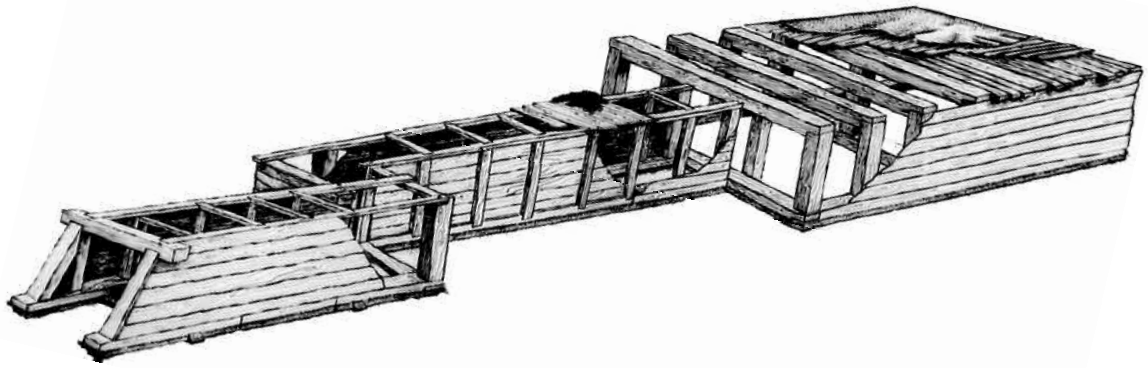
EXCAVATION OF A FORT FISHER BOMBPROOF



Underwater Archaeology Branch

North Carolina
Division of Archives & History
Department of Cultural Resources
Kure Beach, NC

1981

Excavation of a

Fort Fisher

Bombproof

By

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INTRODUCTION

Fort Fisher was constructed during the Civil War to guard the entrance to New Inlet and provide protection for the port of Wilmington. Under the direction of Colonel William Lamb the fortification was developed into a formidable structure that enabled blockade-running activities to continue long after other southern ports had fallen into Union hands.

When designated a state historic site in 1960, Fort Fisher had sustained considerable damage from occupation as a United States Army training base during World War II as well as from severe erosion along the oceanfront. Development plans for the historic site included reconstruction of a portion of the fortification and the construction of a bombproof as an interpretive exhibit. To obtain architectural and construction details a bombproof under one of the surviving traverses was excavated.

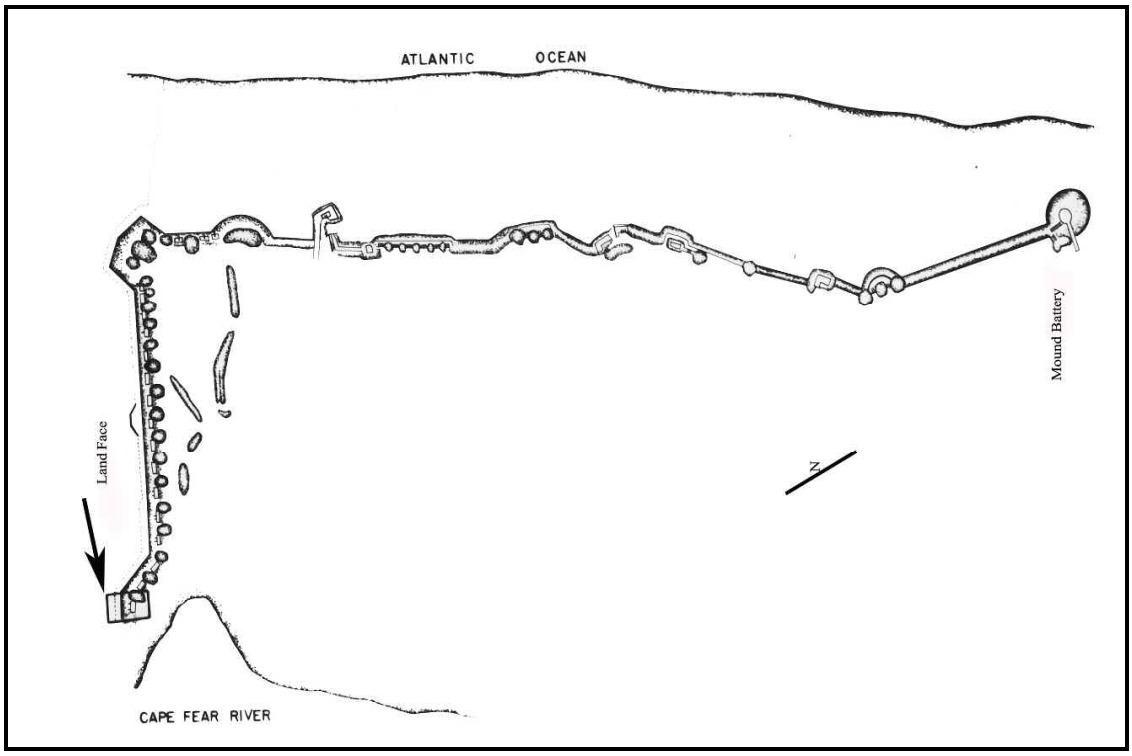

Figure 1: Fort Fisher location of excavation site.

HISTORICAL BACKGROUND

On April 19, 1861, newly elected President Abraham Lincoln declared a naval blockade of those states attempting to secede from the Union. In response Confederate civil and military authorities initiated the construction of fortifications designed to protect the major port facilities of Wilmington, Charleston, Savannah, Mobile, and New Orleans. Three days after Lincoln's declaration North Carolina Governor John W. Ellis appointed Major W. H. C. Whiting as inspector general and charged the West Point engineer with developing defenses for the state. Realizing the importance of the port of Wilmington, Major Whiting immediately dispatched Captain Charles P. Bolles of Wilmington to "construct sand batteries . . . to command the entrance of (New) Inlet." The batteries initiated by Captain Bolles were completed under the direction of Captain William L. De Rosset and named Fort Fisher in honor of Colonel Charles F. Fisher of Salisbury, who was killed on July 21, 1861, in the battle of First Manassas. Although work on the fortification continued, progress was nominal until Brigadier General Samuel G. French was assigned to command the Cape Fear River District on March 15, 1862. General French devoted considerable attention to the fortifications during his four-month command and assigned a sizable labor force to expand the works.

When Colonel William Lamb took command of the fortification on July 4, 1862, the complex of earthworks mounted a total of seventeen cannon. From Shepherd's Battery on the extreme left near the river a quadrilateral work constructed partially of sandbags extended approximately 100 yards in the direction of the ocean. To the right Meade's Battery had been constructed of heavy palmetto timbers covered with sand and turf. South of Meade's Battery and located adjacent to the beach was Cumberland's Battery. Two additional batteries, Hedrick and Bolles, had been constructed to the southwest to form the southern extreme of the fortifications. Although impressive, Fort Fisher in Lamb's opinion was too weak to defend properly New Inlet, and he immediately began to strengthen the works.

From the summer of 1862 until the United States Navy attacked the fort in December, 1864, Colonel Lamb worked continuously on developing the capability to withstand the heaviest bombardment. Occasionally working on Sundays, Lamb's combined force of

soldiers and slaves, at times more than 1,000 in all, made dramatic changes. When Major General W. H. C. Whiting submitted a brief description of the fortification in July, 1863, the progress was obvious.

> This work has been a gradual development of designs of different commandery, commencing with battery Bolles . . . The different batteries are connected by long covered ways. On the left flank at Shepherd's battery flanking defence . . . . A 12' palisade line from Shepherd's battery around to Meade's battery is being constructed which also includes a demilune between the carronade and A [a point on the eastern end of the land defense] . . . Meade's & Purdie battery are casemates of sand, palmetto embrazures of excellent design and construction. The Pulpit is 45' above the sea and carries a 6.40 [inch] rifle. The salient from A to the Pulpit has a command of between 30 & 40' above the sea. The Mound with two 10″ col? [Columbiads] has a command of 65' . . . The work though deficient in flanking arrangements as against land attack is very formidable on the sea approach.

By late 1864 Lamb's industry had produced a formidable and well-armed structure. When the Union fleet arrived to attack Fort Fisher in December, 1864, Colonel Lamb described the fortification as follows:

> I had built . . . two faces to the works; they were two thousand five-hundred and eighty yards long or about one and one half miles. The land face mounted twenty of the heaviest sea-coast guns and was about 682 yards long; the sea-face, with twenty-four equally heavy guns . . . was 1,898 yards in length.
>
> The land face commenced about 100 feet from the river with a half bastion, originally Shepherd's Battery, which I had doubled in strength, and extended with a heavy curtain to a full bastion on the ocean side, where it joined the sea face. The work was built to withstand the heaviest artillery fire. There was no moat with scarp or counter-scarp, so essential for defense against storming parties, the shifting sands rendering its construction impossible with the material available. The outer slope was twenty feet high from the berm to the top of the parapet, at an angle of 45 degrees, and was sodded with marsh grass, which grew luxuriantly. The parapet was not less than twenty-five feet thick, with an inclination of only one foot. The revetment was five feet nine inches high from the floor of the gun chambers, and these were some twelve feet or more from the interior plane. The guns were all mounted in barbette or Columbiad carriages; There was not a single casemated gun in the fort. Experience had taught that casemates of timber and sandbags were a delusion and a snare against heavy projectiles, and there was no iron to construct others with. Between the gun chambers, containing one or two guns each, there were heavy traverses, exceeding in size any heretofore constructed, to protect from an enfilading fire. They extended out some twelve feet on the parapet, and were twelve feet or more in height above the parapet, running back thirty feet

> or more. The gun chambers were reached from the rear by steps. In each traverse was an alternate magazine or bomb proof, the latter ventilated by an air chamber. Passageways penetrated the traverses in the interior of the work forming additional bomb proofs for the reliefs for the guns.

