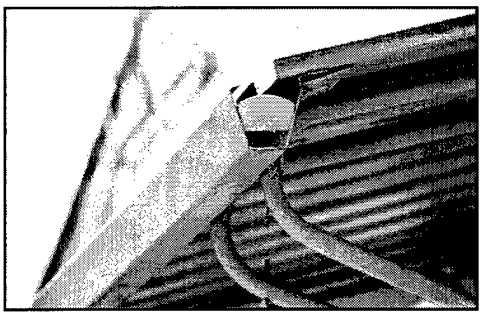


Figure 36. Original Lustron gutters are nonreplacable, and shall be preserved.

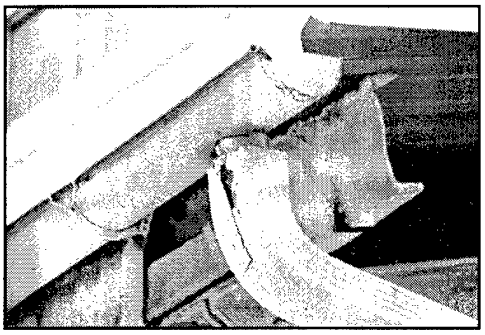


Figure 37. Original half-round gutters shall be maintained; the nonoriginal downspouts should be replaced with original style when they have deteriorated.

Figure 38. Metal half-round gutter and downspout painted brown are compatible to a stage of copper patina.

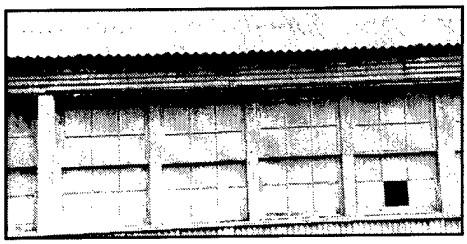


Figure 39. Original hangar windows shall be preserved; paint should be removed from historic windows.

Figure 40. Storm window check rail aligns with check rail of original window and maintains the historic character; original shutters shall be preserved.

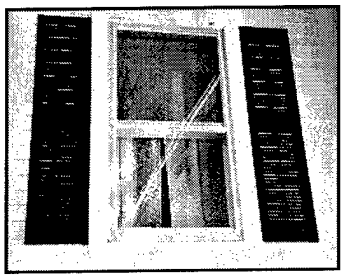


Figure 41. Replacement window does not match original and greatly changes historic appearance.

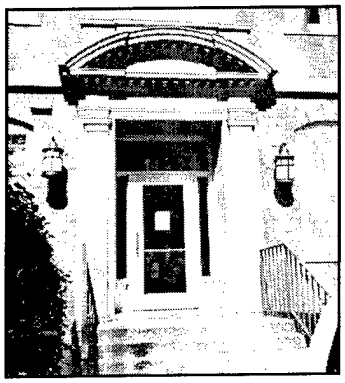


Figure 42. Entrance maintains similar proportions as the original within historic door surrounds.

- Maintain the historic appearance of windows and their frames through retention of designs, materials, finishes, and colors, including the configuration of sashes and muntins, depth of reveals, molding profiles, and the reflectivity and color of the glazing.
- The check rail of storm windows shall align with the check rail of the historic window. Glazing divisions shall coincide with the window it protects. See Figure 40.
- Provide protective glazing where the weather demands it. Protective glazing should be as unobtrusive as possible and should be removable without damaging historic fabric.
- Repair original leaded glass and replace where removed. Replacement elements shall match the original. If using the same material is not feasible, then a compatible substitute material that conveys the visual appearance and design of the surviving parts may be considered. See Figure 41.
- Improve energy-efficiency by using weatherstripping, storm windows, caulking, interior shades, and blinds, not by replacing original windows. Existing operable shutters and canopies can be used for energy conservation.

Doors

- Doors and their surrounds that define the historic character of the building shall be retained and preserved. Retain, repair, and maintain historic hardware where it exists. See Figure 42.
- Replace deteriorated noncompatible doors with doors compatible with the structure. Replacement hardware shall be compatible. See Table 4.

- Maintain the original operating condition, and locate weatherstripping to facilitate operation.
- Maintain the historic appearance of doors and their frames through retention of designs, materials, finishes, and colors, including the reveals, molding profiles, and door knockers. See Figure 43.
- Combination storm and screen doors shall be simple and discreet, of one panel, glazing, or screening divisions aligning with the door it protects, and without ornamentation.
- Replacement elements shall match the original. If using the same materials is not feasible, then a compatible substitute material which conveys the visual appearance and design of the surviving parts may be considered. See Figure 44.
- Improve energy efficiency by using weather stripping, storm doors, caulking, and canopies, if historically appropriate.

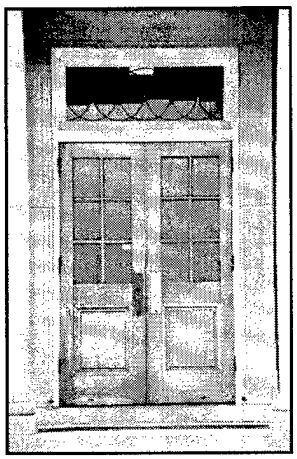


Figure 43. Historic materials and appearance of original doors and transom shall be maintained.

Figure 44. Replacement door should be painted white for better compatibility.

Porches

- Retain historic entrances and porches that define the historic character of the building. See Figure 45.
- Where a porch has not been enclosed, it shall remain open. Where screening has been provided, paint the wood framing for the nonoriginal porch screening a dark color to reduce visual impact of the framing. See Figure 46.
- Repair porch or entrance elements rather than replacing them.

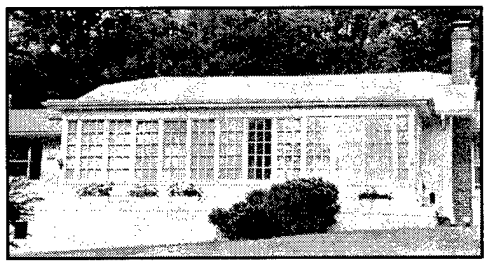


Figure 45. Original enclosed porch for a Bungalow shall be maintained.

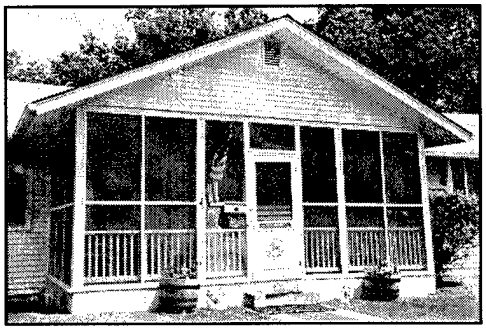


Figure 46. A better solution is to place the screen behind the porch railing and paint the screen supports black.

Figure 47. Enclosed porch is incompatible and distinct, and not reversible.

Figure 48. This weatherstripping is not functional, is intrusive to historic appearance, and should be removed.

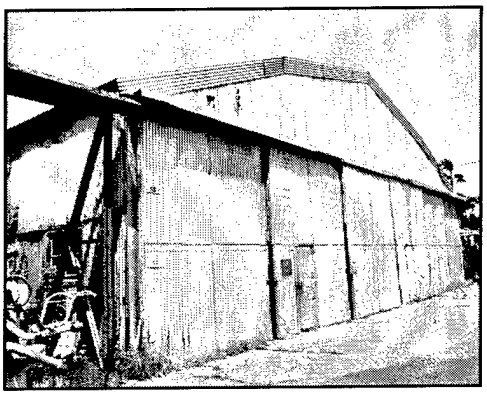


Figure 49. Historic wall covering on hangar shall be preserved.

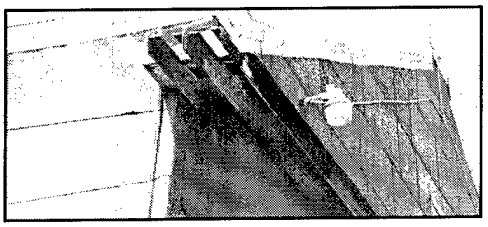


Figure 50. Compatible rolled asphalt roofing replacement on seaplane hangar maintains historic integrity of original.

- When repair is no longer practical, replacement elements shall match the original. If using the same kind of material is not feasible, then a compatible substitute material that conveys the visual appearance and design of the surviving parts may be considered. See Figure 47.
- Improve energy-efficiency by maintaining porches and entrances so they can retain heat, or block the sun and provide natural ventilation. See Figure 48.

Exterior Wall Coverings

- Retain historic exterior wall coverings that are character-defining elements of the building. Some significant types are brick veneer, wood siding, and enamel coated steel panels. See Figure 49.
- Avoid vinyl, aluminum, or other noncompatible sidings. They can cause damage which can alter the appearance of historic buildings.
- Compatible substitute materials may be considered when the original materials have not performed well. Modern metals that withstand corrosion better, may be used as substitutes. See Table 5 and Figure 50.
- Substitute material must be properly installed to allow for galvanic (electrochemical) compatibility, adequate expansion and contraction, and structural security. When the physical properties are not compatible damage can occur.

Canopies

- Canopies shall retain character-defining historic facades. Historically significant elements should not be hidden behind canopies. Style and color shall integrate with the historic character. See Figures 51 and 52.
- Canopies shall be made reversible. See Figure 53.
- Exterior alterations shall not destroy his toric materials that characterize the property.
- Improve energy efficiency by adding canopies that will shade from the sun in the summer and can be opened up for sunlight in the winter, if historic compatibility and character can be achieved. See Figure 54.

Compatible Accessibility

- Make historic properties accessible while preserving their historic character. Review the historic significance of the property and identify character-defining features. Assess the property's existing and required level of accessibility. Evaluate accessibility options within a preservation context.
- When new features are incorporated for accessibility, historic materials and features should be retained whenever possible. Accessibility modifications shall be appropriately scaled, visually compatible, and easily reversible. See Figures 55 and 56.

Figure 51. Historic use of awnings on Dutch Colonial style housing.

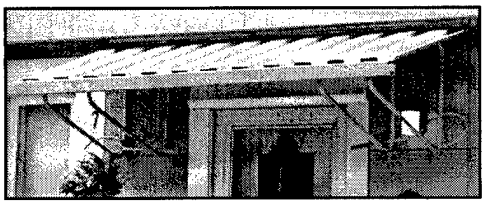


Figure 52. Original Lustron awnings shall be preserved to maintain character.

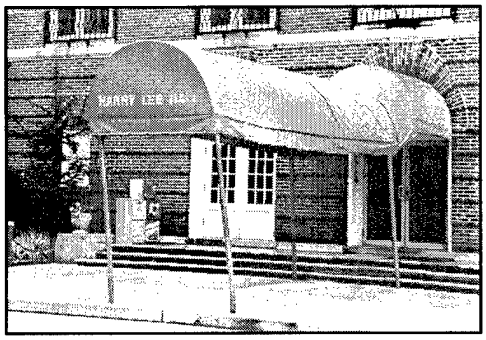


Figure 53. Entrance canopy at Harry Lee Hall does not destroy historic materials, and installation is reversible.

