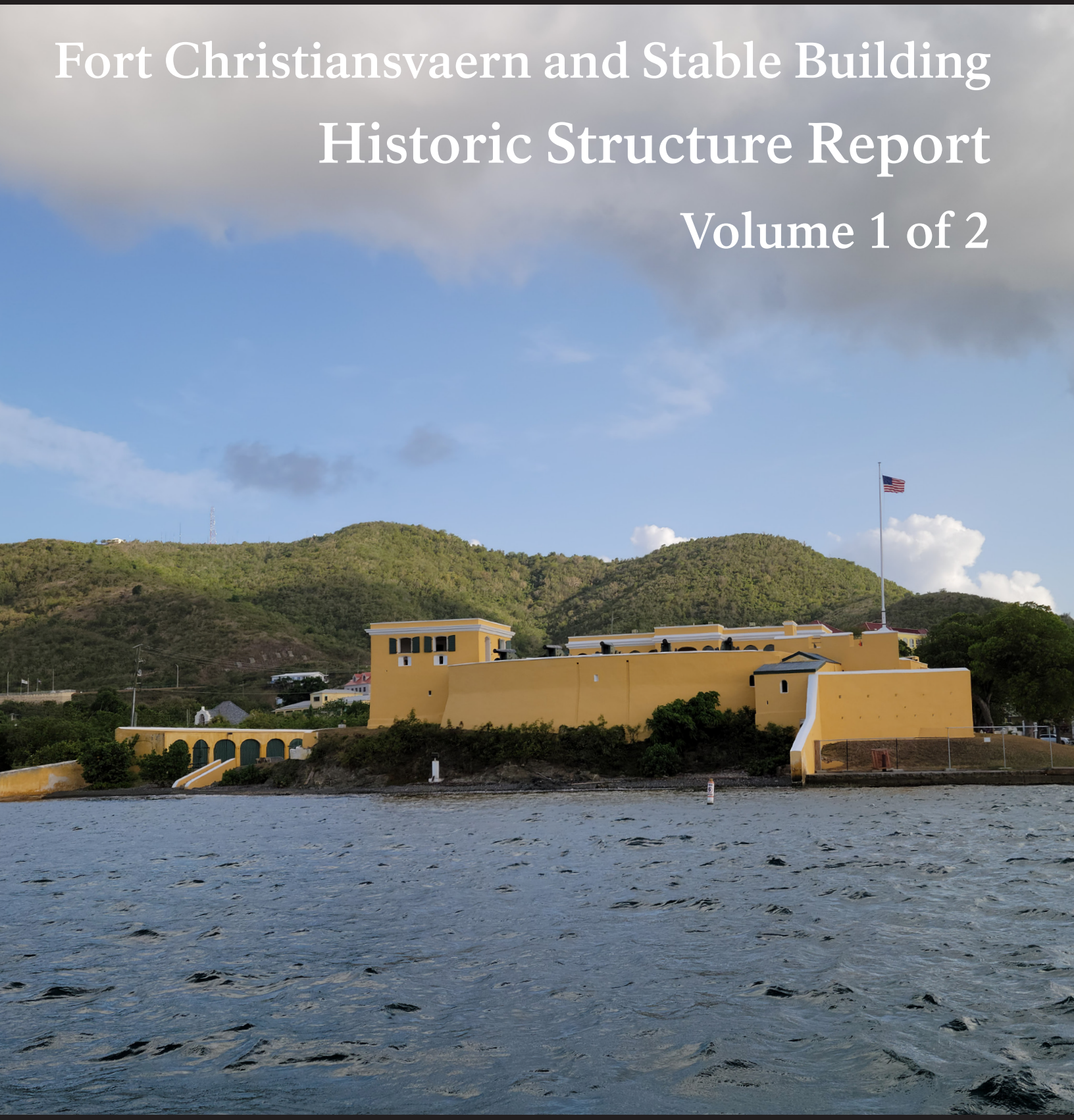
National Park Service
U.S. Department of the Interior

Christiansted National Historic Site
Christiansted, VI

Fort Christiansvaern and Stable Building
Historic Structure Report
Volume 1 of 2



Cultural Resources Partnerships and Science Division

Interior Region 2

Fort Christiansvaern and Stable Building

Christiansted National Historic Site

Historic Structure Report

Volume 1 of 2

2023

for

Christiansted National Historic Site
Interior Region 2: South Atlantic-Gulf, National Park Service

by

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The historic structure report presented here exists in two formats. A traditional, printed version is available for study at the park, at the Interior Region 2: South Atlantic-Gulf office of the National Park Service (NPS), and at a variety of other repositories. For more widespread access, the historic structure report also exists in digital format through the IRMA Portal, Integrated Resource Management Applications, including the NPS Data Store, accessed at <https://irma.nps.gov/App/Reference/Welcome>, a website of the National Park Service.

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Fort Christiansvaern and Stable Building
Christiansted National Historic Site
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Christiansted National Historic Site

Historic Structures Report

Fort Christiansvaern and Stable Building and Associated Stableyard, Gate and Walls

Christiansted, St. Croix, U. S. Virgin Islands

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Foreword

We are pleased to make available this Historic Structures Report for Fort Christiansvaern and its associated Stable Building at Christiansted National Historic Site, part of the ongoing effort to provide comprehensive documentation for the historic structures of the National Park Service. The success of this project is due in large part to the staff of the Christiansted National Historic Site. The park has long sought to protect and interpret this important resource. Evan Gwilliam, the Park's Supervisory Resource Management Specialist, as well as staff from the park and the region have assisted in providing support for this project.

We would like to thank Project Lead Joseph K. Oppermann, FAIA, Preservation Architect Robert J. Hotes, Architectural Historian Langdon E. Oppermann, Architectural Staff Christopher Woollard and Jeffrey P. Anderson, of Joseph K. Oppermann - Architect, P.A., Structural Engineer John Matteo of MCC 1200 Architectural Engineers, PLLC, and Architectural Conservator Dorothy Krotzer of Building Conservation Associates for their thorough research, rigorous existing conditions documentation, and carefully considered recommendations. The Park would also like to thank Interior Region 2 for their careful reviews and contributions on this project.

Angelita Alvino
Superintendent

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Figure M1. Map of the Antilles. (Michelle LeFebvre, Christina Giovas, and Jason Laffoon, "Advancing the Study of Amerindian Ecodynamics in the Caribbean: Current Perspectives," Environmental Archaeology, vol. 24, August 2018, pp.1-8)

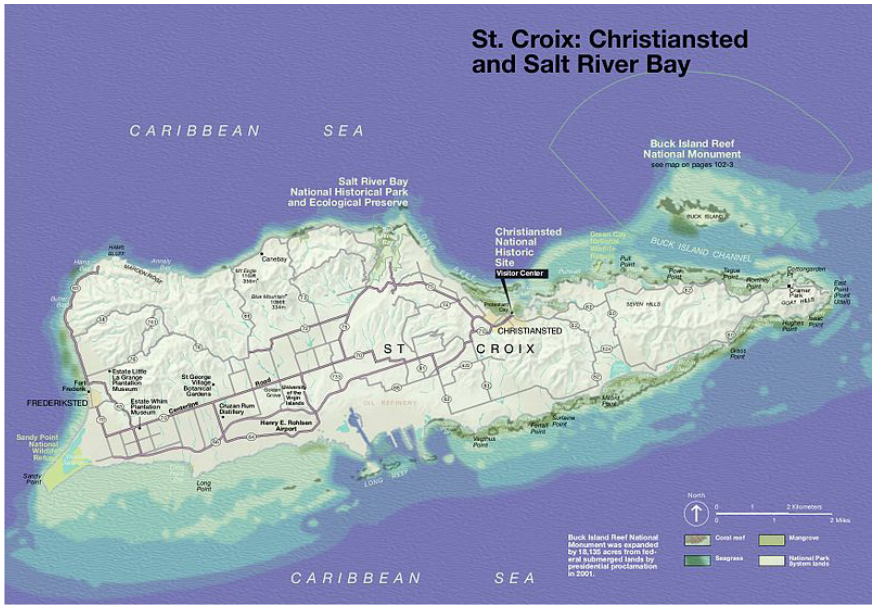


Figure M2. Map of St. Croix showing location of CHRI, SARI, and BUIS. (npmaps.com/wp-content/uploads/virgin-islands-st-croix-map.jpg)

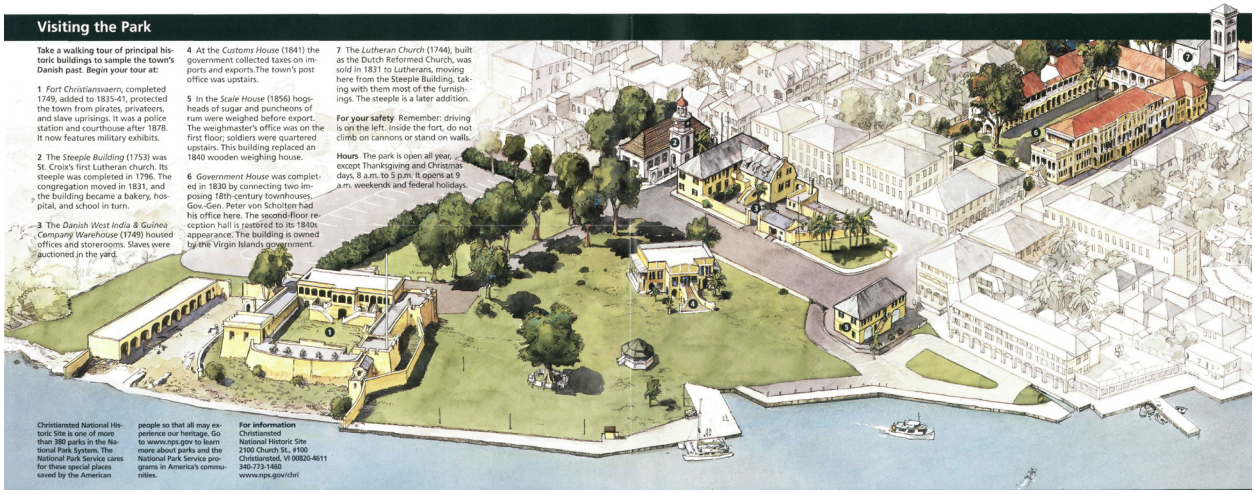


Figure M3. Illustrated aerial map of CHRI showing the location of Fort Christiansvaern within the park. (npshistory.com/publications/chri/map.pdf)

Management Summary

At the request of the National Park Service (NPS), Joseph K. Oppermann–Architect, P.A. (JKOA) has developed this Historic Structure Report (HSR) for Fort Christiansvaern in Christiansted on the island of St. Croix, USVI. The building is part of the Christiansted National Historic Site (CHRI). On the facing page is a regional map showing the location of the park and a map of CHRI showing the location of the fort (*Figs. M1-M2*) on the north shoreline of the island. This HSR documents the development, use, and current condition of the fort and its associated stable and stableyard.

Following NPS protocol, this HSR is divided into two major segments, *Part I: Developmental History*, and *Part II: Treatment and Use*.

Part I: Developmental History, is a scholarly report typically containing four chapters: a chapter providing historic background and context; a chronology chapter documenting the initial construction and continued evolution of the building; a chapter providing a detailed physical description of the exterior and interior on a room-by-room basis and assessing current conditions; and a chapter describing the significance and integrity of the building. These components of Part I are based on the combined analysis of documentary research and physical examination.

The Chronology of Development and Use chapter is presented in three sections: Section I is an annotated version of a chronology written by Herbert Olsen in 1960, to which we have added images from his report and our own research. Section II and Section III cover the developmental history of the fort and stableyard complex respectively after 1960 and are the work of JKOA.

A bibliography follows Section III.

Part II: Treatment and Use, contains chapters that review the requirements for treatment and use; present the NPS administratively determined ultimate treatment and use with an evaluation of alternative treatments; address resilience to natural disasters; and offer recommendations to achieve the ultimate treatment and use, coupled with recommendations for further enhancement. Recommendations reflect objectives identified by park management and an emphasis on preserving extant historic material and applying the new information gained.

Appendices contain: (A) 1959 Historic American Buildings Survey (HABS) Documentation Drawings, (B) Historical Epoch Drawings, (C) Annotated HABS Documentation Drawings Showing Present Conditions, (D) Selected Utility Drawings, (E) Structural Investigation Report by 1200AE, and (F) Materials Conservation Report by Building Conservation Associates, Inc.

Historical Overview

Fort Christiansvaern is significant for its association with the development of Christiansted and St. Croix under Danish Colonial rule and for its later role as municipal offices.[1]

The island of St. Croix was purchased from France in 1733 by the Danish West India and Guinea Company, adding it to their existing land holdings in the Caribbean. The settlement of Christiansted, named for King Christian VI of Denmark, began the next year on a natural harbor on the island's north side, and construction of a fortification soon began. After a hurricane destroyed these early construction efforts, the current fort was built between 1738 and 1749.[2]

1. NRHP Additional Documentation Form, 1999, pp. 3-4.
2. Olasee Davis, "Knights of Malta had a role on St. Croix," *The Virgin Islands Daily News*, 6 June 2017, virginislandsdailynews.com/opinion/knights-of-malta-had-a-role-on-st-croix/article_5964aa77-288b-5358-b603-7db51a384c0d.html.

The economy of the Danish West Indies relied heavily on the production and export of sugar, made possible by the work of enslaved Africans in a system known as triangular trade. However, the economy of St. Croix languished under the Danish West India and Guinea Company due to heavy taxation, and in 1754, the Danish Crown took full possession of the islands. Under new administration the economy flourished.[3]

As the capital of the Danish West Indies during a long period of prosperity, Christiansted saw a building campaign in the mid-nineteenth century that included alterations and improvements to Fort Christiansvaern and construction of the fort's stable and carriage house.

The introduction of sugar beet agriculture in the early 1800s and the eventual abolition of slavery in the islands in 1848 contributed to a decline in sugar production and profits. Despite efforts in cotton production and cattle raising, the combination of hurricanes, droughts, competition, and labor problems led to a steady economic decline, until Denmark saw their interests in the islands as a liability.[4]

After years of negotiation, Denmark sold the islands in 1917 to the United States, which purchased them for military purposes.[5] The U.S. Navy administered the islands, and, recognizing the poverty that had taken over, greatly improved social services until the islands were transferred to the Department of the Interior in 1931.

The Christiansted National Historic Site was established in 1952 under the name Virgin Islands National Historic Site. With the designation was an agreement with the municipality of St. Croix that it would discontinue use of the fort as a prison, police offices and other office uses when space became available; the National Park Service was to use the fort for office, exhibit, and lecture space.[6]

3. NPS brochure, "Christiansted National Historic Site," npshistory.com/publications/chri/index.htm; NPS, "The Port of Christiansted," nps.gov/chri/learn/historyculture/stories.htm.
4. Ibid.
5. Becky Little, "The U.S. Bought 3 Virgin Islands from Denmark. The Deal Took 50 Years," History Stories, 21 August 2019, history.com/news/us-virgin-islands-denmark-purchase; "Transfer Day," National Museum of Denmark, en.natmus.dk/historical-knowledge/historical-themes/danish-colonies/the-danish-west-indies/transfer-day/.
6. Foundation Document, *Christiansted National Historic Site* (National Park Service, January 2015), pp. 3, 49-52.

The site's name was changed from Virgin Islands National Historic Site to Christiansted National Historic Site in 1960, at which time the NPS committed to operate the site exclusively for interpretive purposes. It was not until 1996 that local offices left all NPS buildings.[7]

The Fort

Construction of a fort in Christiansted began soon after the 1733 purchase of St. Croix from France by the Danish West India and Guinea Company. However, after administrative delays and hurricane damage, work on a new fort began in 1738, mostly completed by 1749. The fort was named Christiansvaern, "Christian's Defense," in honor of King Christian VI.[8]

The limewashed, stuccoed brick fort was four-sided, built around a central courtyard, with corner bastions at the salient angles and a ravelin on the south (landward) side. The south curtain was two stories with a projecting double stairway leading to a covered gallery, the side curtains were one-story, and on the north (harbor) side was a projecting water battery.

Repairs and improvements were made in the second half of the eighteenth century, and a major rehabilitation was carried out in 1817-1818 when brick floors, ground gutters, and pavements were relaid; rotted joists replaced; all interior and exterior masonry pointed, stuccoed or plastered, and limewashed; and woodwork painted. The commandant's quarters were paneled and papered at that time.[9]

Another major rehabilitation took place from 1834 to 1837 and included the 1835 addition of a second story to the northeast bastion as a common room for the garrison, a wall added to the west side of the complex to enclose a prison yard, and construction of the stable.[10]

A significant change was made in 1857 when the flat brick roof of the south curtain was replaced with a hip roof, which remained for almost a century.

7. "It's a Golden Year for the National Historic Site," *The St. Thomas Source*, February 8, 2002, stthomassource.com/content/2002/02/08/its-golden-year-national-historic-site/.
8. Jerome A. Greene and William JF. Cissel, *Historic Furnishings Report, Fort Christiansvaern, Christiansted National Site* (Harper's Ferry: National Park Service, 1988, p. 3).
9. Herbert Olsen, *Historic Structure Report, 1*960, p. 8.
10. Ibid.

No major structural changes or additions have been made to the fort since 1857. In 1878 the fort was converted for use by the municipal government but required no significant alterations.[11] It ultimately housed Christiansted's police station, fire station, civil defense headquarters, jail, territorial, and military draft office, and it was not until the 1960s that the local government vacated all spaces in the fort complex.[12]

Repairs to the fort have taken place throughout the centuries and continued in the twentieth century; only the larger projects are mentioned here. The 1857 hip roof of the south curtain was returned to its previous form as a flat brick roof in 1972. The same year, two restrooms were installed in the west curtain after a sewer line was installed across park grounds.[13]

The colors of the fort have been given much attention. NPS historian and author of the 1960 HSR, Herbert Olsen, documented many references to muted colors, including yellow ocher and stone colors, as well as many references to dark green woodwork.

In 1983 the fort remained the red ocher color in place since the early years of the century. The park proposed returning the fort to its original color. However, despite Olsen's report and a corroborating 1983 finishes study, the park painted the fort a pale yellow.

Hurricanes have threatened the fort since its original construction. Major repairs were made throughout the fort in 1980-1982, with elements of the overall project continuing through the decade. As these projects were completed, Hurricane Hugo in 1989 caused great damage and initiated a series of repair projects. Hurricanes in 1995, 1998, and 1999 were followed by Hurricane Omar, which brought on comprehensive repair projects starting in 2010.

Damage from termites was perhaps best expressed by a former superintendent in 2001, who explained, “The fort has been through hurricanes, floods, earthquakes and occupations, but nothing has been more destructive than subterranean termites.” Major termite programs in 1991 and 1995 introduced innovative methods that were successful. Continued monitoring was recommended.

In 1999 the fence at the powder magazine was reconstructed and exterior masonry repairs made in the fort. Major window repairs in the east curtain were completed in 2008. Repairs to the floor of the Commandant's Gallery were made in 1977, in 2005, and again in 2015, and the fort's front gate reconstructed in 2019.

In 2015-2017, a major project addressed serious cracks and other conditions to the fort's masonry, and the building was limewashed. This was followed 2020 by a project to apply a mineral silicate coating to the masonry. An upcoming project is repair to a deteriorating girder above the Commandant's Gallery.

The fort today remains essentially an eighteenth-century structure with a few important additions and alterations from the nineteenth century and twentieth centuries, which together have not changed the overall composition of the fort and its complex.

The Stableyard Complex

As part of the 1830s improvements to the fort, a stable and carriage house were constructed in 1835-1840 in a newly created stableyard to the east and below the fort. The stable was built against a new outer wall on the east side of the fort and contained twelve box stalls within six arched openings on the front. The carriage house abutted the south wall adjacent to the entrance gate.

In 1839 the stable was extended 25 feet to the north towards the water's edge to create a laundry shed, and a laundry house was erected on a piling just north of the stableyard shoreline.

During the municipal government's period at the fort, the Virgin Islands Fire Division used the stable and stableyard as its local facility. The stalls were slowly converted to other uses, and one opening and part of another have been filled with brick and contain two doors and a small window. At an unknown time, most likely in phases, most partitions and all stalls were removed to create a large room encompassing the majority of the building.

The condition of the complex is documented in the Historic American Buildings Survey (HABS) photographs of 1959, which show early features, though the stable and outbuildings are in poor

11. Ibid., pp. 36-37
12. "Golden Year."
13. George D. Church letter to supervisory park ranger, “Sewer Line through Fort Grounds,” 11 May 1970, in CHRI 11424 box 2, folder 49, file 4. CHRI contact sheet, October 1972, uncatalogued boxes.

condition and the stable at that time was missing roof sections. In 1969 the roof was found to again need immediate repair or shoring because the previous shoring had failed.

The carriage house, which contained a watchman's room, was stabilized in the 1960s. However, by the 1970s it was in poor condition, and underwent a major repair. The condition of the stable building in 1978 was also poor, with sections of the roof missing and walls damaged. A comprehensive rehabilitation included replacement of the flat brick roof, repairs to walls, and replacement of the stableyard's damaged brick and cobblestone pavements in kind.

In 1984, the stableyard gates, which were removed by the Fire Division in the 1960s, were reproduced and installed. The work was begun in association with the rehabilitation and wiring of the stable and adaptation as the maintenance area, in part to shield that area from public view.

The most recent work has been a major reroofing project, the first phase conducted in 2015-2017, and the second recently completed.

Period of Significance

The 1999 Additional Documentation for the Christiansted National Historic Site historic district lists the district-wide period of significance as ca. 1734-1931, but provides no specific date range for the individual buildings. The fort and stable are listed as contributing structures within the district.[14]

This report recommends continued management of Fort Christiansvaern under the Preservation standard to the period of 1734-1959 and the Stable Building under the Preservation standard to the period of 1835-1959. These dates are inclusive of the periods identified for interpretation in later park management documents.

Ultimate Treatment and Use

The NPS administratively determined Management Category for the building is "Must Be Preserved and Maintained," and the Ultimate Treatment is Preservation. Further explanation can be found in the *Ultimate Treatment and Use* chapter.

14. NRHP Additional Documentation Form, 1999, Section 8.

Project Scope and Methodology

Purpose

The purpose of this HSR is to document the historical evolution, significance, and present condition of Fort Christiansvaern and its associated stableyard complex and to provide clear information for use in the planning, repair, maintenance, and preservation of the buildings. The National Park Service will use this report to inform and guide its stewardship.

NPS Director's Order 28 (DO-28) recognizes an HSR as an optimal first phase of the preservation effort for an historic building, preceding design and implementation of its preservation, rehabilitation, restoration, or reconstruction. It is the primary guide to treatment and use of an historic structure, and considerable loss of information can result if an HSR is not completed. The information gleaned helps the preservation effort and provides information for interpretation. According to DO-28, "In no case should restoration, reconstruction, or extensive rehabilitation of any structure be undertaken without an approved HSR, Parts 1 and 2."[15]

DO-28 provides guidelines for recording and analyzing the history of a property from its construction through subsequent modifications to the present; to document the performance and condition of its materials, features, and stability; and to recommend an appropriate course of treatment based on those findings. NPS prepares a "Part III" completion report after the work is undertaken, which documents the repairs and changes made and becomes part of the HSR.

This HSR complies with those guidelines and offers a comprehensive, scholarly assessment of the history, fabric, and current condition of the building and makes recommendations for future actions. The project was conducted by the JKOA project team, which included Joseph K. Oppermann, FAIA, historical architect and principal-in-charge; Robert J. Hotes, AIA, historical architect; Langdon E. Oppermann, architectural historian/planner; Christopher M. Woollard, Associate AIA, and Jeffrey P. Anderson, Associate AIA. Joining them were structural engineer John A. Matteo,

15. *NPS Director's Order 28: Cultural Resources Management Guideline*, chapter 8.

P.E., of MCC 1200 Architectural Engineers, PLLC, and architectural conservator Dorothy Krotzer of Building Conservation Associates, Inc. (BCA). This team researched, investigated, documented, and assessed this building and wrote this HSR. The interdisciplinary approach broadens the understanding of the structure and aids the development of appropriate treatment recommendations.

Document Research

Our findings and recommendations for preservation of the buildings rely on research of primary and secondary sources, early photographs, maps, drawings, and interviews, correlated with our physical investigation of extant building fabric. The Scope of Work for research prescribed by NPS for this HSR project is "thorough," defined in NPS DO-28 as "research in selected published and documentary sources of known or presumed relevance that are readily accessible without extensive travel and that promise expeditious extraction of relevant data, interviewing all knowledgeable persons who are readily available, and presenting findings in no greater detail than required by the project management plan."

Research is integral to understanding the fort's evolution and meeting the goals of an HSR. As part of the research for this HSR, JKOA conducted research at the CHRI archives located within the historic fort, the NPS ETIC archive database, and the National Archives and Records Administration (NARA) facility in New York City, which houses the US Navy's records for the US Virgin Islands.

JKOA was met with significant challenges with regard to research in the CHRI archive. The park's collection is large and contains important documents consisting primarily of uncatalogued paper files. In 2010-2012, NPS began a digitization project as a head start on organizing those files; however, the majority of the collection, though valuable, has no systematized arrangement. This hampers research considerably.

Faced with these challenges, JKOA researchers spent considerable time reviewing documents and have endeavored to include as much information as could be gleaned. Future research efforts would be greatly aided by a concerted effort to organize and consolidate the park's archive. Recommendations for further research on Fort Christiansvaern, as well as recommendations for improving the archive itself, are included in this report.

The quality of several images in the report's Fort and Stableyard chronologies is below par. The originals are park project documents that themselves are photocopies of pdfs and emails. Despite these limitations, several such images are included in the report as they are helpful to the reader. Captions include explanatory notes.

Recording and Physical Investigation

Proceeding concurrently with the documentary research were the measured recording and investigation of the building. These served as the basis for in-depth description of the building, including room-by-room descriptions.

Physical investigation to determine evolutionary history, known as building archaeology, was a large component of the work of identifying the scope and time frame of various changes. These investigations were integrated with the documentary research in a correlative approach to determine how the building was used and adapted over its history.

Condition Assessment

Specialized assessment methodology was used to survey the condition of each exterior feature and each interior room, itemizing features and elements and photographing them in detail. Observations were documented with digital photographs, measurements, and field notes. In accordance with the NPS scope of work, no building system components were tested, and no invasive investigation methods were employed.

Development of History, Chronology of Construction, and Evaluation of Significance

The combined information from documentary research and physical investigations was analyzed, and the narrative context history, annotation and expansion of Olsen's report, and the two building-specific chronologies of construction and alterations were written. The narrative physical description was prepared containing a systematic accounting of exterior and interior spaces, features, materials, and condition assessment. All narratives are supplemented by numerous photographs and drawings.

An evaluation of significance was prepared in accordance with the guidelines in National Register

Bulletin 15: How to Apply the National Register Criteria for Evaluation.[16] The seven aspects of historic integrity were assessed using the same guidelines. These evaluations of history, condition, significance, and integrity provided the basis for the development of recommended treatment alternatives.

List of Key Treatment Topics

The following is a selected list of key treatment items for the fort complex. Additional and more specific information, illustrated with photographs, is provided for these and other topics in *Part II: Treatment and Use*, beginning on page 331. The items listed here should not be considered comprehensive.

The park has identified specific items of focus/ concern including:

- Additional technical investigations (See Key Topic #1).
- Options for correction of drainage issues throughout the complex (See Key Topic #2)
- Next steps for structural repairs recommended by this report (See Key Topic #3)

A number of studies and investigations relating to the treatment of the buildings have been identified and are included in the *Recommendations for Further Research*, which begin on p. 380. The most critical of these items are summarized below.

1. Assessing Fire Alarm, Fire Suppression, and Security System

The fire protection system, including fire alarm system and the sprinkler system, should be assessed by an MEP/FP engineer. The existing wet-pipe sprinkler system presents a risk to irreplaceable archival materials and museum collections. As such, this is viewed to be the most critical recommended additional investigation.

During both site visits, the fire alarm and security system control panel in Room 5 was displaying an on-screen error and emitting a warning tone. The system should be assessed by an MEP/FP engineer to ensure that the system is functioning as intended. Park staff should be familiarized with the function of the systems and their controls and testing of the alarm should be performed at a regular interval.

Abandoned system elements, such as older motion detectors, should be removed to avoid confusion and to ensure that proper coverage is being achieved by current systems.

2. Addressing Roofs and Drainage Systems

Roof coatings across the majority of the fort require replacement. Those at the gundecks are no longer impervious to water, allowing water to enter sensitive collections storage spaces.

The internal drains have no cleanouts to assist in maintenance. No screens or filters are installed to reduce the amount of organic material that enters the system. The condition of the subsurface drainage system is unknown.

Potential options for correcting drainage issues begin with scoping and mapping of the existing system as part of a larger recommended drainage study that addresses the buildings and site. As part of that study, existing roof slopes should be evaluated and potentially adjusted to better and more quickly shed water from surfaces, especially when considering projected increases in rainfall.

See also *Roofing and Rainwater Dispersal Recommendations* beginning on p.352.

3. Additional Structural Evaluations

Significant cracking has been observed in ceiling vaulting of the southeast and southwest bastions, and movement appears active. Displacement has occurred at the northwest corner of the stable and cracking of the stable's northernmost arch has occurred. These issues warrant targeted assessments by an engineer and will ultimately require designs for stabilization and repair. See also *Structural Recommendations* beginning on p.366.

4. Monitoring Termite Activity

Regular treatment and inspection of spaces should be performed to address termite activity and locate evidence of termite infestation. A number of termite tunnels, some of them appearing fresh, were observed during the on-site investigations. Damage from termites remains one of the greatest threats to materials at the fort.

16. *National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation* (Washington, D.C.: National Park Service, National Register of Historic Places, 1990, revised 1997).

5. Monitoring Deterioration and Updating Maintenance Schedules

Severe weather events and increased precipitation will necessitate the need to re-evaluate cyclical maintenance and replacement of deteriorated building elements. Elements include wood doors and shutters, metal elements such as window bars and hinges, roofing materials, and exterior coatings. Specific recommendations for each of these elements are provided in Part II.

6. Relocation of Archival Storage

The archive spaces within the fort do not provide an adequate environment for sensitive material. The existing HVAC system does not provide the necessary controls and adjustment for archival storage. Additionally, the wet-pipe sprinkler system presents an immediate concern in the event of failure or damage. See recommendations in Part II for more information.

7. Archive Cataloguing

The archive consists primarily of paper documents, including photographs, which lack systematized organization and are uncatalogued. A comprehensive project to create and catalogue documents should precede a digitization project.

Administrative Data

Locational Data

Building Name: Fort Christiansvaern and Stable Building
Location: Christiansted National Historic Site (CHRI)
Town and Island: Christiansted, St. Croix
Territory: United States Virgin Islands

Real Property Information

Construction Date: Fort: 1738-1749
Stable: 1835-1840

Numbering Information

CRIS: 00188 Fort Christiansvaern
091554 Stable Building

Size Information

Fort Dimensions:	132' x 144'	*Stable Dimensions:*	119' x 16'
Number of Stories:	2	*Number of Stories:*	1
Number of Rooms:	40	*Number of Rooms:*	2
Number of Bathrooms:	2	*Number of Bathrooms:*	0

Cultural Resource Data

National Register Status: Administratively listed 1966 with passage of the National Historic Preservation Act;
Documentation for Christiansted National Historic Site accepted 1998 with the fort listed as a contributing building in a nationally significant historic district;
Additional Documentation accepted March 1999 with the stable also designated a contributing building within the same district.

Gjessing, Frederik. "Christiansted National Historic Site." National Register Nomination Form, approved 20 October 1976, with Additional Documentation approved 5 March 1999.
https://catalog.archives.gov/id/131518858

Period of Significance of Historic District: ca. 1734-1931

Historic American Buildings Survey: Documented and photographed 1957, published 1959.
Library of Congress, Prints and Photographs Division Washington, D.C., Historic American Buildings Survey, HABS VI,1-CHRIS,4-,
https://www.loc.gov/item/vi0085/.

Proposed Treatment

• The NPS administratively determined management category for the fort complex is "Must Be Preserved and Maintained," and the Ultimate Treatment is Preservation. The treatment recommendations in this report continue the established Ultimate Treatment of Preservation. Specific measures that follow The Secretary of the Interior's Standards for Preservation are discussed in this report.

• The recommended ultimate use of the complex is to provide interpretive exhibits as the premiere resource of the Christiansted National Historic Site.

Historical Background and Context



Figure A1. Christiansted Harbor. Watercolor by H. G. Beenfeldt, 1810. (M/S Maritime Museum of Denmark, billedarkiv.mfs.dk/fotoweb/archives/5001-Museet-for-s%C3%B8farts-billedarkiv/archive/Arkiv-32/000011772.jpg.info#?c=%2Ffotoweb%2Farchives%2F5001-Museet-for-s%25C3%25B8farts-billedarkiv%2F%3Fq%3DH.%2520G.%2520Beenfeldt%2520)

Location

With a commanding view of a reef-protected harbor on the north-central side of the Caribbean island of St. Croix, Fort Christiansvaern stands sentinel over the town of Christiansted. The fort dates to the island's Danish colonization period (1734-1917) and is arguably the city's oldest surviving structure.[17] It stands today as the centerpiece of the Christiansted National Historic Site (CHRI) (*Figs. M1, M2*).

Southernmost and largest of the United States Virgin Islands (USVI), St. Croix is part of the Antillean Islands, or Antilles, an archipelago stretching from the peninsula of Florida to the coast of Venezuela, bordered by the Gulf of Mexico to the northwest, the Atlantic Ocean to the north and east, and the Caribbean Sea to the south and west.

The island chain is separated into the Greater Antilles – Puerto Rico and all islands northwest – and the Lesser Antilles – the Virgin Islands and all islands south. The Lesser Antilles are further subdivided from north to south into the Leeward Islands, the Windward Islands, and the Leeward Antilles, so named for the prevailing trade winds. Together, the Antilles and the Lucayan Archipelago, an adjacent island chain to the north comprising the Bahamas and the Turks and Caicos, make up what has been referred to historically as the West Indies (*Fig. M3*).[18]

17. Herbert Olsen, *Historic Structure Report Part I: Fort Christiansvaern* (National Park Service, 1960), p. 12. The fort site, which held a previous French earthen fortification, was occupied by the Danish in 1734. Use of the site as a fortification began immediately and the fort itself grew through accretion rather than being the result of a single construction campaign. No buildings remain from periods of earlier occupation.

18. Bridget M. Brereton and Colin Graham Clarke, "West Indies," *Encyclopedia Britannica*, britannica.com/place/West-Indies-island-group-Atlantic-Ocean. Although

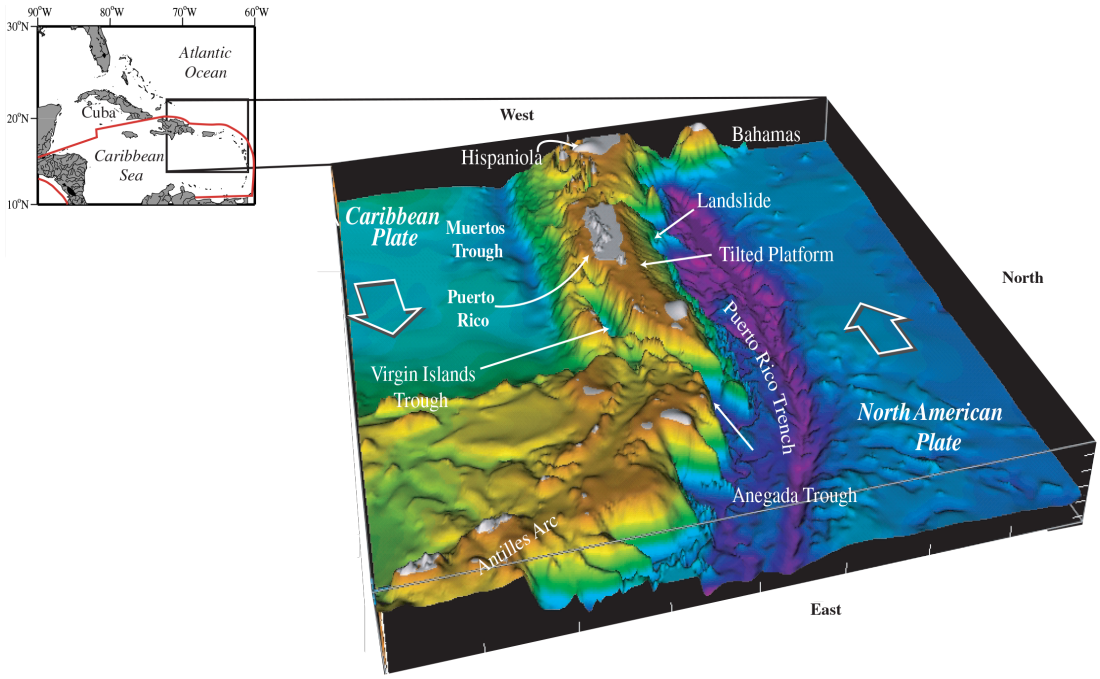


Figure A2. Morphology and color-shaded bathymetry of the northeastern Caribbean region looking toward the west, showing interaction of the North American and Caribbean Plates. The boundary of the Caribbean plate is outlined in red on the location map. ("Earthquakes and Tsunamis in Puerto Rico and the U.S. Virgin Islands," USGS Fact Sheet FS-141-00 (Department of the Interior, April 2001), nps.gov/viis/learn/nature/upload/usgs_earthquakes_and_tsunamis.pdf)

Exposure to Natural Threats and Climate Change

St. Croix defines the easternmost point in the United States (by direction of travel), while it is also within the north-westernmost boundary of the Leeward Islands and the Lesser Antilles. Its south shore touches the Caribbean Sea while its north shore touches the Atlantic Ocean. St. Croix's location at these points of both geographic and geologic transition, place the island at an increased risk from natural disasters.

Earthquakes and Tsunamis

The Antilles were formed by the subduction of the oceanic crust of the Atlantic and South American tectonic plates under the Caribbean plate. St. Croix is positioned in the middle of the complex tectonic transition zone between the major transform fault where the Atlantic Plate meets the Caribbean Plate, and the subduction zones where the North American Plate and Caribbean Plate meet the Puerto Rico Microplate (*Fig. A2*). Subduction faults at this transition zone have formed multiple seafloor depressions, the Muertos Trough west of St. Croix, and the Anegada Trough and the Puerto Rico Trench to the north. While this proximity is one of the many reasons for St. Croix's abundant aquatic natural resources, the entire area is seismically active, placing St. Croix under threat of major earthquakes and tsunamis.[19]

Written records of such events date back to the 1500s, citing more than a dozen seismic events with a magnitude greater than 7.0 and several significant tsunamis. One such event occurred in November of 1867, when a significant earthquake centered in the Anegada Trough between St. Thomas and St. Croix caused a tsunami wave up to 9 meters (29.5 feet) tall to hit the city of Christiansted, running inland to distance of over 90 meters (*Fig. A3*).[20]

geographically separate, Bermuda shares historic and cultural ties to the West Indies, and is sometimes included.

19. "Earthquakes and Tsunamis in Puerto Rico and the U.S. Virgin Islands," USGS Fact Sheet FS-141-00 (Department of the Interior, April 2001), nps.gov/viis/learn/nature/upload/usgs_earthquakes_and_tsunamis.pdf; "Major Caribbean Earthquakes and Tsunamis a Real Risk," Woods Hole Oceanographic Institution, 13 January 2005, whoi.edu/press-room/news-release/major-caribbean-earthquakes-and-tsunamis-a-real-risk/; Michael Cheadle, "The Tectonic Setting and Geology of Puerto Rico and Its Surrounding Seafloor," National Oceanic and Atmospheric Administration, oceanexplorer.noaa.gov/okeanos/explorations/ex1502/background/geology/welcome.html.

20. "Earthquakes and Tsunamis in Puerto Rico and the U.S. Virgin Islands."; "In 1867, a Magnitude 7.5 Earthquake Caused Tsunamis in the USVI (Danish West Indies) That Destroyed Charlotte Amalie and the Frederiksted

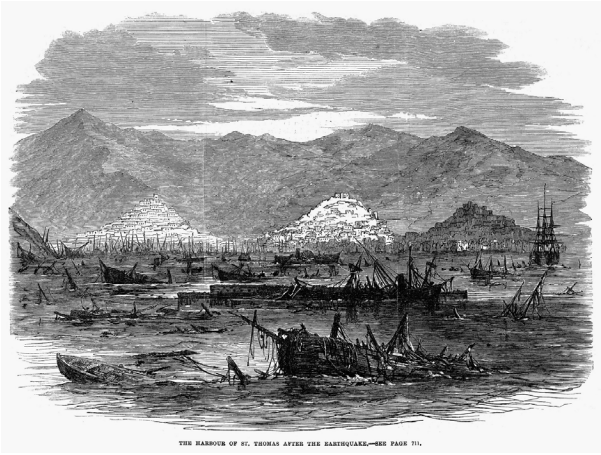


Figure A3. Engraving showing the state of St. Thomas Harbor at Charlotte Amelie following a major earthquake and tsunami in November, 1867. ("In 1867, a Magnitude 7.5 Earthquake Caused Tsunamis in the USVI (Danish West Indies) That Destroyed Charlotte Amalie and the Frederiksted Waterfront," The Virgin Island Consortium, 12 Jan 2020, viconsortium.com/vi-top_stories/virgin-islands-in-1867-a-magnitude-7-5-earthquake-caused-tsunamis-in-usvi-that-destroyed-charlotte-amalie-and-the-frederiksted-waterfront)

Hurricanes

In addition to these natural disasters, St. Croix's location within "hurricane alley," a band of warm water stretching from North Africa to Central America and the Gulf Coast where the vast majority of Atlantic hurricanes form, makes it a prime target.[21] Historical data collected since the latter part of the nineteenth century suggests that, on average, St. Croix experiences a major hurricane ever 16.5 years, with the island experiencing a direct hit every 7 years.[22]

One of Christiansted's most famous residents, U.S. Founding Father Alexander Hamilton, described the aftermath of a 1772 hurricane thusly: "A great part of the buildings throughout the Island are levelled to the ground, almost all the rest very much shattered; several persons killed and numbers utterly ruined... In a word, misery...."[23]

The devastation of 1989's Hurricane Hugo is within more recent memory. "As many as 90 percent of the island's buildings were damaged, communications and transportation were knocked out and, for a time, St. Croix's 55,000 people were simply cut off from the world."[24]

Volcanic Activity

While the Lesser Antilles are semi-volcanic and have 21 identified geologically-active volcanoes, none are large enough or close enough to pose a credible threat to St. Croix. The closest, at 98 miles, is Mount Scenery on the island of Saba, part of The Netherland's territorial holdings in the Caribbean. While volcanos pose no real threat to St. Croix, it should be noted that among natural disasters, volcanic eruptions are the leading cause of death in the Eastern Caribbean.[25] St. Croix has seen minor impacts of wind-driven volcanic ash. Such was the case in July of 2008 with the eruption of the Soufriere Hills volcano on the United Kingdom Overseas Territory of Montserrat.[26]

Climate Change

In addition to the consequences of rising sea levels and global surface temperatures, climate change complicates the dangers already posed by natural disasters. In a 2016 bulletin on climate change in the USVI, the Environmental Protection Agency (EPA) remarked that,

> The air and ocean are warming, heavy rainstorms are becoming more severe, sea level is rising, and the ocean is becoming more acidic. In the coming decades, these environmental changes are likely to increase threats to life and property from severe storms, reduce the availability of fresh water during the dry season, harm or destroy much of the islands' coral reef ecosystems, and make air temperatures uncomfortably hot more often.[27]

Waterfront," *The Virgin Island Consortium, 12 Jan 2020*, viconsortium.com/vi-top_stories/virgin-islands-in-1867-a-magnitude-7-5-earthquake-caused-tsunamis-in-usvi-that-destroyed-charlotte-amalie-and-the-frederiksted-waterfront.

21. "Hurricane Alley Heats Up," National Aeronautics and Space Administration Earth Observatory, 9 August 2005, earthobservatory.nasa.gov/images/5742/hurricane-alley-heats-up.
22. "Saint Croix, Virgin Island's history with tropical systems," Hurricane City database entry, hurricanecity.com/city/saintcroix.htm.
23. Alexander Hamilton to The Royal Danish American Gazette, 6 September 1772, National Archives Founders Online, founders.archives.gov/documents/Hamilton/01-01-02-0042.
24. William Branigin, "Hurricane Hugo Haunts Virgin Islands," *Washington Post Foreign Service*, 31 October 1989, p. A1.
25. "Caribbean Volcanoes," University of the West Indies Seismic Research Center, uwiseismic.com/volcanoes/caribbean-volcanoes/; Smithsonian Institution National Museum of Natural History Global Volcanism Program database, volcano.si.edu/volcano.cfm?vn=360010.
26. "Monserrat Volcano Sends Ash to Virgin Islands," *The Saint Croix Source*, 30 July 2008, stcroixsource.com/2008/07/30/monserrat-volcano-sends-ash-virgin-islands/.
27. "What Climate Change Means for the U.S. Virgin Islands," United States Environmental Protection Agency, bulletin EPA 430-F-16-065, November 2016, 19january2017snapshot.epa.gov/sites/production/files/2016-11/documents/climate-change-usvi.pdf.

Impact to biotic resources aside, the results of climate change that will directly affect the cultural resources of CHRI are rising sea levels, rising water surface temperatures leading to increased intensity of tropical storms, hurricanes, and storm surge, and rising ambient surface temperatures impacting human health and comfort.

According to the most recent Assessment Report by the Intergovernmental Panel on Climate Change (IPCC), Global mean sea level increased by 0.2 meters (0.66 feet) between 1901 and 2018.[28] Based on a range of projections by the IPCC with increasing levels of severity, a 2013 National Park Service (NPS) climate change planning study for CHRI projected sea level rise by the year 2100 in the Virgin Islands at 0.4 meters (1.31 feet) for the conservative model and 0.63 meters (2.07 feet) for the high model.[29]

The water surface temperatures around the USVI have increased by almost 2 °F since 1901. This trend is expected to intensify as the global average temperature reaches and/or exceeds a 1.5 °C increase over 1850-1900 levels within the next 20 years, with a larger increase over land than water. Tropical storms and hurricanes are driven by warm water surface temperatures, and these storms have increased in both frequency and severity over the last 20 years. The most recent report by the IPCC states that, "Evidence of observed changes in extremes such as heatwaves, heavy rainfall, droughts, and tropical cyclones, and, in particular, their attribution to human influence, has strengthened since" their previous report in 2014.[30]

Using Sea, Lake, and Overland Surges from Hurricanes (SLOSH) Maximum Envelope of Water (MEOW) models generated by the National Oceanic and Atmospheric Administration (NOAA) the same 2013 NPS planning study projects that a section of CHRI including the fort will be inundated by future increased storm surges due to more intense tropical storms and hurricanes. These NOAA models do not account for rising sea levels in addition to storm surge.[31]



Figure A4. Christopher Columbus being greeted by native people upon his landing on the island of Hispaniola. Etching by Pieter Balthazar Bouttats, ca. 1728. (Library of Congress, LC-USZ62-8390).

Increasing global temperatures can not only impact human health and comfort, but they can also impact tourism. A 2015 climate change report for the CHRI correlates historic data on average monthly temperature with average monthly visitation between 1979 and 2013 to project the impact of a predicted increased temperatures on park visitation from 2041 to 2060. The report's findings predict a 4-to-10% decrease in annual visitation; a 4-to-9% decrease in peak season visitation (defined as the park's three busiest contiguous months); a 4-to-9% decrease in shoulder season visitation (defined as the two months prior and two months after peak season); a 3-to-11% decrease in low season visitation (defined as the park's three slowest contiguous month); and a 2-to-10-day contraction of the visitation season (defined as beginning on the date when 10% of historical cumulative visitation was achieved and ending on the date when 10% of historical cumulative visitation remained for the year). It should be noted, and perhaps cautioned,

28. "10 urgent takeaways for the Caribbean from IPCC's latest global climate assessment report," The University of the West Indies St. Augustine, *Campus News*, 12 August 2021, sta.uwi.edu/news/releases/release.asp?id=22302.
29. Maria Caffrey, "Sea Level and Storm Trends for Planning at Christiansted National Historic Site and Salt River Bay National Historic Park and Ecological Preserve," National Park Service, 4 November 2013, pp.1-2.
30. "What Climate Change Means for the U.S. Virgin Islands.; 10 urgent takeaways for the Caribbean from IPCC's latest global climate assessment report."
31. Caffrey, pp.1, 6.



Figure A5. "A Map of the West-Indies or the Islands of America in the North Sea; with ye adjacent Countries; explaining what belongs to Spain, England, France, Holland &c. also ye Trade Winds, and ye several Tracts made by ye Galeons and Flota from place to place. According to ye newest and most exact observations" (Herman Moll, A New and Complete Atlas, ca. 1720, upload.wikimedia.org/wikipedia/commons/c/c6/1732_Herman_Moll_Map_of_the_West_Indies%2C_Florida%2C_Mexico%2C_and_the_Caribbean_-_Geographicus_-_WestIndies-moll-1720.jpg)

that this report relies on correlation, not causation, as a predictive tool. The report itself notes that temperature explains only 74% of the variation in visitation in the historic data set.[32]

Empire, Sugar, and Slavery in the West Indies

The colonial history of the West Indies is intangibly connected to a trade economy centered on sugar and enslaved labor. While this HSR in no way purports to give a full history of the colonization of either St. Croix specifically, or the West Indies generally, a basic understanding of both is necessary to place the history of Fort Christiansvaern in its proper context.

The Spanish encountered the island of Hispaniola (present day Haiti and The Dominican Republic) in the late 1400s. Presuming they had found India, the islands were called the Indies. When the mistake was discovered, the name was changed to the West Indies to differentiate from their colonial land holdings in the East Indies, a collection of islands in Southeast Asia and Oceania. The Spanish enjoyed over a century of colonization efforts in the West Indies without interference by other European powers, allowing them to establish dominance in the region (*Fig. A4*).[33]

By the early 1600s, France, England, and The Netherlands established themselves as primary powers alongside Spain, although nearly every country on Europe's west coast with seafaring ambitions, including Portugal, Sweden, and Denmark, eventually joined to vie for territory in the Caribbean (*Fig. A5*).[34] It was the English, French, and Dutch who made the Caribbean the center of the sugarcane industry.[35]

32. Nicholas Fisichelli and Pamela Ziesler, "Christiansted National Historic Site: How might future warming alter visitation?," National Park Service, 2015, pp. 1-3.

33. David Lambert, "An introduction to the Caribbean, empire and slavery," West India Regiments Project, The British Library, 16 November 2017, bl.uk/west-india-regiment/articles/an-introduction-to-the-caribbean-empire-and-slavery.

34. Lambert; *World Regional Geography: People, Places and Globalization* (University of Minnesota Libraries Publishing, 2016), pp. 273-274, open.umn.edu/opentextbooks/textbooks/world-regional-geography-people-places-and-globalization.

35. James Hancock, "Sugar & the Rise of the Plantation System," *World History Encyclopedia*, 18 June 2021,

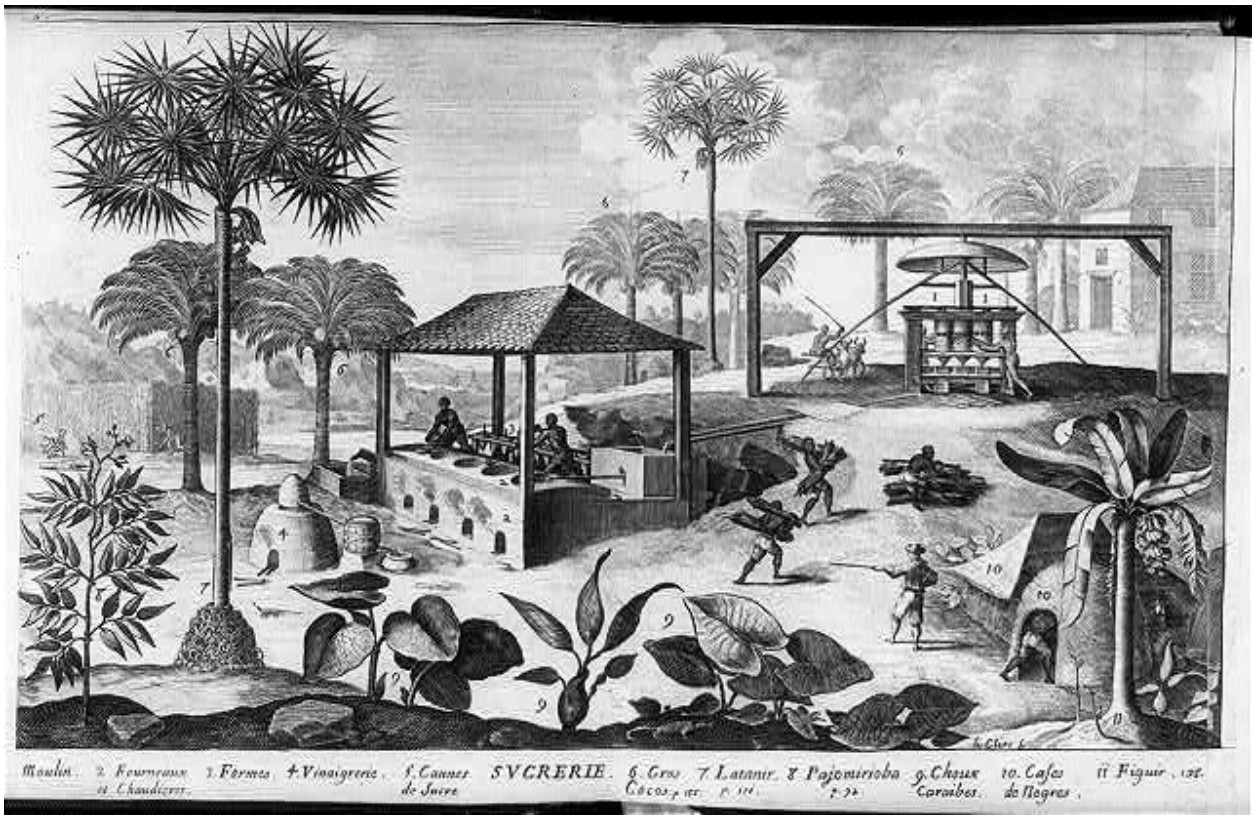


Figure A6. Production of sugar in the West Indies. Etching, ca. 1667. (Library of Congress, LC-USZ62-72098)

As an economic byproduct of their colonization of the Atlantic islands off Africa's west coast in the early 1400s, Portugal gained control of worldwide sugar production by the middle of the fifteenth century. Their first sugarcane plantations were developed on the island of Madeira, and rapidly expanded to Portugal's other territorial holdings in the east Atlantic (*Fig. A6*). These plantations relied on enslaved labor – originally that of native populations of the Canary Islands, and after those were exhausted, enslaved peoples were imported from West Africa.[36]

With the colonization of Brazil in the early 1500s, Portugal expanded the sugarcane plantation system to the Americas, again initially relying on indigenous enslaved labor. When that too proved insufficient, the solution was to import enslaved Africans across the Atlantic, thereby establishing the transatlantic slave trade (*Fig. A7*).[37]

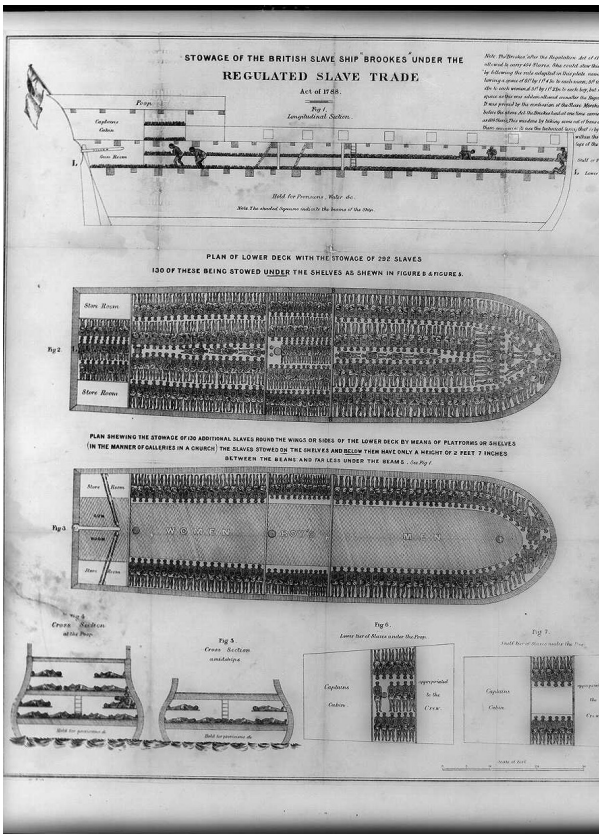


Figure A7. Stowage of the British slave ship "Brookes" under the Regulated Slave Trade Act of 1788. (Library of Congress, LC-USZ62-44000)

worldhistory.org/article/1784/sugar--the-rise-of-the-plantation-system/.

36. Ibid.

37. Ibid.; Hakim Adi, "Africa and the Transatlantic Slave Trade," *BBC History*, 5 May 2012, bbc.co.uk/history/british/abolition/africa_article_01.shtml.



Figure A8. "The Battle of the Saintes," depicting a Revolutionary War naval battle between the French and the British. Oil on Canvas by Thomas Whitcombe, 1783. (christies.com/lot/lot-thomas-whitcombe-the-battle-of-the-saintes-5460757/?)



Figure A9. 1792 British comic titled, "The gradual abolition off the slave trade or leaving of sugar by degrees." It depicts George III sitting at a table with the Queen and two of his daughters, and the Queen's Keeper of the Robes, Juliana Elizabeth Schwellenbergen holding a bottle of "Brandy," discussing the use of sugar in moderation. Princess Elizabeth states that "of late I have been very moderate. But I must have a bit now & then"; while her sister would "rather want alltogether [sic] than have a small Piece." The title is a play on the words "of" and "off"; the "abolition" of "the slave trade or leaving" off "sugar by degrees." (Library of Congress, LC-DIG-ppmsca-31020)

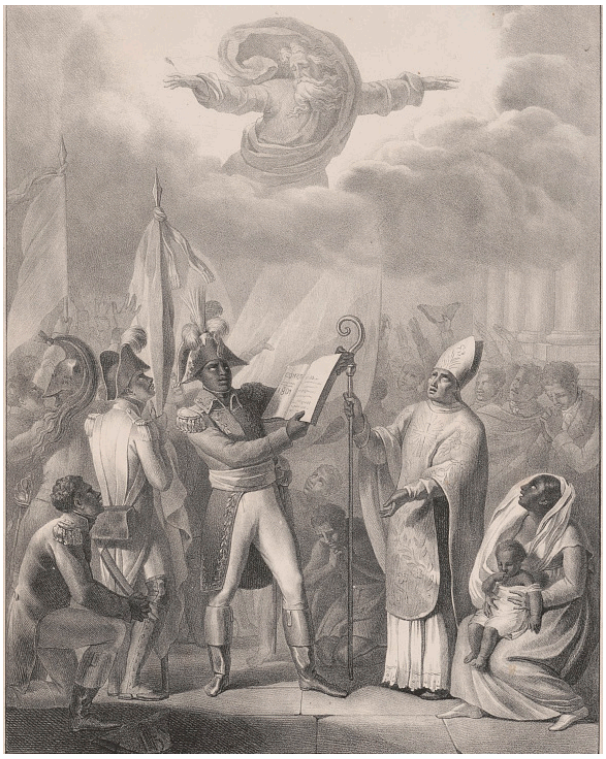


Figure A10. Leader of the Haitian Rebellion, Toussaint L'Ouverture, shown holding a copy of the new Haitian constitution. Lithograph, 1801. (Library of Congress, LC-DIG-ppmsca-31021)

Great strides were made by the English, French, and Dutch in establishing sugarcane plantations in the Caribbean in the 1630s-1650s modeled after this economically-successful Portuguese system, and by the close of the century, sugar production in the Caribbean eclipsed that of Portuguese territories in Brazil.[38]

Sugar became the single most important internally-traded commodity. It was so central to the European economy of the 1700s that nearly every European conflict of the era, including the American Revolution (1775-1783), spilled into the Caribbean (*Fig. A8*), with control over territories often changing hands.[39]

Central to the sugarcane industry was slavery. The start of the French Revolution in 1789, split the colonists of the French territory of St. Dominique (now Haiti) into factions. The enslaved population of the island saw their chance for rebellion and took it on August 22, 1791. St. Dominique had become the center of sugar production in the Caribbean. The fall, first of the French and then of the British, at the hands of an army of enslaved

38. Hancock, "Sugar & the Rise of the Plantation System."
39. Ibid.



Figure A11. Natives working in the sugar cane fields of St. Croix, 1902. (Library of Congress, LC-DIG-stereo-1s36548)

persons, spooked European nations with territorial holdings in the region (*Fig. A9*). The country of Haiti gained independence on January 1, 1804, as the first country to abolish slavery and the first country founded by the formerly enslaved (*Fig. A10*).[40]

This preceded, but cannot be seen as the direct cause of the abolition of slavery in the Caribbean, a slow and staggered process that took nearly a full century, and was the result complex factors including territorial desires for independence, fear of slave rebellion or actual rebellion, complexities of local economies, the rise of democratic regimes, the influence of philosophical and religious movements, and the rise of the sugar beet industry.[41]

After the abolition of slavery, these same colonial powers turned to importing indentured workers from within the Caribbean and from their Southeast Asian territories in the East Indies. This post-abolition use of indentured labor in the West Indies began in the 1830s and lasted until the 1930s. Despite this, the plantation system was ultimately dying by the end of the nineteenth century (*Fig. A11*).[42]

40. Ibid.; "The United States and the Haitian Revolution, 1791–1804," Department of State, Office of the Historian, history.state.gov/milestones/1784-1800/haitian-rev.
41. Hancock; Pieter C. Emmer, "The Big Disappointment. The economic consequences of the abolition of slavery in the Caribbean, 1833–1888," *History In Focus*, issue 12, spring 2007, archives.history.ac.uk/history-in-focus/Slavery/articles/emmer.html; "Abolitions of Slavery," Atlas Caribe, http://atlas-caraibe.certic.unicaen.fr/en/page-117.html.
42. Hancock, "Sugar & the Rise of the Plantation System."; Emmer, "The Big Disappointment."; Kamala Kempadoo, "'Bound Coolies' and Other Indentured Workers in the Caribbean: Implications for debates about human trafficking and modern slavery," Anti-Trafficking Review, issue 9, 2017, pp. 48—63, antitraffickingreview.org/index.hp/atrjournal/article/view/263/252.

Perhaps the most enduring impact of colonialization in the Caribbean, much as it is anywhere, is how dramatically it altered the ethnic makeup of the region. Indigenous populations were nearly wiped out, while African and Asian peoples were introduced by force, engendering pluralistic and diasporic identities and cultural traditions.[43]

Existing today with thirteen independent states and an even greater number of territorial dependencies held across the United Kingdom, France, the Netherlands, Venezuela, and the United States, the West Indies is a melting pot that bears the physical evidence of its colonial history.

Colonization of St. Croix

Of the indigenous peoples who settled in the Caribbean, three groups are known to have inhabited St. Croix in successive order, the Igneri from 1-700 CE, the Taino from 700-1425 CE, and the Kalinago from 1425-1590 CE. By the time St. Croix experience first European contact in the late fifteenth century, it was the Kalinago who inhabited it.[44]

Explorer Christopher Columbus bestowed St. Croix with its name, having landed there briefly during his second voyage to the Americas. On the morning of November 14, 1493, his flotilla spotted an island known to his enslaved Taino guides as "Ayay." Columbus chose to rename the island Santa Cruz, a Spanish term meaning "Holy Cross." Though the visit was brief, it was long enough for his crew to engage in a skirmish with a settlement of native Kalinago at present-day Salt River Bay, which some historians call the first recorded armed conflict in what would be a long succession of aggressions by European explorers against native populations of the New World.[45]

While the Spanish never formally colonized St. Croix in the fifteenth or sixteenth centuries, they left an indelible mark and an enduring legacy of cultural trauma for native populations both there, and throughout the Caribbean through practices of enslavement and outright eradication. St. Croix is thought to have been devoid of native inhabitants by 1590.[46]

The island alternated between colonial interests for much of the seventeenth century. English, Dutch, and French settlers established themselves on St. Croix beginning in 1625. The English expelled the others prior to being driven out by the Spanish in 1650, who enforced their earlier fifteenth-century claim to the island. That same year the Island was captured by the French, who in 1651 sold commercial rights to the Knights of Malta, with the French crown maintaining official ownership.[47]

The island's first sugar cane and tobacco plantations were established by the Knights of Malta, using a combined labor force of Catholic indentured servants and enslaved Africans. Despite reaching a level of success, with nearly 80 active plantations, remaining loans to the French and changing colonial interests prompted the 1665 sale of the commercial interests in St. Croix to the newly-chartered French West India Company.[48]

St. Croix initially flourished under the French West India Company and plantation agriculture expanded to include cotton and indigo. After the death of the island's governor the Company became insolvent and its debts were relieved by the French crown in 1674. The island, now administered directly by the crown, was evacuated in 1695 during the Nine Years War and lay uninhabited until it was purchased by the Danish West India & Guinea Company in 1733.[49]

Having already acquired the islands of St. Thomas in 1672 and St. John in 1717, the royally chartered Danish West India & Guinea Co. found that neither was well suited for plantation agriculture. This was the Company's objective when in 1933, they purchased the nearby and more fertile island of St. Croix.[50]

43. *World Regional Geography: People, Places and Globalization*, p. 274.
44. *U.S. Virgin Islands: a guide to national parklands in the United States Virgin Islands* (Washington, D.C.: Division of Publications, National Park Service, U.S. Dept. of the Interior, 1999), pp. 81–99; Maxine Coles, "Saint Croix and the Virgin Islands," Journal of the Association Medicale Haitienne a l'Etranger (AMHE), amhe.org/journal/?page_id=2525.
45. Samuel Elliot Morrison, *Admiral of the Ocean Sea: A Life of Christopher Columbus, Volume II* (Little Brown and Company: Boston, 1942), pp. 82-86; Coles, "Saint Croix and the Virgin Islands."
46. *U.S. Virgin Islands: a guide to national parklands in the United States Virgin Islands,* pp. 81–99; Coles, "Saint Croix and the Virgin Islands."
47. Olasee Davis, "Knights of Malta had a role on St. Croix," *The Virgin Islands Daily News*, 6 June 2017, virginislandsdailynews.com/opinion/knights-of-malta-had-a-role-on-st-croix/article_5964aa77-288b-5358-b603-7db51a384c0d.html.
48. Davis, "Knights of Malta had a role on St. Croix."
49. Coles, "Saint Croix and the Virgin Islands."
50. NPS brochure, "Christiansted National Historic Site," npshistory.com/publications/chri/index.htm; NPS, "The Port

Settlement of the island occurred in 1734, having been delayed as the Company mitigated a slave revolt on St. John. A protected location on the island's north side with a natural harbor was chosen. This was the location of an earlier French settlement, probably chosen because it was easily defensible, and the harbor served as a natural port for trade.[51]

The settlement was named Christiansted in honor of King Christian VI of Denmark. The surrounding land was surveyed and subdivided into 150-acre plantations. Work began immediately on a defensive structure near the harbor to be named Fort Christiansvaern. While Denmark relied heavily on a diplomatic policy of neutrality, having military presence in far-flung colonies with competing European interests was imperative to protect both trade interests and trade commodities, namely sugar and enslaved peoples. The fort was as necessary for protection against external threats, and it was for maintaining control over the island's large enslaved population, which greatly outnumbered its European population. The fort served as both a military depot, and a jail.[52] A complete history of the construction and use of Fort Christiansvaern can be found in the next chapters.

Construction Labor Force

Construction in the colonies of the West Indies was made possible through a calculus of European design influence, enslaved African and indentured labor forces, and a mixture of imported and local building materials. Enslaved Africans were specifically trained as craftsmen and taught European building methods and practices in the creation of a construction force for colonial infrastructure.[53]

According to records of the Danish West Indian & Guinea Co., 33 enslaved Africans were sent to Christiansted from St. John in April of 1736, a portion of whom were tasked with the Company's initial construction projects, including Fort Christiansvaern. It is known that some of this initial work force was composed of participants in the 1733 slave revolt on St. John.[54]

By 1744, the Company's skilled enslaved construction force in Christiansted numbered 24, consisting of masons, carpenters, and blacksmiths. The number increased to 56 by 1755. Members of these skilled labor forces were assigned management roles overseeing municipal construction projects.[55]

Following the early British colonial model, the Danish West Indian & Guinea Co. also relied on the cheap labor provided by indentured servants and convicts from the Kingdom of Denmark. This practice ended in 1755, after the Danish Crown acquired the territories.[56]

Danish Colonial Economy

Under the administration of the Danish West India & Guinea Co., St. Croix's population grew to 10,000 people, with ninety percent of that population consisting of enslaved African labor forces. Despite this growth in population, the economy stagnated under heavy taxation. This slump led to the Danish crown relieving the Company's debts and taking over administration of its land holdings in the Caribbean in 1754.[57]

Administration by the crown relaxed taxation and restrictions on trade practices, stimulating economic growth, particularly with the sugar cane industry. Christiansted flourished, becoming the capital of the Danish West Indies. The years from 1760 to just after the turn of the nineteenth century were known as the island's golden age. St. Croix became one of the wealthiest sugar producing islands in the Caribbean, a fact that was reflected in colonial architecture of this period.[58]

This economic success was of course built on the backbone of enslaved labor. The enslaved population of St. Croix reached nearly 50,000

of Christiansted," nps.gov/chri/learn/historyculture/stories.htm.
51. Ibid.
52. Ibid.
53. Ulla Lunn, "Forts on St. Croix," *The West Indian Heritage*, http://den-vestindiske-arv.dk/en/flamboyant/forts-on-st-croix/; Alicia Odewale and Meredith D. Hardy, "Royal Enslaved Afro-Caribbeans in Christiansted: Exploring the Archaeology of Enslavement in a Caribbean City," in James A. Delle and Elizabeth C. Clay, edts., *Archaeology of Domestic Landscapes of the Enslaves in the Caribbean* (University Press of Florida: Gainesville, FL, 2019), p. 190, Mirjam Louise Hvid, "Indentured servitude and convict labour in the Danish-Norwegian West Indies, 1671–1755," Scandinavian Journal of History, Vol. 41, Issue 4-5, 2016, pp. 541-564.
54. Lunn, "Forts on St. Croix."
55. Ibid.
56. Hvid, "Indentured servitude and convict labour in the Danish-Norwegian West Indies, 1671–1755."
57. NPS brochure, "Christiansted National Historic Site"; NPS, "The Port of Christiansted."
58. Ibid.

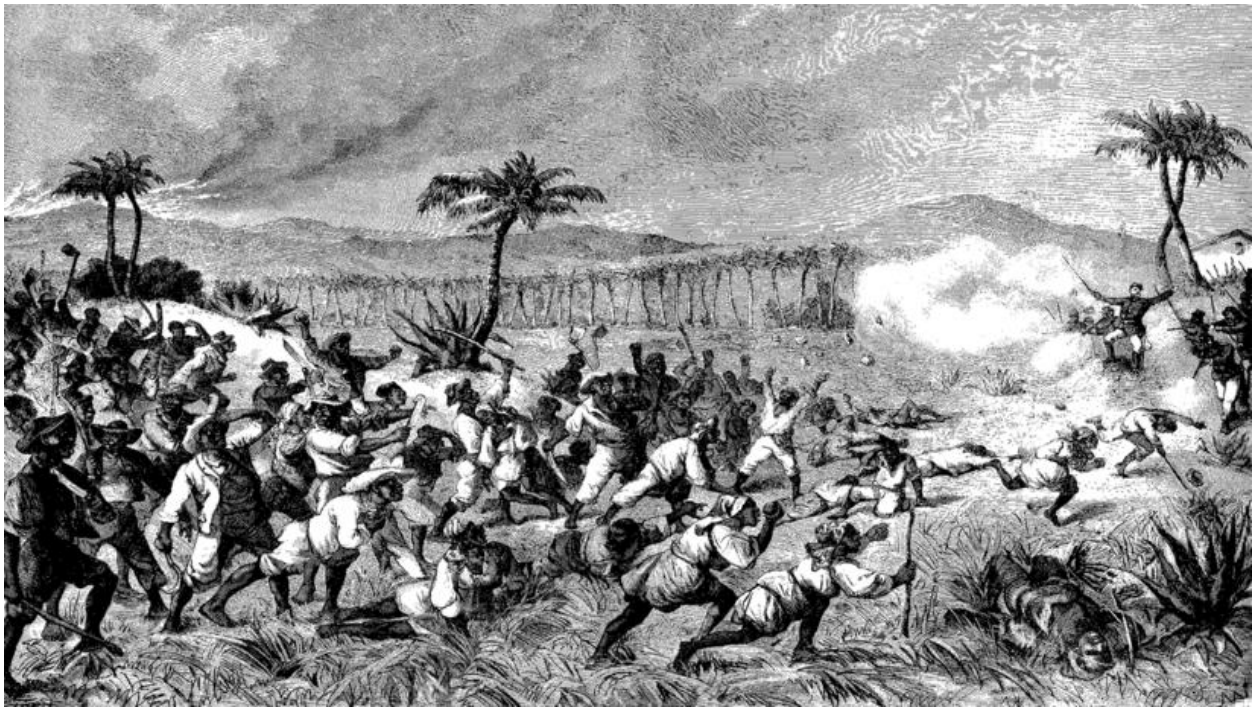


Figure A12. Illustration of the 1878 St. Croix labor riot known as "The Fireburn." (From the Danish Weekly Publication, *Illustreret Tidende*, published November 1878)

during this period. In 1792 Denmark became the first colonial power to signal an end to its participation in slave trade in the West Indies (but not the practice of slavery itself), scheduled to take effect in 1803. Until this point, Christiansted served as a major port for the importation of enslaved Africans to the Caribbean. Slavery in the Danish West Endies would not be abolished until 1848.[59]

The sugar cane industry, and thus the economic stability of St. Croix began to decline in the 1820s with the rising viability of sugar beet as an alternate crop. This, combined with the loss of enslaved labor in 1848 ensured that by the end of the nineteenth century, St. Croix no longer had a viable agricultural economy.[60]

Like the other colonial powers in the Caribbean, the Danish West Indies struggled with an inadequate labor force after the abolition of slavery. Various attempts to create systems of contracted labor managed to prolong the plantation system as a stop-gap measures; however, these too ultimately failed.

The 1849 Labour Act aimed at retaining and heavily controlling the islands' formerly-enslaved population. This was ended forcibly in 1878 through a labor riot of formerly-enslaved workers known as "The Fireburn" (*Fig. A12*). The Labour Act proved insufficient on its own, and beginning in 1850, the Danish government began importing foreign indentured labor, initially from the surrounding islands in the Caribbean, and later from China and the East Indies through the British.[61]

From 1850 to 1917, when the United States acquired the islands, an estimated 10,000 foreign indentured laborers were brought to the Danish West Indies. Ninety-five percent of these workers were sourced from the Caribbean, with the vast majority coming from the British colony of Barbados. The remaining five percent originated from the Portuguese colony of Madeira, and British colonial land in China and India.[62]

Based on British colonial records, only one ship, the *Mars*, was approved for transit of indentured laborers from the East Indies to the Danish West Indies, originating from the British-controlled

59. Ibid.
60. Ibid.

61. Lomarsh Roopnarine, "A Comparative Analysis of Two Failed Indenture Experiences in Post-Emancipation Caribbean: British Guiana (1838-1843) and Danish St. Croix (1863–1868)," *Iberoamericana: Nordic Journal of Latin American and Caribbean Studies*, Vol. XLII, Issue1-2, 2012, pp. 203-230.
62. Ibid.

port of Calcutta and arriving in St. Croix in 1863. The import of indentured labor from outside the Caribbean proved too expensive, and was largely cut off by British oversight, which reported high death rates and inadequate living conditions.[63]

Coinciding with the economic decline of the island is the use of austerity measures by the Danish administration. One of these measures included repurposing space within Fort Christiansvaern. With declining need for military presence, when Christiansted's police department and regional court were in need of new facilities, spaces within the fort were converted to serve municipal functions.[64]

The United States Eyes the Caribbean

The Unites States of America became a colonial power rather unceremoniously in 1856, when they claimed and annexed two uninhabited islands in the central Pacific for guano mining under provisions of the Guano Island Act of 1856.[65] This came at the middle of century of rapid expansion that started with the purchase of the Louisiana Territory from the French in 1803, which, coincidentally, was precipitated by the Haitian Rebellion of 1793.[66] However, this annexation in 1857 marked a turning point where the United States started looking to acquire territory, not for expansion, settlement, or protection of existing land from other colonial interests, but for an external strategic advantage on an international stage.

Strategic advantage was the United States' raison d'être when its attention was first drawn to acquiring property in the West Indies after the Civil War, believing a defensible position in the Caribbean would be both an economic boon and a security asset. The United States had a well-established economic relationship with Denmark's Caribbean interests, having become their primary trading partner after the Napoleonic Wars and



Figure A13. Political cartoon mocking U.S. Secretary of State, William Henry Seward for his perceived imperialist overreach in negotiating purchases of the Danish West Indies and the Alaska Territory on behalf of the U.S. in 1867. While negotiations with Denmark fell through, the U.S. paid Russia $7.2 million for the Alaska Territory in a deal that is often referred to as "Seward's Folly." (Frank Leslie's Illustrated Newspaper, September 28, 1867, p. 32, hd.housedivided.dickinson.edu/node/47474)

British Invasions of the Danish West Indies in the early 1800s disrupted European trade.[67]

After an 1866 tour of the Caribbean, U.S. Secretary of State, William Henry Seward, began formal negotiations with Denmark to purchase the Danish West Indies. A treaty was formally ratified by Danish parliament and by, albeit limited, territorial vote in 1867; however, the treaty was rejected by the U.S. Senate in what is thought to have been an act of political payback against Seward (*Fig. A13*).[68]

U.S. Negotiations with Denmark resumed in the 1890s but were interrupted by the onset of the Spanish-American War in 1898. The U.S. emerged from this brief, but consequential skirmish as both victor and a newly minted world power, acquiring the Spanish territories of Puerto Rico, Guam, and the Philippines, establishing military control of

63. Ibid.
64. Olsen, *Historic Structure Report,* pp. 36-37
65. "Acquisition Process of Insular Areas," Department of the Interior, Office of Insular Affairs, doi.gov/oia/islands/acquisitionprocess.
66. "Louisiana Purchase, 1803," Department of State, Office of the Historian, history.state.gov/milestones/1801-1829/louisiana-purchase; Gabriel Mac, "No Haiti, No Louisiana Purchase," *Mother Jones*, 3 January 2011, motherjones.com/food/2011/01/no-haiti-no-louisiana-purchase/.
67. NPS brochure, "Christiansted National Historic Site.
68. Becky Little, "The U.S. Bought 3 Virgin Islands from Denmark. The Deal Took 50 Years," History Stories, 21 August 2019, history.com/news/us-virgin-islands-denmark-purchase; "Transfer Day," National Museum of Denmark, en.natmus.dk/historical-knowledge/historical-themes/danish-colonies/the-danish-west-indies/transfer-day/.



Figure A14. Belief by the Danish government that the economy of the West Indies could be revitalized was one of the reasons that the sale treaty in 1902 was rejected. Experiments with the cultivation of crops other than sugarcane were conducted on St. Croix, as seen here, ca. 1902. (Photographer John Lee, National Museum of Denmark, en.natmus.dk/historical-knowledge/historical-themes/danish-colonies/the-danish-west-indies/transfer-day/)

Cuba, and having annexed Hawaii as part of its wartime naval operations.[69]

Having established military and financial interests in the Caribbean and the western Pacific, the U.S. set its sights on control of the Panama Canal Zone, with a renewed interest in the Danish West Indies given their strategic location. In 1900, U.S. Secretary of State, John Hay, began negotiations with Denmark; however, this time it was the U.S. that ratified a sales treaty in 1902 and the Danes who ultimately disengaged (*Fig. A14*).[70]

American Acquisition

Fear that Germany might attempt to take control of Denmark after the onset of World War One once again prompted the U.S. to negotiate for the sale of the Danish territories in 1915. The effort, led by U.S. Secretary of State, Robert Lansing, was stymied by a deeply divided Danish government (*Fig. A15*). After insinuating that the U.S. would simply seize the Danish West Indies, Denmark agreed to negotiate and a treaty was formally



Figure A15. In this caricature from the Danish magazine Klods-Hans, U.S. President Wilson, dressed as Uncle Sam, leaves with the three small islands in the form of three Black boys, while the sack of money is carried into the Denmark House and "Mother Denmark" weeps over the loss. While Danes were divided on the issue, this is largely a reflection of the Continental Danish anti-sale perspective that islands with a majority African-diasporic populace should not be sold to a country that practiced legal segregation. (Alfred Schmidt in Klods-Hans, 1917, virgin-islands-history.org/en/history/sale-of-the-danish-west-indian-islands-to-the-usa/our-new-west-indian-fellow-citizens/#&gid=null&pid=2).

69. Ben Markham, "Britain, the United States, and the Danish West Indies, 1916-17," Society for Historians of the Gilded Age and Progressive Era, 5 May 2020, shgape.org/britain-the-united-states-and-the-danish-west-indies-1916-17/; "The Spanish-American War, 1898," Department of State, Office of the Historian, history.state.gov/milestones/1866-1898/spanish-american-war.
70. Little; "Transfer Day."



Figure A16. Virgin Islands purchase ceremony held in Washington, D.C. held on March 31, 1917. Pictured are (in unknown order) Secretary of the Navy, Josephus Daniels; Ambassador from Denmark, Constantine Brun; Rear Admiral, U.S.N., James Harrison Oliver; Secretary of State, Robert Lansing; and Secretary of the Treasury, William Gibbs McAdoo. (Library of Congress, LC-DIG-hec-03228)

ratified by Denmark on December 20 and 22, 1916, and by the U.S. on January 16, 1917.[71]

For the price of $25 million in gold, the governance of the islands of St. Thomas, St. John, and St. Croix was transferred on March 31, 1917 (*Fig. A16*). Simultaneous ceremonies were held in Washington, D.C., St. Thomas, and St. Croix. It was the navies of the two countries that oversaw the transfer – the Commander of the Danish warship *Valkyrien*, Captain Henri Konow, who served as governor of the Danish West Indies in their final years, and Commander Edwin T. Pollock of the USS Hancock oversaw the ceremonies at Fort. Christian on St. Thomas. The ceremony on St. Croix was held on the grounds of Fort Christiansvaern (*Fig. A17*). March 31 is now celebrated as the territory holiday, Transfer Day, an annual commemoration of the 1917 event.[72]

Implications of Changing Governance

As part of the 1917 treaty, Danish citizens living in the Virgin Islands were allowed to continue doing so while maintaining Danish citizenship, although many chose to leave. The free Black population of the Danish West Indies had been permitted to apply for equal citizenship by royal edict in 1831, so long as they were of good social standing. It is however, unclear if a portion of the free Black population of St. Croix simply remained without citizenship at the time the island was transferred to the United States. All islanders who chose to stay could choose to become American nationals, but not yet citizens.[73]

The USVI were administered by the U.S. Navy until 1931, when administration was transferred to the U.S. Department of the Interior with civilian governors appointed by the U.S. President. From 1917 to 1931, the primary administrative focus for St. Croix was improving infrastructure:

> When the United States acquired the Virgin Islands, it had little experience in managing territorial possessions. Because it purchased the islands for their military importance, the governing body established under the U.S. Navy Department administered the islands under quasi-military rule. Although the U.S. Navy did much to improve social services in

71. Ibid.
72. Jennie Ogden, "A History of Transfer Day," gotostcroix, gotostcroix.com/st-croix-blog/a-history-of-transfer-day/.
73. Little; "United States Virgin Islands," *Encyclopedia Britannica*, britannica.com/place/United-States-Virgin-Islands/Government-and-society; Tami Navarro. From Danish West Indies to America's Poorhouse," *SX Salon*, issue 26, October 2017, http://smallaxe.net/sxsalon/issues/sx-salon-26/articles.

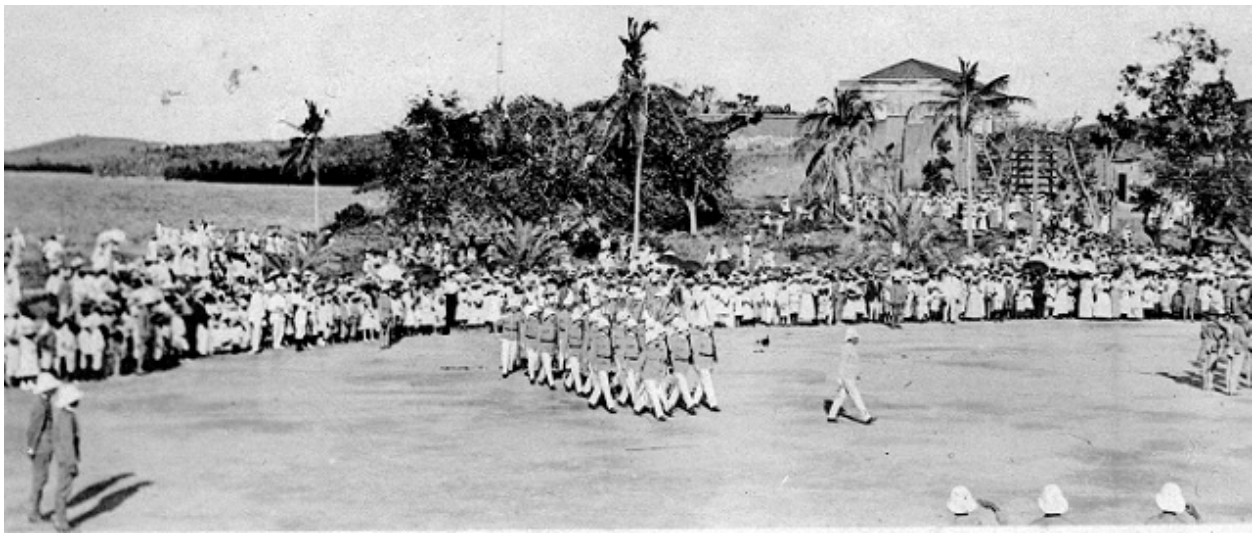


Figure A17. Transfer Day ceremonies on the grounds of Fort Christiansvaern in St. Croix, March 31, 1917. (Photographer Folmer Andersen, CHRI Collection, nps.gov/articles/getaway-chri.htm)

> the areas of public health, water supply, and the road and public education systems, it did little to improve the economic and political situation of the natives.[74]

It was the continued economic decline of the island that prompted its transfer to the Department of the Interior, with the hope that focus on a tourism-based economic strategy could rejuvenate the island's fortunes.[75]

The Organic Act of the Virgin Islands of the United States of 1936 established a local government with two municipal councils – one for St. Thomas and one for St. Croix. The one for St. Croix was run out of Fort Christiansvaern. The 1936 act also granted U.S. citizenship to all Virgin Island natives living there at that time. This Organic Act was revised in 1954 to unify the islands under a single government centered on St. Thomas, and give the islanders non-voting congressional representation.[76]

The first elections for governor were held in 1970, and in 1976 the islands were given the right to establish their own constitution subject to the approval of U.S. Congress and the President, and despite several attempts, they have yet to successfully do so.[77]

74. Frederik Gjessing, "Christiansted National Historic Site," National Register Nomination Form, approved 20 October 1976, with Additional Documentation approved 5 March 1999, section 8, pp. 16-17.
75. Ibid.
76. "United States Virgin Islands," *Encyclopedia Britannica.*
77. Ibid.

Establishment of Christiansted National Historic Site

An administrative history has never been formally compiled, researched, or written for the Christiansted National Historic Site. While this section attempts to piece together this history from existing partial documentation and archival research insofar as it relates to Fort Christiansvaern, it cannot claim to be exhaustive.

Christiansted National Historic Site was established under the name Virgin Islands National Historic Site by Secretarial Order on March 4, 1952, which was preceded by a cooperative agreement between the U.S. Department of the Interior and the Municipality of St. Croix dated February 11, 1952. Both the order and the agreement defined the site as "the Wharf and its buildings," D. Hamilton Jackson Park, and the Government House and grounds. The order recognizes the site's "national historical significance as an excellent example of the Danish economy and way of life in the Virgin Islands."[78]

In addition to "providing for the designation, preservation, and use of the area as a national historic site," the memorandum of agreement includes provisions stating that the Municipality, "within the limits of available appropriations," will "maintain and preserve the municipally owned historic structures and grounds within the national historic site in perpetuity for the benfit [*sic*] and inspiration of the people"; "make suitable space

78. *Foundation Document, Christiansted National Historic Site* (National Park Service, January 2015), pp. 3, 49-50.

available in the fort to the National Park Service for offices, museum exhibits, guide and lecture service"; and "discontinue use of the fort as a prison and as offices for the police as soon as suitable quarters can be provided by the Municipality for this purpose."[79]

The Virgin Islands National Historic Site was the first Park Service unit in the Virgin Islands, preceding Virgin Islands National Park by four years. The impetus for its creation is credited to "civic-minded citizens who petitioned the federal government to protect the fort and its associated buildings."[80] Former CHRI Historian, William Cissel, specifically credited the efforts of "Crucians such as D.C. Cuneata and R.H. Amplest Leader; mainland transplant George van Riper, who chaired the St. Croix Museum Commission; and the St. Croix Landmarks League."[81]

A second memorandum of agreement, this one between the National Park Service and the Office of Territories relating to the Christiansted National Historic Site was issued on December 24, 1960. This agreement changes the name of the historic site to its present name in an effort to disambiguate it from the Virgin Islands National Park. It also clarifies the following items:[82]

- NPS will bear all costs associated with the "preservation, protection, administration, display and maintenance of all of the historic buildings and structures (except the Post Office building) located within the National Historic Site";
- The Government of the Virgin Islands may continue to use the buildings as necessary, with "it being understood that arrangements will be made for payment on an equitable basis of the operational costs by the occupant of the space";
- And that "it is mutually recognized that the ultimate objective of this agreement is to devote the National Historic Site exclusively to public use as a national historical exhibit and that as the need for space in said historic structures for other purposes ceases to exist the space shall be relinquished to the National Park Service."

79. Ibid., pp.51-52.
80. Ibid., p. 3.
81. "It's a Golden Year for the National Historic Site," *The St. Thomas Source*, 8 February 8 2002, stthomassource.com/content/2002/02/08/its-golden-year-national-historic-site/.
82. *Foundation Document*, pp. 54-56.

From this, it can be deduced that the process of getting the local government out of the buildings designated as the historic site was not proceeding as planned. In fact, it would not be until 1996 that the last vestiges of local government left the historic site. Although the fort, which housed Christiansted's police station, fire station, civil defense headquarters, jail, territorial court, and draft (selective service) office, would be relinquished by the end of the 1970s. According to Cissel, "it was an uphill battle."[83]

That this was the case is further evidenced by a third memorandum of agreement issued in 1972, with addendums in '76, '78, and '85. Each clarifies the responsibilities of both parties in detail. Notably, the 1972 memorandum places the fort under the control of the Park Service.[84]

Despite being designated in 1952, Park Service administration of the site did not commence until March 25, 1957, the same day as the Virgin Islands National Park (VIIS). Initially, CHRI was administered by VIIS. This arrangement continued until March 6, 1971. CHRI was independent from March 7, 1971, until St. Croix was devastated by Hurricane Hugo on September 18, 1989, which severely damaged the park and destroyed its headquarters.[85] The park was subsequently placed back under the administration of VIIS until October 1, 1999, when CHRI was once again made independent, and given administrative purview over two other formerly VIIIS administered park units, Buck Island Reef National Monument (BUIS) and Salt River National Historical Park and Ecological Preserve (SARI).[86] This arrangement continues to the present day.

Park Planning Efforts Specific to Fort Christiansvaern

1953 Condition Assessment Report

In April of 1953, NPS Architect Frederik Gjessing produced the first NPS planning document of note in the form a brief condition assessment and

83. "It's a Golden Year for the National Historic Site."
84. CHRI Curator/Historian to CHRI/BUIS Chief Ranger, 15 June 1988, CHRI 11424 box 1, folder 26, file 1.
85. "Superintendents of National Park System Areas," National Park Service, http://npshistory.com/publications/tolson/histlist7.htm.
86. Regional Director Southeast Region to Superintendent VIIS, 9 August 1999, CHRI 11424, box 1, folder 44, file 1.

photographic survey of Fort Christiansvaern.[87] The document provides no guidance or recommendations. The recorded condition of the fort is discussed in detail in the next chapter.

1959 Historic American Buildings Survey

A Historic American Buildings Survey (HABS) team lead by architects Charlie Peterson and Frederik Gjessing, measured and documented the fort from June to September, 1957. The HABS drawing set was published in December, 1959, with an accompanying photographic survey by photographer Jack Boucher.[88] Like the 1953 condition assessment, these documents provided no guidance or recommendations, but rather established a baseline condition of the fort. The condition of the fort at the time is discussed in the next chapter, and the HABS drawing set can be found as an appendix to this report.

1960 Historic Structure Report – Part I

In August of 1960, NPS historian Herbert Olsen completed Part I of an Historic Structure Report (HSR) on the fort.[89] Although the document lacks all the traditional elements of an HSR Part I, it provides a rather exhaustive chronological history of repairs and alterations of the fort from the formal start of construction in 1738 to about the first quarter of the twentieth century. No real attempt is made at a contextual history, and a contemporary description and condition assessment is entirely lacking. From a resource management perspective, Olsen's report is the Park's single most important management tool for the fort. It will be superseded in this by the publication of this HSR by JKOA, which contains an abridged version of Olsen's report.

It is clear from later NPS correspondence that the intent was always to complete an HSR Part II, designating historic use and treatment methodology, and prescribing specific treatment recommendations. A completed HSR is a prerequisite for approval of preservation work on NPS-managed buildings. Completion of the HSR seems to have been an ongoing and parallel issue to getting the Virgin Islands Government to vacate the buildings.

In a 1969 memo, Olsen notes that while the Territorial Court has relocated in 1958, and the municipal jail found a home elsewhere in 1959, that the municipal fire department had been moved into the stable in 1955 and request for new use of the fort continued to be received from both the local government and private organizations. Olsen recommends that NPS "put the fort to full administrative and interpretive use as quickly as possible," in order to stop said use requests. He goes onto say that, "top priority must be given to the completion of" Part II of the HSR, "and rehabilitation plans for the building, since funds cannot be programmed prior to the completion and approval of the report and plans."[90]

Another memo dated December 5, 1969 states that the fort is "programmed for restoration in FY 73," and that "the Architecture Investigation for the Historic Structure Report is programmed in FY 71."[91] It is unclear why this investigation was not carried out ahead of preservation work as planned; however, it is clear that the needed work was pressing and that Architect Frederik Gjessing was providing needed guidance to the Park.[92]

1960s Master Plan – Draft Report

While it is clear that a "masterplan" was in development for CHRI in October of 1962, it is unknown if the report was finalized. A short document named "Volume 1, Chapter 5, Design Analysis General Development," suggesting a much larger report, is the only sections that was found. The document proposes that the fort be used to house NPS management facilities, with administrative offices, a visitor center, interpretive spaces, and comfort facilities. Maintenance operations are proposed to be housed in the stable. The document also notes that the fort should be scheduled for preservation "next, as it is the main interpretive feature."[93]

87. Frederik Gjessing, "Christiansvaern Fort Condition Assessment" National Park Service, April 1953, CHRI 11424, box 19, folder 13, file 5.
88. Historic American Buildings Survey, survey no. VI-5, Library of Congress, loc.gov/item/vi0085/.
89. Olsen, 1960.
90. Herbert Olsen, "Special Report," National Park Service, 1969, CHRI 11424, box 28, folder 28, file 1.
91. Management Assistant CHRI to Superintendent VIIS, 5 December 1969, CHRI 11424, box 02, folder 85, file 11.
92. Ibid.
93. Larry Isaacson, draft report, "Masterplan for the Preservation and Use of the Christiansted National Historic Site: Chapter 5, Design Analysis, General Development," National Park Service, approved 21 November 1962, pp. 3-4, NPS ID CHRI_399_D10_[149481], provided 2021 by

1976 National Register of Historic Places Nomination Form and 1999 Additional Information

On October 20, 1976, the National Register of Historic Places designated the Christiansted National Historic Site as a historic district, and "an outstanding example of Danish colonial development in the Lesser Antilles." The nomination, written by Frederik Gjessing in 1973, assigns the fort "first order" level of importance, noting that, "structurally, it is in fair condition, in part excellent, and in areas, poor," and recommending preservation as the prescribed treatment methodology.[94]

An Additional Documentation filing was entered into the Register on March 5, 1999. For the Historic District, it lists the Period of Significance as "ca. 1734-1931," and the Significance Criteria as:[95]

> "Property is associated with events that have made a significant contribution to the broad patterns of our history"; and,
>
> "Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction."

The filing also lists the Fort Christiansvaern stable, which was included in the previous 1976 filing as part of the fort complex, as its own contributing structure within the District.[96]

1985 Cultural Landscape Report

A Cultural Landscape Report (CLR) for the Historic Site was published on January 5, 1985. By the author's own admission, this report is incomplete, the research for it having been interrupted by a hurricane in 1984.[97] The report does little more than restate Olsen's findings and is of limited utility.

1986 General Management Plan

A General Management Plan (GMP) and Environmental Assessment of the Historic Site was developed in June of 1986. The plan lists four primary proposed actions for the park:[98]

- Seek a single comprehensive memorandum of agreement between the Park and the local government to replace the various existing memoranda and amendments;
- Identify a viable long-term administrative and visitor use for each building;
- "Remove the parking and grade and seed the grounds to return the area to its historic appearance in keeping with a 1985 Memorandum of Agreement between the NPS and the Government of the Virgin Islands"; and,
- Identify historic significance of each building and provide for the park's interpretive programs.

The plan identifies the then-current use of the fort. At the time, it contained, "an information and sales area for the Eastern National Park and Monument Association (ENPMA)…, visitor rest room facilities, curatorial storage, onsite maintenance and some administrative offices."[99]

It notes that the restroom facilities in the fort are not only inaccessible for people with disabilities, but difficult to access in general given their "steep, uneven steps." Accessible restrooms are provided elsewhere within the Historic Site, but they are unable to meet the needs of large tour groups. The plan also notes the absence of a specific period of interpretation for the park, which it proposes as the period of Danish occupation, 1734-1917.[100]

previous contracting officer's representative (COR), NPS regional office.
94. Gjessing, "Christiansted National Historic Site," National Register Nomination Form, approved 20 October 1976, with Additional Documentation approved 5 March 1999, section 7, pp. 1, 6, npgallery.nps.gov/NRHP/GetAsset/d87e3666-1caf-46c8-8d10-ee0cdc26d511.
95. Ibid., Additional Documentation, Section 8.
96. Ibid., Additional Documentation, Section 7, p. 1.
97. Robert Bradley, *Cultural Landscape Report Christiansted National Historic Site* (National Park Service, 5 January 1985), p. 4.
98. *General Management Plan and Environmental Assessment Christiansted National Historic Site* (National Park Service, June 1986), pp. i-ii, NPS ID CHRI_399_D6_[95551], provided 2021 by previous contracting officer's representative (COR), NPS regional office.
99. Ibid., p. 2.
100. Ibid., p. 9.

Proposals specific to the fort include the following:[101]

- "The fort will continue to be the focal point of the visitor experience to the historic site."
- "The Commandant's Quarters will remain as an administrative conference room and a community assembly/meeting area on a reservation oasis until appropriate exhibits can be installed or other space is made available."
- "The east curtain of the fort will continue to house the museum collection and offices for the curator and park ranger (interpretation)."
- "The clerk typist/dispatcher and ranger staff will remain in their present offices but expand into the vacated Buck Island park ranger office (to be moved to the Old Customs House)."
- "The various rooms now used for storage wil1 be opened for interpretive purposes consistent with the historic site's Interpretive Prospectus."
- "The area presently used for the ENPMA storage and sales area will also be restored and opened for interpretive purposes. (The ENPMA sales outlet will be relocated to the first floor of the Customs House)."
- "The nonhistoric [*sic*] stairway in front of the fort entrance will be removed and the area sloped and seeded to grass."
- "The ravelin yard and brick surfaced entrance will be restored to their historic appearance as guided by an historic structures report."
- "Onsite maintenance will continue to be provided at the stables."
- "The stable yard will be restored to its historic appearance."

1988 Historic Furnishings Report

Co-written by NPS historians Jerome Green and William Cissel, the 1988 Historic Furnishings Report provides an in-depth assessment of the everyday life and use of the fort.[102] It is a powerful tool for interpretation of the fort and provides excellent contextual history to this HSR.

101. Ibid., pp. 12-13.
102. Greene and Cissel.

1989 Management Operations Statement

Approved on January 12, 1989, the Management Operations Statement reiterates many of the objectives of the 1986 GMP, adding the following goals:[103]

- Update the Fort Christiansvaern HSR.
- Prepare Historic Preservation Maintenance Guides to guide Park maintenance efforts.
- Evaluate options for a more suitable location for Park maintenance presently housed in the fort's stable, as this limits interpretive use of the stableyard.

1990 Interpretive Prospectus

The CHRI Interpretive Prospectus, approved on October 16, 1990, is the first of the Park's management planning documents to present an overarching vision for the Park. "The vision for Christiansted National Historic Site has three elements:" to restore "the dignity and integrity" of the National Historic Site; to interpret the Danish colonial experience of Christiansted in terms of society, economy, history, military presence, and architecture; and to maximize the use of the Park's collections.[104]

The prospectus states that Fort Christiansvaern has been restored to its 1830-40s appearance, noting that, "excellent temporary museum exhibits have been provided, interpreting some of the more interesting happenings related to the fort and the Danish military presence on St. Croix. Wayside exhibits within the fort are less effective: two (those on exterior parade ground walls) are unacceptable intrusions on the historic scene; thirteen are attached directly to the historic fabric of the fort."[105]

In addition to the primary interpretive theme of the Danish colonial period, secondary themes

103. *Statement for Management, Basic Operations Statement, Christiansted National Historic Site* (National Park Service, 12 January 1989), pp. 6, 8, 11, NPS ID CHRI_399_D7_[246476], provided 2021 by previous contracting officer's representative (COR), NPS regional office.
104. *Interpretive Prospectus Christiansted National Historic Site* (National Park Service, 16 October 1990), p. 1, NPS ID CHRI_399_D2B_[173264], provided 2021 by previous contracting officer's representative (COR), NPS regional office.
105. Ibid., p. 16.

identified are, the pre-history of St. Croix, seventeenth century Europeans – meaning the other colonial powers that briefly held St. Croix, the American colonial period, and "historic conservation" – meaning the decision process behind the restoration of the buildings at CHRI. Some specific recommendations at the fort include the use of the artillery shed in the ravelin yard as an interpretive auditorium, and the interpretation of the following rooms: the dungeon below the southwest bastion, the powder magazine below the water battery, the arsenal room in the northeast casemate, officer's quarters in the east curtain, and the barracks in the southwest casemate. The prospectus makes the recommendation that wayside signage at the fort, and the whole park, be replaced. Current issues at the fort are the lack of adequate maintenance and storage facilities.[106]

2004 Museum Collection Management Plan

The Museum Collection Management Plan, while not directly related to the physical building, offers the crucial insight that the fort is not an adequate environment for museum or archival storage. The recommendation is made to secure permanent offsite storage facilities. In addition, the plan addresses the need to review, process, accession, and properly store many of the contents of the museum collection, and the entirety of the park's paper archive.[107]

2015 Foundation Document

Published in January of 2015, The CHRI Foundation Document articulates the park's purpose. "Christiansted National Historic Site in St. Croix, U.S. Virgin Islands, preserves, protects, studies, and interprets the 18th and 19th century Danish historic structures and surrounding landscape that represent the multiple economic, social, and cultural exchanges of the Caribbean's colonial history, including the Transatlantic Slave Trade and the international sugar exchange."[108]

The document identifies the following interpretive themes, building of those of the 1990 Interpretive Prospectus: the transatlantic slave trade, the island's diverse and diasporic cultural identities, the impacts of the sugar cane industry, the fort as a symbol of defense of colonial power and economy, the implications of colonialism both past and present, and the character of Danish colonial architecture.[109]

It is noted in the report that while routine maintenance is ongoing, various levels of deterioration can be found throughout the fort. The primary drivers for this deterioration are identified as exposure to weathering and the effects of salt water. Specific issues of repair include rot of exposed woodwork and wood structural beams in various locations, notably the commandant's gallery; damage from termite infestation; and the failure of the roofs of the stable and the south curtain wall.[110]

The document identifies deficiencies of the park's archive and museum collections storage facilities housed within the fort, which are insufficient in capacity to hold the park's growing collections, and do not meet NPS standards for collections and archival storage. The report reiterates the recommendation made in a feasibility study, that off-site options, such as Sion Farm, should be considered for the storage and stewardship of the park's museum collections and archives.[111]

In addition to recommending this HSR for the fort, recommendations are made for updating the 1985 Cultural Landscape Report, the 1988 Historic Furnishings Report, and the 1999 National Register Nomination. Identified gaps in data and planning related to the fort are, studies of visitor use and accessibility, a collections storage plans, and several reports aimed at broadening interpretation efforts including an exhibit plan, Historic Resource Studies, and a Long-Range Interpretive Plan.[112]

106. Ibid., pp. 19, 21-24, 29-31.
107. *Museum Collections Management Plan, Buck Island Reef National Monument, Christiansted National Historic Site, Salt River Bay National Park and Ecological Preserve* (National Park Service, August 2004), pp. 3, 39-41, NPS ID CHRI_399_D11_[46392], provided 2021 by previous contracting officer's representative (COR), NPS regional office.
108. *Foundation Document*, p. 4.
109. Ibid, p. 10.
110. Ibid., pp. 12-13.
111. Ibid.
112. Ibid., p. 14.

Chronology of Development and Use

Section I – Herbert Olsen, *Historic Structure Report, Fort Christiansvaern*, 1960



Figure B1. Harbor Square in Christiansted. Watercolor by H.G. Beenfeldt, around 1788-94. (M/S Maritime Museum of Denmark, billedarkiv.mfs.dk/fotoweb/archives/5001-Museet-for-s%C3%B8farts-billedarkiv/archive/Arkiv-13/000031880.jpg. info)

Introduction to Olsen's Work

In 1960, National Park Service historian and Danish native, Herbert Olsen, completed the formidable task of writing the chronological history of changes and alterations to Fort Christiansvaern from the start of its construction in 1738, to the 1950s when then-accessible building records ended. This work was based on Olsen's extensive research, primarily in the Danish National Archives in Copenhagen conducted in 1957, and in the United States Navy records contained in the National Archives and Records Administration (NARA) conducted in 1959.[113]

While the 1960 report is called an HSR Part One, it is really only one section thereof. Olsen's report contains only a cursory contextual history and no physical description or condition assessment of the building as it stood in 1960. Instead, the report is devoted to the fort's chronological history. Olsen expected NPS to later complete a full HSR for Fort Christiansvaern. That task is accomplished with this HSR, which expands on the work he started.

This section of the current HSR includes portions of Olsen's report; they provide the history and changes into the 1950s. Olsen's report is divided into four chapters, each presenting the fort's history in successively greater detail. For this reason, chapters one and two, which are both partial historical overviews, have been omitted. His chapters three and four are presented here in their entirety.[114] Chapter three presents his chronological history of the fort as a whole, while chapter four presents his detailed history of changes and alterations to each section and room of the fort into the 1950s.

113. Olsen, 1960, pp.109-110.

114. Ibid., *passim*. Sections used are Chapter III, pp. 11-40; Chapter IV, pp. 41-108, Bibliography, pp. 109-168; and Infra, pp. 169-212.

Although there is some repetition of information across these two chapters, each format is independently useful. The current HSR's Section II begins where Olsen's chronology ends.

For clarity, *Olsen's text is italicized*, while JKOA's annotations appear as roman font in [brackets]. Olsen's endnotes have been transcribed as footnotes, and endnote-referenced images in Olsen's appendix are included herein with in-text figure references.[115] JKOA has included additional images based on original archival research.

Chapter III: General Construction Data

Introduction

The proximity of the island of St. Croix to the islands of St. Thomas and St. John made it ideal as a site for further expansion of the colonizing and trade activities of the Danish West India and Guinea Company in the Caribbean. Officials of this royally chartered company on St. Thomas suggested the purchase of uncolonized St. Croix from France as early as 1726.[116] However, it was not until June 15th, 1733, that the purchase was finally consummated.

Frederick Moth, a company official in Saint Thomas, received his appointment as the first governor of the new colony on June 11, 1734.[117] Nine days later, he set out from St. Thomas to explore St. Croix. His exploration of the Frederiksted and Christiansted areas disclosed some ruins of the earlier French colony which had been uprooted in 1696 by order of King Louis XIV including those of an earthwork and church, in what was soon to become the town of Christiansted.[118]

Upon his return to St. Thomas in late June 1734, Governor Moth began to gather in fit out a colonizing expedition. He sent several letters to the company directors in Copenhagen during July and August in which he requested instructions for the fortification of Christiansted.[119] Moth was primarily concerned about the size and location of the fort, as well as whether it was to contain the governor's residence.

Governor Moth in the colonizing expedition set sail from Saint Thomas on August 31st, 1734, and reached Christiansted the next day. The colonists had to spend the first five days after their arrival aboard the ship, while a large area was cleared of brush and growth. It was not until September 5-6, 1734, thereafter, that Governor Moth was able to place his cannon and plant the Danish flag on a small knoll at the water's edge and take informal possession of St. Croix.[120] The formal transfer of the island to the Danish West India and Guinea Company by France took place on January 10th, 1735.

The knoll on which Governor Moth placed his cannon, was the site of the earlier French fortification. The clearing operations of September 1 to 5 revealed the remains of the earthwork and the foundations of a building 50 by 30 feet, which Moth presumed must have been the townhouse of the French governors.[121]

[In his endnotes, Olsen warns the reader that all measurements provided in his report, unless specifically noted, are in Danish feet. From 1683 until its adoption of the metric system in 1907, a Danish foot, or "fot," was equal to 0.31405 meters in the metric system, or 1.030348 feet or 12.364 inches in the imperial system.][122]

Fortification of this knoll was immediately begun by the colonists. In March 1735, Governor Moth was able to report to the company directors that an

115. Olsen's annotated bibliography and a key to the abbreviations he uses in footnotes is included at the end of this section. It should be noted for future research that Olsen's citations are not always thorough, and at times the source of his information is either unclear or simply not provided. Reconstructing Olsen's research was not part of the scope for this report.
116. "Uncolonized" here is perhaps misleading as St. Croix had been previously colonized multiple times; however, at the time of purchase in 1733, the Island had been uninhabited for nearly 40 years.
117. Johannes Brondsted (ed.) et. al., *Dansk Vestindien, Vol II, Vore Gamle Tropekolonier* (Copenhagen: Westermann, 1953), p. 138.
118. Moth's report of his exploration of St. Croix is found in: Rigsarkivet, Breve og Dokumenter (Bilag) indkomme til direktionen for vestindisk-guineisk Kompagni fra Vesrindien (1732-34), Frekerik Moth til Direktionen, 17 juli 1734. Hereinafter the Rigsarkiv or Danish National Archieves will be cited as RA; the records of the Danish West India and Guinea Company will be cited as VgK; the series of the group of documents will be cited as B&D followed by the dates of the box or volume consulted; and the specific document referred to will be cited in translated form. The complete citation in this instance would therefore be: RA, VgK: H&D (1732-34), Moth to Directors, July 17, 1734.
119. Ibid., RA, VgK: B&D (1732-34), Moth to Directors, August 7, 1734.
120. RA, VgK: B&D (1735-36), Moth to Directors, November 19, 1734.
121. RA, VgK: B&D (1735-36), Moth to Directors, March 19, 1735.
122. "Norsk Forlishistorisk Forening Gamle danske måleenheter – Legende," 17 February 2013, web.archive.org/web/20030217023328/http://www.maritimt.net/arkforsk/danskem.htm/.

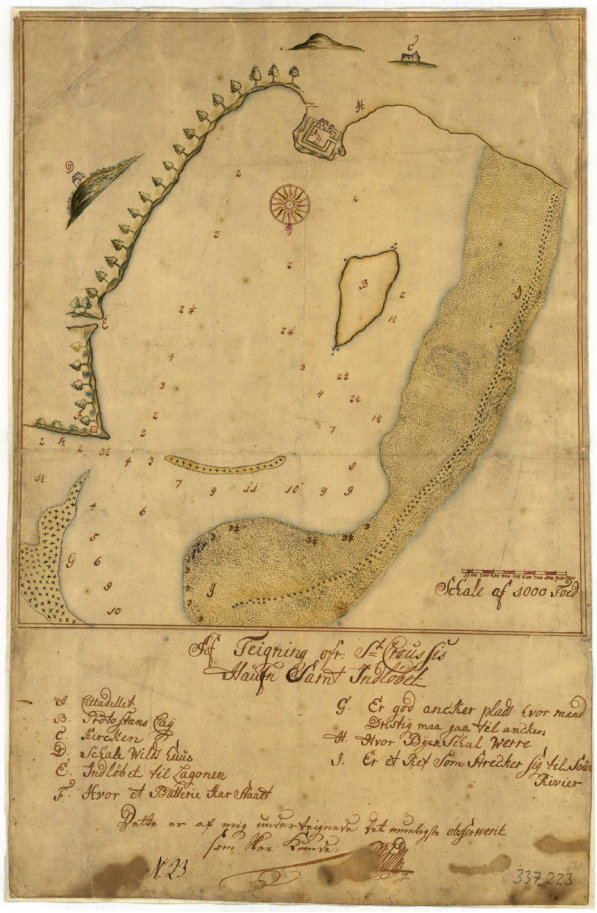


Figure B2. Survey of Christiansted Harbor, ca. 1734. Drawn by Peter Lorentzen Stibolt. Early Danish fortification is labeled "A." Date of survey is more likely mid-1735, given Governor Moth's description of construction work that year. (Danish National Archives, Chamber of Revenue, Maps and Drawings Collection, card no. 337.233, cs.sa.dk/picture/view-values/676853?selectedTab=116&locale=en)

earthwork 100 feet by 116 feet had been thrown up on this site.[123] Some simple houses had been erected on the fourth side of this redoubt for use as quarters, and bastions were in the process of being thrown up on two of the salient angles.[124] In October 1735, a house 35 feet by 18 feet was completed on the fourth side of the redoubt as a residence for Governor Moth (Fig. B2).[125]

Meanwhile, no decision had been made as to the size and location of a permanent fort. After his exploration of St. Croix in June 1734, Governor Moth had recommended the construction of the fort on Protestant Cay, or on the point of land on the east side of the entrance to the harbor.[126] The company directors had given only general instructions for the fortification of Christiansted to Stahlmann, the first of several engineers sent to St. Croix in the early years of its colonization.[127] The actual location and size of the fort were to be determined locally by the governor and engineer.

The death of Stahlmann on October 11, 1734, occurred before he and the governor had made any decision as to the location of the fort.[128] And by March 1735, Governor Moth had changed his mind and recommended that it would be better to construct the fort on a higher elevation, about 500 feet south of the temporary redoubt then under construction.[129]

On April 5th, 1735, the company directors wrote to Governor Moth to inform him that a new engineer, Lieutenant Johan Friderich [sic] Warneck, was being sent to St. Croix.[130] Governor Moth and Lieutenant Warneck were instructed to choose the location for the fort; and its size was to be determined by them, keeping in mind the lessons learned from Fort Christian in St. Thomas and the need to house the governor in the fort.

Lieutenant Warneck prepared plans for a small citadel which were sent to the company directors for approval in July 1735 (Fig. B3).[131] Apparently Moth and Warneck had agreed to locate the fort on the hill to the South of the redoubt. Whether the company directors actually approved Warneck's plans is uncertain. However, it is known that they advised Governor Moth in November 1735 not to be too hasty about constructing a large and permanent until it was more certain that the new colony would succeed.[132]

Several descriptions in April 1736 made it clear that work had not yet been started on a fort and that Christiansted's sole defense continued to be the inadequate earthwork thrown up in 1735.[133]

123. Ibid.
124. Ibid.
125. RA, VgK: B&D (1735-36), Moth to Directors, October 10, 1735.
126. RA, VgK: B&D (1732-34), Moth to Directors, August 7, 1734.
127. RA, VgK: Amerikansk og afrikansk Kopibog (1735-36), pp. 47ff. Hereinafter this copybook will be cited in abbreviated form as: AAK.
128. Ibid., p. 49.
129. RA, VgK: B&D (1735-36), Moth to Directors, March 19, 1735.
130. RA, VgK: AAK (1735-36), p. 49.
131. RA, VgK: B&D (1735-36) Moth to Directors, July 8, 1735. Warneck's plans are in RA, Kortsamling 337A, Vestindien I.
132. RA, VgK: AAK (1735-36), pp.342 f.
133. Manuel Gutierrez de Arce. *La Colonizacion Danesa en Las Islas Virgenes: Estudio Historico-Jurido* (Servilla:

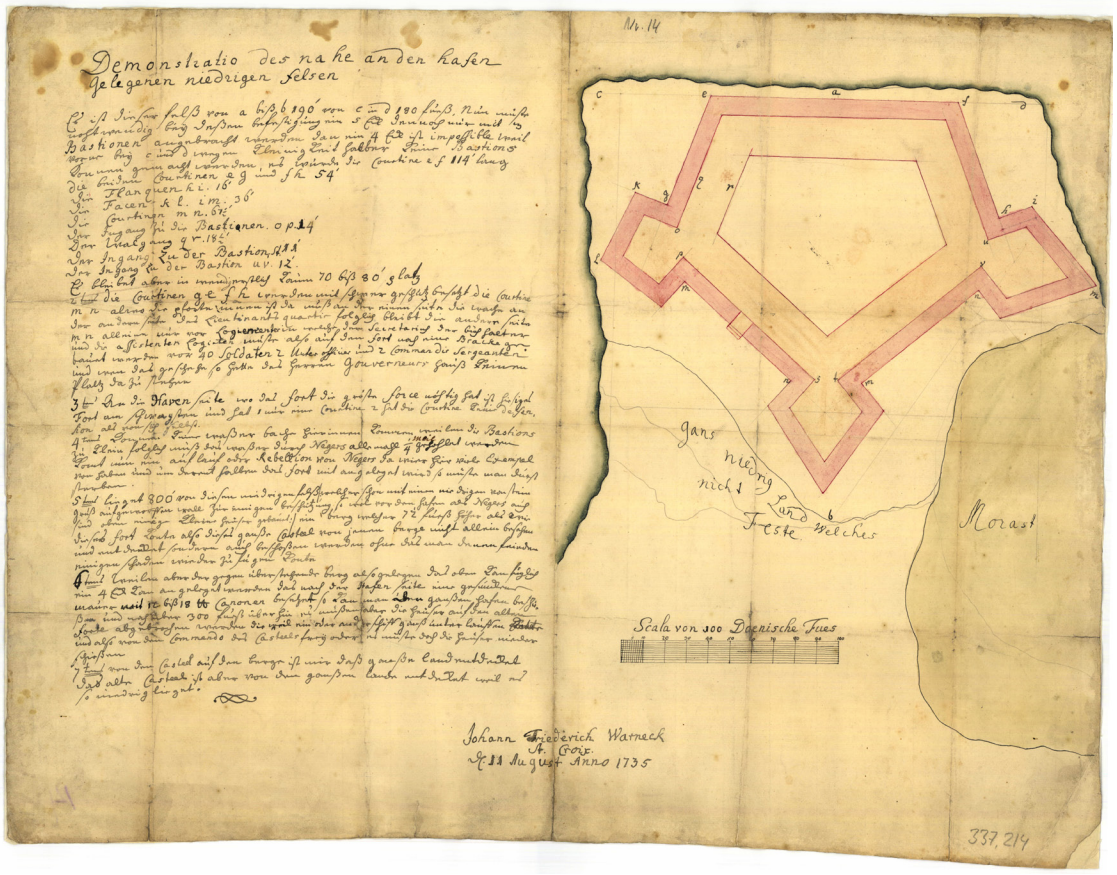


Figure B3. "Project for fort in Christiansted on St. Croix, situation plan." Drawn by Johann Friederich Warneck, 11 August 1735. (Danish National Archives, Chamber of Revenue, Maps and Drawings Collection, card no. 337.214, cs.sa.dk/picture/view-values/676843?selectedTab=116&locale=en)

By Midsummer of the same year, there is some indication that construction of a permanent for it may have been started, but Lieutenant Warneck's death about August 1736 unquestionably put a stop to any work that may have been begun.[134] *And in November 1736, the company directors again instructed Governor Moth not to be too hasty about constructing a permanent fort.*[135]

After the usual delay, a third engineer, Carl August Stoll, was sent to St. Croix by the company in April 1737.[136] *He brought with him several standard plans of small citadels with instructions to adapt one of them to local conditions, and the governor and engineer were ordered to choose the fort's location jointly (Fig. B4).*[137]

Three months later there was still no agreement as to the location of the fort, since the new engineer favored the site on Protestant Cay, while the governor continued to favor the higher elevation to the south of the redoubt.[138] *However, Stoll was forced to agree with the governor's choice by November 1737 because he found the Cay to be too small to construct a fort 200 feet square.*[139]

Despite the final agreement on its location, little, if anything, was done to construct it in the months which followed. Moreover, the death of Stoll in the

Universidad de Sevilla, 1945), p. 511, quotes a description of the earthwork by Francisco de Valdelomar, a military engineer sent from Puerto Rico in the spring of 1736 to spy on the infant colony. See also RA, VgK: B&D (1735-36), Governor and Privy Council of St. Thomas to the Directors, August 17, 1736, and ibid., J. Schonnemann to Directors, August 25, 1736.

