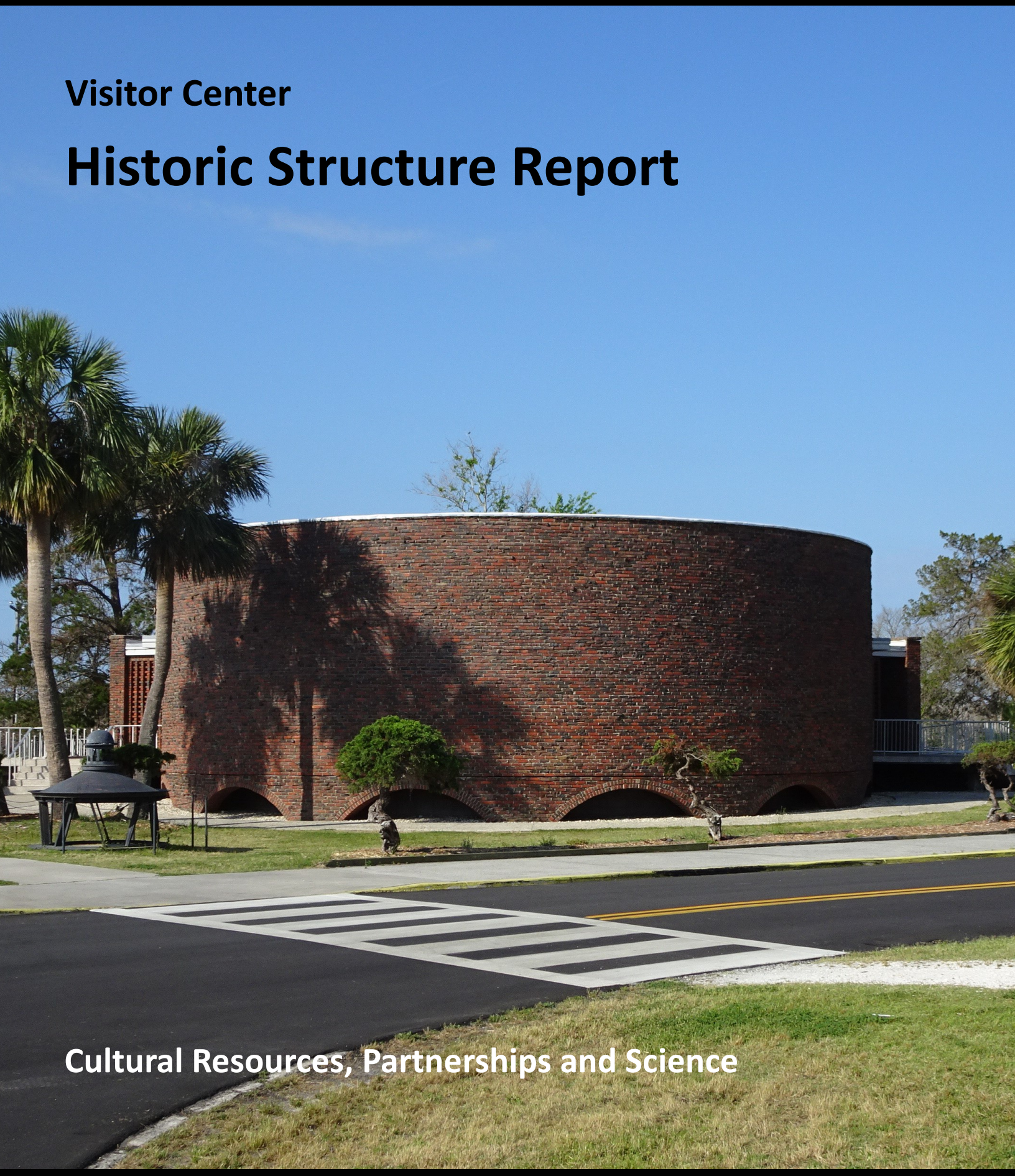
National Park Service
U.S. Department of the Interior

Fort Pulaski National Monument
Georgia

Visitor Center

Historic Structure Report



Cultural Resources, Partnerships and Science

Visitor Center

Fort Pulaski National Monument, Georgia

Historic Structure Report

July 2019

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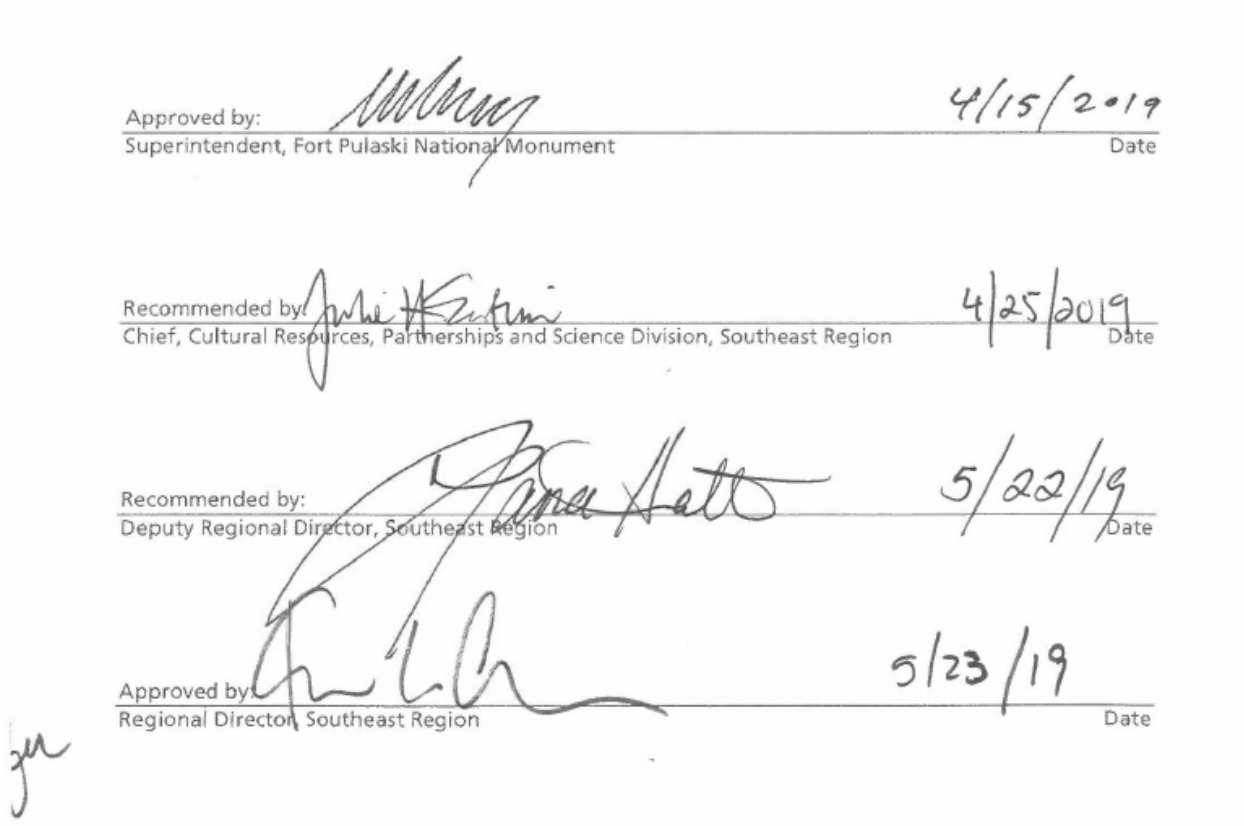
About the front cover: View of Fort Pulaski National Monument Visitor Center looking southwest, April 2017.

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Visitor Center

Fort Pulaski National Monument, Georgia

Historic Structure Report



Contents

List of Figures vii
Project Team xii
Foreword xiii

Management Summary

Historical Data 1
Treatment and Use 3
Administrative Data 3
Project Scope and Methodology 4

Developmental History

Early History of Cockspur 9
The Third System of Defense: Fort Pulaski 9
Early Preservation 12
NPS Stewardship of Fort Pulaski 14
Mission 66 Program 16
Fort Pulaski Mission 66 Visitor Center 18
History of Fort Pulaski Visitor Center 19
Chronology of Development of the Visitor Center 32
Timeline of Fort Pulaski Mission 66 Visitor Center 39

Physical Description and Condition Assessment

Site 43
- Description 43
- Condition Assessment 44

Visitor Center 45
- Exterior and Structural Systems Description 45
- Exterior and Structural Systems Condition Assessment 52
- Additional Masonry Investigation 55
- Interior Description 64
- Interior Condition Assessment 74
- Electrical and Mechanical Systems Description 78
- Electrical and Mechanical Systems Condition Assessment 84

Significance and Integrity

National Register of Historic Places 87
- Significance Criteria 87
- National Register Significance Evaluation 88
- Period of Significance 90

Character-Defining Features 90
Assessment of Integrity 91

Treatment and Use

Requirements for Treatment and Use 93
Alternatives for Treatment and Use 95
Ultimate Treatment and Use 96
Recommendations 98
Resilience to Natural Hazards 103

Bibliography 107

Appendices

Appendix A: Original Drawings and Finish Schedule
Appendix B: Measured Drawings
Appendix C: Masonry Investigation
Appendix D: Hazardous Materials Survey Report
Appendix E: Landscape Assessment
Appendix F: Determination of Eligibility and SHPO Concurrence Letter

List of Figures

Management Summary

1 Map of Georgia showing location of Fort Pulaski National Monument.
2 Park map of Fort Pulaski National Monument.
3 Fort Pulaski Mission 66 Visitor Center and environs.

Developmental History

4 1831 plan of Fort Pulaski, showing the fort as it was constructed.
5 A map showing the Union attack on Fort Pulaski in April 1862.
6 Aerial view of Fort Pulaski, before 1925.
7 Fort Pulaski National Monument Mission 66 Visitor Center, 2017.
8 Kresge Chapel at MIT, Eero Saarinen 1955.
9 Benedictine Military School Priory Chapel, circa1963–1964.
10 The visitor center was laid out and concrete pilings formed, November–December 1962.
11 Levy's "problem in plane geometry" was executed; forms were constructed for placement of the concrete slab, November–December 1962.
12 By mid-December 1962, the floor slab and first-floor beams had been constructed and formwork and reinforcement for the columns had been partially completed.
13 Columns for the first floor to the low roof were completed in December 1962, the week before Christmas.
14 During the first week of January 1963, concrete for the upper beams was placed.
15 Two of the Savannah Electric and Power Company temporary poles, visible to the left of the visitor center in this photo, were still in place in April 1963.
16 Construction of the brick arches at the base of the building was completed during January and February 1963.
17 In January and February 1963, work began on installation of brick cladding at the visitor center.
18 In March 1963, installation of the sunshades began on the building; here the frame is shown attached.
19 In April 1963, at the suggestion of the glazing contractor, the "ears" on the top of the sunshade slats were turned over, producing "a much more pleasing design."
20 Entrance to the women's lavatory, as constructed.
21 View of landscaping undertaken at the site while the visitor center was being completed, as shown in an undated photograph (likely 1963–1964).
22 Fortifying Our Shore, an original exhibit when the visitor center opened in 1964.
23 Building the Fort featured tools recovered from the fort moat, an original exhibit when the visitor center opened in 1964.
24 An exhibit on soldiers' lives featuring bottles found in the fort moat, an original exhibit when the visitor center opened in 1964.
25 Fragments from Pulaski's Past, an original exhibit, featured objects found in and round the fortification that illustrated the daily life and activities of those living and working in the fort.
26 Other cases showing fragments of the past, part of the original exhibits in the visitor center.
27 Original exhibits at the visitor center included several flat panel exhibits on the Civil War blockade and its consequences.
28 The surrender of the fort and events that occurred after the Civil War were featured in a flat panel exhibit.
29 The change in artillery that led to the surrender of Fort Pulaski was depicted in an exhibit.

30 Restoring the Fort was featured in the original exhibits.
31 Drawing of Small Auditorium for Fort Pulaski Visitor Center, January 30, 1996.
32 Drawing indicating layout of the bathroom facilities, 1996.
33 In 2000, an ADA-compliant ramp was built on the southwest side of visitor center.
34 Locations of wells: one was abandoned in 1998; a second was drilled in 1998 and abandoned in 2001; and a third was drilled in 2001.
35 Flooding at Fort Pulaski after Hurricane Matthew, October 2016.
36 Railing damage at the visitor center from the tornado on May 23, 2016.
37 Railing at west entrance to visitor center after repairs, August 2018.
38 New historical marker, April 2018.
39 New visitor center sign, April 2018.
40 Chronological Development Plan.

Physical Description and Condition Assessment

41 Visitor center site.
42 Visitor center site.
43 Visitor center comfort station.
44 Water pump house.
45 East sidewalk.
46 Original cast iron cupola of Cockspur Island Lighthouse.
47 Aluminum-framed interpretive plaque.
48 Cast aluminum informational sign. (Several of the historical markers were damaged during the 2016 tornado that struck the park, and replaced in 2018.)
49 Painted steel sign (replaced in 2018).
50 Visitor center, overall view from the roadway looking southeast.
51 Brick masonry walls.
52 Segmental arch opening.
53 Visible floor and beam structure at crawl space
54 Brick rowlock course at top of exterior wall.
55 Rowlock brick sill at window opening.
56 East return wall.
57 Brick screen wall, west entrance.
58 Vertical louvers block direct sunlight.
59 East entrance approach.
60 West entrance porch.
61 Terrazzo detail.
62 East entrance curb with aluminum handrail.
63 West entrance U-shaped ramp. (This photograph was taken before the railing was damaged during the 2016 tornado. Photographs after the tornado, and following repairs, are provided in the preceding chapter of this report.)
64 Typical window opening.
65 View of interior window.
66 Wood-framed fixed window.
67 Metal-framed window adjacent to west entrance door.
68 Primary entrance door.
69 Door opening at porch return wall.
70 Upper roof.
71 Wrap-around lower roof.
72 Roof canopy extension.

73 Parapet wall.
74 Overflow drain directing water to lower roof.
75 Coping at lower roof.
76 Displacement of brick masonry at east entrance landing.
77 Severe cracking of brick masonry at east entrance landing.
78 Step cracking in brick masonry return end wall at west entrance landing.
79 Corrosion at lower shelf angle.
80 Vertical cracking at individual brick units.
81 Cracked joints at window sills.
82 Cracked joints at brick coping units.
83 Gaps at window and door heads.
84 Embedded expansion anchor in brick masonry.
85 Cracking at masonry adjacent to sun shade anchors.
86 Spalling at brick units at coping.
87 Missing brick unit below upper shelf angle.
88 Cracked and open mortar joints at CMU foundation wall.
89 Overview of inspection opening no. 1.
90 Aluminum laminated flashing at inspection opening no. 1.
91 Close-up of anchor bolt at inspection opening no. 1.
92 Wedge insert 17 inches from anchor bolt.
93 Severe section loss at left end of inspection opening no. 1.
94 Overview of inspection opening no. 2.
95 Missing bolt at end of angle at inspection opening no. 2.
96 Termination of aluminum flashing.
97 Severe corrosion at exposed end of shelf angle.
98 Corrugated metal brick tie in south wall.
99 Overview of inspection opening no. 3.
100 Flashing terminating above angle at inspection opening no. 3.
101 Complete section loss at horizontal leg of angle.
102 Exposed brick tie in insert in concrete beam.
103 Overview of inspection opening no. 4.
104 Severely corroded bolt at shelf angle segment at left end of inspection opening no. 4.
105 Bolt with corroded nut in shelf angle segment at right end of inspection opening no. 4.
106 Complete section loss of horizontal leg of both shelf angles at inspection opening no. 4.
107 Cracking at terrazzo landing.
108 Cracking at terrazzo landing.
109 Cracking at outer edge of porch deck.
110 Cracking at landing slab/ramp abutment.
111 Horizontal cracking at curb.
112 Deterioration of concrete at terrazzo porch.
113 Spall at east porch terrazzo deck slab.
114 Hairline cracking at west ramp.
115 Cracking observed at exterior canopies.
116 Mild surface corrosion.
117 Displaced handrails.
118 Biological grown on aluminum sun shades.
119 Ponding and biological growth at lower roof.
120 Improper anchoring of roof membrane and termination bar.
121 Voids at seams of TPO roof system.
122 Ponding at storm drain.

123 Mud dauber nests, observed at the perimeter crawl space.
124 Typical non-original painted wood paneling installed over wood furring.
125 Office 1 was originally the women's restroom. Note wood paneling on walls.
126 Interior of rear projection room.
127 Visitor center theater—note walls with acoustical panels.
128 A new office was created by adding a wall between the existing office and the breakroom. (Source: Fort Pulaski National Monument).
129 New door into office 3 from breakroom, 2018. (Source: Fort Pulaski National Monument).
130 Missing vinyl cove base and remaining adhesive.
131 Missing wooden baseboard revealing unpainted wood paneling.
132 Four-inch vinyl cove base under desktop and painted tear-drop baseboard next to the door.
133 Acoustical plaster embedded in metal lath viewed from the attic. Note pink fiberglass batt insulation on the suspended plaster.
134 The 9-foot-tall plaster ceiling in the exhibits space
135 Visitor center floor plan, showing area in which ceiling was not replaced following the 2017 tornado. (Source: Information provided by Fort Pulaski National Monument; annotated drawing by authors)
136 Terrazzo floor in exhibits space and at information desk.
137 Ghosting from original interior partition on terrazzo floor.
138 Metal divider strip and spalling of terrazzo.
139 Aluminum entrance doors.
140 Automatic, button activated door opener on entrance doors.
141 Key-operated deadbolt lock on aluminum entrance doors.
142 Non-original west entry door and fixed glass window, view from the west porch.
143 East (exit only) door, view from the east porch.
144 East (exit only) door in office 2.
145 Original door at mechanical room.
146 Original stained, birch veneer door at janitor's closet.
147 Painted stile-and-rail wood door at theater. Note missing vinyl cove base and exposed adhesive on the walls adjacent to the door.
148 Residential quality, Colonial-style, six-panel hardboard door at rear projection room.
149 Residential quality lockset with knob at rear screen projection room.
150 Pair of semicircular arch doors behind information desk.
151 Inside Fort Pulaski, semicircular masonry arches and vaults infilled with wood doors.
152 Knob door hardware.
153 Knob door hardware.
154 Typical door and transom frame detail. Note black strip used to highlight the reveal between the upper and lower wood frames.
155 Detail of original, stained wood window trim partially obscured by non-original, painted wood paneling and trim.
156 Water stains on plaster ceiling.
157 Plaster degradation and water stains on plaster ceiling at roof drain.
158 Rectangular cutout in plaster ceiling.
159 Non-original wood paneling over original CMU wall.
160 Wood paneling on wood stud wall adjacent to original CMU. Missing vinyl base on CMU wall.
161 Tear-drop baseboard and missing baseboard below non-original wood paneling.
162 Ghosting from original interior partition on terrazzo floor.
163 Rust stains on terrazzo floor.
164 Original stained wood trim at windows is partially covered by painted trim.
165 Original stained wood door and transom frame with black reveal strip.

166 Information desk.
167 Knob door hardware is not ADA compliant.
168 Main electrical panel.
169 Tangle of wires above the suspended plaster ceiling.
170 Electrical switches and a telephone board in the mechanical room.
171 Track lights illuminate displays. Dark circle and rectangle in the ceiling are HVAC supply registers. Light fixtures, HVAC grilles, and fire and smoke detectors were replaced in 2018 when ceilings were repaired after they were damaged by the tornado that crossed the park.
172 Recessed step lights in the theater.
173 Insulated air duct in the attic space above the suspended plaster ceiling.
174 Refrigerant lines from the outdoor condensing unit entering the crawlspace.
175 New ten-ton air handler in the mechanical room.
176 Ten-ton condensing unit on wooden platform.
177 Abandoned HVAC supply register no longer secured to plaster ceiling.
178 VRF system outdoor heat pump compressor that was replaced after it was damaged by the Hurricane Irma and the tornado in 2017.
179 Wall mounted VRF fan unit.
180 Electric water heater in mechanical room.
181 Janitor sink.
182 Water stains and plaster ceiling damage around roof drain in office 2.
183 Roof drain from high roof above suspended plaster ceiling, as viewed from access hatch.
184 Fire alarm panel (red), annunciator control pad, and security system panel.
185 New smoke and fire sensor next to remnants of old sensor.
186 Manual pull station, lower right. Security system key pad, upper left.
187 Fire extinguisher in the breakroom.
188 Illuminated exit sign at main entrances and wireless door sensors that are components of the security system.
189 Exterior video camera at east entrance.
190 Interior video camera at exit door in office 2.
191 Ten ton air handler.
192 Condensate on the floor seeping from under the air handler.
193 The new support for the ten-ton condensing unit is much higher than the previous structure, but the electrical disconnect for the unit remains close to the ground.
194 Wall-mounted indoor VRF fan unit.
195 Abandoned HVAC supply register no longer secured to plaster ceiling.

Treatment and Use

195 Aerial view of Fort Pulaski after Hurricane Irma, showing the dike system holding in floodwater.

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Foreword

We are pleased to make available this Historic Structure Report, part of ongoing efforts to provide comprehensive documentation for the historic structures and cultural landscapes of Fort Pulaski National Monument. A number of individuals contributed to the successful completion of this work, but we would particularly like to thank the project team members who authored the report. The authors would like to thank the staff at Fort Pulaski National Monument who assisted with the project, especially Melissa Memory, Superintendent of Fort Pulaski National Monument; Joel Cadoff, Chief of Interpretation and Education at Fort Pulaski National Monument; Katherine, Purcell Exhibit Specialist at Fort Pulaski National Monument; Laura Waller, Cultural Resource Specialist at Fort Pulaski National Monument; and Emily Harte, Chief of Facility and Resource Management, Fort Pulaski National Monument. In addition, the authors would like to thank Dr. Ali Miri and Laurie Chestnut and Keilah Spann of the Southeast Regional Office.

We hope that this study will prove valuable to park management and others in ongoing efforts to preserve the Mission 66 Visitor Center at Fort Pulaski National Monument and to everyone in understanding and interpreting its unique history and its contributions to our understanding of Mission 66 resources across the National Park Service.

Melissa Memory
Superintendent
Fort Pulaski National Monument
National Park Service

Management Summary

At the request of the National Park Service (NPS), Panamerican Consultants, Inc. and its subconsultants, Wiss, Janney, Elstner Associates, Inc. (WJE) and WFT Architects (WFTA) have developed this Historic Structure Report (HSR) for the Mission 66 Visitor Center at Fort Pulaski National Monument on Cockspur Island, near Savannah in Chatham County, Georgia. (The visitor center does not have a NPS Classified List of Structures number.) Figure 1 is a map of the state of Georgia showing the location of Fort Pulaski National Monument. Figure 2 is a map of Fort Pulaski National Monument showing the location of the Mission 66 Visitor Center. Figure 3 is an annotated aerial view showing the visitor center and its environs.

Fort Pulaski is listed in the National Register of Historic Places as the best preserved and most original of a system of eastern coastal forts designed by the French military engineer Simon Bernard while in the employment of the US Army Corps of Engineers. The Fort Pulaski complex is significant in the areas of architecture, engineering, and military history. Specifically, Fort Pulaski is noteworthy for the fact that its construction, designed to resist cannon fire, rapidly failed when under attack by rifled artillery—an event that signaled the beginning of a new approach to fortification architecture and construction.

The National Register nomination for Fort Pulaski National Monument does not mention the visitor center, which was constructed only a decade before the nomination was written.

Historical Data

Coastal defenses at Cockspur Island were first developed during the French and Indian War during the middle of the eighteenth century. Following the British invasion of Washington, DC, during the War of 1812, the US government planned fifty new forts as part of a third system of national coastal defenses, which included Fort Pulaski, to defend the approaches to Savannah. Plans were completed in 1831 for a single-level brick masonry fort to be called Fort Pulaski.

Construction began in 1833 but progressed slowly due to frequent storms and limited funding. The overall structure was not fully completed until 1847. As completed, the five-sided masonry fort included a central parade ground surrounded by casemates. A gorge along the west elevation included officers' quarters, while casemates were present on the remaining four sides of the fort. The fort was designed to hold 146 guns, but by 1860 only twenty guns had been installed, and the fort was manned only by a peacetime caretaker and an ordnance sergeant.

After the election of Abraham Lincoln, the southern states began to consider secession from the Union. South Carolina seceded on December 20, 1860, and less than a week later, a small US Army garrison occupied Fort Sumter in Charleston Harbor. Local leaders in Savannah were concerned that federal forces would soon occupy all military fortifications throughout the South, including nearby Fort Pulaski. As a result, Georgia Governor Joseph E. Brown ordered the Georgia militia to seize Fort Pulaski on January 2, 1861. The militia encountered no resistance at the almost unmanned fort.

Georgia troops, supported by enslaved labor from nearby rice plantations, quickly began to prepare the fort for possible attack. War officially began with the Confederate assault on Fort Sumter, South Carolina, in April 1861. In the fall of 1861, Union forces moved south by sea to begin a planned naval blockade of the South. Union forces quickly captured forts at Hilton Head and Bay Point Islands in South Carolina. The Confederates responded by strengthening the defenses of Fort Pulaski, including moving an artillery battery from Tybee Island to the fort. The abandonment of Tybee Island by the Confederates allowed Union forces to move south to Tybee Island and prepare for a blockade of Fort Pulaski.

Fort Pulaski was reliant upon supplies delivered by ship from Savannah, and on February 13, 1861, the last supply ship to the fort was fired upon and its cargo prevented from delivery. Union troops then began construction of additional gun batteries at Tybee Island and cut communications lines to the fort. Union forces had effectively blockaded Fort Pulaski. Although the fort would have eventually been starved into surrender, Union General Thomas Sherman sought a quicker surrender of the fort and Savannah.

General Sherman planned to besiege Fort Pulaski with the latest Union weaponry—rifled bore guns. It was Sherman's belief that the power of rifled bores, as opposed to smooth bore guns, could destroy the fort and bring about its surrender. On April 10, 1862, Union forces at Tybee began slowly bombarding Fort Pulaski. At first, the mortars lobbed at the fort did little damage, but as the day continued and the heavy, rifled artillery was employed, the fort began to experience serious damage. By the end of the day, the Union forces could see some damage to the fort but were uncertain whether or not that damage was sufficient to cause surrender and commenced shelling the next morning. The damage, however, was significant, and at approximately 12:30 in the afternoon on April 11, 1862, Fort Pulaski sent up a flag of surrender.

The US Army garrisoned troops at Fort Pulaski for the remainder of the war, which continued after the war until the mid-1870s. Changes were made to the fort and a series of improvements were undertaken. But Fort Pulaski was outdated, as its fall as a result of the use of a newer weapons-delivery system had demonstrated. The use of rifled artillery to bombard it into surrender caused "a change in the construction of fortifications as radical as that foreshadowed in naval architecture by the conflict between the *Monitor* and *Merrimac*. No works of stone or brick [could] resist the impact of rifled artillery of heavy caliber."[1] Fortifications would be radically different in the future.

In 1875, the US Army acquired land on Tybee Island to construct its new fortification, Fort Screven, and its six low-profile gun batteries; Fort Pulaski was left with one Army caretaker. In 1899, the Army placed a Fort Screven gun battery, Battery Hambright, and a mining casemate controlled by a very small group of soldiers at Fort Pulaski, but by the early twentieth century, the Army had abandoned the fort.

In 1924, the fortification became a National Monument, and in 1933, Fort Pulaski was transferred to the National Park Service. During the New Deal period, much work was undertaken at the fort by various agencies such as the Public Works Administration (PWA) and the Civilian Conservation Corps (CCC). Battery Hambright was completely restored as a New Deal project. World War II, however, brought an end to New Deal projects, and Fort Pulaski was turned over to the Navy for use.

At the end of World War II, Fort Pulaski was returned to the National Park Service. In the years following the war, Americans began visiting national parks in unprecedented numbers straining the old system. In February 1955, Conrad Wirth, the director of the National Park Service, conceived a comprehensive conservation program to revitalize the national parks. The ten-year capital program, which would be called Mission

1. Ralston Lattimore, *Fort Pulaski National Monument* (Washington, DC: National Park Service, 1954), 35–36.

66, aimed to modernize and expand the national park system.

Several Mission 66-era projects were undertaken at Fort Pulaski National Monument in the late 1950s and early 1960s, the largest of which was the creation of a freestanding visitor center. Construction of the visitor center began in late 1962, and the building was completed and opened to the public in October 1964. The one-story brick structure, which is circular in plan, was designed by the NPS Eastern Office of Design and Construction (EODC) in Philadelphia. Other projects included the reconstruction of the parking area; improvements to the water, power, drainage, dike, and telephone systems; and a series of repairs to the fort and grounds.

Since its creation in 1962–1964, the Mission 66 Visitor Center has undergone general maintenance including at least two roof replacements, glass door replacements, and landscape changes as well as several physical changes including the addition of an exterior, Americans with Disabilities Act (ADA)-compliant ramp on the southwestern side of the building and the addition of a small theater in the lobby.

The Mission 66 Visitor Center is open to the public as a visitor center. The visitor center currently contains an exhibit on Fort Pulaski, a small theater, an information desk, gift shop, offices, and exterior restrooms. Based on a Determination of Eligibility (DOE) issued by the National Park Service in November 2018, the Georgia Department of Natural Resources Historic Preservation Division issued a letter of concurrence on December 4, 2018, finding that the Fort Pulaski Mission 66 Visitor Center is eligible for listing in the National Register of Historic Places under Criteria A and C for its relationship to the Mission 66 program and its Park Service Modern style.[2]

Treatment and Use

The Mission 66 Visitor Center is significant as an example of Mission 66 program-planning efforts within the National Park System. The visitor center is also significant for embodying characteristics of the Park Service Modern architectural style. Despite alterations made to the building since its original construction, the building retains a high degree of integrity overall and continues to be used as a visitor center. It is anticipated that the building will remain in this use. The recommended overarching treatment for the visitor center is therefore *Rehabilitation* to support continued protection of historic character-defining features while incorporating modifications as needed to support continued use. The recommended treatment for the surrounding landscape is also *Rehabilitation*.

The visitor center is generally in fair to good condition.

Administrative Data

Locational Data

Building Name: Mission 66 Visitor Center

Location: Fort Pulaski National Monument, Georgia

LCS Number: None listed

Related Studies

Edward L. Trout, Park Historian, *National Register of Historic Places Registration Form: Fort Pulaski National Monument*. Approved by the National Register, December 3, 1975.

2. Melissa Memory, Superintendent, Fort Pulaski National Monument, to Dr. David Crass, Division Director and Deputy State Historic Preservation Officer, Historic Preservation Division, Georgia Department of Natural Resources, letter with attachments, November 9, 2018; Jennifer Dixon, Program Manager, Environmental Review & Preservation Planning, Historic Preservation Division, Georgia Department of Natural Resources, to Melissa Memory, Superintendent, Fort Pulaski National Monument, re: Fort Pulaski National Monument: Historic Structure Report, Visitor Center, Savannah, Chatham County, Georgia, HP-181113-001, December 4, 2018.

Ralston B. Lattimore. *Fort Pulaski National Monument, Georgia.* National Park Service Historical Handbook Series No. 18. Washington, DC: National Park Service, 1954. Reprinted, 1961 and 2004.