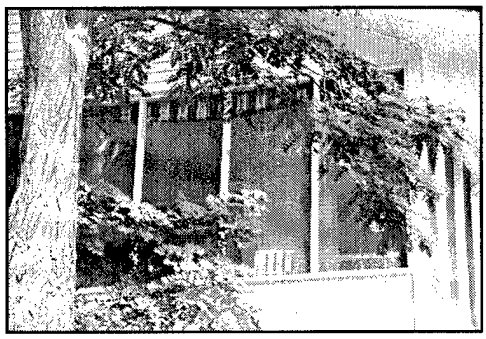


Figure 54. Interior pull-down shade allows for energy efficiency, but does not disturb historic character.

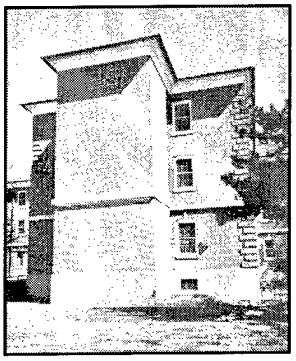


Figure 55. Georgian housing maintains basic original proportions, material, and style with the added stairwells.

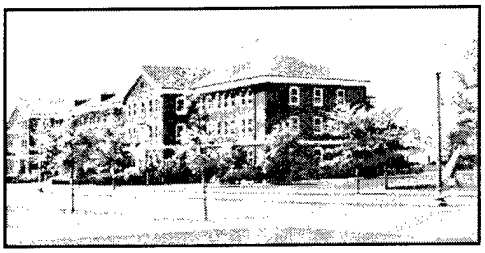


Figure 56. Original historic character of Georgian-style housing.

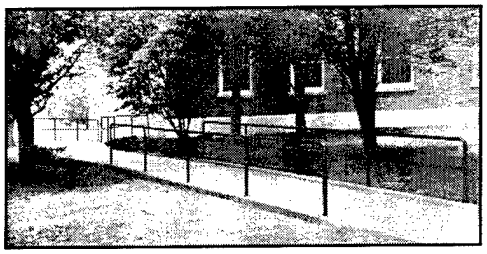


Figure 57. Landscape was only slightly altered to allow for a ramp to be added that would not intrude on the building's integrity.

Figure 58. Ramp placed in good location at rear of the building closest to parking lot, but more compatible materials should have been chosen.

- If alterations would result in a substantial loss or impairment of the historic property, alternative methods for allowing program accessibility shall be used. Audiovisual devices can be used to depict unaccessible portions. Assigned persons could guide individuals with disabilities through parts that would otherwise be unaccessible. Other innovative methods also may be used.
- Accessibility barriers include parking, building and site entrances, surface textures, widths and slopes of walkways, grade changes, and size, weight, and configuration of doorways.
- Parking should be as convenient as possible for people with disabilities. Modifications to parking configurations and pathways should not alter significant landscape features.
- Maintain integrity of entrance when mak ing accessibility changes. Solutions may include regrading the soil, incorporating ramps, installing wheelchair lifts (not recommended because they require frequent maintenance), creating new entrances, and modifying doors, hardware, and thresholds. See Figure 57.
- Ramps shall be placed at the most sensitive location in respect to the historic structure. Location of the ramps do not necessarily need to be at the main entrance, but where greatest access to public spaces are. Also, materials shall be chosen that are most visually compatible with the historic structure. See Figure 58.

- Historic doors generally should not be replaced, nor should door frames be altered. Automatic and power-assisted door openers can reduce or eliminate door pressures that are accessibility barriers.
- A door threshold that exceeds the allowable height can be altered or removed in a historically compatible manner to meet accessibility requirements.
- Clearances by law: ramps and pathways of 36 in.* minimum width, clear door opening of 32 in. minimum width, slopes of 1:12 maximum ratio, railings from 34–38 in. in height and must extend at least 12 in. past sloping segment, and level changes 1/4 in. maximum. For other clearances consult *Uniform Federal Accessibility Standards* and the *Americans With Disabilities Act*, and apply most stringent.

Penetrations Through Walls and Roofs

- To maintain historic character of the structure there should be no objects penetrating the walls or roof. If it is mechanically necessary for equipment to penetrate the structure it shall be placed in the least noticeable location. See Figure 59.
- Exterior walls shall not be cut, or blocked in, for installation of mechanical units. See Figure 60.
- Penetrations through windows by air conditioners, vents, etc. shall be removed and other alternatives investigated.

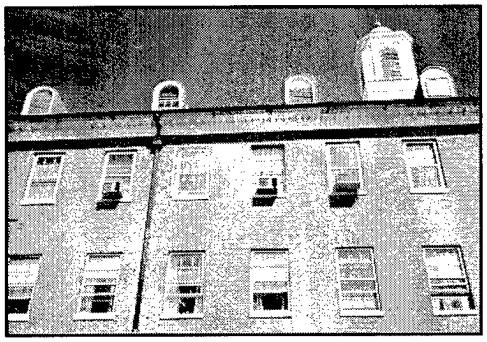


Figure 59. Air conditioners and vents are in appropriate location on the back side, but vents on dormers should be consistent; screen on window is intrusive to historic character.

Utility Elements

- Maintain historic facades when adding or replacing utility elements to preserve historic character of the exterior.
- Install required mechanical systems and service equipment to cause the least alteration possible to the building's exterior elevations, and the least damage to historic building materials.

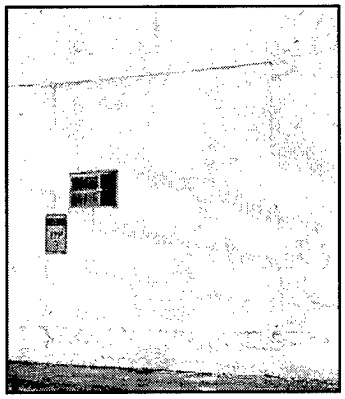


Figure 60. Historic character has been destroyed by blocked-in doors with air conditioner penetration.

* 1 in. = 2.54 cm.

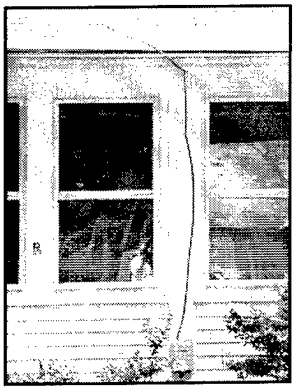


Figure 61. To reduce visual impact, utility wire should be tucked away or run parallel and perpendicular to window.

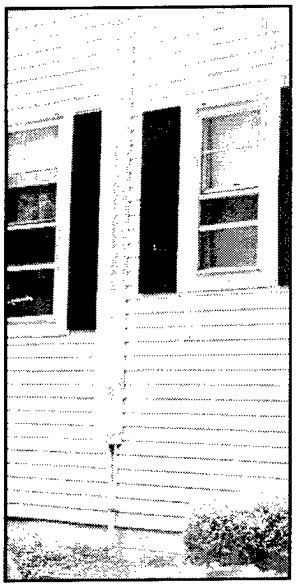


Figure 62. Utilities can often be concealed in interior closets or chases.

- De-emphasize presence of utilities through careful placement, or conceal with paint of same color, screening, or landscaping. See Figures 61 and 62.
- Improve energy efficiency of existing mechanical systems by installing thermal insulation in attics, basements, and crawlspaces.

Table 1. Roof styles.

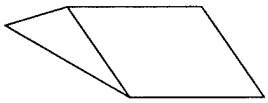
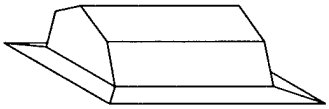
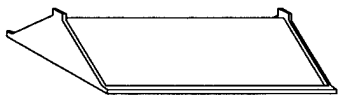
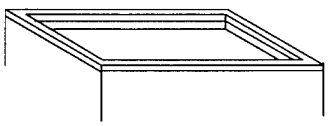
Building Styles	Pictorial	Description	Materials
Lustron		gable	metal porcelain enamel panels
Bungalow		gable	asphalt shingles
Dutch Colonial		gambrel	asphalt shingles
Georgian Revival		hipped	slate shingles
African American Barracks		hipped with gable ends	asphalt shingles
Seaplane Hangars		gable	asphalt shingles
Industrial		flat	tar and gravel

Table 2. Gutter and downspout styles.

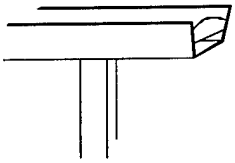
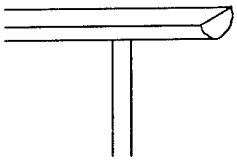
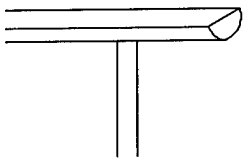
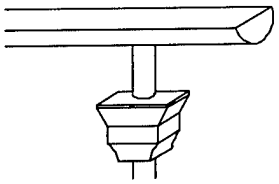
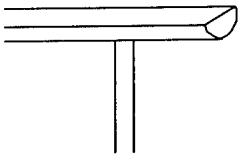
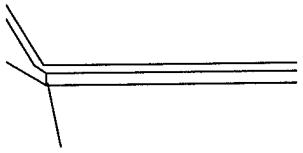
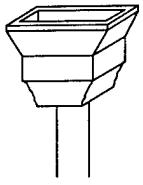
Building Styles	Pictorial	Description	Materials
Lustron		Lustron patented gutters with box downspouts	steel
Bungalow		half-round gutters and round downspouts	aluminum
Dutch Colonial		half-round gutters and round downspouts	aluminum
Georgian Revival		half-round gutters and round downspouts with detailed scupper	copper
African American Barracks		half-round gutters and round downspouts	aluminum
Seaplane Hangars		fascia with drip edge (see Georgian Revival for Georgian style hangers)	metal
Industrial		detailed scupper with round downspout	copper

Table 3. Window styles.

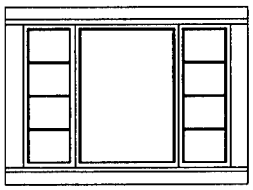
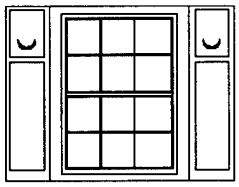
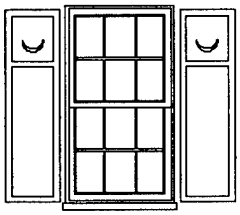
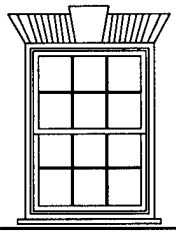
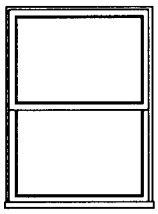
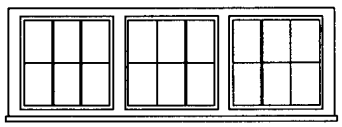
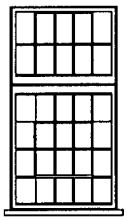
Building Styles	Pictorial	Description	Materials
Lustron		1 light panel; 2 casements with 4 lights sill molding	steel metal porcelain enamel surround
Bungalow		6/6 double hung with shutters	wood
Dutch Colonial		6/6 double hung with shutters	wood
Georgian Revival		6/6 double hung with lintel arch and key	wood window brick with cast stone lintel arch
African American Barracks		1/1 double hung	wood
Seaplane Hangars		6,6,6 awning dormer (see Georgian Revival for Georgian style hangers)	asphalt shingles
Industrial		awning with casement	steel

Table 4. Door styles.