134. RA, VgK: B&D (1735-36), Governor and Privy Council, St. Thomas to Directors, August 17, 1736.

135. RA, VgK: AAK (1736-39), p.8.

136. Ibid., p. 199.

137. Ibid., p. 200. The plans Stoll brought to St. Croix are to be found in RA, Kortsamling 337A, Vestindien I, Nos. 12, 13, and 13a. There are many similarities between the two forts shown in these places and Fort Christiansvaern, but the latter is not an exact copy of either proposal.

138. RA, VgK: B&D (1737-38), Governor and Privy Council, St. Thomas, to Directors, July 27, 1737.

139. RA, VgK: B&D (1737-38), Governor and Privy Council, St. Thomas to Directors, November 25, 1737.

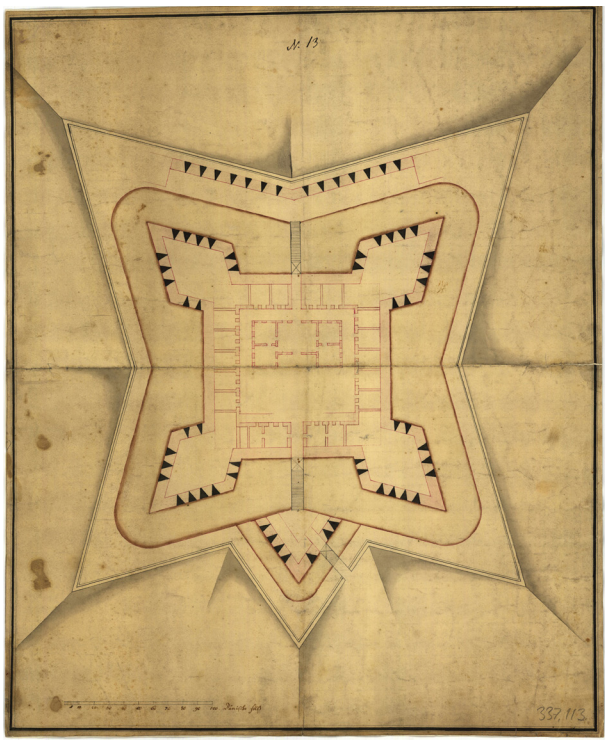


Figure B4. Standard citadel plan option no. 13, to adapt to local conditions. Drawn by Carl August Stoll, 1737. (Danish National Archives, Chamber of Revenue, Maps and Drawings Collection, card no. 337.113, cs.sa.dk/picture/view-values/676801?selectedTab=116&locale=en)

summer or early fall of 1738 foreshadowed a further delay in the construction of the fort.[140]

To add to the troubles of the infant colony, a severe hurricane struck St. Croix on August 29-30, 1738. The palisade and all the buildings in the redoubt except the governor's residence were leveled.[141] *The palisade was quickly re-erected, and a temporary barracks was built for the garrison. Of greater significance, Governor Moth now decided to strengthen the redoubt until the fort could be built on a higher elevation to the south.*[142]

Construction: 1738-1749

Beginning either in October or November 1738, the company slaves and soldiers started to erect rubble masonry walls 2 feet thick within the confines of the existing redoubt.[143] *Coral was obtained from the nearby reef at the entrance to the harbor and burned on the site to produce the necessary lime. Construction was apparently placed under the supervision of Chief Surveyor Jens Friis.*[144]

By April 1739, the outer walls of the third bastion and curtain had been erected to a height of 6 feet, while the other walls were already 8 feet high.[145] *In July of the same year, a plan showing the improvements being made to the redoubt was sent to the company directors.*[146] *Correspondence accompanying this plan indicated that the governor's quarters were to be above the sallyport, while a guardhouse and a church were to be located in the rooms to the right and left, respectively, of the sallyport.*[147]

Laying of a flat roof on the governor's quarters and setting of window frames was in progress in October 1739.[148] *However, it was a year later, before the quarters were completed and Moth was able to move in.*[149] *And inventory taken at the end of 1740, disclosed that "Fort Christians Waern" was still under construction and lacked a curtain towards the sea and platforms on the west curtain and bastions, as well as on the southeast bastion.*[150]

Extensive masonry work, requiring more than 70,000 bricks, was carried out in the following three years but few details of construction are available. A wooden gallery and stairway were erected on the north side of the governor's quarters early in 1741.[151]

140. RA, VgK: AAK (1736-39), Directors to Moth and Privy Council, St. Thomas, December 22, 1738.
141. RA, VgK: B&D (1737-38), Nissen to Moth, September 9, 1738; and ibid., Moth to Directors, October 6, 1738.
142. RA, VgK: B&D (1739), Moth to Directors, January 20, 1739.
143. Ibid.
144. It is not known exactly when Friis came to St. Croix or when he first began to supervise the construction of the fort. However, he may have been on St. Croix at the time of Stahlmann's death, and perhaps he simply assumed the latter's duties when the company failed to send out a new engineer. In any event, Friis was supervising the construction of the fort in 1741; and in September of that year, he was listed on the company's salary accounts not only as "chief surveyor" but also as "building inspector." See Ra, VgK: Negotiejournal fra St. Croix (1741), n.p. (entry date February 2, 1741). Hereinafter this ledger will be cited as NJ, followed by the appropriate year of the volume consulted.
145. RA, VgK: B&D (1739), Governor and Privy Council, St. Thomas, to Directors, May 7, 1739.
146. RA, VgK: B&D (1739), Governor and Council, St. Thomas, to Directors, July 27, 1739. This plan and another sent to the Directors earlier in March were not found with their covering documents.
147. Ibid.
148. RA, VgK: B&D (1739), Moth to Directors, October 6, 1739; and ibid., Moth and Privy Council, St. Thomas, to Directors, October 7, 1739.
149. RA, VgK: B&D (1740-41), Moth to Directors, November 20, 1740. Completion of Moth's quarters was delayed by heavy rains which fell on St. Croix in 1739 and 1740. After he had moved into the fort, Moth complained that the walls of his quarters were very damp and did not have a chance to dry properly because of the continual rainfall.
150. Ra, VgK: B&D (1742-44), Inventory of the… Company's Property on the island of St. Croix… at the end of 1740.
151. RA, VgK: NJ (1741), passim. The absence of a gallery on the north side of the south curtain until 1741 would explain, in part, why the trouble was taken to provide the

Sometime during 1742, 1400 floor tiles were laid in the room or rooms in which the church services and court sessions were held.[152] In 1743-44, two more rooms were added to the existing two rooms of the governor's quarters.[153]

Governor Christian Schweder complained to the company directors in June 1744 about the scarcity or lack of materials and labor.[154] He emphasized that unless the company directors were willing to correct these deficiencies, he and Johan Wilhelm Schopen, who was the construction supervisor, could do little to hasten the completion of the fort.[155]

An evaluation report in June 1744 gives the first clear description of the fort as it stood.[156] The fort is described as a square of 100 feet. The south curtain was of masonry construction, two stories high, and 72 feet long by 30 feet high and 20½ feet wide, exclusive of the wooden gallery on the north side. The governor's quarters occupied the second floor of the south curtain; on the opposite side of the sallyport on the ground floor were the corps de garde and the church. The southeast bastion had a flat roof supported by joists, was 16 feet high to the roof, and was used as troop quarters. The east curtain was 72 feet long and 16 feet high and contained three rooms and a powder magazine, beneath which was a cistern 16 feet by 8 feet by 6 feet; the wall of this curtain facing the courtyard was of half-timbered construction.[157] The northeast bastion was vaulted and housed the canteen. A water battery for eight cannon stood in place of a north curtain. The northwest bastion was also vaulted. Only the outer walls of the west curtain and southwest bastion had been completed, and the wall of the west curtain was 72 feet long and 10 feet high. As it then stood, the fort was valued at 11,940 rix-dollars.

[Rix-dollar is the "name given to large silver coins current, chiefly in the eighteenth and the beginning of the nineteenth century, in several European countries (Germany, Sweden, Denmark, etc.). The Value varied between $1.15 and 60 cents United States money, but was usually a little over $1."][158]

A cistern holding 400 to 500 barrels of water was completed beneath the west curtain in 1745, as were the outer walls and gundecks of this curtain.[159] However, construction of the fort now slowed down to a snail's pace because the company decided to give higher priority to the construction of a warehouse than to the completion of the fort.[160]

As a result, the quarters in the bookkeeper's office in the west curtain were not completed until 1746, or possibly not even until 1747.[161] And the gundeck and parapet of the southwest bastion was still uncomplete in June 1747.[162] Worse still, the gundeck of the east curtain and the flat roof on the governor's quarters were already leaking, and the incoming water was damaging the quarters below.[163] Moreover, the wooden gallery on the north side of the governor's quarters was rotten and in need of replacement.[164]

Work was resumed on the southwest bastion in December 1747, and it was completed in the following year. Entries in the ledger for purchases of material and payment of work done on the fort at this time would seem to indicate that the gundeck of this bastion must have been constructed of bricks laid on timber, as in the southeast bastion.[165]

Repairs were made to the governor's quarters at the beginning of 1749.[166] In March of that year, construction of a masonry gallery and stairway was begun to replace their rotten wood counterparts on the north side of the south curtain.[167] The stairway, variously described as a "double stairway" or an "Italian stairway," was supported on brick arches and

arch of the sallyport with quoins and the windows with surrounds.
152. RA, VgK: NJ (1742), n.p. (entry dated December 31, 1742).
153. RA, VgK: B&D (1742-44), Moth to Directors, May 15, 1743. Quoins visible about 7 feet from either end of the north wall of the second story of the south curtain attest to this addition.
154. RA, VgK: B&D (1742-44). Schweder to Directors, June 26, 1744.
155. Ibid. Johan Wilhelm Schopen arrived in St. Croix in the fall of 1742 as company "merchant" and surveyor. It is not known when he first began to supervise building construction, but in May 1744, he asked to be relieved of his duties as building inspector and supervisor. However, he was still carrying out his duties at the end of 1745. A great deal more needs to be known about Schopen's later architectural interests and influence on such structures in Christiansted as the Steeple Building and the Government House, a portion of which he built as his private residence around 1747.
156. RA, VgK: Vestindiske inventarier (1733-51), Inventory of June 26, 1744. Hereinafter these inventories will simply be cited as VI.
157. Ibid.
158. *The Century Dictionary*, ed. William Dwight Whitney (New York: The Century Co., 1891) s.v. "rix-dollar."
159. RA, VgK: B&D (1745), Schweder to Directors, April 10, 1745.
160. Ibid.
161. RA, VgK: B&D (1746), passim.
162. Ra, VgK: VI (1733-51), Inventory of June 8, 1747.
163. Ibid.
164. Ibid.
165. RA, VgK: NJ (1748), passim.
166. RA, VgK: NJ (1749), passim.
167. Ibid., n.p. (see three entries dated March 31, 1749).



Figure B5. Copper plate etching of Christiansted, ca. 1750-1791, by Surveyor and Building Inspector, Julius von Rohr. Olsen considers this depiction of the fort to be highly accurate given its conformity to other documentary evidence. Note the mansard roof of the south curtain and the configuration of the water battery. (Danish Royal Library Image Collection, www5.kb.dk/images/billed/2010/okt/billeder/object395443/da/)



Figure B6. Plan of Fort Christiansvaern, undated, but likely ca. 1765, by Julius von Rohr. (Danish National Archives, Chamber of Revenue, Maps and Drawings Collection, card no. 337.216, cs.sa.dk/picture/view-values/676845?selectedTab=116&locale=en).

had tiled platforms; the arches supporting the stairs were closed up to form several small rooms below. The floor of the new gallery was tiled, and a flat brick roof was laid on the gallery to match the main roof of the south curtain.[168]

Another brick bell tower was constructed in the summer of 1749, probably in the ravelin, which was then under construction in front of the south curtain.[169] *Construction of a stable, a carriage house, and quarters for the governor's slaves was also begun outside and to the south of the ravelin.*[170]

By the end of 1749, the fort was complete in all its essentials, and with its furnishings was valued at 43,555-2-3 [*sic*] *rix-dollars.*[171] *It had three curtains – the south one two stories high – a water battery, four bastions, and a ravelin. The water battery, according to another contemporary description, was as high as two men* [and] *had embrasures for the cannon* (*Fig. B5*).[172]

[Notably, the gundeck of this water battery constructed in the early 1740s appears to have been at the same elevation as the fort's courtyard. Compare *Fig. B5* to *Fig. B6*.]

Additions and Alterations: 1750-1826

Little is known about the fort during the generation between 1750 and 1770, which witnessed the sale of St. Croix and her sister islands of St. Thomas and St. John to the Danish crown in 1755. Only routine maintenance was performed on the fort during the final years of company ownership, and each year it was listed on the company books at a value of 41,000 rix-dollars.[173] *However, sometime after the sale of the island in 1755 and before 1767 the flat roof on the south curtain was replaced by a mansard roof, undoubtedly because the former leaked in a heavy rain (Fig. B5).*

That little maintenance was performed on the fort between 1755 and 1770 is evidenced by the need for a major rehabilitation of the building in 1770. Inspection of the fort by a military commission revealed that shutters, doors, and other woodwork in the fort were rotten, so rotten, in fact, that very few windows or door frames were to be seen. The troop and officers quarters were full of water every time it rained. Furthermore, the commission, advised the colonial government that the southeast and southwest bastions "must be torn down completely and rebuilt with adequate vaulting..."[174] *The water battery also needed to be torn down and rebuilt closer to the sea, according to the commission's findings.*

Despite the commission's recommendations and Building Inspector von Rohr's reemphasis in 1771 on the need to reconstruct the two bastions and the water battery, nothing was done.[175]

The already dilapidated condition of the fort became more serious as a result of the damage caused by the hurricane of August 31-September 1, 1772, one of the severest in St. Croix's history.[176] *Most of the mansard roof on the south curtain was blown off, and the shutters and doors in the commandant's quarters were badly damaged. The leaky gundecks of the east and west curtains admitted so much rain to the quarters below that extensive damage was done to the interior finishes. The north side of the water battery was heavily damaged by the pounding action of the sea. Immediate reparation* [*sic*] *of this damage, which included a new roof on the south curtain, was estimated to cost 10,670 rix-dollars.*

But again nothing was immediately done. The colonial government requested approval of the above estimate, but the home government demanded more specific estimates and plans before giving its sanction to the repairs.[177]

168. Ibid., n.p. (see three entries dated June 30, 1749).
169. Ibid., n.p. (see three entries dated June 30 and July 31, 1749).
170. Ibid., n.p. (see three entries dated December 31, 1749).
171. RA, VgK: VI (1753-51), Inventory of November 19, 1749.
172. R. Haagensen, *Beskrivelse over Eylandet St. Croix i America i i West- Indien* (Copenhagen: L.H. Lillies Enke, 1758), p. 22.
173. RA, VgK: NJ (1751), n.p. (entry for December 31, 1751); RA, VgK: NJ (1752), n.p. (entry for December 31, 1752); and RA, VgK: NJ (1753, n.p. (entry for December 31, 1753).
174. RA, Vestindisk- guineiske Rente-og Generaldtoldkammer, Sag Nr. 112 til vestindisk brevjournal Litra B(1770), Report of an Inspection held in Fort Christiansvaern on April 20, 1770. Hereinafter the Vestindisk-guineiske Rente-og Generaltoldkammer will Be cited as VgRtK, and the correspondence, reports, etc. entered in the journals will be cited by number and year as, for example, 112 VJ (B) 1770.
175. RA, Danske Kammer, 3die Bureau: 18 VJ (A) 1771, Building Inspector Julius von Rohr to Governor General Peter Clausen, March 4, 1771. Hereinafter the Danske Kammer, 3 die Bureau will be cited simply as DK.
176. Damage details which follow are primarily from von Rohr's report and estimate of October 13, 1772, which was sent to the home Government by Governor General U. von Roepstorff on October 30, 1772, and is found in von Roepstorff's letter of June 28, 1773, to the home government, RA, VgRtK: 617 VJ 1773.
177. Domestic unrest and a change of government in Denmark in 1773 probably had a great deal to do with

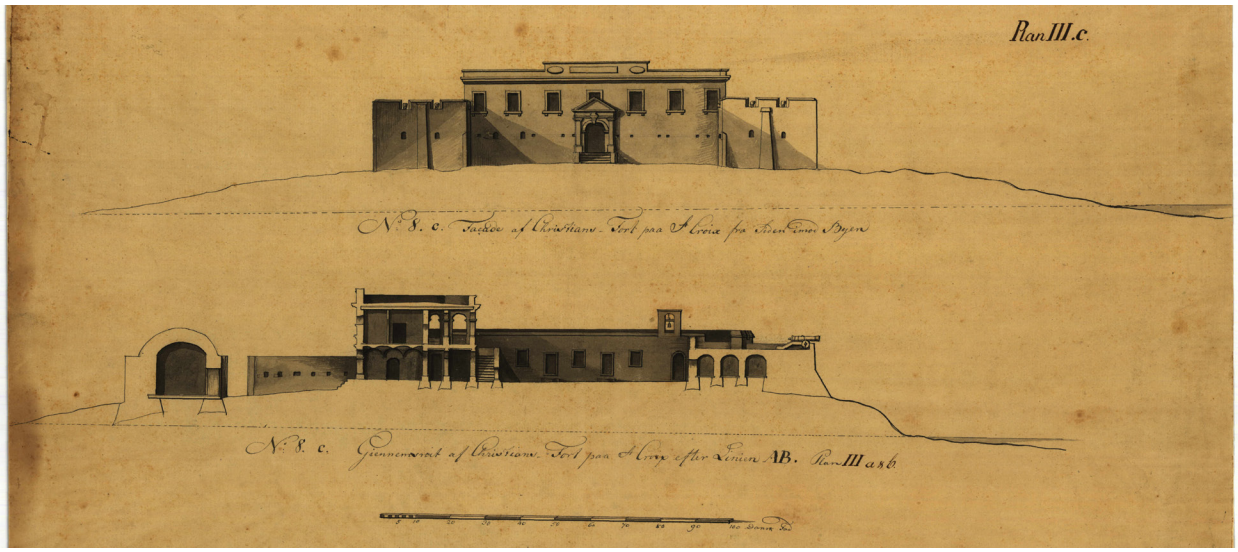


Figure B7. Fort Christiansvaern, elevation of south façade of south curtain and north-south cross-section through fort looking west, ca. 1778-1780, by Peter Lotharius Oxholm. (Danish National Archives, Chamber of Revenue, Maps and Drawings Collection, card no. 337.308, cs.sa.dk/picture/view-values/676877?selectedTab=116&locale=en)

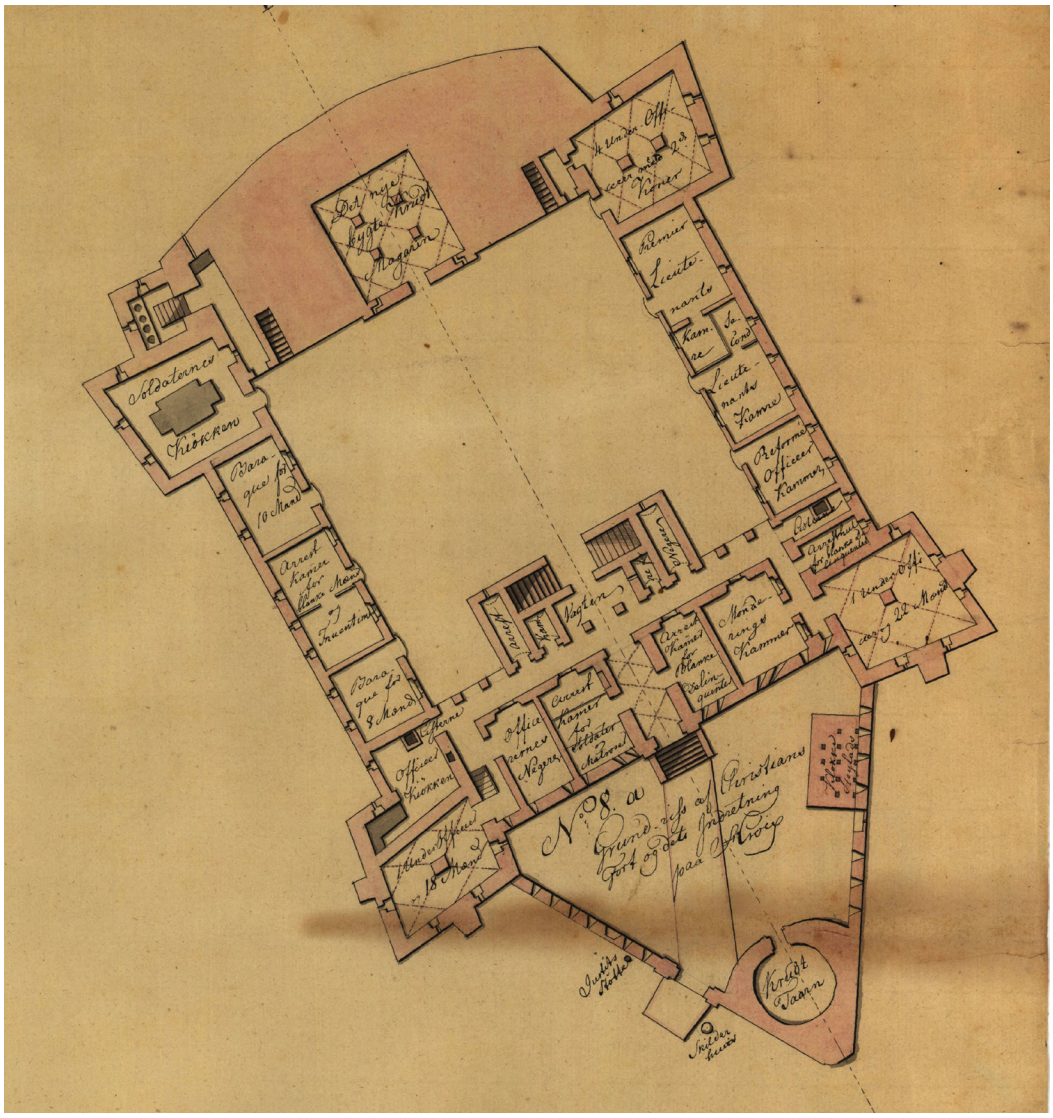


Figure B8. Fort Christiansvaern, first floor plan, ca. 1778-1780, by Peter Lotharius Oxholm. (Danish National Archives, Chamber of Revenue, Maps and Drawings Collection, card no. 337.304, cs.sa.dk/picture/view-values/676872?selectedTab=116&locale=en)

Meanwhile, the commandant's quarters were exposed to the harmful effects of sun and rain, and water continued to run down through the gundecks to ruin the supporting joists and quarters below. So bad was the situation that the commandant of the garrison, Captain Hederich, and other officers had to move out of the fort and rent quarters in town.[178]

Plans for a new mansard roof on the south curtain were finally drawn by Julius von Rohr and submitted to the home government for approval in September 1773, but this roof was never erected.[179] *Apparently either the home government or Peter Clausen, who returned to St. Croix on October 27th, 1773, as Governor General of the Danish West Indies, decided it was foolhardy to erect a roof exactly like the one which had just been blown off. Either in the late spring or early summer of 1774, therefore, a flat brick roof was laid over the south curtain to duplicate the original roof which had covered this section of the building from at least 1739 to 1755* (*Fig. B7*).[180]

This new roof was only one of many major repairs made to the fort in the period from 1774 to 1778. Although the records for this. Are scanty, they reveal that the following was also done: (1) extensive reparation [sic] and redecoration of the commandant's quarters; (2) reconstruction of the southwest bastion to provide a vaulted gundeck, and the addition of a window in the dungeon below; and, (3) raising up the water, battery and construction of a powder magazine below it (*Figs. B7, B8, B9*).[181] *The reparations* [*sic*] *of this also undoubtedly included relaying of the leaky gundecks of the east and west curtains, as well as the redecoration of the quarters below. Repairs also appear to have been made to the southeast bastion, but its reconstruction was not undertaken and completed until 1780-81.*[182]

The arrival of Lieutenant Peter L. Oxholm in St. Croix on March 14th, 1778, indicated the concern of the home government with the adequacy of the defenses of the island during the American Revolution. Oxholm's mission was to study the defenses and fortifications of the Danish West Indies and make recommendations for their improvement.

In the report, which he submitted to the Danish Government in 1779, Lieutenant Oxholm was highly critical of the location, size, and lack of effective defensive strength of Fort Christiansvaern.[183] *He considered it fit for little more than a barracks and recommended that a new fort be constructed on Protestant Cay instead. Governor General Peter Clausen and Building Inspector Julius von Rohr dissented quite strongly; they expressed the view that the fort had served the town well in the past and could continue to do so if a moat were dug around the fort and barracks were erected between the moat and the fort.*[184]

Neither the recommendations of Lieutenant Oxholm nor those of Governor General Clausen and Building Inspector von Rohr were carried out. Fort Christiansvaern remained the principal defense of the town and harbor without any major alteration or addition for many years to come. Indeed, even a proposal to gain more space for military purposes after 1784 by removing the town jail from the fort, was not carried out until 1807.[185]

Meanwhile, the hurricane of August 27th, 1785, did some damage to the fort, most important of which was the almost complete destruction of the privy on the west side of the water battery.[186] *Consequently, a*

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the failure of the colonial government to obtain speedy sanction of the needed repairs.

178. RA, DK: 172 VJ (C) 1772, von Roepstorff to the Danish Office, 3rd Bureau, October 30, 1772.

179. The plans can be found in RA, VgRtK: 224 VJ 1774, Lt. Colonel von Schinmelmann to the West India- Guinea Exchequer and General Customs Office, September 19, 1773.

180. The first documentary reference to this new roof occurs in RA, VgRtK: VJ 1779, Governor General Peter Clausen to the West India-Guinea Exchequer and General Customs Office, May 1, 1779.

181. RA, VgRtK: 476 VJ 1782, Clausen to the West India-Guinea Exchequer and General Customs Office, December 8, 1781.

182. Ibid.; and also RA, VgRtK: 83 VJ 1781, List of Materials Sent for the Reparation of Forts Christiansvaern and Frederik… For earlier repairs see RA, VgRtK: 843 VJ 1778, Clausen to the West India-Guinea Exchequer and General Customs Office, September 15, 1778. Contrary to documentary sources, Peter L. Oxholm indicated that the bastion had been reconstructed by 1779.

183. A bound copy of Oxholm's report will be found in RA, VgRtK: Dokumenter vedrorende forsvarsvasenet og fortifikationerne i Vestindien, 1715-1832. This report is invaluable for the general and detailed information which it contains to supplement Oxholm's plans. The original report is in RA, VgRtK: 879 VJ 1779, Oxholm to the West India-Guinea Exchequer and General Customs Office, August 29, 1779. Hereinafter this packet of collected documents about fortification and defense will be cited as DFF.

184. RA, VgRtK: 476 VJ 1782, Clausen to the West India-Guinea Exchequer and General Customs Office, December 8, 1781.

185. RA, VgRtK: 105 VJ 1785, West Indian Government to the West India-Guinea Exchequer and General Customs Office, October 11, 1784. After 1807 the town jail, police station, and courthouse were located on King's Street at what is now Limpricht Park.

186. RA, VgRtK: Kingelige Resolutioner on summen til bygningsvasenet og angre ubestemt udgifter (1780-1816), 226 VJ 1786, Estimate of Repairs Required to Fort

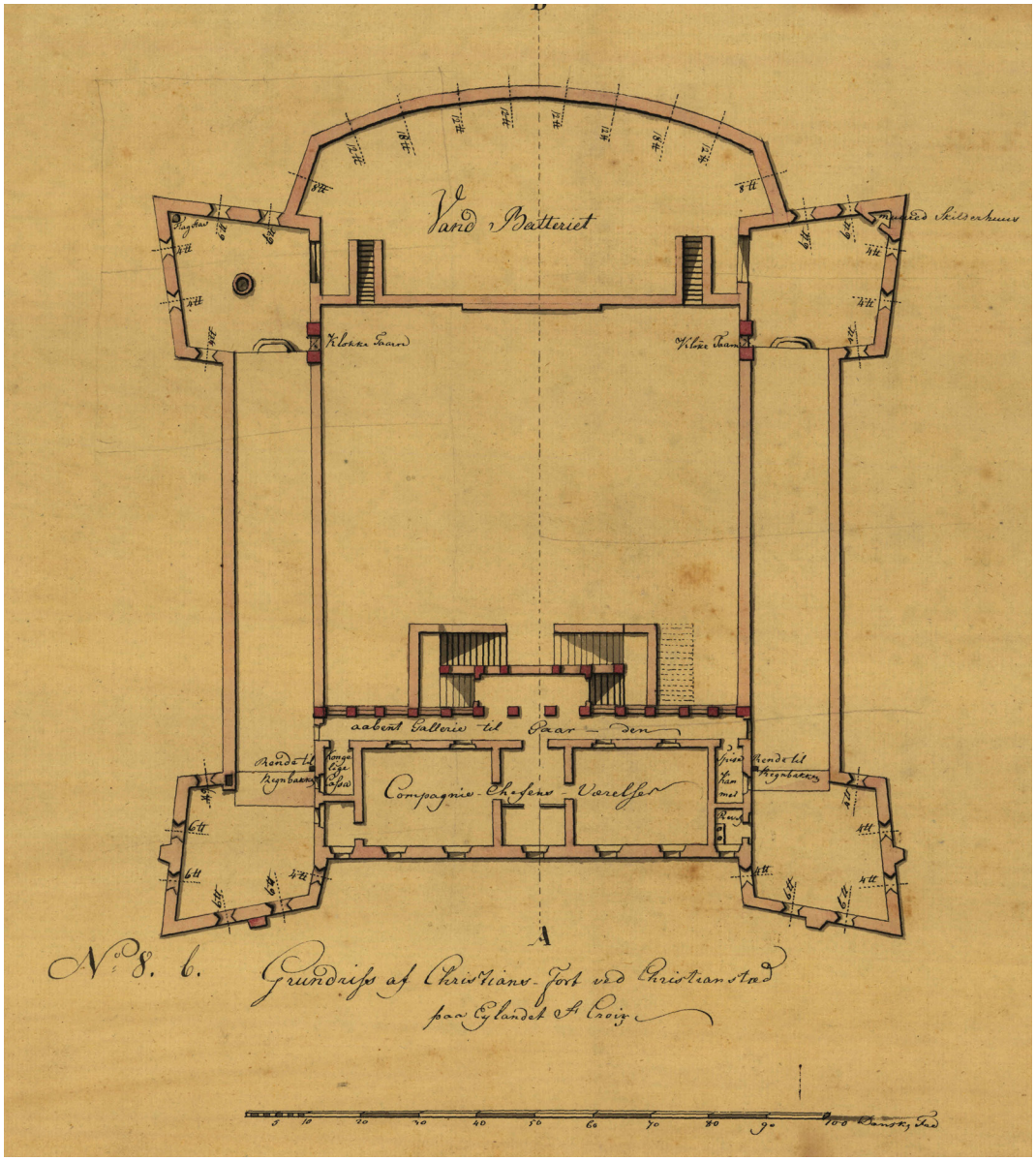


Figure B9. Fort Christiansvaern, second floor plan, ca. 1778-1780, by Peter Lotharius Oxholm. (Danish National Archives, Chamber of Revenue, Maps and Drawings Collection, card no. 337.306, cs.sa.dk/picture/view-values/676874?selectedTab=116&locale=en)

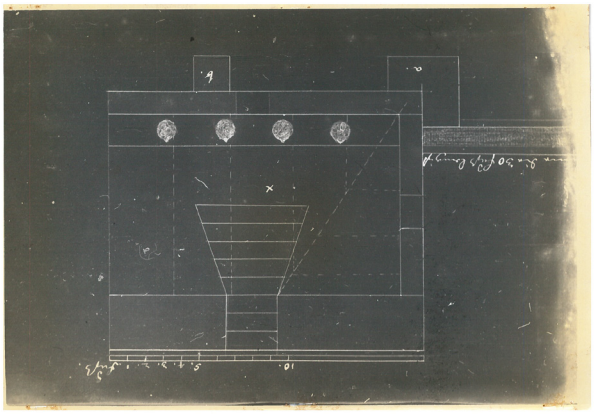


Figure B10. Floor plan for new latrine erected in 1786-87. Drawn by Julius von Rohr, 1786. (Olsen, 1960, infra, p. 181, fig. 14, scan of original source material in CHRI archive)

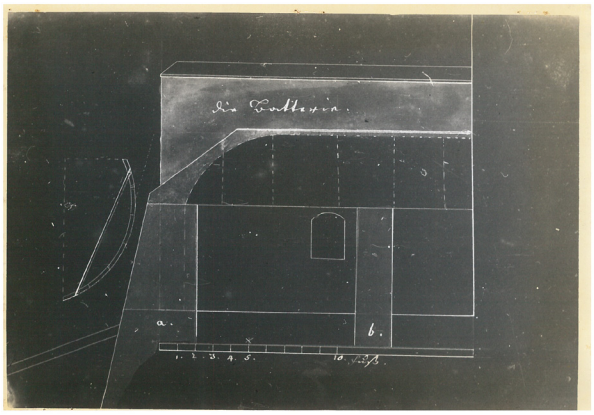


Figure B11. Cross-section for new latrine erected in 1786-87. Drawn by Julius von Rohr, 1786. (Olsen, 1960, infra, p. 183, fig. 15, scan of original source material in CHRI archive)

new masonry privy with a vaulted ceiling, was built on the same site in 1786-87 (Figs. B10, B11).[187]

Repairs to the fort for the next seven years were little more than routine. However, rather extensive reparation [sic] of the fort began again in 1795 and lasted almost uninterruptedly until the beginning of the first British occupation of the Danish West Indies on April 1st, 1801.[188] *Aside from extensive repairs to masonry, wood-work, and hardware, A wood-shingled shed for the storage of cannon was built in the ravelin in 1795; and the former powder magazine at the salient angle of the ravelin was converted into a cell in 1790.*[189] *Partial pavement and laying of gutters in the courtyard was probably also carried out during this era.*[190]

In 1801, the erection of a new privy on the east side of the water battery for the exclusive use of the garrison's officers was approved.[191] *However, the occupation of St. Croix by the British on April 1st, 1801, intervened and prevented its immediate construction. While the erection of this new privy cannot be dated exactly, it is probable that it occurred in late 1802 or in 1803. Moreover, it was built as an addition to the existing privy and not as a separate structure on the east side of the water battery, as originally proposed and approved (Fig. B12).*

A number of alterations and repairs to the fort were proposed in 1802, including a window in the east side of the cell at the salient angle of the ravelin; opening of two air holes in the slave cells under the stairs to the commandant's quarters; installation

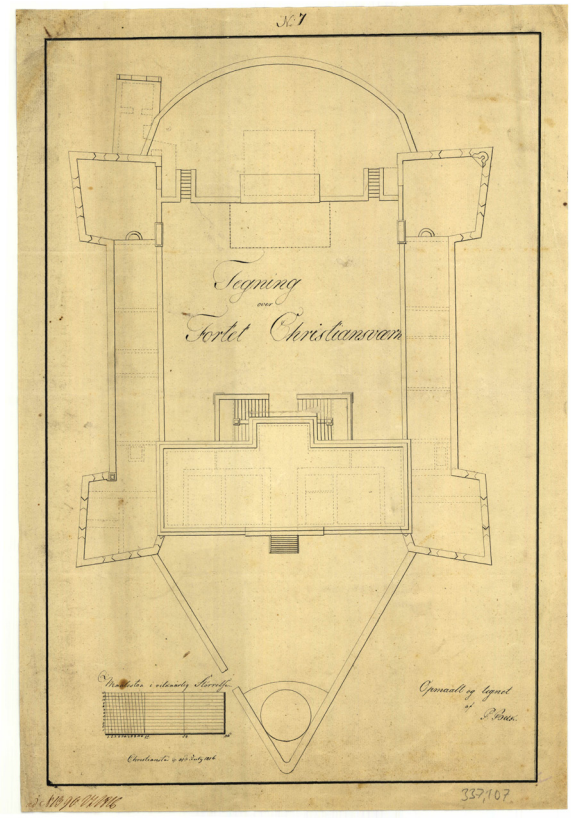


Figure B12. Fort Christiansvaern, roof plan with first floor plan in dashed line, 1816, by Peter Beck. (Danish National Archives, Chamber of Revenue, Maps and Drawings Collection, card no. 337.107, cs.sa.dk/picture/view-values/676795?selectedTab=116&locale=en)

of new, larger window frames in the quarters in the east and west curtains in place of the existing and inadequate air holes; repairs of the cracked vaulting of the old privy; reconstruction of the chimney from the troop kitchen up through the gundeck of the northwest bastion; and repair and redecoration of the commandant's quarters.[192] *All of these repairs or alterations were apparently carried out within the next five years.*[193] *In addition, a new wooden picket fence was erected around the powder magazine in 1806; and in 1807, three masonry walls were erected in unspecified cells, and the door of the arsenal was covered with copper.*[194] *The erection of a town jail at No. 10 King Street in 1807 made it possible to convert most of the cells of the fort to other uses.*

Christiansvaern, August 25, 1785. Hereinafter this packet of documents will be cited as KRB.

187. RA, VgRtK: KRB, 95 VJ 1787. This small portfolio of documents concerning the hurricane damage to the fort and its subsequent repair contains von Rohr's plans for a new privy.

188. As a member of the colonial government during this era, Oxholm proposed that the fort be altered and enlarged. However, these proposals were not carried out. The plans showing the proposed alterations have not been found.

189. RA, VgRtK: KRB, 446 VJ 1797, A List of Expenses on the royal forts and buildings on St. Croix for the year 1795, dated October 29, 1796; and RA, VgRtK: DFF, 799 VJ 1797, Oxholm on the Royal West Indian Government, May 8, 1797.

190. The commandant of the fort, Captain Romeling, complained in 1973 that there was a foot of water or more in the courtyard every time it rained indicating that drainage was faulty, inadequate, or non-existent.

191. RA, Bygingsinspektorens og Landmaalerens Arkic fra St. Croix: Skrivelser til Overbygningsinspektoratet (1800-03), West Indian Government to the Chief Building Inspector von Meley, February 16, 1801. Hereinafter this general records group will be cited as BLA, and the collected packet of correspondence to the building inspector will be cited as SBI (1800-03).

192. RA, BLA: Journal for Overbygningsinspektoratet (1800-04), von Meley to the Governor General, March 7, 1802, pp. 82 ff. Hereinafter this journal will be cited as JBI (1800-04).

193. RA, VgRtK: KRB, 1442 VJ 1816, Fortegnelse over de kongelige Fortresse, samt Huuse og Bygningers Reparationer og Cmkostninger paa Eylandet St. Croix pro Ano 1803, 1804, 1805, 1806, 1807. Hereinafter these lists of expenses for repairs to the forts and other state owned buildings in St. Croix will be cited as FBR.

194. RA, VgRtK: KRB, 1442 VJ 1816, FBR for 1806 and 1807.

The second British occupation of St. Croix and the other Danish West Indies took place from December 25, 1807, to April 1, 1815, and there is no available information in the Danish records for this era. However, the extent of the repairs required and carried out immediately after the occupation in 1815-16 indicates that the British spent little on maintenance of the fort during this period.

The repairs of 1815-16 included replacement or relaying of brick floors and pavement in several rooms and areas of the fort and the repair or replacement of a number of window shutters and glass windows in the commandant's quarters.[195] A new wooden-shingled shed 44 feet long was also erected in the ravelin in 1816 to replace the existing shed for storage of cannon.[196] A proposal to tear down the vaulted roof of the older privy and put a flat brick roof over both privies was not approved.[197]

The repairs of 1815-16 tided the fort over until a major rehabilitation of the structure was undertaken in the period from the fall of 1817 to February 1818. This rehabilitation included: extensive relaying of brick floors, gutters, and pavements; two new stairways with 14 risers each to the water battery, and a new parapet 2 feet high and 1½ feet thick on the water battery; extensive repair and relaying of the gundecks of the east and west curtains, including replacement of rotten joists where necessary; new gates for the entrance of the fort; new hearths in the kitchens for the troops and the commandant; a new cricket fence around the powder magazine; and extensive repair, replacement, and painting of all interior and exterior finishes, woodwork, and hardware.[198] The latter included paneling and papering of the commandant's quarters.

[In his description of the 1817-18 work, Olsen uses the word "new" to describe the stairs to the water battery gundeck, and the water battery parapet. This is misleading given that both of these elements are clearly present in earlier drawings (*Figs. B7, B9, B12*). A more appropriate description would be that these elements were repaired or reconstructed.]

The hurricane of September 21-22, 1819, broke the flagpole which had just been replaced in the northwest bastion, and a new one had to be erected.[199] A number of shutters and doors were badly damaged and were replaced, as were some of the gutters of the south curtain. The foundation of the privy also had to be repaired, since the sea had undermined and washed away part of it.

While not caused by the hurricane, the chimney in the northwest bastion was damaged and had to be reconstructed.[200]

In 1820, a new wooden guardhouse was built to replace the old rotten one on the water battery, two new pumps were bought for the cisterns, and 10 new doors and 4 new shutters were made.[201] Of greater importance, extensive rehabilitation of the commandant's quarters was undertaken in 1820-21. This rehabilitation included relaying of the double stairway and gallery to the quarters, new ceilings and floors, some new doors and shutters, and a partial rebuilding of the east end wall.[202]

Three copper shutters were installed on the vents of the powder magazine in the northeast casemate in 1821 to replace the old wooden ones.[203] The annual inspection of the fort in February 1821 led to a recommendation by the inspecting committee that the east curtain should be rebuilt since the joist supporting the gundeck were rotten and the inner wall towards the courtyard was of half-timbered construction only 5 inches thick.[204]

195. United States National Archives, Records Group 55 (Records of the Former Danish West Indies and the United States Government of the Virgin Islands): Records of the Office of the Bookkeeper (St. Croix), FBR for 1815. Hereinafter the United States National Archives will be cited as NA, the records of the former Danish West Indies and the U.S. Virgin Islands as RG55, and those of the Bookkeeper for St. Croix as BK (SC).
196. NA, RG55: BK, FBR for 1816.
197. RA, BLA: SBI (1815-24), Estimate of Masonry Work to be Completed in Fort Christiansvaern, June 23, 1815.
198. RA, BLA: Protokol for kongelige bygningers reparation (1816-18), pp. 56-60, 68-71. Hereinafter this protokol will be cited as PKBR. See RA, BLA: SBI (1815-24) at this time for three undated estimates for this work.
199. RA, BLA: SBI (1815-24), Building Inspector Beck to Colonel von Stabell, September 14, 1819; Beck to General Government of the Danish West Indies, October 8, 1819; and the Royal West Indian Government to Beck, October 13, 1819.
200. RA, BLA: SBI (1815-24), Beck to the General Government of the Danish West Indies, September 23, 1819.
201. NA, RG55: BK (SC), FBR for 1820.
202. RA, BLA: SBI (1815-24), The Royal West Indian Government to Acting Building Inspector and First Lieutenant Hielte, May 7, 1821; and ibid., an undated report of the commission appointed to inspect the work executed by the contractor, A. Lammers.
203. RA, BLA: SBI (1815-24), The Royal West Indian Government to Lt. von Hielte, June 26, 1821; and ibid., C.H. Panekin's bill of August 1821 for the shutters and their installations.
204. RA, BLA: SBI (1815-24), Inspection Committee's report of February 22, 1821.

The rebuilding of the east curtain was subsequently carried out in 1822 as part of an extensive but otherwise routine rehabilitation of the fort.[205] The new gundeck was poorly laid, however, and required repairs soon after it was completed.[206]

The gun deck of the west curtain had to be shored up in several places in 1824, because the ends of some of the joists were rotten where they were set in the walls.[207] Erection of ravelins in the front of the east and west curtains was proposed but not approved at this time.[208] A storm in early September [1824] *blew down part of the wooden picket fence around the powder magazine, but otherwise did no damage.*

The following year, a new wooden-shingle roof was laid on the cannon shed in the ravelin, paneling was installed under 8 windows in the commandant's quarters, and the wooden stairs leading up to the roof of the commandant's quarters were replaced.[209] The hurricane of July 26-27, 1825, blew the new roof off the cannon shed, requiring its replacement, and did other minor damage to shutters, doors, hardware, and glass windows in the commandant's quarters.[210]

In 1826, the vaulted roof of the cell at the salient angle of the ravelin was torn down because it was badly cracked and replaced by a flat brick roof.[211] The guard house on the water battery was cut in two and the parts placed in the northwest and northeast bastions for separate use by the sentries of the artillery and infantry.[212] The gundeck of the east curtain was covered with a layer of cement to stop it from leaking, and the quarters below were refinished where water damage had occurred.[213] Installation of venetian blinds was also approved for the seven windows of the commandant's quarters which faced the ravelin.[214]

The Von Scholten Era: 1827-48

No other era in the history of the former Danish West Indies is as clearly identified with the personality, ideas, and works of one man as the period between 1827 and 1848, when Peter von Sholten was governor general of the islands. His name is indelibly stamped in the annals of Virgin Islands history for his emancipation of the slaves on July 3rd, 1848. Less well known, but standing still as mute witnesses to his widespread interests, boundless energy, and pervasive influence are a number of buildings, both public and private, which were either built, reconstructed, or significantly altered and added two during his administration. Among the latter is Fort Christiansvaern.

In the first six years of his administration, von Scholten's architectural interests were devoted to the rehabilitation and alteration of Government House and the present Lutheran Church in Christiansted and to the construction of his private residence at [Bulows] *Minde. Thus, aside from the repairs occasioned by the hurricane of August 17, 1827, only routine maintenance was performed on the fort during this period.[215]*

On February 22nd, 1834, however, Governor General von Scholten made a personal inspection of the fort and requested Building Inspector Magens to submit a rehabilitation program.[216] Subsequently, on March 7th, 1834, von Scholten approved the first of several programs which were to bring about

205. RA, BLA: SBI (1815-24), The Royal West Indian Government to Building Inspector and Captain von Magens, June 17, 1823.
206. RA, BLA: Referat og korrespondanceprotokol for Christiansteds jurisdiktion (1823-50), pp. 20b, 21. Hereinafter this protokol will be cited as RKP.
207. RA, VgRtK: Kongelige bygningers reparation m.m. (1822-29), Annual Inspection of the Royal and Public Buildings in Christiansted, January 24, 1824. Hereinafter this packet of correspondence will be cited as KBR (1822-29). See also RA, BLA: SBI (1815-24), The Royal West Indian Government to Captain von Magens, September 11, 1824.
208. RA, VgRtK: KBR (1822-29), Annual Inspection of the Royal and Public Buildings in Christiansted, January 24, 1824.
209. RA, BLA: SBI (1825-29), The Royal West Indian Government to Captain von Magens, February 18, 1825; and RA, VgRtK: KBR (1822-29), a copy of the Auction Proceedings in Christiansted on February 3, 1825.
210. RA, BLA: RKP (1823-32), pp. 54a, 56b, 59b and 60a.
211. RA, BLA: SBI (1825-29), George O'Carroll's Bill to the Royal Treasury for Work done on Fort Christiansvaern, June 26, 1826; and RA, VgRtK: KBR Jurisdiction on March 25, 1823, as submitted to the Royal West Indian Government by Magens on March 29, 1823.
212. RA, VgRtK: KBR (1822-29), Inspection of the Royal and Public Buildings in Christiansted's Jurisdiction on January 31, 1824, as submitted to the Royal West Indian Government by Magens on February 6, 1824; and RA, BLA: SBI (1825-29), George O'Carroll's Bill to the Royal Treasury for Work done on Fort Christiansvaern, June 26, 1826.
213. Ibid., and also RA, BLA:SBI (1825-29), Inspection of the Royal and Public Buildings in Christiansted's Jurisdiction on January 24, 1826.
214. RA, BLA: SBI (1825-29), George O'Carroll's Bill to the Royal Treasury for Work done on Fort Christiansvaern, June 26, 1826; and RA, VgRtK: KBR (1822-29), Inspection of the Royal and Public Buildings in Christiansted's Jurisdiction on March 25, 1823, as submitted to the Royal West Indian Government by Magens 29, 1823.
215. The hurricane broke the flagpole, blew down the fence around the powder magazine, destroyed a sentry box and a guardhouse, and did other minor damage. See RA, BLA: RKP (1823-32), pp. 104a ff., for details.
216. RA, BLA: RKP (1832-41), Nagens to Governor General Peter von Scholten, March 4, 1834, pp. 24a ff.

major additions and alterations to the fort during the remainder of his administration.[217]

From March 1834 to February 1835, the following work was therefore done on the fort.[218]

1. *The rotten ceilings in the commandant's quarters were removed and not replaced. All rotten joists supporting the flat brick roof atop these quarters were replaced, after which the joists were covered in thin boards. The walls and partitions were then repaired and painted.*
2. *The rotten sheathing of the cannon shed in the ravelin was replaced, and the entire shed was reshingled.*
3. *The northeast casemate was converted into an arsenal and all gunpowder was thereafter stored in the powder magazine under the water battery.*
4. *The southeast casemate was converted into a barracks for eight men, which required the laying of wooden floor atop the existing brick floor.*
5. *The northwest casemate was converted into two bread and water cells.*
6. *The wooden stairs from the southeast bastion to the roof of the commandant's quarters were torn down, and a small brick stairway was erected from the southwest bastion to the same roof.*
7. *All gundecks, pavements, and masonry walls were relaid and/or pointed, stuccoed and plastered, and limewashed.*
8. *All woodwork and hardware was inspected, repaired or replaced, and painted.*

No sooner had the above rehabilitation and alterations been completed than Governor von Scholten again inspected the fort and found a number of other alterations, improvements, and additions necessary.[219] *While he gave Building Inspector Hingleberg verbal orders to proceed immediately with many routine repairs, von Scholten requested a detailed estimate of the improvements and additions to be made.*

On September 28th, 1835, therefore, Hingleberg submitted an estimate which included the following:[220]

9. *Erection of a masonry wall from the southwest to the northwest corner of the fort of 145 feet by 8 feet by 2 feet, With a 2½-foot foundation;*
10. *Erection of pillars and other masonry work to embed chevaux de frise*[221] *at the north end of the outer walls and the corners of the water battery;*
11. *Construction of a "common: room on the northeast bastion;*
12. *Erection of a masonry wall of approximately 350 feet by 9½ feet by two feet, with a 2½ -foot. foundation, outside the east curtain to create a stableyard of about 9,000 square feet;*
13. *And, conversion of four rooms for different usage.*

With the exception of the fourth item, all of the above additions and alterations were approved by von Scholten on October 26, 1835.[222] *Item number 4, erection of a stable, and construction of a combined watchman's room-carriage house were approved by von Scholten on March 30th, [1836] (Figs. B13, B14, B15).*[223] *The alterations and additions included in these approvals were completed by November 1837.*

The outer wall on the west side of the fort was completed by December 1835.[224] *Iron spikes embedded in hardwood beams were set atop this wall and also atop the walls of the ravelin.*[225] *Access to*

217. RA, BLA: SBI (1830-39), von Scholten to Magens, March 7, 1834.
218. Ibid.; and also RA, BLA: RKP (1832-41), pp. 24a ff.
219. RA, BLA: RKP (1832-41), Building Inspector and Captain von Hingelberg to von Scholten, September 28, 1835, p. 53b.
220. Ibid., pp. 54b f.
221. A cheval de frise (the plural form being chevaux de frise) is a defensive obstacle usually constructed of wood with sharp spikes, traditionally used to defend a passage or stop a breach. *The Century Dictionary*, ed. William Dwight Whitney (New York: The Century Co., 1891) s.v. "chevaux de frise."
222. RA, BLA: SBI (1830-39), von Scholten to von Hingelberg, October 26, 1835.
223. RA, BLA: SBI (1830-39), von Scholten to von Hingelberg, March 30, 1836. Erection of the laundry house was not approved until 1840. Hingelberg's detailed proposals and estimates to accompany these plans will be found in RA, BLA: RKP (1832-41), Hingelberg to von Scholten, March 24, 1836.
224. RA, BLA: Protokol for Garnisonshaandvaerkerne i Christiansted (1835-40), n.p. (entries for labor and materials used in November 1835). This account book and a similar one for the period from 1840 to 1846 contain an exceptionally detained record of work performed on the fort for more than a decade. Hereinafter these volumes will be cited as PGH, followed by the dates of the particular volume referred to; since no pagination exists in either volume, reports will be referred to by month or period of time covered.
225. Ibid.; and ibid., December 1835.

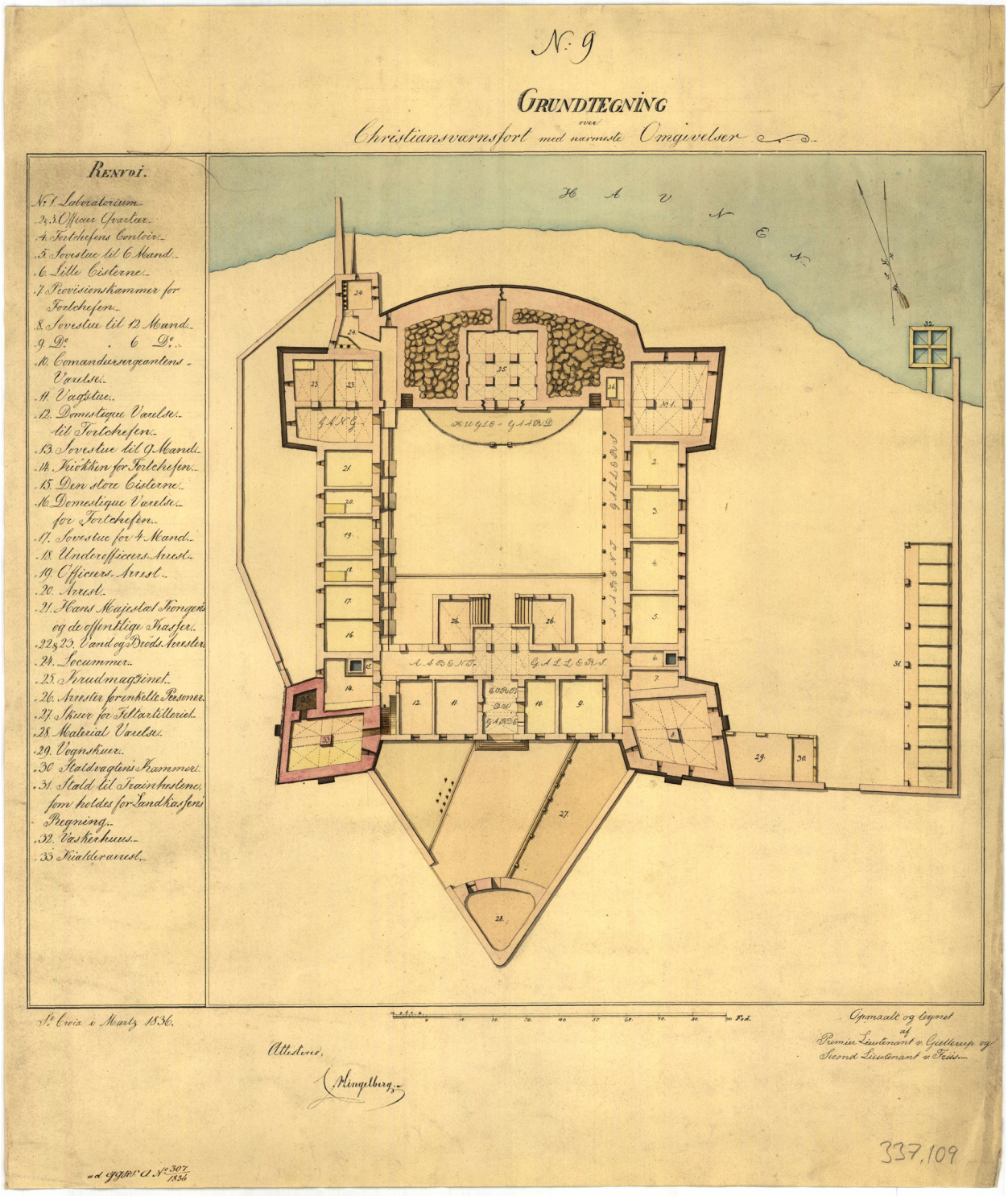


Figure B13. Fort Christiansvaern, first floor plan, 1836, by First Lieutenant Gjellerup and Second Lieutenant Friis. Floor plan has room numbers with corresponding use labels. Olsen uses this room numbering system in his 1960 HSR. (Danish National Archives, Chamber of Revenue, Maps and Drawings Collection, card no. 337.109, cs.sa.dk/picture/view-values/676797?selectedTab=116&locale=en)

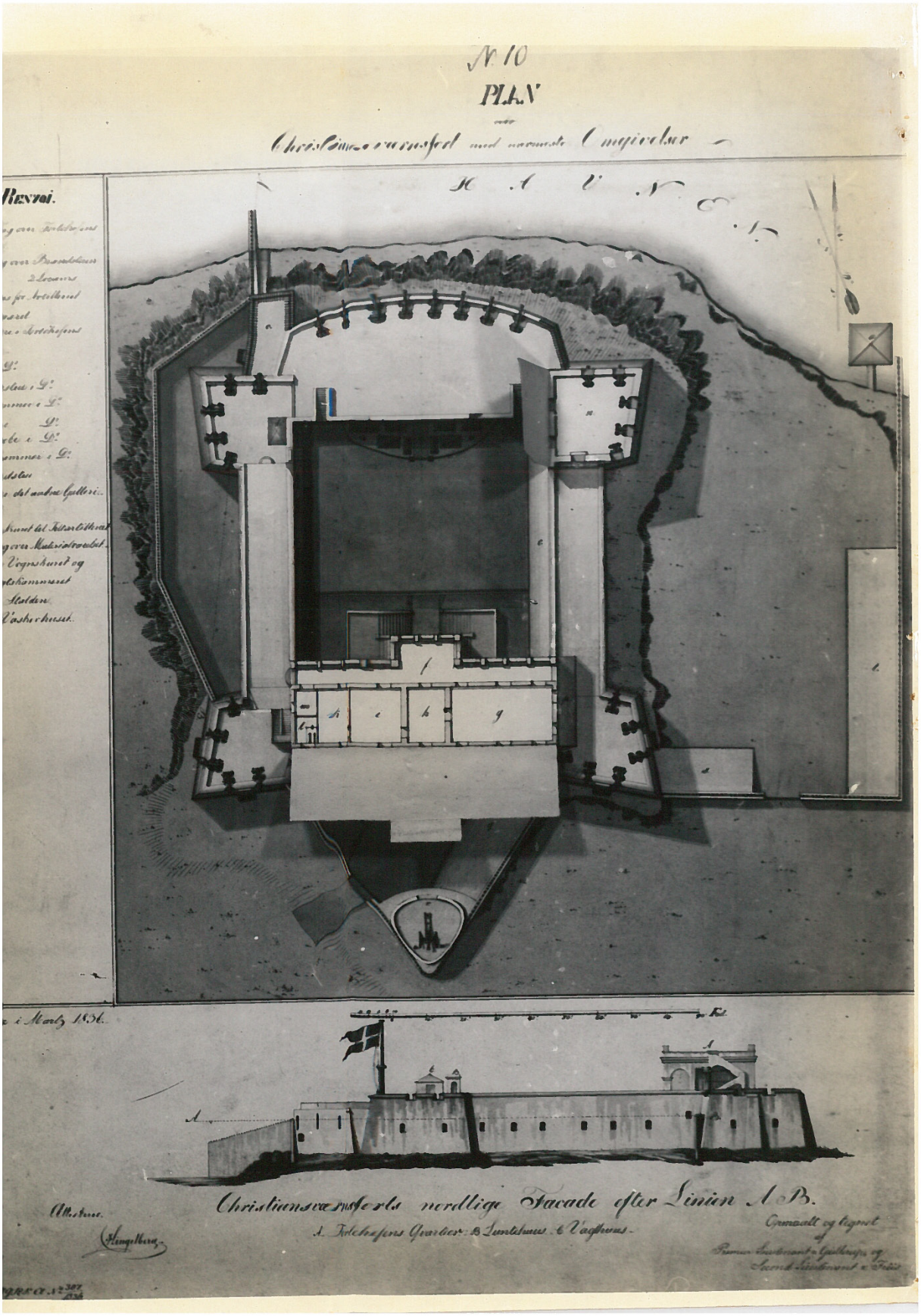


Figure B14. Fort Christiansvaern, second floor plan, 1836, by First Lieutenant Gjellerup and Second Lieutenant Friis. Floor plan has room numbers with corresponding use labels. Olsen uses this room numbering system in his 1960 HSR. (Olsen, 1960, infra, p. 193, fig. 12, scan of original source material in CHRI archive)

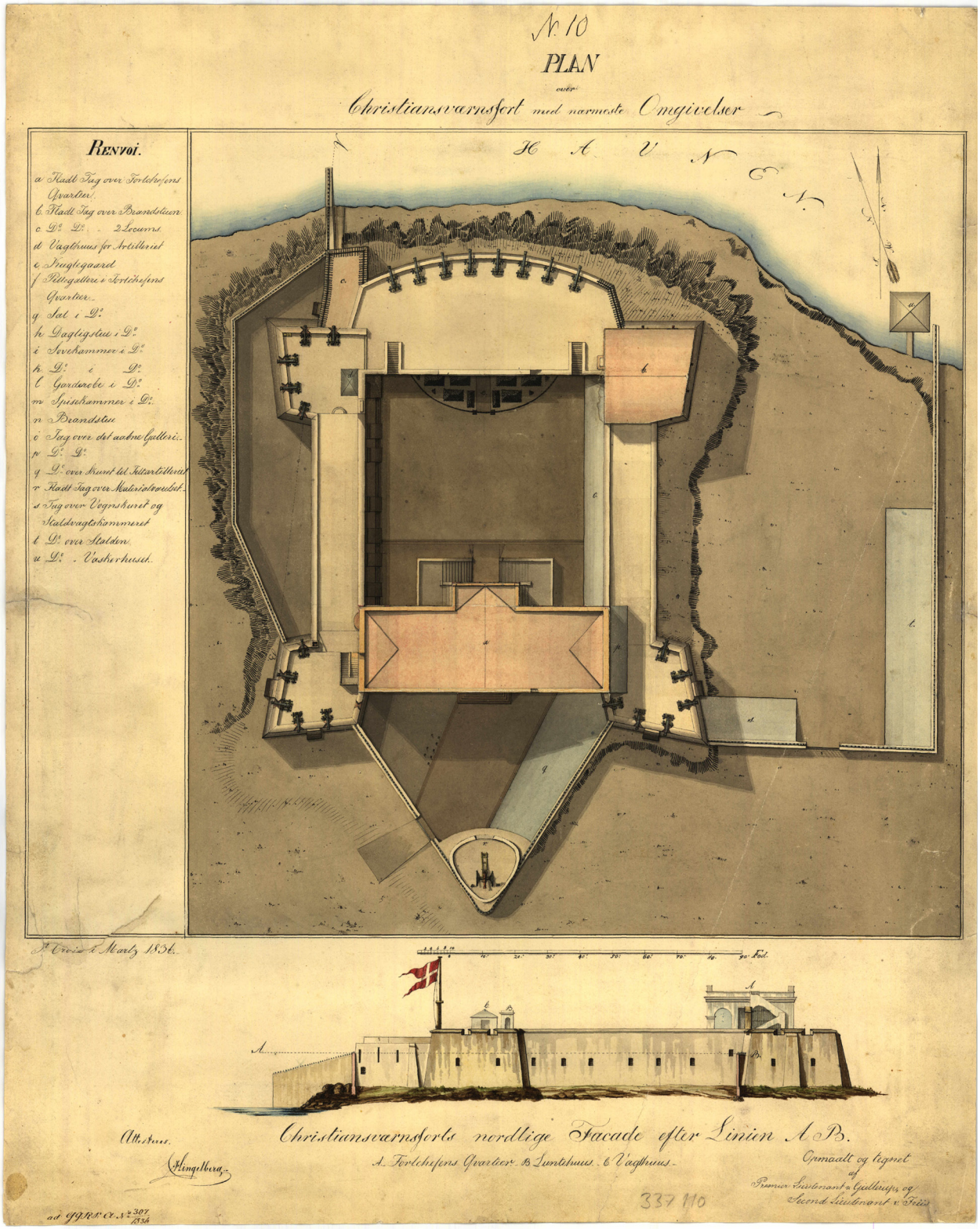


Figure B15. Fort Christiansvaern, roof plan, 1836, by First Lieutenant Gjellerup and Second Lieutenant Friis. Plan has room numbers with corresponding use labels. Olsen uses this room numbering system in his 1960 HSR. (Danish National Archives, Chamber of Revenue, Maps and Drawings Collection, card no. 337.110, cs.sa.dk/picture/view-values/676798?selectedTab=116&locale=en)



Figure B16. View of Christiansted Harbor. Hand colored lithograph, 1839, by Thomas Christian Sabroe. (Danish Royal Library Image Collection, www5.kb.dk/images/billed/2010/okt/billeder/object10289/da/)

the yard created by the new wall was provided by a door covered with crossed iron bars in the southern end of the wall.[226] *By late June 1836, the outer wall on the east side of the fort had also been completed.*[227] *However, it was a year later, before iron spikes were embedded atop this wall and the cheval de frise was set in the masonry pillar at the north or seaward end of the wall* (*Fig. B16*).[228]

Meanwhile, a zinc covered shed supported by eight hardwood post[s], were erected in front of the courtyard side of the east curtain by July 1836 (*Figs. B13, B15*).[229] *The area beneath this gallery was paved with bricks laid flat.*[230] *A shed was also erected on the southeast bastion against the east end of the south curtain; but, unlike the shed against the east curtain, it appears to have been covered with wooden shingles* (*Fig. B14*).[231]

The "common" room in the northeast bastion was completed by October 1836.[232] *It had a flat brick roof supported on timbers, 6 windows, 2 doors, and 5 cannon ports equipped with wooden shutters* (*Figs. B14, B15*).[233]

Construction of the stable against the new outer wall on the east side of the fort was begun in July 1836, as was the combined watchman's room-carriage house against the south wall of the stableyard.[234] *When it was completed in September 1837, the stable had a flat brick roof laid on timbers.*[235] *The stable was about 74 feet long and had 6 arched openings equipped with wooden shades on the west side; in the east wall were 12 shuttered and barred windows.*[236] *The stable was paved with bricks, and there were box stalls for 12 horses* (*Fig. B13*).[237] *A brick gutter was laid in front of the stable and was continued from the stable to the sea with rocks.*[238] *A wooden gutter was hung from the eaves of the stable.*[239]

226. Ibid., November 1835.
227. RA, BLA: RKP (1832-41), Hingelberg to von Scholten, June 27, 1836.
228. RA, BLA: PGH (1835-40), June 1837.
229. Ibid., July 1836.
230. Ibid., June 1836.
231. Ibid., November 1839.
232. Ibid., October 1836.
233. Ibid., September 1836.
234. Ibid., July 1836.
235. Ibid., October 1836 to September 1837 reports, inclusive.
236. Ibid., January 1837, June 1837, July 1837, and August 1837.
237. Ibid., June and July 1837.
238. Ibid., July 1837. The bricks were laid on edge.
239. Ibid., September 1837.

The combined watchman's room-carriage house against the south wall of the stableyard was 28 feet long by 15 feet wide and had a flat brick roof laid on timbers.[240] *The watchman's room on the east side of the structure had a door in the north side and a window on the east side.*[241] *This room was partitioned off from the carriage house to the west, which had a wooden gate* (*Fig. B13*).[242] *A wooden gutter was hung from the eaves.*[243]

A wrought iron gate made in Copenhagen was hung from the entrance pillars to the stableyard.[244] *The stableyard was graded, and a small brick stairway was constructed at the northwest end of the yard up to the foot of the northwest bastion of the fort* (*Fig. B13*).[245]

Numerous repairs and alterations were also made to the quarters and rooms in the fort during the period from November 1835 to November 1837.[246] *Particularly noteworthy here was the erection of a wooden partition with latticework above to separate the cistern from the commandant's kitchen, the provision of a separate door to the kitchen, and also the erection of a wooden stairway from the commandant's quarters down to the kitchen* (*Figs. B13, B15*). *The entire fort was lime washed in a blue or blue-gray color, all exterior woodwork was painted dark green, and all hardware was painted black.*[247] *Decorative iron work with the king's monogram and the date 1836 was erected atop the pillars of the entrance gate to the ravelin; and decorative iron work to hang a lamp from was mounted atop the pillars of the picket fence around the powder magazine.*[248]

For more than a year after completion of the above work, only routine maintenance was performed on the fort. Beginning again in 1839, however, a new series of alterations and additions, were made to the fort.

From April to September 1839, jalousies and doors with glass fanlights were installed in the arched openings of the gallery on the north side of the commandant's quarters.[249] *A jalousie door and fan light was erected in the gallery in June 1839 as a partition.*[250]

[Olsen references jalousies in several ways in his report. It is important to the modern audience to explain that when referring to a jalousie in a window or as a window he is referring to a fixed, or, more likely, operable wood panel with operable wood louvers – essentially a louvered shutter. Similarly, a jalousie door is a wood door with operable wood louvers. These historic designs were popular in tropical climates, and were the inspiration for later mid-twentieth-century jalousie windows with operable glass louvers.]

A new masonry stairway supported on eight piers was constructed up to the commandant's quarters in September and October 1839 as an attachment on the west side of the older double stairway to these quarters (*Fig. B17*).[251] *The paving in the box stalls in the stable was relaid with cut stone and "blue beach,"* [252]

["Blue beach" is a local name for a volcanic brecciated rock found only in the Louisenhoj Formation on St. Thomas and St. John.][253]

In January and February 1840, the westerly of the two existing cells in the northeast casemate was converted into a maximum security cell. This alteration required erection of two masonry walls 1¾ feet thick by 8 feet high to separate it from the adjoining cell and the passageway to the south within the casemate.[254] *The small barred window in the west wall of the casemate and the cell was equipped with an exterior zigzag masonry vent to admit air but shut out all light.*[255] *The latter provided insufficient air to the cell, and a new window similarly equipped was therefore opened in the north wall of the cell in June 1840.*[256]

Erection of a rock retaining wall on the west side of the stableyard was begun in February 1840 but was not complete until a year later (*Figs. B17, B19*).[257]

240. Ibid., November 1836.
241. Ibid., February 1837.
242. Ibid., June and July 1837.
243. Ibid., November 1837.
244. Ibid., May, June, and July 1837.
245. Ibid., October 1837.
246. Ibid., passim.
247. RA, BLA: PGH (185-40), May and June 1836.
248. Ibid., May 1836.
249. Ibid., April to September 1839 reports, inclusive.
250. Ibid., June 1839.
251. Ibid., September and October 1839.
252. Ibid., April, May, and August 1839.
253. Douglas W. Rankin, "Geologic Maps of St. John, U.S. Virgin Islands," Department of the Interior, U.S. Geological Survey, open file report 97-472, 1997, pp. 4-5, pubs.usgs.gov/of/1997/0472/report.pdf.
254. Ibid., January and February 1840.
255. Ibid., January 1840.
256. Ibid., RA, BLA: PGH (1840-46), June 1840.
257. Ibid., January 1841, and RA, BLA: PGH (1835-40), February 1840.

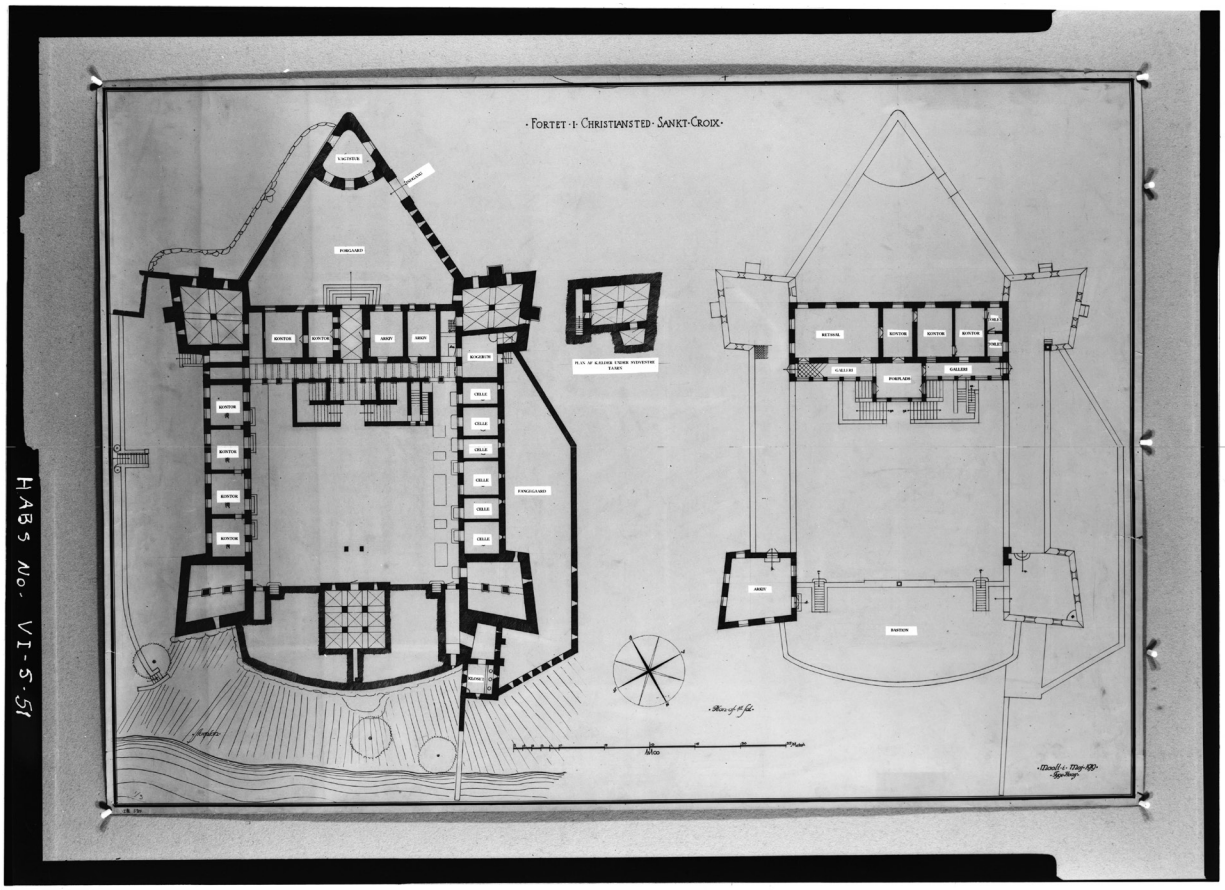


Figure B17. Fort Christiansvaern, first and second floor plans, 1919, by Tyge Hvass. (Library of Congress, HABS Survey VI-5, LOC vi0085, photograph no. 51, www.loc.gov/resource/hhh.vi0085.photos/?sp=51)

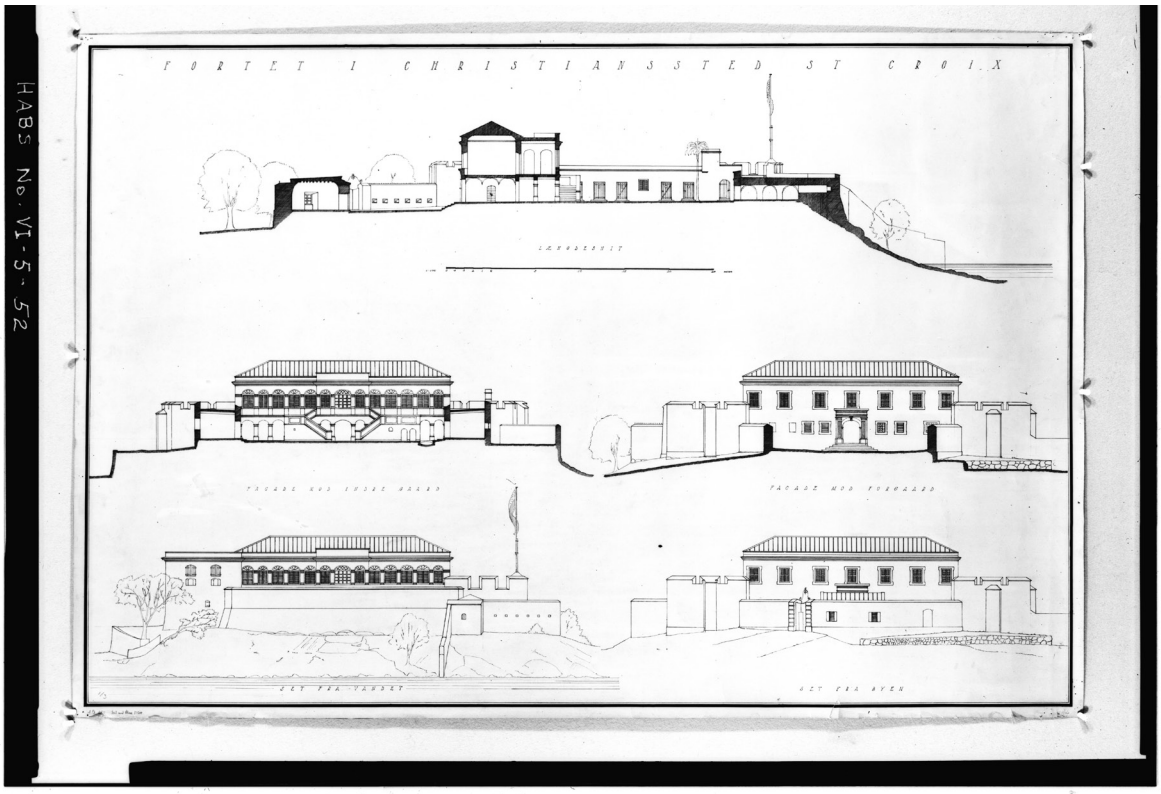


Figure B18. Fort Christiansvaern, elevations and north-south cross-section, 1919, by Tyge Hvass. (Library of Congress, HABS Survey VI-5, LOC vi0085, photograph no. 52, www.loc.gov/resource/hhh.vi0085.photos/?sp=52)

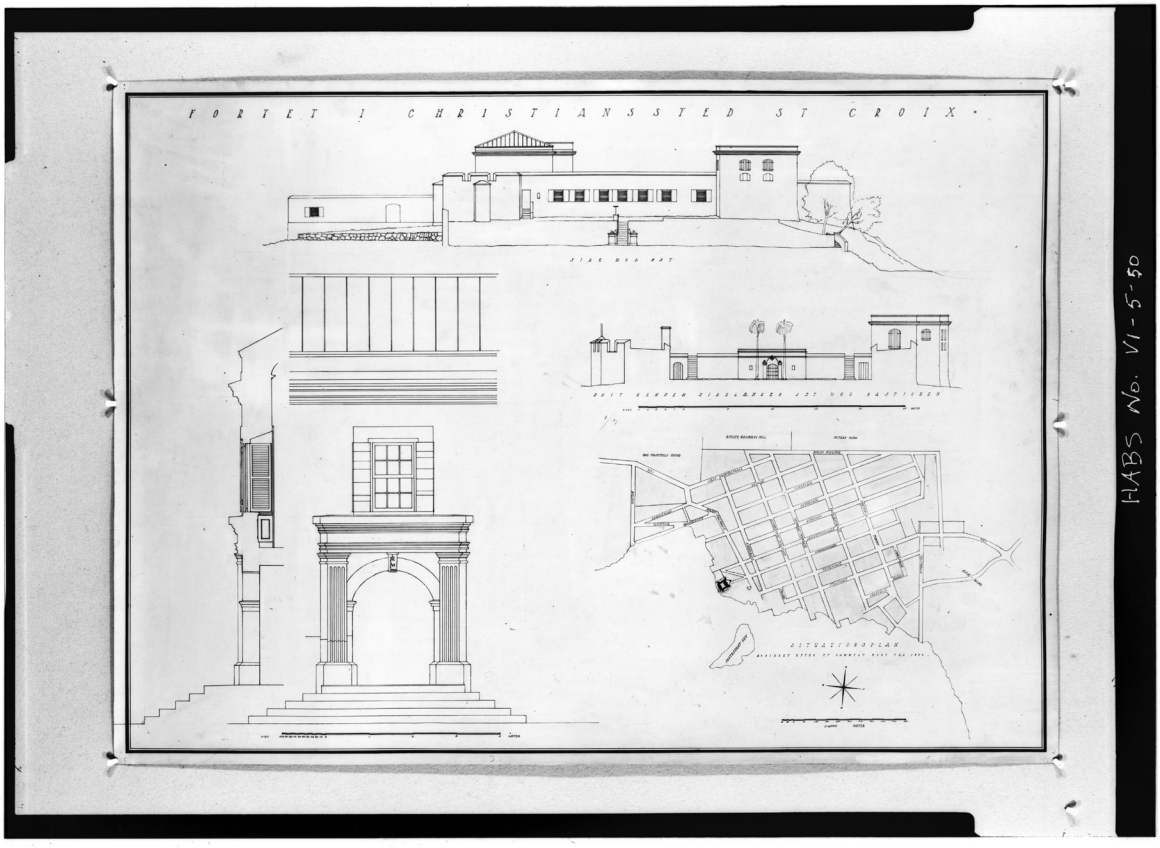


Figure B19. Fort Christiansvaern, elevations and detail of sallyport, 1919, by Tyge Hvass. (Library of Congress, HABS Survey VI-5, LOC vi0085, photograph no. 49, www.loc.gov/resource/hhh.vi0085.photos/?sp=49)

On September 9, 1840, Building Inspector Hingleberg requested approval to extend the stable 25 feet to provide a shed for drying and mangling the garrison's laundry and also to construct a wooden-shingled washhouse 18 feet by 10 feet by 8 feet over the water just beyond the shoreline of the stableyard.[258] Von Scholten approved Hingleberg's proposals, and both structures were erected in late 1840s and early 1841.[259]

[Curiously, Olsen makes no mention of the structure in the same location as the above described "washhouse" that appears on 1836 plans of the fort with the label "vaskerhuus," which Olsen translates to "laundry house" (*Fig. B13*). The earlier structure was perhaps partially constructed in 1836 and finished in 1840-41]

The brick gutter and wooden leader were extended from the stable to the end of the drying and mangling shed.[260] A brick stairway and a stone causeway were built to provide access to the washhouse (*Fig. B25*).[261] *A temporary wooden shed was erected in the stableyard at this time for use of the workmen.[262] Finally, the exterior walls of the fort were lime washed with a "yellow-brown stonecolor."[263]*

Repairs were routine in 1842, but in the following year it was necessary to tear up the gundeck of the east curtain, replace all the joists, and relay the gundeck.[264] In mid-1843, The Fort was valued at 68,437-48 [*sic*] *rix-dollars.[265] Eighteen feet of the southern end of the stable was partitioned off and enclosed in 1844 to provide a granary.[266] The stable was also extended about 21 feet further north towards the sea to create additional space for another carriage house* (*Fig. B25*).[267]

258. RA, BLA: RKP (1832-41), pp. 149 ff.
259. RA, BLA: SBI (1840-49), von Scholten to von Hingelberg, September 21, 1840.
260. RA, BLA: PGH (1840-46), January 1841.
261. Ibid., February 1841.
262. Ibid., April 1841.
263. Ibid., June 1841.
264. RA, BLA: RKP (1842-50), pp. 32 f.; and also RA, BLA: SBI (1840-49). The royal West Indian Government to von Hingelberg, January 9, 1843.
265. RA, BLA: RKP (1842-50), p.57.
266. RA, BLA: SBI (1840-49), von Hingelberg to the Royal West Indian Government, May 14; and RA, BLA: RKP (1842-50), p. 96.
267. Ibid.

In 1845, a shallow well was dug in a stableyard (Fig. B25).[268] A few months later, the water battery was found to be leaking, particularly on the north side, and, as a result, the wooden floor of the powder magazine was rotten.[269] The building inspector's initial estimate for repairs called simply for tearing up the old gundeck and relaying of a new one with two courses of brick laid flat and a third and top course laid on edge.[270] However, when the contractor, "Architect" Albert Lovmand, tore up the old gundeck, he found nothing but loose sand and gravel fill on the north side of the battery in an area 80 feet long by 8 feet wide by 10 feet deep.[271] The fill on either side of the walls of the powder magazine below the battery was found to be of the same material, and the walls themselves were found to be virtually without footings.[272] Lovmand's contract was revised to correct these deficiencies, and he carried out the repairs to the battery within six months.[273]

Replacement of the wooden-shingled cannon shed in the ravelin became necessary in 1848. "Architect" Blom was given a contract to erect a brick-walled shed with a zinc covered roof, which he completed by April 22.[274] Several months later, two box stalls were erected in half of the carriage house in the stable, and the temporary wooden shed formerly used by workman was repaired to shelter one of the carriages displaced from the stablewing.[275]

The End of an Era: 1849-1877

Von Scholten's administration was a last effort to maintain the grandeur of the late 18th and early 19th centuries in the face of a severe decline in St. Croix's sugar economy. After the emancipation of the slaves of the Danish West Indies in 1848, the clamor of the planters for greater governmental economy could no longer be denied. Increasingly, after 1848, the planters, through their representatives in the Colonial Council, imposed a program of austerity on non-essential governmental expenditures, and appropriations for the maintenance of public buildings were cut to the bone.

Throughout the period from 1849 to 1877, therefore, Fort Christiansvaern received little more than routine maintenance, and even that was deferred at times for reasons of economy. Indicative of the routine maintenance performed and the decline in the economy during this era was a drop in the value of the fort from $43,800 in 1849 to $40,000 in 1878.[276]

Little work worthy of note was carried out on the Fort from 1849 to 1851, inclusive. In 1852, four more exterior jalousies were mounted on the windows of the commandant's quarters which face south, all seven windows in these quarters facing towards the ravelin were so equipped.[277] In May of the same year, the old wooden guardhouse for the artillery in the northwest bastion was sold at public auction and removed.[278] In 1853, the wrought iron spikes atop the fort walls were set directly in the masonry, since the hardwood in which they were fastened had rotted.[279]

The flat brick roof of the north section of the privy was removed and replaced by a flat galvanized roof in 1855.[280] A storm on August 15. 1855, caused only minor damage to the fort. In September 1855, the building inspector recommended complete replacement of the flat brick roof of the commandant's quarters, which had been leaking badly for ten years.[281] The government decided instead it would be better to replace the flat roof with a hip roof and this was completed in the spring of 1857.[282] However, the roof of the adjacent gallery

268. RA, BLA: PGH (1840-46), April and May 1845.
269. RA, BLA: RKP (1842-50), p. 131.
270. RA, BLA: SBI (1840-49), Captain and Building Inspector von Strandgaard to the Royal West Indian Government, October 9, 1845.
271. RA, BLA: SBI (1840-49), von Strangaard to the Royal West Indian Government, November 12, 1845.
272. RA, BLA: RKP (1842-50), p.151.
273. RA, BLA: SBI (1840-49), Royal West Indian Government to Von Strandgaard, December 10, 1845.
274. RA, BLA: SBI (1840-49). Von Scholten to Major and Building Inspector von Dalbe, February 3, 1848.
275. RA, BLA: RKP (1842-50), p.258.
276. RA, BLA: SBI (1840-49), Evaluation of the Fort, July 4, 1849; and NA, RG55:BK (SC), Supplement to the St. Croix General Ledger, Appraisal of Various Government Properties in St. Croix, January 1, 1878.
277. NA, RG55: Office of the Building Inspector, St. Croix, Skrivelser indkomme til Bygningspektoren paa St. Croix, Estimate for Making and Putting up Four Jalousies at the Fort, November 11, 1851; and ibid., Government of the Danish West Indian Possessions to Captain and Building Inspector von Moller, January 28, 1852. Hereinafter the records of the building inspector of St. Croix will be cited as BI (SC), and the incoming correspondence to this official will be cited as SBI.
278. NA, RG55: BI (SC): SBI, Government of the Danish West Indian Possessions to von Moller, April 5, 1852; and ibid., May 21, 1852.
279. NA, RG55: BI (SC): SBI, Government of the Danish West Indian Possessions to von Moller, January 28, 1853; and ibid., February 11, 1853.
280. NA, RG55: BI (SC): SBI, Government of the Danish West Indian Possessions to von Moller, March 31, 1855.
281. NA, RG55: BI (SC): Kopibog af udgaaende skrivelser fra Bygningsinspektoren paa St. Croix (1855-59), Building Inspector Ludvig Schellerup to the Government of the Danish West Indian Possessions, September 15, 1855. Hereinafter the copybooks of letters sent by the building inspectors will be cited as KUS, followed by the dates of the appropriate volume.
282. NA, RG55:BI (SC) SBI, Extract from Christiansted's Special Town Court's Protocol, May 14, 1857.

and extension on the north side of the quarters was simply torn up and relaid as a flat brick roof.

A fairly extensive reparation [*sic*] *of the fort was carried out in the spring of 1858, but the work was largely routine.*[283] *Little is known about the period from 1860 to 1864 due to the almost total absence of documentation, but it is doubtful that little more than routine maintenance was performed on the fort.*

Seven new jalousies were made for the windows in the south side of the commandant's quarters in 1866.[284] *Sometime between 1866 and 1869, two pair of these jalousies were altered and mounted inside.*[285] *Four of the five remaining jalousies were removed from the exterior, altered and hung inside these windows in 1870.*[286]

Repairs to the fort for the next three or four years were again routine. In 1876, a lightning rod with a [gilded] *copper tip was installed on the fort, probably on top of the flagpole.*[287] *on September 12-13, 1876, another hurricane struck St. Croix; it blew the roof off the cannon shed in the ravelin and the western half of the roof of the commandant's quarters, necessitating their replacement and repair.*[288]

In 1877, the stone pavement in three box stalls in the stable was covered with wooden planking, and three or four new stalls were erected in the carriage house and a part of the drying and mangling room in the stablewing.[289] *Minor repairs were also made to the roof on the south curtain, since it was again leaking.*[290]

Police Station and Courthouse: 1878-1959

So insistent had the Colonial Council become on austerity by 1878, that it rejected a proposal to thoroughly repair the existing police station and courthouse at No. 10 King Street, Christiansted. Instead, the council voted to convert Fort Christiansvaern into a police station and courthouse.[291] *However, those sections of the fort then in use for the state treasury, the powder magazine and the artillery were to remain unaltered.*

The conversion, which was completed by July 15, 1878, required no changes in the former commandant's quarters, which were thereafter to be used as a courtroom, archive, and offices of the court (*Fig. B17*).[292] *Doors were cut in two of the partition walls inside the east curtain to provide communication between the offices which were to occupy these rooms, and the small windows in these rooms facing on the stableyard were enlarged and equipped with jalousies and shutters* (*Figs. B17, B19*).[293] *a new shingled shed was erected on the courtyard side of the east curtain.*[294] *A door was cut in the wall of the small storeroom next to the cistern in the east curtain to provide access to the stableyard from the fort* (*Fig B17*). *The canteen at the salient angle of the ravelin was converted into a guardhouse for the nightwatch. While no apparent alterations were made to the stable, the horses of the garrison were no longer to be stabled therein. Although proposed in 1878, conversion of the combined watchman's room-carriage house in the stableyard entirely for uses of dwelling for a drover was not carried out until 1880.*[295]

A new iron picket gate was required for the entrance to the stableyard in 1879, but it is not known whether it was obtained at this time.[296]

In 1883, the town telegraph station was moved into the fort, but only minor alterations were made in the room or rooms used for this purpose.[297]

The former "common" room on the northeast bastion was converted into an examining room for

283. NA, RG55: BI (SC): SBI, Schellerup's Estimate of the Costs of Various Repairs to Fort Christiansvaern, February 20, 1858; and ibid., Government of the Danish West Indian Possessions to Schellerup March 12, 1858.
284. NA, RG55: BI (SC): SBI, Government of the Danish West Indies to Schellerup, March 3, 1866.
285. NA, RG55, BI (SC): BUS (1867-70), Schellerup to the Government of the Danish West Indies, November 26, 1869.
286. NA, RG55: BI (SC): SBI, Government of the Danish West Indies to Schellerup, January 19, 1870.
287. NA, RG55: BI (SC): SBI, 169 VJ 1876 (Voucher for a Lightning Rod, May 22, 1876).
288. NA, RG55: BI (SC): SBI, Schellerup to the Presidency of St. Croix, October 13, 1876; and ibid., Commandant Raupach to the Presidency of St. Croix, August 15, 1877.
289. NA, RG55: BI (SC): SBI, Commandant Raupach to the Presidency of St. Croix, May 8. 1877.
290. NA, RG55: BI (SC): SBI, Commandant Raupach to the Presidency of St. Croix, August 15, 1877.
291. *The St. Croix Avis*, April 17, 1872, p.2.
292. NA, RG55: BI (SC): SBI, Building Inspector Emil Petersen to the Presidency of St. Croix, January 15, 1878.
293. Ibid.
294. Ibid.
295. NA, RG55: BI (SC): KUS (1878-87), Building Inspector Carl Eisen to the Presidency of St. Croix, May 25, 1880.
296. NA, RG55: Office of the Government and Government Secretary Sr. Croix Budget Correspondence (1879), Eisen to the Presidency, April 15, 1879. Hereinafter the records of the Governor and Government Secretary will be cited as GGs (SC); and the budget correspondence will be cited as BC, followed by the fiscal year of the packet consulted.
297. NA, RG55: BI (SC): KUS (1878-87), Vouchers for the Installation of the Telegraph Station in the Fort in Christiansted, November 16, 1883. It is not known with certainty what rooms were used, but it may have been the two rooms to the east of the sallyport.

the policemaster in 1884. The existing brick floor of this room was replaced by a wooden floor, jalousies were installed inside the six windows, and the five cannon ports near the floor were masoned up.[298]

Only minor repairs were made to the fort during the next 15 years. Annually during this period the Colonial Council rejected most of the appropriations requested by the government to repair the fort. The 1890's were a particularly austere period, therefore, and [*sic*] *the fort declined in value to only $36,000 in 1895, or $4,000 less than in 1880.*[299]

As early as the hurricane of August 16, 1893, the hip roof on the south curtain showed serious signs of leaking.[300] *The following year, the policemaster complained that many of the galvanized sheets covering the roof were rusted through; and, in 1895, he called attention to the eventual need to replace the entire covering.*[301] *However, nothing was done until after the hurricane of August 8, 1899, had caused further damage to the roof. Then it became necessary to repair both the roof and the court room and offices below at a cost of $752.45.*[302]

The rotten wooden floor of the powder magazine was removed in 1900, and a concrete base and new floor were laid.[303] *Three years later, a door was cut in the wall of the kitchen in the west curtain to provide access to the yard between the fort and the outer wall; this yard was now used as an exercise yard for prisoners* (*Fig. B17*).[304] *A small shed was also erected in this yard to shelter the prisoners in bad weather.*[305]

Replacement of the galvanized covering on the roof of the south curtain was again requested in the budget for the fiscal year. 1907-08 but was not approved.[306] *However, by 1909, repairs to most sections of the fort could no longer be delayed, and from June of that year until the hurricane of October 9, 1916, a general rehabilitation of the fort was carried out.*[307] *This rehabilitation included: substitution in 1911 of high-rib and concrete in the northern end of the west curtain for the old brick and timber supported gundeck; extensive repair of interior and exterior woodwork; limewashing of exterior walls with red ochre and interior masonry walls with whitewash, and the repainting of exterior and interior woodwork with oil paint; and minor repair of the galvanized roof on the south curtain.*

["High rib and concrete" refers to a structural system in which ribbed steel sheeting is used as both reinforcement and formwork for poured-in-place concrete decking. It is likely this system was removed in subsequent repairs after ownership of the fort was transferred to the NPS.]

The Hurricane of October 9, 1916, caused considerable damage to the fort, which required the expenditure of 4,503 Francs by May 1919 to repair.[308] *The repairs included substantial or complete replacement of the galvanized sheets of the roof of the south curtain, a new entrance gate, 250 feet of 6-inch galvanized gutters, extensive reparation* [*sic*] *of the washhouse, painting and papering of the courtroom, and reparation* [*sic*] *of the roof of the northeast bastion.*

There is no evidence in official American records of repairs or alteration to the fort after 1917.[309] *However, common sense dictates that some routine maintenance must have been performed, and physical evidence indicates that certain minor alterations were made during this era. It must have been during this period, for example, that much of the plumbing and electrical wiring were installed, the flagpole was moved from the northwest to the southwest bastion, the window in the west curtain was masoned up, the jalousies inside the windows of the courtroom were removed, and the washhouse*

298. NA, RG55: BI (SC): KUS (1878-87) Building Inspector to the Presidency of St. Croix, October 17, 1882; and ibid., April 20, 1884.
299. NA, RG55: GGs (SC), 817/1916, Evaluation of Fort Christiansvaern, June 25, 1895.
300. NA, RG55: BI (SC): SBI, Policemaster of Christiansted to the Building Inspector, August 18, 1893.
301. NA, RG55: BI (SC): SBI, Policemaster of Christiansted to the Building Inspector, September 25, 1895.
302. NA, RG55: BI (SC), KUS (1899-1906), Entry No. 55, dated June 9, 1900.
303. NA, RG55: Office of the Government Military Secretary, 83/1900, Government of the Danish West Indies to the Building Inspector, August 23, 1900.
304. NA, RG55: BI (SC): JUS (1899-1906), Estimate of the Cost of Converting the Outer Courtyard into a Prison Yard, April 2, 1903; and ibid., Description of the Jails on the Islands of St. Croix, St. Thomas, and St. John, November 24, 1904.
305. NA, RG55:BI (SC) JUS (1899-1906), Estimate of the Cost of Converting the Outer Courtyard into a Prison Yard, April 2, 1903.
306. NA, RG55: GGs (SC): BC (1907/08), Building Inspector Knud Bent Hey to the Government of the Danish West Indies, August 18, 1906.
307. Details of these repairs will be found primarily in NA, RG55:BK (SC), Vouchers, Timesheets, and Correspondence Relating to the Expenditures on Public Buildings, 1906-07. Hereinafter these documents will be cited as VTC.
308. NA, RG55: BI (SC): Office File (1915-17), Building Expenditures in 1916-17.
309. The most important files consulted are listed in the bibliography of this report, supra, p.114. [see end of section.]



Figure B20. West wall of fort with ca. 1945 balustraded terrace, photograph dated 1953 by Frederik Gjessing (Gjessing, 1953, fig. 1, CHRI 11424, box 19, folder 13, file 5)

was destroyed or torn down.[310] *Moreover, in 1935 or 1936, the wallpaper in paneling of the court room and other rooms on the second floor of the south curtain were removed and the walls were then plastered and painted.*[311] *A decade later, a balustraded terrace was built around the west side of the fort* (*Fig. B20*).

[The exact date of construction of the balustraded terrace is not known and Olsen neglects to cite the source of his information. While the 1985 Cultural Landscape Report for CHRI simply restates a mid-1940s date attributed to Olsen's report, it also asserts that D. Hamilton Jackson Park, located immediately southwest of the fort, was developed in the early 1940s and was finished in 1945, although this information also lacks citation.[312] The terrace may have been part of the original landscaping of this park.

The additional documentation registration form filed in 1999 for the National Register of Historic Places listing for CHRI, gives a slightly different account, while still giving a date of 1945 for the terrace. The documentation asserts that an earlier veteran's memorial with landscape elements existed at this location, which was renamed D. Jackson Hamilton Park after Hamilton's death in 1946. This information too, is not cited.[313] If true, the terrace may have been part of the landscaping constructed around the former memorial.

Regardless of its origin, the balustraded terrace was a major visual intrusion on the fort that remained for decades.]

Since National Park Service Administration of the Virgin Islands National Historic Site began in midsummer 1955, only minor repairs have been made to the structure. In 1957, the floor of the gallery at the top of the double stairway on the north side of the south curtain was relaid; and in 1958, the corners of the extension of this same gallery were rebuilt. Painting of various sections of the building, both interior and exterior, has also been carried out, by both the Service and Insular Police Department and Court.

[The following section has been added to Olsen's Chapter 3 based on original research by the authors intended to fill in the gaps at the end of Olsen's chronology up to the 1960 publication date of his report. In his bibliography, Olsen states that at the time of his research, period records were incomplete and that largely still remains the case; however, it is unclear why he would not have included important NPS documentation from the early 1950s that he would have undoubtedly had access to.

Other Changes and Alterations: 1900-1960

Later NPS documentation claims that a flamboyant tree was planted by a police officer in the courtyard of the fort in 1909. While not an architectural element, the tree eventually grew quite large

310. It is probable that the laundry house was destroyed in the hurricane of 1928.
311. Personal interview with Wallace Pháire, Deputy Marshall, U.S. Department of Justice, St. Croix, March 20, 1960.
312. Greene and Cissel, pp. 47-48.
313. NRHP Nomination Form, Additional Documentation, section 7, p. 5.



Figure B21. Interior courtyard of fort, 1953. Note the flamboyant tree, which is said to have been planted by a police officer in 1909. Visible at far right is the last remaining concrete "bridge" over the courtyard drainage gutter along the east curtain. Photograph by Frederik Gjessing. (Gjessing, 1953, fig. 8, CHRI 11424, box 19, folder 13, file 5)



Figure B22. Interior courtyard of fort, November 15, 1945. Note the scalloped cornice board on the shed-roofed colonnade along the east curtain. Photograph by W.H. Simonson. (National Archives and Records Administration (NARA), College Park, MD, item no. 45-2689-k)

causing a major visual intrusion to the courtyard (*Fig. B21*).[314]

Curiously missing from Olsen's analysis of the 1919 floor plans drawn by Danish architect, Tyge Hvass, is the conversion of the small closet and pantry spaces at the west end of the commandant's quarters on the second floor of the south curtain into modern bathroom facilities for the court (*Fig. B17*).

A 1945 photograph of the northeast corner of the courtyard shows that the shed-roofed colonnade along the east curtain has a large-scale scalloped wood cornice board.

(Fig. 22) It is possible that this detail was also used on the shed roof canopy at the east side of the commandant's quarters.

Drawings from the U.S. War Department Engineer's Office in San Juan dated August of 1938 indicate that a municipal pier for Christiansted Harbor was proposed immediately east of the Fort's stable. The modern pier on concrete piles was designed to be eighty feet wide, with a forty-foot-wide walkway and would support a gable-roofed shed measuring forty feet wide by one hundred feet long. A marked-up copy of that drawing dated March 1946, indicates that it was proposed to realign the municipal pier with a new shipping lane dredged within the harbor. It is unclear if either of these projects was carried out *(Fig. 23)*.

In 1953, before the National Park Service began its administration of the fort, architect Frederik Gjessing prepared a brief condition report with as-found floor plans and photographs of the fort.[315] At that time, the building was still being used for police offices, the police court, and for storage by the St. Croix Department of Education. There were penal facilities which were "not generally in use."[316] He found the general condition to be fair to good, with several exceptions.

Gjessing noted the masonry walls were constructed of a hard yellow brick of high quality, and covered inside and out with a layer of stucco ½"- to 1"-thick, except in the vaulted casemates, where the walls were simply whitewashed. Much of the stucco had deteriorated and "scaled," especially on the sea side of the north wall, on the east exterior of the east curtain, and the inside walls of the west curtain. He also observed no structural "faults or flaws," except in the stable and latrine where sections of the roof had caved in (*Figs. B24, B25*).[317]

Gjessing described the floors as being in generally good condition, except for a portion of south curtain, where wood flooring had been damaged by termites and rot. He found the ceilings to be

314. 106 Statements, NPS CHRI 11424, box 22, folder 13, files 1-3.

315. Gjessing, 1953.
316. Ibid., p. 1.
317. Ibid.

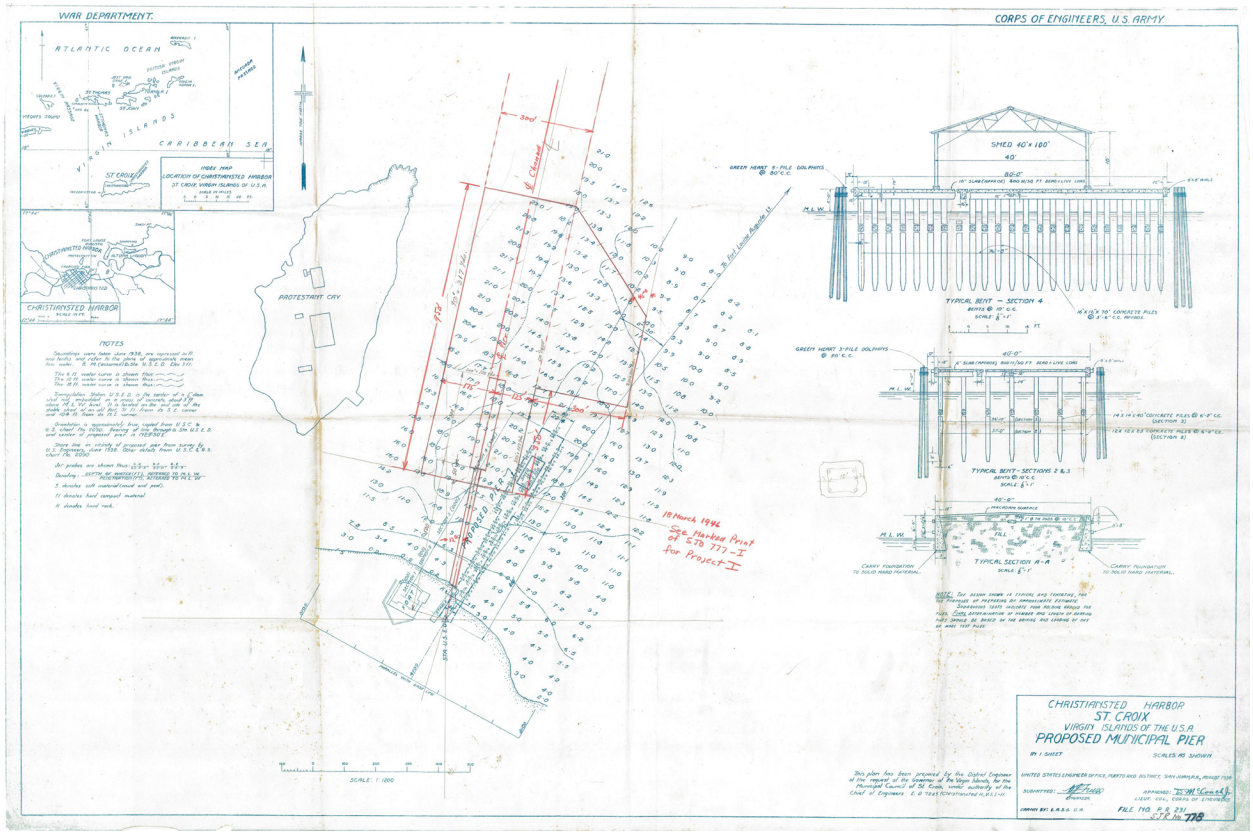


Figure B23. August 1936 U.S. War Department Engineering Division proposal for a municipal pier next to stable building, with March 1946 annotated proposed changes. (National Archives and Records Administration (NARA), New York City, item no. 45-2689-k)



Figure B24. Stableyard looking northeast from gundeck of east curtain, 1953. The stable is visible on the right, with a partially collapsed roof. The short-lived garage is on the left. Photograph by Frederik Gjessing. (Gjessing, 1953, fig. 16, CHRI 11424, box 19, folder 13, file 5)



Figure B25. Latrine ca. 1959, viewed from deck of the northwest bastion. Note that the flat roof is entirely gone. Photograph by Jack Boucher. (Library of Congress, HABS Survey VI-5, LOC vi0085, photograph no. 22, www.loc.gov/resource/hhh.vi0085.photos/?sp=22)

in good condition though termites were in beams (probably ceiling joists) of the west curtain. The corrugated metal roof of the artillery shed was in fair to poor condition.[318] On the second-floor level, the corridors "on the court side," perhaps meaning the commandant's gallery, were quarry tile somewhat worn but in fair condition.[319]

Gjessing indicates that most outside wall openings were equipped with shutters "made from 2 layers of t & g boarding bolted together crosswise"

318. Ibid., pp. 2-3.

319. Ibid., p. 3.



Figure B26. Cell door in the west curtain, 1953. Photograph by Frederik Gjessing. (Gjessing, 1953, fig. 18, CHRI 11424, box 19, folder 13, file 5)

(*Fig. B26*); however, there were metal doors at the powder magazine and perhaps elsewhere, "and shutters in combination with glazed sash or jalousies, iron bars and of a more recent date Miami blinds." He found most of the shutters in fair condition but in need of refinishing.[320]

At the commandant's gallery, two openings were equipped with glazed sash, the remainder with wood jalousies, all in poor condition and some beyond repair (*Fig. B21*). Three of the eleven windows on the east, south, and west walls of the upper level of the south curtain were finished with glazed sash, the remainder with louvered shutters, which Gjessing called jalousies. The condition of all was fair.[321]

At this time, the roof of the south curtain was "crimped sheet metal and sheathing and flat wooden trusses." The metal and exposed wood were in fair condition (*Fig. B21*). All woodwork was said to be in fair condition except the louvered window shutters and sash mentioned earlier.[322]

Gjessing's report contains a list of utilities at the fort included a cistern, a well, two toilet rooms and two baths equipped with showers. The plumbing appeared to be in fair to poor condition, connected to the city's salt water system. The sewer lines from the fort emptied directly into the harbor. The date of installation of electricity was not known; all lines were exposed but appeared to be in good condition.[323]

Most importantly, the 1953 as-found floor plans of the fort give a very complete picture of how the building was being used at the time (*Figs. B27, B28*). In the south curtain on the first floor, to the east of the sallyport were a photo lab and a radio room. On the west side were the "selective service," or draft registry, room, and a records storage room. On the second floor, the large room to the east was used as the police court, where the smaller rooms to the west contained a clerk's office and the judge's chambers. One of the two small rooms at the west end labeled as containing toilet facilities on the 1919 floor plans, still has that use on the 1953 plans, although this toilet is not listed in Gjessing's summary of the fort's utilities (*Fig. B17, B29*).

The southwest casemate is used for general storage, with the room below still bearing the name dungeon. The former commandant's kitchen, still in use as a kitchen in 1919, had been converted into a bathing room, presumably for those detained at the fort. The adjacent small cistern room appears on the plan, however, it is not labeled and the cistern is also not listed among the utilities. Given that the cistern is still present today, this is almost certainly an omission. The remaining rooms of the west curtain were used as detention cells. As the fort now lacked a kitchen, any food provided to those detained within must have been sourced outside the complex.

The northwest casemate, formerly containing a small passageway and two "bread and water" cells, whose use is not labeled on the 1919 plans, is shown here to have been fully partitioned into three rooms. The former passageway became a room for bathing, also likely for those detained at the fort, and each of the cells became "toilet" rooms. The east toilet room was given a new doorway in the east wall, providing access from the passageway to the former privy, while the west toilet room was given a doorway in the south wall, providing access from the older section of the privy. The privy is noted as being no longer in use (*Fig. B27*).

The former powder magazine under the water battery was used for general storage. The northeast

320. Ibid.
321. Ibid., p. 4.
322. Ibid.

323. Ibid.

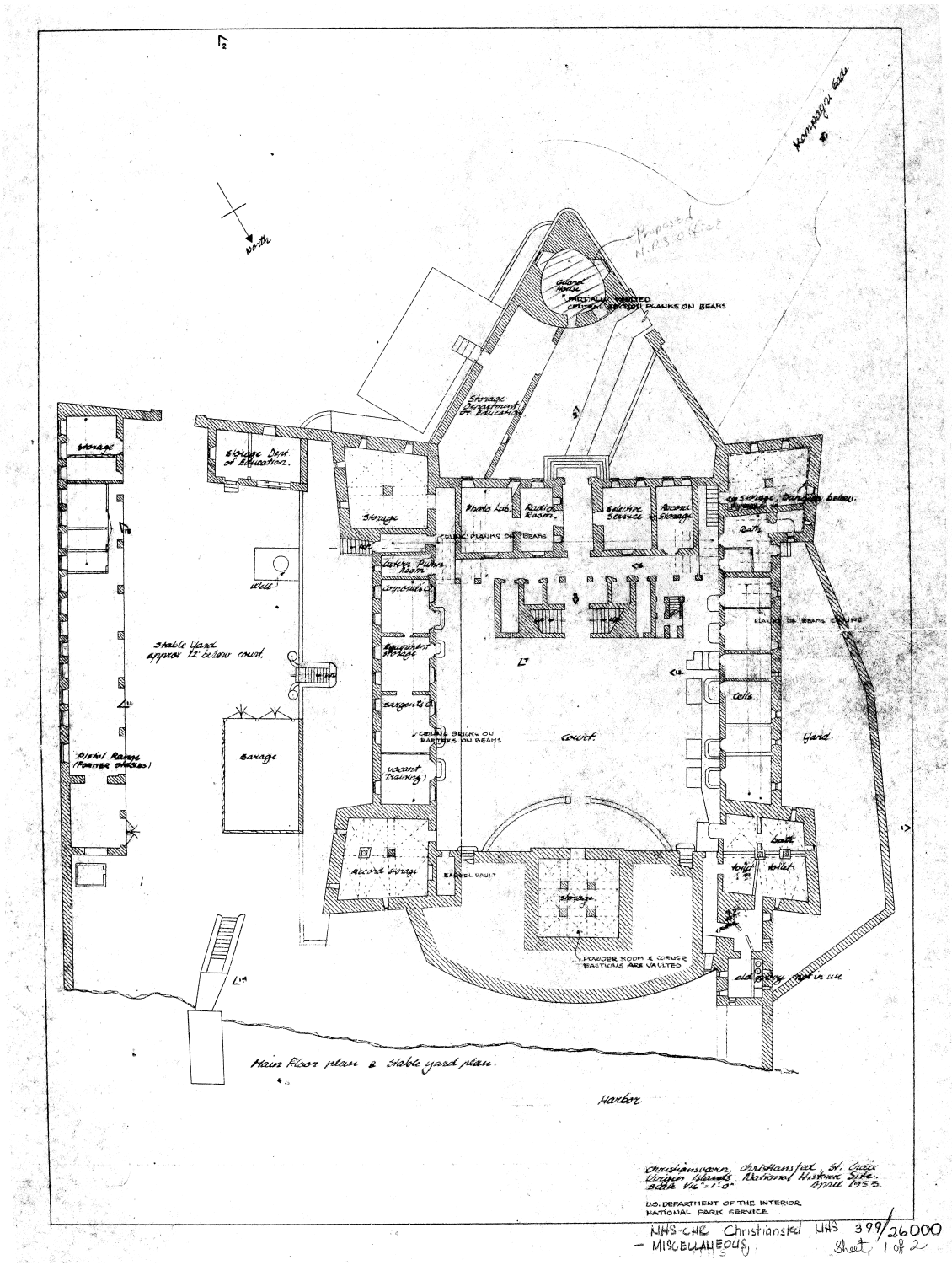


Figure B27. Fort Christiansvaern, first floor plan, 1953, by Frederick Gjessing. (NPS ID 35336-CHRI_399_26000, provided 2021 by NPS archaeologist, Southeast Archeological Center)

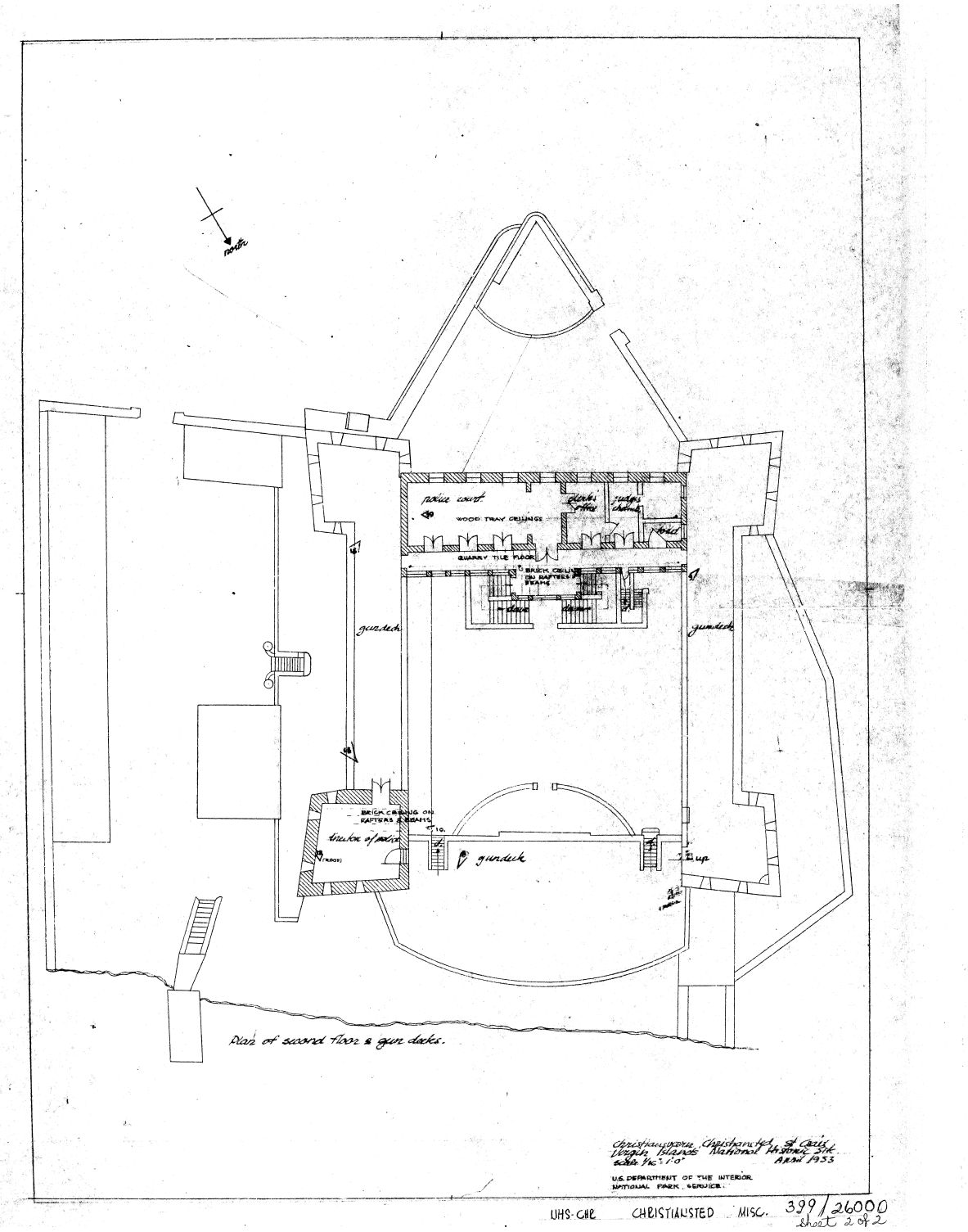


Figure B28. Fort Christiansvaern, second floor plan, 1953, by Frederick Gjessing. (NPS ID 35336-CHRI_399_26000, provided 2021 by NPS archaeologist, Southeast Archeological Center)

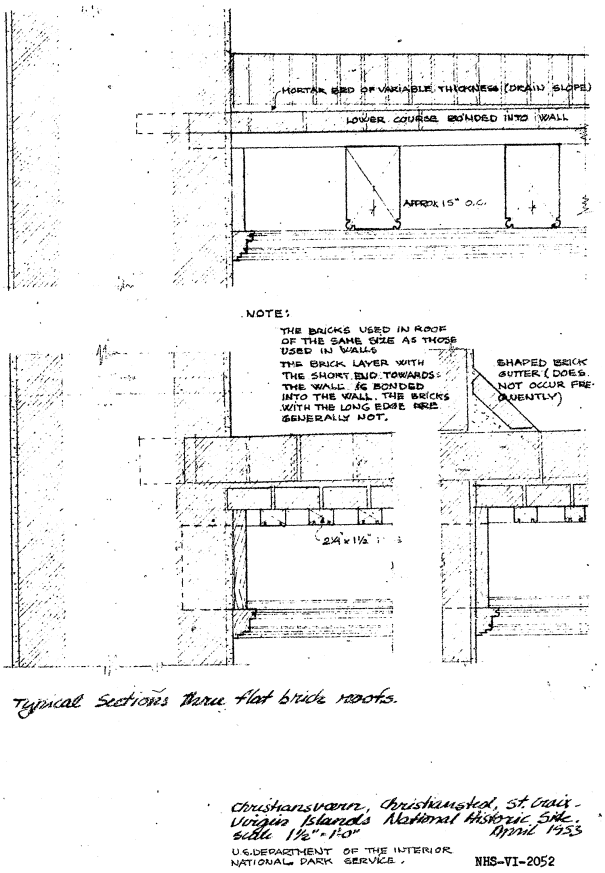


Figure B29. Architectural detail of typical flat brick roof assembly as they were in 1953, drawn by Frederik Gjessing. (NPS ID VIIS_161_2052_[244330], provided 2021 by previous contracting officer's representative (COR), NPS regional office)

casemate was used for record storage, while the room in the bastion above was the office of the police inspector. The use of small chamber near the east stair up to the battery gundeck is not labeled.

