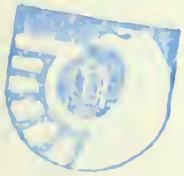
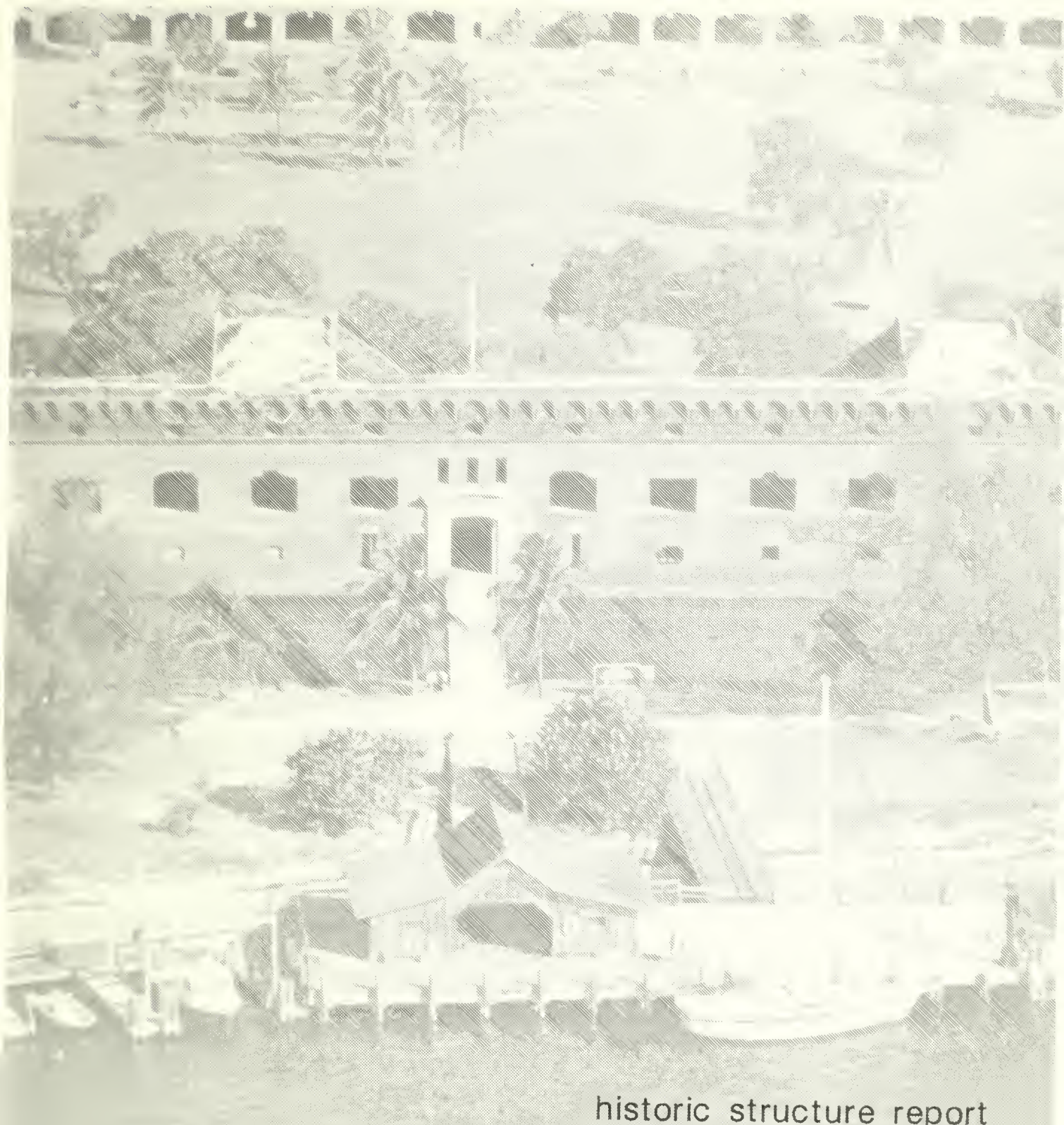
historic structure report
architectural data section

FORT JEFFERSON

NATIONAL MONUMENT / FLORIDA





historic structure report
architectural data section

FORT JEFFERSON

NATIONAL MONUMENT / FLORIDA

BY:LOUIS ANDERSON

APRIL 1988

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

CONTENTS

LIST OF FIGURES

Volume I of the Fort Jefferson Historic Structure Report (HSR), Historical Data Section by Edwin C. Bearss, contains archival copies of original construction drawings and historic photographs.

PREFACE

The scope of this report was outlined by a task directive of April 1982. The purpose of the Historic Structure Report, as stated in the task directive, was:

(1) record the existing conditions,
(2) collect, present, and evaluate archeological, historical, and architectural/engineering data, and
(3) recommend appropriate stabilization treatment, design guidelines for contemporary structure renovations, and uses.

The task directive further defined the project in the Problem Statement:

> Fort Jefferson has received only intermittent, reactive maintenance or treatment (other than groundskeeping) since its abandonment by the army in the late 1880s. The fort structure, with the exception of the counterscarp wall now being repaired, is approaching a state of deterioration that could begin to rapidly accelerate to the point of structural failure leading to collapse. The need for stabilization is urgent and a point may soon be reached when repair will become increasingly difficult and prohibitively expensive.

A memorandum dated December 30, 1981, had previously proposed a selective scope of work by noting that the need for preparation of a Historic Structure Report is immediate; however, "a large scale research project is not anticipated." The general approach, as stated in the memorandum, was to develop a working guide for park management whereby priorities could be set in order of severity to the fort's structural integrity. Subsequently, a memorandum of concurrence was received dated February 19, 1982, acknowledging the intent of the previous transmittal and which agreed to undertaking the forthcoming document in that light.

Both the task directive and the memorandum of concurrence established a limited scope of work for this report. In response, this office made every attempt to stay within those predetermined parameters.

Included in this report are the Administrative Data Section and a Physical History and Analysis section as specified by the approved General Management Plan, Fort Jefferson National Monument, Florida. The ensuing text has been drafted according to Release 3 of NPS-28.

The record of existing conditions of Fort Jefferson consists of photographic and drafted material which document the fort and its associated structures. Scaled photomosaics were prepared from

field photographs made in June and November 1982 and August 1984. It is called to the attention of the reader that these graphic materials record the conditions prevailing at the time of such field work. Also, measured plans, typical sections, and selected details were drawn, based upon field notes, previous work, comparative data of related period structures, and copies of original construction drawings acquired from the National Archives.

Available prior research on the historic fort is excellent, exhaustive in its detail, and has simplified the task of preparing this Historic Structure Report immeasureably. Particularly helpful have been Albert C. Manucy's Constructional History of Fort Jefferson, 1846-1874, and Edwin C. Bearss' Historical Data Section, Historic Structure Report, Fort Jefferson: 1846-1898, from which I have excerpted liberally.

Historical Architect H. Thomas McGrath, Jr. prepared the original report outline and determined preservation treatments recommended in the accompanying Historic Structure Report drawings. Historical Architect Louis W. Anderson compiled available resources on Fort Jefferson and authored the text. Both assembled the drawings and photographs constituting the graphics package for the report. The 1970 comparative photographs are by William Alexander of Everglades National Park; all other photographs were taken by Louis Anderson.

The involvement in this project of park and regional personnel was particularly helpful, as their familiarity with the resource in question led to numerous helpful suggestions and insights. Many thanks to Glen Ferrar of Everglades National Park, Tom Baltzell of the Southeast Regional Office, and Dick Newgren, Site Manager, Mike Jester and Jay Liggett of Fort Jefferson National Monument. Their assistance was much appreciated.

Without the contributions of many people, this project would have been difficult, if not impossible. The assistance of my colleagues at the Denver Service Center is gratefully acknowledged. This includes Historical Architects George Thorson, Harold LaFleur, Anthony Crosby, the entire staff of the Micrographics Division, and Editorial Assistant Mary Ryan Volkert without whose efforts this report would never have reached a legible conclusion.

Thanks are due Cullen Chambers, Curator, Fort Zachary Taylor, Florida, and Howard S. England, former Curator of the same, for according access to the scale models of the Totten shutters and embrasure details for which they are responsible. Permission to publish Howard's outstanding drawings of these features is

greatly appreciated. The clarification of very complex details accomplished by these drawings cannot be overemphasized.

Louis W. Anderson
Kenneth W. Bennett

Subcript: Minor modifications were made to this report which includes insertion of an updated set of Region prepared construction drawings that comprise Appendix 3. These newly incorporated changes were executed in response to Southeast Region review comments dated September 28, 1987.

HISTORIC STRUCTURE REPORT
ARCHITECTURAL DATA SECTION

FORT JEFFERSON COMPLEX
FORT JEFFERSON NATIONAL MONUMENT

PREPARED BY: DSC-TEA

PACKAGE NO. 103, PROJECT TYPE 35

RECOMMENDED Donald B. Galvey 6/20/88
ASSISTANT MANAGER, DENVER SERVICE CENTER, EASTERN TEAM — DATE

RECOMMENDED Pam Martens 5/2/88
DEPUTY ASSOCIATE REGIONAL DIRECTOR, CULTURAL RESOURCES, SOUTHEAST REGION — DATE

CONCURRED: M.V. Finley 5/12/88
SUPERINTENDENT — DATE

APPROVED: Robert L Uskins 6/15/88
REGIONAL DIRECTOR, SOUTHEAST REGION — DATE

MANAGEMENT SYNOPSIS

EXTERIOR PRESERVATION: IMMEDIATE

Moat and Counterscarp, HS-11

The recommended treatment for the counterscarp is to repair and consolidate severely damaged areas and to repoint eroded mortar joints. In addition, repairs and paving are proposed for the coping in several locations.

Scarp (Curtains), HS-12

The recommended treatment for the curtains involves the removal of exfoliating embrasure irons and rebricking of openings to historic dimensions. In addition, a major repointing effort, including the replacement of missing brick in selected areas, is strongly recommended. Cracks in the scarp should be monitored on an ongoing basis, with repairs recommended for those cracks threatening the structural integrity of the fort.

Bastions and Stairtowers, HS-14

The recommended treatment for the bastions involves the removal of exfoliating embrasure irons and rebricking of embrasures to historic dimensions with brick replacement and repointing where needed. The replacement of missing brick and selective repointing is recommended for the stabilization of the stairtowers.

EXTERIOR PRESERVATION: URGENT

Hot Shot Furnace, HS-04

Recommended stabilization treatment for the shot furnace will involve disassembly of brick coursing to structural cracks, preparation of measured drawings and photographs to document the disposition of the internal elements of the structure, removal of exfoliating iron tie rods and any other ironwork which may be determined to contribute to the structural failure of the furnace walls, and subsequent reassembly of the materials to historic appearance.

Terreplein, HS-15

Recommended treatment of the terreplein would include the replacement of the intended sand fill in those areas where missing; the removal of fill, the application of a low-impact, breathing water repellant to the fort roof above Fronts 2 and 3 along with subsequent replacement of displaced fill; controlling the levels of vegetative growth throughout

the terreplein; and the insurance of visitor safety by the elimination of hazardous conditions, emphasis being placed on those areas along the tour route.

EXTERIOR PRESERVATION: NECESSARY

Large Powder Magazine, HS-02

Recommended treatment of the large magazine will be aimed at the stabilization of its present condition. Work involved would include primarily repointing but, where necessary, brick replacement and grouting of cracks as well.

Small Powder Magazine, HS-03

Ongoing control of threatening vegetation is recommended as a necessary action for preventing further damage to the structure by this source. Spot repointing and grouting of cracks is also recommended for the stabilization of the magazine's present condition.

Engineer Officers' Quarters, HS-08

The maintenance of the engineer officers' quarters is recommended to ensure its continued adaptive use as residence quarters for Park Service personnel. As a whole, cyclical maintenance is essential in the context of periodic monitoring and subsequent repointing of the exterior masonry walls to resist moisture transmission due to wind-driven rain. Also, masonry repairs to doorways where exfoliating iron lintels occur is suggested.

EXTERIOR PRESERVATION: DESIRABLE

Officer's Quarters, HS-06

The recommended treatment of the officers' quarters foundation is to preserve its present condition for use as an interpretive feature. Work involved may include spot repointing, brick replacement and selective patching of cracked or spalling concrete, as well as routine removal of encroaching vegetation.

Enlisted Men's Barracks, HS-07

The recommended treatment of the enlisted men's barracks is to preserve its present condition for use as an interpretive exhibit. Work involved may include patching of concrete where cracked or spalling, as well as routine vegetative management.

EXTERIOR PRESERVATION: KEEP UNDER OBSERVATION

Garden Key Lighthouse, HS-01

Ongoing inspection and maintenance of the lighthouse is recommended in order to prolong its present resistance to weathering and deterioration. Work involved will consist primarily of painting but may include spot cleaning and surface preparation for subsequent priming and painting.

Cistern, HS-10

Recommended treatment of the cistern will have as its object its continued satisfactory performance as a potable water reservoir. A recently initiated utilities rehabilitation project included considerable repairs to the cistern.

INTERIOR TREATMENT: URGENT

Casemates, HS-13

The recommended treatment for the casemates is to monitor structural cracks in selected areas and repair those cracks of sufficient severity as to pose a threat to visitor safety or the stability of the fort superstructure. The recommended treatment for adaptively used casemates is the installation of some form of waterproofing membrane without permanently damaging historic fabric, and thereby upgrading these areas to suitable standards for human occupancy.

INTERIOR TREATMENT: NECESSARY

Bakery, HS-09

Stabilization involving grouting of structural cracks, treatment of oven ironwork, brick replacement and overall consolidation is recommended for the bakery in addition to auxiliary illumination.

INTERIOR TREATMENT: KEEP UNDER OBSERVATION

Dr. Mudd's Cell, HS-05

Maintaining Dr. Mudd's cell for continued use as an interpretive feature of the fort is recommended.

HANDICAPPED ACCESS AND USER SAFETY

Recommendations as to handicapped access includes providing a visual experience such as slides or photographs with accompanying text which simulate the experience of those portions of the tour route that are currently obstructed. Providing additional

signage along the tour route which warns against falls from the upper tier is a suggested means of improving visitor safety.

ENERGY EFFICIENCY

No recommendations are made relating to energy efficiency.

CHAPTER I - ADMINISTRATIVE DATA SECTION

A. PROJECT IDENTIFICATION

Fort Jefferson National Monument is located approximately 70 miles (110 kilometers) west of Key West, Florida, in the Gulf of Mexico. (See Figures 1 and 2, Region and Vicinity Maps). Situated in the Dry Tortugas, seven waterless keys of 85 acres (34 hectares) total, the monument includes a significant historic resource in a pristine subtropical marine setting. The vast diversity of marine plant and animal life combine to make one of the richest natural environments on the eastern seaboard of the United States.

The monument bears the name of the masonry fortress of the Third System (permanent, interdependent network of United States seacoast fortifications initiated after the War of 1812) and was built between 1846 and 1874 on Garden Key in the Tortugas. Perhaps one of the most ambitious projects of its type ever undertaken by this country, Fort Jefferson is listed on the National Register of Historic Places.

Located in Monroe County, Florida, Fort Jefferson is a complex of 15 structures. These structures are of First Order of Significance and are in management Category A (must be preserved). Fifteen entries appear on the List of Classified Structures (LCS) for Fort Jefferson National Monument. (See Appendix 3, LCS Data - National Register of Historic Places Inventory.) Included are:

HS-01	Garden Key Lighthouse
HS-02	Large Powder Magazine
HS-03	Small Powder Magazine
HS-04	Hot Shot Furnace
HS-05	Dr. Mudd's Cell
HS-06	Officers' Quarters
HS-07	Enlisted Men's Barracks
HS-08	Engineer Officers' Quarters
HS-09	Bakery
HS-10	Cistern
HS-11	Moat and Counterscarp
HS-12	Scarp
HS-13	Casemates
HS-14	Bastions and Stairtowers
HS-15	Terreplein

B. MANAGEMENT

Fort Jefferson National Monument is managed by a Site Manager whose address is c/o USCG Base, Key West, Florida 33040. Fort Jefferson is an administrative unit of Everglades National Park,