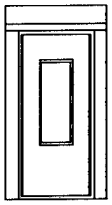
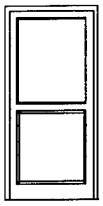
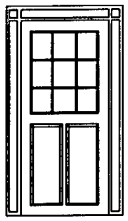
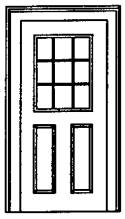
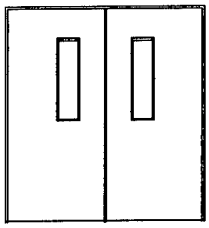
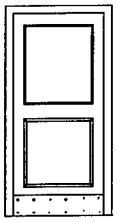
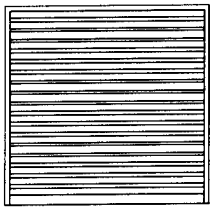
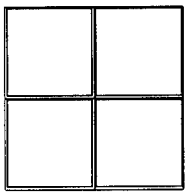
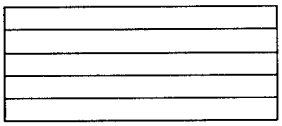
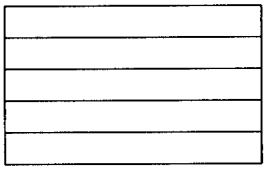
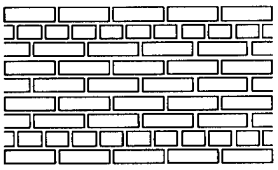
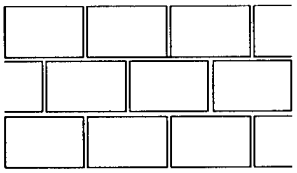
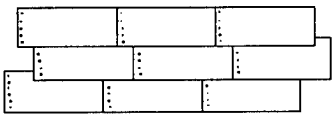
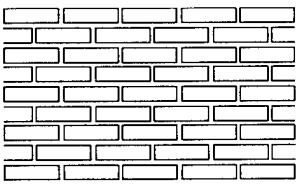
Building Styles	Pictorial	Description	Materials
Lustron		1 light panel with lintel	steel metal porcelain enamel surround
Bungalow		1 light; 1 panel	wood
Dutch Colonial		9 light; 2 panel; 3 light transom	wood
Georgian Revival		9 light, 2 panel	wood
African American Barracks		1 narrow light solid double	wood
Seaplane Hangars		1 light; 1 panel (see Georgian Revival for Georgian style hangars)	wood
Industrial		overhead	steel

Table 5. Exterior wall covering styles.

Building Styles	Pictorial	Description	Materials
Lustron		2' x 2' panels	metal porcelain enamel
Bungalow		horizontal siding	wood
Dutch Colonial		horizontal siding	wood
Georgian Revival		american bond (header course every 5th or 6th course of stretchers)	brick and mortar
African American Barracks		running bond (all stretcher courses)	structural terra cotta
Seaplane Hangars		layered roof asphalt (see Georgian Revival for Georgian style hangers)	rolled asphalt
Industrial		running bond (all stretcher courses)	brick and mortar

4 Interior Building-Level Guidelines

General Interior Building Treatments

Each building type in the Quantico historic district is characterized with respect to its interior, in addition to the exterior. The different interior building types include Lustron, Bungalow, Dutch Colonial, Georgian Revival, African American Barracks, Hangars, and Industrial. Specific spaces within each of these types represent the detail in construction. These spaces include: entrances, corridors, stairwells, ceremonial rooms (main spaces), lighting, and finishes. Main spaces within quarters include: living rooms, bedrooms, kitchens, and bathrooms; these should follow the guidelines for ceremonial rooms. Guidelines for general interior building treatments include the following:

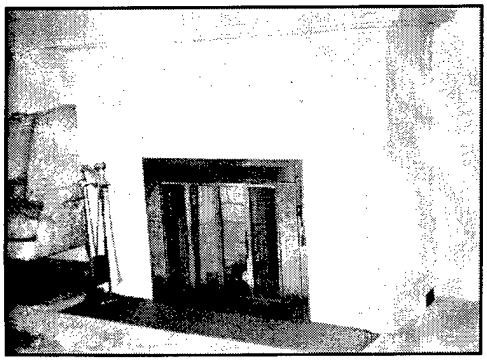


Figure 63. Historic fireplaces are character defining to the building's interior.

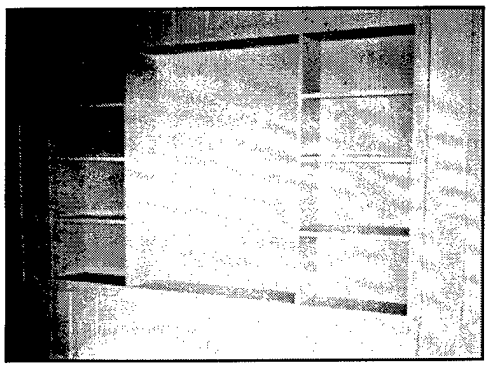


Figure 64. Character defining built-in bookshelves, common to the Lustron interiors.

- Maintain historic use, or allow new use that retains distinctive materials, features, spaces, and spatial relationships. See Figure 63.
- Retain historic interior character. Alterations to the structure shall be physically and visually compatible, but shall be differentiated from the old. New construction shall be reversible. See Figure 64.
- Retain interior elements that are important in defining the overall historic character of the building. These include wall finishes, floor finishes, ceiling finishes, doors, windows, lighting, and plumbing fixtures. See Figure 65.
- Preserve and retain architectural changes that have historic significance.
- Evaluate the interior's level of deterioration to determine the treatment required.

- Any physical treatment undertaken shall use the least disturbing means possible. Those causing damage to the historic material shall not be used.
- Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and material where possible.

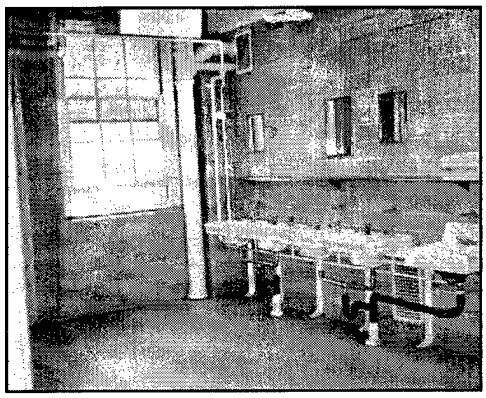


Figure 65. Bathroom has original plumbing fixtures, windows, floor tiles, and wall finishes; these shall be maintained.

Typical Floor Plans

Figures 66 through 73 show representative examples within each building type. The major historic building types at Quantico are:

- Lustron (Figure 66)
- Bungalow (Figure 67)
- Dutch Colonial (Figure 68)
- Georgian Revival (Figures 69 and 70)
- African American Barracks (Figure 71)
- Hangar (Figure 72)
- Industrial (Figure 73).

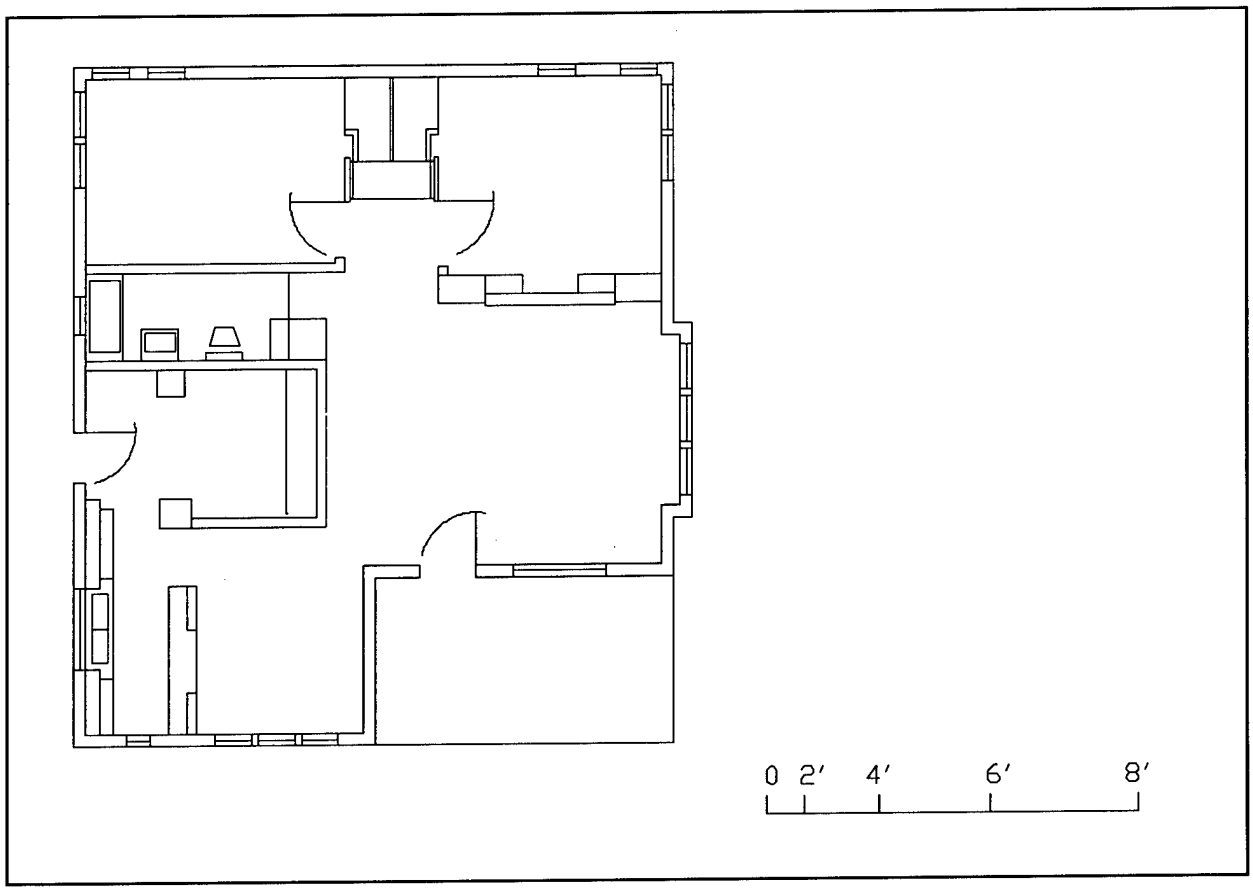


Figure 66. Example of a Lustron house floor plan (typical).