From north to south, the rooms of the east curtain are used as a training room, a sergeant's office, an equipment storage room, a corporal's office, and a cistern room. The doorway between the training room and the sergeant's office that first appeared on the 1919 floor plan had been removed, and the doorways between the sergeant's office, the equipment storage room, and the corporal's office had been centered in the dividing walls. The southeast casemate is used for general storage.

In the ravelin, the former artillery shed was used for storage by the Department of Education, and the room at the salient angle was used as a guard house. A new doorway in the outside wall of the fort was added to the west side of the ravelin providing access to the former artillery shed. This may have been to provide the Department of Education access to their storage area without having to enter the fort. A small set of steps at this door and some hardscaping had been added to the west side of the ravelin.

In the stableyard, the former carriage house and watchman's room that had been combined as a residence for a drover, was now used as additional storage for the Department of Education. The former stable had been mostly cleared of interior partitions, and was used as a pistol range and additional general storage. A two-vehicle garage, noted by Gjessing as being of recent construction, is opposite the stable, adjacent to the retaining wall in the stableyard (*Fig. B24*).[324] The stairs and the walkway out to the former wash house are still present, though the wash house is not.

Gjessing also makes a point of documenting the construction methodology for the fort's flat brick roofs, the design of which is responsible for innumerable leaks over the course of the fort's history (*Fig. B29*). It is the only detail drawings he creates. In it, a layer of bricks laid flat and bonded into the walls is set over purlins spaced at the joint interval of the short span of the bricks. The purlins are supported by joists and the whole system was left visible as the interior ceiling. Above the layer of flat bricks is a mortar bed of varying thickness necessary to generate slope for water drainage. Set into the mortar bed is a second layer of bricks laid on their sides in rowlock position. In this layer, only the bricks whose short-span end touches the walls are bonded therein. Gjessing shows a bead detail at the bottom corners of both the joists and the purlins. While it is likely this drawing is quite representative of how the flat brick roofs would have been constructed two centuries prior, given the number of times these roofs had been replaced over the fort's history, specific details could have changed.

A Historic American Buildings Survey (HABS) team lead by architects Charlie Peterson and Frederik Gjessing, measured and documented the fort from June to September, 1957. Presumably also at this time, photographer Jack Boucher took HABS photographs of the complex. The HABS drawing set was published in December, 1959.[325] The drawing set can be found as an appendix to this report. The fort appears to be in nearly the same configuration and condition as that recorded

324. Ibid., p. 1.
325. HABS survey no. VI-5.

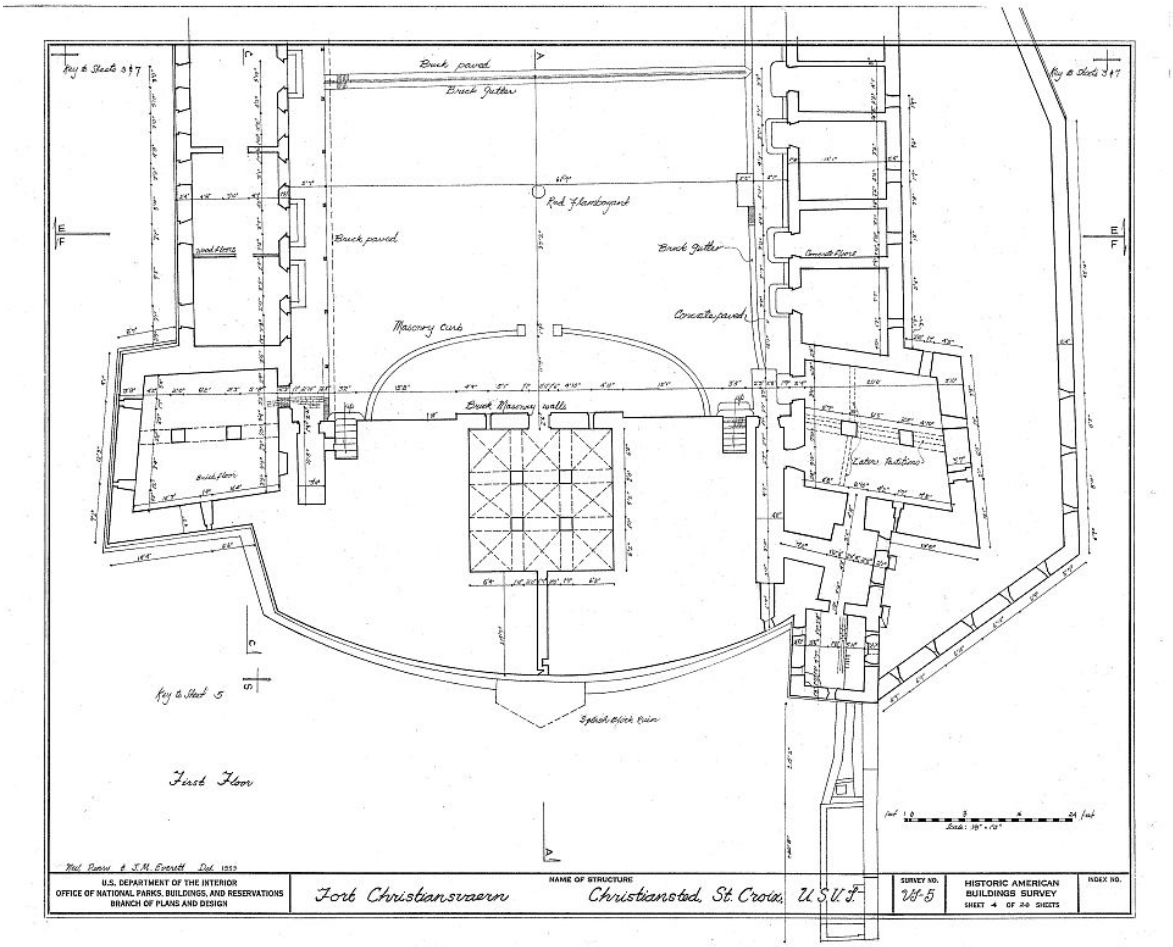


Figure B30. Fort Christiansvaern, partial first floor plan showing north half of the structure. HABS drawing sheet 4 of 26, 1959. (Library of Congress, HABS Survey VI-5, LOC vi0085, sheet 4 of 26, www.loc.gov/resource/hhh.vi0085.sheet/?sp=4)

by Gjessing in 1953, with minor exceptions. A doorway is shown between the two northernmost rooms of the east curtain, and apparently by this time only one of the concrete "bridges" over the courtyard drainage gutter along the west curtain remained in place (*Figs. B21, B30*).]

Chapter IV: Constructional Features

South Curtain

Foundations and Walls

Construction of the brick and rubble masonry walls of the south curtain was begun in the fall of 1738. Floor joists were laid atop the first floor in April 1739, and by the end of the year a flat brick roof had been laid over the second story.

When completed in late 1740, the governor's quarters on the second floor of the south curtain consisted of only two large rooms separated by a smaller room. His quarters soon proved to be too small for the occupants, and in 1743-44 a room was added to both the east and west ends of the quarters. In an inventory of June 26, 1744, therefore, the two-story south curtain was described as being 30 feet high with foundation, 20½ feet wide exclusive of the wooden gallery of the north side, and 72 feet long.[326]

Removal of the flat brick roof and replacement by a mansard roof sometime between 1758 and about 1765 may have brought about some alterations in the height of the walls. However, replacement of the mansard roof by a flat brick roof in 1774 probably resulted in a close approximation of original conditions, which probably included a cornice and parapet similar to the one shown by Oxholm in 1779 (Fig. B7).

326. RA, VgK: VI, Inventory of June 26, 1744.

The east end wall of the second story was partially torn down and rebuilt during the rehabilitation of 1820-21.[327]

Removal of the flat brick roof and substitution of a hip roof on the south curtain in 1857 made some changes in the upper walls necessary. The parapet was broken down to the main walls, and the walls were then raised 2 feet in their full thickness all around to provide a base for the plate.[328] *The cornice was rebuilt at the same time around the east, south, and west sides of the curtain.*[329]

Roof

The roof laid on the south curtain in the fall of 1739 was a flat brick roof with a slight pitch to provide drainage.[330] *This roof began to leak as early as 1744, and ultimately it was replaced by a mansard roof sometime between 1758 and about 1765 (Fig. B5).*

The mansard roof was almost completely destroyed or blown off by the hurricane of August 31-September 1, 1772.[331] *Although a new mansard roof was proposed,*[332] *the roof finally laid on the south curtain in 1774 was a flat brick roof (Fig. B7).*[333]

Except as shown in Oxholm's plan of 1779, early details of this roof are lacking. In 1817-18 it is learned that the corners of this roof were lead covered or lined.[334] *A full description of this roof in 1843 indicates that the span between the beam ends was equal to the interior width of the rooms, or 16 Danish feet; The beams were 10 inches high and 4 inches wide; The beams were 17 inches apart centered to center; the laths laid crosswise on the beams were 2 inches thick, 3 inches wide, and spaced 1½ inches apart; and the beams and laths were covered with two courses of single Flensborg bricks (9 inches long by 1½ inches thick) laid flat in mortar prepared from pulverized bricks and lime.*[335]

The roof was covered with a layer of cement in 1846 to stop water from leaking down into the quarters below. However, this proved to be only a temporary expedient, and in 1857 the flat brick roof was replaced with a hip roof covered with galvanized iron sheets.

Construction details indicate that the two-foot-high-parapet around the flat brick roof was broken down, and the main walls were raised two feet in their full thickness all around.[336] *The plate of the new hip roof was set atop these walls, and the pitch pine rafters were covered with white pine sheathing, tarpaper, and galvanized iron sheets.*[337]

Minor repairs to the roof were necessary in 1874, but the hurricane of September 12-13, 1876, blew the western half of the roof off, necessitating its replacement in kind.[338]

The roof was again damaged in the hurricane of August 9, 1899, and October 9, 1916 (Fig. B31). However, the framing of the roof apparently escaped serious damage or destruction, and only sheathing, tarpaper, and galvanized iron sheets and ridge caps had to be replaced.

Gutters and Downspouts

Downspouts are first mentioned in 1819, although they must have existed even earlier to convey water from the flat brick roof to the downspouts which led

327. RA, BLA: SBI (1815-24), Undated and unsigned Report of Inspection of the Repairs to the Commandant's Quarters in Fort Christiansvaern. According to the report of the inspection committee, the whole east end wall was supposed to be torn down and rebuilt.
328. NA, RG55: BI (SC)- SBI, Estimate for Laying a Flat Roof on the Gallery of the Commandant's Quarters in Fort Christiansvaern, as well as the masonry work for Erecting a Roof; repaired by Ludvig Schellerup, December 2, 1856.
329. NA, RG55: BI (SC)-SBI, Estimate of Extra Masonwork to be executed at Christiansvaernsfort; prepared by Geo. Hoope, February, 26, 1857. Hoope's estimate was worded as follows: "To break down the front and end [east] cornice of 108 feet long by 2 feet square; to take out the irons from the walls ["iron anchors" at two corners], to rebuild the same cornice as well as repair the cracks to the corners… "Hoope estimated that 1000 bricks would be required for the job. The cornice around the west end of the curtain also had to be rebuilt because of the removal of the bricks stairs to the roof of the south curtain.

330. RA, VgK: B&D (1739), Governor and Council, St. Thomas, to Directors, October 7, 1739.
331. RA, DK: 164 VJ(C) 1772, von Rohr to von Roepstorff, October 13, 1772.
332. RA, VgRtK: 224 1774 contains the drawing for the proposed new mansard roof as prepared by von Rohr.
333. RA, VgRtK: VJ 1779, Clausen to the West India-Guinea Exchequer and General Customs Office, May 1, 1779.
334. RA, BLA: PKBR, Estimate of Repairs found to be necessary in Fort Christiansvaern by Inspection Committee, July 28, 1817. The estimate called for 800 pounds of lead; if this measurement was given in Danish pounds the equivalent in English would be 880 pounds.
335. RA, BLA: RKP (1842-50) Hingelberg to Captain von Strandgaard, St. Thomas, March 21, 1843.
336. NA, RG55: BI (SC)-SBI, Estimate for Laying a Flat Roof on the Gallery of the Commandant's Quarters in Fort Christiansvaern, as well as the Masonry Work for Erecting a Roof; prepared by Ludvig Schellerup, December 2, 1856.
337. NA, RG55: BI (SC)-SBI, Estimate for the Erection of the Galvanized Iron Roof on the Commandant's Quarters in Fort Christiansvaern, December 2, 1856.
338. NA, RG55 (SC)-SBI, Company Commander to the Presidency of St. Croix, August 15, 1877. The building inspector is quoted by the company commander as saying that "the western half of the roof blew off in the hurricane because of a mistake in the construction of the roof– that is, the false rafters were not properly fastened."



Figure B31. Fort Christiansvaern after hurricane of October 9, 1916, photographer unknown. (Danish Royal Library Image Collection, www5.kb.dk/images/billed/2010/okt/billeder/object275218/da/)



Figure B32. Fort Christiansvaern ca. 1881-82, photograph by Everett A. Scholfield. (Olsen, 1960, infra, p. 201, plate I, scan of original source material in CHRI archive).

from the southeast and southwest bastions to the cisterns below the east and west curtains. Two new lead downspouts and receivers were made for this purpose in November 1838.[339]

Replacement of the flat roof by a hip roof in 1857 made gutters around the entire roof necessary, and they were provided as shown in a photograph of the building taken in 1881 or 1882 (Fig. B32).[340] *All gutters were replaced with new 6-inch galvanized gutters after the hurricane of October 9, 1916.*

Stairs to Roof

A set of wooden stairs is known to have existed from the gun deck of the southeast bastion to the roof of the south curtainwall as early as 1817.[341] *East wooden stairs were replaced in kind in 1825, and in 1834 they were torn down and replaced by a new brick stairway erected from the southwest bastion to the roof of the south curtain (Fig. B15).*[342] *This small brick stairway was subsequently torn down in 1857 when the flat roof was replaced by the hip roof.*[343]

East Gallery

A gallery or lean-to was erected on the southeast bastion against the east end wall of the south curtain in 1836 (Fig. B15). Although not stated at the time, it must have been wooden-shingled since its roof was tarred in 1839.[344]

The lean-to was rebuilt in 1857 and covered with galvanized iron sheets instead of shingles.[345] *As seen in a photograph of 1881, the lean-to also had fascia boards (Fig. B32,* although more visible in *Fig. B31)*

North Gallery and Stairs

Access to the quarters on the second floor of the south curtain must have been provided initially by a simple wooden stairway. In 1741, however, a wooden gallery and stairway were built on the north side of the curtain.[346] *Both the gallery and the stairway were rotten by 1747, and two years later they were torn down and replaced in brick.*[347]

The new gallery and "double" or "Italian" stairway were supported by brick columns and vaulting and had tiled floors and landings. The tiled floor of the gallery was laid on wooden joists and boards. The roof of the gallery was a flat brick roof laid on timbers, and lead flashing was provided in the joint between the new gallery and the older flat brick roof of the south curtain. A parapet and cornice were built around the gallery, obviously to match a similar parapet and cornice around the south curtain. Four marble tiles were embedded atop the landing [piers] *of the stairway. The arched openings below the stairs were bricked in to create several small cells.*

Details of the gallery and stairs are very indistinct in von Rohr's drawings of Christiansted of about 1765 (Figs. B5, B6). The first reliable details of these appurtenances are shown in Oxholm's plans of 1779 (Figs. B7, B8, B9). Four cells are indicated beneath the stairs, but only three of them have air holes. The number and placement of the arches of the gallery correspond to existing conditions. However, the two pillars shown by Oxholm as center supports for the roof of the stairway must have been removed prior to 1836, since they are not shown on the plans for the fort of that year (Figs. B9, B14).

Two new wooden frames were set in the small openings on the landings of either side of the stairway in 1800.[348] *20 years later, the brick risers were relaid, and the landings of the stairway were relaid with red bricks and tiles.*[349] *Small iron gates were set in the doors of the four cells beneath the stairway in 1822-23.*[350]

Illustrative materials and plans of the 1830's show only four arches on either side of the stairway extension of the gallery (Figs. B14, B16). These illustrations must be in error, since Oxholm's plans of 1779 and existing conditions agree fully; moreover, there is not the slightest hint in documentary sources of any change in the number of arches on the gallery.

339. RA, BLA: PGH (1835-40), November 1838.
340. NA, RG55: BI (SC)-SBI, Estimate for the Erection of a Galvanized Iron Roof on the Commandant's Quarters in Fort Christiansvaern, December 2, 1856.
341. RA, BLA: SBI (1815-24), Estimate of Painting to be done at Fort Christiansvaern, August 12, 1817.
342. RA, BLA: RKP (1832-41) Magens to von Scholten March 4, 1834.
343. NA, RG55: BI (SC)-SBI, Estimate for Laying a Flat Roof on the Gallery of the Commandant's Quarters in Fort Christiansvaern… prepared by Ludvig Schellerup, December 2, 1856.
344. RA, BLA: PGH (1835-40), November 1839.
345. NA, RG55: BI (SC)-SBI, Estimate of Repairs to the Rooms in the Commandant's Quarters in Fort Christiansvaern; prepared by Ludvig Schellerup, March 25, 1857.
346. RA, VgK: NJ (1741), passim.
347. Details of the gallery and double stairway which follow are based on the accounts in RA, VgK: NJ (1749), passim.
348. RA, VgRtK: 1333 VJ 1804, Mason Bradt's Estimate for Reparation of Fort Christiansvaern, November 16, 1799.
349. RA, BLA: SBI (1815-24), Undated and unsigned Inspection Report of Reparations to the Commandant's Quarters in Fort Christiansvaern.
350. RA, BLA: SBI (1815-24), Rothe to Magens, June 1, 1822, and accompanying Estimate of Repairs needed to Fort Christiansvaern, February 22, 1821.



Figure B33. Drawing of sallyport by Chief Surveyor, Jens Sørenson Friis, 1741. (Danish National Archives, Chamber of Revenue, Maps and Drawings Collection, card no. 337.131, cs.sa.dk/picture/view-values/676825?selectedTab=116&locale=en)



Figure B34. Sallyport, 1953, photograph by Frederik Gjessing. (Olsen, 1960, infra, p. 206, plate VI, scan of original source material in CHRI archive)

A new lead downspout with receiver was provided from the gallery to the gutter in the courtyard below in 1835.[351] *Rehabilitation of the fort in 1834-35 did not result in any changes to the cells under the stairs, but there were four of them and not two as shown in the plans of the fort of 1836 (Figs. B8, B13). Two of the cells were converted into storerooms for the garrison's polishing equipment in 1838 with the installation of five shelves.*[352]

The year 1839 witnessed the enclosure of the arches of the gallery with wooden jalousies and glass fanlights.[353] *Solid double doors with glass fanlights above were installed in the openings at the head of the stairs and at either end of the gallery. As for the arches of the stairway extension which face north, the two smaller ones were also enclosed with jalousies and glass fanlights, while the larger center arch was provided with casement windows surmounted by a glass fanlight. The section of the gallery to the west of the stairway extension was partitioned off by the erection of a double jalousie door with a glass fanlight above. The solid doors at the top of the stairs were fitted with brass boxlocks, while the jalousies were apparently equipped with brass bolts. Hurricane bars were provided for the entire gallery.*

It was also in 1839 that a small brick stairway supported on eight columns was erected as an attachment to the west side of the existing double stairway (Fig. B17).[354] *Its landing was paved with curbing tiles.*[355]

Subsequent documentary evidence indicates no significant changes in the gallery thereafter. However, the flat brick roof of the gallery was completely torn up and relaid when the hip roof was put on the south curtain in 1857.[356]

Sallyport and Steps

The sallyport, drawn by Chief Surveyor Friis in 1741 closely resembles the one shown on Oxholm's plan in 1779 and the existing one (Figs. B7, B33, B34).

351. RA, BLA: RGH (1835-30). November 1835.
352. RA, BLA: PGH (1835-40), July 1838.
353. Details of this work will be found in RA, BLA: PGH (1835-40), passim.
354. Ibid.
355. Ibid., October 1839.
356. NA, RG55: BI (SC)-SBI, Estimate for Laying a Flat Roof on the Gallery of the Commandant's Quarters in Fort Christiansvaern… prepared by Ludvig Schellerup, December 2, 1856; and ibid., Estimate for Extra Carpenterwork to the Flatroof of Christiansvaernsfort, prepared by George Hoope, March 10, 1857. The old beams 10 inches wide and 4 inches thick were sawed into laths 4 inches wide and 2 inches thick for the new roof and the laths were planed and beaded before they were laid across the new beams and covered with two courses of old and one of new brick.

The date of the removal of the upper moldings of the pediment is probably 1839, as is the monogram of King Frederik VI which is fastened on the keystone of the arch.[357] *The lantern bracket was apparently fastened above the sallyport in 1836.*[358]

The sallyport gates must have been solid originally, or at least until after the construction of the ravelin in 1749 put the sallyport in a less exposed position. However, by 1835, the sallyport was equipped with wooden picket gates.[359]

The sallyport steps shown in all pre-1835 drawings and plans of the fort do not return to the building. This was done during the alterations of 1835 when the steps were relaid with bricks laid on edge and cut stones at corners (Fig. B13).[360]

Exterior Paints and Finishes

[Curiously, physical investigations conducted as part of the materials analysis for this report uncovered two interior locations within the east curtain (inside the slave cells on the ground floor and at the jambs of the window openings of the second-floor level gallery) where the brick was never stuccoed. In these locations the mortar used in the masonry is of the earliest type identified (c.1739-50) and the mortar joints is decorative, having a convex, rounded bead. This and the evidence of multiple washes applied directly to the brick, strongly indicate that the masonry surfaces of these locations originally left unstuccoed. Further analysis and more broad mortar sampling are warranted to examine the extent of areas where this was the case *(see Appendix F: Materials Analysis Report)*.]

Numerous bills exist for frequent pointing, stuccoing, and lime washing of the exterior walls of the south curtain and the entire fort.

The earliest of these accounts indicate that the masonry walls of the fort were stuccoed with lime mortar and limewashed with a combination of yellow-ochre and brown-red color until 1829.[361] *All woodwork was painted "gray" or "stonecolor" during this era.*[362]

The color of the walls was altered to a blue-gray in 1829.[363] *All exterior woodwork was apparently painted a light yellow color until 1836 and thereafter a dark green color.*[364] *All hardware was painted black.*

Once again in 1839 the walls were lime washed with a yellow-brown stonecolor, and all exterior woodwork was painted green.[365] *The practice of limewashing the walls was apparently not begun until early in the 20th century.*[366]

First Floor: Room No. 9

Ceiling

The ceiling of this room consisted of the exposed joists and boards of the floor above until 1835 when the joists were covered with white pine boards.[367]

Doors

Oxholm's plans of 1779 show a door in the center of the east wall of this room (Fig. B8). This store was masoned up in 1800, and the window to the north. Of it in the same wall was converted into a door.[368] *The latter door was still in existence in 1836 (Fig. B13), but it was masoned up sometime after that date and prior to 1919. Access to this room was provided thereafter by cutting an opening in the masonry partition between Room Nos. 9 and 10 and equipping it with a double door (Fig. B17).*

The doorway must have been equipped with a solid outer door, as was customary. Later, when the room was converted into a barracks for six pin and. 1835, it was also equipped with an inner blind door covered with duck.[369]

357. RA, BLA: PGH (1835-40), March 1839. The work on the sallyport is referred to as follows: "Forfaerdiget 4 stk. Trae chabelongs, til brug for murerne ved Opsaetningnen af Portalet over Indgangen til Corps du Garde."
358. Ibid., May 1836.
359. Ibid., October 1835.
360. Ibid., December 1835.
361. RA, VgK: NJ (1752), n.p. (entry dated November 30, 1752), is the earliest entry for the purchase of yellow ocher.
362. The formula for "stonecolor" in 1823 was 5/16 pound "light" and 19-48 lb. white lead in oil, an insignificant amount of black oil color (about 25 lb. for 485 ½ windows), turpentine, boiled linseed oil, and some litharge and "kobberrog"; see RA, BLA: SBI (1815-24), List of the Gates, Doors and Windows Painted in 1823…
363. RA, BLA: SBI (1825-29), Inspection of the Royal and Public Buildings in Christiansted's jurisdiction in 1829; submitted to Government by Magens on February 27, 1829. See also RA, BLA: SBI (1830-39), Royal West Indian Government to von Hingelber, March 27, 1830.
364. RA, BLA: PGH (1835-40), April 1836 and passim.
365. Ibid., passim.
366. The first entry in the accounts for the purchase of red ocher occurs in 1909; see NA, RG55: BI (SC)-VTC, William Clindinen's Bill for Hardware and Paints, June 1909. Proposed painting of the jalousies and windows of the south curtain facing on the courtyard in 1910 included in the following quantities of paints: 100lbs. white lead, 14 lbs. chrome green, 7 lbs yellow ocher, and an unspecified quantity of lampblack and paint oil.
367. RA, BLA: PGH (1835-40), November 1835. The system of numbering used to designate the rooms hereinafter corresponds to that used in the plans of 1836.
368. RA, VgRtK: 1333 VJ 1804, Mason Bradt's Estimate for the Reparation of Fort Christiansvaern, November 26, 1799.
369. RA, BLA: PGH (1835-40), November 1835.

[Canvas made of cotton, or more rarely linen, is often referred to as "duck" within the textile industry.]

Windows
Oxholm shows a recessed window in the north wall, two windows in the east wall, and three firing holes in the South wall in 1779 (Fig. B8). The window to the north of the door in the east wall was converted into a door in 1800, while the window to the south of the same door was masoned up at that time.[370] The firing holes in the south wall were converted into two windows in 1835.[371]

The windows, too, must have been equipped with hurricane shutters from the earliest times. As for the two windows made in the south wall in 1835, they were equipped with both hurricane shutters and interior jalousies.[372] The recessed window in the north wall was probably also equipped with an interior jalousie as early as, if not earlier than, 1835.

Floor
Documentary sources contain no references to the original floor of this room. However, it is known to have been a wooden floor as early as 1800.[373]

Paints and Finishes
Like most of the rooms in the fort, the plaster walls of this room were whitewashed. Doubtless the ceiling and other wood trim was painted white.

First Floor: Room No. 10

Ceiling
Like Room No. 9, the exposed joists of the floor above were not covered with white pine boards until 1835.[374]

Doors
Oxholm indicates a door in the center of the west wall of this room (Fig. B8), a door which is still located in the same position today. It probably had a solid outer door at one time, although there is no evidence of it in the documents or illustrations. However, from 1835 on, when it was converted into quarters for the commanding sergeant of the artillery, it was definitely equipped with an inner jalousie door.[375]

Windows
There were two firing holes in the south wall and a recessed window in the north wall of this room in 1779 (Fig. B8).

When the room was converted into a barracks for four men in 1831, two small openings were cut on either side of the door in the west wall, and they were equipped with jalousies.[376]

The small firing holes in the South wall were converted into a window equipped with iron bars and a double jalousie in 1835.[377]

It is not known when the recess of the north window was masoned up, nor when the window was first equipped with a double jalousie, although the latter apparently dates back to 1835 or earlier

Floor
A new wooden floor was laid in this room in 1850, indicating that the room probably had a wooden floor as early as 1835 when it was converted into quarters for the commanding sergeant of the artillery.[378]

Paints and Finishes
The plaster walls of this room were whitewashed, and the ceiling and wood trim were probably painted white like those in Room No. 9.

Corps de Garde
No changes are known to have been made in the brick vaulting of the sallyport from 1779 to the present time (Fig. B8).

The brick pavement of the sallyport was relaid in 1817-18 and again in 1822-23, with bricks laid flat.[379] In 1836, it was relaid with bricks laid on edge.[380] The pavement was relaid in the same fashion

370. RA, VgRtK: 1333 VJ 1804, Estimates for Carpentry and Masonry Work on Fort Christiansvaern, February 24, 1800.
371. RA, BLA: PGH (1835-40), November 1835.
372. Ibid.
373. RA, VgRtK: 1333 VJ 1804, Mason Bradt's Estimate for the Reparation of Fort Christiansvaern, November 26, 1799.
374. RA, BLA: PGH (1835-40), October 1835.
375. Ibid.
376. RA, BLA: RKP (1823-32), Magens to von Scholten, April 11, 1831.
377. RA, BLA: PGH (1835-40), October 1835.
378. NA, RG55: BI (SC)-SBI, Governor to the Building Inspector, February 24, 1850.
379. RA, BLA: PKBR (1816-18), Committee Report of Reparations Required to Fort Christiansvaern, August 8, 1817.
380. RA, BLA: SBI (1815-24), Rothe to Magens, June 1, 1822, and accompanying Inspection Report and Estimate of February 22, 1821; and ibid., Bardenfleth to Magens, November 30, 1822.

on several occasions in the 1850s, but in 1867 it was relaid with stone blocks.[381]

First Floor: Room No. 11

Ceiling

Documentary sources shed no light on the ceiling of this room. However, it is probable that the joists of the floor above were covered as early as 1835 or at the same time that ceilings were installed in Room Nos. 9 and 10.

Installation of a galvanized iron ventilation pipe in this room in 1858 may account for the curious cut in the ceiling which exists above the west window in the south wall.[382]

Doors

The arched door in the east wall of this room dates [to as late as 1779, but may be earlier] (*Fig. B8*). *However, it is not known whether it was originally equipped with a solid double door opening inward, similar to the existing door, or whether it had a single door opening outward, as shown by Hvass in 1919* (*Figs. B17, B18*).[383]

The recessed window shown by Oxholm in the north wall in 1779 was converted into a door in 1870-71.[384] *Apparently it was re converted into a window sometime between the latter date in 1919* (*Fig. B17*).

Windows

The two firing holes shown in the south wall in 1779 were enlarged into two windows equipped with iron bars set in hardwood frames in 1835.[385] *These windows were probably also equipped with hurricane shutters at the same time.*

As cited above, the recessed window in the north wall was converted into a door in 1870-71 and reconverted into a window prior to 1919. Whether used as a window or a door, it would have had hurricane shutters, but it is not known whether it was equipped with an inner jalousie when it was a window.

Floor

This room was used as a church and courtroom from 1739 to 1750 and had a tiled floor as early as 1742.[386] *Whether the tiles were taken up in 1750, when the church was moved out of the fort is not known, but by 1800 the room was definitely paved with bricks.*[387] *The brick flooring existed as late as 1836*[388]*, but it was probably covered with a wooden floor soon after. In any event, a new wooden floor was laid in the room in 1858.*[389]

Paints and Finishes

The paints and finishes of this room must have been identical to those of the other rooms to the east of the sallyport, although this may not necessarily be true for the period from 1739 to 1750 when the room was used for church services.

Miscellaneous

Oxholm indicates a recess in the north of the door in the east wall in 1779, and it is still in existence today.

First Floor: Room No. 12

Ceiling

The wooden ceiling in this room probably dates back to 1835, when the room was converted into a pantry and servant's quarters, or earlier. In any event, the ceiling was definitely in existence in 1904 when the room was used as a cell.[390]

Doors

The door shown in the west wall in 1779 was converted into a window in 1835, while the window in the north wall was converted into a door with an inner blind door covered with duck and an outer solid double door.[391] *The existing single door was probably installed after 1878, when the room was converted into a cell.*

Windows

The recessed window shown by Oxholm in the north wall in 1779 was converted into a door in 1835, while the door and the west wall was converted

381. NA, RG55: BI (SC)-SBI, Government of the Danish West Indies to the Building Inspector, December 15, 1866.
382. NA, RG55: BI (SC)-SBI, Government of the Danish West Indies to the Building Inspector, March 12, 1858, and accompanying Estimate of Costs of Various Repairs to Fort Christiansvaern, February 20, 1858.
383. Hvass is not consistent on this point.
384. NA, RG55: BI (SC)-SBI, Estimate of Costs of Repairs of… Buildings on St. Croix in Fiscal Year 1870-71; prepared by Ludvig Schellerup, January 15, 1870.
385. RA, BLA: PGH (1835-40), December 1835.
386. RA, VgK: NK (1742), n.p. (entry for December 31, 1742) The entry states that 1400 tiles "were used for the floor here in the fort where the church and court are held." However, no dimensions are given for the tiles.
387. Ra, VgRtK: 1333VJ 1804, Mason Bradt's Estimate for the Reparation of Fort Christiansvaern, November 26, 1799.
388. RA, BLA: PGH (1835-40), February 1836.
389. NA, RG55: BI (SC)-SBI, Schlegel to Schellerup, March 12, 1858 and accompanying Estimate of Cost of Repairs…, February 20, 1858.
390. NA, RG55: BI (SC)-KUS (1899-1906), Description of Jails on St. Croix…, November 24, 1904
391. RA, BLA: PGH (1835-40), November and December 1835.

into a window equipped with a fixed jalousie.[392] Existing evidence indicates that this window was also equipped with exterior shutters prior to the time that the window was masoned up. The latter probably occurred after 1878, when the room was converted into a cell.

The firing holes shown in the south wall in 1779 were slightly enlarged in 1835-36 and were equipped with iron bars and interior wooden shutters.[393]

Floor

This room had a wooden floor in 1904, but it probably dates back as early as the rehabilitation of 1835.

Paints and Finishes

The walls of this room were plastered and limewashed normally, although there is existing evidence that they were papered at one time or another.[394] The ceiling and wood trim were probably painted white.

Partitions

When the room was converted into a pantry and servant's quarters in 1835-36, a lattice partition with a door in the center was erected across the middle of the room.[395] This partition must have been removed after 1878.

Arcade and Passageways

While unquestionably predating 1800, the accounts do not indicate brick pavement in the arcade and side passageways of the south curtain until that date.[396] After 1800, the pavement was relaid a number of times with bricks laid flat. After 1867, stone blocks were apparently substituted for bricks in some of the passageways.[397]

The stairs to the dungeon below the southwest casemate were probably equipped with a trapdoor from earliest times, although it is first mentioned in 1835 when a new trapdoor was made.[398] Whether there was also an iron grate above the stairs, as shown by Hvass in 1919, is uncertain, since there are no bills for its purchase or repair (Fig. B17).

392. Ibid.
393. Ibid., November 1835.
394. The wallpaper may date back sometime prior to 1835 when the room was used as an assembly room for the artillerists.
395. RA, BLA: PGH (1835-40), December 1835.
396. RA, VgRtK: 1333 VJ 1804, Mason Bradt's Estimate for Reparation of Fort Christiansvaern, November 26, 1799.
397. NA, RG55: BI (SC)-SBI, Government of the Danish West Indies to the Building Inspector, December 15, 1866.
398. RA, BLA: OGH (1835-40), December 1835.

The existence of partitions or doors in the arcade is hinted at as early as 1816 (Fig. B12), but it is not until 1858 that a bill for the purchase of a new door definitely establishes the fact.[399]

A new wooden stairway was erected in the passageway to the southwest casemate in 1835-36 to provide convenient access to the commandant's quarters from the kitchen.[400] The stairway must have been enclosed, since it had a door at the bottom and a trapdoor at the top where it entered the commandant's corners. A closet was built under the stairs in 1840 for storage of the garrison's work clothes.[401] There is no further reference to these stairs in the records, and it is believed that they were torn down soon after 1840 because the new brick stairway added to the west side of the double stairway in 1839 could be used for the same purpose.

Second Floor

Partitions

Initially, the second floor had two large rooms separated by a smaller one. However in 1743-44 two more rooms were added, one each on the east and west ends, to provide more living space for the governor.[402] This layout of the quarters is shown in Oxholm's plan in 1779 (Fig. B9).

Sometime between 1779 and 1836, the pantry and privy shown by Oxholm at the eastern end of the quarters were done away with by the removal of the wall which separated them from the large reception hall to the west. The exact date of the removal of the wall is unknown, but it may have occurred prior to 1817.

As for the large room shown by Oxholm in the western end of the quarters, it would appear that it was divided into bedrooms sometime prior to 1806-07.

The partition shown by Oxholm across the southern half of the small center room was removed prior to 1836 (Figs B9, B14).

Placement of the doors in the various partitions of these quarters has not been altered. In most

399. NA, RG55: BI (SC)-SBI, Schlegel to Schellerup, March 12, 1858, and accompanying Estimate of Cost of Repairs… , February 20, 1858.
400. RA, BLA:PGH (1835-40), December 1835.
401. RA, BLA: PGH (1840-46), October 1840.
402. RA, VgK*B&D (1742-44), Moth to Directors, May 15, 1743.

cases, except for the door in the West wall of the reception hall (g) which was simply arched in 1857 and enlarged sometime after 1919 (Fig. B17).[403] *The door shown by Oxholm in the center of the wall between rooms (h) and (i) was moved to the southern end of the wall prior to 1829.*[404] *The partition erected prior to 1806-07 to create the two bedrooms (i) and (k) originally had a door in the south end, but in 1919 it had been moved to the north end of the wall (Figs. B14, B17). There is no apparent means of ingress to the cloak room or closet (l) from the bedroom (k) in the 1836 plans, but it is difficult to believe that these plans are accurate in this respect (Fig. B14). Similarly, it is not logical to believe that there was no door in the wall between the closet (l) in the pantry (m), since the stairway from the kitchen is shown entering the closet (l) and not the pantry (m) (Fig. B13).*

All of the interior partitions must have been raised about 2 feet when the flat brick roof was replaced by a hip roof in 1857.[405]

Ceiling

The beams of the first flat brick roof laid on the south curtain were covered with ceiling boards,[406] *and this was also true of the flat brick roof laid above the commandant's quarters in 1774. According to an estimate for repairs in 1817, white pine boards were used for the ceiling.*[407] *In the rehabilitation of 1834-35, however, Governor General Peter von Scholten ordered the removal of all ceiling boards.*[408] *The beams and laths of the ceiling were thereafter to be left exposed, although the beams were to be dressed with a covering of thin boards.*

It was not until the flat brick roof was replaced by a hip roof in 1857 that ceilings were again installed in the commandant's quarters. Details of these ceilings are not given in the records, but there can be little doubt that the existing ceilings duplicate those installed in 1857, if, in fact, they are not in part, at least, the originals.

Four rosettes were purchased for the ceilings in the reception hall (g) and the adjacent daily parlor (h) in 1857, and these are believed to be the same rosettes from which the present electric lights hang today.[409]

Doors: Numbers and Locations

The first reliable information about the number and placement of exterior doors in the second floor quarters of the south curtain is contained in Oxholm's plan of 1779 (Fig. B9).

Oxholm shows three doors in the north wall opening on the gallery and one door in the south end of the east wall.

The door in the east wall is believed to have been closed up prior to 1817 to provide for the small stairway to the roof of the south curtain.

As for the north wall, the window farthest to the west in Oxholm's plan may have been converted into a door prior to 1806-07 to provide a separate entrance to the new bedroom probably created prior to that date. The western-most window in the reception hall (g) also seems to have been converted into a door as early as the renovations of 1820-21.[410]

The plans of 1836 are of no value in distinguishing between doors and windows because they fail to differentiate between the two. However, documentary sources make it clear that in 1840 five of the seven openings in the north wall were doors;[411] *the only two windows in this wall were the one in room (i) and the center opening in the reception hall (g). In fact, if the symbols used by Hvass have been correctly interpreted, these two windows were not converted into doors until sometime after 1919 (Fig. B17).*

Doors: Types

Early information about the doors is scanty [sic], but it is probable that they were equipped with solid outer double doors originally. Inner blind doors covered with duck may also have been provided in the early period, as was customary, but later in 1821 it is definitely known that two of the five doors

403. NA, RG55: BI (SC)-SBI, Estimate of Repairs to the Commandant's Quarters in Fort Christiansvaern; prepared by Ludvig Schellerup, March 25, 1857. See Figure, infra, p. 198, for condition in 1919.
404. RA, BLA: SBI (1825-29), von Scholte to von Hingelberg, March 28, 1829.
405. NA, RG55, BI: (SC)-SBI, Estimate of Repairs to the Commandant's Quarters in Fort Christiansvaern; prepared by Ludvig Schellerup, March 25, 1857. And ibid., Estimate for Erecting a Galvanized Iron Roof on Commandant's Quarters…; prepared by Ludvig Schellerup, December 2, 1856.
406. RA, VgK: NJ (1741), n.p. (entry dated January 3, 1741).
407. RA, BLA: PKBR (1816-18), p. 68.
408. RA, BLA: SBI (1830-39), von Scholten to von Magens, March 7, 1834.
409. NA, RG55: BI (SC)-SBI, Schlegel to Schellerup, June 17, 1857.
410. RA, BLA: SBI (1815-24), List of All Doors and Windows in his Majesty's Buildings in Christiansted; prepared by Lt. Hielte, September 10, 1821.
411. RA, BLA: PGH (1835-40), February and August 1840.

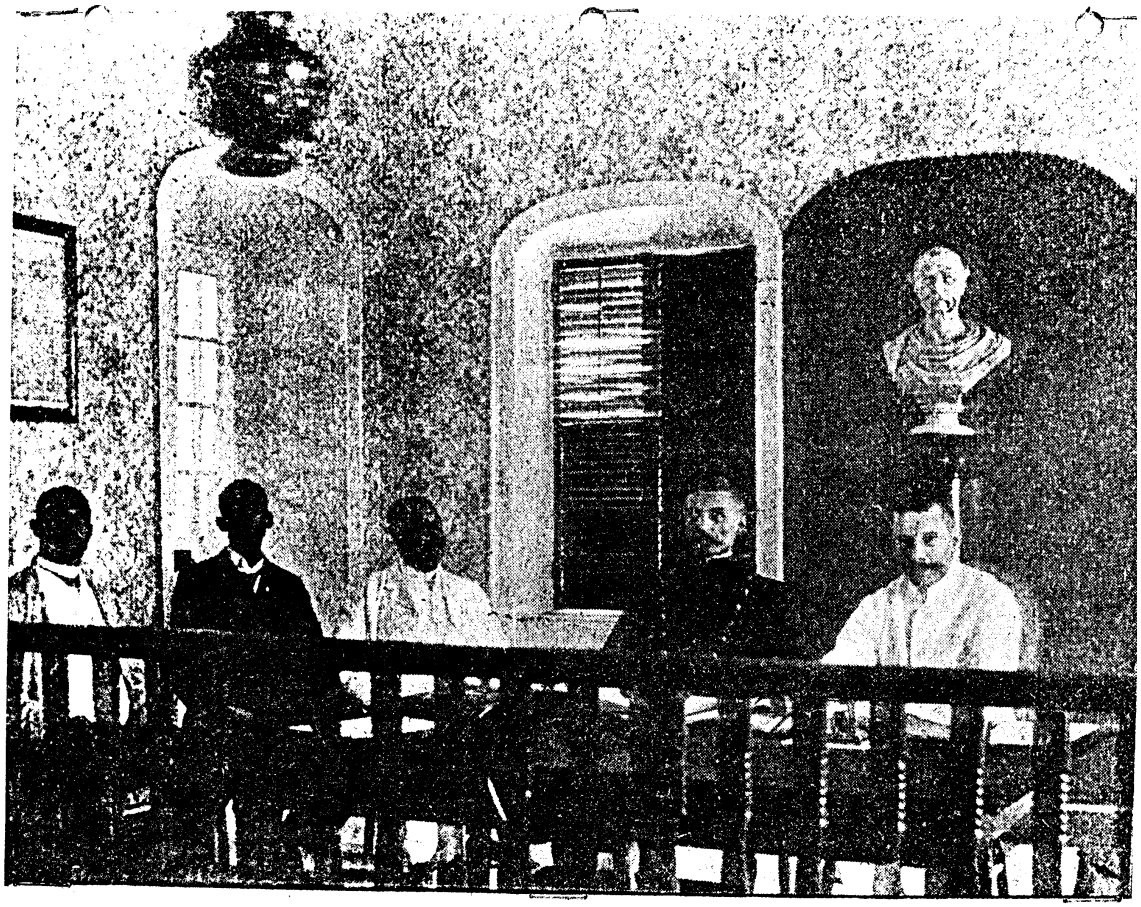


Figure B35. Interior of the courtroom on the second floor of south curtain, 1902. Photographer unknown. A better quality scan has not been located for this image; however, the architectural details of the room are still visible. (Olsen, 1960, infra, p. 202, plate II, no NPS ID provided, digital file provided 2021 by contracting officer's representative (COR), NPS regional office)

in the north wall were equipped with inner jalousie doors.[412]

In 1840, the two jalousie doors to the reception hall (g) and the entrance door to the daily parlor (h) were altered and made into double glass doors with four panes of glass per [leaf].[413] *The doors of rooms (k) and (m) were equipped with jalousie doors.*[414]

Whether the two windows in rooms (g) and (i) when later converted into doors were equipped with anything but the customary solid outer double door is not known. However, the door of room (i) is now fitted with an inner three-quarter length double jalousie door.

The arches above the doors are believed to date back to the construction of the quarters, although there is no definite proof of this. Oxholm's cross-sectional view of the fort in 1779 seems to show an arch above the center door in the north wall, but there is no confirmation on this point until the photograph showing the interior of the courtroom or former reception hall (g) in 1902 (Figs. B7, B35).

Doors: Hardware

Documentary sources shed little light on the question of hardware for the doors of these quarters. The outer doors would have been equipped with the customary wrought iron hinges, however, and they were apparently also equipped with bolts. A "brass door lock" and several other brass locks were bought for the quarters in the late 1740s, but there is no clear indication as to what door or doors they were for.[415] *However, by 1821, the two jalousie doors opening on*

412. RA, BLA: SBI (1815-24), List of All Doors and Windows in His Majesty's Buildings in Christiansted; prepared by Lt. Hielte, September 10, 1821.
413. RA, BLA: PGH (1835-40), February 1840. Purchases of glass included 16 panes which were 11 by 13 inches and 8 panes of an unspecified size.
414. RA, BLA: PGH (1835-40), August 1840.

415. RA, VgK:NJ (1749), n.p. (entry dated June 30, 1749).

the gallery were equipped with brass locks,[416] and it is probable that when the doors of the reception hall (g) and the daily parlor (h) were altered to glass stores in 1840, they either had or were provided with brass locks.

Windows: Numbers and Locations

The earliest information about the windows occurs in 1743 when a room was being added to each end of the quarters. A request was sent to Denmark at that time for glass casement windows for both the new and old rooms of the quarters.[417] There were to be six windows with inside dimensions of 5 feet by 3 feet in the two new rooms. The dimensions of the windows in the older rooms were not given, but they must have been the same size as the new windows and there were apparently eight of them.[418] On the basis of the foregoing, there would have been six windows in the south wall, with no window directly above the sallyport; two windows in the west end wall; four windows in the north wall; and two windows in the east end wall.

This assumption is confirmed by Oxholm's plans of 1779, with two exceptions – that is, a window is indicated above the sallyport, but only one window is shown in the east end wall, while the other opening in this wall is a door (*Fig. B9*).

As cited above, the window on the gallery in room (k) was probably converted into a door prior to 1806-07, While the westernmost window in the reception hall (g) was probably converted into a door in the renovations of 1820-21. The other two windows opening on the gallery from rooms (i) and (g) were apparently not converted into doors until after 1919 (*Fig. B17*).

The west end wall had two windows from 1743 to 1834. Erection of a brick stairway to the roof of the south curtain in the latter year caused the window of room (l) to be masoned up (*Fig. B14*).

As for the east end wall, the northernmost window dates back to 1743, although it may have been relocated slightly at some subsequent date. The existing window in the southern end of the wall was created after the stairs to the roof were removed in 1834, but prior to 1836 (*Fig. B14*).

Windows: Types

Originally, the windows of the second floor quarters were equipped only with hurricane shutters. The request made to the company directors in 1743 for glass casement windows for these quarters was not fulfilled. Instead, the windows were provided with a simple substitute – that is, a frame on which green duck with a white duck border was tacked with brass nails.[419]

The first indication that glass windows had been installed in the commandant's quarters occurs in 1799 when Thomas Osborn put in eight new panes of glass.[420] Thereafter, there are numerous bills for the replacement of window panes. However, the bills give no idea as to the size of the panes nor whether the windows were casement or sash windows. Casement windows were more likely, however, and this seems to be confirmed by the purchase of brass bolts for some of the windows in the quarters in 1838.[421]

In 1816, the glass windows in the east and west walls of the quarters facing the southeast and southwest bastions were replaced with jalousies because the firing of the cannons broke the windows so often.[422] The northern window in the east end wall was still equipped with a jalousie in 1902, indicating that the removal of the jalousies from the windows of the east and west walls is comparatively recent (*Fig. B35*).

An estimate for the painting of the windows and doors of the fort in 1821 indicates that the second floor quarters of the south curtain had eight moveable jalousies and four glass windows.[423] In the light of other documents of the same period, there can be little doubt but that these figures were transposed – that is, there were four moveable jalousies and eight glass windows and not vice versa. Seven of the glass windows were in the south wall of the quarters, while

416. During the repairs of 1820-21, the contractor, Lammers, apparently put some very common iron locks on the doors opening on the gallery. Although there is no record of the action taken on this complaint, it is probable that Lammers was made to replace them. See RA, BLA: SBI (1815-24), Inspection Report on Repairs to Commandant's Quarters in Fort Christiansvaern; unsigned and undated.
417. RA, VgK: B&D (1742-44), Moth to Directors, May 15, 1743.
418. Ibid. The request for glass windows for the older rooms was phrased as follows: "... to send 16 panes in wooden frames 37 inches high ad 17 ¼ wide. Likewise 16 ditto 18 inches high and 17 ¼ wide, because the frames have a cross in the middle…"
419. RA, VgK: NJ (1747), n.p. (entries dated June 8 and August 1, 1747); and RA, VgK:NJ (1753), n.p. (entry dated June 20, 1753).
420. RA, VgRtK: KRB, FBR for 1799.
421. RA, BLA: PGH (1835-40), July 1838; and RA, BLA:RKP (1832-41), p. 95a.
422. RA, BLA:PKBR (1816-18), p. 31.
423. RA, BLA: SBI (1815-24), List of All the Doors and Windows in His Majesty's Buildings in Christiansted, September 10, 1821, by Lieutenant Hielte.

the eighth window must have been the center opening between the two doors and the north wall of the reception room (g). The fourth movable jalousie must have been set in the window of bedroom (i) which opened on the gallery to the north.

The glass windows in the south wall were equipped with venetian blinds in 1826 to reduce the heat of the afternoon sun in the quarters.[424] New venetian blinds were made in 1838. Sometime between that year and 1851, the hurricane shutters on three of these windows were replaced with exterior jalousies.[425] The remaining four windows in the south wall were similarly equipped in 1852.[426] Installation of the exterior jalousies must have been designed to do away with venetian blinds, and they are not mentioned again in the records.

New exterior jalousies were made for the foregoing windows in 1866.[427] Sometime between that year, in 1869, the jalousies on two of these windows were altered and mounted inside in place of the glass windows; these two windows were then equipped with hurricane shutters.[428] The same alterations were carried out on four more of the windows in the south wall in 1870.[429] Only the western most of the windows in the south wall continued to have an interior casement window and an exterior jalousie, as shown. In a photograph of the facade of the fort as it appeared in 1881-82 (Fig. B32). The exterior jalousie on this window was replaced sometime after that date and before 1916 by hurricane shutters, but the glass casement window was allowed to remain (Fig. B31).

Another glass window was installed in one of the other windows in the South wall in 1894, but it is not known whether this was in room (h), (i), or (k).[430]

In any event, by 1916 there were sash windows in rooms (h) and (i) and casement windows in rooms (k) and (l), while room (g) still had interior jalousies (Fig. B29). With the exception of the latter, which are now missing, the windows and the south wall of the second floor of the south curtain are still equipped as they were in 1916.

As for the four windows originally located in the north wall, they were equipped with blinds covered with duck initially. But subsequently, and prior to 1799, the windows in the north wall of the reception hall (g) must have been equipped with glass to match the windows in the east and south walls of the room. The window in the bedroom (i) was probably equipped with a jalousie until it was converted into a door after 1919, and the same was probably true of the window in the bedroom (k) prior to 1806-07.

According to Oxholm's plans, none of the windows in the quarters were originally recessed (Figs. B7, B9). However, documentary sources indicate that the seven windows in the south wall were definitely recessed by 1827; and this was apparently also true of the eighth window, probably the window in the center of the north wall of the reception hall (g).[431] The plaster of the recesses in the reception hall was removed in 1838 and replaced with plaster of paris.[432]

Whether the windows were originally arched is not known, but Oxholm does indicate an arch in the window above the sallyport (Fig. B7). The window in the north end of the east wall is an arched window in the photograph of the courtroom or the former reception room (g) taken in 1902, and it is equipped with an architrave (Fig. B35).[433] Hvass's cross-sectional plan of the quarters in 1919 shows the window above the sallyport with an arched recess (Fig. B18).

Windows: Hardware

It is difficult to identify window hardware from the accounts for the construction and subsequent maintenance of the fort. However, the hurricane

424. RA, BLA: SBI (1815-29), George O'Carroll's bill for Repairs to Fort Christiansvaern, June 26, 1826; and RA, BLA: RKP (1823-32), pp. 3(b) ff. The initial proposal called for seven jalousies, not venetian blinds. However, if is clean from RA, BLA: SBI (1825-29) Inspection of the Royal and Public Buildings in Christiansted's Jurisdiction in 1829 and Estimate of Cost of Repairs to Fort Christiansvaern, February 27, 1829, and later documents that venetian blinds, rather than jalousies, were put on the windows.
425. NA, RG55: BI (SC)-SBI, Estimate for making and putting up 4 pairs of Jalousies in the fort prepared by William Clinidenen, November 11, 1851.
426. NA, RG55: BI (SC)-SBI, Feddersen to the Building Inspector, January 28, 1852.
427. NA, RG55: BI (SC) -SBI, Government to Building Inspector, March 3, 1866.
428. NA, RG55: BI (SC)-KUS (1867-70), Building Inspector to Government, November 26, 1869.
429. NA, RG55: BI (SC)-SBI, Government to Building Inspector, January 18, 1870.
430. NA, RG55: BI (SC)-SBI, Heltius to Government, July 26 and August 31, 1894.
431. RA, BLA: SBI (1825-29), Inspection of the Royal and Public Buildings in Christiansted's Jurisdiction in 1827. There was wooden paneling below these windows.
432. RA, BLA: PGH (1835-40), July 1838.
433. An Estimate for repairs needed to the fort in 1870 indicates that the windows in the Commandant's Quarters had arches; see NA, RG55: BI (SC)-SBI, Estimate of Costs of necessary Repairs to Public Buildings in St. Croix in Fiscal Year 1870/71, dated January 15, 1870, and prepared by Ludvig Schellerup.

shutters were equipped with the customary hooks and some form of bolt, bar, or fastener as well.[434]

The glass windows were equipped with brass bolts in the 1830s.[435] *Data about their hinges is so obscure that the type of hinges and the material that they were made up from cannot be determined with certainty.*

Finishes and Paints

Originally the walls of the quarters were simply plastered and whitewashed. But in 1817-18 moldings were installed in the walls were papered.[436] *In 1825 paneling was installed under eight of the windows in the quarters in place of the existing wallpaper; these must have been the seven windows in the south wall and the window in the north wall of the reception room (g).*[437] *Panels under these windows were limewashed in 1827-28.*[438]

The quarters were papered in 1828, at which time one side of a partition had to be replastered.[439] *Repapering and repainting of the quarters also occurred in 1857, 1873, 1886, 1889, and 1916. All paneling and wallpaper* [was] *removed in 1935 or 1936.*[440]

Replastering of the window recesses in the reception hall (g) in 1838 would indicate that they were not provided with architraves until sometime after that date and prior to 1902 (*Fig. B35*).

Floors

Repair or relaying of the floors of the quarters is known to have occurred in 1820-21, 1857, 1873, and the records indicate that they consisted of [pitch pine] boards.[441] *Baseboards are known to have existed as early as 1806-07.*[442]

East Curtain

Foundations and Walls

Construction of the outer east brick and rubble masonry wall of the east curtain, like that of the south curtain, was begun in the fall of 1738. Exactly when the curtain was completed is not known, but it was probably before the end of 1740. In any event, the curtain is described in 1744 as being 72 feet long by 16 feet high and containing three rooms and a powder magazine, beneath which was a cistern 16 feet by 8 feet by 6 feet.[443] The west wall of the curtain facing the courtyard was of half-timbered construction only 5 inches thick.[444]

The east curtain had to be reconstructed in 1822-23 because the timbers supporting the gundeck were rotten. Not only was it necessary to replace the gundeck, but the half-timbered wall facing the courtyard had to be torn down and replaced by a brick and rubble masonry wall 18 inches thick.[445]

The partitions shown by Oxholm in 1779 were torn down in 1822-23 and replaced by three masonry partitions 9 inches thick.[446] *There were no communicating doors in these partitions until the renovations of 1835-36, at which time a door was cut in the wall between Rooms (2) and (3)* (*Fig. B13*). *Communicating doors were cut in the other two partitions in 1878 when the rooms were converted into police offices.*[447]

Gundeck

Early details of the gundeck are lacking, but there can be no doubt that it was constructed of bricks laid on timbers. The gundeck leaked as early as 1747, a common complaint about flat brick roofs and gundeck throughout the fort's history.

The gundeck was apparently relaid or extensively repaired sometime between 1774 and 1778 because

434. RA, VgK: NJ (1745), n.p. (entry dated December 10, 1745); and RA, VgK:NJ (1747), n.p. (entry dated August 19, 1747).
435. RA, BLA: PGH (1835-40), July 1838.
436. RA, BLA: PKBR (1816-18), Inspection Report and Estimate of Repairs to Fort Christiansvaern, July 28, 1917.
437. RA, VgRtK: KBR (1822-29), Inspection of January 24, 1824, of the Royal and Public Buildings in Christiansted's Jurisdiction; and ibid., Copy of the Auction Register for the Jurisdiction of Christiansted, February 3, 1825.
438. RA, BLA: SBI (1825-29), Inspection Report… for 1827; prepared by Magens, March 9, 1827. See also George O'Carroll's Bill of March 1828 for repairs to the fort.
439. RA, BLA: RKP (1823-32), p. 136b.; and RA, BLA: SBI (1825-29), von Scholten to von Magens, August 1, 1828. The estimate for materials included 59 rolls of wallpaper, 12 rolls of border, and an unspecified amount of linen; the number of tacks and quantity of glue required are also unspecified.
440. Personal interview with Wallace Phaire, Deputy Marshall, U.S. Department of Justice, St. Croix, March 20, 1960.
441. NA, RG55: BI (SC)-SBI, Estimate of Building Repairs… in 1873-74 proposed by Judvig Schellerup, February 13, 1873.
442. *Dansk Vestindien Regierings Avis*, September 29, 1806; and RA, VgRtK: KRB, FBR for 1807.
443. RA, VgK: VI (1733-51), Inventory of June 26, 1744.
444. Ibid., and also RA, BLA: SBI (1815-24) Inspection Report and Estimate of February 21, 1821, to accompany letter of Rothe to Magens, June 1, 1822.
445. Ibid.
446. Ibid.
447. NA, RG55: BI (SC)-SBI, Petersen to the Presidency of St. Croix, January 15, 1878.

of the damage done to it by the hurricane of August 31, 1772.[448] It was probably relaid again in 1795, at which time it consisted of two courses of whole bricks and one of half bricks laid on timbers.[449]

The gun deck was so leaky by 1822-23 that it had to be torn up, and the east curtain had to be reconstructed. A new gundeck laid on the curtain consisted of two courses of bricks laid flat on pitch pine beams and laths.[450]

The new gundeck began to leak almost as soon as it had been laid, and in 1826 it had to be covered with a layer of cement in an effort to stop the leaks.[451] Further repairs 1834-35 prolonged the life of the gundeck, but it was finally torn up and relaid in 1843.[452] The supporting pitch pine beams of the new gundeck were 13½ feet long by 6 inches wide by 8 to 9 inches high, and were covered with pitch pine laths and two courses of bricks laid flat in cement. Nothing further is known about the maintenance or repair of the gundeck after 1843.

Ceilings

Whether the beams of the gundeck were covered underneath with ceiling boards prior to 1822-23 is not known. In the reconstruction of the east curtain in 1822-23, however, it was proposed and apparently approved that the beams of the new gundeck be covered with white pine boards.[453]

As for the gundeck laid in 1843, there is again no direct evidence as to whether the beams were exposed or covered. However, Governor General Peter von Scholten had issued specific orders in 1833 that the beams of any flat brick roofs laid after that date were to be left exposed.[454] It is therefore probable that the beams were left exposed in 1843 and were not subsequently covered.

448. PA, DK: 172 VJ(C) 1772, Roepstorff to the Royal Danish Chamber, Copenhagen, October 30, 1772.
449. RA, BLA: RKP(1823-32), p.21(b).
450. RA, BLA: SBI (1815-24), Inspection Report of February 22, 1821, and accompanying letter from Rothe tp Magens, June 1, 1821.
451. RA, BLA: SBI (1825-29), Inspection Report and Estimate of Repairs to Fort Christiansvaern; prepared by Hagens, January 27, 1826; and ibid., George O'Carroll's Bill for Repairs to Fort Christiansvaern, June 26, 1826.
452. PA, BLA: SBI (1840-49), Government to Hingleberg, January 9, 1843; and RA, BLA: PGH (1840-46), Hungleberg to Government, April 22, 1843.
453. RA, BLA: SBI (1815-24), Inspection Report and Estimate of February 22, 1821, and accompanying letter from Rothe to Magens, June 1, 1821; ibid., Bardenfleth to Magens, August 14, 1822; and ibid., Bardenfleth to Magens November 30 1822.
454. RA, BLA: SBI (1830-39), von Scholten to Magens, June 6, 1833; and ibid., March 7, 1834.

Doors

Oxholm shows only three doors in the west wall of this curtain opening on the courtyard (Fig. B8). However, four doors were made in the new wall which was erected on the courtyard in 1822-23.[455] According to the plans for this reconstruction, the door and Room No. (3) was to be located to the north of the window in this room and not vice versa as shown in the plans of 1836 (Fig. B13). It is doubtful that the condition shown in 1836 plans ever existed, therefore, since the door is actually located to the north of the window today and there is no documentary evidence that they were ever interchanged.

Doubtless the doors of the east curtain were equipped with exterior double doors from the earliest days, but this is not definitely known until after the reconstruction of the east curtain in 1822-23. Thereafter, the doors of Rooms (2) and (5) were also to be equipped with interior blinds of an open checked linen, While the doors of Rooms (3) and (4) were to be equipped with movable jalousies.[456] The interior blind door of Room (2) was probably removed in 1824 when the room was converted into a strong-room for the safekeeping of the funds of the State Treasury; the outer door of the room must either have been strengthened or replaced by a metal door at the same time.

In the renovations of 1835-36, Room No. (2) was converted into officers quarters and was equipped with an interior double jalousie door.[457] Whether Room No. (5) Was also equipped with an interior jalousie door at this time is not definitely known, but it would seem highly probable since it was to be barracks for six men. A jalousie door was also provided for the communicating door between Rooms (2) and (3).[458] The doors in the west wall of Rooms (2) and (3) were also equipped with architraves in 1836.[459]

Further evidence concerning the doors in the east curtain is meager. However, when the rooms in this curtain were converted into police offices in 1878, three of the doors, at least, had interior jalousie

455. RA, BLA: SBI (1815-24), Inspection Report and Estimate of February 22, 1821, and covering letter from Rothe to Magens, June 1, 1821.
456. RA, BLA: SBI (1815-24), Inspection Report and Estimate of February 22, 1821, and covering letter from Rothe Magens, June 1, 1821.
457. RA, BLA: PGH (1835-40), April 1836.
458. Ibid.
459. Ibid., May 1836.

doors.[460] Perhaps it was at this time that the interior jalousie door of Room No. (2) Was replaced by the [present] *panel door with glass panes. It is not known at what later date the jalousie doors of the other rooms were removed.*

It was also during the renovations of 1878 that a door was cut in the east wall of the storeroom (7) to provide access to the stableyard.[461]

As for the hardware, it is only known that the jalousie doors of Rooms (3) and (4) were probably provided with brass cabinet locks in 1822-23, while the exterior doors of Rooms (2) and (5) were equipped with bolts and padlocks.[462]

Windows

Oxholm shows four windows in the west wall and nine firing or air holes in the east wall of the curtain (Fig. B8).

There is some evidence to indicate that the firing holes in the east wall of Room No. (3) were enlarged and converted into glass windows as early as 1802.[463] In any event, these windows existed at the time of the 1836 renovations, and they were equipped with glass panes below and "half" jalousies above at that time.[464] In 1839 venetian blinds were apparently provided for the glass portions of these windows,[465] but in 1870-71 they were made into full glass windows.[466] These two windows must have been equipped with iron bars as early as 1802, since they were in an exposed position, and hurricane shutters.

The other firing holes in the east wall, except for those in the cistern room and storeroom, were enlarged and equipped with hurricane shutters and jalousies during the renovations of 1878.[467] Doubtless they were also equipped with iron bars at this time. No evidence has been found to indicate when the existing glass windows in the east wall were substituted for jalousies, but the change perhaps occurred prior to 1919.[468]

Reconstruction of the east curtain in 1822-23 brought about the existing placement of the four windows in the west wall. The windows in Rooms (2) and (5) were equipped with iron bars and interior blinds covered with linen at this time, while the windows in Rooms (3) and (4) were equipped with movable jalousies.[469] All four of these windows were equipped with hurricane shutters.

Conversion of Room No. (2) into a strongroom for the state treasury in 1824 caused the interior blinds to be removed and replaced by a solid shutter.

The renovations of 1836 brought no major changes in the windows in the west wall, although it is probable that the windows in Rooms (2) and (5) were also equipped with movable jalousies thereafter. In any event, the windows in Room No. (5) definitely had a jalousie in 1867,[470] and the window in Room No. (2) was similarly equipped in 1878.[471] It cannot be determined when these jalousies were removed.

Floors

Repairs of the floors in the east curtain in 1802 indicate that the early floors were laid with bricks.[472] When the east curtain was reconstructed in 1822-23, however, pitch pine floors were substituted for the brick floors in all rooms except the cistern room (6) and the storeroom (7).[473] The cistern room (6) was repaved with bricks laid on edge in 1822-23,[474] but in 1836 it was repaved with bricks laid flat.[475]

Paints and Finishes

Information about the interior decoration of the east curtain prior to the reconstruction of 1822-23 is scanty [sic], but the rooms were undoubtedly

460. NA, RG55: BI (SC)-SBI, William Peebles Bill for Repairs to Fort Christiansvaern, July 6, 1878.
461. NA, RG55: BI (SC)-SBI, Petersen to the Presidency of St. Croix, January 15, 1878, and accompanying Estimate for Alterations.
462. RA, BLA: SBI (1815-24), Inspection Report and Estimate of February 22, 1821, and covering letter from Rothe to Magens, June 1, 1821.
463. RA, BLA: SBI (1800-03), Walterstorff to Meley, March 15, 1802.
464. RA, BLA: PGH (1835-40) May 1836.
465. Ibid., December 1839.
466. RA, RG55: BI (SC)-SBI, Estimate of Costs of necessary repairs to Public Buildings on St. Croix in Fiscal Year 1870/71, dated January 15, 1870, Ludvig Schellerup.
467. NA, RG55: BI (SC)-SBI, Petersen to the Presidency of St. Croix, January 12, 1878.
468. See view of outer wall of east curtain in Tyge Hvass, *Dansk Vestindien*, Vol. VI, *Aeldre Nordisk Architektur*, Mogens Clemmensen (ed.). Copenhagen: C.A. Reitzels Boghandel, 1925, p.30.
469. RA, BLA: SBI (1815-24), Inspection Report and Estimate of February 22, 1821, and covering letter from Rothe to Magens, June 1, 1821.
470. NA, RG55: BI (SC)-SBI, Estimate of Repairs Needed to some of the Buildings Belonging to the Colonial Treasury in St. Croix in Fiscal Year 1867/68.
471. NA, RG55: BI (SC)-SBI, William Peebles Bill for Repairs to Fort, July 6, 1878.
472. RA, BLA: JBI (1800-04), Meley to Governor General, March 7, 1802.
473. RA, BLA: SBI (1815-24), Inspection Report and Estimate of February 22, 1821, and covering letter from Rothe to Magens, June 1, 1821.
474. Ibid.
475. RA, BLA: PGH (1835-40), April 1836.

plastered and limewashed like most of the other rooms in the fort.

However, in 1822-23, Rooms (3) and (4) were wallpapered, while Rooms (2) and (5) were simply plastered and limewashed.[476]

The reparations [sic] of 1835-36 brought about a complete redecoration of Rooms (2) and (3), which were now to be officers quarters. The walls were both paneled and furred and wallpapered, and all windows and doors in these two rooms were provided with architraves.[477] *All wood was painted three times with a mixture of Spanish Green in white lead.*[478]

Room No. (4) the commandant's office, was simply plastered and limewashed in 1835, and this was probably also true in the case of Room No. (5).[479] *However, there is some indication that Room No. (5) was papered prior to 1858, at which time it is known to have been repapered.*[480]

Rooms (2) and (3) We repainted with the same colors as above in 1839, repapered in 1858, and partially repaneled and repainted in 1870-71.

Gallery

A gallery was first raised in front of the west wall of the east curtain in 1836.[481] *This gallery consisted of a zinc-covered shed resting on eight hardwood posts. The hardwood posts were hand rubbed and finished in oil, while the zinc covering was painted green and the roof beams and laths were painted white. A decorative fascia board was hung from the eaves of the shed.*

The zinc roof was replaced in kind in 1853, at which time it was also necessary to replace the pitch pine boards and white pine boards on which the zinc sheets were laid. The roof was repainted in 1858 and repaired in 1870-71.

A new gallery was erected in 1878, but at this time it was covered with cypress shingles instead of zinc sheets.[482] *A new roof of the same material was recommended in 1907-08, but it seems highly probable that it was at this time or shortly thereafter that the gallery was covered with galvanized iron sheets instead of wooden shingles.*

Steps and Pavements

When the east curtain was reconstructed in 1822-23, new brick steps having two risers each were erected in front of the doors in the west wall.[483]

In 1836 the entire area under the new gallery erected in front of the west curtain was paved with bricks laid flat.[484]

As for the steps from No. (7) to the stableyard, these were erected in 1878 when a door was cut in from the former storeroom to provide access to the stableyard.[485]

Cistern

The cistern is mentioned as early as 1744, when it is cited as being 16 feet long by 8 feet wide by 6 feet *deep.*[486] *Thereafter, information about the cistern is generally restricted to periodic replacement of the wooden cover or pump. An overflow pipe of lead was installed in the east wall in 1838, and in 1840 a pipe was laid underground from the cistern to the stableyard.*[487]

West Curtain

Foundations and Walls

The outer (west) masonry wall 72 feet long by 10 feet high was the only portion of the west curtain which was completed by June 1744.[488] *Indeed, it was not until 1747 that the west curtain was finally completed.*

476. RA, BLA: SBI (1815-24), Inspection Report and Estimate of February 22, 1821, and covering letter from Rothe to Magens, June 1, 1821.
477. RA, BLA: PGH (1835-40), May 1836. Thirty-one rolls of wallpaper and border were bought for this purpose.
478. Ibid.
479. Ibid., December 1835.
480. NA, RG55: BI (SC)-SBI, Estimate of Costs of Various Repairs to Fort Christiansvaern… by Ludvig Schellerup, February 20, 1858.
481. Details are from RA, BLA: PGH (1835-40), passim.
482. NA, RG55: BI (SC)-SBI, Petersen to Presidency of St. Croix, January 15, 1878, and accompanying Estimate of Costs of Converting Fort Christiansvaern to a Police Station and Jail. The estimate called for 4,000 cypress shingles, 1,200 square feet of 6 by 6 inch pitch pine beams and 1,000 feet of white pine boards.
483. RA, BLA: SBI (1815-24), Inspection Report and Estimate of February 22, 1821, and covering letter from Rothe to Magens, June 1, 1821. The risers were to be semi-circular shaped.
484. RA, BLA: PGH (1835-40), June 1836.
485. NA, RG55: BI (SC)-SBI, Petersen to the Presidency of St. Croix, January 15, 1878, and accompanying Estimate of Costs of Converting Fort Christiansvaern to a Police Station and Jail.
486. RA, VgK: VI (1733-51), Inventory of June 26, 1744.
487. RA, BLA: PGH (1835-40), October 1838; and RA, BLA: PGH (1840-46), November 1840
488. RA, VgK: VI (1733-51), Inventory of June 26, 1744.

There were only three rooms in the west curtain to the north of the cistern and kitchen in 1779, but the large room in the center of the curtain was partitioned into separate sections for male and female prisoners (Fig. B8). Sometime after 1784 and prior to 1816, this large room was divided into two smaller rooms (18) and (19) by the erection of a masonry wall (Fig. B12).

During the renovations of 1835-36, the room immediately to the north of the cistern was divided into a servant's room (16) and a barracks for four men (17) by the erection of a wooden partition (Fig. B13).[489] The northernmost room in the curtain was divided into a cell (20) and a strongroom for the state treasury (21) by the erection of a masonry wall at the same time, and the kitchen and cistern were separated by the erection of a wooden partition with latticework above around the cistern.[490]

Replacement of the rotten wood partition between rooms (16) and (17) by a concrete wall was proposed in the fiscal year 1915/16, but was apparently never carried out.[491]

Gundeck

The gun deck laid on the west curtain in 1745 consisted of bricks laid on fir beams and laths.[492] The gundeck was leaking in 1770. However, it was not until after the hurricane of August 31, 1772, had caused further damage that the gundeck was probably relaid. Relaying of the gundeck must have occurred sometime between 1774 and 1778 to coincide with the reconstruction of the southwest bastion.[493]

Less than 20 years later, the gundeck was again leaking. It was therefore necessary in 1795 to splice new ends on many of the beams and support them at the walls by shoring.[494] The center beam was also covered with thin boards, and most of the gundeck was torn up and relaid with three courses of brick.

The beams of the kitchen and cistern were shored up in 1802 because the ends of some of the beams were rotten.[495]

Minor repairs of an unspecified nature were made to the gundeck in 1822-23, but the gundeck was not relaid as proposed in 1823. The following year, 1824, the gundeck was again shored up.[496] Two years later the earlier request to lay a new gundeck was repeated, but it is not known whether this request was approved.

The gundeck was repaired or relayed as necessary in 1834-35 and probably again in 1867-68. The last known repairs to the gundeck were made in 1911 when the brick-on-timber construction at the north end of the curtain was replaced by reinforced concrete.[497]

Ceilings

There is no documentary evidence that the beams of the west gundeck were ever covered with ceiling boards in any of the rooms in the curtain.

Doors

Four doors are shown in the courtyard wall of the west curtain in 1779, including the door of the kitchen and cistern room (Fig. B8). This number was increased to five sometime prior to 1816 by the partitioning of the large center room into Rooms (18) and (19) and the conversion of a window into the door of Room No. (18). Two more windows in the east wall of the curtain were converted into doors during the renovations of 1835-36, when the large room to the north of the cistern and the northernmost room in the curtain were divided in two (Figs. B8, B13). Operation of the cistern in the kitchen at the same time made it necessary to cut a separate door for the kitchen, and it was equipped with double doors.[498]

489. RA, BLA: PGH (1835-40), October 1835.
490. RA, BLA: RKP (1832-41), pp. 53 (b)-55 (a); and RA, BLA: PGH (1835-40), December 1835.
491. NA, RG55: GGs (SC)-BC 1915/16.
492. RA, VgK: NJ)1745), passim.
493. RA, DK: 172 VJ(C) 1772, Roepstorff to the Royal Danish Chamber, October 30, 1772. Details of the reparations completed between 1774 and 1778 are missing but can be pieced together from later accounts.
494. RA, VgRtK: 164 VJ 1795, Inspection Committee's Report to Major and Building Inspector P.L. Oxholm, October 11, 1794; and RA, VgRtK: KRB, FBR for 1795.
495. RA, BLA: JBI (1800-04), Meley to Walterstorff, March 7, 1802; and RA, BLA: SBI (1800-03), Walterstorff to Meley, March 15, 1802.
496. RA, VgRtK: KBR (1822-29), Inspection Commission's Report and Estimate of Repairs to Fort Christiansvaern in 1824; and RA, BLA: SBI (1815-24), Bardenfleth to Magens, September 11, 1824.
497. NA, RG55: GGs (SC)-BC for 1910/11. Materials purchased in 1911 for this alteration included "56 feet Kahn Steel Bars" and "252 square feet Hy Rib imported from New York"; see NA, RG55 (SC)-VTC, Voucher to William Clindinen, February 6, 1911.
498. RA, BLA: PGH (1835-40), December 1835.

The door in the outer (west) wall of the curtain was cut in 1903 to provide access from the fort to what was to be a prisoner exercise yard thereafter.[499]

In addition to solid outer doors, there were usually inner blind doors covered with linen or duck on those rooms in the curtain which were used as quarters. This was true, for instance, in 1822-23 of the door of the northernmost room in the curtain and the doors of Rooms (16) and (17) in 1826.[500] *From 1836 to 1878, at least, the officer's cell (19) was equipped with an inner jalousie door instead of a blind door.*[501]

The door of those rooms, which were used as cells were equipped with heavy iron crossbars in addition to the usual hardware, and they were also provided with small square air holes cut near the tops of the doors. The door of Room No. (21) was equipped with two heavy iron crossbars in 1836, since it was to be used thereafter as a strong room for the state treasury funds.[502]

Windows

Four windows are shown in the courtyard wall of the west curtain in 1779, one each in the northernmost room and the room to the north of the cistern and the two in the center room (*Fig. B8*).

The window to the south of the door in the center room was converted into the door of Room No. (18) when the latter was created as a separate room sometime prior to 1816. The windows in the room immediately to the north of the cistern and in the northernmost room in the curtain were also converted into doors when both these rooms were divided in two during the renovations of 1835-36 (*Fig. B13*). *The window in Room No. (19) was not masoned up until sometime after 1919* (*Fig. B18*).

In addition to hurricane shutters, these windows were usually also equipped with inner blinds covered with duck or linen if and when the rooms were used as barracks or quarters. This was true, for example, of the window in the northernmost room of the curtain in 1822.[503] *The window in Room No. (19) was an exception, since it was equipped with a pair of jalousies from 1836 until it was masoned up sometime after 1919* (*Fig. B18*).[504]

As for the eight firing holes in the outer (west) wall of the curtain in 1779, one of the three shown in the center room of the curtain was masoned up quite early. Doubtless this happened prior to 1816 and at the same time that the center room was divided in two. The firing holes may have been enlarged somewhat in 1802.[505] *The air hole in the west wall of the cistern room was located higher in the wall than those in the other rooms* (*Fig. B15*). *This air hole was eliminated when the door was cut to provide access to the yard on the west side of the fort in 1903* (*Fig. B17*).

The firing or air holes in the west wall were always equipped with iron bars. In addition, the openings of Rooms (18) and (20) were apparently also equipped with inner fixed jalousies in 1835-36.[506] *The opening of Room No. (21) was equipped with an inner shutter in 1846 which subsequently was replaced in 1848 by a jalousie.*[507]

Floors

All the rooms in the west curtain originally had brick floors.[508] *Room No. (19) probably had a wooden floor as early as 1816, while Rooms (20) and (21) had wooden floors as early as 1822-23.*[509] *The other rooms in the west curtain were apparently provided with wooden floors during the renovations of 1835-36. All these rooms had wooden floors as late as 1904, and the existing concrete floors were therefore laid sometime after that date.*[510]

The flat brick floor of the kitchen was relaid in 1844 with bricks laid on edge, and the floor was again relaid in 1850.[511]

Paints and Finishes

All documentary references to this subject indicate that the rooms of the west curtain were simply plastered in limewashed. Room No. (17) was

499. NA, RG55: BI (SC)-KUS (1899-1906), Estimate of Expense of Converting the Outer Yard into an Exercise Yard for Prisoners, April 2, 1903.
500. RA, BLA: PGH (1835-40), December 1835.
501. Ibid., June 1836.
502. Ibid., November 1835.
503. RA, BLA: : SBI (1815-24), Rothe to Magens, June 1, 1822, and accompanying Inspection Report and Estimate of February 22, 1821.
504. RA, BLA: PGH (1835-40), June 1835.
505. RA, BLA: JBI (1800-04), Meley to the governor General, March 7, 1802.
506. RA, BLA: PGH (1835-40), November 1835.
507. RA, BLA: RKP (1842-50), p. 205; RA, BLA: SBI (1840-49) von Falbe to von Scholten, April 15, 1848; and ibid., von Scholten to von Falbe, May 2, 1848.
508. RA, BLA: JBI (1800-04), Meley to Governor General, March 7, 1802.
509. RA, BLA: SBI (1815-24), Rothe to Magens, June 1, 1822, and accompanying Inspection Report and Estimate of February 22, 1821.
510. NA, RG55: BI (SC)-KUS (1899-1906), Description of the Jails on the Islands of St. Croix, St. Thomas, and St. John.
511. RA, BLA: RKP (1842-50), pp. 72, 80; and NA, RG55: BI (SC)-SBI, Hansen to Falbe, October 21, 1850.

limewashed in yellow in 1839, as was Room No. (21) in 1846.[512] *The kitchen was also limewashed yellow in 1838, and in 1840 the ceiling was whitewashed and the walls were yellow-washed.*[513]

Steps and Pavements

Semi-circular steps are shown in front of three of the doors in the courtyard wall of the west curtain in 1779 (Fig. B8).

Sometime prior to 1816, a fourth set of steps were added to the newly created Room No. (18). All of the brick steps were repaired in 1817-18. Between the latter date in 1835, a masonry platform was laid in front of the west curtain, and both the platform and steps were relaid in 1835.[514] *The renovations of 1835-36 made it necessary to erect a set of steps to the newly created door* [of] *Room No. (21) (Fig. B13).*

The steps for the door from the kitchen to the exercise yard inside the outer west wall of the fort were made in 1903.[515]

Cistern and Kitchen

Construction of the cistern began in the fall of 1744. When it was completed in 1745, the cistern was described as holding 400 to 500 barrels of water.[516] *The cistern was provided with a wooden cover and, at least, as early as 1800, a chain operated pump.*[517] *The chain pump was replaced by a more modern lift pump in 1861.*[518]

A zinc overflow pipe was provided from the cistern room to the yard on the west side of the fort in 1837.[519]

As for the kitchen, it was established when the southwest bastion was completed in 1748.[520] *However, reconstruction of the southwest bastion sometime between 1774 and 1778 may have brought about some changes from the original conditions.*

The hearth was on the north side of the kitchen in 1779 (Fig. B8). It was rebuilt in 1817-18, but in 1822-23 the hearth was moved to the south side of the room.[521] *The hearth was relaid in 1841.*

A small window or airhole equipped with iron bars was cut in the west wall of the kitchen in 1822-23 to increase the amount of light and air to the hearth (Fig. B15).[522] *An inner shutter was apparently provided for this window in 1835.*[523]

The cistern and kitchen were separated in 1835-36.[524] *A wooden partition with latticework above was erected around the cistern, and a door was cut in east wall of the kitchen to provide separate access to the room from the courtyard. This door* was *equipped with a double door then just as it is now.*

A door was cut in the west wall of the kitchen in 1903 to provide access to the yard inside the outer wall of the fort.

Water Battery

The existence of a water battery "for 8 cannons" in place of a north curtain is first known in 1744.[525] *Six years later it was described as being as high as two men and having embrasures.*[526]

The latter description is generally confirmed by Julius von Rohr's sketch of Christiansted of about 1765 (Fig. B5). The water battery shown is considerably lower than the neighboring bastions and connecting curtains; It has eight embrasures and appears to have a buttress centered against the north side. Von Rohr confirmed his earlier depiction of the water battery by writing in 1781 that anyone could easily get in or out of the fort because "when one sat on the battery, one's feet reached the ground."[527]

An inspection of the fort made on April 20th, 1770, revealed that the water battery, like the rest of the fort, was in need of major reparation [*sic*].[528] *Indeed, the inspection committee recommended that it would*

512. RA, BLA: PGH (1835-40), October 1839, and RA, BLA: RKP (1842-50), p. 205.
513. RA, BLA: PGH (1835-40), July 1838; and ibid., February 1840.
514. RA, BLA: PGH (1835-40), December 1835.
515. NA, RG55: BI (SC)-KUS (1899-1906), Estimate of Expense of Converting the Outer Yard into an Exercise Yard for Prisoners, April 2, 1903.
516. RA, VgK: B&D (1745), Schweder to Directors, April 10, 1745.
517. RA, VgRtK: KRB (1780-1816), FBR for 1800.
518. NA, RG55: BI (SC)- SBI, Government to Building Inspector, April 4, 1861.
519. RA, BLA: PGH (1835-40), January 1837.
520. RA, VgK: B&D (1748) Governor and Privy Council, St. Croix to Directors, April 23, 1748; and RA, VgK: A K (1746-48), Directors to Hansen and Privy Council, St. Croix, Juny 24, 1748.
521. RA, BLA: SBI (1815-24), Rothe to Magens, June 1, 1822, and accompanying Inspection Report and Estimate of February 22, 1821.
522. Ibid.
523. 256. RA, BLA: PGH (1835-40), December 1835.
524. Ibid.
525. RA, VgK: VI (1733-51), Inventory of June 26, 1744.
526. Haagensen, *Beskrivelse over Eylandet St. Croix*, p. 22.
527. RA, VgRtK: 476 VJ 1782, Peter Clausen to the West India-Guinea Exchequer and General Customs Office, December 8, 1781, with Accompanying Remarks by Julius von Rohr.
528. RA, VgRtK: 112 VJ (B) 1770, Report of an Inspection held in Fort Christiansvaern on April 20, 1770.

be better to tear the old battery down and build a new one closer to the sea.

The north or seaward wall of the battery was heavily damaged by the hurricane of August 31, 1772.[529] *However, repair and reconstruction of the water battery was not carried out until 1777. And instead of building a new water battery, the old one was simply raised and rebuilt with a vaulted powder magazine beneath the battery* (*Fig. B8*).[530]

As shown by Oxholm in 1779, the powder magazine, had a door and two vents in the south wall, but no vent or tunnel in the extremely thick north wall (*Figs. B7, B8*). *There were no embrasures on the* water battery but only a low *parapet. There were two sets of stairs up to the battery; to the left of the stairs up to the west side of the battery was a passageway to a latrine, and to the right of the stairs up to the east side of the battery was a small room.*

The parapet was repaired in 1795, but in 1817-18 a new parapet 2 feet high by 1½ feet thick was built on the north side of the battery.[531] *In 1817-18, moreover, the two sets of stairs up to the battery from the courtyard were completely rebuilt with 14 risers each.*[532] *The stairs were again rebuilt in 1846, when the water battery underwent reconstruction, and in 1853.*

The tunnel in the north wall of the powder magazine is first shown in the plans of 1836, and it is shown as being vented towards the sea (*Fig. B13*). *This vent may have been masoned up when the water battery was reconstructed. In 1846.*

Reconstruction of the water battery became necessary in 1846 because the north side of the gundeck was sinking.[533] *Subsidence of the gundeck occurred because loose sand and gravel was used as fill around the powder magazine when the water battery was raised and reconstructed in 1777. The gundeck was therefore torn up in 1846, and the loose sand and gravel fill was removed and replaced by the old bricks of the gun deck laid in cement. The gundeck was then relaid with two courses of brick laid flat and one course of brick laid on edge.*

The wooden floor of the powder magazine was relaid with new joists and boards in 1840, 1878, and 1900. However, before the new floor was laid in 1900, a layer of concrete was poured on the ground to provide a moisture-free foundation for the wooden floor.[534]

An entry for "copper and copper work" by G. Forster in 1796 probably included vents and covering of the door or doors of the powder magazine. The masoning in of two wooden blocks with copper hooks at the "doors" of the powder magazine[535] *in 1840 would seem to indicate that it had a double door, but it is not clear whether this was an inner or outer door.*[536] *However, existing physical evidence provided by four copper pintles and two wooden blocks indicates that the reference was to a double inner door.* [Hvass's] *depiction of the outer door of the magazine is contradictory, and the existing outer door is a single rather than a double door* (*Figs. B17, B18*). *The vents still have small copper shutters.*

There is little information in documentary sources about the small room no (26) to the right of the stairs up to the east side of the battery. Oxholm does not indicate what it was used for in 1779, but in 1822 it was apparently a strongroom for the state treasury. Uses a strongroom ended in 1824, and in 1836 the room was being used as a cell. The small opening shown in the east wall of the room into the northeast casemate in 1779, was closed up prior to 1836 (*Figs. B8, B13*). *The plans of 1836 failed to show a small opening with bars in the west wall of the room, and yet this opening was apparently cut in 1823.*[537] *Nothing is subsequently known about this room, not even the date of the wooden floor.*

The passageway on the west side of the battery to the latrine had an air hole at its north or seaward end as early as 1779 (*Fig. B8*). *The existing board-covered gutter down the center of the passageway*

529. RA, VgRtK: 164 VJ (C) 1772, von Rohr's Estimate of Damages Caused to Fort Christiansvaern by the Hurricane of August 31, 1772, dated October 13, 1772.
530. RA, VgRtL: DFF (1715-1832), Peter L. Oxholm Report and Observations on the Royal Troops, Forts, other Military Installations, and Buildings, August 30, 1780, p. 49.
531. RA, BLA: PKBR (1816-18), Committee Report of Reparations Required to Fort Christiansvaern, August 8, 1817; and NA, RG55: BK (SC)-FBR for 1818.
532. RA, BLA: PKBR (1816-18), Committee Report and Estimate of Costs of Reparations required to Fort Christiansvaern, August 8, 1817.
533. RA, BLA: PKBR (1816-18), Committee Report and Estimate of Costs of Reparations required to Fort Christiansvaern, August 8, 1817.
534. NA, RG55: Office of the Government Military Secretary, Correspondence File 83/1900, Government to Building Inspector, St. Croix, August 23, 1900.
535. RA, VgRtK: KRB (1780-1816), 414 VJ 1798, Royal Resolution of June 2798, approving Building Expenses on St. Croix in 1796.
536. RA, BLA: PGH (1835-40), February 1840.
537. RA, BLA: SBI (1815-24), Voucher to E S. Colbiornsen, May 1, 1823.

was first made in 1817-18.[538] The existing door in the passageway opening into a modern latrine in the northwest casemate was not cut until after 1919, although there was a small air hole in this general vicinity in 1779 (*Fig. B8*). *It is not known whether the outer door to the passageway was originally an arched door, as it is shown in 1919* (*Fig. B18*). *However, in the latter year, it is shown as a full door and not as a flat headed door with a fan light above.*

The proposal, made in 1836 to mount chevaux de frise atop the parapet on the east side of the water battery and on the roof of the latrines was not carried out.[539]

Southeast Bastion and Casemate

Bastion

A description of the fort in 1744 indicates that the southeast bastion was not originally vaulted, but simply had a flat brick gundeck laid on timbers 16 feet above the floor of the casemate.[540] The existence of this condition was confirmed in 1770 when an inspection team recommended that the bastion be completely torn down and rebuilt with adequate vaulting.[541]

Reparation [*sic*] *of the southeast bastion was apparently begun in 1777, but there is conflicting evidence as to when the reconstruction was completed. Documentary sources indicate that orders were received late in 1777 or early in 1778 from the home government to cease all work on the fort until Peter L. Oxholm, a military engineer, completed an inspection of the island's fortifications and made appropriate recommendations to the home government.[542] Work on the bastion was stopped, according to documentary sources, and not resumed and completed until 1780-81.[543] However, Oxholm's plans of 1779 show a vaulted casemate and bastion similar to the existing one* (*Figs. B7, B8, B9*).

The bastion had embrasures for six cannons; the one in the west wall of the bastion [was] *masoned up* [by 1919] (*Fig. B17*). *There was a leader from the gundeck to the cistern below in the east curtain.*

Casemate

The casemate probably had a brick floor until 1817-18 when a wooden floor of pitch pine joists and white pine boards was laid.[544] This floor was relaid in 1834-35, when the casemate was reconverted into a barracks for eight men. The casemate had a wooden floor in 1904, when it was being used as a cell, and still does to this day.

There was a firing hole in the north wall of the casemate in 1779 which is not shown on the plans of 1836 and does not exist today (*Figs B8, B13, B17*). *Likewise, the plans of 1836 show a firing hole in the west wall of the casemate which also existed in 1779 but does not now exist. The firing or air holes were equipped with inner frames and shutters in 1834-35 in addition to the usual iron bars, and in 1885-86 they were also equipped with exterior metal shields.[545]*

Aside from a solid outer door, the casemate also had an inner blind door covered with linen or duck whenever it was used as a barracks.

Northeast Bastion and Casemate

Bastion

Unlike the southeast bastion, the northeast bastion had a brick gundeck supported by masonry arches and vaulting when completed early in the 1740s.[546]

Oxholm's plans of 1779 indicate that the bastion had embrasures for five cannons, a bell cot on the west side of the bastion, and a masonry sentry box in the northeast corner, step two steps down to the level of the water battery, and two semi-circular steps up to the level of the gundeck of the east curtain (*Fig. B9*).

As part of the renovations of 1835-36, the northeast bastion, was roofed over and converted into a "common" room for the garrison.[547] The merlons

538. RA, BLA: PKBR (1816-18), pp. 68f.
539. RA, BLA: PGH (1835-40), contains no entry for the construction and placement of these chevaux de frise and there is no subsequent mention of them in documentary sources.
540. RA, VgK: VI (1733-51), Inventory of June 26, 1744.
541. RA, VgRtK: 112 VJ (B) 1770, Report of an Inspection held in Fort Christiansvaern on April 20, 1770.
542. RA, VgRtK: 843 VJ 1778, Clausen to Royal West Indian Chamber, September 15, 1778.
543. RA, VgRtK: 83 VJ 1781, Estimate of Materials Sent and Still to be Sent for the Repair of Forts Christiansvaern and Frederik, February 91, 1781; AND ibid., 476 VJ 1782, Summary Statement filed with Clausen's letter of December 8, 1781, to the West Indian-Guinea Exchequer and General Customs Office.
544. RA, BLA: SBI (1815-24), Estimate of Reparations to Fort Christiansvaern, undated but probably 1817.
545. The metal shields may have been installed as early as 1878- - when the fort was first converted into a police station, jail and courthouse - -to prevent prisoners from having any communication with outsiders.
546. RA, VgK: VI (1733-51), Inventory of June 26, 1744.
547. The proposal and estimate for this renovation will be found in RA, BLA: RKP (1832-41), pp. 53 (b) ff. And (63(b), Construction details will be found in RA, BLA: PGH (1835-40), passim.

of the bastion were raised about 9 feet. Pitch pine joists 4 inches thick were laid atop of the walls and were covered with pitch pine laths and two courses of bricks laid flat. A lead downspout was provided to carry the water off the roof down to the gundeck of the east curtain. Two windows were made in the north wall, two in the east wall, and one each in the south and west walls. A door in the west wall provided access from the water battery, and a door in the south wall opened to the gundeck of the east curtain; two steps were provided outside the door in the west wall, while the old steps inside the door in the south wall were retained. The windows and doors were equipped with inner linen covered frames and outer hurricane shutters and doors. The five embrasures were not masoned up, but were simply equipped with double shutters in order that the bastion might continue to be armed with four 3-pounders. The ceiling beams and laths were painted a pearl color, the walls were plastered and limewashed, and window and door blinds were painted green. The masonry sentry box, the bell cot, and the guardhouse were eliminated as a result of these changes in the bastion.[548]

The brick gundeck of the bastion was unchanged by the renovations of 1835-36, but sometime after 1841 and prior to 1867 it was apparently covered with a wooden floor.[549] *However, the wooden floor was removed prior to 1884. The poor condition of the brick floor caused a new wooden floor to be laid over the brick floor when the room was converted into an examining room for the Police Magistrate in 1884.*[550] *It is not known when this wood floor was removed and the old brick floor was covered with cement, as it is at present, but it was probably done after 1917.*

When the "common" room was converted into an examining room in 1884, the windows were provided with jalousies instead of linen blinds.[551] *The shuttered embrasures were masoned up, and the walls were whitewashed.*[552]

548. This drawing is not to be relied on in this respect since these earlier features of the northeast bastion had, of necessity, to be done away with to create the "common" room.
549. Repairs to the floor in 1841 indicate that it was still of brick - -RA, BLA: PGH (1840-46), August - - while a proposal to repair the floor in December 1866 indicates that it was wooden - - NA, RG55: BI (SC)-SBI, Government… to Building Inspector, December 15, 1866.
550. NA, RG55: BI (SC)KUS (1878-87), Voucher No. 30, April 20, 1884. The floor was supposed to be laid on 3 by 4-inch joists according to the original proposal; see ibid., Meyer to the Presidency of St. Croix, October 17, 1882.
551. Ibid.
552. Ibid.

Casemate

Little is known about the northeast casemate. It was used at various times as a barracks, a powder magazine, and arsenal and a storeroom, and an archives. Documentary sources reveal few significant changes in the casemate through the years. The three firing or air holes in the east and north walls were equipped with copper shutters in 1821 similar to the existing ones on the opening in the north wall.[553] *Sometime prior to 1836, the opening in the west wall of the case may show in Oxholm's plans of 1779 was masoned up* (*Figs. B8, B13*). *The existing circular indentations in the vaulted ceiling are inexplicable, but must have some connection with use of this casemate as an arsenal.*

Northwest Bastion and Casemate

Bastion

Like the northeast bastion, the northwest bastion and casemate were a vaulted masonry construction originally.[554]

The bastion had five embrasures, a bell cot on the east side, two steps down to the level of the water battery, and two steps up to the level of the west curtain (*Fig. B9*). *All these features remain to the present day, although the bell was removed from the cot prior to 1836 and the east side of the cot was bricked up at that time.*[555]

On the other hand, the chimney shown in the center of the gundeck of the bastion in 1779 was removed sometime between 1822 and 1834-35, or in the later years.[556] *The flagpole, shown in the northwest corner of the bastion in 1779, was not moved to the southwest bastion until sometime after 1919* (*Figs. B17, B18*).

Casemate

The northwest casemate became a kitchen for the fort's garrison upon its completion in the early 1740s. It was used as a kitchen until at least 1822, and possibly even as late as 1834. During this era, the chimney above in the bastion was rebuilt in 1772 and

553. A drawing of these copper shutters is included with the Estimate of June 21, 1821, sent to the Government by Lt. Hielte, in RA, BLA: SBI (1815-24).
554. RA, VgK: VI (1733-51), Inventory of June 26, 1744.
555. The bell cot was to be used for the storage of gunfuses thereafter.
556. The kitchen still existed in 1822, when it was first proposed that the casemate be converted into cells; se RA, BLA: SBI (1815-24), Colbiornsen's Estimate of June 13, 1822, Conversion of the kitchen into two cells was approved in March 1834; see RA, BLA: RKP (1832-41), Magens to the Governor General, March 4, 1834.

in 1802. The last known repairs to the chimney before it was torn down were made in 1819.

Kitchen hearth was centered between the supporting pillars of the bastion, according to Oxholm (Fig. B8). A separate hearth was made for the officers in 1799, but no details are given as to its location within the casemate.[557] The hearth was rebuilt in 1817-18, at which time the brick floor was also relaid.[558] The floor was relaid in 1822-23 with bricks laid on edge. The kitchen was plastered and limewashed in 1822-23, as it was in 1817-18.

The first proposal to convert the northwest casemate into a cell or cells was made in 1822, but it was apparently not until 1834-35 that the suggestion was approved.[559] The case mate was converted into two bread and water cells by erecting wooden partitions to divide it in two and to provide a passageway south of them within the casemate (Fig. B13). Whether the air hole in the north wall and the niche and air hole in the east wall of the casemate were masoned up at this time is not known; but it seems possible, although the eastern cell would have had no other source of air or light than a small opening in the door to the cell.

Except for the addition of some moldings to the wooden partition separating the two cells in 1836, they remained unchanged until 1839. The conversion of the western of these cells into a maximum security cell in 1839, however, brought about several changes.[560] The existing wooden partitions were torn down and replaced by masonry walls.[561] A double door was provided for the maximum security cell (22), as with the zigzag masonry pipe on the outside of the air hole in the west wall in order to exclude all light but still permit air to enter the cell. A new airhole was cut in the north wall of cell No. (22) in June 1840, and it was also equipped with iron bars and an exterior zigzag pipe.[562]

The casemate was still in use as a cell as late as 1904, at which time it still had a brick floor.

It is not known when the existing air hole in the south wall of the casemate was cut. The existing toilet facilities, concrete floor, and door in the east wall opening on the passageway to the old latrines are all post 1919.

The door to the casemate was an arched door as early as 1779 (Fig. B7).

Southwest Bastion and Casemate

Bastion

The southwest bastion was the last major section of the fort to be completed, except for the ravelin. When finished in 1748, it had a flat brick gundeck supported on timbers like the southeast bastion.[563] Reconstruction of the southwest bastion to provide a gundeck adequately supported by arches and vaulting was suggested in 1770. However, it was not until sometime between 1774 and 1778 that the reconstruction was actually carried out.[564]

The bastion shown in 1779 had five embrasures and a chimney for the commandant's kitchen below at the intersection of the bastion and the parapet of the west curtain (Fig. B9). There was a leader from the bastion down to the cistern below in the west curtain.

It is not known exactly when the flagpole was moved from the northwest to the southwest bastion or when the embrasure on the east side was masoned up, but both these alterations were made after 1919 (Figs. B17, B18).

Casemate

The layout of the southwest casemate prior to its reconstruction sometime between 1774 and 1778 is unknown. In 1779 Oxholm shows the casemate foreshortened on the north side to provide a kitchen for the commandant, however, and it is probable that this was the same kitchen which existed as early as 1748 when the casemate was first completed (Fig. B8).

Oxholm shows an air hole in the east wall and two air holes in the south wall of the casemate, which are still located in the same places today. The air hole shown by Oxholm in the west wall of the case mate does not exist, but there is an air hole to the north rather than to the south of the buttress against this wall. In additional air hole was cut in the west wall

557. RA, VgRtK: KRB (1780-1816), 241 VJ 1804, Royal Resolution of March 21, 1806, approving Building Expenses in Virgin Islands for the Years 1797 to 1802.
558. RA, BLA: PKBR (1816-18), p. 68.
559. See entry for footnote 444.
560. RA, BLA: RKP (1832-41), p. 130a; and RA, BLA: PGH (1835-40), January and February 1840.
561. Ibid. The walls were 8 feet high by 1-¾ feet thick.
562. RA, BLA: PGH (1840-46), June 1840.
563. RA, VgK: NJ (1747), passim; and ibid. (1748), passim.
564. It is probable that the southwest bastion was reconstructed prior even to midsummer 1777. Otherwise, material for its reconstruction should have been requested at the same time that materials were urgently requested for the reconstruction of the southeast bastion. See RA, VgRtK: 667 VJ 1777, Clausen to the West India-Guinea Exchequer and General Customs Office, August 9, 1777.

of the casemate in 1822-1823 to provide more light in air in the kitchen.[565] *All air holes were provided with iron bars, and those of the southwest casemate proper were also equipped with exterior metal shields after 1885-86.*[566]

The door into the casemate was already equipped with a solid outer door; and during the period when it was used as a barracks, the casemate also had an inner blind door of linen or duck.

The southwest casemate was partitioned and converted into three cells prior to 1807, but it was again converted into a barracks in 1836.[567] *The casemate was probably reconverted into a cell when the fort became a police station and courthouse in 1878, since there would have been no other reason to have exterior shields on the openings in 1885-86. The case mate was definitely a cell in 1904; But sometime after that date and perhaps even prior to 1917, it was converted into a telephone exchange.*[568]

Reconversion of the case may into a barracks in 1836 caused a wooden floor to be laid on top of the original brick floor.[569] *This wooden floor was removed sometime after 1904, and the* [present] *concrete floor was subsequently poured atop the old brick floor.*

Dungeon

The dungeon is first mentioned in 1753, when two iron bars and two large pintles. And hinges were *bought for the "black hole where slaves are incarcerated."*[570] *This hardware was probably for the outer door of the dungeon, which was located below the southwest casemate.*

In his report to the home government in 1779, Oxholm condemned the use of this dungeon for the imprisonment of slaves as inhumane because "no light or even air comes herein."[571] *This statement was disputed by von Rohr, who, in commenting on Oxholm's reports in 1781, claimed that the dungeon had been provided with a proper air hole when the entire bastion was rebuilt sometime between 1774 and 1778.*[572] *Von Rohr must have been referring to an air hole in the east wall towards the ravelin. However, it is quite possible that the air hole referred to by von Rohr was enlarged to its present size at some later date, perhaps in 1835 when the dungeon was again put to its original use.*[573]

The dungeon fell into disuse around 1796 when the former powder magazine at the salient angle of the ravelin was converted into a cell or cells.[574] *Apparently the dungeon was used as a storeroom until 1835, when it was rehabilitated and put back into use as a dungeon.*

The steps down to the dungeon are first shown by Oxholm in 1779, and in 1784 the dungeon is described as being nine steps below the southwest casemate (*Fig. B8*).[575] *Later plans confirm the location and general construction of the stairs, although,* [Hvass's] *plan is in error in showing their location and depicting the extent of the landing at the foot of the stairs* (*Figs. B8, B13. B17*).

The stairs were undoubtedly equipped with a trapdoor initially, but there is no reference to it in the accounts until a new trapdoor equipped with a pair of hinges was made in 1835.[576] *Whether there was an iron grate above the stairs in 1919 as shown by Hvass cannot be determined from the accounts, but there is now a solid cover in its place* (*Fig. B17*).

As for the doors of the dungeon, there can be little doubt that they were equipped with heavy wooden doors with iron bars and hinges. Whether there were as many doors and whether they all opened in the directions shown by Hvass in 1919 is questionable in the light of existing conditions and evidence (*Fig. B17*).[577]

565. RA, BLA: SBI (1815-24), Rothe to Magens, June 1, 1822, and accompanying Inspection Report and Estimate of February 22, 1821.
566. It is highly probable that the shields were installed as early as 1878 when the fort was converted into a police station, jail, and courthouse.
567. RA, BLA: RKP (1832-41), p. 64 (a).
568. A telephone cable junction box is sill mounted in the southeast corner of the casemate.
569. RA, BLA: PGH (1835-40), January 1837.
570. RA, VgK: NJ (1753). m.p. (entry dated January 9, 1753).
571. RA, VgRtK: DFF (1715-1832), Oxholm's Report and Observations on the Royal Troops, Forts, other Military Installations and Buildings, August 30, 1780, p. 49. Oxholm's report was originally made in 1779, despite the fact that this copy is dated 1780.
572. RA, VgRtK: 476 vVJ1782, Clausen to West India-Guinea Exchequer and General Customs Office, December 8, 1781, with an Extract of Remarks by Julius von Rohr…
573. RA, BLA: PGH (1835-40), December 1835; and RA, BLA: RKP (1832-41), p. 64 (b).
574. RA, VgRtK: DFF (1715-1832), 799 VJ 1897, Oxholm to the Royal West Indian Government, May 8, 1797.
575. The 1784 description is contained in a report on the jails of the Danish West Indies submitted by Lindemann to the West India-Guinea Exchequer and General Customs Office on October 11, 1784; see RA, VgRtK: 105 1785.
576. RA, BLA: PGH (1835-40), December 1835.
577. The only door remaining is a single door at the foot of the stairway which open outward, not inward as shown by Hvass.

The floor was undoubtedly laid with brick originally and was covered with cement fairly recently.

Courtyard

Gutters and Pavements

Information about the condition of the inner courtyard of the fort in the 18th century is scanty. However, complaints that the courtyard was always. Underwater in a heavy rain would indicate faulty or inadequate drainage of the enclosed area.[578]

Whether anything was done about this condition prior to 1817-18 is not known. However, at the time a brick gutter with boards was laid along the west side of the courtyard from the commandant's kitchen to the privy, and part of the courtyard around the double stairway of the south curtain was paved with bricks terminated on the north side by a brick gutter across the width of the courtyard.[579]

The old brick gutters across and on the west side of the courtyard were torn up and relaid with bricks laid on edge in 1835-36. The courtyard itself was graded at that time by breaking up an evening off the rock outcrop of which it consisted.

The gutter on the west side of the courtyard was spanned by six small masonry bridges in 1836, and there was a platform running the full length of the west curtain (Fig. B13). Some of the steps and platform may date back to 1817-18. The two southernmost bridges across the gutter were removed prior to 1919, and only one of them still exists today (Figs. B17, B21, B27).

Powder Magazine Fence

Captain P. L. Oxholm was paid 350 rix dollars in 1806 for erecting a picket fence around the powder magazine.[580] *A plan of the fort shows that the picket fence was rectangular in shape in 1816 (Fig. B12).*

A new picket fence was erected in 1817-18, and the bill for 6 hardwood posts and 400 feet of white pine boards indicates that it was a simple wooden fence.[581]

The fence was damaged by a severe storm in September 1824, and had to be repaired. Almost three years later, a hurricane blew the fence down, and a new fence was erected which was 40 feet long by 7 feet high.[582]

The fence erected in 1827 was torn down and replaced by another wooden picket fence during the renovations of 1836. However, this new fence was oval in shape and had 20 hardwood posts and 2 masonry pillars equipped with a double wooden picket gate (Fig. B13).[583] *An ornamental iron scrollwork was set atop the gateposts to hold a lantern to light the courtyard.*[584] *The fence was painted a dark green to match the woodwork of the fort.*

Fourteen new pitch pine frames were made to hold the piles of cannonballs which were to be stacked inside the fence.[585]

The wooden picket fence is known to have existed as late as 1893 when part of it was blown down by a hurricane.[586] *While it may have been repaired at that time, the fence apparently did not survive into the 20th century.*[587]

Landscaping

It is not known when the practice of landscape in the courtyard was begun, but it is highly doubtful that it began before the fort was converted into a police station in courthouse in 1878. The existing flamboyant tree dates back to the beginning of the present century, while the royal palms shown by Hvass in 1919 have since disappeared (Figs. B18, B21).

Latrines

It is not known when the latrines shown by Oxholm in 1779 between the northwest bastion and the water battery was first built, although it does not appear in von Rohr's drawings of Christiansted of about 1765

578. RA, VgRtK: 164 VJ 1795, Lindemann to the West India-Guinea Exchequer and General Customs Office, October 24, 1794.
579. RA, BLA: PKBR (1816-18), pp. 68.; and RA, BLA: SBI (1815-24), Estimate of the Masonry Work included in the Reparations to be done at Fort Christiansvaern; undated.
580. RA, VgRtK: KRB (1780-1816), 1442 VJ 1816, Royal Resolution of November 13, 1816, and accompanying FBR for 1806.
581. RA, BLA: SBI (1815-24), Estimate of Reparations to Fort Christiansvaern; undated. See also, NA, RG55: BK (SC)-SBR for 1819.
582. RA, BLA: SBI (1825-29), Inspection and Estimate of Repairs Needed to Fort Christiansvaern in 1827; prepared by Magens, March 9, 1827. And ibid., Vouchers to George O'Carroll for Reparations to Fort Christiansvaern, March 15, 1828.
583. RA, BLA: PGH (1835-40), February, March, April, and May 1836.
584. Ibid., May 1836.
585. Ibid., March 1836.
586. NA, RG55: BI (SC)-SBI, Policemaster to Building Inspector, August 18, 1893.
587. There is no fence around the powder magazine in a post card view of the courtyard of the fort around 1905; this post card has not been included among the illustrative materials accompanying this report because it adds little to our knowledge of the fort.

(*Figs. B5, B8*). *The latrine shown by Oxholm had a flat brick roof, and it was virtually destroyed by the hurricane of August 25, 1785.*[588]

A new privy with a vaulted masonry roof was built in 1786-87 on the site of the original latrine (*Figs. B10, B11*).[589] *However, later evidence suggests that the floor of the new latrine was not raised like that of the old one. As a result, it was not necessary to build steps up to the level of the privy as originally proposed. Instead, the floor of the passageway was pitched downward slightly to meet the level of the latrine floor.*

The vaulted roof of the latrine was cracked as early as 1802 by the firing of cannons on the water battery, but it was simply repaired rather than replaced.[590]

A new latrine was added to the north side of the old latrine sometime in 1802-03, and it is first shown on the plan of 1816 (*Fig. B12*).[591] *In 1815, it was suggested that a single roof be laid on both latrines, but the proposal was not carried out. Instead, the flat brick roof of the newer latrine was relaid in 1822-23. Again in 1835-36, a single flat roof was recommended for both latrines, but subsequent evidence indicates that once again, this proposal was rejected. The vaulted roof of the old latrines was repaired again in 1849, but sometime between that date and about 1900 it was covered over with galvanized sheets.*[592] *As for the flat brick roof on the new latrine, it was replaced by a roof covered with galvanized sheets in 1855; the roof was relaid several times thereafter with the same material before it rotted away in relatively recent times.*

Floors of the latrines were laid with brick. They were relaid with bricks laid on edge in 1822-23, but in 1836 they were relaid with bricks laid flat.[593] *Possibly the brick floor of the officers privy was covered with a wooden floor at the same time.*[594]

The sewage disposal canal beneath the latrines, which ran down to the sea, was rebuilt in 1822-23, in 1836, and in 1849.[595] *The trough in the new latrines was rebuilt in 1822-23, at which time it was described as being 6 feet by 2½ high by 3 feet wide.*[596]

After the erection of the new latrine in 1802-03, a section of the old latrine was partitioned off for use of the officers, while the remainder served as a passageway to the new latrine (*Fig. B13*). *The officers latrine was equipped with a locked door and all woodwork was painted green. Another partition was erected between the officers latrine and the common latrine in 1839 to provide a privy for servants.*[597]

The walls of the latrines were plastered and whitewashed, and a strip of about a foot wide was usually painted blue or black at the base of the walls.

Evidence concerning the number of windows or openings in the west wall of the latrines is conflicting. The existing large window at the south end of the west wall of the old latrine is not shown in the construction drawings of 1786, appears as a large window in one of the plans of 1836, and is shown as a small slit in 1919 (*Figs. B11, B13, B15, B17*). *The existing slit north of the center buttress is shown in the construction drawing of 1786 as a window, appears on one of the plants of 1836 but not the other, and is shown as a slit in 1919* (*Figs. B11, B13, B15, B17*). *As for the latrine added in 1802-03, the plans of 1836 fail to agree as to the number and location of openings, while the plan of 1919 supports the view that there was only one opening which was centered in the wall* (*Figs. B13, B15, B17*). *At present there are two off-center slits in this wall, but there is also evidence of an earlier window in the center of the*

588. RA, VgRtK: KRB (1780-1816), 226 VJ 1786 List of Damage Caused to Government Buildings by Hurricane of August 25, 1785; prepared by Julius von Rohn, October 24, 1785.
589. Estimates and plans of the new privy are contained in ibid., 95 VJ 1787.
590. RA, BLA: JBI (1800-04), pp. 84, 86.
591. Ibid., pp. 73 f, 83. The construction date of the additional latrine could be in error, since documentary sources do not reveal the exact date. However, the latrine was undoubtedly constructed before the second British Occupation of the Danish West Indies began in December 1807.
592. A post card view of the north side of the fort around 1900 shows a galvanized-covered roof on the latrine similar to the existing one.
593. RA, BLA: PGH (1835-40), March 1836.
594. The existence of both wooden and brick floors in the latrines is not definitely known until 1851, at which time both required reparation. See NA, RG55: BI (SC)-SBI, Building Inspectors Estimate for Repairs to the Fort's Latrine, November 4, 1851, and ibid., Government of the Danish West Indies… to the Building Inspector, November 15, 1851.
595. PA, BLA: SBI (1815-24), Inspecting Committees Report and Estimates of Repairs needed to Fort Christiansvaern, February 22, 1821; and ibid., Bardenfleth to Magens, August 16, 1822. RA, BLA: PGH (1835-40), March 1836. RA, BLA: SBI (1840-49), Building Inspector to Government, May 10, 1849; and ibid., Government to Building Inspector, May 15, 1849.
596. RA, BLA: SBI (1815-24), Inspecting Committes Report and Estimate of Repairs neededto Fort Christiansvaern, February 22, 1821; and ibid., Bardenfleth to Magens, August 16, 1822.
597. RA, BLA: PGH (1835-40), September 1839.

wall. Documentary sources indicate only that there were five "air holes" in the latrine in 1851 which needed new frames and bars.[598]

Ravelin

Walls

Construction of the masonry walls of the ravelin was well underway on July 24, 1749, and they seem to have been completed by the end of the year.