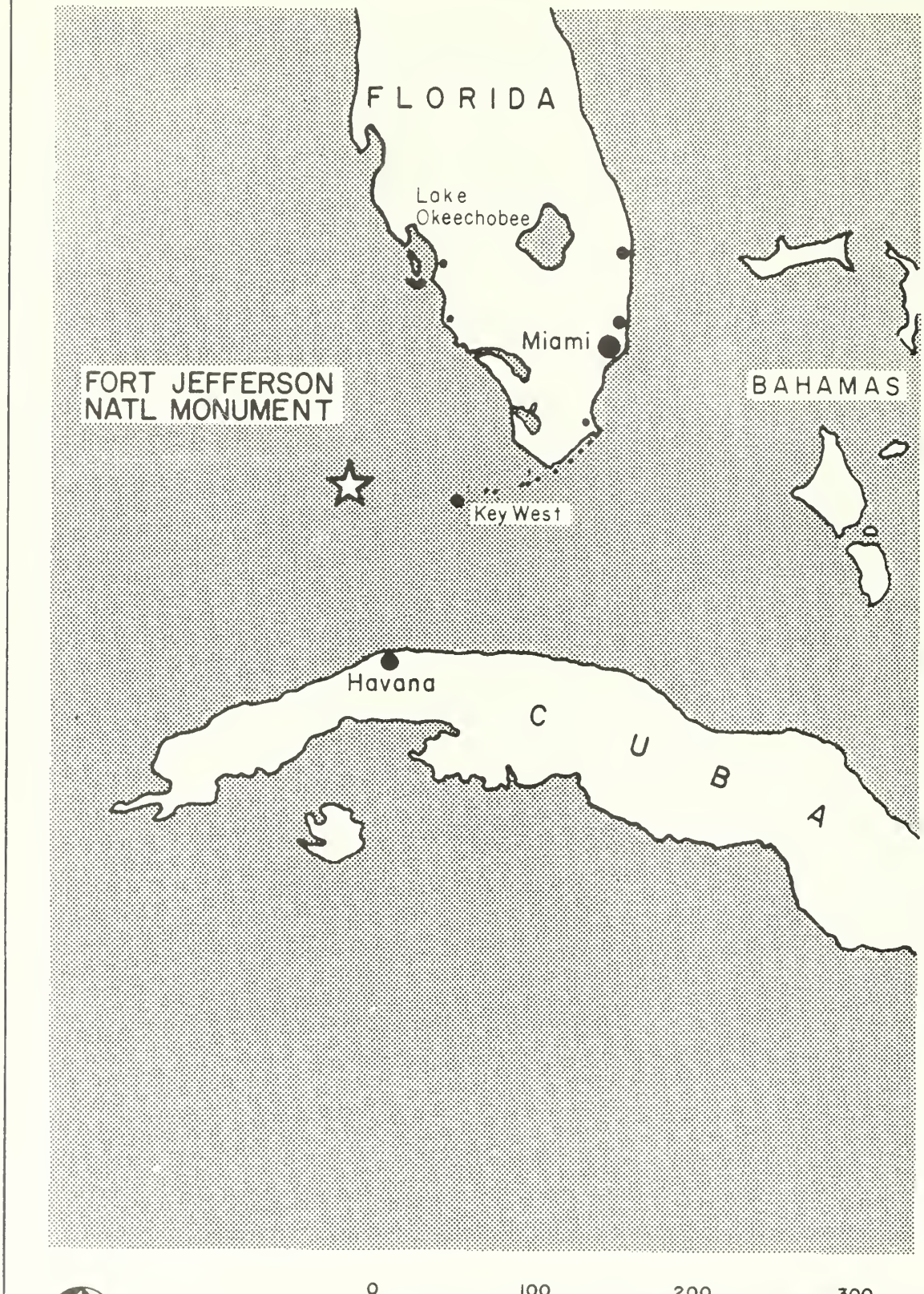


Figure 1 REGION

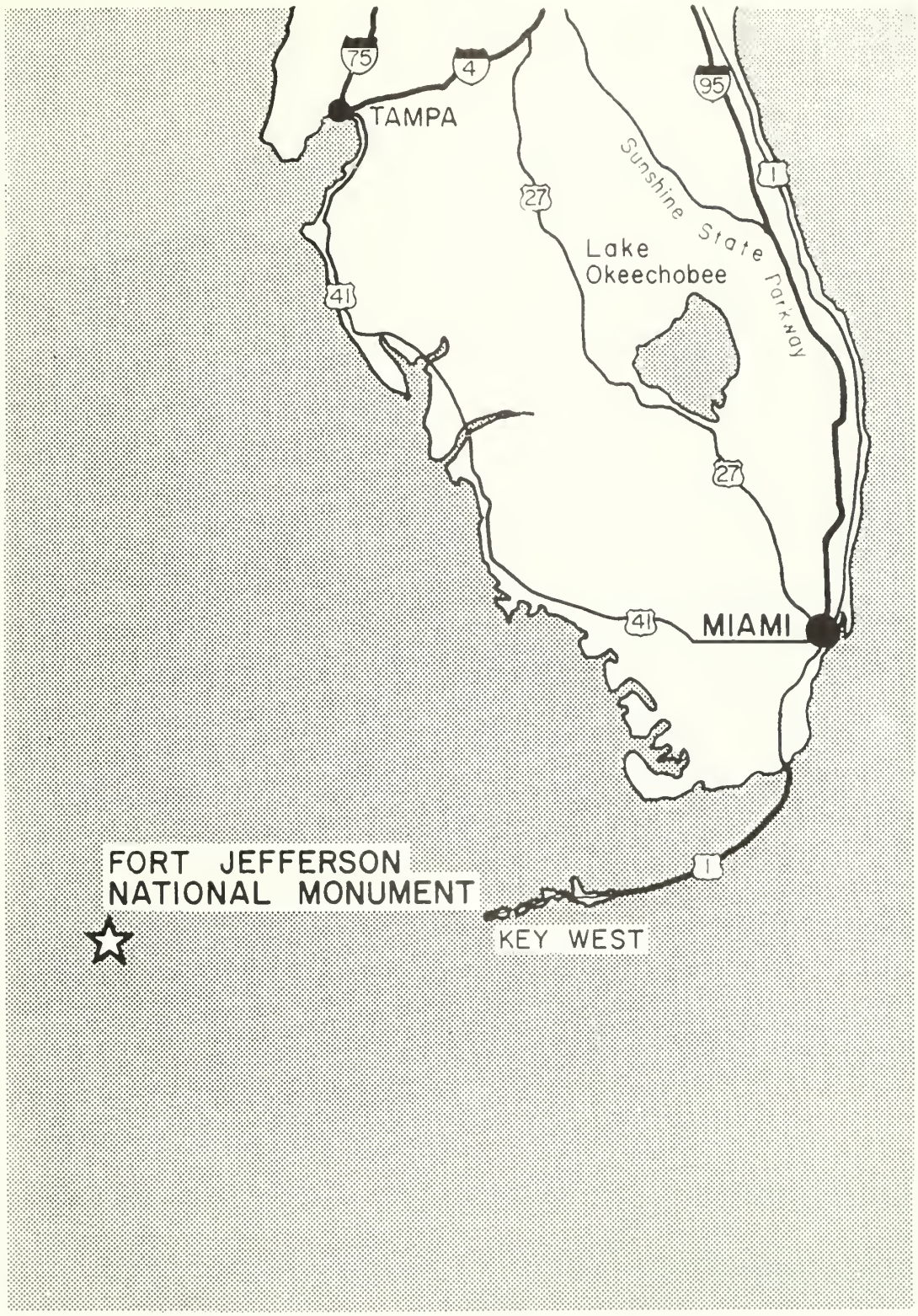


Figure 2 **VICINITY**

both of which are a part of the Southeast Region of the National Park System.

Planning for Fort Jefferson is guided by a General Management Plan/Development Concept Plan approved in March 1983.

C. DESCRIPTION AND JUSTIFICATION OF PROPOSED TREATMENT

The selected and approved treatment for Fort Jefferson, as described in the Fort Jefferson General Management Plan, is stabilization of structurally critical areas throughout the fort.

The goal of the treatment would be stabilization/preservation of critical structural elements throughout the fort complex (all scarp walls, bastions, outer works, the shot furnace, magazines, etc.). The importance of the dockside front (Front 1) to the visitor's impressions and experiences would be recognized in the stabilization program, but emphasis would be placed on stabilizing the entire structure.

Treatment could include selective removal of first-tier iron embrasure shutters, selective or spot repointing and brick replacement, grouting of structural failure cracks and separations of the scarp wall, selective repair and waterproofing of the terreplein, and stabilization of the shot furnace and powder magazines.[1]

D. PROVISION FOR OPERATING STRUCTURES

Fort Jefferson will be preserved and interpreted as a complex of structures significant to the nation's engineering, architectural, political and military history.

E. COOPERATIVE AGREEMENT, IF ANY, EXECUTED OR PROPOSED FOR OPERATING STRUCTURES

No cooperative agreement will be required to operate the structures.[2]

---

[1] Stuart, David R., "General Management Plan/Concept Development Plan, Fort Jefferson National Monument, Florida," 1983, pg. 14.

[2] Bearss, Edwin C., "Historic Structure Report, Historical Data Section, Fort Jefferson: 1846-98," 1983, pg. 2.

CHAPTER II - PHYSICAL HISTORY AND ANALYSIS

A. STATEMENT OF SIGNIFICANCE

Fort Jefferson epitomizes the advanced technologies developed by the United States in military engineering during the mid-19th century. One of a comprehensive system of permanent coastal fortifications, Fort Jefferson is a ponderous masonry work whose construction required numerous technical refinements in the use of the arch, among other features. Of the Third System fortifications, it was second only to Fort Monroe in terms of area. However, in terms of the armament for which it was designed, Fort Jefferson was by far the largest work conceived. The fort also managed to elude modification during the Endicott and Taft periods.

United States Army Engineers supervised the actual construction of the fort, the project being masterminded by Brigadier General Joseph G. Totten. These engineers demonstrated a high degree of expertise in the utilization of the arch and were recognized as the nation's foremost innovators in concrete construction. Numerous monographs treating builder's arts were published by these engineers and promoted the widespread adoption of their techniques by civilian architects and builders. Totten himself devoted long years of his life to the development of a highly refined casemate plan, in addition to the iron-lined gun embrasure and his remarkable "Totten shutters." These features were extensively implemented, not only at Fort Jefferson, but at other Third System fortifications as well. (Appendix 2- Comparative Data - Fort Zachary Taylor.)

Also significant is the example the fort serves of United States territorial expansion during the age of manifest destiny. It is demonstrative of that controlling optimism and assertive spirit which guided 19th-century America and ultimately resulted in our Caribbean and Far Eastern involvements. As well, Fort Jefferson is a tribute to the resourcefulness of its inventors and the indefatigable efforts of the engineers and artisans who faced the ominous task of its construction.[3]

B. APPEARANCE, OCCUPANCY, USE AND SETTING

Fort Jefferson is situated on Garden Key in the Dry Tortugas, a small archipelago 68 miles west of Key West, Florida, and 150 miles south of the nearest mainland ports on Florida's west coast. The remote islands lie in the primary shipping lane between the ports of the gulf coast and eastern seaboard of the United States. Tortugas Harbor affords a spacious natural

---

[3] Bearss, pg. 1

anchorage, protected by surrounding reefs from high seas under all but the most severe storm conditions.

Fort Jefferson is an elongate hexagon, modulated to secure the most efficient utilization of the sandy key upon which it is founded. It has four sides measuring 476.88 feet and two of 324.88 feet. The fort is bounded by a 70-foot wide magistral moat and seawall, the counterscarp, whose perimeter measures approximately 6/10 mile. Tower bastions project from the intersections of the sides of the hexagon, armed on the seaward side and housing stairways for vertical circulation on the parade ground side. The fort rises nearly 50 feet above the key, progressing upward from barrel-vaulted cisterns below grade, to two tiers of casemates culminating in the terreplein with gun emplacements en barbette. Powder magazines occur at the midpoint of the longer fronts on the lower tier, on the terreplein, and within the bastions at both upper and lower tiers. Access and egress are accomplished solely by the sally port and moat bridge which occur at the approximate center of Front 1.

The 17.2 acre (7.0 hectares) parade ground hosts the shot furnace, a massively vaulted large powder magazine, a small powder magazine, the engineer officers' quarters, the foundation remains of the officers' and enlisted men's barracks (structures demolished in 1962 for safety purposes), the fresh water cistern, various monuments, and the Tortugas Lighthouse, constructed atop Bastion 6 in the 1870s.

The dominant design effect of the fort owes to the use of the more than 2,000 arches, exemplary in their level of craftsmanship. The structure is principally brick masonry and monolithic concrete but utilizes several types of stone in various applications as well as wrought iron and boiler plate for the gunport armor. Relatively free of any architectural elaboration, the fort's decorative features are practically limited to the pedimented, cut stone sally port and the round-arched crown at the cornice, projecting by shallow corbels from the face of the scarp wall. Typical of the highly precise building methods employed in the construction of Fort Jefferson are the shaped brick and meticulous ribbon pointing of the casemate vaults and arches.

Fortifications of the Third System, which evolved after the War of 1812, sought to achieve and maintain a logically interrelated and thorough national defense system by the avoidance of those flaws which prior fortifications demonstrated over the course of that conflict. The decision to fortify the Dry Tortugas was based upon a strategy of safeguarding against enemy blockades along the gulf coast and by the denial of Tortugas Harbor as a safe anchorage from which enemy forces might launch massive assaults on the mainland. The importance of this location to successful commerce with the West, Midwest and South could hardly

be overlooked due to the flow of trade from the gulf river ports, around the Florida Straits to the east coast. Furthermore, the desire of the young nation to discourage continued European involvement in the Western Hemisphere reflected the pervasive nationalism of this stage in the country's evolution and served as an additional impetus for strengthening the defense of the Tortugas. Not only so, but ensuring the nation's own expansion was seen to depend upon control of this strategic area.

Garden Key in the Tortugas was chosen as the location for a lighthouse in 1821, the same year that Florida was ceded to the Union. Congress approved construction of the lighthouse in 1822 and by 1825 the new beacon was erected. Proposals to fortify the Tortugas were under consideration as early as this same decade. However, the actual execution of the work did not commence until 1846. Numerous delays impeded the advancement of the project resulting from the sheer scope of the works, funding, and the logistics of project coordination in a remote setting. By 1860, the lower tier was prepared to receive its designated armament and the upper tier was covered.

Construction was not halted during the Civil War, as Fort Jefferson was one of the few southern forts which did not fall into Confederate hands during that period. The fort had attained its full height by 1862 and was partially outfitted with armament in anticipation of capture attempts. The Union Navy used the fort as a base for blockading operations during the war. During the same period, and for the decade that ensued, use was made of the facilities as a military prison and quarantine station. Among the more notable prisoners incarcerated there was Dr. Samuel A. Mudd and three other men convicted as conspirators in the Lincoln assassination. Construction continued on the fort until 1875 when work was halted. The advent of the new rifled cannon had rendered masonry fortification obsolete well before the time Fort Jefferson construction was discontinued.

Between the years of 1890 and 1900, the fort was operated by the Treasury Department as a quarantine station and disinfecting facility for troops and crews shipping from Cuba. Related to the medical operation of the quarantine station was the establishment of a bacteriology laboratory conducting research into the causes of yellow fever. During the Spanish-American War, the Navy made use of Tortugas Harbor as an important coaling station. In 1900, the Dry Tortugas were transferred to the Department of the Navy and in 1908 to the Department of Agriculture. The First World War saw the use of Fort Jefferson as a seaplane base and wireless radio station. It served as a naval support station during the Second World War. In 1935, President Franklin Delano Roosevelt declared Fort Jefferson and the Dry Tortugas a national monument thenceforth to be administered and protected by the National Park Service (NPS).

From a military standpoint, the structure was unfinished as the upper tier and terreplein were never completely prepared to accommodate armament. The fort never received more than a fraction of the 450 guns for which it was designed. Architecturally, however, the massing and outline of the works conveyed a sense of completeness of the original conception. Fort Jefferson saw no action as a harbor defense structure, shots fired from its guns only serving the functions of ordnance trial and calibration. This of itself attests to the success of the fortification as an adequate deterrent to those hostilities its design endeavored to discourage.

C. SUMMARY OF AVAILABLE DATA AND RESEARCH

Additional to archival drawings and other historic documents, the available information base addressing the historic fort includes:

1942. "A Handbook for Fort Jefferson History," by Albert C. Manucy.

1961. "A Constructional History of Fort Jefferson 1846-1874," by Albert Manucy.

1964. A Guide to the Military Posts of the United States, by Francis Paul Prucha, the State Historical Society of Wisconsin, Madison.

1965 (draft). "Historic Structure Report," by Homer Robinson.

1966 (draft). "Historic Structure Report Part II, Fort Jefferson National Monument," by C.A. Burroughs and Albert Manucy.

1970. "Historic Structure, Physical Status Report, Fort Jefferson National Monument, Dry Tortugas, Florida," by William M. Alexander.

1970. Seacoast Fortifications of the United States: An Introductory History by Emanuel Raymond Lewis, Smithsonian Institution Press, City of Washington.

1971. Underwater Archeological Research (draft manuscript on the Underwater Studies of the Moat), Daniel J. Lenihan.

1973. Special History Study, Masonry Forts of the National Park Service, by F. Ross Holland, Jr. and Russell Jones.

1974. Military Architecture, by Quentin Hughes, St. Martin's Press, New York.

1976. "Assessment of Conditions, Fort Jefferson National Monument," by Frederik C. Gjessing.

1977 (draft). "Historic Resources Management Plan, Fort Jefferson National Monument."

1977. American Forts: Architectural Form and Function, by Willard B. Robinson, University of Illinois Press, Urbana.

1978. "106 Compliance Statement, Fort Jefferson National Monument," by Frederik C. Gjessing.

1979. "Foundation Condition Appraisal and Improvements Recommended for the Counterscarp Rehabilitation," Jacksonville District Corps of Engineers for Southeast Regional Office, NPS.

1981. "Interim Cultural Resources Management Data."

1981. "Fort Jefferson General Management Plan, Cultural Resources Management," by D.R. Stuart.

1981. "Report on Threats to Cultural Resources."

1982. Task Directive, Historic Structure Report, Fort Jefferson National Monument, Dry Tortugas, Florida.

1983. "Historic Structure Report, Historical Data Section, Fort Jefferson 1846-1898, Fort Jefferson National Monument, Monroe County, Florida," by Edwin C. Bearss.

1983. "Vegetative Threats to Historic Sites and Structures," Robert A. Warnock.

1984. "Inspection Report," by Tom Baltzell, Paul Hatchett and Sam May.

Relevant archeological data to the Historic Structure Report includes reports and letters filed at the NPS Southeast Archeological Center and details:

April 1969. Land Survey of Loggerhead and Garden Keys.

April 1969. Evaluation of Potential for Underwater Archeological Research, Including Fort Moat.

December 1970. Excavations in Moat Near Sally Port.

December 1975. Monitoring of Construction on Garden Key.

More formal archeological reports of interest are:

1969. "Prospectus for Underwater Archeology Survey, Fort Jefferson National Monument, Florida," by George R. Fischer. MS, Division of Archeology, National Park Service, Washington, D.C.

1974. "Fort Jefferson Moat Study," by Daniel J. Lenihan. Underwater Archeology in the NPS, United States Department of the Interior, National Park Service, pgs. 44-50.

1977. "Fort Jefferson National Monument." Pages 175-180 in An Inventory of Archeological Research in the National Parks of the Southeast, Vol. 1., National Park Service, Southeast Archeological Center, pgs. 175-180.

D. DESCRIPTION OF EXISTING CONDITIONS.

1. Materials

a. Brick

The fort is constructed principally of two varieties of brick: a light sand colored unit, historically referred to as "Pensacola" brick and a darker red unit, generally called "Northern" brick. The larger, Gulf Coast brick, were supplied by two separate manufacturers from Baldwin County, Alabama, and measure approximately 3-1/8" by 4-3/4" by 9-1/2", or 140 cubic inches (2300cc) in volume. Their light color can be attributed to their manufacture from Escambia clay.[4] The smaller, 2-1/4" by 3-1/2" by 7-7/8", or 60-cubic-inch (1000cc) Northern brick, were secured from brickyards in Danvers, Massachusetts, and Brewer, Maine, upon the secession of Florida from the Union.[5] (See Figure 3, Pensacola and Northern Brick.)

The Pensacola brick predominate and are the primary contributors to the overall visual impression of the fort in terms of color and texture. The present condition of these brick indicates a tendency towards a slightly greater susceptibility to weathering than is the case with the Northern

---

[4] Bearss, pgs. 73, 74.

[5] Bearss, pgs. 226, 227.

Figure 3 PENSACOLA AND NORTHERN BRICK

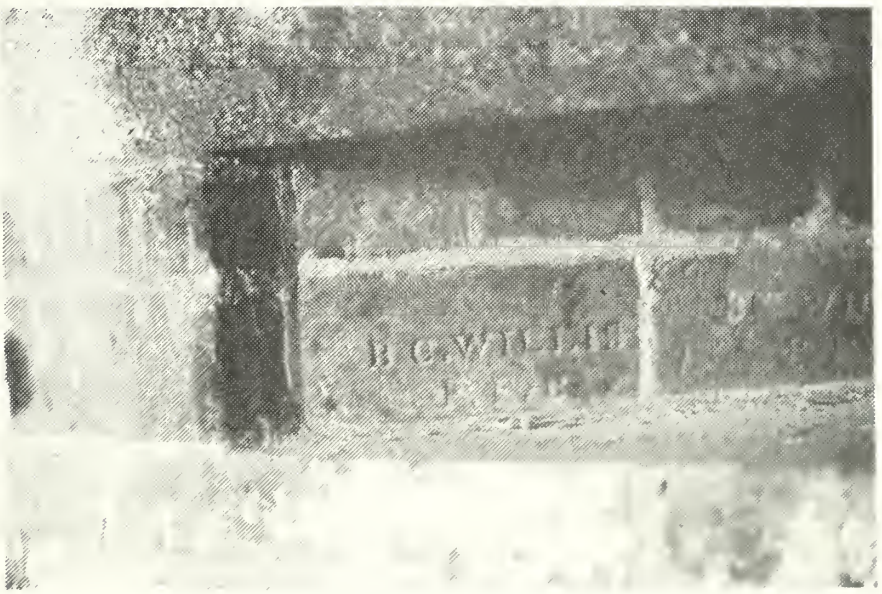


Figure 4 STAMPED BRICK

brick.[6] With the wear associated with marine and climatic exposure, the edges of these brick have become rounded and the granular character of their constituent clay revealed.

The Northern brick appear almost exclusively as the characteristic material of the ornamental cornice, forming the arches of the crown which step out from the scarp by corbelling. These brick have retained relatively more of their original crispness which sharpens the effect of their incorporation in the cornice, one of the fort's most elaborately detailed architectural features.