Lamb's description of the fortification was corroborated by that of General C. B. Comstock who surveyed the works after the garrison surrendered in January, 1865. Following this survey, the Union garrison that occupied the fort until the end of the Civil War was engaged in "reducing its size and increasing its strength at the same time. Since the capture hundreds of men have been constantly employed dragging, pulling down, erecting and intrenching, and the appearance of the work is entirely changed. I hardly recognize it as Fort Fisher . . ."

Until 1941 Fort Fisher received little attention save nominally successful efforts to develop the area as a park in the early 1930s. During World War II Federal Point was utilized by the United States Army as a training base for artillery and antiaircraft weapons. During that occupation construction of an aircraft landing strip destroyed a substantial portion of the land face of the earthworks, including the sally port. Man-made destruction, combined with erosion along the oceanfront during the last century, was responsible for the loss of much of the remainder of the earthworks prior to the designation of Fort Fisher as a state historic site in 1960 and a National Historic Landmark in 1962.

DESCRIPTION OF THE WORK

In 1970 the Historic Sites Section of the North Carolina Division of Archives and History initiated an excavation of the structure constructed under the traverse immediately east of the westernmost emplacement. Interest in building a "bomb-proof" or "magazine" in conjunction with reconstructing a portion of the fortification destroyed during the World War II occupation of Fort Fisher provided the impetus for the project. Work at the site was initiated by Stuart Schwartz in October, 1970. Schwartz, aided by personnel from the Fort Fisher State Historic Site and student volunteers from the University of North Carolina at Wilmington, invested two months in the compilation of a topographic map of the site and an excavation that exposed the entrance and several feet

of a tunnel that provided access to the structure. At the end of November Schwartz was recalled to Raleigh, and work on the excavation ceased.

Investigation of the structure was not resumed until the spring of 1972 when archaeologist Gordon P. Watts, Jr., was assigned to the Preservation Laboratory at the Fort Fisher State Historic Site. With the assistance of personnel from the Fort Fisher State Historic Site, the excavation was carried to a point within twelve feet of the room by December, when inclement weather forced the work to be halted for the winter. During the spring of 1973 the excavation was resumed. Because funds for the earth-moving equipment necessary to remove overburden were unavailable, work on the structure ceased until 1977.

By August, 1977, erosion in the open excavation had exposed a substantial portion of the westernmost gun emplacement and much of the structure was being lost, so Historic Sites archaeologist Thomas Funk decided to complete the work. To preclude the loss of the remaining gun emplacement structure, initial investigations directed by Richard Lawrence of the Underwater Archaeology Branch concentrated on documenting its remains. This work was carried out with the assistance of personnel from the Fort Fisher State Historic Site and the Underwater Archaeology Branch of the North Carolina Division of Archives and History. Once the gun emplacement had been completely excavated and removed, a mobile crane equipped with a clamshell bucket was employed to remove overburden obscuring the bombproof structure. From October, 1977, to March, 1978, excavation of the bombproof entrance structure was completed and the first six feet of the room exposed. At this point the mobile crane was again required to remove additional overburden. Work was interrupted until November, 1978, when the investigation was completed by archaeologist Mark Wilde-Ramsing of the Underwater Archaeology Branch staff, assisted by personnel from the Fort Fisher State Historic Site and the Underwater Archaeology Branch.

METHODS

Following a topographic survey of that area of the fortification to be disturbed by the investigation, excavation commenced in the vicinity of the entrance of the structure.

Overburden in each excavated 10-foot by 10-foot grid square was removed by shovel until contact was made with identifiable portions of the structure. Trowels were then employed in exposing the remains for photographing and recording. As the investigation proceeded into the traverse, additional effort was required to dispose of overburden, and both terraces and shoring were employed to prevent sand from collapsing into the work area. The difficulties of working in the unstable sand eventually necessitated abandoning the excavation of grid squares associated with the topographic survey, and structural data was recorded in reference to a grid-associated baseline outside the confines of the excavation. Throughout the excavation of the entrance tunnel, the work proceeded in cycles. Overburden was removed to permit a section of approximately eight feet of the tunnel roof to be exposed. The tunnel roof was photographed, recorded, and plotted. The tunnel walls and sills were then exposed in cross section every 2 feet for photographing, recording, and plotting. Once this was complete, the exposed structure was protected by the construction of a work platform and additional overburden was removed to permit the exposure of the next segment of the structure. At a point approximately 12 feet from the room, this technique was abandoned because of the volume of overburden and lack of adequate protection offered by the construction of shoring. To expose the remainder of the structure a mobile crane equipped with a clamshell bucket was twice employed to remove sufficient overburden to permit the construction of adequate shoring. With the site stabilized and a large work area accessible, grid squares were reestablished to facilitate recording and the structure was exposed, photographed, documented, and plotted. With the excavation completed, fill dirt was brought in and the mound reconstructed according to the original topographic survey.

Figure 2: The westernmost traverse of the land face of Fort Fisher prior to excavation in 1971.

Figure 3: As the excavation proceeded into the traverse, cave-ins became more frequent and destructive.

Figure 4: Prior to the availability of mechanical assistance, all overburden was removed by hand. A platform constructed over the bombproof entrance served both to protect the structure and facilitate loading a dump-body trailer designed by Fort Fisher State Historic Site.

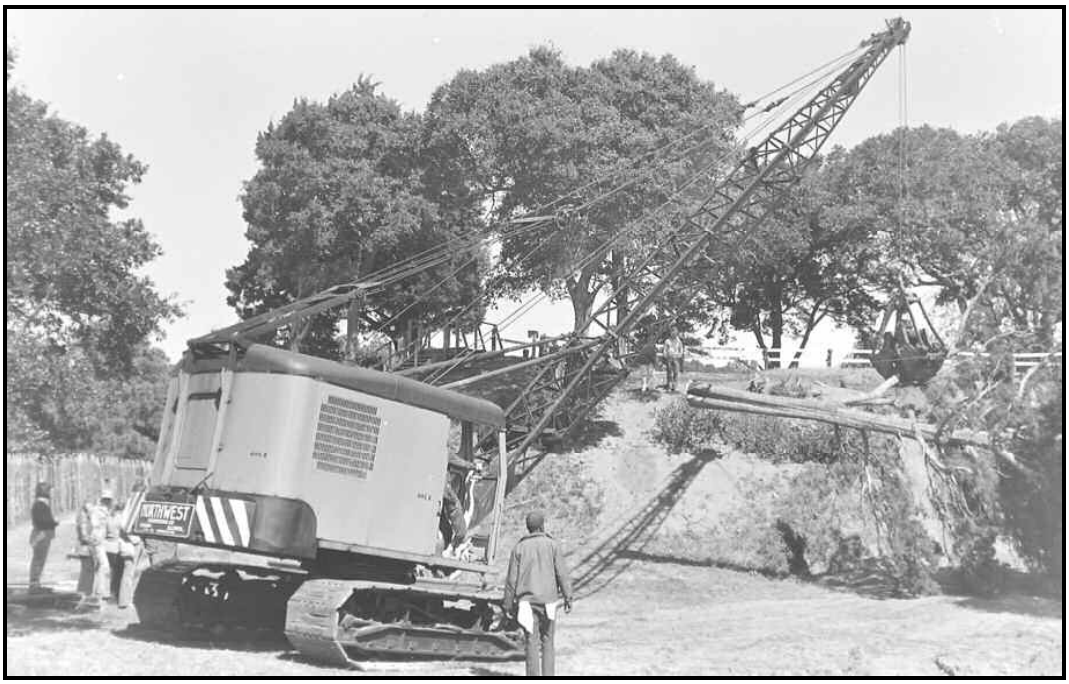

Figure 5: Final stages of excavation required the removal of several trees and approximately 500 cubic yards of overburden.