The original number of openings and their location in the walls cannot be determined from the construction accounts. However, the opening shown by Oxholm in 1779 probably are the original openings, and they conform to existing conditions except that the niche in the west wall was converted into a door before 1919 (Fig. B18) and two windows were added in the east and west walls at the salient angle of the ravelin in 1878.[599]

In 1835, some 380 9-inch spikes were fastened in 135 running feet of hardwood, and they were masoned in atop the walls of the ravelin.[600] *The hardwood eventually rotted away, and in 1853 the spikes were set directly in mortar atop the walls.*

Powder Magazine, Cell, Storeroom, or Guardhouse

Details of the construction of a powder magazine at the salient angle of the ravelin are missing, and we know only that it was constructed sometime between 1755 and 1765.[601]

Oxholm's plans present the earliest view of the powder magazine and show it with a door in the north wall, no windows, and a vaulted roof in 1779 (Fig. B8).

The powder magazine was converted into a cell or cells in 1796, and it was at this time that a window was cut in the north wall to the west of the door.[602] *The window was equipped with iron bars, but there is no mention of a hurricane shutter (Fig. B13). A urine disposal pipe was also extended through the wall below the window. In 1802 it was proposed to cut a window in the east wall of the cell and to move the urine disposal pipe to the same side of the room; the latter proposal may have been carried out, but there is no evidence that the former was done until 1878 (Fig. B17).*

The vaulted masonry roof of the cell was cracked as early as 1823, and it was finally torn off and replaced by a flat brick roof in 1826.[603] *This change permitted a small 3-pounder cannon to be mounted atop the cell (Fig. B15).*[604]

The room was used as a storeroom and canteen from 1836, or slightly earlier, until 1878, and only routine repairs were carried out during this period. The flat brick roof, for instance, was relaid in 1853.

With the conversion of the fort into a police station in courthouse in 1878, some alterations were necessary to convert the canteen into a guardroom for the patrolman on night duty.[605] *Two more windows were cut in the room, one each in the east and west walls outside the ravelin. All three windows in the guardroom were equipped with wooden jalousies and hurricane shutters, as well as the customary iron bars. The flat roof was relaid with new pitch pine beams in white pine boards covered the bricks. A new floor of pitch pine joists and white pine boards was also laid.*

It is not known at what subsequent time prior to 1919 galvanized iron sheets were substituted for bricks on the roof of the guardroom or when the opening was cut in the north wall to the east of the entrance door to the room (Fig. B18).[606]

Field Artillery Shed

A wooden-shingled shed was erected in the ravelin in 1795 by Heinrich Schultz to house the equipment

598. NA, RG55: BI (SC)-SBI, Building Inspector's Estimate of Reparations needed to the Fort's Latrine, November 4, 1851.
599. Conversion of the niche into a door occurred prior to 1919; see Figure 31, infra, p. 199. For the two windows cut in the salient angle of the ravelin in 1878 see NA, RG55: BI (SC)-SBI, Voucher to William Peebles, July 6, 1878.
600. RA, BLA: PGH (1835-40), December 1835.
601. RA, VgRtK: 476 VJ 1782, Clausen to the West India-Guinea Exchequer and General Customs Office, December 8, 1781.
602. RA, VgRtK: DFF (1715-1832), Oxholm to the Royal West Indian Government, May 8, 1797.
603. RA, VgRtK: KBR (1822-29), Inspection of the Royal and Public Buildings in Christiansted's Jurisdiction, March 11, 1823, and accompanying Estimate of March 29, 1823; and also RA, BLA: SBI (1825-29), Voucher to George O'Carroll, June 26, 1826. The estimate called for 10 hardwood beams, 4 to 5 inches thick; and two layers of "double" brick laid flat on 314 square feet.
604. Its placement atop the cell is first known in 1836 when it was taken down to be cleaned and its carriage repaired; see RA, BLA: PGH (1835-40), February 1836.
605. Details are from the Building Inspector's proposal found in NA, RG55: BI (SC)-SBI, Petersen to the Presidency of St. Croix, January 12, 1878; and ibid., Voucher to William Peebles, July 6, 1878.
606. The opening to the east of the entrance door was cut sometime prior to 1878, according to a plan just recently found for the renovations of 1878.

of the field artillery, but construction details are unknown.[607]

The shed was replaced in 1815 by a wooden-shingle shed 44 feet long.[608] *Reshingling of the shed was recommended in 1822-23, at which time the shed was said to be 42 feet 8 inches long by 7 feet high and had two windows and a door 5 feet wide.*[609] *Reshingling of the shed was not carried out until 1825, however, and no sooner had it been completed than the hurricane of July 26 blew the roof off and it had to be relaid a second time.*

The shed was reshingled again in 1835, and a new wooden gutter was made for the eaves the following year.

The exterior of the shed was customarily tarred with a mixture of red-brown color in tar.[610] *In the 1830s, at least, the interior was apparently limewashed with the same yellow color used on the exterior walls of the fort.*

In 1848 the old wooden shed was torn down and replaced by a brick shed with a zinc covered roof.[611]

The floor of the shed was relaid in 1850, and three years later stone was laid at the entrance gate of the shed. In 1887 it was proposed to cover the shed with galvanized iron sheets rather than zinc sheets.[612]

The hurricane of September 12-13, 1787, destroyed the roof of the shed, and it was relaid with new pitch pine beams, white pine sheathing, and galvanized iron sheets.[613] *No further information is available about the shed after that day.*

Gate

Details of the cursed gate hung on the pillars in the east wall of the ravelin are meager, but when they are put together they seem to indicate a gate quite similar to, if not exactly the same as, the present one. There was probably a small door in a large gate, just as there is now, since the accounts use the plural expression "gates of the ravelin" and indicate the purchase of two different sizes of hardware – such as, three pairs of large hinges, two large gate hinges, a large lock, and a small one, and two different size bolts – for the same.[614] *Two large iron hooks were also bought for the gate.*

A new gate was apparently made for the ravelin in 1817-18, and a new gate with a bolt and padlock was again made in 1822-23.[615] *The gate was repaired in 1836 and again replaced in 1841.*

An iron frame to hold a large lantern was first mounted atop the gate in 1833, but this was replaced in 1836 by a fancy iron scrollwork bearing the initials of Frederik Rex VI.[616] *It was also at this time that iron spikes were set atop the gate to match the spikes set atop the ravelin and other walls of the fort.*

Further documentary details of the gate are few, but the gate is clearly seen to be exactly like the [present] *gate in the photograph of the fort of 1881-82 and in other later illustrative materials* (*Figs. B31, B32, B36*).

Pavements and Retaining Wall

[Eighteenth] *century records shed no light on this question except for Oxholm's plans which show a small paved area just outside the ravelin gate in a narrow path from the gate to the sallyport steps* (*Fig. B8*). *Apparently the rest of the grounds inside the ravelin walls were simply hard packed earth in 1779, but at a level considerably below the existing level.*

An area measuring 36 feet by 8 feet wide was paved in front of the ravelin gate, with bricks laid on edge in 1815, and a new area "from the ravelin up to the fort" was laid "with bricks where necessary."[617]

607. The opening to the east of the entrance door was cut sometime prior to 1878, according to a plan just recently found for the renovations of 1878.
608. NA, RG55: BK (SC)-FBR for 1816.
609. RA, BLA: SBI (1815-24), Colbiornsen's Estimate for Shingling a Shed in the Fort, June 13, 1822. Colbiornsen's estimate called for 2,500 shingles and 454 feet of white pine boards.
610. Seem for example, RA, BLA: PGH (1835-40), March 1836 and November 1840.
611. RA, BLA: SBI (1840-49), von Scholten to von Falbe, February 3, 1848.
612. NA, RG55: BI (SC)-SBI, Government of the Danish West Indies to Building Inspector, December 15, 1866.
613. Ibid., Estimate of Costs of the necessary Repairs to the following Buildings in Fiscal Year 1876/77; and ibid., Schellerup to Presidency of St. Croix, October 13, 1876. Schellerup requested 150 pieces of "galvanized Iron-Tiles".
614. RA, VgK: NJ (1749), n.p. (entry for November 30, 1749); and RA, VgK: NJ (1750), n.p. (two entries for January 31, 1750).
615. RA, BLA: PKBR (1816-18), p. 59; and RA, BLA: SBI (1815-24), Rothe to Magens, June 1, 1822, with accompanying Inspection Report of February 22, 1821, and Estimates. The estimate called for 166 feet of white pine plans 2 inches thick and 3 narrow hinges.
616. RA, BLA: SBI (1830-39), Magen's Account of Materials and Labor for Work Completed at Fort Christiansvaern in September 1833; and RA, BLA: PGH (1835-40), May 1836. The meaning of the small initials "NP" at the bottom of the scrollwork is not entirely clear. However, since the scrollwork was made in the "Roya;" smuthy in Christiansted, the initials may be those of the blacksmith.
617. RA, BLA: SBI (1815-24), Estimate of Masonry Work to be completed in Fort Christiansvaern, June 23, 1815.



Figure B36. Ravelin, south curtain, and southwest bastion. NPS photograph by David Jones and Clarence Johnson. April 1951. (Olsen, 1960, infra, p. 205, plate V, scan of original source material in CHRI archive)

In 1817, it was recommended that the old pavement in the ravelin should be torn up and that the entire ravelin up to the shed should be repaved with bricks laid flat.[618] *As far as is known, this proposal was carried out during the rehabilitation of the fort in 1817-18.*

Repavement of the narrow area or path leading from the gate to the sallyport was necessary in 1834-35, and the bricks were laid on edge in contrast to the pavement of 1817-18.[619]

The plans of 1836 clearly show a paved area about 20 feet by 8 feet outside the ravelin gate (Fig. B13). Inside the ravelin there is definitely a paved area from a line from the left of the sallyport steps and ravelin gate over to the shed (q). The area to the left of the demarcation line on the left side of the ravelin is differently shaded than the area, but this does not necessarily mean that this area was unpaved (Fig. B15).[620] *Indeed, there is no evidence to indicate that the flat brick pavement laid in this area in 1817-18 was torn up in 1834-35.*

As for the retaining wall, there is no evidence that this wall was erected on the west side of the newly edgewise-paved path in 1834-35 as a termination for the path. On the contrary, physical evidence indicates that the path was separated from the adjacent flat-paved area by a row of bricks laid on edge at a 45 degree angle between the two. Even more conclusive is the fact that documentary sources for this era and the next decade are so comprehensive as to virtually preclude the erection of a wall until after 1847.[621]

All the hypothesis cannot be proved or disproved at the present time, it is probable that the retaining wall was not erected until after the fort became a police station and courthouse in 1878.

Bell Cot

A masonry bell cot was erected in the ravelin when the latter was under construction in the summer of 1749.[622] *Location of the bell cot on the east side of the ravelin is disclosed by Oxholm in 1779 (Fig. B8).*

The ravelin bell was used to call the Lutheran congregation of the Church of the Lord of Sabbath

618. Ibid., Estimate of Masonry Work to be completed in the Reparations to Fort Christiansvaern, undated; and RA, BLA: PKBR (1816-18), p. 56. The estimate called for 1,500 bricks to cover an area of 2,777 square feet.
619. RA, BLA: RKP (1832-41), p. 25 (b), and RA, BLA: SBI (1830-39), a partial and undated document pertaining to the repairs of 1834-35.
620. There is a colored print of this same plan which shows the distinction more clearly in Bronsted (ed.), *Dansk Vestindien...*, p. 283. The meaning of the dots to the left of the path is not clear.
621. RA, BLA: PGH (1835-40), and (1840-46), passim.
622. RA, VgK: NJ (1749), n.p. (entries for June 30 and July 31).

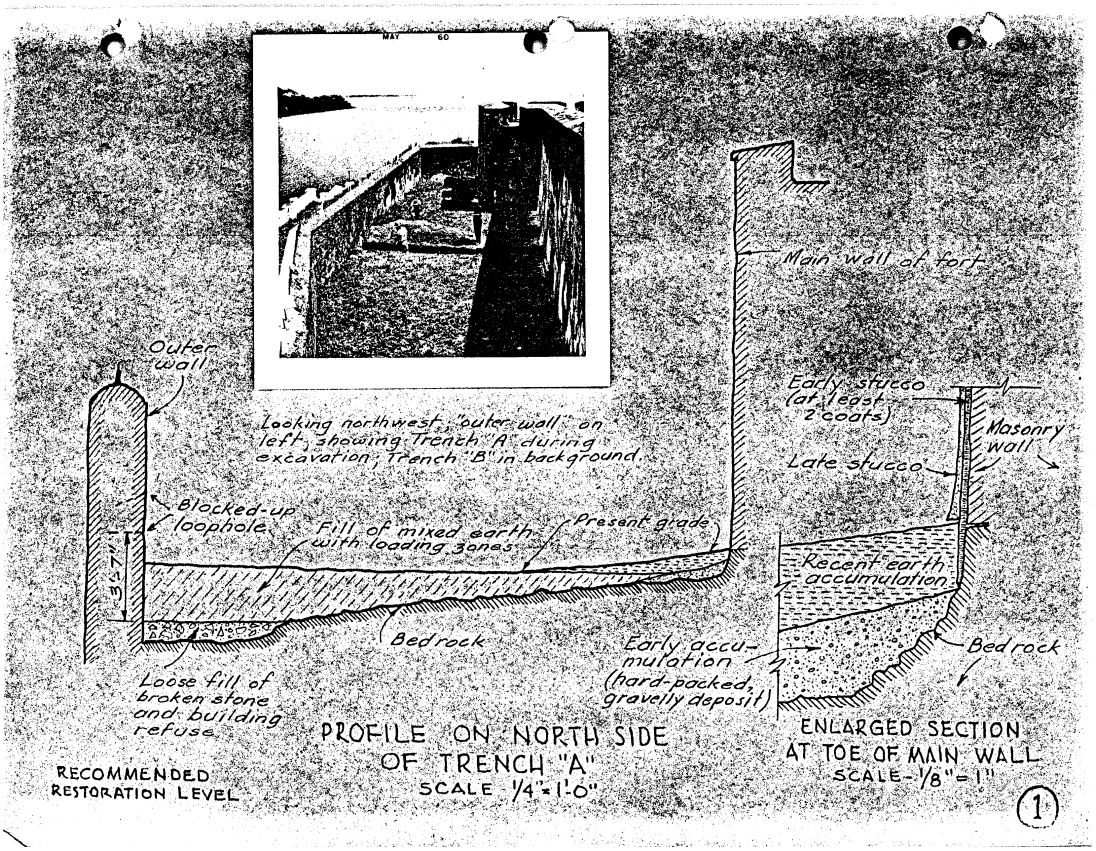


Figure B37. Illustration of an archaeological trench dug in the prison yard at fort, 1960. A better quality scan has not been located for this image; however, the information is still legible. (Jean C. Harrington, "Archeological Data," National Park Service, June 1960, fig. 1. This report is included as an appendix to Olsen, 1960, no NPS ID provided, digital file provided 2021 by contracting officer's representative (COR), NPS regional office)

to worship until 1795, when the Lutheran church had its own bell and the cot was torn down to make way for the shed erected in that year for the field artillery.[623]

West Wall

The outer wall from the southwest bastion around the northwest bastion to the latrines and down to the sea was built in 1835.[624] *As described in 1836, the wall had a total length of 172 feet; an average height of 12½ feet, including a 2½ foot foundation in 9 inch spikes; and a thickness of 2 feet (Fig. B13).*[625] *The spikes were fastened in hardwood beam set in mortar atop the wall. A door covered with cross iron bars was located in the southern end of the wall near the southwest bastion (Fig. B13).*[626] *When the section of the wall from the latrines to the sea was completed in 1836, a cheval de frise with 21-iron-tipped spikes was set in the masonry pillar at the north end of the wall (Fig. B16).*[627]

The plans of 1836 fail to show any firing holes in the wall, but there can be little doubt that they were provided when the wall was constructed. In addition to the existing holes in the northern end of the wall, physical evidence indicates others at various places in the rest of the wall.[628]

623. RA, VgRtK: KRB (1780-1816), Royal Resolution No. 409 of June 21, 1797, approving Building Expenses for 1795.
624. RA, BLA: PGH (1835-40), November 1835.
625. The height of the wall, exclusive of its foundation and spikes, is variously given as 8, 9, and 10 feet in the original proposal for its construction- - RA, BLA: RKP (1832-41), p. 54 (b); in the work accounts- -RA, BLA: PGH (1835-40), November 1835; and in the Plan and Estimate submitted by Building Inspector Hingleberg to von Scholten on March 24, 1836, with accompanying Plans by Gjellerup and Friis, for the Expansion, Improvement and Alteration of Fort Christiansvaern- -RA, BLA: RKP (1832-41), p. 63 (a). The existing wall has an average height above ground of 15 feet.
626. RA, BLA: PGH (1835-40), November 1835.
627. RA, BLA: PGH (1835-40), June 1836. The cheval de frise consisted of a heavy hardwood beam in which was set 21-iron-tipped hardwood spikes.
628. These holes are in the length of wall between the southwest bastion and the northwest bastion and number in all, as far as can be determined by ordinary visual inspection.

[Archaeological investigations carried out in early 1960 confirm Olsen's assertions that loopholes, or firing holes, were placed regularly along the west wall. The investigations also found that the grade of the area within the west wall was largely exposed grade, will a small soil accumulation at the base of the fort and a platform of loose fill at the west wall for gunmen to stand at the loopholes (*Fig. B37*).][629]

These holes were undoubtedly masoned up in 1903, when the area inside the wall was converted into an exercise yard for prisoners confined in the cells in the west curtain of the fort.[630] It must have been at this time, too, that the door in the southern end of the wall was masoned up, since a new door was cut in the outer wall of the west curtain to provide direct access to the yard from the fort thereafter.[631]

The spikes in the hardwood in which they were fastened were painted black in 1840. However, this did not keep the hardwood from rotting, an in 1853 the hardwood was discarded and the spikes were set directly into mortar atop the walls.[632]

A portion of the wall from the latrines to the sea was torn down and rebuilt in 1868-69 because it was cracked.[633] Perhaps it was at this time that the cheval de frise was removed, since it is never mentioned in the records again.

The balustraded terrace outside the west wall was put up in 1945.

Miscellaneous

Bells

The fort had two bells as early as 1743, one of which was larger than the other, and they were mounted in cots by the northeast and northwest bastions.[634] A third masonry bell cot was erected in the ravelin in 1749 for use of the Lutheran church.[635]

One of the bells inside the fort was broken in 1750, and it was sent to Denmark in that year with a request for a new bell.[636] Another bell was received from Denmark and hung in the fort in January 1751. A year later, another bell was sent to Denmark to be recast, and a new one was received and hung in the fort in 1752.[637]

Both bells in the cots by the northeast and northwest bastions were cracked in 1776.[638] They were sent to Denmark with the request that two slightly larger bells in the same proportions be provided. The request was undoubtedly granted, and the bell shown by Oxholm in the cot on the northwest bastion in 1779 was undoubtedly one of these bells (*Fig. B7*).

The bell and cot in the ravelin were removed in 1795 to make way for the new shed for the field artillery. The bell cot on the northeast bastion was incorporated into the west wall of the "common room" created there on in 1836 (*Fig. B14*). *The bell in the cot on the northwest bastion was removed in 1836, or perhaps earlier.*

A little bell cot and bell were first mounted on the outside of the guardroom at the salient angle of the ravelin in 1878. The bell was connected to the telegraph key – which was left open at night when there was no operator on duty – so that an emergency message from St. Thomas could be received as soon as the telegrapher could be awakened.[639]

As for the iron bell pull mounted on the west ravelin wall just to the north of the entrance gate, there is no indication of its existence or purchase in the accounts.

629. Jean C. Harrington, "Archeological Data," National Park Service, June 1960, pp. 3-4. This report is included as an appendix to Olsen, 1960.
630. NA, RG55: BI (SC)-KUS (1899-1906), Estimate of Cost of Converting the Outer Yard into a Prison Yard, April 2, 1903; and ibid., Description of the Jails of the Islands of St. Croix, St. Thomas, and St. John, November 11, 1904. Apparently the exercise yard did not extend further to the north than the south wall of the northwest bastion, since the firing holes in the outer wall north of this region were not masoned up.
631. Ibid., Estimate of Cost of Converting the Outer Yard into a Prison Yard, April 2, 1903.
632. NA, RG55: BI (SC)-SBI, Government of the Danish West Indian Possessions to Building Inspector, February 11, 1853; and ibid., Building Inspector's Estimate for a Major Reparation of Fort Christiansvaern, January 24, 1853.
633. Ibid., Government of the Danish West Indies to Building Inspector, December 8, 1868.
634. RA, VgK: B&D (1742-44), Moth to Directors, May 15, 1743.
635. RA, VgK: NJ (1749), n.p. (entries for June 30 and July 31).
636. RA, VgK: B&D (1750), Governor and Privy Council, St. Croix, to Directors, March 25, 1750.
637. RA, VgK: B&D (1752), Governor and Privy Council, St. Croix to Directors, April 28, 1752; and RA, VgK:NJ (1752), n.p. (entry for October 31).
638. RA, VgRtK: 346 VJ 1776, Clausen to West India-Guinea Exchequer and General Customs Office, June 6, 1776. Clausen states that these bells were used to strike the hour (the larger bell) and the quarter hours. He also adds that the church bell hung in the ravelin was inaccessible at night when the fort was closed up.
639. This version is based on local legend, which attributes the installation of the alarm bell to the inability to communicate with St. Thomas at night during the Labor Riot of October 1878. However, it seems probable that the bell was not actually put up until the telegraph office was moved into the fort in the fall of 1883. The bell was removed and installed at King's Hill Police Station during World War II and cannot now be found.

Flagpole

The first reference to a flagpole is encountered in 1741, and a new flagpole was made in 1749.[640] These early references do not indicate the location of the flagpole, but von Rhor's drawing of Christiansted of about 1765 shows the flagpole located in the northwest corner of the northwest bastion (Fig. B5). All subsequent documentary sources and illustrative materials show the flagpole in the same location until 1919. At some unknown date thereafter, the flagpole was moved to its [present] *location in the southwest bastion.*

The flagpole was replaced in 1772, 1785, 1796, 1819, 1827, and probably on many subsequent occasions when the island was struck by hurricanes.

Illustrations show the flagpole as both a single pole and a two-part stepped mast. The latter construction was used in 1819 when a new flagpole was made from a 25-foot hardwood post and a 40-foot mast timber.[641] This type of flagpole was in use in the 1830s and perhaps later, although later illustrations are usually not clear on this point. The [present] *flagpole in the Southwest bastion is this type of construction.*

Guardhouse

There was a wooden guardhouse on the water battery as early as 1807, when N. Nathan shingled this structure.[642]

A new guardhouse was built on the water battery in 1819-20. It was 12 feet long by 5 feet wide by 8 feet high and had a shingle roof and clapboard siding.[643] Hardware purchases indicate that the guardhouse had a window in the door.

This guardhouse was cut in two in 1826, and the parts were moved from the water battery to the northeast and northwest bastions.[644]

The hurricane of August 17, 1827, destroyed the artillery guardhouse, which was apparently the one located in the northwest bastion, and a new one was made in the following year.

Both guardhouses were repaired in 1834-35. The one in the northeast bastion was done away with when that bastion was roofed over in 1836 (Figs. B14, B15). The guardhouse in the northwest bastion is shown at this time to the north of the bell cot and on the west side of the bastion.[645] The plans of 1836 show a hip roof on the guard house, but Sabroe's drawings of the same period show the building with a shed roof (Fig, B16). The exterior of the guard house was painted green in 1836 to match the exterior woodwork of the fort.

The guardhouse in the northwest bastion was thoroughly rehabilitated in 1840 (Figs. B15, B16). Some new clapboards and shingles were required on the sides and roof of the building. A new door and windows were made, as well as a new frame for a glass window with panes 11 by 13 inches. The floor was repaired with some new joists and boards, and new pieces were spliced at the bottom of two of the hardwood posts of the frame. The interior of the guardhouse was whitewashed three times, and the exterior was given two coats of green paint.

In 1852, the guardhouse was sold and removed from the northwest bastion, and it was apparently not replaced thereafter.[646]

Lanterns

There are numerous bills in the early years for the purchase of oil for lanterns and lamps, and this undoubtedly remained the prevalent mode of lighting the fort until electricity was introduced in the present century.

An iron frame to hold a lantern was first fastened above the ravelin gate in 1833.[647] This frame was replaced in 1836 by an elaborate iron scrollwork bearing the initials of Frederik Rex VI, the then King of Denmark.[648]

It was also during the renovations of 1836 that the iron scrollwork for a lantern was hung above the masonry pillars of the gate in the fence around the

640. RA, VgK: NJ (1741), n.p. (entry dated December 31); and RA, VgK: NJ (1749), n.p. (entry dated August 23).
641. RA, BLA: SBI (1815-24), Beck to West Indian Government, October 8, 1819; and ibid., West Indian Government to Beck, October 13, 1819.
642. RA, VgRtK: KRB (1780-1816), 1442 VJ 1816, Royal Resolution No. 387 of November 13, 1816.
643. Details are from RA, BLA: SBI (1815-24) Beck's Estimate for the Erection of a new Guardhouse, January 6, 1820. The estimate included 1,000 feet of white pine boards, 800 feet of white pine timbers, 600 feet of white pine clapboards, and 1,500 shingles.
644. RA, VgRtK: KBR (1822-29), Inspection of the Royal and Public Buildings in Christiansted's Jurisdiction, January 24, 1824; and RA, BLA: RKP (1823-32), p. 81(b).
645. Details will be found in RA, BLA:PGH (1835-40), February 1840; and RA, BLA: RKP (1832-41), pp. 141 (a) f.
646. NA, RG55: BI (SC)-SBI, Government of the Danish West Indies to Building Inspector, April 5, 1852; and ibid., May 21, 1852.
647. RA, BLA: SBI (1830-39), Magen's Account of Materials and Labor for Work Completed at Fort Christiansvaern in September 1833.
648. RA, BLA: PGH (1835-40), May 1836.

powder magazine, and that an iron frame was fastened above the sallyport for a lantern.[649]

Lightning Rod

William Peebles was paid $6.48 In July [of 1876] *for putting up a lightning rod with a gilded copper tip.*[650] *There is no reference to its location; however, it may have been mounted atop the flagpole, since this was the highest part of the fort. There are no further references to the lightning rod, and it is not visible in any illustration showing the fort after 1876.*

Rain Gauge

A rain gauge is first shown on the south parapet of the water battery in 1919 (*Fig. B17*). *However, it is possible that there was a rain gauge in this location as early as 1852 when collection of statistics on rainfall was apparently first begun.*

Sentry Boxes

There is mention of a sentry box as early as 1752, and the reference seems to indicate that it was located outside the ravelin gate.[651]

Two sentry boxes are visible on the floor in von Rohr's drawing of Christiansted of about 1765, one of them in the northwest bastion and the other in the southwest bastion (*Fig. B5*).

Oxholm shows a masonry sentry box in the northeast corner of the northeast bastion in 1779 (*Fig. B9*). *This sentry box was still in existence in 1816 and may have remained in use until the northeast bastion was altered in 1836* (*Figs. B12, B14*). *Oxholm shows a sentry box just outside and to the right of the ravelin gate.*

A new sentry box was made in 1800 and again in 1827. The king's arms were painted on a sentry box in 1829. The sentry box "outside the fort" was repaired in 1831, 1835, and 1836. A new sentry box was made in 1839 for the same location, and a brick platform was laid for it to stand on.

The sentry box to the right of the ravelin is clearly visible in a photograph of the fort taken in 1881-82 (*Fig. B32*).

A new sentry box was made "for the pavement outside the ravelin gate" for the last time in 1896. Thereafter, there is no further reference to the sentry box, and it is not seen in early 20th century photographs of the fort.[652]

Steps and Retaining Wall on the East Side of Ravelin

Documentary sources contain no reference to either of these features, and it is not until 1919 that they are shown in any of the illustrations or plans of the fort (*Fig. B18*).[653] *Moreover, the 1919 plans do not show any steps outside the door in the east wall of the ravelin. The existing concrete pavement atop the area behind the retaining wall was all laid after 1919.*

Whipping Posts

Two whipping posts for the corporeal punishment of prisoners are cited as early as 1744.[654] *Oxholm shows such a post to the left of the ravelin gate in 1779* (*Fig. B8*). *The last reference to this feature occurs in 1788, when a new whipping post was made.*

Stableyard Structures

Wall

Erection of a masonry wall 350 feet long by 9½ feet high by two feet thick with a 2½ foot foundation to the east and below the fort was proposed in September 1835.[655] *However,* construction of the wall was not approved until March 1836.[656]

The wall was completed by the end of June 1836 (*Fig. B13*).[657] *The section of the wall running eastward from the southeast bastion had a gate near its center to provide access to the stableyard. The wall on the east side of the stableyard had 12 windows near the top, and they were equipped with iron bars set in hardwood frames and hurricane shutters. Subsequently, 9-inch iron spikes were fastened in hardwood and set atop the wall, and a cheval de frise was embedded in the pillar at the northern end of the wall* (*Fig. B16*).

A section of the wall near the water's edge had to be torn down and rebuilt in 1868-69 because it was badly

649. RA, BLA: PGH (1835-40), May 1836.
650. NA, RG55: BI (SC), SBI, Cost of Reparations to the following Buildings in Fiscal Year 1876/77… Fort Christiansvaern… and ibid., Invoice for a Lightning Rod for Fort Christiansvaern, May 22, 1876. The lightning rod came equipped with a 54-foot-long copper wire ⅝ inches thick.
651. RA, VgK: NJ (1752), n.p. (entry for June 30).
652. While not included among the illustrative materials accompanying this report, there are several post card views of the ravelin and south curtain of the fort in the early 20th century which do not show the sentry box.
653. The existing splash block is not shown by Hvass.
654. RA, VgK: NJ (1744), n.p. (entry for November 30).
655. RA, BLA: RKP (1832-41), pp. 53 (b), 55 (a). The proposed length of the wall, 350 feet, exceeds the length of the existing wall by more than 100 feet.
656. RA, BLA: SBI (1830-39), von Scholten to von Hingelberg, March 30, 1836.
657. RA, BLA: PGH (1835-40), July 1836; and RA, BLA: RKP (1832-41), p. 70 (a).



Figure B38. Christiansted Harbor, ca. 1840-1883. Lithograph by Alexander Nay after painting by Vilhelm Melbye. (Danish Royal Library Image Collection, www5.kb.dk/images/billed/2010/okt/billeder/object275169/da/)

cracked.[658] It was probably at this time that the cheval de frise was removed from the north end of the wall.

Stable

Upon the completion of the wall in June 1836, construction of a 75-foot-long stable was begun against the east wall of the stableyard (Figs, B13, B15).[659] Six brick peers and arches were constructed as a west wall for the stable, and a flat brick roof was laid atop the walls on pitch pine joists and laths. The stable was paved with brick. A brick gutter was laid in front of the stable and was continued from the north end of the stable to the sea with rocks. A wooden gutter 70 feet long was suspended from the eaves on 13 iron hangers. Twelve box stalls were made and provided with cribs and racks covered with zinc. Finally, six wooden blinds were made for the arches in the west wall of the stable to keep out the afternoon sun.

In 1839, the pavement of the box stalls was relayed with stone and "blue beach."[660]

The stable was extended an additional 25 feet in 1840-41 to create a clothes drying and mangling shed for the garrison.[661] Construction of this extension was identical to that of the earlier stable, and the wooden and brick gutters of the stable were simply extended 25 feet to include the extension. Two windows were set in the east wall, and they were equipped with iron bars and hurricane shutters just like the older windows in the wall. A window with hurricane shutters was apparently also set in the north wall of the extension. The two arches of the west wall of the shed were provided with roll-shades of unbleached linen to keep out the afternoon sun.

The pavement of the box stalls was relayed with stone in 1843.

The following year, 1844, about 19 feet of the southern end of the stable was partitioned off to be used as a granary.[662] A masonry wall was erected

658. NA, RG55: BI (SC)-SBI, Government of the Danish West Indies to the Building Inspector, December 8, 1868.
659. Details of the construction of the stable are from RA, BLA: PGH (1835-40), passim.
660. RA, BLA: PGH (1835-40), August, September, and October 1839.
661. Details of the shed will be found in Hingelberg's estimate of September 10, 1840, RA, BLA: RKP (1832-41), p. 51 (a); and in the construction reports in RA, BLA: PGH (1840-46), passim.
662. The proposal and accompanying plan for this alteration are in RA, BLA: SBI (1840-49), Hingleberg to Government of the Danish West indies, May 14, 1844; alteration details are found in RA, BLA: PGH (1840-46), June and July 1844. The floor of the granary was relaid



Figure B39. Christiansted Harbor, 1851. Watercolor by Peter Anton Seidelin. (Danish Royal Library Image Collection, www5.kb.dk/images/billed/2010/okt/billeder/object277448/da/)

across the width of the stable, and an arch and a half of the front (west) wall was bricked up with and provided with two windows and a door equipped with hurricane shutters.

The stablewing was also extended about 21 feet further northward in 1844 to create a new carriage house.[663] *Actually, the clothes drying and mangling facilities were moved to the new addition, while the former drying and mangling shed became the carriage house. Construction of the extension was similar to the older sections of the stablewing. No windows were to be set in the east wall of the extension according to the plans, but it is not certain whether this proposal was actually carried out in practice* (*Figs. B38 B39*). *A grilled iron window was set in the north end wall of the addition* (*Fig. B28*).[664] *The roof gutter was again extended from the older sections of the wing to include the addition, and this was also true of the stableyard gutter to the sea. The extension was paved, but whether with brick or stone is not stated.*

Half of the carriage house was converted into stables in 1848 when two box stalls were erected.[665] *In 1851, a new wooden gutter, which was tarred and painted, was provided for the stablewing, as well as a lead receiver and downspout at one end of the gutter. The pavement*

with bricks laid flat. The door was centered between the windows, as one might have expected.

663. RA, BLA: SBI (1840-49), Hingelberg to Government of the Danish West Indies, May 14, 1844; and RA, BAL: PGH (1840-46), August, September, and October 1844. The floor of the extension was apparently laid with brick.

664. RA, BLA: SBI (1840-49), Hingelberg to Government of the Danish West Indies, May 14, 1844; RA, BLA: PGH (1840-46), October 1844.

665. RA, BLA: SBI (1840-49), Falbe to Danish West Indian Government, June 15, 1848; ibid., Danish West Indian Government to Falbe, June 19, 1848; and RA, BLA: RKP (1842-50), p. 258.

of six of the box stalls was torn up and replaced with "blue beach" at the same time.

In 1855 eleven old window frames in the east wall were repaired and three new ones were made of pitch pine.[666] These frames and those of the door and two windows in the west wall of the granary were then painted.

Some beams were replaced in the roof of the stablewing in 1858. Ten years later the box stalls were relaid with new white pine planks, and there were frequent repairs to or replacement of the floors of the box stalls in the next decade. A new wooden gutter was made in 1870. Seven years later, the remainder of the carriage house and half of the clothes drying and mangling shed were also converted into stables when three or four box stalls were put up.[667] And with the conversion of the fort to a police station in courthouse in 1878, it is probable that the rest of the clothes drying in mangling shed was also converted to stable use.

It is not known when the brick roof on the granary was removed and replaced by galvanized sheets, or when a section of the brick roof near the northern end collapsed and was not replaced.

Carriage House-Watchman's Room

At the same time that this table was constructed against the wall of the stableyard, a combined carriage house and room for the night watchman was built against the south wall of the yard to the west of the entrance gate (Fig. B13).[668]

Like the stable, this structure was built with a flat brick roof laid on pitch pine beams and laths. The watchman's room on the east side of the structure was separated from the carriage house on the west side by a masonry wall. The watchman's room was provided with a window in the east wall and a door in the north wall, both equipped with hurricane shutters. A wooden floor was laid in the room.

The carriage house section of the building was simply provided with a large gate in the north wall. It is not known whether the carriage house was paved at this time or whether it was not until 1840 that it was paved with stones.[669]



Figure B40. HABS photograph of the carriage house/watchman's room, ca. 1959. (Library of Congress, HABS Survey VI-5, LOC vi0085, photograph no. 23, www.loc.gov/resource/hhh.vi0085.photos/?sp=23)

A wooden gutter 28 feet long was hung under the eaves of the building.

The watchman's room was provided with an inner blind door in 1839.

The gate of the carriage house was repaired in 1841, but a new gate had to be made in 1844. A new gate was again made in 1855 and in 1874, at which time it was described as being 9 feet 4 inches by 8 feet 7 inches.[670] A new lintel 16 inches wide was also installed over the gate in 1874.[671]

A new wooden floor was laid in the watchman's room in 1855, and the window shutter was repaired and a new door was made. Minor repairs were made to the steps of the watchman's room in 1876.

The combined carriage house-watchman's room was converted into a residence for a drover in 1880.[672] It was at this time that a window was cut in the south wall of the former carriage house and that the gate in the north wall was removed and replaced by a barred and shuttered window set in clapboard siding. A doorway was cut in the north end of the masonry wall, which formerly separated the carriage house from the watchman's room (Fig. B40).

666. NA, RG55: BI (SC)-SBI, Meyer's Estimate for reparations to the Stableyard in Fort Christiansvaern, March 12, 1855; and ibid., Government of the Danish West Indies to Building Inspector, April 20, 1855. It is impossible to say whether there were only 14 windows in the east wall of the stable, as this document seems to imply, and that there were therefore no windows in the wall of the extension added to the stable in 1844.
667. Ibid., Raupach to the Presidency of St. Croix, May 8, 1877, with endorsement of Presidency instructing Building Inspector to Complete Work, May 11, 1877.
668. Construction details are contained in RA, BLA: PGH (1835-40), August 1836-November 1837.
669. RA, BLA: PGH (1840-46), November 1840.
670. NA, RG55: BI (SC)-SBI, Estimate of Cost of Reparations Needed in Fiscal Year 1874/75 to the following Buildings on St. Croix belonging to the Colonial Treasury.
671. Ibid.
672. NA, RG55: BI (SC)-KUS (1878-87), Eisen to the Presidency of St. Croix, May 25, 1880.

Workshed-Carriage House

A wooden-shingled shed was erected in the stableyard in April-May of 1841 for the use of artisans [*sic*] *working on the fort.*[673] *When completed, it was tarred "and the posts on which it rests [were] masoned in [the ground]."*[674] *This must be the shed just barely visible in the stableyard in Melbye's painting of about 1845-51* (*Fig. B38*).

This shed was converted into a carriage house in 1848 for the carriage displaced from the stablewing.[675] *The shingle roof was replaced by a galvanized roof in 1856.*[676]

After 1856, it is difficult to determine what happened to the shed, although it seems that it was still in existence in 1878.[677] *The* [present] *shed was probably erected in the present century, but it undoubtedly stands on the site of the earlier shed* (*Fig. B24*).

Laundry House-Boathouse

Erection of a little building to the north of the stableyard and just beyond the water's edge was proposed as early as 1836 so that the troops of the garrison would have a place to do their laundry.[678] *However, erection of the structure was not approved until 1840.*[679]

[A structure in this location appears on 1836 plans of the fort with the label "vaskerhuus," which Olsen translates to "laundry house" (*Fig. B13*). Olsen does not make note of this. The way the "laundry house" is depicted on the 1836 plans could also suggest that perhaps only the foundation was constructed in 1836 and the "washhouse" itself was constructed later.]

The building erected between December 1840 and March 1841, was 18 feet by 10 feet by 8 feet and was set on 12 hardwood piles which were 14 feet long by 9 inches in diameter and had iron "shoes" fastened on the bottom.[680] *The roof and sides were covered with white pine sheathing and cypress shingles. The windows were equipped with jalousies. When completed in March 1841, the whole building was tarred.*

A boathouse was attached to the north side of the laundry house in 1846.[681] *From later descriptions and Melby's painting of this period it is clear that the boathouse was simply a shingled lean-to erected on posts or piles on the north side of the laundry* (*Figs. B38, B39*).

Various repairs were necessary to the laundry-boathouse in 1870-71, the most important of which was the replacement of the wooden shingles on the roof of the boathouse with galvanized sheets.

Minor reparations [*sic*] *were again necessary in 1877. More extensive reparations [sic] were required to the laundry house after the hurricane of August 18, 1893, and October 9, 1916. Indeed, the latter virtually tore the lean-to for the boat off of the north side of the building, and the lean-to was not replaced when the laundry house was repaired.*[682] *The laundry house was apparently so severely damaged by the hurricane of 1928 that it was not subsequently rebuilt.*

Retaining Wall

A stone retaining wall was erected on the west side of the stableyard and below the east curtain of the fort in 1840-41.[683]

[Archaeological explorations at the retaining wall conducted in 1960 concluded, based on the rough and unfinished nature of the west side of the retaining wall below present grade level, that the grade west of the retaining wall was raised significantly at the time the wall was constructed. The original grading of the stableyard can be seen in the 1836 plans (*Figs. B15, B17*).][684]

Steps

A set of brick steps was built from the stableyard up to the base of the northeast bastion in 1837.[685]

673. RA, BLA: PGH (1840-46), April and May 1841.
674. Ibid., May 1841.
675. RA, BLA: SBI (1840-49), Falbe to Danish West Indian Government, June 15, 1848; and ibid., Danish West Indian Government to Falbe, June 19, 1848.
676. NA, RG55: BI (SC)-SBI, Government of the Danish West Indies to Building Inspector, October 13, 1856.
677. Ibid., Building Inspector Petersen to the Presidency of St. Croix, January 15, 1878. The plan accompanying this proposal and its estimates shows a shed against the retaining wall on the west side of the stableyard on about the same location as the existing shed. The existing shed was probably erected after the hurricane of October 9, 1916, which seems to have blown down the earlier shed.
678. RA, BLA: RKP (1832-41), p. 63 (b).
679. RA, BLAL SBI (1840-49), von Scholten to von Hingelberg, September 21, 1840.
680. Details are from RA, BLA: RKP (1832-41), pp. 149 (b) ff.; and RA, BLA: PGH (1840-46), December 1840-March 1841.
681. RA, BLA: RKP (1842-50), pp. 208f.
682. NA, RG55: BI (SC)- Office File (1915-17), Budget Proposal of March 15, 1917, in connection with the Hurricane of October 9-10, 1916.
683. RA, BLA: PGH (1840-46), November 1840-January 1841.
684. Harrington, p.4.
685. RA, BLA: PGH (1835-40), October 1837.



Figure B41. View of east curtain from the stableyard showing the door near the southeast bastion and two sets of steps down to the stableyard level. A mezzanine level was created by adding a retaining wall to the stableyard and backfilling to the west. This narrow flat area created by the retaining wall would have served no logical purpose if the area was not accessible from the east curtain. (Gjessing, 1953, fig. 15, CHRI 11424, box 19, folder 13, file 5)



Figure B42. Same as Fig, B41, except viewed from above on the gundeck of the east curtain. (Gjessing, 1953, fig. 11, CHRI 11424, box 19, folder 13, file 5)

A set of brick steps was erected down to the water's edge at the northern end of the yard in 1841 to provide access over a stone causeway to the new laundry house.[686]

The steps midway in the retaining wall erected on the west side of the stableyard in 1840-41 may be as old as the wall itself. However, it is also possible that these stairs were not made until 1878 when a door was first cut in the outer wall of the east curtain to provide direct access to the stableyard from the fort.

[This order of operations, including the date of 1878 for the exterior door in the east curtain, makes little sense, as there would have been no practical reason for the retaining wall if not to provide an intermediary platform for access from the east curtain of the fort to the stableyard (*Figs. B41, B42*).]

Well

The well on the west side of the stableyard was dug in the spring of 1845, but it was not until a year later that a wall and cover were made for the well (Fig. B41).[687] *The well was equipped with a winch in 1859.*[688]

686. RA, BLA: PGH (1840-46), February 1841. This stairway, like that from the stableyard up to the base of the northeast bastion, still exists in a dilapidated condition.
687. Ibid., May 1845; and RA, BLA: SBI (1840-49), Royal West Indian Government to Building Inspector, June 25, 1846.
688. NA, RG55: BI (SC)-SBI, Government of the Danish West Indian Possessions to the Building Inspector, March 21, 1859.

Gates

The gates first put up on the gateposts of the stableyard in 1837 were iron grill gates imported from Denmark in the preceding year.[689]

A new iron grill gate, described as being 10 feet by 10 feet, was requested in 1879, but there is no record of the action taken on this request.[690]

Fences

Erection of a wooden picket fence was proposed along the shore of the stableyard in 1878 to prevent impounded cattle from getting into the sea.[691]

A wooden picket fence was located atop the fill behind the retaining wall on the west side of the stableyard in 1919.[692] *It is not known when this fence was erected or torn down.*

689. RA, BLA: RKP (1832-41), p. 66 (b).
690. NA, RG55: GGs (SC)-BC 1879/80. Eisen to the Presidency of St. Croix, April 15, 1879.
691. NA, RG55: BI (SC)-SBI, Petersen to the Presidency of St. Croix, January 12, 1878.
692. See Hvass, *Dansk Vestindien…*, Figure 56, p.31.

Olsen's Key to Footnotes & Bibliography

FOOTNOTES

Symbols

AAK	Amerikansk Kopibog
BC	Budget Correspondence
B&D	Breve og dokumenter (bilag) indkomme til direktionen for vestindisk-guineisk Kompagni fra Vestindien
BI (SC)	Office of the Building Inspector, St. Croix
BK (SC)	Office of the Bookkeeper, St. Croix
BLA	Bydningsinspektorens of Landmaalerens Arkiv fra St. Croix
DFF	Dokumenter vedrorende forsvarsvasenet of fortifikationerne i Vestindien
DK	Danske Kammer, 3die Bureau
FBR	Fortegnelse over de kongelige fortresser, samt huuse og bygningers reparationer og omkostninger paa Eylandet St. Croix
FMKK	Finansministeriets Kolonial Kontor
GGs (SC)	Office of the Government and Government Secretary, St. Croix
JBI	Journal for Overbygningsinspektoratet
KBR	Kongelige byningers reparation m.m.
KRB	Kongelige resolutioner om summen til Bygningsvaesenet og andre ubestemt udgifter
KUS	Kopibog of udaaend skrivelser fra Bygningsinspektoren paa St. Croix
NA	National Archieves
NJ	Negotiejournal fra St. Croix
PGH	Protokol for Garnisonshaandvaerkerne
PKBR	Protokol for kongalige bygningers reparation
RA	Rigsarkivet
RBO	Revisitation for Overbygningsinspektoratet
RG55	Records of the Government of the Danish West Indies (1850-1917) United States Virgin Islands (1917-43)
RKP	Referant og korrespondanceprotokol for Christiansteds jurisdiktion

SBI	Skrivelser til Overbygningspektoratet (or Bygningsinspektoraterne i Christiansted og Frederiksted)
SP	Sekretprotokol for St. Croix
VgK	Vestindisk-guineisk Kompagni
VgRtK	Vestindisk-guineiske Rente-og Generaltoldkammer
VI	Vestindiske Inventarier
VTC	Vouchers, Time Sheets, and Correspondence Relating to Expenditures on Public Buildings

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Primary Sources

Manuscript Materials

Danish National Archives (Rigsarkivet), Copenhagen, Denmark

This is the main repository for the official correspondence and records of the former Danish West Indies. The collection is voluminous and has never been adequately catalogued, thereby making the work of the researcher doubly difficult and time consuming.

Research in this collection was undertaken by the writer in the summer of 1957. Three months were devoted to a search for all records relating to the construction and subsequent modifications of Fort Christiansvaern and the other five buildings of the Virgin Islands National Historic Site, Christiansted, St. Croix.

Findings for the 18th century were not complete or as comprehensive as one might desire. Construction of the fort is recorded in the accounts of the Danish West India and Guinea Company during the era from 1738 to 1750, although these records are often not sufficiently detailed or explicit to be of much value. The construction era is followed by a 20-year gap during which little is known about the fort, particularly after St. Croix became a crown colony in 1755. Maintenance accounts and records of work performed on the fort are resumed in 1770 and are fairly complete for the remainder of the 18th century.

Except for gaps caused by the British occupation of 1801-02 and 1807-15, the physical history of the fort is adequately covered from 1800 to 1850 by the records of the Building Inspector for St. Croix (these records were transferred to the Danish National Archives in bulk in 1889).

Insufficient time was available to the writer to conduct an adequate search for materials for the period after 1850, and this search was made more difficult by the administrative changes in the Danish Government which put colonial affairs under the Ministry of Finance after that date. However, this gap is covered in large measure by the writer's research and findings in the United States National Archives, as explained in detail below.

The following is not a comprehensive list of all materials examined in the Danish National Archives but simply of those records of significance to this study. The list is sub-divided according to archival grouping or arrangement.

Vestindisk-guineisk Kompagni: 1734-54.

Amerikansk og afrikansk Kopibog: 1735-36, 1736-39

Breve og Dokumenter (Bilag) indokmme til Direktionen: 1732-34, 1735-36, 1737-38, 1740-41

Den vestindiske Regering paa Sct. Croix. Diverse Pakkesager: Indentarier, Besigtigelser og Overleverings Forreninger, 1743-63

Negotiejournal fra Sct. Croix: 1744-53 (Separate volume for each year).

Vestindiske Inventarier: 1733-34, 1734-36, 1736, 1744, 1747, 1749, 1751

Rentekammeretes vestindisk-guineiske Renteskrivekontor: 1754-60

Brecejournal, 1754-60.

Indkomme breve fra Generalgouvernoren og Gouvernementet paa Sct. Croix, 1756-59

Vestindisk-guineiske Rente-og Generaltoldkammer, 1760-61

Amerikansk Journal, 1770-71

Indkorme vestindiske Breve, 1760-71

Vestindiske Brevejournaler: 1760-62, 1762-67, 1768-69

Danske Kammer 3die Bureau: June 1771 to January 1773

Sager til vestindiske Journaler: 1771-73.

Vestindiske Journaler, Litra A-C: 1771-72, 1772-73

Vestindisk-guineiske Rente-og Generaltoldkammer, 1773-1848

Dokumenter vedrorende forsvarsvaesenet og fortifikationerne i vestindien: 1775-1832.

Henlagte Sager til vestindiske Journaler: 1814-48.

Kongelige bygningers reparation m.m. - Sct. Croix: 1822-29

Kongelige Resolutioner on Summen til bygningsvaesenet og andre ubestemt Udgifter: 1780-1816

Vestindiske Journaler: 1773-1848.

Vestindiske Journalsager: 1773-1847.

Vestindiske Resolutioner: 1771- 1839.

Bygningsinspektorens og Landmaalerens Arkiv: 1800-1850.

Journal for Overbygningspektoratet: 1800-04

Protokol for Garnisonshaandvaerkerne i Christiansted: 1835-40, 1840-46.

Protokol for kongelige bygningers reparation: 1815-18

Referat og Korrespondanceprotokol for Christiansteds Jurisdiktion:

1823-32, 1832-41, 1842-50.

Rekvisitionsbog for Overbygningsinspektoratet: 1800-06.

Skrivelser til Bygningspektoraterne i Christiansted of Frederiksted.

Ind-og udgaaende Breve: 1815-24, 1825-29, 1830-39, 1840-49.

Skrivelser til Overbygningsinspektorate: 1800-03.

Finansministeriets Kolonial Kontor: 1850-1917.

Vestindiske Journaler: 1850-1917

Vestindiske Journalsager: 1850-1917.

United States National Archives, Washington, D.C.

The records of the former Danish West Indies contained in the United States National Archieves (Records Group 55) are still in such an unclassified state that it is difficult to assess their contents and value. However, the writer was able to reach some tentative conclusions about the collection during the months's research in September 1959.

The collection dates back as early as the 18th century but the major part of it pertains to the 19th and early 20th centuries. It contains copies of incoming and outgoing correspondence, reports, etc. from one government agency to another in St. Croix and of the government of the former Danish West Indies with the home government in Denmark. This collection is particularly important for the period after 1850 when the colonial government exercised more and more self-government and such matters as routine maintenance were handled locally.

The incoming and outgoing correspondence to and from the Building Inspector of St. Croix is the most important material in Records Group 55 for this study. As noted in the list below, this correspondence is far from complete at present for the period between 1850 and 1917. However, it is possible that as further classification and sorting of the collection continues, some of the missing materials will be found and properly shelved.

The annual Budget Proceedings of the Colonial Council are also of great importance for the period from 1865 to 1917, since the construction and maintenance of public buildings was subject to debate and approval by the Colonial Council. Like the records of the building inspector, the budget proceedings are

incomplete at the present time.

The records of the United States government of the Virgin Islands from 1917 to 1943 are also included in Records Group 55, but they shed little light on the maintenance of the fort.

Office of the Bookkeeper, St. Croix: 1850-1917.

Appraisal of Government and Municipal Buildings in Christiansted,

January 1, 1880 (A supplement to the St. Croix General Ledger).

List of Expenditures on Government and Municipal Buildings in 1908-09.

List of Expenditures for the reparation of the Royal Forts, Houses and Buildings on St. Croix: 1804, 1805, 1806, 1807, 1815, 1816, 1818, 1819, 1820, 1821, 1822, 1827, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1841, 1842, 1843, 1845, 1846.

Office of the Building Inspector, St. Croix: 1850-1917.

Copybook of Letters Sent: 1855-59, 1867-70, 1878-87 (entries missing from June 1880 to May 1882), 1887-92, 1899- 1906, 1906-08.

Press Copybooks of Letters Sent: 1910-13, 1913-15, 1916-17 (all in poor condition).

Journal of Letters Received: 1878-1907.

Letters Received (Original correspondence): 1850-1917 (correspondence for 1880, 1881, 1886-89, 1900-03 is completely missing and is only partially complete for 1904-10, 1912, and 1914).

Vouchers, Time Sheets, and Correspondence Relating to Expenditures on Public Buildings : 1906-17.

Office File: 1915-17.

Office of the Governor and Government Secretary: 1850-1917.

Budget Correspondence: 1870/71 (incomplete), 1872/73 (incomplete), 1876/77 (incomplete). 1877/78, 1879/80 (incomplete), 1884/85, 1889/90, 1891/92, 1894/95, 1900/01 (incomplete), 1901/02 (incomplete) 1903/04, 1904/05 (incomplete) 1905/06, 1906/07, 1907/08, 1908/09 (incomplete), 1909/1910, 1910/11, 1911/12, 1912/13, 1913/14, 1914/15, 1915/16, 1916/1917, 1917/1918.

Correspondence Files Nos. 817/1916 and 1338/1917

Office of the Government Military Secretary: 1850-1917.

Correspondence Files: 83/1900

Office of the Despatching Secretary: 1917-1930.

Correspondence File N-4-G (Public Buildings): 1917-30.

Office of the Lt. Governor and Administrator for St. Croix: 1931-40.

Correspondence File 64 (Public Works): 1931-40.

Miscellaneous Archives and Libraries

While in Denmark in 1957, the writer also conducted research in the Royal Library, Copenhagen, and the Trade and Shipping Museum, Helsingor, Denmark. No manuscript materials of value to this study were found in these repositories. However, some of the illustrations contained in this report were copies from originals or engravings in the collections of these institutions.

Except for newspapers, the entire collection of materials from the former Danish West Indies now deposited in the Bencroft Collection, University of California Library, has been obtained on microfilm and found to be of no value to this report.

Likewise, the Westgaard Transcripts of Materials from the former Danish West Indies deposited in the Library of Congress, Washington, D.C. , contain nothing of importance to this study.

Newspapers

The St. Thomas Public Library, Charlotte Amalie, St. Thomas, has a fairly complete microfilm file of newspapers published in St. Croix as far back as 1770 when the first newspapers published in the Danish West Indies. The writer has examined the complete file of newspapers listed below, but the search proved singularly unrewarding.

The Royal Danish American Gazette: 1770-79, 1787, 1789-92, 1802.

Dansk Vestindisk Regierings Avis: 1802-07

The St. Croix Gazette: 1808-13

The Royal St. Croix Gazette: 1813-15

Dansk Vestindisk Regierings Avis: 1815-43

The St. Croix Avis: 1844-1917.

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Chronology of Development and Use

Section II – The Fort, 1960 to the present



Figure B43. South curtain viewed from roof of northeast bastion, 2021 (JKOA)

Introduction to Section II

Olsen's Historic Structure Report (HSR) in the previous section, with our additions, brought the fort's chronological history to 1960. This Section and Section III begin in 1960 and are the work of JKOA. Section II addresses the fort proper; Section III covers the stableyard complex.

Park records contain many files documenting proposed projects, which are presented here. While it is presumed that the majority were completed, in many cases no documentation was found indicating whether, when, or in what way these projects were conducted.

The Fort

1960, Repair of Walkways

The earliest item found in CHRI files regarding work on the fort after the 1960 completion of Olsen's Historic Structure Report is a photograph of two men repairing brick paving. Handwriting on the back of the snapshot identifies it as "Repair of Walkways, 1960." The image shows walkways and a drainage channel in front of the east curtain. No associated information was found (*Fig. B44*).



Figure B44. Snapshot with handwritten label "Repair of Walkways," stamped May 1960. (CHRI uncatalogued boxes)

1963, Repairs to Dungeon Trap Door Area

Frederik C. Gjessing, the NPS architect who wrote the 1953 condition report of the fort, recommended in 1963 that the frame of the trap door to the dungeon be replaced with a new matching frame, and that a new wood floor be made in front of the casemate. The existing door and hardware were to be reused. An interesting instruction is that the frame, new floor, and existing door were not to be painted.[693]

1969, Deteriorated Structural Elements

In November 1969, a carpenter and maintenance worker from the Virgin Islands National Park in St. John were sent to the fort to evaluate the extent of rotten timbers. They were accompanied by architect Gjessing and another. Four rooms and the stable were investigated. In the kitchen, all beams were rotten at the wall junction and "could cave in at any time." Replacement of all timbers and reworking the supporting masonry was needed, and shoring was immediately necessary.[694]

The cistern room required repair to prevent the brick ceiling from falling. Shoring installed several years earlier showed signs of rotting. The fire room [?] needed shoring or repair, and the old courtroom ceiling was in very bad condition and could fall at any time. A new roof and ceiling were recommended quickly, as "shoring of this expensive ceiling" would be a difficult job.[695]

The stable roof needed immediate repair or shoring. One small area was already shored, but "because it was improperly done very little support is realized."[696]

In a follow-up memo to the superintendent, the park recommended that, since the fort was programmed for restoration in FY73, temporary shoring was the solution until then. The "Architecture Investigation" to complete Olsen's 1960 HSR was programmed for FY71 and would identify any other structural weaknesses before the restoration.[697] Olsen had insisted for years that the 1960 report was not a full HSR as it lacked the investigative section; he had asked repeatedly to complete the HSR.

Temporary shoring of most rooms was to begin soon, with the exception of the floor of the old courtroom, which would be closed to the public. The writers expressed concern that the roof might not be able to wait until FY73.[698] No further information was found in park files indicating when any masonry interventions took place.

1971, Brick Oven

The oven in the fort's west curtain kitchen was rapidly deteriorating as failing mortar could no longer support the brick vaulting. The superintendent, concerned there was no appropriate local mason and recognizing that he had no staff member who understood the construction details, asked the superintendent of the Virgin Islands National Park whether a mason from the San Juan NHS might be available.[699] No further information was found on the request. An undated contact sheet in park files includes a photograph of the oven, taken perhaps in 1972 or 1973, with appearance similar to its condition in a 1959 HABS photograph (*Fig. B45*).

693. Gjessing to Manolin Torres and Roy Anduze, 10 May 1963, in CHRI 11424 box 2, folder 85, file 13.
694. "Staff Carpenter and Maintenance Man" to Virgin Islands National Park [former name of CHRI NHS] Maintenance Supervisor, 21 November 1969; CHRI Management Assistant to Superintendent, 5 December 1969, both in CHRI 11424 box 2, folder 85, file 11.
695. "Staff Carpenter and Maintenance Man" to Maintenance Supervisor.
696. Ibid.
697. CHRI Management Assistant to Superintendent of Virgin Islands NP [CHRI was under VINP administration], 5 December 1969, in CHRI 11424 box 2, folder 85, file 11.
698. Ibid.
699. CHRI Superintendent Charles B. Sigler, Jr., to superintendent of Virgin Islands NP, 6 August 1971; referred to superintendent San Juan NHS, 11 August 1971, CHRI 11424 box 2, folder 85, file 9.



Figure B45. Condition of the oven in an undated, probably 1972-1973, photograph appears unchanged from a 1959 HABS photograph. (CHRI contact sheet, uncatalogued boxes)



Figure B46. Hip roof over the south curtain was introduced in 1857 before replacement and a return to a flat roof. (Olsen, HSR, 1960, p. 207)

1971, Commandant's Woodwork Colors

An August 1971 letter sheds light on the choice of exterior woodwork colors at the fort. Chester Hamilton, the park's interpretive specialist, explained that Olsen in his HSR stated that "all exterior woodwork was apparently painted a light yellow color until 1836 and thereafter a dark green color. Once again in 1839…all exterior woodwork was painted green."[700]

Hamilton proffered that, in Olsen's report,

> No reference is made to the second story of the south curtain having the windows, doors or casements painted a different color than the rest of the Fort, but since it was the Commandant's Quarters it is quite conceivable they may have been a different color.[701]

With that justification, he selected a color not mentioned by Olsen:

> Therefore until a more exhaustive study reveals otherwise I suggest we continue to paint the windows, doors and casements of the Commandant's Quarters white and all hardware black. All other windows, doors and casements in the Fort should be painted a dark green with black hardware.[702]

700. CHRI Interpretive Specialist Chester V. Hamilton to CHRI superintendent, 7 August 1971, CHRI 11424 box 2, folder 85, file 10.
701. Ibid.
702. Ibid.

1972, Recreating the Flat Roof and Parapet of South Curtain

The earlier concerns about the roof of the south curtain were addressed in elevation drawings prepared in 1971 by Gjessing. These show the hip roof then in place and its proposed replacement with a flat roof. The building's flat brick roof had been replaced in 1857 by the hip roof, and restoration included a return to the previous shape (*Fig. B46*). The project included reconstruction of the roofline parapet over the south sallyport entrance as depicted in early drawings. The existing brick roof over the commandant's gallery was to be retained.[703]

In May 1972, a Request for Proposals was issued for the roof restoration and for refinishing the interior of the south curtain. Specifications indicate the roof was to be Hypalon/Neoprene over concrete slab with copper flashing at the parapet.[704]

1972, New Restrooms

A sewer line installed across park grounds in April 1970 extended from Queen Street to the water at the Hotel King Christian. There was concern

703. Plans and elevations, "Restoration of Roof, South Curtain, November 1971, NPS ID 82856-CHRI_399_94002, provided 2021 by NPS archaeologist, Southeast Archeological Center.
704. Specifications, Restoration of Roof South Curtain, 23 May 1972, in CHRI 11424 box 17, folder 27, file 1.



Figure B47. Installation of piping for new women's restroom, October 1972. (CHRI contact sheet, October 1972, uncatalogued boxes)



Figure B48. Work underway as new bathrooms are installed, October 1972. (CHRI contact sheet, October 1972, uncatalogued boxes)

that untreated effluent was to empty "into the sea beyond the reef."[705]

Two 1972 photographs indicate that the current restrooms were installed in the west curtain of the fort after the sewer line was available. One photograph shows PVC waste pipes in place for the women's toilets, the other shows work underway and a wheelbarrow ramp entering the room (*Figs. B47-48*).

705. George D. Church letter to supervisory park ranger, "Sewer Line through Fort Grounds," 11 May 1970, in CHRI 11424 box 2, folder 49, file 4.

1975, Repainting Commandant's Quarters and Gallery

Minor repairs to masonry and wood finishes and painting of the commandant's quarters and gallery were proposed in 1975, with the colors to be "identical to the restoration of the 1970's established by Historical and Architectural research." The gallery masonry was to be painted "to match an earlier color, as determined by paint chips taken from the walls." The gallery doors, shutters, and woodwork were to be identical to the 1970s work.[706] The reference to "the 1970's" in 1975 seems odd, but suggests the work followed Chester Hamilton's 1971 call for white woodwork, as shown in a 1979 photograph (*Fig. B49*).

A September 1975 aerial photograph provides an overall view of the fort and shows Hamilton's white woodwork on the south curtain by that time. The flamboyant tree in the courtyard appears dead. West of the fort wall is the 1945 balustrade (*Fig. B50*). The stable and stableyard to the east are discussed below in Section III.

1977, Repair West End of Commandant's Gallery Floor

Advanced deterioration of joists, joist ends, and ceiling boards beneath the west end of the gallery reduced their ability to support the tile floor. The joists and boards were believed to be early nineteenth-century replacements. The floor tiles were also later, but, importantly, the tiles along the edges of the gallery were thought to be original, as were those on the staircase to the courtyard.[707]

The park proposed to remove only the tiles in the damaged section, about five by eight feet, and remove their bed of brick and mortar in order to replace the underlying joists and boards with new wood of identical size and finish, then repave with the salvaged tiles. It was noted that deterioration "to a lesser degree" was visible elsewhere beneath the gallery, and similar repairs would be needed in the future.[708] No information on project completion was found in park files.

706. Regional Director David D. Thompson, Jr., to SHPO Thomas Blake, 16 September 1975, and associated 106 statement, n.d., in CHRI file "106 Compliance 1975-1979," uncatalogued boxes.
707. Thompson to Blake, 10 March 1977, and associated 106 statement, n.d., in CHRI file "106 Compliance 1975-1979," uncatalogued boxes.
708. Ibid.



Figure B49. Woodwork of the south curtain is painted white, as advocated by Chester Hamilton. Photographed November 1979. (CHRI uncatalogued slide)

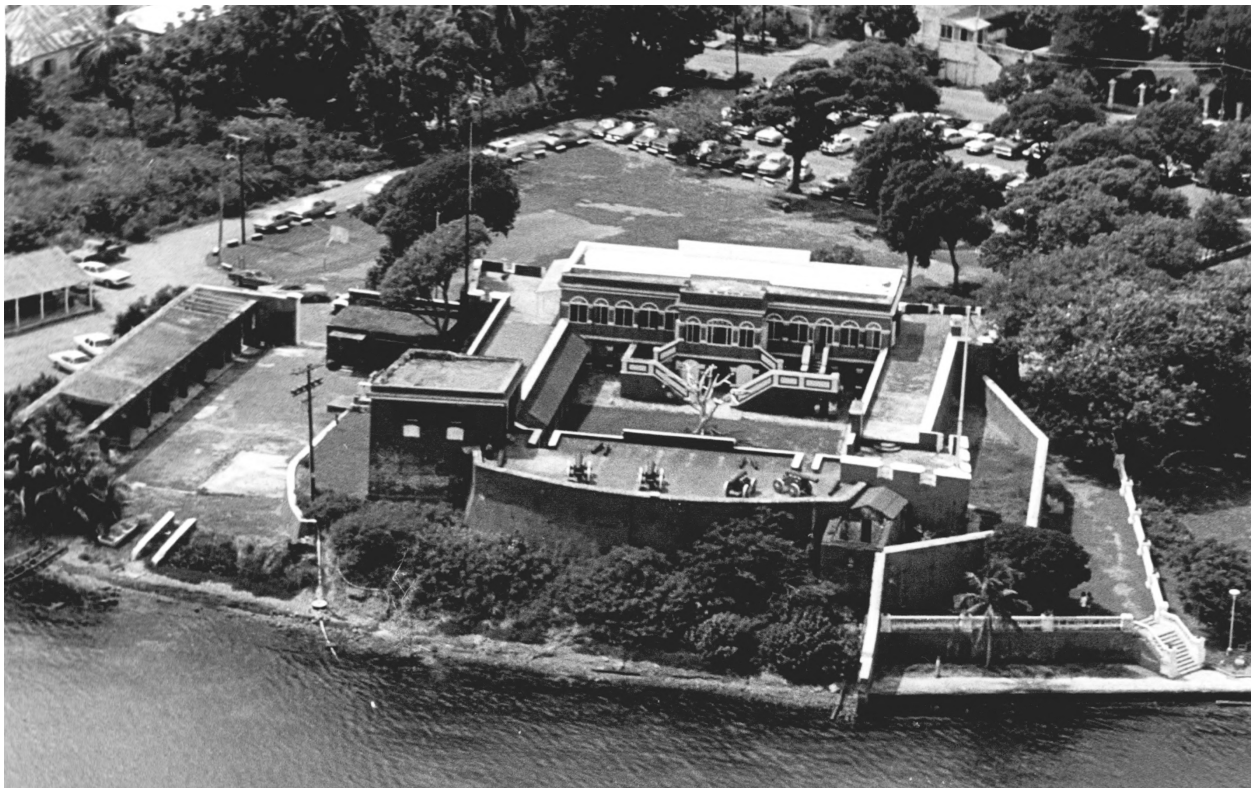


Figure B50. Aerial photograph of the stableyard, fort and west balustrade, September 1975, photographer Frank Pelligrini. (National Register nomination, "Christiansted National Historic Site," 1976)

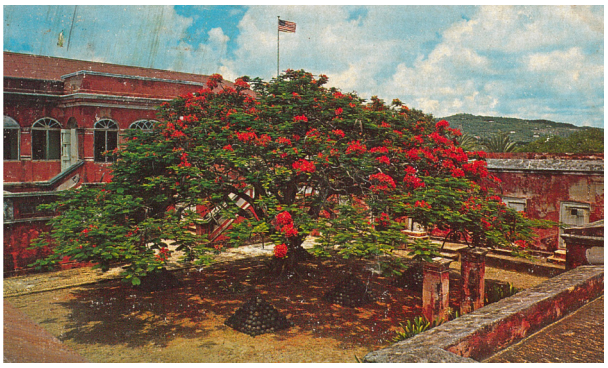


Figure B51. Flamboyant tree in bloom when the exterior of the fort was red. Photograph also shows the flagpole over the southwest bastion and the lack of a fence in front of the powder magazine. (Color postcard, Louis Dormand, photographer, n.d., in CHRI folder "postcards," uncatalogued boxes)



Figure B52. Dead flamboyant tree before removal, 1978. (CHRI 11424 box 22, folder 13, file 1, p. 2)

1978, Removal of Flamboyant Tree in Courtyard

The large, spreading flamboyant tree in the center of the fort's courtyard was proposed for removal in 1978; it had died a few years earlier. The tree was said to have been planted by a police officer in 1909 when the fort served as a police station (*Figs. 51-52*). (Another tree was also credited to an officer, this one the mango in the ravelin yard, planted in 1917.)[709]

The 1978 request proposed that the flamboyant tree's roots would be cut flush to the ground and the courtyard seeded with grass; however, this proposal was apparently denied or recommended for modification and was amended to include planting of a replacement flamboyant tree in the same location. The justification was to continue to portray the courtyard as it was known since 1909.[710] A new tree was never planted.

709. 106 Statements, CHRI 11424 box 22, folder 13, files 1-3; typed index card, n.d., CHRI 11424 box 2, folder 85, file 13.
710. 106 Statements, CHRI 11424 box 22, folder 13, files 1-3.

1978, Repair Floors of South and East Curtains

Damaged wood floors of rooms used as offices and storage areas in the south and east curtains were proposed for repair in 1978. The floors were believed to have been laid in the late 1850s. The proposal was to lift boards in the damaged areas, replace deteriorated joists, and replace floorboards "in a variable width," using wood of identical kind, size, and finish. Deterioration was said to be prevalent throughout.[711] No information on project completion was found, though appearance suggests the changes were made.

1980, "Preservation of Fort Christiansvaern"

Drawings for a comprehensive project throughout the fort were prepared in 1980, the same year the request for compliance review was made to "restore the structural and architectural integrity" of the fort. The fort was in fair to poor condition; the effort was to return the condition to a properly maintained appearance and reestablish a state of soundness, in the hope that periodic maintenance would suffice for the fort's upkeep and preservation (*Fig. B53*).[712]

The 106 Statement attached to the request lists problems and proposed actions. The terrepleins

711. Acting Regional Director Neal G. Guse, Jr., to Advisory Council on Historic Preservation Executive Director Robert R. Garvey, Jr., 6 June 1978, and associated 106 statement, n.d., in CHRI file "106 Compliance 1975-1979," uncatalogued boxes.
712. Plans and elevations, "Preservation of Fort Christiansvaern," 21 March 1980, NPS ID 113350-CHRI_399_80006, provided 2021 by NPS archaeologist, Southeast Archeological Center; Regional Director Joe Brown to superintendent, 22 May 1980; in CHRI folder "Restoration Fort Christiansvaern," uncatalogued boxes.



Figure B53. Exterior appearance of the fort in 1976. (CHRI uncatalogued slide)

were deteriorated and leaking, causing damage to interior plaster and wood structural systems beneath. The terreplein surfaces were built with sheathing boards over the wood ceiling beams of the rooms below, covered with three courses of brick and lime mortar. The deteriorated mortar was allowing water to penetrate and rot the wood below.

Water shedding was proposed by removing the brick and the wood sheathing, repairing beams below, and replacing the upper layers with salvaged brick where possible and new matching brick where needed. An impervious membrane was proposed beneath the first brick course.[713]

Rainwater dispersal systems had failed and were to be repaired to carry water to existing cisterns, which also would be repaired to make watertight.[714]

Masonry repairs were part of the fort's regular maintenance program and were needed again. As part of the 1980 project, deteriorated mortar was to be pointed with a lime cement mortar matching existing in composition, strength, color, and tooling. Large cracks would be grouted, and brick and stone replaced where needed to match existing. Spot repairs of stucco were to match in material, bond, texture, and color.[715]

The brick floors of the casemates, believed to be original, were to be repaired, and missing and deteriorated portions rebuilt to match.[716]

Structural wood components were in various stages of deterioration. Repairs and replacement of wood components were a longstanding maintenance element, and the wood, especially below the terreplein, needed to be addressed. A "preservation treatment" was to be applied, and deteriorated pieces removed and replaced to match in design and dimension unless hidden from view. Painted surfaces would be repainted to match.[717]

Hardware would continue with its normal maintenance of inspection, oiling, painting, and adjusting, with missing items replaced "if essential," and replacements to match "existing similar hardware in regard to historic period and type."[718]

713. Brown to superintendent.
714. Ibid.
715. Ibid.
716. Ibid.
717. Ibid.
718. Ibid.

A set of 1983 drawings indicate that Phase II of the project addressed the east curtain and bastions, the artillery shed, and the fee office.[719]

The CHRI unit manager's 1982 Narrative Report states that the restoration was underway throughout 1982 with major improvements made to the stables area, west curtain, shutters, and doors.[720] Elements of the overall project continued throughout the 1980s.

1983, Replacement of Latrine Roof

The flat roof of the one-story latrine, which extends north from the southwest bastion, was proposed for replacement in 1980, and a photograph of the missing roof was included in a 1983 compliance request.[721] This was not the first time the latrine roof needed full replacement. Gjessing in 1953 reported that the latrine was already missing sections of its roof, and the HABS documentation shows that the roof was entirely missing by 1959 (*Figs. B54-55*).[722] Soon after replacement, Hurricane Hugo in 1989 destroyed the roof once again.

719. Phase II plans and elevations, 11 March 1983, NPS ID -CHRI_399_80009, provided 2021 by NPS archaeologist, Southeast Archeological Center.
720. CHRI/BUIS unit manager to regional manager, "1982 Narrative Report for Christiansted NHS…," 30 March 1983, in CHRI 11424 box 2, folder 85, file 5.
721. Section 106 Assessment of Actions, 15 November 1989, in CHRI 11424 box 11, folder 6, file 8.
722. Frederik Gjessing, NPS, "Christiansvaern Fort, Christiansted, St. Croix, Virgin Islands," April 1953, p. 2, in CHRI 11424 box 19, folder 13, file 5; Historic American Buildings Survey, service-pnp-habshaer-vi-vi0000-vi0085-photos-166372pv.



Figure B54. Vegetation in the latrine floor indicates the roof was open for some time before this 1959 photograph. (Historic American Buildings Survey, service-pnp-habshaer-vi-vi0000-vi0085-photos-166372pv)



Figure B55. Latrine roof is also missing in this photograph accompanying a 1983 compliance request. (In CHRI folder "Rpr or Replace Flooring—Painting Interior Walls," uncatalogued boxes)

1983, Prepare Floor for Collections Storage

Compliance efforts began in 1983 for two rooms in the east curtain proposed for use as a museum storage facility. The current uses were storage for old administrative records and maintenance equipment and supplies. The rooms would also house the park's microcomputer, which would organize and store data from the 10,000+ museum catalog cards.[723]

To comply with guidelines of NPS 6 and NPS 28, the park proposed to repair and replace the floor joists and tongue-and-groove flooring and to paint the interior walls.[724] No further information was found.

1983, From Red to Yellow

A major change began in 1983 as part of the restoration. The fort had been painted red at least since the second decade of the twentieth century, and a paint researcher believed the red finishes had become deeper and richer in color as applications became more recent. The most recent were latex paint (*Fig. B49*).[725]

Among the articles on the subject was a July press release that reported that "the deep red exterior of the fort will be painted a mustard yellow, which was the historic color of the structure when it was built by Danish colonists in the mid-1700s..." The contract, awarded to Zenon Construction Corporation of St. Croix, was part of a $1 million project to restore and "spruce up" the park.[726] The color change was big news and drew mixed emotions from those who agreed with the approach and those who had a sentimental attachment to the color they had known all their lives.

Tom Bradley, then manager of the site, may have been unaware of Herbert Olsen's research indicating that red ocher was applied as a new color at least as early as 1911 when he explained in a press release that over the years the fort took on a reddish hue "probably due to the inexact mixing of pigments during several repaintings." This may also have been an attempt to temper local emotions.[727]

An NPS report prepared in June 1983 reviews Olsen's 1960 HSR and specifically his thorough research regarding the fort's colors, the earliest recorded being walls a combination of yellow-ocher and brown-red and the woodwork gray or stone color. The walls were altered to a blue-gray in 1829; woodwork remained a light yellow until 1836 and thereafter a dark green, and all hardware black. Ten years later in 1839 the walls were limewashed with a yellow-brown stone color with exterior woodwork painted dark green.[728]

An exception was the exterior of the artillery shed, which was treated with tar mixed with red-brown colors until the 1830s when it was limewashed the same color as the rest of the fort.[729]

After researching colors, the NPS regional office decided on a pigmented, acrylic-based limewash in colors unlike those documented by Olsen, although stated as representing the fort's color in the 1830s. Although Olsen's evidence of color tones included deep yellows or mixes, such as yellow ocher, mixes of yellow ocher with red-brown, and yellow-brown stone color, the NPS

723. Section 106 Assessment of Actions, 29 April 1983, in CHRI 11424 box 22, folder 21, file 1.
724. Ibid.
725. Benjamin Nistal-Moret, Architecture Technician, NPS Southeast Regional Office, "Fort Christiansvaern Color Change and Report on Architectural Finishes," 20 June 1983, p. 5, in CHRI 11424 box 17, folder 33, file 1.
726. NPS press release, 20 July 1983, in CHRI 11424 box 17, folder 33, file 1.
727. Ibid.
728. Nistal-Moret, "Finishes; Nistal-Moret on-site examination, 10-11 January 1983, in CHRI 11424 box 2, folder 85, file 2; Olsen, Historic Structure Report, 1960, p. 47.
729. Nistal-Moret, "Finishes."

1983 report concluded that the darker yellows found during inspection were due to possible contamination. The report does not address the conflict with Olsen's documentation. NPS instead recommended that exterior walls be painted a paler yellow oxide, exterior trim white, exterior hardware black, exterior woodwork dark green, and wall baseboards dark gray.[730] No information on the reason for this decision was found in park archives or other sources. In the archives are many photographs of painting in progress, but no pertinent documentation beyond the 1983 report and Olsen. It is also unclear why the later press release of July 1983 referenced the new color as mustard yellow.

As prep work for the 1983 color change, the fort was cleaned with a "high-pressured blast of broken walnut shells" (*Fig. B56*).[731] In response, the park complained to the NPS regional office, requesting that walnut shell blasting be discarded as unacceptable. The reason was the noise and dust that affected neighbors and the park, the dust creating health problems for staff, even in buildings several hundred yards away. The tenting of the blast area had been ineffective.[732]

Colors were examined with test patches before the final color was chosen and the fort was primed with white paint, then the yellow. Park files contain several slides showing different stages of the painting (*Figs. B57-59*).

730. Ibid.
731. NPS press release, 20 July 1983, in CHRI 11424 box 17, folder 33, file 1.
732. CHRI Unit Manager Tom Bradley to SERO Cultural Preservation Chief Bill Harris, 14 February 1984, in CHRI 11424 box 2, folder 85, file 1.



Figure B57. Test square on west wall, 1983. (CHRI uncatalogued slide)



Figure B58. Applying the new yellow limewash over white primer, 1983. (CHRI uncatalogued slide)



Figure B56. South wall of the south curtain in 1983 after blasting with walnut shells. (CHRI uncatalogued slide)



Figure B59. Lower level of the south curtain shows its new colors while work continues on the upper level. Three layers of finishes are on display. (CHRI uncatalogued boxes)



Figure B60. Condition of the ca. 1945 balustrade at its junction with the west wingwall, September 1984. (CHRI uncatalogued slide)



Figure B61. Balustrade removal, September 1984. (CHRI uncatalogued slide)

1984, Removal of West Balustrade and Expansion and Addition of Spikes to Fort Walls

Section 106 compliance documents were prepared in October 1983 for removal of the balustraded terrace just west of the fort, said to have been built in 1945 (*Figs. B50, B60-61*). The project was stated as part of the park's efforts to restore the fort to the 1830-1860 period.[733]

The extent of removal was from north of the associated steps near the fort, extending to the wharf and east to the wing wall. The steps were retained.

An associated Section 106 review request was submitted to increase the height of the fort's east and west wingwalls and extend them two feet further into the water, and to install spikes along the top of the wall.[734] By May 1984, the wingwalls were to be extended six feet rather than two.[735]

1984, Fire and Intrusion Alarm

Fire and intrusion alarm systems were proposed for three park buildings, including the fort, in 1984. There was no fire alarm system in the park. The work would introduce a fire alarm and replace and expand an existing security alarm that was badly deteriorated with some parts inoperable. The park had experienced five forcible entries in the past 15 months.[736]

Within the fort, wiring was proposed to follow existing power or alarm routes, or to run just above and parallel to rafters, and where possible through existing conduit holes between rooms. Wiring at windows would be routed through holes drilled in the lower frames, then sealed.[737] Memoranda of February and March 1985 state that the project was underway by Engineered Security Services, Inc., of St. Croix.[738]

1985, Cultural Landscape Report

The most recent Cultural Landscape Report (CLR) of the park was prepared by Robert Bradley in 1985 and focuses on the period from 1830 to 1917. Within the fort, Bradley notes that the retaining wall and fill in the west portion of the ravelin yard at that time were clearly later additions, as they would have prevented military use of the artillery embrasure and gun ports. A large tree in the fill was causing considerable damage to the paved yard, and removal was recommended (*Fig. B62*). Years earlier, a 1960 archaeological investigation of the fill area revealed paving beneath.[739]

733. SER Regional Historian Leonard E. Brown memorandum to CHRI Unit Manager Tom Bradley, 6 October 1983 and two undated Assessments of Actions, CHRI 11424 box 22, folder 22, file 1.

734. Ibid.

735. Bradley letter to Virgin Islands Planning Office, 2 May 1984, CHRI 11424 box 22, folder 22, file 4.

736. Regional Director Bob Baker to Advisory Council on Historic Preservation Executive Director Robert R. Garvey, Jr., in CHRI file "Fire and intrusion alarm," uncatalogued boxes.

737. Ibid.

738. Contracting officer, S Florida/Caribbean Contracting District to SER/OM Jim Ayers, 26 February 1985, in CHRI file "Security Alarm System FY84," uncatalogued boxes; Engineered Security Services President Raymond E. Boudreau to NPS, Homestead, FL, 11 March 1985, in CHRI 11424 box 17, folder 36, file 1.

739. Robert Bradley, "Cultural Landscape Report, Christiansted National Historic Site, St. Croix, Virgin Islands," 5 January 1985, p. 30. Jean C. Harrington, "Archeological Data," June 1960, appended to Bradley 1985 CLR.



Figure B62. Large mango tree in fill area of ravelin yard, n.d. (CHRI uncatalogued slide)

1986, Approval to Extend Wingwalls

In 1985, updated in 1986, the park received approval to extend the wingwalls, resulting in an east wall ten feet long, eight feet high, and 1′7″ wide, and the west wall six feet long, nine feet high, and two feet wide. Construction would be of brick and mortar on a concrete footing. The purpose was twofold: to limit unauthorized entry into the fort, and to acknowledge research findings that the walls were present in the 1840s.[740]

740. Environmental Assessment Report for Minor Projects in Coastal Waters, 30 August 1984, and approval for an extension from the Virgin Islands Department of Conservation and Cultural Affairs, 5 February 1986, in CHRI 11424 box 22, folder 43, file 2.

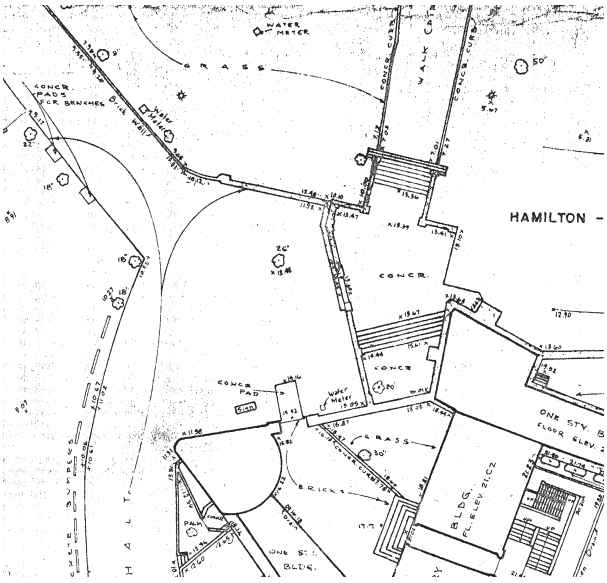


Figure B63. Stairs and walkway near southwest bastion depicted on September 1986 property survey by Frank Dospiva, Land Surveyor, St. Croix. (Public etic CHRI_399_128161)

1987, Removal of Hardware

As a part of the work to restore the fort to its ca. 1830-1855 appearance, an effort was made to remove inappropriate hardware from exterior masonry, focusing on items installed after 1940. Examples provided in a Section 106 compliance request included rebar supporting electric lines, a 1940s-1950s iron awning frame at unspecified location, and electrical and telephone clamps and brackets. After the items were removed from masonry, holes would be patched with lime mortar and whitewashed to match the existing color.[741] A decade later in 1997, hardware installed in the commandant's gallery in the 1980s was recommended for removal.

1987, Removal of West Staircase and Walkway

The removal of the balustrade and terrace in 1984 was Phase I of the removal project. Phase II addressed the associated steps near the southwest bastion and the fort entrance. Two versions of a 106 Assessment were prepared. In one, William Cissel cites the *St. Croix Avis* newspaper of February 5, 1945 as his source for a 1945 construction date of the stairs. The submitted request included the steps, railings, landing, and grading to conform to "historic contours," and the park curator was to supervise removal to recover any exposed artifacts (*Figs. B63-64*).

741. Section 106 Assessment of Actions, 17 December 1987, in CHRI folder "Compliance, Drawings, General correspondence 12/1/1987-5/1/1990, uncatalogued boxes.



Figure B64. Staircase next to southwest bastion leading to walkway to the fort entrance, n.d. (CHRI uncatalogued boxes)

1987-1988 Preservation Projects Continue

A list of tasks accomplished sheds light on several large and small projects underway at the fort, though the source of the list, and those accomplishing the work, is not provided. Some entries are general, such as "repaired walls as necessary and applied lime wash," while others are more specific.[742]

The list indicates that, in the fall of 1987, an unspecified four of the seven doors and door frames of the commandant's quarters were replaced, and doors of the west curtain were painted. In January 1988, the corrugated metal roofs of the east curtain and the artillery shed were painted International Green.[743]

Repairs were made to the commandant's roof in February, starting with pressure washing of the roof and the parapet tops. After priming, a base coat of acrylic roof mastic was applied to the roof and to the sides and tops of parapet walls. A polyester reinforcing fabric was embedded in wet mastic, and two more coats of acrylic roof mastic were applied.[744]

1988, Termites and Wood-boring Beetles

A report on termite activity was prepared by the park biological technician in October 1987, who instigated significant attempts to address the problems.[745] The park and region worked with the NPS Integrated Pest Management Program (IPM) office in Washington regarding termites and wood-boring beetles. That office recommended that the Southeast region rescind its moratorium on the use of pesticides on historic masonry, as the year-round destruction from insects in such a humid climate exceeded damage from pesticides.[746]

The IPM office recommended specific methods, such as injection into galleries and a semi-annual monitoring program using detailed locational records.[747] Efforts to combat termites would escalate in the next years.

742. "Fort Christiansvaern" printout, in CHRI 11424 box 30, folder 10, file 1.
743. Ibid.
744. Ibid.
745. Zandy Hillis-Starr, "Report on Termite Activity in Historic Structure Fort Christiansvaern," October 1987, in CHRI 11424 box 17, folder 39, file 1.
746. WASO IPM Coordinator Gary Johnston to SERO IPM Coordinator Trish Patterson, 6 May 1988, loose document in CHRI uncatalogued boxes.
747. Ibid.

1989, General Maintenance

A compliance request was approved in November 1988 to replace a door and six inner and outer shutters missing from the common room on the second floor of the south curtain. Another door was badly deteriorated, and all window frames were missing or partly missing. Repair and replacement was requested.[748]

A larger compliance request for general maintenance for the fort and three other buildings included the items in the earlier request and was approved in April 1989. A primary need was to address deteriorated limewash on interior and exterior masonry walls, and the need for "frequent painting and occasional repair/replacement of wood elements."[749] Corrugated metal roofs of the fort also needed frequent painting and spot replacement of panels. The request indicates that replacement doors, shutters, muntins and sashes would be "manufacture[d] to match with mahogany" and the manufactured date would be stamped on the edge. Doors and window frames would be "manufacture[d] to match with pressure treated pine, stamp manufactured date, prime and paint."[750]

1989, Hurricane Hugo

Hurricane Hugo slammed into St. Croix on September 17-18, 1989 with winds over 200 mph, inflicting major damage to the fort and throughout the park. Most exterior elements of the fort were affected, many severely. The general maintenance projects approved in April were no longer maintenance but major repair, and many proposed and contracted construction projects were canceled or postponed due to more necessary hurricane repairs. Compounding the difficulties was the unavailability of contractors because of high demand for emergency work throughout the islands.[751]

The park was closed after Hurricane Hugo until January 15, 1990, when it opened on an intermittent basis. Many staff members had their

748. Section 106 Assessment of Actions and 10 November 1988 concurrence, loose document in CHRI uncatalogued boxes.
749. Section 106 Assessment of Actions, 17 February 1989, in CHRI folder "106 docs recovered from W. Cissel files," uncatalogued boxes; also in CHRI 11424 box 2, folder 91, file 1. Request approved 11 April 1989. Limewash and masonry formulas are on pdf pp. 12-17.
750. Ibid.
751. Bill Brown to CHRI superintendent, 14 December 1989, in CHRI 11424 box 2, folder 73, file 1.

homes destroyed or severely damaged during the storm, and the single staff member assigned to the fort would, like all CHRI employees, share duties elsewhere, requiring the fort to close at those times.[752]

A series of repair projects, large and small, were identified after Hugo, and their Section 106 compliance and other requests indicate proposed work as presented below. Some of these project files document work accomplished, while others provide no information on whether a proposed project was undertaken.

1990, Latrine Roof

A casualty of Hurricane Hugo was another loss of the entire roof system of the latrine in the northwest bastion, which was "completely blown away and not found." The masonry walls were believed not to be affected. The park proposed to install a new roof using the same standards as the roof built in 1980. New framing would be installed to support a corrugated galvanized roof.[753] A requisition form of January 1990 indicates the materials for a corrugated shed roof on new wooden joists, which suggests the work was accomplished.[754]

1990, Doors and Windows

Another request for Section 106 approval made late in 1989 addressed exterior doors, fixed louvered windows, and the glass fanlights in the gallery, many of which were destroyed or seriously damaged by Hugo. Listed without specific locations were four paneled doors, four louvered windows, and three sash windows. The hope was to repair when possible, but duplicate where necessary.[755] The file contains no information on whether the project was undertaken in part or in full.

1991, Flagpole Replacement

Hugo sheared the flagpole on the northwest bastion into two pieces, the break occurring near an old splice believed to date from a 1928 hurricane (*Fig. B65*). In November 1989, the park proposed to replace the flagpole with a new fiberglass pole with reinforced core, citing previous SERO approval of reinforced fiberglass replicas of cannon carriages.[756]

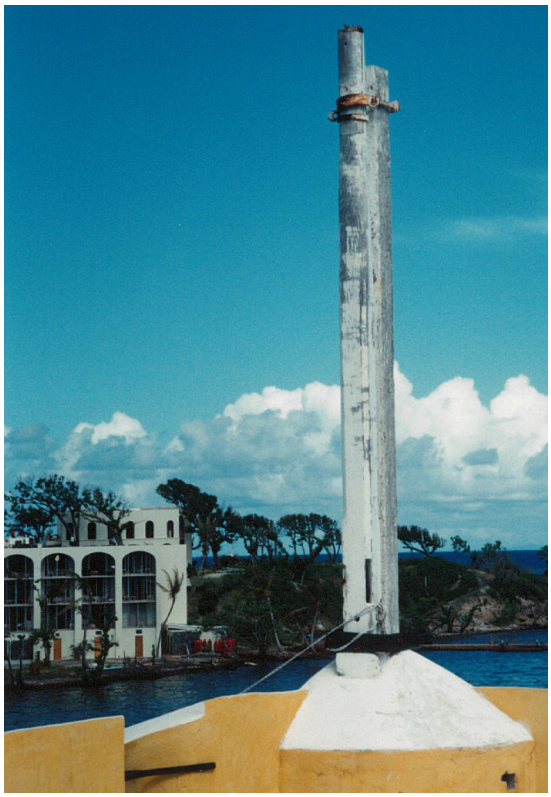


Figure B65. Remains of flagpole on northwest bastion after Hurricane Hugo. (Section 106 Assessment of Actions, 15 November 1989, in CHRI 11424 box 11, folder 6, file 5)

The use of fiberglass was denied, and in December a new pole of wood, the preference yellow pine, was requisitioned to be set into the upper masonry wall of the north[west] bastion. A new Section 106 request and a similar requisition were made in January.[757] A purchase order of September 1991 confirms the use of seasoned pitch pine for the pole, with dimensions before turning of 8 inches square by 37 feet. The work required a crane.[758]

752. John W. Lynch memorandum to all employees, Fort Christiansvaern Re-opening," 11 January 1990, in CHRI 11424 box 11, folder 7, file 4.
753. Section 106 Assessment of Actions, 15 November 1989, in CHRI folder "1989 Hugo 106 repairs," uncatalogued boxes; also in CHRI 11424 box 11, folder 6, file 8. Request approved 27 November 1989.
754. Requisition form, 23 January 1990, in CHRI uncatalogued boxes.
755. Section 106 Assessment of Actions, 6 December 1989, in CHRI 11424 box 11, folder 6, file 6.
756. Section 106 Assessment of Actions, 15 November 1989, in CHRI 11424 box 11, folder 6, file 5.
757. Requisition form, 18 December 1989, in CHRI 11424 box 11, folder 6, file 9; John W. Lynch, CHRI, memorandum to SERO, 24 January 1990, in CHRI 11424 box 11, folder 7, file 6. Requisition form, 23 January 1990, in CHRI folder, "Hurricane Hugo Repair Package, Construction Contracts 1/24/1990-10/29/1990," uncatalogued boxes.
758. Order for Supplies or Services, 30 September 1991, in CHRI 11424 box 17, folder 41, file 1.

1991, Powder Magazine Floor and Officers' Day Room

In November 1989, two months after Hurricane Hugo, a compliance request was made for a project that mentioned neither the hurricane nor recent damage, suggesting the proposal was prepared earlier. Five rooms were identified for refurnishing: the dungeon, powder magazine, arsenal (northeast bastion), officers' day room, and barracks (southwest bastion). All required limewashing, differing levels of replastering, and repairs to wood elements.[759]

In the dungeon, two wrought iron staples would be replaced, "one each, floor and base of west wall." The 1988 Historic Furnishings Report is referenced. A three-sided security barrier was to be installed in the powder magazine. The arsenal required replacement woodwork on gun and projectile racks and shelves for tools. A security barrier was also planned in that room. Modern shelving and other elements were to be removed from the day room, and the floor and wood paneling repaired or replaced. In the barracks, two wrought iron hooks were to be installed for hanging lamps, and a two-sided security barrier was planned. A handwritten note indicates concern about the design of the barriers.[760]

In 1991 a new proposal was made, this one only for the powder magazine and officers' day room, with work to be conducted by a regional preservation crew. The purpose was to restore the two rooms to their original appearance before furnishing by Harpers Ferry Center for interpretation.[761]

In the powder magazine, sound floorboards were to be removed and stored, and square wood pegs would be fabricated "in the shop at Dunwoody, Georgia" for use in reinstallation of new and historic 1-by-12-inch boards over 1.5-by-2-inch sleepers, following the existing pattern, and fastened by two pegs per sleeper with power tools allowed. Boards would be course-sanded and coated with "clear penetrating oil."[762]

In the day room, plywood flooring, shelving, furnishings, and wiring were to be removed and disposed of, and 1-by-6-inch tongue-and-groove flooring would be installed, nailed through the tongue with galvanized nails, the floors finished as above. Missing molding was to be fabricated and installed around joist pockets. All wood surfaces would receive one finish coat of a gloss-white, oil-based paint.[763]

1991, Wayside Signs

Wayside signs designed by Harpers Ferry Center were erected in the park in 1991, including at the fort. The signs were fabricated by Exhibitology Company and replaced more than a dozen existing panels and added five new signs. The 1991 signs were replaced with updated interpretive signs in 2019.[764]

1991, Termite Monitoring and Baiting

During a refurnishing project in 1991, the park found foraging tubes of termites and damaged wood in several rooms, among them the arsenal beneath the north bastion, the western cistern access, commandant's servant's room, 4-man barracks, non-commissioned officer's cell, powder magazine, and a detention cell beneath the gallery stairs. In the masonry walls of the powder magazine and floor of the arsenal, termites appeared to tunnel through the mortar and rubble between the stones.[765]

Park superintendent Joel Tutein explained, "The fort has been through hurricanes, floods, earthquakes and occupations, but nothing has been more destructive than subterranean termites."[766] The frequency and cost of replacing wood elements had increased to every five or six years as the park tried numerous treatments without success, including tenting and drilling pesticides into walls. In 1995 they contacted Nan-Yao Su, a University of Florida entomologist who had developed the first effective method for

759. Section 106 Assessment of Actions, 15 November 1989, and 11 December 1989 concurrence, in CHRI 11424 box 22, folder 42, file 1. See also box 22/43/1.
760. Ibid.
761. Deputy associate regional director to superintendent, 20 March 1991; Task Directive for Preservation of Rooms, in CHRI 11424 box 22, folder 49, file 1.
762. Ibid.
763. Ibid.
764. PMIS 190017, updated 27 March 2013, in CHRI folder "CHRI 2016," uncatalogued boxes; "Panel Replacement," *St. Croix Avis*, 13 December 2019, in CHRI folder "CHRI Wayside Panels Fabrication," uncatalogued boxes.
765. Nan-Yao Su, Zandy Hillis-Starr, et al., "Protecting Historic Properties from Subterranean Termites: a Case Study With Fort Christiansvaern, Christiansted National Historic Site, United States Virgin Islands," in *American Entomologist*, Spring 2003, p. 23, in CHRI folder "Terminex," [*sic*] uncatalogued boxes.
766. "Professor helps protect fort from termites," *St. Croix Avis*, 28-29 January, 2001, p. 5, in CHRI folder "CHRI termites," uncatalogued boxes.

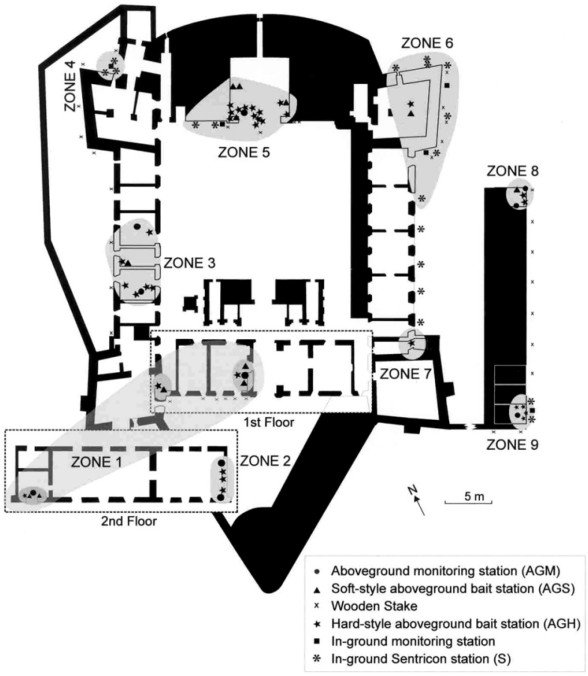


Figure B66. Activities of Hetrotermes sp. termites were grouped into nine zones (shaded areas) on the basis of proximity. (American Entomologist, Spring 2003, Fig. 6, p. 25, in CHRI folder "Terminex," [*sic*] uncatalogued boxes)

stopping subterranean termites. Most treatments attack termites in buildings, but do not control the colonies in the ground.[767]

Su and a team of entomologists joined with park staff in 1996 to address the infestations at the fort. The team acknowledged that the fort in the tropical climate was likely subjected to termite infestation soon after it was erected, causing much of the frequent replacement of woodwork. To approach the current infestations, the team grouped the areas of high infestation in the fort into nine zones (*Fig. B66*). Aboveground bait stations of different types were placed on the active foraging tubes in some locations, liquid insecticide was injected into tubes elsewhere, and in-ground monitoring stations were placed near the latrine.[768]

Localized termite activity varied, abating but then returning in some places within a few months, while in others, activity ceased. With continued applications and monitoring, the infestations were eliminated by 1999, and by February 2003, no sign of new activity was identified. The article stressed the essential need to implement an on-going monitoring program for early detection of new termite populations. In-ground monitoring stations and routine inspection by park personnel were critical to catching activity early.[769]

1992, Install Window Attachments at Two Rooms

In 1992 the Advisory Council concurred with two proposals for window attachments, the first, to place a wood-framed mesh screen fitted outside the iron bars of the windows of the enlisted men's barracks in the southwest bastion. The room contained reproduction textiles that were exposed to damage from rats and mice entering through the windows.[770]

The second proposal was to place a Lexan panel on the outside of the three gun slits of the arsenal in the northeast bastion, which was furnished with reproduction metal objects exposed to excessive salt air through the openings.[771] The file contains no information on whether these were installed.

1992, Remove Fill and Tree from Ravelin Yard

A compliance request was initiated in 1987 to remove the low masonry retaining wall extending from the southwest corner of the sallyport steps to the north edge of the main gate in the ravelin yard, together with the mango tree and earth fill within (*Figs. B67-68*).[772] The park was concerned about structural damage from tree roots and wanted to return the area to its original paving level as a location for placement of rifle and field-cannon at the gun ports for interpretation.

The request indicates the tree was planted perhaps in the early 1920s. This is close to the date given on a typed index card in park archives stating that the tree was planted in 1917 by Egbert Thomas, a member of the police force when the fort served as the police station.[773]

The project apparently was postponed, as a second compliance assessment was submitted in January 1992. The first submission stated the wall and fill

767. Ibid.
768. Nan-Yao Su, et al., "Protecting Historic Properties," pp. 23-28.
769. Ibid.
770. Section 106 Assessment of Actions, 17 January 1992, and 5 June 1992 concurrence, in CHRI 11424 box 22, folder 51, file 1.
771. Ibid.
772. Section 106 Assessment of Actions, 13 October 1987, in CHRI folder "106 docs recovered from W. Cissel files," uncatalogued boxes.
773. Typed index card, n.d., CHRI 11424 box 2, folder 85, file 13.

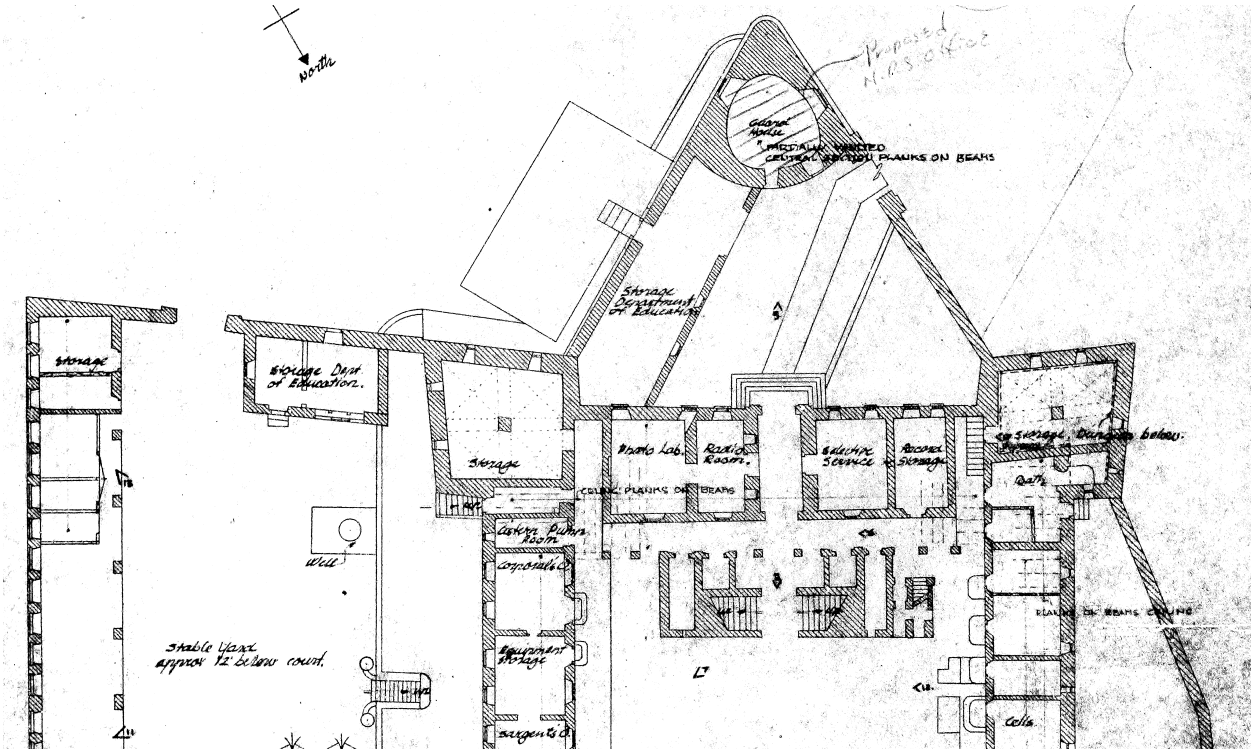


Figure B67. Gjessing's 1953 floorplan shows the wall, filled area, and walkway in the ravelin yard. (Full drawing in Appendix B) (Frederik Gjessing, NPS, "Christiansvaern Fort, Christiansted, St. Croix, Virgin Islands," April 1953, in CHRI 11424 box 19, folder 13, files 2-5)



Figure B68. Filled area in west corner of ravelin yard, August 1985. (CHRI uncatalogued slide)

were added in the 1920s; the latter places it at about 1880, though Olsen's 1960 report determined that evidence was inconclusive. The fill reached up to the dungeon window, and the roots of the tree and its successors had caused considerable damage to historic fabric, especially the paving. The tree was destroyed in 1989's Hurricane Hugo, but the recurring infestations of subterranean termites into the dungeon floor and door and up the wall to the commandant's quarters continued. Exterminators determined that the infestations originated in the fill, where the remaining roots provided food.[774]

The removal was to return the ravelin yard to its full size and shape, minimize termite staging areas, and restore the wall and paving to original appearance.[775] The work was accomplished though the date is not documented.

1992, Wingwall Reconstruction

In 1992, the west wingwall of the fort was reconstructed after severe damage from Hurricane Hugo when both wingwalls, one extending seaward from the northwest latrine, the other from the stables to the east, were partially destroyed by large yachts thrown by the storm (*Fig. B69*). Each wall lost about ten feet of length. The compliance document proposed repairs to both walls; however, the completion report refers only to the "north wall." Photographs indicate it is the west wall.[776]

774. Acting deputy associate regional director to superintendent, 19 June 1992; Section 106 Assessment of Actions, 17 January 1992, in CHRI 11424 box 22, folder 52, files 1-2.
775. Ibid.
776. Section 106 Assessment of Actions, n.d., probably ca. 1990, in CHRI folder "106 docs recovered from W. Cissel files 2006," in uncatalogued boxes; also in CHRI 11424 box 11, folder 6, file 9. Requisition form, 23 January 1990, CHRI 11424 box 11, folder 7, file 7. Completion Report, in CHRI



Figure B69. Grounded yacht after being thrown against wingwall by Hugo, 1989. (CHRI uncatalogued boxes)

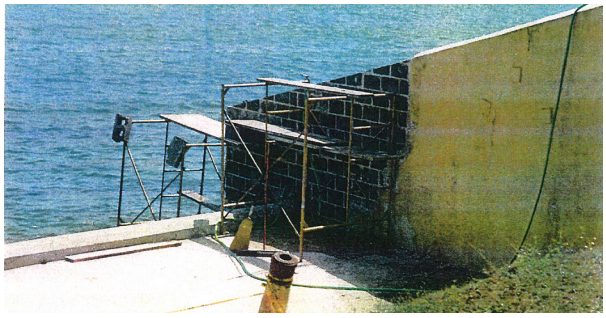


Figure B70. Completed wingwall before application of stucco, 1992, scanned image in report. (Completion Report, in CHRI file "Steeple Building Fence and Fort Christiansvaern Wingwall," CHRI 11424 box 19, folder 5, file 1.

Historic stone from the wall was salvaged for reuse in future projects elsewhere before the wall was rebuilt with concrete block to differentiate from the earlier material, then stuccoed and limewashed to match existing. It was recommended that the wall be inspected and receive a fresh coat of yellow limewash every two years, with repairs allowed to cure for thirty days before limewashing (*Fig. B70*).[777]

folder "Steeple Building Fence and Fort Christiansvaern Wingwall," 1992, box 19, folder 5.

777. Completion Report, in CHRI file "Steeple Building Fence and Fort Christiansvaern Wingwall," 1992, CHRI 11424 box 19, folder 5, file 1.

1993-1994, Electrical Work

In 1993 and 1994, the electrical systems of the fort and three other park buildings were upgraded by Glasson Construction. Since the most recent wiring in 1982, a substantial amount of electrical equipment had been added to the buildings, including computers, air conditioning systems, dehumidifiers, alarms, and the expanded maintenance facility at the stable. The systems did not meet code.[778]

A park memo of March 1993 further indicates the need for the work, which had been approved for funding. Because the fort contained "no or very few hollow walls, virtually all wiring, conduit, and boxes will be exposed." The park asked that the region's historical architect visit the fort "to review the extensive routing of the proposed electrical system and the accompanying destruction of historic fabric. A mere review of drawings will not suffice due to the variable site conditions…"[779]

An historic architect and mechanical engineer from the region visited the fort the next month to discuss routing for the new service, and recommended that the main service be routed underground from the park to the stableyard. A separate service and panel were recommended for the maintenance area in the stable, with the fort panel placed in the artillery shed.[780]

By January 1994, the wiring was complete and contract modification work was underway. This included wiring for future air conditioning units in the west curtain and existing and future units in the east curtain.[781] A Punch list from an April site visit as the project was ending recommended installation of a PVC pipe at the back of the fort for running refrigerant lines and air conditioning drains.[782]

778. Glasson Construction President Kenneth Glasson to Steve Sherwood, NPS, 6 January 1994, in CHRI folder "Old Danish Customs House/Fort (Rewiring), 3/9/1993-4/30/1996," uncatalogued boxes.

779. CHRI chief of Historic Architecture Division to acting chief, Engineering and Facilities Resource Management, 9 March 1993, in CHRI 11424 box 17, folder 42, file 1.

780. Regional Mechanical Engineer Steve Sherwood, site visit report, 20 April 1993, in CHRI 11424 box 17, folder 42, file 3.

781. Ibid.

782. Mechanical/electrical engineer, trip report and punch list, to chief of SERO Engineering & Facilities Management Division, 26 April 1994, in CHRI folder "Museum Collection Building (rehabilitation) Trip Report 4/26/1994-4/26/1994," uncatalogued boxes.

1995, Termite Treatment

Efforts to address the termite situation at the fort increased in the 1990s. The park in 1995 requested and received approval for use of the University of Florida's entomologist's prototype termite treatment. Subterranean termite infestation had been a long-standing problem, and conventional treatment (Dursban) was ineffective. Termite activity had actually increased significantly over the past five years, and the situation had drawn the interest of the University of the Virgin Islands as well.[783]

The proposed use of the fort as a test site for a new treatment, Hexaflumuron developed by DowElanco, had been approved by the NPS Integrated Pest Management Program (IPM). Twenty bait stations would be placed, each requiring an excavated area about ten inches deep and ten wide, covered. The two universities conducted the project with DowElanco.[784]

1995, Hurricane Marilyn Repairs

A list of repairs needed after Hurricane Marilyn damaged the fort in September 1995 was prepared the next month. Included was the removal of wood ceilings and floorboards in offices to allow them to dry, then to strip, repair, reinstall, and repaint. Structural repairs for "roof uplift" were needed in the commons room, and the flagpole was to be replaced. A door shutter on the upper level of the north elevation was to be reinstalled, a door jamb replaced, three missing shutters replaced in the stableyard, and general repairs made to retaining walls, stairs, and electrical elements.[785]

No further details were found regarding the October list until a 1997 memo regarding Hurricane Marilyn indicates plans to paint and repair stucco at the fort and paint the staff office space, and a later 1997 memo with an itemized list of repairs needed to windows and fanlights in the commandant's gallery and a recommendation to replace almost all hardware, which were noted to be 1980s replacements. Numerous wood elements and a few sash were also to be replaced.[786]

A solicitation to bid was issued in July 1997 outlining the work to the commandant's gallery, including restoring windows and frame, replacing three fanlights, replacing historic window hardware, installing all windows and doors in the gallery, caulking, and painting. A window restoration schedule keyed specific work for each window. The contract was awarded to C/R General Contractors, Inc., of Christiansted.[787]

1998, Hurricane Georges

Hurricane Georges hit St. Croix in September 1998 as Marilyn repairs continued. The "south" wingwall fell during the storm, according to an undated estimate of repair costs. No additional information is provided. In the same list is the need for four security lights in the stableyard and fan lights in the commandant's quarter; those items were perhaps new requests rather than repairs.[788]

1999, Exterior Masonry and Additional Repairs

A bid solicitation and contractor's offer from Keystone Restoration, Inc., of Palm Beach, FL for buildings in the park include a list of work items for the fort. The primary task was to pressure wash all exterior masonry surfaces, apply stucco at selective locations, and limewash the exterior masonry walls.[789] Some of the items listed as bid additives for the fort were to shore the roof within the commons room during construction and repair five brick rafter pockets there, excavate fill and repoint brick paving within the ravelin yard, install concrete footings for the [west?] wingwall and rebuild the east wingwall, repair and realign the brick foundation for the gun powder magazine fence, repoint exposed brick coping at the water battery, repair the brick coping of the stableyard retaining wall, repair selective masonry openings at door and window

783. Cissel to Superintendent, 3 February 1995; Section 106 Assessment of Actions 1995; and correspondence 1991-1994, in CHRI 11424 box 22, folder 56, file 1; Advisory Council concurrence, file 3.
784. Ibid.
785. Gulf Coast System Support Office, "Hurricane Marilyn Assessment Report," October 1995, CHRI 11424 box 11, folder 12, file 4.
786. Acting deputy regional director memorandum to superintendent, "FY97 Preservation Program Related to Hurricane Marilyn Damage," 5 February 1997, CHRI 11424 box 11, folder 16, file 1. William F. Cissel memorandum to superintendent, "Hurricane Marilyn Repairs," 9 June 1997, CHRI 11424 box 11, folder 16, file 2.
787. Solicitation, Offer, and Award, 17 July 1997, and C/R Contractor Caleb E. Romero to Regional Historical Architect Deborah Rehn, 26 November 1997, both in CHRI folder "Hurricane Marilyn Repairs," uncatalogued boxes.
788. "Hurricane Georges Damage Assessment," unsigned cost estimate of items in two parks, n.d., CHRI 11424 box 11, folder 5, file 1.
789. Bid solicitation and offer by Keystone Restoration, Inc., 18 August 1999, in CHRI 11424 box 4, folder 11, file 1.



Figure B71. The gateposts were without fence or gate for perhaps 100 years. (CHRI uncatalogued boxes)



Figure B72. The reconstructed fence, seen from the northeast bastion, 2021 (JKOA)

frames, repair the main entrance wood gate and metal hardware, and others.

Minutes of meetings during the month of June 2000 indicate completed items included the ravelin yard brick paving, stucco repair and limewash of the artillery shed, unspecified bathroom renovations, and installation of new shutters and doors.[790]

790. "Preservation of Fort Christiansvaern and other Historic Structures, Minutes of June 2000," 11 July 2000, in CHRI folder "Fort Christiansvaern & Other Historic Structures (Preservation) Contract Documents 6/21/1999-8/7/2000, folder #2," uncatalogued boxes.

1999, Reconstruct Fence at Powder Magazine

The fence in front of the powder magazine had been missing for decades before a compliance request was made in 1992 to build a replacement wood picket fence (*Fig. B71*). The masonry base, two masonry gate pillars, and an iron lantern holder were extant, and the design would be based on earlier documentation. The compliance statement cited Olsen's description of the fence built in 1836, oval in shape with 20 hardwood posts and two masonry pillars equipped with a double wooden picket gate and a lantern above in iron scrollwork. The fence was known to have existed as late as 1893 when a part of it was blown down by a hurricane.[791]

It appears that the fence was reconstructed in 1999. The 1999 list of work in Keystone Restoration's bid included "repair and realign the brick foundation for the gun powder magazine fence," and subsequent documents indicated Keystone conducted the project (*Fig. B72*).