The shot furnace and the bakery ovens of Bastion 3 employ the additional use of fire brick. Selected on the basis of their thermal function, these units do not contribute significantly to the visual character of the fort.

Brick stamped "B.C. Willis" appear in the sides of the tongue hole lintels of the casemates. Several of the casemate vaults have stamped brick at the apex of the vault, also. (See Figure 4, Stamped Brick, previous page.)

b. Concrete and Mortar

The concrete used in the fort occurs primarily in the foundation work, floors of the casemates, and as structural infill for the scarp, casemate piers, space between arches and the counterscarp. The proportions of concrete used in underwater applications, such as the scarp and counterscarp foundations, were 3 parts cement:4 parts fine aggregate:8 parts coarse aggregate. Concrete in above-water applications introduced lime as an additional ingredient at the ratio of 2 barrels, unslaked, to a barrel of cement.[7] Coarse aggregate was constituted of broken coral and shell fragments ranging from approximately 1/4 to 3/4-inch in diameter. Sand for fine aggregate is reported as having been boated from adjacent Long Key because of its superior cleanliness and the scarcity of sand on Garden Key. Due to changes in the names of the keys

---

[6] Gjessing, "Assessment of Conditions, Fort Jefferson National Monument," 1976, photo VII.

[7] Bearss, pgs. 78-84.

of the Tortugas, it is very probable that the historic Long Key is the present day Bush Key.

Historic cement mortar at Fort Jefferson was mixed in the proportions of 1 part dry hydraulic cement:1 part fine aggregate for applications such as the masonry of the embrasures.[8] Lime mortar was specified for all other areas above the level of the lower tier casemate floors and this additional ingredient was introduced at the ratio of not less than 1 barrel lime:1 barrel cement.[9] Sand for fine aggregate was acquired from Long and Sand Keys.

c. Stone

The use of materials at Fort Jefferson was for the most part limited to brick and concrete fill except where the demands of certain uses required another choice. Granite was utilized for the tongue hole lintels and pintle blocks of the embrasures; for the traverse arcs of the barbette tier gun emplacements; for the belt coursing, window and door sills and lintels, and steps of the bastion stairtowers; and for the ornamental stonework of the sally port. The stone was reportedly quarried from a site in Vermont. A significant feature of the fort is the way in which the cut stone steps of the stairtowers are assembled. At the center of the circular tower, the pointed ends of the triangular granite slabs are stacked such that their pivotal alignment creates a column. Meanwhile, the other ends of the slabs are built into the circular enclosure of the tower. The precisely executed design follows the dictates of a medieval precedent.

The original design of the casemates called for the use of bluestone slate flagging as a floor surfacing material. This choice was predicated on the superior hardness of slate in comparison to brick or concrete, and the demands of material performance imposed by the casemates' intended use as gunroom floors. Where used under the traverse circles, 6-inch thick material was required, while 3 to 6-inch flagging was specified elsewhere.[10] Flagged casemates include numbers 61, 69, 74, and 85 on the

---

8 Bearss, pg. 165.

9 Bearss, pg. 84.

10 Bearss, pg. 134.

upper tier in addition to all of the lower tier casemates. Manhole covers and flue caps were also made of bluestone slate.

d. Metals

The most frequently used metal in the fort was wrought iron. It was the selection for the traverse circles and embrasure armor of the casemates, the fire grating and tie rods of the shot furnace, and the pintle hinge assemblies of the sally port gate. The embrasures incorporated the most noticeable quantities of iron, having two massive jambs. The exterior of the embrasure opening was lined with 3/8 to 1/2-inch boiler plate. (See Appendix 1, Sheet 30 of HSR Drawings.) The embrasure irons, Totten shutters, and their various related components were secured from the Robert P. Parrott Foundry. Boiler plate was also the material chosen for the Garden Key lighthouse.

Cast iron constituted the drainage conduits from the terreplein which fed the cisterns below the casemates, the cistern curbing and manhole covers.

Bronze was used as the strike plate material in the latching system of the Totten shutters. It was keyed into the surrounding masonry and ironwork of the sill by the use of lead concrete, poured into the void surrounding the iron gun pintle.

Lead was utilized in numerous dampproofing applications of the fort. These included gutters of the parade ground buildings, water catchment inlets and waterproofing of the terreplein; and fort-wide flashing details. Much, if not all, of this material was removed by vandalism prior to acquisition of the resource by the National Park Service.

Historical references indicate the specification of copper for ventilator grating and screens of the detached magazines of the parade ground. The only areas of the fort where any copper is presently found are in the magazines of the tower bastions of the fort proper.

e. Wood

Wood received widespread utilization in the historic fort. The scarp wall foundations are atop a timber grillage and numerous finishing applications in the

fort incorporated wood. Of what remains, the most visible situations in which wood is used are the magazines located in the centers of the long fronts on the lower tier and the tower bastion magazines. Typically, nominal 1-inch sheathing was installed over a frame of 3x4's, 18 inches on center. Wooden doors and doorframes of a very high level of craftsmanship are also evident in several areas of the fort. (See Figure 5, Wood-Lined Bastion Magazine. This photo was made in the magazine at Tower Bastion 1.)

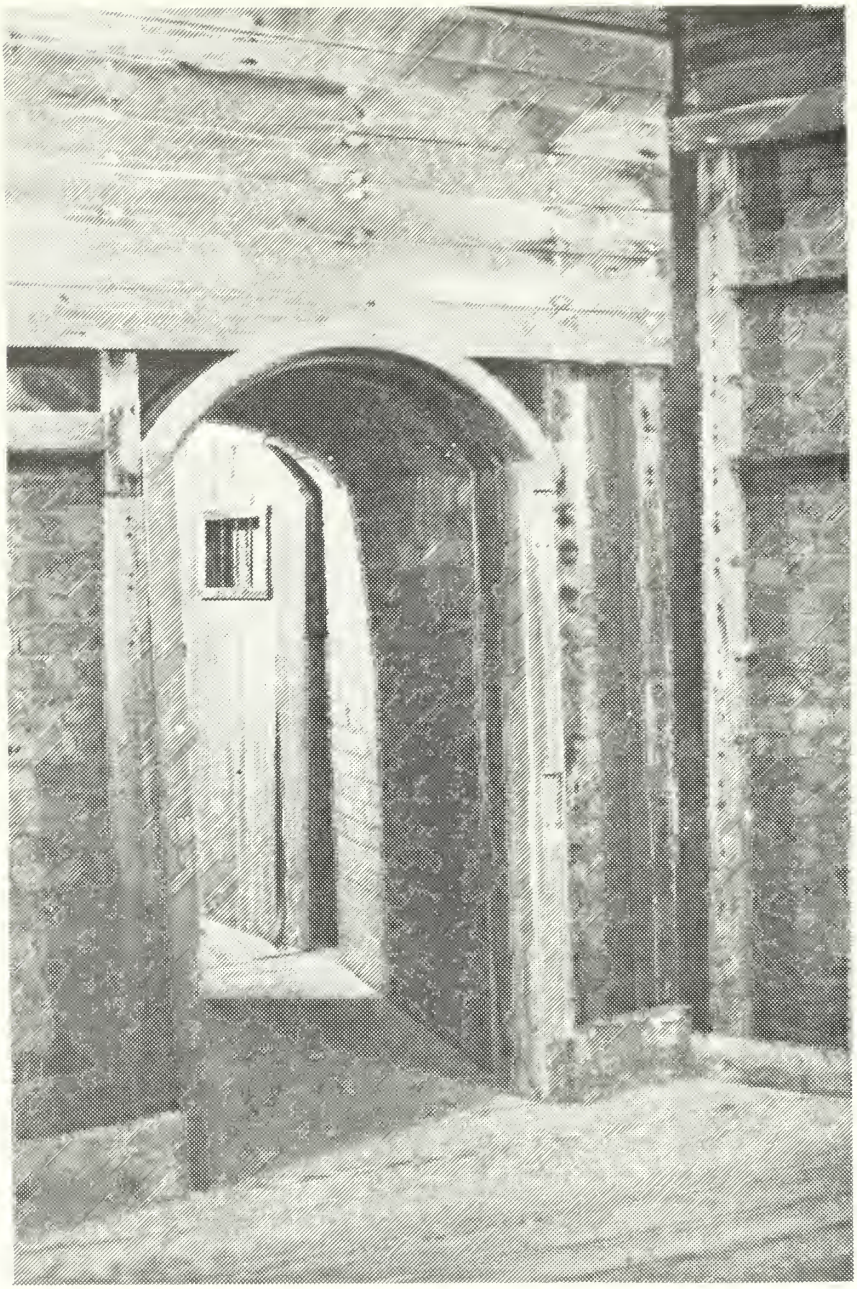
2. Structural

Fort Jefferson is a casemated brick masonry structure incorporating over 2,000 arches. The roughly 40-foot cross section comprising the scarp, casemates and communication arches, rests upon a grillage of 3-inch planks, abutting, topped by 6x8-inch timbers spaced 8 inches apart. The interstices of the grillage were filled with rammed coral-aggregate concrete and the foundation completed with an 8-inch concrete topping. Below the first tier casemates are the barrel-vaulted cisterns of the fresh water catchment system. Masonry piers measuring approximately 4x4 and 4x8 feet carry the superstructure of the fortification. Certain of the piers are penetrated by 2-foot 6-inch-wide arched openings for cistern access. Additionally, 6-inch iron drainage conduit from the terreplein feed the cisterns, passing vertically within the core of the structural piers. Segmented arches spring from 8 and 10-foot references up the piers on the lower and upper ties respectively. The lower tier arches of the parade face have a rise of 1.6 inches per foot of span while the upper tier arches rise 2.4 inches per foot of span. The scarp walls are massive with concrete fill between arches and above casemate vaults.

The face brick of the scarp was laid separately from the scarp wall core (casemates) by the intentional inclusion of a construction joint. The purpose of this division was to sustain structural integrity of the casemates during bombardment albeit at the expense of incurring damage to and loss of the face brick with shell impact.

3. Utilities

Electricity for current operating needs of Fort Jefferson is provided by two 60-kw diesel-powered generators which operate alternately, controlled manually. One each of 30-kw and 45-kw generators provide auxiliary power when demands are in excess of



WOOD-LINED BASTION MAGAZINE

Figure 5

60 kw. Electrical power generation equipment is located in Casemates 42-45 of Front 2. The equipment exhausts through the embrasure of Casemate 43 on the moat side. Four diesel storage tanks are situated at the south coaling dock having a 16,000 gallon total capacity. A 1-inch fuel line services the generator room from the storage tanks. Additionally, two 550-gallon diesel storage tanks are located in Casemate 44.[11]

A thorough rehabilitation of the fort utility systems was recently completed. Electrical work performed included: rewiring park offices, shops, residences and campground area; installation of new conduit, circuit boxes, receptacles, and circuit breaker panels; installation of new exterior dock and campground lighting; and installation of new motor controls for the dock and waste disposal system.

Mechanical work performed included: installation of a new 60-kw generator, a new pump room for the dock waste disposal system, and reoutfitting of the pump room.

Freshwater collection system work performed included: making 14 rooftop collectors operational, replacement of all underground collection lines, installation of a new sump box, installation of a new desalination plant, grouting cracks in the cistern, sealing cistern interior and applying a 1-inch cementitious polymer topping to the exterior, installation of new cistern feeder lines, installation of a new electronic monitoring system, and replacement of gutters and downspouts at the park manager's residence.

---

[11] "Historic Resources Management Plan, Fort Jefferson National Monument," 1977, p. II-4.

CHAPTER III - RESULTS OF FABRIC INVESTIGATION

A. STATEMENT OF PRESENT CONDITION

1. Garden Key Lighthouse, HS-01

Preservation maintenance was performed on the lighthouse in July 1983. The result of this effort is an excellent state of repair of the structure. During December of 1985 and January of 1986, the lighthouse was treated by a volunteer painter. Work performed included: sanding rusted areas to bare metal, spot priming and applying several coats of rust-inhibiting paint. Much of the window sash was observed to be dry rotting during this latter project and was puttied and painted at that time. Metal fasteners used in the fabrication of the lighthouse doors and windows have oxidized through the paint film, however, and are staining the sash. (See Appendix 1, Sheet 24 of HSR Drawings.)

2. Large Powder Magazine, HS-02

The condition of the unfinished large powder magazine is one of relative stability, the structure being situated in the protected confines of the parade ground. The brick are showing signs of weathering in some areas, particularly on the south and west elevations. There is speculation that the cause of the pronounced weathering on the south elevation was its use as a rifle range for target practice during the historic period. Approximately 100 square feet of brick are damaged or missing in this area. (See Figure 6, Damage to Large Magazine.) Accompanying the brick weathering is a certain amount of mortar deterioration, especially evident on the west elevation. Several interior brick are missing from the entrance to the magazine at the point where access door hinges were mounted. Mildew staining is evident over the surface of the interior in general, being concentrated in the masonry vault. (See Appendix 1, Sheets 26 and 27 of HSR Drawings.)

3. Small Powder Magazine, HS-03

The most obvious condition of the small powder magazine needing remedy is the predominance of vegetative intrusion, particularly on the east elevation. Some cracks in the structure can be attributed to this cause. One major crack in the horizontal mortar beds circles the entire magazine at a level coincident with the depth of the root systems of plants growing on the structure. This condition is periodically kept in check by park maintenance personnel. One corner of the magazine is

DAMAGE TO LARGE MAGAZINE

Figure 6 PRESENT CONDITION

slightly eroded, missing about four brick units. One of the vents on the southside is damaged and missing approximately 30 brick units. Otherwise, brick and mortar integrity and the soundness of the structure in general is good. (See Appendix 1, Sheet 25 of HSR Drawings.)

4. Hot Shot Furnace, HS-04

The shot furnace shows evidence of accelerating deterioration due to the typical weathering to which all of the fort structures are subjected. (See Appendix 1, Sheet 28 of HSR Drawings.) Also, considerable quantities of ironwork integral to the furnace assembly are exfoliating, generating severe damage to the masonry. The latter case is particularly seen on the west face where two large cracks have occurred along the planes defined by the iron tie rods. (See Figure 7, Shot Furnace Cracking.) Prior repointing of these cracks is evident but the problem itself persists essentially unremedied. Of 26 tension rod washers on this face, seven are intact, six are cracked or broken with missing pieces, and 13 are missing. The fire box at this side is severely damaged in an area encompassing approximately 40 brick units. (See Figure 8, Damage to Firebox.) Also, major cracks have opened at the corner of this face, one separation of nearly 3 inches being recorded where mortar joints are typically 1/4 inch. (See Figure 9, Shot Furnace Cracking.) On the east face of the furnace, the same diagonal crack attributed to the tie rods exists. Of 28 tension rod washers, three are intact, four are cracked or broken with missing pieces, and 21 are missing.

At the south face of the shot furnace, most of the granite coping stones of the chimney are missing and the chimney itself is inclining toward the north. At the southwest corner the masonry is displaced 4-1/2 inches outward, with a 2-inch separation between the brick and granite cap. Also, displaced masonry at the arch on this face bulges 6 inches out from the wall surface. (See Figure 10, Shot Furnace Brick Displacement.)

5. Dr. Mudd's Cell, HS-05

Dr. Samuel Mudd's Cell, presumed to have been in the lower tier of Bastion 1, is currently in use as an interpretive feature of the fort. It is located near the terminus of the tour route upon descent from the terreplein. There are presently no conditions in this area which demand treatment or detract from its current use. (See Figure 11, Dr. Samuel Mudd's Cell.)

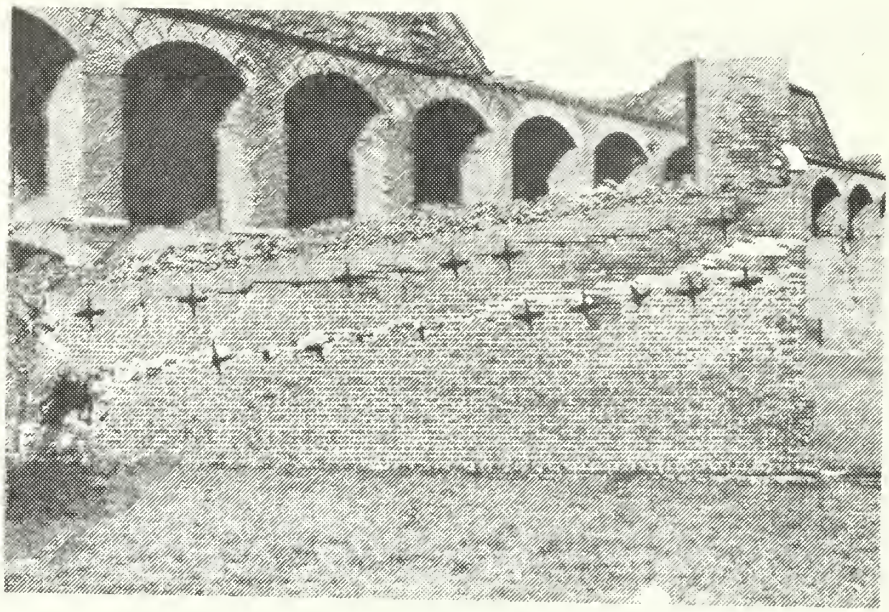
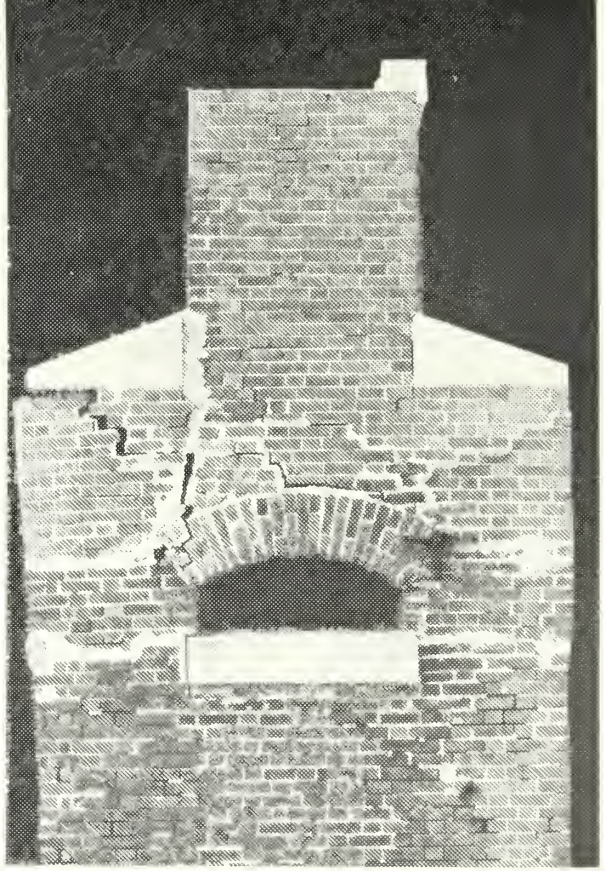