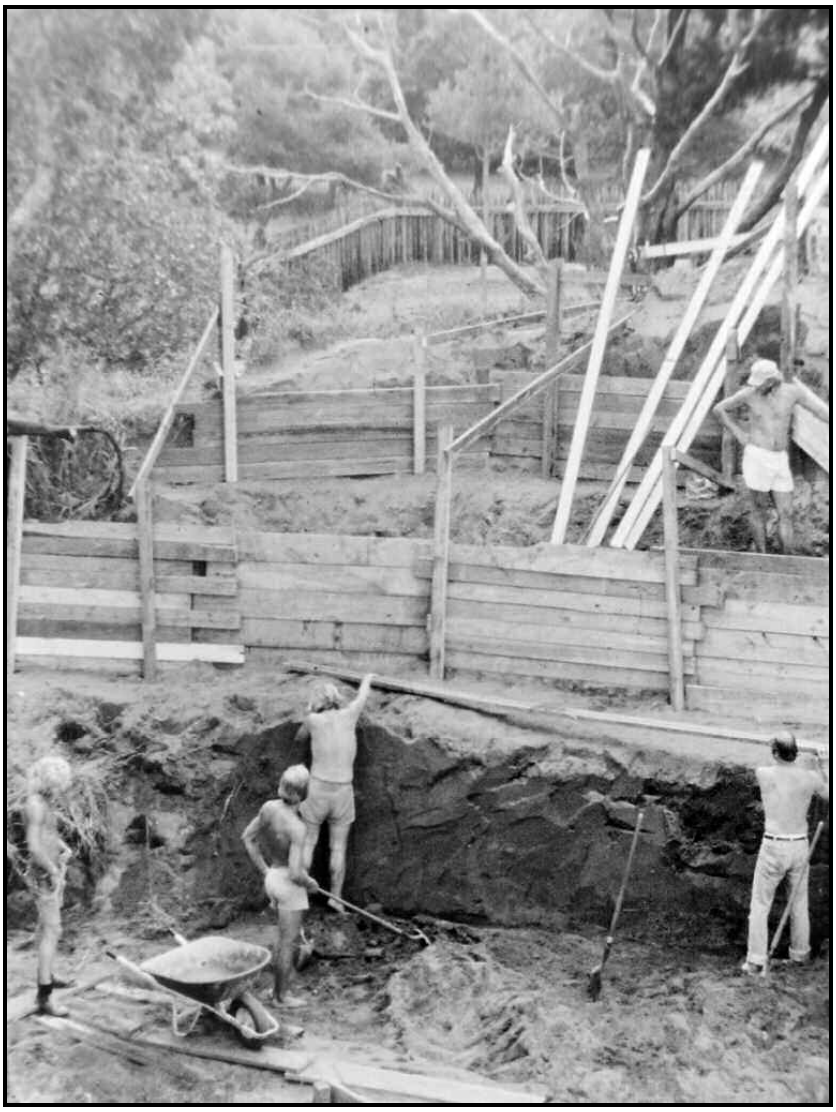

Figure 6: As the excavation progressed, an extensive series of terraces and shoring were required.

CONDITION OF STRUCTURAL REMAINS

Two major factors affected the condition and structural integrity of wooden components of the tunnel and bombproof room. The first factor was the burning and subsequent collapse of portions of the structure shortly after the Civil War. The second was the natural deterioration and compression of the wood after being buried for 110 years. Along the length of the entrance tunnel, structural evidence was found to be in good condition in spite of both extensive fire damage and deterioration of the remaining wood. While random roof planks were found to have collapsed into the tunnel, the

majority remained intact, sagging into the tunnel. Framing the entrance, studs, corner posts, and side planking remained basically in their original positions. At the baffle, planking on the south and north walls had collapsed into the structure, but each of the corner posts and studs remained intact. As was the case in the entrance section, random roof planks were found to have collapsed into the tunnel while the majority only sagged. In the tunnel section immediately inside the baffle the entire roof was found to have dropped approximately ten inches, although it remained structurally intact. Walls in this section had shifted toward the baffle along the longitudinal axis of the structure but remained vertical. The interior planking survived intact for at least nine feet inside the baffle.

The final eight feet of tunnel before reaching the room showed a complete collapse of the eastern wall to the extent of pressing the eastern wall studs and planks against the western wall. The roof of this portion of the tunnel had also collapsed after the east wall had caved in. The interior portions of both walls and the ceiling exhibited evidence of extensive burning.

The collapse of the bombproof room seems to have been concentrated in the center of the southern half of the room. Only 3 vertical feet of the southern wall was still intact and the roof behind the wall was 2.3 feet above the floor. In places in the southern half of the room the roof beams were less than one foot off the floor. The southern portions of both the east and west walls had buckled into the room. The collapse of these walls was less pronounced in the northern half of the room and at the north wall they were virtually intact. The north wall showed little signs of disturbance. As in the tunnel, the interior faces of the walls and roof beams showed evidence of burning. The heat from the fire escaping up the air shafts was so intense as to cause discoloration of the surrounding sand from yellow to reddish orange.

The burning and collapse of the roof coupled with the natural deterioration of the roof beam ends made it impossible to ascertain the method of joining the large and small roof beams to the studs and top wall planks.

Figure 7: Along the entrance badly deteriorated remains of the roof were found to have sagged but survived to preserve structural data.

Figure 8: Although partially collapsed, the tunnel structure preserved an extensive record of architectural and construction details.

Figure 9: Sills along the entrance section of the bombproof were separated by two spacers dadoed to accept the sills.

Figure 10: Wall studs along the entrance tunnel were found to have been set into the sills using stopped dado joints.

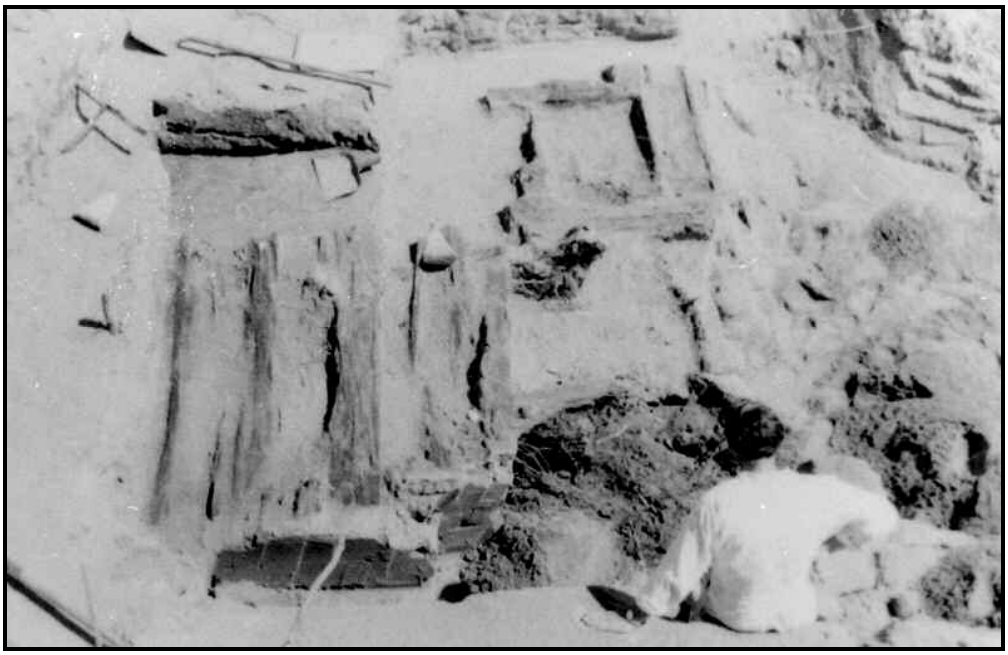

Figure 11: While the majority of the ceiling planking over the baffle was found to have collapsed into the tunnel, evidence indicated that the planks were placed parallel to roof planking along the other sections of the entrance tunnel. The lack of evidence of fastenings in the roof planking confirmed that the weight of backfill was employed to hold the planks in place.

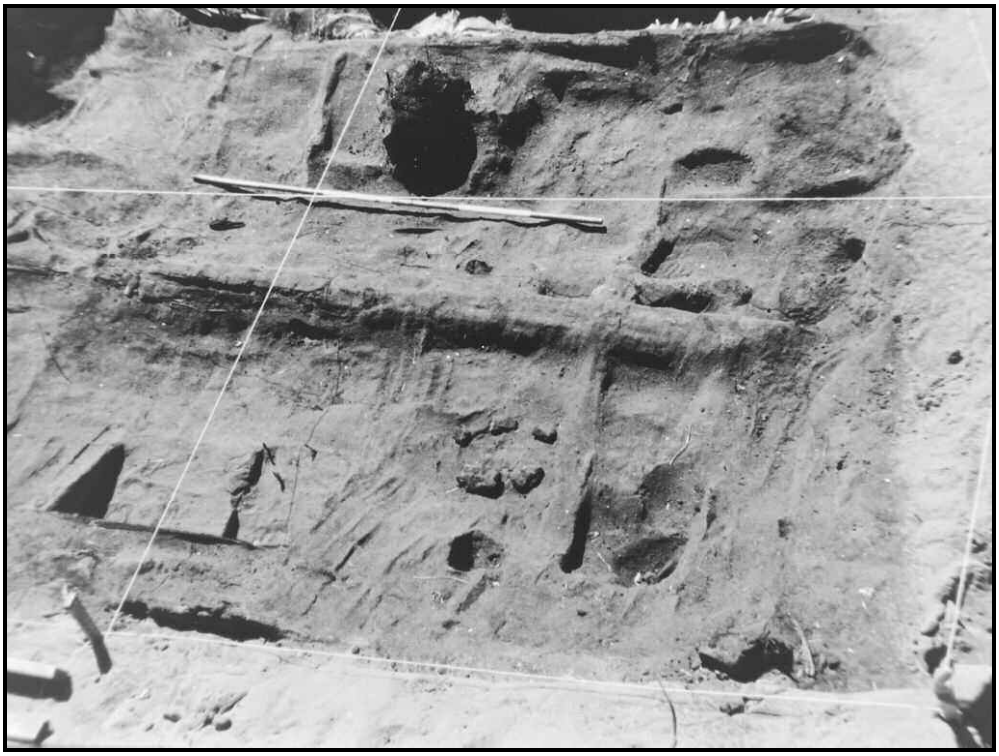

Figure 12: Although collapsed, remains of the bombproof roof preserved evidence of construction feature and a tarred canvas covering.