1999, Hurricane Lenny

A late hurricane that struck St. Croix in November 1999 caused damage to shutters, windows, doors, and gutters.[792]

2000, Roof Coatings

A quote from Rooftops Silicone Distributors, Inc., of Christiansted reported that several locations on the roof of the commandant's quarters needed repairs to the fabric reinforcement, and that the commons roof was not coated at all. They proposed to pressure wash all surfaces, apply new reinforcing material and several coats of flat roof acrylic coating over the entire roof surface.[793]

2001, Maintenance Manual

A park maintenance manual completed in 2001 includes guidelines for plaster, stucco, mortar, and paint. The manual was updated in 2012.[794]

791. Deputy Associate Regional Director for Cultural Resources to superintendent,12 June 1992, and accompanying Section 106 Assessment of Actions, in CHRI folder "106 docs recovered from W. Cissel files," uncatalogued boxes.
792. Regional director memorandum to superintendent, 1 December 1999, CHRI 11424 box 11, folder 18, file 1.
793. Rooftops General Manager Arthur S. Fromer to William Cissel, 4 August 2000, in CHRI 11424 box 18, folder 4, file 1.
794. Loose in CHRI uncatalogued boxes.

2002, Internet Installation

It appears that high-speed internet was introduced to the park and fort in 2002 by Caricomm, a Christiansted telecommunications company. Caricomm installed the punch box in the fort's administration officer closet with the antenna connection going out of the west wall and up to the roof, as well as two data/phone and a fax for the administrative office, one each for the interpretation/fee office, the BioSci Tech (location not indicated), and the collection storage room, and three and a fax for the library. Geeks-R-Us was responsible for hardware and antennas in the fort and other buildings for the DSL connection.[795]

2005, Commandant's Gallery Floor

Several projects were initiated in April 2005 for completion by TipTop Construction, who conducted many projects at the fort. Repairs to the commandant's gallery floor were proposed, necessitated by water damage from Hurricane Jeanne in 2004 and from previous termite infestation. The project was to identify the location of each floor tile before removal, replace the floorboards beneath with aged tongue-and-groove pine boards already stored on stableyard racks, and relay each tile in the same location. The existing sand bedding would be replaced with sand mixed with dry cement. Unfortunately, the tiles were not numbered as called for by Chief of Interpretation/ Park Historian William Cissel. Instead, they were replaced randomly, though those from the west side were reused in the west, the middle in the middle, and the east in that section (*Fig. B73*).[796] There is no indication in files that the project designers were aware of the 1977 determination that the tiles along the edges of the gallery were thought to be original, as were those on the staircase to the courtyard.[797]

Work on the door frame facing the gallery also veered from the method proposed. The frame alone was to be repaired with epoxy; however, the crew addressed a void in the brick masonry



Figure B73. Tiles relaid in commandant's gallery floor, scanned image in file memo, 2005. (Hillis-Starr memorandum to RM Files, 14 April 2005, in CHRI folder "Repair/106 Artillery Shed Wall," uncatalogued boxes)

adjacent to the frame without prior discussion. They placed several long screws into the side of the frame as anchors in the void to hold a fill of a "yellow substance" made of "epoxy and filler," then filled with mortar and smoothed over.[798]

Repairs were made to a detention cell door hinge and the shutter doors of the gallery. The 1999 fort entrance gate was to be planed and sealed with epoxy to prevent swelling caused by rain.[799]

2005, Artillery Shed and Visitor Contact/Fee Area

The artillery shed was included among additional projects conducted by TipTop Construction. A partition wall and door were built to separate visitors from the existing utility panels mounted on the north wall of the room. Park historian William Cissel recommended a tongue-and-groove panel wall, painted white, and board shutter doors. The new wall was designed to avoid contact with the exterior walls, but instead to attach to the concrete floor and rafter. It was placed on the north side of the northernmost of the east gun ports, leaving all within the visitor area.[800]

795. Hillis-Starr memorandum to superintendent, 18 November 2002, in CHRI folder "Caricomm," uncatalogued boxes.
796. Hillis-Starr memorandum to Chief of Facilities Steve Luppert, "Repair Notes on Fort C'vaern by TipTop," 11 April 2005; her letter to Ali Miri of the NPS Southeast Regional Office (SERO), 12 April 2005; and her memorandum to RM Files,14 April 2005, all in CHRI folder "Repair/106 Artillery Shed Wall," uncatalogued boxes.
797. Thompson to Blake, 10 March 1977, and associated 106 statement, n.d., in CHRI file "106 Compliance 1975-1979," uncatalogued boxes.
798. Hillis-Starr memorandum to RM Files, 14 April 2005, in CHRI folder "Repair/106 Artillery Shed Wall," uncatalogued boxes.
799. Project Status Report, May 2005, CHRI folder, "TipTop Project Folder," in uncatalogued boxes.
800. Hillis-Starr "Repair Notes on Fort C'vaern by TipTop," 11 April 2005, and letter to Ali Miri, SERO, 12 April 2005,

During the project, the foreman noticed several leaks in the artillery shed and offered to caulk the leaking screws. It was noted that the leaks had caused water damage to the roof boards that would need to be replaced in the future.[801]

TipTop Construction also worked at the Visitor Contact Station/fee office at the south end of the ravelin yard, replacing the door frame with treated pine and replacing the termite-damaged door and shutters on the north side, both in-kind with treated tongue-and-groove pine boards and hung with existing or unspecified new hardware. The work was completed in April 2005; however, by October, rain had swollen the door and shutters so they would not close to secure the fee area.[802]

2007, Stopgap Repair to Museum Collection Room

Several pieces of masonry had fallen off the column and ceiling of the Museum Collection Room in the east bastion in 2007, and in March 2008, the chief of resource management suggested a park employee limewash the ceiling where salt crystals had built up and the areas where unpainted masonry had been exposed by the fallen plaster. This apparently had been done in the past as what was called a "stop-gap measure" to reduce salt precipitation and hold the masonry in place.[803]

2008, Window Bars in Room of East Curtain

An additional problem in the east curtain was the metal bars of the exterior window in today's middle archives room, at that time an office, which had pulled out of the wood, pushing off a temporary plywood cover and allowing moisture into the building. In order to address the problem quickly, a request was made for a park employee to remove the bars and damaged portions of the frame, as well as the "glass pane style" internal shutters, and to install plywood on both sides of the opening. A similar temporary fix was made in the adjoining library room a year earlier. The chief of resource management also asked the superintendent to secure quotes for emergency window and shutter repair along the entire east curtain of the fort, and repeated a request to replace the air conditioning system.[804] No further information was found in park files.



Figure B74. Looking up at the east stable wall, an example of severe cracks identified in post-Hurricane Omar project, scanned image in letter report. (Karen Gravel, Lord Aeck & Sargent, Site Visit Report, 15 April 2010, in CHRI folder "Omar Repairs," uncatalogued boxes)

2010, Hurricane Omar Repairs

A large project was conducted in 2010 to repair damages caused by Hurricane Omar in 2008, as well as previous repair needs identified during project investigations. In April, the *St. Croix Source* newspaper reported that the project began in early February and was about half completed.[805]

Severe cracks in the fort's masonry walls were contributing to further damage (*Fig. B74*). Stonework, brick, and stucco were repaired using specialized lime mortar, limewash instead of paint, and mahogany woodwork. The work was designed by the architectural firm of Lord Aeck & Sargent (LAS) and conducted by OTAK Group, Inc., a Florida civil and marine contractor.[806]

The first phase was to test the outer walls "with mason's hammers, chipping and checking for

both in CHRI folder "Repair/106 Artillery Shed Wall," uncatalogued boxes.

801. Hillis-Starr, "Fort C'vaern Artillery Shed Partition Wall—final notes and 106 Approval," 18 April 2005, in CHRI folder "Repair/106 Artillery Shed Wall," uncatalogued boxes.

802. Joe Hollins, TipTop Construction, to Superintendent Tutein, 29 April 2009; TipTop invoice, 10 June 2005; and Hillis-Starr fax to Debra and Joe Hollis of TipTop Construction, 12 October 2005, all in CHRI folder "Repair/106 Artillery Shed Wall," uncatalogued boxes.

803. Hillis-Starr email to Superintendent Tutein, 29 March 2008, in CHRI folder "Miscellaneous Maintenance," uncatalogued boxes.

804. Hillis-Starr email to Tutein, 18 January 2008, in CHRI folder "Miscellaneous Maintenance," uncatalogued boxes.

805. Bill Kossler, "Fort Christiansvaern Getting Well Deserved Makeover," 15 April 2010, https://stcroixsource.com/2010/04/15/fort-christiansvaern-getting-well-deserved-makeover/.

806. Ibid.

weak spots," according to the OTAK supervisor.[807] Though not reported in the article, that work was interrupted in late February 2010 because the crewmember's deep hammer blows were chipping and gouging pick marks into the "cut coral/caliche and brick."[808]

The article reports that during the testing, serious structural problems were found around windows where imbedded, rusted iron had cracked and stained the walls. In areas where more than three quarters of an inch of surface were removed, three applications of stucco were applied, the base coat, scratch coat, and finish coat, with the surface purposely left wavy, then coated with yellow limewash and white trim.[809]

Although the article reports that all windows and shutters were being rebuilt of mahogany, it is likely the count was an overstatement. Many of the door jambs had termite damage, and about half were repaired and retained, the others replaced with mahogany.[810]

The fort retained "many" old wrought-iron hinges hasps, clasps, and latches, as well as rows of iron spikes on the fort's outer wall. The OTAK foreman was interviewed and declared some unable to be restored, and these were being duplicated by local blacksmith Richard Waugh.[811]

Work on the exterior of the fort was near completion in mid-April and expected to be completed for the 275th anniversary of Christiansted in May. The article states that repairs to the masonry and windows of the interior courtyard were to follow, and that shutters that had been stored were to be reused.[812]

A site visit by the project's architects in April 2010 identified many deficiencies with the work to date. Several roofs, both metal and membrane, had been replaced with decks, materials, flashing, and design not matching specifications. Other deviations included missing downspouts, hardware not matching existing, mismatched chevron patterns, use of metal other than stainless steel for small nuts and bolts, and more. LAS and PBS&J, a Florida engineering firm, were to monitor the work more closely.[813]



Figure B75. Work underway on a window in an archives room in the east curtain wall, scanned image in letter report. (Karen Gravel, Lord Aeck & Sargent, Field Reports, 21 July 2010, in CHRI folder "Omar Repairs," uncatalogued boxes)

Additional work included full restoration of the seven windows, shutters, related woodwork, and masonry in the three archives rooms of the east curtain (*Fig. B75*). The park's concern about driving rain and water infiltration in the gaps between the shutter frames and the masonry wall led to discussions about whether to caulk or to use rolled rubber gasket or weather stripping, though the decision is not recorded in the project file. The window work was completed during the summer, but a year later in July 2011, one window showed cracking in the interior wall at both top corners. The header was dropping slightly, and leaks were evident at the bottom of the window. Handwritten notes suggest a contractor was contacted on August 1 to repair, replaster, and paint.[814]

Stucco work had been among the earliest conducted during the project, starting in February, but in December 2010, park staff documented 22 locations of peeling or flaked limewash, exposing the stucco below, and several areas of spotting.[815]

807. Ibid.
808. Hillis-Starr email to Superintendent Tutein, 25 February 2010, in CHRI folder "Omar Repairs," uncatalogued boxes.
809. Kossler, "Makeover," 15 April 2010.
810. Ibid.
811. Ibid.
812. Ibid.
813. Karen Gravel, Lord Aeck & Sargent, Site Visit Report, 15 April 2010, in CHRI folder "Omar Repairs," uncatalogued boxes.
814. Gravel, Field Reports, 22 May and 21 July 2010; Park file memo, 26 July 2011, all in CHRI folder "Omar Repairs," uncatalogued boxes.
815. Hillis-Starr, note to NPS Historical Architect Richard Ramsden and Karen Gravel of Lord Aeck & Sargent, n.d., probably December 2010, in CHRI folder "Omar Repairs," uncatalogued boxes.

2010, Discovery

A discovery was made during repairs to the north wall of the arcade beneath the commandant's gallery, just west of the sallyport passage. A brief staff memo reports that a "wooden beam integral to the wall" was found 61.5 inches above floor level. The beam was 50.5 inches in length and 3 inches thick in its exposed surface. The purpose was unknown to park staff, who documented the information in the memorandum and replastered over the beam. Images from the memo are included here to provide the information despite the poor quality of the originals (*Figs. B76-78*).[816]

The purpose of the feature remains a mystery, though it could be a remnant of half-timbering, stated by Olsen in his 1960 report to be the original construction technique of portions of the fort.

816. Unidentified park staff memo, "Discovery in Fort C'vaern, interior wall," 8 May 2010, in CHRI folder "Omar Repairs," uncatalogued boxes.

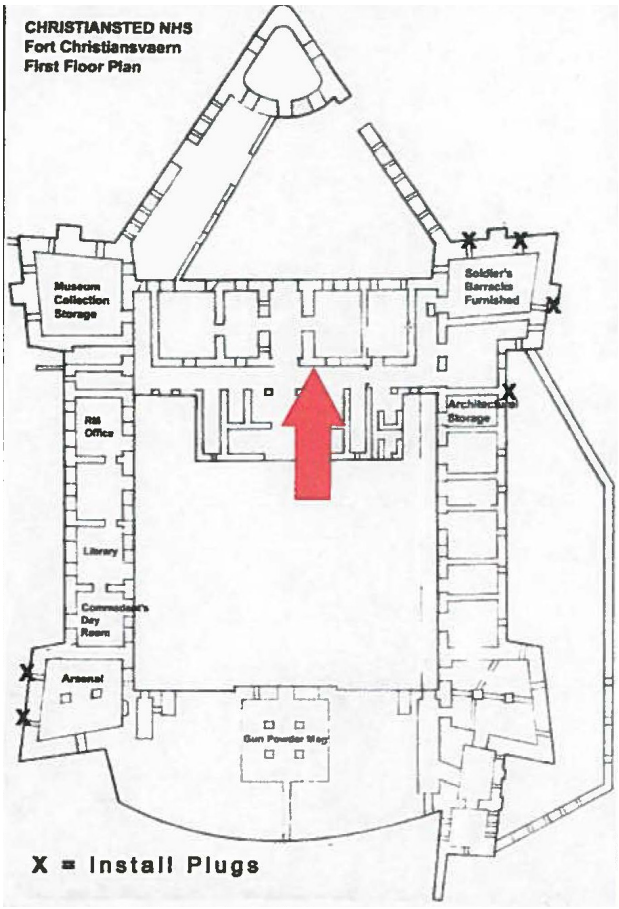


Figure B76. Location of discovered beam shown by red arrow on plan. (Unidentified park staff memo, "Discovery in Fort C'vaern, interior wall," 8 May 2010, in CHRI folder "Omar Repairs," uncatalogued boxes)

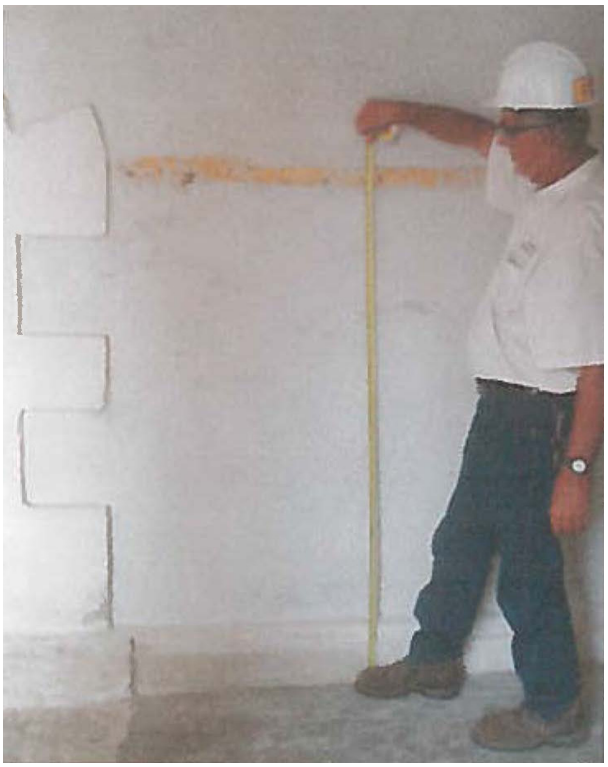


Figure B77. OTAK mason shows location and height of beam. (Scanned photograph in park staff memo, "Discovery in Fort C'vaern, interior wall," 8 May 2010, in CHRI folder "Omar Repairs," uncatalogued boxes)

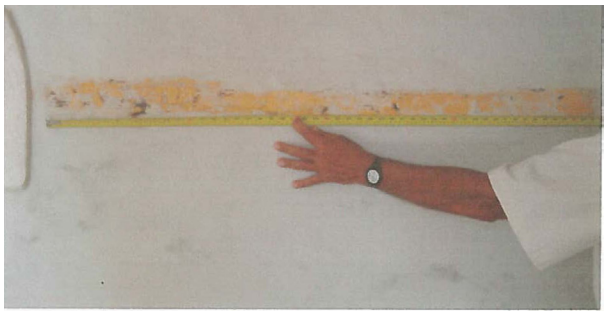


Figure B78. The beam before being re-plastered. (Scanned photograph in park staff memo, "Discovery in Fort C'vaern, interior wall," 8 May 2010, in CHRI folder "Omar Repairs," uncatalogued boxes)

2010, Repair Flagpole

The wood base of the flagpole on the northwest bastion was repaired in 2010. The pole was designed with a pivot point that allowed the flagpole to be lowered to lay flat before a storm; however, a sudden increase in Omar's storm strength damaged the pivot point and masonry base before staff could lower the pole (*Fig. B79*).

The project required disassembly of the pivot point to clean and repair elements. Iron straps securing the two lower supports were removed, restored, and reinstalled, and a steel pin was removed and

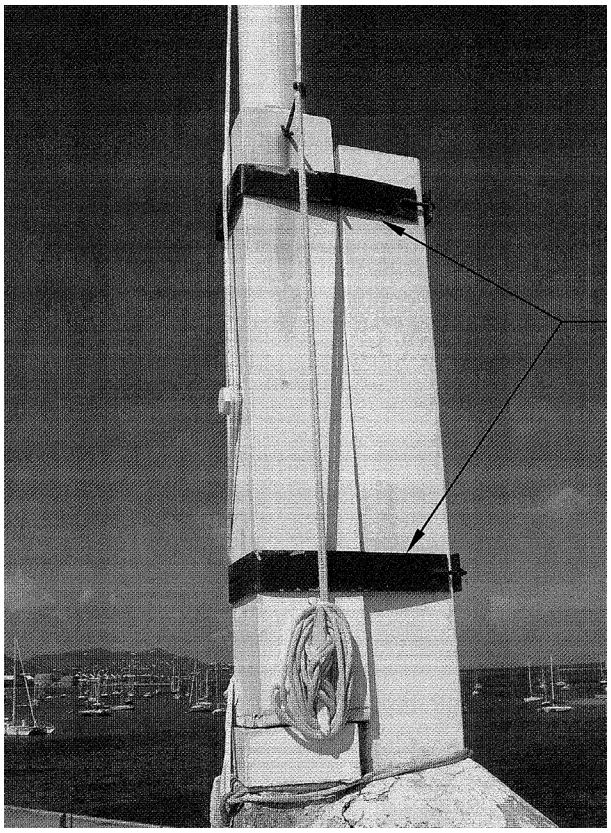


Figure B79. Proposed repairs to flagpole base, 2010. Poor quality of image on drawing sheet, "Repair Historic Flagpole," 22 March 2010, public etic ID CHRI_399_80049_Z1)

replaced within a new galvanized steel sleeve. The stucco was removed from the top of the masonry base, which was restuccoed after cracks were grouted, then limewashed.[817]

2011(?), Upgrade Collections/Library/ Archives Environmental Control

By 2006, the air conditioning/dehumidification system in the library/archives rooms was failing. To better meet NPS Museum Standards for temperature and humidity in those rooms and in the museum collections storage room, the park hoped to replace the existing equipment with a more energy efficient system. The purpose was to provide protection from sea air and improve the condition of the resources in the rooms. Funding was requested in 2006 with no success, and again in 2010 or 2011. Electrical, layout, and system drainage plans for both areas were prepared in August 2010, but the project file contains no information later than a November 2011 email regarding efforts towards funding. (See electrical plans in Appendix D.) The file includes no indication of whether or when the project was undertaken or whether the 2010 plans were used.[818] Based on appearance only, the current lighting fixtures and main panels could be 2011 or later.

2012, Fort Security Repairs

Work to improve security at the fort began in January 2012, starting with replacement of three exterior shutters of the commandant's quarters. Among items included in an April 2011 memo and July 2011 estimate from contractor Tiptop Construction are resizing the door of the collection storage room and adding an exterior bar lock there, and adding Lexan view panels in front of the exhibit room. The south shutters of the law enforcement office facing the ravelin yard were to be secured with a slide bolt, and an interior mahogany shutter installed. A metal security screen, slide bolt, and padlocks were planned for the artillery shed. In the commandant's exhibit area and office, window security bars and a diagonal locking bar were to be added. Locks and attachments were called for in several areas, a new door for the visitor center, and shelving in the fee area and upstairs exhibit area. No further records were found regarding completion or changes to the project.[819]

In the security project file is a 2011 estimate from Genesis Electric to install new grounding cables on both sides of the building with rigid conduits installed two feet above ground.[820]

2012, Updated Maintenance Manual

Lord Aeck & Sargent Architecture and TipTop Construction prepared an update of the 2001 park maintenance manual, including guidelines for plaster, stucco, mortar, and paint.[821]

817. PMIS 150236 and 50% design narrative, in CHRI uncatalogued boxes; drawing sheets, "Repair Historic Flagpole," 22 March 2010, public etic ID CHRI_399_80049_Z1.

818. PMIS 136136, "CHRI Library/Archive Storage Environmental Control," 14 February 2007, in CHRI folder "Fort Library A/C 2006 replace/repair;" Hillis-Starr email to Feliz J. Lopez, SAJU/NPS, 6 November 2010, in CHRI folder "Fort HVAC," both in uncatalogued boxes.

819. Hillis-Starr response memo to TipTop Construction 15 April 2011; her email to Superintendent Tutein and others, 9 January 2012; estimate, TipTop Construction, 7 July 2011, all in CHRI folder "Fort Security Repairs," uncatalogued boxes.

820. Estimate, Genesis Electric of Kingshill, Virgin Islands, 12 September 2011, in CHRI folder "Fort Security Repairs," uncatalogued boxes.

821. Loose document, CHRI uncatalogued boxes.

2015, Replace Commandant's Gallery Floor

In January 2015, the floor of the commandant's gallery was again removed, only ten years after the 2005 replacement, though the need was identified in the fall of 2013 when the park's chief of resource management asked for an immediate inspection of the gallery, as changes were noticeable and the need for stabilization was of concern. A draft action plan prepared four days later identified the issues as wood damaged from water intrusion, mold, termites, damage to floor and windows, and visitor safety and access. The flawed slope of the 2005 installation was cited.[822]

A PMIS was quickly prepared for repair to the floor and drainage system, but the project was not started until January 2015. A front-page article in the *St. Croix Avis* newspaper explains that the repairs included the complete documentation and replacement of the gallery floor, as well as improvement to the internal drain system, and that poor drainage of the floor had rotted the wood supports and caused part of the floor to begin to fall.[823]

There is no reference to the floor replacement conducted in 2005 or to any aspect of that work, though it is clear from the 2013 documents that the 2005 replacement lacked an adequate drainage design.

The corrective 2015 work was conducted by the Historic Preservation Training Center (HPTC), whose crew was to reuse the floor tiles and as much of the wood support system as possible. However, 70 percent of wood elements were replaced due to damage (*Fig. B80*). Most tiles were reused, with the exception of the border tiles and some tiles laid in Portland cement during the 2005 work.[824] It is not clear whether the border tiles were discarded or retained for storage. It is also unclear whether the HPTC knew that the border tiles had been identified as original during the 1977 repairs to the gallery floor, which left them undisturbed. Treatment of the border tiles during the 2005 work was not identified.[825]



Figure B80. Masonry fill of gallery floor removed with demolition hammers during 2015 work. (Blurry image in "Historic Structure Treatment Record, Emergency Stabilization of the Christiansted NHS Gallery Floor," February 2015, Figure 5, NPS ID CHRI_399_141714_ [80925], provided 2021 by previous contracting officer's representative [COR], NPS regional office)

In the 2015 work, the layers of the new floor above the new planks and joists included plywood, a surface conditioner at the borders, a waterproof membrane (Grace Bituthene), crushed stone dust, a "peppered" mix of historic and new pavers with a 2-part masonry sand to 1-part natural hydraulic lime mixture, WaterBan waterproofing, grouted joints, and a second layer of waterproofing. Pavers were sloped towards the middle of the gallery, then to scuppers.[826]

822. Hillis-Starr email to Maintenance Supervisor George Canavan, Superintendent Tutein, and another, 25 October 2013; unsigned draft action plan, 29 October 2013, both in CHRI folder "Fort Gallery 2013 Repair," uncatalogued boxes.
823. PMIS 204474 initiated 8 November 2013, updated 12 November 2013, all in CHRI folder "Fort Gallery 2013 Repair;" uncatalogued boxes. Tom Eader, "Park Service crew repairing floor of Fort Christiansvaern gallery," *St. Croix Avis*, 29 January 2015, loose pages in CHRI uncatalogued boxes.
824. Eader article; "Historic Structure Treatment Record, Emergency Stabilization of the Christiansted NHS Gallery Floor," February 2015, NPS ID CHRI_399_141714_ [80925], provided 2021 by previous contracting officer's representative (COR), NPS regional office.
825. Regional Director David D. Thompson, Jr., to SHPO Thomas Blake, 10 March 1977, and associated 106 statement, n.d., in CHRI file "106 Compliance 1975-1979," uncatalogued boxes.
826. Historic Structure Treatment Record.



Figure B81. North elevation of the commandant's gallery showing biological growth before limewashing, 2015. (Scanned image in Statement of Work, 31 March 2015, in CHRI folder "Fort Painting 2015," uncatalogued boxes)

2015, Painting and Limewashing

In 2015, the fort and stable were limewashed and painted in preparation for the 2016 centennial of NPS and the 2017 centennial of the transfer of the Virgin Islands from Denmark to the United States. The project included the preparation, painting, and limewashing of all exterior surfaces of the fort and stable, which showed extensive staining ad biologic growth (*Fig. B81*).[827] The park contracted with SF General Maintenance Services, LLC, of Christiansted, a company apparently new to the fort and whose diverse services included landscaping, auto cleaning, janitorial service, and cistern cleaning, as well as painting.

The statement of work calls for the use of limewash on all masonry surfaces, rust inhibitor on all exposed metal, wood primer on all exposed wood, and industrial enamel oil-based paint on all metal and wood surfaces. It also specifies methods, calling for complete pressure wash cleaning of surfaces including masonry, stucco, wood, metal, and plaster. Loose paint and rust were to be removed by "pressure washers, wire brush, paint scrapers, electric grinders, and/or wire wheels," and the contractor was to then repair areas damaged by pressure washing and prep work. The spraying of paints was not permissible. Limewash formulas for yellow and white, paints, mortar mix, slurry mix, and stucco mix were specified.[828]

The folder in park files contains no information beyond the July 2015 agreement with the contractor, but it is assumed that the work was completed.

2016-2017, Fort Masonry, HPTC

In a separate project, certain interior rooms of the fort were also prepared for the 2016 and 2017 centennials. In January 2014, the park requested funds to address serious cracks in the masonry, including general spalling, falling bricks, iron bars, and a window. The project was conducted by HPTC and focused on three areas: the slave quarters room, the barracks, and the kitchen and oven, which were the three major exhibit areas of the fort. The project was to remove and replace

827. Statement of Work, 31 March 2015, in CHRI folder "Fort Painting 2015," uncatalogued boxes.

828. Ibid.

metal bars and other embedded metal that was damaging masonry, repair masonry, replaster with traditional lime masonry, and apply limewash finish.[829]

In the pantry/servant's quarters (sometimes also called the servants' kitchen in project files), a project was to stabilize two windows on the south facing the ravelin yard. The windows at one time had two rows of bars, one set in wood on the outer side of the wall. The second row was a later addition set in the masonry near the inner side of the wall and had caused such severe damage to the masonry that most bars had fallen out. Bars from both rows were removed, but only the outer bars were replaced, and those with hollow square aluminum bars. Loose brick were removed and replaced. Only the recessed area around each window was plastered; the surrounding wall remained unplastered to demonstrate construction methods for visitor education, as this room was planned to be used for exhibit space in the future.

During removal, a piece of Elkhorn coral about 12 inches long and 6 inches wide was found in the upper right corner of the window and retained in place.[830]

829. PMIS 190256, 4 November 2015 and 12 July 2017 update, in CHRI folder "Fort Masonry 2016, HPTC," uncatalogued boxes.
830. HPTC Masonry Weekly Field Report #1, 21 July 2017, in CHRI folder "Fort Masonry 2016, HPTC," uncatalogued boxes.

In the soldiers' barracks in the northeast bastion, an inner set of bars had been added to the windows when the fort was used as a police station. HPTC removed the interior bars of four windows, laying seven courses of brick below one during the repair, and retained the exterior set of bars. Rust stains and deteriorated iron were left in the masonry where the bars were removed. A masonry crack in the lower portion of the doorway was stabilized by cutting away surrounding masonry and forcing an epoxy mix into the crack to prevent further separation, then replastering. A U-bolt was installed in the wall behind the wooden door to prevent the door from slamming in the wind.[831]

The brick oven in the kitchen in the west curtain needed immediate attention. The inner arch had almost completely collapsed, and cracks were evident around the exterior. It is not known whether any repairs were made to the oven after the concerns about its condition in 1971, although it seems likely that some repair would have been made in the five ensuing decades.

Gaining access to the oven in the 2017 project required removal of the top and rebuilding of the arch. Cracks on the sides were repaired by removing and relaying bricks, and the opening of the oven had to be rebuilt because it was completely removed during the project (*Figs. B82-83*).[832]

831. Ibid.
832. HPTC Masonry Weekly Field Reports #1 and #2, 21 July and 1 August 2017, in CHRI folder "Fort Masonry 2016, HPTC," uncatalogued boxes.



Figure B82. Condition of the oven in an undated, probably 1972-1973 photograph appears unchanged from a 1959 HABS photograph, though spot repairs may have been made subsequently. (CHRI contact sheet, uncatalogued boxes)



Figure B83. The oven after extensive repairs and stabilization. (HPTC Masonry Weekly Field Report #1, 21 July 2017, in CHRI folder "Fort Masonry 2016, HPTC," uncatalogued boxes)

The project included help from members of the 21st Century Conservation Service Corps (21CSC) brought in through *The Corps Network* in partnership with Hands on Preservation Experience (HOPE). The 21CSC was described as a "national effort to put young Americans and veterans to work protecting, restoring, and enhancing" natural and cultural resources.[833]

2016(?), Fire and Security

A PMIS was updated in 2014 for installation of fire and security systems for the fort, expected to include hard-wired smoke and motion detectors, annunciators, fire alarm strobe lights and horns, and closed-circuit television and video management systems (CCTV). The system, which would bring the structure to code for NFPS and A-123 structural fire code requirements, was to be centralized in the Danish Customs House building. At that time neither the fort nor the stable was equipped with hard-wired fire or intrusion detection systems.[834]

Discussions continued in January 2016 when the chief of resource management reported that plaster flaked daily from the walls and ceiling of the museum collections room, with larger pieces falling in the area of the doorway.[835] A nine-person committee reviewed options for fire detection and suppression in the three archives rooms and the collections room, with particular attention to the merits of a wet pipe vs. dry pipe sprinkler system.

In a wet pipe sprinkler system, the sprinkler heads connect to in-room pipes filled with pressurized water. With a dry pipe system, the pipes within the building are filled with pressurized air or nitrogen that holds back the water, which is in a riser just outside the building. In both cases, the fire causes the heads to open and allow water to discharge.

NPS generally installs dry pipe systems in museum and archives spaces to avoid introducing water except in the case of a fire, and because wet pipes run the risk of producing condensation. Also of concern to the park was the fort's outdated electrical system, which was not properly grounded and itself created a fire hazard.[836]

The committee's recommendation, therefore, was to upgrade the electrical system, which it saw as a necessity, and install only a fire detection system, removing the sprinkler system from the project. An NPS waiver request was prepared for omission of a wet pipe system, stating that the threats to the contents and threats to elements of the building from installation and operation outweighed potential benefits of such a system.[837]

Bass Fire & Security Systems, Inc., of Pompano Beach, Florida, prepared fire alarm plans for the fort and stable in 2016 (See Appendix D). The project file contains no further information; however, despite the concerns for use in an archives, a wet pipe sprinkler system appears to be in place in those rooms. Alarm and detection systems and new security panels are in place, and it appears that aspects of the electrical system have been updated.

2017, Request Repair of Drainage System

A statement of work for schematic design, design development, and construction documents was prepared for full inspection and repair of damaged drainpipes throughout the fort leading to historic cisterns and potentially causing internal leaks and damage to interior walls. No documentation was found indicating whether the work was conducted.[838]

2018, Proposal for Bookstore in Artillery Shed

In 2018, the park proposed to rehabilitate the artillery shed for installation of a cooperating association retail operation and the park's fee revenue operation. The park and the company, Eastern National, were developing plans for installation of a visitor contact and sales desk as well as shelving for a bookstore, fans, and improved lighting and electrical service. Exhibits then in

833. Final Project Agreement with HPTC, 12 July 2017, in CHRI folder "Fort Masonry 2016, HPTC," uncatalogued boxes.
834. PMIS 199589 updates 20 March 2013 and 22 January 2014, in CHRI folder "Fire & Security 2015," uncatalogued boxes.
835. Hillis-Starr email to park and regional employees, 29 January 2016, in CHRI folder "Fire, IT, Security--Fire Suppression," uncatalogued boxes.
836. Lt. Kelly Kachurak, PE, email to committee, 5 March 2016; Chief of Museum and Archival Services Mary D. Troy email to committee, 11 March 2016, both in CHRI folder "Fire, IT, Security--Fire Suppression," uncatalogued boxes.
837. Committee emails, 19 May 2016, in CHRI folder "Fire, IT, Security--Fire Suppression," uncatalogued boxes.
838. "Repair Drainage System Fort Christiansvaern," n.d., calls for October 2017 completion, file provided 2021 by contracting officer's representative (COR), NPS regional office.

the space were proposed to be moved to the Scale House on park grounds.[839]

A May 2018 memo addresses areas of significant water penetration in the artillery shed that would be addressed to avoid damage to the contents of the bookstore. Water flowing into the shed from the ravelin yard during heavy rains would be redirected by creation of a four-inch-wide and four-inch-deep trench in the concrete floor at the doorway. A gutter was to be added at the fort end of the roof to eliminate interior moisture problems already present; the roof leaked there even after multiple repairs. A security gate was proposed at the west door facing the ravelin yard for the safety of staff, and a "wooden shed will be installed in the staircase" leading to the east exterior door for staff access.[840]

There is no indication in park files whether the project was approved. The trench was cut in the concrete; however, other changes had not commenced by late 2021.

2019, Replace Fort Gate

The outside gate to the fort was damaged by Hurricane Maria in 2017, and continued water intrusion caused increasing rot in the upper portions of both leaves. A temporary plywood door was installed for security while HPTC reconstructed a new gate, the millwork completed at its shop in Frederick, Maryland. Existing hardware was to be reused (*Figs. B84-85*).[841]

2019, Wayside Markers

The park requested funding in 2012 for Harper's Ferry Center to develop about 26 new wayside signs. Many changes had occurred at the park since 1991 when the last signs were placed, including several building restorations, a newly acquired building, and major relandscaping. One goal was for the new waysides to improve the previous informative approach by including interpretive content for local and global visitors.[842]



Figure B84. Significant areas of wood at the top of the gates were rotten. (NPS image 0563 provided by project COR)



Figure B85. Temporary plywood door installed at entrance during project to replace gate, October 2019. (NPS image provided by project COR)

839. Section 106 Assessment of Actions, 31 August 2018, in CHRI folder "Fort Artillery Shed 2018 Bookstore Relocate," uncatalogued boxes.
840. Ibid., Hillis-Starr memorandum to several NPS employees, 10 May 2018, both in CHRI folder "Fort Artillery Shed 2018 Bookstore Relocate," uncatalogued boxes.
841. Final Project Agreement, Replace Fort Christiansvaern Historic Gate, PMIS 248494" 5 February 2019, file provided 2021 by contracting officer's representative (COR), NPS regional office.
842. PMIS 190017, updated 27 March 2013, in CHRI folder "CHRI 2016," uncatalogued boxes.

2020, Mineral Silicate Coating

In 2020, the HPTC masonry team repaired and repainted the exterior stucco walls of the fort with specialized coatings. The walls were first cleaned with a bleach mixture and rinsed with low-pressure water, and vegetation was removed from the water battery parapet. Several cementitious repair materials were tested before damaged stucco was removed. At least four products were then applied in layers: KEIM fixative to areas repaired with new stucco; RoyalanGrob, a potassium silicate tinted primer; KEIM Silin 100, a water repellant; and Royalan Paint as a finish coating.[843]

During the project, a fractured parapet cap on the east side of the southeast bastion was rebuilt. In covered areas, deteriorated lime paint was removed and replaced with NHL 3.5 to match the Royalan paint color. While on site, the team repaired shutters of the northeast bastion.[844]

2021-2022, Girder above Commandant's Gallery; Shutters and Windows

Investigations associated with this HSR project included analysis of the long girder above the front gallery opening that shows signs of water infiltration. The park has subsequently contracted with a preservation engineer to design repairs anticipated in 2023.

A project on the horizon is repair and replacement of the shutters and windows of the commandant's gallery. Many are among architectural items stored in rooms of the west curtain.

843. "Historic Structure Treatment Report, Stabilize Fort Christiansvaern Masonry Walls-Mineral Silicate Coating," November 2020, PMIS 243895 and 240080, TIC 399 176844, provided 2021 by FMSS Specialist, NPS regional office.

844. Ibid.

Chronology of Development and Use

Section III – Stableyard Complex, 1960 to the present



Figure B86. Stable in 1959. (HABS, service-pnp-habshaer-vi-vi0000-vi0085-photos-166379 pv)

Introduction to Section III

The previous section addresses the fort's history from 1960. This section also begins in 1960 and covers the stableyard complex. Section I addressed Olsen's and other previous reports through 1959. Sections II and III are the work of JKOA.

Park records contain many files documenting proposed projects, which are presented here. While it is presumed that the majority were completed, in many cases no documentation was found indicating whether, when, or in what way these projects were conducted.

Stableyard Complex

The earliest information found in park files on the stableyard complex after 1960 regards actions by the Virgin Islands Fire Division, which continued its use of the stable and stableyard as its local facility. The condition of the complex is documented in the Historic American Buildings Survey (HABS) photographs of 1959, which show early features, though the stable and outbuildings are in poor condition and the stable is missing roof sections (*Figs. B86-87*).

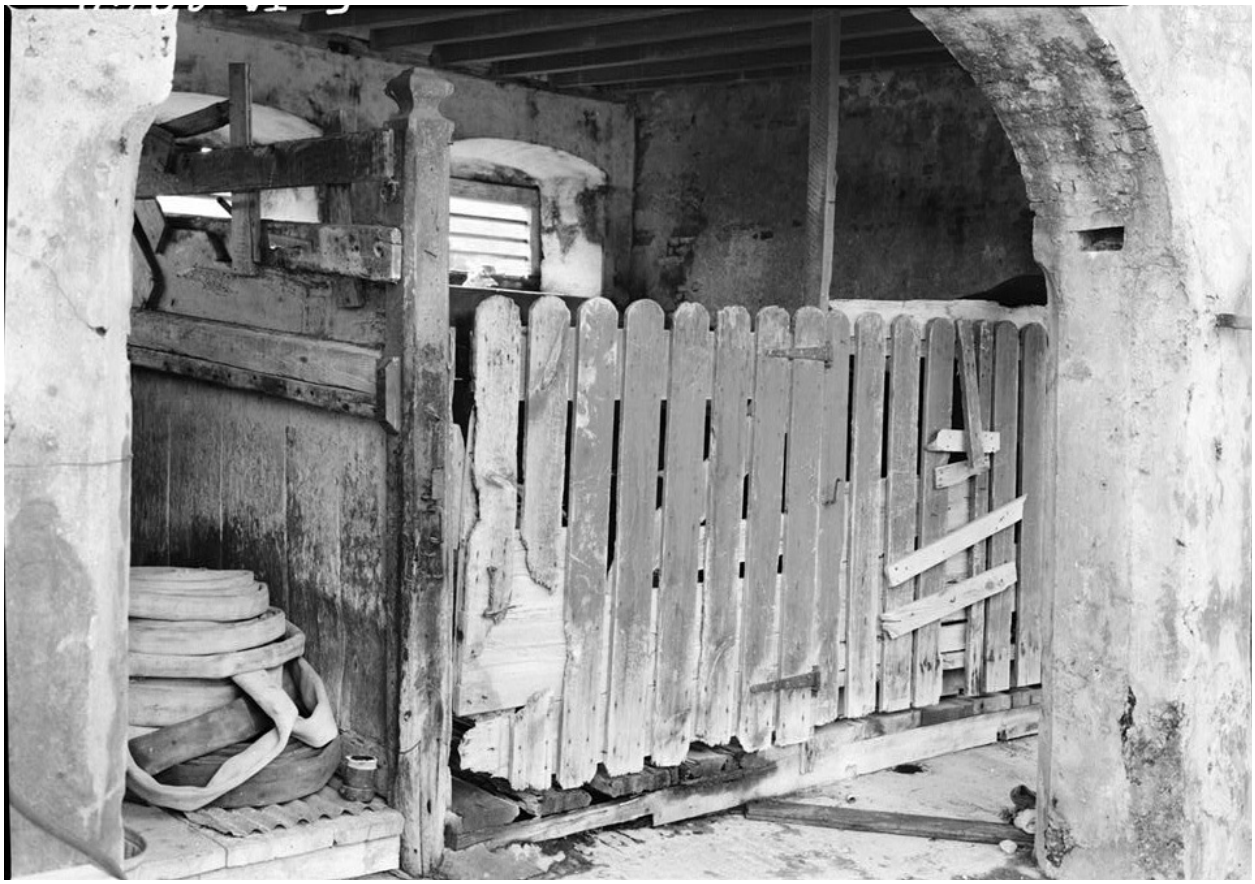


Figure B87. Stable showing stall partition, 1959. (HABS, service-pnp-habshaer-vi-vi0000-vi0085-photos-166380pv)

The shed-roofed frame garage remained in place in the northern part of the stableyard against the west retaining wall (*Fig. B88*). Frederik Gjessing in his 1953 condition assessment reported that the garage was "of a recent date."[845] The date of its demolition is not known, though we know it was demolished by 1975 when the concrete pad of the structure is seen in an aerial photograph. It is also depicted on a 1986 survey (*Figs. B89*, *B92*).

1962, Unknown Damage

Documents from 1962 reflect apparent ongoing conflicts between the park and the Fire Division. The head of the division informed the park superintendent that metal roofs were in need of repair, and the formal request for repair was approved by the park. However, the Division made other, unapproved changes, apparently building concrete block walls and possibly damaging the stable arches. This may have been when the division built a new shed to house fire engines



Figure B88. Garage in 1950s photograph. (NPS ID Pkg1_photo495, provided 2021 by NPS archaeologist, Southeast Archeological Center)

845. Frederik Gjessing, NPS, "Christiansvaern Fort, Christiansted, St. Croix, Virgin Islands," April 1953, p. 1, in CHRI 11424, box 19, folder 13, file 5.

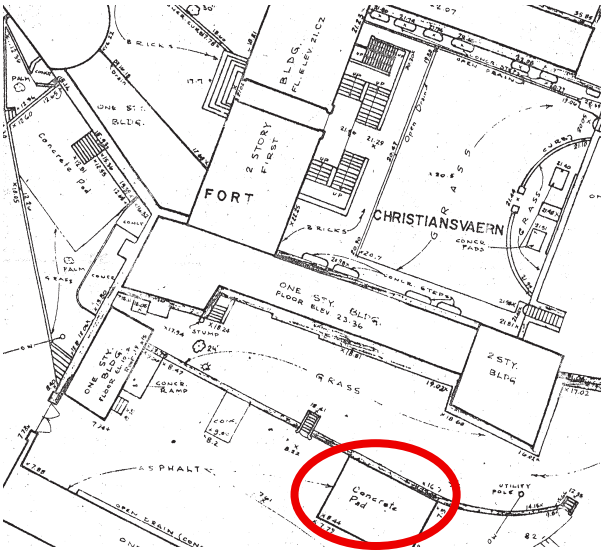


Figure B89. Concrete pad of the former garage depicted on September 1986 property survey by Frank Dospiva, Land Surveyor, St. Croix. (Public etic CHRI_399_128161)

when given permission only to repair an existing shed. Photographs of the alterations sent to the region with the letter are not in park files.[846]

1963, Remove Stableyard Gates

A year later, the Fire Division received permission to widen the entrance gate to the stableyard and remove the gates (*Fig. B90*). The opening was to be widened two feet by partially removing the east gatepost and building a new one duplicating the existing. An important condition of approval was that the Fire Division rebuild the gatepost in its original location when it moved to a new facility in the future, thereby returning the opening to its original width.[847]

The condition also required the existing iron gates, "including pintles, cap of post, as well as all other parts removed and not reused," to be carefully stored and clearly identified for reuse in the restoration of the gates when the Division vacated.[848]

All work to remove the gates and gatepost and build a new gatepost in the new location was to be supervised by an NPS architect, preferably Frederik Gjessing, and the Fire Division was responsible for all costs, including the required future restoration of the gateway and gates.[849]

A 1960s photograph confirms that the gates were removed, though it is unclear whether the opening was widened (*Fig. B93*). Park files contain no information on whether or where the gates were stored. Portions of a gate are currently stored in the Commandant's Servant's Room in the west curtain (Room 16). The pieces are similar in design to the 1951 photograph and the HABS 1959 drawings (see Appendix A); however, it is not known whether they are parts of the stableyard gate or another gate in the complex (*Fig. B91*).

846. Superintendent John G. Lewis to Regional Director, 26 June 1962, in CHRI 11424 box 2, folder 85, file 16.

847. Virgin Islands National Park [former name of CHRI NHS] Superintendent Frank R. Givens to Deputy Fire Commissioner Omar Brown, 22 July 1963, in CHRI 11424 box 2, folder 85, file 12.
848. Ibid.
849. Ibid.



Figure B90. Stableyard gate and gatepost in original location before widening. (Image SJ86, David J. Jones and Clarence L. Johnson, "Historic Sites of St. Croix, Virgin Islands," 1951, San Juan, PR: San Juan Historic Site, 1950)



Figure B91. Portions of a gate stored in Room 16 in the west curtain; design is similar to the stableyard gate shown in photographs and depicted in the 1959 HABS drawings. (JKOA 2021)

1969, Deteriorated Structural Elements

In November 1969, a carpenter and maintenance worker from the Virgin Islands National Park in St. John were sent to evaluate the extent of rotten timbers at the fort complex, accompanied by architect Gjessing and another. The stable was among the areas investigated, and the inspectors found that the stable roof needed immediate repair or shoring. One small area was already shored, but "because it was improperly done very little support is realized."[850] No information was found on any intervention that may have taken place.

A September 1975 aerial photograph of the fort complex provides an overall view of the stableyard and shows missing north and south portions of the stable roof. The concrete pad of the garage is visible in the stableyard, as are two utility poles (*Fig. B92*).

850. "Staff Carpenter and Maintenance Man" to Virgin Islands National Park [former name of CHRI NHS] Maintenance Supervisor, 21 November 1969; CHRI Management Assistant to Superintendent, 5 December 1969, both in CHRI 11424 box 2, folder 85, file 11.

1977, Reroof Watchman/Carriage House

Section 106 compliance began in 1975 for reroofing the existing flat brick roof of the watchman's and carriage house, which was formed of yellow Danish brick laid on pitch pine beams and lath.[851] A 1959 photograph shows that building in poor condition (*Fig. B93*).

In the 1960s the building was stabilized with steps and a plywood door installed at the carriage opening for security. A photograph shows that change and the plywood gate to the stableyard installed by the Fire Division in 1963 when they widened the opening (*Fig. B94*).

By the 1970s, the condition of the building had deteriorated significantly, with failing wood elements and cracked masonry causing numerous leaks (*Fig. B95*). Layers of asphalt had been added to the roof in recent years as a temporary measure.[852]

851. Acting Regional Director David G. Wright to Advisory Council on Historic Preservation Executive Director Robert R. Garvey, Jr., 10 June 1977, in CHRI folder "Compliance 1975-79," uncatalogued boxes.
852. Ibid.

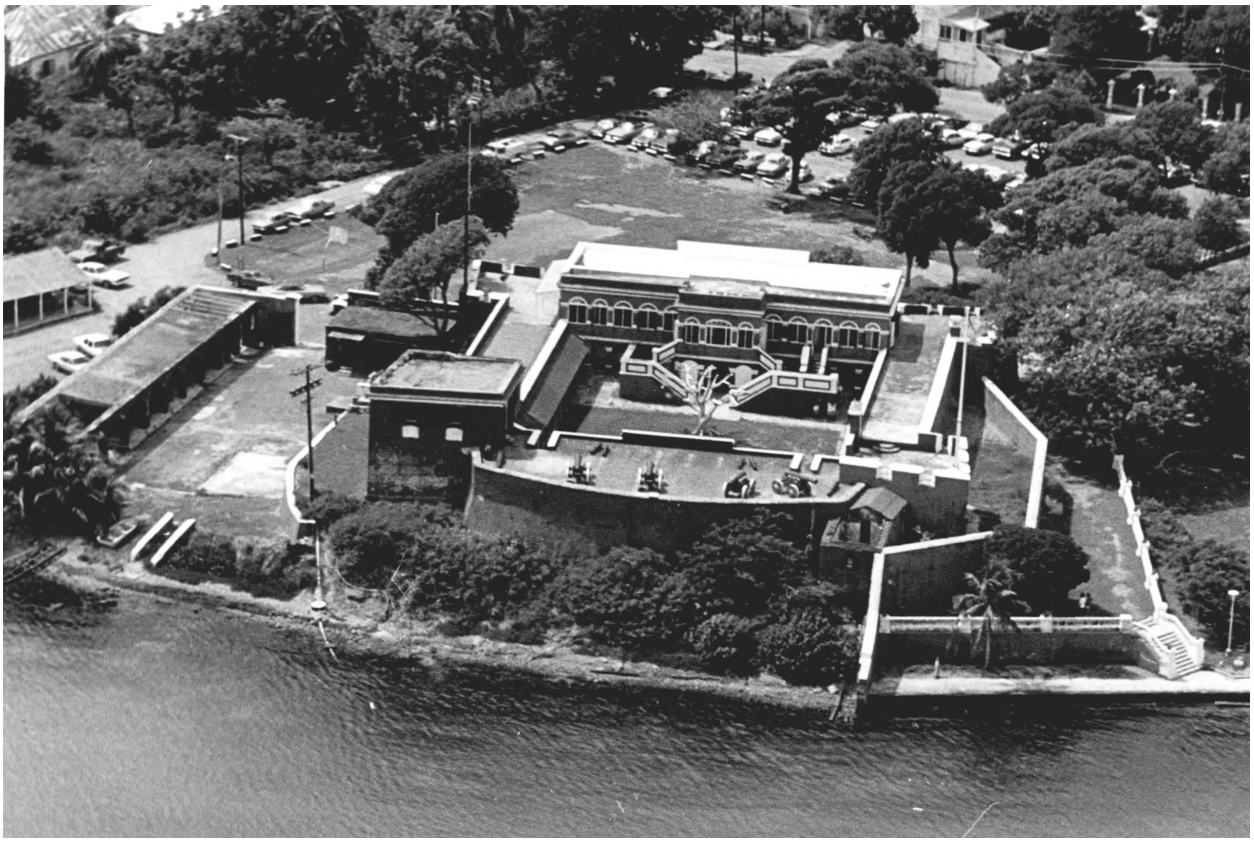


Figure B92. Aerial photograph of the stableyard and fort, September 1975, showing missing portions of the stable roof and the concrete pad of former garage. Photographer Frank Pelligrini. (National Register nomination, "Fort Christiansvaern," 1976)



Figure B93. Exterior in 1959, showing deterioration. At the left is the stableyard gate before its removal. (Service-pnp-habshaer-vi-vi0000-vi0085-photos-166373pv)

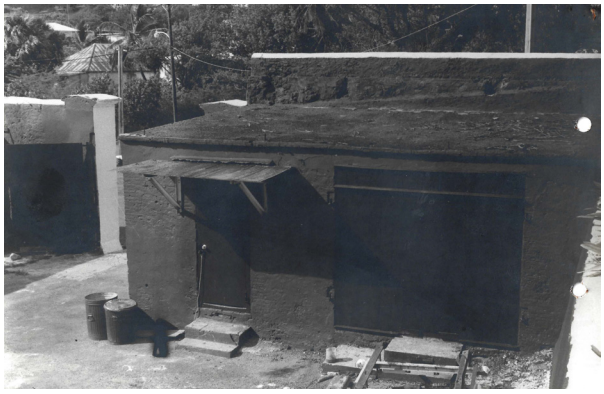


Figure B94. Improved condition after stabilization in the 1960s, including the door and steps to the carriage opening. Visible at the left is the plywood gate installed in the early 1960s by the Fire Division. (CHRI uncatalogued boxes)

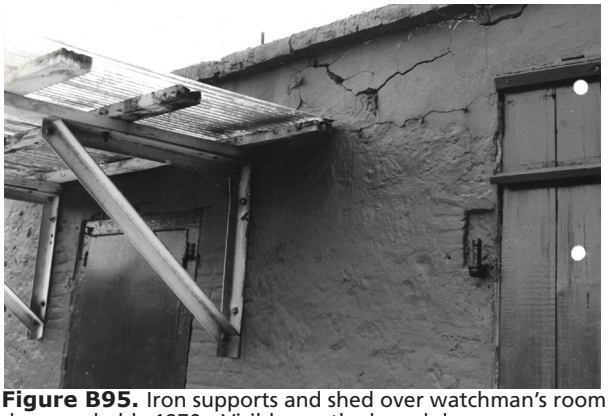


Figure B95. Iron supports and shed over watchman's room door, probably 1970s. Visible are the board doors, masonry crack, and the brick roof edge. (CHRI uncatalogued boxes)

The park proposed to replace the roof reusing bricks where possible and laid "in the same manner as it was originally but for waterproofing purposes will include a structural reinforced concrete slab between the top and bottom layers of brick."[853]

The project included filling the south window, reintroducing the dividing partition between the watchman's room and carriage room, and installing a wood floor and new door in the former and stone paving and gate in the latter.[854]

Compliance was completed in July 1977 with plans and elevations prepared the same year. These supply additional information on the project. Brick was to be salvaged from the flat roof, cleaned, and reused. On the north, front, elevation, two sets of steps were to be replaced, the easternmost (watchman's room) with brick steps, the westernmost (carriage room) with a ramp to floor level. The small shed roof over the watchman's door was to be removed and the door replaced with a half-louvered door. The carriage house double doors were to be replaced with board doors with strap hinges.[855]

853. Ibid.
854. Ibid.
855. Robert M. Utley letter to NPS Acting Regional Director, 29 July 1977, CHRI 11424 box 22, folder 11, file 1. Plans and elevations, "Rehabilitation Fort Christiansvaern Carriage House, 1977, NPS ID101095-CHRI_399_80002, provided 2021 by NPS archaeologist, SEAC.

On the south side of the building, the stableyard wall was to be reduced to what was thought to be its original level, and an 1880 window in the wall was to be removed, the opening filled with concrete block and plastered.[856]

Inside, the reintroduced partition between the two rooms was to be built with plastered concrete block, and the plywood floor of the carriage room to be replaced with cobblestone paving set in sand and cement.[857]

1978, Stable Rehabilitation

The condition of the stable building in 1978 was poor, with sections of the roof missing and areas of the walls and wood elements damaged. A comprehensive rehabilitation was undertaken, with the August 1978 Invitation for Bids describing a wide range of work including concrete, masonry, carpentry, millwork, plaster and stucco, and painting.[858]

The roof was of major concern. A sketch plan shows its condition at the time, with two north sections missing, a long central area damaged, and the southernmost portion also missing.[859] The roof was to be replaced to simulate the original appearance, using two layers of thin Danish brick with a rigid underlayment sandwiched between (*Fig. B96*).[860] The design for missing sections was to follow the pattern of the roof remaining in the central area.[861]

Walls, doors, and shutters were included in the project. Walls were to be repaired and stuccoed with lime mortar, and missing shutters and metal window bars were to be replaced. About five shutters were in a condition allowing repair.[862]



Figure B96. Stable roof installed in 1978-1979 showing a large mortar joint between the west course of brick and the remainder of the roof, photographed 2015. (Historic Preservation Training Center [HPTC], Site Visit Trip Report, 10 November 2015, in CHRI folder "Stable Building Roof," uncatalogued boxes)

A wall beam resting on brackets set in masonry was said to have been added in the 1850s just below earlier supports. However, it had deflected from the weight of the roof and was to be strengthened by a steel plate bolted to the wall side of the beam.[863]

Another part of the project was replacement of the stableyard's damaged brick and cobblestone pavements in kind, and removal of concrete patches.[864]

1984, Electrical Work, Use as Maintenance Shop

During the rehabilitation of the stable, electrical service was to be introduced to enable the use of power tools and the building's use as a maintenance shop.[865]

In the accompanying Assessment of Actions, the park explains the need for a central work area to continue the major restoration and stabilization then underway throughout the site, emphasizing that the stables were well suited to become that

856. Plans and elevations, "Rehabilitation Fort Christiansvaern Carriage House," 1977, NPS ID101095-CHRI_399_80002, provided 2021 by NPS archaeologist, Southeast Archeological Center.
857. Ibid.
858. Invitation to Bid, Rehabilitation Fort Christiansvaern Stable, 7 August 1978, in CHRI 11424 box 17, folder 28, file 1.
859. Plans and elevations, "Rehabilitation Fort Christiansvaern Stable," 10 March 1978, NPS ID104166-CHRI_399_80005, provided 2021 by NPS archaeologist, Southeast Archeological Center.
860. Historic Preservation Training Center (HPTC), Site Visit Trip Report, 10 November 2015, in CHRI folder "Stable Building Roof," uncatalogued boxes.
861. Regional Director Joe Brown to Advisory Council Executive Director Robert R. Garvey, Jr., 13 July 1978, in CHRI folder "Compliance 1975-79," uncatalogued boxes.
862. Ibid.
863. Ibid.
864. Ibid.
865. Virgin Islands Director of Planning to Advisory Council Executive Director Robert R. Garvey, Jr., 28 February 1984, and Assessment of Actions, in CHRI file "Electrical wiring steeple building & stable," uncatalogued boxes.

work area. It references the associated project to replace the gates to the stableyard to shield the workplace from public view.[866]

1984, Reconstruction of Stableyard Gates

The stableyard gates had been proposed for replacement in a 1977 compliance request, well before the project commenced in the mid-1980s. The project was to restore the south gateposts and replace the temporary plywood gate with a reconstruction of the gates "which were still hanging in a damaged condition when [the park] was created."[867]

The gate then in place may have been similar to the replacement installed by the Fire Division when the east gatepost was altered to widen the entrance. The post had since been restored to its original width, though when and by what agency is not documented in files.[868]

What is not stated in the compliance statement, and apparently forgotten, was the 1963 agreement that the Fire Division would store the removed gate, and upon leaving the stableyard for another site, use the stored elements of the gate in a reconstructed gate. The Division was to bear all costs.[869]

With no mention of the agreement or of any stored portions of the early gate, the park proposed that new gates were to be reconstructed of aluminum to reduce weight and painted green. The gateposts were to be recapped with brick and plaster (stucco). Photographs are referenced but are not included in the file.[870]

Drawings and specifications were prepared in July 1978, the specifications giving three alternate materials: aluminum; hollow "wrought" iron with decorative pieces to be "cast solid wrought iron," certainly meaning cast iron; or solid wrought iron/malleable cast iron.[871]

The work was begun in association with the rehabilitation and wiring of the stable and adaptation as the maintenance area, in part to shield that area from public view. The material selected is not stated; however, the current gates are aluminum with steel fasteners.[872]

1985, Iron Bars on Openings

In 1985, the park proposed the installation of "full-length ½" iron bars" in the arched openings of the stable building to increase security. The bars would be associated with "full-length wood fencing" for the openings. Sketches suggest the proposal was for a metal grid to cover the entire arched opening.[873] The file contains no information on whether the project was undertaken.

1987, Proposal for Restroom in Stable

Restroom facilities, including a shower, were proposed in 1987 to be provided in the stable for use by the Maintenance Division. A sketch shows three spaces running east to west in a room along the far south wall: toilet, shower, and storage, with a window in the toilet room. Facilities were never installed.[874]

1988, Windows and Shutters

A list of completed tasks at the fort includes one entry at the stable. The source of the list is not known and those accomplishing the work are not identified. The information is spare, stating only that window frames and shutters in the carpenter shop were repaired/replaced in November 1988.[875]

866. Ibid.
867. Ibid.
868. Ibid.
869. Virgin Islands National Park [former name of CHRI NHS] Superintendent Frank R. Givens to Deputy Fire Commissioner Omar Brown, 22 July 1963, in CHRI 11424 box 2, folder 85, file 12.
870. Regional Director David D. Thompson to Advisory Council Executive Director Robert R. Garvey, Jr., 20 July 1977, in CHRI folder "Compliance 1975-79," uncatalogued boxes.
871. Drawings, "Reconstruction of Fort Christiansvaern Stableyard Gate," 7 July 1978, NPS ID 106224-CHRI_399_80003, provided 2021 by NPS archaeologist, Southeast Archeological Center.
872. Assessment of Actions, in CHRI file "Electrical wiring steeple building & stable," uncatalogued boxes.
873. Regional Director to Advisory Council Executive Director Robert R. Garvey, Jr., 16 May 1985, in CHRI 11424 box 2, folder 85, file 4.
874. Assessment of Actions Having an Effect on Cultural Resources, 6 August 1987, in CHRI 11424 box 22, folder 33, file 1.
875. "Fort Christiansvaern" printout, in CHRI 11424 box 30, folder 10, file 1.

1994, Removal of Utility Pole and Hazardous Materials

As part of an upgrade to the fort's electrical system, a utility pole near the stableyard entrance was to be removed. Hazardous materials had already been removed from the stables, in use as the maintenance facility since the mid-1980s.[876]

1999, Repair of Coping of Retaining Wall

A bid solicitation and contractor offer for buildings in the park include a list of work items for the fort complex. The primary task was to pressure wash all exterior masonry surfaces, apply stucco at selective locations, and limewash exterior masonry walls, though it is not clear whether that work included the stable. The stated stableyard task was repair of the brick coping of the stableyard retaining wall. No further information was found, but projects such as this were often conducted under general masonry contracts.[877]

2005, Doorways

A project status memo of May 2005 provides information on the work completed by TipTop in their larger fort project (discussed in Section II). The door frame of the maintenance office was replaced with a new treated pine frame, and the existing shutter doors were rehung, but with new hardware. Masonry was patched where plaster fell during frame removal.

The door of the SCUBA room, or dive locker room, in the southernmost space of the stable building was replaced to reproduce the door then in place, the "wide two shutter style with treated pine" represented in the 1959 HABS drawings. Hardware appears to have been replaced, and a large exterior bolt was proposed to be replaced with a 24" L-shaped metal rod.[878] Such a door was installed and is currently in place.

876. Mechanical/electrical engineer, Trip Report, to chief of SERO Engineering & Facilities Mgmt Division, 26 April 1994, in CHRI folder "Museum Collection Building (rehabilitation) Trip Report 4/26/1994-4/26/1994," uncatalogued boxes.
877. Bid solicitation and offer by Keystone Restoration, Inc., of Palm Beach, FL, 18 August 1999, in CHRI 11424 box 4, folder 11, file 1.
878. Hillis-Starr memorandum to RM Files, "Fort Repairs/repair and replace in kind," 25 April 2005; her memorandum to Facilities Chief Steve Luppert and the TipTop foreman, 9 May 2005, in CHRI folder "Repair/106 Artillery Shed Wall," uncatalogued boxes; and her memorandum, May 2005, in CHRI folder, "TipTop Project Folder," uncatalogued boxes.



Figure B97. Arrow points to the stable door to be replaced. (Karen Gravel, Lord Aeck Sargent, Field Report, 22 May 2010, in CHRI folder "Omar Repairs," uncatalogued boxes)



Figure B98. All shutters were replaced on the back, east wall of stable. (Karen Gravel, Lord Aeck Sargent, Field Report, 22 May 2010, in CHRI folder "Omar Repairs," uncatalogued boxes)

2010, Doors and Shutters

Needed work identified by Lord Aeck & Sargent Architects (LAS) in May 2010 included stable openings. One of the arched doors of the stable was to be replaced, and all shutters on the east, back side of the stable were to be replaced (*Figs. B97-98*).[879]

2015, Painting and Limewashing

In 2015, the fort and stable were limewashed and painted in preparation for the 2016 centennial of NPS and the 2017 centennial of the transfer of the Virgin Islands from Denmark to the United States. The project included the preparation, painting, and limewashing of all exterior surfaces of the fort

879. Karen Gravel, Lord Aeck & Sargent, Field Report, 22 May 2010, in CHRI folder "Omar Repairs," uncatalogued boxes.

and stable.[880] The park contracted with SF General Maintenance Services, LLC, of Christiansted, a company whose diverse services included painting as well as landscaping, auto cleaning, janitorial service, and cistern cleaning.

The statement of work called for the use of limewash on all masonry surfaces, rust inhibitor on all exposed metal, wood primer on all exposed wood, and industrial enamel oil-based paint on all metal and wood surfaces. It also specified methods, calling for complete pressure wash cleaning of surfaces including masonry, stucco, wood, metal, and plastic. Loose paint and rust were to be removed by "pressure washers, wire brush, paint scrapers, electric grinders, and/or wire wheels," and the contractor was to then repair areas damaged by pressure washing and prep work. The spraying of paints was not permissible. Limewash formulas for yellow and white, paints, mortar mix, slurry mix, and stucco mix were specified.[881]

The folder in park files contains no information beyond the July 2015 agreement with the contractor, but it is assumed that the work was completed.

2016, Replace Stableyard Doors and Shutters

A memo attached to the 2016 Statement of Work specified shutters to be "in the traditional Danish method of two layer of ¾-inch tongue-and-groove dimension lumber on a bias (typically the inner (closed) layer is vertical and the outer (closed) layer is at a 45 deg angle)."

After modifications to reduce costs, a 2014 PMIS was updated in September 2016, stating that the previous post-Hurricane Omar work replaced only the damaged doors and shutters; however, work on the "oversized open gate style" wood doors and interior shutters was not included, and these were now deteriorated beyond use. Replacements were needed, and the desire was to complete work before the 100th anniversary of Transfer Day in March 2017.[882] No information on work undertaken was found in project files.

880. Statement of Work, 31 March 2015, in CHRI folder "Fort Painting 2015," uncatalogued boxes.
881. Ibid.
882. Statement of Work, Replace Wooden Gates, Doors and Shutter in the Stable Yard Building, 26 June 2016; Park emails, 3 and 9 September 2016; PMIS 206554, updated 14 September 2016, all in CHRI folder "CHRI Stable Yd Gates," uncatalogued boxes. PMIS stands for Project Management Information System.

2015-2017, Stable Roof Phase I

By 2013, the new stable roof installed in 1978 or 1979 was determined to have "critical structural failure." Although other repairs and replacements were made to the building over the years, a roof was not among them. A new roof had been requested before January 2013, but only unspecified interim measures were completed. Despite the building's serving as the maintenance facility for the park, including carpentry and masonry shops and storage of large equipment and maintenance supplies, it had been closed for worker and public safety.[883]

The NPS Historic Preservation Training Center (HPTC) recommended full replacement of all wood components of the roof due to considerable termite and water damage, as well as replacement of window shutters and repair to wood doors and gates.[884]

The reroofing project removed all components of the 1978 roof. Bricks were not salvaged for reuse because the Portland cement mortar used in the 1970s would require labor-intensive cleaning. Samples of all non-usable components were to be tagged and stored in an artifacts box and accessioned to the park. New wood components were of green, pressure treated pine due to the cost and availability of the termite-resistant local mahogany. The green wood was thought to better acclimate to the humid environment.[885] Photographs in project files are scanned images in email reports and of a quality inadequate for inclusion here.

A temporary roof was installed over the wood components, designed to move water towards weep holes leading to the west elevation ground drain that funnels water into the bay on the north side of the fort. The weep holes were to be closed when the new roof was installed in Phase II. HPTC was to provide an illustrated Record of Treatment at completion, though that is not included in the file.[886]

883. PMIS 196842, updated 23 January 2013, in CHRI folder "CHRI 2016;" PMIS 214804, updated 23 March 2015; Historic Preservation Training Center (HPTC), Site Visit Trip Report, 10 November 2015, p. 12, both in CHRI folder "Stable Building Roof," and both folders in uncatalogued boxes.
884. HPTC Site Visit Trip Report, 10 November 2015, p. 12, in CHRI folder "Stable Building Roof," uncatalogued boxes.
885. Draft Project Agreement, Replace Stable Building Roof Phase I, 15 February 2017, in CHRI folder "Stable Building Roof," uncatalogued boxes.
886. Ibid.



Figure B99. Stable roof replacement underway. Phase I constructed a new framing system with a temporary cover. Plywood was removed in Phase II and replaced with concrete panels topped by a single course of brick. ("Replace stable roof weekly report #9," p. 2)

It was discovered during the project that the masonry walls and rafter pockets were cracked and crumbling. They were rebuilt using a mortar mix reported as two parts masonry sand and one part NHL 3.5 (natural hydraulic lime), and a one-to-one mix for the top coat of plaster. The top plate was fastened to the masonry wall, and the rafters were fastened to the top plate, in contrast to the 1970s elements, which were held only by the weight of the brick above. PVC sheets were nailed atop 2x4 purlins to create a barrier between the new framing and the temporary roof.[887]

The new roof was to follow the more historic design rather than the 1970s sandwiched foam underlayment (*Fig. B99*).[888]

A note in the draft scope of the 2021 Phase II projects states that the brick ceiling was not installed in 2017; instead, the purlin framing was covered with panels.[889]

2021, Stable Roof Phase II

The primary focus of Phase II was to reconstruct the "Historic Brick Layer" of the roof. This top brick layer was to be of replacement brick similar in color and size to the brick roof on the watchman/carriage house.[890]

The plywood installed in the 2017 Phase I project was to be removed, and concrete roof deck panels fastened directly to the roof framing. Calculations of the weight of the concrete deck with the top layer of brick indicated that alterations were needed to strengthen the joist framing installed in 2017.[891] A single course of brick was set on the panels in epoxy, and all construction joints were infilled with a non-shrink epoxy grout.[892]

887. Hillis-Starr, email to several NPS staff at park and region, 8 May 2017; and HPTC weekly field reports, 16 June and 14 July 2017, in CHRI folder "Stable Building Roof," uncatalogued boxes.
888. Hillis-Starr 8 May 2017 email.
889. HPTC, "Draft Project Agreement, Restore Stable Building Roof, Phase II-Historic Brick Layer," 21 January 2021, NPS ID 20CHRI_Stable Roof DPA revised 1.21.21, provided 2021 by contracting officer's representative (COR), NPS regional office.
890. Ibid.
891. Ibid.
892. Ibid.

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Physical Description and Condition Assessment



Figure C1. Fort Christiansvaern as viewed from the north. Unless otherwise indicated, all photos in this section were taken by JKOA in 2021.

Fort Christiansvaern's entrance gate faces west-southwest, while the sallyport gate accessing the main courtyard from the ravelin yard faces south-southwest. For the purposes of this report, the fort is said to face south.

General Description

Fort Christiansvaern is a square fort with east, west, and south curtains and the water battery surrounding a square courtyard at the north end of the structure. A bastion is at each corner. The triangular ravelin yard extends south from the south curtain and is connected to the main courtyard by means of the sallyport gate. At the southern point of the ravelin yard is the former canteen. The main gate is positioned on the southwestern face of the ravelin yard.

The fort is primarily a single story, though the south curtain and northeast bastion each have an upper level. Low-sloped gundecks top the east and west curtains and the southeast, southwest, and northwest bastions. The nearly flat water battery is built largely atop infill material. The latrine extends from the northwest bastion and has a wingwall that extends to the water (*Figs. C1-C4*).

East of the fort is the stableyard, which lies at a lower elevation than the fort itself, protected on the south side and linked to the fort by a masonry wall with gateway. The stableyard can be accessed via the gate or from a stair descending from the east curtain. A carriage house is just west of the stableyard gate, while the linear stable lies to the east and has a wingwall extending to the water at the north end, creating a closed compound against the water's edge (*Fig. C1*).



Figure C2. Overall view of the fort from the southeast.



Figure C3. Overall view of the fort from the south.



Figure C4. Overall view of the fort from the west.

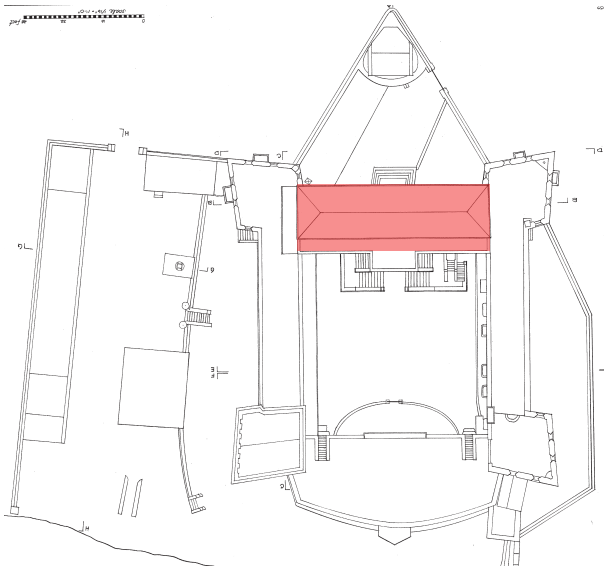


Figure C5. Key plan highlighting south curtain.

The majority of the fort's interior spaces are accessed directly from the courtyard. Interior spaces are mainly utilitarian in nature and are typically plastered with minimal decoration. Punched window and door openings are typical, and the majority of both window and door openings hold solid wood shutters.

Exterior Organization

The Exterior Organization section is organized by portion of the fort, then by elevation. The *Exterior Features* section that follows provides a detailed description of exterior elements for each portion.

South Curtain

The south curtain lines the south side of the courtyard between the southeast and southwest bastions. The sally port passage passes through the center of the curtain at the first floor and connects the courtyard to the ravelin yard (*Fig. C5*).

The south curtain has a low-sloped roof with subtle ridge at the center that is surrounded by a masonry parapet wall.

South Curtain - South Elevation

The south elevation of the south curtain faces the ravelin yard (*Fig. C6*). The arched sally port gate is centered on the elevation at the lower level and is accessed by stuccoed masonry stairs. Window openings at the first floor are irregular in size and spacing, with three window openings with board shutters to the east of the sally port and two openings with shutters and two smaller openings with bars to the west.

Seven equally spaced openings with board shutters are at the second floor, below a projecting cornice. The parapet above is taller at the center of the elevation and has two oval-shaped and one rectangular-shaped stuccoed plaques.



Figure C6. South curtain - South elevation.



Figure C7. South curtain - East elevation.



Figure C9. South curtain - West elevation.

South Curtain - East Elevation

The lower-level east elevation is contained within a hallway passing between the south curtain and the southeast bastion. The wall has no openings.

At the upper level, an open shed-roofed structure extends the width of the elevation (*Fig. C7*). The structure is of wood construction with corrugated metal roofing and is supported at its outboard end by four posts. Three openings lie beneath the projecting roof, two window openings with board shutters at the south end and a single doorway accessing the commandant's gallery at the north end. The same stuccoed cornice present on the south elevation extends the length of the east elevation below the parapet.

South Curtain - North Elevation

The north elevation has a full-width arcade at the lower level and the full-width commandant's gallery at the upper level (*Fig. C8*). The arcade at the first floor is open to the courtyard at the center and at each of the east and west curtains. The sally port passage intersects the arcade, connecting the ravelin yard to the courtyard. Hallways turn south at the ends of the arcade to access the southeast and southwest casemates and the dungeon beneath the southwest bastion.

Two window openings with shutters exist at the first-floor arcade east of the sally port passage. One window opening and one doorway are west of the passage. Within the sally port passage, two paired doorways are centered on the east and west walls. The passageway itself is vaulted with a wood gate at the south end. Photos of these spaces are found in the *Exterior Features* section.

The commandant's gallery is a space open to the exterior with thirteen arched window openings



Figure C8. South curtain - North elevation.

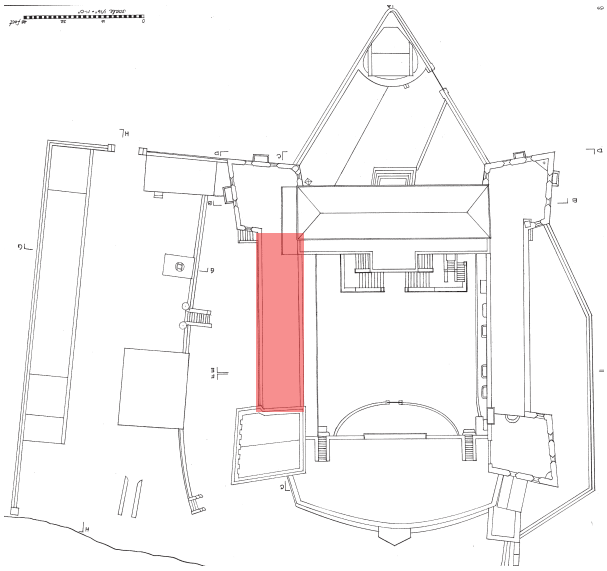


Figure C10. Key plan highlighting east curtain.

facing the courtyard. Seven irregularly spaced doorways, each with board doors, access the interior spaces of the second floor from the gallery.

The central portion of the commandant's gallery projects to the north with a pair of mirrored exterior stairs descending from arched doorways at the east and west sides. The stairs have intermediate landings, and the stair runs return to the center to flank the opening passing from the sally port passage to the courtyard. The area beneath the stairs is largely enclosed, containing a total of four cells beneath, two on each side. A second stair to the west engages the western paired stair at its intermediate landing and has a run that continues south to the first-floor arcade level.

South Curtain - West Elevation

The west elevation of the south almost a mirror image of the east but has only one centered window opening and one doorway at the north end (*Fig. C9*). The west elevation also lacks the shed-roofed structure. At the arcade level, one window opening is at the north end of the wall facing into the hallway to the southwest bastion.

East Curtain

The single-story east curtain extends between the southeast and northeast bastions (*Fig. C10*). The roof of the east curtain is a low-sloped gundeck accessed from either the commandant's gallery or the northeast bastion. Parapet walls with sloped copings are continuous on each side of the gundeck.

East Curtain - East Elevation

The east elevation of the east curtain faces the stableyard and has seven equally sized but unequally spaced window openings, each with board shutters (*Fig. C11*). A doorway at the far south end of the elevation has a brick stair descending to the upper earthen terrace adjacent to the stableyard. A small punched opening lies between the doorway and the first shuttered window opening.

East Curtain – West Elevation

The east curtain's west elevation faces the courtyard and has an open shed-roofed structure



Figure C11. East curtain - East elevation.



Figure C12. East curtain - West elevation.

extending the full length (*Fig. C12*). The wood-framed-structure has nine bays across the face separated by thin wood posts.

The wall beneath the gallery has four equally-sized window openings with board shutters and four equally sized doorways at the curtain. The doorways are irregularly spaced, and each has board doors. Each doorway is accessed by stuccoed steps.

West Curtain

The west curtain extends from the southwest to northwest bastions and forms the east wall of the prison yard (*Fig. C13*). The prison yard is accessed from within the west curtain. The roof of the west curtain is a low-sloped gundeck accessed from either the commandant's gallery or the northwest bastion. Parapet walls with sloped copings are continuous on each side of the gundeck.

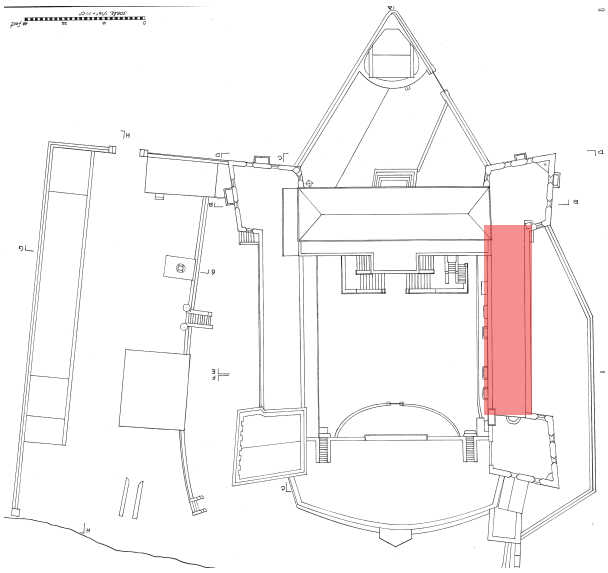


Figure C13. Key plan highlighting west curtain.

West Curtain – East Elevation

The east elevation of the west curtain has eight doorways, two of which hold paired doors at



Figure C14. West curtain - south end of east elevation as viewed from south curtain arcade.



Figure C15. West curtain - East elevation at courtyard. Far-right arched opening accesses northwest bastion.

the south end. Similarly sized doorways face the courtyard, four of which hold single-leaf board doors. The two openings at the north end have had their doors removed (*Figs. C14-C15*).

West Curtain – West Elevation

The west curtain's west elevation faces into the prison yard and has six punched window openings of varying sizes with metal bars and no shutters (*Figs. C16-C17*). The two northernmost windows have round holes above from previous bathroom exhaust fans. An exterior doorway at the south end with board door and brick stairs descends into the prison yard.

Water Battery

The water battery sits between the northeast and northwest bastions and closes the north side of the courtyard (*Fig. C18*). The battery is a single-story structure with a flat gundeck at the upper level and powder magazine centered below. The majority of the space beneath the gundeck is infilled and not accessible. The exterior walls of the water battery flare outward as they approach grade level.



Figure C16. West curtain - west elevation from within prison yard wall, looking south. West wall of yard limits photography.



Figure C17. West curtain - west elevation from within prison yard wall, looking north. Northwest bastion in distance.

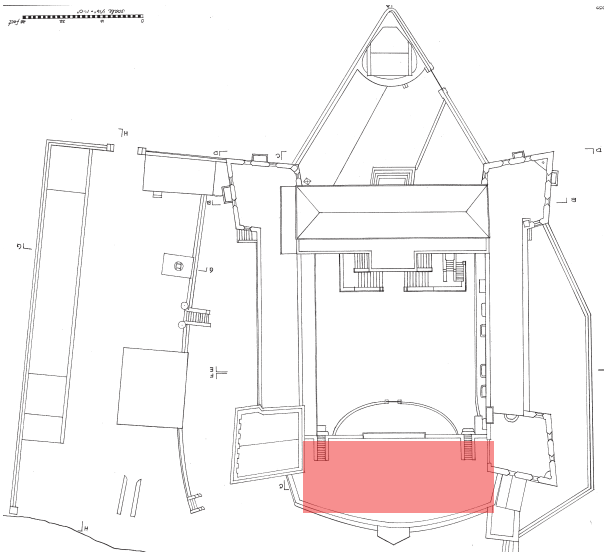


Figure C18. Key Plan highlighting water battery.

Water Battery – South Elevation

The south elevation of the water battery has a central arched doorway accessing the powder magazine (*Fig. C19*). Two small vent openings flank the doorway. The door and vents are centered on a section of the elevation that projects south into the courtyard. Brick stairs ascend to the upper level gundeck at each end of the water battery. At the east end of the water battery, where the battery meets the northeast curtain, is an arched doorway with a board door accessing a barrel-vaulted cell. At the corresponding west end, an arched opening accesses a passage to the latrine north of the northwest bastion.

Water Battery – North Elevation

The water battery's north elevation faces the water and has an outward curve (*Fig. C20*). At the center of the curve, a ventilation opening connects to the powder magazine. Two scupper openings at the parapet level have vertical indentations below. An arched window opening at the far west end provides light to the passage to the latrine.

Southeast Bastion and Casemate

The southeast bastion is at the intersection of the south and east curtains and has a single space at the casemate and a gundeck level above (*Fig. C21*). The gundeck is at the same level as the east curtain gundeck.



Figure C19. Water battery - South elevation.



Figure C20. Water battery - North elevation.

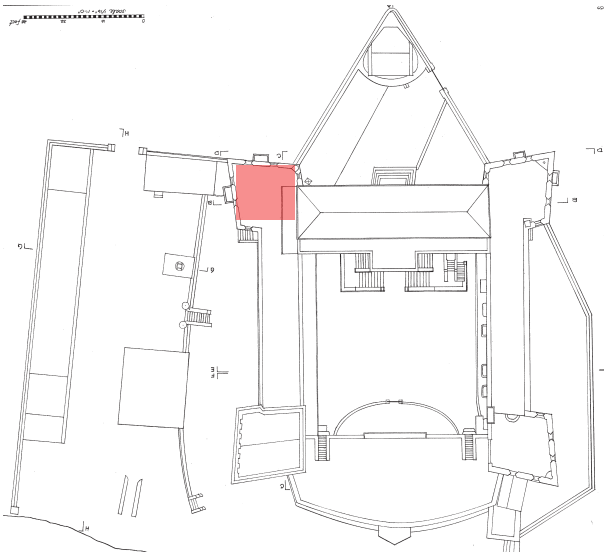


Figure C21. Key Plan highlighting southeast bastion.



Figure C22. Southeast bastion - East elevation.



Figure C23. Southeast bastion - South elevation.

Southeast Bastion – Elevations

The east and south elevations each have two equally sized and spaced punched window openings (*Figs. C22-C23*). The southern opening on the east elevation is used an entry point for utilities. A buttress is centered on the south and east elevations between the windows. A single arched doorway accesses the casemate from the hallway between the south curtain and the bastion.

The parapet of the southeast bastion has angled embrasures, two on each of the south and east elevations and one on each of the south and west elevations.

Northeast Bastion and Casemate

The northeast bastion is at the intersection of the east curtain and the water battery and is the only one of the four bastions with an enclosed upper level. A single space is contained within the casemate at the first floor (*Fig. C24*).

Northeast Bastion and Casemate - Elevations

The north elevation has two arched window openings with a cannon embrasure centered beneath each. A single window opening is at the casemate level. The east elevation is similar to the north, except that the cannon embrasures are blind openings. Two window openings are present at the casemate. The south elevation has one arched doorway accessing the gundeck of the east curtain and one window opening at the east end. The west elevation has an arched opening at the south end accessing the water battery and one window opening at the north end (*Figs. C25-C28*).

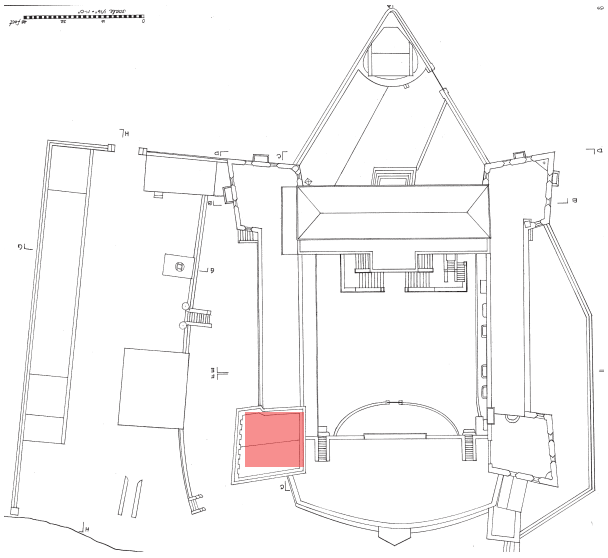


Figure C24. Key Plan highlighting northeast bastion.



Figure C25. Northeast bastion - Openings on north elevation.



Figure C26. Northeast bastion - East elevation.



Figure C27. Northeast bastion - South elevation.



Figure C28. Northeast bastion - West elevation.

The bastion has a stucco cornice similar to the upper level of the south curtain. A parapet surrounds a low-sloped gable roof. The exterior walls of the bastion get wider as they approach grade level.

Northwest Bastion and Casemate

The northwest bastion is at the intersection of the west curtain and the water battery (*Fig. C29*). The gundeck is accessed by ascending steps from the water battery to the east or descending from the west curtain to the south.

The parapet of the bastion has angled cannon embrasures, two on each of the west and north elevations and one on the south elevation. A bellcot is on the south end of the east elevation but holds no bell.

A flagpole is mounted behind the parapet at the northwest corner.

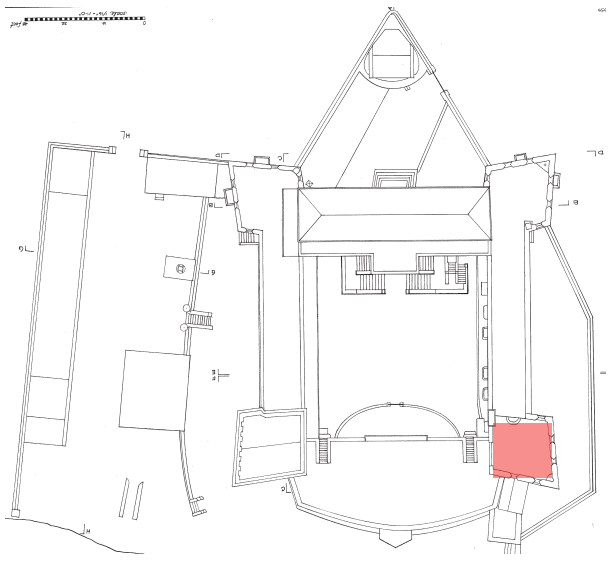


Figure C29. Key plan highlighting northwest bastion.



Figure C30. Northwest bastion - South elevation.



Figure C32. Northwest bastion - West elevation.

Northwest bastion and Casemate – Elevations

The latrines engage the north elevation at the casemate; however, there is one small window opening at the west end of the north elevation. The south elevation has one punched opening at the casemate, while two similar openings are on the west elevation (*Figs. C30-C32*).

Southwest Bastion and Casemate

The southwest bastion is nearly a mirror image of the southeast bastion and is at the intersection of the south and west curtains (*Fig. C33*). The gundeck level is accessed from the commandant's gallery or from the west curtain gundeck.

A masonry chimney with arched cap is at the north end of the bastion and served the kitchen below.



Figure C31. Northwest bastion - East elevation.

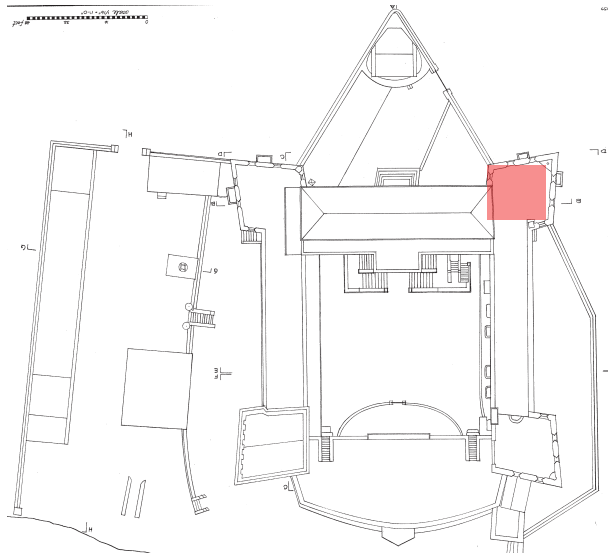


Figure C33. Key plan highlighting southwest bastion.



Figure C34. Southwest bastion - South elevation.

The parapet of the southwest bastion has angled embrasures, two on each of the south and west elevations and one on each of the north and east elevations.

Southwest Bastion and Casemate - Elevations

The south elevation has two punched openings at the casemate with a buttress centered between the openings. The east elevation has two stacked punched openings, one at the first floor and one at the dungeon level. The west elevation has two window openings, a larger one at the center and a smaller one at the north end. A buttress is south

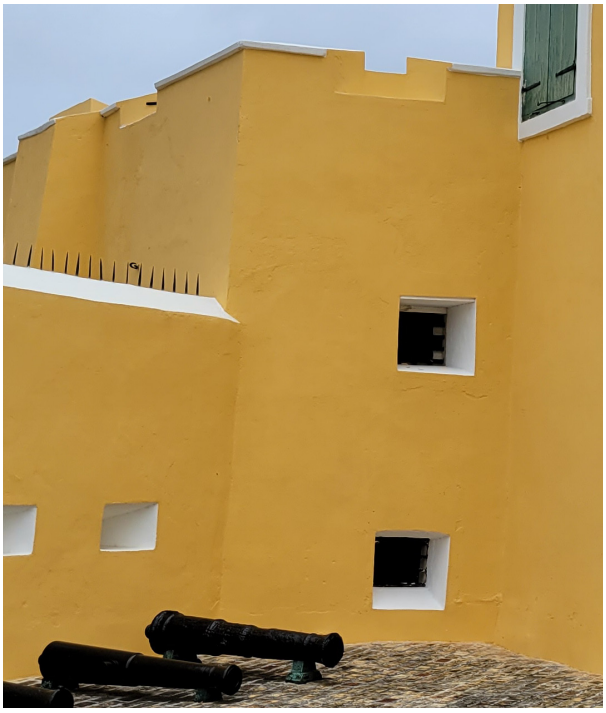


Figure C35. Southwest bastion - East elevation.



Figure C36. Southwest bastion - West elevation.

of the centered window. The north elevation has a small window opening at the casemate level (*Figs. C34-C37*). A single arched doorway accesses the casemate from the hallway between the south curtain and the bastion.

Courtyard

The courtyard is an open lawn bounded by the south, east, and west curtains and the water battery to the north (*Figs. C38-C40*). The sallyport passage enters the courtyard on-axis at the south end. A wood fence forms an arc at the north end, along the water battery. An iron gate arch is at the center of the arc, aligned with the door to the powder magazine.

A brick gutter along the west curtain walkway passes into a channel beneath the floor of the latrines.



Figure C37. Southwest bastion - North elevation.

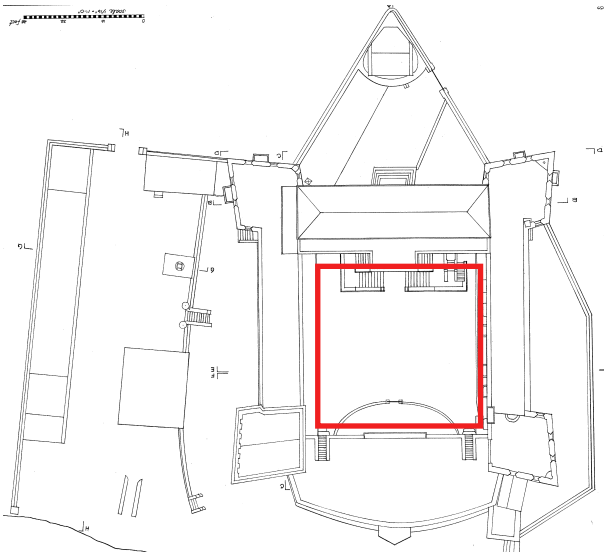


Figure C38. Key plan highlighting courtyard.

Latrines

The latrines are accessed from the northwest corner of the courtyard, by means of the passage adjacent to the water battery, or by passing through the casemate of the northwest bastion (*Fig. C41*). The latrine sits at a lower level than the first floor of the fort and has a hip roofed upper portion and shed roofed northern portion.



Figure C40. Gutter along west curtain walkway, view looking south.



Figure C39. View of courtyard looking southeast.



Figure C41. Latrines - west elevation.



Figure C42. Latrines - North and east elevations.

Latrines – Elevations

The west elevation of the latrine has three narrow slot openings and one larger window opening. The east elevation has two equally sized punched openings. The north elevation has a centered arched opening and a drainage slot at floor level. A second drain opening is low on the elevation, well below floor level (*Figs. C41-C43*).

Ravelin

The ravelin yard is a triangular outdoor space bounded by a wall and the ravelin gate on the southwest side, the artillery shed on the southeast



Figure C43. Latrine - North elevation.

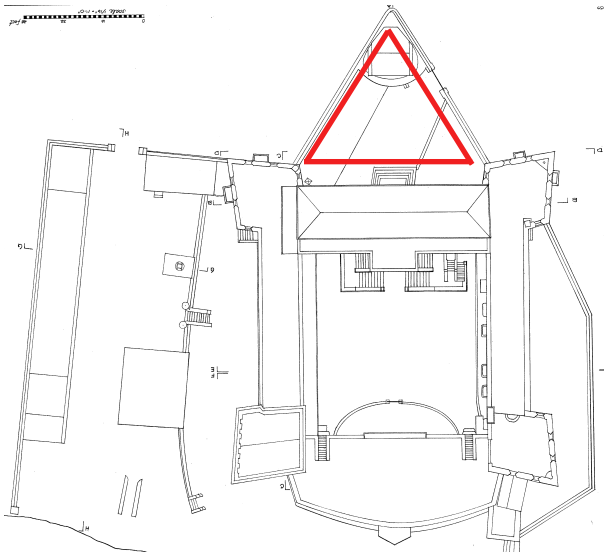


Figure C44. Key plan highlighting the ravelin yard.

side, and the south curtain on the north side. The southern point of the ravelin is occupied by what is now the triangular fee office for the fort (*Figs. C44-C48*).

The southwest wall has six firing holes along its north end and the wood ravelin gate with decorative ironwork at the south end. Two window



Figure C45. Ravelin - View looking south from second floor of south curtain.



Figure C46. Ravelin - View looking west from the southeast bastion.



Figure C47. Ravelin - View looking northeast showing artillery shed at right and sallyport gate at left.



Figure C48. Ravelin - Southwest exterior elevation.

openings and a wide gate opening face the ravelin yard from the artillery shed. An exterior doorway and seven firing holes are in the east wall of the artillery shed. The fee office has a doorway and window opening with board shutters facing into the ravelin and two additional window openings facing southeast and southwest.

Prison Yard

The prison yard is bounded by a tall masonry wall to the west (*Figs. C50-C52*). The west curtain,



Figure C49. Ravelin - Southeast exterior elevation.

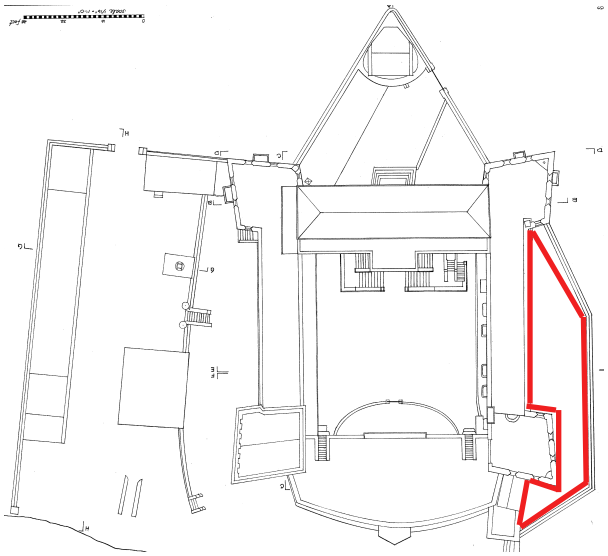


Figure C50. Key plan highlighting the prison yard.

southwest bastion, northwest bastion, and latrines form the east wall of the yard. Three firing holes face west and five similar holes face northwest along the outer wall.



Figure C51. Prison yard - View looking south.



Figure C52. Prison yard - View looking north.

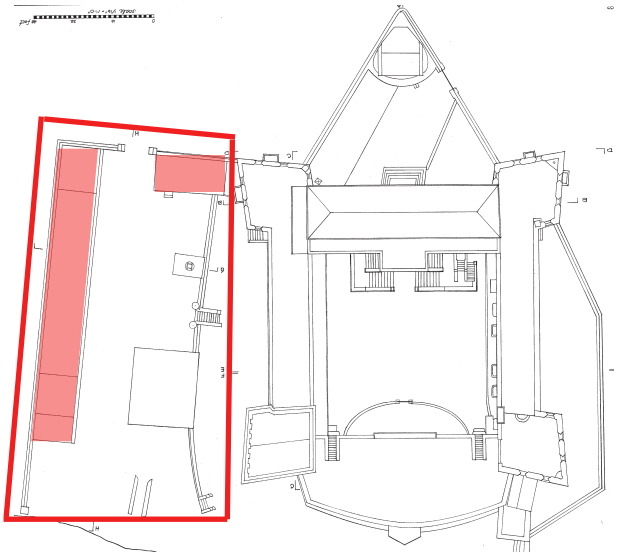


Figure C53. Key plan highlighting the stableyard and stable structures.



Figure C55. Stableyard - View looking southeast from the east curtain gundeck.

The prison yard is accessed by a doorway at the far south end of the west curtain's west elevation. A small stair descends from the first-floor level to the level of the prison yard lawn.

Stableyard

The stableyard lies east of the fort and is accessed by a gateway at the south end or from an exterior stair descending from the south end of the east curtain (*Figs. C53-C55*). A terrace with retaining wall lies at the foundation level of the fort and a stair descends to the lower portion of the yard, which is at the level of the stable and carriage house buildings. The stable forms the eastern boundary of the stableyard and has a projecting exterior wall at the north end that becomes a wingwall extending into the water. An exterior stair descends from the stableyard to the shoreline and a similar stair, now in ruins, once descended from the upper terrace to the water.

Stable

The stable is a long, linear structure with ten bays across the west elevation. The southernmost bay and half of the next bay to the north have been infilled and have two doorways and a window opening with board shutter. The remaining bays are open masonry arches with modern wood screens installed within. Two of the bays hold



Figure C56. Stableyard - Stable west elevation.



Figure C54. Stableyard - View looking northeast from southeast bastion.



Figure C57. Stableyard - Stable east elevation.



Figure C58. Stableyard - Stable north elevation.

wood gates of a design similar to the screens (*Figs. C55-C56*).

The south elevation is formed by the stableyard wall, and the north wall has a blind window opening. The east elevation has thirteen similar window openings high on the wall with top-hinged board shutters (*Figs. C57-C58*). The northeast wall extends to form a wingwall at the north end (*Fig. C59*).

Carriage House

The carriage house is at the south end of the stableyard between the southwest bastion of the fort and the gate (*Fig. C62*). The south elevation is formed by the stableyard wall, while the west wall is largely below grade and functions as a retaining wall. The north elevation has a large doorway with paired doors at the west end and a smaller door with paired board doors at the east end. The east elevation has a single centered window opening with board shutters (*Figs. C60-C61*).



Figure C60. Stableyard - Carriage house north elevation.



Figure C61. Stableyard - Carriage house east elevation.



Figure C59. Stableyard - Wingwall at north end of stable.



Figure C62. Stableyard - Gateway in south wall viewed from inside the stableyard. East elevation of carriage house is at right.

Exterior Features

Exterior Features – South Curtain

Exterior Walls

The masonry exterior walls of the south curtain are stuccoed and exhibit a higher level of ornamentation than other portions of the fort. Molded stucco trim is common at most window openings, archways, piers, and at the cornice and parapet.

Stucco window surrounds are typical on the north and south elevations and measure between 8” and 10” wide. The surrounds have projecting ears at the headers and sills of each opening (*Fig. C63*).

The sallyport gate on the south elevation has a stuccoed gateway with a central arch flanked by fluted pilasters with simple molded capitals. A frieze and projecting cornice top the portal. An iron lantern hanger is mounted above the keystone of the arch (*Figs. C63-C64*).

Also on the south elevation, three flat stuccoed plaques are centered on the parapet wall. The coping of the parapet is raised at this location and has a long rectangular panel at the center flanked by two oval panels (*Fig. C63*).

At the north end of the sallyport, the side of the archway facing the courtyard has a 10” wide curved trim with simulated quoins projecting outward. Similar quoins are found at the east and west ends of the arcade and commandant's gallery (*Fig. C65*).

A projecting stuccoed cornice is consistent on all four sides of the south curtain below the parapet (*Fig. C66*).

The arches of the arcade have 4”-tall moldings at their base, while 11”-tall capitals double as spring blocks for each archway (*Fig. C67*). Similar profiles are used at the commandant’s gallery archways.

The stucco detailing of the exterior stairs is described in the *Exterior Stairs* section.



Figure C63. South curtain - Sallyport gate and stair. Note window surrounds and plaques at parapet.



Figure C65. South curtain - North end of sallyport passage.



Figure C64. South curtain - Detail of sallyport gateway.



Figure C66. South curtain - Cornice.



Figure C67. South curtain - typical capital and base at arcade.



Figure C68. South curtain - paired door at sallyport.

Door Types

This section provides a general description of door designs, locations, and hardware. Specific dimensions and hardware descriptions are provided on an opening-by-opening basis in the Room-by-Room Description section.

The south curtain has three exterior door designs, two are found at the first floor and the third is found on the second floor. The doors at the commandant's gallery have been removed; however, the openings are described in the *Commandant's Gallery* description section. No doors of the south curtain are thought to be early material and reproduction hardware is typical.

The first door type is found at the east and west doorways of the sallyport passage accessing Rooms 10 and 11 and are paired board doors with hinges mounted on the interior (*Fig. C68*). The door to Room 10 measures 3'-4" wide by 5'-8" tall, while the doorway to Room 11 measures 3'-9" wide by 6'-7" tall. The exterior face of the doors is made up of 5" wide beveled-edge horizontal boards. The doorways are surrounded by masonry arches on the exterior.



Figure C69. South curtain - Single door to Room 12.

The second door type is found at the doorway to Room 12 only and is a board door measuring 2'-11" wide by 7'-1" by 1½" thick (*Fig C.69*). The exterior face has vertical flush boards and has an opening measuring 8¼" wide by 9" tall. The door is secured with a diagonal securing bar with padlock. The door jamb is exposed on the exterior and measures about 2½" wide.

Seven doors of the third type are at the commandant's gallery and are paired board doors typically measuring 3'-0" wide by 7'-2½" tall. The doors have flush vertical boards at the exterior and flush horizontal boards at the interior. The doors are hung with pintle hinges and are typically secured on the interior with iron hooks at top and bottom and a pivoting lock bar at the center. The door jambs are exposed on the exterior and typically measure about 3" wide.



Figure C70. South curtain - Typical paired door at second floor.

Window and Shutter Types

This section provides a general description of window and shutter types, locations, and hardware. Specific dimensions and hardware descriptions are provided on an opening-by-opening basis in the Room-by-Room Description section.

The south curtain has five window designs. The first and most prevalent are found at the majority of the first floor and the entirety of the second floor and are openings with paired board shutters with flush boards on the exterior and beaded boards on the interior (*Fig. C71*). At the first floor, the interior boards are horizontal, while at the second floor they are diagonal. A single-shutter variant of this design is found in Rooms 9 and 11 (*Fig. C72*). The shutters are hung with pintle hinges and are typically secured with iron hooks at top and bottom and a pivoting lock bar at the center. No early examples of early window shutters or sash were identified, and reproduction hardware is typical.

The second window type is found on the south elevation at Room 10 only and is a paired three-light wood casement sash with a grid of iron bars on the exterior (*Fig. C73*).



Figure C71. South curtain - Typical window opening with paired shutters.



Figure C72. South curtain - Single-shutter variant of typical window type.



Figure C74. South curtain - Window opening with interior casement sash.

The third window type is a punched masonry opening with horizontal bars found at two openings on the south elevation at Room 12 (*Fig. C74*).

The fourth window type is found at the commandant's gallery and consists of paired openings with fanlights above. The openings are depicted and described in detail in the *Commandant's Gallery* description section.

Sallyport Gate and Passage

Stuccoed steps accessing the passage from the ravelin yard have five treads measuring 1'-1" deep on the main face and 10½" deep on the sides. The risers from bottom to top measure 8", 8", 7", 6½", and 6½" tall (*Fig C63*). The pavers of the passage are covered with a parge coat (*Fig. C75*).

Paired modern wood gates at the south end of the passage each measure 3'-9" wide by 8'-5½" tall and have stiles measuring 3½" wide by 2¾" thick. The rails measure 3½" wide. Vertical wood bars measure 1⅜" square and are spaced at 4" on center. Each gate is hung with two pintle hinges with straps



Figure C73. South curtain - Window opening with interior casement sash.



Figure C75. South curtain - Sallyport passage looking south.

measuring 3'-4" long by 2¾" wide. A diagonal securing bar measures 8'-6" long (*Fig. C76*).

The ceiling of the passage consists of three groin vaults (*Fig. C75*). Two small openings with board shutters on the east wall of the passage access the rear side of modern bookcases in Room 10. The shutters each measure about 2'-6" wide by 1'-10" tall and are each hung with two pintle hinges.

Arcade & Exterior Hallways

The arcade spans the length of the north side of the south curtain at the first floor and is bisected by the sallyport passage (*Figs C77-C78*). The arcade has three arches at each end along the north side that open to the courtyard (*Fig. C79*). At the intersection with the sallyport passage, three arches open and the arcade extends north to an arched portal at the base of the mirrored exterior stairs (*Fig. C80*).

The floor of the arcade is paved with bricks of varying sizes, though the most prevalent size is



Figure C77. South curtain - View of arcade looking east.



Figure C76. South curtain - Eastern leaf of sallyport gate.



Figure C78. South curtain - View of arcade looking west.



Figure C79. South curtain - Arches at east end of arcade.



Figure C80. South curtain - View looking northwest from sallyport through arcade.



Figure C81. South curtain - Jamb near west end of arcade.

about 4½" wide by 9" long by 2¼" deep. The coloration of the bricks varies from reddish-brown to orangish-brown to golden-brown and are laid in a common bond running north-south. Portions of the paving have been covered with a parge coat.

Exposed joists and flush-board decking are typical at the ceiling above. The structural system is described in the Structural Investigation Report in *Appendix E*.

Wood jambs that once held doors or gates are at the east and west ends of the portions of the arcade concealed behind the exterior stairs (*Fig. C81*). The east jambs measure 4" wide by 4½" deep, while those at the east end measure 6½" wide by 3¾" deep. The west opening has a header measuring 2¾" wide by 3¾" deep.

Hallways turn south from the ends of the arcade to access the doorways to the southwest and southeast bastion casemates. The paving and ceiling treatments are consistent with those of the arcade.

Exterior Stairs

A mirrored set of exterior stairs descends from the central projecting bay of the commandant's gallery at the second floor. The stair runs each measure about 5'-8" wide and have brick treads and risers. The treads measure 1'-1" deep and the risers measure about 7½" tall. The intermediate landings are finished with 9" by 9" clay tiles. Wood louvers at the south sides of the landings measure



Figure C82. South curtain - Western exterior stair.



Figure C83. South curtain - Intermediate landing of west stair.



Figure C84. South curtain - Typical marble tile at newel.

about 1'-10" square and open to the arcade below (*Fig. C83*). The stuccoed masonry railings measure about 1'-0" thick overall and have recessed panels on the outward faces and molded stucco top rails. Marble tiles measuring 1'-0" square are at the newels of the railings (*Fig. C84*).

A secondary stair to the west connects to the intermediate landing of the west stair (*Figs. C85-C86*). This set of stairs descends from a doorway at the center of the western portion of the commandant's gallery and turns back on itself to



Figure C86. South curtain - Bottom run of secondary stair as viewed from the arcade.

reach the arcade of the south curtain. The stair measures 3'-0" wide and has brick treads and risers matching those of the mirrored stairs. Two arches below the landing of the stair each measure 2'-0" wide by 4'-0" tall (*Fig. C82*).

Commandant's Gallery

The commandant's gallery extends the length of the north elevation of the south curtain at the second floor and has thirteen arched bays across the north elevation and one arched doorway at each end. The central three bays project to the north and have a wide center bay. Doorways on the east and west sides of the projection open to



Figure C85. South curtain - View of secondary stair as it connects to the intermediate landing of the west stair.



Figure C87. South curtain - Arched window openings of the east end of the commandant's gallery.



Figure C88. South curtain - Arched window and door openings of the west portion of the commandant's gallery.

the descending exterior staircases. The gallery measures about 4'-9" deep at the east and west ends and about 12'-8" deep at the center projection (*Figs. C87-C92*).

Flooring

The floor is finished with terracotta tiles measuring 9½" by 9½" square and laid on point. The floor is drained by scuppers along the north wall.

Walls and Ceiling

The walls are stuccoed masonry. The roof structure is exposed at the ceiling and a large beam runs



Figure C91. South curtain - Commandant's gallery looking east.



Figure C89. South curtain - Center portion of commandant's gallery looking northwest.



Figure C90. South curtain - Center portion of commandant's gallery looking southeast.



Figure C92. South curtain - Commandant's gallery looking west.

east-west above the outer wall. The structural system is described in the Structural Investigation Report in *Appendix E*.

Doorways

The doorways accessing the mirrored exterior stairs each measure 4'-0" wide by 6'-10½" tall and have jambs measuring 3¼" wide by 3" deep. The transom bar measures 3½" wide and the transom sash measures 4'-1" wide by 1'-4" tall with a 2"-wide frame and 1"-wide muntins. Three hinge pintles remain on each side of the opening and the keeper for a security bar remains on each side. The overall masonry opening measures 4'-5¾" wide by 10'-6" tall (*Fig. C93*).

The doorways at the east and west ends of the gallery are similar and measure 3'-3½" wide by 5'-10½" tall. The jambs measure 3" wide by 3½" deep. Two hinge pintles remain on each side. A 4" tall threshold spans the base of the openings. The



Figure C94. South curtain - Doorway at west end of commandant's gallery. East doorway is similar.



Figure C93. South curtain - Commandant's gallery doorway at top of mirrored stairs.



Figure C95. South curtain - Doorway center of western portion of commandant's gallery.

fanlight above the doorway measures 3'-4" wide by 1'-7" tall (*Fig. C94*).

A doorway at the center arch of the west gallery accesses the western exterior stair. The opening measures 2'-7¼" wide by 6'-10½" tall and has a jamb measuring 3" wide by 3½" deep (*Fig. C95*). Three hinge pintles are on the east side of the opening. The remaining shutter adjacent to the opening measures 1'-3" wide by 4'-2½" tall and has fixed louvers. The shutter frame measures 2¼" wide and the blades measure 2¾" wide. The fanlight above the overall opening measures 4'-2" wide by 1'-6½" tall and has transom hardware matching that of a typical window opening of the gallery.

An interior doorway separates the western portion of the gallery from the center and east portion and is part of a wood partition that does not extend to the floor (Fig. C96). The opening measures 3'-11¼" wide by 7'-0" tall. The jambs measure 3¾" wide by 3 ½" deep and have an inner edge bead. Evidence remains for two incised 3½"-tall butt hinges on each side of the opening. The door jambs stop 3½" above the floor. The fanlight opening above the door measures 4'-2" wide by 1'-6¾" tall and has a 3" wide frame with inner edge bead.

Windows

Remnants of wood frames remain in each of the northern arches. With the exception of the openings at the center projection, each opening is similar and is designed to hold two sash with a top-hinged glazed fanlight above. The typical openings measure 3'-9¾" wide by 4'-3" tall and have jambs measuring 3½" wide by 3" deep. The center mullions measure 2¾" wide by 3" deep. Transom openings measure 3'-11" wide by 1'-6¾" tall and have jambs measuring 2½" wide by 3" deep. The remaining sash have frames measuring 2" wide and muntins measuring 1" wide. The overall masonry openings measure 4'-6¼" wide by 6'-6¾" tall with sills measuring 2'-4" above finished floor level. Hinge pintles remain at the top and bottom of each side. Two hooks for holding sash open remain at some openings. Hardware at remaining fanlights includes two hooks, one at each side and one bar for holding the sash open at the center. A curved H-hinge at the top of the sash allows it to operate as an awning (*Fig. C97-C98*).

The center window opening measures 5'-7½" wide by 4'-2½" tall and has a fanlight opening above measuring 6'-0" wide by 1'-6" tall. The jambs are similar to those of the typical window openings. The opening once held four casement sash. The overall masonry opening measures 6'-2¾" wide by



Figure C96. South curtain - Doorway in partition looking west.



Figure C97. South curtain - Typical window opening at commandant's gallery.



Figure C98. South curtain - Typical fanlight viewed from exterior.



Figure C101. South curtain - Upper scupper draining southern portion of roof at east end.



Figure C99. South curtain - Window openings at center bay of commandant's gallery.

6'-7½" tall with sill measuring 2'-4" above finished floor level (*Fig. C99*).

The openings adjacent to the larger central opening are similar to the typical window openings except that they measure 3'-2¾" wide by 4'-2½" tall and have fan light openings measuring 3'-4½" wide by 1'-7" tall. The masonry opening measures 3'-9¼" wide by 6'-6" tall with sills measuring 2'-4" above finished floor level (*Fig. C99*).

Roofing and Rainwater Dispersal

The south curtain roof slopes from a central ridge to 4" by 4" scuppers at the east and west parapets. The south wall of the commandant's gallery extends through the roof, creating two separate roof areas (Fig. C100). At the east elevation, the scupper for the area above the gallery is located below the level of the cornice, while the larger roof area to the south has a scupper above the cornice (*Figs. C101-C102*). The west end of the roof is drained by a single 4x4 scupper at the cornice (*Fig. C103*). The roof membrane and inside face of the parapets have applied coatings.

At the east end, a shed-roofed structure extends the length of the south curtain at the level of the southeast bastion gundeck (*Fig. C104*). The structure has a corrugated metal roof and is constructed of modern dimensional lumber. The eave of the structure is supported by chamfered nominal 4x4 posts. The roof scuppers at the east parapet of the south curtain drain onto the shed-roof (*Fig. C101*).

Internal roof drains measure 3" in diameter at the east and west ends of the south curtain (*Figs.*



Figure C100. South curtain - View of roof looking west. Note wall between second floor rooms and gallery extends through the roof.



Figure C102. South curtain - Lower scupper draining roof above east end of gallery.



Figure C103. South curtain - Scupper at west elevation.



Figure C106. South curtain - Roof drain at west end.

C105-C106). These internal roof drains also serve both south bastions and the entirety of the east and west curtain gun decks. Historically, the drains would have connected to the cisterns in Room 6 of the east curtain and Room 15 of the west curtain. The outlet of the west drain is unknown and may still connect to the west cistern. The east drain discharges to a brick catch basin at the base of the east elevation of the southeast bastion (*Fig. C107*). The catch basin appears to drain to a subsurface drainage system.

Utilities

A fire alarm strobe is at the west end of the commandant's gallery.

Spotlight fixtures are mounted on the roof (*Fig. C108*).

Finishes

The majority of the stucco is painted with mineral paint. The areas beneath the arcade have earlier



Figure C104. South curtain - Shed-roofed structure on east elevation.



Figure C107. Brick catch basin on east elevation of southeast bastion.



Figure C105. South curtain - Roof drain at east end.



Figure C108. South curtain - Deterioration of central beam of commandant's gallery.

limewash. Stucco trim elements are white while the body of the walls are painted yellow. The exterior doors and shutters are painted green. The ceilings are painted white.

Issues of Condition

The large beam above the commandant's gallery is extensively deteriorated near the center (*Fig. C107*).

The window openings of the commandant's galleries are missing all shutters and window sash, with the exception of a few fanlights. Many of the shutters are stored in rooms of the west curtain (see the *Room-by-Room Description* section). The remaining wood jambs are in poor condition and most hardware is missing from the openings. No exterior doors are in place at the gallery, though they may exist in storage.

The roof drainage system is undersized for the amount of water being directed to the scuppers and drains. The internal drainpipes are difficult to monitor for leaks and can cause considerable internal damage to materials before external evidence of issues is apparent.