J. Faith Meader, New South Associates, and Cameron Binkley, editor, National Park Service. *Fort Pulaski National Monument Administrative History*. Atlanta: National Park Service, Southeast Regional Office, Cultural Resources Division December 2003.

Cultural Resource Data

Fort Pulaski was listed in the National Register of Historic Places in 1975 for its significance in architecture, engineering, and military history.

The visitor center, which was only about ten years old at the time the nomination for the fort was prepared, is not discussed in the nomination.

In 2000, for the 50th Anniversary of the Mission 66 program, the NPS studied the program and its buildings, which resulted in the publication of *Mission 66: A History of a Building Type* (Washington, DC: Government Printing Office, 2000) by Sarah Allaback. The visitor center at Fort Pulaski was identified as part of that program. As a follow-up in 2010, the Southeast Region surveyed the integrity of Mission 66 visitor centers within its parks. This survey found that "The visitor center at Fort Pulaski retains its integrity despite a number of changes to the building."[3]

Period of Significance: 1964 (Mission 66 Visitor Center)

Proposed Treatment: Rehabilitation

3. Caitlin Buckley, "Mission 66 Visitor Center Survey Form – Fort Pulaski," *Southeast Region Mission 66 Visitor Center Survey* (Atlanta: National Park Service, 2010), np. The finding does not indicate the eligibility criteria, but certainly the visitor center is eligible under Criterion A, associated with events that have made a significant contribution to the broad patterns of our history.

Project Scope and Methodology

The goal of the HSR is to develop planning information for use in the repair, maintenance, and preservation of this historically significant structure. First developed by the NPS in the 1930s, HSRs are documents prepared for a building, structure, or group of buildings and structures of recognized significance to record and analyze the property's initial construction and subsequent alterations through historical, physical, and pictorial evidence; to document the performance and condition of the structure's materials and overall physical stability; to identify an appropriate course of treatment; and, following implementation of the recommended work, to document alterations made through that treatment.

The HSR addresses key issues specific to the visitor center, including the design and construction of the building; the existing physical condition of the exterior envelope, structural systems, and primary interior spaces and features; and the historic significance and integrity of the structure.

The following project methodology was used for this study.

Research and Document Review. Archival research was performed to gather information about the original construction and past modifications and repairs for use in assessing existing conditions and developing treatment recommendations for the visitor center. Documents reviewed included maps, drawings, specifications, historic photographs, and other written and illustrative documentation about the history of construction and repairs to the visitor center. The research for this study built upon prior historical and archival research completed by the NPS and others, as outlined in the bibliography provided with this report. Primary reference material for this study was obtained from the Fort Pulaski archives and facilities collections. Additional research material was obtained from the National Park Service Technical Information

Center (TIC) in Denver, and the National Archives at College Park, Maryland.

Condition Assessment and Documentation. Concurrent with the historical research, a condition survey of the visitor center was performed and observations were documented with digital photographs, field notes, and annotation on baseline drawings. For purposes of the field survey, copies of architectural drawings from original construction were provided to the project team by the Park. The condition assessment addressed the exterior and primary interior spaces and features of the visitor center.

At the request of the NPS, WJE structural engineers completed additional investigation of the brick masonry on the visitor center on July 20, 2017. Contractor support was provided by Midwest Maintenance, Inc. (MMI) to make and repair four inspection openings in the exterior brick masonry. The purpose of the additional investigation was to evaluate the extent and severity of the corrosion noted on the shelf angles supporting the brick veneer as noted during the initial field work for this study, as well as other conditions that may have affected the brick veneer. A memo summarizing findings and recommendations from the additional investigation was provided to the NPS in WJE's memo dated August 21, 2017. This information is also incorporated in this HSR, and informed development of the treatment recommendations provided.

Development of History, Chronology of Construction, and Evaluation of Significance. Based on historical documentation and physical evidence gathered during the study, a context history and a chronology of design and construction were developed. An evaluation of the building's significance was also prepared, taking into consideration guidelines provided by *National Register Bulletin: How to Apply the National Register Criteria for Evaluation*.[4] This evaluation of history and significance provided the basis for the development of recommended treatment alternatives.

Guidelines for Preservation. Based on the evaluation of historical and architectural significance of the structure, guidelines were prepared to assist in the selection and implementation of preservation treatments.

Treatment Recommendations. The Secretary of the Interior's Standards for the Treatment of Historic Properties guided the development of treatment recommendations for the significant exterior and interior features of the buildings, as well as for the features of the landscape included in this study. Following the overall treatment approach of *Rehabilitation* for the visitor center, the specific recommendations were developed to address the observed existing distress conditions as well as long-term preservation objectives.[5]

Preparation of Historic Structure Report. Following completion of research, site work, and analysis, a narrative report was prepared summarizing the results of the research and inspection and presenting recommendations for treatment. The HSR was compiled following the organizational guidelines of NPS *Preservation Brief 43: The Preparation and Use of Historic Structure Reports*, with modifications to organizational structure for purposes of this project.[6]

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4. *National Register Bulletin: How to Apply the National Register Criteria for Evaluation* (Washington, DC: National Park Service, National Register of Historic Places, 1997).
5. Anne E. Grimmer, *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, 2017).
6. Deborah Slaton, *Preservation Brief 43: The Preparation and Use of Historic Structure Reports* (Washington, DC: National Park Service, Technical Preservation Services, 2005).

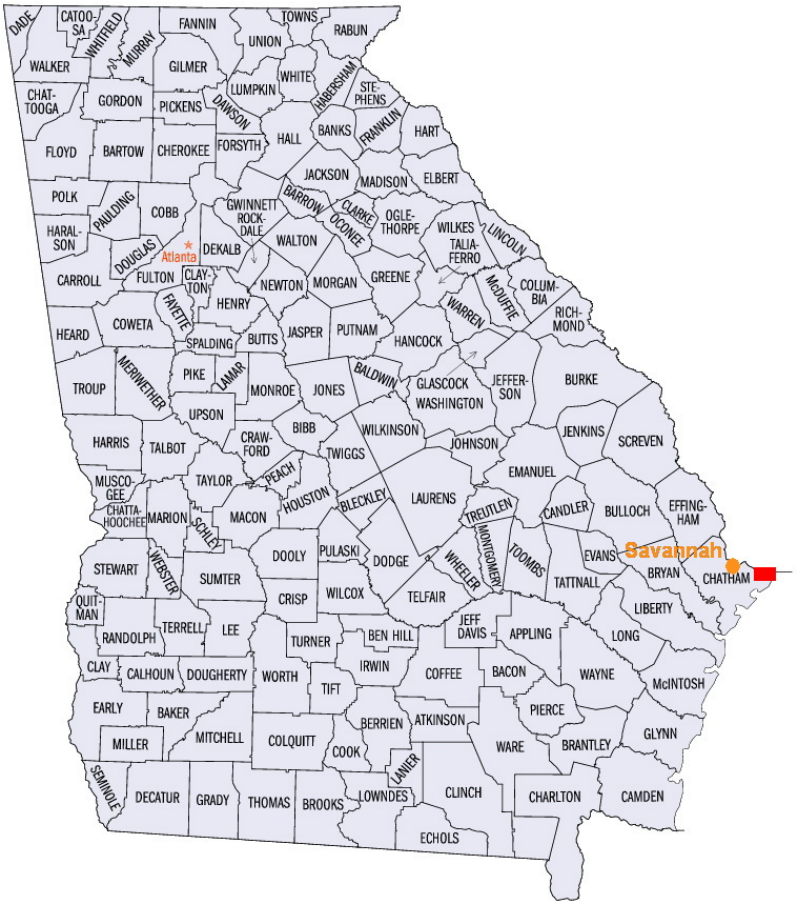


FIGURE 1. Map of Georgia showing location of Fort Pulaski National Monument (red rectangle) on the coast near Savannah (not to scale) (Source: US Census Bureau, modified by the authors).



FIGURE 2. Park map of Fort Pulaski National Monument (Source: Fort Pulaski National Monument).



FIGURE 3. Fort Pulaski Mission 66 Visitor Center and environs. The fort is to the right (east) in this image (Source: Google Earth, annotated by the authors).

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Developmental History

As a result of the War of 1812, the coastal fortifications of the United States were significantly damaged, prompting the government to institute a new program of coastal defense construction that became known as "The Third System of Defense." The Third System included the construction of a permanent system of modern masonry fortifications. One of these fortifications, to be named Fort Pulaski, was recommended for construction on Cockspur Island at the mouth of the Savannah River.

Early History of Cockspur Island

Archeological studies have not been conducted to confirm prehistoric occupation of Cockspur Island. However, archeological studies at nearby Whitemarsh and Wilmington Islands have found evidence of human habitation during the Middle Woodland (500 BCE to 500 CE) and Late Woodland (500 to 1100 CE) periods.[7] The North American Atlantic coast, including the area around Cockspur Island was visited and occupied by Spanish missionaries and English settlers during the 1500s and 1600s. The English, with the local Indian tribes, finally drove the Spanish out of the area, and in 1733, Gen. James Oglethorpe sailed into the Savannah River, passing Cockspur Island (then known as Peeper Island) before landing and establishing Savannah at Yamacraw Bluff. Oglethorpe led several subsequent expeditions to Savannah from England. On a later voyage in 1736, Oglethorpe's party, which included John Wesley, the founder of the Methodist movement, stopped at Cockspur Island on its way up the Savannah River.

The strategic importance of the island was quickly realized, and during the French and Indian War (known as the Seven Years' War in Europe) and the Revolutionary War, wooden fortifications were erected on the island to defend Savannah Harbor. At the end of the Revolutionary War, Cockspur Island was vacated.[8] Shortly after the end of the Revolutionary War, the newly established United States sought to develop a defensive system of fortifications in a program called "The First American System of Fortifications." This program called for a fortification on Cockspur Island to protect Savannah. Named after Revolutionary War hero Nathanael Greene, the fortification was constructed between 1794 and 1795, but was destroyed by a hurricane in 1804. Still fearing a British attack, the United States initiated a "Second American System of Fortifications" in 1804; fortifications constructed under this system were more substantial, with high stone and masonry walls. The Second System was under development when the War of 1812 began.

The Third System of Defense: Fort Pulaski

Construction of Fort Pulaski, named for Polish Count Casmir C. Pulaski in honor of the role he played in the defense of Savannah during the Revolutionary War, began in spring 1833. When

7. J. Faith Meader and Cameron Binkley, ed., *Fort Pulaski National Monument Administrative History* (Atlanta: National Park Service, 2003), 3, citing John H. Jameson Jr., *Archeological Issues at Fort Pulaski National Monument, Georgia* (Tallahassee, Florida: Southeast Archeological Center, National Park Service, 1998).

8. Ibid., 6.

completed in March 1847, the five-sided masonry fort included a central parade ground. A gorge along the west elevation included officers' quarters, while casemates were located on the remaining four sides of the fort. Above the interior casemates and gorge rooms was a terreplein. The fort was designed to hold 146 guns. The demilune, which included emplacements for an additional twenty-eight guns, was surrounded by a breast-high masonry wall, protected on its exterior by embanked earth. A shot furnace was located within the demilune (Figure 4).

The completed fort was maintained by caretaker activities. At the outbreak of the Civil War, Fort Pulaski was not fully garrisoned.

The Civil War and its Aftermath. In November 1860 Abraham Lincoln was elected President, and in the following month South Carolina seceded from the Union. A few days later, federal troops were moved into Fort Sumter, infuriating residents of the city of Charleston as well as many other Southerners. Military leaders of Savannah, fearing that federal troops would soon occupy all coastal fortifications, moved quickly to occupy Fort Pulaski. On January 3, 1861, the 1st Volunteer Regiment of Georgia marched on the fort and, meeting little resistance, took control of it. On April 13, 1861, with the firing on Fort Sumter by Confederate forces, the Civil War began.

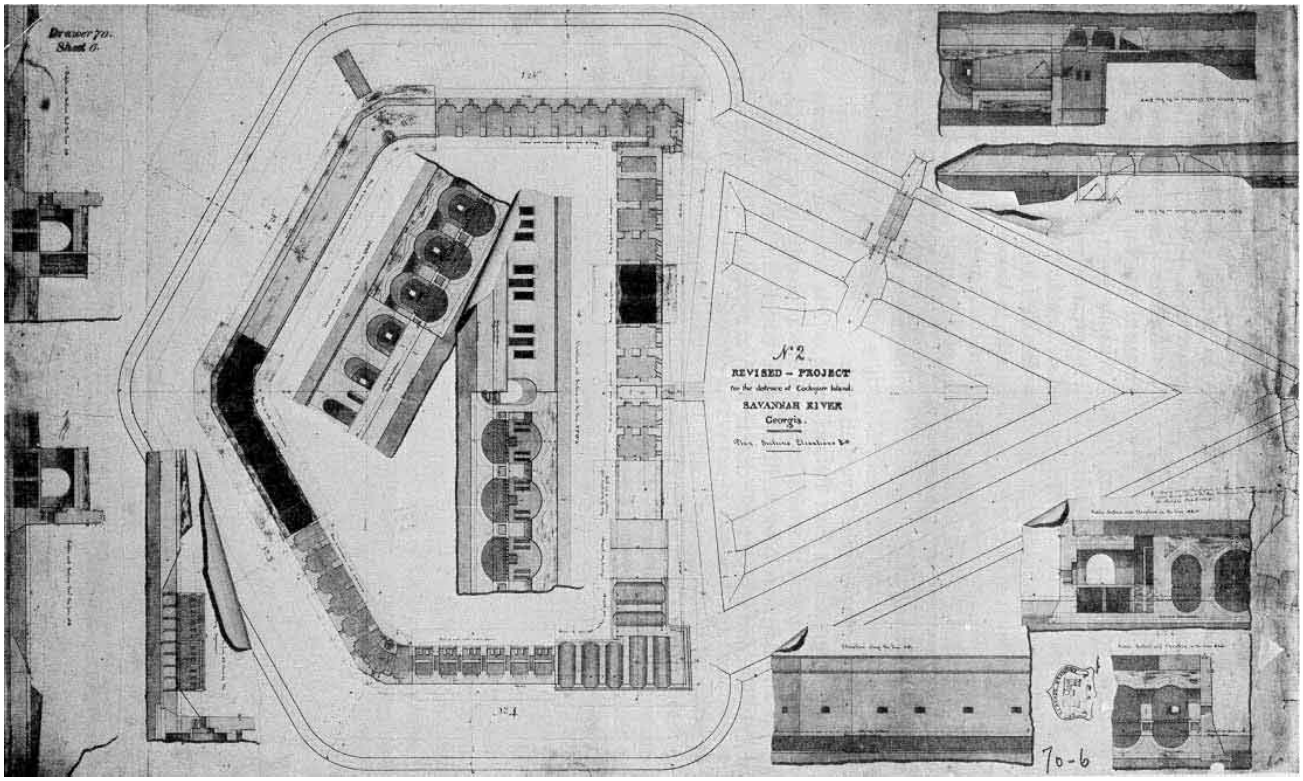


FIGURE 4. 1831 plan of Fort Pulaski, showing the fort as it was constructed. (Source: Fort Pulaski National Monument)

Union naval forces, which were considerable, were brought to bear on the coastal fortifications now held by Confederate forces. However, a storm off Hatteras Island, North Carolina, caused significant losses to Union ships, providing the Confederate planners time to revise their strategy. The Confederates relocated forces and guns away from smaller island fortifications to the larger inland fortifications. A critical fortification on nearby Tybee Island was dismantled and resources moved to Fort Pulaski. Following its abandonment, Tybee Island was occupied by Union troops, which prepared to attack Fort Pulaski.

Fort Pulaski was reliant upon the delivery of supplies by ship from Savannah, and on February 13, 1862, the last supply ship to the fort was fired upon and prevented from delivering its cargo. Union troops then began construction of additional gun batteries at Tybee Island and cut communications lines to the fort, effectively blockading Fort Pulaski. Although the fort would have eventually been starved into surrender, Union Gen. Thomas Sherman sought a quicker approach to taking over the fort and Savannah.

General Sherman planned to besiege Fort Pulaski with the latest Union weaponry—rifled bore guns. It was Sherman's belief that the power of rifled bore guns, as opposed to smooth bore guns, could destroy the fort and bring about its surrender. On April 10, 1862, Union forces at Tybee began slowly bombarding Fort Pulaski. At first, the mortars lobbed at the fort did little damage, but as the day wore on and heavy rifled artillery was employed, the fort began to experience serious damage. By the end of the day, Union forces could see damage but were uncertain whether it was sufficient to cause the defenders to surrender. They began shelling again the following morning (Figure 5). The damage, however, was significant, and at approximately 12:30 in the afternoon on April 11, 1862, the defenders of Fort Pulaski sent up a flag of surrender.

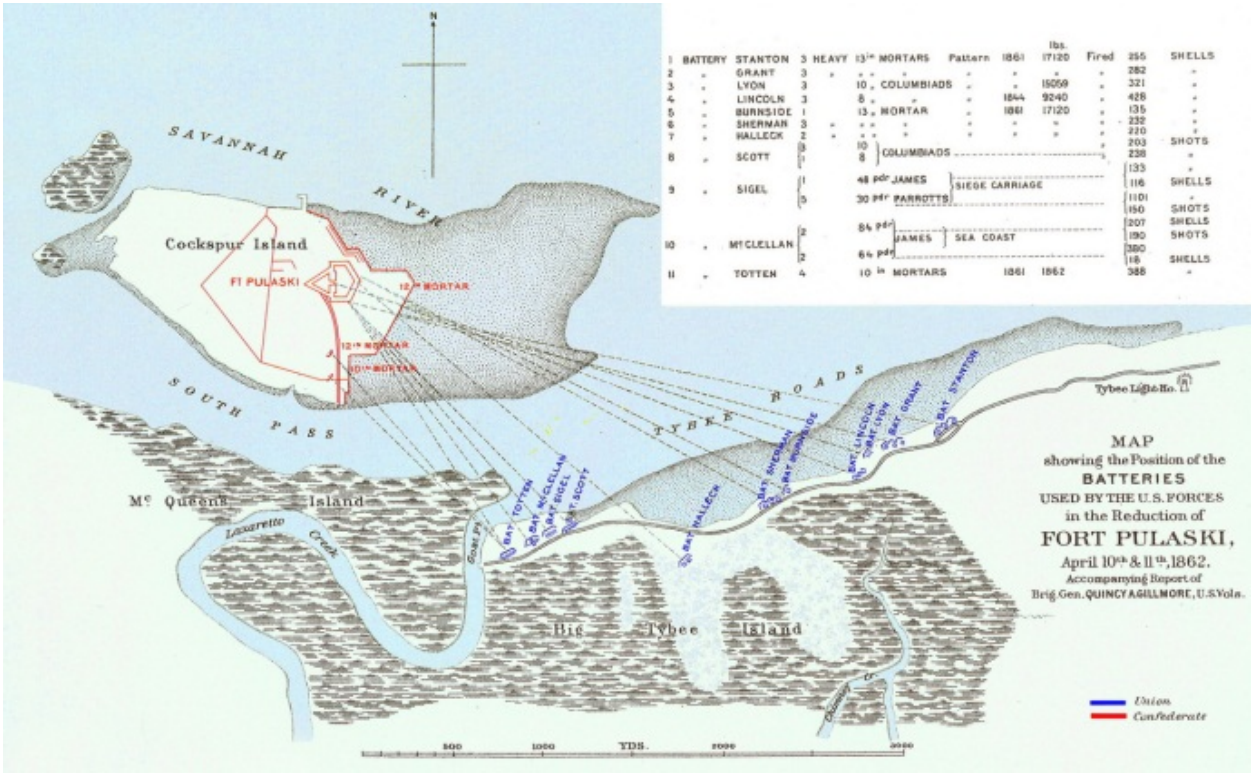


FIGURE 5. A map showing the Union attack on Fort Pulaski in April 1862. (Source: Fort Pulaski National Monument)

The US Army garrisoned troops at Fort Pulaski for the remainder of the war, and after the war until the mid-1870s. Changes were made to the fort and a series of improvements were undertaken. However, Fort Pulaski as a defensive structure was essentially obsolete. The inability of the masonry fort to resist the attack by rifled cannon led to a change in fortification design and construction, which Ralston Lattimore characterize as being "as radical as that foreshadowed in naval architecture by the conflict between the Monitor and Merrimac." He added, "No works of stone or brick [could] resist the impact of rifled artillery of heavy caliber."[9] Within the next several decades, new US coastal fortifications were constructed primarily of concrete, and the design of structures changed in accordance with use of, and protection against, new types of armaments.

In 1875, the US Army acquired land on Tybee Island to construct a new fortification, Fort Screven. Fort Pulaski was left with one Army caretaker. In 1899, the Army constructed a Fort Screven gun battery, Battery Hambright, and a mining casemate controlled by a small group of soldiers at Fort Pulaski. By the early twentieth century, the US Army had abandoned the fort.

Early Preservation

By the early twentieth century, Fort Pulaski exhibited signs of deferred maintenance. It was difficult to retain a caretaker in such a remote spot, and lack of use of the fort was contributing to its deterioration (Figure 6). On July 17, 1915, the US War Department announced that Fort Pulaski had been selected for consideration as a national monument under the American Antiquities Act. However, efforts to preserve the site were postponed as a result of World War I. In 1917, after visiting the fort, Col. John Millis, the District Engineer of the US Army Corps of Engineers in Savannah, recommended its immediate preservation. Millis, with the help of Thomas Purse, Secretary of the Savannah Board of Trade, sought War Department funds to be used for the improvement of Fort Pulaski. In December 1917, $500 was made available, allowing the ridge around the fort to be cleared, affording visitors arriving at the site by boat a better view of the fort.

Minor repairs and changes were made to the fort through the 1920s and visitors began to come to the island. The city of Savannah expressed an interest in owning and maintaining the site as a park, prompting a closer examination of the site by the federal government. In January 1924, Georgia Congressman Charles G. Edwards introduced legislation that would designate Fort Pulaski as a national monument. Later that year, on October 15, Fort Pulaski was made a national monument in a proclamation by President Calvin Coolidge.[10] The fort was to be managed by the US War Department, which maintained other Civil War sites such as Antietam, Gettysburg, and Shiloh national military parks

This designation did not settle the issue of funding, however, which remained limited. Small allotments were used to remove vegetation and preserve the site, and the last caretaker left the fort in 1921.[11] Responsibility for the site was transferred from the US Army Corps of Engineers to the US Army Quartermaster Department, which managed Fort Screven, in August 1925.[12] Finally, on June 10, 1933, President Franklin D. Roosevelt signed Executive Order 6166, through which the National Park Service gained jurisdiction over all historic sites, battlefields, monuments, and parks previously administered by the War Department, the Department of Agriculture, and the Office of Public Buildings and Public Parks of the National Capitol. As a result, Fort Pulaski National Monument and approximately 20 acres of adjacent land were placed under the administrative responsibility of the National Park Service.[13]

9. Lattimore, *Fort Pulaski*, 35–36.

10. Meader and Binkley, 17–18.
11. Ibid., 18.
12. Ibid.
13. Ibid, 18–19.



FIGURE 6. Aerial view of Fort Pulaski, before 1925. Note the overgrowth of trees and shrubs at the parade ground and demilune, low vegetation in the former moats, a caretaker's house atop the terreplein, and small outbuildings on the parade ground. (Source: Fort Pulaski National Monument)

NPS Stewardship of Fort Pulaski

Following the transfer of Fort Pulaski to the National Park Service, the State of Georgia donated 297.39 acres to the Department of the Interior in 1935. This included the east end of Cockspur Island, as well as portions of the former right-of-way of the Central of Georgia Railway on McQueen's Island, south of Cockspur Island. An act of Congress extended the western boundary of the national monument to the eastern property line of the US Public Health Service Quarantine Station situated on the west end of the island. This expanded the size of the monument to nearly 500 acres in size. The legislation also authorized the Secretary of the Interior to accept lands, easements, and improvements on nearby McQueen's and Tybee islands, and construction of a bridge between Cockspur Island and McQueen's Island.[14]

New Deal Programs. Between 1933 and 1941, an extensive amount of restoration and renovation work was completed at Fort Pulaski and its grounds under the auspices of several New Deal agencies including the Civil Works Administration (CWA), the Civilian Conservation Corps (CCC), and the Public Works Administration (PWA). In May 1934, CCC Camp 460 was established along the northwest shore of Cockspur Island. Initially, 175 CCC workers were part of the camp. By mid-1934, the number of CCC enrollees at Fort Pulaski had fallen to thirty. The size of the CCC camp rose to 242 workers in January 1935, following a request by the superintendent of Fort Pulaski for the continuation of the CCC program at the fort. Although CCC work continued on the island, a substantial portion of funds and labor was reallocated to the CCC camp at Robert Fechner Park, located southeast of Savannah, in 1938. As a result, major work at the fort was left unfinished, and maintenance of the park subsequently declined. The CCC continued to have a presence at Fort Pulaski until May 1941, when CCC Camp 460 was transferred to Florida.[15]

The entrance of the United States into World War II in December 1941 prompted the termination of New Deal-era programs such as the CCC and PWA. The US Navy established a section base on Cockspur Island in late 1941. The base, which was used to support coastal patrol ships, remained active until 1947.[16] During this time, the fort was maintained by one laborer and was closed to the public.[17]

After World War II: Mission 66. After the war, the buildings associated with the Navy's occupation of the fort were removed. On October 15, 1947, Fort Pulaski National Monument reopened to the public. In the years following the war, Americans began visiting national parks in unprecedented numbers, straining park resources. In February 1955, Conrad Wirth, director of the National Park Service, conceived a comprehensive conservation program to revitalize the national parks. The capital program would begin in 1956 and conclude ten years later at the fiftieth anniversary of the National Park System. The program, called Mission 66, aimed to modernize and expand the National Park System. Wirth put together a working committee as well as a steering committee to help outline the scope and budget of the program. He also instructed park superintendents to prepare lists of work that needed to be done in the various parks.[18]

In 1956, the Mission 66 Final Prospectus for Fort Pulaski National Monument was completed. The

14. Meader and Binkley, 23, citing Farris Cadle, "Title Abstract for Cockspur Island" (Fort Pulaski National Monument, 2000). Fort Pulaski NM, Resource Management Records Collection. (Note that where footnotes in the Historic Structure Report do not cite box and folder information, research using these reference documents was conducted at Fort Pulaski National Monument prior to processing of the collections.)
15. *Fort Pulaski Superintendent's Annual Report,* 1938, 1939). Fort Pulaski NM, Resource Management Records Collection.
16. Meader and Binkley, 29.
17. Ibid., citing "Mission 66 for Fort Pulaski National Monument" (Washington, DC: National Park Service, 1956), 3–4.
18. Ethan Carr, *Mission 66: Modernism and the National Park Dilemma* (Amherst: University of Massachusetts Press, 2007), 10.

document called for all park structures to be properly maintained and made safe, while new interpretive services also were proposed. Most importantly, the prospectus called for an increase in funds and personnel to allow for the proper maintenance and interpretation of the national monument.[19]

The largest Mission 66 project undertaken at Fort Pulaski was the construction of a new freestanding visitor center. Construction of the visitor center began in late 1962, and the building was completed and opened to the public in October 1964. The one-story brick structure, which is circular in plan, was designed by the NPS Eastern Office of Design and Construction in Philadelphia.[20] Other Mission 66 projects completed at the national monument included reconstruction of the parking area; improvements to the water, power, drainage, dike, and telephone systems; and a series of repairs to the fort and grounds.[21]

Continued Maintenance. The fortification and grounds as well as the Mission 66 visitor center have continued to undergo general maintenance, renovation, and updating since the end of the Mission 66 period, as well as repairs in response to several severe weather events.

1970–1990 Maintenance. During the 1970s through 1990s, modifications to the park sought to retain and enhance the historic character of the landscape and fort.[22] Available records in park archives do not document specific projects or ongoing maintenance efforts at the visitor center during this period.

1990–2000 Maintenance. The visitor center underwent major renovations in the 1990s. The roof was replaced, exhibits were refurbished, a small theater was added to the lobby, concrete sidewalks around the building were replaced with exposed aggregate concrete, new exterior bathroom facilities were added, fire safety was upgraded, and the gift shop was reorganized with a new shelving system.[23]

Maintenance since 2000. This period has seen a series of changes and upgrades to the visitor center. Changes included the addition of an ADA-compliant ramp to the exterior of the building, replacement of glass doors, reroofing, and replacement of heating, ventilation, and air conditioning (HVAC) units.[24] This period has witnessed an increase in severe weather damage

19. Meader and Binkley, 30, citing, "Mission 66 for Fort Pulaski National Monument" (Fort Pulaski: National Park Service, 1956).
20. Ralston Lattimore, letter to J. F. Odum, Superintendent of the Cherokee Filtration Plant, October 8, 1962, Fort Pulaski NM, Resource Management Records Collection.
21. Meader and Binkley, 31, citing, "Mission 66 for Fort Pulaski National Monument."
22. *Administrative History*, 32.
23. Invitation for Bids: Fort Pulaski Reroof, March 23, 1994, Fort Pulaski NM, Resource Management Records Collection, Box 55, Folder 28; Acting Superintendent, Fort Pulaski, memo to Harpers Ferry Center, Chief of Contracting, August 4, 1995 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 13); Order for Supplies and Services, Order No. 1443PX500095751, to Malone Displays for Installation of Exhibits at visitor center, Fort Pulaski, August 22, 1995 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 13); Notice of Award – Sidewalk Repair and Replacement, September 4, 1999 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 10); Steve Sherwood, memo to Carl Vicari, July 13, 1992 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 19); Solicitation for Construction of Men's and Women's Restroom Facilities on a Concrete Slab, July 18, 1996 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 26); US Department of Interior Requisition, Malone Displays, February 12, 1996 (Fort Pulaski NM, Resource Management Records Collection, Box 8, Folder 59).
24. FOPU Maintenance, September 9, 2000 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 9); Bill of Sale to Roy Moore Contracting, June 2003 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 11); Invoice, Roy Moore Painting, November 11, 2003 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 24); John Breen Superintendent, memo, August 8, 2004 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 12).

from hurricanes, tornadoes, and rainstorms. In 2017 alone, Hurricane Irma and a tornado caused enough damage to the visitor center, the fort, and the site to warrant the closing of park for several weeks.

In 2000, for the fiftieth Anniversary of the Mission 66 program, NPS studied the program and its buildings, which resulted in the publication of *Mission 66: A History of a Building Type* by Sarah Allaback. In this publication, the Fort Pulaski Visitor Center is identified in the list of visitor centers constructed as part of the Mission 66 program. As a follow-up in 2010, the NPS Southeast Region surveyed the integrity of Mission 66 visitor centers within its parks. This survey found that the visitor center at Fort Pulaski retained its integrity, despite a number of changes to the building.[25]

Mission 66 Program

The National Park Service implemented the Mission 66 program to revitalize the national parks and to accommodate an increase in visitors after World War II. In 1949, Newton Drury, director of the NPS, first acknowledged that the national parks were in dire need of funds for basic maintenance, as park facilities remained largely as they had been prior to the war.[26] He described the postwar parks as "victims of war." Visitor attendance between 1931 and 1948 soared from 3,500,000 to almost 30,000,000; the increase in visitation placed the parks' natural resources at risk. Drury recognized that new, modern facilities might help conserve park land by restricting public impact on fragile natural areas. However, the necessary improvements would require large appropriations from the US Congress that Drury was unable to obtain during his tenure.[27]

In 1951, Conrad Wirth assumed the directorship of the National Park Service. US Department of the Interior Undersecretary Ralph Tudor reorganized his department in 1954, a decision that indirectly resulted in the establishment of the Mission 66 program. The organizational change allowed Wirth to direct his attention to problems in the National Park System. Wirth developed a comprehensive program that included a request for a decade of funding, to ensure the availability of funds for any building projects that might span several years. The NPS presented Mission 66 as an initiative to elevate the parks to modern standards of comfort and efficiency, as well as an effort to conserve natural resources. Wirth established two committees composed of members of NPS branches to work on the planning of Mission 66—a steering committee and a Mission 66 committee.[28]

Each park superintendent generated a comprehensive list of priorities required to place park facilities in a condition appropriate for visitation at that time, while protecting the park. The superintendents also projected each park's visitation ten years into the future. In the early planning stage, Mission 66 staff engaged in reviewing the history of NPS development policy and initiated a pilot study of Mount Rainier National Park, Washington. A list of priorities for determining park needs derived from this study assisted the superintendents in their assessments. Park standards were also introduced throughout the park system.