Figure 13: Although the structure had burned and collapsed, sills and portions of the walls of the entrance tunnel and southwest wall of the room remained intact.

Figure 14: Excavation of the south corner of the bombproof revealed that the roof and walls had partially collapsed into the room once weakened by fire. A layer of charred wood can be seen directly above the original floor level.

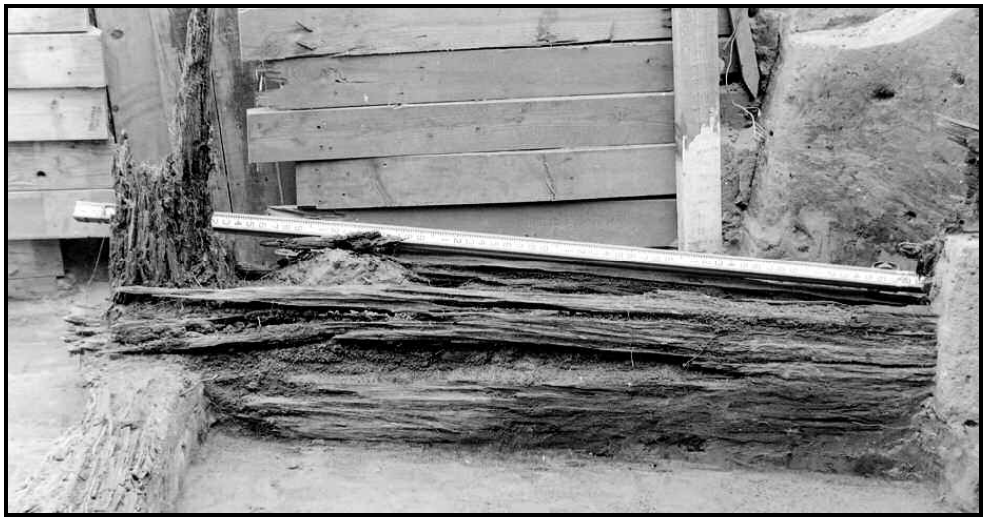

Figure 15: Corner posts were mortised into the overlapping timber of horizontal butt scarfs in the sills.

Figure 16: Tenons in the base of the 12-inch by 12-inch studs used in the bombproof wall were found to have been cut on only two sides.

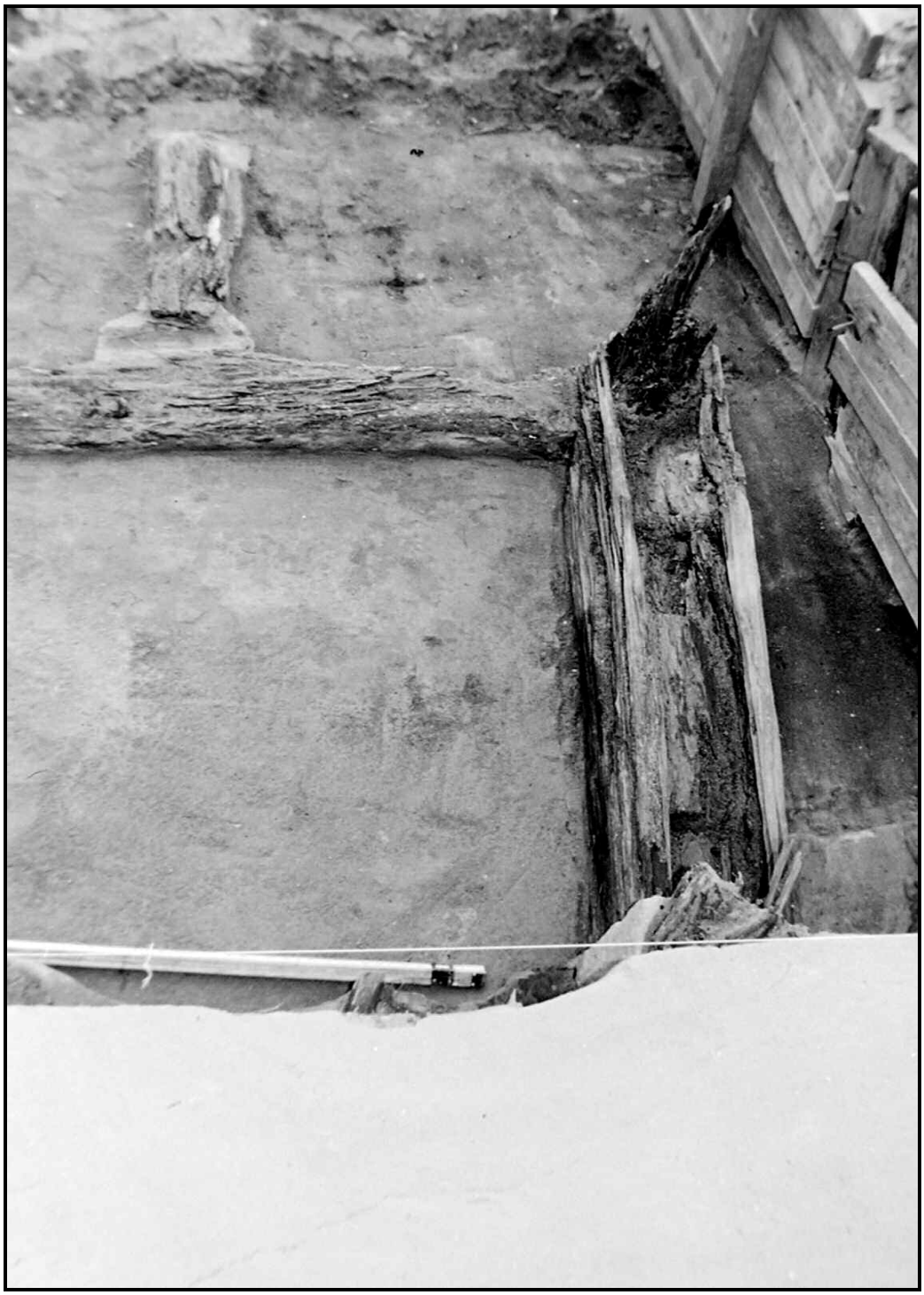

Figure 17: Mortices in the bombproof sills along the northwest wall were obvious once the studs were removed.

Figure 18: While little wood remained, the distinct sand discolored by the fire that destroyed the bombproof provided evidence of vent locations and construction.

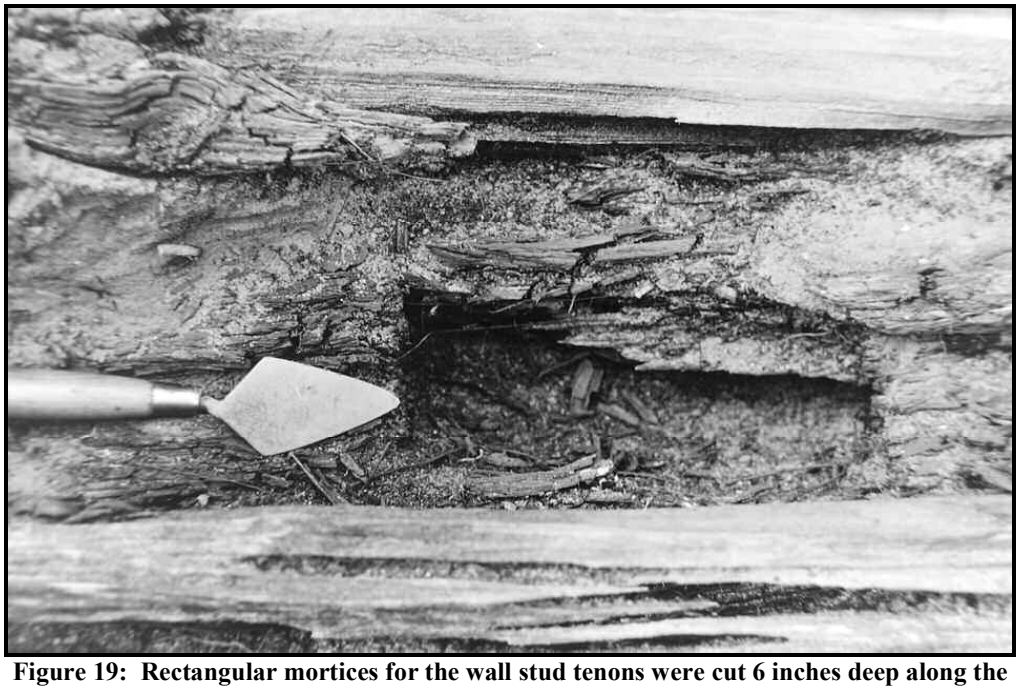

Figure 19: Rectangular mortices for the wall stud tenons were cut 6 inches deep along the longitudinal axis of the sills.