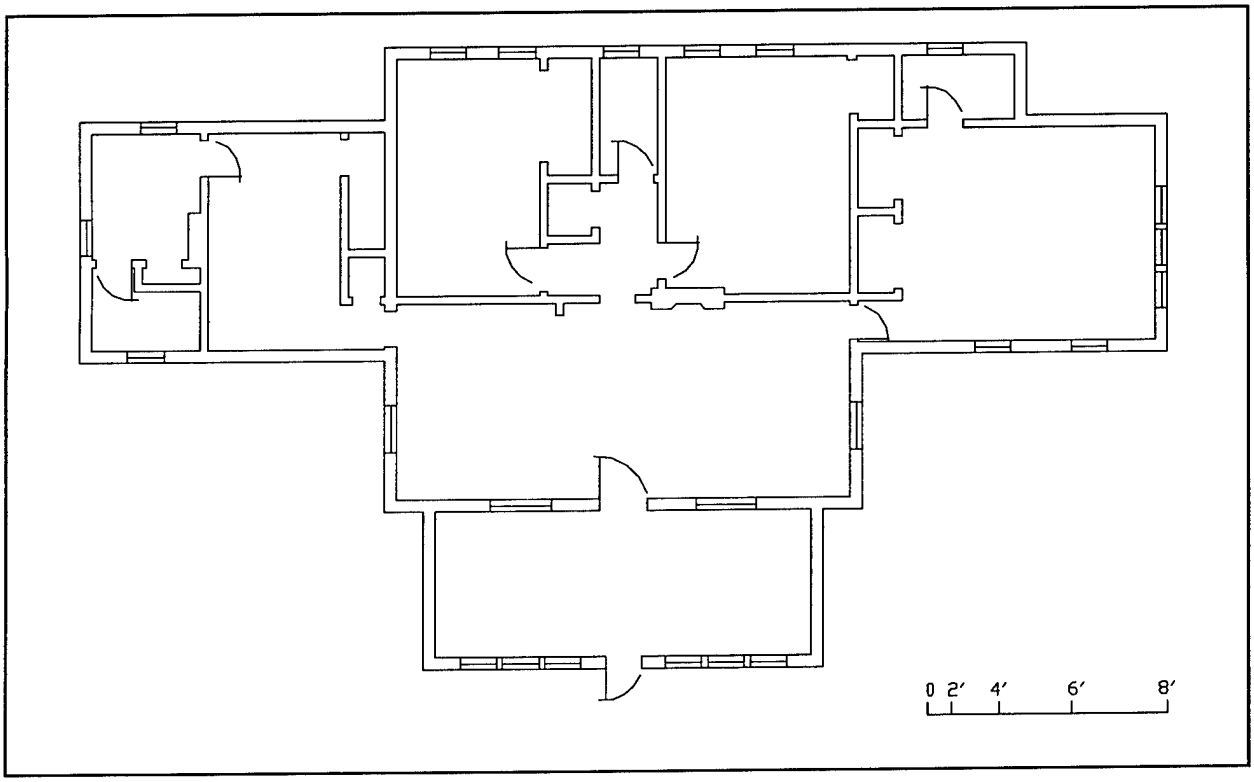


Figure 67. Example of a Bungalow house floor plan (Building 108).

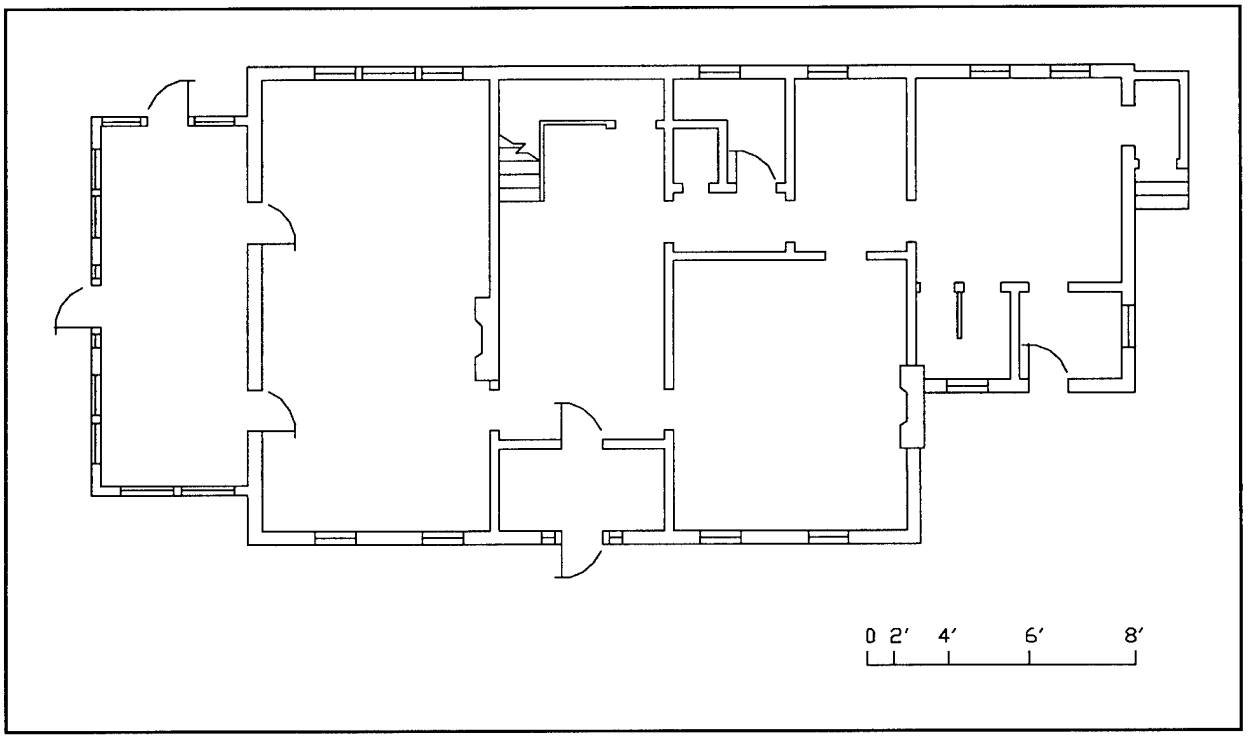


Figure 68. Example of a Dutch Colonial house floor plan (Building 376).

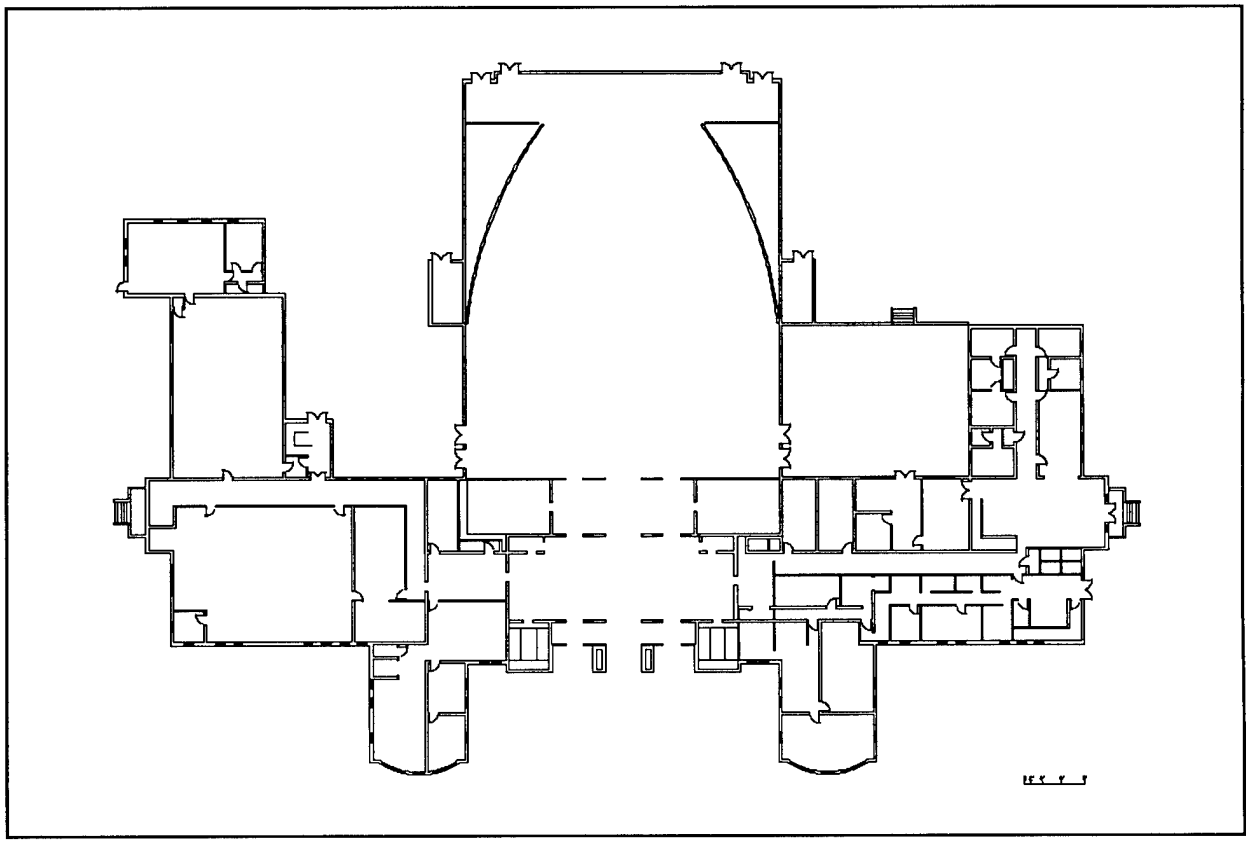


Figure 69. Example of a Georgian Revival administration building floor plan (Building 2034).

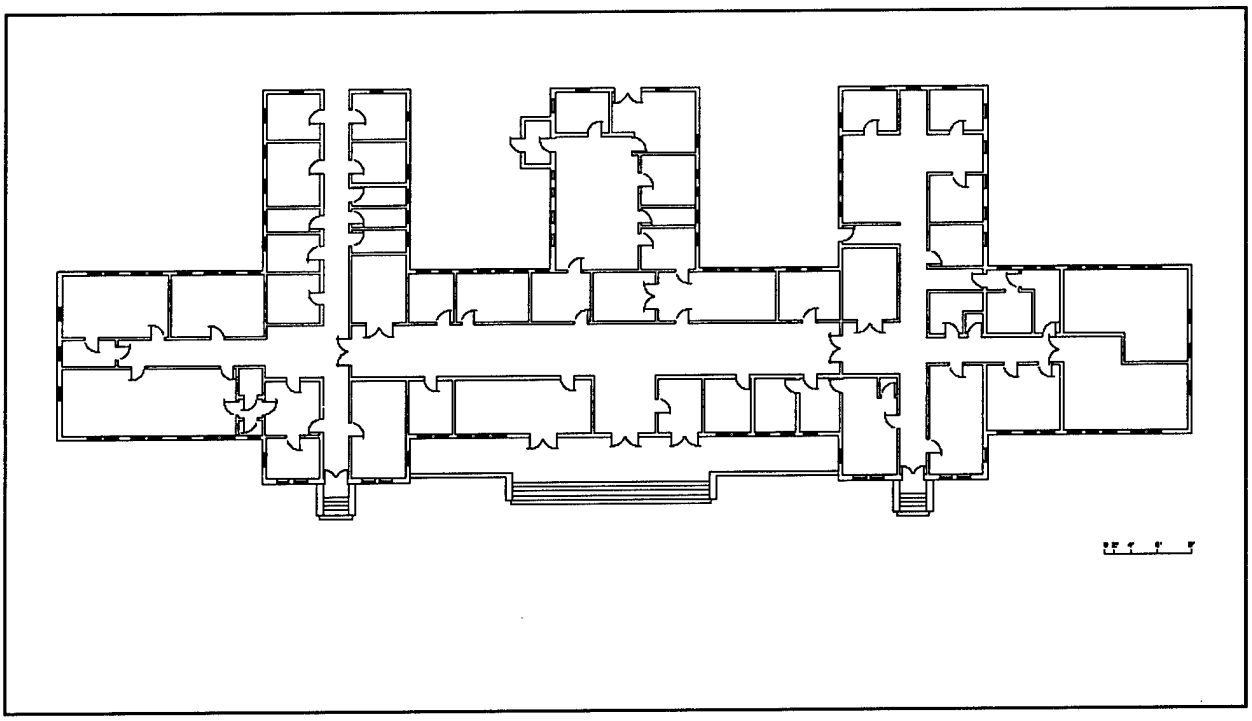


Figure 70. Example of a Georgian Revival quarters floor plan (Building 2006).