Wirth unveiled Mission 66 to President Dwight D. Eisenhower and his cabinet on January 27, 1956. In the following month, the program received final authorization and was introduced to the public. Congressmen with national parks in their districts supported the increased appropriations for the entire ten-year construction period. The program generated public support through its mission

25. Sarah Allaback, *Mission 66 Visitor Centers: History of a Building Type* (Washington DC: Government Printing Office, 2000), Appendix I, 258. See also Caitlin Buckley, "US Department of the Interior, National Park Service, Mission 66 Visitor Center Survey Form," June 7, 2010.
26. Refer to Newton Drury, "The Dilemma of Our Parks," *American Forests* 55 (June 1949): 6–11, 38–39.
27. Allaback, "Introduction: The Origins of Mission 66. "
28. Allaback, 3.

statement and pending celebration of the fiftieth anniversary of the NPS in 1966. The Mission 66 program sought to facilitate the demands of the modern era, and also introduced a broad overhaul of the planning, interpretive, and educational practices of the NPS. Mission 66 permitted the NPS to repair and construct roads, bridges, and trail systems; hire additional staff; build new facilities ranging from campsites to administration buildings; improve employee housing; and obtain land for future parks. In addition to improving facilities, the NPS introduced new methods for managing and conserving resources.

By the mid-1950s, the number of visitors to the national parks each year had reached nearly 62 million. In *Mission 66: Modernism and the National Park Dilemma*, Ethan Carr attributes the post-war development of the US highway system as the single element that directly marked the connections between national parks and the changing geography surrounding them.[29] In addition to the proliferation of the automobile, Carr further notes that the expansion of suburban cities and the availability of labor-saving construction technology affected future development in the national parks, similar to construction throughout the country during the mid-twentieth century.[30] The program was planned to be acceptable and affordable to Congress and the public, and to allow for coordination with architectural consultants and construction contractors.[31]

Mission 66 introduced a new building typology to the national parks—the visitor center. NPS planners, architects, and landscape architects conceived of a single centralized building to house interpretive programs, administrative offices, and visitor facilities. The new visitor centers typically reflected modernist architectural design influences. Similar to midcentury modern shopping centers, the new national parks facilities offered easy highway access, ample parking, and convenience.[32] This approach contrasted with the earlier park village planning model, facilities spread out in an arrangement of individual buildings, typically designed in a rustic style.

The Park Service Rustic style, developed in the 1920s, accentuated natural materials and associations with the surrounding landscape. During the 1930s, the CCC provided inexpensive labor for rustic construction. The parks featured well-groomed trails with amenities such as stone drinking fountains and steps, trailside museums, and other architectural features that blended into the natural landscape. National Park Service architects were familiar with European modernism by the late 1930s, although the Rustic style was more prevalent in the design of park structures at that time. When the Mission 66 planners introduced the prospect of modern architecture in the national parks they were met with objections from environmentalists and visitors who preferred the more traditional architectural styles. However, NPS planners considered the modernist design to be in harmony with the surrounding landscape. By the late 1950s, Rustic-style design for new structures in the parks was increasingly supplanted by what became known as Park Service Modern.

Architects, landscape architects, and planners collaborated on the design of new visitor centers. The architecture of the Mission 66-era visitor centers embraced a new streamlined approach to design that removed most decorative or associative elements. Architects utilized modern building materials such as textured concrete with panels of stone veneer, painted steel, and glass. Pre-fabricated and precast materials were also employed in the designs. Modernist elements included flat roofs with projecting flat terraces and a low, horizontal profile, winding forms, and greater variety and openness in plan. Visitor centers were carefully sited to be unobtrusive in the historic setting as well as located for maximum efficiency in managing visitation; they were often located at entryways and high use areas. These facilities were often placed on slopes to present the visitor with a single-story elevation, while the

29. Carr, 50.
30. Ibid.
31. Ibid.
32. Ibid.

rear (service / administrative facade) consisted of two levels of offices.[33]

The sequence of interior spaces was an important aspect of the visitor center. Modernist design of the Mission 66 visitor centers incorporated spatial progression through wide entrances and exits, ramps and inclined planes, an open lobby, easy access to exhibit and auditorium areas, and significant views of natural features or historic sites to facilitate interpretive talks.[34]

The Mission 66 program also included construction of other types of facilities such as housing, maintenance areas, roads, entrance stations, parking lots, campgrounds, comfort stations, picnic shelters, concessions buildings, and other park structures intended to serve visitors and facilitate park management. A total of one billion dollars was spent between 1956 and 1966 to modernize and expand the US National Park System.

Mission 66 is significant for representing the second era of major park development that introduced the construction of various new facilities for park visitor. The social acceptance of Modernism and its use in the parks, together with economic benefits provided by Modernist styles, allowed the parks to construct new facilities to meet the demands of increased visitation. Modern building materials tended to be less expensive and Modernist design, with its lack of ornamentation and incorporation of prefabricated units, was generally less costly than Rustic style. More than 100 new visitor centers were built during Mission 66. Park Service Modern architecture largely succeeded in reinterpreting the NPS's tradition of harmonizing architecture with park landscapes by creating a new approach. The modern visitor center provided more programmatic and functional space with less architectural presence.[35]

Fort Pulaski Mission 66 Visitor Center

The Fort Pulaski Mission 66 visitor center is located immediately west of the fortification within the Fort Pulaski National Monument, Savannah, Georgia.[36] The visitor center was constructed in 1962–1963 as part of the nationwide Mission 66 program, which sought to modernize and update the National Park System over the ten years beginning in 1956. This period of modernization brought significant changes to the National Park System and produced innovative ways of managing the vast crowds of visitors that began to flock to the country's parks after World War II. One of program's innovations was the creation of the visitor center.[37] The concept of a visitor center—a single building, close to primary park resources, where visitors could obtain information; purchase tickets and souvenirs, and something to eat and drink; arrange tours; and use the restrooms—was a novelty at the time, but one that forever changed the way visitors are handled en masse in any public place.

Fort Pulaski National Monument was one of the parks that received a visitor center. Buildings designed during the Mission 66 program are typically in modern styles, as is the case with the Fort Pulaski visitor center (Figure 7). In a National Park Service 2010 survey of Mission 66 visitor centers in the Southeast Region, the building was described as follows:

> Constructed with steel frame and concrete-block curtain walls, the visitor center at Fort Pulaski has a circular plan, base arches, and rusticated brick veneer. Set in a dry moat, the building's low elevation and flat roof minimizes its impact on the historic scene. The location close to the primary resource, centralized service and low profile are all features that are characteristic of Mission 66. Over the years, several changes have been made to the building, including the addition of ADA approved restrooms and the creation of an

33. Ibid.
34. Ibid.
35. Ibid.
36. The Fort Pulaski Visitor Center is not currently listed in the NPS List of Classified Structures.
37. Allaback.

> auditorium in the lobby. The design was highly influenced by Eero Saarinen's design of the MIT Chapel.[38]

The visitor center is used today for its original purpose.

History of Fort Pulaski Visitor Center

In *Mission 66 Visitor Centers*, Sarah Allaback notes:

> The planning and design of all visitor centers began in the Park Service offices of design and construction in San Francisco (WODC) and Philadelphia (EODC). Both offices had been established as part of the Park Service's reorganization in 1953, and both were overseen by the central planning and design office in Washington, DC. Neither the WODC nor the EODC was prepared for the quantity of work Mission 66 would bring to the drawing boards. Rather than hire additional architects and landscape architects who would have to be laid off at the conclusion of Mission 66, the Park Service planned to contract out work to private firms on a project by project basis. Visitor centers were typically the most expensive new buildings in the parks, as well as high-profile commissions and, therefore, attractive to private consulting firms.[39]



FIGURE 7. Fort Pulaski National Monument Mission 66 Visitor Center, 2017. (Source: All photographs by the authors unless otherwise noted.)

38. Buckley.
39. Allaback, 49.

The NPS Eastern Office of Design and Construction in Philadelphia designed the Fort Pulaski Visitor Center. In April 1962, the architectural firm of Levy and Kiley, AIA, of Savannah, Georgia, was engaged to complete the working drawings and serve as supervising architects during construction.[40]

Levy and Kiley, AIA. At the time of the Fort Pulaski Visitor Center commission, the firm of Levy and Kiley, AIA, included principals Henry "Hank" Levy (1927–2016) and Walter F. Kiley (1909–1992). Hank Levy joined Clarke and Levy, the architectural firm in which his father, Henry Morton Levy, was a principal, after service in the Navy during World War II. The younger Levy later changed the name of the firm to Levy and Kiley.[41] Levy and Kiley, AIA, still exists as a small architectural firm in Savannah, Georgia.

Hank Levy was born in Savannah; attended the Georgia Institute of Technology, earning a B.S. in Architecture; and studied at the L'Ecole des Beaux Arts in Fontainebleau, France. Levy was a noted civic leader in Savannah and on Tybee Island, his last home. During his lifetime, he was recognized as Outstanding Young Man of the Year, Outstanding Man in Georgia, Outstanding Citizen in Savannah, and Outstanding Citizen in Commence. He worked diligently as the chair of the Special Advisory Committee on Oceanography to the Savannah Port Authority to locate Skidaway Marine Institute. He also served as chair of the Savannah Metropolitan Planning Commission; chair of the Bridge for Progress Bond Referendum Campaign to connect Skidaway Island to the mainland; chair of the Citizens for Better Roads Sales Tax Referendum, which resulted in $200 million in roads in Chatham County; and a trustee

40. Meader and Binkley, 30. See also Robert E. Smith, Chief Architect, NPS EODC, memo to Regional Director, Region 1, April 11, 1962 (Fort Pulaski Resource Management Records Collection).
41. Introduction, MS354: Henry Levy Papers, Berman Jewish Heritage Archives.

and treasurer of the Skidaway Marine Science Foundation.[42]

Levy was also outspoken about zoning and building issues on Tybee Island. In an ongoing disagreement with a developer, he created and placed on a road sign a sticker that read, "Going somewhere? Take (the name of the developer) with you." The developer, in a fit of pique, threatened to have Levy arrested for defacing public property. Levy's supporters raised money for bail and produced another sticker reading, "Free Henry." He was never arrested, but in a highly contentious public meeting with the US Army Corps of Engineers over beach replenishment, he upbraided the Corps and suggested that it need a housecleaning—with an AK-47. Although Levy was not serious, the FBI was alerted and turned the problem over to the Tybee police; Levy again avoided arrest.[43]

Walter F. Kiley appears to have been a more sedate personality that Hank Levy. Kiley, like Levy, was a graduate of the Georgia Institute of Technology. He served as president and past president of the Savannah Chapter of the AIA, and as president, past president, and examiner of the Georgia State Board of Architects.[44] In 1974, Kiley was given the AIA Bronze Medal for outstanding service to the AIA and the community.[45]

It is not clear how NPS chose Levy and Kiley as the architects for this project. Certainly, by the early 1960s the firm was recognized regionally. From 1959 to 1961, the firm designed one of the largest and most prominent modern commercial buildings in Savannah, the former First Federal Savings Bank, now the Broughton Street Municipal Building, at 132 East Broughton in Savannah. Among the building's more distinctive features, echoing the sunshades of the visitor center, were pairs of movable louvers, since removed, which adjusted automatically to the position of the sun. The Savannah School of Art and Design (SCAD) Jen Library is also located at the intersection of Broughton and Abercorn. Formerly Levy's of Savannah Department Store, the building at 201–209 East Broughton was designed by the firm in 1925 for a relative of Levy's. An example of the new trend for "windowless" department stores, the building anchored the eastern end of the shopping district. Across from Levy's Department Store was the new Woolworth Co. Variety Store (131 East Broughton Street). Designed by Levy and Kiley in 1954, the building represents the apex of the large downtown variety store, and also illustrates Woolworth's interest in emulating certain aspects of major department stores to gain a greater share of the latter's market, including updating the appearance of the exterior and interior of its buildings.[46] That Levy and Kiley designed modern buildings on three of the four corners of the most important intersection in the downtown Savannah shopping district likely did not go unnoticed by the NPS. The firm's work in the modern style and willingness to experiment with different building types and features was also likely an attraction for new commissions.

Design of the Visitor Center. In late 1960, the EODC created preliminary drawings for the proposed visitor center at Fort Pulaski and circulated them within EODC and to the Superintendent at Fort Pulaski. The plan created by EODC architect J. Walter Roth is, unfortunately, no longer attached to the memorandum on file in the Fort Pulaski archives. However, Superintendent Ralston B. Lattimore

42. Henry Levy (2016 [sic]–2016) Obituary, *The Telegraph* (Macon, Georgia), http://www.legacy.com/obituaries/macon/obituary.aspx?pid=179859215 online, accessed September 12, 2017.
43. Ann Woolner, "Architect, civic leader Henry Levy dies," *Savannah Morning News*. Online. Accessed May 3, 2017.
44. "Walter Kiley Architect (Obituaries)," *Savannah News-Press*. Online. Accessed February 9, 2017. Page 3c.
45. American Institute of Architects, Georgia Association, *AIA Georgia Honor Awards*. Online, accessed May 2017.
46. Documentation and Conservation of Buildings, Sites and Neighborhoods of the Modern Movement (DOCOMMO) / US Georgia Chapter and Historic Savannah Foundation, *DOCOMOMO US National Tour Day 2011, Modern Savannah* (DOCOMMO / US).

congratulated Roth on creating a "most interesting design" and added, "I not only wish to congratulate him, but hope that the spirit of his concept can be preserved in the final plan."[47] This memo also indicates that the visitor center also serves as an exhibit hall with a map room with speakers at each map; it would have a U-shaped or round information-sales counter in the lobby, a conference room, and a lounge. The superintendent commented that ". . . an effort should be made to gain greater lightness in the structure, both to the eye and in fact," recommending the incorporation of features such as louvers or vertical ribs in the facades. He commented on the unstable site soils, and noted that the park had a stock of large cypress timbers that could be used for construction of a foundation mat. In addition, he suggested that the entrance and stairway at the north side of the building were too narrow and cramped, and recommended a flying stair or bridge over a moat or reflecting pool[48]

Although the design developed by the EODC is not included with the archival copy of Superintendent Lattimore's comments of December 1960, it is likely that the visitor center was circular in plan, as this is the approach carried forward in documents developed by Levy and Kiley. The Administrative History notes that Henry Levy stated that Eero Saarinen's Kresge Chapel (1955) at the Massachusetts Institute of Technology provided the inspiration for the new visitor center, which resembles the chapel in its circular plan, base arches, rusticated brick, and surrounding gravel moat (Figure 8).[49] The height of the new building was kept low, to prevent it from intruding on the historic fort. Correspondence during construction of the visitor center further suggests that its design referenced the MIT chapel; correspondence from the EODC to supervising architects Levy and Kiley cited the MIT chapel in discussing bricks selection for the new visitor center.[50]



FIGURE 8. Kresge Chapel at MIT, Eero Saarinen 1955. (Source: Arch Daily, accessed at www.archdaily.com/112682/ad-classics-mit-chapel-eero-saarinen/503800f228ba0d599b00087f-ad-classics-mit-chapel-eero-saarinen-image, July 2018)

In 1961, a memo from the NPS Region One Director to Superintendent Lattimore bemoaned the fact that "Visitor Center plans agreeable to all concerned have not yet been developed." Nevertheless, Lattimore was urged to complete plans for three interpretive elements shown on the Director's Interpretive Developments Status Report, which were then overdue. The Director cautioned that the delay of the building should not delay the preparation of the interpretive design inside and outside the fort—or the furnishings

47. Ralston B. Lattimore, Superintendent, Fort Pulaski, Memo to Chief, EODC, December 12, 1960 (Fort Pulaski NM Resource Management Records Collection).
48. Ibid.
49. Meader and Binkley, 30.
50. Robert Smith, Chief Architect, EODC, letter to Henry Levy, January 24, 1963 (Fort Pulaski NM Resource Management Records Collection, Box 53, Folder 18).

plan—all of which were to be funded by FY 1961 monies.[51]

In April 1962, Lattimore received word that funding for the new visitor center had been "unfrozen" and reported to John B. Cabot, Chief Architect, NPS:

> . . . it appears to be going forward rather smoothly, and I am much pleased. I sincerely hope that the local architect will rise to the occasion and give us a good job. The circular idea has taken hold here in Savannah and there will be three building simultaneously under construction, the Savannah Tourist Contact Station, the Chapel of the new Benedictine School and our Visitor Center.[52]

The Benedictine Military School Priory Chapel, constructed in 1963–1964, offers an interesting comparison to the Fort Pulaski Visitor Center as one of three modern, circular buildings constructed in Savannah at the same time as the Fort Pulaski Visitor Center (Figure 9). The chapel was designed by architect Carlos Bertotto, who during his studies at the Georgia Tech School of Architecture was influenced by the work of Modernist architects, particularly Eero Saarinen. Similar to the Fort Pulaski Visitor Center, the design of the Priority Chapel references Saarinen's Kresge Chapel at the Massachusetts Institute of Technology (MIT), constructed in 1955, in its circular plan, brick exterior walls, and reflecting pool or moat.[53]



FIGURE 9. Benedictine Military School Priory Chapel, circa1963–1964. (Source: *Recent Past Preservation Network Bulletin*, Spring 2011, accessed at https://issuu.com/recentpast/docs/rppn_bulletin_spring2011, March 2019)

In the spring of 1962, as Levy and Kiley were selected as supervising architects for construction of the new Fort Pulaski Visitor Center, an invitation for bids was issued to nine firms in Savannah, as well as the F. W. Dodge Corporation, with four offices in Georgia. In response to the invitation, which was a small business set-aside, two general contractors submitted bids: Hugh Jackson and Harry Roland. On June 26, 1962, Hugh Jackson General Contractor and Engineer, Savannah, Georgia, was awarded the contract for a bid of $136,124.90. The contract was for all construction related to the building, including water, sewerage, and electrical utilities.[54]

Soon after Jackson was awarded the contract, he indicated that mistakes had been made in his bid of June 7, 1962. Jackson noted that he had received communications from J. Walter Roth of the EODC alleging that an error of $9,103.20 had been made in his bid. Jackson, therefore, requested that his bid be increased from $136,124.90 to $145,138.10, which was lower than the next lowest bid of $150,241. The Secretary of the Interior and the Comptroller General of the United States became involved in responding to this request. Jackson eventually agreed to the original bid of $136,124.90, and the National Park Service was

51. Region One Director to Ralston B. Lattimore, Superintendent, Fort Pulaski, Memo, March 27, 1961 (Fort Pulaski NM Resource Management Records Collection).
52. Ralston Lattimore, letter to John B. Cabot, April 19, 1962 (Fort Pulaski NM Resource Management Records Collection, Box 53, Folder 22).
53. Docomomo / US, *Modern Savannah*, Docomomo / US National Tour Day, 2011, 5–6.
54. Bid Form / Schedule / Abstract of Bid, 1962 (Fort Pulaski NM Resource Management Records Collection, Box 53, Folder 21).

able to begin disbursing funds for the construction of the building.[55]

Construction of the Visitor Center. Before the general contractor had set up offices at the site, Levy sent a brick fabricator's representative, Robert Thrower of Columbus, Georgia, to assess the Savannah Grey bricks of which the fort is largely constructed. Levy was concerned about the color and texture of the brick to be used in the visitor center, while Superintendent Lattimore, was concerned about the porous quality of the grey brick and its performance in the salt environment. Lattimore issued a memo to the EODC concerning the brick for the project.[56] Brick would be a continuing subject of discussion among Lattimore, the EODC, and Levy.

All parties were eager to begin construction at the site; however, the start of work was delayed due to a local labor strike at the beginning of September 1962. A stop order on the work was issued until the labor dispute had been resolved, and the contractor's contract was extended.[57] In the meantime, Jackson assembled his subcontractors and material suppliers. They included:

- Installation of reinforcing and structural steel – Southeastern Steel Co.
- Masonry labor – Gregory & Mills, Masonry Contractors
- Plaster and stucco – D.C. Dorminey
- Heating and air conditioning – Nettles Refrigeration Co.
- Glass, aluminum and sunscreen – Southern Glass Co.
- Roofing and sheetrock – Case-Jenkins, Inc.
- Pilings – Tutan Construction Co.
- Roof deck – Bonitz Insulation Co.
- Electrical work – Lynah Electric Co.
- Plumbing and utilities – Consolidated Plumbing Co.
- Terrazzo and tile work – Dan J. Sheehan Co.
- Foundation bents, hardware, and weather stripping material – McCarthy, Inc.
- Reinforcing – Savannah Steel
- Misc. iron and aluminum nails – Savannah Iron & Fence Co.
- Steel joist – Wen Steel Co.
- Millwork – Harmons, Inc.
- Face brick – F. Graham Williams Company
- Vinyl base – C.M. Strickland

J. H. McCall served as the job superintendent and Parker Laboratory was the testing laboratory selected. There was, however, disagreement over the selection of D.C. Dorminey for plaster and stucco work. Levy and Kiley did not like the quality of the firm's work and another plaster and stucco subcontractor was used instead; the latter firm is not named in archival correspondence reviewed.[58]

Finally, at the end of September 1962, Jackson set up an office on site and installed a telephone, storage, and tool shelter. The first test piles were driven during the week of September 24, and a 5 degree discrepancy in the surveyor's lines for the building was discovered. All agreed that the discrepancy was not of "any significant

55. Comptroller General of the United States, letter to the Secretary of Interior, June 26, 1962 (Fort Pulaski NM Resource Management Records Collection, Box 53, Folder 22).
56. Ralston Lattimore, memo to Chief, EODC, April 17, 1962 (Fort Pulaski NM Resource Management Records Collection, Box 53, Folder 22).
57. Chief Architect, EODC, memo to Superintendent, Fort Pulaski, September 7, 1962 (Fort Pulaski NM Resource Management Records Collection).
58. Hugh Jackson, letter to Levy and Kiley, September 13, 1962 (Fort Pulaski NM Resource Management Records Collection).

importance."[59] The high-voltage electrical lines near the site were originally to be abandoned, but it was not clear whether this occurred. If the line had been damaged during construction, the fort would have been without power, light, or water. Lattimore traced the line and determined that it was located north of the building.[60]However, the presence of the electrical lines remained a constant challenge for Levy during the work.

Through October and into December 1962, the building was laid out, the piles were driven, and concrete was placed. The electrical underground lines were laid but not given their final check. The brick remained a point of contention. All brick samples to date had been brown and mostly red, when the architects had specifically requested dark brown and black. In September, the F. Graham Williams Company, brick subcontractors for the project, had begun receiving brick samples that had a very rough, "antique" finish from various contractors. The Women's Dormitory at the University of Pennsylvania, designed by Eero Saarinen, had just been completed using handmade brick that Williams thought would be appropriate for the visitor center. Levy was not convinced and sought confirmation about the brick selection from the EODC, writing: "Would Philadelphia please answer the question just above [about brick color] and send us an approved finish color schedule."[61] From this point forward, Levy addressed all questions to the EODC architects to "Philadelphia."

In October, Levy also started another battle of wills—this time with Savannah Electric and Power Company. Three power poles were erected and wired for service to the area; Levy noted that they resembled ". . . so they tell me, Christ and the two thieves."[62] Levy would make mention of these poles thereafter as the "three crosses." He was much aggrieved by their unsightliness.

In November and December 1962, the columns and piles to the first floor had been formed and the concrete placed (Figure 10). The first-floor formwork was progressing and the 4 foot plywood boards presented a "problem in plane geometry." (Figure 11).[63] The floor was expected to be poured during week of November 26, 1962. Around that time, Levy noted in his report, "The Electric Company has offered to help us on the problem with the three poles with crosses on them. They offered a searchlite [sic] . . . in case we wished to make a Christmas display." Superintendent Lattimore, upon receiving the progress report, underlined the last sentence about making a Christmas display and noted, "Do not forward to Region or EODC."[64]



FIGURE 10. The visitor center was laid out and concrete pilings formed, November–December 1962. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 84, image 2194)

59. Levy and Kiley Construction Progress Report, September 24–28, 1962 (Fort Pulaski NM Resource Management Records Collection, Box 53, Folder 18).
60. Ibid.
61. Levy and Kiley Construction Progress Report, 10/1–12, 1962 (Fort Pulaski NM, Resource Management Records Collection, Box 3, Folder 18); F. Graham Williams, Brick Building Materials, letter to Hugh Jackson, General Contractor, Fort Pulaski Visitor Center, October 2, 1962 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 21).
62. Levy and Kiley Progress Report, October15–27, 1962 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 18).
63. Levy and Kiley Progress Report, – October 29–November 6, 1962 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 18).
64. Ibid.



FIGURE 11. Levy's "problem in plane geometry" was executed; forms were constructed for placement of the concrete slab, November–December 1962. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 84, Image 2196)

In mid-December, the first-floor beams and slab were poured (Figure 12). The pouring of the slab was described in Levy and Kiley's progress report as:

> . . . some undertaking. Seven people (Contractor, Superintendent, Sub-contractors, Architect, Electrical Engineer, Mechanical Engineer, Structural Engineer) spent the greater part of a day off and on checking the see if it was okay.

The outside electrical utility runs had been constructed or begun. Several pallets of red brick were on the job site; however, EODC had approved the samples and Levy and Kiley's progress report noted that ". . . we can't complain. We have almost the identical brick here that comes out of old paved street and have used them several times."[65]

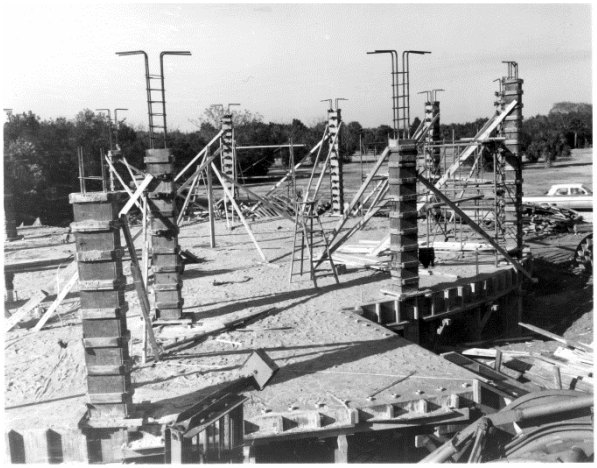


FIGURE 12. By mid-December 1962, the floor slab and first-floor beams had been constructed and formwork and reinforcement for the columns had been partially completed. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 84, Image 2199)

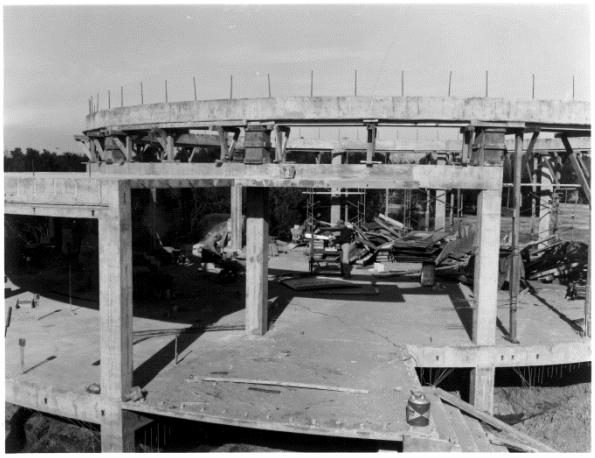


FIGURE 13. Columns for the first floor to the low roof were completed in December 1962, the week before Christmas. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 84, Image 2200)

The week before Christmas, 1962, Levy reported that the concrete from the first floor to the low roof beams had been placed (Figure 13). Some of the first-floor forms had been removed and other forms were being built and placed for the brick aches. Construction of forms for the roof had begun. Levy noted that ". . . nothing significant, if

65. Levy and Kiley Progress Report, November 19–December 7, 1962 (Fort Pulaski NM Resource Management Records Collection, Box 53, Folder 18).

anything, will be done now until the holidays are over."[66]

During the first weeks of January 1963, the upper beams were framed and poured (Figure 14). Miscellaneous and loose steel had been delivered to the job and all of the brick had been delivered. The progress report noted, "Things are looking up. We have a physical Building shape now."[67]

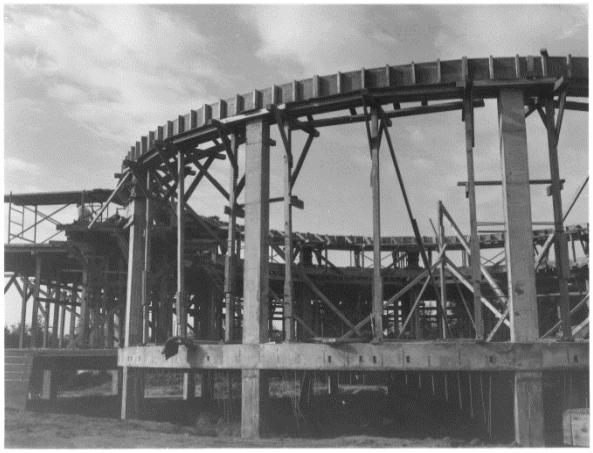


FIGURE 14. During the first week of January 1963, concrete for the upper beams was placed. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 84, Image 2202)

Finally, in late January 1963, Levy received a letter from EODC Chief Architect, Robert E. Smith about the brick. Smith sent black-and-white photographs, color photographs, and Kodachrome slides of bricks, brick mortar, and brick buildings, and included several examples for Levy to consider. The Women's Dormitory at the University of Philadelphia, designed by Eero Saarinen and Associates, was provided as an exemplar, as well as the MIT Chapel, also designed by Saarinen. Smith informed Levy that Saarinen had to cull about 10 to 15 percent of the clinkers used on the chapel, and anticipated this would happen on the visitor center project. [68]

The Levy and Kiley progress report of January 25, 1963, included photographs (no longer attached to the archive copy of this document) of several aspects of the project, particularly the three electrical poles (Figure 15). Levy said:

> If you cannot do anything about getting those poles and lines underground or out of sight now I hope you will do same as soon in the future as possible. They are most incompatible and incongruous with the scene and can only be described as comparing to cow dung plop in the middle of a white table cloth. Please do what you can. [69]

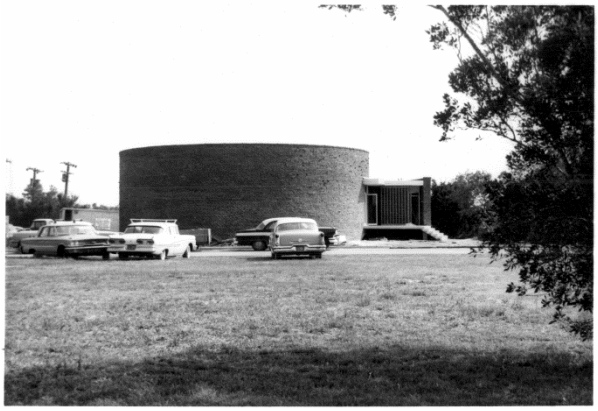


FIGURE 15. Two of the Savannah Electric and Power Company temporary poles, visible to the left of the visitor center in this photo, were still in place in April 1963. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 84, Image 2216)

However, Levy found the visitor center structure "truly beautiful." He issued one final warning went out about the brick: "If the brick does not please you, let us know immediately as we begin brick work about Tuesday [January], 29th." Lattimore wrote a note at the bottom of the report, noting, "I'm trying all I can." Presumably this cryptic

66. Levy and Kiley Progress Report, – December 7–21, 1962 (Fort Pulaski NM Resource Management Records Collection, Box 53, Folder 18).
67. Levy and Kiley Progress Report, December 24–January 11, 1963 (Fort Pulaski NM Resource Management Records Collection, Box 53, Folder 18).
68. Robert E. Smith, Chief Architect, EODC, letter to Henry Levy, January 24, 1963 (Fort Pulaski NM Resource Management Records Collection, Box 53, Folder 22).
69. Levy and Kiley Progress Report, January 11–25, 1963 (Fort Pulaski NM Resource Management Records Collection Box 53, Folder 18).

message is intended as a response to Levy's comments about the offending electrical poles.[70]

At the end of January 1963 and continuing into February, a Nor'easter blew into the area and the wind-driven rain interfered with work on the project. Nevertheless, the contractor managed to erect steel, place concrete for the high roof, and complete most of the concrete unit masonry construction.[71] The rain, however, continued throughout the month of February, making it difficult to lay brick; Levy lamented, ". . . when it wasn't raining it was too cold to lay brick, etc., and as soon as it got warm it rained, again seemingly *ad infinitum*." The block work was completed, however, and the brick arches constructed—described by Levy as "quite a task"—and the brick veneer completed on about two-thirds of the wall (Figure 16 and Figure 17). Some of the outside grading and utilities installation was also completed. The contractor asked for a thirty-day extension due to the weather and the NPS agreed.[72]

During March 1963, the brickwork was completed except for waterproofing. Work was begun on the interior of the building. Lath was installed for plaster and stucco, and scratch and brown coats applied. Terrazzo was laid and rough grinding was in progress. Installation of the sunscreens had begun (Figure 18). Levy questioned the EODC architects about the color desired for painting the concrete masonry units behind the arches at the base of the building painted. Levy suggested charcoal black and the EODC architects agreed, leading the Levy and Kiley progress report to note, "We're on the way."[73] The sunscreens had been an early topic of discussion between Superintendent Lattimore and the Region One Director. The region had determined that the sunscreens should not be part of the building, but Lattimore pointed out that even the fortification had porches added for sun cover as a result of the long hot mornings, which could raise interior temperatures to more than 100 degrees. He felt very strongly that "Omission of . . . the sun screen, will make the administrative offices untenable," further stating, I do not believe any interior screens, curtains, or shades will counteract the influence of day long sunlight . . . . Even with the screen, the new Visitor Center will have to be equipped with a mighty efficient cooling system."[74] The sunscreens remained in the plan.