Figure 20: The bombproof sills were cleaned for mapping and photography. Ventilator shafts can be seen in the profile beyond the northeast wall.

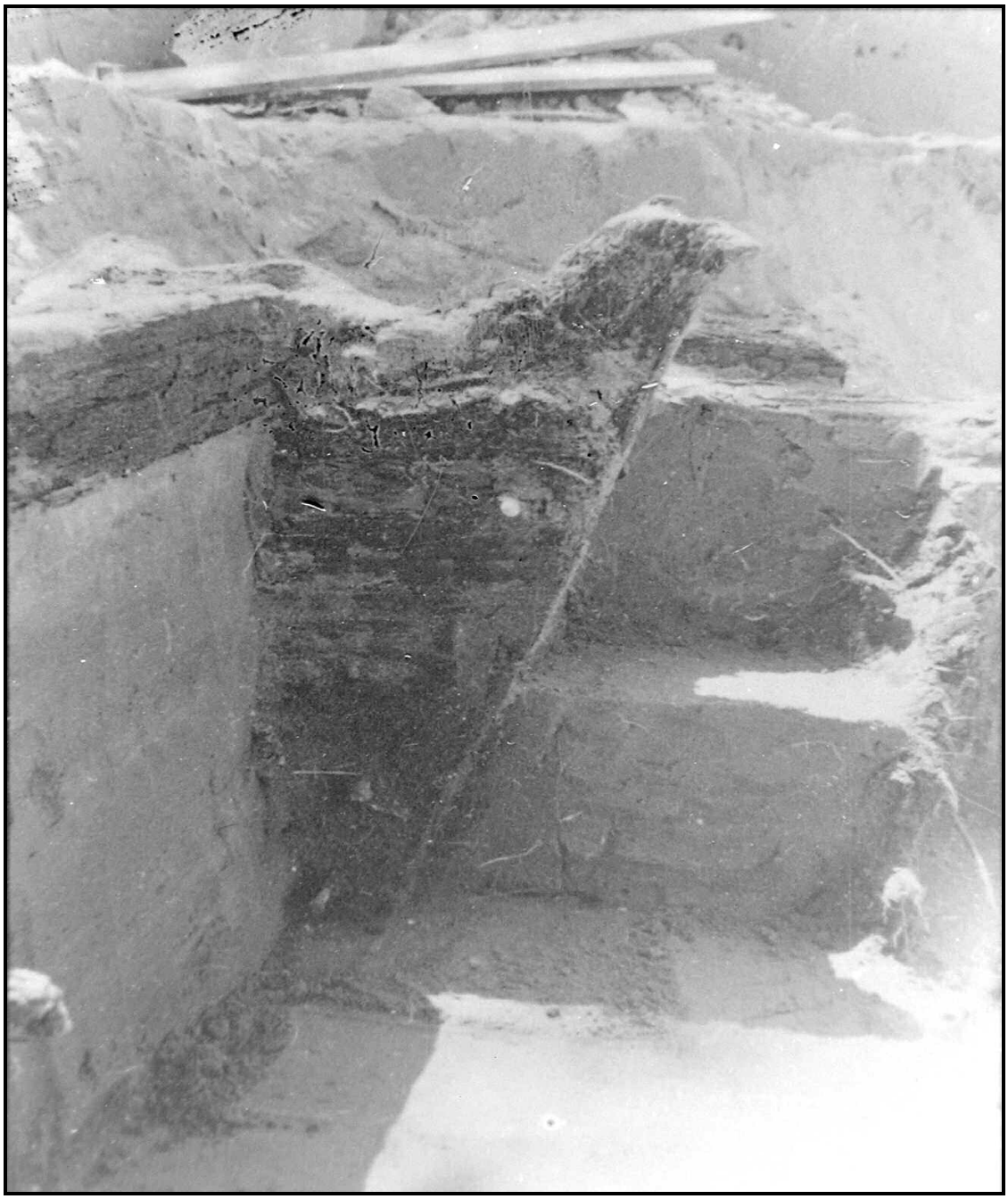

Figure 21: Unmistakable evidence of the interior planking along the tunnel section immediately inside the baffle was found on the east corner post. As was the case along this unusual section, planking was found to be attached at each corner post and studded by one or more 6-inch iron spikes.

Figure 22: Planks attached diagonally along the entrance sections of the bombproof tunnel were employed to provide increased stability. A pin driven vertically through the sill ahead of the only double stud arrangement in the structure provided evidence that portions of material in the bombproof had been salvaged. Heavy charring confirmed that fire was partially responsible for the destruction of the bombproof.

ARCHITECTURAL AND CONSTRUCTION FEATURES

The general configuration of the structure was found to consist of an entrance tunnel 63 feet in length and an attached room measuring 15 feet by 18 feet. Aligned along an axis oriented North 60° 38' East, the 3-foot-wide tunnel penetrated the traverse immediately east of the westernmost gun emplacement on the land face of the fortification. From a framed entrance the tunnel structure extended northeast along this axis for 27 feet before connecting with a 9-foot section laid out on an axis of West 303° 32' North and forming a 115-degree juncture. At the end of this short section a second 115-degree reorientation brought the tunnel back to its original alignment. From this offset baffle the tunnel structure extended northeast for an additional 29 feet before joining the southwest wall of the room. To provide ventilation two wood shafts ran from the north and east corner of the room to the northern face of the traverse. Throughout the tunnel and room a 5-foot ceiling height was maintained over a floor of hard-packed sand.

With the exception of the northeast wall of the room, all walls were constructed upon 12-inch square pine sills. Sill timbers were laid out in shallow 4-inch trenches and interconnected by 12-inch vertical butt scarfs. Each scarf was fastened by 8-inch wrought iron spikes driven horizontally through the scarf. Where the baffle and corners of the room required altering the orientation of the sill, horizontal 12-inch butt scarfs were employed. A 15-inch long, 1-inch diameter iron pin was driven vertically through the joint at its center to serve both as a fastening and to secure the base of 12-inch square pine corner studs. Along the entrance section of the tunnel the sills were additionally stabilized by two, 4-inch by 6-inch spacers located 7 feet and 19 feet from the entrance tunnel. Both spacers were notched to separate the sills a distance of three feet, and each was situated below the level of the sand floor of the tunnel. No similar spacers were found along the section of the tunnel that extended from the baffle to the room.

At the entrance of the tunnel two 12-inch square pine timbers cut at 50 degree angles were pinned to the sills 12-inches from the exterior ends to frame the structure. Both timbers were cut at 40 degree angles on the upper ends and designed to be of sufficient length to lap over the face of a third 12-inch square pine timber that formed the top of the entrance. Both diagonals were fastened to two 4 ½-feet long timbers of identical

proportions that were positioned vertically to act as the first set of wall studs and support the entrance structure and tunnel roof.