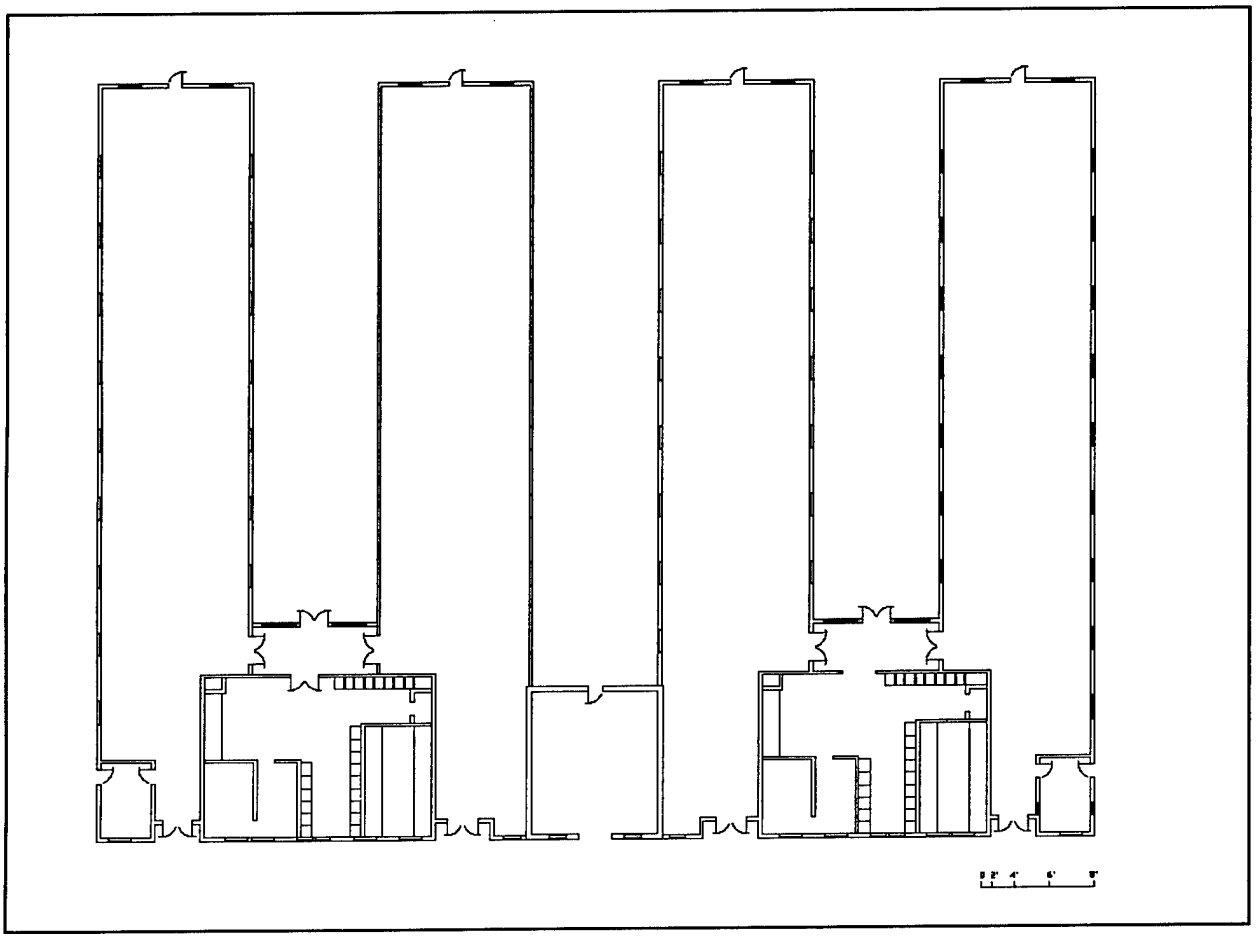


Figure 71. Exampale of an African American Barracks floor plan (Building 3086).

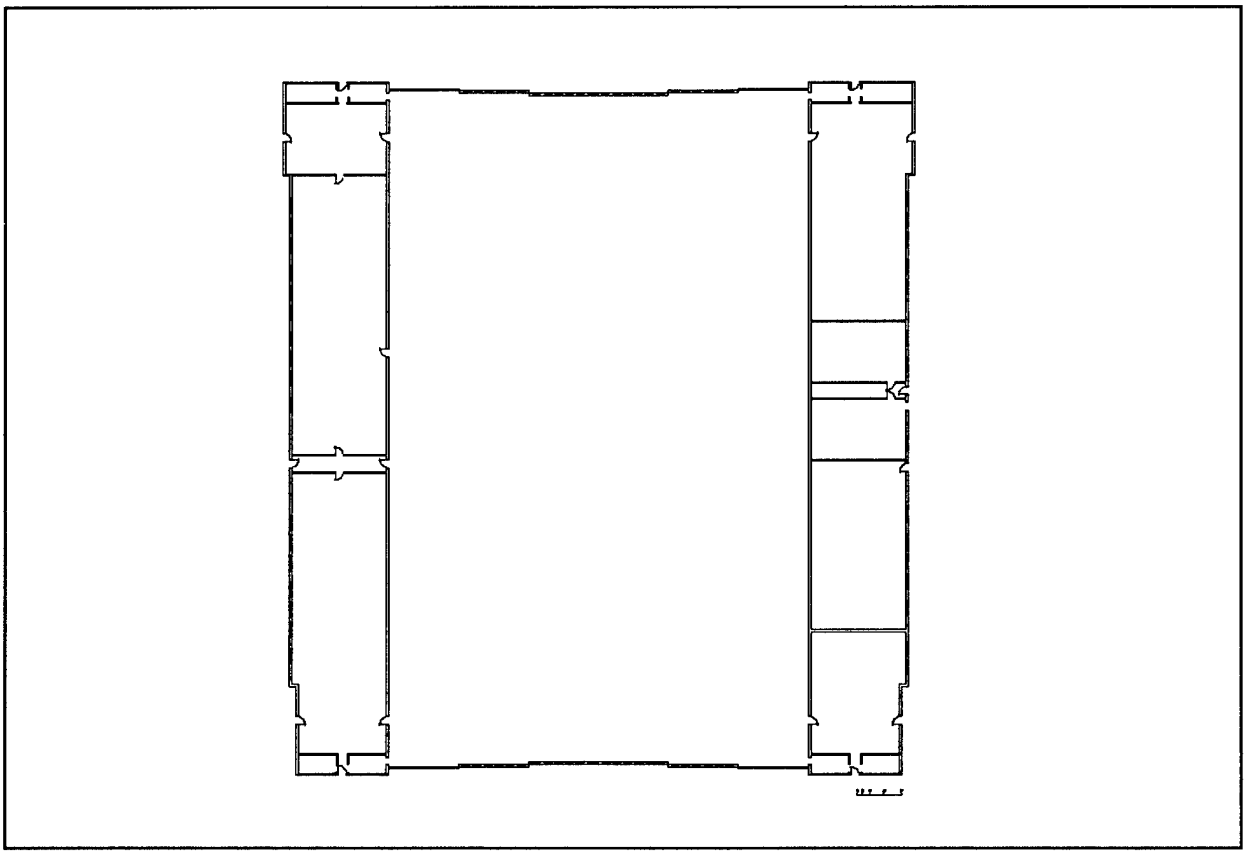


Figure 72. Example of a Georgian hangar floor plan (Building 2101).

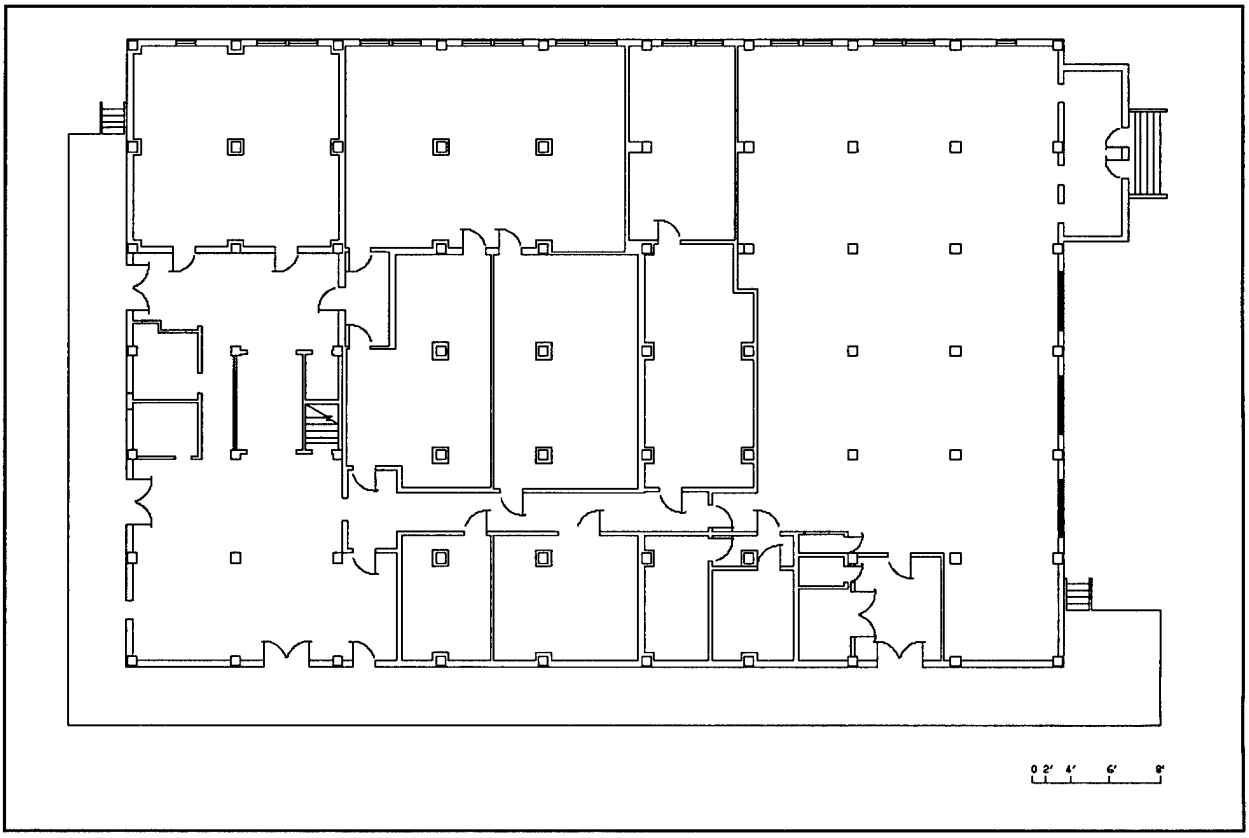


Figure 73. Example of an Industrial warehouse floor plan (Building 2010).