FIGURE 16. Construction of the brick arches at the base of the building was completed during January and February 1963. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 84, image 2206)

70. Levy and Kiley Progress Report, January 1125, 1963 (Fort Pulaski NM Resource Management Records Collection Box 53, Folder 18).
71. Levy and Kiley Progress Report. January 28–February 8, 1963 (Fort Pulaski NM Resource Management Records Collection Box 53, Folder 18).
72. Levy and Kiley Progress Report, February 11–March 1, 1963 (Fort Pulaski NM Resource Management Records Collection Box 53, Folder 22Fo).
73. Levy and Kiley Progress Report. March 4–9, 1963 (Fort Pulaski NM Resource Management Records Collection Box 53, Folder 18).
74. Ralston B. Lattimore, letter to Region One Director, June 21, 1962 (Box 53, Folder 22, Fort Pulaski National Monument Archives).



FIGURE 17. In January and February 1963, work began on installation of brick cladding at the visitor center. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 84, Image 2205)



FIGURE 18. In March 1963, installation of the sunshades began on the building; here the frame is shown attached. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 84, Image 2214)

By April 15, 1963, Levy reported, "In general except for painting, millwork, tile, final fixtures, ornamental metals, glass, and cleanup, the job is nearing completion."[75] Later that month, a small change was made to the sunscreen louvers. According to Levy, the "ears" on the top of the slats were turned over, producing "a much more pleasing design (Figure 19)."[76]



FIGURE 19. In April 1963, at the suggestion of the glazing contractor, the "ears" on the top of the sunshade slats were turned over, producing "a much more pleasing design." (Source: Fort Pulaski NM, Resource Management Records Collection, Box 84, Image 2213)

As the project neared completion, several problems were noted. At the end of April, it was discovered that the women's bathroom was more public than desired (Figure 20). Levy wrote to Smith:

> Picture some female customer standing at the lavatories hitching up her skirt to adjust undergarments when another customer enters. The line of sight from the lavatory, through the women's toilet public entrance door, through the vestibule entrance screen is directly across the public entrance plantroom and aimed right straight at the parking lot. If we get the proper patronage at our lavatories this view may prove infinitely more attractive than the Visitor' Center, as well as the Fort itself.[77]

Levy and Superintendent Lattimore proposed screening the interior of the women's restroom in several ways, and asked Smith to notify them as to

75. Levy and Kiley Progress Report, April 1–12, 1963 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 18).

76. Levy and Kiley, letter to Hugh Jackson, April 23, 1963 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 22s).

77. Levy and Kiley Progress Report, January 11–25, 1963, (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 18). This quotation attests to Levy's feisty and irreverent personality.

the proper solution.[78] Smith's reply is not in the archives.



FIGURE 20. Entrance to the women's lavatory, as constructed. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 84, Image 2218)

Also by the end of April, the door frames and doors were erected, the tile finished, plumbing and electrical fixtures installed, sunscreen finished, terrazzo grinding completed except for final seal coat, painting began, and cabinet installation was starting. Levy reported, "We're in the home stretch."[79]

The date on which the building was turned over to the NPS is not clear. Punch lists began in June 1963 and were ongoing for several months. The roof leaked in several places, plumbing fixtures or piping in the restrooms leaked, and the terrazzo floors exhibited cracking and were very slippery. The cracked terrazzo could not be adequately repaired and letters were issued over several months about the application of strips to the floor surface to make it less slippery.[80] The way in which this issue was ultimately addressed is not documented in archival material reviewed for this study.

In November 1963, a request for proposal was submitted for landscape development around the visitor center and the entrance to the park. This was a large project including the demolition and removal of existing signage, bituminous roads and parking, sidewalks, and signage; removal of soil and a flagpole; creation of new planting beds, rock beds, sidewalks, parking, pathways, a new flagpole, brick wall, and paths; amending of soils; planting of specified trees and shrubs; and siting of specified benches. The project could be bid in phases or per project, and an addendum was added in December 1963.[81] Available archival documentation does not indicate whether a contract was awarded for the work as described in the request for proposal. The grounds were landscaped, but it is not possible to determine readily from available documentation if the work completed at that time correlates to the 1963 request for proposal (Figure 21).

The visitor center opened its doors to the public on October 25, 1964. Archival photographs reveal that the public viewed exhibits on *Fortifying Our Shores* (Figure 22); *Building the Fort*—featuring tools recovered from the fort moat (Figure 23); the *Soldier's Life*—featuring bottles recovered from the fort moat (Figure 24); *Fragments from Pulaski's Past*—featuring objects from many time periods and of many types found in and around the fort (Figure 25 and Figure 26); the *Civil War blockade* (Figure 27); the *Surrender of the Fort* (Figure 28); the *End of an Era*, about the change of artillery and

78. Levy and Kiley, letter to Robert E. Smith, EODC, April 29, 1963 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 22).
79. Levy and Kiley Progress Report, April 12–26, 1963 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 18).
80. Various letters, 1963 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 22).
81. Invitation for Bids, Landscape Development, November 12, 1963 (Fort Pulaski NM, Resource Management Records Collection, Box 52, Folder 61); Addendum to Invitation for Bid, Landscape Development, December 13, 1963 (Fort Pulaski NM, Resource Management Records Collection, Box 52, Folder 16).

fortifications—featuring shells (Figure 29); and the *Restoration of the Fort* (Figure 30).



FIGURE 21. View of landscaping undertaken at the site while the visitor center was being completed, as shown in an undated photograph (likely 1963–1964). (Source: Fort Pulaski NM, Resource Management Records Collection, Box 84, Image 2226)

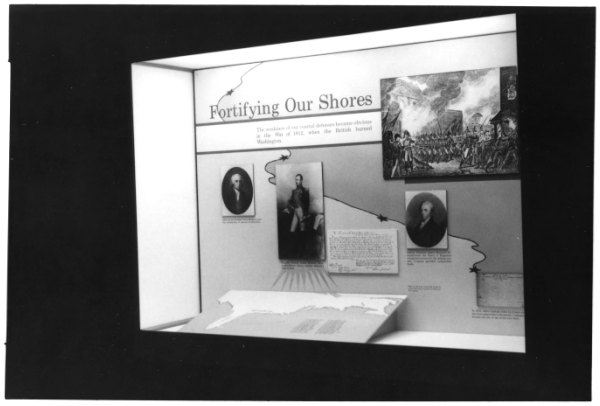


FIGURE 22. *Fortifying Our Shore*, an original exhibit when the visitor center opened in 1964. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 84, Image 3100-15)



FIGURE 23. *Building the Fort* featured tools recovered from the fort moat, an original exhibit when the visitor center opened in 1964. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 84, Image 3100-4)



FIGURE 24. An exhibit on soldiers' lives featuring bottles found in the fort moat, an original exhibit when the visitor center opened in 1964. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 84, Image 3100-4)

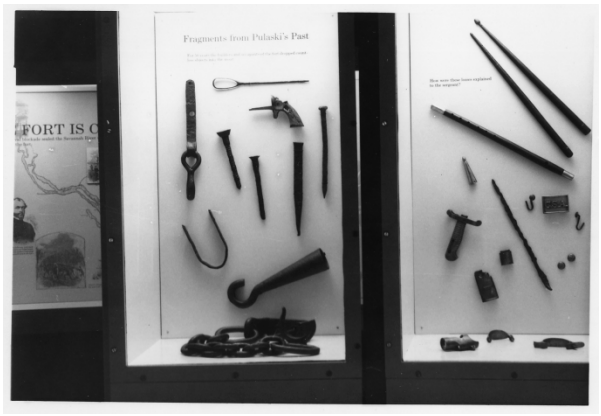


FIGURE 25 *Fragments from Pulaski's Past*, an original exhibit, featured objects found in and round the fortification that illustrated the daily life and activities of those living and working in the fort. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 84, Image 3100-6)



FIGURE 26. Other cases showing fragments of the past, part of the original exhibits in the visitor center. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 84, Image 3100-7)

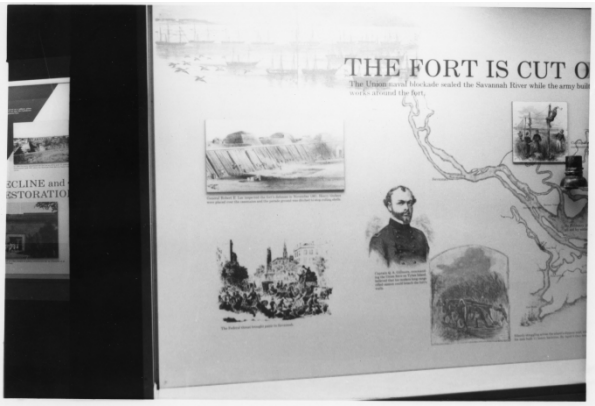


FIGURE 27. Original exhibits at the visitor center included several flat panel exhibits on the Civil War blockade and its consequences. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 84, Image 3100-8)



FIGURE 28. The surrender of the fort and events that occurred after the Civil War were featured in a flat panel exhibit. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 84, Image 3100-12)



FIGURE 29. The change in artillery that led to the surrender of Fort Pulaski was depicted in an exhibit. (Source: Fort Pulaski NM, Resource Management Records Collection s, Box 84, image 3100-11)



FIGURE 30. *Restoring the Fort* was featured in the original exhibits. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 84, image 3100-2)

The formal dedication of the Fort Pulaski Visitor Center took place on May 1, 1965, the 179th anniversary of the Chatham Artillery. The NPS Assistant Regional Director, E. M. Lisle, presided. The ceremony was marked by a military review of the ROTC units of Savannah High School, the Robert W. Groves High School, and the Benedictine Military School. The Chatham Artillery was represented by Colonel Richard E. Evans, 84th Armored Division Artillery Commander, and the address was given the Honorable William Jennings Bryan Dorn, Congressman from South Carolina. The 80th Army Band under the direction of Chief Warrant

Officer Adrian Primo, Fort Stewart, Georgia provided music.[82]

Chronology of Development of the Visitor Center

See **Error! Reference source not found.** for plans showing the development of the visitor center.

Although a lack of documentation in the Fort Pulaski National Monument Resource Management Records Collection suggests that very little work was undertaken at the visitor center during the 1970s and 1980s, it is likely that records are missing. Exhibits in the visitor center were redone in the mid-1980s, according to park personnel, although archival documentation is not available to confirm this. During the 1990s several changes were made at the visitor center:

- 1992 – Fire safety technology was updated to wireless throughout the fort and in the visitor center; a 360-degree passive infrared sensor was added to the lobby of the visitor center.[83]

- 1994 – The visitor center was reroofed, including preparation of the existing built-up roof surfaces and application of a flood coat with aggregate surfacing.[84]

- 1995 – Two 4 foot by 7 foot by 30 inch bookstore cabinets with locking storage and twelve shelves were ordered from Malone Displays, Decatur, Georgia, for $5,160.25.[85]

- 1996 – Rehabilitation of the museum exhibits and the creation of a small auditorium (Figure 31) in the lobby of the visitor center were implemented by Malone Displays, Decatur, Georgia, with a not-to-exceed bid of $69,000.[86]

- 1996 – A bid solicitation was issued for construction of restroom facilities on a concrete slab outside the visitor center, to be compatible with the visitor center (Figure 32).[87] LAFAE, Inc., of Atlanta was selected for the project.

82. *Dedication of the Fort Pulaski Visitor Center*, May 1, 1965 (Box 53, Folder 22, Fort Pulaski National Monument Archives).
83. Steve Sherwood, memo to Carl Vicari, July 13, 1992 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 19).
84. Invitation for Bids: Fort Pulaski Reroof, March 23, 1994 (Fort Pulaski NM, Resource Management Records Collection, Box 55, Folder 28).
85. US Department of Interior Requisition, Malone Displays, February 12, 1996 (Fort Pulaski NM, Resource Management Records Collection, Box 8, Folder 59).
86. Acting Superintendent, Fort Pulaski, memo to Chief of Contracting, Harpers Ferry Center, August 4, 1995 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 13); Order for Supplies and Services, Order No. 1443PX500095751, to Malone Displays for Installation of Exhibits at Visitor Center, Fort Pulaski, August 22, 1995 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 13).
87. Solicitation for Construction of Men's and Women's Restroom Facilities on a Concrete Slab, July 18, 1996 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 26).

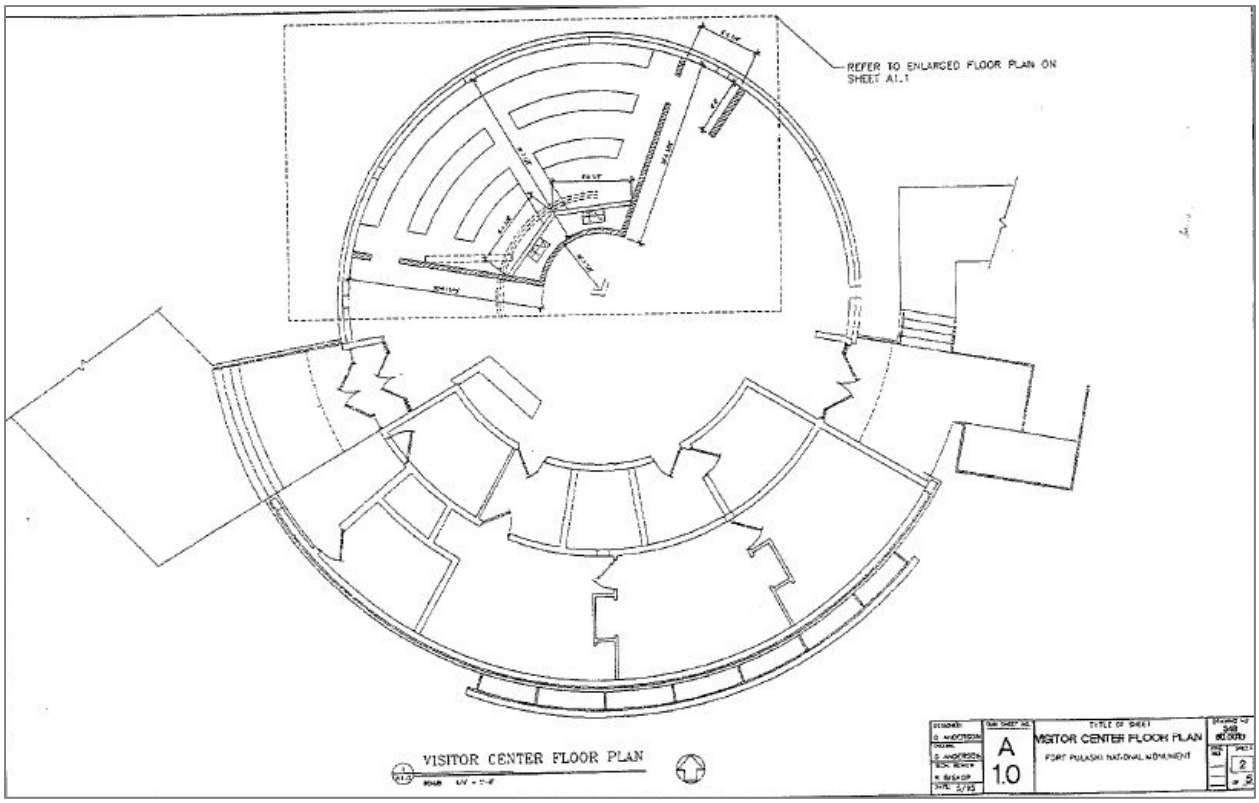


FIGURE 31. Drawing of Small Auditorium for Fort Pulaski Visitor Center, January 30, 1996. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 13)

- 1996 – With the relocation of restrooms to a new facility west of the visitor center, the interior of the visitor center was modified. The original restrooms were demolished along with the contact office, supply room and filing area to enlarge the exhibits area and make room for a larger reception and information counter. The original administration space became a new bookstore, the all-purpose room was converted to a staff break room, and the former women's restroom was renovated as an office.

- 1998 – A new well was drilled to replace the existing well that supplied water to the visitor center and comfort stations.[88]

- 1999 – Concrete sidewalks were replaced with exposed aggregate sidewalks by Savanah Concrete, Inc. for a total budget of $17,500.[89]

At the fiftieth anniversary of the Mission 66 program, the NPS studied the program and its buildings, resulting in the publication of *Mission 66: A History of a Building Type* by Sarah Allaback. The study established periods of significance for the program: Precedents (1945–1965), Mission 66 program (1956–1966), and Parkscape program (1966–1972). The Fort Pulaski Visitor Center is included in the list of Mission 66 visitor centers cited in this publication.[90]

88. Mike Hosti, Chief of Maintenance, letter to A. J. Lungwitz, NPS Environmental Protection Division, June 23, 1998 (Fort Pulaski NM, Resource Management Records Collection, Box 53. Folder 28).

89. Notice of Award – Sidewalk Repair and Replacement, September 4, 1999 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 10).

90. Allaback, Appendix I.

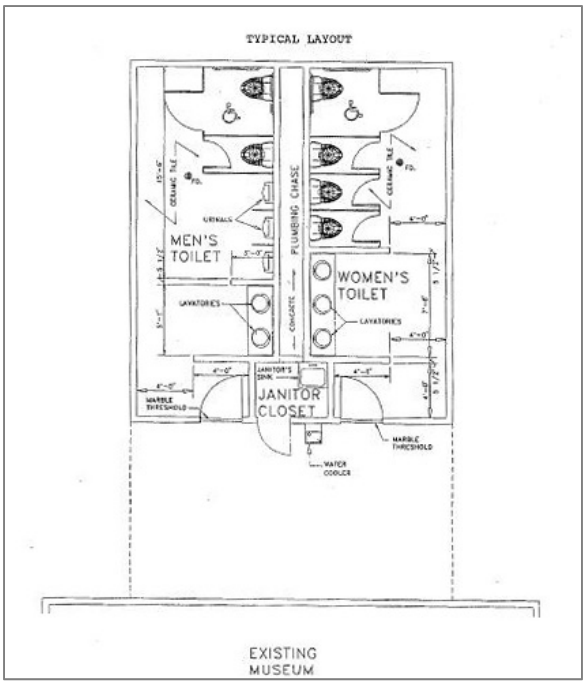


FIGURE 32. Drawing indicating layout of the bathroom facilities, 1996. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 26)

Since 2000, the visitor center has undergone several changes, including:

- 2000 – An ADA-compliant ramp was constructed at the visitor center by Holman Construction (Figure 33); doors to the center were repaired.[91]

- 2001 – A new well was drilled to supply water to the visitor center and comfort stations; the 1998 well abandoned (Figure 34).[92]



FIGURE 33. In 2000, an ADA-compliant ramp was built on the southwest side of visitor center. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 6)

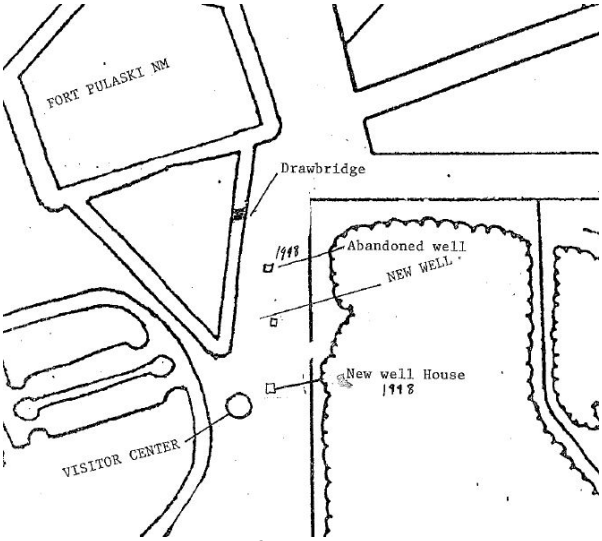


FIGURE 34. Locations of wells: one was abandoned in 1998; a second was drilled in 1998 and abandoned in 2001; and a third was drilled in 2001. (Source: Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 29)

- 2003 – Glass entry and exit doors in the visitor center, a glass door in the gift shop, and sliding glass windows in the office area were replaced by Roy Moore Contracting.[93]

- 2003 – A complete cleaning and reroofing of the visitor center was completed by Roy

91. Memo, FOPU Maintenance, September 9, 2000 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 9).
92. Michelle Jackson, memo to John Breen, June 6, 2001 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 29).
93. Bill of Sale to Roy Moore Contracting, June 2003 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 11).

Moore Painting, including a ten-year guarantee, for $29,290.[94]

- 2004 – Emergency replacement of the two visitor center HVAC units due to an electrical surge during a thunder storm.[95]

- 2010 – A survey was conducted by the NPS Southeast Region to provide a general overview of the integrity of those Mission 66 visitor centers within the region. The results of this survey indicated that seven of the twenty extant Mission 66 visitor centers in the region retained integrity and were eligible for listing in the National Register of Historic Places. The evaluations were preliminary and were recommended as a starting point for more formal determinations. The survey found:

  > The visitor center at Fort Pulaski retains its integrity despite a number of changes to the building[;] the most obtrusive modification is the creation of an auditorium in what had once been a part of the lobby. Though this change altered the building, it did not significantly change the exterior or significantly change the character of the interior, and the building is still identifiable as a Mission 66 style visitor center.[96]

- 2012 – A pair of semi-circular arched doors are placed in a brick wall behind the information desk. The brick wall and arched wooden doors were designed to recall the large arched doors and brick vaults at the fort. These new doors provided access for the staff to the break room directly from the lobby and exhibits space.

- July 2015 – The roof membrane on the visitor center was replaced.

- 2016 – On May 23, an EF2 tornado caused extensive damage in the park (Figure 36). The tornado:

  > . . . touched down near the entrance of the park. The tornado then proceeded in an East / Northeast direction over the Historic District of the park. The visitor center, comfort station, fort, and surrounding landscape received damage from a direct strike. The Visitor Center sustained damages to the interior ceiling due to wind and pressure causing the suspended ceiling to break free from the hanger rods. The ceiling contains asbestos material, which must be completely removed and abated before further repairs begin. Additional Visitor Center damage corrective actions include replacing damaged walkway railing, replacing a damaged 10 ton heat pump and associated ductwork, and interior lighting, security camera and fire detection repairs sustained from ceiling damage. The Visitor Center Comfort Station roof surface was completely removed and the structure sustained a large amount of damage.[97]

  A temporary visitor center was opened in the fort. It was determined that the comfort station roof structure needed to be rebuilt and a new roof added, the mini-split HVAC system needed to be replaced, the visitor center ceiling needed to be abated and repaired, and other minor damage repaired.[98]

94. Invoice Roy Moore Painting, November 11, 2003 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 24).
95. John Breen Superintendent, memo, August 8, 2004 (Fort Pulaski NM, Resource Management Records Collection, Box 53, Folder 12).
96. Buckley, "Visitor Center Survey Form."
97. Wade Lewis et al., *Fort Pulaski National Monument Tornado Assessment Damage Summary*, May 24–25, 2017.
98. Ibid.



FIGURE 35. Flooding at Fort Pulaski after Hurricane Matthew, October 2016. (Source: Associated Press / Curtis Compton)

- 2016 – On October 8 and 9, after leaving a path of destruction throughout the Caribbean and along the Atlantic coast of the United States, Hurricane Matthew entered Georgia as a Category 3 hurricane. Peak wind gusts of 96 miles per hour were recorded at Tybee Island and 11 inches of rain fell at Hilton Head, South Carolina. According to NOAA / National Ocean Service data, a storm surge of 8 feet was recorded at Fort Pulaski and a new record for tide level of 12.57 feet MLLW (mean lower low water, above normal low tide), which occurred two hours after high tide, was set exceeding the old record that was established during Hurricane David in 1979.[99] The damage was severe; the park was extensively flooded, and water remained trapped within the fortification for days (Figure 35). More than 300 trees were downed. The wind ripped roofs off the fort, flooding destroyed century-old floorboards, and entryways to the fort. Drawbridges were washed away making boats the only mode of transportation capable of crossing the moat leading up to the fort.[100]

- 2017 – On May 23, an EF2-class tornado touched down near the entrance of the park.[101] The tornado proceeded in an east–northeast direction over the park, causing extensive damage to the landscape as well to the visitor center, the comfort station, and the fort.

99. The Weather Channel, "Hurricane Matthew Recap: Destruction form the Caribbean to the United States," News, Online, October 2016.

100. *Savannah Now*, "Fort Pulaski Closed Indefinitely until Experts Can Assess Repairs, Ensure Safety after Storm," Online October 28, 2016.

101. The tornado was classified as EF2 on the Enhanced Fujita Scale. EF2 tornados have wind speeds between 111 to 135 mph (178 to 217 km/h).

- 2017 – In early September, Hurricane Irma, one of the strongest storms in recorded history, moved through the region. The hurricane resulted in damage to the park, although not as significant as from Hurricane Matthew in 2016.

- 2017–2018 – The park completed work on the visitor center to repair the extensive damage caused by a series of storms in 2016 and 2017. The repairs include removing and replacing some of the existing asbestos-containing finish ceilings; repairs to the roof, parapet, coping and flashing; replacement of damaged HVAC equipment and ducts; and repair of the aluminum entry doors and exterior railings and entry ramps (Figure 36 and Figure 37). The visitor center reopened to park visitors in May 2018. The damaged ductless, mini-split, VRF air conditioning and heating units were replaced in July 2018.

  The heavily damaged comfort station on the west side of the visitor center was also repaired concurrently with the visitor center. The new septic system was not completed until August 2018, so temporary restroom trailers were placed on site until that time.

- 2018 – New historical markers were installed to replace those damaged by the tornado in 2016 (Figure 38). A new visitor center sign was also installed (Figure 39).

- 2018 – In November, the NPS issued a Determination of Eligibility and requested concurrence from the State Historic Preservation Office.