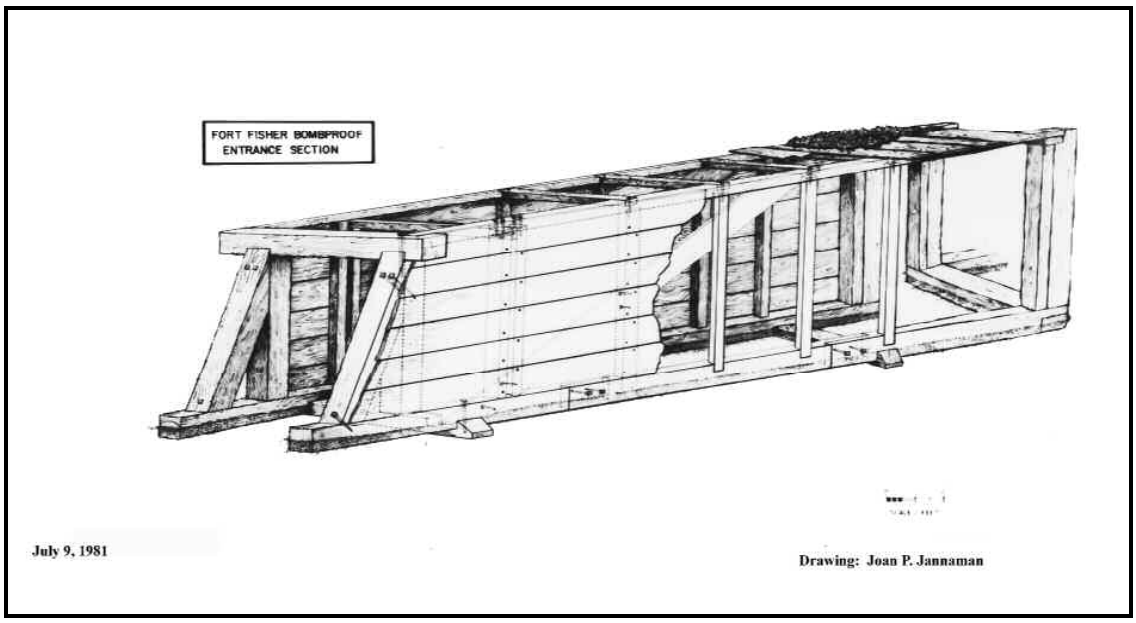

Figure 23: Artistic reconstruction of the bombproof entrance section.

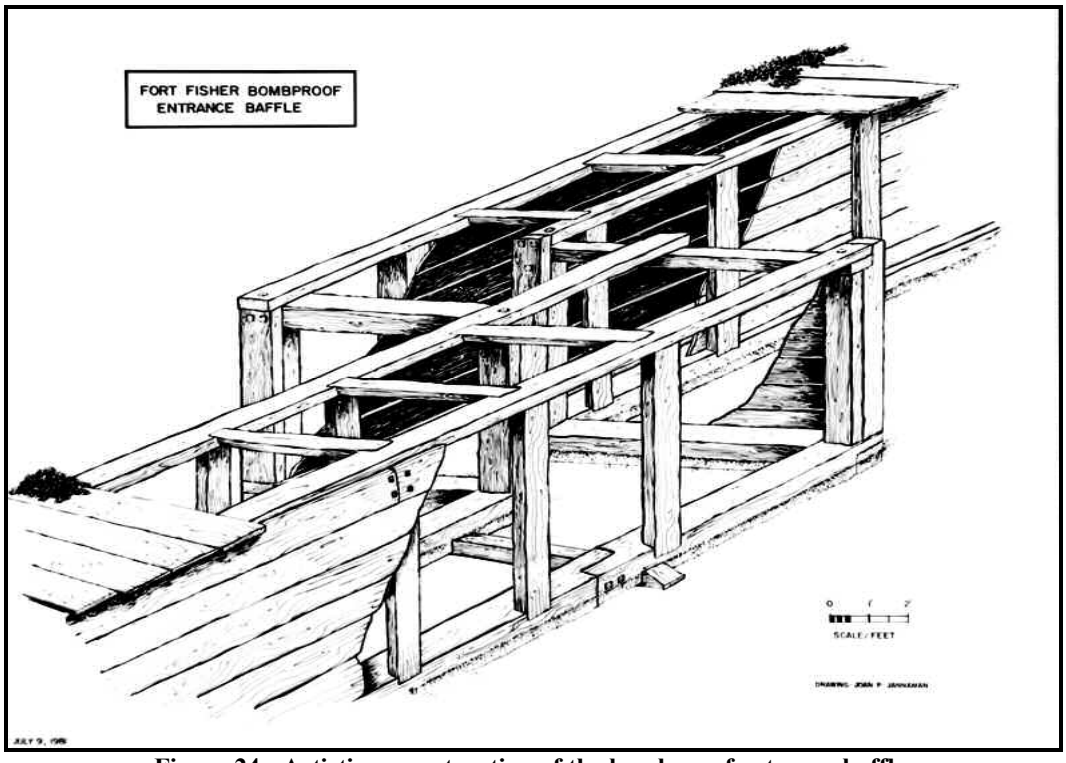

Figure 24: Artistic reconstruction of the bombproof entrance baffle.

With the exception of a set of studs, each composed of two 4-inch by 8-inch timbers and located 6 feet inside the entrance of the tunnel, all of the remaining wall studs were found to be constructed from 4-inch by 8-inch pine and positioned on 3-foot centers. Each stud was lap jointed into the exterior face of the sill to a depth of 6 inches vertically and 4 inches horizontally. The top of each stud was pinned to a top plate composed of 4-inch by 8-inch pine. At each stud the top plate was found to have been inletted to accept the ends of 4-inch by 8-inch pine spacers that separated the walls of the tunnel. In the entrance section of the tunnel framing was additionally reinforced by two 14 ½-foot-long, 2-inch by 10-inch pine planks positioned diagonally and fastened to the interior of the framing with 4-inch hand wrought spikes.

With the exception of the baffle, this type of design and construction was employed in framing the tunnel over its entire length. At the baffle corner posts were constructed of both 12-inch square and 4-inch by 12-inch pine timbers. Where the baffle interfaced with the entrance section, 4-inch by 12-inch timbers had been cut and the 12-inch square timbers had been notched to permit the top plates of the baffle to fit underneath the top plates of the short tunnel section. Where the baffle interfaced with the section of the tunnel leading into the room, the 12-inch square timbers had been cut short to support the top plates. On the east top plate, the 4-inch by 12-inch timber was left of sufficient length to lap over the butt end of the top plate. However, on the west side of the tunnel the top plate from the baffle to room section lapped over both timbers, forming the corner post.

Planking along the tunnel was composed of 2-inch pine randomly butt jointed and varying in width between 8 inches and 12 inches. Although the pressure of backfill was utilized to secure the exterior planking, two 20-penny nails were employed at the ends of each plank. With the exception of a section of the tunnel approximately 17 feet in length and located immediately inside the baffle, all planking followed this general design. Here planking of the same general specifications used elsewhere in the tunnel had been attached to the interior of the tunnel framework. At both corner posts where the tunnel interfaced with the baffle and each stud in the section, the planks were fastened with two 5-inch to 6-inch spikes offset diagonally.

Over the entire course of the tunnel 2-inch pine planking was found to have been employed in the construction of the roof. Roof planks varied in width from 6 inches to 14 inches and were randomly cut to lap the top plates by approximately 6 inches on both sides of the structure. Above this a layer of live oak leaves approximately 1 inch thick had been utilized to keep sand from seeping through cracks in the rough cut planking.

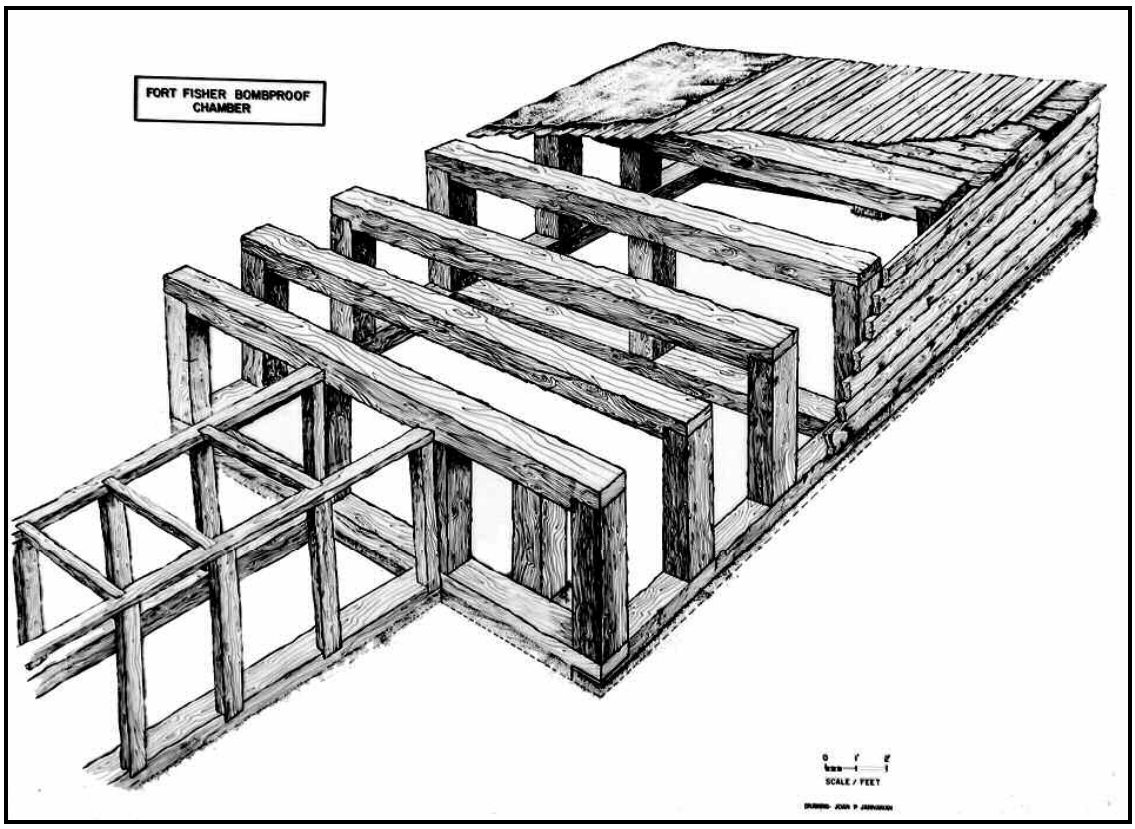

Figure 25: Artistic reconstruction of the bombproof room.