Several wood bars on the sallyport gate are missing or deteriorated.

Exterior Features – East Curtain

Exterior walls

The masonry walls are finished with stucco and are largely without decorative elements. The coping of the parapet at the gundeck is sloped to the outside and has a molded stucco detail at the outside face.

Door Types

This section provides a general description of door designs, locations, and hardware. Specific dimensions and hardware descriptions are provided on an opening-by-opening basis in the Room-by-Room Description section.

The east curtain has three exterior door designs. No doors of the east curtain are thought to be early material and reproduction hardware is typical.

The first door type is the most prevalent and consists of paired board doors typically measuring about 3'-8" wide by 6'-3" tall (F*ig. C109*). The exterior faces are made up of flush vertical boards while the interior has horizontal



Figure C109. East curtain - typical doorway and steps on west elevation.



Figure C110. East curtain - Doorway at west wall of Room 7.

flush boards. Each leaf is hung with two pintle hinges. Jambs typically measure 3½" wide on the exterior. Doors of this design access Rooms 2, 3, 4, and 5 on the west elevation. The inward-swinging paneled doors of the doorway accessing Room 2 are described in the *Room-by-Room Description* section.

The second door type is found at the west doorway to Room 7 and is an arched board door measuring 2'-9½" wide by 6'-8" tall by 1¾" thick with a central opening with grate (*Fig. C110*). The inside face has horizontal beaded boards of varying widths, while the exterior has vertical flush boards. The door is hung with two pintle hinges.

The third door type is on the east exterior wall of Room 7 and holds a board door measuring 2'-9" wide by 6'-0" tall by 1½" thick (*Fig. C111*). The door is hung with two pintle hinges. The interior face is made up of diagonal beaded boards while the exterior has vertical beveled edge boards. A wood plate on the exterior provides greater rigidity at the lock. The jamb measures 3½" wide at the exterior.

Window and Shutter Types

This section provides a general description of window and shutter types, locations, and hardware. Specific dimensions and hardware descriptions are provided on an opening-by-opening basis in the Room-by-Room Description section.

The east curtain has three window designs. No windows of the east curtain are thought to be early material and reproduction hardware is typical.

The first design is typical at all four openings on the west elevation and consists of a pair of board shutters measuring 3'-2" wide by 3'-11" tall overall (*Fig. C112*). The openings each have eleven horizontal bars at the interior. The inside face of the shutters has horizontal flush boards, while the exterior has vertical flush boards. Each leaf is hung with two pintle hinges. Jambs measure 3½" wide at the exterior.

The second window design is consistent at seven of the eight openings on the east elevation and consists of paired board shutters measuring 2'-11" wide by 3'-7" tall overall (*Fig. C113*). The openings have nine horizontal bars on the interior, as well as a pair three-light casement sash on all but the opening in Room 2. The inside face has diagonal beaded boards while the exterior has vertical flush boards. Each shutter leaf is hung with two pintle hinges. Hooks on the exterior sills hold the shutters in an open position. Jambs measure 3½" wide at the exterior. The casement sash are depicted and fully described in the *Room-by-Room Description* section.



Figure C111. East curtain - Exterior doorway on the east side of Room 7.



Figure C112. East curtain - Typical window opening on west elevation.



Figure C113. East curtain - Typical window opening on east elevation. Note deterioration of shutters.

One punched masonry window opening is centered on the east wall of Room 6 and measures 1'-0" wide by 1'-7½" tall. One 1" square vertical bar is centered in the opening (*Fig. C114*)

Paving and Exterior Steps

The walkway beneath the shed-roofed structure is paved with bricks of varying sizes, though the most prevalent size is about 4½" wide by 9" long by 2¼" deep. A parge coat is applied over portions of the walkway (*Fig. C115*).



Figure C114. East curtain - Masonry window opening on east elevation.



Figure C115. East curtain - View looking north along west elevation.



Figure C116. East curtain - East exterior stair.

Stuccoed exterior steps access the doorways to Rooms 2, 3, 4, and 5 on the west elevation. The stairs consist of two 1'-1"-deep treads and three risers measuring 10", 7" and 7" from bottom to top. The corners of the treads are curved (*Fig. C109*).

Brick exterior steps descend from the east elevation at the south end (*Fig C116*). The stair measures 3'-0" wide overall and has six treads measuring 1'-1" deep and seven risers measuring 7½" tall. A masonry railing on the north side of the stair has a rounded top.

Roof and Rainwater Dispersal

The gundeck of the east curtain has a brick paver roof deck with a cementitious coating applied on the surface (*Fig. C117*). The southern scupper of the northeast bastion roof drains onto the gundeck at the north end. The roof slopes toward the west parapet wall. Rainwater is directed to the south end of the curtain where it drains to a 3"-diameter internal roof drain shared by the southeast bastion and east half of the south curtain.

A shed-roofed covering extends the length of the west elevation and is clad with corrugated metal roofing (*Fig. C115*). Chamfered wood posts with corner beads at top and bottom measure about 2½" square support the roof at the eaves. Beaded joists and spaced roof decking are exposed on the underside of the roof. The structural system is described in the Structural Investigation Report in *Appendix E*.

Utilities

A fire alarm strobe is at the south end of the west elevation. A siren for the security system is adjacent to the strobe (*Fig. C118*).

Two outdoor units serving the HVAC system in Rooms 4 and 5 lie along the east elevation (*Fig. C119*). The units provide cooling only. The southern unit is a TGM model MROPT12AS providing 24,000 Btu/h, while the northern unit is a TGM model MWDRT24S providing the same cooling capacity. Refrigerant lines extend from the units to a window opening above (*Fig. C119*).

A sprinkler riser pipe for the sprinkler system in the archive space is south of the outdoor units on the east elevation (*Fig. C120*).

Finishes

The majority of the stucco is painted with yellow mineral paint, with the exception of the area



Figure C117. East curtain - View of gundeck.



Figure C118. East curtain - Fire alarm strobe and siren for the security system on west elevation.



Figure C119. East curtain - Outdoor units for HVAC system along east elevation.

beneath the shed roof, which has earlier yellow limewash. The exterior doors, shutters, and posts of the shed-roofed structure are painted green. The underside of the roof framing and the coping of the parapet are painted white.

Issues of Condition

The roof drainage system is undersized for the amount of water being directed to the scuppers and drains.

Shutters on the east elevation show signs of rot (*Fig. C113*).

Exterior Features – West Curtain

Exterior walls

The masonry walls are finished with stucco and are largely without decorative elements. The coping of the parapet at the gundeck is sloped to the outside and has a molded stucco detail at the outside face.

Door Types

This section provides a general description of door designs, locations, and hardware. Specific dimensions and hardware descriptions are provided on an opening-by-opening basis in the Room-by-Room Description section.

The west curtain has two exterior door designs. No doors of the west curtain are thought to be early material and reproduction hardware is typical.

The first door type is the most prevalent and consists of board doors typically measuring about 2'-10" wide by 5'-10" tall (*Fig. C121*). The exterior faces are made up of flush vertical boards while the interior has horizontal beaded boards. Each door is hung with two pintle hinges. Jambs typically measure 3½" wide on the exterior. Diagonal security bars on the exterior secure the doors. Doors of this design are typical on all but the east doorway to Room 14/15 and the closet accessed from the arcade.

The second door type is found at the two southernmost doorways on the east elevation and typically measure 3'-0" wide by 6'-4½" tall



Figure C120. East curtain - Sprinkler system riser on east elevation.



Figure C121. West curtain - Typical door on east elevation.

overall and hold a pair of board doors (*Fig. C122*) The doors have horizontal beaded boards on the interior, while the exterior has vertical beveled-edge board. Each leaf is hung with two pintle hinges. Jambs typically measure 3 ½" wide on the exterior.

Window and Shutter Types

This section provides a general description of window and shutter types and locations. Specific dimensions are provided on an opening-by-opening basis in the Room-by-Room Description section.

All window openings of the west curtain are of similar design and are punched masonry openings with a mixture of vertical and horizontal bars. At some windows, the bars are installed in wood frames, while others are embedded directly in the masonry (*Fig. C123*)



Figure C122. West curtain - Typical paired door at south end of east elevation.

Paving and Exterior Steps

A brick walkway lines the east elevation and is paved with bricks measuring 4½" wide by 9" long by 2 ¼" deep.

Steps constructed of the same brick as the surrounding paving access each exterior doorway. The stairs vary slightly in size but typically measure 7" tall and have curved corners with rowlock bricks at the perimeter. The steps typically measure about 4'-0" wide by 2'-0" deep (*Fig. C124*).

A brick stair descends from the south end of the west elevation and accesses the prison yard and measures 4'-4" wide. The stair has two treads measuring 11" deep and two 10"-tall risers (*Fig. C125*).

Roof and Rainwater Dispersal

Grade drops along the east side of the walkway, where a brick-lined gutter drains the courtyard to a grate at the north end of the curtain. The drain passes under the floor of the latrine in a trench and finally exits through the north elevation (*Fig. C124*).

The gundeck of the west curtain has a brick paver roof deck with a cementitious coating applied on the surface (*Fig. C126*). The roof slopes toward the east parapet wall. Rainwater is directed to the south end of the curtain where it drains to a 3"-diameter



Figure C123. West curtain - Typical window opening of west curtain.



Figure C124. West curtain - Walkway and gutter along east elevation.

internal roof drain shared by the southwest bastion and west half of the south curtain.

Utilities

There are no exterior elements of building systems on the west curtain.

Finishes

The majority of the stucco is painted with yellow mineral paint, with the exception of the area



Figure C125. West curtain - Stair at west doorway.



Figure C126. West curtain - View of gundeck looking south.

beneath the arcade, which has earlier yellow limewash. The exterior doors are painted green. The coping of the parapet is painted white.

Issues of Condition

The roof drainage system is undersized for the amount of water being directed to the scuppers and drains.

The exterior wood doors and jambs are weathered. The doorways at Rooms 17, 19, 20, and 21 are particularly deteriorated. The door to Room 17 has become detached from the frame and the door to Room 19 has extensive rot on the interior face. Conditions are depicted in the *Room-by-Room Description* section.

Exterior Features – Water Battery

Exterior walls

The masonry walls are finished with stucco and are largely without decorative elements. The coping of the parapet at the gundeck is sloped to the outside and has a molded stucco detail at the outside face.

Door Types

This section provides a general description of door designs, locations, and hardware. Specific dimensions and hardware descriptions are provided on an opening-by-opening basis in the Room-by-Room Description section.

The water battery has two doors, both of the same basic arched wood design. The doors and hardware are not thought to be early material.

The central doorway to Room 25 holds an arched metal-clad board door measuring 3’-6” wide by 5’-6½” tall by 2” thick (*Fig. C127*). The inside face of the door has vertical tongue-and-groove boards measuring 6” wide. The door is hung with three pintle hinges with straps measuring 3’’-0” long. A



Figure C127. Water battery - Exterior doorway to powder magazine (Room 25).



Figure C128. Water battery - Exterior doorway to cell (Room 26E).

horizontal securing bar measuring 5'-0" long by 2½" wide locks the door in a closed position.

The arched doorway accessing Room 26E holds an arched board door measuring 2'-11½" wide by 5'-9½" tall by 1½" thick and has vertical boards on the exterior measuring wide (*Fig. C128*). The interior face has horizontal beaded boards. The door is hung with two pintle hinges. At the center of the door is an iron vent.

Window Types

This section provides a general description of window types and locations. Specific dimensions are provided on an opening-by-opening basis in the Room-by-Room Description section.

The water battery has only two window openings, each is a punched masonry opening with metal bars. The north elevation window has vertical bars set in the masonry, while the window of Room 26E has horizontal bars set in a wood frame (*Fig. C129*)

Ventilation openings opening to the powder magazine are described in the *Room-by-Room Description* section.

Paving and Exterior Steps

Two identical brick steps access the gundeck from the courtyard and measure 3'-4" wide. Each stair has fourteen 1'-1" deep treads and fifteen 7"-tall risers (*Fig. C130*).

Roof and Rainwater Dispersal

The gundeck of the water battery has a brick paver roof deck with units typically measuring 4 ½" wide by 9" long by 2¼" deep with a cementitious coating applied on the surface. The gundeck has very little slope but is intended to drain to two scuppers along the north parapet (*Fig. C131*).



Figure C129. Water battery - window opening in Room 26E as viewed from the interior.



Figure C130. Water battery - western exterior stair. The east stair is similar.

Utilities
There are no exterior elements of building systems on the water battery.

Finishes
The majority of the stucco is painted with yellow mineral paint. The exterior doors are painted green. The coping of the parapet is painted white.

Issues of Condition
The roof drainage system is undersized for the amount of water being directed to the scuppers and drains.

The metal door on the east ventilation opening on the south elevation is missing.



Figure C131. Water battery - overview of gundeck.

Exterior Features - Southeast Bastion and Casemate

Exterior walls
The masonry walls are finished with stucco and are largely without decorative elements. Buttresses centered on the south and east elevations provide additional support to the walls and ceiling vaults within.

Door Types
The southeast bastion has only a single door on the west wall facing into the hallway between the bastion and the south curtain. The door and hardware are not thought to be early material. The doorway holds an arched wood door measuring 3'-11" wide by 6'-11" tall (Fig. C132). The inside face of the door has horizontal beaded boards measuring 8" to 10" wide and the exterior face has flush boards of similar sizes. The door is hung with two pintle hinges with straps measuring 2'-9½"



Figure C132. Southeast bastion - West doorway.

long. The door is secured with a diagonal bar measuring 5'-9" long on the exterior.

Window and Shutter Types

The southeast bastion has a single window type present at the casemate. The narrow punched masonry window openings have vertical iron bars and are obscured at the interior (*Fig. C133*).

Roof and Rainwater Dispersal

The gundeck of the southeast bastion has a brick paver roof deck with a cementitious coating applied on the surface (*Fig. C134*). The roof surface drains to internal drain shared by the east half of the south curtain and the east curtain.

The parapet of the gundeck has embrasures and merlons on each exterior face, two embrasures are on each of the south and east elevations and one is on the north elevation. The embrasures are spanned by 1” wide iron straps.



Figure C133. Southeast bastion - Typical window opening.



Figure C134. Southeast bastion - View of gundeck.

Utilities

An outdoor unit serving the HVAC system in Room 8 lies along the east elevation. The unit provides cooling only and is a TGM model MWAET12SA providing 12,000 Btu/h cooling capacity. Refrigerant lines extend from the unit to a window opening above (*Fig. C135*).

A sprinkler riser pipe for the sprinkler system in Room 8 is adjacent to the outdoor unit (*Fig C135*).

Finishes

The majority of the stucco is painted with yellow mineral paint. The exterior doors are painted green. The coping of the parapet is painted white.

Issues of Condition

The roof drainage system is undersized for the amount of water being directed to the scuppers and drains.



Figure C135. Southeast bastion - Sprinkler riser pipe and outdoor unit for HVAC in Room 8.

Exterior Features – Northeast Bastion and Casemate

Exterior walls

The masonry walls are finished with stucco. A projecting stuccoed masonry cornice below the parapet walls is similar to that found on the south curtain. Cannon embrasures are functional on the north elevation and blind on the east and south elevations. The embrasures are fully described in the *Room-by-Room Description* section.

Door Types

The northeast bastion has only a single door on the west wall facing into the courtyard. The upper-level doorways lack doors. The first-floor doorway holds a metal-clad arched door measuring 3'-9" wide by 6'-6" tall by 2 ¼" thick (*Fig. C136*). The door is hung with two pintle hinges with straps measuring 3'-7" long by 3½" wide. A Y-shaped padlock hasp measures 2'-5" long by 1'-2" at its tallest. The door and hardware are not thought to be early material.

Window and Shutter Types

This section provides a general description of window and shutter types and locations. Specific dimensions are provided on an opening-by-opening basis in the Room-by-Room Description section.

The northeast bastion has two window types, one at the casemate and one at the upper level of the bastion above. The casemate windows are punched masonry openings and all but the north opening have a single vertical iron bar (*Fig. C137*).

The upper-level window openings are arched openings typically measuring 3'-5½" wide by 3'-11" tall (*Fig. C138*). Each holds a pair of board shutters with diagonal beaded boards at the interior and vertical flush boards on the exterior.



Figure C136. Northeast bastion - West doorway.



Figure C137. Northeast bastion - Typical window opening at casemate as viewed from interior.



Figure C138. Northeast bastion - Typical window openings at upper level.

The shutters are hung with pintles hinges and are secured with iron hooks. The shutters and shutter hardware are not early material.

Roof and Rainwater Dispersal

The roof of the northeast bastion has a brick paver roof with a cementitious coating applied on the surface (*Figs. C139-C140*). The roof surface has a main east-west hip at the center and is canted at the northwest and southwest corners to direct waters to a perimeter gutter behind the parapet. The gutter exists at the east side of the roof and the eastern half of the south side of the roof. The gutter drains to a single 3"-diameter scupper near the center of the south elevation that drains onto the gundeck of the east curtain below (*Fig. C141*).

Utilities

A fire alarm strobe is above the west doorway.



Figure C139. Northeast bastion - View of roof looking east.



Figure C140. Northeast bastion - Perimeter gutter behind parapet at southeast corner.



Figure C141. Northeast Bastion - Scupper near the center of the south elevation.

Finishes

The majority of the stucco is painted with yellow mineral paint. The exterior door and shutters are painted green. The coping of the parapet and the cornice are painted white.

Issues of Condition

The roof drainage system is undersized for the amount of water being directed to the scuppers and drains.

Window shutters are missing on the southern opening on the east elevation. The adjacent window to the north has ill-fitting shutters of an inconsistent design. See the *Room-by-Room Description* section.

Exterior Features – Northwest Bastion and Casemate

Exterior walls

The masonry walls are finished with stucco and are largely without decorative elements.

Door Types

The northwest bastion has only a cased opening on the east elevation opening to the courtyard. The opening is described in the *Room-by-Room Description* section.

Window and Shutter Types

Punched masonry openings with two layers of iron bars are consistent at the casemate, with the exception of the north opening, is narrower and has a single vertical bar. The larger openings each have interior shutters that are described in the *Room-by-Room Description* section (*Fig. C142*).



Figure C142. Northwest bastion - Typical window opening as viewed from the interior.

Roof and Rainwater Dispersal

The gundeck of the northwest bastion has a brick paver roof deck with a cementitious coating recently applied on the surface. The roof surface drains to a single 4” by 4” scupper at the southwest corner near the bell cot. Two curved steps with two 6" tall risers access the gundeck of the west curtain (*Figs. C143, C145*).

The parapet of the gundeck has embrasures and merlons on each exterior face, two embrasures are on each of the north and west elevations, and one is on the south elevation. The embrasures are spanned by 1” wide iron straps. A flagpole extends from a masonry base at the northwest corner of the parapet (*Fig. C144*).

At the southeast corner, an arched bell cot extends at the parapet level, but holds no bell (*Fig. C145*)

Utilities

There are no exterior elements of building systems on the northwest bastion.



Figure C143. Northwest bastion - View of gundeck.



Figure C144. Northwest bastion - Base of flagpole.



Figure C145. Northwest bastion - Bell cot. Note scupper below.

Finishes
The majority of the stucco is painted with yellow mineral paint. The coping of the parapet is painted white.

Issues of Condition
The roof drainage system is undersized for the amount of water being directed to the scuppers and drains.

Exterior Features – Southwest Bastion and Casemate
Exterior walls
The masonry walls are finished with stucco and are largely without decorative elements. Buttresses centered on the south and west elevations provide additional support to the walls and ceiling vaults within.

Door Types
The southeast bastion has only a single door on the east wall facing into the hallway between the bastion and the south curtain. The door and hardware are not thought to be early material. The doorway holds an arched wood door measuring 4'-1" wide by 7'-1" tall by 2" thick and has horizontal beaded boards on the interior and flush vertical boards on the exterior (*Fig. C146*). The door is hung with two pintle hinges with 2'-0" straps and has a 1'-11"-long padlock hasp. An opening in the center of the door measures 8¼" square and has a hinged wood door.



Figure C146. Southwest bastion - East exterior door.

Window Types
Punched masonry openings with a grid of iron bars are common across the entire casemate (*Fig. C147*).

Roof and Rainwater Dispersal
The gundeck of the southwest bastion has a brick paver roof deck with a cementitious coating applied on the surface. The roof surface ramps upward toward the southwest end, directing water to the internal drain at the west wall of the south curtain (*Fig. C148*).

The parapet of the gundeck has embrasures and merlons on each exterior face, two embrasures are on each of the south and west elevations, and one is on the north elevation. The embrasures are spanned by 1" wide iron straps.

A stuccoed chimney extends from the north parapet and measures about 2'-0" square (*Fig. C149*). The arched masonry cap measures about 1'-10" tall at its highest point. The chimney served the stove in the kitchen (Room 14/15).

Utilities
There are no exterior elements of building systems on the southwest bastion.



Figure C147. Southwest bastion - Typical window opening.



Figure C148. Southwest bastion - View of gundeck looking south. Note drain at left.



Figure C149. Southwest bastion - Chimney.

Finishes

The majority of the stucco is painted with yellow mineral paint. The coping of the parapet is painted white. The exterior door is painted green.

Issues of Condition

The roof drainage system is undersized for the amount of water being directed to the scuppers and drains.

Courtyard

The courtyard lawn is bordered by the south, east, and west curtains and the water battery to the north. The majority of interior spaces of the first floor are accessed directly from the courtyard.

A brick gutter at the west side of the courtyard carries surface water to a drain beneath the latrines. And is depicted in the *Exterior Features - West Curtain* section.

A wood fence creates an arc in front of the water battery at the north end. The modern picket fence has nominal 4x4 posts measuring 4'-6" tall that are spaced about 5'-6" apart. Wood pickets measure 3" wide by 1" thick and are spaced at 4½" to 5" on center (*Fig. C150*).

Two stuccoed masonry piers create a gateway at the center of the fence arc. Each pier measures 1'-2" east-west by 1'-7" north south by 6'-1" tall and supports a decorative iron arch. Two hinge pintles for gates remain on the interior faces of the piers (*Fig. C151*).

Exterior Features – Latrines

Exterior walls

The masonry walls are finished with stucco and are largely without decorative elements.



Figure C150. Courtyard - Fence in front of powder magazine.



Figure C151. Courtyard - Gate in fence.

Door Types
A single arched opening on the north end of the latrines opens to the courtyard and is described in the R*oom-by-Room Description* section.

Window and Shutter Types
Punched masonry window openings are common throughout the latrines (*Figs. C152-C153*). Of the seven window openings, four of them have vertical iron bars. The remaining three are narrow slot openings without bars. Interior views of the windows are in the *Room-by-Room Description* section.

Roof and Rainwater Dispersal
A gable roof at the south end of the latrines is clad with corrugated metal panels. The roof transitions to a shed roof at the north end and has similar metal panels (*Fig. C154*).

Utilities
There are no exterior elements of building systems on the latrines.

Issues of Condition
The wood frame of the southernmost window on the west elevation has rotted and the iron bars are missing (*Fig. C152*). The remaining iron bars at other openings are rusted extensively.



Figure C154. Latrines - View of metal roof looking north.



Figure C152. Latrines - View of west elevation showing slot window openings and larger opening.



Figure C153. Latrines - View of north and east elevation showing punched openings.

Ravelin
Exterior Walls
The ravelin yard is bounded by approximately 2'-6"-thick walls along its southeast and southwest exposures (*Fig. C155*). The tops of the walls are sloped in each direction and have 1"-square iron spikes at about 6" on center.

Six firing holes are on the southwest wall. Each hole measures about 4" wide by 5" tall and has a widely angled masonry opening typically measuring about 2'-0" wide by 1'-2" tall. A cannon embrasure low on the wall between the second and third firing holes from the south end measures 1'-4" wide by 1'-19" tall and has a masonry opening at the interior measuring 4'-1" wide by 2'-5½" tall. The opening has a metal cover (*Fig. C156*).

The rounded fee office at the south point of the ravelin has a modest molded stucco cornice at the top of the lower walls. A second set of walls is setback from the outside face of the fee office and frames the upper roof with parapets on each of the southeast and southwest sides (*Fig. C157*).



Figure C155. Ravelin - View of ravelin yard from the southwest bastion looking southeast.



Figure C156. Ravelin - Firing holes on southwest wall.



Figure C157. Ravelin - Roof of fee office. Note lights and security cameras.



Figure C158. Ravelin - Interior face of gate.

Ravelin Gate

The ravelin gate is located on the southwestern wall, just north of the fee office (*Figs. C158-C159*). The gate is of modern construction and has reproduction hardware. The gate opening holds a pair of solid board gates with leaves measuring 4'-5" wide overall by 10'-7" at their tallest point by 3" thick. The top of the gates curves downward at the center and measures 9'-10" tall where the two leaves meet. The exterior face of the gates has flush vertical boards of widths varying from 6" to 11" to 12" wide. The interior face has horizontal beaded boards measuring 11½" wide. Each leaf is hung with three pintle hinges on the exterior with straps measuring 3'-0" long. A slide bolt at the top of interior face secures the large gates and measures 3'-4" long. Hooks measuring 3'-0" long secure the doors and have square plates on the inside face of the door measuring 8" by 8" square.

A second smaller gate opening is centered between the two larger gates and is of similar construction as large gates. The small gate measures 1'-10½" wide by 7'-1" tall and is hung with two strap hinges.



Figure C159. Ravelin - Exterior face of gate.

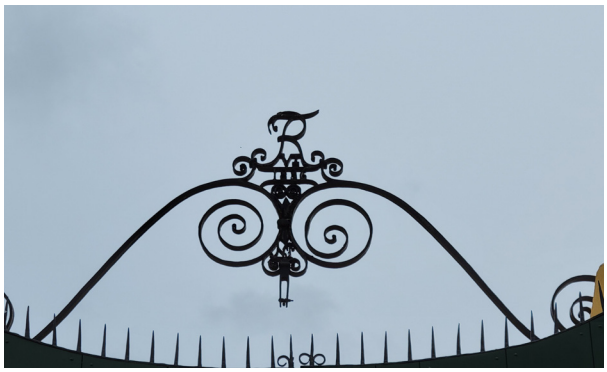


Figure C160. Ravelin - Iron decorate arch above gate.

The upper hinge has decorative curls on the larger gate and measures 2'-2" long by 1'-3" tall. The lower hinge is of a simple design and measures 2'-6" long by 3" tall. The door is secured by sliding bolts with padlock hasps on both the interior and exterior. The interior bolt measures 1'-7½" long by 4" tall, while the exterior measures 2'-9" long by 3" tall.

The frame of the gate has two wood posts at the inside corners measuring 4" by 4" with iron straps. The posts support a decorative iron arch that spans the entire gateway (*Fig. C160*). Iron spikes measuring 6" tall are typical across the large gate. On the exterior, raised stucco coins flank the opening.

Doorways

Two doorways open from to the ravelin yard from the south and southeast. The southeast opening is a paired gate accessing the artillery shed, while the south opening is a board door accessing the fee office (Room 28) (*Figs. C161-C162*). Both doors are described with their respective rooms in the *Room-by-Room Description* section.

Window and Shutter Types

Two punched masonry openings face the ravelin from the west wall of the artillery shed (*Fig. C163*).



Figure C161. Ravelin - Gate accessing artillery shed.



Figure C162. Ravelin - Doorway accessing fee office.

Each opening measures 2'-0½" wide by 2'-6¾" tall and has six horizontal bars measuring 1" square spaced at 4½" on center and positioned on point. The bars are set in a wood jamb measuring 4¾" deep.

Three window openings, each with paired wood shutters, are found on the southeast, southwest, and northwest faces of the fee office (*Fig. C164*). The openings typically measure 3'-0" wide by 4'-4" tall and hold paired shutters with horizontal beaded boards on the interior and vertical flush boards on the exterior. The windows are fully described in the *Room-by-Room Description* section.

Roofing and Rainwater Dispersal

The artillery shed has a shed roof sloping inward toward the ravelin yard. The roof is clad with corrugated metal panels (*Figs. C155*).

The roof of the fee office has a sloping stuccoed outer portion surrounding a square gable roof with ridge running east-west. The gable roof is clad with corrugated metal panels similar to the artillery shed (*Fig. C157*).



Figure C163. Ravelin - Typical window opening at artillery shed.

The paved surface of the ravelin yard drains to the southeast corner and passes through a channel in the floor of the artillery shed. The channel exits the east elevation at a curved raised platform (*Figs. C165-C166*).

Paving and Exterior Steps

The ravelin yard is paved with bricks measuring 4½" wide by 9" long by 2¼" deep. The bricks are laid in a common bond pattern are separated into different sections by borders formed by stretchers. A subtle path in the paving connects the sallyport steps to the main gate. (*Fig. C167*)

A stuccoed exterior stair on the east elevation of the ravelin accesses the east doorway to the artillery shed. The stair measures 6'-0" deep and has four 1'-4" treads and five 10"-tall risers (*Fig. C168*).

Other Features

A bell with pedimented covering and decorated brackets is on the northwest elevation of the fee office (*Fig C169*).

Utilities

Security cameras are mounted on the roof of the fee office (*Fig. C157*).

Two light fixtures are mounted on the fee office roof.



Figure C165. Ravelin - Scupper at southeast corner.



Figure C164. Ravelin - Typical window opening at fee office.



Figure C166. Ravelin - Outlet of ravelin drain on east elevation.



Figure C167. Ravelin - Overview of paving.



Figure C168. Ravelin - Exterior stair on east elevation.

Finishes

The majority of the stucco is painted with yellow mineral paint. The copings are painted white. Exterior doors, shutters, and the ravelin gate are painted green.

Issues of Condition

The drainage of the ravelin through the artillery shed is provided by a channel cut in the concrete floor slab. The channel is undersized and presents a trip hazard to visitors.



Figure C169. Ravelin - Bell on northwest portion of fee office.

Water damage and shoring at the north end of the artillery shed on the interior suggests ongoing leaks at the shed roof's intersection with the south curtain.

Prison Yard

The prison yard is accessed from the south end of the west curtain and extends to the west wall of the latrines. The space is bounded on the west side by a wall measuring about 2'-0" thick with iron spikes at the top. The top of the wall slopes inward toward the yard (*Figs. C170-C171*).

Eight firing holes are in the west wall. Each hole measures about 4" wide by 5" tall and has a widely angled arched masonry opening typically measuring about 2'-0" wide by 1'-2" tall.

Masonry openings exist on the outside face of the west wall below grade that serve to drain rainwater from the yard (*Fig. C171*).



Figure C170. Prison yard - Firing holes on west wall.



Figure C171. Prison yard - Firing holes and drainage holes on west wall as viewed from outside the fort.

Stableyard

The stableyard lies east on the east side of the fort complex and is bounded by a masonry wall with gate to the south and by the stable building and extending wingwall to the east. The space can be accessed from the east elevation of the east curtain by a set of exterior stairs. The stairs access an upper terrace that is held by a masonry retaining wall with steps near the center descending to the level of the stable and carriage house buildings. An exterior floodlight is near the northwest bastion.

Exterior Features - Carriage House

Exterior walls

The masonry walls are finished with stucco and are largely without decorative elements.

Door Types

The carriage house has two exterior doors on the north elevation. The western doorway holds a pair of doors each measuring 4'-6" wide by 7'-8" tall by 1¼" thick. The exterior face of the doors is made up of 6"-wide flush boards. Each door is hung with two pintle hinges with 3'-6"-long straps (*Fig. C172*).

The doorway at the east end of the north elevation holds a pair of board doors measuring 2'-7½" wide by 6'-6½" tall overall by 2" thick. Horizontal flush boards at the interior vary in width between 7" and 11" wide. The exterior face has flush boards measuring 8" wide. Each leaf is hung with two pintle hinges with straps measuring 1'-2" long (*Fig. C172*).

Additional information about each door is found in the *Room-by-Room Description* section.

Window and Shutter Types

A single window opening on the east wall measures 2'-11½" wide by 3'-11" tall and holds a pair of board shutters (*Fig. C173*). The inside face of the shutters has beveled edge boards measuring 5" wide, while the exterior has flush boards of varying widths. The shutters are each hung with two pintle hinges.



Figure C173. Stableyard - Carriage house window.

Roof and Rainwater Dispersal

Brick pavers are consistent across the entire roof and appear recently installed. The roof has a low slope and water sheds off the north side (*Fig. C174*).

Finishes

The north elevation is painted with yellow mineral paint, while the east elevation has earlier limewash. The doors and window shutters are painted green.

Issues of Condition

The east wall of the building has little limewash remaining.



Figure C172. Stableyard - Carriage house doorways.



Figure C174. Stableyard - Carriage house roof.



Figure C175. Stableyard - Missing bricks at carriage house roof.



Figure C177. Stableyard - Typical stable gate on west elevation.

Several bricks are missing from the roof at the northwest corner (*Fig. C175*).

Exterior Features - Stable

Exterior walls

The masonry walls are finished with stucco and are largely without decorative elements.

Door Types

The stable has two door types; the first is at the south end of the west elevation and are solid board doors (*Fig. C176*). The southern has paired doors measuring 4'-9" wide by 6'-4" tall overall. The inside face of the door has horizontal beaded boards measuring 5" wide, while the exterior has vertical flush boards measuring 5" wide. Each leaf is hung with pintle hinges. The northern door is of similar design but measures 2'-2" wide by 6'-5½" tall. The doorways are fully described in the *Room-by-Room Description* section.

The second door type is a board-and-batten gate found at two arched openings of the west elevation (*Fig. C177*). The northern gate opening measures 7'-2" wide by 8'-7" tall and holds a pair of gates each measuring 3'-7" wide by 3" thick. The gates are each hung with pintle hinges. The vertical boards of the gates are made up of nominal 2x4 boards with ½"-wide edge beads. The southern gate is similar, but measures 9'-11" wide by 8'-8" tall. The doorways are fully described in the *Room-by-Room Description* section.

Window and Shutter Types

The stable has two window types, a single opening with wood shutter on the west elevation and is of similar construction to the adjacent exterior doors (*Fig. C178*).

The openings on the east elevation vary slightly in size but typically measure 3'-8" wide by 1'-7" tall (*Fig. C179*). Top-hinged shutters are common on most openings and consist of horizontal flush



Figure C176. Stableyard - Doorways at south end of west elevation of stable.



Figure C178. Stableyard - Window opening and hose bib at south end of west elevation of stable.



Figure C179. Stableyard - Typical east window openings of stable.

boards on the interior and vertical flush boards on the exterior. The shutters are hung with a mixture of pintle hinges, and H-shaped hinges. Iron hooks at the interior sills prop the shutters open.

The wood screens installed in the masonry arches of the west elevation are made up of nominal beaded 2x4s. The screens are fully described in the *Room-by-Room Description* section.

Roof and Rainwater Dispersal

Temporary plywood roofing is installed over the wood roof structure. The plywood is covered with a coated membrane. The roof has a low slope and water sheds off the west elevation to a concrete gutter at grade that slopes north (*Figs. C180-C181*).

Utilities

Two hose bibs are at the far south end of the west elevation (*Fig. C178*).

Two modern light fixtures are mounted on the west elevation (*Fig. C182*).

Finishes

The stable building retains earlier limewash on all elevations. The doors and window shutters are painted green.



Figure C180. Stableyard - Flat roof of stable.



Figure C181. Stableyard - Gutter along west elevation of stable.

Issues of Condition

Two openings on the east opening are missing shutters and four openings are covered with plywood panels.

Stableyard Wall and Gate

The stableyard wall forms the south exterior wall of the carriage house and stable and has a gateway at the center that holds two modern replacement gates. The top of the wall is lined with iron spikes and the top of the wall slopes outward.

The gate opening measures 9”-10” wide and each leaf of the gate measures about 5’-0” wide by about 8’-0” tall (*Fig. C183*). The replacement aluminum gates are made up of 1” square stock and has vertical bars spaced at about 6” on center. The leaves are each hung with two pivoting hinges. Horizontal bars cross at the top and bottom to create two rows of squares, each with a cross shape. The bottom of the gate has four panels, each with a diamond-shaped design at the center held by diagonal bars. The gate ends about 1’-4” from grade level and added wire mesh secures the base of the gateway. A padlock hasp and foot bolt hold the gates in position.



Figure C182. Stableyard - Light fixture on west elevation of stable.



Figure C183. Stableyard - Gate as viewed from outside the stableyard.

The gateway is flanked by two pilasters, each with scribed blocks measuring about 8” tall. The tops of the pilasters have curving projecting capitals.

Stableyard Stairs and Retaining Wall

A set of brick stairs descending from the upper level of the stableyard measures about 4’-0” wide. The stair has eleven 11”-deep treads and twelve 10”-tall risers (*Fig. C184*). A 1”-diameter iron rail lines the southern side of the stair and stuccoed wingwalls for the sides. At the base of the stair, two scrolled masonry newels have rounded tops and measure about 1’-9” in diameter.

The ruins of a stair remain at the northeast corner of the upper level of the stableyard (*Fig. C185*).

A concrete stair with masonry side walls descends from north of the stable to the water’s edge (*Fig. C186*). The stair measures about 4’-0” wide and has nine 1’-0”-deep treads, with the exception of the bottommost step, which measures 2’-0” deep. Ten risers each measure about 5” to 8” tall.

A stuccoed masonry retaining wall measuring about 2’-0” thick holds back an earthen terrace along the east side of the fort. The wall curves westward as it approaches the water and has several square drain holes for groundwater that typically measure about 4” by 4” square.



Figure C185. Stableyard - Ruins of stair.



Figure C184. Stableyard - Stair at retaining wall.



Figure C186. Stableyard - Stairs at north end.

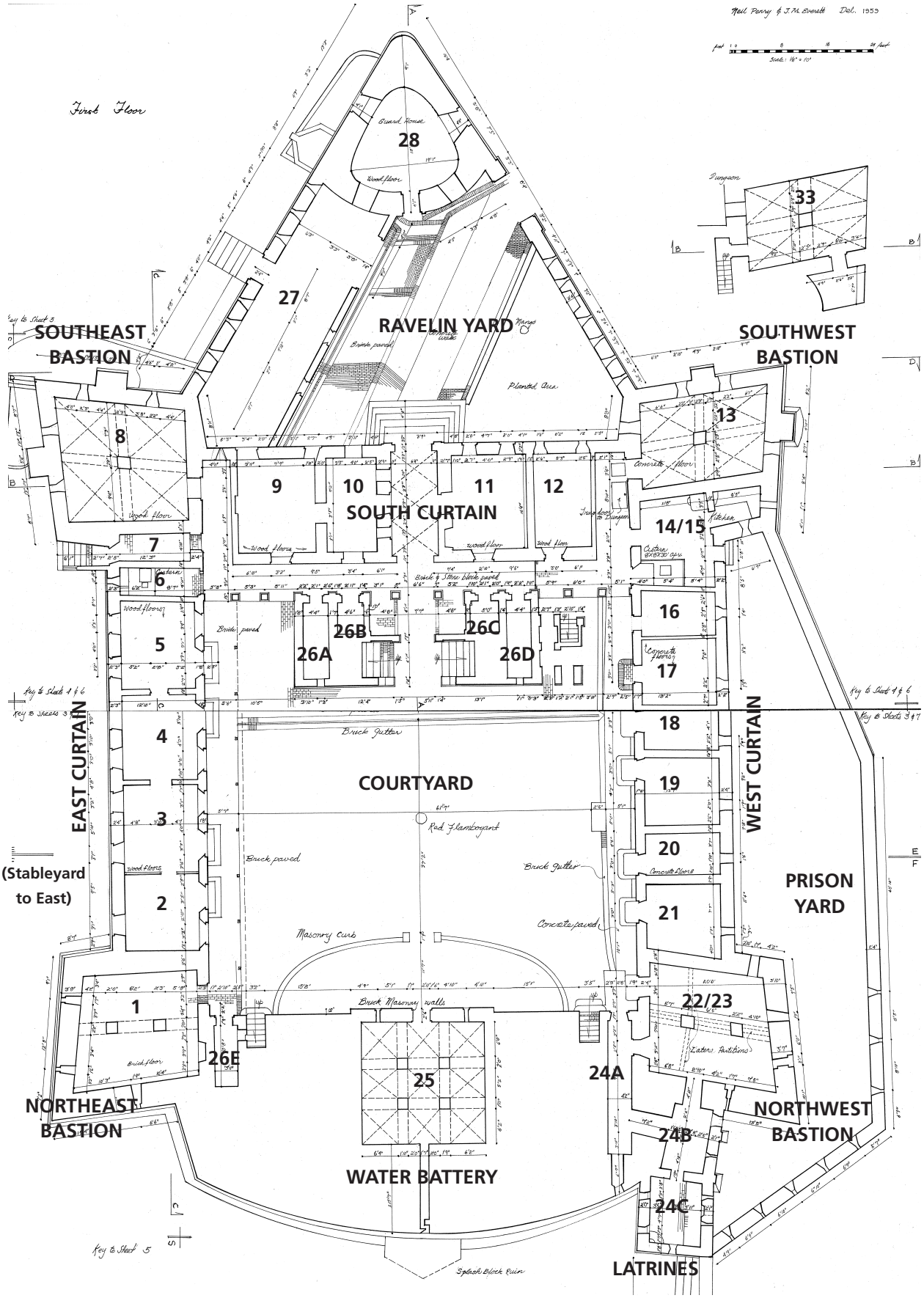


Figure C187. First-floor plan. The stableyard to the east is depicted before the *Stableyard Room-by-Room Description* section. Enlarged plans are found in *Appendix C.*

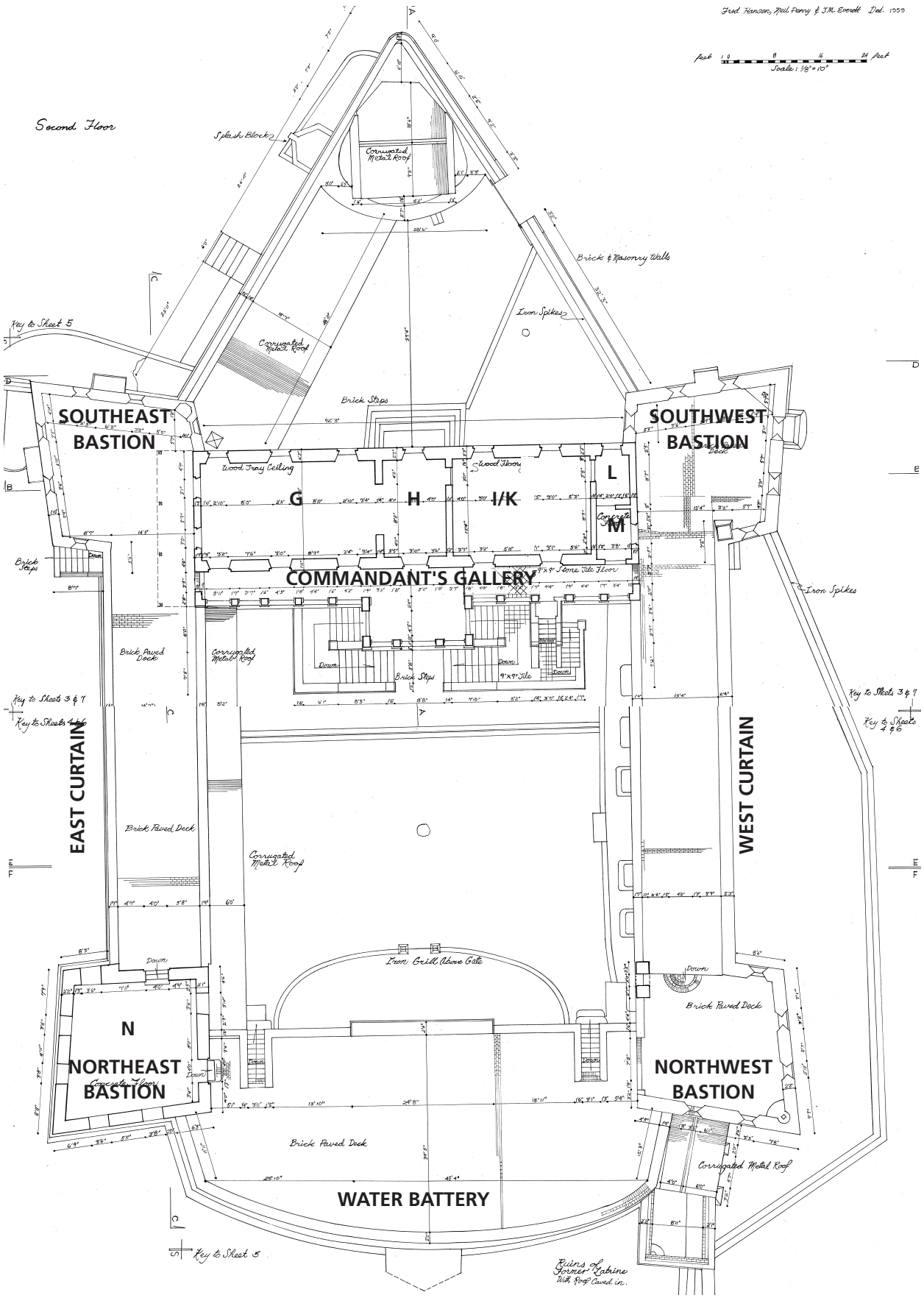


Figure C188. Second-floor plan. Enlarged plans are found in *Appendix C.*

Room-by-Room Description

The Room-by-Room description is organized based on the sequence of the Exterior Organization and Exterior Features sections, which matches the sequence of Olsen's description. The room numbers match those featured in the 1836 plan referenced in Olsen's HSR. For these reasons, the rooms are described out of numerical order.

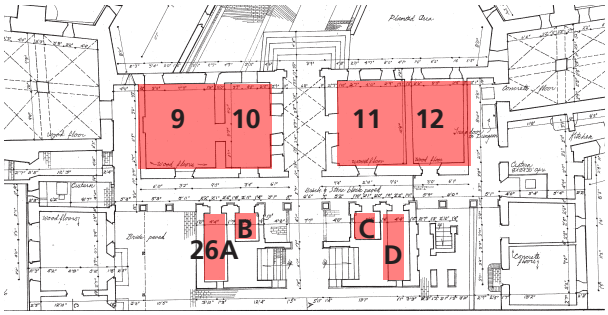


Figure C189. South Curtain - First Floor key plan.

South Curtain – First Floor

The first floor of the south curtain consists of Rooms 9 through 12 and Rooms 26A through 26E. The first floor is bisected by the sally port passing north-south and the arcade passing east-west.

Room 9 – Evidence Room

Room 9 is at the east end of the first floor of the south curtain and is accessed from Room 10 to the west. In the 1836 plan, the room is identified as a barracks for six men and is accessed from the east only. The room measures about 16'-6" north-south by 13'-0" east-west and has a floor-to-ceiling height of 7'-10" tall (*Figs. C190-C199*).

Flooring

Modern tongue-and-groove flooring of widths varying between 3", 5", and 6 ¾" runs north-south throughout the room.

Walls and Ceiling

The masonry walls are finished with plaster. The ceiling consists of modern tongue-and-groove boards running east-west and measuring 10½" wide by likely ¾" thick.

A modern crown molding with edge bead lines the perimeter of the ceiling and measures 1½" wide by 1⅛" tall.

Doorways

The room has one doorway on the west wall accessing Room 10 that holds a modern metal gate measuring 3'-5" wide by 7'-3" tall. The gate is hung with three 4"- tall butt hinges that are secured



Figure C190. Room 9 - View looking north.



Figure C192. Room 9 - View looking south.



Figure C191. Room 9 - View looking northeast.



Figure C193. Room 9 - View looking northwest.



Figure C196. Room 9 - Modern crown molding.

to the masonry on the Room 8 side. The gate is secured with a padlock hasp. The gate is made up of 1" square stock with diamond-shaped mesh on the inside face. The Room 9 side of the opening has a wood jamb with mitered casing measuring 3¾" wide with an edge bead. Modern 3½"-tall butt hinges remain on the south side of the jamb.



Figure C195. Room 9 - Southeast window opening.



Figure C194. Room 9 - Interior doorway with gate as viewed from Room 10.

A former doorway at the center of the east wall is infilled with masonry but remains expressed as a niche in the wall. The former masonry opening measures 3'-1" wide by 6'-4½" tall and once exited to the hallway between the south curtain and southeast bastion.

Windows

The room has three window openings, two on the south wall facing the ravelin yard and one on the north wall facing the arcade of the south curtain. The eastern window on the south wall measures 3'-6" wide by 3'-4" tall and holds a pair of board shutters made up of 6"-wide beaded horizontal boards on the interior. The masonry opening 3'-11" wide by 3'-8" tall. The opening has no casing; however, the wood jamb is partially exposed at the masonry opening. Hardware includes two securing hooks and a ring pull on the primary leaf, and a pivoting lock bar. The shutters and hardware are modern.

The southwest window openings measures 2'-3" wide by 2'-10" tall and holds a single board shutter made up of 6"-wide beaded horizontal boards on the interior. The masonry opening measures 2'-3" wide by 3'-7" tall. Hardware includes a sliding bolt with integrated padlock hasp. The opening



Figure C197. Room 9 - Southwest window opening.



Figure C198. Room 9 - North window opening.

has no casing; however, the wood jamb is partially exposed at the masonry opening.

The window opening centered on the north wall holds a pair of board shutters at the exterior and a pair of louvered wood shutters at the interior that swing inward. The opening measures 2'-10" wide by 4'-2-½" tall. The exterior shutters are made up of 8"-wide horizontal flush boards at the interior. The solid shutters are secured with a pivoting lock bar and two hooks on the primary leaf.

The two-louvered-panel interior shutters have operable louvers and are hung with 5"-long by 3"-tall barn hinges. The primary leaf has a barrel bolt at the bottom of the center stile. The stile has a ¼"-wide edge bead where it meets the secondary leaf. A sliding barrel bolt secures the shutters at the center. The opening has no casing; however, the wood jamb is partially exposed at the masonry opening. The base of the masonry opening has a wood sill measuring 1" thick with bullnose edge profile.

The louvered shutters at the north window opening are of considerably earlier vintage than those on the south openings, and likely date to the early twentieth century.

Finishes

With the exception of the flooring, which is unfinished, all surfaces are painted. The walls and ceiling are white while the shutters are dark green. The gate to Room 10 has a black factory finish.

Mechanical System

There is no evidence of any mechanical systems.

Electrical System

Two modern linear fluorescent fixtures are centered on the ceiling and run north-south. The fixtures are fed by a central fixture box that holds a ceiling fan.



Figure C199. Room 9 - Light fixtures and ceiling fan.

Surface-mounted receptacles are consistent throughout the room and are connected by plastic conduit and junction boxes.

Plumbing System
There is no evidence of any plumbing system.

Fire Protection and Life Safety Systems
A wall-mounted fire extinguisher is south of the doorway to Room 10.

Security System
There are two motion detectors, one south of the doorway to Room 10 and one in the southeast corner.

Issues of Condition
The paint and finish plaster coats are flaking on the north, south, and east walls. Lockers and cabinets obscure a full view of the walls; however, the deterioration appears worst on the south exterior wall.

Room 10 – Law Enforcement Office
Room 10 is an office accessed from the east wall of the sally port passage and is identified as the Commanding Sergeant's Room in the 1836 plan. The room measures about 16'-6" north-south by 9'-10" east-west and has a floor-to-ceiling height of 7'-10" tall (*Figs. C200-C210*).

Flooring
Modern tongue-and-groove flooring of widths varying between 3", 5", and 6¾" runs north-south throughout the room.

Baseboard
A modern baseboard measuring 3" tall by ¾" thick has a ¼"-wide edge bead is consistent throughout the room.

Walls and Ceiling
The masonry walls are finished with plaster. The ceiling consists of modern tongue-and-groove



Figure C202. Room 10 - View looking southwest.



Figure C200. Room 10 - View looking north.



Figure C203. Room 10 - View looking south.



Figure C201. Room 10 - View looking northeast.



Figure C204. Room 10 - Modern baseboard.

boards running east-west and measuring 10½" wide by likely ¾" thick.

A modern crown molding with edge bead lines the perimeter of the ceiling and measures 1½" wide by 1⅛" tall.

Doorways

The room has two doorways, one on the east wall accessing Room 10 that is described in the *Room 10 – Evidence Room* section and one exterior door on the west wall exiting to the sally port passage.

The west exterior doorway measures 3'-4" wide by 5'-8" tall and holds a pair of solid-panel wood doors each measuring 1'-8" wide by 2¼" thick. The interior face is made up of vertical beveled-edge boards measuring 5" wide, while the exterior face has the same boards oriented horizontally. The doors are each hung with two strap hinges 11½" long by 2½" tall. Hardware includes a deadbolt mounted on the interior and a padlock hasp on the exterior. Head and foot bolts are on the secondary leaf. A wood threshold measures 5" wide by 1½" thick. The modern interior plank board casing measures 2⅜" wide by ½" thick.



Figure C205. Room 10 - Exterior face of west exterior door.



Figure C206. Room 10 - West doorway, interior face.

Windows

The room has two window openings, one on the south wall facing the ravelin yard and one on the north wall facing the arcade of the south curtain. The south window opening measures 2'-7" wide by 3'-7" tall and holds a pair of three-light casement sash that open inward. The sash are each hung with two HL hinges measuring 4" tall. A slide bolt secures the sash at the head of the opening. Unlike other window openings of the south curtain, this opening does not have solid-panel exterior shutters. Instead, a grid of 1" bars spaced roughly 6" on center is on the exterior.

The window opening centered on the north wall holds a pair of board shutters at the exterior and a pair of louvered wood shutters at the interior that swing inward. The opening measures 3'-2" wide by 4'-6" tall. The exterior shutters are made up of



Figure C208. Room 10 - South window opening.



Figure C207. Room 10 - North window opening.

8"-wide horizontal flush boards on the interior. The solid shutters are secured with a pivoting bar lock and two hooks on the primary leaf.

The two-louvered-panel interior shutters have operable louvers and are hung with 5" long by 3" tall HL hinges. The primary leaf has a barrel bolt at the bottom of the center stile, while the secondary leaf has similar bolts at the top and bottom of the center stile. A hook-and-eye latch secures the shutters at the center. The opening has no casing; however, the wood jamb is partially exposed at the masonry opening. Unlike the similar opening in Room 9, this opening has no wood sill.

The louvered shutters at the north window opening appear to be of the same vintage as those found in Room 9, and likely date to the early twentieth century.

Other Features

Pass-through openings in the east wall that previously opened to the sally port passage have been converted into bookshelves. The southern opening measures 1'-10" wide by 2'-6" tall and the

northern opening measures 1'-8" wide by 2'-6½" tall. The northern opening has modern board-and-batten cabinet doors at the interior that are each hung with two butt hinges. The opening has a 2½" modern mitered clamshell casing. Solid-panel exterior shutters remain secured in place on the exterior and are described in the *Exterior Features - South Curtain* section.



Figure C209. Room 10 - Southern bookcase.



Figure C210. Room 10 - Northern bookcase.

Finishes
With the exception of the north bookcase, which has a clear finish, all surfaces are painted. The flooring is painted red, while the walls and ceiling are white. The shutters, exterior doors, and window sash are dark green.

Mechanical System
There is no evidence of any mechanical systems.

Electrical System
Two modern linear fluorescent fixtures are centered on the ceiling and run north-south.

Surface-mounted receptacles are consistent throughout the room and are connected by plastic conduit. The majority of the conduit runs at the top of the walls.

Plumbing System
There is no evidence of any plumbing system.

Fire Protection and Life Safety Systems
A wired smoke detector is on the ceiling. A fire alarm relay box is adjacent to the detector. A fire extinguisher is on the north wall.

Security System
Motion detectors are mounted above and north of the doorway to Room 9.

Room 11 – Interpretation Staff Office
Room 11 is an office accessed from the west wall of the sally port passage and is identified as the Guardroom in Olsen's referenced 1836 plan. The room measures about 16'-6" north-south by 12'-11" east-west and has a floor-to-ceiling height of 8'-6" tall (*Figs. C211-C218*).

Flooring
Modern tongue-and-groove flooring measuring 7" wide runs north-south throughout the room.

Walls and Ceiling
The masonry walls are finished with plaster. The ceiling consists of modern tongue-and-groove boards running east-west and measuring 10½" wide by likely ¾" thick.

A modern molded crown molding with edge bead lines the perimeter of the ceiling and measures 1½" wide by 1⅛" tall.

Doorways
The room has one doorway centered on the east wall that exits to the sally port passage. The

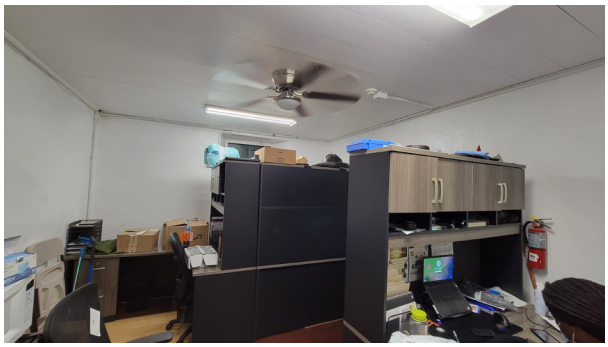


Figure C211. Room 11 - View looking northeast.



Figure C213. Room 11 - View looking south.



Figure C212. Room 11 - View looking east.



Figure C214. Room 11 - View looking west.

doorway measures 3'-9" wide by 6'-7" tall overall and holds a pair of board doors each measuring 1'-8" wide by 2¼" thick. The interior face is made up of vertical flush boards measuring 5¾" wide, while the exterior face has 5"-wide beveled edge boards oriented horizontally. The doors are each hung with two pintle hinges with straps measuring 1'-2½" long on the interior. Hardware includes a padlock hasp and a loop pull on the exterior. A head bolt is on the interior face of the secondary leaf.

Windows

The room has three window openings, two on the south wall facing the ravelin yard and one on the north wall facing the arcade of the south curtain. The south window openings each measure 2’-0” wide by 2’-6” tall and hold single solid-panel shutters. The shutters have 6” wide horizontal tongue-and-groove boards at the interior. The east window is secured with a hook and eye, while the west window is tied shut. A 1’-0” long hook holds the shutter in position against the exterior wall when opened. Each opening has five 1” square bars spaced at 5” on center.

The north window opening is centered on the wall and measures 2’-11” wide by 3’-5½” tall. The



Figure C215. Room 11 - Exterior door on east wall.



Figure C216. Room 11 - Western window opening on south wall. The eastern window is similar.

window opening is inset into the wall with brick infill below, suggesting the opening was previously a doorway. The opening holds a pair of solid-panel wood shutters with beaded horizontal boards varying in width from 6" to 8" to 10" wide. Each leaf has a hook at top and bottom. A pivoting bar lock secures the shutters at the center. The opening has no casing; however, the wood jamb is partially exposed at the masonry opening.

Other Features

An arched niche is at the north end of the east wall and measures 3'-4" wide by 6'-9" tall. The bottom of the niche measures about 1" above the finished floor.

Finishes

Surfaces throughout the room are painted. The flooring is painted red, while the walls and ceiling are white. The shutters, exterior doors, and window sash are dark green.

Mechanical System

There is no evidence of any mechanical systems.

Electrical System

Two modern linear fluorescent fixtures are centered on the ceiling and run east-west. A ceiling fan with light kit is centered on the ceiling.

Surface-mounted receptacles are consistent throughout the room and are connected by plastic conduit. The majority of the conduit runs at the top of the walls.

Plumbing System

There is no evidence of any plumbing system.

Fire Protection and Life Safety System

A wired smoke detector is on the ceiling. A fire alarm relay box is adjacent to the detector.

Security System

Motion detectors are mounted in the southwest and northwest corners.



Figure C217. Room 11 - North window opening.



Figure C218. Room 11 - Niche on the east wall.

Issues of Condition
No apparent condition issues were observed.

Room 12 – Pantry and Servant's Quarters
Identified as the commandant's servant's room in the 1836 plan, Room 12 currently serves as storage. The space measures about 16'-6" north-south by 10-2" east west with a floor-to-ceiling height of 7'-7" tall (*Figs. C219-C233*).

Room 12 has the greatest concentration of exposed early materials and finishes of any room in the fort. It is critical that this room be preserved and protected.

Flooring
Tongue-and-groove flooring measuring 5 ¼" wide is consistent throughout the room and is laid on 2¼" wide sleepers. The flooring runs north-south while the sleepers run east-west.

Baseboard
A wood baseboard measuring 6¼" tall by ¾" thick overall is consistent on the east and west walls. The top of the threshold has an integrated beveled cap measuring 1¼" tall.



Figure C219. Room 12 - View looking north.



Figure C220. Room 12 - View looking northeast.



Figure C221. Room 12 - View looking south.



Figure C222. Room 12 - View looking northwest.

Walls and Ceiling
The walls are finished with plaster and have examples of early decorative painting in multiple locations (see the *Finishes* section). Evidence in the masonry indicates an arch window opening at the center of the south wall was infilled and later replaced with two window openings. Salvaged yellow brick is found around both current window openings. At the far south end of the west wall, a brick arch in masonry indicates the location of a previous doorway.



Figure C223. Room 12 - Early wood flooring. Note previous termite damage.



Figure C224. Room 12 - Early baseboard.



Figure C225. Room 12 - Early crown molding and board ceiling.



Figure C226. Room 12 - Early joist above finished ceiling.

An early crown molding lines the perimeter of the ceiling and measures 2⅛" wide against the ceiling by ¾" thick and has a molded edge measuring ⅞" wide.

The ceiling is clad with early tongue-and-groove boards of widths varying between 11", 12", 14", 16", 18", and 20" wide by ¾" thick. Boards have been removed along the south wall and near the north doorway. The exposed joists above the ceiling in these locations measure 7" wide by 8" deep and have unique molded edges on their bottom surface measuring ½" wide. The joists are painted or limewashed. The detailing and finishing of the joists indicate that they were intended to be exposed prior to the installation of the current ceiling.

Doorways

The room has one doorway on the north wall that exits to the arcade. The doorway measures 2'-11" wide by 7'-1" tall and holds a board door with horizontal beaded boards at the interior measuring 6" wide. The exterior face has vertical flush boards measuring 11" wide. The door is hung with two pintle hinges with straps measuring 1'-8" long.



Figure C227. Room 12 - Interior face of doorway.

An opening in the door measures 8¼" wide by 9" tall and has three vertical bars and one horizontal bar each measuring ½" in diameter. The door is secured with a diagonal securing bar with padlock. A loop pull is on the exterior and two iron hooks are on the interior. The jamb measures 5" wide by about 2" wide.

Windows

The room has two window openings on the south wall and one opening on the west wall. Each south opening measures 1'-3" wide by 2'-6" tall and has five horizontal bars measuring 1" square spaced at 4" on center. The masonry openings measure 1'-10" wide by 2'-3" tall overall.

The window opening on the west wall measures 2'-9" wide by 3'-2½" tall and holds a pair of board shutters measuring 1½" thick. The inside face of the shutters is made up of horizontal beaded boards measuring 6" wide. The exterior face has vertical flush boards of varying width. The shutters are each hung with two pintle hinges with straps measuring 1'-2" long. The wood jamb measures 5"



Figure C229. Room 12 - Typical south window opening.



Figure C228. Room 12 - Exterior door viewed from arcade.



Figure C230. Room 12 - West window opening.

deep and the side members have a ½”-wide edge bead. The shutters are secured with a diagonal bar on the exterior.

Finishes
The walls are limewashed and the ceiling is painted greyish white. The exposed joists are painted grey, and the exterior door and west window shutters are painted green.

A black painted wainscotting is visible on the north, east, and west walls and extends to a height of 2'-3" above the floor.

Decorative stenciling at the top of the walls is visible in several locations and is dark greenish-black. Around the masonry opening of the door, a grey painted frame is on a layer behind the decorative stenciling.

Mechanical Systems
There is no evidence of any mechanical systems.

Electrical System
Plastic conduit crosses the room at the ceiling along the north wall.

Plumbing System
There is no evidence of any plumbing system.

Fire Protection and Life Safety System
A smoke detector is mounted on the ceiling above the door.

Security System
There is no evidence of any security system elements.



Figure C231. Room 12 - Painted wainscotting on west wall.

Issues of Condition
The wood flooring and plaster walls are deteriorated; however, given the historic value of the materials and finishes, it is recommended that these materials remain in place.



Figure C232. Room 12 - Stenciling and grey painted door surround on north wall.



Figure C233. Room 12 - Remnant of stenciling on east wall.

Room 26A – Cell for 1 Person

Room 26A is one of five cells in the fort designated as a cell for one person. The 1836 plan uses the same number for all cells of this type. Rooms 26A through 26D are located beneath the double stair of the south curtain and are accessed from the arcade. Room 26A is at the east end. The fifth cell, Room 26E described in the *Water Battery* section.

Room 26 A measures 4'-4" east-west by 13'-5" north-south and has a floor-to-ceiling height of 3'-9" tall at the highest point (*Fig. C234-C237*).

Flooring

Tongue-and groove wood flooring measuring 1'-1" wide by 1" thick is consistent throughout the room. The floor level sits 6" above the floor level of the adjacent arcade. The flooring has a bullnose edge nosing in the doorway.

Walls and Ceiling

Limewashed brick masonry is typical throughout the room. The ceiling is a brick barrel vault.

Doorways

A board-and-batten door on the south wall measures 2'-11½" wide by 4'-3" tall by 1½" thick and is made up of 7"-wide boards. The boards are chamfered on the inside face and flush on the exterior. The door is hung with two pintle hinges with 2'-3"-long straps. Hardware includes a 1'-6" long padlock hasp and a loop pull. The door has an opening at the center measuring 1'-2" wide by 1'-0" tall with six vertical bars and an X-shaped grille. The overall masonry opening measures 2'-3" wide by 4'-4" tall. A 1½"-thick wood lintel spans the opening.

Windows

The room has one masonry opening on the north wall measuring 4¾" wide by 6½" tall.

Finishes

The walls and ceiling have remnants of limewash. Portions of a previous parge coat remain in some areas.

Mechanical System

There is no evidence of any mechanical systems.

Electrical System

There is no evidence of any electrical system.

Plumbing System

There is no evidence of any plumbing system.



Figure C234. Room 26A - View looking north.



Figure C235. Room 26A - Doorway



Figure C236. Room 26A - Interior face of door.



Figure C237. Room 26A - Exterior face of door.

Fire Protection and Life Safety System

There is no evidence of any fire protection or life safety systems.

Security System

There is no evidence of any security system elements.

Issues of Condition

No apparent condition issues were observed.

Room 26B – Cell for 1 Person

Room 26B measures 4'-6" east-west by 5'-7" north-south and has a floor-to-ceiling height of 5'-6" on the west end and 7'-4" on the east end (*Figs. C238-C241*).

Flooring

Brick pavers measuring about 4" wide by 9" long are laid in a running bond.

Walls and Ceiling

Limewashed brick masonry is typical throughout the room. The ceiling is a brick vault.

A course of decorative molded brick remains at the base of the east wall. Tooled, penciled mortar joints are visible on the wall above. This elevated detailing predates the infill of this space for use as a cell.

Doorways

A board-and-batten door on the south wall measures 3'-5" wide by 4'-10½" tall by 1 ½" thick



Figure C238. Room 26B - View looking north.



Figure C239. Room 26B - View looking northwest. Note window opening and molded brick.



Figure C240. Room 26B - Interior face of door.

and is made up of 10”-wide boards. The boards are chamfered on the inside face and flush on the exterior. The door is hung with two pintle hinges with 1’-8”-long straps and has a pull loop. The door has an opening at the center measuring 1’-2” wide by 1’-0” tall with six vertical bars and an X-shaped grille. The overall masonry opening measures 3’-1” wide by 4’-11½” tall. A 1½”-thick wood lintel spans the opening.

Windows

The room has one masonry opening on the east wall measuring 7” wide by 9” tall.

Finishes

The walls and ceiling have remnants of limewash. Portions of a previous parge coat remain in some areas.

Mechanical System

There is no evidence of any mechanical systems.

Electrical System

There is no evidence of any electrical system.



Figure C241. Room 26B - Exterior face of door.

Plumbing System
There is no evidence of any plumbing system.

Fire Protection and Life Safety System
There is no evidence of any fire protection or life safety systems.

Security System
There is no evidence of any security system elements.

Issues of Condition
No apparent condition issues were observed.

Room 26C – Cell for 1 Person
Room 26C measures 5'-2" east-west by 5'-4" north-south and has a floor-to-ceiling height of 5'-3" on the west end and 6'-6" on the east end (*Figs. C242-C245*).

Flooring
Tongue-and-groove flooring with widths varying between 8", 9", and 11" wide by 1" thick runs north-south throughout the room.



Figure C242. Room 26C - View looking north.

The floor level sits 5" above the floor level of the adjacent arcade. The flooring has a bullnose edge nosing in the doorway.

Walls and Ceiling
Limewashed brick masonry is typical throughout the room and has a partial parge coat. The ceiling is a brick vault.

A course of decorative molded brick remains at the base of a pier at the northeast corner of the room. The brick is similar to that found in Room 26B. This elevated detailing predates the infill of this space for use as a cell.

Doorways
A board-and-batten door on the south wall measures 2'-11" wide by 4'-7½" tall by 1½" thick and is made up of 7"-wide boards. The boards are chamfered on the inside face and flush on the exterior. The door is hung with two pintle hinges with 1'-1½"-long straps. Hardware includes a 10" long padlock hasp and a loop pull. The door has an opening at the center measuring 1'-2" wide by 1'-0" tall with six vertical bars and an X-shaped grille. The overall masonry opening measures 2'-2" wide by 4'-8½" tall. A 1½"-thick wood lintel spans the opening.

Windows
The room has no windows.



Figure C243. Room 26C - Molded brick in northeast corner.



Figure C244. Room 26C - Interior face of door.



Figure C245. Room 26C - Exterior face of door.

Finishes
The walls and ceiling have remnants of limewash. Portions of a previous parge coat remain in some areas.

Mechanical System
There is no evidence of any mechanical systems.

Electrical System
There is no evidence of any electrical system.

Plumbing System
There is no evidence of any plumbing system.

Fire Protection and Life Safety System
There is no evidence of any fire protection or life safety systems.

Security System
There is no evidence of any security system elements.

Issues of Condition
Termite mud tunnels were observed on the north wall. They did not appear to be active.

Room 26D – Cell for 1 Person
Room 26D measures 4'-4" east-west by 13'-4" north-south and has a floor-to-ceiling height of 4'-2" tall at the highest point (*Figs. C246-250*).



Figure C246. Room 26D - View looking north.



Figure C247. Room 26D - View looking south.



Figure C248. Room 26D - Example of drawing/graffiti on floor.

Flooring

Tongue-and-groove flooring measuring 1'-1" wide by 1" thick runs north-south throughout the room. The flooring at the northeast corner is new; however, the remainder of the flooring is of earlier vintage, but has what appear to be fairly recent carvings in the floor. Given their sharpness, it is thought that these were likely created by tourists.

The floor level sits 5" above the floor level of the adjacent arcade. The flooring has a bullnose edge nosing in the doorway.

Walls and Ceiling

Limewashed brick masonry is typical throughout the room and has a partial parge coat. The ceiling is a brick vault.

Doorways

A board-and-batten door on the south wall measures 2'-11½" wide by 4'-3¾" tall by 1½" thick and is made up of 10"-wide flush boards. The battens at the inside face have a ½"-wide edge bead at the inside face. The door is hung with two pintle hinges with 11"-long straps. Hardware includes a 1'-1" long padlock hasp and a loop pull. The door has an opening at the center measuring 1'-2" wide by 8" tall with six vertical bars and an X-shaped



Figure C249. Room 26D - Interior face of door.



Figure C250. Room 26D - Exterior face of door.

grille. The overall masonry opening measures 2'-2" wide by 4'-5" tall. A 1½"-thick wood lintel spans the opening.

Windows
An arched window opening on the north wall measures 1'-2" wide by 1'-4" tall.

Finishes
The walls and ceiling have remnants of limewash. Portions of a previous parge coat remain in some areas.

Mechanical System
There is no evidence of any mechanical systems.

Electrical System
There is no evidence of any electrical system.

Plumbing System
There is no evidence of any plumbing system.

Fire Protection and Life Safety System
There is no evidence of any fire protection or life safety systems.

Security System
There is no evidence of any security system elements.

Issues of Condition
Small holes in the flooring are observed at fasteners and edges of boards. Surface loss is noticeable on the brick vault due to water infiltration from above.

South Curtain – Second Floor

At the second floor, the numbering system used by Olsen identifies areas with letters rather than numbers. The plan identifies roofs throughout the fort as letters A through E. Item F is the Commandant's Gallery, which is described in the Exterior Features section.

The second floor of the south curtain consists of five interconnected rooms. All but room L are accessible directly from the Commandant's Gallery (Fig. C251).

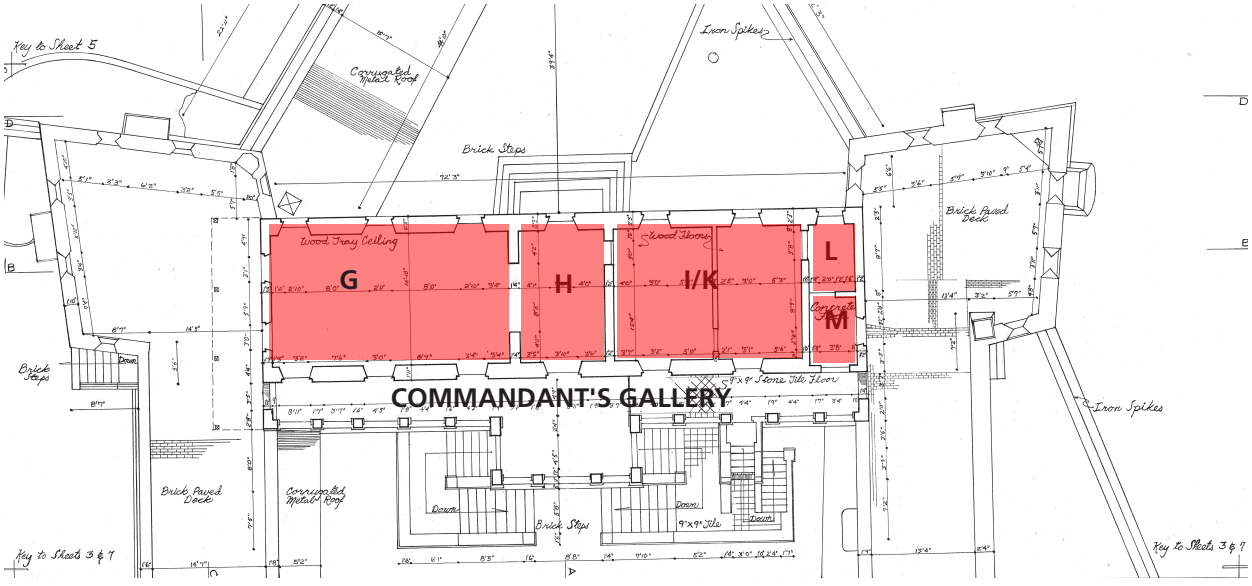


Figure C251. Second-floor key plan of South Curtain.

Room G - Reception Hall in the Commandant's Quarters

Room G is accessed from the Commandant's Gallery to the north or from Room H to the west. The room currently serves as the primary museum display space for the fort and measures about 16'-10" north-south by 30'-6" east-west with a floor to ceiling height of 12'-3" tall (*Figs. C252-C261*).

Flooring

Modern tongue-and-groove flooring of widths varying between 2½", 3¼" and 5" wide runs north-south throughout the room.

Walls and Ceiling

The masonry walls are finished with plaster. The roof structure is exposed at the ceiling and has beaded joists running north-south. Spaced decking boards span on top of the joists and the brick roofing substrate is visible in the spaces between. The structural system is described in detail in the Structural Investigation Report in *Appendix E*.

Doorways

The room has three exterior doorways on the north wall accessing the commandant's gallery that. Each doorway varies slightly in size, but typically measure 3'-0" wide by 7'-2½" tall and each hold a pair of wood 1½"-thick board doors each measuring about 1'-6" wide. The inside faces of the doors are made up of random-width horizontal flush boards of sizes varying between 6" and 8" wide. The exterior face of the doors has vertical flush boards typically measuring 9" to 10" wide. Each door is hung with two pintle hinges with straps measuring 1'-5½" long. Wood jambs measure 4" deep and measure 3" wide at the exterior. The wood thresholds measure 4" tall. The arched masonry openings around the doorways typically measure 4'-0" wide by 8'-2" tall.

Door hardware at the easternmost door has four securing hooks, two on each leaf, and a 1'-6"-long



Figure C254. Room G - View looking northwest.



Figure C255. Room G - View looking west.



Figure C252. Room G - View looking northeast.



Figure C253. Room G - View looking east.



Figure C256. Room G - Modern wood flooring.



Figure C257. Room G - Interior face of typical exterior door on north wall.



Figure C259. Room G - Interior face of window opening on south wall missing pivot bar.



Figure C258. Room G - Interior face of typical window opening.

pivoting lock bar. The eastern door has similar hardware. The center doorway shares the same pivot bar but has sliding bolts at the foot of each door and a hook on each leaf at the top.

A large arched masonry opening separates Room G from Room H to the west. The arched opening measures 8'-7½" wide by 8'-10" tall at its highest point.

Windows

The Room has five windows, two on the east elevation and three on the south elevation. The window openings vary slightly in size but typically measure 3'-2" wide by 5'-3" tall and hold a pair of modern board shutters. The inside faces of the shutters have diagonal beaded boards measuring 6" wide. The masonry openings around the window openings typically measure 3'-8" wide by 8'-3" tall. Each leaf is secured at top and bottom by an iron hook. A pivoting lock bar is mounted at the center and a pull loop is typical on each primary leaf, with the exception of the eastern two windows on the south wall, which are missing pivot bars and are secured with wood boards. Hooks mounted on the exterior hold the shutters against the exterior wall when open. The openings have no interior casings,



Figure C260. Room G - Ceiling fans and track lighting.

but the wood jambs are exposed slightly on all four sides of the opening.

Finishes
All surfaces are painted. The flooring is painted brown, the walls are white, and the doors, shutters, and jambs are all dark green.

Mechanical Systems
There is no evidence of any mechanical systems.

Electrical System
Two ceiling fans with light kits are mounted to the underside of the ceiling joists. Between the fans is a section of track lighting with six lamps. The fixtures are controlled by a switch in Room H.

A large number of plastic conduits enter the room through the floor at the northeast corner and feed the second floor of the south curtain. This corner is the closest point to the main electrical panel located in Room 7 in the east curtain.

Plumbing System
There is no evidence of any plumbing system.

Fire Protection and Life Safety System
A relay for the fire alarm system is mounted to the jamb of the westernmost window opening.

Security System
A security camera is mounted in the southeast corner.

Motion detectors are mounted in the northeast and southwest corners.

Issues of Condition
Termite mud tunnels were observed on the walls in multiple locations. The largest of the tunnels extends the full height of the south wall and runs along the bead of the ceiling joist above.

Deterioration of the finish coat of plaster is common on all but the west wall. In most cases, the damage is low on the wall and around the window and door openings.

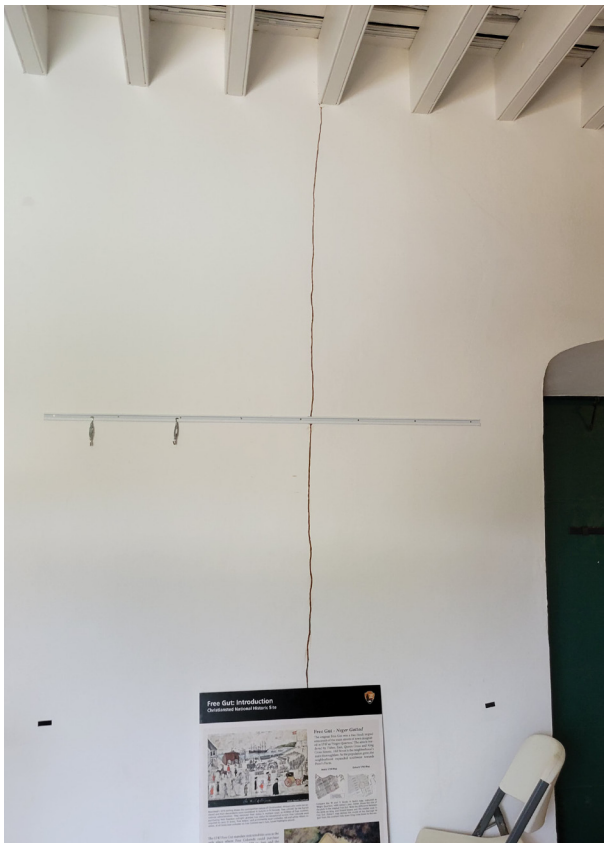


Figure C261. Room G - Termite mud tunnel extending the full height of the north wall.

Room H – Daily Parlor in the Commandant's Quarters
Room H is the central space of the second floor and currently serves as an extension of the exhibition space in Room G. The space measures 11'-0" east-west by 16'-10" north-south and has a floor-to-ceiling height of 12'-9" tall (*Figs. C262-C270*).

Flooring
Modern tile flooring measuring 9 ½" square is consistent throughout the room and is orangish-brown in color.

Walls and Ceiling
The masonry walls are finished with plaster. The roof structure is exposed at the ceiling and has beaded joists running north-south. Spaced decking boards span on top of the joists and the brick roofing substrate is visible in the spaces between. The structural system is described in detail in the Structural Investigation Report in *Appendix E*.



Figure C262. Room H - View looking southwest.



Figure C263. Room H - View looking south.



Figure C264. Room H - View looking southeast.



Figure C265. Room H - Tile flooring.

Doorways

The Room has two doorways, one on each of the north and west walls. The doorway on the north wall accesses the commandant's gallery. The doorway measures 3'-11" wide by 7'-2½" tall and holds a pair of wood 1½"-thick board shutters,

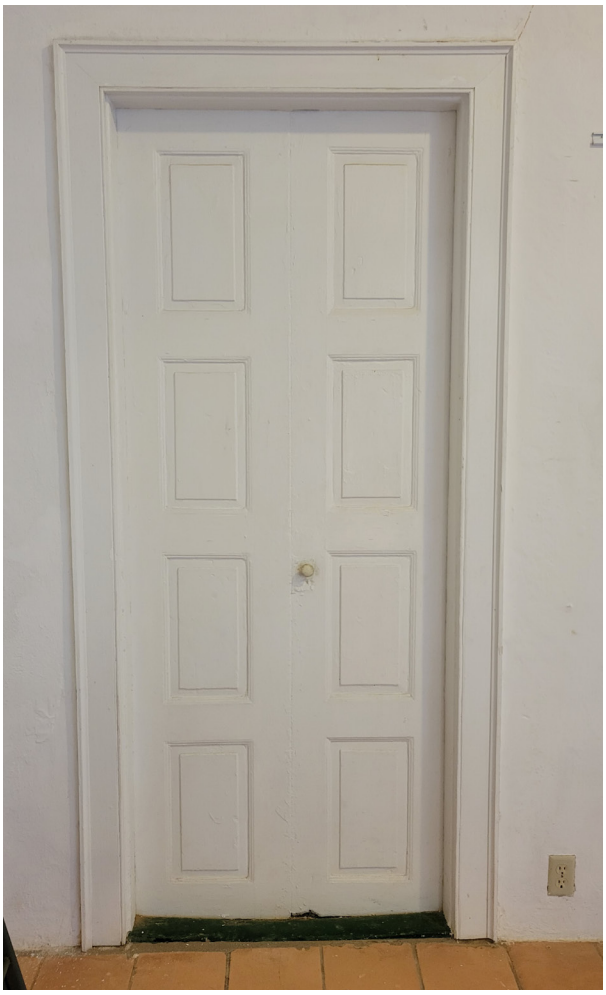


Figure C266. Room H - Interior doorway on west wall.



Figure C267. Room H - Knob and escutcheon on interior door.



Figure C269. Room H - Casing on Room H side of the doorway. Note termite mud tunnel above doorway.

each measuring about 1'-6" wide. The inside faces of the doors are made up of random-width horizontal flush boards of sizes varying between 8" and 10" wide. The exterior face of the shutters is a single board. Each door is hung with two pintle hinges with straps measuring 1'-5" long. Wood jambs measure 4" deep and measure 3½" wide at the exterior. The wood threshold measures 4" tall. An iron hook is on the interior and a loop pull is on the primary leaf on the exterior. A diagonal securing bar on the exterior measures 6'-4" long by 2½" wide and is secured with a padlock.



Figure C268. Room H - Hinges on interior doorway as viewed from the Room I/K side.

The west doorway is at the south end of the west wall and accesses Room I. The opening holds a pair of four-raised panel doors likely dating from the early twentieth century and measuring 1'-5½" wide by 7'-4 ½" tall. The stiles measure 4¼" wide and the rails typically measure 5¼" wide forming panels that are 8½" wide by 1'-3" tall. The doors are currently fixed in place.

Each leaf is hung with two 6"-tall HL hinges. A mortised lockset in the primary leaf has a flush escutcheon on the Room H side only that measures 2½" wide by 3¾" tall with a 1⅜" painted knob. The door casing measures 4½" overall with a ⅜"-wide edge bead along the inner edge. The casing has a 1"-wide cove molding backband.

Windows

The room has one window opening centered on the south wall measuring 3'-1" wide by 5'-0 ½" tall. The paired board shutters are of the same design as those found in Room G and share the same hardware; however, the opening in Room H is missing the pivoting lock bar and two hooks on the primary leaf. The shutters are currently secured with a surface-mounted board on the interior.

Finishes

The walls, ceiling, and interior door and door casing are painted white. The shutters, window frame, and exterior door and frame are painted dark green. The flooring has a matte glazed finish.



Figure C270. Room H - fire extinguisher and surface-mounted switches and receptacle west of exterior door.

Mechanical Systems
There is no evidence of any mechanical systems.

Electrical System
A ceiling fan with light kit is centered on the ceiling and matches those in Room G. Plastic electrical conduit runs along the north wall entering from Room G and passing to Room I. Surface mounted switches west of the exterior door control the lighting in Rooms G and H. A surface mounted receptacle is positioned below the switch.

Plumbing System
There is no evidence of any plumbing system.

Fire protection and Life Safety System
A fire extinguisher is mounted west of the exterior doorway.

A smoke detector is mounted on the ceiling.

Security System
A metal box above the exterior door appears to hold a siren for a previous security system. The age of the unit and lack of visible wiring suggests it may be abandoned.

Issues of Condition
A termite mud tunnel extends from the casing of the west doorway to the ceiling framing.

Room I/K– Bedroom in the Commandant's Quarters
Room I was once divided into two rooms, identified as Rooms I and K in the 1836 plan (the plan skips the letter J), by a north-south partition at the center. This partition appears and disappears and plans throughout the fort's history. The room currently serves as storage and measures 24'-0" east-west by 16'-10" north-south with a floor-to-ceiling height of 12'-8" tall (*Figs. C271-C280*).

Flooring
Modern tongue-and-groove flooring of widths varying between 2½", 3¼" and 5" wide runs north-south throughout the room.

Walls and Ceiling
The masonry walls are finished with plaster. The roof structure is exposed at the ceiling and has beaded joists running north-south. Spaced decking boards span on top of the joists and the brick roofing substrate is visible in the spaces between. The structural system is described in detail in the Structural Investigation Report in *Appendix E*.

Ghost marks remain on the north and south walls just west of center for a removed partition wall that once separated the room into two.



Figure C271. Room I/K - View looking northwest.



Figure C272. Room I/K - View looking southeast.



Figure C273. Room I/K - View looking south.



Figure C274. Room I/K - View looking west.

Doorways

The room has two exterior doorways on the north wall accessing the commandant's gallery. Interior doorways are at the south end of the east and west walls. The doorway on the east wall accesses Room H and is described in the *Room H – Daily Parlor* section. The Room I side of the opening has no casing. The west interior doorway accesses Room L.

The eastern exterior doorway measures 3'-2½" wide by 7'-3½" tall an holds a pair of wood 1½"-thick wood shutters, each measuring about 1'-7" wide. The shutters are of the same construction as those described in the *Room G - Reception Hall* section. Each leaf is hung with two pintle hinges with straps measuring 1'-4½" long. The concrete subthreshold measures 4" tall and a pillowed wood threshold on top measures 1" tall. Each leaf has an iron hook at top and bottom on the interior. A barrel bolt secures the doors at the center. A diagonal securing bar on the exterior measures 4'-11" long by 2½" wide and is secured with a padlock.

The western exterior doorway measures 2'-11½" wide by 7'-0" tall an holds a pair of board doors each measuring 1½"-thick and about 1'-5½" wide. The doors are of the same construction as those described in the *Room G - Reception Hall* section. The doorway shares the same hinges and threshold as the eastern doorway. Hardware includes one hook at the head of each leaf, a barrel bolt at the center, as well as pivot bar measuring 1'-5" long. The keeper for a rimlock remains on the secondary leaf. The ghostmarks for the rimlock measure 8" wide by 4" tall. The keeper measures 1" wide by 4" tall.

The interior doorway holds a pair of one-panel-over-one-raised-panel doors each measuring 1'-6" wide by 6'-1" tall by ¾" thick. The stiles each measure 2¾" wide and the rails measure 2¾", 2¾" and 3" tall from top to bottom. The louvered panels each measure 11½" wide by 3'-3½" tall and have operable louvers measuring 2" wide. Applied cove-and-ovolo molding around the louvered panels measures 1⅛" wide. The raised solid panels below



Figure C275. Room I/K - Western exterior door on north wall.



Figure C276. Room I/K - Ghostmark for rimlock and remaining keeper on western exterior door.

measure 1'-0 ¾" by 2'-2" tall and have square sticking.

The doors are each hung with two 7" tall by 4" long HL hinges. A pointed oval-shaped escutcheon measures 1¼" wide by 2½" tall. There is no doorknob. The door jamb is exposed on the Room K side and measures 3" wide. Exposed iron holders measuring 3" long with ¾"-tall anchors hold the jamb in place. The Room I side of the opening has a casing similar to that of the door between Rooms H and I, but measures 5" overall. A 2"-tall threshold spans the base of the opening.



Figure C277. Room I/K - Interior doorway on west wall.

Windows

The Room has two windows on the south wall, each measuring 3'-3" wide by 5'-3" tall and holding a pair of typical modern solid-panel wood shutters. The inside faces of the shutters have diagonal



Figure C278. Room I/K - Interior door hinge as viewed from Room L. Note iron strap below holding jamb in place.



Figure C279. Room I/K - Keyhole escutcheon on interior door.

beaded boards measuring 6" wide. The masonry openings around the window openings typically measure 3'-8" wide by 8'-3" tall. Each window lacks one securing hook at the top and the typical pull ring on the primary leaf, as well as the pivoting lock bar. Hooks mounted on the exterior hold the shutters against the exterior wall when open. The openings have no interior casings, but the wood jambs are exposed slightly on all four sides of the opening.

Finishes
All surfaces are painted. The flooring is painted brown, the walls are white, and the doors, shutters, and jambs are all dark green.

Mechanical Systems
There is no evidence of any mechanical systems.

Electrical System
Two ceiling fans with light kits are mounted to the underside of the ceiling joists. The fans are controlled by a surface-mounted switch on the south wall, just east of the western doorway.



Figure C280. Room I/K - Interior face of typical window shutter on south wall.

Receptacles throughout the room are connected by plastic conduit.

Plumbing System
There is no evidence of any plumbing system.

Fire Protection and Life Safety System
A fire extinguisher is mounted on the south wall just west of the eastern exterior doorway.

Security System
A motion detector is mounted near the center of the south wall.

Issues of Condition
Deterioration of the finish coat of plaster is common on the north and south walls. In most cases, the damage is low on the wall and around the window and door openings.

Room L – Closet in the Commandant's Quarters
Room L is a storage closet accessed from Room I that measures 5'-11" east-west by 8'-7" north-south with a floor-to-ceiling height of 12'-1" tall (*Figs. C281-C282*).

Flooring
Modern tongue-and-groove flooring of widths varying between 2½", 3¼" and 5" wide runs north-south throughout the room.

Walls and Ceiling
The masonry walls are finished with plaster. The roof structure is exposed at the ceiling and has beaded joists running north-south. Spaced decking boards span on top of the joists and the brick roofing substrate is visible in the spaces between. The structural system is described in detail in the Structural Investigation Report in *Appendix E*.

Doorways
The room has two doorways, one on each of the east and north walls. The doorway on the east wall is described in the *Room I/K – Bedroom in the Commandant's Quarters* section. The north doorway accesses Room M and holds a modern door that is flush panel on the Room L side with two applied molded panels at the top. The Room M side of the opening has applied stiles and rails that form four panels. The door measures 2'-10" wide by 7'-3" tall by 1½" thick. The door is hung with two modern HL hinges measuring 11" tall by 10½" long. A modern barrel bold secures the door. The door jamb measures 2" wide by 5"

deep and a 5”-tall threshold spans the base of the opening.

Windows
The Room has one window opening on the south wall measuring 3’-3” wide by 5’-3” tall that holds a pair of typical modern solid-panel wood shutters. The inside faces of the shutters have diagonal beaded boards measuring 6” wide. The masonry openings around the window openings typically measure 3’-8” wide by 8’-3” tall. The shutters have two securing hooks on each leaf. Hooks mounted on the exterior hold the shutters against the exterior wall when open. The opening has no interior casing, but the wood jamb is exposed slightly on all four sides of the opening.

Finishes
All surfaces are painted. The flooring is painted brown, the walls and interior doors are white, and the doors, shutters, and jambs are all dark green.

Mechanical Systems
There is no evidence of any mechanical systems.



Figure C281. Room L - View looking north into Room M.

Electrical System
A four-foot linear fluorescent fixture is mounted on the ceiling and controlled by a surface-mounted switch north of the door to Room I/K. A plastic conduit passes through the north wall from the switch into Room M.

Plumbing System
There is no evidence of any plumbing system.

Fire Protection and Life Safety System
There is no evidence of any fire protection or life safety systems.

Security System
There is no evidence of any security system elements.

Issues of Condition
Deterioration of the finish coat of plaster is common on the north, south, and west walls.

Room M – Pantry in the Commandant’s Quarters
Room M currently serves as a storage closet accessed from Room L that measures 5’-11” east-west by 8’-5” north-south with a floor-to-ceiling height of 12’-1” tall (*Figs. C283-C287*).



Figure C282. Room L - View looking south.

Flooring
Modern tongue-and-groove flooring of widths varying between 2½", 3¼" and 5" wide runs north-south throughout the room.

Walls and Ceiling
The masonry walls are finished with plaster. The roof structure is exposed at the ceiling and has beaded joists running north-south. Spaced decking boards span on top of the joists and the brick roofing substrate is visible in the spaces between. The structural system is described in detail in the Structural Investigation Report in *Appendix E*.

Doorways
The room has two doorways, one on each of the north and south walls. The doorway on the south wall accesses Room L and is described in the *Room L - Closet* section.

The doorway on the north wall exits to the commandant's gallery and measures 3'-1½" wide by 7'-3" tall and holds a pair of board doors measuring about 1'-6½" wide by 1½" thick. The doors have flush boards on the interior and exterior similar to those in Rooms H and share the same pintle hinges. Hardware on the interior includes hooks at head and foot of the secondary leaf and two metal brackets that hold a 2x4 security bar. The concrete threshold measures 5" tall.

Windows
The Room has one window opening on the west wall measuring 3'-1" wide by 5'-2" tall that holds a pair of typical modern board shutters. The inside faces of the shutters have diagonal beaded boards measuring 6" wide. The masonry openings around the window openings typically measure 3'-8" wide by 8'-3" tall. The shutters have two securing hooks on each leaf. Hooks mounted on the sill hold the shutters in place when open. The shutters are bolted with a nominal 2x4 that sits in two metal brackets. The opening has no interior casing, but the wood jamb is exposed slightly on all four sides of the opening.



Figure C283. Room M - View looking north into Room M.



Figure C284. Room M - View looking south.

Finishes
All surfaces are painted. The flooring is painted brown, the walls and interior doors are white, and the doors, shutters, and jambs are all dark green.

Mechanical Systems
There is no evidence of any mechanical systems.

Electrical System
A four-foot linear fluorescent fixture is mounted on the ceiling and controlled by a surface-mounted switch east of the exterior doorway.

Networking cables exit a conduit on the east wall and are connected to a network switch and modem.

Plumbing System
There is no evidence of any plumbing system.

Fire Protection and Life Safety System
A smoke detector is mounted on the ceiling.

Security System
There is no evidence of any security system elements.



Figure C285. Room M - Window opening on west wall.



Figure C286. Room M - Network switch and cabling along east wall.



Figure C288. Room M - Water staining in northwest corner.



Figure C287. Room M - Deteriorated flooring in northwest corner.

Issues of Condition

Deterioration of the finish coat of plaster is common on the north, south, and west walls. Water infiltration appears active in the northwest corner.

The northwest corner of the flooring exhibits potential rot or termite damage.

East Curtain

The east curtain contains Rooms 2 through 7 and is located along the eastern side of the courtyard. The majority of the east curtain currently serves as park archival storage (*Fig. C290*).

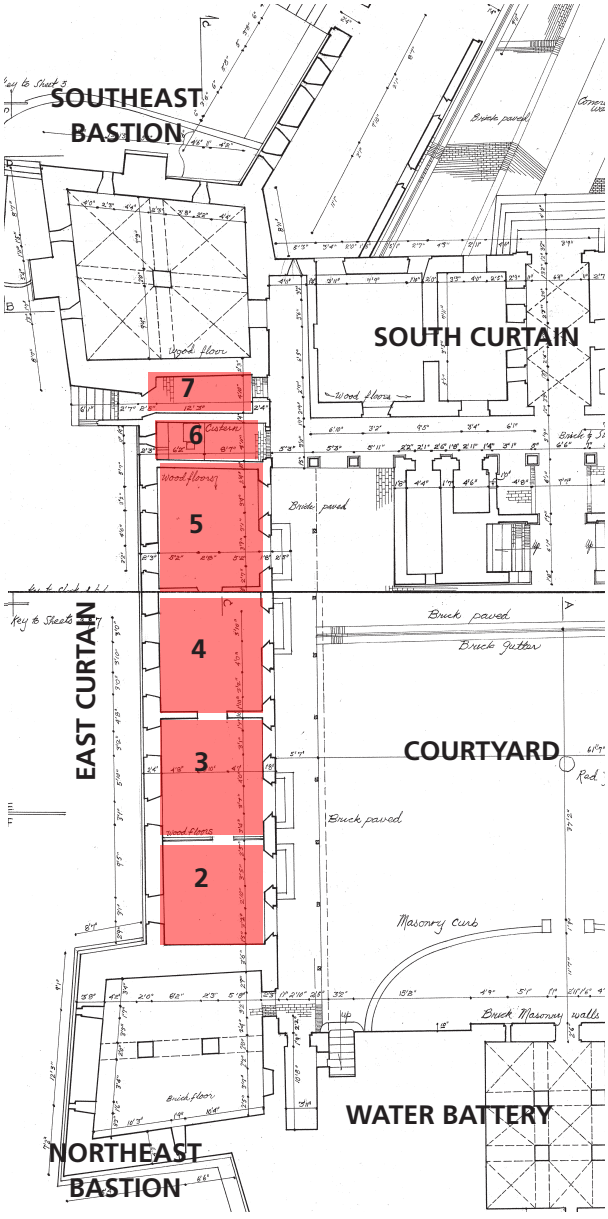


Figure C289. Key plan showing rooms of the south battery.

Room 2 – Officer's Quarters

Room 2 is currently interpreted as an officer's common room. Olson's referenced plan refers to Rooms 2 and 3 as both having been officer's quarters in 1836. The room measures about 13'-6" north-south by 12'-8" east-west. The floor to ceiling height measures 9'-1" tall (*Figs. C290-C308*).

Flooring

Modern tongue-and-groove wood flooring measuring 6" wide is typical throughout the room and runs north south.

Baseboard

A wood baseboard measuring 2½" tall by ½" thick with a ⅜"-wide edge bead is consistent on all but the south wall and appears to be of the same vintage as the wainscoting above. The baseboard on the south wall is modern and measures 2 ½" tall by ¾" thick and lacks a bead.

Walls and Ceiling

Paneled wood wainscoting extends to a height of 2'-2¼" on all but the south wall. The wainscot cap measures 1" tall by 1¾" deep overall. The leading edge of the cap is rounded. The top rail measures 5" wide with a ⅜" wide edge bead, while the bottom rail has a 3" exposure with the same bead



Figure C290. Room 2 - View looking northeast.



Figure C291. Room 2 - View looking southeast.



Figure C292. Room 2 - View looking south.



Figure C293. Room 2 - View looking west.

found on the top rail. The beaded stiles between the panels measure 5" wide and separate flat panels measure 1'-1¾" tall by varying widths.

The upper portions of the north, east, and west walls and the entirety of the south wall are clad with flush vertical boards of varying widths. Widths of the boards above the wainscoting range between 6, 7, 8, 10, and 9½" wide. Most boards on the north wall measure 6" wide. The modern boards on the south wall are more uniform and measure 15" wide. A crown molding measuring



Figure C294. Room 2 - Wood flooring.



Figure C295. Room 2 - Baseboard and bottom rail of wainscotting.

2½" tall lines the perimeter of the room below the ceiling joists.

The ceiling consists of exposed beaded wood joists and spaced beaded wood sleepers. The brick substrate of the gun deck above is visible through the decking. The structural system is described in the Structural Investigation Report in *Appendix E*. A modern ⅝"-wide molding lines three sides of the joists and is mitered at the corners.



Figure C296. Room 2 - Stile and panel design of wainscotting.



Figure C297. Room 2 - Top cap of wainscotting as seen at west window sill.

Doorways

The room has two doorways, one on each of the east and south walls. The west doorway opens to the Officer's Gallery and holds a pair of four-light-over-two-raised-panel wood doors measuring 1'-9½" wide by 6'-1¾" tall by 1¼" thick. The doors are secured in an open position against the angled masonry opening. The masonry opening measures 5'-6" wide by 7'-0" tall. The glazed portion of the doors each measure 1'-3¾" wide by 1'-5" tall and the panels measure 1'-3¾" wide by 1'-8¾" tall.



Figure C298. Room 2 - Exposed ceiling joists and sleepers.

The stiles measure 2 ¾" wide and the rails from top to bottom measure 3½", 3", 4¾", and 3" tall. A dummy knob is visible on the interior face of the primary leaf. There is no visible exterior hardware.

A molded casing lines the masonry opening of the doorway and measures 3½" wide by 1½" thick with a ½"-wide corner bead at the inside edge.

A metal-framed partition with clear acrylic panels allows visitors to look into the space but prevents entry.

A pair of board shutters on the exterior of side of the opening measure 1'-9½" wide by 6'-1½" tall by 1½" thick. The doors are hung with two pintle hinges measuring 1'-5" long. The interior face is made up of horizontal flush boards of widths varying from 6" to 10" wide. The exterior face has flush vertical boards of similar sizes. The wood jamb is exposed at the exterior and measures about



Figure C299. Room 2 - Northern leaf of west doorway.



Figure C301. Room 2 - Exterior shutters of west doorway as viewed from the exterior.



Figure C300. Room 2 - South doorway.

3½" wide. Hardware includes iron hooks at the top and bottom of each leaf and a pivot bar that secures the doors. A pull loop is on the inside face of the primary leaf.

The south doorway accesses Room 3 and holds a two-panel door measuring 2'-10¼" wide by 6'-5" tall by 1½" thick. Door is hung with two 9½" long barn hinges and has a padlock hasp and 5"-long slide bolt on the Room 3 side. The doorway has a plank board casing measuring 4" with a ½" edge bead. The Room 103 side of the doorway has an exposed jamb measuring 2½" wide with a ½" edge bead.

Windows

The room has two windows, one on each of the east and west walls. The east window measures 2'-11" wide by 3'-9" tall and holds no sash. Nine 1"-diameter horizontal bars span the opening, and an acrylic panel is mounted on the interior face of the wood frame. The window frame measures 2½" wide at the sides, 3½" tall at the sill and 1" tall



Figure C302. Room 2 - East window opening.



Figure C303. Room 2 - Interior face of east window shutters.

at the head. A pair of board shutters typical of the east curtain is mounted with two pintle hinges and secured with iron hooks at the top and bottom of each leaf. A round iron hook is on the interior face of the primary leaf. The inside face of the shutter is made up of 6”-wide diagonal beaded boards, while the exterior consists of 6”-wide flush boards.

The west window measures 3’-2” wide by 3’-11” tall and has eleven 1”-diameter bars spanning the opening. The window frame measures 2½” wide at the sides 3” tall at the sill and 4½” tall at the head. A pair of solid wood hurricane shutters is mounted with two pintle hinges and secured with iron hooks at the top and bottom of the primary leaf. The interior face is made up of horizontal flush boards of widths varying from 6" to 10" wide. The exterior face has flush vertical boards of similar sizes. A 2’-0” pivoting bar secures the shutters when closed. A heart shape is cut out of the secondary leaf.

A molded casing lines the masonry opening of each of the windows and measures 3 ½” wide by 1½” thick with a ½”-wide corner bead at the inside edge. The wainscoting cap doubles as the interior sill nosing at each window.

Finishes

The walls, ceiling, doors, and all casings and trim are painted white. The shutters are painted green. The flooring is unfinished.

Mechanical, Electrical, and Plumbing Systems

There is no evidence of any mechanical, electrical, or plumbing systems.



Figure C304. Room 2 - Window casing at east and west windows. The west doorway casing is of the same design.



Figure C305. Room 2 - West window opening.



Figure C306. Room 2 - Smoke detector and fire alarm relay near west wall.



Figure C307. Room 2 - One of two sprinkler heads on south wall.



Figure C308. Room 2 - Motion detector on south wall.

A modern pendant light fixture is centered on the ceiling but is non-functional.

Fire Protection and Life Safety Systems

A smoke detector is mounted on the ceiling along the west wall. A relay box for the fire alarm system is near the detector.

A sprinkler pipe with two sprinkler heads lines the top of the south wall.

Security System

A motion detector is mounted east of the doorway to Room 4.

Issues of Condition

No apparent condition issues were observed.

Room 3 – Archive Storage (North)

Room 3, identified as officer's quarters in Olson's referenced 1836 plan, currently serves as archival storage space. The room measures about 15'-3" north-south by 13'-0" east-west with a ceiling height of 8'-11" tall (*Figs. C310-C314*).

Flooring

Modern tongue-and-groove wood flooring of widths varying between 3¼", 6¾", 5", and 7" is typical throughout the room and runs north-south.

Baseboard

The room has no baseboard.

Walls and Ceiling

The walls are finished with plaster. The ceiling matches that described in the *Room 2 – Officer's Quarters* section. A crown molding measuring 2½" tall lines the perimeter of the room below the ceiling joists.

Doorways

The room has three doorways, one on each of the south, west, and north walls. The north doorway accesses Room 2 and is described in the *Room 2 – Officer's Quarters* section.

The west doorway is obscured by shelving on the interior but is an exterior doorway opening to the officer's gallery that holds paired solid-panel shutters matching those described in the *Room 2 - Officer's Quarters* section.

The south doorway accesses Room 4 and currently holds no door. The doorway measures 3'-6" wide by 6'-8" tall.



Figure C310. Room 3 - View looking north.



Figure C309. Room 3 - View looking south.



Figure C311. Room 3 - View looking southwest.

Windows

The Room has three window openings, two on the east wall and one on the west wall. The window openings are largely obscured by objects in the room.

The west window opening measures 3'-2" wide by 3'-10" tall and has eleven 1"-diameter horizontal bars spanning the opening. The solid wood shutters on the exterior match those described at the west window in the *Room 2 – Officer's Quarters* section.

The two east windows match the fully exposed window described later in the *Room 5 - Archival Storage (South)* section.



Figure C312. Room 3 - Window opening at south end of east wall. See additional photos of this window type in the Room 5 section.

Finishes

The walls, ceiling, doors, and window sash are painted white. The shutters are painted green. The flooring is unfinished.

Mechanical Systems

There is no evidence of any mechanical systems.

Electrical System

Two linear fluorescent fixtures that have been converted to use LEDs are mounted on the ceiling. Receptacles throughout the room are surface mounted and connected by plastic conduit.

Plumbing System

There is no evidence of any plumbing system.

Fire Protection and Life Safety Systems

Two sprinkler heads are equally spaced on the ceiling. A fire alarm strobe is near the center of the ceiling.

Security System

A motion detector is east of the south doorway.

Issues of Condition

Deterioration of the finish coat of plaster is common on the east wall, where visible.

Paint on the exposed structural members is peeling in several locations.

The southern light fixture is missing its internal and external covers, allowing the wiring to hang freely from the fixture.



Figure C313. Room 3 - Fire alarm strobe on ceiling.

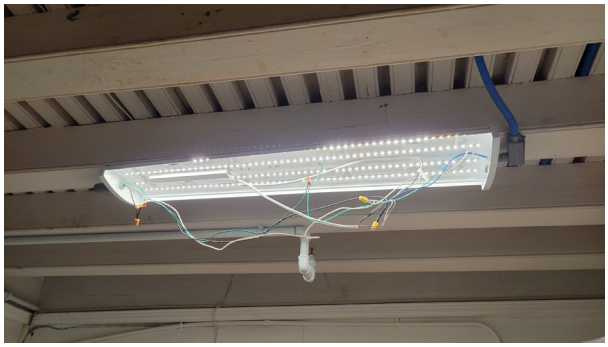


Figure C314. Room 3 - Light fixture with missing covers.

Room 4 – Archive Storage (Center)

Room 4, identified as the Commandant's Office in the 1836 plan, currently serves as archival storage space. The room measures about 15'-3" north-south by 13'-0" east-west with a ceiling height of 8'-11" tall (*Figs. C314-C321*).

Flooring

Modern tongue-and-groove wood flooring of widths varying between 3¼", 6¾", 5", and 7" is typical throughout the room and runs north-south.

Walls and Ceiling

The walls are finished with plaster. The ceiling matches that described in the *Room 2 – Officer's Quarters* section. A crown molding measuring 2½" tall lines the perimeter of the room below the ceiling joists.

Doorways

The room has three doorways, one on each of the south, west, and north walls. The north door accesses Room 3 and is described in the *Room 3 – Archive Storage (South)* section.

The west doorway is obscured by shelving on the interior but is an exterior doorway opening to the officer's gallery that holds paired board doors matching those described in the *Room 2 - Officer's Quarters* section.

The south doorway accesses Room 5 and holds a modern gate measuring 3'-5" wide by 6'-8" tall. The gate is made up of 1" square stock and diamond-shaped mesh. The gate is hung on two pintles attached to a continuous bar at the wall. A slide bolt and padlock hasp secure the gate.

A wood frame separate from the gate measures 3" wide by 5½" deep and has a 1" tall by 3" wide pillowed wood threshold. A rounded-edge casing on the Room 4 side measures 2½" wide.

Windows

The Room has three window openings, two on the east wall and one on the west wall. The window openings are largely obscured by objects in the room.

The west window opening measures 3'-2" wide by 3'-10" tall and has eleven 1"-diameter horizontal bars spanning the opening. The board shutters on the exterior match those described at the west window in the *Room 2 – Officer's Quarters* section.

The two east windows match the fully exposed window described later in the *Room 5 - Archival Storage (South)* section.



Figure C315. Room 4 - View looking north.



Figure C316. Room 4 - View looking southeast.



Figure C317. Room 4 - View looking southwest.

Finishes
The walls, ceiling, doors, and window sash are painted white. The shutters are painted green. The flooring is unfinished.

Mechanical Systems
A wall mounted indoor cassette is above the south doorway and is adjusted by remote control. The unit appears relatively new. A condensate pump is below the unit and east of the doorway.

Electrical System
Two linear fluorescent fixtures are mounted on the ceiling. Receptacles throughout the room are surface mounted and connected by plastic conduit. The lights are controlled by a surface mounted switch west of the south doorway.

An electrical subpanel is mounted west of the south doorway.

Plumbing System
There is no evidence of any plumbing system.

Fire Protection and Life Safety System
Two sprinkler heads are equally spaced on the ceiling. A fire alarm strobe and a smoke detector are near the center of the ceiling.

Security System
A motion detector is east of the south doorway.

Issues of Condition
Deterioration of the finish coat of plaster is common on the east wall, where visible.

Paint on the exposed structural members is peeling in several locations.

Room 5 – Archive Storage (South)
Room 5, identified as a barracks for six men in the 1836 plan, currently serves as archival storage space



Figure C318. Room 4 - Gate at south doorway.



Figure C319. Room 4 - Indoor unit for HVAC system.



Figure C320. Room 4 - Condensate pump, motion detector, electrical panel, and remote for HVAC unit east of south doorway.



Figure C321. Room 4 - Peeling paint at ceiling in southeast corner.

and contains control panels for building systems. The room measures about 15’-2” north-south by 13’-0” east-west with a ceiling height of 8’-11” tall (*Figs. C322-C332*).

Flooring

Modern tongue-and-groove wood flooring of widths varying between 3¼”, 6¾”, 5”, and 7” is typical throughout the room and runs north-south.

Walls and Ceiling

The walls are finished with plaster. The ceiling matches that described in the *Room 2 – Officer’s Quarters* section. A crown molding measuring 2½” tall lines the perimeter of the room below the ceiling joists.

Doorways

The room has two doorways, one on each of the north and west walls. The north door accesses Room 4 and is described in the *Room 4 – Archive Storage (Center)* section.

The west exterior doorway measures 3'-8½" wide by 6'-3" tall and holds a pair of board doors each measuring 1'-10" wide by 1½" thick. The doors are hung with two pintle hinges measuring 1'-5" long. The interior face is made up of horizontal flush boards of widths varying from 6" to 10" wide. The exterior face has flush vertical boards of similar sizes. The wood jamb is exposed at the exterior and measures about 3½" wide. The inside face of each door leaf has two wood strengthening bars for added security. Hardware includes hooks at the head and foot of the secondary leaf and a pull loop on the primary leaf. A modern keyed deadbolt secures the door, along with a diagonal bar at the exterior measuring 4'-8" long by 2½" wide.

Windows

The Room has three window openings, two on the east wall and one on the west wall. The southern opening on the west wall has been infilled on the interior, though the shutters remain on the exterior.



Figure C322. Room 5 - View looking northeast.



Figure C324. Room 5 - View looking southwest.



Figure C323. Room 5 - View looking east.



Figure C325. Room 5 - View looking northwest.



Figure C326. Room 5 - Interior face of west doorway.



Figure C327. Room 5 - Interior face of west window.

The west window opening measures 3’-2” wide by 3’-11” tall and has eleven 1”-diameter horizontal bars spanning the opening. The opening holds a pair board shutters with horizontal flush boards on the interior and vertical flush boards on the exterior, both of widths varying from 8" to 10" wide. The shutters are hung with two pintle hinges and secured by an iron hook at the top of the primary leaf. A piece of wood passes through a pull loop on the primary leaf to secure the shutter against the inside of the bars. The opening has no casings, but the wood jamb is exposed at the perimeter of the opening and measures about 3" wide at the exterior.

The east window opening measures 2'-11" wide by 3'-7" tall and holds a pair of three-light casement sash mounted on the interior. Nine 1"-diameter bars span the opening. The sash are hung with 4”-tall HL hinges. The individual sash measure 1’-6” wide by 3’-7” tall. The window frames measure 2¼” wide and the muntins measure 1” wide. A beveled wood strip at the base of each sash diverts water from the bottom of the sash and is notched around the sill hooks. Slide bolts are found at the top and bottom of the primary sash. The inside face of the shutters has diagonal beaded boards measuring 6" wide. Each shutter has a hook at the top and bottom and the primary leaf has a



Figure C328. Room 5 - East window opening.

pull ring. The opening has no casings, but the wood jamb is exposed at the perimeter of the opening.

Finishes
The walls, ceiling, doors, and window sash are painted white. The shutters are painted green. The flooring is unfinished.

Mechanical Systems
A wall mounted indoor cassette is mounted high on the east wall and is adjusted by remote control. The unit appears relatively new. The refrigerant lines exit through the infilled window opening.

Electrical System
Two linear fluorescent fixtures are mounted on the ceiling. Receptacles throughout the room are surface mounted and connected by plastic conduit. The lights are controlled by a surface mounted switch south of the west doorway.

A large junction box is in the upper west corner of the south wall and connects to the fire and security system panels on the south wall.



Figure C329. Room 5 - Casement sash at east window.



Figure C330. Room 5 - Interior face of shutters at east window opening.

Plumbing System
There is no evidence of any plumbing system.

Fire Protection and Life Safety System
Two sprinkler heads are equally spaced on the ceiling and a fire extinguisher is west of the exterior door. A fire alarm strobe is near the center of the ceiling.

Two fire alarm control panels are mounted on the south wall. Each is connected to a surge protector. The westernmost panel appears to also serve the security system. It is not clear whether one or both panels is currently active.



Figure C331. Room 5 - Indoor unit for HVAC system on east wall.



Figure C332. Room 5 - Security and fire alarm panels on south wall.

Adjacent to the fire alarm panel is a keypad for the fire alarm annunciator system.

Security System

A wall mounted metal cabinet on the south wall appears to contain the distribution panel for the motion sensors and security cameras.

A motion detector is south of the west window opening. A second motion detector is west of the doorway to Room 4.

Issues of Condition

Deterioration of the finish coat of plaster is common on the east, west, and south walls.

Paint on the exposed structural members is peeling in several locations.

Room 6 – Small Cistern

Room 6 is a narrow room holding a cistern. The room measures 4'-11" north-south by 13'-10" east-west and has a floor-to-ceiling height of 8'-10" tall (*Figs. C333-C337*).

Flooring

Mortared pavers laid in a running bond pattern run north-south. The pavers vary in size but generally measure about 4½" wide by 9" long. The colors range from golden brown to reddish orange, to brownish red.

Walls and Ceiling

The walls are finished with plaster, while the roof structure is exposed at the ceiling. The joists run east-west and are not beaded. Wide plank boards



Figure C333. Room 6 - View looking east.



Figure C334. Room 6 - View looking east.



Figure C335. Room 6 - Frame of west cased opening.

are continuous above the beams. The structural system is described in Appendix E.

Doorways
The room has one cased opening that exits to the arcade of the south curtain. The opening measures 3'-4½" wide by 6'-4" tall. An early wood jamb at the south end of the opening measures 6" by 6¾". There is a 6 ½" tall step at the exterior face of the doorway.

Windows
One window opening is centered on the east wall and measures 1'-0" wide by 1'-7 ½" tall. One 1" square vertical bar is centered in the opening. The masonry opening is arched and measures 1'-8½" wide by 1'-4½" tall. The sill lies about 3'-10" from floor level.

Other Features
A cistern at the east end of the room measures 2'-1" tall. The cistern cover measures 2'-6" square and the pump base measures 1'-4" by 1-0" by 8" tall.

Finishes
The walls appear to be limewashed. The ceiling is painted white.

Mechanical Systems
There is no evidence of any mechanical systems.

Electrical System
Plastic conduit crosses through the room at the west end.

Plumbing System
There is no evidence of any plumbing system.

Fire Protection and Life Safety System
There is no evidence of any fire protection or life safety systems.

Security System
There is no evidence of any security system elements.

Issues of Condition
Deterioration of the finish coat of plaster is common on all four walls. Biologic growth is also typical.

A section of wood at the ceiling has deteriorated and fallen out of place.



Figure C336. Room 6 - Window opening on east wall.



Figure C337. Room 6 - Top of cistern.