- 2018 – On December 4, the Georgia Department of Natural Resources Historic Preservation Division issued a letter concurring that the Fort Pulaski National Monument Visitor Center is eligible for listing in the National Register of Historic Places



FIGURE 36. Railing damage at the visitor center from the tornado on May 23, 2016. (Source: *Fort Pulaski National Monument Tornado Assessment Damage Summary*, May 25–26, 2017)



FIGURE 37. Railing at west entrance to visitor center after repairs, August 2018. (Source: Fort Pulaski National Monument)



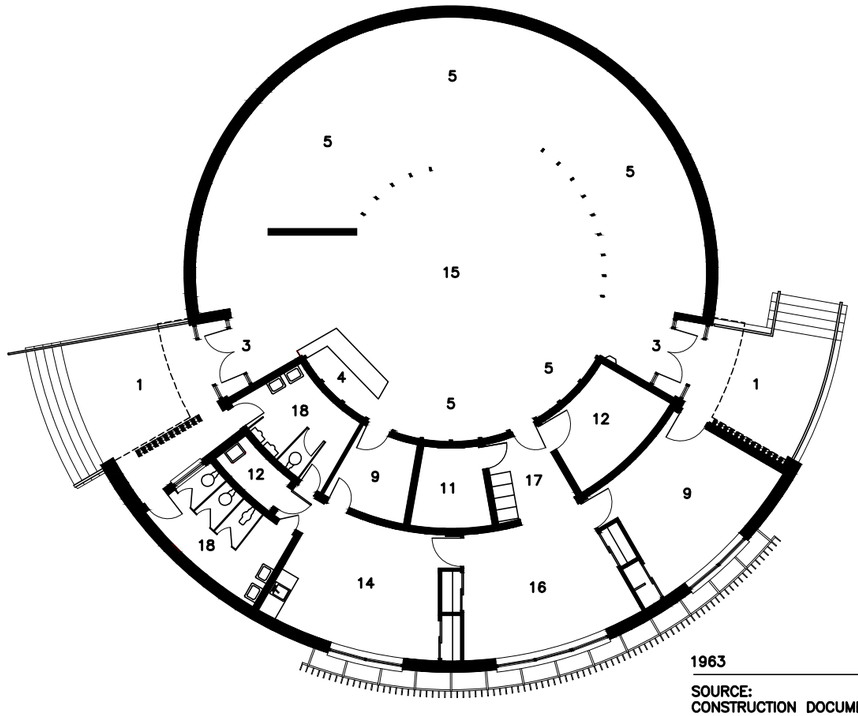
FIGURE 38. New historical marker, April 2018.
(Source: Fort Pulaski National Monument)



FIGURE 39. New visitor center sign, April 2018.
(Source: Fort Pulaski National Monument)

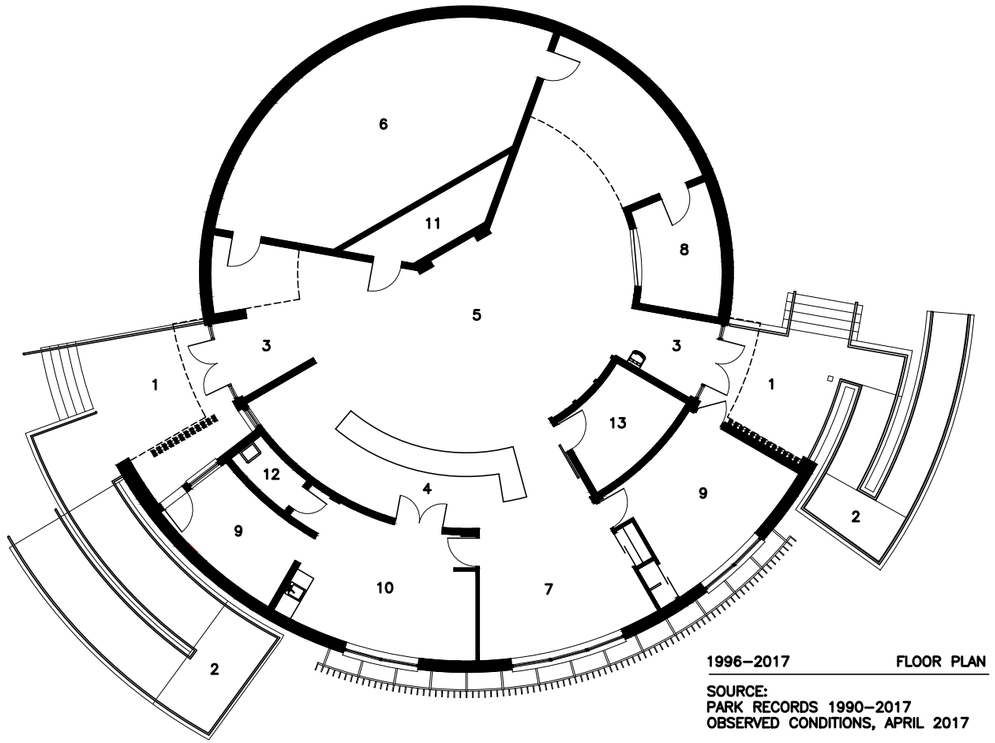
Timeline of Fort Pulaski Mission 66 Visitor Center

Year	Event
1924	Fort Pulaski National Monument established.
1956	Mission 66 program began.
1962	Funding released for construction of Mission 66 visitor center at Fort Pulaski; supervising architectural firm selected, Levy and Kiley, Savannah, Georgia; general contractor selected, Hugh Jackson General Contractor and Engineer; construction began.
1963	Construction completed.
1964	October 25—visitor center opened to public.
1965	May 1—the 179th Anniversary of the Chatham Artillery, visitor center formally dedicated.
1992	Fire safety / security technology updated.
1994	Visitor center reroofed.
1995	Two 4 foot by 7 foot by 30 inch bookstore cabinets added.
1996	Rehabilitation of the museum exhibits and the creation of a small auditorium in lobby.
1996	Comfort station constructed near visitor center; interior of visitor center modified.
1998	New well drilled.
1999	Concrete sidewalks replaced with aggregate sidewalks.
2000	Fiftieth anniversary of Mission 66 program; ADA-compliant ramp added; doors to visitor center repaired.
2001	New well drilled; 1998 well abandoned.
2003	Glass entry and exit doors in visitor center replaced; glass door in gift shop replaced; sliding glass windows in office area replaced; exterior cleaned and reroofed.
2004	Emergency replacement of the two visitor center HVAC units.
2010	Southeast Region Mission 66 visitor center survey determined that Fort Pulaski visitor center had integrity and was eligible for the National Register of Historic Places as a Mission 66 property.
2012	Pair of semi-circular arched doors placed in a brick wall behind the information desk.
2016	May 23—EF2 tornado struck the park, damaging the visitor center, visitor center comfort station, and landscape. October 8–9—Hurricane Matthew caused record flooding and tides in the area, with extensive damage to park buildings, the fort, and the landscape.
2017	September 10–12—Hurricane Irma caused flooding and damage at the park.
2017–2018	Interior and exterior repairs completed and all mechanical units replaced to address damage from tornado and hurricanes in 2016–2017. New historical markers installed to replace those damaged by the storm. New visitor center sign installed. May 2018–visitor center reopened. November 2018–NPS issued Determination of Eligibility and request concurrence from the State Historic Preservation Office. December 4, 2018–Georgia Department of Natural Resources Historic Preservation Division concurred that the Fort Pulaski National Monument Visitor Center is eligible for listing in the National Register of Historic Places.



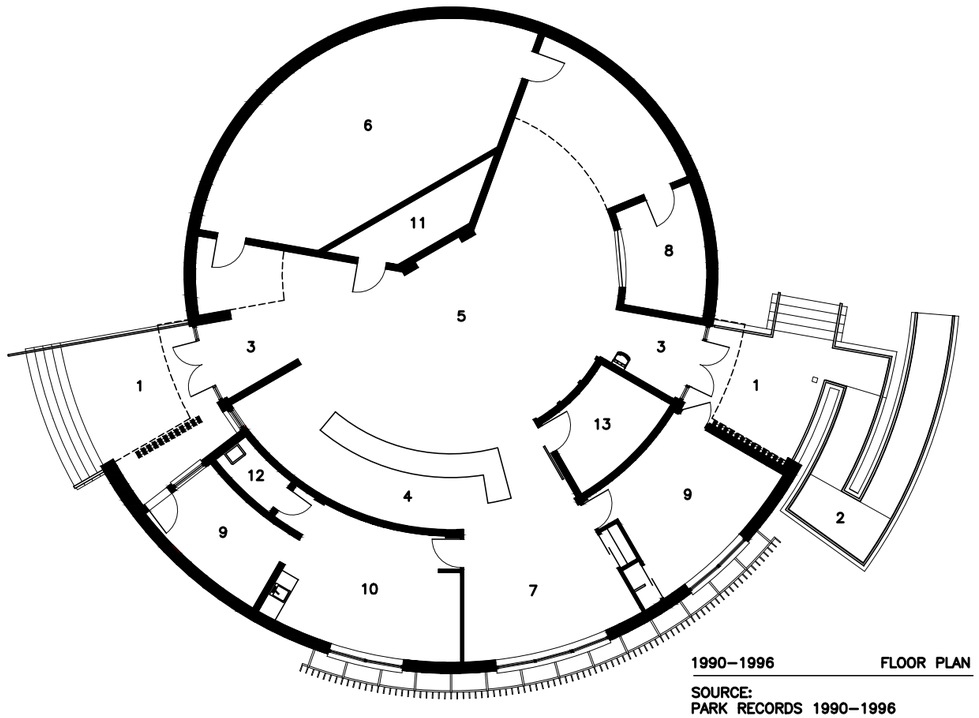
1963 FLOOR PLAN

SOURCE:
CONSTRUCTION DOCUMENTS,
LEVY & KILEY ARCHITECTS, 1962



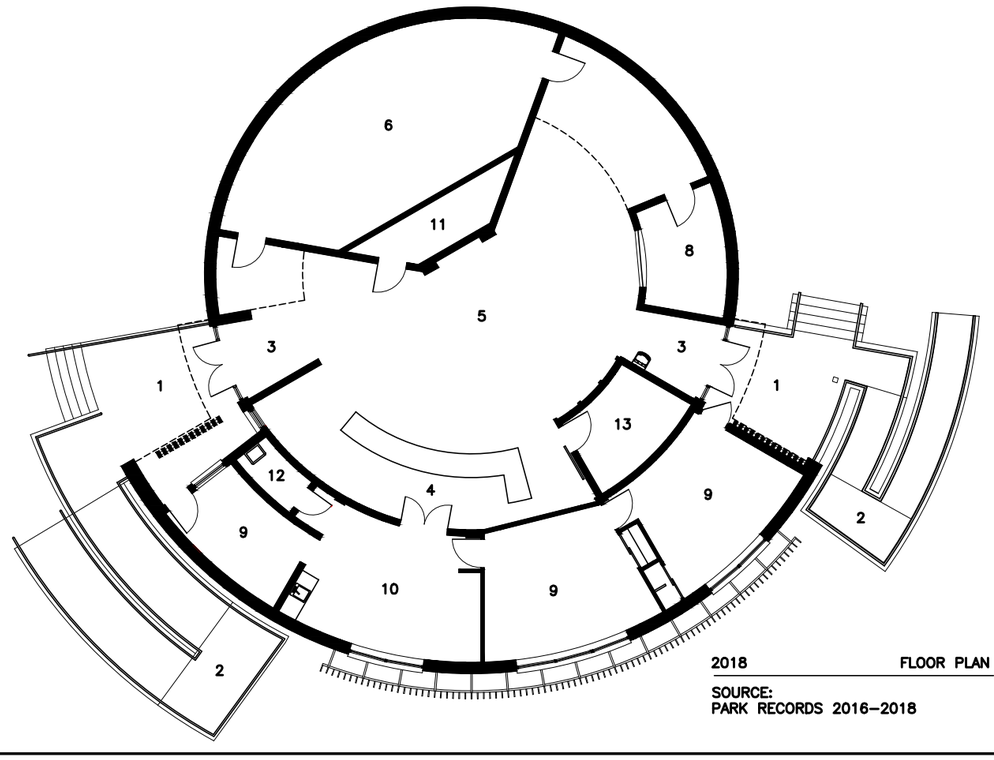
1996–2017 FLOOR PLAN

SOURCE:
PARK RECORDS 1990–2017
OBSERVED CONDITIONS, APRIL 2017



1990–1996 FLOOR PLAN

SOURCE:
PARK RECORDS 1990–1996



2018 FLOOR PLAN

SOURCE:
PARK RECORDS 2016–2018

CHRONOLOGICAL
PLAN LEGEND

1. PORCH
2. ADA RAMP
3. ENTRY
4. INFORMATION
5. EXHIBITS
6. THEATER
7. BOOKSTORE
8. PROJECTION
9. OFFICE
10. BREAK ROOM
11. STORAGE
12. JANITOR
13. MECHANICAL
14. ALL–PURPOSE ROOM
15. LOBBY
16. ADMINISTRATION
17. FILING
18. RESTROOM

FIGURE 37
CHRONOLOGICAL
DEVELOPMENT PLANS

0 2 4 8 12
SCALE IN FEET
1/16" = 1'–0"

NORTH

MISSION 66
VISITOR CENTER

FORT PULASKI
NATIONAL MONUMENT
SAVANNAH, GEORGIA

WFT ARCHITECTS, PA AUGUST 2018

Physical Description and Condition Assessment

The Fort Pulaski National Monument Visitor Center is a Mission 66 structure and functions as the visitor center and gift shop for the Fort Pulaski National Monument.

Site

Description

The visitor center is located on Cockspur Island, a small island in the Savannah River. The island is characterized by marshlands with shrubbery and wooded outcroppings. Fort Pulaski Road, a two-lane asphalt-paved road, extends perpendicularly from Highway I-80 and crosses the south channel of the Savannah River via a concrete bridge. The road terminates at an asphalt-paved surface lot at the center of the island, immediately west of Fort Pulaski.

The visitor center is situated on a site south of the surface lot and west of Fort Pulaski, in line with the peak of the fort's demilune (Figure 41 and Figure 42). The mown-turf site includes the visitor center at the center of the site, a public comfort station to the northwest, and a water pump house to the southeast. The comfort station, which is located approximately 20 feet northwest of the visitor center's west entrance stairs, is a one-story brick-clad structure with a standing seam metal gable roof and fiberglass skylights (Figure 43). The building has a rectangular plan oriented on a southeast-northwest axis with the main entrances located on the southeast elevation. The water pump house is a one-story brick-clad structure with standing seam metal gable roof (Figure 44). It has a concrete slab foundation and is located approximately 40 feet southeast of the visitor center.



FIGURE 41. Visitor center site.



FIGURE 42. Visitor center site.

The structures are connected by a series of concrete walks and gravel access roads. At the north end of the site is a smooth-finished concrete sidewalk that extends along Fort Pulaski Road and the paved-surface parking lot. Two smooth-finished concrete sidewalks extend at right angles to this sidewalk. The west sidewalk provides access to a landscaped outdoor public area from which the comfort station and west entrance of the visitor center are accessed. The east sidewalk extends toward the east entrance of the visitor

center and intersects an exposed aggregate concrete sidewalk that runs east-west across the site (Figure 45). The east-west sidewalk extends from Fort Pulaski, wraps around the north elevation of the visitor center, and ends at the landscaped public area east of the comfort station.



FIGURE 43. Visitor center comfort station.



FIGURE 44. Water pump house.

A gravel-paved road wraps around the south elevation of the visitor center and leads to the water pump house and along the south elevation of the comfort station.

Various artifacts, benches, and signage are located at the visitor center site, typically along the network of sidewalks. Artifacts include the original cast iron cap of the Cockspur Island Lighthouse (Figure 46). There are also various public benches on the site. All benches are metal-framed and have seating composed of a composite material. Signage includes aluminum-framed interpretative plaques, cast iron informational signs erected by the Georgia Historical Society, and a brick pedestal upon which is mounted a painted steel sign directing visitors to the visitor center (Figure 47, Figure 48, and Figure 49).



FIGURE 45. East sidewalk.

Condition Assessment

On May 23, 2017, a tornado touched down near the park's main entrance and traveled in an east–northeast direction across the park. The tornado was classified as EF2 on the Enhanced Fujita Scale, with wind speeds over 110 miles per hour. Damage from the tornado to the visitor center is discussed below. Damage caused to the site and adjacent buildings included the following:

- The comfort station roof surface was removed and much of the roof structure was damaged. The mechanical system was also damaged. As a result of the rains after the storm, the interior ceiling, air handlers, and main electrical panel were also damaged.

- The water pump house sustained minor damage to the roof and one door was torn off its hinges.

- The landscape and site surrounding the visitor center were flooded, and a wood-framed wayside sign was displaced from its base.

(See further discussion of tornado-related damage in the Treatment and Use chapter.)



FIGURE 46. Original cast iron cupola of Cockspur Island Lighthouse.



FIGURE 47. Aluminum-framed interpretive plaque.



FIGURE 48. Cast aluminum informational sign. (Several of the historical markers were damaged during the 2016 tornado that struck the park, and replaced in 2018.)



FIGURE 49. Painted steel sign (replaced in 2018).

Refer to Appendix E – Landscape Assessment for further discussion of the site and landscape surrounding the visitor center.

Visitor Center

Exterior and Structural Systems Description

Measured drawings of the visitor center are provided in Appendix A.

The visitor center is a one-story concrete-framed structure, with concrete masonry unit (CMU) walls and brick cladding (Figure 50). It has a circular plan consisting of an inner circular wall of masonry, with a radius of 28 feet 2 inches, and an outer circular wall of masonry, with a radius of 42 feet 2 inches, which wraps 120 degrees around the south portion of the building. The inner circle is approximately 21 feet tall and the outer circle is approximately 15 feet tall.

At the base of the brick cladding are segmental arch openings that provide access to a perimeter crawl space. The CMU foundation wall is visible from the perimeter crawl space.

The main entrances are located at the east and west elevations and include a terrazzo landing and stair with aluminum handrails. The landings are located at the ends of the outer circle and continue the circular plan. The entrances also feature access ramps, cantilevered canopies, aluminum-framed double doors, and brick screen walls.



FIGURE 50. Visitor center, overall view from the roadway looking southeast.

Window openings are located at the outer circular wall of masonry and are aluminum framed. An aluminum sunshade system is mounted to the wall and covers many of the window openings on the south elevation.

The building has a low-slope membrane roof with a parapet wall at both the inner and outer circle.

Masonry Walls

The building has irregular-shaped red clay clinker brick masonry walls. Many of the brick units have an irregular or misshapen face and a darker red color than typical red clay brick. Other colors within individual brick vary from red to dark red, to black (Figure 51). The brick units measure 8 inches by 2-1/8 inches by 3-3/8 inches and are set in a running bond. The brick masonry has 1/2-inch-wide mortar joints. The bed joints are raked and recessed 1/2 inch. The head joints are flush with the brick surface.

Segmental arch openings are located at the bottom of the wall (Figure 52). The openings are approximately 10 feet wide and 30 inches tall and are spaced approximately 6 feet apart. Each arch is composed of two concentric rowlock brick courses or voussoirs. At the arcade, the wall has brick cladding on both faces of the wall and measures 16 inches wide. At the base of the wall, between the arcade and the inner foundation wall, is a 30-inch-wide perimeter crawl space. The concrete floor and beam structure and CMU infill are visible at the crawl space (Figure 53). The CMU units measure 4 inches by 8 inches by 16 inches each and are set in a stack bond. At the top course of CMU are aluminum louvered vent openings. The vents are horizontally spaced eight CMU units apart.



FIGURE 51. Brick masonry walls.



FIGURE 52. Segmental arch opening.



FIGURE 53. Visible floor and beam structure at crawl space

At the top of the exterior wall is a brick rowlock course that forms the wall coping (Figure 54). The brick projects 1-1/4 inch beyond the face of the wall.



FIGURE 54. Brick rowlock course at top of exterior wall.

Window openings have a steel lintel at the head and a sloped brick sill consisting of a rowlock course that projects approximately 1 inch from the face of the wall (Figure 55).

The return walls at the ends of the outer circular wall of masonry have a screen wall appearance and are positioned at the east and west entrance porches. These walls are constructed with modular brick that appears different than the brick at the circular portion of the building. The east return wall has a projecting geometric brick pattern consisting of a base rowlock course upon which are stacks of header course brick separated by alternating stretcher course brick and open void spaces (Figure 56). The pattern is capped by three rowlock courses. The brick screen wall at the west entrance has a similar pattern of brick; however, the wall does not extend to the sides, providing access to a vestibule and doors behind the screen wall, and the center portion of the pattern has been removed and replaced with a segmental arch opening (Figure 57).



FIGURE 55. Rowlock brick sill at window opening.



FIGURE 56. East return wall.



FIGURE 57. Brick screen wall, west entrance.

The exterior wall on the south side of the building has fixed aluminum-framed vertical louvers that are angled to block direct sunlight into the building (Figure 58). This sun shade consists of 3x3 aluminum tubes anchored to metal sleeves set in the masonry wall with 3/4-inch lag bolts. The tubular framing is 6 feet 9 inches tall, spaced 4 feet

on center, and projects 24 inches from the face of the wall. Vertical slats, each measuring 8 inches wide by 8 feet long, are mounted to the tubular frame by a series of aluminum clips. The slats are spaced 8 inches apart. At the top of the sun shade and mounted to the horizontal portion of the tubular frame are a series of seven horizontal 3-inch aluminum slats. Several of the vertical louvers were displaced by the tornado that touched down in May 2017. The tubular frame that supports the louvers was also deformed, and both were repaired by the summer 2018.



FIGURE 58. Vertical louvers block direct sunlight.

Entrance Landings

The entrance landings are located at the east and west sections of the building. Each landing consists of a terrazzo floor slab supported on a concrete structure with a stair, access ramp, and aluminum-framed handrails (Figure 59 and Figure 60). The slab is approximately 7 inches thick. The terrazzo is separated into squares by aluminum divider strips, and consists of a matrix of white cement with dark red, brown, and black aggregate ranging in size from 1/4 inch in diameter to approximately 3/4 inch in diameter (Figure 61). Original construction documents suggest that the same terrazzo mix was specified for both exterior and interior floors. (See further discussion under Interior, below.) Exposure of the exterior terrazzo to environmental conditions likely caused the difference in appearance when compared to the same terrazzo inside the building.



FIGURE 59. East entrance approach.



FIGURE 60. West entrance porch.



FIGURE 61. Terrazzo detail.

At the east entrance, an 8-inch-wide by 2-inch-tall curb supports an aluminum railing. The grip handrail has a rectangular top profile measuring 2-1/2 inches by 3/4 inch (Figure 62). Spindles are 1 inch square, spaced 12 inches on center, and have a 3-inch x 3-inch base mounted to the concrete. The U-shaped ramp and stair have a similar

terrazzo slab and handrail. At the west entrance, there is no terrazzo curb supporting the handrail, which instead is set level with the top of the terrazzo slab. The west entrance has a railing consisting of round metal pipe with anchor locations spaced every 4 feet. The west entrance has a U-shaped concrete ramp constructed over the south portion of the original terrazzo stair (Figure 63).

The round metal pipe railing along the entrance ramp on the west side of the visitor center was heavily damaged by the tornado. Because the vertical supports of the railing system were embedded in the concrete ramp, the ramp had to be partially demolished and reconstructed in 2017 to anchor and support a new guardrail.



FIGURE 62. East entrance curb with aluminum handrail.



FIGURE 63. West entrance U-shaped ramp. (This photograph was taken before the railing was damaged during the 2016 tornado. Photographs after the tornado, and following repairs, are provided in the preceding chapter of this report.)

Windows

The primary window type on the building is located at the south portion of the building and consists of an aluminum-framed sliding window unit with tinted glass. The windows appear to be original and consist of either paired or triple sliding glass units (Figure 64). Each unit has a 2-1/2-inch-wide bottom rail and 1-3/4-inch top rail and stiles. The units are separated by aluminum mullions measuring 2-3/4 inches wide and 2-1/4 inches deep. The frame has weeps with hoods at the bottom track of the window, and operable windows were modified for the installation of exterior vinyl mesh insect screens. The interior of the windows has a pocket for opening, closing, and locking the windows (Figure 65). A non-original metal latch has been mounted to the interior stool to help secure the window. On the interior, the windows have 3-1/2-inch-wide painted wood trim and a stained wood stool. The painted wood trim and stool are separated by a 1/2-inch-wide recessed wood trim piece, painted black.

Other non-original windows are located at the west entrance landing and include door openings that were modified into windows. One window opening, at the return wall of the porch, is a wood-framed fixed window that measures 50 inches square and has tinted glazing (Figure 66). The window adjacent to the west entrance door has a metal frame and consists of a fixed sash with transom. The window measures 28 inches square and has 1-3/4-inch rails and stiles and 1-1/8-inch metal glazing stops (Figure 67). The lower portion of the window has been overlaid with wood.



FIGURE 64. Typical window opening.



FIGURE 65. View of interior window.



FIGURE 66. Wood-framed fixed window.



FIGURE 67. Metal-framed window adjacent to west entrance door.

Doors

The exterior doors on the building are all non-original. The primary entrances at the east and west both have aluminum-framed double-leaf pivot hinge doors with tinted glazing, sidelights, and a transom (Figure 68). The doors, manufactured by Vistawall, have a 4-inch-wide top rail and stile and a 10-inch-tall bottom rail. The doors feature an aluminum threshold with an extension mounted to the exterior side, exterior door pulls, interior push bars, and an automatic door closer. Each door leaf is 36 inches wide and there is no center astragal.



FIGURE 68. Primary entrance door.

Door openings at the return walls of the landings have single-leaf hinge doors (Figure 69). The doors are approximately 35 inches wide, with an aluminum threshold and metal knob with lock, a separate deadbolt locking mechanism, and an interior push bar. The west door is a hollow-core

wood-framed door with painted 2-1/4-inch flat wood exterior trim at the west jamb. The east jamb has a 5-1/2-inch-wide mullion separating it from the adjacent window. The east door opening is metal-framed and has a steel door. The area above the door has been infilled with vertically oriented 5-1/4-inch-wide V-grooved wood boards.



FIGURE 69. Door opening at porch return wall.

Roof

The building has a low-slope roof covered with a single-ply thermoplastic polyolefin (TPO) roofing membrane. The roof area consists of an upper circular roof, a lower roof situated approximately 6 feet below the upper roof that wraps around the south portion of the upper roof, and two roof canopy extensions at either end of the lower roof (Figure 70, Figure 71, and Figure 72). All roof surfaces feature 2-inch-diameter drains, vent pipes, and other pipe penetrations.



FIGURE 70. Upper roof.



FIGURE 71. Wrap-around lower roof.



FIGURE 72. Roof canopy extension.

At the upper roof, the parapet walls are approximately 18-1/2 inches wide and 10-1/2 inches tall. The TPO membrane wraps over the top of the parapet wall and is anchored to the exterior edge of the brick masonry with a stainless steel termination bar (Figure 73). The edge of the membrane and termination bar is visible from grade. The roof has cast iron drain strainers and 3-1/2-inch-diameter overflow scuppers that direct water onto the lower roof (Figure 74).



FIGURE 73. Parapet wall.



FIGURE 74. Overflow drain directing water to lower roof.

Like the upper roof, the lower roof has a 10-1/2 inch tall parapet. However, the roof membrane is wrapped 6 inches up onto the roof side of the parapet and terminates with a stainless steel termination bar and sealant. The coping consists of rowlock brick courses capped by a fiber reinforced cementitious parge coating (Figure 75). Drains have a plastic drain strainer.

At either end of the lower roof is a canopy extension that spans over the two main entrances. The canopy has a 1-inch lip that prevents water from flowing off the edge of the canopy. The roof membrane is terminated at the roof edge with a termination bar and sealant. The canopies have a sheet metal face trim on the fascia.



FIGURE 75. Coping at lower roof.

Exterior and Structural Systems Condition Assessment

The following notable conditions were observed at the building exterior:

Masonry

- Displacement and severe cracking were observed at the return end of the brick masonry adjacent to the east porch. The cracking was approximately 3/4 inch wide and extended vertically, approximately 24 inches through the brick masonry and joints (Figure 76 and Figure 77). The bottom of the crack extended to the terrazzo paving of the landing.

- Step cracking was observed at the brick masonry return end wall near the west entrance landing (Figure 78). The cracking extended approximately 8 feet, from a few courses above the connection with the concrete porch slab to the top of the wall. The crack extended through mortar joints as well as through several individual brick units.



FIGURE 76. Displacement of brick masonry at east entrance landing.



FIGURE 78. Step cracking in brick masonry return end wall at west entrance landing.



FIGURE 77. Severe cracking of brick masonry at east entrance landing.



FIGURE 79. Corrosion at lower shelf angle.

- Around the building, severe corrosion was observed at the toe of the lower shelf angle (Figure 79). At some locations, the mortar joint was observed to be 1 inch in width, as opposed to the typical 1/2-inch width observed elsewhere on the building, as a result of the build-up of corrosion by-product. Inspection openings performed in August 2017 documented extensive corrosion at areas of the lower shelf angle, as further discussed below. Corrosion was also observed at the upper shelf angle, also as further discussed below.
- Vertical cracking was observed at individual brick units in the field of the exterior wall (Figure 80). The cracking ranged in width from hairline to 1/4 inch in width and was typically aligned with the adjacent mortar joints above.
- Open and cracked joints were observed at the mortar bed joint below window sills and coping units (Figure 81 and Figure 82). The cracks were typically 1/8 inch wide. At some locations, the cracked mortar had been temporarily repaired with sealant, which was also observed to have failed.
- Gaps were observed between steel shelf angles at window and door heads (Figure 83). Each shelf angle is approximately 20 feet in length and adjacent angles do not fully abut one another. The gap between adjacent shelf angles was as large at 1-1/4 inches at some locations.
- Abandoned, ferrous expansion anchors were observed in the brick masonry (Figure 84). The anchors were set in the mortar joints and exhibited surface corrosion.

- Cracking was observed at brick masonry adjacent to the metal sun shade anchors (Figure 85). The cracks at these locations were typically 1/16 inch wide and extended outward from the location of the anchorage.

- Spalling was observed at some brick units, particularly brick units at corners and coping (Figure 86). The spalled brick was typically associated with other distress conditions such as cracked joints.



FIGURE 80. Vertical cracking at individual brick units.



FIGURE 81. Cracked joints at window sills.



FIGURE 82. Cracked joints at brick coping units.



FIGURE 83. Gaps at window and door heads.



FIGURE 84. Embedded expansion anchor in brick masonry.



FIGURE 85. Cracking at masonry adjacent to sun shade anchors.



FIGURE 86. Spalling at brick units at coping.



FIGURE 87. Missing brick unit below upper shelf angle.

- One brick unit below the upper shelf angle on the southwest portion of the building was observed to be missing (Figure 87). A white paint ring was observed on the masonry adjacent to where the brick was missing. The reason for the missing brick is unknown.
- At one location, cracked and open mortar joints were observed at the CMU foundation wall (Figure 88). The cracking extended from a vent opening.



FIGURE 88. Cracked and open mortar joints at CMU foundation wall.

Additional Masonry Investigation

At the request of the National Park Service, and in response to conditions observed during the initial visual inspection for this study, WJE project team structural engineers completed an additional investigation of the brick masonry on the visitor center. Midwest Maintenance, Inc. (MMI) provided contractor assistance to make and repair a total of four inspection openings.

The purpose of the additional investigation was to evaluate the extent and severity of the corrosion noted on the shelf angles supporting the brick veneer, as well as other conditions that may have affected the brick veneer. Information gathered through this additional investigation has informed the condition assessment and treatment recommendations developed as part of this Historic Structure Report.

As indicated in the original construction drawings and confirmed where visible during the masonry investigation, the visitor center is a concrete-framed structure with CMU infill walls clad with brick veneer. The brick veneer is supported by two shelf angles anchored into the concrete structure. One shelf angle is located near the lower portion

of the wall above the arched openings, and the other is near the top of the wall. For the purposes of this discussion, these angles have been referred to as the lower and upper shelf angle, respectively.

During the initial site visit by the project team in April 2017, significant corrosion was observed on the leading edge (toe) of the shelf angles, particularly on the lower shelf angle. In addition, significant cracking and displacement of the brick veneer was observed at isolated locations, primarily along the south facade of the building. As a result of these conditions, WJE recommended that inspection openings be made in the brick veneer to determine the conditions of the concealed shelf angles.

As noted, MMI created four inspection openings in the brick veneer at locations selected by WJE and reviewed by the park. All four locations were made along the south facade, which is less visible to park visitors. The approximate locations of the openings are shown on annotated copies of the original drawings for the building provided in Appendix A. During the site visit, WJE was able to determine that the shelf angles consist of curved sections of approximately 20 feet in length. Conditions observed at the inspection openings are described in the following.

Inspection Opening No. 1. The first inspection opening was made at the upper shelf angle to the west of the aluminum sunscreen on the south facade. The opening was approximately 34 inches wide and incorporated two courses of brick above the shelf angle and one below the angle (Figure 89). The brick below the shelf angle tightly abutted the underside of the angle. Aluminum laminated flashing, consisting of a thin aluminum sheet and asphalt impregnated fabric, was observed on the angle (Figure 90). The flashing was placed in a reglet in the concrete beam approximately 5 inches above the angle and terminated approximately 1/2 inch short (inboard) of the toe of the angle. The flashing was torn and wrinkled, and it was not adhered to the steel angle. The angle measured approximately 3 inches vertically and 4 inches horizontally by 1/4 inch thick.