Figure 7 SHOT FURNACE CRACKING

Figure 8 DAMAGE TO FIREBOX

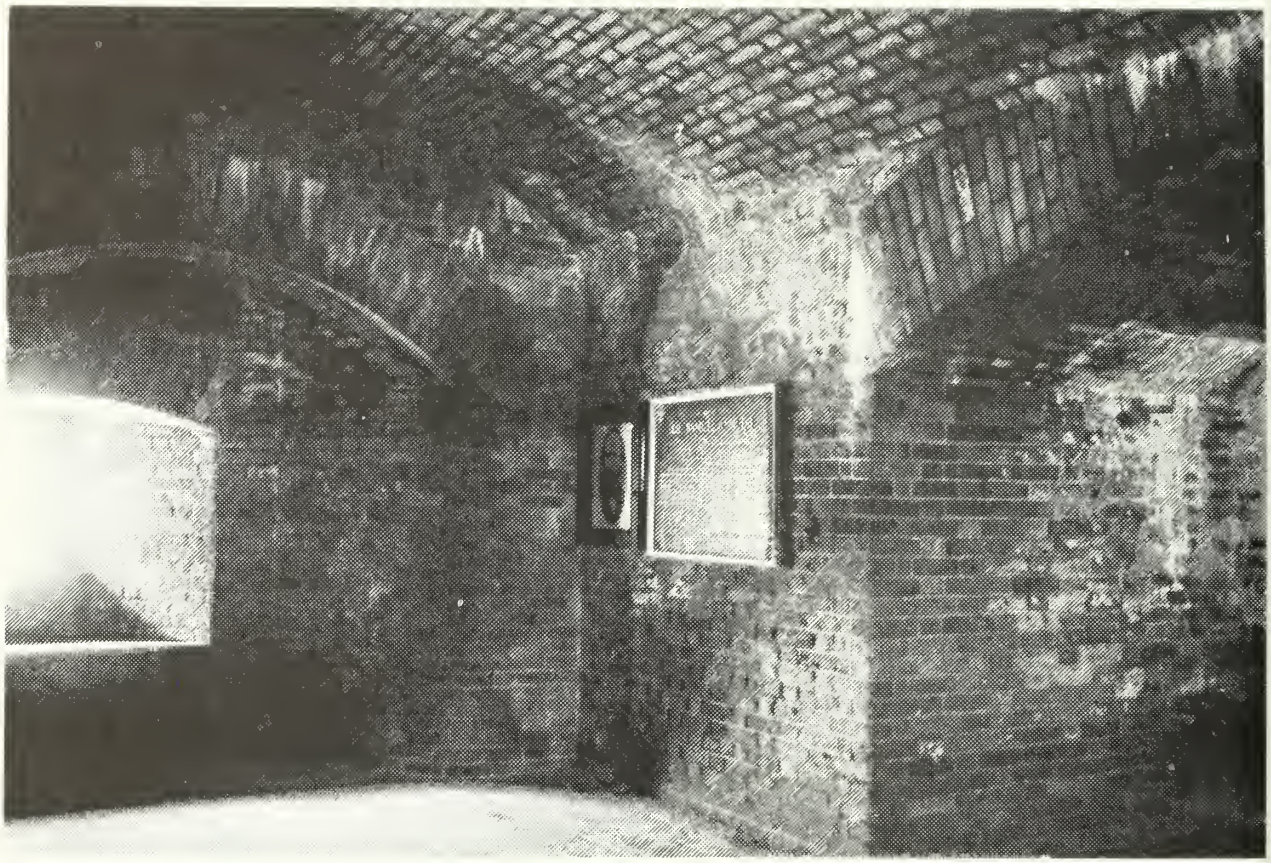
SHOT FURNACE
CRACKING

Figure 9



SHOT FURNACE
BRICK DISPLACEMENT

Figure 10



DR. SAMUEL MUDD'S CELL

Figure 11 PRESENT CONDITION

6. Officers' Quarters, HS-06

The officers' quarters were demolished in 1962, being deemed a threat to the safety of Park Service personnel as well as visitors. The existing condition of the ruins that remain is one of reasonable stability for the function of interpretive use. Vegetation covering the ruin, predominantly grass and small shrubs, is routinely kept under control by park maintenance personnel. (See Figure 12, Officers' Quarters Ruin.)

7. Enlisted Men's Barracks, HS-07

The enlisted men's barracks were also razed in the demolition of 1962. The ruin outline is in reasonably stable condition for interpretive use. As in the case of the officers' quarters ruins, vegetation which covers most of this site is regularly controlled by periodic maintenance by the park. (See Figure 13, Enlisted Men's Barracks Ruin.)

8. Engineer Officers' Quarters, HS-08

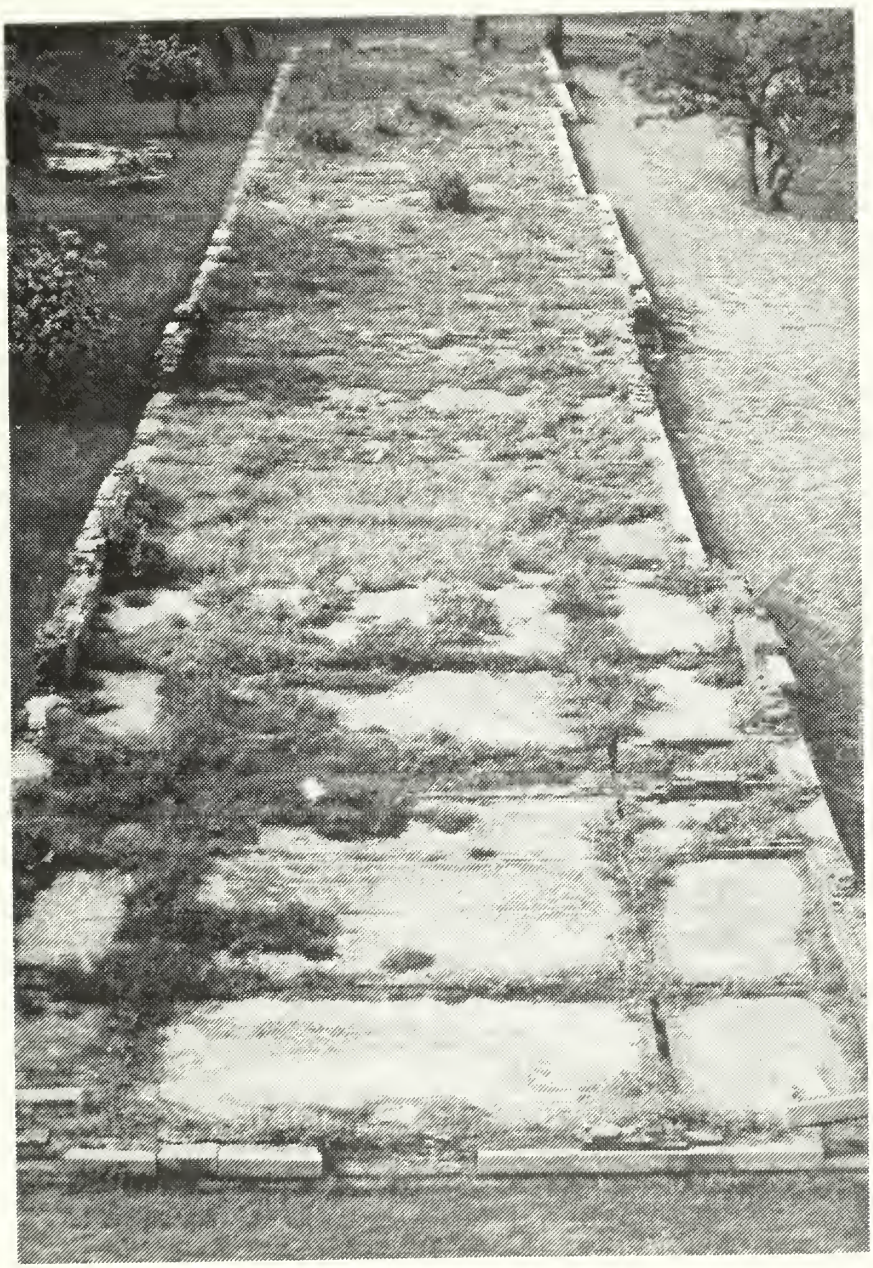
The southern portion of the engineer officers' quarters was rebuilt sometime after 1938. This habitable area of the engineer officers' quarters is currently in use as residences for Park Service personnel. Adjacent to the north and attached to the portion of the quarters used as residences is an area of stable ruins which is not presently used. The masonry and mortar integrity of the entire structure is good throughout, with the exception of several doorways where iron lintels have exfoliated and jacked open the mortar joints where installed. (See Figure 14, Damage to Doorway Lintels.) The photo above shows damage to an entry doorway to the south portion of the quarters caused by an exfoliating doorway lintel. This is the primary entrance to a park staff residence. By far the most significant preservation issue attending this building is the transmission of moisture through the masonry walls during periods of wind-driven rain. As the climate is unusually humid, moisture introduced into the masonry by this means is generally retained for long periods of time, resulting in damage to the interior drywall ceiling and wall surfaces. The resulting conditions do not meet acceptable standards for habitable space.

9. Bakery

The bakery, located in Bastion 3 of the lower tier, is an important interpretive feature of the fort and an element of the tour route. (See Figure 15, Bakery.)

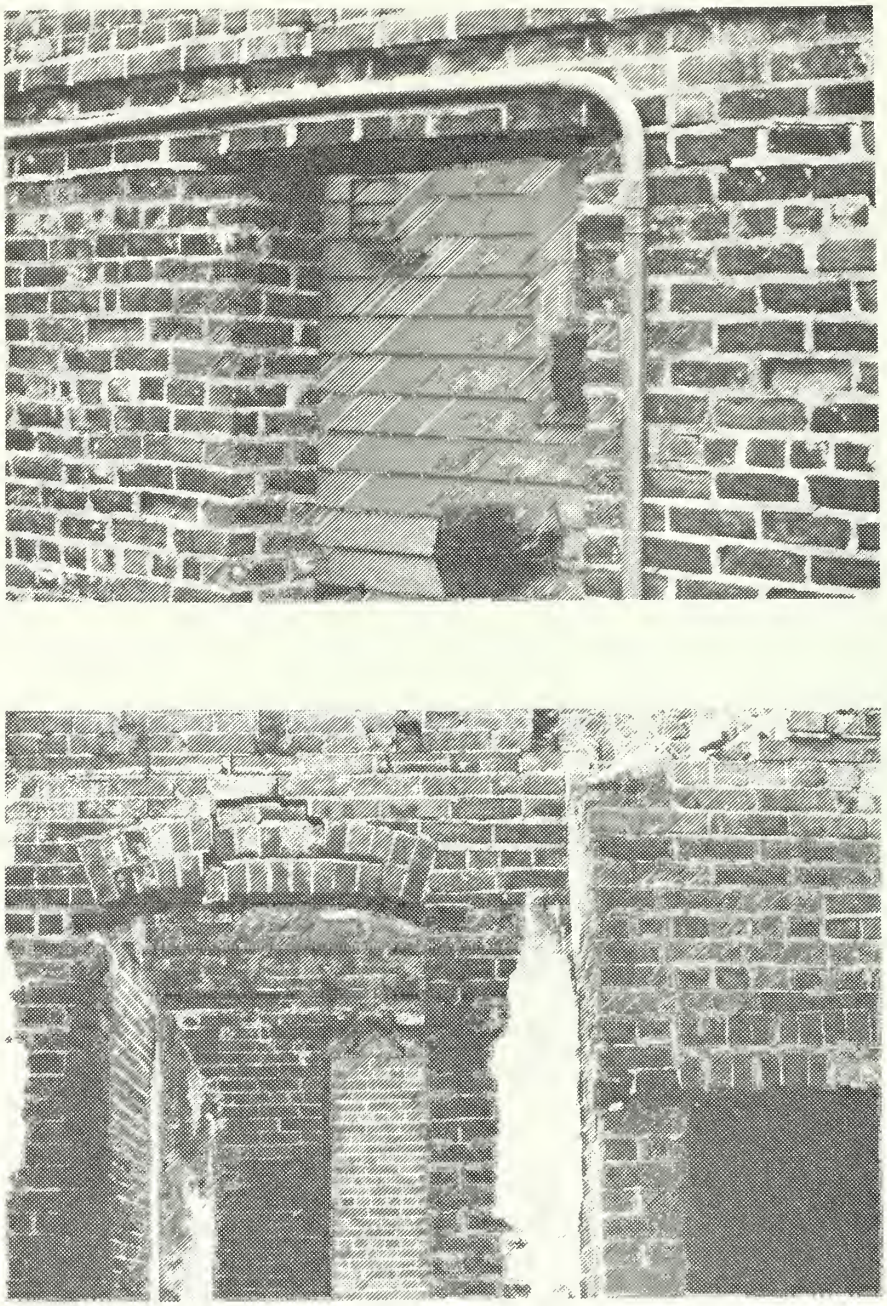
OFFICERS' QUARTERS RUINS

Figure 12 PRESENT CONDITION



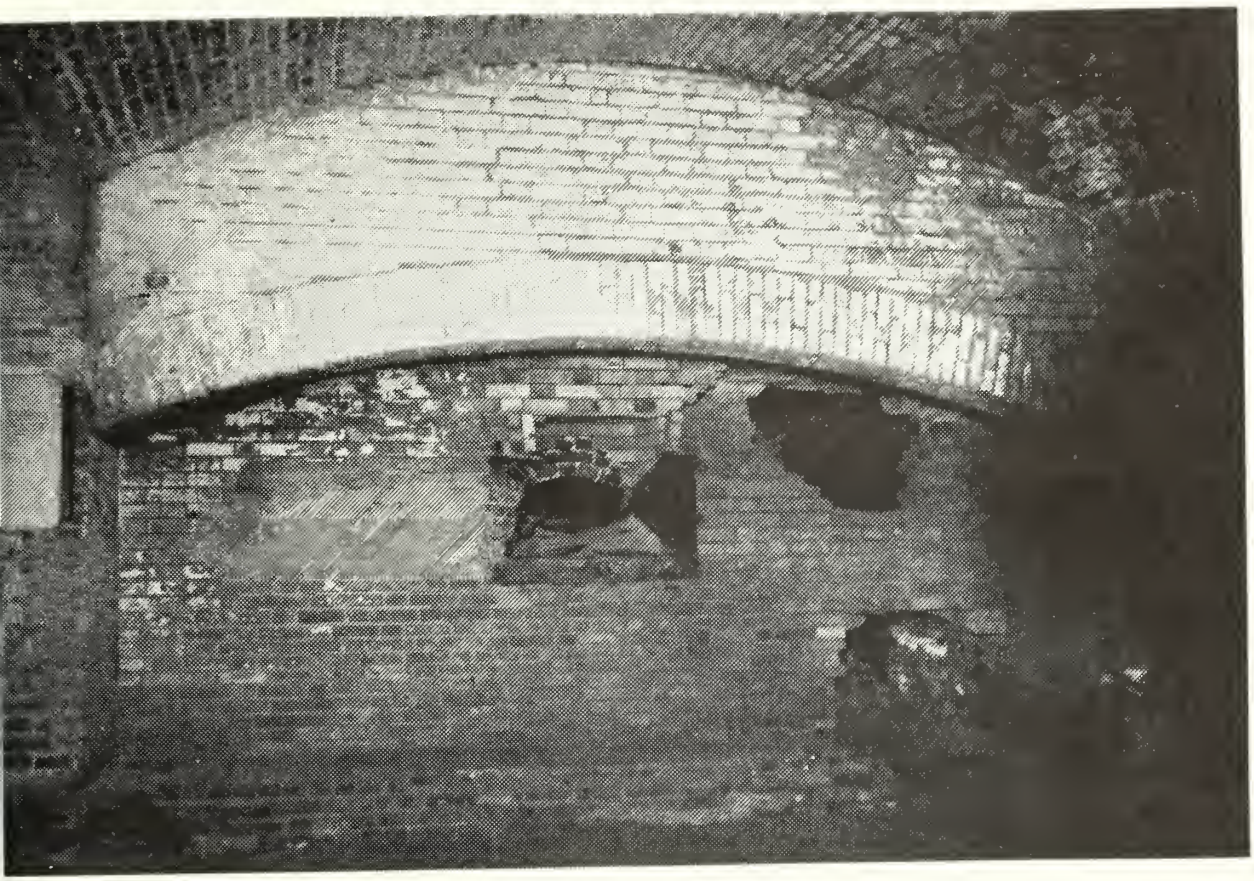
ENLISTED MEN'S BARRACKS RUINS

Figure 13 PRESENT CONDITION



DAMAGE TO DOORWAY LINTELS

Figure 14 PRESENT CONDITION



BAKERY

Figure 15 PRESENT CONDITION

Two large cracks occur above the main arch and at the junction of the front wall of the oven and the ceiling of the vault. A large hole, approximately 10 square feet in area penetrates the wall of the oven adjacent to the oven door. (See Figure 16, Damage to Bakery Wall.) Although the source of this damage is unknown, it is highly unlikely to have been caused by natural weathering processes. The oven door opening is characterized by mortar deterioration and brick loss typical of other areas of the fort where iron work has been used. Inasmuch as the bakery occupies the area of a bastion which would ordinarily be occupied by seven gunports, the amount of daylight entering this space is quite limited. This not only reduces visibility but provides a hospitable atmosphere for mildew and efflorescent deposits, particularly to the southwest of the bastion interior.

10. Cistern, HS-10

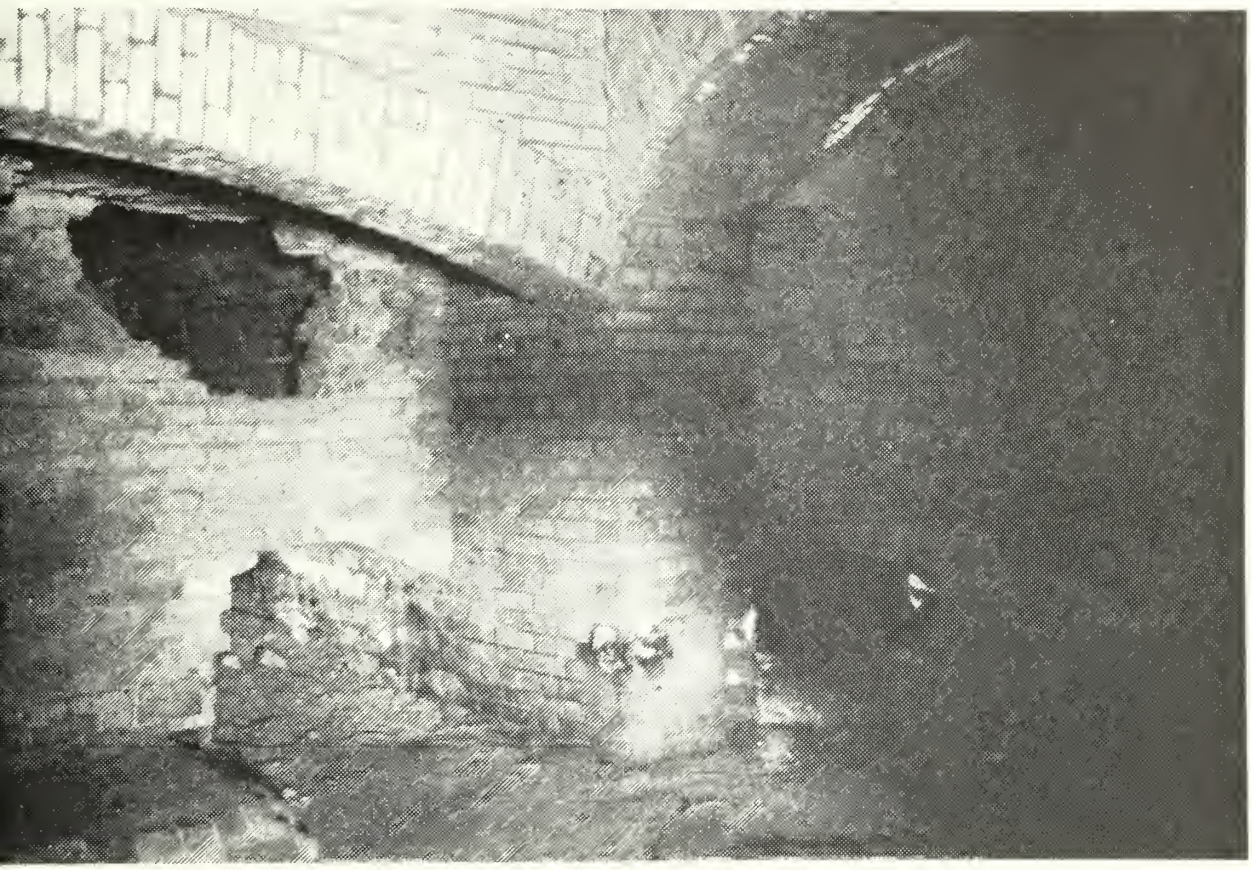
The cistern, formerly the foundation of a chapel and office, is a current component of the freshwater collection system and serves as the primary storage reservoir for the fort. A recent utilities rehabilitation project involved considerable repairs to the cistern and should ensure its continued and satisfactory performance.