Common Interior Spaces

Each style of historic building at Quantico has specific maintenance, repair, and rehabilitation needs according to construction method, material composition, and characteristic features. Guidelines are provided for key interior spaces and elements. For further guidance, refer to Chapter 3, **Exterior Building-Level Guidelines**.

Figure 74. Dutch Colonial entrance with original door and windows with their surrounds.

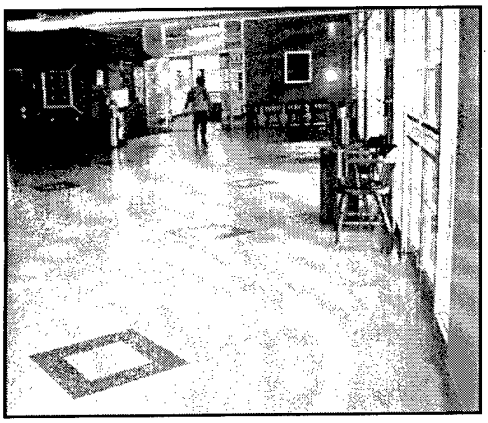


Figure 75. Although new entrance doors have been added, the space maintains its original use.

Figure 76. Hallway with original plaster walls and wood floors to be maintained.

Entrances

- Retain historic entrances and vestibules that define the historic character of the building. See Figure 74.
- Repair entrance elements rather than replacing them.
- When repair is no longer practical, replacement elements shall match the original. If using the same kind of material is not feasible, then a compatible substitute material that conveys the visual appearance and design of the surviving parts may be considered.
- Preserve the use of the main entrance as originally intended. See Figure 75.

Corridors

- Retain historic corridors and hallways that define the historic character of the building. See Figures 76 and 77.
- Repair elements rather than replacing them.
- When repair is no longer practical, replacement elements shall match the original. If using the same kind of material is not feasible, then a compatible substitute material that conveys the visual appearance and design of the surviving parts may be considered.

Stairwells

- Retain historic stairwells that define the historic character of the building.
- Repair elements rather than replacing them. Such elements include: treads, risers, railings, balusters, and detailing. See Figure 78.
- When repair is no longer practical, replacement elements shall match the original. If using the same kind of material is not feasible, then a compatible substitute material that conveys the visual appearance and design of the surviving parts may be considered.
- Make historic stairs accessible by code while preserving their historic character. Retain the overall historic context when bringing stairwells up to fire code. See Figure 79.
- When new features are incorporated for accessibility, or fire regulations, historic materials and features should be retained whenever possible. Code modifications shall be appropriately scaled, visually compatible, and easily reversible.

Ceremonial Rooms (Main Spaces)

- Retain historic rooms that define the historic character of the building. See Figure 80.
- Repair elements rather than replacing them.

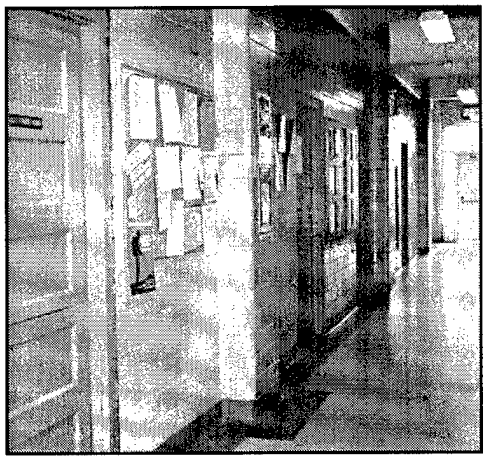


Figure 77. Bulletin boards that penetrate through the wall can be intrusive to the original finishes.

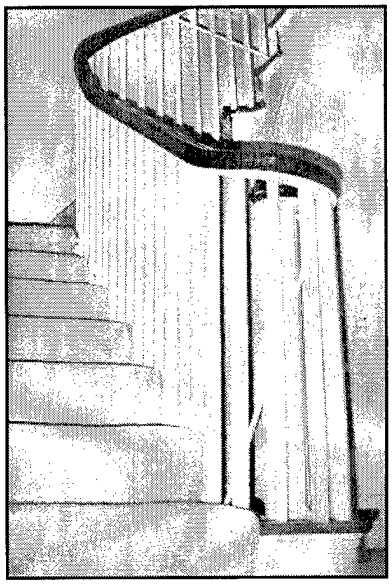


Figure 78. Wooden detailing on stair railing identifies the craftsmanship that was used.

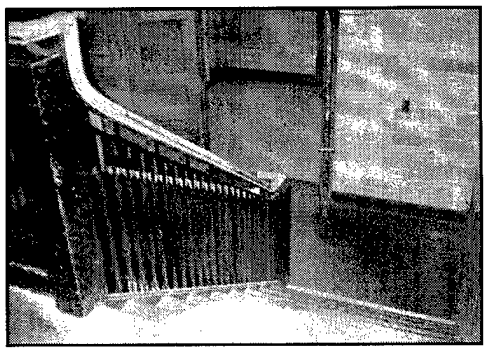


Figure 79. Corridor wall encloses stairwell, which meets the fire safety codes.

Figure 80. Trimwork, fireplace, and lighting are all features that contribute to the character of the space.

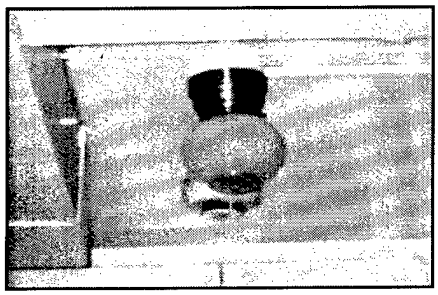


Figure 81. When light fixtures in the Lustron houses need to be replaced, the incompatible fixtures should be taken out and replaced with those that match the original.

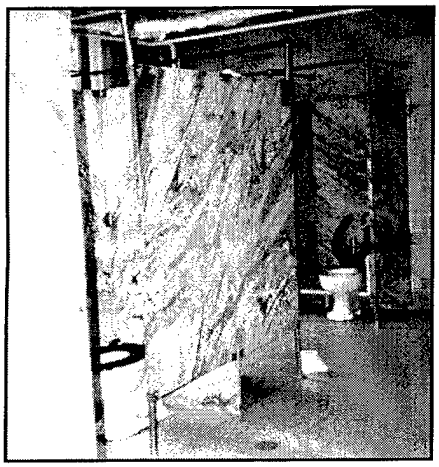


Figure 82. Original marble bathroom partitions and floor tiles shall be maintained.

- When repair is no longer practical, replacement elements shall match the original. If using the same kind of material is not feasible, then a compatible substitute material that conveys the visual appearance and design of the surviving parts may be considered.
- Maintain the original circulation intended upon entry into the historic room.
- Retain all historic plumbing fixtures such as radiators, toilets, lavatories, and tubs. Abandon in place nonfunctioning radiators.

Lighting

- Retain and preserve fixtures that define the historic character of the building. Retain, repair, and maintain original historic lighting where it exists.
- Replace deteriorated noncompatible light fixtures with compatible fixtures. Replacement hardware shall be compatible. See Figure 81.
- Do not use fixtures of a different style than that of the room.

Finishes

- Finishing elements that are important in defining the overall historic character of the building shall be retained and preserved. Similar elements such as the original floor, wall, ceiling, and trimwork finishings shall remain as original fabric with repairs. Replace such elements only if the original is unrepairable. See Figures 82 and 83.
- Repairs shall match the original work in terms of construction technique, coating, ornamentation, craftsmanship, color, and material. See Figure 84.

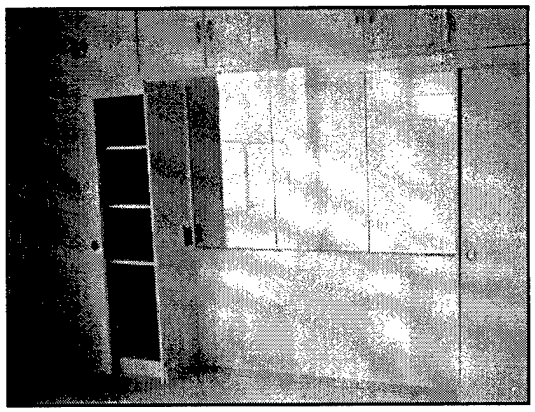


Figure 84. Steel custom cabinets and closets are character defining of the original design of the Lustron houses.

Figure 83. Wood panels that have scratches in the surface should be repaired to match the original.

5 Summary

The architecture of Quantico comprises a unique cultural resource for the Department of Defense. Quantico employs a large number of historically significant facilities in its daily operations. Within the installation, historic districts have been identified for seven historic themes: Aviation, Education, First Permanent Construction, Lustron Housing, Naval Clinic Complex, African American Barracks, and Industrial. Quantico's historic facilities and districts are subject to provisions of *The National Historic Preservation Act of 1966* that require all Federal agencies to duly consider the effects of any proposed action on properties listed or eligible for listing in the National Register of Historic Places.

To maintain the integrity of Quantico's historic properties, maintenance, repair, alterations, and required retrofits should follow *The Secretary of the Interior's Standards for the Treatment of Historic Properties*. Retrofits for accessibility must conform to passages of the *Americans With Disabilities Act* and *Uniform Federal Accessibility Standards* pertaining to historic properties.

The fundamental guidelines for any changes are to: (1) repair rather than replace significant features and (2) replace irreparable features only with new or reproduced items that match the historic original in design, color, texture, and, where feasible, materials. Required new construction must be visually compatible and reversible.

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Hanbury, John Paul C., et al., *Stewardship Standards for Fort Myer, Fort McNair, and Fort Belvoir* (Military District of Washington, 1992).

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Appendix A: Glossary of Preservation Terms

action: All activities, undertakings, or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas.

adverse effect: Changes that diminish those attributes of a property that qualify it for the National Register of Historic Places (NRHP).

Advisory Council on Historic Preservation (ACHP): The council established by Title III of the National Historic Preservation Act to advise the President and Congress, to encourage private and public interest in historic preservation, and to comment on Federal agency actions under Section 106 of the National Historic Preservation Act.

applied archeology: The use of archeological techniques to conserve sites and preserve information from sites to be destroyed.