A 5/8-inch-diameter anchor bolt with 1-inch square nut, was exposed at the left end of the opening (Figure 91). The bolt was placed in a wedge insert embedded in the concrete beam. The exposed bolt exhibited moderate surface corrosion, but no section loss. A second wedge insert was noted approximately 17 inches from the first anchor; however, no slotted hole or bolt were present (Figure 92). Moderate surface corrosion was observed on the horizontal surface of the angle throughout much of the exposed length; however, significant corrosion with severe section loss was noted at the left (as viewed from the exterior) 9 inches of the exposed portion (Figure 93). Portions of the outer edge of the angle were completely missing at this location.



FIGURE 89. Overview of inspection opening no. 1.



FIGURE 90. Aluminum laminated flashing at inspection opening no. 1.

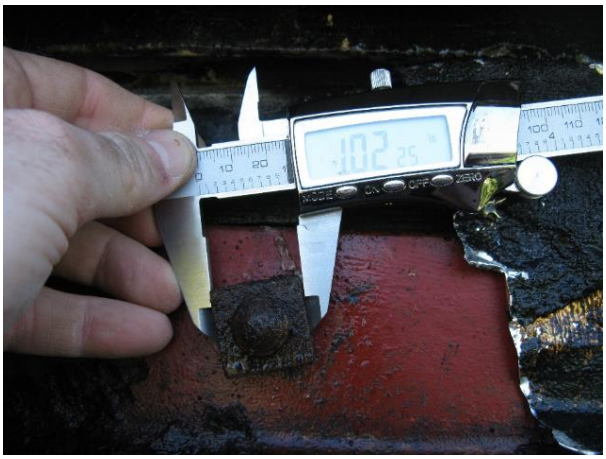


FIGURE 91. Close-up of anchor bolt at inspection opening no. 1.

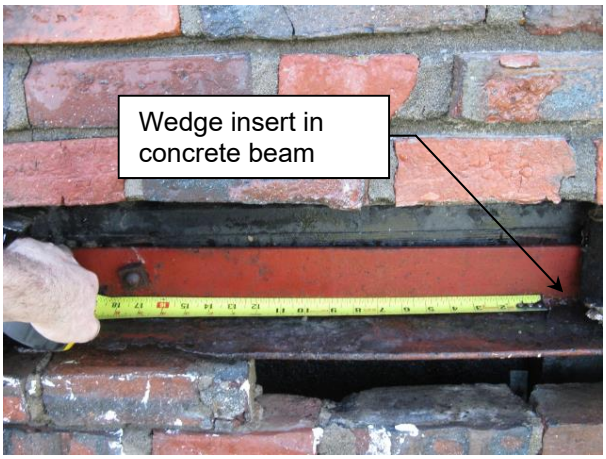


FIGURE 92. Wedge insert 17 inches from anchor bolt.



FIGURE 93. Severe section loss at left end of inspection opening no. 1.

Inspection Opening No. 2. Inspection opening no. 2 was made at the upper shelf angle at the west end of the wall near the entrance to the visitor center. The opening was approximately 17 inches in height and wrapped the concrete column at the end of the wall (Figure 94). A shelf angle was observed in the south side of the opening; however, no angle was provided on the west face of the column or along the north face of the wall. The angle on the south wall matched the dimension of the angle exposed in inspection opening no. 1. A slotted hole and wedge insert were observed 4-1/2 inches from the edge of the angle; however, no bolt existed at this location (Figure 95). The aluminum laminate flashing terminated approximately 6-1/2 inches from the exposed end of the angle (Figure 96). Severe corrosion with significant section loss was noted at the exposed end of the angle (Figure 97). The angle thickness was reduced to 0.14 inches at this location. The brick below the angle generally tightly abutted the underside of the angle. A corrugated metal brick tie was observed in the cavity, in a slotted insert in the concrete column (Figure 98 and Figure 94). The tie appeared to be in good condition.



FIGURE 94. Overview of inspection opening no. 2.



FIGURE 95. Missing bolt at end of angle at inspection opening no. 2.

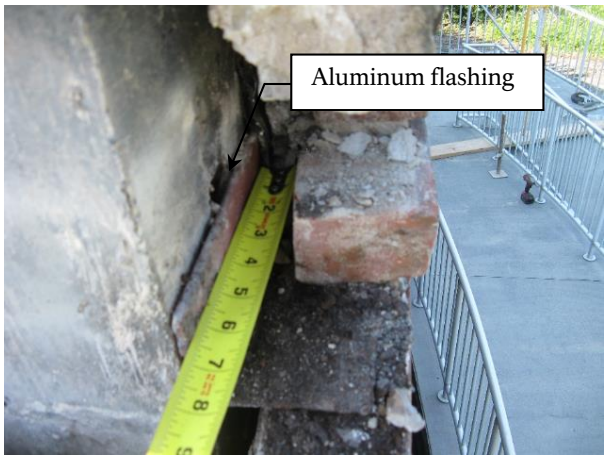


FIGURE 96. Termination of aluminum flashing.

Inspection Opening No. 3. This inspection opening was made at the lower shelf angle near the center of the south wall. The opening was approximately 12 inches in height, incorporating three courses of brick above the angle and one below, and 36 inches in width (Figure 99). The angle exposed measured approximately 3-/12 inches vertically by 4 inches horizontally by 5/16 inch thick. The aluminum laminate flashing terminated approximately 5 to 7 inches above the angle (Figure 100). Severe corrosion, including full thickness section loss, was observed on the horizontal leg of the angle throughout the entire exposed portion (Figure 101). Significant corrosion with pitting and section loss extended onto the vertical leg of the angle in some areas. No slotted holes or bolts were exposed in the opening and none could be detected in the near vicinity of the opening. Corrugated metal brick ties were noted in slotted inserts in the concrete beam at approximately 16 inches on center (Figure 102). The exposed ties were in good condition.



FIGURE 97. Severe corrosion at exposed end of shelf angle.



FIGURE 98. Corrugated metal brick tie in south wall.



FIGURE 99. Overview of inspection opening no. 3.



FIGURE 100. Flashing terminating above angle at inspection opening no. 3.



FIGURE 101. Complete section loss at horizontal leg of angle.



FIGURE 102. Exposed brick tie in insert in concrete beam.

Inspection Opening No. 4. Inspection opening no. 4 was made at the lower shelf angle near the east end of the south wall. The opening was approximately 36 inches wide and incorporated two courses of brick above the angle and one below (Figure 103). The angle dimensions matched those in inspection opening no. 3. The opening was made at the ends of adjacent shelf angle segments. The aluminum laminate flashing terminated approximately 9 inches above the angle and extended into the brick veneer. Bolts were observed near the end of each shelf angle segment. The bolt in the segment exposed at the left side of the opening was severely corroded (Figure 104). The bolt in the shelf angle segment exposed at the right side of the opening exhibited surface corrosion, but the nut had lost significant section (Figure 105). Both angles exhibited full section loss across the horizontal leg over a portion of the exposed area (Figure 106).



FIGURE 103. Overview of inspection opening no. 4.



FIGURE 104. Severely corroded bolt at shelf angle segment at left end of inspection opening no. 4.



FIGURE 105. Bolt with corroded nut in shelf angle segment at right end of inspection opening no. 4.



FIGURE 106. Complete section loss of horizontal leg of both shelf angles at inspection opening no. 4.

Findings of Additional Masonry Investigation

The flashings installed during the original construction of the visitor center contain numerous defects and have failed to protect the shelf angles from corrosion. In both of the inspection openings at the lower shelf angle, the flashings were terminated well above the angle, which has contributed to widespread deterioration and significant corrosion of the exposed angles. The anchored connections to the concrete structure have also been compromised by corrosion along the lower angle, as identified in inspection opening no. 4. At the openings along the upper angle, the flashings exposed were installed onto the horizontal leg of the angle and terminated approximately 1/2 inch from the toe of the angle; this has provided some long-term protection for the upper angle, limiting the areas of corrosion to defects in the flashing such as tears or wrinkles. In inspection opening No. 1, the flashing was not adhered to the angle and was wrinkled and torn near the left side of the opening, enabling corrosion of a portion of the angle. The flashings were terminated short of the end of the shelf angle at inspection opening no. 2, which has contributed to isolated deterioration of the unprotected portion of the angle.

In addition to the deterioration of the angles, WJE noted missing anchor bolts at inspection opening no. 2 and a possible missing bolt at inspection opening no. 1. The spacing of the bolts at the lower shelf angle, as illustrated by the fact that no bolts were exposed in the 36 inches of angle visible in inspection opening no. 3, is also questionable. In order to determine the spacing of the bolts, structural analyses of the shelf angles would be required, which was beyond the scope of the current investigation.

Inspection opening no. 2 revealed that the shelf angle terminated on the south wall and that no intermediate supports were provided for the brick veneer on the west or north face of the wall. As a result of these varying support conditions, the cumulative expansion of the brick veneer on the west and north faces was greater than the expansion on the south facade, which contained an upper shelf angle, resulting in the cracks in the brick veneer that were noted during WJE's April site visit, as described above.

Terrazzo and Concrete

- Cracking was observed at the terrazzo deck at the entrance landings. The cracking consisted of hairline to 1/8-inch wide cracks in the concrete (Figure 107 and Figure 108). At some locations, specifically along the side and outer edge of the deck, the cracking appeared to be more widespread and was accompanied by efflorescence (Figure 109). At one location, a 1/8-inch-wide crack/incipient spall was observed. The crack/spall was positioned near the edge of the landing slab, where it abuts the concrete ramp (Figure 110). Typically, the wider areas of cracking appeared to be associated with loss of the exposed aggregate.



FIGURE 107. Cracking at terrazzo landing.



FIGURE 108. Cracking at terrazzo landing.



FIGURE 109. Cracking at outer edge of porch deck.



FIGURE 110. Cracking at landing slab/ramp abutment.



FIGURE 111. Horizontal cracking at curb.

- Horizontal cracking and severe deterioration of the terrazzo were observed at the 2-inch-tall curb and the terrazzo landing at the east entrance (Figure 111 and Figure 112). The spalling was most pronounced at the edges of the curb.
- A large spall was observed at one location on the east entrance terrazzo landing (Figure 113). The spall was approximately 2 inches wide, 12 inches long, and 1/2 inches deep and was adjacent to a metal divider strip.
- Hairline cracking was observed at the concrete surface of the west ramp (Figure 114). The cracking was typically hairline and extended perpendicular across the ramp at regular intervals approximately 6 feet apart.



FIGURE 112. Deterioration of concrete at terrazzo porch.



FIGURE 113. Spall at east porch terrazzo deck slab.



FIGURE 114. Hairline cracking at west ramp.

Stucco

- Cracking was observed at the plaster ceiling at the exterior overhangs (Figure 115). The cracks were typically less than 1/16 inch in width and were located at interior corners.



FIGURE 115. Cracking observed at exterior canopies.

Metal Elements

- Displaced vertical sun shades were observed at two locations. The displacement was observed following the May 2017 tornado event. Distress included a broken metal angle at the base of the vertical fins. The fins were displaced approximately 1/2 inch.

- Mild surface corrosion was observed at metal features including fasteners and metal-framed doors. The corrosion was most pronounced at roof termination bars, windows, and at the decorative fascia at the canopy roofs where the fasteners are more exposed to the elements (Figure 116).



FIGURE 116. Mild surface corrosion.

- Displaced handrails were observed at a few locations (Figure 117). The displacement included missing anchors and impact damage, both of which may result in components of the handrails becoming bent, loose, or damaged. Additional damage was documented following the May 2017 tornado event. It was reported that approximately 50 percent of the length of the non-original handrail at the west accessibility ramp had been damaged. The damage included broken and bent spindles and rails.
- Biological growth was observed on the face of the aluminum sun shades (Figure 118). The growth was most pronounced at the base of the shades as well as at the horizontal framing members.



FIGURE 117. Displaced handrails.



FIGURE 118. Biological grown on aluminum sun shades.

Roofing

- Evidence of ponding water and biological growth was observed at the lower roof (Figure 119). While no actual ponding was observed, staining and discoloration on the roof indicate these conditions are likely present after heavy rainfall.



FIGURE 119. Ponding and biological growth at lower roof.

- The roof membrane and termination bar at the upper roof are anchored into the exterior face of the brick wall (Figure 120). This detail causes damage to the brick and has introduced unaccommodated stresses to the roof membrane. It has the potential to reduce the serviceable life of the roof membrane. In addition, the detail is aesthetically intrusive to the historic appearance of the building.
- Punctures were documented in the roof membrane following the May 2017 tornado. There were two punctures identified; each puncture appeared to have been caused by debris embedded in the roof.
- At a few locations, small voids and penetrations were observed at the adhered seams of the TPO roof system (Figure 121). The distress was typically located at flashing details, such as at scuppers and parapet walls.



FIGURE 120. Improper anchoring of roof membrane and termination bar.



FIGURE 121. Voids at seams of TPO roof system.

Other Elements

- Ponding water and flooding were observed at the storm drain adjacent to the southwest portion of the building (Figure 122). The water was approximately 1-1/2 inches deep and the storm drain did not appear to be actively draining.
- Pest infestations were observed at the masonry concealed by the perimeter crawl space (Figure 123). The infestation consisted of mud dauber nests.



FIGURE 122. Ponding at storm drain.



FIGURE 123. Mud dauber nests, observed at the perimeter crawl space.

Interior Description

The Mission 66 program that resulted in the development of a new type of visitor center had a major impact on the development of new park facilities for visitors. As illustrated by the Fort Pulaski Visitor Center, these new facilities had open floor plans organized around the visitor's path through exhibits and displays, with the information desk as a central and key feature of the space. At the same time, many Mission 66 designs, including the visitor center, embraced a modern architectural aesthetic. Modernist design, with its precepts of open floor plans, functional and efficient designs, the elimination of unnecessary and costly decoration, and application of mass-produced, standardized, and modular building components that could be made and assembled relatively inexpensively, were well suited to the goals of the Mission 66 program. The

design of Fort Pulaski Visitor Center also exemplifies Modern design as developed for National Park Services resources, the Park Service Modern style. As previously noted, the design of the visitor center is based on an icon of Modern Architecture–the MIT Chapel designed by Eero Saarinen– resembling that structure closely in its exterior design, brick cladding, and interior plan. While the exterior if the visitor center has remained largely intact since original construction, the interior has been more significantly altered, as further discussed below.

The Interior. The iconic MIT chapel that provided the inspiration for the Fort Pulaski Visitor Center is a 50-foot-diameter, 30-foot-high, brick-clad cylinder devoid of windows, and the floor plan is a pure circle resulting in an expression of Euclidean geometry that is often found in modern architecture. In comparison, the main form of the visitor center at Fort Pulaski National Monument is a 56-foot-diameter (28-foot-radius), windowless cylinder that is approximately 23 feet tall. On the south side, the main cylinder of the visitor center is partially wrapped by a perimeter ring of spaces with an outside radius of 42 feet and a height of 17 feet 8 inches (refer to Appendix A – Original Drawings and Finish Schedule).

The original interior layout consisted of a large, circular, exhibit display area within the volume of the main cylinder. A small information desk was positioned adjacent to the west entrance for the convenience of visitors, and also afforded the staff a view of the entire exhibit space. Two concentric arcs of staff and support spaces fanned out to the south between the east and west entry vestibules. These trapezoidal spaces included the park's administrative offices, a multi-purpose room, a mechanical room and public restrooms (refer to Figure 37 - Chronological Development Plans and Appendix A).

This interior configuration remained for some time until a pie-shaped theater space was constructed in the northwest quadrant of the original exhibit and display space prior to 1995. In September 1994, during a re-roofing inspection, an architect from the Professional Support Branch of the Engineering and Park Facilities Management Division developed a cost estimate for a universally accessible ramp, modifications to the existing restrooms to make them more accessible, and other interior rehabilitation work. It was determined that modifying the existing restrooms was not feasible because of their inadequate size. Subsequently, a new comfort station was designed and constructed just to the west of the visitor center in time for the influx of visitors during the 1996 Olympics in Atlanta. Relocating restrooms to the adjacent comfort station allowed the extant women's restroom to be converted to office space, while partitions at the men's restroom were demolished. Other interior partitions were removed to accommodate a larger information desk and a bookstore, and the original multi-purpose room was converted into a breakroom. Subsequent rehabilitation projects occurred in 2000 when the exterior ramp at the west side of the visitor center was completed along with repairs to exterior doors and sidelights. Another substantial interior renovation took place in 2003, which resulted in the interior configuration depicted in chronological development plans provided in Chapter 2 of in this report. That project involved demolition of CMU walls, asbestos abatement, plaster repairs, painting, terrazzo floor repairs, electrical wiring, new light fixtures, plumbing, new interior doors, new exterior aluminum doors with automatic openers, and a new modular information desk.

Walls. Originally, exterior walls and interior partitions were painted CMU except in the current exhibits area and theater, where stained and lacquered, tongue-and-groove cypress paneling covered portions of the CMU walls. Currently, non-original painted wood paneling applied to wood furring also covers CMU walls in the breakroom, office 2, the bookstore, and the information area (Figure 124).

Walls of the original men's and women's restrooms were finished with 1-inch-by-2-inch glazed ceramic tile. Although no ceramic tile was visible in office 1 or the southwest portion of the information space (former locations of the restrooms), it is suspected that the remaining ceramic tile walls were covered

with painted wood paneling when the visitor center was renovated in the mid-1990s (Figure 125).



FIGURE 124. Typical non-original painted wood paneling installed over wood furring.



FIGURE 125. Office 1 was originally the women's restroom. Note wood paneling on walls.

Newer walls constructed of wood studs were used for the rear projection and storage rooms and the theater. The rear projection and storage room is finished with gypsum board that is painted black inside the room (Figure 126). In the theater, wood stud walls have acoustical panels with a vinyl fabric surface except for the curved northwest (back) wall, which is original concrete block covered with carpet (Figure 127). During the summer of 2018, a new gypsum board wall was constructed between the northeast corner of the break room and the northwest corner of office 2 (Figure 128). This was done to make a new staff office 3 and correspondingly reduce the size of the bookstore. A new door was also added into office 3 from the breakroom (Figure 129). Perhaps unintentionally, office 3 re-establishes this space for administrative use, its original function when the visitor center was built (refer to Figure 31 and Figure 37).



FIGURE 126. Interior of rear projection room.



FIGURE 127. Visitor center theater—note walls with acoustical panels.



FIGURE 128. A new office was created by adding a wall between the existing office and the breakroom. (Source: Fort Pulaski National Monument).



FIGURE 129. New door into office 3 from breakroom, 2018. (Source: Fort Pulaski National Monument).

When the visitor center was completed in 1963, the walls had a 4-inch-tall vinyl cove base, but presently, only a few walls have vinyl or rubber cove base. Attention is drawn to the missing cove base where adhesive residue is present along the bottom of the walls (Figure 130), and where newer wooden base boards are missing, unpainted wood paneling is visible (Figure 131). In a few locations, such as office 1, there is a 4-inch-tall rubber or vinyl cove base along the southwest wall. Oddly, the other walls in this room have a wood, tear-drop baseboard (Figure 132).



FIGURE 130. Missing vinyl cove base and remaining adhesive.



FIGURE 131. Missing wooden baseboard revealing unpainted wood paneling.



FIGURE 132. Four-inch vinyl cove base under desktop and painted tear-drop baseboard next to the door.

Ceilings. At the time of the site visit for this report, most original plaster ceilings throughout the building were intact; although, water stains on the ceiling surrounding the roof drains was visible

(refer to Figure 157 and Figure 182). The textured acoustical plaster is embedded in metal lath that is attached to a grid of galvanized steel channels which is suspended from the structural steel roof framing members (Figure 133). Ceiling heights vary from 7 feet 8 inches over the information desk and in office 1; to 9 feet 3 inches in office 2, office 3, the bookstore, and the breakroom; and to 12 feet 0 inches in portions of the theater and the exhibits space. These original plaster ceilings are considered character-defining features of the interior (Figure 134). However, it is important to note that the plaster has been sampled and tested for asbestos-containing materials (ACMs), so proper abatement procedures and safety measures must be employed whenever the ceilings or the ACM-containing plaster is disturbed. (Refer to Appendix D – Hazardous Materials Survey Report.)

On May 23, 2017, a tornado struck the visitor center and the adjacent comfort station. The membrane roof of the visitor center was damaged, which resulted in water and wind damage and the collapse of some ceilings inside the building. An NPS damage assessment report, dated May 24 – 25. 2017, noted that portions of the suspended plaster ceiling in the exhibits area broke loose from wire hangers and collapsed. The report also acknowledged that the acoustical ceilings throughout the visitor center contained asbestos and that they must be abated before making repairs and replacing the ceilings.[102] According to park staff and an October 30, 2017, asbestos air monitoring report from the Fleetwood Daniels Group, LLC, an abatement project was conducted that included the two entrances, the exhibits area, the rear projection and storage room and the theater.[103] Asbestos-containing ceilings in the outer ring of office spaces were not abated (Figure 135). (A completion report from the contractor conducting the work was not available at this time of this writing.) Park staff also confirmed that a new gypsum board ceiling was installed and completed before the end of 2017, along with other interior repairs. The new gypsum board ceiling received an applied texture to mimic the texture of the original acoustical plaster.

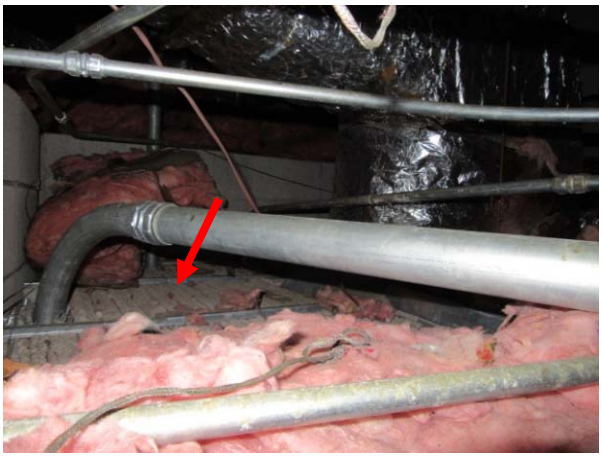


FIGURE 133. Acoustical plaster embedded in metal lath viewed from the attic. Note pink fiberglass batt insulation on the suspended plaster.



FIGURE 134. The 9-foot-tall plaster ceiling in the exhibits space

102. Fort Pulaski National Monument Tornado Damage Assessment Summary. May 24–28, 2017.
103. Fleetwood Daniels Group LLC. Asbestos Air Monitoring Results Fort Pulaski Visitors Center. October 30, 2017.

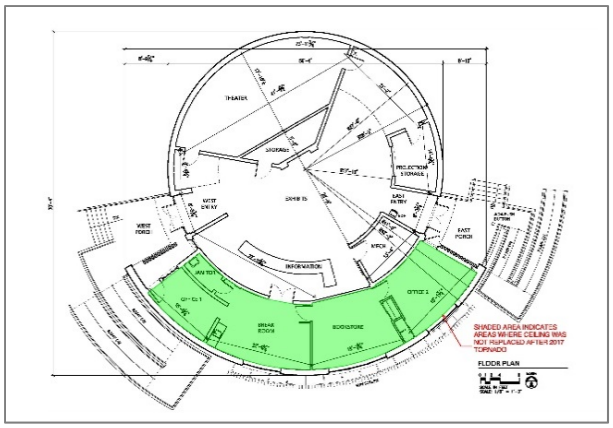


FIGURE 135. Visitor center floor plan, showing area in which ceiling was not replaced following the 2017 tornado. (Source: Information provided by Fort Pulaski National Monument; annotated drawing by authors)

Floors. Another character-defining feature of the interior is the terrazzo flooring, which is composed of one-third dark red aggregate chips, one-third brown aggregate chips, and one-third black aggregate chips in a matrix of white cement.[104] During construction, several letters were exchanged between the architect, the contractor, the terrazzo installer, and the NPS Eastern Office of Design and Construction regarding the pattern of metal dividers (screeds) and the resulting size and quantity of terrazzo panels. The installer was concerned that additional dividers were needed to reduce the size of the panels and minimize cracks in the terrazzo. The architect stated that the pattern of metal screeds and the size of the panels conformed to the recommended standards of the National Terrazzo and Mosaic Association. An agreement was reached, and the terrazzo was installed (Figure 136). In 1964, cracks occurred in the terrazzo floor. In a memorandum to the NPS Regional Director, the park superintendent acknowledged that architect Henry Levy and his structural engineer examined the cracks and found that they were not caused by settlement or structural issues. Most of the cracks occurred along the divider strips, and they were considered to be narrow, although some were wider. The architect and structural engineer concluded that there was no way to repair the floor without removing and replacing the terrazzo, which would not guarantee that new cracks would not reappear. No other documentation was found to indicate that repairs were ever undertaken until a 2003 rehabilitation project encompassed the installation of approximately 100 square feet of 3-inch-thick terrazzo flooring.



FIGURE 136. Terrazzo floor in exhibits space and at information desk.

Presently, minor cracks are visible in the floor, and the position of previously demolished walls can be seen where the floor color changes slightly (Figure 137). Also, the terrazzo is chipped in places where former displays and exhibits were anchored to the floor (Figure 138).

At the time of the site visit, glued-down carpet covered the terrazzo floor in the theater, likely for acoustical reasons. Flooding from Hurricane Matthew saturated the carpet, and it was removed during the clean-up. Adhesive residue remained, so new carpet tiles were installed in the theater in August 2018.[105]

104. Letter from Robert E. Smith, Chief Architect, National Park Service Eastern Office, Design & Construction, to Superintendent, Fort Pulaski, September 9, 1964, and attached Fort Pulaski Visitor Center Interior Finish Schedule, Item I.A. Terrazzo Floors throughout Building, Fort Pulaski National Monument Archives, Box 53 – Folder17.

105. Information on post-hurricane and post-tornado repairs in 2017–2018 provided by Fort Pulaski National Monument staff.



FIGURE 137. Ghosting from original interior partition on terrazzo floor.

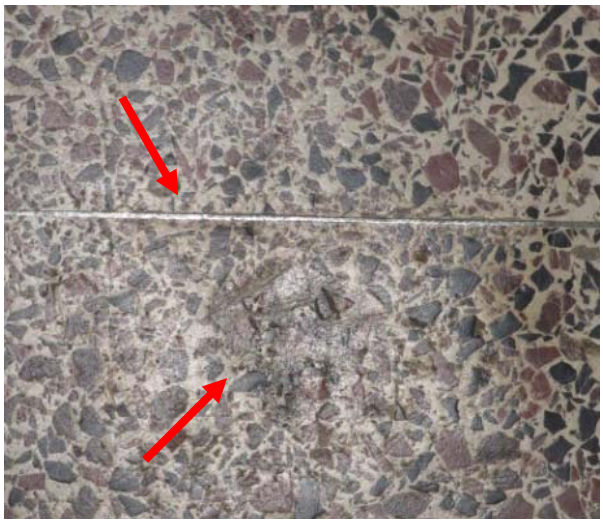


FIGURE 138. Metal divider strip and spalling of terrazzo.

Doors and Hardware. Doors to the exterior are of three types: aluminum and glass, flush hollow metal (steel), and flush wood. The original pairs of aluminum and glass storefront doors, transoms and sidelights were replaced by new, clear anodized aluminum units in 2003 (Figure 139) when the visitors center was renovated.[106] At the time, the insulated glass in the new units was specified to have an ultra-violet (UV) radiation rating, and the doors were equipped with automatic, button-activated openers to facilitate access by individuals with disabilities. Hardware on the east and west side entrance doors consists of offset pivots (hinges), aluminum thresholds, panic devices on the interior side, and pulls on the exterior in addition to automatic openers (Figure 140), and standard, key-operated deadlocks with Best cylinders (Figure 141).



FIGURE 139. Aluminum entrance doors.



FIGURE 140. Automatic, button activated door opener on entrance doors.



FIGURE 141. Key-operated deadbolt lock on aluminum entrance doors.

106. Contract for rehabilitation of the interior of the Fort Pulaski Visitor Center, Roy Moore Contracting and Painting, College Park, Georgia, May 2003 (Fort Pulaski NM, Resource Management Records Collection).

According to park staff, both pairs of aluminum and glass doors at the east and west public entrances were repaired after sustaining damage from the tornado that passed through the national monument in the spring of 2017.

The west exterior door at office 1 is a 35-inch-wide flush wood door in a wood frame. An adjacent 50-inch-by-50-inch, fixed-glass window also has a wood frame. This door and window replaced the original 28-inch-wide door and transom when the former women's restroom was renovated for office space in the 1990s (Figure 142). Brick veneer on the exterior and painted wood paneling on the interior fill in the wall above the current door where the transom was. Hardware on this door consists of steel hinges, an aluminum threshold and an interior sweep, and a standard, key-operated lock (knob type) and deadbolt (refer to Figure 132). There is no closer.



FIGURE 142. Non-original west entry door and fixed glass window, view from the west porch.

The east exterior door at office 2 is not original. This 36-inch-wide, flush, hollow metal door set in a hollow metal frame opens to the outside. It replaces an original wood door that opened into the office. A transom was replaced with painted wood paneling applied to wood framing on both the interior and exterior sides. Hardware includes hinges, an aluminum threshold, an interior panic device, and a closer (Figure 143 and Figure 144).

Two of the original solid-core, birch veneer doors and wood frames and transoms remain in the visitor center. One is the door into the mechanical room and the other is at the janitor's closet (Figure 145 and Figure 146).



FIGURE 143. East (exit only) door, view from the east porch.



FIGURE 144. East (exit only) door in office 2.



FIGURE 145. Original door at mechanical room.



FIGURE 146. Original stained, birch veneer door at janitor's closet.

Other interior doors are not original and date from later repairs and renovation projects during the 1990s and early 2000s. The two stile-and-rail doors at the theater have full glass lights and are painted gray. Both doors have push-pull hardware and self-closing spring hinges (Figure 147). An incongruous six-panel, hollow-core, hardboard door provides access to the rear projector/storage room on the east side of the exhibit space. It is a standard colonial-style, pre-assembled door unit with traditional wood trim that is painted white on the side facing the exhibit space and black on the opposite side to match the dark walls of the rear projection/storage room (Figure 148). Typical residential hardware includes three hinges and a round brushed chrome knob lockset (Figure 149).

Behind the information desk is a prominent pair of doors within a semicircular arched opening constructed of brick masonry that fills a rectangular opening in an original CMU wall (Figure 150). The masonry archway and the pair of doors were installed in 2012. Both sides of the gray-painted doors are faced with vertical, tongue-and-V-groove boards and 4-inch-wide wood trim. Each door leaf has two black, strap hinges and a simple pull. Presumably, this pair of non-original arched doors and the brick surround were designed to evoke the large wooden doors within the semicircular barrel vaults found at Fort Pulaski (Figure 151).



FIGURE 147. Painted stile-and-rail wood door at theater. Note missing vinyl cove base and exposed adhesive on the walls adjacent to the door.



FIGURE 148. Residential quality, Colonial-style, six-panel hardboard door at rear projection room.