11. Moat and Counterscarp

The condition of the counterscarp varies from one of acceptable stability to severe weathering with loss of brick and badly deteriorated mortar. Stable conditions are the result of prior maintenance efforts involving repointing, brick replacement, concrete resurfacing and, in some areas, reconstruction. The most seriously weathered areas owe to their orientation toward the northwest through northeast quadrants, the zone subject to the most pronounced effects of wave action. (See Figure 17, Relative Wave Energy Distribution.)

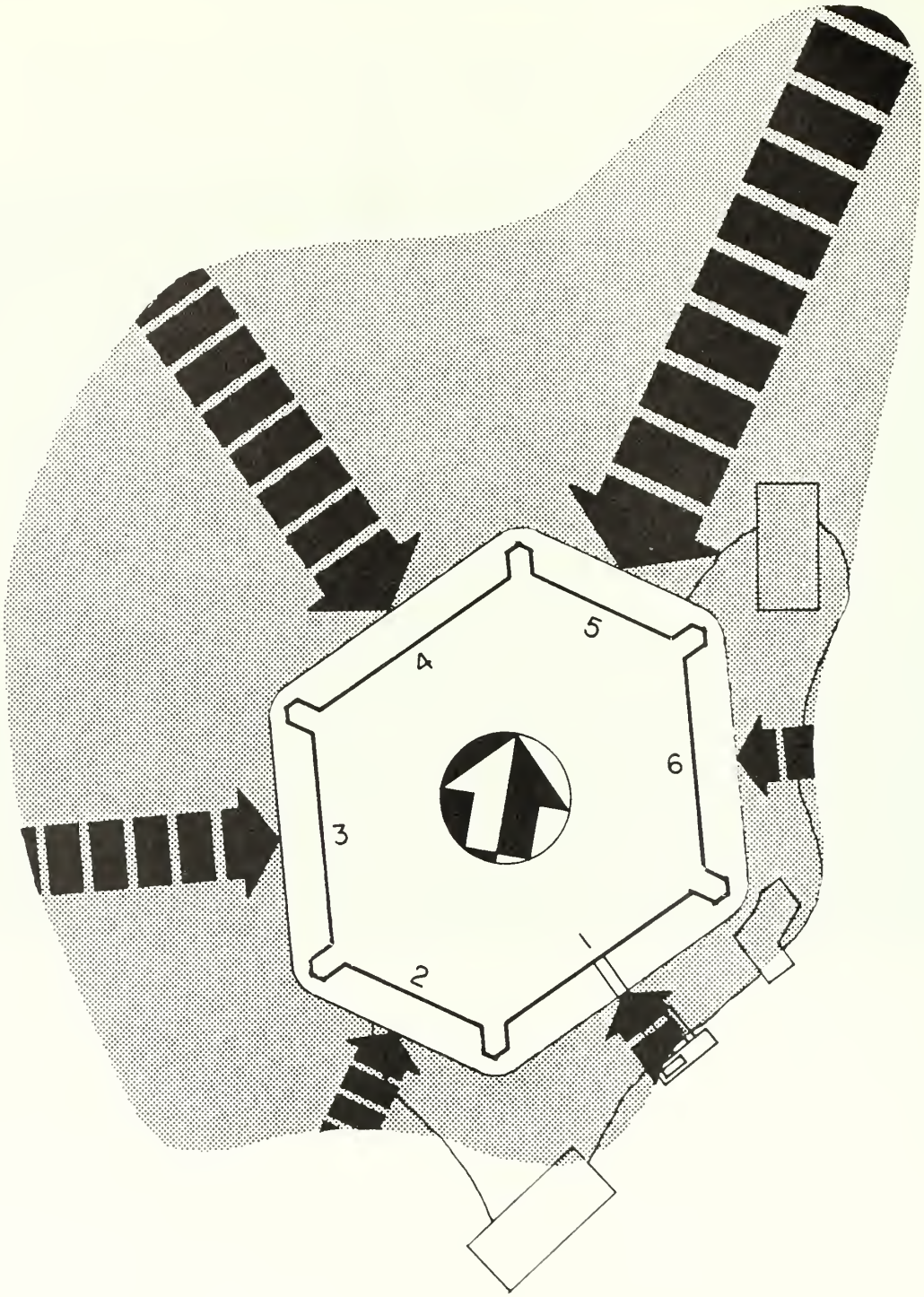
A counterscarp stabilization project is in progress. The conditions of the counterscarp immediately prior to the commencement of this project are summarized as follows:

Front 1 - The seaward face is not exposed to weathering, being situated such that Garden Key serves as a protective berm. The coping is relatively stable but missing brick in spots and having widespread deteriorated mortar. The paving, where concrete, is



DAMAGE TO BAKERY WALL

Figure 16 PRESENT CONDITION



RELATIVE WAVE ENERGY DISTRIBUTION

Figure 17 PRESENT CONDITION

spalling and crumbling as well as evidencing intrusive vegetation. (See Appendix 1, Sheet 31 of HSR Drawings.)

Front 2 - Approximately half of the seaward face is not exposed to weathering, being bermed by Garden Key. For the remainder, the bricks are in a fairly stable condition with most of the mortar in good condition, excepting two areas of badly deteriorated mortar. The coping and the concrete paving are in an excellent state of repair. (See Appendix 1, Sheets 31 and 32 of HSR Drawings.)

Front 3 - The seaward face is in good to fair condition having been recently repointed. The coping is similarly stable and the concrete paving is in excellent condition. (See Appendix 1, Sheets 31 and 33 of HSR Drawings.)

Front 4 - Overall, the seaward face is in fair to poor condition, one section having been recently rebuilt. Some undercutting of the wall below the waterline is in evidence. Above the waterline, the brick are weathering and the mortar is badly deteriorated. The coping is severely weathering with some missing brick and the concrete paving badly cracking and crumbling in areas. On this front there is also apparent weathering on the moat side of the counterscarp involving missing brick and badly deteriorated mortar. (See Appendix 1, Sheets 31 and 34 of HSR Drawings.)

Front 5 - The most extremely affected section of the counterscarp, the seaward face is characterized by severely weathered brick with badly deteriorated mortar. There are large areas of missing brick with the exposed core concrete extensively eroded. The coping brick are weathered and their mortar joints badly deteriorated. Concrete paving of this area is severely cracked with some missing concrete fragments. On the moat side, some undercutting has occurred below the waterline with some brick missing and mortar erosion above the waterline. (See Appendix 1, Sheets 31 and 35 of HSR Drawings and Figures 5 and 6, Present Condition.)

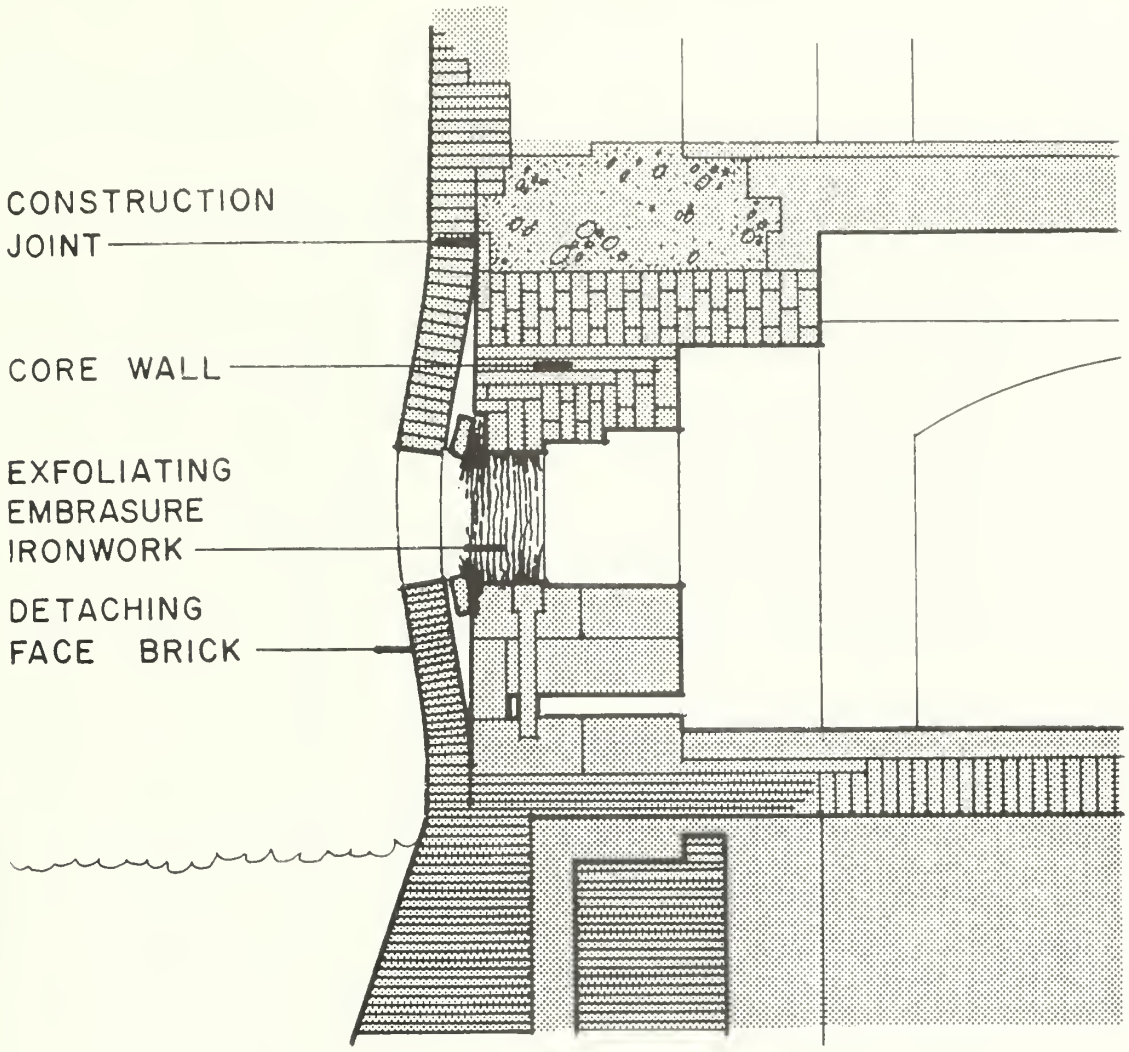
Front 6 - The seaward face is bermed by Garden Key and not exposed to weathering. The coping, however, is seriously eroding with some missing brick and deteriorated mortar. The concrete paving is spalling in areas and covered and/or cracking in points due to intruding vegetation. On the moat side, substantial quantities of brick are missing and mortar joints are deeply eroded above the waterline. (See Appendix 1, Sheet 31 of HSR Drawings.)

12. Scarp (Curtains), HS-12

Scarp conditions range from fairly stable to severely deteriorated and are the result of several causes. The pronounced brick weathering and mortar erosion have been caused by their exposure to the severe climatic conditions typical of subtropical marine environments. The severe masonry disintegration around the gunports has been generated by the effect of exfoliating embrasure ironwork in tandem with the nature of the scarp wall construction. As the embrasure ironwork (which was constructed into the masonry of the scarp at the juncture of the core wall and face brick) has oxidized and swollen, it has induced an internal expansive stress which has been sufficient to affect the scarp in two ways: (1) face brick in the immediate area around the gunport have been pushed free by the outward distension of the iron work, then falling into the moat; and (2) in some instances, the mortar and masonry have demonstrated sufficient flexibility to enable the stresses to spread along the plane of the construction joint, the face brick bulging markedly away from the scarp core as the mortar failed along that plane. (See Figures 18 and 19, Typical Embrasure Deterioration and Figures 20 and 21, Bulging Embrasure Masonry. Figure 20 shows the condition of Upper Tier Casemate 36. Figure 21 is Lower Tier Embrasure 138.) In both cases, another condition has ensued. The loss or detachment of face brick around the gunports has exposed the core of the scarp wall to weathering. The quality of this core material is decidedly inferior in comparison to the face brick and is thus significantly less weather resistant. The structural integrity of the fort thus is severely threatened as this core material helps to bear the load of the casemate vaults. Should structural failure of the arches occur, the ongoing collapse of the entire fort would be accelerated and extremely difficult to arrest. Examples of scarp areas where the core material has become exposed by the foregoing process clearly demonstrate the accelerating effect this core exposure has to scarp wall deterioration. (See Figure 22, Comparative Photographs of Scarp Deterioration. Both photos appear adjacently to allow comparison of Lower Tier Embrasures 153-155 conditions in 1970, above, and 1986, below.)

Scarp conditions in summary are as follows:

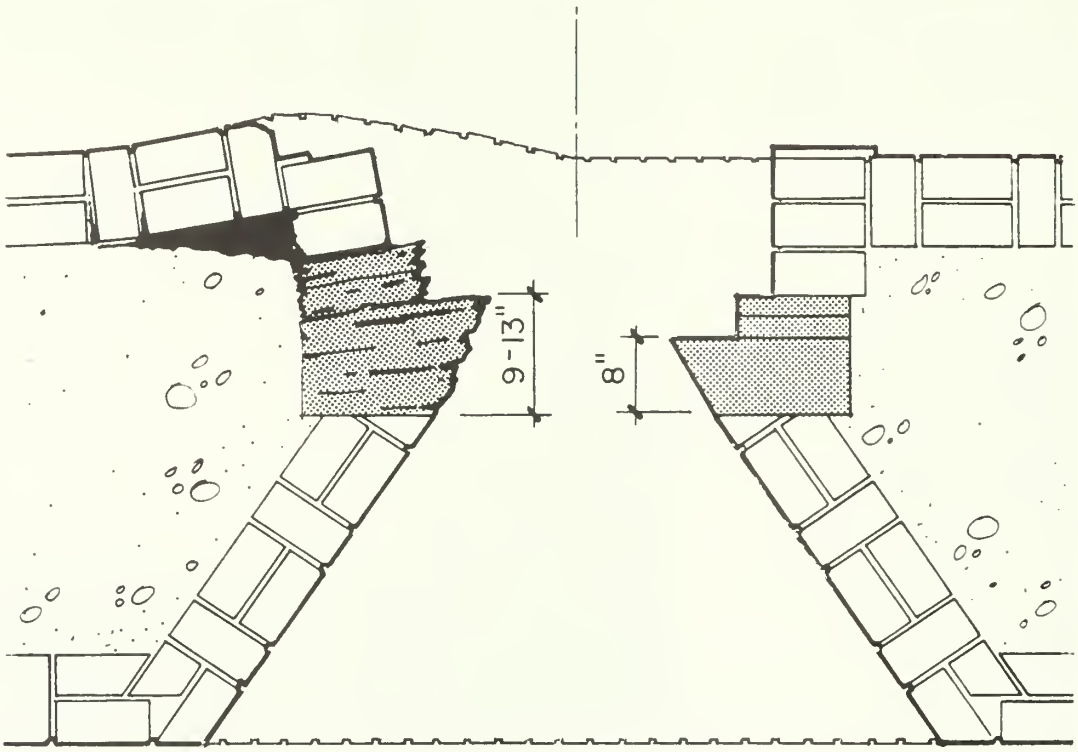
Front 1 - Seven of 18 lower tier embrasures show bulging masonry resulting from exfoliating ironwork.