Room 7 – Hallway to Stableyard

Room 7 is a narrow room identified in Olsen's referenced 1836 plan as the Storeroom for the Commandant. Currently, the room serves as a passage to the east exterior door accessing the stableyard. The room measures 4'-10" north-south by 12'-3" east-west and has a floor-to-ceiling height of 8'-10" tall (*Figs. C338-C342*).

Flooring

Mortared pavers laid in a running bond pattern run north-south. The pavers vary in size but generally measure about 3 ½" wide by 8" long. The colors range from golden brown to reddish orange, to brownish red. The floor is partially pargeted.

Walls and Ceiling

The walls are finished with plaster, while the roof structure is exposed at the ceiling. The joists run east-west and are similar to those found in Room 6. Wide plank boards are continuous above the beams. The structural system is described in detail in Appendix E.

Doorways

The room has two doorways, one on each of the east and west walls. The east doorway accesses a set of exterior stairs descending to the stableyard and holds a board door measuring 2'-9" wide by 6'-0" tall by 1½" thick. The door is hung with two pintle hinges with straps measuring 1'-5" long. The interior face is made up of 5½"-wide diagonal boards while the exterior has vertical beveled edge boards measuring 5" wide. The jamb measures 3½" wide by 4" deep and is exposed at the exterior. A slide bolt on the interior measures 1'-3" long by 4½" tall. A foot stop is at the base of the door.

The west doorway opens to the arcade of the south curtain. The arched masonry doorway measures 2'-6" wide by 6'-4" tall and holds a board door measuring 2'-9½" wide by 6'-8" tall by 1¾" thick. An opening in the door 11½" wide by 1'-0½" tall



Figure C338. Room 7 - View looking east.



Figure C339. Room 7 - View looking west.

and has a perforated cover with X-shaped brace. The inside face has horizontal beaded boards of widths varying from 8" to 10" to 12" wide. The exterior has vertical boards measuring about 8" to 10" wide. The door is hung with two pintle hinges with 2'-8½" long. A 9½" tall pull handle is on the exterior. The door is secured with a diagonal bar measuring 4'-5" long by 2½" wide.

Windows
The room has no window openings.

Finishes
The walls appear to be limewashed. The ceiling is painted white.

Mechanical Systems
There is no evidence of any mechanical systems.

Electrical System
The main electrical panel is at the west end of the north wall. A large disconnect switch is adjacent to the panel. Large conduits pass through the west wall and into the south curtain, while a single large conduit continues down the north wall and turns to enter the rooms of the east curtain.

Plumbing System
There is no evidence of any plumbing system.

Fire Protection and Life Safety System
A smoke detector is mounted on the ceiling at the west end of the room.

Security System
There is no evidence of any security system elements.

Issues of Condition
Deterioration of the finish coat of plaster is common on all four walls.

The ceiling boards exhibit deterioration in several locations.



Figure C340. Room 7 - East doorway as viewed from exterior.



Figure C341. Room 7 - West doorway as viewed from exterior.



Figure C342. Room 7 - Disconnect switch and main electrical panel.

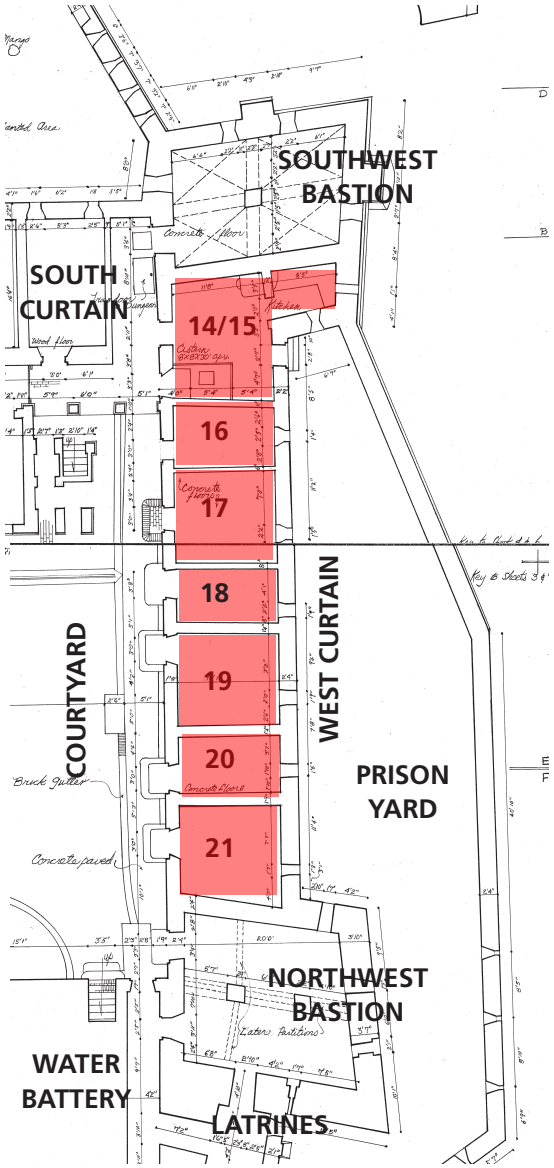


Figure C343. Key plan showing rooms of the west curtain.

West Curtain

The West Curtain contains Rooms 14 through 21 and is located along the west side of the courtyard. Room uses include interpreted spaces, storage, and public restrooms (*Fig. C343*).

Rooms 14 & 15 – Commandant's Kitchen and Large Cistern

Rooms 14 & 15 consist of two connected spaces, the eastern space is the kitchen itself, while a second smaller room is to the southwest. The 1836 plan does not apply a room number to the smaller room but does apply the number 15 to the cistern itself. For the purposes of this description, the large cistern is considered part of the kitchen.

The main kitchen space measures about 16'-7" north-south by 11'-8" east-west and has a floor-to ceiling height of 8'-7" tall. The smaller southwestern room measures about 6'-0" north-south by 8'-5" east-west (*Figs. C344-C359*).

Flooring

Mortared pavers laid in a running bond pattern run east-west. The pavers vary in size but generally measure about 4½" wide by 9" long. At the south side of the room, the pavers are laid vertically, making them about 2 ½" wide by 8" long. The colors range from golden brown to reddish orange, to brownish red. The floor is partially pargeted.

A shallow gutter in the floor begins about 5'-0" from the west exterior doorway and drains to the prison yard.

The flooring slopes upward as it enters the pantry room at the southwest corner.

Walls and Ceiling

The walls throughout the kitchen are finished with plaster. The pantry to the southwest has exposed brick masonry walls. The north wall consists of plastered masonry infill between a grid of timber framing.

The roof framing is exposed at the ceiling of the kitchen and consists of joists spanning east-west supported at their midspan by a low north-south beam and a second similar beam along the east wall. A molded piece of trim lines the underside of the joists at the north-south beams. Flush boards form the deck of the roof and are continuous above the joists. The pantry has exposed brick vaulting. Elements of the structural system are described in the Structural Investigation Report in *Appendix E*.

Doorways

The room has three doorways, one on the east wall and two on the west. The east doorway exits to the north arcade of the south curtain. The northern doorway on the west elevation accesses an exterior stair that descends to the prison yard.

The east doorway opens to the south curtain arcade and measures 3'-0" wide by 6'-4½" tall overall and holds a pair of board doors each measuring about 1'-7" wide by 2" thick. The doors have horizontal beaded boards measuring 7" wide on the interior, while the exterior has vertical beveled-edge boards measuring 8½" and 9½" wide. The doors are each hung with two pintle hinges with straps measuring 1'-4½" long. A Y-shaped padlock hasp measures 11" wide by 7" tall. The doors are secured in an open position by one iron hook per leaf on the exterior wall. A 4"-tall step accesses the door and the threshold measures 2½" tall. The door jamb measures about 3½" wide at the exterior.

The west exterior doorway holds a solid wood door measuring 2'-7 ¼" wide by 7'-10" tall by 2"



Figure C344. Room 14/15 - View looking northwest.



Figure C345. Room 14/15 - View looking southeast.



Figure C346. Room 14/15 - View looking west.



Figure C347. Room 14/15 - View in southwestern space looking southwest.



Figure C348. Room 14/15 - View in southwestern space looking east.



Figure C349. Room 14/15 - Flooring and shallow trough extending to west exterior doorway.



Figure C350. Room 14/15 - Embedded timber framing and infill plaster on north wall.

thick. The interior face is made up of horizontal beaded board varying between 5" and 7" wide. The exterior face has beveled-edge vertical boards of similar widths. The door is hung with two pintle hinges with straps measuring 1'-11" long. Two hooks on the interior secure the door. The jamb measures 5" deep by about 3½" wide.

The west interior doorway is a half-arched masonry opening measuring 2’-8” wide by 5’-8” tall at its highest point and 4’-8” tall at its lowest point. The opening has no door.

Windows

The pantry has two punched window openings, one on each of the north and west walls. The north window measures 1’-6” square and has five vertical 1” square bars set in wood framing at top and bottom. The masonry opening measures 2’-1” wide by 2’-1½” tall and has an exposed ferrous lintel.

The west window measures 1’-0 ½” wide by 1’-3” tall and has two vertical 1” square bars set in wood framing at the top and bottom. The masonry opening measures 1’-2” wide by 1’-8” tall.



Figure C351. Room 14/15 - Exposed joists and low beams on ceiling.

Other Features

A cistern in the northeast corner measures about 2'-0" tall and has a wood lid measuring 3'-8 ½" by 3'-9" square. The perimeter of the cistern is beveled around the lid.

Just east of the cistern, a partial-height wood partition creates a closet space accessed from the exterior at the east elevation. The partition measures about 3'-0" north-south by 2'-0" east-west and is clad on the Room 14 side with a mixture of 5½" and 6" wide by ¾" thick boards.

A masonry oven is in the southwest corner of the kitchen and has a vaulted brick interior and projecting rounded brick hearth that extends about 6" from the face of the oven. The oven opening measures 1'-4 ½" wide by 1'-2 ¼" tall and is 2'-9½" above floor level. A hole at the base of the oven measures 9 ½" wide by 11 ½" tall. The flue serving the oven is visible from the pantry room.

Finishes

The walls in the kitchen are limewashed, while the ceiling is painted white. The exterior doors are painted green. The exposed framing embedded in the north wall is painted black. All surfaces in the pantry are unfinished.

Mechanical Systems

The room has no evidence of any mechanical systems.

Electrical System

A plastic conduit enters the room above the east doorway and passes into the wood partition at the southeast corner of the room.

Plumbing System

The room has no evidence of any plumbing system.



Figure C352. Room 14/15 - Interior face of west doorway as viewed from the prison yard.



Figure C353. Room 14/15 - Interior face of east exterior doorway as viewed from the south curtain arcade.



Figure C354. Room 14/15 - North window in southwestern room.



Figure C355. Room 14/15 - West window in southwestern room.



Figure C356. Room 14/15 - Cistern and closet partition in northeast corner.



Figure C357. Room 14/15 - Oven in southwest corner.



Figure C358. Room 14/15 - Chimney stack opening as viewed from southwestern room.

Fire Protection and Life Safety
A smoke detector is on the ceiling above the east doorway.

Security System
A motion detector is on the west side of the central beam at the south wall.

Issues of Condition
Isolated areas of water damage are visible on the ceiling, particularly at the southeast corner.



Figure C359. Room 14/15 - Termite damage on south wall.

The timber framing of the north wall exhibits termite damage.

Room 16 – Commandant's Servant's Room
Room 16 is identified in the 1836 plan as a room for the commandant's servant, a function also applied to Room 12 of the south curtain. The room currently serves as storage space for architectural salvage. Elements stored include doors, shutters, and window sash. Some elements may have been removed from the commandant's quarters, but it appears items from other park buildings are also stored. The room measures about 8'-1" north-south by 13'-0" east-west with a floor to ceiling height of 8'-9" tall (*Figs. C360-C364*).

Flooring
A concrete slab is consistent throughout the room.



Figure C360. Room 16 - View looking west.



Figure C361. Room 16 - View looking northeast.

Walls and Ceiling

The walls throughout the room are finished with plaster, with the exception of the north wall. The south wall consists of plastered masonry infill between a grid of timber framing. This farming is also visible in Room 14 to the south.

The north wall is clad with vertical boards varying between 11", 11½", and 12" wide.

The roof framing is exposed at the ceiling and consists of joists spanning east-west supported at their midspan by a low north-south beam and a second similar beam along the west wall. A molded piece of trim lines the underside of the joists at the north-south beams. Flush boards form the deck of the roof and are continuous above the joists. Elements of the structural system are described in the Structural Investigation Report in *Appendix E*.

Doorways

The room has one doorway on the east wall exiting to the courtyard that holds a single board door typical of the west curtain and measuring 2'-10" wide by 5'-10½" tall by 1½" thick. The door is hung with two strap hinges measuring 1'-11" long with driven pintles. A diagonal securing bar measuring 4'-5½" long by 2" wide on the exterior hangs from the jamb and can be locked with padlock. Horizontal boards with beveled edges measure 5" wide on the interior. Vertical flush tongue-and-groove boards on the exterior face measure 5½" wide. A 2" wood drip cap is on the exterior. The jamb measures 3" wide by 4" deep and is exposed at the exterior. An iron hook at the base of the door secures the door in an open position against the wall.

Windows

The room has one window on the west wall measuring 1'-4" wide by 2'-0" tall and holding five round horizontal bars measuring about 4½" on center. The inside face of the window measures 1'-8" wide by 2'-0" tall and has five vertical bars measuring 1" square. The exterior bars are set in a wood frame measuring about 4" wide, while the interior bars are set in masonry.

Finishes

The walls are limewashed, while the ceiling is painted white. The exterior door is painted green.



Figure C362. Room 16 - Vertical boards on north wall.



Figure C363. Room 16 - Timber framing with infill on south wall.

Mechanical Systems
The room has no evidence of any mechanical systems.

Electrical System
A plastic conduit crosses the room at the east end and connects to a surface-mounted receptacle on the north wall.

Plumbing System
The room has no evidence of any plumbing system.

Fire Protection and Life Safety System
A smoke detector is on the ceiling above the east doorway.

Security System
There is no evidence of any security system elements.

Issues of Condition
Isolated areas of water damage are visible on the ceiling, particularly at the southeast corner.



Figure C364. Room 16 - Interior face of exterior door. This door type is typical across the west curtain.

The timber framing of the north wall exhibits termite damage.

Room 17 – Barracks for Four Men
Room 17 is identified in the 1836 plan as a barracks for four men. The room currently holds interpretive panels and measures 11'-9" north-south by 13'-0" east-west with a floor to ceiling height of 9'-0" tall (*Figs. C365-C372*).

Flooring
A concrete slab is consistent throughout the room.

Walls and Ceiling
The walls throughout the room are finished with plaster, with the exception of the south wall, which is clad with vertical boards of widths varying between 11", 11½", and 12" wide.

The roof framing is exposed at the ceiling and consists of joists spanning east-west supported at their midspan by a low north-south beam and a second similar beam along the west wall. A molded piece of trim lines the underside of the joists at the north-south beams. Flush boards form the deck of the roof and are continuous above the joists. Elements of the structural system are described in the Structural Investigation Report in *Appendix E*.



Figure C365. Room 17 - View looking northeast.



Figure C366. Room 17 - View looking east.



Figure C367. Room 17 - View looking northwest.



Figure C368. Room 17 - View looking west.

Doorways

The room has one doorway on the east wall exiting to the courtyard that holds a single board door typical of the west curtain and measuring 2'-10" wide by 6'-0" tall by 1½" thick. The door is hung with two strap hinges measuring 1'-11" long with driven pintles. A diagonal securing bar measuring 4'-5 ½" long by 2" wide on the exterior hangs from the jamb and can be locked with padlock. Horizontal boards with beveled edges measure 5" wide on the interior. Vertical flush tongue-and-groove boards on the exterior face measure 5½" wide. A 2" wood drip cap is on the exterior. The jamb measures 3" wide by 4" deep and is exposed at the exterior. An iron hook at the base of the door secures the door in an open position against the wall.



Figure C369. Room 17 - Vertical boards on south wall.

Windows

The room has one window on the west wall measuring 1'-2½" wide by 2'-0" tall and holding four 1" horizontal square bars spaced at 4½" on center. The bars are set in a wood frame measuring about 3" wide by 4" deep. The inner masonry opening measures 2'-1½" wide by 2'-6" tall.

Finishes

The walls are limewashed, while the ceiling is painted white. The exterior door is painted green.

Mechanical Systems

The room has no evidence of any mechanical systems.

Electrical System

A plastic conduit lines the east wall above the door.

Plumbing System

The room has no evidence of any plumbing system.

Fire Protection and Life Safety

A smoke detector is on the ceiling above the east doorway. A relay box for the fire alarm system is adjacent to the detector.



Figure C370. Room 17 - Window opening on west wall.



Figure C371. Room 17 - Detail of west window opening.

Security System
A motion detector is in the northwest corner.

Issues of Condition
Applied limewash coatings have failed at the base of the north wall.

The jamb at the hinge side of the door has rotted. The bottom pintle is loose and pulls out of the frame when the door is opened.

Room 18 – Non-Commissioned Officer's Cell
Room 18 is identified in the 1836 plan as a cell for non-commissioned officers. The room currently serves as storage. Stored architectural items are similar to those found in Room 16. Paper files are also stored in the room and are at risk of being destroyed in the unconditioned space. The room measures 6'-11" north-south by 13'-0" east-west with a floor to ceiling height of 9'-1" tall (*Figs. C373-C375*).



Figure C372. Room 17 - Smoke detector and conduit along the the east wall.

Flooring
A concrete slab is consistent throughout the room.

Walls and Ceiling
The walls throughout the room are finished with plaster. The south wall consists of plastered masonry infill between a grid of timber framing.

The roof framing is exposed at the ceiling and consists of joists spanning east-west supported at their midspan by a low north-south beam and a second similar beam along the west wall. A molded piece of trim lines the underside of the joists at the north-south beams. Flush boards form the deck of the roof and are continuous above the joists. Elements of the structural system are described in the Structural Investigation Report in *Appendix E*.



Figure C373. Room 18 - View looking northwest.

Doorways
The room has one doorway on the east wall exiting to the courtyard that holds a board door typical of the west curtain and measuring 3'-6½" wide by 6'-0" tall by 1½" thick. The door is hung with two strap hinges measuring 1'-11" long with driven pintles. A diagonal securing bar measuring 4'-5½" long by 2" wide on the exterior hangs from the jamb and can be locked with padlock. Horizontal boards with beveled edges measure 5" wide on the interior. Vertical flush tongue-and-groove boards on the exterior face measure 5½" wide. A 2" wood drip cap is on the exterior. The jamb measures 3" wide by 4" deep and is exposed at the exterior. An iron hook at the base of the door secures the door in an open position against the wall.

Windows
The room has one window on the west wall that is obscured by storage cabinets. The window appears to be identical to that found in described in Room 19.



Figure C374. Room 18 - View looking east.

Finishes
The walls are limewashed, while the ceiling is painted white. The exterior door is painted green.

Mechanical Systems
The room has no evidence of any mechanical systems.

Electrical System
A plastic conduit lines the east wall above the door and connects to a receptacle on the east wall.

Plumbing System
The room has no evidence of any plumbing system.

Fire Protection and Life Safety System
A smoke detector is on the ceiling near the center of the room. A relay box for the fire alarm system is adjacent to the detector.

Security System
A motion detector is in the northwest corner.

Issues of Condition
Applied limewash coatings have failed on the north, south, and east walls. Paint peeling is typical at the ceiling.



Figure C375. Room 18 - Embedded timber framing and infill on south wall.

Room 19 – Officers' Cell

Room 19 is identified in the 1836 plan as the officers' cell. The room currently serves as storage and measures 11'-8" north-south by 13'-0" east-west with a floor to ceiling height of 9'-1" tall. A number of replacement louvered shutters removed from the commandant's gallery are stored in the room (*Figs. C376-C379*).

Flooring

A concrete slab is consistent throughout the room.

Walls and Ceiling

The walls throughout the room are finished with plaster.

The roof framing is exposed at the ceiling and consists of joists spanning east-west supported at their midspan by a low north-south beam and a second similar beam along the west wall. A molded piece of trim lines the underside of the joists at the north-south beams. Flush boards form the deck of the roof and are continuous above the joists.

Elements of the structural system are described in the Structural Investigation Report in *Appendix E*.

Doorways

The room has one doorway on the east wall exiting to the courtyard that holds a single board door typical of the west curtain and measuring 3'-2½" wide by 5'-11½" tall by 1½" thick. The door is hung with two strap hinges measuring 1'-11" long with driven pintles. A diagonal securing bar measuring 4'-5½" long by 2" wide on the exterior hangs from the jamb and can be locked with padlock. Horizontal boards with beveled edges measure 5" wide on the interior. Vertical flush tongue-and-groove boards on the exterior face measure 5½" wide. A 2" wood drip cap is on the exterior. The jamb measures 3" wide by 4" deep and is exposed at the exterior. An iron hook at the base of the door secures the door in an open position against the wall.

Windows

The room has one window on the west wall measuring 1'-6" wide by 2'-0" tall and holding



Figure C376. Room 19 - View looking northwest.



Figure C377. Room 19 - View looking east.

seven 1” horizontal hexagonal bars spaced at 3¼” on center. The bars are set in a wood frame measuring about 3” wide by 4” deep. The inner masonry opening measures 2’-0” wide by 2’-7” tall.

Finishes
The walls are limewashed, while the ceiling is painted white. The exterior door is painted green.

Mechanical Systems
The room has no evidence of any mechanical systems.

Electrical System
A plastic conduit lines the east wall above the door and connects to a surface-mounted duplex outlet on the east wall.

Plumbing System
The room has no evidence of any plumbing system.

Fire Protection and Life Safety System
There is no evidence of any fire protection or life safety systems.



Figure C378. Room 19 - Window opening on west wall. Note spalling plaster.

Security System
A motion detector is in the southeast corner.

Issues of Condition
Applied limewash coatings have failed on all four walls. Plaster is spalling on the west wall near the window, exposing brick masonry beneath. Peeling paint is typical at the ceiling.

The exterior door exhibits significant rot near the top. Several boards have lost the majority of their integrity.

Room 20 – Men’s Restroom
Room 20 is identified in the 1836 plan a cell and currently serves as the men’s public restroom. The room measures 7’-3” north-south by 13’-0” east-west with a floor to ceiling height of 9’-7” tall. Finishes throughout the room appear to date from the mid-twentieth century (*Figs. C379-C389*).

Flooring
The floor is finished with matte-glazed ceramic tile measuring 4” by 8” and laid in a running bond pattern.

Baseboard
Base tiles measuring 8” long by 4” tall are consistent at the perimeter of the room.

Walls and Ceiling
The walls throughout the room are finished with plaster. A partition wall runs north-south about 3’-0” from the east wall, creating a vestibule. A second wall placed perpendicularly to the first measures 4’-0” east-west to form a stall partition. Above the north-south partition are three louvered wood transom panels. Infill panels above the



Figure C379. Room 19 - Extensive deterioration of inside face of exterior door.

louvers fill the spaces between the ceiling joists and appear to be of gypsum wallboard construction.

The roof framing is exposed at the ceiling and consists of joists spanning east-west supported at their midspan by a low north-south beam and a second similar beam along the west wall. A molded piece of trim lines the underside of the joists at the north-south beams. Flush boards form the deck of the roof and are continuous above the joists. Elements of the structural system are described in the Structural Investigation Report in *Appendix E*.

Doorways

The room has two doorways, one on the east wall and one at the south end of the north-south partition. The doorway on the east wall exits to the courtyard and currently has no door hanging in the opening. The opening measures 3'-1" wide by 6'-7 ½" tall. A typical diagonal securing bar is mounted



Figure C381. Room 20 - View looking northeast from within the vestibule. Note that the exterior door has been removed.



Figure C380. Room 20 - View looking southwest from just inside the exterior doorway.



Figure C382. Room 20 - View looking west from vestibule doorway.



Figure C383. Room 20 - View looking northwest.



Figure C384. Room 20 - View looking northeast.

on the north jamb. The door jamb measures about 3" wide on the exterior and has a 2" drip cap. The lower hinge pintle is missing.

The interior doorway in the north-south wall holds a modern flush panel door measuring 3'-0" wide by 6'-8" tall by 1¾" thick and is hung with two 4"-tall butt hinges. A pull handle is on the exterior face and a push plate is on the interior. The door jamb doubles as the door casing and measures 1½" wide.

Windows

The room has one window on the west wall measuring 1'-6" wide by 1'-11" tall. The opening holds four 1¼" vertical square bars spaced at 4½" on center at the inside face of the opening and a grid of ½" diameter round bars at the exterior. The outer bars are set in a wood frame measuring about 3" wide by 4" deep, while the interior bars are embedded in the masonry wall.

Other Features

A stall partition extends between the east-west partition and the north wall. The flush-panel door



Figure C385. Room 20 - Interior slab door between vestibule and restroom.

of the stall measures 2'-0" by about 6'-4" tall by 1¾" thick. The door is hung with two 4"-tall butt hinges and has a pull handle on each side. The inside face also has a sliding barrel bolt. A solid panel adjacent to the stall door measures about 1'-0" wide. The framing of the stall partition is made up of nominal 2x4 construction.

A paper towel dispenser and two soap dispensers are mounted on the south wall near the sink.

A round opening above the window measures about 10" in diameter and has capped wiring that once served an exhaust fan. The fan and housing have been removed.

Finishes

The walls are limewashed, while the ceiling is painted white. The interior door, louvered panels, and stall partition are painted beige.

Mechanical Systems

The room has no evidence of any mechanical systems.

Electrical System

A recessed receptacle is in the north-south partition wall, directly opposite the exterior doorway.

As mentioned in the *Other Features* section, wiring for a previous exhaust fan is capped above the window.

Plumbing System

The room has a toilet and urinal on the north wall and a wall-mounted sink on the south wall. The fixtures are fed by plastic supply piping that enters through the window opening and runs along the top edge of the tile baseboard.

Fire Protection and Life Safety

A smoke detector is mounted on the north-south partition wall.



Figure C386. Room 20 - Window opening on west wall. Note water pipe passing through window and the former exhaust fan vent above.



Figure C387. Room 20 - Toilet and stall partition.



Figure C388. Room 20 - Sink on south wall.

Security System
There is no evidence of any security system elements.

Issues of Condition
Applied limewash coatings have failed on all four walls. Peeling paint is typical at the ceiling.

The exterior door jamb exhibits rotting, particularly at the base and threshold. The exterior door being removed makes the vestibule area more susceptible to water and storm damage.

The interior door between the bathroom and vestibule has veneer damage at the base.

The stall partition door has veneer damage along the latch side.



Figure C389. Room 20 - Deterioration of exterior door frame and threshold.

Room 21 – Women's Restroom
Room 21 is identified in the 1836 plan as the royal and colonial treasury and currently serves as the women's public restroom. The room measures 13'-2" north-south at its widest point by 13'-0" east-west with a floor to ceiling height of 10'-0" tall. Finishes throughout the room appear to date from the mid-twentieth century (*Figs. C390-C397*).

Flooring
The floor is finished with matte-glazed ceramic tile measuring 4" by 8" and laid in a running bond pattern.

Baseboard
Base tiles measuring 8" long by 4" tall are consistent at the perimeter of the room.

Walls and Ceiling
The walls throughout the room are finished with plaster. A partition wall runs north-south about 3'-6" from the east wall, creating a vestibule. A second wall placed perpendicularly to the first encloses a janitor's closet within the vestibule. Above the partitions are two louvered wood transom panels, one above each of the interior bathroom and janitor's closet doors.

The underside of a concrete roof slab is exposed on the ceiling. Two concrete beams run east-west across the ceiling.

Doorways
The room has two doorways, one on the east wall and one at the north end of the north-south partition. The doorway on the east wall exits to the courtyard and currently has no door hanging in the opening. The opening measures 3'-1" wide by 6'-7" tall. A typical diagonal securing bar is mounted on the north jamb. The door jamb measures about 3" wide on the exterior and has a 2" drip cap. The upper hinge pintle is missing.

The interior doorway in the north-south wall holds a modern flush-panel door measuring 2'-7" wide by 6'-8" tall by 1¾" thick and is hung with two 4"-tall butt hinges. A pull handle is on the exterior face and a push plate is on the interior. The door jamb doubles as the door casing and measures 1½" wide.

The closet doorway in the east-west partition of the vestibule holds a pair of single-panel louvered doors each measuring 1'-7" wide by 6'-8" tall. The doors are hung with two 3"-tall butt hinges and are secured with a padlock hasp at the top.

Windows
The room has one window on the west wall measuring 1'-1" wide by 1'-6" tall. The opening holds four 1" vertical square bars spaced at 3" on center at the exterior face of the opening. The bars are set in a wood frame measuring about 4" deep. The masonry opening at the interior measures 1'-7" wide by 1'-6 ½" tall.

Closet
The interior of the janitor's closet has a plywood shelf across the back wall. Two hose bibs are at the center of the back wall. A capped drain line in the wall below suggests a janitor's sink was once present. The flooring and tile baseboard extends into the closet.

Other Features
Two stall partitions lie between the north-south partition and the west wall. Each stall has a flush-panel door measuring 2'-0" by about 6'-4" tall by 1¾" thick. The doors are each hung with two 4"-tall butt hinges and have a pull handle and sliding barrel bolt on the inside face. The framing of the stall partition is made up of nominal 2x4 construction and has flat solid panels between the stall doors.

A paper towel and soap dispensers are mounted on the north wall near the sink.

A round opening above the window measures about 10" in diameter and has capped wiring that once served an exhaust fan. The fan and housing have been removed.

Finishes
The walls are limewashed, while the ceiling is painted white. The interior door, louvered panels, and stall partition are painted beige.



Figure C390. Room 21 - View looking west from just inside the exterior doorway.



Figure C391. Room 21 - View looking southwest from just inside the exterior doorway.

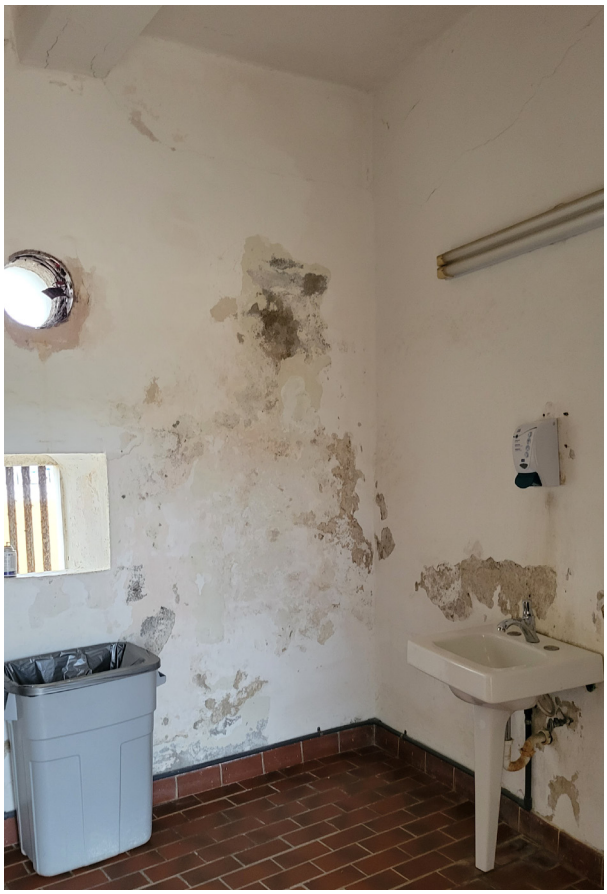


Figure C392. Room 21 - View looking northwest.



Figure C393. Room 21 - View looking southeast.

Mechanical Systems

The room has no evidence of any mechanical systems.

Electrical System

Surface-mounted receptacle is on the east wall of the closet. A recessed switch in the north-south partition controls a linear fluorescent fixture on the north wall above the sink.

As mentioned in the *Other Features* section, wiring for a previous exhaust fan is capped above the window.

Plumbing System

The room has two toilets on the south wall and a pedestal sink on the south wall. The fixtures are fed by plastic supply piping that enters through the window opening and runs along the top edge of the tile baseboard.

Fire Protection and Life Safety System

A smoke detector is mounted on the ceiling. A relay box for the fire alarm system is mounted on the west wall of the vestibule as well as near the detector.

Security System

There is no evidence of any security system elements.

Issues of Condition

Applied limewash coatings have failed on all four walls. Cracking and potential incipient spalls were observed at the ceiling.

The exterior door jamb exhibits rotting, particularly at the base and threshold. The exterior door being removed makes the vestibule area more susceptible to water and storm damage.



Figure C394. Room 21 - View looking south.



Figure C395. Room 21 - Concrete slab ceiling and concrete beams. Note smoke detector and relay.

The interior door between the bathroom and vestibule has veneer damage at the base. The louvered doors of the janitor's closet bind at the center and cannot be fully closed.



Figure C396. Room 21 - Window opening on west wall.



Figure C397. Room 21 - Interior of closet on south end of vestibule.

Water Battery

The water battery closes the north end of the courtyard and contains the powder magazine and a small cell at the east end (*Fig. C398*).

Room 25 – Powder Magazine

Room 25 is located beneath the gundeck of the water battery and is accessed from the north end of the courtyard. The Room measures about 21'-2" north-south by 21'-8" east west and has a floor-to-ceiling height of 5'-6" at its tallest (*Figs. C399-C407*).

Flooring

Tongue-and-groove wood flooring measuring 11½" wide is consistent throughout the room and runs north south.

Walls and Ceiling

Exposed masonry is typical at the walls and ceiling. The ceiling consists of a grid of nine brick groin

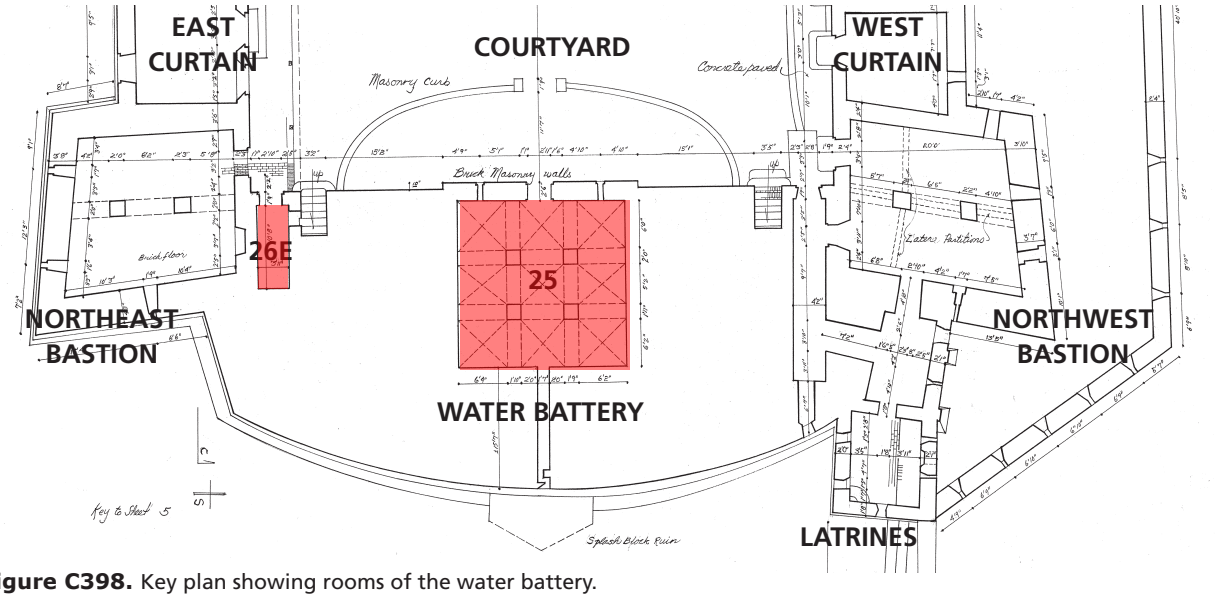


Figure C398. Key plan showing rooms of the water battery.

vaults supported by four 1'-10" by 1'-10" square brick piers at the center of the room.

The center vault at the south end of the room is separated from the rest of the magazine by metal bar partitions that allow limited access by park visitors. The bars measure ½" in diameter and are spaced at 6" on center. A gate measuring 3'-0" wide is centered in the eastern partition.

The partitions are held in place by friction, using threaded rods at the top and bottom that have metal pads at the ends where they touch the walls, floor, and ceiling.

Doorways

The room has one doorway centered on the south wall that exits to the courtyard. The doorway holds an arched metal glad door measuring 3'-6" wide by 5'-6 ½" tall by 2" thick. The inside face of the door has vertical tongue-and-groove boards measuring 6" wide. The door is hung with three pintle hinges with straps measuring 3'-0" long. A horizontal securing bar measuring 5'-0" long by 2 ½" wide locks the door in a closed position. The inner masonry opening measures 3'-1" wide by 5'-1" tall. A pair of hinge pintles is on the interior face of the opening, suggesting that the opening once had a pair of doors at the interior face of the doorway.

Windows

The room has no windows, but does have three ventilation openings, two on the south wall and one on the north. The openings on the south wall each measure 6" wide by 9" tall and the west opening has a hinged metal door on the exterior measuring 10 ½" wide by 1'-0" tall. The door is hung with two pintle hinges with straps measuring 10 ¼" long. A hasp measuring 8 ¼" long secures



Figure C399. Room 25 - View looking northwest.



Figure C400. Room 25 - View looking south.



Figure C401. Room 25 - View looking east.

the door. A similar door is missing on the eastern opening. Within the ventilation openings, a masonry partition obscures direct access to the magazine, instead providing indirect ventilation around the partition.

The north vent measures 1'-7" wide by about 3'-0" tall and opens to a barrel-vaulted ventilation shaft that extends about 15'-7" north-south into the north masonry wall of the water battery. At the end of the ventilation shaft, two masonry protrusions create an indirect connection to the exterior to provide airflow.

Finishes

The walls and ceiling are limewashed. The flooring is unfinished. The exterior door is painted green.



Figure C402. Room 25 - Interior face of exterior door.



Figure C403. Room 25 - Exterior face of exterior door.



Figure C404. Room 25 - Hinge pintles on western jamb. Eastern jamb is similar.



Figure C405. Room 25 - View of typical south ventilation hole from interior.

Mechanical System
There is no evidence of any mechanical systems.

Electrical System
There is no evidence of any electrical system.

Plumbing System
There is no evidence of any plumbing system.



Figure C406. Room 25 - View of typical south ventilation hole from exterior.

Fire Protection and Life Safety System
There is no evidence of any fire protection or life safety systems.

Security System
A motion detector is mounted on the north side of the northeast support pier.

Issues of Condition
The metal shutter on the western vent opening is missing.

Room 26E – Cell for 1 Person
Room 26E is one of five cells in the fort designated as a cell for one person. The 1836 plan uses the same number for all cells of this type. Rooms 26A through 26D are described in the *Room-by-Room Description – South Curtain* section. Room 26E is accessed from the south wall of the water battery at its intersection with the northeast bastion and measures 10'-8" north-south by 3'-11" east-west. The floor-to-ceiling height measures 6'-1" tall at its highest point (*Figs. C407-C411*).

Flooring
A dirt floor is consistent throughout the room.



Figure C407. Room 25 - North ventilation shaft, looking north.

Walls and Ceiling

The walls and ceiling are exposed masonry. The ceiling is a brick barrel vault.

Doorways

The room has one doorway on the south wall that exits to the courtyard. The doorway holds an arched wood door measuring 2'-11 ½" wide by 5'-9½" tall by 1 ½" thick and has vertical boards on the exterior measuring 8 ½" wide. The interior face has horizontal beaded boards measuring 6" wide. The door is hung with two pintle hinges with 2'-0" long straps. A padlock hasp measures 1'-6" long. At the center of the door is an iron vent measuring 8 ¾" wide by 10" tall. The overall masonry opening measures 2'-8" wide by 5'-8 ½" tall.

Windows

The room has one window on the west wall that looks onto the east stair to the gundeck of the water battery. The opening measures 1'-11" wide by 1'-1¾" tall and has three horizontal 1"-diameter round bars. The wood jamb measures 3½" deep.



Figure C409. Room 26E - View looking south.



Figure C408. Room 26E - View looking north.



Figure C410. Room 26E - Exterior face of door.



Figure C411. Room 26E - Window opening on west wall.

Finishes
The frame of the window is painted white, while the jamb and exterior door are painted green. The masonry walls are unfinished.

Mechanical System
There is no evidence of any mechanical systems.

Electrical System
There is no evidence of any electrical system.

Plumbing System
There is no evidence of any plumbing system.

Fire Protection and Life Safety System
There is no evidence of any fire protection or life safety systems.

Security System
There is no evidence of any security system elements.

Issues of Condition
No apparent condition issues were observed.

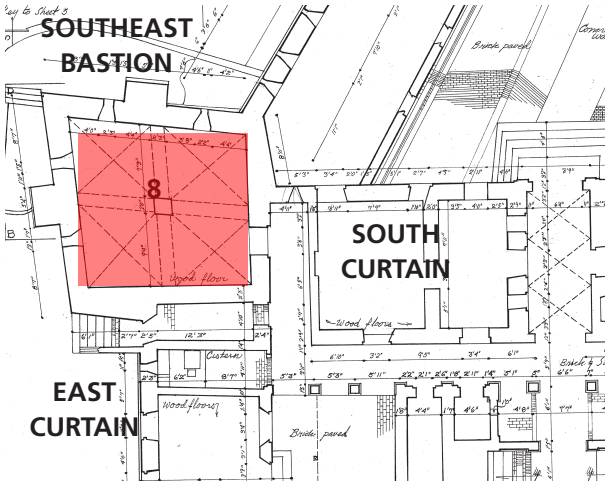


Figure C412. Key plan showing rooms of the southeast bastion.

Southeast Bastion and Casemate
The southeast bastion lies at the intersection of the south and east curtains and holds a single room within the casemate (*Fig. C412*).

Room 8 – Collection Storage
Room 8 is in the casemate of the southeast bastion and is identified as a barracks for twelve men in the 1836 plan. The room currently serves as museum collection storage and measures about 19’-10” north-south by 23’-0” east-west at its widest. The floor-to-ceiling height measures 8’-2” tall (*Figs. C413-C418*).

Flooring
Modern tongue-and-groove wood flooring measures about 10¾” wide and runs north-south throughout the room.

Walls and Ceiling
The walls and ceiling are plastered and limewashed. The ceiling consists of four vaults separated by rounded arches. A 2’-0”-square masonry post supports the arches at the center of the room. The majority of the walls are obscured by storage cabinets.

Doorways
The room has one doorway on the west wall that holds an arched wood door measuring 3'-11" wide by 6'-11" tall. The inside face of the door has horizontal beaded boards measuring 8" to 10" wide and the exterior face has flush boards of similar sizes. The door is hung with two pintle hinges with straps measuring 2'-9½" long. The door is secured with a diagonal bar measuring 5'-9" long on the exterior.

Windows
The room has five window openings, two on each of the south and east walls and one on the north wall. The openings have been concealed on the interior but are visible on the exterior and are punched masonry openings that once held vertical metal bars similar to those found at other casemates. The southern window on the east elevation is used as an entry point for buildings systems.

Finishes
The flooring has a clear finish. The walls and ceiling are painted or limewashed. A section of decorative painting remains exposed on the north wall near the doorway.

Mechanical Systems

An indoor cassette unit is mounted to dimensional framing on the east wall, just above the southern window opening. Refrigerant lines pass through the infilled opening to the outdoor unit. The unit appears to be relatively new.

Electrical System

The room has three wall-mounted linear fluorescent fixtures that are controlled by a surface-mounted switch south of the doorway.

Switches and receptacles are connected by plastic conduit.

Plumbing System

There is no evidence of any plumbing system.

Fire Protection and Life Safety System

The room has four sprinkler heads, one in each vault. The sprinkler pipes are suspended from the ceiling. A fire alarm strobe is mounted just north of the doorway. Two smoke detectors are mounted on the ceiling.



Figure C415. Room 8 - View looking west toward doorway.



Figure C413. Room 8 - View looking south.



Figure C414. Room 8 - View looking east.



Figure C416. Room 8 - Sprinkler piping and deterioration at ceiling.



Figure C417. Typical deterioration of plaster ceiling.

Security System

A motion detector is on the west wall north of the doorway.

Issues of Condition

Moisture damage is typical across the entirety of the ceiling. The finish plaster coat is bubbling and beginning to spall. Cracking is common at the vaults.



Figure C418. Room 8 - Decorative painting on north wall.

Northeast Bastion and Casemate

The southeast bastion lies at the intersection of the east curtain and the water battery. The casemate contains one room. The bastion has one room at the upper level accessed from the gundecks (*Fig. C419*).

Room 1 – Arsenal

The Arsenal is located in the casemate of the northeast bastion and is a vaulted space measuring about 18'-9" north-south by 21'-6" east-west. At the highest point of the vaulting, the floor-to-ceiling height measures 7'-5" tall (*Figs. C420-C429*).

Flooring

Mortared pavers laid in a running bond pattern run north-south. The pavers vary in size but generally measure about 4½" wide by 9" long. The colors range from golden brown to reddish orange, to brownish red.

Walls and Ceilings

The walls and ceiling are plastered and limewashed. The ceiling is a barrel vault running east-west with two supports at the midspan connected by arches. Anchor hooks are centered between the arches in round indentations measuring 1'-1" in diameter.

A niche on the west wall measures 3'-10¼" wide by 3'-10" tall by about 16" deep and lies 2'-9" above floor level.

A number of holes have been created on the north wall and at the ceiling vault above. The holes

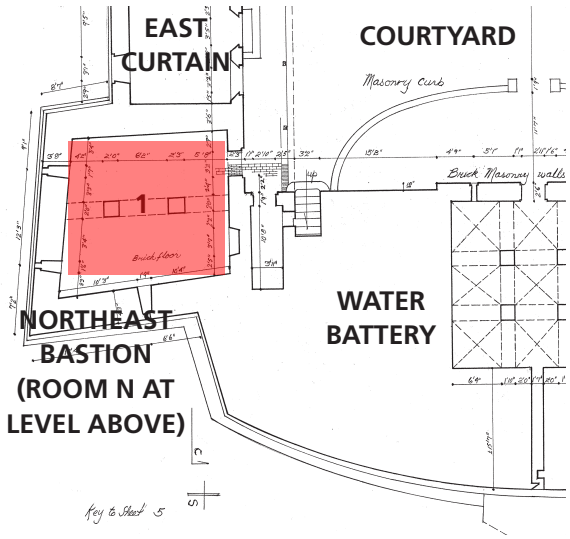


Figure C419. Key plan of northeast bastion.

appear to have been purposely made to view wall composition.

A metal bar partition at the southwest corner of the space prevents visitors from accessing the entire space. The bars measure ½" in diameter and are spaced at 6" on center. The partition measures 5'-8½" north-south by 3'-10" east west and has a hinged gate for staff access measuring 2'-6" wide and extending to the underside of the ceiling vault.

Doorways

The room has an exterior doorway at the south end of the west wall that exits to the officer's gallery. The doorway holds a metal-clad arched board door measuring 3'-9" wide by 6'-6" tall by 2¼" thick. The door is hung with two pintle hinges with straps measuring 3'-7" long by 3 ½" wide. A Y-shaped padlock hasp measures 2'-5" long by 1'-2" at its tallest. The masonry opening measures 3'-0" wide by 5'-8½" tall. A 5"-tall stuccoed threshold spans the doorway.

Windows

The room has three windows, one on the north wall and two on the east wall. The north window measures 10" wide by 1'-1" tall with an arched masonry opening measuring 1'-0" wide by 1'-6"



Figure C420. Room 1 - View looking northwest.



Figure C421. Room 1 - View looking south.



Figure C422. Room 1 - View looking southeast.



Figure C423. Room 1 - View looking southwest.



Figure C424. Room 1 - Floor paving.



Figure C425. Room 1 - Niche on west wall.



Figure C426. Room 1 - Exterior face of door.

tall. The windows on the east wall are identical to each other and measure 1'-1" wide by 1'-5" tall with arched masonry openings measuring 1'-9 ½" wide by 1'-7" tall. Each has a vertical 1" square iron bar centered in the opening at the exterior face.

Finishes

The walls and ceiling are limewashed. The exterior door is painted green, and the door hardware is painted black.

Mechanical System

There is no evidence of any mechanical, electrical, or plumbing systems.

Electrical System

There is no evidence of any electrical system.

Pluming System

There is no evidence of any plumbing system.



Figure C427. Room 1 - North window opening.



Figure C428. Room 1 - Typical east window opening.



Figure C429. Room 1 - Motion sensor on western support.

Fire Protection and Life Safety System
A smoke detector is mounted on the ceiling in the southwest corner.

Security System
A motion detector is mounted on the east side of the western ceiling support.

Issues of Condition
No apparent condition issues were observed.

Room N – Common Room
At the second floor, the numbering system from the 1836 plan used by Olsen identifies areas, including roofs, with letters rather than numbers. Room N is located directly above Room 1 in plan.

Room N is a room at the upper level of the northeast bastion that is identified a common room in the 1836 plan. The room is accessed from stairs ascending form the gundeck of the water battery to the west or by descending from the gundeck of the east curtain. The space measures about 21'-5" east-west by 21'-3" north-south and has a floor-to-ceiling height of about 10'-0" at the highest point (*Figs. C430-C442*).

Flooring
A concrete slab is consistent throughout the room.



Figure C430. Room N - View looking northwest.



Figure C431. Room N - View looking east.



Figure C432. Room N - View looking southeast.

Walls and Ceiling
The walls are finished with plaster, while roof framing is exposed at the ceiling. Beaded ceiling joists span east-west, parallel to the ridge of the gable roof. A beaded beam runs north-south at the midspan of the joists. The structural system is fully described in the Structural Investigation Report in the Appendix.

Doorways
The room has two doorways, one on each of the south and west walls. The south door accesses the gundeck of the east curtain and is an arched masonry opening measuring 4'-2½" wide by 6'-7" tall. The opening currently holds no door; however, a pair of hinge pintles remains on the



Figure C433. Room N - View looking southwest.



Figure C434. Room N - Center connection of ceiling beam.



Figure C436. Room N - Steps at south doorway.

exterior. The larger masonry opening measures 3'-11 ¼" wide by 6'-3" tall. Three stuccoed steps at the threshold of the opening have treads measuring 9½", 10", and 10½" deep from top to bottom and risers measuring 4 ½", 6 ½" and 6 ½" from top to bottom.

The west doorway is an arched opening similar to the south, but measures 3'-11¼" wide by 7'-9" tall and has two pintles on each side on the exterior side of the opening. The larger masonry opening measures 4'-2 ¾" wide by 8'-4" tall. A set of two stuccoed steps are at the threshold of the opening have treads measuring 1'-2" and 1'-1" from top to bottom and risers measuring 6", 6½", and 6½" from top to bottom.

Windows

The room has six window openings, two on each of the north and east walls and a single opening on each of the south and west walls.



Figure C435. Room N - South doorway as viewed from the east curtain gundeck.

The north windows each measure 3'-5 ½" wide by 3'-11" tall and each hold a pair of wood solid-panel shutters with 6"-wide horizontal beaded boards at the interior. Each leaf is hung with two pintle hinges with 1'-5" long straps. Each pair of shutters has a ½"-diameter bar that holds the shutters apart in an open position. A pair of iron hooks at the base of the shutters secures them when closed.

The northern window on the east wall has the same dimensions as the north windows, but holds a pair of solid-panel wood shutters with 6"-wide



Figure C437. Room N - West doorway and steps as viewed from the water battery.

flush boards on the interior face. The shutters hung with two pintle hinges and have 1'-5" long straps. The shutters are too wide for the opening and overlap at the center. The shutters lack hooks and are tied shut.

The southern window on the east elevation measures 3'-6 ¼" wide by 3'-10 ½" tall and holds no shutters. Two hinge pintles remain on each side of the opening on the exterior.

The south window opening measures 3'-5 ½" wide by 3'-11" tall and holds a pair of wood solid-panel shutters with 6"-wide horizontal beaded boards at the interior. Flush vertical boards on the exterior measure 10" wide. Each leaf is hung with two pintle hinges with 1'-5" long straps. Two iron hooks secure the door at the sill when closed.

The west window opening measures 3'-6" wide by 4'-2 ½" tall and holds a pair of wood solid-panel shutters with 6"-wide horizontal beaded boards at the interior. Each leaf is hung with two pintle hinges with 1'-5" long straps. A ½"-diameter bar holds the shutters apart in an open position as found on the north windows. A pair of iron hooks at the base of the shutters secures them when closed.

Other Features

Cannon embrasures are centered beneath each of the two north window openings. The openings each measure 1'-1" wide by 2'-0" tall and hold a pair of inward-swinging steel doors each measuring 1-1" wide by 2'-0¼" tall with a 1" wide astragal. The doors are each hung with two 8" strap hinges and have a 10" long pivoting lock bar. A wood header above each opening measures 3½" deep.

Finishes

The walls are limewashed and the ceiling is painted white.

Mechanical System

There is no evidence of any mechanical systems.

Electrical System

There is no evidence of any electrical system.

Plumbing System

There is no evidence of any plumbing system.

Fire Protection and Life Safety System

There is no evidence of any fire protection or life safety systems.

Security System

There is no evidence of any security system elements.

Issues of Condition

The southern window opening on the east wall is missing shutters. The northern opening, also on



Figure C438. Room N - North window openings, shutters, and cannon embrasures as viewed from the exterior.



Figure C439. Room N - Northern window opening on east wall. Note that shutters do not fit the opening.



Figure C440. Room N - South window opening.

the east wall has shutters of different construction than other windows and the shutters do not fit the opening.



Figure C441. Room N - West window opening and shutters as viewed from the exterior.



Figure C442. Room N - Typical cannon embrasure on north wall.

Northwest Bastion

Rooms 22 and 23 – Bread and Water Cells

Rooms 22 and 23 are contained within the casemate of the northwest bastion (*Fig. C443*). The two northern chambers are identified as the bread and water cells. The space was later converted to bathrooms, since removed, and currently consists of three chambers separated by arched vaulting and partition walls. The space measures 20'-0" by 19'-10" overall and has a floor-to-ceiling height of 5'-10 tall at the lowest point and 7'-10" tall at the highest point (*Figs. C444-C457*).

Flooring

A concrete slab is consistent in all but the southeast quadrant of the space. The slab in the two western

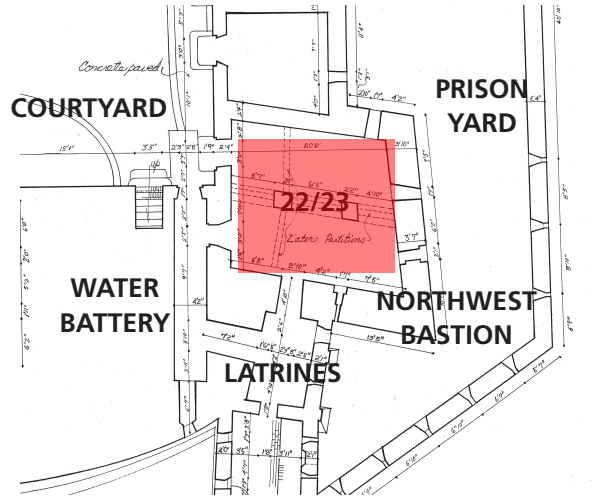


Figure C443. Key plan of northwest bastion.

quadrants is of notably earlier vintage. The southeast quadrant has mortared pavers measuring about 4½" by 9" laid in a running bond pattern. The pavers are covered in a partial parge coat.

Walls and Ceiling

The walls and ceiling both have a plaster finish. The ceiling is a barrel vault with high point running east west. Two arched openings lie in the wall beneath the centerline of the vault. The eastern arch measures 5'-7" wide, while the west measures 6'-5" wide. The remainder of the wall is solid at the western end. A partition wall extends perpendicular between the northeast and northwest quadrants of the room.

Doorways

The room has three doorways, one on the east wall of the southeast quadrant, one on the east wall of the northeast quadrant, and one on the north wall of the northwest quadrant.

The doorway in the southeast quadrant is an arched masonry opening measuring 4'-0" wide by 7'-0" tall and has two hinge pintles on the exterior.

The doorway in the northeast quadrant accesses the hallway of Room 24 and is a masonry opening measuring 3'-1" wide by 7'-1" tall. Two steps at the threshold of the opening have risers measuring 4" and 9½" tall starting from the bottom and a tread measuring about 1'-0" deep.

The doorway in the northwest quadrant accesses the southern portion of Room 24 and is a masonry opening measuring 2'-9 ½" wide by 6'-7" tall. The steps within the doorway measure 2'-6" wide and have risers measuring 11" and 9" tall, starting at the bottom.

Windows

The room has four window openings, one on the south wall, two on the west wall, and one on the north wall. All but the north opening are of similar



Figure C446. Room 22/23 - View looking northeast.



Figure C444. Room 22/23 - View looking north into northeast quadrant.



Figure C447. Room 22/23 - Northwest quadrant, view looking northwest.



Figure C445. Room 22/23 - View looking west. Archway to northwest quadrant at right.



Figure C448. Room 22/23 - Northwest quadrant, view looking southeast.



Figure C449. Room 22/23 - Flooring transition in the southeast quadrant.

design and have hinged solid-panel wood shutters on the interior.

The south window opening measures 1'-2" wide by 1'-5½" tall and has 1¼" horizontal square bars spaced at 2½" on center at the interior face of the opening. At the exterior, four similar bars are oriented vertically. The interior shutter measures 1'-3" wide by 1'-7" tall by 1 ½" thick. The door Is hung with two 11½" long strap hinges and are secured with a hook. The masonry opening measures 1'-7½" wide by 1'-11" tall. The wood jamb measures about 3" wide.

The southern window on the west wall measures 1'-3¼" wide by 1'-6¼" tall. The bars and interior shutter are similar to the south window. The masonry opening measures 1'-9" wide by 2'-0" tall.

The northern window on the west wall measures 1'-1¾" wide by 1'-6¾" tall. The bars and interior shutter are similar to the south window. The masonry opening measures 1'-8" wide by 2'-1¼" tall.

The window on the north wall measures 7 ½" wide by 1'-5" tall and has one vertical 1" square bar at the center. The interior masonry opening measures 1'-6½" wide by 1'-7½" tall.

Finishes

The walls and ceiling are limewashed. The frames and shutters of the window openings are painted white.



Figure C451. Room 22/23 -Southeast doorway as viewed from courtyard.



Figure C450. Room 22/23 -Northeast doorway as viewed from Room 24A.



Figure C452. Room 22/23 -North doorway as viewed from the Room 24B side.

Mechanical Systems
There is no evidence of any mechanical systems.

Electrical System
There is no evidence of any electrical system.

Plumbing System
Remnants of a previous plumbing system remain on the north wall of the northeast quadrant and at the north wall of the southwest quadrant.



Figure C453. Room 22/23 - Typical window opening with shutter.



Figure C454. Room 22/23 - Interior face of window shutter.

Fire Protection and Life Safety System
There is no evidence of any fire protection or life safety systems.

Security System
There is no evidence of any security system elements.

Issues of Condition
Applied limewash coatings have failed on the majority of the walls.

The embedded abandoned pipes are rusting and have caused the plaster around them to spall.



Figure C455. Room 22/23 - North window opening.



Figure C456. Room 22/23 - Abandoned piping in northeast quadrant.



Figure C457. Room 22/23 - Abandoned piping in southwestern quadrant.

Southwest Bastion and Casemate

Room 13 – Barracks for 9 Men

Room 13 is in the casemate of the southwest bastion and is identified as a barracks for nine men in the 1836 plan. The room is interpreted as a barracks and measures about 15'-0" north-south by 21'-11" east-west at its widest. The floor-to-ceiling height measures 7'-5" tall (*Figs. C458-C465*).

Flooring

Poured-in-place concrete flooring is consistent throughout the room.

Walls and Ceiling

The walls and ceiling are plastered and limewashed. The ceiling consists of four vaults separated by rounded arches. A 2'-0" square masonry post supports the arches at the center of the room.

The northeast vault is separated from the rest of the room by metal bar partitions that allow limited access by park visitors. The bars measure ½" in diameter and are spaced at 6" on center. A gate measuring 3'-0" wide by 6'-8½" tall is centered in the western partition.

The partitions are held in place by friction, using threaded rods at the top and bottom that have metal pads at the ends where they touch the walls, floor, and ceiling.



Figure C458. Key plan of southwest bastion.

Doorways

The room has one doorway on the east wall that exits to the hallway between the southwest bastion and the south curtain. The doorway holds an arched wood door measuring 4'-1" wide by 7'-1" tall by 2" thick and has horizontal beaded boards on the interior with widths varying from 11", 11 ½", and 13" wide. The door is hung with two pintle hinges with 2'-0" straps and a 1'-11" long padlock hasp. An opening in the center of the door measures 8 ¼" square and has a hinged wood door on the exterior that sits flush with the face of the door when closed. The inside face of the opening has a grid of six ¼" round bars. A step at the threshold measures 6 ½" tall.

Windows

The room has four window openings, two on the south wall and one on each of the east and west walls. Each window is of similar design.

The east window measures 1'-11" wide by 1'-6" tall and has four 1" square horizontal bars spaced at 4½" on center and three bars of the same dimension spaced at 6" on center. The bars have an iron knot detail that ties each intersection. The wood jambs measure 5" deep and are heavily deteriorated on all four sides. The masonry



Figure C459. Room 13 - View looking northwest.



Figure C460. Room 13 - View looking east.



Figure C461. Room 13 - View looking southeast.



Figure C462. Room 13 - View looking southwest.



Figure C463. Room 13 - Interior face of door as viewed from exterior.

opening measures 2'-3" wide by 1'-11¼" tall and has a 1½" thick wood lintel with square holes cut in the underside.

The eastern window on the south wall is similar to the east window but measures 1'-10 ½" wide by 2'-0" tall and shares the same bar and jamb design but has five horizontal bars. The masonry opening measures 2'-3" wide by 2'-2" tall and has a wood lintel matching the east window.

The western window on the south wall and the window on the west wall each match the size and design of the eastern window on the south wall.

Finishes
The walls and ceiling are limewashed. The wood frames and lintels of the windows are painted white. The exterior door is painted green.



Figure C464. Room 13 - East window opening. Note deteriorated frame. Also note fire alarm relays in opening and motion detector mounted near the floor.



Figure C465. Room 13 - Typical example of south and west window opening.

Mechanical System
There is no evidence of any mechanical systems.

Electrical System
There is no evidence of any electrical system.

Plumbing System
There is no evidence of any plumbing system.

Fire Protection and Life Safety System
Two relays for the fire alarm system are mounted in the east window opening.

Security System
A motion detector is on the east wall below the window.

Issues of Condition
Applied limewash coatings are failing at the lower portion of the exterior walls.

Multiple cracks extend through the vaulted ceiling and have crack monitors installed. Diagonal cracking is also present at the headers of the windows.

The wood jambs of the windows are deteriorated, particularly at the east opening.

Room 33 - Dungeon
The dungeon lies at the lowest level of the southwest bastion and consists of two vaulted spaces. The dungeon is accessed via a stair descending from the hallway between the southwest bastion and the south curtain. The main chamber of the dungeon measures 20'-10" east-west by 14'-6" north south and has a floor-to-ceiling height of 5'-6" tall (*Figs. C466-473*).

A small chamber connects to the main chamber at the west end of the north wall and measures 10'-5"



Figure C466. Room 33 - View looking north. Doorway to small chamber at center.



Figure C467. Room 33 - View looking northeast.



Figure C468. Room 33 - View looking southwest.



Figure C469. Room 33 - View looking north into small chamber.

east-west at its widest by 6'-7" north-south. The floor-to-ceiling height measures 5'-8" tall.

Flooring

A concrete floor is continuous throughout the dungeon. The surface is uneven and may be a parge coat applied over another flooring.

Walls and Ceiling

The walls and ceiling are finished with plaster. The ceiling consists of four vaults separated by rounded arches. A 2'-5" square masonry post supports the arches at the center of the room. The ceiling of the small chamber has a single groin vault.

Doorways

The room has two doorways, one on each of the north and east walls. A floor hatch accesses the stairs descending to the dungeon.

The doorway on the north wall accesses the small chamber and 2'-5 ½" wide by 5'-2 ½" and holds no door. Two hinge pintles remain on the west side of the opening and a ring for accepting a padlock hasp is on the east side.



Figure C470. Room 33 - East doorway.

The doorway on the east wall accesses the landing at the base of the dungeon stair and holds an arched wood door measuring 2'-5" wide by 4'-10½" tall by 2" thick. The inside of the door is made up of horizontal flush boards, while the exterior has vertical flush boards, both are of widths varying from 6" to 10" wide. The door is hung with two pintle hinges with 2'-2" long straps. A 1'-6" long padlock hasp secures the door. A diagonal security bar measuring 2'-11" long provides additional security. The doorway has a window opening in the center measuring 7" wide by 5" tall and has a grid of three vertical square bars and three horizontal straps on the exterior face. The masonry arch of the doorway measures 2'-0" wide by 4'-11" tall and has a 2"-tall step at the threshold.

The floor hatch at the top of the stair measures 2'-6" wide by 4'-11 ½" long by 2" thick and is comprised of boards widths varying from 5" to 7" wide. The exterior boards have chamfered edges, while the interior boards are beaded. The door is hung with two pintle hinges with straps measuring 2'-5" long and is propped open with a 2'-3" hook that pivots from the exterior wall. A triangular loop pull is on the exterior face of the door. The frame around the hatch measures about 4" wide and the opening continues to the far south wall of the hallway. Flush tongue-and-groove boards at the floor extend over the dungeon stairwell and vary from 5" to 7" to 10" in width.

Windows

The dungeon has on window on the east wall of the main chamber measuring 1'-10 ½" wide by 1'-6" tall. A grid of four 1" vertical bars spaced at 4" on center and four horizontal bars spaced at 6" on center span the opening. Two of the vertical bars have rusted through. The masonry opening measures 2'-0½" wide by 2'-6½" tall.

Staircase

A brick stair descending to the dungeon from the arcade of the south curtain measures 2'-6" wide



Figure C471. Room 33 - Exterior face of east doorway.



Figure C472. Room 33 - Hatch accessing dungeon steps.

and has seven 9"-deep treads and eight 8"-tall risers.

Finishes
The walls and ceiling are limewashed.

Mechanical System
There is no evidence of any mechanical systems.

Electrical System
There is no evidence of any electrical system.

Plumbing System
There is no evidence of any plumbing system.

Fire Protection and Life Safety System
There is no evidence of any fire protection or life safety systems.

Security System
There is no evidence of any security system elements.

Issues of Condition
Applied limewash coatings are failing at the lower portion of the exterior walls.



Figure C473. Room 33 - Hatch accessing dungeon steps.

Several bars at the window opening have rusted through.

Latrines

The latrines are located north of the northeast bastion and extend to the far northern point of the fort (*Fig. C474*).

Room 24 – Latrines

Room 24 consists of three spaces associated with the latrines, including a hallway connecting to the courtyard to the south (Room 24A), a southern latrine connected to Room 22/23 (Room 24B), and northern latrine (Room 24C) (*Figs. C475-C488*).

The hallway (Room 24A) measures 4'-0" east-west by about 19'-3" north-south. The floor to ceiling height is about 8'-6" tall.

The southern latrine (Room 24B) measures about 11'-6 north-south by 6'-5" east west and is connected to the hallway to the east by a 7'-2" long by 4'-0" wide passage. The floor to ceiling height measures about 8'-6"

The northern latrine (Room 24C) measures 10'-11" north-south by 9'-6" east-west and has a floor-to-ceiling height of 7'-10" tall at the low end and 9'-10" tall at the high end.

Flooring
The flooring in Room 24A consists of a border of 4½" by 9" pavers along the two side walls and a poured concrete section at the center. A 9 ½" wide channel that drains the drainage gutter at the west



Figure C474. Key plan of latrines.

end of the courtyard is covered with segmented concrete panels at the center of the hallway. The same flooring continues into the northeast corner of Room 24B. A raised shelf at the north end of the room measures 2'-1" tall.

The southwest portion of Room 24B appears to have pavers with a partial parge coat. A 6 ½" riser accesses the doorway to Room 22/23 on the south wall.

Room 24C has 4½" by 9" pavers laid north-south in a running bond pattern. The pavers are pinkish brown in color.

Walls and Ceilings

Walls throughout all three portions of Room 24 are finished with plaster. The ceilings in Rooms 24A and 24B are vaulted, while shed roof framing is exposed in Room 24C. The structural system is described in the Structural Investigation Report in *Appendix E*.

Doorways

The room has four doorways, two in Room 24A and two in Room 24B. The south doorway in



Figure C476. Room 24A - View looking south.



Figure C475. Room 24A - View looking north.



Figure C477. Room 24A - Step and window opening at north end.



Figure C478. Room 24B - View looking west from Room 24A.

Room 24A exits to the courtyard and measures 3'-5½" wide by 7'-5" tall and is an arched opening that holds no door. Two hinge pintles remain on the exterior. The doorway on the west wall of Room 24A is described in the *Room 22/23 – Bread and Water Cells* section.

The doorways in Room 24B are on the north and south walls. The doorway on the south wall is described in the *Room 22/23 – Bread and Water Cells* section. The doorway on the north wall is a masonry opening measuring 2'-5 ½" by 8'-9" tall.

Windows

Room 24A has one window on the north wall that is an arched masonry opening measuring 1'-2" wide by 2'-4" tall with three vertical 1" square bars.

Room 24B has two window openings on the west wall. The southern window measures 1'-9 ¾" wide y 1'-9 ½" tall and is missing three vertical bars. The wood jamb measures 4" wide and is heavily deteriorated. The masonry opening around the window measures 2'-5½" wide by 2'-11" tall.

The northern window on the west wall is a masonry opening measuring 2" wide by 2'-10"



Figure C479. Room 24B - View looking south toward doorway to Room 22/23 in the northwest bastion.



Figure C480. Room 24B - View looking northeast. Room 24A is to the right and Room 24C is left of center.



Figure C481. Room 24C - View looking south.



Figure C482. Room 24C - View looking northeast.



Figure C483. Room 24C - View looking northwest.

tall. The masonry opening around the window measures 9½" wide by 2'-8½" tall.

Room 24C has five window openings, two on each of the east and west walls and one on the north wall. The north window opening measures 1'-2¾" wide by 2'-6" tall and has four vertical 1" bars spaced at 3¼" on center. The wood jamb measures 4" wide and the masonry opening measures 1'-7" wide by 2'-8½" tall.

The northern window on the east wall measures 1'-1 ¼" wide by 1'-5 ¾" tall and has three 1" vertical bars spaced at 3 ½" on center. The wood jamb measures 4" wide and the masonry opening measures 1'-8" wide by 1'-8 ½" tall.

The southern window on the east wall measures 1'-0" wide by 1'-6" tall and has three 1" vertical bars spaced at 3 ½" on center. The wood jamb measures 4" wide and the masonry opening measures 1'-8¼" wide by 1'-8½" tall.

The northern window on the west wall measures 2" wide by 1'-9" tall and has a masonry opening measuring 10" wide by 2'-2" tall at the interior. The southern window on the west wall is similar, but measures 2" wide by 2'-4" tall and has a masonry opening measuring 10" wide by 1'-8" tall at the interior.

Other Features

A bench along the west wall of Room 24C measures 1'-8" tall by about 3'-0" deep and has a top surface of the same pavers used on the floor.

A basin in the northeast corner of Room 24C measures 2'-6" square by 2'-0" tall. The concave bowl has a drain at the base that opens to the exterior.



Figure C484. Room 24C - Exposed roof framing.



Figure C485. Room 24C - North window opening.



Figure C486. Room 24C - basin in northeast corner.

Finishes
The walls and ceilings are limewashed. Vestiges of red paint are common in Room 24A, and vestiges of green paint are found on the east wall of Room 24B.

Mechanical System
There is no evidence of any mechanical systems.

Electrical System
There is no evidence of any electrical system.

Plumbing System
There is no evidence of any plumbing system.



Figure C487. Room 24C - Latrine bench along west wall.



Figure C488. Room 24B - Deteriorated wood frame at southwest window opening.

Fire Protection and Life Safety System
There is no evidence of any fire protection or life safety systems.

Security System
There is no evidence of any security system elements.

Issues of Condition
The wood jambs of the window frames exhibit rot, particularly the southern window on the west wall of Room 24B.

Ravelin

Room 27 – Artillery Shed
Room 27 is located along the east wall of the ravelin yard and abuts the south curtain at the north end and the ticketing office at the south end (*Fig. C489*). The space measures about 13'-2" east-west by 34'-7" north-south. A modern partition wall separates the far north end of the room (*Figs. C490-C507*).

Flooring
A poured-in-place concrete slab is consistent throughout the room. A channel cut in the floor slab at the west doorway and along the south wall is intended to direct water from the ravelin yard through the room at out through the west wall.

A 6" tall concrete platform is in the partitioned space at the north end of the room.

Walls and Ceiling
The east wall is exposed masonry, while the remaining walls are stuccoed.

The north wall is constructed of nominal 2x4s and faced with 5¼"-wide by ¾" thick vertical tongue-and-groove boards. A wood louver at the east end

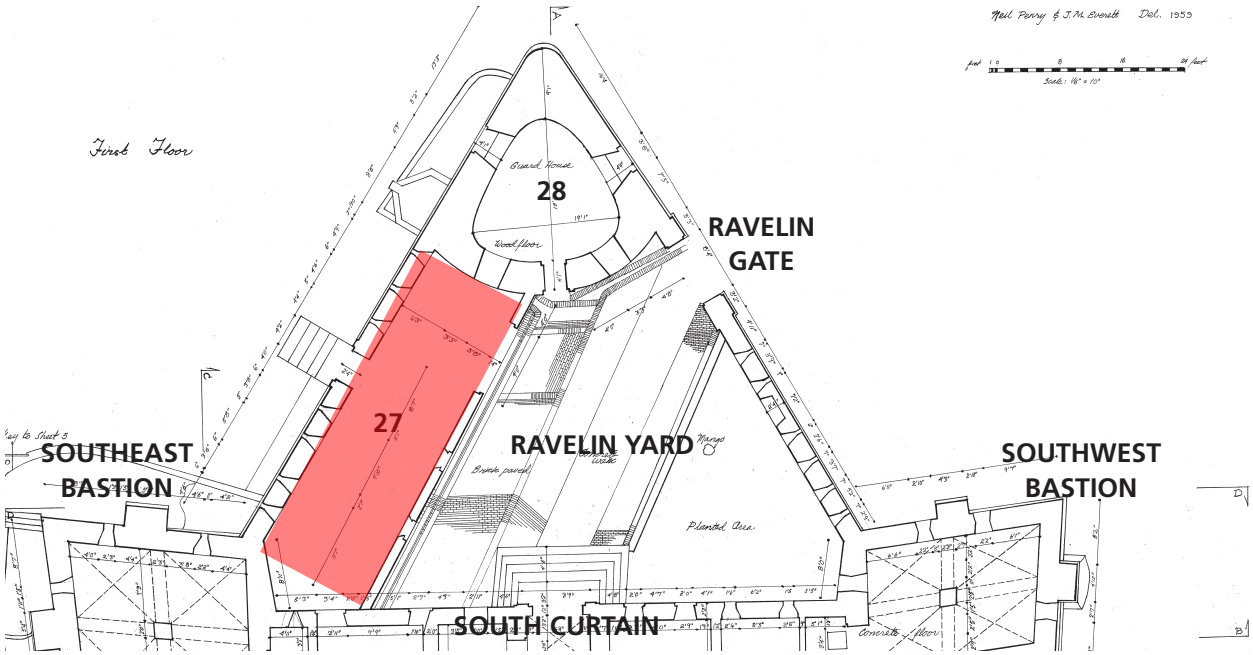


Figure C489. Key plan showing rooms associated with the ravelin.

of the wall measures 3'-2" wide by 1'-0 ½" tall. A 2¼" tall by ¾" thick plank baseboard is continuous at the partition.

Roof framing is exposed at the ceiling and consists of 3" wide by 6" deep beaded joists spaced at about 48" on center. The structural system is described in the Structural Investigation Report found in the Appendix.

Shoring in the partitioned north space supports the north end of the roof structure and is made up of nominal 2x4 members. Signs of water infiltration are typical along the far north wall where the shed roof abuts the south curtain.

Doorways

The room has three doorways, one on each of the east, west, and north walls. The east exterior doorway is near the center of the west wall and measures 3'-9 ¼" wide by 6'-2" tall. The doorway holds a pair of solid-panel shutters measuring 1½" thick. The inside face is made up of horizontal beaded boards measuring 6" wide. Flush



Figure C490. Room 27 - View looking northeast.



Figure C491. Room 27 - View looking southeast.



Figure C492. Room 27 - View looking southwest.



Figure C493. Room 27 - Overview of partitioned space looking north. Note shoring supporting roof deck.



Figure C494. Room 27 - Drainage trough at southwest corner of the room. Ravelin yard out of frame to the right.



Figure C495. Room 27 - Outlet for drainage trough at southeast corner.



Figure C496. Room 27 - Interior face of east doorway.

random-width vertical boards are typical on the exterior. Each leaf is hung with two barn hinges with straps measuring 1'-1¼" long. The door is secured with a sliding foot bolt measuring about 2'-0" long with padlock hasp on the primary leaf. Each leaf has a 6" sliding head bolt. The primary leaf is further secured with an iron hook at the jamb.

The west wall has an exterior doorway measuring 9'-3" wide by 6'-1" tall and holding a pair of board-and-batten doors. The north leaf measures 5'-0" wide by 6'-0" tall, while the south leaf measures 4'-1½" wide by the same height. The boards of the doors are random width and vary between 6½",



Figure C497. Room 27 - Interior face of west doorway.



Figure C498. Room 27 - Pivoting hinges on north leaf.

11 ½", and 9" wide. The battens are organized in a Z pattern and have 10 ¼" top rails and 11 ¾" bottom rails. The lower portion of the top rail and top portion of the bottom rail have applied pieces measuring about 2" wide with a ½"-wide applied edge bead. The diagonals measure 4¼" wide and have applied ½"-wide edge beads. Wood blocking at the center of the doors provides a mounting point for hardware on the exterior. The south leaf is hung with two pintle hinges with straps measuring 1'-11" long. The north leaf is hung with pivoting L-shaped hinges measuring 1'-2" long by 10 ½" tall. The north leaf is secured at top and bottom with 10 ½" long head and foot bolts. A slide bolt with padlock hasp measures 2'-8 ½" long by 4 ¼" wide and secures the door at the center. An iron hook on the south leaf holds the door in position against the exterior wall when opened.

The doorway on the north wall is an interior doorway in the added partition wall. The doorway measures 3'-0" wide by 6'-8" tall and holds a pair of board-and-batten doors. The boards measure 5¼" wide by ¾" thick and the horizontal battens are of the same dimension. The vertical battens at the latch measure 2¼" wide. The doors are each hung with two 3 ½" tall barn hinges. The door is secured with a padlock hasp. A 2 ¼" wide by ¾" mitered plank board casing surrounds the doorway.



Figure C499. Room 27 - Slide bolt on exterior.



Figure C500. Room 27 - North interior door.



Figure C501. Room 27 - Typical window opening on west wall.

Windows

The room has two window openings on the west wall. Each opening measures 2'-0½" wide by 2'-6¾" tall and has six horizontal bars measuring 1" square spaced at 4½" on center and positioned on point. The bars are set in a wood jamb measuring 4 ¾" deep. The overall masonry openings measure 3'-0" wide by 2'-10¾" tall at the inside face of the wall.

Other Features

Seven firing holes are on the east wall, six of which are in the main area, and one is within the partitioned space. Each hole measures about 4" wide by 5" tall and has a widely angled masonry opening typically measuring about 2'-0" wide by 1'-2" tall.

An opening on the south wall once connected to Room 28 but has been converted to a cabinet. The opening holds a plywood door measuring 2'-0½" wide by 3'-5 ½" tall by 1 ½" thick. The door is hung with two pintle hinges with straps measuring 1'-1¼" long. The door is secured with a padlock hasp and iron hook.



Figure C502. Room 27 - Typical firing hole on east wall.



Figure C503. Room 27 - Cabinet on south wall. Note security system keypad at back of cabinet.

Finishes

The walls and ceiling appear to be painted throughout the main space. The plastered walls



Figure C504. Room 27 - Typical light fixture.

are limewashed in the partitioned space at the north end. The exterior doors and cabinet door are painted green.

Mechanical Systems
There is no evidence of any mechanical systems.

Electrical System
Four surface-mounted light fixtures are on the ceiling and are connected by plastic conduit. A receptacle is mounted within the joist space at the ceiling, as is a switch above the west doorway controlling the lights.

A ceramic lamp holder is in the partitioned space. Three receptacles are on the north wall of the partitioned space.

An electrical panel is mounted on the north wall of the partitioned space. A conduit exits the top of the switch and passes through the north wall, presumably to the breaker panel in Room 7.

Plumbing System
There is no evidence of any plumbing system.

Fire Protection and Life Safety System
A fire alarm control panel is mounted on the east wall of the partitioned space.

A smoke detector is mounted on the ceiling of the partitioned space.

Security System
A security camera is mounted high in the southeast corner.

A security system keypad is inside the cabinet at the south end of the room.

A large conduit enters the partitioned space through the northernmost firing hole and connects to a security system panel.

Issues of Condition
The roof framing at the north end of the room exhibits deterioration and shoring has been installed.

The drainage trough at the south end of the room is likely undersized for the amount of water being directed to it from the ravelin yard. The open



Figure C505. Room 27 - Electrical panel on north wall of partitioned space.



Figure C506. Room 27 - Fire alarm and security system panels on east wall of partitioned space.



Figure C507. Room 27 - Shoring and deteriorated roof decking at north end of partitioned space.

trough in the west doorway presents a potential trip hazard. Flowing water may also impact the stability of the surrounding concrete slab over time.

Room 28 – Fee Office

Room 28 is identified in the 1836 plan as the canteen but has served several different uses throughout the fort's history. Its former use as a powder magazine, for example, likely explains the exceptionally thick exterior walls. Currently, the room serves as the fee office for the fort. The room is a rounded triangle in plan and measures about 19'-1" east-west by 19'-1" north south with a floor-to-ceiling height of 11'-10" tall (*Figs. C508-C517*).



Figure C508. Room 28 - View looking northeast.

Flooring

Pavers measuring 9" long by 4½" wide are typical throughout the majority of the room and are laid in a running bond pattern. Tongue-and-groove wood flooring behind the desk along the east wall measures 4" wide.

Walls and Ceiling

The walls are finished with plaster and curve inward above the window openings, creating a round opening at the ceiling. The round opening is capped with exposed wood ceiling framing consisting of beaded joists running east-west. Flush boards are continuous above the joists. Paint buildup on the roof structure is significant, suggested it is of considerable age.

Doorways

The room has one doorway on the north wall that accesses the room from the ravelin yard. The doorway holds a solid panel wood door measuring 2'-7" wide by 5'-9" tall by 1½" thick. The inside face of the door is made up of 5"-wide flush horizontal boards, while the exterior has vertical flush boards measuring 4" wide. The door is hung with two pintle hinges with 2'-3" long straps. The door is secured with a padlock hasp. An iron hook



Figure C509. Room 28 - View looking southeast.

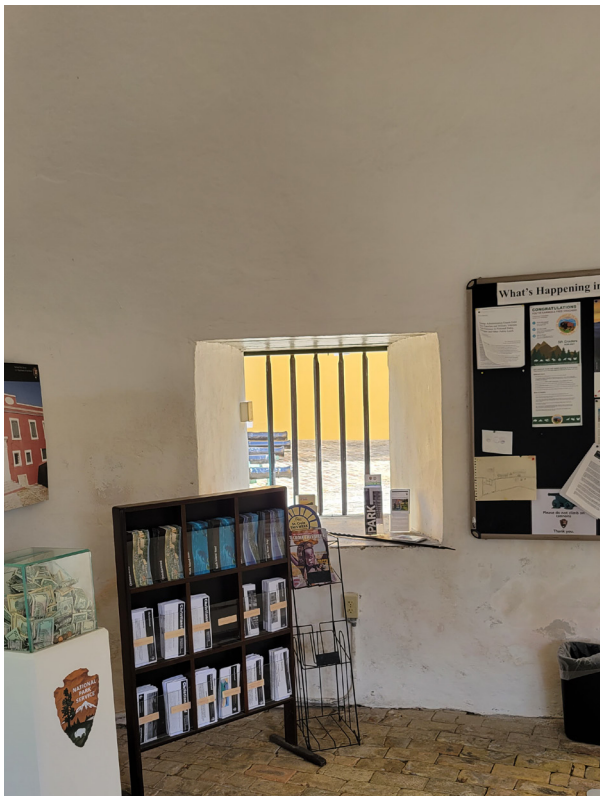


Figure C510. Room 28 - View looking northwest.

and a pull loop are on the interior face. A second loop is on the exterior. The door jamb measures about 4" wide by 5½" deep. The masonry opening measures 2'-10" wide by 7'-1" tall. A step at the door threshold measures about 5" tall.

Windows

The room has three window openings, one facing southeast, one facing southwest, and one facing northeast. The masonry openings of the southeast and northeast windows are widely angled and extend nearly to the floor. The southeast window opening measures 2'-11¾" wide by 4'-4¼" tall and has 10 horizontal bars measuring 1" in diameter



Figure C511. Room 28 - Brick pavers.



Figure C512. Room 28 - Exposed structure at ceiling.

and spaced at 5" on center. A pair of solid panel wood shutters is mounted on the exterior. The inside face of the shutters has beaded horizontal boards measuring 6" wide. The exterior face has random-width flush boards. Each leaf is hung with two pintle hinges with straps measuring 1'-0" long. Two iron hooks hold the shutters in position when opened. Each leaf has a hook at top and bottom to secure the shutters when closed. The wood jamb measures 5¾" deep by 2½" wide.

The southwest window opening is nearly identical to the west, but measures 2'-8½" wide by 4'-1" tall. It shares the same shutters, jamb, and hardware.



Figure C513. Room 28 - Interior face of exterior door.



Figure C514. Room 28 - Interior face of typical window shutters as viewed from the exterior.

The northwest window opening measures 3'-0" wide by 3'-4 ¼" tall and has five vertical bars measuring 1" square and spaced at 6" on center. The shutters match those found on the southwest and southeast openings but lack hooks on the secondary leaf. A pull loop is on the interior face of the primary leaf.

Other Features

A modern cabinet behind the counter at the northeast counter has pair of cabinet doors measuring 1'-5½" wide by 3'-3½" tall each. The doors are made up of 3"-wide beveled edge boards and are each hung with two cabinet hinges. A round pull is on one door. The cabinet is back-to back with the cabinet opening described on the south wall of Room 27.

A wood ramp measuring 2'-6" wide by 6'-1" long descends from the threshold of the exterior door to the level of the interior floor.

A modern curved counter is in the northeast corner of the room and has a face clad with 3"-wide beveled-edge boards. The countertop and backside of the counter are clad with beige and white laminate, respectively.

Finishes

The walls and ceiling are painted white. The shutters, exterior door, and jambs are all painted green.

Mechanical Systems

There is no evidence of any mechanical systems.

Electrical System

A ceiling fan with light kit is centered on the ceiling. Surface-mounted receptacles connected by plastic conduit are typical throughout the room.

Two surface-mounted switches are behind the counter, along with networking jacks.

Plumbing System

There is no evidence of any plumbing system.



Figure C515. Room 28 - Cabinet in the northeast corner.



Figure C516. Room 28 - Face of counter. Note wood ramp to exterior doorway at left.



Figure C517. Room 28 - Backside of counter.

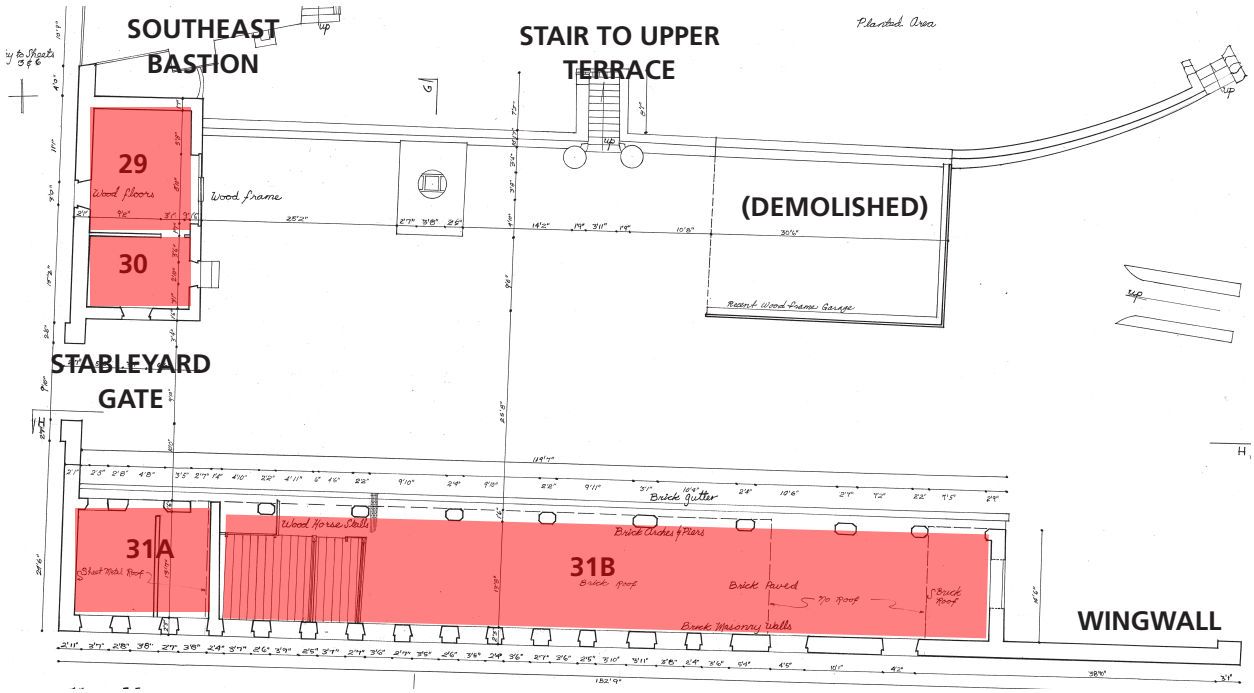


Figure C518. Key plan of stableyard.

Fire Protection and Life Safety System

A fire alarm beacon is on the east wall and a fire extinguisher is behind the counter.

A smoke detector is centered on the ceiling.

Security System

A security system control panel is on the east wall. Two motion detectors are on the south wall.

A security camera is mounted above the counter.

A siren horn is mounted in the joist space at the ceiling.

Issues of Condition

No apparent condition issues were observed.

Stableyard

The stableyard lies east of the fort and has two separate structures. East of the stableyard gate, adjacent to the southeast bastion, is the carriage house. The stable lies east of the gate and has an extending wingwall at the north end that forms the fort complex's eastern boundary (*Fig. C518*).

Room 29 – Carriage House

Room 29 is the western portion of the carriage house building. The room measures about 15’-10” east-west by 12’-10” north-south and has a floor-to-ceiling height of 8’-5” tall (*Figs. C519-C524*).

Flooring

A plywood floor is consistent throughout the room lies about 7” above the level of the concrete slab below.

Walls and Ceilings

The walls are plastered. The ceiling consists of exposed roof framing with joists running north-south and wood sleepers running east-west. The structural system is described in the Structural Investigation Report in the Appendix.

Doorways

The room has one doorway on the north wall holding a pair of doors each measuring 4’-6” wide by 7’-8” tall by 1¼” thick. The exterior face of the doors is made up of 6”-wide flush boards. Each door is hung with two pintle hinges with 3’-6” long straps. Head and foot bolts secure the western leaf.



Figure C519. Room 29 - View looking northwest.

A strengthening H-shaped frame on the inside face of the doors is made up of nominal 2x4 verticals and a 4x4 horizontals. A hook-and-eye on the exterior secures the doors. A wood lintel is made up of multiple nominal 2x8 members.

Windows
The room has no windows.

Finishes
The walls are limewashed and the ceiling is painted grey. The exterior doors are painted green.

Mechanical Systems
There is no evidence of any mechanical systems.



Figure C520. Room 29 - View looking northeast.



Figure C521. Room 29 - View looking southwest.



Figure C522. Room 29 - View looking southeast.



Figure C523. Room 29 - View looking southwest.

Electrical System
Surface-mounted receptacles are found on each of the north and south walls.

A light switch east of the doorway controls a linear fluorescent fixture on the ceiling along the east wall.

Plumbing System
There is no evidence of any plumbing system.



Figure C524. Room 29 - Interior face of door.

Fire Protection and Life Safety
A smoke detector and fire alarm relay are mounted on the ceiling.

Security System
A motion detector is on the south wall.

Issues of Condition
Applied painted coatings on the exterior walls have failed. Minor plaster spalling is on the north wall, west of the doorway.

The roof framing has water staining from previous roof leaks.

Room 30 – Stable Guard's Room
Room 29 is the eastern portion of the carriage house building, which lies between the Stableyard gate and the southeast bastion of the fort. The room measures about 9'-2" east-west by 12'-10" north-south and has a floor-to-ceiling height of 8'-5" tall (*Figs. C525-C529*).

Flooring
Tongue-and-groove flooring of widths varying between 5", 6", 7", and 12" is consistent throughout the room and runs east-west.

Walls and Ceilings
The walls are plastered. The ceiling consists of exposed roof framing with joists running north-south and wood sleepers running east-west. The structural system is described in the Structural Investigation Report in the Appendix.

Doorways
The room has one exterior doorway on the north wall that holds a pair of solid-panel shutters measuring 2'-7 ½" wide by 6'-6 ½" tall overall by 2" thick. Horizontal flush boards at the interior vary in width between 7" and 11" wide. The exterior face has flush boards measuring 8" wide. Each leaf is hung with two pintle hinges with straps measuring 1'-2" long. The door is secured with a slide bolt with integrated hasp measuring 1'-6" long. A diagonal security bar measures 5'-0" long by 2" wide. A hinge for an earlier door remains on



Figure C525. Room 30 - View looking northwest.



Figure C526. Room 30 - View looking south.



Figure C527. Room 30 - Remaining hinge for inward swinging door.



Figure C528. Room 30 - Window opening on east wall.



Figure C529. Room 30 - Light fixture, smoke detector, and fire alarm relay on ceiling.

the interior jamb and is an H hinge measuring 8" tall. The door jamb measures 5" deep by 3" wide. A 2¼"-wide by ½"-thick drip edge is above the doorway on the exterior. A wood lintel is made up of multiple nominal 4x4 members.

Windows

A window opening on the east wall measures 2'-11½" wide by 3'-11" tall and holds a pair of board shutters. The inside face of the shutters has beveled edge boards measuring 5" wide, while the exterior has flush boards of varying widths. Head and foot bolts measuring 5" long are on the primary leaf. The primary leaf has a round hole cut to accept ductwork for a portable air conditioner.

Finishes

The walls are limewashed and the ceiling is painted grey. The doors and window shutters are painted green.

Mechanical Systems

A portable air conditioner connects to a standard receptacle and is vented through the east window opening.

Electrical System

A linear fluorescent fixture is centered on the ceiling and is controlled by a surface-mounted switch on the north wall.

Surface-mounted receptacles connected with plastic conduit are typical throughout the room.

Plumbing System

There is no evidence of any plumbing system.

Fire Protection and Life Safety System

A smoke detector and fire alarm relay are mounted on the ceiling.

Security System

There is no evidence of any security system elements.

Issues of Condition
Applied coatings on the exterior walls have failed.

The roof framing has water staining from previous roof leaks.

Room 31A – Scuba Room
Room 31A is a partitioned space at the south end of the stable building. The 1836 plan shows the room containing stall partitions as found throughout the rest of the stable; however, the HABS drawings show the northern masonry partition in place. The room currently stores scuba equipment and measures 13'-7" east-west by 17'-1" north-south with a floor-to-ceiling height of 9'-4" tall (*Figs. C530-C536*).

Flooring
A plywood platform is consistent throughout the room and measures 7" tall. The platform is made up of plywood sheets measuring 4'-0" wide by 8'-0" long. A ramp slopes to the level of the doorway threshold at the west doorway.

Walls and Ceiling
The walls are plastered. The ceiling consists of exposed roof framing with joists running east-west and wood sleepers running north-south. The



Figure C532. Room 31A - View looking southeast.



Figure C530. Room 31A - View looking northwest.



Figure C531. Room 31A - View looking east.



Figure C533. Room 31A - View looking southwest.

framing was fully replaced in 2017. The structural system is described in the Structural Investigation Report in the Appendix.

Doorways

The room has two exterior doorways on the west wall. The southern opening is the principal entrance, and measures 4'-9" wide by 6'-4" tall overall. The opening holds a pair of board doors measuring 1½" thick and hung with two pintle hinges with straps measuring 1'-11" long. The lower hinge on the north door has a strap measuring 1'-5" long. The inside face of the door has horizontal beaded boards measuring 5" wide, while the exterior has vertical flush boards measuring 5" wide. The door is secured with a slide bolt with integrated hasp measuring 2'-0" long. The door jamb measures 5" deep by 3" wide. A 2"-wide by ¾"-thick drip edge is above the doorway on the exterior.

The doorway at the north end of the west wall measures 2'-2" wide by 6'-5 ½" tall and holds a single door measuring 1½" thick that is secured in place. The door has ghost marks for hinge marks measuring 1'-6" long. The hinge pintles remain in place. The inside face of the door has horizontal beaded boards measuring 5" wide, while the exterior has vertical flush boards measuring 5" wide. The door is secured with a hook on the interior. The door jamb measures 5" deep by 3" wide. A 2"-wide by ¾"-thick drip edge is above the doorway on the exterior.

Windows

The room has four windows, one at the south end of the west wall and three high on the east wall.

The west window opening measures 1'-11" wide by 3'-7 ½" tall and holds a single solid-panel shutter measuring 1 ½" thick. The shutter is hung with a pair of pintle hinges with straps measuring 1'-3" long. The inside face of the door has horizontal beaded boards measuring 5" wide, while the exterior has vertical flush boards measuring 5"



Figure C534. Room 31A - Interior face of main exterior doorway. Additional photos of doors are in the *Exterior Features* section.



Figure C535. Room 31A - Interior face of northern doorway on west wall.

wide. The jamb measures 5” deep by 3” wide. A 2”-wide by ¾”-thick drip edge is above the doorway on the exterior. The window is obscured on the interior by an electrical panel.

The three windows on the east wall are identical and measure 3’-8” wide by 1’-7” tall. Each holds a solid-panel shutter hinged at the top and opening outward. Three horizontal 1” square bars span each opening and are spaced at 5½” on center. The jamb measures 5” deep by 3” wide. The door construction and hinge type vary at each window. The southernmost opening has two 1’-3” long pintle hinges, the center window has two 8”-long H hinges, and the northern opening has a centered 8” hinge. The inside faces of all but the southern window have flush horizontal boards of varying widths, while the southern window has beveled edge horizontal boards measuring 5” wide. The exterior face of each shutter has flush boards of varying widths. Iron hooks at the interior sill are used to prop the shutters open.

Finishes
The walls are limewashed. The exterior doors and window shutters are painted green. The ceiling is painted white.

Mechanical Systems
There is no evidence of any mechanical systems.

Electrical System
A disconnect switch is on the west wall, adjacent to the main doorway. South of the switch is an electrical panel serving the stable. One of the three conduits exiting the top of the panel has been capped with wire nuts.

Surface-mounted receptacles connected with plastic conduit are typical throughout the room.



Figure C536. Room 31A - Typical east window opening.

Plumbing System
Pipes serving the hose bib on the west elevation of the stable are in the southwest corner and have shutoff valves.

Fire Protection and Life Safety System
A fire alarm pull station and fire alarm beacon are on the west wall, north of the doorway.

Security System
A motion detector is centered on the east wall.

Issues of Condition
Applied limewash coatings on the exterior walls have failed.

The case of the disconnect switch on the west wall is rusted and damaged where it appears to have been partially pried open.

If the electrical panel on the north wall is active or is planned to become active again, the capped wiring above the panel should be properly terminated or removed.

Room 31B – Stable
Room 31B is the northern end of the stable building. The 1836 plan shows the room containing horse stall partitions throughout. The room is currently used as storage for construction materials and equipment and measures 13’-7” east-west by 99’-4” north-south with a floor-to-ceiling height of 10’-5” tall (*Figs. C537-C545*).

Flooring
A poured-in-place concrete slab is consistent throughout the majority of the room. A wood platform with plywood deck at the south end of the room measures 1’-1” tall and extends about 18’-0” from the south wall.

Walls and Ceiling
The walls are plastered. The ceiling consists of exposed roof framing with joists running east-west and wood sleepers running north-south. The framing has recently been replaced and currently has a temporary plywood deck with membrane roofing. The structural system is described in the Structural Investigation Report in the Appendix.

The west wall has eight-and-a-half arched openings of widths typically varying between 9’-10” and 10’-4” wide by about 9’-0” tall at the peak of the arch. The two narrowest openings at the north end each measuring 7’-5” wide. The partial arch at the south end measures 4’-10” wide. The masonry

piers between each opening have chamfered corners. All but the northern three arches have projecting masonry blocks at the piers, likely relating to a previous roof structure.

Wood screens panels at arches not containing gates are constructed of vertical nominal 2x4 boards with ½" wide edge beads. Two horizontal battens at the rear of the screens measure 4" wide by 6" deep and have ½" edge beads.

Doorways

The room has two exterior gates on the west wall, a smaller one in the second bay from the north end and a larger one at the sixth bay from the north end. Each archway on the west elevation has a wood screen of similar construction to the gates.

The northern gate opening measures 7'-2" wide by 8'-7" tall and holds a pair of board-and-batten gates each measuring 3'-7" wide by 3" thick. The gates are each hung with pintle hinges with straps measuring 3'-8" long. The door is secured with a slide bolt with integrated padlock hasp measuring 2'-1" long overall. The vertical boards of the gates



Figure C538. Room 31B - View looking south.

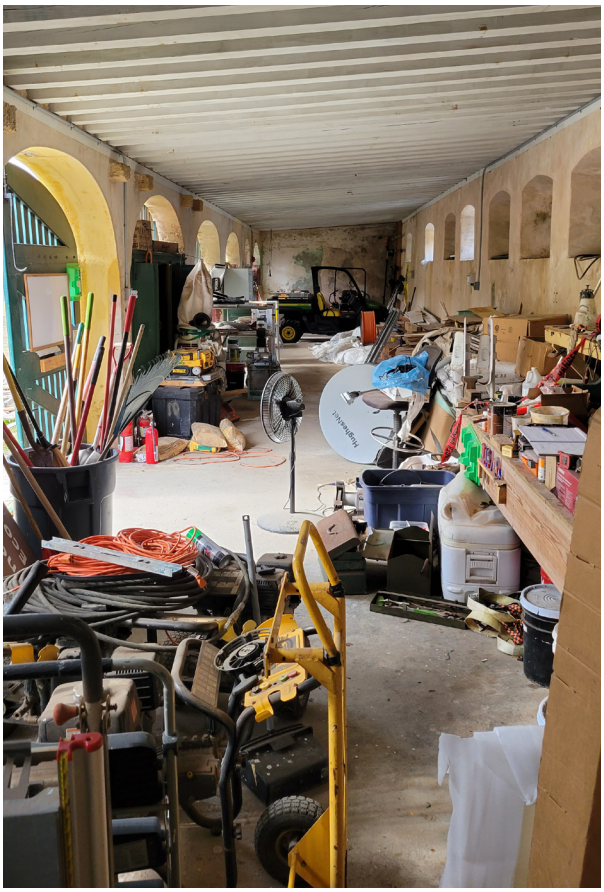


Figure C537. Room 31B - View looking north.



Figure C539. Room 31B - View looking northwest near north end.



Figure C540. Room 31B - View looking southwest near center of the room.



Figure C541. Room 31B - Typical projecting blocks between arches.

are made up of nominal 2x4 boards with ½"-wide edge beads. The boards are spaced 1 ½" apart. The Z-shaped battens on the inside face of the gates consist of 2x7 horizontal and 2x6 diagonal members. A foot bolt on the northern leaf secures the gate. A wood block at the top of the arch prevents the doors from swinging inward.

The southern gate measures 9'-11" wide by 8'-8" tall and holds a pair of board-and-batten gates measuring 4'-11" wide by 3" thick. The southern gates share the same hardware as those at the north. The vertical boards of the gates are made up of nominal 2x4 boards with ½"-wide edge beads. The boards are spaced 1 ½" apart. The Z-shaped battens on the inside face of the gates consist of 2x10 horizontal and 2x6 diagonal members. A foot bolt on the northern leaf secures the gate.



Figure C542. Room 31B - Detail of typical wood screen.

Windows

The room has thirteen windows on the east wall that are similar to those found on the east wall in Room 31A. The openings vary slightly in size but typically measure 3'-8" wide by 1'-7" tall. Three horizontal 1" square bars span each opening and are spaced at 5½" on center. Seven openings have shutters matching those described in Room 31A and are each hung with a centered H hinge at the head measuring 8" long. Iron hooks at the interior sills prop the shutters open. Two of the openings



Figure C543. Room 31B - Interior view of northern gate. Additional photos of gates are in the *Exterior Features* section.



Figure C544. Room 31B - Interior view of southern gate. Additional photos of gates are in the *Exterior Features* section.

are missing shutters and the remaining four are covered with painted plywood panels on the exterior, though the bars and interior jambs remain in place. Sheet plastic has been installed on the interior of most openings.

Finishes

The walls are limewashed. The gates and exterior face of the screens are painted green, while the interior of the screens is painted white. The ceiling is painted white.



Figure C545. Room 31B - Typical window opening on east wall. Additional photos of the windows are in the *Exterior Features* section.

Mechanical Systems

There is no evidence of any mechanical systems.

Electrical System

Surface-mounted receptacles are found on the east and west walls and have exterior outlet covers.

Plumbing System

There is no evidence of any plumbing system.

Fire Protection and Life Safety System

A fire alarm pull station and fire alarm beacon are on the west wall, south of the northern gate opening. A second beacon is south of the southern gate.

Security System

A motion detector is centered on the east wall.

Issues of Condition

A number of vertical members of the wood screens are warped and twisted.

Of the thirteen window openings on the east wall, four of them are covered with plywood on the exterior. Two of them are missing shutters.



Figure C546. View of the fort from the south.

Character-defining Features

Exterior

- The overall form and massing of the fort, with south, east, and west curtains, the water battery, latrines, bastions, and ravelin;
- The two wingwalls that extend to the water from the latrines and the stable;
- The stucco-clad exterior walls, including stuccoed cornice, trim, and decorative elements;
- The general locations of exterior doorways and window openings, which remain largely consistent throughout the fort's history;
- The overall design of the wood window and door shutters and other exterior doors;
- The masonry window openings holding metal bars;
- The remaining casement sash of the east elevation of the east curtain;
- The firing holes throughout the complex;
- The ventilation holes at the powder magazine;
- The historic design of the ravelin gate and associated decorative ironwork, but not the modern gate and hardware itself;
- The vaulted sallyport passage and entrance portal;
- The arcade of the south curtain;
- The paired exterior stair and tiled landings of the south curtain;
- The western stair to the commandant's gallery;
- The commandant's gallery, its arched window and door openings, and tile flooring;
- The exposed roof structure at the commandant's gallery;
- The shed-roofed structure at the gundeck of the southeast bastion;
- The overall layout and circulation around the gundecks of the curtains and water battery;
- The merlons and embrasures at each bastion;
- The paved ravelin yard and its relationship to the sallyport gate and perimeter spaces;
- The ravelin walls;
- The drainage structure on the east wall of the ravelin;
- The courtyard and its relationship to spaces of the east, west, and south curtains and water battery;
- The exterior steps at doorways of the east and west curtains facing the courtyard;
- The masonry gateposts and decorative

ironwork of the fenced area of the courtyard;

- The presence of a wood fence in the courtyard;
- The officer's gallery along the western elevation of the east curtain;
- Brick paving and gutter along the east side of the west curtain;
- The prison yard and associated wall;
- The chimney at the southwest bastion;
- The bell cot at the northwest bastion;
- The flagpole at the northwest bastion.
- The open stableyard and north-south retaining wall;
- The carriage house and its door and window opening locations;
- The stable building and its door and window locations;
- The masonry arches of the west elevation of the stable;
- The awning-style shutters at the east window openings of the stable;
- The stableyard wall;
- The stableyard gateway and historic design of the replacement gates, but not the gates themselves;
- Site stairs at the north end of the stableyard and at the stableyard retaining wall.

Interior

- The overall plan layout of interior partitions in all portions of the fort;
- The ceilings with exposed structural members;
- The plastered interior walls and vaults;
- All early historic interior finishes in Room 12, including flooring, baseboard, crown molding, ceiling boards, joists with molded edges, and all examples of decorative painting.
- The early molded brick and tooled mortar joints in Room 26B and 26C;
- The timber-and-masonry partition walls found in the west curtain;
- The vertical boards on partitions of the west curtain;
- Remaining examples of early wall colors in Rooms 24A and 24B of the latrines;
- The ceiling vaulting of all casemates, the dungeon, and the powder magazine;
- The masonry oven and associated flue in Room 14/15;
- The cistern in Room 14/15;
- The cistern in Room 6;
- Wood details in Room 2, including wainscotting, casings with backband, vertical board walls, and inward swinging doors.
- The remnant of decorative painting in Room 8;
- The louvered interior shutters in Rooms 9 and 10;
- The casement window sash in Room 10;
- Latrine details in Room 24C, including basin and bench.
- Door and opening details between Rooms G and H, including the arched opening and the paired interior doors.
- The paired louvered interior doors between Rooms I/K and L;

Condition Assessment

The fort is in overall fair to good condition with several common condition issues throughout. The location of the fort and extreme climatic conditions means that cyclical maintenance of building elements is critical. For example, wood elements such as the shutters and wood door and window frames found throughout the fort require replacement at regular intervals. The iron bars and ferrous hardware elements rust quickly in the salty air and similarly require periodic repair or replacement. The list below, separated by feature, summarizes the conditions observed and documented throughout the *Physical Description and Condition Assessment* chapter. Recommendations for addressing these condition issues are found in *Part II: Treatment and Use*.

Exterior

Site

- Minor erosion has taken place near the north end of the stable yard, where an early stair and part of a retaining wall has been undermined (*Fig. C547*). As a result, the stair has been partially lost. Similar erosion is taking place at the larger stair descending to the water's edge.
- The two wing walls that extend into the water are experiencing scouring at their bases (*Fig. C548*)

Exterior Walls

- The stuccoed exterior walls are in generally good condition, and most have recently been painted with mineral paint. Localized areas of failed paint are likely the result of improper surface preparation prior to application (*Fig. C549*).
- Areas that are more protected, such as within commandant's gallery, the south arcade, and beneath the covering of the officer's gallery, still have earlier limewash coatings (*Figs. C550-C551*). The east elevation of the carriage house and the north and west elevations of the stable have also not been painted (*Figs. C552-C553*). The limewashed areas are generally in fair condition but require reapplication.

Windows and Shutters

- Modern shutters on the east elevation of the east curtain, facing the stableyard, showed significant deterioration at exposed end grain and at locations where hinge straps are attached (*Fig. C554*)
- One pair of shutters on the east elevation of the northeast bastion is missing. The adjacent pair of shutters on the east elevation are not sized appropriately for the opening (*Fig. C555*).
- Several of the south elevation window shutters at the second floor of the south curtain are missing securing hardware and have been held in place with boards nailed to the interior or are secured with zip ties (*Fig. C556*).



Figure C548. Scouring occurring at base of west wingwall. East wingwall is similar.



Figure C547. Undermined wall and remains of stair at north end of stableyard.



Figure C549. Example of mineral paint failure on landing of central stair accessing Commandant's Gallery.



Figure C550. Example of limewash remaining on exterior surfaces of south curtain arcade and sally port passage.



Figure C551. Example of limewash remaining on exterior surfaces of east curtain west elevation.



Figure C552. Limewash remaining on the west elevation of the stable.



Figure C553. Limewash remains on the east elevation of the carriage house.



Figure C554. Typical deterioration of shutters on the east elevation of the east curtain.



Figure C555. Missing pair of shutters and ill-fitting shutters on east elevation of the northeast bastion.



Figure C556. Example of board and zip ties securing shutter at second floor of south curtain.

- A total of six shutters are missing on the east elevation of the stable. Four of the openings are covered with plywood, while two are without shutters (*Fig C557*).
- One window opening in Room 24B of the latrines has extensively deteriorated such that the bars have fallen from the opening (*Fig. C558*). Wood frames at the southwest bastion are similarly heavily deteriorated (*Fig. C559*). The rusting of bars is typical wherever they are exposed to the elements.
- The window sash, doors, louvered sash, and several of the window jambs and frames are missing from the Commandant's Gallery (*Fig. C560*).
- The metal shutter for the western ventilation hole for the powder magazine (Room 25) is missing (*Fig. C561*).

Exterior Doors and Gates

- Doors at the Commandant's gallery are no longer in place (*Fig. C560*).
- Doors at both entrances to the upper level of the northeast bastion from the gundecks have been removed (*Fig. C562*). Similarly, doors in



Figure C557. Examples of missing shutters and covered window openings on east elevation of the stable.



Figure C558. Deteriorated wood frame and holes for bar in Room 24B.



Figure C559. Example of deteriorated wood frame at east window opening of Room 13 of the southwest bastion.



Figure C560. Open window openings and doorways at Commandant's Gallery.



Figure C561. Missing hinged metal shutter at powder magazine ventilation hole.

doorways accessing Rooms 20, 21, 22/23, and 24A have been removed (*Fig. C563*).

- At the restrooms (Rooms 20 and 21), the open doorways are accelerating the deterioration of the bathroom vestibules, as well as the doorway thresholds (*Fig. C564*).
- Doorways accessing Rooms 17 and 19 have rotted jambs no longer hold the driven hinge pintles in place, resulting in the doors twisting out of the frame when operated. This issue presents a potential life safety hazard, as Room 17 is open to visitors daily.



Figure C562. Doorway missing paired doors on west elevation of northeast bastion. Note that the south doorway is similar.



Figure C563. Missing doors at doorways to (from L to R) Rooms 20, 21, 22/23, and 24A.



Figure C564. Doorway accessing Room 21 of the west curtain. Note deterioration of jamb and threshold. Conditions at Room 20 doorway are similar.

- The door in the doorway accessing Room 19 is heavily deteriorated on the inside face near the top (*Fig C565*).
- The sally port gates have several broken pickets at their base (*Fig.C566*).
- At the modern replacement stableyard gates, steel fasteners are used in the gate's otherwise aluminum construction and are rusting (*Fig. C567*).

Roofing and Rainwater Dispersal

- Roof coatings at the gundecks have typically begun to fail in the form of cracking and spalling (*Figs. C568-C569*). The gundeck of the northwest bastion has recently had this



Figure C565. Deterioration of interior face of door accessing Room 19 of the west curtain.



Figure C566. East leaf of sally port gate. Note broken pickets at base. West leaf is similar.



Figure C567. Peeling paint on replacement aluminum stableyard gate. Note rusted steel fasteners at bars and added steel mesh at base.

coating removed down to the brick deck and a similar new coating applied (*Fig. C570*).

- At the south curtain upper-level roof, ponding appears to occur near the scuppers at the east and west ends and several large bubbles appear in the membrane (*Fig. C571*).
- Water infiltration to the interior at the southwest corner near the scupper has been a problem in the past, though the leak does not appear active currently (*Fig C572*).
- The intersection of the shed roof with the south face of the south curtain has been the source of previous long-term leaks. Roof



Figure C568. Typical condition of coatings on gundecks. Note exposed brick substrate.



Figure C569. Overview of condition of east curtain gundeck. West curtain gundeck and southeast and southwest bastion gundecks are similar.



Figure C570. New roof coating installed on trial basis at northwest bastion.



Figure C571. Roof of south curtain. Note black area near scupper at left where water ponds. Large bubbles are also visible on the membrane surface.



Figure C572. Signs of water infiltration beneath west scupper as seen in Room M.



Figure C573. Shoring in Room 27, beneath previous leak damage.

framing has been shored in this area from below (*Fig. C573*).

- At the latrines, stucco is crumbling at the intersection of the shed roof and masonry (*Fig. C574*).
- Vegetation is growing around the internal drains of the south curtain, which lack screen or cleanouts to aid maintenance (*Figs. C575-C576*). These drains are responsible for handling the majority of water carried off the roofs.
- The stable has a temporary plywood roof with membrane (*Fig. C577*). An ongoing project is the replacement of the temporary



Figure C574. Crumbling stucco at intersection of latrine roof with masonry.



Figure C575. Condition of east drain at south curtain.



Figure C576. Condition of west drain at south curtain.



Figure C577. Roofing of the stable (background) and carriage house (foreground). Note plant material growing along wall.

roofing with a new brick roof to match the carriage house.

- Plant material is growing along the back wall and leading edge of the carriage house roof, causing moisture to be retained. Several bricks have been lost at the northwest corner (*Figs. C577-C578*).
- The gundeck of the water battery has barely any slope and portions of the brick substrate is exposed beneath later cementitious coatings (*Fig. C568*).
- Water shed from the ravelin yard flows through a channel cut in a modern concrete slab in the artillery shed (Room 27). This channel is likely undersized, and the solution detracts from the historic character of the fort (*Figs. C579-C580*).



Figure C578. Seam with vegetation at edge of carriage house roof and along back wall. Note missing bricks at corner.



Figure C579. Inlet for drainage of water from ravelin yard.



Figure C580. Drainage channel in artillery shed. Note brick at base of channel that concrete slab is poured on top of.

Exterior Steps

- At the stairs accessing the Commandant's Gallery, mortar joints at the landings and treads are failing. Moss and plants are growing inside many of the mortar joints (*Fig. C581*).
- The brick steps and walkway accessing the eastern doorways of the west curtain are in overall good condition but require visitors to cross a drainage ditch to access (*Fig. C582*).

Interior Features

Flooring

- Sections of the flooring in Room 12 have been extensively damaged by insects, though no current insect activity was observed (*Fig. C583*).



Figure C582. Drainage ditch and walkway along east side of west curtain.

- There is minor rot in the southwest corner of Room M at the upper level of the south curtain (*Fig. C584*). This condition was likely caused by the leak above (*Fig. C572*)

Architectural Trim and Interior Doors

- Trim and interior doors in all locations are in good condition, with the exception of the



Figure C581. Typical example of vegetation growing in failed mortar joints of exterior stairs at south curtain.



Figure C583. Deteriorated flooring and evidence of wood damaging insect activity in Room 12.



Figure C584. Small hole in flooring at southwest corner of Room M. Note that this area is near a previous roof leak.



Figure C585. Deterioration of vestibule door in Room 201 due to exposure to moisture.

modern restroom vestibule and stall doors in Rooms 20 and 21, which are delaminating (*Fig. C585*).

Walls and Ceilings

- Interior limewash coatings throughout the fort vary in condition, with the majority of spaces exhibiting some level of flaking or failure (*Fig. C586*).
- Embedded piping from the previous restrooms is rusting and causing plaster and masonry cracking in Rooms 22/23 (*Fig. C587*).
- Localized failure of paint and limewash coatings at ceilings is typical (*Fig. C588*).
- Moisture infiltration at the ceiling of the museum collections storage (Room 8) is of critical concern (*Fig. C589*).
- Early decorative painting remains on plaster walls in Room 12 of the south curtain and Room 8 of the southeast bastion (*Figs. C590-C591*). These finishes should be preserved and protected, and the plaster stabilized to ensure that this important evidence is not lost.