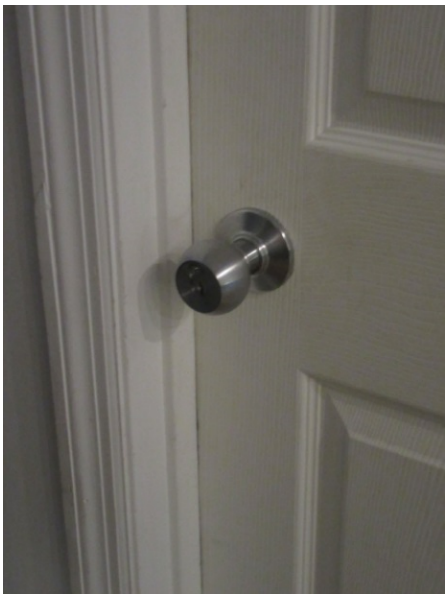


FIGURE 149. Residential quality lockset with knob at rear screen projection room.



FIGURE 150. Pair of semicircular arch doors behind information desk.



FIGURE 151. Inside Fort Pulaski, semicircular masonry arches and vaults infilled with wood doors.

Generally, interior doors throughout the visitor center have a mixture of cylinder and mortise hardware with a variety of knobs, which are not compliant with the requirements of the Americans with Disabilities Act (ADA) (Figure 152 and Figure 153 and refer to Figure 149).



FIGURE 152. Knob door hardware.



FIGURE 153. Knob door hardware.

Woodwork and Trim. By design, initial details of interior woodwork and trim followed the principles of post-World War II modern architecture and the objectives of the Mission 66 program—clean lines and functional and efficient details without unnecessary and costly ornament in the form of traditional moldings and elaborate woodwork. Wood trim was minimal and only components with square and rectangular cross sections were used, instead of curved and radiused moldings (Figure 154). And, the structural components of the architectural element were expressed as the finished detail (i.e., form follows function; Figure 155). Wooden door frames and

transoms, the interior window trim, and the original information desk were designed and constructed accordingly.[107] However, most of these wood components are no longer extant and most of the trim details have been concealed by later renovation work and off-the-shelf wood trim (refer to Figure 155).



FIGURE 154. Typical door and transom frame detail. Note black strip used to highlight the reveal between the upper and lower wood frames.



FIGURE 155. Detail of original, stained wood window trim partially obscured by non-original, painted wood paneling and trim.

107. National Park Service Division of Design & Construction, Eastern Office, "Construction Documents for Visitor Center Building, Headquarters Area, Fort Pulaski National Monument," 1962.

Interior Condition Assessment

At the time of the site visit for this report, the interior of the visitor center was in relatively good condition overall. On May 23, 2017, a tornado touched down and moved across the park causing substantial damage to park facilities and the landscape, including the visitor center. The extent of the damage was assessed by an NPS team and described in their report.[108] The following items represent concerns, derived from on-site observations prior to the tornado, that warrant attention or localized distress that requires corrective action. Interior conditions that were exacerbated by the tornado are noted as well.

The following notable interior conditions were observed in April 2017.

Walls and Ceilings

- Plaster degradation and water stains on ceilings from roof leaks and at roof drains are evident. According to park staff, a recently installed new roof has mitigated the leaks (Figure 156 and Figure 157).



FIGURE 156. Water stains on plaster ceiling.

- A rectangular section of the plaster ceiling behind the information desk was removed in the past, leaving a thin layer of the brown coat still adhered to the wire mesh. A repair should

108. Wade Lewis, Scott Mapes, and Cephus Bragg, "Fort Pulaski National Monument Tornado Damage Assessment Summary" (National Park Service, May 2017).

be a priority during the next maintenance cycle (Figure 158).



FIGURE 157. Plaster degradation and water stains on plaster ceiling at roof drain.



FIGURE 158. Rectangular cutout in plaster ceiling.

- The tornado in May 2017 damaged the new roof membrane, which increased the potential for water penetration. Wind and air pressure differentials caused the suspended plaster ceilings to sag and drop significantly in the exhibit space and in other areas of the building.[109] Ceiling plaster has been sampled and tested for asbestos-containing materials (ACMs), so proper abatement procedures and safety measures must be employed whenever the ceilings or the ACM plaster is disturbed. Park staff confirmed that a new gypsum board ceiling was installed and completed by December 2017, along with other interior repairs. The new gypsum board ceiling also received an applied texture to mimic the texture of the original acoustical plaster.

- Originally, exterior walls and interior partitions were constructed with CMU and painted. Every wall and partition was rigorously designed to form a complete circle, an arc with its radius at the center of the circle, or a straight wall parallel to the radius of the circle. While this parti is a significant feature of the visitor center, several of the original walls and partitions were completely removed during renovations in the 1990s and early 2000s resulting in the loss of significant historic fabric. In some cases, new partitions of wood studs and gypsum board were added, and some are neither parallel to the radius of the primary circle nor an arc. As a result, the clarity and consistency of the original Park Service Modern design concept was substantially altered.

- When the visitor center was dedicated in 1965, the only walls that were not painted CMU were a few sections of the lobby and the two restrooms. In the lobby (now the exhibits space and theater), cypress paneling with a walnut stain was specified to cover portions of the curved CMU wall as a background for displays, and walls in the original restrooms were finished with ceramic tile.[110] It is very likely that the presence of combustible materials, such as wood paneling, door, and trim, was limited to the amount permitted by the building code in a non-combustible building type. Over time, renovations and modifications included the installation of painted wood paneling and trim on wood furring that now covers a majority of the original CMU walls in administration spaces (Figure 159 and Figure 160).

109. Ibid.

110. NPS Division of Design & Construction, Eastern Office, *Construction Documents for Visitor Center Building, Headquarters Area, Fort Pulaski National Monument* (Philadelphia, 1962).



FIGURE 159. Non-original wood paneling over original CMU wall.



FIGURE 160. Wood paneling on wood stud wall adjacent to original CMU. Missing vinyl base on CMU wall.

- After Hurricane Matthew in October 2016, the vinyl cove base at the bottom of walls was removed to aid mold remediation. Some of it is still missing resulting in an unsightly condition (refer to Figure 144 and Figure 157). Where new wood paneling was installed, common tear-drop wooden baseboards were applied; they are also missing in places (Figure 161). According to park staff, new vinyl and wooden base are scheduled for installation.



FIGURE 161. Tear-drop baseboard and missing baseboard below non-original wood paneling.

Floors

- The terrazzo floor in the visitor center is still in good condition after years of visitor and staff traffic. Cracks that appeared in 1964 after the building was completed did not adversely affect its serviceability or appearance. Slight ghosting is apparent where original interior partitions were removed (Figure 162), and there is some spalling where exhibits and displays were anchored to the floor.

- Rust stains are visible where water on the floor has caused metal file cabinets and furniture to corrode, particularly in office 2 (Figure 163). Although the staining is unsightly, the performance of the terrazzo is not compromised.



FIGURE 162. Ghosting from original interior partition on terrazzo floor.



FIGURE 163. Rust stains on terrazzo floor.

Woodwork and Trim

- As noted above, original woodwork and trim was limited to window and door surrounds and the information desk, most of which was removed (the first information desk) or was obscured by present-day wood paneling and ordinary wood trim. Some remnants of the walnut-stained woodwork and trim remain and are still visible (Figure 164 and Figure 165).

- The current information desk dates from 2003 and appears to be in good condition (Figure 166).



FIGURE 164. Original stained wood trim at windows is partially covered by painted trim.



FIGURE 165. Original stained wood door and transom frame with black reveal strip.



FIGURE 166. Information desk.

Doors and Hardware

- Several interior doors were either painted or replaced the original stained, solid-core, flush wood doors. Two original stained wood doors are located in the mechanical room and the janitor's closet; the latter still retains its glass transom. Other transoms have been filled in with painted wood paneling.

- Two stile-and-rail doors with full glass lights are located at the entrance to the theater. Both are recent additions and are in good condition.

- Hardware throughout the visitor center is a combination of original and recent components. Most of it is in fair to good condition and appears to function properly. Finishes on the older hardware are worn. The variety of knobs is not consistent with the

original hardware, and knobs are not ADA compliant (Figure 167).



FIGURE 167. Knob door hardware is not ADA compliant.

Electrical and Mechanical Systems Description

Electrical and Lighting Systems

Electrical service enters the visitor center underground on the south side of the building where it comes into the crawlspace. Electrical conduit penetrates the floor in the mechanical room and rises to the main distribution panel on the southwest wall next to the door (Figure 168). Circuits from the main panel run through the crawlspace and above the ceiling to light fixtures, receptacles, switches, and equipment in the building (Figure 169). In addition to the main electrical panel, the mechanical room has a telephone board, several wall-mounted electrical disconnects, a security system panel and a web of wires and metal conduits (Figure 170).



FIGURE 168. Main electrical panel.



FIGURE 169. Tangle of wires above the suspended plaster ceiling.



FIGURE 170. Electrical switches and a telephone board in the mechanical room.

There is a variety of surface mounted and recessed lighting in the visitor center. Surface mounted, fluorescent fixtures illuminate all the offices, staff spaces and the bookstore, as designed in 1962. However, the current 12-inch-by-48-inch fluorescent fixtures replaced the earlier fixtures indicated on the construction documents. An April 2003 memo from Mr. Mike Hosti, Chief of Maintenance for Fort Pulaski National Monument, to Mr. Greg DeFelicibus at Everglades National Park contains an expanded scope of work for the visitor center modifications project. The additional work includes the "installation of five four-foot surface mounted fluorescent light fixtures and five four-foot tracks with four fixtures each." Therefore, it is assumed that most of the current surface mounted fluorescent light fixtures and some of the track lighting was installed about 2003 as no other documentation specifically mentions new light fixtures.

Recessed incandescent fixtures are distributed throughout the exhibit space for general illumination, and track lighting is positioned to illuminate displays (Figure 171). In the theater, recessed step lights at the base of the walls provide subtle light at the floor to guide visitors into and out of the space that remains dimly lit for video presentations (Figure 172).



FIGURE 171. Track lights illuminate displays. Dark circle and rectangle in the ceiling are HVAC supply registers. Light fixtures, HVAC grilles, and fire and smoke detectors were replaced in 2018 when ceilings were repaired after they were damaged by the tornado that crossed the park.



FIGURE 172. Recessed step lights in the theater.

Illuminated exit signs, some with integrated emergency lights, are located at the primary building exits and above the two theater doors. There are no exit signs at the exterior doors in office 1 on the west side of the building or at the exterior door on the east side in office 2.

Mechanical Systems

Heating, Ventilating and Air Conditioning (HVAC). When it was constructed in 1963, the visitor center was heated and cooled by two split system heat pumps, one five-ton unit and one ten-ton unit. The visitor center interior was divided into two zones. Zone one was the lobby/exhibit space served by the ten-ton system. Zone two covered the remaining administration and staff spaces. Presently, insulated ducts above the suspended plaster ceiling (Figure 173) distribute conditioned air from two air handlers in the mechanical room to ceiling and sidewall grilles (refer to Figure 160). Refrigerant lines are concealed in the crawlspace and run underground from there to the outdoor equipment placed a low area southwest of the building (Figure 174).

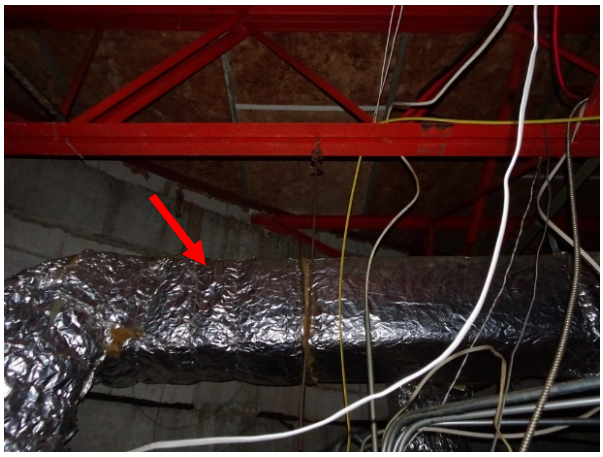


FIGURE 173. Insulated air duct in the attic space above the suspended plaster ceiling.



FIGURE 174. Refrigerant lines from the outdoor condensing unit entering the crawlspace.

At the time of the site visit, the ten-ton HVAC system was relatively new, having been replaced after Hurricane Matthew in 2016 and again after Hurricane Irma and the tornado that occurred in 2017. The new Carrier air handler sits in the mechanical room where it is connected to the original ducts that now supply conditioned air to the exhibits space, the theater, the information area, and the bookstore (Figure 175). A return air grille is in the northwest wall of the mechanical room. The outdoor heat pump condensing unit is raised above grade on a wooden platform approximately 30 yards southwest of the visitor center (Figure 176). This system was damaged by the tornado that passed through the park on May 23, 2017 and by hurricane Irma in September 2017. The tornado caused interior ceilings to sag and collapse in some places taking ducts and supply registers with them, and the heat pump was dislodged from its platform.[111] The indoor air handler, ducts and supply registers for the smaller five-ton system remain in the mechanical room and above the ceiling, although they are mostly abandoned (Figure 177). As described above, this system served the original administration and staff spaces and the former men's and women's restrooms. It was replaced by a highly efficient, variable refrigerant flow (VRF) multi-unit system often referred to as a mini-split system. Here, a single, outdoor heat pump compressor unit is connected to three wall-mounted indoor fan units that can provide simultaneous heating and cooling. The compressor and fan unit is outside on a raised wooden platform on the south side of the visitor center (Figure 178). Individual, indoor fan units are wall mounted in office 1, office 2, and the breakroom (Figure 179). These VRF mini-split units were damaged by the tornado and hurricane Irma and were replaced in July 2018.[112]



FIGURE 175. New ten-ton air handler in the mechanical room.

111. Lewis, Mapes, and Bragg.
112. Ibid.



FIGURE 176. Ten-ton condensing unit on wooden platform.



FIGURE 177. Abandoned HVAC supply register no longer secured to plaster ceiling.



FIGURE 178. VRF system outdoor heat pump compressor that was replaced after it was damaged by the Hurricane Irma and the tornado in 2017.



FIGURE 179. Wall mounted VRF fan unit.

Plumbing. Potable water is supplied from a remote well house southeast of the visitor center to an electric water heater in the mechanical room (Figure 180). When the original men's and women's restrooms were removed during the early 1990s, domestic water lines and drain lines in the crawlspace to these two restrooms were abandoned and capped. Plumbing for the janitor sink and break room sink remain (Figure 181). A waste line runs to a subgrade septic system and drain field nearby.



FIGURE 180. Electric water heater in mechanical room.



FIGURE 181. Janitor sink.

An electric drinking fountain is located adjacent to the east entry.

Cast iron roof drains and piping for the lower roof are exposed in the administration and staff spaces, and water stains and ceiling damage around the drains are an indication of past leaks (Figure 182). It was not possible to observe all the other drains, since drains for the higher roof are only accessible above the plaster ceiling at access hatches in the janitor's closet and mechanical rooms. Beyond those immediate locations, views are blocked by ductwork and insulation (Figure 183).



FIGURE 182. Water stains and plaster ceiling damage around roof drain in office 2.



FIGURE 183. Roof drain from high roof above suspended plaster ceiling, as viewed from access hatch.

Fire Alarm, Fire Suppression, and Security Systems. Available information from the park contains a 1992 solicitation to update and replace the existing fire and intrusion alarm (security) systems. No other documentation was found that identified more recent upgrades to these systems; although, much newer control panels and equipment are in the visitor center.

The current fire alarm control panel and annunciator control pad are in office 1 on the north wall (Figure 184) and an ancillary panel is mounted on the wall behind the information desk. Hard-wired and wireless smoke and heat detectors are distributed throughout the building. New devices replaced older ones, but many of the outdated and non-functional detectors remain, in some places next to the new ones (Figure 185). Manual fire alarm pull stations are at the main east and west entries and next to the exit door in office 2 (Figure 186). Besides fire extinguishers, there is no integrated fire suppression (sprinkler) system (Figure 187). Most likely this is because the visitor center was originally designed and constructed to be non-combustible, as that was defined by the applicable building code in the early 1960s, and because the park was and is not connected to a municipal water system.



FIGURE 184. Fire alarm panel (red), annunciator control pad, and security system panel.



FIGURE 185. New smoke and fire sensor next to remnants of old sensor.



FIGURE 186. Manual pull station, lower right. Security system key pad, upper left.



FIGURE 187. Fire extinguisher in the breakroom.

The main panel for the current security alarm system is also in office 1 on the north wall just to the left of the fire alarm panel (refer to Figure 184). Wireless and hard-wired door contacts, glass-break detectors, and motion sensors communicate with the panel (Figure 188). The system can be armed and disarmed at key pads near exterior doors (refer to Figure 186). All four entrances are also monitored by video cameras (Figure 189 and Figure 190) that are connected to a control and digital recording station in the break room.



FIGURE 188. Illuminated exit sign at main entrances and wireless door sensors that are components of the security system.



FIGURE 189. Exterior video camera at east entrance.



FIGURE 190. Interior video camera at exit door in office 2.

Electrical and Mechanical Systems Condition Assessment

Mechanical System

- The two HVAC systems are relatively new and energy efficient. An air handler for the ten-ton, split system, heat pump located in the mechanical room is connected to ducts above the suspended ceiling (Figure 191).

- Condensate from the indoor equipment was trickling along the floor from under the unit to a floor drain. Typically, a condensate line carries liquid from the equipment to a drain (Figure 192).



FIGURE 191. Ten ton air handler.



FIGURE 192. Condensate on the floor seeping from under the air handler.

- The tornado that moved through the park in May 2017 damaged both HVAC systems. The ten-ton condensing unit was beyond repair after being displaced from its raised wooden

platform on the southwest side of the visitor center. Currently, a new ten-ton unit is mounted on a higher wooden platform to position it above flood level. Even though the electrical disconnect was also raised higher above grade, it may still be susceptible to future flooding in this low-lying area of the site (Figure 193).



FIGURE 193. The new support for the ten-ton condensing unit is much higher than the previous structure, but the electrical disconnect for the unit remains close to the ground. (Source: Fort Pulaski National Monument)

- A highly efficient, ductless, variable refrigerant flow (VRF) system was installed for the administration spaces on the south side of the building. It is also less than two years old and appeared to be working properly at the time of the site visit for this report (Figure 194). Since that time, the VRF units were damaged by Hurricane Irma and a tornado in 2017 and were inoperable. These units were replaced with new ones in July 2018.

- Some ducts and supply registers were abandoned when the VRF system was put in. A ceiling mounted register in office 1 was hanging from the ceiling attached only to an insulated duct (Figure 195).

- Inside the visitor center, ducts and supply registers damaged during the tornado and storm were repaired in 2017 in conjunction with the ceiling repairs.



FIGURE 194. Wall-mounted indoor VRF fan unit.



FIGURE 195. Abandoned HVAC supply register no longer secured to plaster ceiling.

Fire Alarm, Fire Suppression, and Security Systems

The security, fire and smoke detection and alarm systems were recently upgraded and appeared to be operating properly. There were no reports of problems from the park staff. The damage caused by the tornado is not fully known. Consequently, replacement of detectors and other repairs to the system will of course affect the condition.

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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, the National Park Service's National Register of Historic Places 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.[113]

The significance evaluation identifies the important historical associations of the property, and comments on its architectural, archeological, and social value as they relate to the National Register of Historic Places. 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 of Historic Places, it must possess significance under one of four criteria. The Criteria for Evaluation for listing in the National Register of Historic Places 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 fifty years are not 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

113. National Park Service, "National Register of Historic Places," accessed March 29, 2019, https://www.nps.gov/subjects/nationalregister/index.htm.

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, 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.[114]

National Register Significance Evaluation

Fort Pulaski National Monument was administratively listed in the National Register of Historic Places on October 15, 1966, under the National Historic Preservation Act. Documentation of Fort Pulaski National Monument was added to the National Register of Historic Places on December 9, 1975. The property is described as a historic district and is noted as significant in the areas of Architecture, Engineering, and Military history.[115]

The National Register nomination for Fort Pulaski National Monument does not mention the visitor center, which was constructed only a decade before the nomination was written.

Research conducted for this study indicates that the visitor center is significant under National Register Criterion A, for its association with the Mission 66 program and the development of the National Park System. The visitor center is also significant under Criterion C for embodying the characteristics of the Park Service Modern architectural style.

The ten-year initiative of Mission 66 transformed the American National Park System by facilitating new construction of visitor centers, administrative buildings, and support facilities at more than 100 national parks. The program focused on planning measures to provide an improved visitor experience while protecting the parks' natural resources, and on cost-effective construction using modern materials and the modern architectural style. The goal of Mission 66 was to reinvigorate the National Park System, defining the parks as desirable travel destinations in the changing social and economic climate of postwar America.

The visitor center building type was developed by the National Park Service in the mid-1950s as a successor to park museums, administration buildings, and comfort stations. In the new visitor centers, these functions were consolidated into a single building.

In addition to the development of visitor centers as a new building type, National Park Service architects also began to site new buildings in less important areas of park landscapes, rather than directly within a significant portion of a site. In general, National Park Service architect John Cabot thought that visitor centers should be placed at one of three locations: at park entrances, along a major road within the park, or at a major destination within the park. The locations of visitor centers constructed during Mission 66 were carefully selected with significant input from interpretation leaders.[116]

114. *Code of Federal Regulations*, Title 36, Part 60, "The National Register Criteria for Evaluation."

115. Edward L. Trout, *National Register of Historic Places Inventory – Nomination Form: Fort Pulaski National Monument. Fort Pulaski, Georgia*, December 1974 (placed 1975).

116. Allaback, n.p.; Ethan Carr, Elaine Jackson-Retondo, and Len Warner, *National Register*

The new visitor centers constructed during the Mission 66 program were largely designed in the Park Service Modern style, which reflected the shift of architectural styles seen throughout the country. While the idea of constructing modernist buildings in the national parks was not seen as radical within the context of modernist structures being built across the nation at the time, it did prove to be controversial. Some environmentalists, as well as former National Park Service Director Newton Drury, considered modern architecture to be inappropriate for a natural setting. The use of modernist design in national parks, however, proved to be very appropriate to meeting the needs of new parks facilities. Building technologies developed during and immediately following World War II made construction faster and more economical, especially as compared to the costly, labor-intensive efforts needed to construct the rustic structures built in parks in the 1920s and 1930s.

The visitor center at Fort Pulaski is characteristic of the visitor centers constructed during the Mission 66 program. The building is sited near the historic fort, at the end of the main road into the park, one of the preferred locations for a visitor center as outlined by National Park Service architect John Cabot. Additionally, the visitor center was designed in the Park Service Modern style. Its design was clearly influenced by the MIT chapel designed by Eero Saarinen. A survey performed by the National Park Service, Southeast Regional Office in 2010 notes that the modern design of the visitor center includes a flat roof and low profile, which lessens the visual impact of the building on the historic fort nearby.[117]

The Multiple Property Documentation Form for National Park Service Mission 66 resources notes that to be considered eligible for listing in the National Register of Historic Places, fifty-year-old Mission 66 visitor centers should possess the following characteristics:

1. The Visitor Center should be one of the important precedents of the Mission 66 program (1945–1956), be one of the Visitor Centers originally planned and built as part of the Mission 66 program (1956–1966), or as part of the Parkscape program (1966–1972). The property's period of significance should fall within the years 1945–1972.

2. The Visitor Center should retain most or all of the physical characteristics described in the description of the property type (above). The Visitor Center should be a centralized facility that includes multiple visitor and administrative functions within a single architectural floor plan or compound. Programming elements should include interpretive displays, space for slide shows and films, visitor contact, restrooms, and other services. The Visitor Center should be intended to serve the public by interpreting scenery, natural resources, and cultural sites, and should be a major point of visitor arrival, orientation, and service.

3. The Visitor Center should possess physical integrity to the period of significance. The NRHP requires that the integrity of a property be evident through historic qualities including location, design, setting, materials, workmanship, feeling, and association.

4. The Visitor Center should embody distinctive characteristics of a type, period, or method of construction that represent high artistic values. Specifically, the Visitor Center should be a successful reflection of the principles of "Park Service Modern" style.[118]

To confirm the National Register eligibility of the visitor center, the National Park Service issued a Determination of Eligibility (DOE) for the visitor center and a request for concurrence by the Georgia Department of Natural Resources Historic Preservation Division (State Historic

Nomination: National Park Service Mission 66 Resources: The Mission 66 Era of National Park Development, 1945–1972, certified by the National Register of Historic Places, August 13, 2015, Section E, 14.

117. Buckley, "Visitor Center Survey Form," np.

118. Carr et al., Section F, 65–66.

Preservation Office) in November 2018.[119] The DOE concludes, "The Fort Pulaski Visitor Center is eligible for the National Register of Historic Places under Criteria A and C as part of the Mission 66 program and as a quintessential example of the Park Service Modern style." The DOE also notes that visitor Center retains the integrity to convey its historic associations.[120]

In a letter dated December 4, 2018, the Historic Preservation Division concurred that the Fort Pulaski National Monument Visitor Center is eligible for listing in the National Register of Historic Places under Criteria A and C for its relationship to the Mission 66 program and its Park Service Modern style.[121]

A copy of the DOE and the concurrence letter are provided for reference in Appendix F.

Period of Significance

The Fort Pulaski Visitor Center is considered significant for its association with the Mission 66 program and its design in the Park Service Modern style. Therefore, the period of significance is focused on the initial construction, which occurred from 1962 to 1964. Within this period, architectural plans were created and the building was constructed and opened to the public. The visitor center was not formally dedicated until May 1, 1965.

The recommended period of significance for the visitor center is therefore 1964, the year of completion of construction.

The National Register nomination completed in 1975 for the historic district identifies periods of significance of 1829–1847, 1861–1872, and briefly during the 1890s.[122] The more recently completed Cultural Landscape Report for Fort Pulaski National Monument Cockspur Island Historic District identifies a period of significance of 1829–1895, spanning the period from the initial construction of Fort Pulaski to completion of the southeast magazine at the demilune.[123] The visitor center is not associated with these periods of significance, which are associated with the military use of Fort Pulaski.

Character-Defining Features

The historic nature of significant buildings and structures is defined by their character, which is embodied in their identifying physical features. Character-defining features can include the shape of a building; its materials, craftsmanship, interior spaces, and features; and the different components of its surroundings.[124]

The following list identifies existing character-defining features on the exterior and interior of the Fort Pulaski National Monument Visitor Center:

- General configuration, plan, and orientation
- Brick veneer, including color, texture, and style of brick placement
- Brick arches at lower part of wall

119. Melissa Memory, Superintendent, Fort Pulaski National Monument, to Dr. David Crass, Division Director and Deputy State Historic Preservation Officer, Historic Preservation Division, Georgia Department of Natural Resources, letter with attachments, November 9, 2018.
120. Ibid.
121. Jennifer Dixon, Program Manager, Environmental Review & Preservation Planning, Historic Preservation Division, Georgia Department of Natural Resources, to Melissa Memory, Superintendent, Fort Pulaski National Monument, re: Fort Pulaski National Monument: Historic Structure Report, Visitor Center, Savannah, Chatham County, Georgia, HP-181113-001, December 4, 2018.
122. Trout, *National Register Nomination Form,* np.
123. Susan Hitchcock, *Fort Pulaski National Monument Cockspur Island Historic District Cultural Landscape Report*. (Atlanta, Georgia: National Park Service, 2011).
124. Lee H. Nelson, FAIA, *Preservation Brief 17: Architectural Character: Identifying the Visual Aspects of Historic Buildings as an Aid to Preserving Their Character* (Washington, DC: National Park Service, Technical Preservation Services, 1988).

- Stairs and landings (configuration and remaining original materials)
- Original large, sliding windows on south elevation, and extant original window screens
- Exterior louvers over windows
- Interior layout of spaces (original open plan and curved walls)
- Terrazzo flooring
- Original finishes, including acoustical plaster ceilings; stained wood doors, frames, and transoms; and cypress tongue and groove wall paneling (if present; existing paneling is currently painted and wood species could not be confirmed visually)

Assessment of Integrity

Assessment of integrity is based on an evaluation of the existence and condition of the physical features which date to a property's period of significance, taking into consideration the degree to which the individual qualities of integrity are present. The seven aspects of integrity as defined in the National Register Criteria for Evaluation are location, design, setting, materials, workmanship, feeling, and association. As noted in the National Register Bulletin, *How to Apply the National Register Criteria for Evaluation*:

> 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.[125]

The property must retain the essential physical features that enable it to convey its historical significance. The essential physical features are those features that define both why a property is significant (National Register criteria) and when it was significant (period of significance). The National Register Bulletin, *How to Apply the National Register Criteria for Evaluation*, defines integrity as "the ability of a property to convey its significance."[126]

The visitor center survives with sufficient integrity to convey its historic associations. A survey of the structure performed by the National Park Service, Southeast Regional Office in 2010 noted that although changes have been made to the building—including, most significantly, the creation of an auditorium in what had once been a part of the visitor center lobby—the exterior appearance and interior character remain intact, and that the building is still identifiable as a Mission 66 style visitor center.[127]

Integrity of Location. The visitor center retains integrity of location. The location of the visitor center has remained unchanged since construction in 1964.

Integrity of Design. The visitor center retains integrity of design. Although alterations to the stairs, entrances, and interior have somewhat altered the appearance of the structure, the original design remains largely recognizable and intact.

Integrity of Setting. The visitor center retains integrity of setting. The relationship of the visitor center to the fort and its surrounding landscape remains largely intact to the period of construction of the visitor center. The addition of the comfort station nearby, and alterations to plantings since

125. National Register Bulletin, *How to Apply the National Register Criteria for Evaluation*, 44–45.
126. Ibid.
127. Ibid.

construction, have slightly diminished integrity of setting.

Integrity of Materials and Workmanship. The visitor center retains integrity of materials and workmanship. The original exterior brickwork, which is the primary character-defining material, remains intact. Modifications to the stairs and entrances, and to interior spaces and finishes, have somewhat diminished integrity of materials and workmanship.

Integrity of Feeling. The visitor center retains integrity of feeling. The visitor center retains its historic character and continues to serve its original function and role within Fort Pulaski National Monument.

Integrity of Association. The visitor center retains integrity of association. The building was constructed to support visitation to Fort Pulaski National Monument and retains this function, as well as visual connections with the monument. In addition, the visitor center continues to embody the characteristics of the Mission 66 planning and of Park Service Modern architectural design.

Treatment and Use

Requirements for Treatment and Use

The visitor center is not mentioned in the National Register nomination for Fort Pulaski National Monument, likely because the building was only constructed shortly before the nomination was written. As discussed in the significance evaluation provided as part of this Historic Structure Report, research conducted for this study indicates that the visitor center is significant under National Register Criterion A, for its association with the Mission 66 program and the development of the national park system, and under Criterion C, for embodying the characteristics of the Park Service Modern architectural style.

To confirm the National Register eligibility of the visitor center, the National Park Service issued a Determination of Eligibility (DOE) for the visitor center and a request for concurrence by the Georgia Department of Natural Resources Historic Preservation Division (State Historic Preservation Office) in November 2018.[128] In a letter dated December 4, 2018, the Historic Preservation Division concurred that the Fort Pulaski National Monument Visitor Center is eligible for listing in the National Register of Historic Places under Criteria A and C for its relationship to the Mission 66 program and its Park Service Modern style.[129]

The visitor center should therefore be treated as a cultural resource, pending determination of its eligibility for nomination to the National Register of Historic Places. As a cultural resource, treatment measures implemented at the visitor center should be considered within the context of the legal mandates and policy directives established by National Park Service Cultural Resources Management Guideline (Director's Order 28) for the protection of cultural resources. The visitor center should be understood for its association with the Mission 66 program and as an example of Park Service Modern architecture.