Archeological and Historic Preservation Act of 1974 (AHPA): (Public Law 93-291; 16 US 469-469c) directs Federal agencies to notify the Secretary of the Interior when they find that any Federal construction project or Federally licensed activity or program may cause irreparable loss or destruction of significant scientific, prehistoric, historical, or archeological data. It also provides for funding historical and archeological protection for such projects.

archeology: The study of the human social and cultural past through material remains with the aim of ordering and describing events of the past and their meaning.

architecture: The style and construction of buildings and structures.

area: Includes all domains to be affected directly or indirectly by a Federal action, not merely the immediate property involved in the action.

assessment of effect: A process to determine whether an undertaking may affect in any way the qualities of a property that make it eligible for NRHP. The

assessment is made by the installation commander in consultation with the State Historic Preservation Officer (SHPO).

attribute: An individual characteristic that distinguishes one artifact from another.

barrack: Simply constructed building or range of buildings for lodging soldiers. Single-story units had an unornamented facade, with long extended rooms which housed the corridor of bunkbeds. Roofs were of low pitched gable and/or hipped construction.

building: A structure created to shelter any form of human activity, such as a house, barn, church, hotel, or similar structure. Building may refer to a historically related complex, such as a courthouse and jail or a house and barn.

bungalow: The bungalow (early 1900s) resembles a cottage, commonly of one or one and a half stories, and includes a partial or full porch. Typically at Quantico the porch is centrally located on the front facade with a cross-gabled roof.

certified local government: A local government that has been certified to carry out the purposes of the National Historic Preservation Act, as amended, in accordance with Section 101(c) of the Act.

comprehensive historic preservation planning: An ongoing process that is consistent with technical standards issued by the Department of the Interior, and which produces reliable, understandable, and up-to-date information for decisionmaking related to the identification, evaluation, registration, and treatment of historic properties for accomplishing preservation activities.

determination of eligibility: A decision by the Department of the Interior that a district, site, building, structure, or object meets the NRHP criteria for evaluation even though the property is not listed in the National Register. A determination of eligibility does not make the property eligible for such benefits as grants, loans, or tax incentives that have listing on the National Register as a prerequisite.

district: A district is a geographically definable area—urban or rural—possessing a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united by past events, or aesthetically by plan or physical development. A district may also comprise individual elements separated geographically but linked by association or history.

DoD Directive 4710.1, Archeological and Historic Resources Management: Provides policy, prescribes procedures, and assigns responsibilities for the management of archeological and historic resources located on lands or waters under DoD stewardship. It requires DoD components to integrate the archeological and historical preservation requirements of applicable laws with the planning and management of activities under DoD control.

Dutch Colonial: Dutch Colonial Revival houses (1880-1955) typically have a steeply pitched gambrel roof with a continuous dormer across the front for a full second story. Entry details, doors, and windows are similar to elements of Federal or Georgian styles.

effect: any condition of a project or undertaking that may cause any change in the quality of the historical, architectural, archeological, or cultural character of a property that qualifies for the National Register. An undertaking is considered to have an effect when any aspect of the undertaking changes the integrity of location, design, setting, materials, workmanship, feeling, or association of the property that contributes to its significance according to the National Register criteria.

endangered property: a historic property subject to a major impact that will destroy or seriously damage the qualities of significance that make it eligible for the National Register of Historic Places or National Historic Landmark designation.

feature: A nonportable artifact, not recoverable from its matrix without destroying its integrity.

Federal Historic Preservation Officer: The office responsible for coordinating the agency's activities under the *National Historic Preservation Act* and Executive Order 11593, including nominating properties under the agency's ownership or control to the National Register.

Federal Preservation Officer: The official designated by the head of each Federal agency responsible for coordinating that agency's activities under the *National Historic Preservation Act of 1966*, as amended, and Executive Order 11593, including nominating properties under that agency's control to the National Register.

Georgian Revival: Georgian Revival buildings (1880-1955) are usually a simple two- or three-story box, with doors and windows in strict symmetry. Typically

at Quantico, Georgian Revival architecture includes hipped slate roofs with dormers. The principal areas of elaboration are entrances, cornices, and windows.

hangars: Airplane hangers were constructed throughout the years varying in styles as military needs and airplanes changed. Seaplane hangars had gambreled roofs similar in appearance to a barn shape. More recent hangars took on elements of the Georgian style. Although the styles of each differ, all were designed to house airplanes, and therefore share similar characteristics in size and location. All have large sliding doors.

historic preservation: Identification, evaluation, documentation, curation, acquisition, protection, rehabilitation, restoration, management, stabilization, maintenance, recording, and reconstruction of cultural resources (including any combination of the foregoing).

historic properties: All buildings, sites, or archeological deposits that may be eligible for listing on the National Register of Historic Places.

Historic Sites Act of 1935: (Public Law 74-292; 16 USC 470-470w-6), authorizes the designation of national historic sites and landmarks, authorizes interagency efforts to preserve historic resources, and establishes a maximum fine of $500 for violations of the Act. The implementing regulations are 36 CFR 62 and 65 National Historic Landmarks and 36 CFR 68 - Standards for Historic Preservation.

identification: Finding all historic properties that might be eligible through systematic inventory, survey, and research.

inventory: To determine the location of cultural resources that may have National, state, or local significance.

landscape architecture: The art or practice of planning or changing land and water elements for the enhancement of the physical environment.

Lustron: Lustron ranch homes, first marketed in 1947, were built in a factory using mass production, unit-assembly, and precision methods similar to those used in the automotive industry. Lustron homes are of all-steel construction, and include built-in cabinets, radiant ceiling heat, and shiny porcelain everywhere. All parts and subassemblies for a single house were trucked to the construction site. A trained crew could erect a Lustron in 3 days. Prefabricated

wall sections and roof trusses were the main structural components, which were erected on a concrete slab.

military: Pertaining to the armed forces and individual soldiers.

mitigation: Reducing the adverse effects of an undertaking that may cause to properties on, or eligible for, the National Register. Mitigation can include (1) limiting the magnitude of the action, (2) repairing, rehabilitating, or restoring the affected property, (3) recovering and recording data from cultural properties that may be destroyed or substantially altered, (4) avoiding the effect altogether by not taking an action (or part of an action), or by relocating the action, (5) reducing or eliminating the effect over time by preservation and maintenance operations during the life of the action, (6) or compensating for effect by providing substitute resources or environments.

National Environmental Policy Act (NEPA) of 1969: (Public Law 91-190; 42 USC 4321-4347) states the Federal policy for preserving important historic, cultural, and natural aspects of our national heritage, and mandates the consideration of environmental concerns during project planning and execution. This act requires Federal agencies to prepare an Environmental Impact Statement (EIS) for every major Federal action that affects the quality of the human environment, including both natural and cultural resources. It is implemented by regulations issued by the Council on Environmental Quality (40 CFR 1500-08), which are incorporated into AR 200-2, *Environmental Effects of Army Actions*.

National Historic Preservation Act of 1966: [as amended (Public Law 89-665; 16 USC 470-470w-6)] establishes historic preservation as national policy and defines it as the protection, rehabilitation, restoration, and reconstruction of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, or engineering. Amendments of 1980 establish guidelines for nationally significant properties, curation of artifacts, and data documentation of historic properties, and preservation of Federally owned historic sites; require designation of a Federal Historic Preservation Officer in each Federal agency; authorize the inclusion of historic preservation costs in project planning costs; and authorize the withholding of sensitive data on historic properties when necessary. Section 106 provides direction for Federal agencies for undertakings that affect properties listed or eligible for listing on the National Register, and is implemented by regulations (36 CFR 800) issued by the Advisory Council on Historic Preservation. Section 110 requires Federal agencies to locate, inventory, and nominate all properties that may qualify for

the National Register. Applicable regulations are 36 CFR 60, *National Register of Historic Places*; 36 CFR 63, *Determination for Eligibility for Inclusion in the National Register of Historic Places*; and 36 CFR 800, *Protection of Historic Properties (Advisory Council on Historic Preservation)*. 36 FR 78 provides a waiver of responsibility for Federal agencies of the requirements of the National Historic Preservation Act of 1966 in the event of a major natural disaster or imminent threat to national security.

National Historic Landmarks Program: The program that identifies, designates, recognizes, lists, and monitors National Historic Landmarks conducted by the Secretary through the National Park Service.

National Park Service: The bureau of the Department of the Interior to which the Secretary has delegated the authority and responsibility for administering the National Historic Preservation Program to the National Park Service.

National Register of Historic Places: A nationwide list of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering, and culture maintained and expanded by the Secretary of the Interior.

object: A material thing of functional, aesthetic, cultural, historical, or scientific value that may be, by nature or design, movable yet related to a specific setting or environment.

preservation: The act or process of applying measures to sustain the existing form, integrity, and material of a building or structure, and the existing topography and vegetative cover of a site. It may include initial stabilization work where necessary, as well as ongoing maintenance of historic building materials.

property: A site, building, object, structure, or a collection of such items that forms a district.

protection: The act or process of applying measures designed to affect the physical condition of a property by defending or guarding it from deterioration, loss, attack or alteration, or to cover or shield the property from danger or injury. In the case of buildings and structures, such treatment is generally temporary and anticipates future historic preservation treatment; in the case of archeological sites, the protective measure may be temporary or permanent.

reconstruction: The act or process of reproducing by new construction the exact form and detail of a vanished building, structure, or object, or a part thereof, as it appeared at a specific time in history.

rehabilitation: The act or process of returning a property to a state of utility, repair, or alteration that makes possible an efficient contemporary use while preserving those portions or features of the property that are significant to its historical, architectural, and cultural heritage.

restoration: The act or process of accurately recovering the form and details of property and its setting as it appeared at a particular period of history by means of the removal of later work or by the replacement of missing earlier work.

Section 106 Consultation: A compliance procedure in which an agency requests the comments of the SHPO and/or the Advisory Council on Historic Preservation when an undertaking may affect a property on, or eligible for, the National Register.

significant: Having a characteristic that makes a property eligible for listing on the National Register.

site: The location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself maintains historical or archeological value regardless of the value of any existing structure.

State Historic Preservation Officer (SHPO, pronounced "shippo"): The state official designated by the state's chief executive or by State statute to administer the state historic preservation program, including identifying and nominating eligible properties to the National Register and otherwise administering applications for listing historic properties in the National Register.

structure: Human construction comprising interdependent and interrelated parts in a definite pattern of organization. Constructed by man, it is often an engineering project large in scale.

thematic group: A finite group of resources related to one another in a clearly distinguishable way. They may be related to a single historic person, event, or developmental force; of one building type or use, or designed by an individual architect; of a single archeological site form, or related to a particular set of archeological research problems.

treatment: Any of the various historic preservation activities, including everything from restoration of a building to excavating an archeological site.

type: A class of architectural elements, or archeological artifacts, defined by a consistent clustering of attributes.

undertaking: Any project, activity, or program that can change the character or use of a cultural or historic resource.

Appendix B: The Secretary of the Interior's Standards for the Treatment of Historic Properties

Note

This appendix reproduces text pertaining to *preservation, rehabilitation,* and *restoration*, as extracted from *The Secretary of the Interior's Standards for the Treatment of Historic Properties* (National Park Service 1995). Each of these treatments is distinct but interrelated. (Passages from the brochure pertaining to *reconstruction* are not reproduced here because that treatment is not within the scope of the current work for Quantico.)

Treatments

Preservation focuses on the maintenance and repair of existing historic materials and retention of a property's form as it has evolved over time. *Rehabilitation* acknowledges the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character. *Restoration* is undertaken to depict a property at a particular period of time in its history while removing evidence of other periods.

Standards for Preservation

Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive

upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material shall match the old in composition, design, color, and texture.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials shall not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

Standards for Rehabilitation

Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.

2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, shall not be undertaken.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials shall not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
9. New additions, exterior alterations, or related new construction shall not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Standards for Restoration

Restoration is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.

1. A property will be used as it was historically or be given a new use which reflects the property's restoration period.
2. Materials and features from the restoration period will be retained and preserved. The removal of materials or alteration of features, spaces, and spatial relationships that characterize the period shall not be undertaken.
3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate and conserve materials and features form the restoration period will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
4. Materials, features, spaces, and finishes that characterize other historical periods will be documented prior to their alteration or removal.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize the restoration period will be preserved.
6. Deteriorated features from the restoration period will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and, where possible, materials.
7. Replacement of missing features from the restoration period will be substantiated by documentary and physical evidence. A false sense of history shall not be created by adding conjectural features, features from other properties, or by combining features that never existed together historically.
8. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials shall not be used.
9. Archeological resources affected by a project will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
10. Designs that were never executed historically shall not be constructed.