The room was found to have been constructed of considerably heavier material throughout. Sills on the southeast and northwest walls were separated by a 12-inch square timber laid perpendicular to the two walls and lap jointed into both at their centers. A 12-inch square stud sat on the center of this timber and supported a roof beam. Seven 12-inch pine studs were positioned along both the southeast and northwest walls to support seven 1-foot square roof timbers. Each of these studs and two others located on the southwest wall on either side of the tunnel entrance were blind mortised into the sills on 3-foot centers. Roof timbers were rabbet jointed on both ends to seat on top of the

studs and corner posts. Two additional 12-inch square timbers located adjacent to the northeast and southwest walls and east of the centerline of the room had been planted more than a foot below the floor inside the structure and possibly assisted in reinforcing the walls of the room against backfill pressure.

The remainder of the roof of the room was composed of 6-inch square beams placed between each of the 12-inch by 12-inch beams and cut to rest on the exterior wall planking. Above this, the entire roof was covered by rough cut ½ inch by 4-inch boards of random lengths placed perpendicular to the 6-inch by 6-inch and 12-inch by 12-inch beams. The layer of ½ inch planking was additionally covered by a layer of tarred canvas that served the same purpose as the oak leaves covering the entrance tunnel. With the exception of the northeast wall, exterior planking on the room was rough cut 2-inch by 6-inch pine that extended the entire length of the wall. Along the northeast wall where no 12-inch by 12-inch sill had been employed, wall planking was found to be 4 inches by 8 inches along the base of the wall. Near both the north and east corners of the northeast wall ventilators constructed of rough cut 1-inch by 6-inch planks were positioned to form square hollow shafts. Both passages connected the room with the northeast wall of the traverse and were constructed to ascend at a rate of 1-foot in every 6 feet.

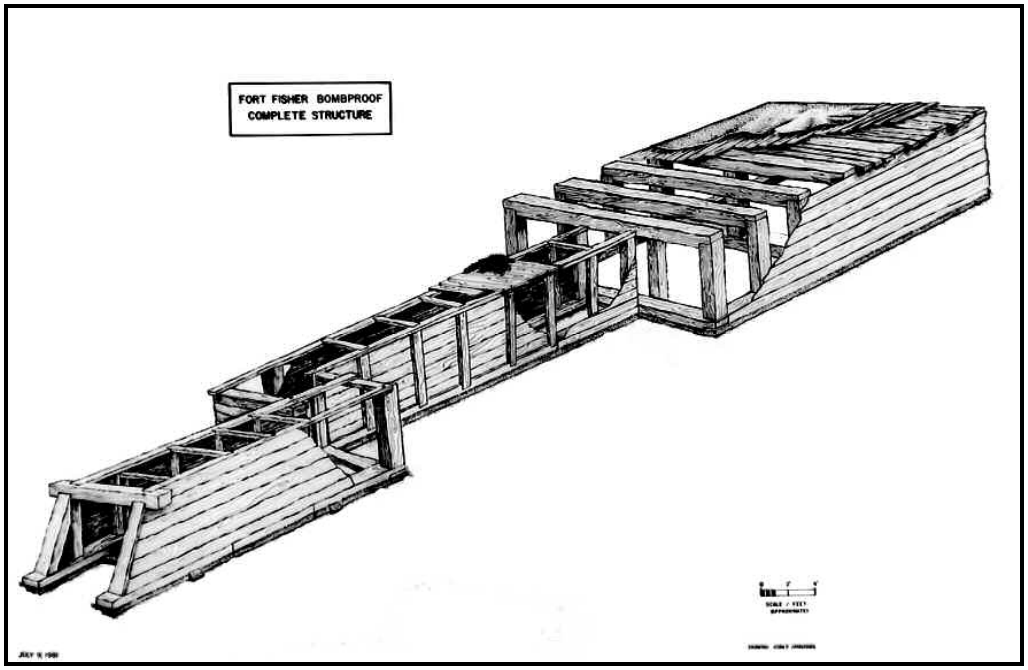

Figure 26: Artistic reconstruction of the complete bombproof structure.

ARTIFACTS

Artifacts recovered during the excavation generally can be separated into two categories for the purpose of analysis. The majority of the material recovered was found in the fill dirt used in the construction of the traverse and provided no indication of the type of activities carried out within the structure under investigation. Briefly this material can be separated into three categories. The first of these consisted of prehistoric ceramics material that can be identified as indigenous to southeastern North Carolina. The second classification included historic period glass and ceramics that predated the Confederate occupation of Fort Fisher. Most was found to date from the second quarter of the nineteenth century and might be considered contemporary with the lighthouse structure that existed on Federal Point prior to the Civil War. All of this material was found to exist randomly through the fill. The third classification found in the overburden was material contemporary with the construction of the fortifications at Fort Fisher. With few exceptions this material was all associated with the remains of two cooking fire pits found at various levels in the traverse fill. Both fire pit features contained the remains of charred wood and were delineated by coquina rock that had been previously employed in some type of structure. The pits contained a variety of food remains including oyster shells, chicken, turtle, and pork bones. In the immediate vicinity of both features broken bottle and ironstone china fragments were found.

Artifacts found at the floor level within the confines of the structure and associated with post-construction activities were extremely limited. Within the entrance tunnel artifacts were concentrated at one location 19 feet from the entrance. At this point a small depression in the sand floor was found to contain charcoal, oyster shells, and a pork bone fragment. Also in association with this feature was a bone button, a Union infantry tunic button, fragments of a small light green glass bottle, and an unfired .58 caliber minié bullet. With the exception of this material and a few iron fasteners from the structure itself, the tunnel was sterile.

Materials associated with activities inside the room were also minimal. In addition to five Confederate infantry uniform buttons and a small iron buckle, the southern portion of the room produced a total of eleven porcelain undergarment buttons. In the opposite end of the room, seven cast lead projectiles were found in association with several dozen

casting droplets. Glass artifacts consisted of a dozen fragments of wine bottle and a few fragments of window glass. A few fragments of prehistoric ceramic appeared to have been intrusions associated with the fill that poured into the room as the structure collapsed.

CONCLUSIONS

In light of both the historical source material and the archaeological evidence generated by the investigation, it is reasonable to draw several conclusions concerning the structure and its function. Both the historical evidence, particularly the report of Colonel Lamb, and the archaeological evidence found inside the remains confirmed that the structure was constructed for use and served as a bombproof rather than a magazine. In his report dated June 15, 1893, Colonel Lamb stated that only the bombproofs were constructed with ventilator shafts such as those found in the north wall of the structure under investigation. Artifacts from the interior floor level tend to confirm that the structure saw little use and preserved no evidence to indicate that the structure had served as a magazine. Given the nature of the structure, there can be little doubt that other options would have offered distinct advantages in terms of comfort except during attack. Following the occupation of Fort Fisher in January, 1865, the structure may have served temporarily as habitation for Union soldiers. This is suggested by some of the artifacts recovered from both the tunnel and the room and is again suggested from a photograph taken after the fort fell into Union hands.

Although local tradition and rumor suggested that the structure was employed as a fishing camp well after the fort was abandoned by Union forces, this was not supported by the archaeological evidence, which strongly suggested that use of the structure ceased shortly after the fort was occupied by Union soldiers in January, 1865.

Structural evidence recovered during the excavation additionally suggested that the design of the bombproof was conceived to permit maximum use of available materials. The limited use of iron fasteners in the structure probably resulted from the known shortage of iron materials in the Confederacy. One of the room studs and a tunnel sill containing nonfunctional fasteners and mortises suggested that the wood employed in the

construction was also salvaged for that purpose. The less-than-rectangular dimensions of the room may well have been the result of efforts to employ available timber.