Laws, Regulations, and Functional Requirements

Key laws, regulations, and functional requirements that apply to the recommended work include the following:

- National Park Service Cultural Resources Management Guideline (Director's Order 28), which requires planning for the protection of cultural resources on park property.
- Section 106 of the National Historic Preservation Act (NHPA), which mandates

128. Melissa Memory, Superintendent, Fort Pulaski National Monument, to Dr. David Crass, Division Director and Deputy State Historic Preservation Officer, Historic Preservation Division, Georgia Department of Natural Resources, letter with attachments, November 9, 2018.

129. Jennifer Dixon, Program Manager, Environmental Review & Preservation Planning, Historic Preservation Division, Georgia Department of Natural Resources, to Melissa Memory, Superintendent, Fort Pulaski National Monument, re: Fort Pulaski National Monument: Historic Structure Report, Visitor Center, Savannah, Chatham County, Georgia, HP-181113-001, December 4, 2018.

that federal agencies, including the National Park Service, take into account the effects of their actions on properties listed or eligible for listing in the National Register of Historic Places and give the Advisory Council on Historic Preservation a reasonable opportunity to comment.

Treatment of the building and site are also to be guided by the following:

- *Secretary of Interior's Standards for the Treatment of Historic Properties*
- National Park Service Management Policies 2006
- Architectural Barriers Act Accessibility Standards (ABAAS)
- International Building Code (IBC), 2018
- International Existing Building Code (IEBC), 2018
- International Plumbing Code (IPC)
- National Electrical Safety Code (NESC)
- National Fire Protection Association (NFPA) 101: Life Safety Code (LSC), 2015 and NFPA 1 Uniform Fire Code
- NPS Guiding Principles of Sustainable Design

The State of Georgia has adopted the 2012 IBC with Georgia State Amendments (2018) for statewide applicability. The State of Georgia has also permitted local jurisdictions the option of adopting the 2012 IEBC with Georgia State Amendments (2015); however, Chatham County has not adopted this code. The National Park Service is self-regulating in terms of enacting and enforcing building code standards. Fort Pulaski National Monument is therefore not legally subject to local or state building code requirements. When undertaking repairs to buildings and structures, the National Park Service endeavors to have the work comply with model building code standards. At this time, the 2018 International Building Code is the model building code used by the National Park Service for design and construction. The NPS Denver Service Center also references the 2018 IEBC, with appendices and Resource A.

With historic structures, attempts to achieve strict conformance with model building code standards that are intended for new buildings can lead to destruction of the historic fabric. Alternative compliance procedures, such as Chapter 12 of the IEBC relating to historic buildings, should be referenced in determining code compliance. For the visitor center, alternatives to full prescriptive legislative and code compliance should be considered where such compliance would compromise the integrity of the structure.

The 2018 IEBC includes the following statements in Section 507, Historic Buildings:

> 507.1 Historic buildings. The provisions of this code that require improvements relative to a building's existing condition or, in the case of repairs, that require improvements relative to a building's predamage condition, shall not be mandatory for historic buildings unless specifically required by this section.
>
> 507.2 Life safety hazards. The provisions of this code shall apply to historic buildings judged by the building official to constitute a distinct life safety hazard.
>
> 507.3 Flood hazard areas. Within flood hazard areas established in accordance with Section 1612.3 of the International Building Code, or Section R322 of the International Residential Code, as applicable, where the work proposed constitutes substantial improvement, the building shall be brought into compliance with Section 1612 of the International Building Code, or Section R322 of the International Residential Code, as applicable:
>
> Exception: Historic buildings meeting any of the following criteria need not be brought into compliance:
>
> 1. Listed or preliminarily determined to be eligible for listing in the National Register of Historic Places.

2. Determined by the Secretary of the U.S. Department of Interior as **contributing** to the historical significance of a registered historic district or a district preliminarily determined to qualify as an historic district.

3. Designated as historic under a state or local historic preservation program that is approved by the Department of Interior.

507.4 Structural. Historic buildings shall comply with the applicable structural provisions in this chapter.

Exceptions:

1. The *code official* shall be authorized to accept existing floors and existing live loads and to approve operational controls that limit the live load on any floor.

2. Repair of *substantial structural damage* is not required to comply with Sections 405.2.3, and 405.2.4. Substantial *structural damage* shall be repaired in accordance with Section 405.2.1.[130]

The IEBC exceptions noted above pertain to Fort Pulaski National Monument, including the visitor center, as a property listed in the National Register.

In addition, Executive Order 13693 issued in 2015 directs all federal agencies to implement sustainable design and construction practices, including reducing agency building energy intensity by 2.5 percent annually through the end of fiscal year 2025, relative to the baseline of the agency's building energy use in fiscal year 2015, and reducing agency potable water consumption intensity by 36 percent by fiscal year 2025 through reductions of 2 percent annually through fiscal year 2025, relative to a baseline of the agency's water consumption in fiscal year 2007.[131]

Also, newly installed electrical systems and components, including any significant alterations to existing electrical systems, should comply with applicable provisions of the NFPA 70: National Electrical Code (NEC).

Alternatives for Treatment and Use

The National Park Service has developed definitions for the four major treatments that may be applied to historic structures: preservation, rehabilitation, restoration, and reconstruction. The four definitions are 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. 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. However, new exterior additions are not within the scope of this treatment. The Standards for Preservation require retention of the greatest amount of historic fabric along with the building's historic form.
>
> 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. The Rehabilitation Standards acknowledge the need to alter or add to a historic building to meet continuing or new uses while retaining the building's historic character.

130. International Code Council, Inc., *International Existing Building Code 2018* (Country Club Hills, Illinois: International Code Council, 2017).

131. "Executive Order 13693: Planning for Federal Sustainability in the Next Decade," signed March 19, 2015.

> 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. The Restoration Standards allow for the depiction of a building at a particular time in its history by preserving materials, features, finishes, and spaces from its period of significance and removing those from other periods.
>
> 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. The Reconstruction Standards establish a limited framework for recreating a vanished or non-surviving building with new materials, primarily for interpretive purposes.[132]

Of the four treatment approaches, *rehabilitation*, which involves making possible a compatible use through repair, alterations, or additions, is most appropriate for the visitor center building. This treatment would protect the historic character of the building while allowing for modifications (especially on the interior, which has already been altered) to meet the needs of contemporary park visitation, interpretation, and National Park Service management. The treatment *rehabilitation* is also appropriate for the landscape associated with the Mission 66 Visitor Center, given its historic significance both as part of Mission 66 design and planning. The landscape illustrates the National Park Service response to its mission to provide interpretation and visitor access.

Future use of the visitor center is anticipated to be similar to its current function.

Ultimate Treatment and Use

Guidelines for Treatment

The guidelines and requirements for treatment included later in this chapter have been defined based on the preservation objectives and requirements for treatment and use outlined above for the Fort Pulaski Visitor Center. All treatment guidelines and recommendations were developed in accordance with the *Secretary of Interior's Standards for Preservation.* (The *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* were referenced in development of treatment guidelines and recommendations for landscape features addressed in this study.)

The Secretary of the Interior's Standards for Rehabilitation are as follows:

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

2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.

3. Each property will be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.

4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.

5. Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize a property will be preserved.

132. Grimmer.

6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.

7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and special relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Guidelines for implementing the treatment recommendations provided herein are as follows:

- Retain the character of the historic structure and environs by protecting the visitor center and significant site features and viewsheds.
- Ensure that proposed new elements or construction are compatible with the historic character of the structure and its site.
- Protect adjacent natural resources during construction activities.
- Document through detailed as-built drawings, photographs, and written narrative 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 records in NPS archives.
- Retain features and materials at 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 all future projects that respect the preservation principles listed above.
- Undertake all work on the structure and landscape in compliance with the *Secretary of the Interior's Standards for Rehabilitation*.

Prioritization of Treatment

Based on the condition assessment performed as part of this Historic Structure Report, the following prioritization is recommended for work on the visitor center.

The park recently completed work on the visitor center to repair the extensive damage caused by a series of storms that started with Hurricane Matthew in October 2016, followed by a tornado in May 2017, and then Hurricane Irma in September 2017. The repairs include removing and replacing some of the existing asbestos-containing finish ceilings; repairs to the roof, parapet, coping and flashing; replacement of damaged heating, ventilation and air conditioning system (HVAC) equipment and ducts; and repair of the aluminum entry doors and exterior railings and entry ramps. The visitor center reopened to park visitors in May 2018.

Portions of the asbestos-containing ceilings that became friable when they collapsed because of a pressure differential and wind-driven rain during the May 2017 tornado were removed and replaced with new gypsum board ceilings. Original asbestos-containing ceilings in the administrative spaces on the south side of the visitor center were

not damaged by the tornado and, consequently, were not abated along with the plaster ceilings in the rest of the building (refer to Figure 134). Abatement and replacement of all remaining asbestos-containing ceilings in the visitor center should remain a priority.

Also important is the rehabilitation of historic landscape and repair or replacement of signage and exterior interpretive exhibits because of recent storm damage. At this writing, landscaping has not been undertaken to address damage caused by the storms, other than installation of new historical markers to replace those damaged by the tornado, and installation of a new visitor center sign.

In preparation for the recommended repairs, research should be conducted to identify matching brick for use in future repairs to the exterior masonry. Trial repairs should be conducted to determine the most appropriate repair mixes for the terrazzo, and to confirm techniques for repairs.

In addition to the specific repairs recommended, cyclical maintenance tasks such as inspection, painting of exterior metal elements, preparation and resealing of joints, and other ongoing maintenance tasks must be continually implemented to avoid damage to the historic structure and to reduce the need for large-scale repair projects in the future.

All work performed on the building, the comfort station, and site features should be documented through notes, photographs, and measured drawings and/or sketches, or with as-built annotations to construction documents at project completion. These records should be placed in park archives as part of the permanent record of Fort Pulaski, and to provide information for future repairs and ongoing maintenance. The project work orders currently developed using the NPS Facility Management Software System can provide a basis for this documentation.

These records should be permanently archived at NPS or park archives as a part of the permanent record of the building and to provide information for future repairs and ongoing maintenance. In addition, these records will allow future observers to identify which materials are historic.

Recommendations

The following specific recommendations for treatment of the visitor center respond to the overarching treatment approach *rehabilitation*, which involves making possible a compatible use for the building through repair, alterations, and additions while preserving those portions or features that convey its historical, cultural, or architectural values. The overarching treatment approach *rehabilitation* is also recommended for the historic landscape resources associated with the visitor center.

Responses to Code Provisions and Safety Issues

No immediate actions are required in response to code provisions and safety issues.

The park recently completed removal and replacement of some asbestos-containing finish ceilings in the visitor center. The park should prioritize the abatement and replacement of any remaining asbestos-containing ceilings and other hazardous materials. Refer to the Hazardous Materials Survey Report in Appendix D.

Site and General Recommendations

1. Retain the visual connection between the visitor center and the adjacent landscape, as well as the fort.

2. Retain and maintain patterns of spatial organization that include the circulation routes that provide access to the visitor center.

3. Avoid constructing new features that interfere with views to and from the visitor center.

4. Protect the setting of the visitor center from changes that will affect its historic integrity.

5. Retain and maintain the character-defining qualities and characteristics of the visitor

center, while applying contemporary effective preservation methods to stabilize and preserve historic features and materials in good condition.

6. Consider altering non-original features and modifications to be more sympathetic and less intrusive to the original appearance of the visitor center.

7. Avoid adding new features or altering existing non-historic features in ways that adversely affect the visitor center's historic character and historic materials.

8. Consider sustainability in the choice of materials and energy use.

9. Consider interpreting the visitor center to tell the story of Mission 66 and Park Service Modern architecture.

10. Document all work performed on the visitor center with notes, photographs, and measured drawings and/or sketches, or with as-built annotations to construction documents at project completion. The development of comprehensive organized documentation of all work performed on the building and its landscape is essential to the preservation and maintenance of the historic resources. Records of future research, condition assessments, investigations, and treatment should be permanently archived at the park and copies provided to other relevant NPS archives.

Visitor Center Exterior and Structural Systems

Brick and Concrete Masonry

As a result of the conditions observed during this study, replacement of the lower shelf angle and repair of the upper shelf angle in the exterior brick masonry walls are recommended. The portions of the lower shelf angle exposed in the inspection openings, and the toe of the angle visible throughout the facade, were observed to be severely corroded to an extent that repair of these angles is impractical.

Based on the portions of the shelf angles exposed in the inspection openings, and the condition of the toe of the angle throughout the facade, the areas of severe corrosion on the upper shelf angle appear to be more isolated and less extensive than those observed on the lower shelf angle. As a result, repairs (rather than replacement) should be considered for the upper shelf angle, except where localized severe corrosion is present.

The conditions of the upper shelf angle on the main area of the building appear to be better than the upper shelf angle where it is exposed on the south wall, based on the observations made during site work for this study. Therefore, consideration could be given to deferring the repair work on the upper shelf angle on the main building until a later date, if required for budgetary or other reasons.

The following specific measures are recommended to address the conditions described above:

- Remove and replace severely corroded and deteriorated shelf angles including those at the upper shelf angle adjacent to the west entrance ramp and the lower shelf angle that wraps around the building, immediately above the arched openings. Replacement will require temporary removal of three or four courses of brick above the existing lower shelf angle, temporary shoring of the remaining brick, removal of the shelf angle, and installation of a new angle. In addition, new flashings should be installed. Selection of material and detailing of the flashing (e.g., stainless steel flashing with a drip edge) needs to take into consideration the level of protection afforded as well as the visual effect of the detail as constructed.

  Consideration should be given to using stainless steel for the new shelf angle and anchor bolts. If stainless steel is not used, a high performance coating should be applied to the new angles. Although the brick below the shelf angle abuts the underside of the angle, WJE does not recommend cutting a new horizontal expansion joint. Based on the age of the building, the majority of the permanent moisture expansion of the brick veneer has already occurred. Although temperature

related expansion and contraction will continue to occur, the risk of damaging brick while attempting to cut a new joint is more significant than the risk of further expansion-related problems. The brick veneer should be periodically monitored for crushing, cracking, or displacement of the veneer below the angle for the remainder of the life of the building. If these conditions occur, the need for a horizontal expansion joint should be reevaluated.

- Repair shelf angles that have surface corrosion but retain sufficient cross-sectional area, including most of the existing upper shelf angles that wrap the top of the building. These repairs will require temporary removal of three or four courses of brick above the shelf angle, which will expose the angle and enable implementation of appropriate repairs. Repairs may include removal of severely corroded portions of the angle and installation of new, short angle segments, removal of the severely corroded horizontal leg sections and welding of new steel plates on the existing angle, or a combination of the two. In addition, the existing anchor bolts can be examined during this process and new bolts installed where needed. The existing and repaired shelf angle segments should be coated with a high performance coating to provide protection for the steel. Installation of new flashings should also be considered. Consideration may be given to phasing the work with preference to the upper and lower shelf angles at the south wall where more extensive distress conditions were observed.

- Remove the existing reinforced cementitious coping at the outer roof and install a new sheet metal coping. Terminate the edge of the coping one inch from the edge of roof, set in sealant, and seal the edge of the flashing so that the sheet metal is not visible from grade. Rebuild upper three courses of masonry where displaced.

- In support of future brick repairs and replacements, identify appropriate replacement brick that matches the existing in color, texture, and profile.

- Repoint localized open and deteriorated mortar joints in areas of brick and CMU. Repointing mortar should match existing mortar in color, composition, and configuration.

- Rebuild cracked and displaced masonry at the corners adjacent to the east and west entrance porches. Replace cracked brick units.

- Replace cracked, missing, and spalled brick units in the field of the wall with new brick units to match existing color, texture, and profile.

- Install sealant at joints between the metal sun shade anchors and brick. Remove loose, cracked, or deteriorated brick adjacent to the sun shade anchors and replace with new brick to match existing color, texture, and profile.

Terrazzo

- Monitor cracks in the terrazzo flooring that are 1/32 inch or wider. If cracks are found to be stable, repair using a cementitious crack fill material. If cracks are not stable, remove unsound material, saw cut square to remove unsound material, and patch with new terrazzo to match existing. Hairline cracks do not require repair.

- In support of developing appropriate terrazzo repairs and for documentation purposes, conduct laboratory petrographic studies and material studies of the existing historic terrazzo. Perform terrazzo repairs mock-ups to assist in developing an appropriate mix design and repair protocol.

- Remove unsound material and repair the existing terrazzo curb at the east entrance porch with new terrazzo to match existing. Consideration should be given to removing the non-original curbs when handrails are removed for repair in the future.

Stucco

- Rout out cracks in the exterior stucco at overhanging eaves and fill with paintable sealant. First verify that the stucco does not contain asbestos before routing out cracks and performing repairs that could disturb the stucco. (Refer to Appendix D: Hazardous Materials Survey Report.)

Windows and Doors

- Inspect and repair original aluminum-framed windows, including replacement of perimeter sealant and assessment of window hardware to verify that it is operational.

- As part of future window restoration or replacement, consideration should be given to removing the rowlock course brick at window sills, installing a membrane flashing with end dams, and reinstalling the brick sill units.

Metals

- Repair bent and damaged handrail spindles on the east side of the visitor center. At locations of severe damage, the spindles may need to be replaced in kind. Reset displaced handrails and secure with new anchors.

- Future consideration should be given to replacing the non-original round handrails at the west elevation with a square spindle handrail to more closely match the original.

- Remove and replace corroded anchors with new anchors of metal compatible with the substrate.

Roofing

- Inspect the roof system as part of cyclical maintenance activities. Identify open joints and seams that require repair.

- Consideration should be given to removing the existing termination bar and anchorage at the interior circle portion of the building and creating a new roof termination that is not damaging to the brick and is less intrusive to the appearance of the building. This would involve cutting back the roof membrane, installing a new termination bar on the inside face of the parapet, and sealing the top edge of the termination bar with sealant.

Other Elements

- The exterior of the brick and aluminum sun shades should be cleaned to remove general soiling and organic growth. Cleaning products should be selected based on field trials, with preference given to the gentlest means of cleaning that is effective in removing the deleterious materials. No cleaning products containing strong acids (e.g., hydrofluoric or hydrochloric acid) should be used at any time, as such acids are harmful, and can cause damage and staining of the masonry and metal.

- As part of annual ongoing maintenance, roof drains and storm drains should be cleared of any debris and assessed to verify they are not blocked. In addition, insect infestations such as mud dauber nests should be identified and removed.

Visitor Center Interior

- Interior asbestos-containing materials (ACMs), such as ceiling plaster, should be scheduled for abatement as soon as funding permits. These materials should not be disturbed or repaired before they are properly removed from the building.

- Water stains and discoloration of ceilings should be addressed when all the existing asbestos-containing plaster is removed and replaced with gypsum board. Where original plaster ceilings remain in administrative spaces, replacement should be considered as soon as possible. First verify that roof repairs are complete and there are no leaks.

- New ceilings should have a textured surface the mimics the original texture of the plaster.

- When adding new walls, the original design concept of the visitor center and the design precepts of the Mission 66 program should be

followed as closely as possible. For example, new interior walls should be constructed as an arc of a circle concentric with the cylindrical form of the exhibits space or as a straight wall along a radius line originating at the center of the circular exhibits space. Constructing new walls or replacing existing ones according to this recommendation will preserve the clarity and integrity of the original Park Service Modern design of the visitor center.

- The terrazzo flooring is a character-defining feature of the visitor center. Regular periodic maintenance of this durable material is all that is necessary to keep it in good condition. For improved appearance, consider patching spots that experienced spalling from exhibit and wall anchors placed in the terrazzo. Hairline cracks do not require repair.

- In support of developing appropriate terrazzo repairs and for documentation purposes, conduct laboratory petrographic studies and material studies of the existing historic terrazzo. Perform terrazzo repair mock-ups to assist in developing an appropriate mix design and repair protocol (also refer to exterior terrazzo above).

- As part of future window restoration or replacement, remove contemporary, painted wood trim and restore the original stained wood trim where it still exists. Also consider replicating original wood trim around windows where it is missing.

- When adding new doors or replacing non-original doors, consider installing stained, solid-core, flush wood doors that match the original doors, like the ones at the mechanical room and the janitor's closet. Hang doors in stained wooden frames that also replicate the original door frames. Details of the door frames are in the original construction documents in Appendix A.

- Schedule the replacement of existing knob-type door hardware with lever-type hardware that complies with the requirements of the Architectural Barriers Act Accessibility Standards (ABAAS). Select lever-type hardware that has clean lines and would fit with the mid-twentieth century Park Service Modern design of the visitor center.

- Plan for future changes to the building that will accommodate new interpretive exhibits and programs. Changes or additions to the visitor center should strive to preserve its historic integrity, the clarity of its original Park Service Modern and Mission 66 design concept, and its character-defining features.

Visitor Center Mechanical, Electrical, and Plumbing Systems

- Since 2016, the primary 10-ton HVAC system has been damaged by two hurricanes and a tornado. With environmental changes, additional severe weather events are likely. HVAC equipment and components should be designed and installed to withstand heavy rain, flooding and wind; although, surviving a major hurricane or a tornado is likely unrealistic.

- Plan to protect the main underground electrical service to the visitor center and underground electrical service to the outdoor HVAC equipment from inundation because of rising sea levels that will exacerbate flooding.

- Raise HVAC equipment and electrical disconnects above anticipated future flood levels.

- Plan for the eventual replacement of existing light fixtures with energy efficient LED fixtures.

- Plan to update the fire alarm and security systems as new, advanced wireless technology becomes available and budgets permit.

- Regular periodic maintenance should be the fundamental priority for maintaining the plumbing system and the few plumbing fixtures in the building.

Resilience to Natural Hazards

Located near the Atlantic coastline, on low-lying terrain, the Fort Pulaski National Monument including the visitor center is vulnerable to current and future threats associated with climate change. As noted in a 2016 study by the Environmental Protection Agency: "Since 1958, the amount of precipitation during heavy rainstorms has increased by 27 percent in the Southeast, and the trend toward increasingly heavy rainstorms is likely to continue."[133] Although the ocean rises and falls at different rates at different locations, making some coastal regions more vulnerable to flooding than others, in general a 1 inch rise in sea level translates to 100 inches of shoreline retreat.[134] Flooding from more frequent severe storms and rising sea levels, together with sinking of wetlands and loss of sediment due to development, contribute to erosion and have significant negative impacts on the natural environment. In addition to the effect on the natural environment and landscape of historic sites, severe storms and flooding threaten cultural resources such as Fort Pulaski National Monument. Storms have affected the site throughout its history, and most recently damage and flooding have occurred in the park following severe storms in early 2016, Hurricane Matthew in October 2016, a tornado in May 2017, and Hurricane Irma in September 2017.

Hurricane Matthew moved up the coast of the southeastern United States, making landfall in South Carolina on October 8, 2016. The hurricane caused extensive flooding and damage from Florida to the Carolinas. The storm surge and concurrent high tide led to a record tide level and a storm surge of nearly 8 feet at Fort Pulaski. Wind speeds neared 100 miles per hour and at least 300 trees were downed across Cockspur Island. At Fort Pulaski, in addition to lost trees and flooding of the landscape, damage included displacement of one of the fort's moat bridges and several wooden floors, and flooding of interior spaces with mud and debris. In response to the storm and resultant damage and flooding, Fort Pulaski National Monument was closed to the public while the National Park Service conducted extensive repair and clean-up efforts. The park reopened to the public in early November 2016.

On the evening of Tuesday, May 23, 2017, a tornado touched down near the entrance of the park.[135] The tornado proceeded in an east–northeast direction over the park, causing extensive damage to the landscape as well as damage to the visitor center, the comfort station, and the fort. At the visitor center, localized damage occurred to the roof from tree limbs. The visitor center interior ceiling was displaced by wind force, as wind pressure caused the suspended ceiling to detach from the hanger rods. The interior lighting, security cameras, fire detection system, heating, ventilating and air conditioning equipment and ductwork also required repairs related to the ceiling damage. As the ceiling finish material contains asbestos, the visitor center was closed after the tornado until repairs could be completed. A temporary visitor center was set up in one of the fort casemates.

Other damage from the tornado to the visitor center included damage to the railing at the accessibility ramp at the west entrance. A ten-ton heat pump was displaced from its platform. Minor damage was sustained to the exterior brick wall and the exterior sun control louvers.[136]

The roof and roof structure of the nearby comfort station were severely damaged by the storm. The park landscape sustained significant damage, with loss of multiple trees and vegetative debris falls. Various park signs were also damaged or destroyed by the tornado.

133. *What Climate Change Means for Georgia*, U. S. Environmental Protection Agency, EPA 430-F-16-012 (August 2016).
134. "Rising Tide: Will Climate Change Drown Coastal Wetlands?" *Coastal Heritage* 21, no. 3 (Winter 2007), 3–6.
135. The tornado was classified as EF2 on the Enhanced Fujita Scale. EF2 tornados have wind speeds between 111 to 135 mph (178 to 217 km/h).
136. National Park Service, Fort Pulaski National *Monument: Tornado Damage Assessment Summary,* May 24–28, 2017.

In early September 2017, Hurricane Irma, one of the strongest storms in recorded history, moved through the Caribbean, across the Florida Keys, and up the west coast of Florida, making landfall at several locations. The vast size and enormous strength of the storm resulted in storm surges along both coasts of Florida and northward along the coasts of Georgia and South Carolina. At Fort Pulaski, although damage to the park was not as significant as from Hurricane Matthew in 2016, effects of Hurricane Irma included flooding of the site, damaged and fallen trees, and damage to sheet metal roofing at the fort veranda. Both wood bridges over the Fort Pulaski moat were washed away, and the park headquarters was flooded.

At Cockspur Island, Hurricane Irma caused a 12.4-foot tide, which overtopped the 12-foot-tall dike system surrounding the fort. Site flooding does not immediately abate because the floodwater can only drain from an area through small culverts. In addition, the saltwater from this hurricane and previous storms have caused vegetation to die off, as especially evident from the park entrance road.

The visitor center was not significantly impacted by Hurricane Irma. The park closed as the hurricane approached and park personnel prepared for the weather; and the park remained closed while clean-up and repairs were conducted, reopening in early October 2017.

Each severe weather event was followed by assessment of damage by NPS personnel and incident teams, and intensive recovery work to repair damaged built resources, conduct site clean-up, remove downed trees and branches, and efforts to address flooding of the site and structures, and the increasing periods during which standing water remains on site following a storm event (Figure 196). Even after the park reopened following Hurricane Irma, potable water was not available, and some amenities such as comfort stations and hiking trails remained unusable due to flooding and other storm-related damage. Standing water has remained present in some areas of the park since Hurricane Irma in September 2017.

Increasingly frequent strong storms and heavy rainfall have been noted for several years in the southeastern United States. A study entitled, *Climate Change Impacts to Natural Resources in South Carolina*, by the South Carolina Department of Natural Resources and published in 2013 noted: "A predicted result of climate change is the increase in intense storm events causing greater water inputs in shorter periods of time, affecting flood frequency and duration."[137] Coastal Georgia is similarly affected; studies indicate, for example, that sea levels have risen by 8 inches at Fort Pulaski since 1935.[138]

137. Bob Perry, compiler and editor, *Climate Change Impacts to Natural Resources in South Carolina* (Columbia: South Carolina Department of Natural Resources, 2013), 16, http:www.dnr.sc.gov, accessed December 14, 2015.
138. University of Georgia, Georgia Sea Grant, "Sea Level Rise in Georgia," http://georgiaseagrant.uga.edu/article/sea_level_rise_in_georgia/, accessed 2016.



FIGURE 196. Aerial view of Fort Pulaski after Hurricane Irma, showing the dike system holding in floodwater. (Source: Fort Pulaski National Monument)

Because loss of historic resource integrity may occur as a result of the impacts of severe storms associated with climate change, documentation and analysis of change over time using data collection are anticipated to be an important part of the response to mitigating anticipated loss or diminishment. Data collected through documentation can also be used to plan for the impacts associated with climate change. This Historic Structure Report, including the historical narrative, condition assessment, and recommendations, together with photographs and measured drawings, is an example of the type of documentation that is relevant to this purpose. As part of future efforts to build on and update the documentation provided in this Historic Structures Report, the National Park Service should consider such approaches as more detailed documentation resulting from new three-dimensional scanning technology. Monitoring of weather-related deterioration will also support an understanding of what additional protection and repairs may be needed in response to ongoing and specific weather events.

Although documentation and monitoring of existing conditions are important, more immediate and active measures are required at Fort Pulaski National Monument in response to climate change. Management of the dike system is particularly important, given the potential for flooding of the site after severe storms. The 2011 Cultural Landscape Report for Fort Pulaski National Monument recommended preserving all historic landscape features and the historic dike and ditch system, and retaining water to a depth of 18 inches in the ditches.[139] Given the changes that have occurred within the site since the CLR was completed, including what appears to be accelerating evidence of climate change resulting in rising water levels, more frequent and severe storms, and associated flooding and periods of standing water, as well as impacts associated with shipping use of the river channel and related dredging efforts, the Park is exploring alternatives for adaptation of the ditch and dike system to protect the site and its resources. As part of this

139. Hitchcock, *Cultural Landscape Report*, 122.

effort, the Park has engaged a team of cultural landscape and restoration ecology consultants, through a memorandum of agreement between the National Park Service and the University of Georgia, which is working on an integrated management plan designed to help address the issues surrounding flooding and resource protection that will likely entail adaptations to the ditch and dike system.

Prior to implementing any adaptive strategies that may be proposed by the consultant cultural landscape and restoration ecology team, the Park is working on cleaning out the ditches and providing a more effective tide gate. Using a survey prepared by the US Army Corps of Engineers, the Park is also adding fill to some low-lying areas that have been noted as vulnerable to flooding. The Park is also researching previous strategies used to control flooding on the island. Recommendations in the Park archives dating from twenty years ago suggested breaching the outer part of the dike system and allowing it to become salt marsh. The goal of the effort was to enhance views, which had been lost due to tree growth once the National Park Service stopped allowing that area to be flooded. Current work by the University of Georgia consultants suggests that restoration of the salt marsh may serve as the most sustainable approach and an initial line of defense against flooding. Added benefits will include enhanced habitat for wildlife and plants.[140]

Climate change poses challenges and potential disruptions that are only now beginning to be understood and anticipated. It will be necessary to consider and imagine a wide spectrum of possible responses to the threat, which may need to be implemented concurrently and nimbly, with the ability to refine and update regularly as conditions change. Historic cultural responses used by coastal communities to combat flooding, and ecological processes within wetland environments, coupled with appropriate application of emerging technology, should all be considered in devising responses to the challenge of protecting significant cultural resources.

Efforts conducted for Fort Pulaski National Monument will benefit from coordination with other planning and documentation projects to address effects of climate change under consideration or in the process of being implemented by the National Park Service in the Southeast Region. Future severe weather events, rising sea levels, and other impacts related to climate change should be anticipated and considered in planning for protection and maintenance of the site and its resources.

140. Erosion along the north shore of the channel near Battery Hambright is also a significant site issue for Fort Pulaski National Monument, although this does not directly affect the visitor center. This issue is addressed in the Historic Structure Report for Battery Hambright (2018), prepared by the project team for this report.

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