Appendix C: Americans with Disabilities Act (ADA): Historic Buildings–Title II

With regard to existing historic preservation programs, the regulations state that a public entity shall give priority to programs that allow physical access to individuals with disabilities but in cases where alterations would result in a substantial loss or impairment of "significant historic features of an historic property" or would "result in a fundamental alteration in the nature of a service, program or activity, or in undue financial and administrative burdens," then the following alternative methods of choosing program accessibility would be acceptable.

1. Using audiovisual materials and devices to depict those portions of a historic property that cannot otherwise be made accessible;
2. assigning persons to guide individuals with disabilities into or through portions of historic properties that cannot otherwise be made accessible; or
3. adopting other innovative methods.

Appendix D: Uniform Federal Accessibility Standards (UFAS)—Historic Preservation

Note

The following text is extracted from UFAS (Fed-Std-795, 1 April 1988), Section 4.1.7, "Accessible Buildings: Historic Preservation."

4.1.7 Accessible Buildings: Historic Preservation

(1) Applicability.

(a) As a general rule, the accessibility provisions of part 4 shall be applied to "qualified" historic buildings and facilities. "Qualified" buildings or facilities are those buildings and facilities that are eligible for listing in the National Register of Historic Places, or such properties designated as historic under a statute of the appropriate state or local government body. Comments of the Advisory Council on Historic Preservation shall be obtained when required by Section 106 of the National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470 and 36 CFR Part 800, before any alteration to a qualified historic building.

b. The Advisory Council shall determine, on a case-by-case basis, whether provisions required by part 4 for accessible routes (exterior and interior), ramps, entrances, toilets, parking, and displays and signage, would threaten or destroy the historic significance of the building or facility.

c. If the Advisory Council determines that any of the accessibility requirements for features listed in 4.1.7(1) would threaten or destroy the historic significance of a building or facility, then the special application provisions of 4.1.7(2) for that feature may be utilized. The special application provisions listed under 4.1.7(2) may only be utilized following a written determination by the Advisory Council that application of a requirement contained in part 4 would threaten or destroy the historic integrity of a qualified building or facility.

(2) Historic Preservation: Minimum Requirements

(a) At least one accessible route complying with 4.3 from a site access point to an accessible entrance shall be provided.

EXCEPTION: A ramp with a slope no greater than 1:6 for a run not to exceed 2 ft (610 mm) may be used as part of an accessible route at an entrance.

(b) At least one accessible entrance which is used by the public complying with 4.14 shall be provided.

EXCEPTION: If it is determined that no entrance used by the public can comply with 4.14, then access at any entrance not used by the general public but open (unlocked) with directional signs at the primary entrance may be used.

(c) If toilets are provided, then at least one toilet facility complying with 4.22 and 4.1.6 shall be provided along an accessible route that complies with 4.3. Such toilet facility may be "unisex" in design.

(d) Accessible routes from an accessible entrance to all publicly used spaces on at least the level of the accessible entrance shall be provided. Access should be provided to all levels of a building or facility in compliance with 4.1 whenever practical.

(e) Displays and written information, documents, etc., should be located where they can be seen by a seated person. Exhibits and signage displayed horizontally, e.g., books, should be no higher than 44 in. (1120 mm) above the floor surface.

Appendix E: Manufacturers of Commonly Replaced Components

As historic elements deteriorate over time they will need to be repaired, restored, or possibly replaced. This appendix provides the findings of market research that may be useful to architects and other specifiers tasked with coordinating the modification of historic properties. Please note that the authors do not intend to imply that the list of vendors is exhaustive or is officially endorsed by USACERL. The information is intended to offer a starting point in the search for historically compatible building components or restoration services.

Doors	
The Building Block 550 West 30th Street New York, NY 10001 (212) 714-9333 (212) 714-9411 fax	*Produces traditional rail and stile doors with blind mortise and tenon joiner in any size, style, or wood species.*
Cassidy Company 12100 Baltimore Avenue Baltsville, MD 20705 (301) 419-2200	*Specializes in custom and historic replication wood doors.*
Strobel Millwork 240 Kent Road, Route 7 Cornwall Bridge, CT 06754 (203) 672-6460	*Duplicates doors, windows, or trimwork in a variety of wood species, or work from clients' designs.*
The Wood Factory 901 Harvard Houston, TX 77008 (409) 825-1733	*Specializes in replications of historic doors, using mahogany, ash, white oak, or as specified.*
Woodstone Box 223 Westminster, VT 05158 (802) 722-9217	*Manufactures architectural woodwork, windows and doors in a variety of woods, using computer-aided design, manufacturing, and engineering technology.*
Windows	
Anderson Windows, Inc. 100 4th Ave. North Bay Port, MN 55003 (612) 439-5150	*Specializes in high-quality custom windows made with weathertight construction for energy efficiency.*

The Building Block 550 West 30th Street New York, NY 10001 (212) 714-9333 (212) 714-9411	*Produces traditional rail & stile doors with blind mortise & tenon joiner in any size, style, or wood species.*
Custom Window PO Box 118 Englewood, CO 80151 (800) 255-1820	*Makes aluminum replacements for steel windows.*
Drums Sash-Door Company PO Box 207 Drums, PA 18222 (717) 788-1145 (717) 788-3007 fax	*Can reproduce any sash design, including parting strips or balance weights.*
Kentucky Millwork, Inc. 4200 Reservoir Avenue Louisville, KY 40213 (502) 451-3456 (502) 451-6027 fax	*Manufactures custom windows including round top, segment top windows.*
Woodstone Box 223 Westminster, VT 05158 (802) 722-9217	*Sells window components, including cast-bronze pulleys, steel weights, and weatherstripping.*
Sash Weights	
Architectural Iron Co. PO Box 126 Milford, PA 18337 (800) 442-IRON	*Specializes in patented cast-iron window weights (stock and custom sizes) and supplemental weights in various sizes.*
Pullman Manufacturing Corp. 77 Commerce Drive Rochester, NY 14623 (716) 334-1350	*Manufactures counterbalances for double-hung windows, doors, and mechanical devices.*
Quaker City Manufacturing 201 Elmwood Avenue SharonHill, PA 19079 (610) 586-4770	*Manufactures replacement channels for double-hung wood windows; replacement balances, weatherstripping, and lubricants.*
Roofs	
Berridge Manufacturing Co. 1720 Maury Street Houston, TX 77026 (800) 231-8127 (713) 233-4971	*Offers complete line of prefinished steel standing-seam panels for new and restorating roofing.*
C&H Roofing PO Box 2105 Lake City, FL 32056 (800) 327-8115	*Specialty roof contractor; works on historic roofs of thatch, slate, tile, steam-bent cedar. Also does sheet metal, ornamental cornices, and custom copper work.*

Follansbee Steel PO Box 610 Follansbee, WV 26037 (800) 624-6906 (304) 527-1260	*Produces Terne Metal, the traditional "tin" roofing metal, and Terne-Coated Stainless (TCS) roofing materials and flashing products.*
Greenstone Slate PO Box 134 Poultney, VT 05764 (802) 287-4333	*Offers authentic Vermont roofing slate in wide range of sizes, colors, and weights. Experienced in matching slates for roof restoration, additions, and new construction. Graduated roof bending, contrasting, all effects.*
Heathers & Little, Ltd. 36 Wagstaff Drive Toronto, ON M4L 2R8 (800) 450-0659 (416) 465-5491	*Specializes in all types of sheet metal roofs, ornaments, restoration, and reproduction; works on copper- and lead-coated copper roofing projects.*
Rogers Roofing Co., Inc. 251 1/2 Grove Ave. Verona, NJ 07044 (201) 744-0820	*Works with traditional roofs, domes, and steeples, including slate and tile. Also does custom copper work, wood roofs, drainage systems, and complete exterior restoration.*
Vande Hey–Raleigh Mfg. 1665 Bohm Drive Little Chute, Wisconsin 54140 (800) 236-8453 (414) 766-1181	*Manufactures a line of extruded concrete roofing tile offered in 8 styles and 20 standard colors. Reproduces custom colors and surfaces for restoration and new construction. Also offers recycled slate, concrete, and clay tiles.*
Gutters and Downspouts	
Commercial Gutter Systems 5621 East 'D.E.' Avenue Kalamazoo, MI 49004 (616) 382-2700	*Offers authentic 6 in. seamless half-round gutter in both copper and heavy aluminum. Gutter is compatible with specialized hidden nut-and-bolt adjustable hangar system.*
Sur-Fin Chemicals 1530 Spence Street Los Angeles, CA 90023 (213) 262-8108	*Carries a wide range of finishing patinas and chemicals for the coloring of metals, including copper, brass, bronze, steel, and iron.*
Zurn Roof Drains 1801 Pittsburgh Avenue Erie, PA 16512 (814) 455-0921	*Manufactures a wide range of roof drain systems for both renovation and new construction.*
Canopies	
Anchor Industries, Inc. PO Box 3477 Evansville, IN 47733 (812) 867-2421	*Makes custom-made traditional canvas and synthetic fabric awnings, marquees, and stationary patio canopies. Custom sizes are available in hundreds of colors and patterns for recovers or retrofits.*
Craft-Bilt Manufacturing Co. 2901 North 18th Street Philadelphia, PA 19132 (800) 422-8577	*Offers retractable fabric awnings and sunshades for patios, decks, windows, and doors; some motorized. Carries fabrics in over 150 colors and styles.*
Forster Corporation 1050 Plastermill Road Victor, NY 14564 (800) 366-4624	*Fabricates about a half-dozen awnings with awning systems and backlit signs; does custom work.*

Epoxies and Repair Services	
Abatron, Inc. 33 Center Drive Gilberts, IL 60136 (800) 445-1754	*Manufacturers LiquidWood, a penetrating epoxy wood consolidant; and WoodEpox, an epoxy wood paste for wood replacement. Other products include Abocrete for concrete, and Abojet resins for load-bearing elements.*
Gougeon Brothers, Inc. 100 Patterson Ave. PO Box 908 Bay City, MI 48707 (517) 684-7286 (517) 684-1374 fax	*Specializes in epoxy repair and maintenance projects involving wood, fiberglass, or metal.*
Leeds Clark Restoration 300 North Third Street Midlothian, TX 76065 (214) 775-3843	*Specializes in historic preservation; wood and steel window replacement and repair are done in-house.*
Preservation Resource Group PO Box 1768 Rockville, MD 20849 (301) 309-2222	*Makes products for wood preservation, including books, instruments, tools, epoxies, and Bora-Care EPA-registered materials to protect wood from insects and decay.*
Restoration Works, Inc. PO Box 995 Kankakee, IL 60901 (815) 937-5101	*Offers complete window restoration on-site or in the shop, including either epoxy consolidation or remilling to match.*
Seekircher 630 Saw Mill River Road Ardsley, NY 10502 (914) 693-1920	*Specializes in steel casement window adjustments and repair for residential and commercial historic buildings.*

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