TYPICAL EMBRASURE DETERIORATION

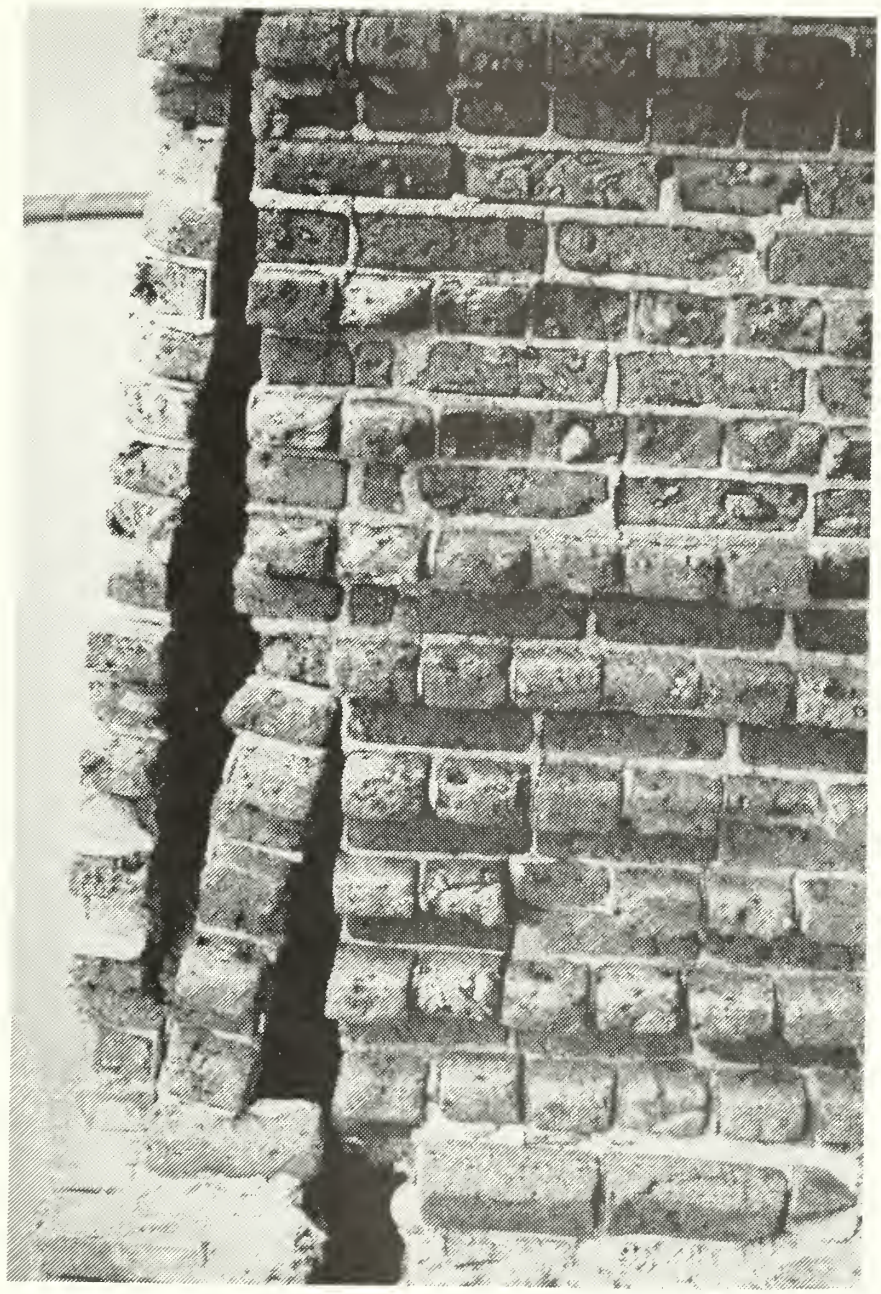
Figure 18 PRESENT CONDITION

EXISTING CONDITION CONDITION AS BUILT



TYPICAL EMBRASURE DETERIORATION

Figure 19 PRESENT CONDITION



BULGING EMBRASURE MASONRY

Figure 20 PRESENT CONDITION

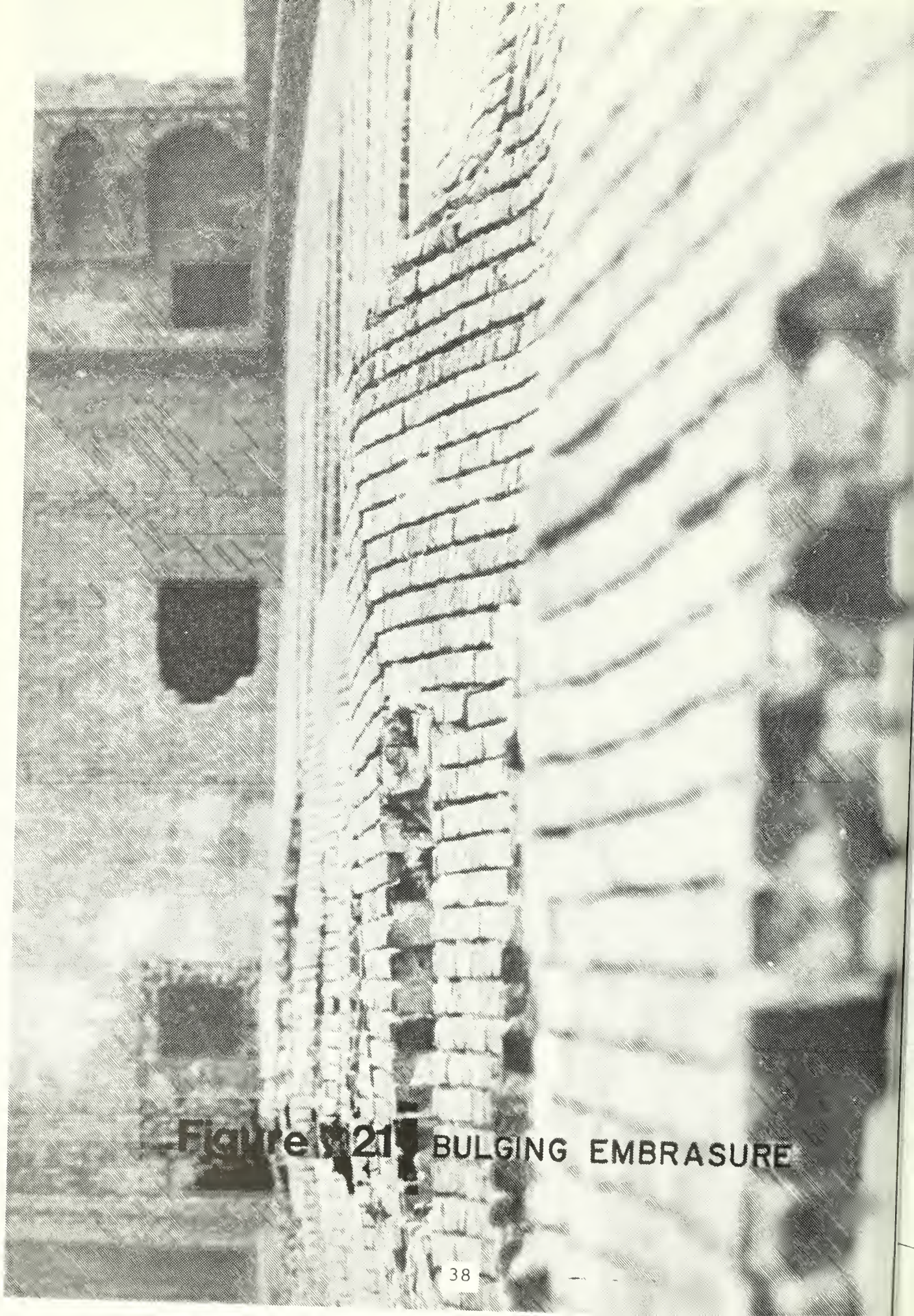
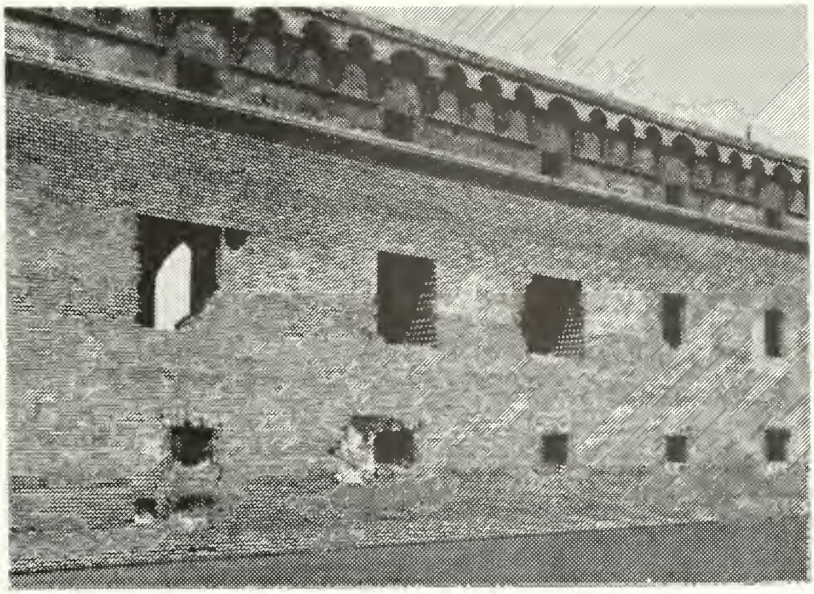


Figure 21 BULGING EMBRASURE



1970

1986

Figure 22 SCARP DETERIORATION

Front 2 - Five of 15 lower tier embrasures demonstrate masonry bulging. Visible exhaust stains appear around Embrasures 42-44 on the lower tier from diesel generating equipment in the corresponding casemates.

Front 3 - Severe masonry bulging occurs at Embrasure 74 and moderate loss of face brick near the waterline is evident. A sample repair and stabilization was performed on Embrasure 75 in 1983.

Front 4 - The area around Lower Tier Embrasure 88 shows extensive loss of face brick and masonry bulging. Otherwise, this front is in a fairly stable condition.

Front 5 - This front is in a relatively stable condition, with the exception that typical masonry and mortar deterioration are apparent.

Front 6 - The most severely deteriorated section of the scarp, Lower Tier Embrasures 147-149, display the long-term consequences of unchecked gunport damage initiated by exfoliating ironwork. The face brick have bulged away from the wall with somewhere upwards of 700 square feet of this brick subsequently falling free into the moat. Serious weathering to the core masonry is also evident here. Embrasures 150 and 153-155 of the lower tier also demonstrate bulging of face brick.

Casemates of the upper tier were unfinished but hasty masonry infill was laid during the 1860's in anticipation of the fort seeing action. This infill endeavored to only simulate the appearance of finished gunports and therefore does not adhere to design specifications for the upper tier. Being only one wythe thick, these infill areas have tended to weather rapidly with extensive mortar erosion and brick loss being seen. The structural integrity of the fort is essentially unaffected by this deterioration although its instability could constitute a hazard to curious visitors. Embrasure 1 of the upper tier is the only completed gunport having its intended ironwork. (See Appendix 1, Sheets 6, 9, 12, 15, 18 and 20 of HSR Drawings.)

13. Casemates, HS-13

The casemate vaults are some of the most well-crafted features of the fort. They are, however, plagued by several recurrent problems which appear with varying frequency at all fronts. These include: moisture damage identified by mortar leaching and the crystallization of soluble salts (efflorescence) in the

casemate ceilings; structural damage evidenced by cracking in the transverse arches, vaults and piers; and material damage signaled by brick spalling or loss.

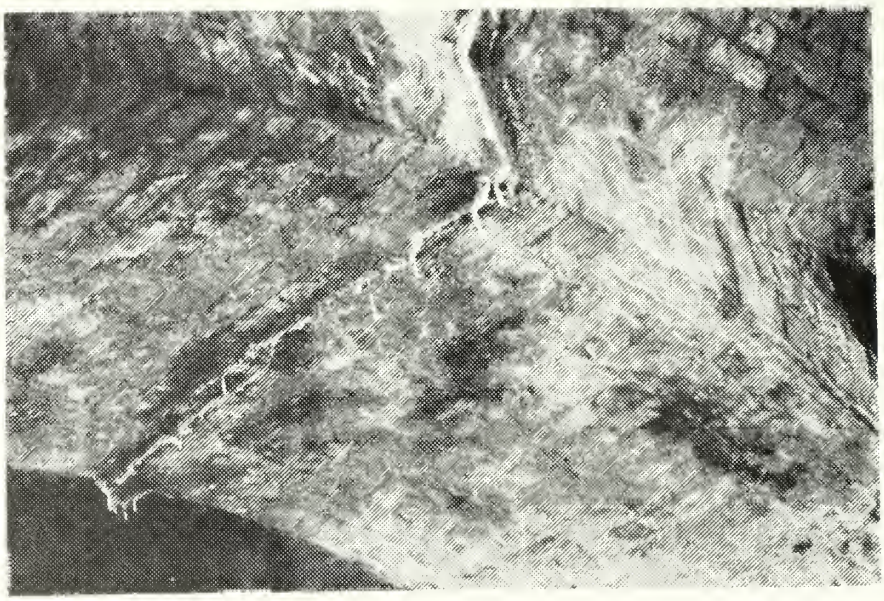
Several factors can be named as the causes of these problems. Most of the present cracking in the casemate vaults may have causes which date to the historic period over a hundred years ago. Concurrent with the fort's construction, differential settlement was recognized as a major issue with subsidence of as great as a foot documented.[12] This has resulted in widespread cracking and occasional material displacement.

The construction of the terreplein as a water collection gallery for charging the cisterns has implications as to current moisture problems. First of all, the downward sloping areas between arches were designed to collect rainwater later to be conducted to the cisterns. This emphasis on the collecting rather than the shedding of water, combined with the fact that these collection galleries are earth-filled, and given the climatic conditions, implies a constantly moist topping to the casemate vaults which fosters leakage. (See Figure 23, Casemate Moisture. These photos were taken at the arch between Casemates 115 and 116, Front 5.) Secondly, the linkage between the collection galleries and the cisterns is made by 6-inch cast iron conduits housed within the masonry piers. With the unavoidable oxidation and exfoliation of these pipes, internal stresses initiated within the piers by this swelling ironwork have resolved themselves by vertical cracking of the containing pier masonry. (See Figure 24, Pier Cracking at Cistern Access. This figure records the condition of the pier between Casemates 99 and 100, Front 4.) Thirdly, the seepage and travel of this moisture through masonry materials incorporating lime mortar has resulted in the crystallization of soluble salts such as calcium carbonate contained in these mortar mixes. Results of this crystallization process are the leaching out of mortar from the masonry joints and spalling off of the brick surface.

Casemates where moisture problems seem to be concentrated are as follows: Upper Tier Casemates 12, 13, 18-20, 40, 41, 44-48, 51-54, 64, 65, 71, 72, 74, 75, 82, 83, 85-89, 91-93, 96-100, 115-117, 121-123, 138, 139, 142-144, 149-153, 155 and 156.

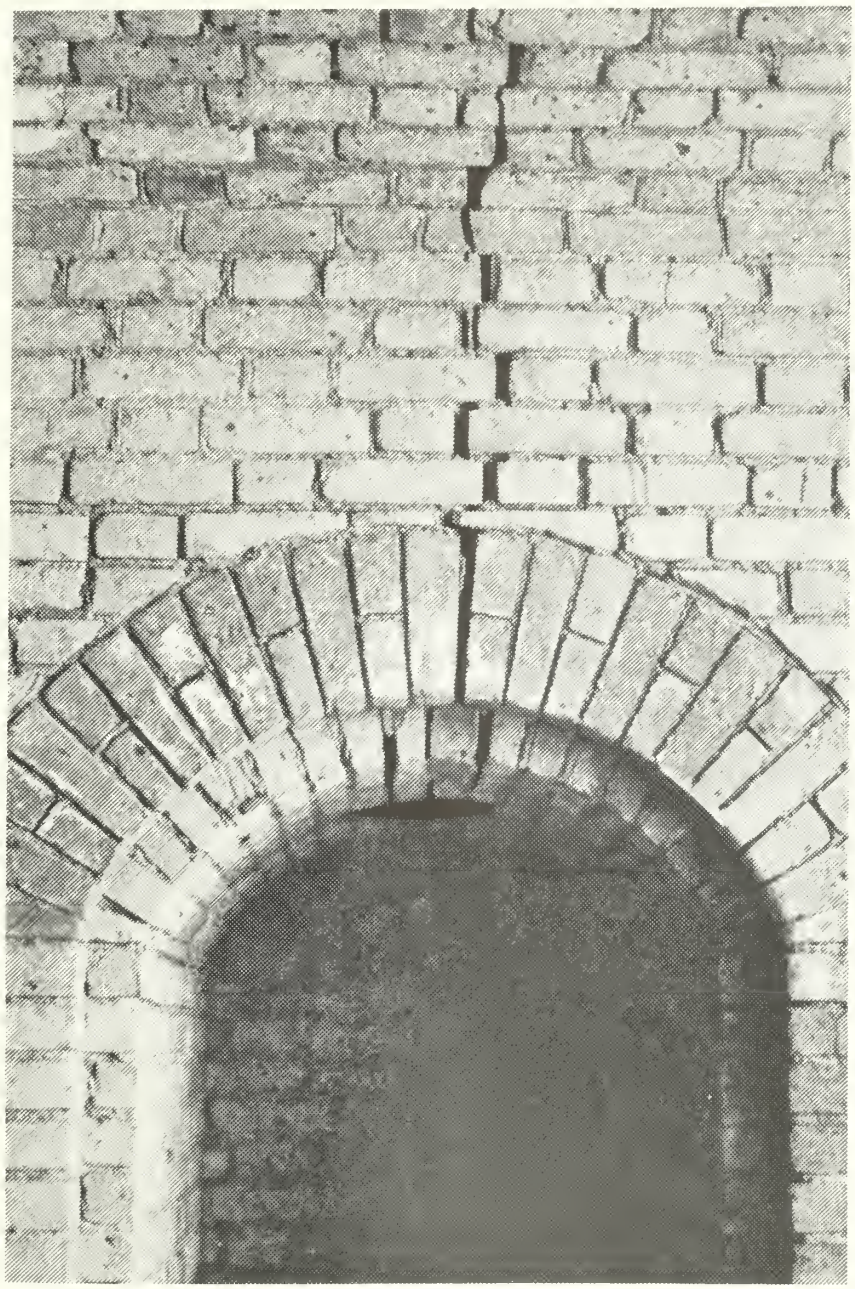
---

[12] Bearss, p. 170.



CASEMATE MOISTURE

Figure 23 PRESENT CONDITION



PIER CRACKING AT CISTERN ACCESS

Figure 24 PRESENT CONDITION

Casemate arches and supporting piers at the parade ground side of the fort are showing signs of accelerated weathering. Mortar erosion in varying degrees of severity is occurring at all fronts of the parade. In some instances, brick spalling and loss have resulted as well. (See Figures 25, 26, 27 and 28, Pier Masonry Deterioration. Figure 25 is the pier between Lower Tier Casemates 92 and 93, Front 4. Figure 26 is the pier between Lower Tier Casemates 101 and 102, Front 4. Figure 27 shows the pier between Lower Tier Casemates 117 and 118, Front 5. Figure 28 shows the same pier as it appeared in 1970, above, and 1986, below.) Much of the brick loss at the upper tier arches has been caused by the exfoliation of embedded iron brackets, formerly supporting wooden planks giving access to the terreplein magazines. (See Figure 29, Casemate Arch Damage. This figure is of the arch at Upper Tier Casemate 115, Front 5. Conditions of these arches are summarized as follows:

Front 1 Seven upper tier arches are missing brick.
Five lower tier arches are missing brick.
Three upper tier piers are missing brick.
Three lower tier piers are missing brick.

Front 2 Four upper tier arches are missing brick.
One lower tier arch is badly cracked.
One lower tier pier is missing brick.

Front 3 Four upper tier arches are missing brick.

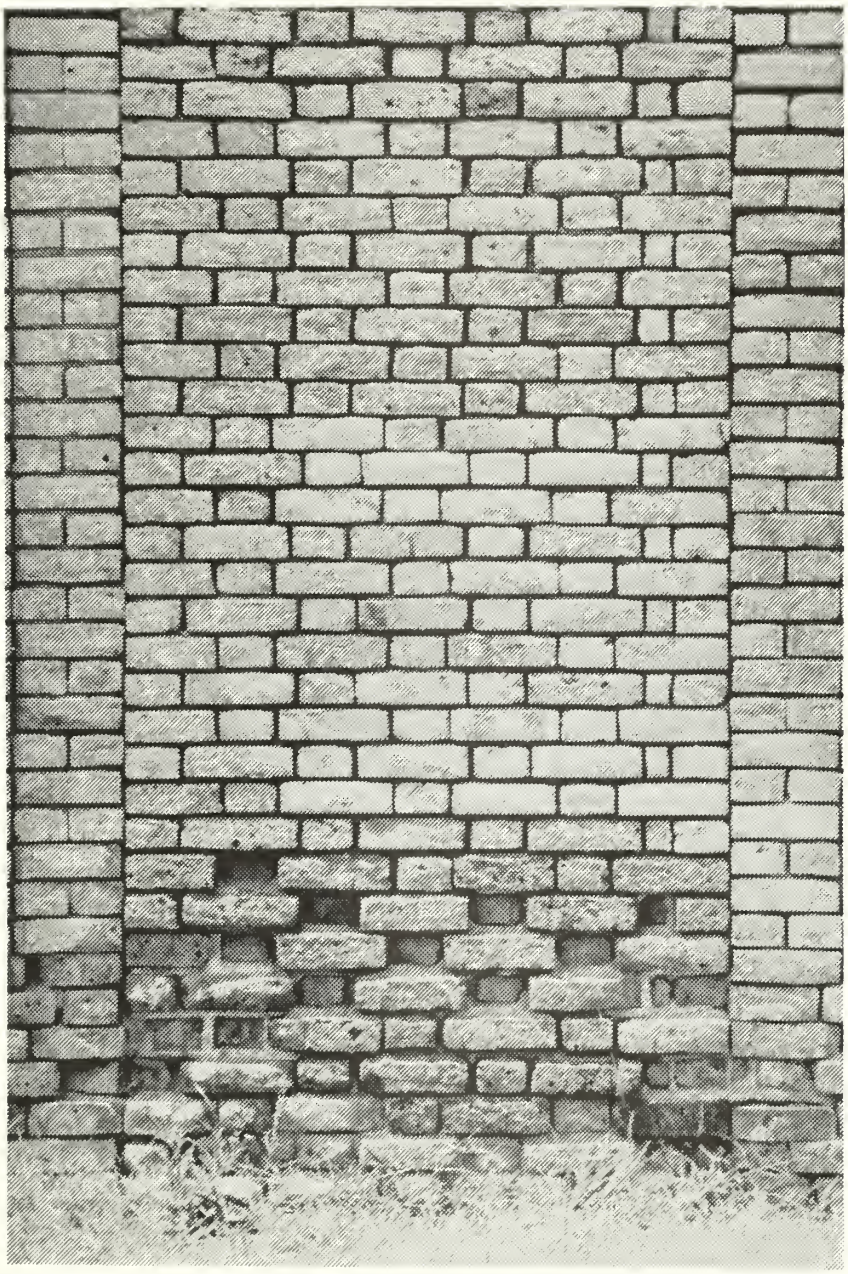
Front 4 Three upper tier arches are missing brick.
One lower tier arch is cracked.
Five upper tier piers are missing brick.