Figure C586. Typical example of flaking limewash on walls of Room 22.



Figure C587. Abandoned plumbing pipe in Room 22/23 causing cracking and damage to masonry.



Figure C588. Typical example in the east curtain of flaking paint at ceiling beams and roof sleepers.



Figure C589. Moisture infiltration at ceiling of Room 8.

Building Systems

- The indoor and outdoor units serving HVAC systems in the east curtain and southeast bastion are of relatively new vintage and are in good condition.
- The main electrical panel appears to be of fairly recent vintage, and conduit, where exposed, appears to be in good condition.



Figure C590. Decorative painted border in Room 12.



Figure C591. Decorative painting in Room 8.

- The disconnect switches near the panels in Room 7 of the east curtain and Room 31A of the stable are rusted and the one in Room 31A has been partially pried open (*Figs. C592-C593*).
- The panel in Room 31A currently has all circuits capped above the panel until the stable re-roofing project is completed (*Fig C593*). The capped wires are not terminated in a box.
- The security system has a mixture of older and newer motion sensor designs. The newer sensors are in comparatively fewer locations. It is unclear whether both sets of sensors are still in use.



Figure C592. Electrical panel in Room 7 of the east curtain. Note rust on adjacent switch.

- During both site visits, the fire alarm and security system control panel in Room 5 was displaying an on-screen error and emitting a warning tone. Additionally, elements of past systems appear to remain in place.
- The plumbing system and fixtures in Rooms 20 and 21 appear to be in good condition but are older and less efficient than current fixtures.

Structural System

- The large beam above the north wall of the commandant's gallery is extensively deteriorated due to water infiltration and termites (*Fig. C594*). Design of repairs for this beam was completed in January 2023.
- Multiple cracks with crack monitors are in the casemate of the southwest and southeast bastions (Rooms 8 and 13) (*Fig. C595*).
- Deterioration of framing due to previous water leaks was observed in the artillery shed (Room 27). Shoring has been installed at this location (*Fig. C596*).
- See observations and recommendations in *Part II: Treatment and Use* for more information regarding structural conditions.



Figure C594. Large deteriorated beam at Commandant's Gallery.

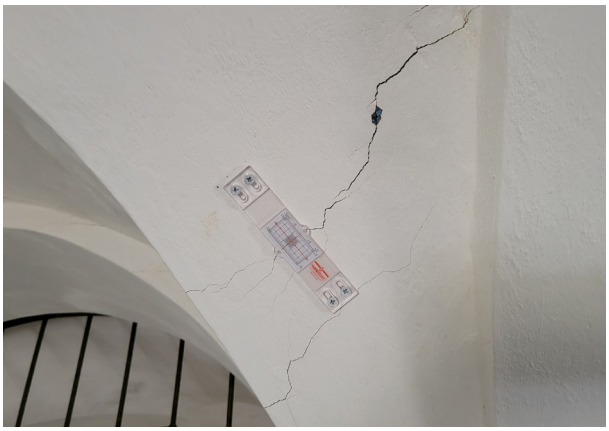


Figure C595. Crack and crack monitor on vaulting in Room 13.



Figure C593. Panel and switch in Room 31A of the stable. Note condition of switch box and capped wiring above breaker panel.



Figure C596. Shoring beneath deteriorated roof framing in Room 27.



Figure C597. Example of termite mud tunnel in Room H of the south curtain.



Figure C598. Example of termite mud tunnel in Room 19 of the west curtain.

Vermin and Pests

- Termite mud tunnels were observed in several locations, most notably in the second-floor rooms of the south curtain, as well as in the storage rooms of the west curtain (Rooms 16, 18 and 19) (*Figs C597-C598*).

Significance and Integrity

National Register of Historic Places

The National Register of Historic Places is the official list of the nation's historic places worthy of preservation. Authorized by the National Historic Preservation Act of 1966 and overseen by the National Park Service, it is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources.[893]

The significance evaluation identifies the important historical associations of a property and comments on its architectural, archaeological, and social value as they relate to the National Register. A property's significance is tied to a discrete period of time in which its important contributions were made, and to relevant national, state, and local historic contexts.

Significance Criteria

In order for a property to be eligible for inclusion in the National Register, it must possess significance under at least one of four criteria. The Criteria for Evaluation for listing state:

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
>
> A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> B. That are associated with the lives of persons significant in our past; or
>
> C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> D. That has yielded, or may be likely to yield, information important in prehistory or history.

Criteria Considerations

Ordinarily cemeteries, birthplaces, graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

a. A religious property deriving primary significance from architectural or artistic distinction or historical importance; or

b. A building or structure removed from its original location but which is primarily significant for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or

c. A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building associated with his or her productive life; or

d. A cemetery that derives its primary importance from graves of persons of transcendent importance, from age,

893. National Park Service, "National Register of Historic Places." https://www.nps.gov/subjects/nationalregister/index.htm.

from distinctive design features, or from association with historic events; or

e. A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or

f. A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or

g. A property achieving significance within the past 50 years if it is of exceptional importance.[894]

National Register Status of the Fort Christiansvaern compound and its Stable

Fort Christiansvaern, as part of the Christiansted National Historic Site (CHRI), was administratively listed in the National Register of Historic Places in October 1966 with passage of the National Historic Preservation Act. National Register documentation for the Historic Site as a nationally significant historic district was approved and accepted on October 20, 1976.[895]

The Historic Site had previously been established under the name Virgin Islands National Historic Site by Secretarial Order on March 4, 1952, which was preceded by a cooperative agreement between the U.S. Department of the Interior and the Municipality of St. Croix dated February 11, 1952. Both the order and the agreement defined the site as "the Wharf and its buildings," D. Hamilton Jackson Park, and the Government House and grounds. The order recognizes the site's "national historical significance as an excellent example of the Danish economy and way of life in the Virgin Islands."[896]

A second memorandum of agreement, this one between the National Park Service and the Office of Territories relating to the Christiansted National Historic Site, was issued on December 24, 1960. This agreement changes the name of the historic site to its present name in an effort to disambiguate it from the Virgin Islands National Park, established in 1956.[897]

The 1976 National Register documentation lists six areas of significance for CHRI: architecture, commerce, military, political, religion/philosophy, and urban planning. Fort Christiansvaern is listed as having "first order" significance as a contributing structure within the district.[898]

An Additional Documentation filing was entered into the Register on March 5, 1999. For the Historic District, it lists the Period of Significance as "ca. 1734-1931," with specific dates of 1734 (Danish settlement of St. Croix), 1754 (full possession by Danish Crown), 1917 (United States purchase), and 1931 (transfer from Navy to the Department of the Interior). Significance Criteria for the district recognize politics, government, and architecture and cite Criteria A and C:[899]

A. "Property is associated with events that have made a significant contribution to the broad patterns of our history"; and,

C. "Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction."

The 1999 filing also lists the Fort Christiansvaern stable, which was included in the previous 1976 filing as part of the fort complex, as its own contributing structure within the district.[900]

Period of Significance

While the 1999 Additional Documentation lists the district-wide period of significance as "ca.

894. Code of Federal Regulations, Title 36, Part 60, "The National Register Criteria for Evaluation" (36 CFR Part 60).
895. NRHP Nomination Form.
896. *Foundation Document*, pp. 3, 49-50.
897. Ibid., pp. 54-56.
898. NRHP Nomination Form, section 7, p.6 and section 9, p.1.
899. NRHP Additional Documentation Form, 1999, pp. 3-4.
900. Ibid., Section 7, p. 1.

1734-1931," it provides no specific date range for the individual buildings.[901]

There are a few references to date ranges for interpretive uses unassociated with the National Register designation. The 1990 I*nterpretive Prospectus* states that the fort has been restored to its 1830-1840s appearance.[902] And while many of the park's compliance documents lists the period of interpretation as ca. 1830-1855, this date range has not been formally applied to the fort in any of the park's management documents.[903]

JKOA recommends amending the period of significance for the fort to 1734-1959 and that of the Stable Building to 1835-1959. These dates are inclusive of the periods identified for interpretation in later park management documents. For each structure, they include date of construction through municipal use by the USVI government, stopping just before acquisition by the NPS in 1960.

Assessment of Integrity

An assessment of integrity is to be based on an evaluation of the existence and condition of the physical features that date to a property's period of significance, taking into consideration the degree to which the qualities of integrity are present. The *National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation* defines integrity as "the ability of a property to convey its significance."[904]

The property must retain the essential physical features that enable it to convey its historical significance, those features that define both why a property is significant (National Register criteria) and when it was significant (period of significance).[905]

The seven aspects of integrity as defined in the National Register Criteria for Evaluation are location, design, setting, materials, workmanship, feeling, and association. These are explained in *Bulletin 15:*

> Location is the place where the historic property was constructed or the place where the historic event occurred. . . . Design is the combination of elements that create the form, plan, space, structure, and style of a property. . . . Setting is the physical environment of a historic property. . . . Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property. . . . Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory. . . . Feeling is a property's expression of the aesthetic or historic sense of a particular period of time. . . . Association is the direct link between an important historic event or person and a historic property.[906]

JKOA investigations and evaluations for this HSR include assessments of the historic integrity of the Fort Christiansvaern compound, including the accessory structures in the stableyard and the outer walls of the fort.

Integrity of Location

The fort retains integrity of location, remaining on the site where originally constructed.

Integrity of Design

The fort retains integrity of design in its overall form, plan, space, structure, and style during the period of interpretation.

Integrity of Setting

The fort retains integrity of setting on the bank of Christiansted Harbor, despite significant landscape modification to the surrounding Christiansted Square and wharf areas. Historic viewsheds to adjacent historic structures within the district are maintained.

Integrity of Materials and Workmanship

The fort retains integrity of materials and workmanship insomuch as is practical, given that the building's exposure causes significant

901. Ibid., Section 8.
902. *Interpretive Prospectus*, p. 16.
903. The Period of Significance is the timeframe recognized by the National Register.
904. *National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation*, (Washington, D.C.: National Park Service, National Register of Historic Places, 1990, revised 1997). pp. 44– 45.
905. Ibid.
906. Ibid.

cyclical maintenance issues. Throughout its entire history, many of the fort's material components have required replacement at regular intervals. Significant components of the structure have required reconstruction. Despite this, the basic composition and specific material components have remained true to the original design intent.

Integrity of Feeling

The fort retains integrity of feeling. The structure was originally built as a military compound and continued that use during the period of interpretation. It retains the same basic floor plan and relation of exterior and interior spaces of that period. Its active interpretation as a fort enhances this association.

Integrity of Association

The fort retains integrity of association as an example of Danish military architecture from the eighteenth century, and as "an excellent example of the Danish economy and way of life in the Virgin Islands," as stated by the National Register listing.

Part II: Treatment and Use

Requirements for Treatment and Use

The treatment and use of all historic properties maintained by the NPS are guided by federal laws and regulations as well as NPS policies, directives, and functional requirements. In addition to protecting cultural resources, they address safety, fire protection, energy conservation, universal accessibility, and abatement of hazardous materials. If rigidly interpreted, some of these requirements may be contradictory or at cross purposes. Any treatment must be carefully considered to ensure that the historic fabric of the structure is preserved.

The National Historic Preservation Act

The 1966 National Historic Preservation Act (NHPA), as amended, establishes programs for the preservation of historic and cultural properties, including buildings, landscapes, and archaeological sites. Its implementation has established laws and authorities that are binding on the NPS.

Section 106

Section 106 of the NHPA requires a consultative process prior to any federal agency undertaking, or federal involvement in an undertaking, which might affect historic properties listed or eligible for listing in the National Register of Historic Places. The regulations are codified at 36 CFR Part 800, "Protection of Historic Properties." The agency must initiate consultation; identify and evaluate historic properties; assess effects to historic properties; take steps to avoid, minimize, or mitigate adverse effects; and give the Advisory Council on Historic Preservation "a reasonable opportunity to comment with regard to such undertaking."



Figure II-1. Fort Christiansvaern as viewed from the north.

Section 106 strives to ensure that all interested parties have a voice in the preservation of our nation's cultural heritage. The published regulations require, among other things, consultation with State Historic Preservation Officers (SHPOs) and other appropriate parties, which may include local governments, government or nongovernment applicants, Tribal Historic Preservation Officers (THPOs) and tribal leaders, other parties, the general public, and the Advisory Council.

The regulations establish criteria under which the Advisory Council may comment, but the vast majority of federal undertakings do not involve Advisory Council review.

A programmatic agreement among the Advisory Council for Historic Preservation, the National Conference of State Historic Preservation Officers, and the NPS expedites the Section 106 review process. With certain conditions, routine repairs and maintenance that do not alter the appearance of the historic structure or involve widespread or total replacement of historic features or materials are not subject to review outside the NPS.

Director's Order 28

Director's Order 28 is the NPS Cultural Resources Management Guideline, which requires planning for the protection of cultural resources on park property.

The Secretary of the Interior's Standards

The Secretary of the Interior's Standards for the Treatment of Historic Properties articulate best practices for protecting a wide range of historic properties. They provide a philosophical rationale for historic preservation that is almost universally accepted in the United States and applies to a wide variety of resource types, including buildings, sites, structures, objects, and districts. Revised in 2017, the Standards are codified at 36 CFR Part 68.

The Standards describe four broad approaches to the treatment of historic properties: Preservation, Rehabilitation, Restoration, and Reconstruction. Definitions of each of these treatments are found in the *Alternatives for Treatment and Use* subsection of this report (p. 107).

Americans with Disabilities Act of 1990 and Architectural Barriers Act of 1968

The 1990 Americans with Disabilities Act (ADA) establishes comprehensive civil rights protection for disabled Americans, both in employment and in their right to free, unaided access to public buildings.



Figure II-2. View northwest across the center courtyard.



Figure II-3. View looking east down the Commandant's Gallery.

The 1968 Architectural Barriers Act (ABA) applies to facilities designed, built, altered, or leased with certain federal funds. The law is intended to provide unaided access to federal buildings. While people with restricted mobility have benefited most, the protections of ADA and ABA extend to those with impaired vision, hearing, or other disabilities.

Requirements for full compliance with ADA and ABA regulations are extensive and easiest to apply to new construction. Full compliance for historic buildings is more difficult. When a project would require significant alterations to their historic character, the regulations authorize a process for arriving at alternatives that can preserve historic character while maximizing disabled visitors' access.

Director's Order 42

Director's Order 42 concerns the NPS goal to ensure that all people have the highest reasonable level of accessibility to NPS programs, facilities, and services in conformance with relevant regulations and standards. The level of accessibility to be provided will be consistent with the obligation to conserve park resources and preserve the quality of the park's experience. A fundamental principal of the order is to "seek to provide the highest level of accessibility that is reasonable, and not simply provide the minimum level that is required by law. Consequently, managers are encouraged to exceed the requirements for visitor accessibility through innovative techniques and partnerships whenever possible and reasonable."

The five objectives of the Director's Order are:

- Incorporate the long-range goal of providing the highest level of accessibility that is reasonable for people of all abilities in all facilities, programs, and services, instead of providing "separate" or "special" programs;
- Implement this goal within the daily operation of the NPS, its policies, organizational relationships, and implementation strategies;
- Provide further guidance and direction regarding the NPS interpretation of laws and policies;
- Establish a framework for the effective implementation of actions necessary to achieve the highest level of accessibility that is reasonable; and,
- Ensure the implementation of "universal design" principles within the national park system.

Building Code Requirements

Treatment of Fort Christiansvaern may be guided by the following codes:

- International Building Code (IBC), 2021
- International Existing Building Code (IEBC), 2021
- International Energy Conservation Code (IECC), 2021
- International Plumbing Code (IPC)
- National Electrical Safety Code (NESC)
- National Fire Protection Association (NFPA) Code 914
- NPS Guiding Principles of Sustainable Design



Figure II-4. Overview of the south curtain from the northeast.

The National Park Service is not legally bound to local or state building codes. The Public Buildings Amendments of 1988 require that each building constructed or altered by any federal agency shall, to the maximum extent feasible, be in compliance with one of the nationally recognized model building codes and with other applicable nationally recognized codes.[907] The 2021 IBC and 2021 IEBC with appendices are currently referenced by the NPS Denver Service Center as nationally recognized building codes for design and construction.

The National Fire Protection Association (NFPA) has promulgated codes for historic buildings, most notably NFPA 909, "Code for the Protection of Cultural Resources Properties - Museums, Libraries, and Places of Worship," and NFPA 914, "Code for Fire Protection of Historic Structures." As a matter of policy, NPS provides a reasonable level of fire protection for all historic buildings and structures.[908]

907. 40 U.S.C. 3312 (formerly section 21 of the Public Buildings Act of 1959, 40 U. S.C. 619).
908. NPS Structural Fire Reference Manual 58, 2015, https://www.nps.gov/subjects/fire/upload/reference-manual-58.pdf.

Threats to public health and safety must be eliminated, but alternative ways to prevent them are always sought when full code compliance would needlessly compromise the integrity of a historic building.

Consulting with the NPS Branch Chief of Structural Fire located at the National Interagency Fire Center (NIFC) in Boise, Idaho regarding the requirements of fire protection for this historic structure is recommended. NPS Regional Structural Fire Managers (RSFMs) are also responsible for NPS structural fire program management within their regions and should also be consulted.

Abatement of Hazardous Materials

Repairs to the fort were made in an era when hazardous materials such as lead-based paint and asbestos were commonly used. Asbestos, considered a miracle product for decades, was used as an additive to provide fireproof qualities and additional strength to a wide variety of building materials through the late 1970s. Examples of building materials commonly containing asbestos include, but are not limited to:

- Plaster and Stucco
- Flooring tiles and tile mastic or grout

- Insulation
- Gypsum wallboard
- Mortar
- Acoustic ceiling tiles
- Electrical wire insulation

If left undisturbed, lead-based paint and asbestos-containing materials pose no threat to building occupants. However, appropriate abatement measures should precede any future work on building elements suspected to contain hazardous materials.

NPS Management Policies

NPS General Management Policies (2006), especially chapter 5, "Cultural Resource Management," guide its oversight of historic properties. Based on the authority of some nineteen Acts of Congress and many more Executive Orders and regulations, these policies require planning to ensure that decision-making and priority-setting processes integrate information about cultural resources and consultation and collaboration with outside entities. They also support good stewardship to ensure that cultural resources are preserved and protected, receive appropriate treatments (including maintenance), and are made available for public understanding and enjoyment.

Section 5.3.5, Treatment of Cultural Resources
This section of NPS General Management Policies provides specific directives, including a stipulation that "the preservation of cultural resources in their existing states will always receive first consideration."

It also states:

> ... treatments entailing greater intervention will not proceed without the consideration of interpretive alternatives.... Pending treatment decisions reached through the planning process, all resources will be protected and preserved in their existing states. Except for emergencies that threaten irreparable loss without immediate action, no treatment project will be undertaken unless supported by an approved planning document appropriate to the proposed action. (p. 50)

A *Long-Range Interpretive Plan* (LRIP) is an example of an approved planning document. HSRs and CLRs are intended to inform the planning process.

Park Planning Documents Addressing Treatment of Fort Christiansvaern

See detailed information for each document in the Historical Background and Context chapter of this HSR. A listing of relevant documents is provided below.

- 1953 Condition Assessment Report
- 1959 Historic American Building Survey
- 1960 Historic Structure Report - Part 1
- 1960s Masterplan - Draft Report
- 1976 National Register of Historic Places Nomination Form and 1999 Additional Information
- 1985 Cultural Landscape Report
- 1986 General Management Plan
- 1988 Historic Furnishings Report
- 1989 Management Operations Statement
- 1990 Interpretive Prospectus
- 2004 Museum Collection Management Plan
- 2015 Foundation Document

Ultimate Treatment and Use



Figure II-5. Fort Christiansvaern as viewed from the south.

This chapter presents the Ultimate Treatment and Use, introduced by the NPS Alternatives considered.

Alternatives for Treatment and Use

The United States Department of the Interior is responsible for establishing professional standards and providing advice on the preservation and protection of all cultural resources listed in or eligible for listing in the National Register of Historic Places. Accordingly, the National Park Service developed The Secretary of the Interior's Standards for the Treatment of Historic Properties ("Secretary's Standards," or "Standards"), which are intended to be applied to a wide variety of resource types, including buildings, sites, structures, objects, and districts.[909]

The Standards address four treatments: preservation, rehabilitation, restoration, and reconstruction. These are neither technical nor prescriptive but are intended to promote responsible preservation practices.[910] The NPS defines the four major treatments as follows:

> ***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.[911]

909. The Standards were developed in 1978, updated in 1983 and again in 1995 before the most recent 2017 revisions. They are codified at 36 CFR Part 68.

910. Anne E. Grimmer, *The Secretary of the Interior's Standards for the Treatment of Historic Properties, with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings* (Washington, DC: National Park Service, Technical Preservation Services, rev. 2017).

911. **Preservation** Treatment Standards, www.nps.gov/tps/standards/four-treatments/treatment-preservation.htm.

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.[912]

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.[913]

Reconstruction is defined as the act or process of depicting by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.[914]

Ultimate Treatment and Use

For Fort Christiansvaern, the NPS administratively determined Management Category is "Must Be Preserved and Maintained," and the Ultimate Treatment is ***Preservation***. This treatment allows for the efforts necessary to preserve, maintain, and repair historic materials and features, and permits minor modifications as needed to address new information regarding historic integrity and to meet the needs of contemporary interpretation. The ***Preservation*** treatment retains historic features and permits removal of non-historic features.

Rehabilitation focuses on work towards a compatible use for a property. Fort Christiansvaern is currently partially interpreted and partially used as archival storage. These are both compatible uses for the structure.

Restoration would return the fort to its appearance during the period of significance. The fort has already been restored to its ca. 1830s-1840s appearance according to the 1990 Interpretation Prospectus.

Reconstruction does not apply as the fort is in place.

JKOA recommendations determined during the investigations and assessments for this HSR for achieving the NPS administratively determined treatment of ***Preservation*** are found in the *Recommendations for Achieving Ultimate Treatment and Use* chapter that follows.

A summary of the recommended ultimate treatments and uses is as follows:

• ***The NPS administratively determined management category for the fort complex is "Must Be Preserved and Maintained," and the Ultimate Treatment is Preservation. The treatment recommendations in this report continue the established Ultimate Treatment of Preservation. Specific measures that follow The Secretary of the Interior's Standards for Preservation are discussed in this report.***

• ***The recommended ultimate use of the complex is to provide interpretive exhibits as the premiere resource of the Christiansted National Historic Site.***

Standards for Preservation Treatment

The Secretary of the Interior's Standards include individual standards addressing each of the four treatments. The *Standards for Preservation* are to be applied taking into consideration the economic and technical feasibility of each project. They are as follows:

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

912. **Rehabilitation** Treatment Standards, www.nps.gov/tps/standards/four-treatments/treatment-rehabilitation.htm.
913. **Restoration** Treatment Standards, www.nps.gov/tps/standards/four-treatments/treatment-restoration.htm.
914. **Reconstruction** Treatment Standards, www.nps.gov/tps/standards/four-treatments/treatment-reconstruction.htm.

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 will 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 will not be used.
8. Archaeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.[915]

915. Preservation Treatment Standards, https://www.nps.gov/tps/standards/four-treatments/treatment-preservation.htm.

Recommendations for Achieving Ultimate Treatment and Use

Guidelines for Treatment

Recommendations have been formulated based on the guidelines provided by The Secretary of the Interior's Standards for Preservation and reflect the administratively determined ultimate treatment. The full list of Preservation standards is provided in the *Ultimate Treatment and Use* chapter. Other guiding documents are outlined in the *Requirements for Treatment and Use* chapter.

Recommendations that further enhance the ultimate treatment of preserving the fort are based on the findings of this HSR and are included in the *Further Research* subsection at the end of this chapter. That discussion includes recommendations for performing additional studies and addressing matters relating to interpretation of the resource.

Implementation of the recommendations provided by this report should adhere to the following guidelines:

- Undertake all work in compliance with The Secretary of the Interior's Standards for Preservation.
- Retain the historic character of the building and its surroundings by protecting the building and significant site features.
- Ensure that any proposed new elements or construction are compatible with the historic character of the building and site.
- Protect adjacent natural resources during construction projects.
- Document through photography, written narratives, and detailed as-built drawings, all changes and treatments to the building and its immediate site. Maintain records of treatments and preserve documentation according to professional archival standards. Maintain a copy of these records in NPS archives.
- Retain features and materials of both the exterior and interior of the building that survive from the period of significance to the greatest extent possible.
- Incorporate sustainable design principles in future projects that respect preservation principles.

Recommendations

The actions recommended below are organized by feature and are intended to provide a conceptual framework for achieving the recommended ultimate treatment and use. They do not and are not intended to provide the detailed guidance of architectural/engineering plans and specifications.

Site and Site Features

Observations

The fort's northern face, consisting mainly of water battery and projecting latrines, is separated from the water's edge by a narrow strip of rocky shoreline and vegetation. The adjacent stable yard to the east is at a lower level than the fort itself, and consists of two relatively flat, terraced levels connected by an exterior staircase.

Beyond the fort and stableyard walls is a parking lot for visitors and staff to the southeast, a wide tree-lined walkway approaching the ravelin gate from the south, and a rolling grassy area to the southwest.

Grading is appropriately sloped away from the walls of the fort; however, some minor erosion has taken place near the north end of the stable yard, where an early stair and part of a retaining wall has been undermined (*Figs. II-6*). As a result, the stair has been partially lost. More minor erosion has taken place at the larger stair descending to the water's edge (*Fig. II-7*).

Scour was observed at the base of the east and west wingwalls (*Fig. II-8*).

A Cultural Landscape Report (CLR) was partially completed in 1985, but offers little guidance on site treatment, instead largely restating the findings of Olsen's 1960 HSR.

Recommendations

- Prepare a Cultural Landscape Report (CLR) for Fort Christiansvaern that addresses treatment of the fort complex. See the *Recommendations for Further Research* section for more information.
- Although no obvious issues are currently noted, evaluate site for flood avoidance under potentially heavier rainfall, possibly including the introduction of features such as swales to divert or direct water as necessary to carry water away from the structure.
- Maintain the partially destroyed stair and wall in the stableyard as a ruin. As an immediate measure, add fill behind the wall and along the stair to avoid further undermining.
- Designs for localized underpinning of the projecting wingwalls should be developed in coordination with a geotechnical investigation at the waterline. Underpinning may be in the form of surface-level concrete in combination with deeper pile foundations, depending upon geotechnical findings. See recommendation for geotechnical investigation in the *Recommendations for Further Research* section.
- See *Roof and Rainwater Dispersal Recommendations* section for spaces within the fort itself, such as the courtyard, ravelin yard, and prison yard.
- Consult the *Exterior Masonry and Stucco Recommendations* and *Roofing and Rainwater Dispersal Recommendations* sections for specific measures to address moisture threats.

Relevant NPS Preservation Briefs

- Preservation Brief 36: *Protecting Cultural Landscapes: Planning, Treatment and Management of Historic Landscapes*



Figure II-6. Undermined wall and remains of stair at north end of stableyard.



Figure II-8. West wingwall. Condition at east wingwall is similar.



Figure II-7. Minor erosion at stair descending to water's edge. Photo by 1200AE.



Figure II-9. Example of limewash remaining on exterior surfaces of east curtain west elevation.

Exterior Features

Masonry/Stucco

Observations

The exterior brick masonry walls are finished with stucco. Until recently, the entirety of the stucco was coated with limewash, which requires frequent re-application to provide effective protection. In 2020, the majority of the exterior of the fort was painted with mineral paint, a coating with a much longer lifespan. The mineral paint has generally been applied only to faces of the building expected to receive considerable weathering. Areas that are more protected, such as within commandant's gallery, the south arcade, and beneath the covering of the officer's gallery, still have earlier limewash coatings (*Figs. II-8, II-9*). The east elevation of the carriage house and the north and west elevations of the stable have not been painted either (*Figs. II-10, II-11*).

The new mineral paint coating has a few isolated areas of failure, likely caused by improper preparation of the underlying surface (*Figs. II-12, II-13*).

The fresh application of the mineral paint makes identifying previous damage or cracking difficult. No major evidence of cracking or delamination was noted on the exterior, and the underlying masonry is not visible on the exterior.



Figure II-10. Limewash remaining on the west elevation of the stable.



Figure II-11. Limewash remaining on the east elevation of the carriage house.

The limewash in areas that have not had mineral paint applied is generally in fair condition but requires reapplication.

While mineral paint is to an extent breathable, it is less breathable than the repetitive limewash coatings used historically. It remains to be seen how this new coating may impact the historic structure long term. Additionally, the mineral paint has a higher sheen than the previous limewash coatings and is not expected to weather to the same visual characteristics of limewash.

At the time of the site investigations for this report, biologic growth had not yet begun to grow on the exterior. Although mineral paint is comparatively more resistant to biologic growth than limewash, it should be expected that growth will eventually take hold and will require regular cleaning.

The potential impact of rising damp should be considered in relation to masonry, stucco, and applied finish deterioration. The majority of deterioration observed appears to be the result of drainage and roofing issues; however, moisture rising from the ground by capillary action may also contribute. Promoting proper site drainage and ensuring that applied coatings are breathable is a key first step in addressing rising damp. A dedicated moisture study, potentially involving the introduction of probes, use of infrared imagery, and long-term monitoring of moisture within the exterior walls should be explored.

The vaulting beneath the U-shaped exterior stairs accessing the Commandant's Gallery requires repointing. See also the *Exterior Steps* section for observations.

Masonry repairs are also required at window openings with rusted metal bars, particularly those at the latrine. See also the *Exterior Metals* section.

Recommendations

- Prepare surfaces where mineral paint has failed by removing unsound coatings and re-applying mineral paint. Given that fading has likely occurred, it may be necessary to repaint from edge to edge on a given wall to ensure a consistent appearance. Areas of deterioration include the north face of



Figure II-12. Mineral paint failure on landing of central stair accessing Commandant's Gallery.



Figure II-13. Examples of mineral paint failure at blind arch (left) and pilaster (right).

the south curtain at the exterior stairs and the west face of the west curtain facing the prison yard.

- Monitor performance of the mineral paint coating before continuing with application at exterior faces with limewash currently applied. It may be desirable to maintain limewash finishes in less-exposed areas to better show historic conditions. For these locations, prepare surfaces and reapply limewash to match the existing color. Locations currently retaining limewash coatings include the south arcade, the commandant's gallery, the officer's gallery, the carriage house, and the west and north elevations of the stable building. Frequency of reapplication will vary by degree of exposure to weather.
- Complete masonry repairs at the exterior stairs and at window openings with ferrous bars set within the masonry. See specific recommendations in the *Exterior Steps* and *Exterior Metals* sections, respectively.
- Consider performing a dedicated moisture study to analyze the potential causes of water infiltration into the masonry walls. Such a study should be coordinated with the recommended rainwater drainage study. Both studies are described in the *Recommendations for Further Research* section.
- Regularly monitor stucco for new and worsening cracks.
- When repointing of the underlying masonry is required, use an appropriate mortar as recommended by the mortar analysis performed for this report. See BCA's Report in *Appendix F* for more information.
- Ensure that electric saws and grinders are not used to remove mortar from historic masonry. These tools are imprecise and pose a high risk of damage to historic material. Repointing should be performed by skilled masons with experience working with historic buildings. Appropriate methods of mortar removal include the use of hand tools or a combination of hand tools and small pneumatic chisels.
- Clean biologic growth from surfaces, testing a wide range of cleaning methods and materials before use of a chosen cleaning system.
- Always test cleaning methods in a small, inconspicuous area to gauge effectiveness.
- Test cleaning methods by progressing from the gentlest solution, such as presoaking with warm water, to mild non-ionic detergents, and finally to more aggressive commercial cleaners as necessary to remove soiling or staining. All methods should be agitated with a soft, natural bristle brush to prevent damaging the surface of the material being cleaned.
- Clean masonry elements using the lowest level of abrasion and mildest cleaning solution possible while achieving the desired results.
- Ensure that pressure washing with water is performed at a low psi (garden hose level up to about 300-400psi) with a fan-tip nozzle and a minimum distance of 30 inches from nozzle tip to masonry surface.
- Prohibit use of high-pressure washing (in excess of 400 psi) to clean historic masonry. The pressure exerted on the surface by a pressure washer can result in damage or loss of material, and also exposes historic materials to large volumes of water.

- Blasting with hard material (sand, nutshells, glass beads, etc.) should never be considered as an option for cleaning or removing coatings from masonry.
- Ensure that any repair work taking place at the wingwalls is coordinated with applicable natural resource requirements, including permits and surveys.

Relevant NPS Preservation Briefs:

- Preservation Brief 1: *Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Buildings*
- Preservation Brief 2: *Repointing Mortar Joints in Historic Masonry Buildings*
- Preservation Brief 6: *Dangers of Abrasive Cleaning*
- Preservation Brief 22: *The Preservation and Repair of Historic Stucco*

Wood Elements

Observations

Exterior wood elements include window sash, shutters, exterior doors, and all door and window jambs and casings. Also included are elements of the projecting roof structures over the officer's gallery and at the east side of the south curtain. Specific recommendations pertaining to doors and windows are described in their respective sections. The recommendations described here address the general treatment approach for exterior wood elements.

All exterior wood appears to be modern replacement material. The extreme exposure and harsh conditions faced by all exterior wood elements at the fort result in on-going need for repair and replacement. It is critical that appropriate wood species and detailing be used to ensure maximum feasible service life for wood elements.

Refer to the *Windows and Shutters* and the *Exterior Doors and Gates* recommendations sections for specific information and photographs of deteriorated conditions.

Recommendations

- Maintain protective coatings on exterior face of all wood elements, including exterior doors, door and window frames, gates, and exposed exterior structural elements.
- Prepare surfaces appropriately to achieve a sound protective coating. Painted surfaces should be scraped to remove loose paint, the edges feathered, and sound paint cleaned of dirt, oil, and moisture before repainting. Clean painted wood surfaces using mild detergents and a natural bristle brush. Rinse with tap water to remove residue.
- Ensure that pressure washing with water is performed at a low psi (garden hose level up to about 300-400psi) with a fan-tip nozzle and a minimum distance of 30 inches from nozzle tip to wood surface.
- Prohibit use of high-pressure washing (in excess of 400 psi) to clean wood. The pressure exerted on the surface by a pressure washer can result in damage or loss of material, and also exposes historic materials to large volumes of water.
- Follow manufacturer's instructions for chosen coating and stay within one system, as paint formulations are frequently evolving.
- Ensure that replacement material and patches are primed on all six faces to maximize the life of the wood and applied coatings by sealing it from moisture.
- Use more durable species of wood or treated wood in areas exposed to moisture. Considering the difference in quality between early woods and those available today, it is not always preferable to match the existing wood species. It is thought that the park is currently using Sapele mahogany for repairs, as large amounts are stockpiled in the stable. Sapele is a good choice for exterior wood elements in this locale, though other options may also be viable.
- Utilize wood which is relatively free of knots and checks in order to assure a longer life for replacement materials.
- Ensure that replacement material is installed such that it integrates well with the early material. For example, while it is generally preferred to retain as much early material as possible when making repairs, the use of very small pieces is not advisable in areas commonly exposed to moisture.

Relevant NPS Preservation Briefs

- Preservation Brief 1: *Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Buildings*

- Preservation Brief 6: *Dangers of Abrasive Cleaning*
- Preservation Brief 10: *Exterior Paint Problems on Historic Woodwork*
- Preservation Brief 39: *Controlling Unwanted Moisture in Historic Buildings*

Exterior Metals

Observations

Iron bars are present at the majority of window openings throughout the fort, some of which are fully exposed at all times, while others are secured behind shutters. Many bars are secured into a wood frame within each masonry opening; however, some are embedded directly in the masonry walls (*Figs. II-14, II-15*).

Rust is typical on nearly all of the window bars across the fort. Rusting of the bars causes them to expand. This expansive process can exert large forces on the surrounding materials. At the masonry, this process results in cracking and spalling. Bars that are fully exposed, particularly those of the latrine, which is closest to the water's edge, are among the greatest affected. The bars of the dungeon window that faces the ravelin yard have rusted through.

In addition to the window bars, ferrous metal elements throughout the fort and stable building for which the recommendations below apply include:

- The decorative iron gate arches found above the ravelin gate and above the gate in the courtyard fence;
- The iron spikes that line the top of the walls of the ravelin yard, along with the iron rack just east of the gate;
- The iron lamp holder centered above the sally port gate on the side facing the ravelin yard;
- The iron straps spanning the cannon embrasure openings;
- The two pairs of metal cannon embrasure doors at the northeast bastion;
- A bell with decorative cover and brackets on the northwest elevation of the fee office;
- The metal doors on the ventilation openings serving the south face of the powder magazine;
- Door, gate, and shutter hinges and hardware.
- Structural hardware and ties.

Generally, the exterior metalwork appears to be in good condition, with the exception of heavily rusted window bars at the latrine and southwest bastion. The majority of window elements are painted black.

The spikes at the ravelin yard walls appear to be in good condition; however, the use of embedded ferrous material at this location could result in damage to the masonry/stucco from rust jacking. After rust jacking has occurred, the masonry is susceptible to moisture infiltration and further damage.

Recommendations

- Regularly inspect the iron bars for advancing deterioration. Two options for treatment are recommended:
    - Option 1: For bars that retain structural integrity, remove loose rust to a stable surface before applying new coatings. Prime with a rust inhibiting primer and



Figure II-14. Example of heavily rusted window bars in Room 24C of the latrine.

apply a paint appropriate for marine environments to extend the life of the metal.

- Option 2: For bars that have rusted beyond what can be treated as described in Option 1, replace the bars in-kind, taking care to match the dimensions and profile of the existing material. Regularly painting the bars as outlined in Option 1 will prolong the life of the bars as long as possible. Painted stainless steel or marine grade bronze bars may be considered as viable replacement materials that maintain the historic appearance without rusting.

- Consider replacing the spikes at the ravelin yard walls with painted stainless-steel or marine grade bronze spikes, which will not rust. Ensure that replacements match the existing spikes in form and dimension. Perform any necessary repairs to the masonry and stucco at the spike locations in accordance with the *Masonry/Stucco Recommendations* section.
- Consider replacement of ferrous structural hardware and ties with painted stainless steel versions that provide appropriate structural strength.
- Maintain protective painted coatings on all decorative ironwork throughout the fort. Prepare surfaces for repainting by first removing all loose paint and exfoliation. Prime with a rust inhibiting primer and repaint using a paint that is formulated for marine environments.



Figure II-15. Example of window bars embedded in masonry at Room 24A of the latrine.

Windows and Shutters

Observations

All extant examples of wood sash, shutters, and hardware appear to be modern reproductions or replacement elements.

Deterioration of shutters was observed in multiple locations. More recent modern shutters on the east elevation of the east curtain, facing the stableyard, showed significant deterioration at exposed end grain and at locations where hinge straps are attached (*Fig. II-16*).

One pair of shutters on the east elevation of the northeast bastion is missing. The adjacent pair of shutters on the east elevation are not sized appropriately for the opening (*Fig. II-17*). Several of



Figure II-16. Typical deterioration of shutters on the east elevation of the east curtain.



Figure II-17. Missing pair of shutters (Left) and ill-fitting shutters (Right) on east elevation of the northeast bastion.

the south elevation window shutters at the second floor of the south curtain are missing securing hardware and have been held in place with boards nailed to the interior or are secured with zip ties (*Fig. II-18*).

A total of six shutters are missing on the east elevation of the stable. Four of the openings are covered with plywood, while two are without shutters (*Fig II-19*).



Figure II-18. Example of board and zip ties securing shutter at second floor of south curtain.



Figure II-19. Examples of missing shutters and covered window openings on east elevation of the stable.



Figure II-20. Deteriorated wood frame and holes for bar in Room 24B.

Several of the window openings of the west curtain have wood frames that hold vertical iron bars. One window opening in Room 24B of the latrines has extensively deteriorated such that the bars have fallen from the opening (*Fig. II-20*). Wood frames at the southwest bastion are similarly heavily deteriorated, however the grid pattern of the bars provides more points of support to remain in the opening (*Fig. II-21*).



Figure II-21. Example of deteriorated wood frame at east window opening of Room 13 of the southwest bastion.



Figure II-22. Open and deteriorated window frames at Commandant's Gallery.



Figure II-23. Stacks of stored louvered sash in Room 19 of the west curtain.

Few examples of wood casement window sash remain and are found in Rooms 3,4, and 5 in the east curtain and Room 10 in the south curtain. These sash are later modern elements and are in good condition.

The window sash, doors, louvered sash, and several of the window jambs and frames are missing from the Commandant's Gallery (*Fig. II-22*). Many of the louvered sash for the east end of the gallery are stored in Rooms 18 and 19 of the west curtain and appear to be in reusable condition (*Fig. II-23*).

The metal shutter for the western ventilation hole for the powder magazine (Room 25) is missing (*Fig. II-24*).

Hardware throughout the fort consists of reproduction iron pieces. Most of the hardware is in overall good condition and the majority of it has a painted coating to slow the formation of rust.

Recommendations

- Maintain protective coatings on all elements of shutters, window sash, frames, and casings in accordance with the guidelines in the preceding *Exterior Wood Elements* section.
- Ensure that windows and shutters remain in operable condition as part of maintenance campaigns. Associated maintenance tasks may include periodic lubrication of hinges and locking mechanisms, as well as ensuring that shutters and sash are opened on a regular basis. Windows opening to light-sensitive spaces such as the archive storage rooms in the east curtain may remain closed, but their ability to be opened should be maintained. For instance, shutter hinges and hardware should remain in place and any new shutters installed should be fitted to the window openings appropriately in order to operate.
- Regularly survey shutters, window sash, and hardware for deterioration. As elements invariably begin to deteriorate and require replacement, plan ahead to fabricate new in-kind replacements to avoid leaving the openings unsecured or in a condition that creates a life safety hazard due to potential for falling material.
- Fabricate new shutters for the two openings on the east elevation of the northeast bastion to match existing examples. If possible, trim existing incorrectly sized shutters to fit the opening. Match the operating hardware of other openings in the bastion.



Figure II-24. Missing hinged metal shutter at powder magazine ventilation hole.

- Fabricate new shutters to replace the six missing shutters on the east elevation of the stable to match existing examples.
- Monitor wood elements of window frames and plan for in-kind replacement as elements begin to deteriorate.
- Retain all examples of wood casement sash in Rooms 3, 4, 5, and 10.
- Create an inventory of stored window and door elements stored in Rooms 18 and 19 of the west curtain. Many of these elements appear to be removed from the Commandant's Gallery and are fit for repair and reinstallation.
- Replace missing jambs and sills at the Commandant's gallery based on surviving examples. Deteriorated pieces should be replaced in-kind. If only a small portion of the overall element is damaged, a Dutchman repair should be performed.
- Reinstall louvered and glazed sash at the Commandant's Gallery. Fabricate new sash as required based on surviving examples.
- Replicate the missing metal cover at the powder magazine ventilation hole based on surviving example.
- Replace any deteriorated hardware in-kind. For missing hardware, select reproduction hardware based on existing examples.
- Regularly maintain hardware, applying lubricants, replenishing paint finishes as appropriate, and making repairs to extend the life of the hardware.

Related NPS Preservation Briefs

- Preservation Brief 9: *The Repair of Historic Wooden Windows*
- Preservation Brief 10: *Exterior Paint Problems on Historic Woodwork*

Exterior Doors and Gates

Observations

All extant examples of exterior doors and gates appear to be modern reproductions or replacement elements.

The doors at the Commandant's gallery are no longer in place.

the doors at both entrances to the upper level of the northeast bastion (Room N) from the gundecks have been removed (*Fig. II-25*). Similarly, doors in doorways accessing Rooms 20, 21, 22/23, and 24A have been removed (*Fig. II-26*). At the restrooms (Rooms 20 and 21), these open doorways are accelerating the deterioration of the bathroom vestibules, as well as the doorway thresholds (*Figs. II-27, II-28*).

On the east face of the west curtain, the doors are heavily exposed to weather and prone to accelerated deterioration. At the doorways to Rooms 17 and 19, the rotted jambs no longer hold the driven hinge pintles in place, resulting in the doors twisting out of the frame when operated. This issue presents a potential life safety hazard, as Room 17 is open to visitors daily. The door in the doorway accessing Room 19 is heavily deteriorated on the inside face near the top (*Fig. II-29*).

A reproduction wood gate accesses the ravelin yard from the outside the fort footprint. Two large leaves hang in the opening and a smaller personnel door is hinged within the eastern leaf. The gate is of recent construction, but closely matches the gate depicted in the HABS documentation. All hardware consists of reproductions and appears to be of the same vintage as the gates themselves.

The sally port gate is of wood construction and consists of vertical pickets turned on point. The



Figure II-25. Doorway missing paired doors on the west elevation of the northeast bastion. Note that the south doorway is similar.



Figure II-26. Missing doors at doorways to (from L to R) Rooms 20, 21, 22/23, and 24A.



Figure II-27. Doorway accessing Room 21 of the west curtain. Note deterioration of jamb and threshold. Conditions at Room 20 doorway are similar.



Figure II-28. Deterioration of vestibule door in Room 20 due to exposure to moisture.

gate is a modern reproduction and several of the pickets are broken at the base of the gate (*Fig. II-30*).

The gates accessing the stableyard closely match those shown in the HABS documentation and are reproductions produced in aluminum based on 1979 specifications for replacement. The current gates were ultimately installed in 1984.



Figure II-29. Deterioration of interior face of door accessing Room 19 of the west curtain.



Figure II-30. East leaf of sally port gate. Note broken pickets at base. West leaf is similar.

Steel fasteners are used in the gate construction and are rusting (*Fig. II-31*). Mesh has been added to the lower portion of the gate, presumably to discourage trespassing.

Recommendations

- Maintain protective coatings on all wood elements in accordance with the *Exterior Wood Elements* recommendations section.
- Maintain protective coatings on all metal elements. For ferrous metals, see the *Exterior Metals Recommendations* section. For the aluminum stableyard gates, remove any loose paint, thoroughly clean surfaces, and repaint with a compatible coating. Rusted fasteners should be cleaned of flaking rust, treated with rust inhibiting primer, and repainted.
- Ensure that driven hinge pintles remain anchored in jambs and that jambs are sound by regularly surveying exterior doorways. The failing door jambs observed at doorways accessing Rooms 17 and 19 have caused the doors to detach from their frames and potentially fall. As these doors are located in areas frequented by visitors (the main courtyard), this presents a life safety issue and should be addressed immediately.
- Replace deteriorated doors and frames at Rooms 17 and 19 of the west curtain in-kind. Retain existing hardware, if reusable, or replace in-kind.
- Regularly monitor doors, gates, and hardware for deterioration. As elements invariably begin to deteriorate and require replacement, plan ahead to fabricate new in-kind replacements to avoid leaving the openings unsecured or in a condition that creates a life safety hazard due to potential for falling material.
- Perform in-kind replacement of broken base pickets at the sally port gate.
- Reinstall or fabricate new exterior doors based on existing examples at the following locations: Rooms N (north and west openings), 20, 21, 22/23, 24A, and the four doorways accessing the Commandant's Gallery.
- Regularly maintain hardware, applying lubricants, replenishing paint finishes as appropriate, and making repairs to extend the life of the hardware.
- Prepare a unit-by-unit window and shutter/door survey for the fort and stable building. See the *Recommendations for Further Research* section for more information.

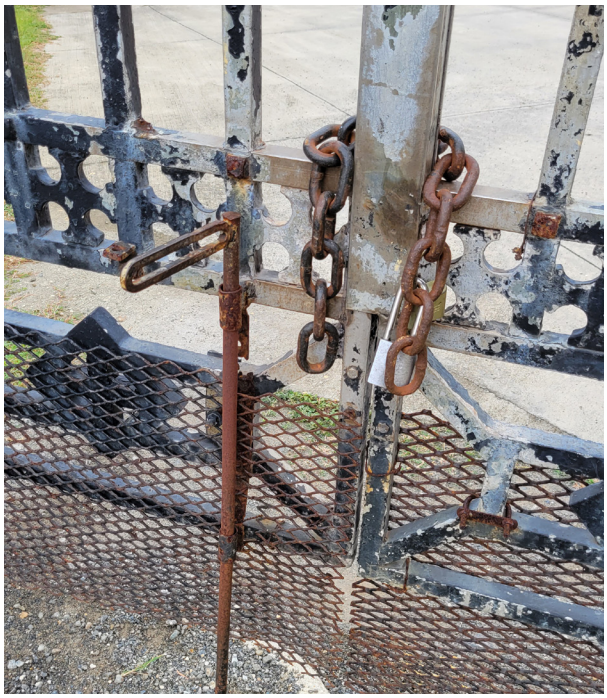


Figure II-31. Peeling paint on replacement aluminum stableyard gate. Note rusted steel fasteners at bars and added steel mesh at base.

Roofing and Rainwater Dispersal

Observations

Roofing throughout the fort consists of low-sloped brick roofs laid on wood sleepers that span timber beams. At the gundecks of the east and west curtains, the water battery, and the bastions, this brick is covered with a cementitious coating. These



Figure II-32. Typical condition of coatings on gundecks. Note exposed brick substrate.



Figure II-33. Overview of condition of east curtain gundeck. West curtain gundeck and southeast and southwest bastion gundecks are similar.

coatings have typically begun to fail in the form of cracking and spalling (*Figs. II-32, II-33*). The gundeck of the northwest bastion has recently had this coating removed down to the brick deck and a similar new coating applied (*Fig. II-34*). Reportedly, there have been no issues with this new application and near-future plans include application at other roofs. Deterioration was noted at the underside of the concrete roof framing at the north end of the west curtain. See also the *Structural System* section.

At the roof of the south curtain and Commandant's Gallery, the brick roof deck is covered with a coated membrane. Ponding appears to be an issue



Figure II-34. New roof coating installed on trial basis at northwest bastion.



Figure II-35. Roof of south curtain. Note black area near scupper at left where water ponds. Large bubbles are also visible on the membrane surface.

near the scuppers at the east and west ends and several large bubbles appear in the membrane (*Fig. II-35*). Water infiltration to the interior at the southwest corner near the scupper has been a problem in the past, though the leak does not appear to be currently active.



Figure II-36. The artillery shed roof at south curtain. Arrows indicate the edge of patch where flashing has likely been installed to stop leaks into the space below.



Figure II-37. Crumbling stucco at intersection of latrine roof with masonry.

The artillery shed within the ravelin yard has a modern corrugated metal roof, as does the fee office, the latrines, and the officer's gallery and east overhang of the south curtain. The intersection of the shed roof with the south face of the south curtain has been the source of previous long-term leaks. The leaks were likely the result of inadequate flashing. Stucco patches along the roofing indicates that new flashing has likely been installed since the leaks were active (*Fig. II-36*). Deterioration to the roof decking and framing below remains and is supported by temporary shoring. See also the *Structural Systems* section.

At the latrines, stucco is crumbling at the intersection of the shed roof and masonry (*Fig. II-37*). This is likely caused by expansion and contraction of the metal roofing. These roofs may require improved connections to resist wind loads.



Figure II-38. Roofing of the stable (background) and carriage house (foreground). Note plant material growing along wall.



Figure II-39. Seam with vegetation at edge of carriage house roof and along back wall. Note missing bricks at corner.

Sistering and roof decking repairs are required at the north end of Room 27. Widespread sistering or installation of additional rafters to reduce the rafter spacing may be required throughout Room 27. See also the *Structural System* section.

The carriage house within the stable yard has a brick roof with no coating applied, while the stable has a temporary plywood roof with membrane (*Fig. II-38*). A currently ongoing project is the replacement of the temporary roofing with a new brick roof to match the carriage house. Plant material is growing along the back wall and leading edge of the carriage house roof, causing moisture to be retained. Several bricks have been lost at the northwest corner (*Figs. II-38, II-39*). The wood roof framing of the carriage house exhibits some deterioration.

Rainwater drainage for the fort is largely reliant on two 3"-diameter internal drains located at the east and west ends of the south curtain (*Fig. II-40*). These drains are tasked with accepting all of the water shed from the upper level of the south curtain, as well as all water shed from the east and west curtains, the southeast and southwest bastions, and a large portion of the northeast bastion. The eastern drain discharges to a catch basin on the east elevation of the fort; however, the status of the subsurface drains from this point is unknown. The western drain is thought to connect to the cistern in the kitchen (Rooms 14/15).



Figure II-40. Roof drain at east end of south curtain. West drain is similar. Note vegetation and biologic growth.

Opportunity to enlarge these drains is limited given their location and the existing subsurface systems. Ensuring that the existing drains are maintained and that roof coatings are watertight is critical to the wellbeing of the fort and its contents.

The gundeck of the water battery has barely any slope and portions of the brick substrate is exposed beneath later cementitious coatings (*Fig. II-32*). Scuppers draining the gundeck exist along the north edge. Although no obvious signs of distress were observed, it is assumed that much of the water falling on the battery currently migrates into the earthen fill beneath the paving.

The ravelin yard drains to an exterior scupper at ground level on the southeast elevation. To reach that scupper, water must first pass through the artillery shed (Room 27). The brick floor in this area, which had an integrated gutter, has been covered with a recently added concrete slab. A channel cut in the slab connects the ravelin yard paving to the scupper. The channel presents a potential trip hazard and is likely undersized for the amount of water that is shed from the ravelin yard (*Figs. II-40, II-42*). The solution also detracts from the historic character of the fort.

The courtyard generally drains to a ditch along the western edge (*Fig. II-43*). The ditch passes beneath the floor of the latrines and exits the fort to the north near the water's edge.



Figure II-41. Inlet for drainage of water from ravelin yard.

The prison yard relies on drainage through the soil to weep holes in the exterior masonry wall.

Recommendations

- Prepare a drainage study that addresses all aspects of the building-wide drainage system, including adjusting roof slopes, enlarging or adding drains/scuppers, and effectively carrying water away from the building at the site level and within the ravelin yard. See the *Recommendations for Further Research* section for more information.



Figure II-42. Drainage channel in artillery shed. Note brick at base of channel that concrete slab is poured on top of.



Figure II-43. Drainage ditch and walkway along east side of west curtain.

- Plan for replacement of all cementitious coatings at the gundecks, with the exception of the northwest bastion, which has recently been recoated. Analysis on the existing material should be performed to ensure that the selected new material is comparable in performance characteristics and appearance. Remove entirety of existing coating prior to reapplication.
- Plan for replacement of coated membrane at upper-level roof of south curtain and the northwest bastion. As part of replacement, ensure that the substrate beneath the membrane is pitched appropriately to drain water to scuppers without ponding. Coordinate replacement of any deteriorated wood members with roofing repairs, including repairs to the main girder above the Commandant's Gallery and wood members of the Carriage House roof. Members should be replaced in-kind, either full length or partial length with an engineered scarf joint. See also the *Structural System* section.
- Complete analysis of roof framing with metal roofing and plan for improvement of structural connections in accordance with analysis described in the *Recommendations for Further Research* section.
- Complete repairs to the roof structure in Room 27 by replacing roof decking within the northern bay, sistering the rafter against the north wall, and performing any associated roof or flashing repairs made necessary by this intervention. Widespread sistering may be required to meet loading requirements in Room 27. See also the *Structural System* section.
- Coordinate repairs to the concrete roof framing at the north end of the west curtain with roofing repairs. See also the *Structural System* section.
- Verify the subsurface condition and path of the two interior roof drains at the east and west walls of the south curtain. It is thought that the western drain still connects to the cistern in Rooms 14/15. The eastern drain exits the east elevation of the fort, but the path and condition of the subsurface drainage system is unknown.
- Ensure that the internal drains remain clear of debris. Introduction of cleanouts before the system enters the subsurface drainage system may aid in maintenance efforts. As the relatively small drains are required to carry a great deal of water, keeping them clear and functional is critical to the wellbeing of the fort and its contents.
- Install debris screens at the internal drain openings to reduce the amount of debris that is able to enter the system.
- As part of re-surfacing the water battery, ensure that the roof surface has enough slope to direct water to the north-facing scuppers.
- Repair stucco at the latrine roof and ensure that proper isolation from the roofing is maintained to prevent expansion and contraction from dislodging the stucco.
- Clear vegetation and dirt from the carriage house roof joints and seal with mortar to match existing.
- Complete the replacement of the stable roof with a brick roof to match the carriage house.
- Eliminate the trip hazard at the artillery shed drainage channel by installing a grille across the opening that will allow water to drain but prevent visitors or staff from stepping into or tripping over the channel.
- As part of any major future work in the artillery shed, redesign the drainage solution connecting the ravelin yard to the exterior drainage structure to ensure that it is



Figure II-44. Typical example of vegetation growing in failed mortar joints of exterior stairs at south curtain.

adequately sized. Ideally, restore the early gutter design that likely remains beneath the current floor slab.

- Maintain the drainage ditch and partially-subsurface drainage system for the courtyard.

Relevant NPS Preservation Briefs

- Preservation Brief 4: *Roofing for Historic Buildings*
- Preservation Brief 39: *Controlling Unwanted Moisture in Historic Buildings*

Exterior Steps

Observations

Exterior stairs access a wide variety of locations throughout the fort. All steps are of masonry construction, and many consist of exposed brickwork. Some steps, such as those accessing the sally port gate, spaces of the east curtain, and level changes at the gundecks, are finished with stucco.

The U-shaped, mirrored stairs accessing the Commandant's Gallery, as well as the service stair to the west, have exposed brick treads and tile-clad landings. Mortar joints at the landings and treads are failing and have led to water infiltration into the vaulting below. Repointing of the intrados of the vaults is required. Moss and plants are growing inside many of the mortar joints (*Fig. II-44*).

The brick steps and walkway accessing the eastern doorways of the west curtain are in overall good condition but require visitors to cross a drainage ditch to access (*Fig. II-43*). The narrow walkway and significant height difference between the walkway and the courtyard may present a safety hazard. In the past, small wood bridges spanned the ditch to access each of the doors, making access to these spaces easier.

Recommendations

- Remove vegetation and repoint open or failed mortar joints at exterior stair treads and landings accessing Commandant's Gallery. See the *Exterior Masonry/Stucco* recommendations section for approach to repairs.
- Ensure that treads and landings have appropriate slope to effectively drain water. Any treads or landing surfaces that are not adequately sloped may require resetting to avoid water pooling on the stair surface. Standing water on these elements will accelerate the deterioration of mortar joints and will expose the underlying masonry structure to moisture.
- Repoint the intrados of the vaults beneath the stairs using mortar formulation derived from analysis. Consider the application of a parge coat to protect against the loss of brick units. This parge coat should be formulated to allow the masonry to breathe, allowing moisture to escape.
- Monitor all exterior stairs for loose bricks, new or worsening cracks, and open mortar joints.
- Consider re-introduction of wood bridges to access the east elevation doorways of the west curtain. This will improve ease of access for visitors and reduce trip hazards.

Interior Features

Flooring

Observations

Flooring throughout the fort varies between brick pavers, concrete slabs, tile, and wood.

Concrete slabs throughout the fort and stable building appear to be in good condition. No significant cracking suggesting instability was observed.

Modern plywood flooring is installed in Room 31A of the stable building and is in good condition. The material and condition of the flooring beneath the added plywood is unknown; however, documentary evidence suggests that brick flooring may remain in place in this location.

Wood flooring in Room 12 is of earlier vintage than other wood flooring observed in the fort. Sections of the flooring in Room 12 have been extensively damaged by insects, though no obvious current insect activity was observed in this space (*Fig. II-45*).

There is minor rot in the tongue-and-groove wood flooring at the southwest corner of Room M of the South Curtain (*Fig. II-46*).

Based on the findings of the structural assessment, sistering of select beams supporting the second floor of the south curtain above Room 12 may be required. Also see the *Structural System* section.

Aspects of this sistering may require removal and reinstallation of the non-historic wood flooring at the second floor.

Recommendations

- Monitor wood flooring throughout the fort for damage from insects. See the *Vermin and Pests Recommendations* section for more information.
- Retain existing concrete flooring in all locations. Monitor concrete flooring throughout the fort for any newly formed cracks that could suggest stress or structural movement.
- Retain existing pavers in all locations. Monitor pavers for broken or loose units that may present trip hazards to visitors. Replace any broken pavers that could present a trip hazard in-kind. Reset any loose pavers to ensure stability.
- Retain tile flooring in the restrooms (Rooms 20 and 21) and Room H. Monitor for any loose, cracked, or missing tiles. If damage is observed, replace in-kind.
- Remove portion of plywood flooring in Room 31A of the stable building to verify



Figure II-45. Deteriorating flooring and underlying sleepers in Room 12.



Figure II-46. Small hole in flooring at southwest corner of Room M. Note that this area is near a previous roof leak.



Figure II-47. Paneled wainscotting, doors, and trim in Room 2. See the *Room-by-Room Description* for detail photos.



Figure II-48. Early baseboard in Room 12. Note early wall finishes.



Figure II-49. Early crown molding in Room 12.

material and condition of flooring beneath. If the floor is brick, consider removing the added plywood floor and repairing the underlying brick. Replace any deteriorated units in-kind and repoint joints using mortar formula derived from analysis.

- Retain wood flooring in all locations. See targeted repair recommendations below.
- Patch the flooring at the northwest corner of Room M. Ensure that the patch material matches the dimensions of the existing flooring and that the patch is well integrated into the surrounding floor. In this case, this could mean replacing a slightly larger portion of the flooring to avoid an obvious repair. For example, seams should be staggered, rather than aligned across multiple boards.
- Take particular care to protect the comparatively early flooring in Room 12 of the south curtain. Two options are presented for treatment based on use of the room:
    - Option 1: If access to Room 12 is to remain restricted, it is recommended that the flooring be left in place and that the space be regularly monitored and treated for termites. See the *Vermin and Pests Recommendations* for more information. Option 1 is the preference of this report, given the importance of early materials in Room 12.
    - Option 2: If Room 12 is given an active use or is to be open to visitors, carefully remove and retain the flooring for reuse, pour a concrete slab with stainless steel reinforcement within the room, and reinstall the flooring on new sleepers. The new floor level should match the existing. In this scenario, any deteriorated portions of flooring should be replaced in-kind, while retaining as much of the sound flooring as possible. Flooring patches should be well integrated into the surrounding flooring to avoid an obvious repair. For example, seams should be staggered, rather than aligned across multiple boards.
- As part of necessary beam sistering at the second floor of the south curtain above Room 12, selectively remove wood flooring only to the extent necessary to complete the structural repairs. After repairs are completed, reinstall existing flooring.

Architectural Trim and Interior Doors

Observations

Decorative trim throughout the fort is limited, as most spaces are utilitarian. A few rooms, most notably Room 12, have earlier interior trim elements. Early trim is also found in Rooms 2, H, and I/K at the second floor of the south curtain.

Room 2 has early paneled wainscotting, board walls, and wide trim at the east and west window and door openings likely dating from the late 19th or early 20th century (*Fig. II-47*). The paneled exterior doors are secured in an open position on the interior and are of similar vintage.

Room 12 has examples of early baseboard and crown molding (*Figs. II-48, II-49*).

Rooms H and I/K retain a pair of paneled interior doors, a pair of louvered interior doors, and wide molded casings likely dating from the late 19th or



Figure II-50. Doorway with paired doors in Room H.

early 20th century (*Fig. II-50*). Both doorways have early hardware.

Rooms 20 and 21 (the men's and women's restrooms) have modern slab doors and wood-framed partitions. All elements are modern. The doors themselves are in poor condition overall, as moisture has caused them to delaminate (*Fig. II-28*).

Recommendations

- Retain all existing interior wood elements, including trim, interior doors, and wainscoting. Place particular emphasis on protecting the early examples identified above by maintaining protective coatings on all interior doors, trim elements, and wainscotting. If elements should become damaged, prioritize Dutchman repairs over replacement. If an element is too damaged to perform a Dutchman repair, replace in-kind.
- Monitor interior wood elements for wood-damaging insect activity. See the *Vermin and Pests Recommendations* section for more information.
- Plan for in-kind replacement of deteriorated modern slab doors in Rooms 20 and 21.

Walls and Ceilings

Observations

The vast majority of the interior walls consist of plaster applied directly to masonry. Exposed brick is found within the powder magazine (Room 25) and within the five vaulted cells (Rooms 26A-E). Rooms 26B and 26C have molded decorative bricks with tooled joints forming pilaster bases and water table moldings (*Fig. II-51*). Similar tooled joints were found behind the jambs at the window



Figure II-52. Limewash and tooled mortar joints behind wood jamb at the Commandant's Gallery.



Figure II-51. Example of molded decorative brick with tooled joints in Room 26C.



Figure II-53. Typical example of flaking limewash on walls of Room 22.

openings of the Commandant's Gallery (*Fig. II-52*). These tooled joints and decorative elements remain from before stucco was applied and before the space beneath the stairs was fully infilled to serve as cells. The findings of the material analysis indicate the application of several limewash coatings ranging from red to brown in color at the tooled brickwork. See also Appendix F.

This evidence indicates that the brick was once intended to be exposed and may represent the original exterior wall treatment. Research suggests that the exposed limewashed brick was present from 1734-1779 and may have adorned the interior of the fort until as late as 1839, when the arched openings of the second-floor level of the south curtain were purportedly enclosed, covering one of the locations of the red limewashed brickwork.

Interior limewash coatings throughout the fort vary in condition, with the majority of spaces exhibiting some level of flaking or failure (*Fig. II-53-54*). Of particular concern is failure due to moisture at the ceiling of the museum collection storage room (Room 8) (*Fig. C55*). This failure is likely the result of water infiltration from the gundeck above.



Figure II-55. Moisture infiltration at ceiling of Room 8.



Figure II-56. Typical example in the east curtain of flaking paint at ceiling beams and roof sleepers.



Figure II-54. Abandoned plumbing pipe in Room 22/23 causing cracking and damage to masonry.

With the exception of rooms with vaulting, the roof structure is typically exposed to the interior. Exposed beams support sleepers upon which the brick roofing is installed. Some roof/ceiling beams are painted, while others appear to be limewashed. Localized failure of these coatings is typical due to leaks from the roofs and gundecks above (*Fig. II-56*). Roofing is addressed in the *Roofing and Rainwater Dispersal* section.

The potential impact of rising damp should be considered in relation to plaster and applied finish deterioration. The majority of deterioration observed appears to be the result of drainage and



Figure II-57. Molded joist above ceiling in Room 12.



Figure II-58. Decorative painted border in Room 12.

roofing issues; however, moisture rising from the ground by capillary action may also contribute. Promoting proper site drainage and ensuring that applied coatings are breathable is a key first step in addressing rising damp. For the archival spaces, inadequate or inappropriate climate and humidity control could also play a role. See the *Building Systems Recommendations* for more information. A dedicated moisture study, potentially involving the introduction of probes, use of infrared imagery, and long-term monitoring of moisture within the exterior walls should be explored.

Embedded piping from the previous restrooms is rusting and causing plaster and masonry cracking in Rooms 22/23 (*Fig. II-54*).



Figure II-59. Decorative painting in Room 8.

Early molded-edge beams remain above the ceiling in Room 12 and have early finishes (*Fig. II-57*).

Early decorative painting remains on plaster walls in Room 12 of the south curtain and Room 8 of the southeast bastion (*Figs. II-48, II-58, II-59*). These finishes should be preserved and protected, and the plaster stabilized to ensure that this important evidence is not lost.

Based on the findings of the structural assessment, sistering of select beams supporting the second floor of the south curtain above Room 12 may be required. See also the *Structural System* section. Aspects of this sistering may require removal and reinstallation of portions of the wood ceiling above Room 12.

Recommendations

- Remove flaking or unstable limewash and paint from walls and ceilings. Prepare surfaces for application of new paint or limewash after recommendations outlined in the *Roofing and Rainwater Dispersal* section have been completed.
- Retain all decorative painting in Rooms 8 and 12. Stabilize and consolidate plaster in place to avoid further loss.
- Retain and protect early ceiling beams in Room 12. The later ceiling should remain in place.
- Retain and protect examples of tooled, limewashed brick within the cells below the stairs to the Commandant's Gallery, as well as within the arched window openings of the Commandant's Gallery. See also the Recommendations for Further Research section.
- Remove embedded piping from masonry in Room 22/23, patch masonry and plaster. Monitor for any further cracking in these areas.
- At all plaster walls, perform any necessary plaster patching or repair using plaster formula derived from finishes analysis. See also Conservation Report by BCA located in *Appendix F*.
- Consider performing a dedicated moisture study to analyze the potential causes of water infiltration into the masonry walls. Such a study should be coordinated with

the recommended rainwater drainage study. Both studies are described in the *Recommendations for Further Research* section.

- As part of the necessary beam sistering at the second floor of the south curtain above Room 12, selectively remove wood ceilings only to the extent necessary to complete the structural repairs. After repairs are completed, reinstall existing ceilings.

Building and Site as Artifacts

Observations

It is important to think of the building and its surroundings as an archaeological site. Evidence of the creation and evolution of this place is embodied in the building and site features, and sometimes hidden below the ground's surface.

Recommendations

- As part of any project requiring ground disturbances, have an archaeologist on call to review any potential findings.
- Select representative samples of building elements to retain, label, and archive when they have deteriorated such that they can no longer serve their intended function.
- Be aware of the importance of fasteners such as nails and screws, the markings of the tools that created elements (such as the types of saws or hand tools), and the methods of construction. All of these aspects are a testimony to the characteristics of this building and have interpretive potential.

Ventilation and Building Systems

Observations

General Considerations

The introduction of any new building systems, including mechanical, electrical, plumbing, and life safety, can result in damage or loss of historic fabric if care is not taken in its design, installation, and operation.



Figure II-60. Example of mini-split unit in east curtain.

Ventilation

Providing airflow throughout the fort is critically important in high-moisture climates such as St. Croix. The moisture held within the building due to lack of airflow can result in mold growth, deterioration of plaster, and will attract wood damaging insects. The majority of spaces throughout the fort have one or more window opening that consists of open bars with or without shutters, which make promoting ventilation an easy task.

The second floor of the south curtain, which contains two exhibit spaces and three storage spaces, is currently closed to the public as a result of concerns about the deteriorated beam at the Commandant's Gallery. Since this space has been closed, it receives little if any airflow.

Room 2 in the east curtain, which is currently interpreted as an officer's common room, is directly connected to the climate-controlled archives space but is not conditioned. This room lacks any sort of ventilation, as the windows are closed by acrylic panels. The doorway is closed off by an acrylic viewing window (*Fig. II-47*).

Mechanical Systems

Two mini-split systems serve to condition the archival storage space (Rooms 3, 4, and 5) and a third system serves the museum collections storage (Room 8). The systems are of recent vintage and are in serviceable condition (*Fig. II-60*). The systems do not provide the fine level of climate control and adjustment required for archival or museum storage.

Finish deterioration in Rooms 3, 4, 5, and 8 are thought to be related largely to roof leaks; however, improper dehumidification of these spaces could also be a contributing factor.

Electrical System

The fort's electrical system primarily serves the archival and collections storage spaces (Rooms 3, 4, 5, and 8), the artillery shed (Room 27), the fee office (Room 28), and both levels of the south curtain. The stable and carriage house also have a basic electrical system fed from the fort. The



Figure II-61. Panel and switch in Room 31A of the stable. Note condition of switch box and capped wiring above breaker panel.

stable electrical system has been capped at the panel until the roofing replacement is completed.

The main electrical service serves a panel in the Hallway to the Stableyard (Room 7), while subpanels are located in the artillery shed (Room 27), as well as in the scuba room (Room 31A) in the stable. Large disconnect switches are located in Rooms 7 and 31A. Both switches are rusted and the case of the unit in Room 31A is bent (*Figs. II-61, II-62*).



Figure II-62. Electrical panel in Room 7 of the east curtain. Note rust on adjacent switch.

The panel in Room 31A currently has all circuits capped above the panel until the stable re-roofing project is completed (*Fig. II-61*). The capped wires are not in an electrical box.

Fixtures throughout the fort are modern and utilitarian in nature.

Plumbing System

Rooms 20 and 21 contain public restrooms. Room 20 is the men's room and has one toilet, one urinal, and one sink, while the women's restroom has two toilets and one sink.

A hose bib is located at the south end of the stable.

Fire Alarm System

The fire alarm system is controlled by a panel on the south wall of Room 5 (*Fig. II-63*). There appear to be two generations of panel in place and equipment may remain from previous systems throughout the fort. At the time of inspection, both were reading trouble codes and a warning alarm was constantly emitting. It was unclear whether the system would be functional in the event of an emergency.

Park staff are not currently trained in the system's operation.

Fire Sprinkler System

The current fire sprinkler system serves Rooms 2, 3, 4, 5 and 8 and is a wet pipe system, meaning that water is present in the overhead pipes at all times.



Figure II-63. Fire alarm and security control panels in Room 5.

A wet pipe system is not recommended for museum or archival applications, as a malfunction of the system or broken pipe could result in damage of irreplaceable objects and records.

Security System

The motion-sensor based security system is controlled by a panel in Room 5. Motion sensors throughout the fort vary in design, and versions from past systems likely remain in place.

Recommendations

General Considerations

- Minimize drilling, cutting or otherwise damaging historic trim, finish materials, or framing elements such as door casings, headers, baseboards, wall and ceiling boards, or joists to accommodate new building utility systems.
- Strive to use existing holes for routing pipes and wiring in order to minimize impact on historic framing members.

Ventilation

- Until the second floor of the south curtain can be reopened to the public, regularly open windows on the south elevation to promote ventilation to the second-floor spaces.
- Consider removing acrylic panels from the courtyard-facing window in Room 2 to allow airflow. The shutters could be closed for security when the fort is closed.

Mechanical Systems

- The existing systems cannot provide adequate climate control to meet standards for archival storage. See the *Recommendations for Ultimate Use* section for information regarding relocation of the archive storage.
- If archival storage is to remain and existing climate control kept in place, monitor and analyze performance and impact of the existing mini-split systems serving Rooms 3, 4, 5, and 8 on the masonry structure. This analysis should be as part of a larger moisture study that addresses sources of moisture infiltration throughout the building. See the *Recommendations for Further Research* section for more information.

Electrical System

- Have an electrical engineer inspect the existing panels and system to ensure adequate capacity and verify condition. See the *Recommendations for Further Research* section for more information regarding inspection.
- Replace deteriorated disconnect switches in Rooms 7 and 31A. Discussions with the park suggest that this may have already occurred since the investigations for this HSR.
- Terminate any capped wiring inside an accessible electrical junction box.

Plumbing System

- Consider replacement of existing bathroom fixtures with more efficient models.

Fire Alarm System

- Have a fire protection system engineer inspect the existing system to ensure that the system is functioning properly and that all spaces in the fort are adequately covered. See the *Recommendations for Further Research* section for more information regarding inspection.
- Remove any fire alarm equipment that is not part of the active system to avoid confusion.
- Ensure that park staff operating in the fort are aware of how the fire alarm system operates in the event of an emergency, trouble code, or maintenance issue.

Fire Sprinkler System

- Following evaluation by a fire protection engineer, replace, or if possible, convert the existing sprinkler system serving the archival and collections storage spaces from the current wet-pipe system to a dry-pipe system. Dry pipe systems are preferred for spaces containing sensitive items. See the *Recommendations for Further Research* section for more information regarding evaluation.
- If the current piping and sprinkler heads are to remain with the new dry-pipe system, have an engineer evaluate the

existing system to ensure that the current design and placement of sprinkler heads provides adequate coverage.

Security System

- Remove any security system elements that are not part of the active system.



Figure II-64. Deterioration of brick in Room 26D.



Figure II-65. Flooring and sleepers in Room 12.



Figure II-66. Termite damage to framing above Room 12.

- Perform regular testing of the system and ensure that park staff are trained in the system's operation.

Structural System

The observations, recommendations, and photographs provided in this section were prepared by 1200AE. A standalone structural assessment report can be found in Appendix E.

South Curtain – First Floor Spaces and Second Floor Framing

Observations

The rooms below the exterior stairs on the north side of the south curtain are built with barrel vaults supporting the stairs above. The brick masonry and mortar in these vaults are showing signs of deterioration, likely due to long-term water infiltration through the stairs above (*Fig. II-64*).

The wood floor and supporting joists/ sleepers at the south-facing rooms in the south curtain are



Figure II-67. Damage from water infiltration in Room M.



Figure II-68. Damage from water infiltration at west end of the Commandant's Gallery.

in contact with the ground in Room 12, which dramatically increases the moisture contact of the wood, a condition favorable to wood rot and termites (*Fig. II-65*). The condition of the floor sleepers in other parts of the south curtain's lower level is unknown, as members are fully concealed by flooring.

The second-floor framing above Room 12 was found to have evidence of termite damage (*Fig. II-66*). Field documentation of exposed areas estimated the amount of loss to the 7" x 8" beams to be on the order of 1" from the top surface, for the southern third of the span. The floorboards were previously replaced and are currently supported on wood sleepers set on top of the beams. The sleepers are intermittently attached to the beams and some gaps in their support are likely causing flexibility in the floor surface above.

Recommendations

- The vaults appear structurally stable but surface deterioration of brick units and mortar can accelerate over time and lead to future structural weakening. The transmission of water through the stairs above should be minimized where possible, through localized joint treatments or potential resloping of surfaces to assure water can run off and is not trapped. At the intrados of the vaults, repointing is recommended at deteriorated areas and consideration of applying a parge coat to help minimize further losses of brick units.
- Wood in direct contact with earth is subject to accelerated deterioration from both moisture and easy access for termites and other insects. If public access is to be allowed to Room 12, lift wood boards and salvage intact material for reuse. Install a reinforced concrete slab on grade at an elevation deep enough to allow room for application of wood sleepers and finish wood flooring at the current elevation. Reinforcement in the slab on grade should be corrosion resistant, with consideration of both galvanized and stainless-steel wire mesh. If public access is not to be allowed, then the existing condition can remain as is. Probe openings in other rooms of the lower level of the south curtain would allow confirmation of joist/sleeper condition in other areas.
- Termite treatments should be updated at regular intervals to assure that infestations are not active. See the *Vermin and Pests Recommendations* section for more information. Preliminary calculations based upon the observed dead load and a 60 pounds per square foot live load find the magnitude of loss to warrant reinforcement of the framing. Refinement of these findings is warranted, given the limited access, and the need for reinforcement may be limited to a portion of the beam span. It is assumed that reinforcement would be in the form of sistering new timber alongside the existing framing. As the current floorboard support is inconsistent, sistering the beams could also provide a more continuous and direct support of the floorboards, thereby providing both added beam capacity and continuous board support.

South Curtain – Second Floor Spaces and Roof Framing

Observations

Termite trails were noted on wall surfaces in the Commandant's Gallery at several locations. These trails lead up the walls towards the roof framing. See the *Vermin and Pests Recommendation* section for representative photographs.

Evidence of water infiltration through the roof and resulting deterioration of wood framing was noted in several locations within the Commandant's Gallery. One such location is at the northwest corner of Room M and the adjacent space at the west end of the corridor (*Figs. II-67, II-68*). At this location, there is a scupper to drain the rainwater from the roof. It is likely that the scupper does not drain adequately and has caused water to back up



Figure II-69. Overview of deteriorated girder in center bay of Commandant's Gallery.

and enter the building through the exterior wall and / or roof.

Recommendations

- Termite treatments should be updated at regular intervals to assure that infestations are not active. See the *Vermin and Pests Recommendations* section for more information.
- Roofing and drainage systems should be reviewed to ensure that the roof is watertight, and the scupper is functioning as intended. After any necessary roofing repairs have been made, deteriorated wood members should be replaced in-kind, either full length or partial length with an engineered scarf joint.

Commandant's Gallery Roof

Severe deterioration of the low timber girder in the center bay of the Commandant's Gallery was noted during 1200AE's initial site visit (*Fig. II-69*). Deterioration was found to be particularly severe at the east end of the girder in the upper portion. The root cause of this deterioration is likely water ingress from the roof associated at least in part with problems of the flashing around the flagpole immediately above. The flagpole no longer projects above the roof and the roofing appears to have been repaired such that water is no longer penetrating the roof at this location.

1200AE recommended that temporary shoring be installed to provide safe access to the gallery and adjacent spaces for staff and the public and provided engineered drawings for this shoring. Subsequently, 1200AE visited the site again to perform probing of the girder and its bearings to assess the remaining intact portions of wood and recommend options for repair or replacement of the girder.

The girder was found to be built up with four separate members connected to each other with ferrous elements (*Fig. II-70*). In the areas of heavy deterioration of the wood, the connectors were also noted to be heavily corroded. Wood testing indicated that the existing girder species is Southern Pine. A more detailed report of the girder assessment is provided in *Appendix E.2*.

Recommendation

- Based on the findings of the girder assessment, the southern ply of the girder should be replaced in-kind. Connectors between plies will require replacement and potentially reinforcement. A small area of the lower plies at the west end may require wood



Figure II-71. Embedded anchor in window opening at Commandant's Gallery.



Figure II-70. Detail of deteriorated girder in center bay of Commandant's Gallery.



Figure II-72. Wood split caused by rusting hinge pintle at Commandant's Gallery.



Figure II-73. Wood cracking at location of connection to posts.

consolidation. Final design of the repairs was issued on January 23, 2023.

South Curtain – Embedded Ferrous Structural Elements

Rusting of iron embedments in masonry, including window bars as well as window and door framing anchorages was prevalent. Some areas the deterioration of the iron was coincident with significant wood deterioration, or complete loss of wood components (*Fig. II-71*). Other areas were clearly in an earlier phase of deterioration, with iron fasteners beginning to rust and starting to cause damage to surrounding materials (*Fig. II-72*). As iron or steel rust in the presence of water and oxygen, the chemical process results in the volumetric expansive production of iron oxide. This expansive process can exert large forces on the surrounding materials.

Recommendations

- Iron or steel anchorages should be replaced with structurally equivalent stainless steel to assure proper durability in the marine environment. Given the proximity of salt water, stainless steel Type 316 is recommended. Embedded iron or steel that is not deteriorating actively may be susceptible to future deterioration, however replacement may be deferred, and the areas visually monitored over time to assure conditions do not change.

South Curtain – Shed Roof

Observations

The second-floor porch on the east side of the South Curtain has a wood-framed, corrugated metal covered shed roof. As opposed to the heavy flat brick roofs in other areas, where the weight of the brick resists wind uplift during heavy wind events, this shed roof is of much lighter construction. Wind uplift is resisted by roof connections down to the wood rafters and tie-downs of the roof rafters to the wood beams and posts below.

Edge beam to wood post connections are assumed to consist of pegged mortise and tenon connections, possibly with ferrous connectors in lieu of wood pegs. Some cracking was observed in the wood at these connections (*Fig. II-73*), possibly indicating either corrosion of the ferrous connector or overstress in the wood. In addition, at the south end of the roof, the edge beam was observed to be pulling away from the south curtain wall (*Fig. II-74*). This behavior is consistent with roof shifting or uplift due to high wind loads.

Recommendations

- Tie-downs and connections should be evaluated, although they currently appear



Figure II-74. Separation between east wall and beam of shed roof.

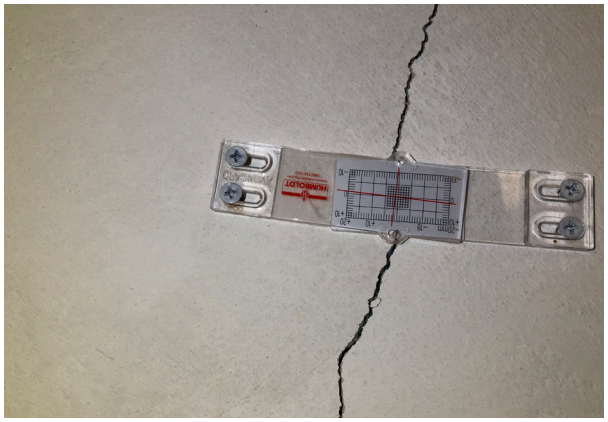


Figure II-75. Crack gauge showing movement.



Figure II-76. Plaster falling from crack.

to have performed relatively well over time. As the severity of storms and, as a result, wind loads are predicted to increase with the warming climate, this evaluation should take into account these anticipated changes. It is likely that connections will require some reinforcement in the form of added fasteners or connector plates. Added materials should be selected for the marine environment, with stainless steel typical for metal fasteners and connectors.

Southwest Bastion

Observations

Extensive cracking in the masonry vaulting in the southwest bastion was observed from within the first-floor spaces, at the underside of the roof. Crack patterns are indicative of outward movement in masonry walls and piers, and corresponding flattening of the arches and vaults, associated with the horizontal thrust imposed by the primary arches and groin vaults. In broad terms, as vertical load is applied to vaults and arches these structures carry that weight through compression along the lines of their raised profiles. For these structures, the rise of the vaults and arches provide the geometric stiffness to accommodate the large weights. These compressive forces must then be resisted at the base of the vaults and arches, both vertically and horizontally. When insufficient resistance to these forces is present, the vaults and arches will spread or settle, generally resulting in cracking.

Crack gauges were installed prior to the current survey as a means to monitor and measure any movements after the installation of the gauges. Assuming that the gauges were all installed to be with the standard zero setting, movement has been observed at several locations (*Fig. II-75*). Several of the gauges indicated no movement, remaining at the zero-movement mark.

In one area, plaster was noted to have fallen from a line of cracking in a primary arch (*Fig. II-76*) with plaster dust and fragments observed on the beds below. This provided a clear sign of recent, on-going movement.

Based on the 1960 HSR, the roof of the southwest bastion was originally built as a brick flat roof supported on timber framing. This framing system would not have imposed horizontal thrust on the walls below, only vertical loads; however, the wood framing would have been more susceptible to rot and termite damage in the presence of moisture over time. The brick roof and wood framing were replaced with brick groin vaults, which likely provided better protection against water infiltration but did exert a horizontal thrust on the walls below.



Figure II-77. Beam in west curtain repaired with scarf joint.



Figure II-78. Cracking at concrete roof framing, in this case above Room 21.

Recommendations

- Since movement has been documented to be active and the observed conditions clearly support that data, a more detailed structural investigation and the design of repairs is warranted. Given the presence of the large exterior piers, the overall mass of the walls and vaulting, and the long history of the vaults remaining in place, an imminent structural failure does not seem likely. It is more likely that movements will advance slowly over time. As such, having this space continue to operate with the public having partial access near the entrance is deemed acceptable while further evaluation and likely strengthening is pursued. Structural analysis should provide a quantified assessment of the vault loads and thrust on the perimeter walls. The exterior masonry piers should be evaluated to resist these forces. Strengthening may consist of grouted anchorage of the exterior wall and piers to the roof and second-floor diaphragms, with potential vertical reinforcement of the exterior piers. Grouted anchorage may be in the form of extended stainless-steel anchors set in a grouted sock, with the grout engaging and keying into irregularities and/or voids in the masonry.

West Curtain

Observations

Some of the wood framing has suffered from both water and insect damage historically, with residual evidence of deterioration as well as areas of both full member replacement and repairs with traditional scarf joints for partial member replacement (*Fig. II-77*).

Cracking was observed at the underside of the reinforced concrete roof framing just south of the northwest bastion (*Fig. II-78*). This is likely due to long-term water infiltration causing corrosion of the steel reinforcing at the bottom of the concrete beams. As noted previously, like steel or iron embedded in masonry, when steel reinforcement in concrete corrodes in the presence of moisture and oxygen, it expands volumetrically, exerting large pressures against the surrounding materials. This typically causes cracking, crushing and/or displacement of these materials. The observed cracking will likely continue and eventually result in spalling of the concrete below the reinforcing bars. At this point the concrete below the bars would eventually break off and fall to the floor. Although this would not likely coincide with a catastrophic failure of the roof structure since the bars typically would remain in place, the falling concrete itself could represent a risk to visitors.

Recommendations

- Address any active areas of water penetration to reduce potential for ongoing accelerated deterioration of wood framing. See the *Roofing and Rainwater Dispersal Recommendations* section.
- Remove loose concrete. Expose corroded reinforcing bars, clean of all corrosion and coat with a rust-inhibiting coating. Patch concrete with a trowel-on patching mortar.

Northwest Bastion

Observations

Directly to the south of the latrine, in the northwest bastion, embedded ferrous piping has caused deterioration in the masonry walls (*Fig. II-54*). As noted above, when ferrous elements rust in the presence of moisture and oxygen, they expand volumetrically, exerting large pressures on the surrounding materials. This has caused spalling of these materials. These elements do not appear to serve a structural function and appear to be abandoned and no longer needed.

The vaulting of the northwest bastion generally appears in good structural condition. A line of cracking was noted, running parallel to the span of the main north-south barrel vault. That this crack is running parallel to the span, as opposed to being transverse, leaves the vault form and original load path structurally intact without indication of movement relating to horizontal thrust. The crack may relate to some past movement of the exterior wall or localize discontinuity in the construction but does not impede proper structural functioning of the vault.

Recommendations

- Remove ferrous elements from walls and repair masonry as described in the *Exterior Masonry Recommendations* section.
- Localized repointing of crack and repair of finishes. If crack re-emerges then



Figure II-79. Rusting anchors at central beam of northeast bastion.

some form of long-term monitoring may be warranted, similar in nature to what has been done at the Southwest Bastion.

Latrine

Observations

The latrine roof is a light corrugated metal roof supported on wood framing. While there are no visible signs of distress, this type of roof is vulnerable to high wind uplift forces during severe weather events.

Recommendations

- Tie-downs and connections should be evaluated, although they currently appear to have performed relatively well over time. As the severity of storms and, as a result, wind loads are predicted to increase with the warming climate, this evaluation should take into account these anticipated changes. Some connection reinforcement with stainless steel fasteners or connectors is likely, pending a detailed structural analysis.

Water Battery

Observations

The structure of the Water Battery was found to appear in good condition where accessible. No structural treatments are required.

Recommendations

- No recommendations at this time.

Northeast Bastion

Observations

The masonry structure of the Northeast Bastion was found to appear in good condition. No structural treatments are required.

The roof framing appears to have suffered some damage historically, with some rafters being repaired with bolted half-lapped joints. The bolt heads are covered with wood plugs and the repairs appear to be functioning well over time. Surface rusting of iron anchors at the kinked center beam was observed (*Fig. II-79*). The rusting does not appear to be compromising the structural functioning of the framing.

Recommendations

- Scrape the iron of paint and loose materials and recoat with an appropriate coating for the marine environment, in-keeping with the historic appearance.

East Curtain

The first-floor porch on the courtyard side of the east curtain has a wood-framed, corrugated metal covered shed roof. As opposed to the heavy flat brick roofs in other areas, where the weight of the brick resists wind uplift during heavy wind events, this shed roof is of much lighter construction. Wind uplift is resisted by roof connections down to the wood rafters and tie-downs of the roof rafters to the wood beams and posts below.

Edge beam to wood post connections are observed to consist of pegged mortise and tenon connections, possibly with the addition of ferrous connectors in lieu of wood pegs in some areas (F*ig. II-80*).

Some of the wood roof framing has suffered from both water and insect damage historically, with residual evidence of deterioration as well as areas of both full member replacement and repairs



Figure II-80. Structural connection at east curtain shed roof.



Figure II-81. Cracking at vaulting of southeast bastion.

with traditional scarf joints for partial member replacement.

Recommendation

- Address any active areas of water penetration to reduce potential for ongoing accelerated deterioration of wood framing. See the *Roofing and Rainwater Dispersal Recommendations* section.
- Similar to the shed roof at the south curtain second floor, tie-downs and connections should be evaluated, although they currently appear to have performed relatively well over time. As the severity of storms and, as a result, wind loads are predicted to increase with the warming climate, this evaluation should take into account these anticipated changes. It is likely that connections will require some reinforcement in the form of added fasteners or connector plates. Added materials should be selected for the marine environment, with stainless steel typical for metal fasteners and connectors.



Figure II-82. Shoring beneath deteriorated roof framing in Room 27.

Southeast Bastion

Observations

Similar to the observations at the southwest bastion, extensive cracking in the masonry vaulting was observed from within the first-floor spaces, at the underside of the roof. Crack patterns are indicative of outward movement in masonry walls and piers, and corresponding flattening of the arches and vaults, associated with the horizontal thrust imposed by the primary arches and groin vaults (*Fig. II-81*).

The observations described for the southwest bastion are also applicable here, with a similar history of timber roof replacement with a heavier and thrust-inducing vaulted masonry roof system.

Recommendations

- The observed cracking again appears to be active, with areas of delaminating plaster and/or masonry, particularly at the primary arches. This area is not currently accessible to the public and should remain that way until further analysis and repairs, similar to that recommended for the southwest bastion are performed. Like the southwest bastion, further deterioration would appear to most likely develop in a slow progression in the form of localized material loss, as opposed to catastrophic collapse. As such, occasional access by staff would be acceptable and temporary shoring is not currently recommended.

Ravelin

Observations

Shoring has been installed in the artillery shed (Room 27) to support deteriorated roof boards (*Fig. II-82*). This deterioration is likely due to water infiltration through the roof. It appears that the leak has been repaired.

Recommendations

- Replace the roof boards for one bay. Sister or replace the rafter up against the wall. This will also require some roofing / flashing repair or replacement.



Figure II-83. Northward movement at the northwest corner of the stable.



Figure II-84. Interior face of northernmost bay of stable. Note cracking at top and spring point of arch.

- The roof framing above Room 27 is of small dimensions and is spaced far apart, at approximately 3'-10" on center. Preliminary analysis of these rafters (using assumed material properties in the absence of wood identification and grading) indicates that the live load capacity of these rafters is on the order of only eight pounds per square foot. This is not sufficient to meet current load requirements. In addition, it is unclear whether the rafter ends are adequately tied down to resist wind uplift loads.

Stable

Observations

At the northern end of the stable, there is visible outward displacement of the northwest corner at the spring point of the arches on the west façade (*Fig. II-83*). Related to this outward movement, there is cracking visible at the interior face of that corner and of the north wall (*Fig. II-84*).

The cracking and movement are likely caused by the lateral thrust at the arch spring point and insufficient stiffness at the corner pier to resist this thrust.

Recommendations

- Further analysis of the arch system along the west wall of the stable should be performed to support the development of some form of strengthening and stiffening of the northernmost bay. Given that this bay does not currently have a door opening and has some shelving on the interior, there is opportunity to infill the opening in a discrete manner that still expresses the arched profile on the exterior, and perhaps even keeps the wood lattice finish. An infill might consist of reinforced concrete block with a potential new footing at the existing threshold of the opening, depending on existing conditions below grade. An external augmentation of the pier, in the form of a buttress is also



Figure II-85. Deterioration at east end of carriage house.



Figure II-86. Deteriorated lintel in carriage house.

a possible solution however it will have greater visual impact and likely require more complicated foundations given the slope of the grade and the proximity of the shoreline.

Carriage House

Observations

Some deterioration of wood framing was observed in areas of more recent water penetration at the carriage house roof, east end. This correlates to open joints and vegetation observed in the flat brick roof above (*Figs II-38, II-39)*, likely allowing water to penetrate into the building and cause the deterioration of the wood.

The sill and roof framing at the southeast corner of the building showed signs of rot (*Fig. II-85*), as did the west bearing end of the lintel above the door opening (*Fig. II-86*).



Figure II-87. Ramp descending from doorway to the fee office (Room 28).



Figure II-88. Threshold at ravelin yard side of doorway accessing fee office (Room 28)

Recommendations

- Remove vegetation and repair brick roof to provide waterproof enclosure. After any necessary roofing repairs have been made, deteriorated wood members should be replaced in-kind. Roof joists may be replaced full length or possibly partial length with an engineered scarf joint. A lapped joint should be provided for the sill replacement. Replacement wood should be suitable to the marine environment and contact with masonry for durability, although these members should be subjected to extensive amounts of direct, sustained moisture.

Accessibility and Universal Design

Observations

Providing universal access to the fort presents several challenges. Access to the ravelin yard is provided via the ravelin gate, which is level with the walkway approaching the fort from the south.

From the ravelin yard, a ramp is provided on the interior side of the fee office (Room 28) door; however, no ramp is provided to reach the threshold from the yard (*Figs. II-87, II-88*). The interior ramp appears to exceed the allowed slope for accessibility ramps.

The artillery shed (Room 27), which contains interpretive exhibits, is accessed from the ravelin yard at the same level, making that space accessible.

Access to the remainder of the fort, all of which lies north of the ravelin yard, requires ascending a set of five steps accessing the sally port gate (*Fig. II-89*). Beyond the sally port gate, the vast majority of locations with interpretive information, including the large exhibit space at the second floor of the south curtain, require either ascending steps or crossing high thresholds.

The stableyard, though not open to visitors currently, is accessible from a level entrance at the stableyard gate. If the stable were to be used for interpretation in the future, this location would be another space that could be targeted for accessible exhibits (*Fig. II-90*).

Recommendations

- In consultation with NPS, replace the

existing wood ramp in the fee office with one that meets ABA/ADA slope requirements. Provide a removable ramp to access the level of the threshold at the doorway to the fee office.

- Ensure that level entry is maintained at the doorway accessing the artillery shed, where interpretive exhibits are located.



Figure II-89. Stairs accessing sally port gate. The courtyard is beyond the gate passage.



Figure II-90. Level access to the stableyard can be provided via the stableyard gate.

- Provide interpretive information within the accessible artillery shed space that addresses locations throughout the fort that are not accessible. Photos and video walkthroughs could serve to provide a comparable experience.
- Consider using the currently underutilized stableyard and stable as space for interpretation. The stable could be easily and sensitively modified to provide a substantial increase in the amount of accessible interpreted space. See *Recommendations for Ultimate Use* for more information.

Resilience to Natural Hazards

Climate

Observations

Average temperatures and precipitation at CHRI are increasing and are projected to continue to increase. Storm frequency and intensity is also projected to increase. These changes will have major impacts on the frequency of maintenance required for buildings and have implications for the structural system. Storm preparation and adequate drainage to handle increased rainfall will also be critical.

A full description of the climate challenges facing Fort Christiansvaern can be found in the *Historical Background and Context Chapter* of this report.

Recommendations

- Consider the potential effects of climate change issues on the building and its immediate site, such as increased storm threats, changes in average temperature and rainfall totals, and associated loss or degradation of resources.
- Monitor weather-related deterioration and evaluate needed responses to protect the building and its immediate site in coordination with overall assessment of climate change effects on the park overall.
- Complete building drainage and roofing recommendations advocated by this HSR.
- Perform additional structural analysis on the lightweight metal roofs of the latrine, artillery shed, officer's gallery, and the east overhang of the south curtain to determine current resistance to wind loads. Findings may indicate that more substantial tie-downs

should be installed to prevent the roofs from being lifted during a heavy storm. See the *Recommendations for Future Research* section for more information on structural analysis.

- Consider the susceptibility of the flagpole to high winds. The flagpole and/or its attachment may require reinforcement. See the *Recommendations for Future Research* section for more information on structural analysis.
- Consider the impact of wind-borne debris on elements such as windows. Ensure that window openings are properly secured prior to major storms.
- Consider that elements nearest the shore, such as the wingwalls and site stairs, will likely experience stronger levels of wave action in the coming years. Increased intensity of wave action will accelerate scouring and lead to more frequent repairs.
- Use studies regarding adaptation to natural hazards to inform management decisions. Current studies that address the park include those cited above.
- Assume increased visitation will take place in the coming years and adjust maintenance schedules appropriately.
- Consult regularly with the NPS Interior Region 2 Climate Change, Socioeconomics, and Adaptation Coordinator to inform management policies. Coordinate with planning and documentation projects being implemented by the NPS Region.
- Evaluate building maintenance schedules as necessary to account for the possibility of more frequent exterior painting/finishing campaigns, roof repairs, and roof and site drainage repairs in response to increased and more intense projected precipitation. The Condition Monitoring Checklist that follows this section helps guide cyclical maintenance and frequent monitoring of conditions and creates a record.
- Update emergency and disaster planning to address resiliency to natural hazards and mitigation of the effects of hazardous events.

Vermin and Pests

Observations

Termite activity has long plagued the fort, and has resulted in significant loss of material across the fort's history. Major efforts to address termite activity took place in 1999 and by 2003 had shown effectiveness; however, termites are once again an active threat, and visual evidence was found during site investigations for this report. Preventative treatment, careful monitoring, and prompt response to activity are critical to managing this threat.

Termite mud tunnels were observed in several locations, most notably in the second-floor rooms of the south curtain, as well as in the storage rooms of the west curtain (Rooms 16, 18 and 19) (*Figs. II-91, II-92*).

In addition to termites, pests such as carpenter ants, carpenter bees, and powder post beetles pose a significant threat to wood elements.



Figure II-91. Example of termite mud tunnel in Room H of the south curtain.



Figure II-92. Example of termite mud tunnel in Room 19 of the west curtain.

Insects that present potential safety issues for visitors, such as wasps and hornets, should also be monitored.

Plants prevalent in the region, including moss and fungi, also attack wood construction materials.

Recommendations

- Maintain termite and wood-damaging insect integrated pest management at the perimeter of the building and within outdoor spaces such as the courtyard, ravelin yard, prison yard, and stableyard.
- Regularly inspect all fort spaces, as well as the base of the exterior walls, for termite activity and mud tunnels. At the second floor of the south curtain, tunnels were observed running up the wall and then made their way across the ceiling within the beads of the ceiling beams. Termite treatments should be updated at regular intervals to assure that infestations are not active.
- Ensure that all spaces are accessible for regular pest monitoring. Rooms 18 and 19 of the west curtain are currently very difficult to monitor due to being almost entirely filled with materials, many of which are wood doors and shutters that should be retained, but which also serve to attract termites. Ideally, this type of storage should be moved to a more appropriate location outside of the fort. See the *Recommendations for Ultimate Use* section for more information.
- Remove any insect nests that may appear on the building exterior, as well as those that may form behind shutters.
- Be vigilant to prevent habitation of vermin such as mice, rats, or snakes on the interior of the building and also in nearby site features.



Figure II-93. Museum collections storage room in southeast bastion (Room 8). Note water damage at ceiling.

Recommendations for Ultimate Use

It is the recommendation of this HSR that Fort Christiansvaern continue to serve as a center for interpretation as the centerpiece of the Christiansted National Historic Site. Currently, a significant portion of the fort's interior space is devoted to archival and collections storage and is not accessible to visitors. Similarly, the entirety of the stable complex is restricted from visitors and used for facilities storage.

The potential exists to expand interpretation into these areas and tell a more comprehensive story of the fort's history. The stable and stableyard are also good candidates for providing more universally accessible interpretive space, which the



Figure II-94. Archive storage rooms in east curtain, looking from Room 5 toward Rooms 4 and 3.

fort currently lacks. The stableyard gate is in close proximity to the parking area and provides level entry to the stable complex.

A more detailed description of building usage recommendations follows.

Archival and Collection Storage Relocation

Park archives and museum collections are at risk in their current location within the fort, both due to shortcomings of the facility itself, as well as inherent risk of storing sensitive materials in a location highly susceptible to tropical storms.

Water infiltration from the roof, particularly in Room 8, is of great concern (*Fig. II-93*). Climate control in these spaces, though adequate for comfort, does not provide the level of control that museum collections demand. In addition, the current wet-pipe sprinkler system poses an immediate threat in the event of malfunction.

Expansion of Interpretive Space within the Fort

A major portion of the east curtain, including Rooms 3, 4, and 5, is devoted to archival storage (*Fig. II-94*). These spaces present a great deal of interpretive potential that could activate more of the fort and improve visitor experience.

Similarly, Rooms 16, 18, and 19 in the west curtain have been relegated to storage for architectural salvage from the fort and other park buildings (*Figs. II-95, II-96, II-97*). These rooms are difficult to



Figure II-95. Room 16 in west curtain.



Figure II-96. Room 18 in west curtain.



Figure II-97. Room 19 in west curtain.



Figure II-98. Overview of stable and stableyard from the southeast bastion.

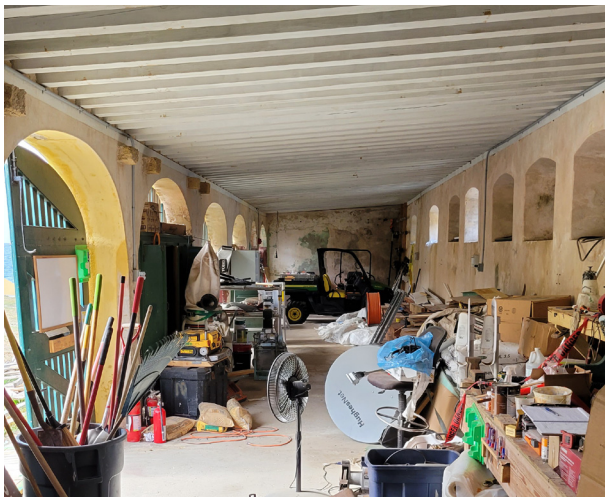


Figure II-99. Overview of Room 31B of the stable, looking north.

monitor for termite and other pest activity, and the extent of their contents are unknown. These items should be fully catalogued, evaluated as to whether or not they warrant being retained, and ultimately relocated to a location outside the fort that is better suited for this type of storage.

Interpretation of the Stable Complex

The stableyard, including the stable building and the carriage house, are currently used as facilities and maintenance storage. The stableyard is highly visible from the gundecks of east curtain and east bastions, and its current use detracts from the historic character of the site (*Fig. II-98*).

The large, linear space contained within the stable offers a great deal of flexibility for interpretive use and exhibits (*Fig. II-99*). The carriage house and southern room of the stable could serve as support or administrative space.

Reactivating the stable area would be beneficial to both the visitor experience and to the preservation of both structures.

Interpretation of Materials and Finishes

Examples of early decorative painting was observed in Rooms 8 and 12, and examples of limewashed brickwork with tooled joints were observed beneath the stairs accessing the Commandant's Gallery as well as within the arched window openings of the Commandant's Gallery. The decorative painting and limewashed brickwork present interpretive opportunities that should be explored. The exposed limewashed brickwork does not appear to have been fully addressed by previous studies, but likely represents the original exterior wall treatment, predating the current stuccoed finish. See additional recommendations in the *Recommendations for Further Research* section see also *Appendix F.*

Operations and Maintenance Program

The park currently does not have formal procedures established for conserving the historic building materials.

Recommendations

- Initiate an Operations and Maintenance (O&M) program focused on this building, specifically to:
  - Develop a protocol of best practices for maintenance, including lists of proven products, materials, and methods.
  - Also develop a list of products, materials, and methods that should NOT be used.
  - Avoid the use of new construction products and materials until the specific application has been sufficiently tested and approved by the appropriate NPS management unit.

Monitoring Checklist

The use of a Condition Monitoring Checklist outlining inspection topics and the date of inspection helps both to formalize the monitoring process and to create a record for future reference.

A checklist tailored specifically to the needs of Fort Christiansvaern was prepared for this HSR and follows this section.

Recommendations

- Adopt the recommended inspection schedule included in the Checklist or substitute a more suitable one.
- Adjust the list of inspections as appropriate. Integrate the monitoring schedule into park activities.
- Retain the Checklists for tracking needs and scheduling remedial actions.

Recommendations for Further Research

Studies and Reports

- Update the 1985 Cultural Landscape Report (see additional information below).

- Update the 1988 Historic Furnishings Report.
- Update the 1999 National Register Nomination.
- Prepare a Long-Range Interpretive Plan
- Complete several Historic Resource Studies topics, including:
    - Enslaved population under Danish rule;
    - Race and changing governance;
    - Native Peoples who settled St. Croix;
    - Danish Colonial economic model.
- Enact recommendations made in 2004 Museum Collection Management Plan.
- Organize and catalogue park archives prior to a recommended digitization project.
- Prepare a Window and Shutter/Door Inventory (see additional information below).

Cultural Landscape Report

The 1985 Cultural Landscape Report does not effectively address current park needs. The Fort Christiansvaern site (including the Stableyard) is a component historic landscape within the larger Christiansted National Historic Site Landscape (CRIS-CL 550170). Completion of a Cultural Landscape Inventory (CLI) and Cultural Landscape Report (CLR) for the site at Fort Christiansvaern would yield useful information to guide treatment of the setting, including guidance for incorporating improved accessibility and building uses.

Window and Shutter Survey

Prepare a unit-by-unit window and shutter survey for the fort and stable building to be completed or backchecked by a historic preservation professional. The survey should include a tabular summary (schedule) of all windows, shutters, and doors with the following information: sizing, frame material, sash/shutter material, glazing information, hardware information, repair information, and a photo of each unit.

Additional Materials Study and Testing

The current materials analysis was able to uncover and document significant information about the fort's historic materials, both its mortars and its paint finishes. Although the allowed scope of the study was limited, it nonetheless reveals information about the fort's earliest appearance and the materials used to create it. The fort contains numerous unique mortar materials and finishes, and this study was able to analyze selected areas believed to be the most representative. Additional study and testing are required to understand and document the full breadth of the fort's construction materials.

In terms of the mortar materials, three distinct but similar early mortars were documented as part of the current materials analysis. The mortar appears to date to the earliest periods of construction for the fort, c. 1734-1837. They are all non-hydraulic, high calcium lime-based mortars mixed with natural coralline sand; and they are all highly water permeable. Lime-based mortars such as these are typical of the 18th and early 19th centuries, as well as Caribbean masonry structures of the period. The mortars examined are also all in good condition.

Recommendations for replication mortar mixes for the three mortar types that were analyzed are included on pp. 40-41 of BCA's *Material Analyses Report* in *Appendix F*.

Additional study of the fort's masonry materials beyond what was able to be accomplished in the current study is also recommended. There are numerous stuccos, mortars, and plasters present at the fort and this study was able to focus only on a select few. More investigation and analysis to confirm the findings of this report, as well as document the characteristics of later masonry materials, would be helpful for gaining a more comprehensive understanding of the fort's materials and physical evolution over time.

Investigations and Assessments

Fire Alarm, Fire Suppression, and Security System Assessments

The fire protection system, including fire alarm system and the sprinkler system, should be assessed by an MEP/FP engineer. The existing wet-pipe sprinkler system presents a risk to irreplaceable archival materials and museum collections.

During both site visits, the fire alarm and security system control panel in Room 5 was displaying an on-screen error and emitting a warning tone. An MEP/FP engineer should assess the system to ensure that the system is functioning as intended. Park staff should be familiarized with the function of the systems and its controls and

testing of the alarm should be performed at a regular interval.

Abandoned system elements, such as older motion detectors, should be removed to avoid confusion and to ensure that proper coverage is being achieved by current systems.

Assessment and Repair Design for Southwest and Southeast Bastion Vaulting

Extensive cracking in the masonry vaulting in the southwest and southeast bastions was observed from within the first-floor spaces, at the underside of the roof. Further evaluation and ultimately strengthening and repair is warranted. See the *Structural Systems Recommendations* section for more information. These areas should be regularly monitored for movement.

Geotechnical Investigation of Shoreline

Erosion is ongoing at site features at the north end of the complex, including exterior stairs and retaining walls. The wingwalls that extend into the water exhibit scouring and have been longtime maintenance challenges.

Perform geotechnical study of shoreline to determine the best means of stabilizing wingwalls and site features. See the *Site and Site Features Recommendations* section for more information.

Assessment and Stabilization of Northwest Stable Arch

The northwest corner of the stable shows displacement and there is cracking at the northernmost arch. Further evaluation and ultimately stabilization of the area is warranted. See the *Structural Systems Recommendations* section for more information.

Assessment and Stabilization of Lightweight Wood Roof Structures

Additional structural analysis should be performed on the wood-framed, metal clad roof structures throughout the fort, including: the latrines, officer's gallery, artillery shed, guard house, and the east shed roof projection of the south curtain. The focus for this analysis should be on tie-downs and structural connections to ensure that they meet current and projected wind upload forces. At the artillery shed (Room 27), additional analysis should also be performed to confirm the need for additional sistering or added framing members to adequately support the roof.

Scoping and Evaluation of Internal and Subsurface Drainage

The configuration and condition of the subsurface drainage system should be verified to ensure that water is being effectively dispersed from the building and site. This work could include adjusting the slope of the roofs and gundecks to improve drainage. The internal drains at the south curtain are tasked with accepting the majority of the runoff from the fort, and their continued functionality is critical to the health of the structure. See the *Roofing and Rainwater Dispersal Recommendations* section for more information.

Moisture Study

In concert with the drainage study described above, perform a study addressing potential causes and the extent of moisture infiltration into the masonry walls of the fort and stable building. This study may include analysis involving the introduction of probes, use of infrared imaging, and long-term monitoring of moisture within the exterior walls. The majority of deterioration observed appears to be the result of drainage and roofing issues; however, moisture introduced as a result of rising damp should also be considered. Promoting proper site drainage and ensuring that applied coatings are breathable is a key first step in addressing rising damp.

Additionally, humidity levels in the archival storage spaces should be monitored and analyzed as part of the study. Inadequate dehumidification could result in deterioration of finishes and stored files and objects.

Hazardous Materials Testing

Much of the work to the buildings was completed in an era when hazardous materials such as asbestos and lead paint were in widespread use. Examples of building materials commonly containing asbestos include, but are not limited to:

- Plaster and Stucco
- Flooring tiles and tile mastic or grout
- Insulation
- Gypsum wallboard
- Mortar
- Acoustic ceiling tiles
- Electrical wire insulation

If left undisturbed, lead-based paint and asbestos-containing materials pose no threat to building

occupants or visitors. However, appropriate testing and abatement measures should precede any future work on building elements suspected to contain hazardous materials. Recommendations are as follows:

- Perform hazardous materials testing on suspect materials, such as those listed above, prior to beginning work. Similarly, test applied finishes for lead content.
- Perform appropriate abatement measures for hazardous materials prior to future work that could disturb suspected hazardous materials.

CONDITION MONITORING CHECKLIST
FORT CHRISTIANSVAERN

Feature	Action	Frequency	Date
Rainwater Collection & Dispersal:	o Inspect roof coatings for new or worsening cracks, inspect metal roofs for lifted roof panels, and inspect membranes for damage	Post-Storms	
	o Inspect ceilings for signs of leaks	Post-Storms	
	o Inspect scuppers and drains for blockages	Twice yearly	
	o Snake internal drains to prevent blockages.	Annually	
	o Observe site and building roofs' drainage patterns for indications of inadequacies.	Seasonally	
Window Openings & Shutters	o Inspect window shutters and hardware for advancing deterioration.	Seasonally	
	o Use awl to check wood for rot.	Seasonally	
	o Inspect iron bars for deterioration	Twice yearly	
Doors & Doorways	o Inspect doors and hardware for advancing deterioration and test operation.	Seasonally	
	o Probe with awl for rot if soft wood	Seasonally	
	o Lubricate hardware	Twice yearly	
Commandant's Gallery and Exterior Stairs	o Inspect scuppers and flooring to ensure water is effectively draining.	Post-Storms	
	o Inspect underside of gallery ceiling for leaks.	Post Storms	
	o Inspect mortar joints at exterior stairs.	Seasonally	

Exterior/Interior Walls	○ Inspect for new and worsening cracks or failure in stucco	Twice yearly	
	○ Inspect paint and limewash coatings for failure.	Twice yearly	
	○ Inspect exterior for termite tubes. Remove any found and adjust treatment frequency in response.	Seasonally	
	○ Inspect site walls and steps for advancing erosion.	Seasonally	
Roof & Floor Framing Vaulting	○ View from exterior for deflection of roof planes and framing	Twice yearly	
	○ Inspect members for indications of damage, overstressing, or termite activity.	Twice yearly	
	○ Inspect vaults for new or worsening cracks	Seasonally	
Interior Finishes & Material Substrate	○ Inspect for evidence of water infiltration at ceilings and perimeter exterior walls, doors and windows	Post-Storms	
	○ Monitor finish deterioration and reapply finishes as necessary	Annually	
Fire Detection & Suppression System	○ Monitor components of the suppression system for evidence of leaks	Twice yearly	
	○ Schedule system tests as per NPS policy	NPS Policy	
Security System	○ Monitor system performance as part of daily arming and disarming	Daily	
	○ Schedule system tests as per NPS policy	NPS Policy	
Electrical Service	○ Inspect exposed system components for evidence of deterioration	Annually	

List of Implementation Projects

The following is a list of potential projects relating to Fort Christiansvaern. Justification for each project is provided for the purposes of submitting the Project Management Information System (PMIS). Note that some projects are interdependent and may be most efficiently and cost effectively accomplished together.

1. Fire Alarm Assessment and Fire Suppression Retrofit/Replacement

   - If the archives and collections are to continue to be stored in the fort, the fire suppression system should either be evaluated and retrofitted to a dry pipe system (if feasible) or replaced. An assessment of the fire alarm system should take place concurrently to ensure proper operation.
   - Justification: The existing fire suppression system is a wet-pipe system that places the archives and collections storage spaces at risk.

2. Electrical System Assessment

   - Inspect and assess the condition and adequacy of elements of the electrical system throughout the fort.
   - Justification: Elements of the electrical system show signs of deterioration.

3. Resurfacing of Gundecks/Roofs

   - Remove existing failing cementitious coatings at gundecks for replacement with new compatible material following material analysis. Material recently installed at northwest bastion should be evaluated for effectiveness as a potential option. Repairs may involve correction/modification of slopes to improve drainage. This work would best be coordinated with item #4 below, as it directly relates to overall drainage of the structure.
   - Justification: Roof coatings have begun to fail and will soon allow water to infiltrate the substrate.

4. Scoping and Evaluation of Internal and Subsurface Drainage

   - Scope internal drains to determine path and conditions of subsurface drainage. Evaluate effectiveness of drainage as part of study and present potential alternative routing to adapt to heavier and more frequent projected rainfall.
   - Justification: The path of the internal drainage system is not known but is thought to connect to the cisterns at least on the west end. The capacity and condition of the pipes and cistern(s), if applicable, should be evaluated.

5. Structural Assessment and Repair Design of Southeast and Southwest Bastion Vaulting

   - Perform full structural assessment of the vaults in both bastions to determine conditions and identify necessary repair options.
   - Justification: Cracking is widespread in both bastions and crack monitors previously installed show active movement.

6. Fabrication of Replacement Doors and Shutters

   - Fabricate replacement doors and shutters at locations where doors have been removed. Locations include the doorways to Rooms 20, 21, 22/23, 24A, and the south and west doorways of the upper northwest bastion. Shutters are missing on the east elevation of the northeast bastion.
   - Justification: The lack of doors and shutters at these locations make the fort more difficult to secure during storms and in some cases are contributing to deterioration by allowing moisture into the interior spaces.

7. Geotechnical Study of Shoreline

   - Perform geotechnical study of shoreline to determine best means of stabilizing wingwalls and site features along the north end of the fort complex, such as the exterior stairs and retaining walls,

which are experiencing erosion.

- Justification: Erosion is ongoing at exterior stairs and retaining walls at the north end of the complex. The wingwalls that project into the water are experiencing scouring and have presented longtime maintenance challenges.

8. Replacement of Membrane Roofing at South Curtain

- Replace roofing and scuppers at the upper level of the south curtain.
- Justification: The roofing at the south curtain shows evidence of ponding and has bubbling beneath applied coatings. Replacement should be considered in the near future.

9. Stabilization of Northwest Stable Arch

- Design stabilization solution for cracking and displacement at northernmost arch of stable.
- Justification: The northwest corner of the stable is displaced and cracks at the spring point of the arch indicate stresses.

10. Design and Construct Footbridges for West Curtain Doorways

- Design footbridges to cross the drainage ditch at the west end of the courtyard as shown in early park photographs.
- Justification: The high step and narrow walkway lining the west curtain presents potential tripping hazards to visitors when accessing the restrooms, interpretive plaques in Room 17, and the latrines.

National Park Service
U.S. Department of the Interior

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