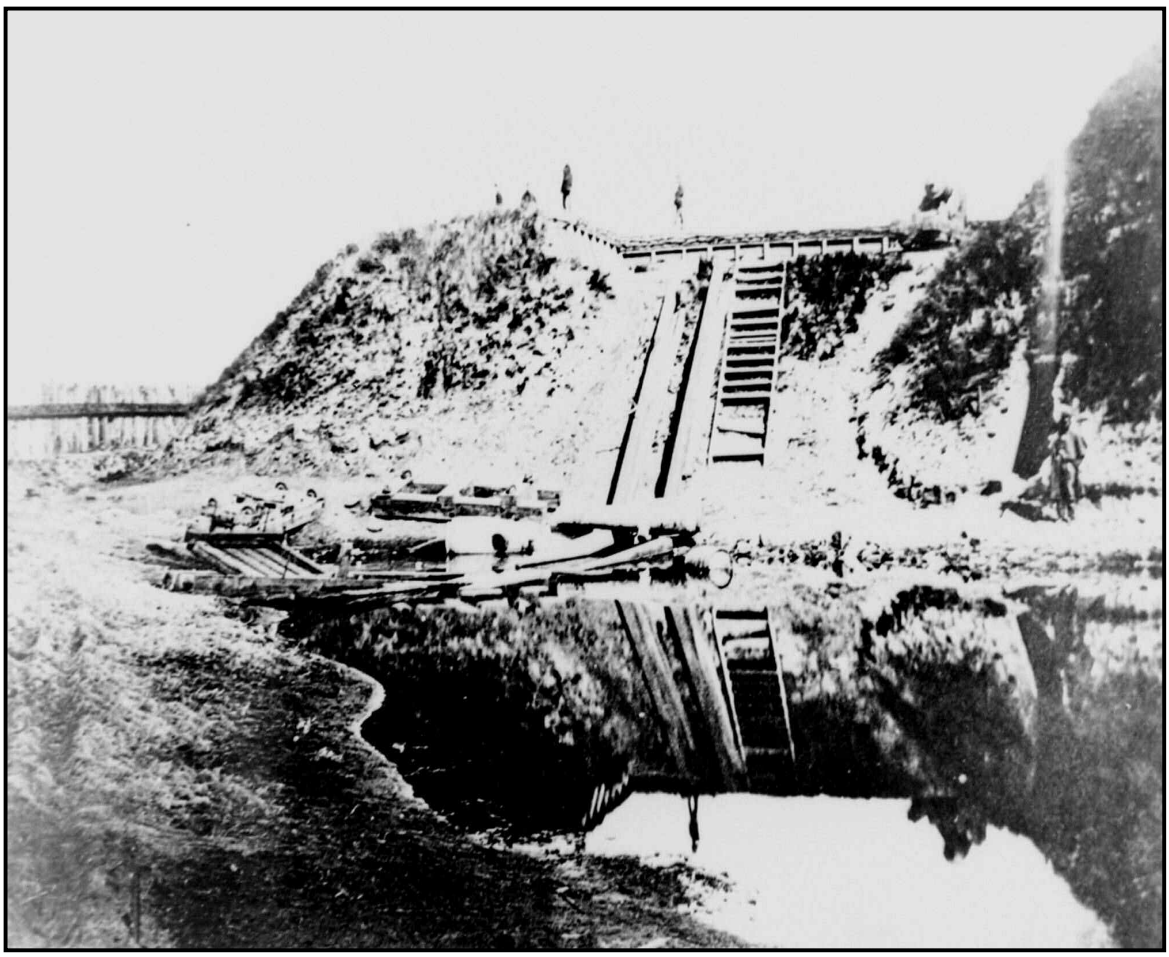

Figure 27: This photograph taken during the Union occupation of Fort fisher shows a Union guard at the entrance of the bombproof. The remains of a small fire pit in the entrance tunnel indicated that an open fire cooked food, provided warmth, and possibly contributed to the destruction of the bombproof.

The most perplexing aspect of the structure was the interior placement of planking along the first section of the tunnel beyond the baffle. In contrast to using exterior planking, this technique required extensive fasteners to counteract the pressure of fill dirt. This possibly reflected the necessity of building the tunnel within the previously constructed Shepherd's Battery.

While the excavation of the bombproof structure will not provide the architectural details necessary to reconstruct the sally port, the project generated sufficient evidence to reconstruct a bombproof structure for interpretive purposes.

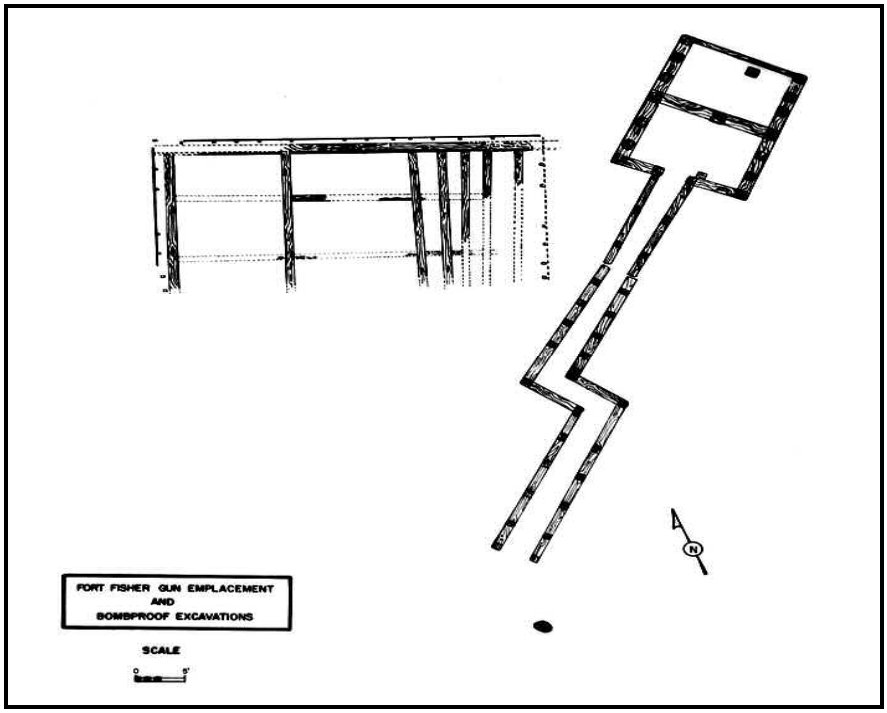

Figure 28: Artistic reconstruction of the gun emplacement and bombproof excavations.

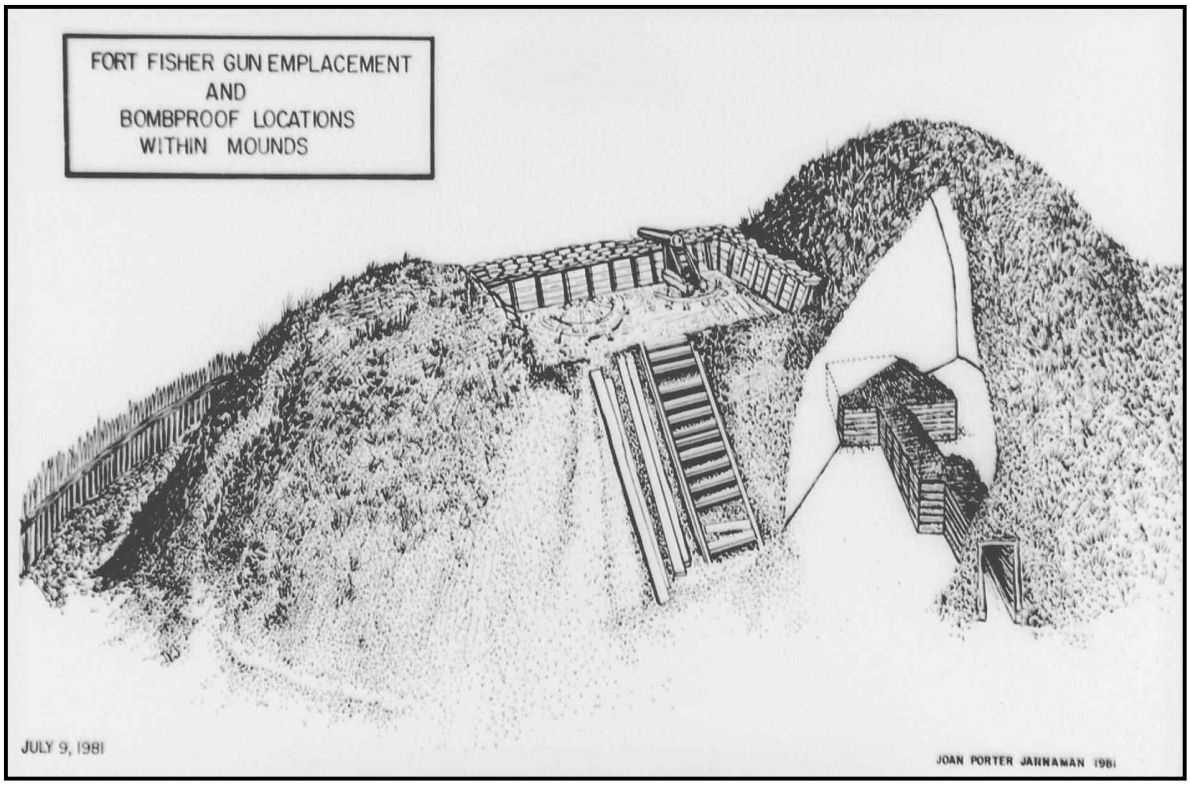

Figure 29: Artistic reconstruction of the gun emplacement and bombproof locations within the mounds.