Front 5 Six upper tier arches are missing brick.
Eleven upper tier piers are missing brick.
Eighteen lower tier piers are missing brick.
Pronounced brick/mortar erosion is evident throughout.

Front 6 Five upper tier arches are missing brick.
Four upper tier piers are missing brick.
Nine lower tier piers are missing brick.
Pronounced brick spalling is evident throughout.

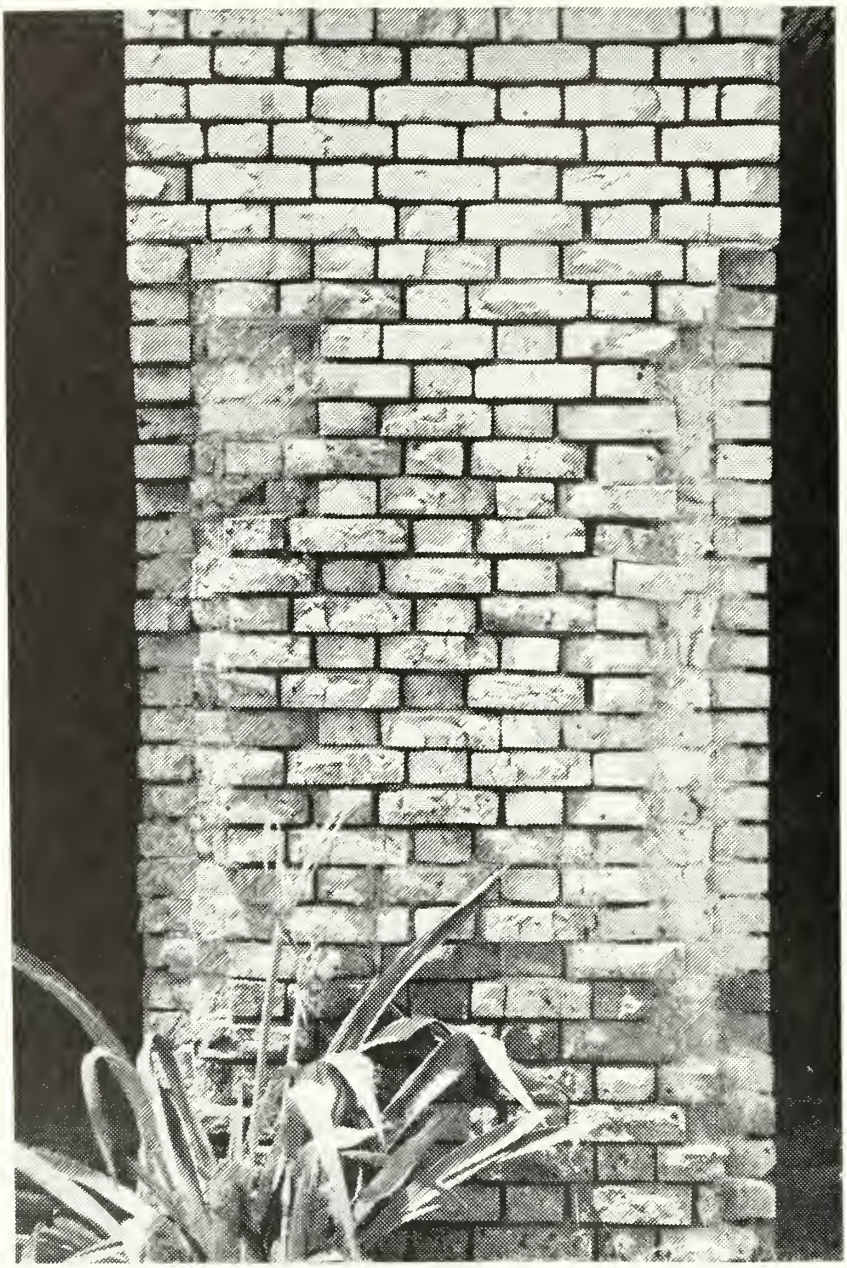
14. Bastions and Stairtowers, HS-14

Since the bastions share many of the construction characteristics of the curtains, it is not surprising that they are subject to the same variety of



PIER MASONRY DETERIORATION

Figure 25 PRESENT CONDITION

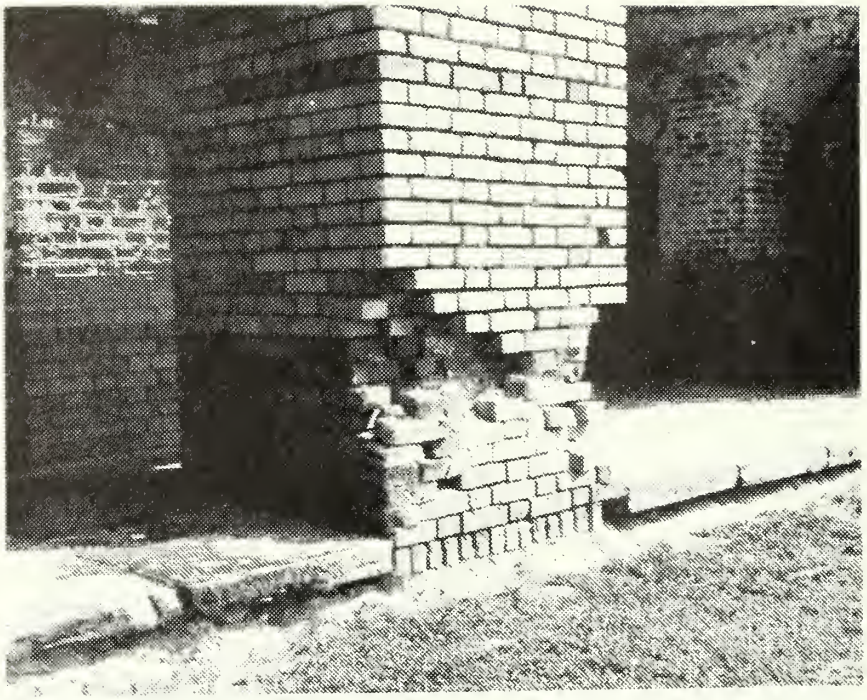


PIER MASONRY DETERIORATION

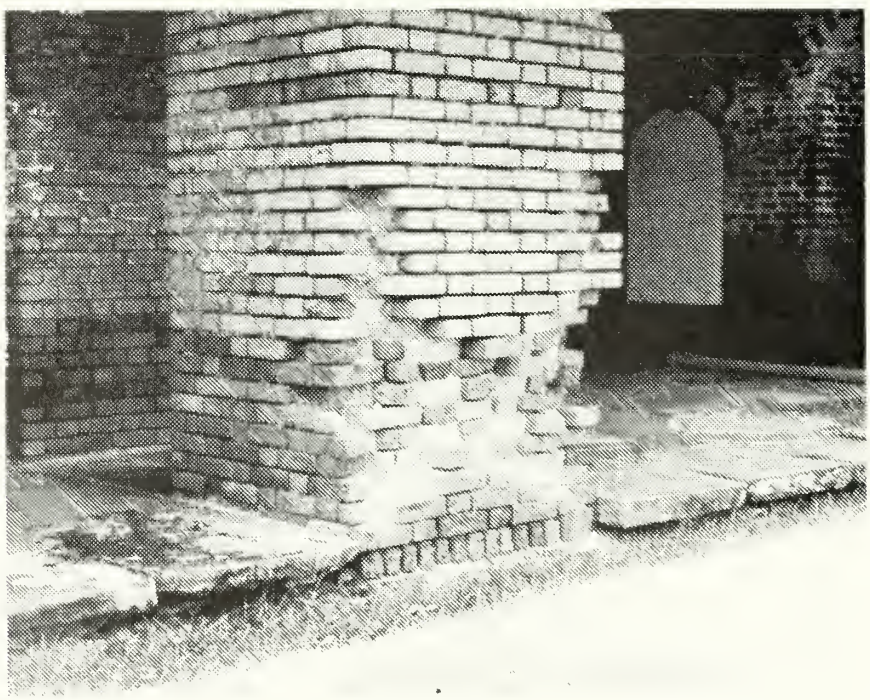
Figure 26 PRESENT CONDITION

PIER MASONRY DETERIORATION

Figure 27 PRESENT CONDITION

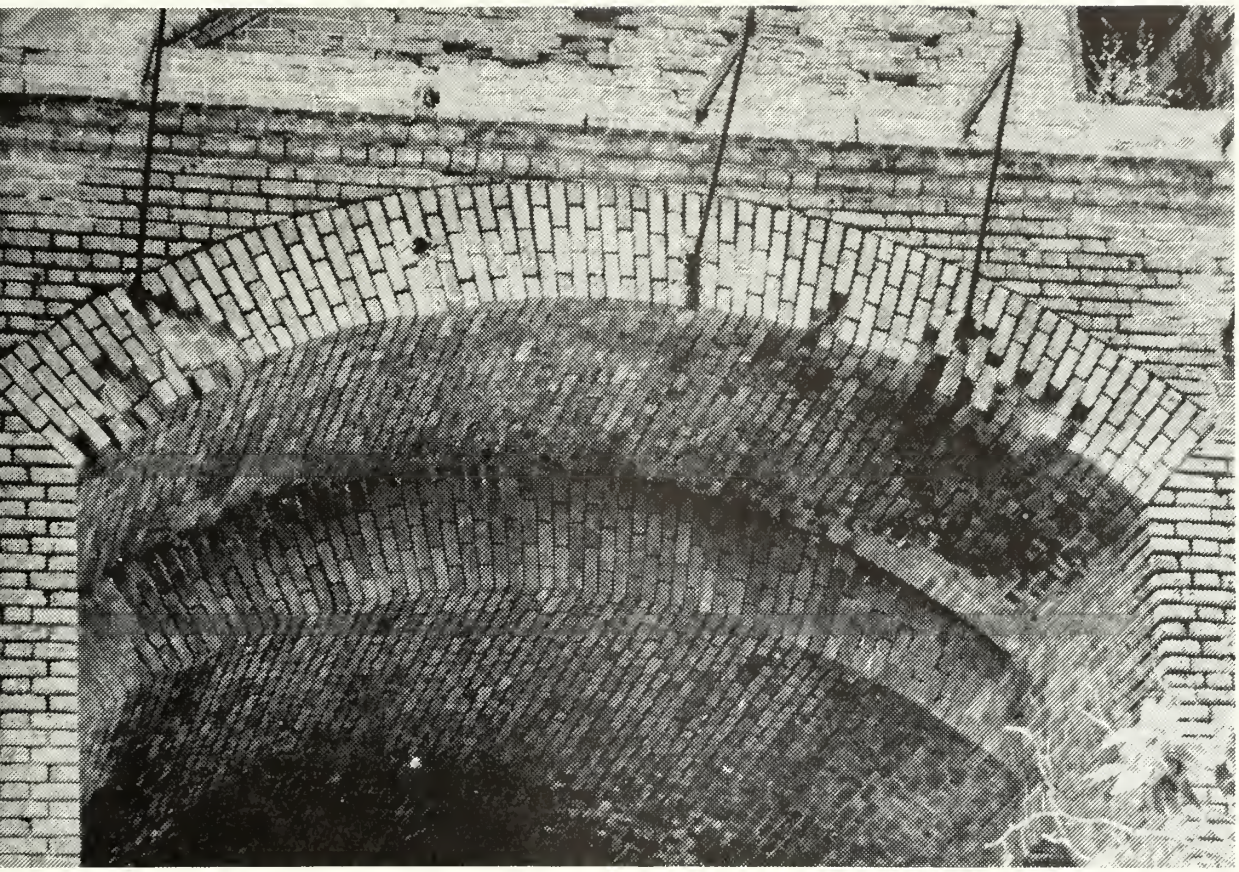


1970



1986

Figure 28 PIER DETERIORATION



CASEMATE ARCH DAMAGE

Figure 29 PRESENT CONDITION

preservation problems. Exfoliating embrasure irons have caused severe damage to several of the bastions, most notably, Bastion 3. (See Figure 30, Embrasure Damage to Bastion.) In January of 1986, an area of approximately 300 square feet dropped into the moat at Embrasures 76 and 77 of this bastion. The area of masonry erosion has probably continued to expand to date. Damage to Bastion 2 is also worthy of attention. (See Figure 31, Comparative Photos of Embrasure Damage to Bastion. The latter figure compares conditions of Bastion 2 prevailing in 1970, above, and 1986, below.)

The stairtowers are in a state of relative stability. However, a prevailing condition which is worth consideration from the standpoint of safety is that of masonry integrity. As a result of mortar erosion, the brick arches of the windows and doors of the stairtowers are coming loose and/or falling out. (See Figure 32, Stairtower Deterioration. The features shown are Stairtower 2, left, and Stairtower 6, right.) To briefly summarize stairtower conditions:

Stairtower 1 - A moderate number of brick have fallen from the window arch and most of the masonry surfaces show mortar erosion to depths of over 1 inch.

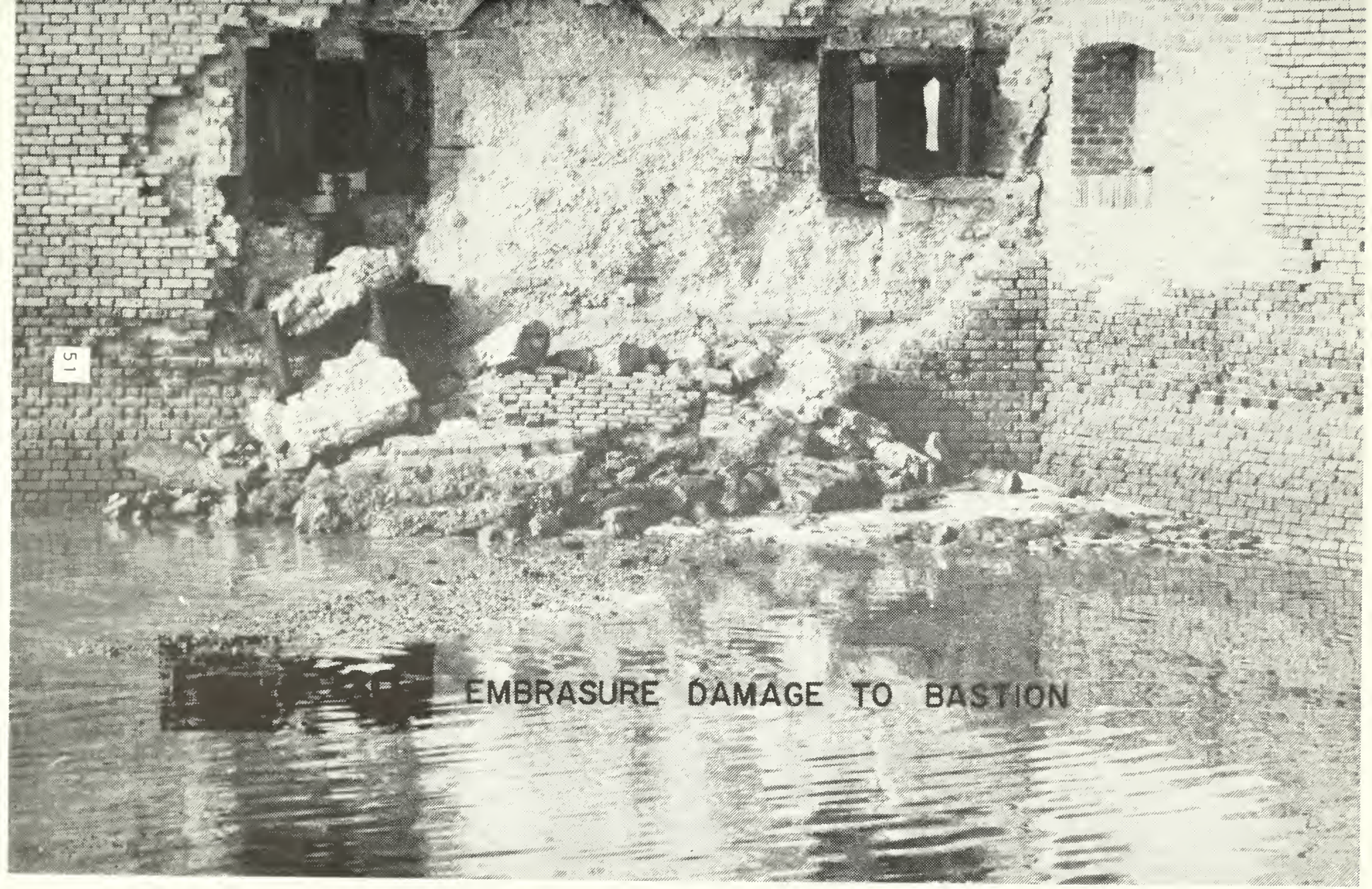
Stairtower 2 - Several brick have fallen from the apex of the window arch and the masonry jamb. The masonry surfaces are eroded to 1/2 inch.

Stairtower 3 - Six brick at the apex of the window arch would have fallen had not an emergency repointing treatment been performed. At least five or more brick are loose enough as to be displaced in this area, and several brick have fallen from the jamb. Mortar erosion to over 1 inch is evident.

Stairtower 4 - Two brick at the apex of the window arch are held in place by emergency repointing. One brick is displaced from the arch and mortar erosion of the masonry surfaces is to depths of over 1 inch.

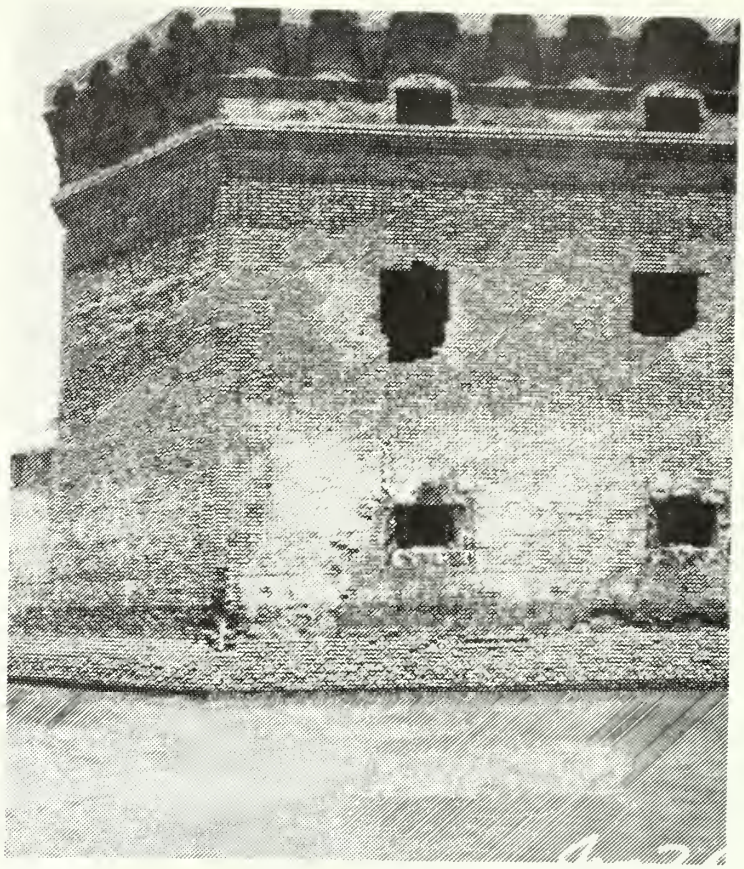
Stairtower 5 - The entire window arch has been repointed, although the remaining masonry surfaces are in need of a similar stabilization measure. The lower entry door jamb has lost approximately 50 brick from one side.

Stairtower 6 - The mortar of the window arches and surrounding masonry has eroded to such a depth that collapse of this area is imminent. At least two dozen brick are visibly displaced in this area and six are

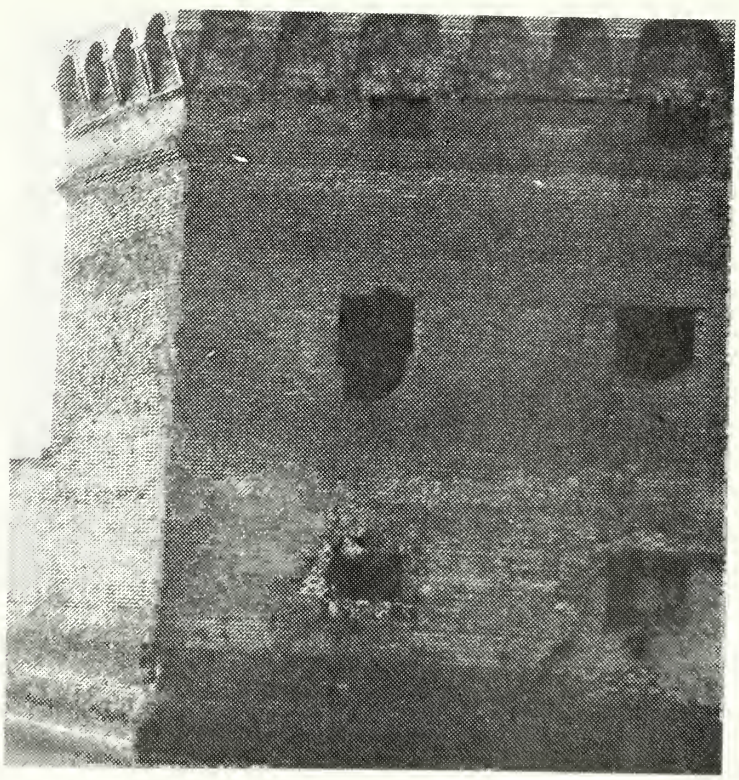


51

EMBRASURE DAMAGE TO BASTION

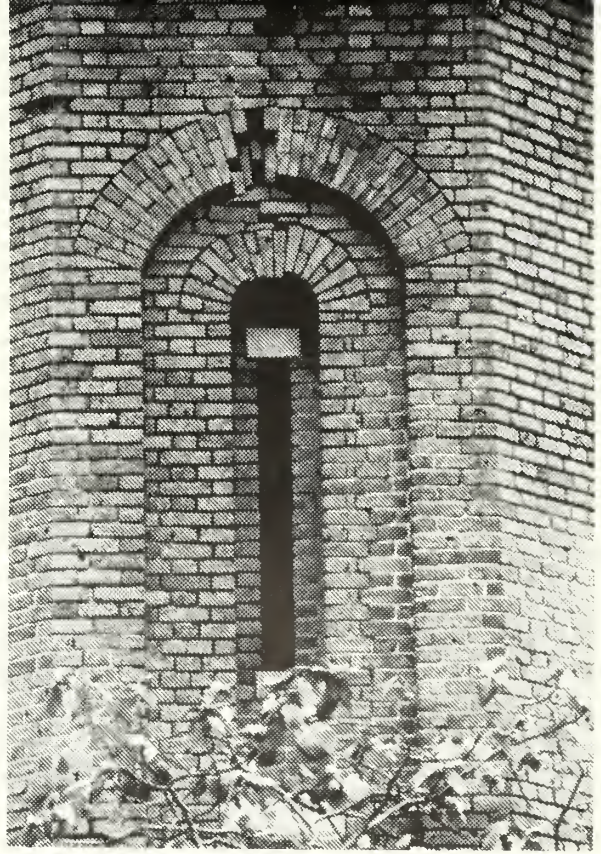


1970



1986

Figure 31 EMBRASURE DAMAGE



STAIRTOWER DETERIORATION

Figure 32

missing. Mortar erosion, though not uniform, has exceeded 3 inches in depth in certain areas.

15. Terreplein, HS-15

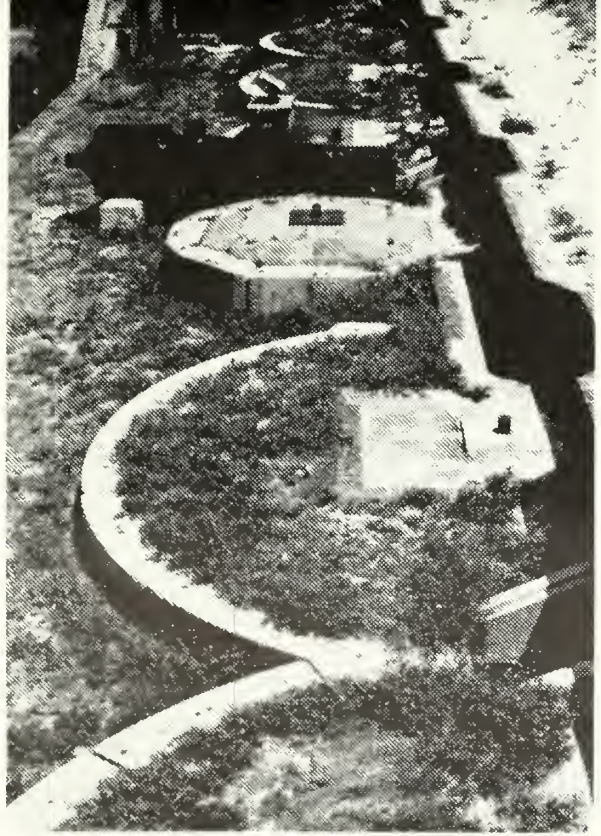
The terreplein is in a reasonably stable condition due to a program of ongoing vegetative management being carried out by the park staff. This includes, more specifically, a major project involving the removal of agave and prickly pear varieties from the area. One characteristic of the terreplein attracting attention is the widespread dislocation of the granite traverse stones on most fronts. Although the scattering of these elements does not constitute any particular preservation problem, it is nevertheless, an undeniable detraction from the interpretive success of the terreplein. (See Figure 33, Present Condition of Terreplein. In this photo pair, the left shot, taken at Front 6, shows a relatively stable condition at the terreplein, while that on the right, taken at Front 1, is decidedly less so.)

B. FACTORS AFFECTING PRESERVATION

1. Human

Interior park and visitor use of the fort proper and related structures does not presently constitute a threat to the preservation thereof. Those areas most likely to incur wear due to their accessibility: the counterscarp, the casemates, the stairtowers, and the terreplein, are of sufficient durability as to render probable wear through current use patterns negligible.

Operation of diesel generators on the lower tier of Front 2 has resulted in smoke stains around the gunports through which this equipment exhausts. By-products of diesel combustion are particulates and sulphur dioxide (SO2) which occur in comparatively higher concentrations than in gasoline combustion, carbon monoxide (CO) and hydrocarbons, which are relatively lower. Dry masonry, especially having carbon deposits, will absorb sulphur dioxide, which when moistened becomes a dilute sulphuric acid solution. Further, NaCl (from sea) + H2SO4 (pollutant ---> 2HCl (corrosive) + Na2SO4 (very expansive sulphate when crystallizing). Chemical damage will result to lime mortars where sufficient concentrations of these acids exist. Although the degree of deterioration may not be predictable, these conditions do enhance the likelihood of accelerating material decay. Sulphate crystallization could promote spalling of brick as well.



TERREPLEIN

Figure 33 PRESENT CONDITION

This condition has attracted criticism as an esthetic intrusion, but insofar as the materials involved are concerned, it may be of greater moment as a preservation issue. Over time, accelerated masonry and mortar deterioration could result from these factors.

2. Environmental

The setting of Fort Jefferson is a subtropical marine environment which implies several factors that will influence preservation. Climatic conditions dictate temperature ranges of below freezing to 100 degrees Fahrenheit with high relative humidity values year-round. Annual rainfall figures 36 inches per year. The combination of moisture, solar exposure and salt air produce a challenging situation to material durability. This is compounded by the direct effects of wave action on the erosion of the counterscarp, and saline moisture on iron oxidation of the embrasures. These conditions accelerate the rate of deterioration of the elements in question and necessitate stabilization and maintenance attention of high priority.

Between the months of June and November, the possibility of tropical storms constitutes an additional threat to the historic fort. Historically, hurricanes have amounted to perhaps the single most destructive force acting upon the Tortugas fortification, battering the complex numerous times over the years, and causing damage to the structures estimated in the thousands of dollars. The monument occupies the Coastal High Hazard Area, which designation applies to those areas subject to damage by wave action as well as by flooding. The potential for flooding is imminent in the Dry Tortugas, all of the keys being within the 100-year floodplain (8 feet or 2.5 meters above mean sea level). This is of particular significance in the preservation of investments related to the park operation and staffing facilities located on Garden Key. Statistics indicate that there is a 13% probability of a tropical storm occurring in any given year which will cross the area of Fort Jefferson.

HAPTER IV - RECOMMENDATIONS

ne April 1982 task directive for this project prescribed the ollowing order of priority for stabilization treatment:

1. Immediate: Stabilize dangerous conditions.

2. Urgent: Stabilize areas of rapid decay to make wind and weathertight.

3. Necessary: Stabilize to strengthen and consolidate.

4. Desirable: Interpretive restoration.

5. Keep Under Observation: Establish monitoring system.

PROPOSED TREATMENTS

1. Immediate

a. Moat and Counterscarp, HS-11

Work proposed for the moat and counterscarp recognizes the importance of this structure as the fort's first line of defense. Breaching of the counterscarp would result in exposure of the scarp to wave action and subsequent decay. Therefore, the recommended classification of this project is as an immediate stabilization priority. The treatments proposed will increase the accessibility to as well as the durability of the seawall.

Repointing, primarily on the seaward faces but also for selected areas of the moat face, is proposed as a necessary action to strengthen and consolidate the wall. Approximately 4,250 square feet of the counterscarp surface are in need of repointing, in combination with rebricking to consolidate damaged areas and epoxy grouting of undercut areas below the waterline. Paving an estimated 8,200 square feet of counterscarp coping is also proposed and will involve some rebricking and repointing where required. (See Appendix 1, Sheets 36-40 of HSR Drawings which indicate specific areas of treatment.)

A contract was let and completed in FY87 with regard to needed stabilization repairs on Fronts 1, 2, 4, 5 and 6 (See Appendix 3). Therefore, no further recommendations are made for the counterscarp at this point.

b. Scarp, HS-12

The present state of the scarp has been recently stabilized to preclude the progressive ravelling of the wall's fabric. With this action completed, the repair of those embrasures most seriously damaging the curtains by exfoliating iron is proposed as an immediate and primary preservation objective. As already mentioned under Statement of Present Condition, the integrity of the fort's superstructure is severely threatened by this process in its advanced stages. The critical areas are primarily limited to the lower tier embrasures and are spelled out in a report titled "Project Analysis Report-Preservation of lower tier embrasures" prepared by Baltzell and Hatchett, SERO, August 15, 1986.

Nine embrasures are signalled for repairs involving the dismantling and removal of exfoliated ironwork, the reassembly of the gunport to historic dimensions with brick replacement as required, and the installation of corten steel silhouette plates to visually approximate the historic appearance. An approximate area of 2,400 square feet of the curtain needs repointing with rebricking where necessary. (See Appendix 1, Sheets 41-46 of HSR Drawings which indicate specific areas of treatment.) Structural cracking of the scarp due to differential settlement should be kept under observation by the establishment of a monitoring system. It is of utmost importance to immediately implement an appropriate telltale system. The probability of these cracks ever constituting a safety hazard is a scenario that needs to be addressed scientifically.

Periodic inspection and cleaning of the exhaust deposits around Embrasures 42-44 of the lower tier is recommended to check conditions likely to initiate later damage to those areas.

c. Bastions and Stairtowers, HS-14

The condition of the seaward face of the bastions equals or exceeds the instability of the scarp and therefore merits the same priority of attention. Proposed work includes the repair of four embrasures involving dismantling and removing exfoliated ironwork, the reassembly of the gunport to historic dimensions with brick replacement as necessary, and the installation of corten steel silhouette plates. Approximately 600 square feet of the bastions need repointing with rebricking where necessary. (See

Appendix 1, Sheets 41-44 of HSR Drawings for specific areas of treatment.)

2. Urgent

a. Hot Shot Furnace, HS-04

Stabilizing the shot furnace is a necessary preservation treatment as a preventive to a level of deterioration which would obliterate the details of this feature. Approximately 350 square feet of the furnace walls will need to be dismantled and rebuilt. Exfoliating iron will have to be removed and treated or replaced. Replacement and waterproofing of the coral rubble top will also be required.

b. Casemates, HS-13

Recommended repairs to the casemates focus on the parade ground side of the fort. Necessary treatments are directed at inhibiting the rapid deterioration of the casemate arches and masonry piers. Thirty-five arches (approximately 1,260 square feet) are signalled as needing repointing with some brick replacement. Fifty-four masonry piers (approximately 2,160 square feet) need repointing with some brick replacement.

c. Terreplein, HS-15

Because of the number of moisture related problems in all areas of the fort which originate in the terreplein, the treatment of this feature is recommended as an urgent priority. In the areas of the terreplein where the sand fill which contributed to the original design intention is missing, it should be replaced. Moisture infiltration in the areas below the terreplein at Fronts 2 and 3 require arresting by waterproofing treatment of the fort roof at those fronts with subsequent replacement of sand fill.

3. Necessary

a. Large Powder Magazine, HS-02

The area of the large powder magazine which has suffered the most damage is the south face which, as previously noted, has been attributed to that wall's use as the backup for target practice during the historic period. Because of the interpretive

purpose served by this feature, coupled with the fact that the overall structural integrity of the magazine is not threatened, no treatment of this condition is proposed. However, the overall stability of the structure would be ensured by repointing approximately 4,000 square feet of brick work, thereby enhancing the safety of the magazine for park users.

b. Small Powder Magazine, HS-03

Grouting the large crack which circles the small powder magazine and general repointing of the masonry are recommended to consolidate the structure and prolong its stability. Approximately 200 lineal feet of crack needs to be grouted, coordinated with the removal of vegetation tied to the cause of such cracking. Also, approximately 1,600 square feet of repointing will be necessary.

c. Engineer Officers' Quarters, HS-08

Repairs needed for the engineer officers' quarters to permit their suitable performance as park staff housing include repair of two masonry lintels and the general repointing of the exterior masonry.

d. Bakery, HS-09

In order to strengthen and consolidate the bakery, several repair items are recommended. The structural cracking of this feature should be grouted with repointing as required. The damaged ironwork in the oven should be treated and the oven roof and door to the firebox rebuilt with salvaged brick. Approximately 100 square feet of repointing is also needed. For the purpose of rendering the space useful as an interpretive element of the fort, an auxiliary illumination system on a timer and powered by a dry cell battery is suggested as a provision for generating adequate light levels.

4. Desirable

a. Officers' Quarters, HS-06

The performance of periodic inspection and ongoing maintenance is recommended for the continuation of the officers' quarters as a stabilized, interpretive feature of the fort. Repair work could be performed in conjunction with the routine removal of threatening vegetation and could include occasional

spot repointing, brick replacement, and selective patching of cracked or spalling concrete.

b. Enlisted Men's Barracks, HS-07

Treatment recommended for the enlisted men's barracks would consist of periodic inspection and occasional concrete patching coupled with ongoing vegetative management. This work would aim at extending the utility of this feature for interpretive use.

5. Keep Under Observation

a. Garden Key Lighthouse, HS-01

Because of the recent preservation treatment of the lighthouse, the only features for which repairs are recommended are the wood windows. The staining of the sash by the oxidation of metal fasteners could be abated and the life of the fabric extended by removing the present paint film, priming, and painting the sash with an exterior alkyd paint.

b. Dr. Mudd's Cell, HS-05

Dr. Mudd's cell is not seen to exhibit any present needs for repair or preservation. It is, nevertheless, an important interpretive feature of the fort and should be kept under observation in the event that any such needs arise.

c. Cistern, HS-10

The cistern should be monitored on a regular basis to ensure its continued satisfactory performance as a potable water reservoir for the fort complex.

. DESIGN CONCEPTS FOR ADAPTIVE REUSE

number of casemates are currently being adaptively used for arious functions of park operation. These functions occur at ronts 1-3 on both the lower and upper tiers after the following utlay:

Casemate	Tier	Front	Use	HSR Drawing Sheet Ref.
9	Lower	1	Park Museum and A/V	2
11	Lower	1	Park Office	2
16-17	Upper	1	Park Residence #5	3
32-34	Lower	2	Park Residence #4-1/2	2

35	Lower	2	Crew's Kitchen	2
36-41	Lower	2	Park Storage	2
42-44	Lower	2	Generator Room	2
52-55	Lower	3	Shop	2
56-57	Lower	3	Park Residence #10	2
58	Lower	3	Quarters #9	2
63-64	Lower	3	Park Storage	2
65-66	Lower	3	Recreation Hall	2
66-68	Upper	3	Park Residence #2	2
70-73	Upper	3	VIP Quarters	3

Historically, those casemates sealed at the parade face were infilled by either flemish bond masonry (See Appendix 1, Sheet 17 of HSR Drawings, Casemate 101.), or wood frame construction (See Appendix 1, Sheet 8 of HSR Drawings, Casemate 18.).

Other examples of the variety of casemate infill treatment over the years include:

1. Flush wood frame infill. (See Appendix 1, Sheet 14 of HSR Drawings, Front 3, Tier 1, "Rec. Hall #7".)

2. Flush masonry infill. (See Appendix 1, Sheet 9 of HSR Drawings, Front 1, Tier 2, "Park Res. #5" and Sheet 14, Front 3, Tier 2, "Park Res. #2" and "VIP Quarters #3.)

3. Recessed masonry infill (See appendix 1, Sheet 8 of HSR Drawings, Front 1, Tier 1, "Park Office" and "Park Museum").

4. Flush sill-height masonry with wood frame infill above. (See Appendix 1, Sheet 11 of HSR Drawings, Front 2, Tier 1, "Crew's Kitchen" and "Park Generator Room".)

The disparate visual nature of these respective infill areas has attracted some criticism claiming that they are intrusive into the historic character of the fort in their present condition.[13]

Recommendations will be according to the provisions of NPS-28, Release 3.

1. Locate required functions in casemates rather than in detached, new structures.

---

[13] "Historic Resources Management Plan, Fort Jefferson National Monument," draft, pg. I-2.
"Task Directive," pgs. 7,8.
Stuart, pgs. 47, 54.

2. Consolidate adaptive uses to Fronts 2 and 3 of the fort to minimize the extent of visual impact to the historic scene.

3. Perform attachments to the historic structure such that the fabric thereof will not be permanently altered or obscured in the event of the subsequent removal of the attachment. (See Figure 34, Design Concepts - Perform Reversible Attachments.)

4. Inset infill of casemates back from wall plane of parade face so as to maintain a clear distinction between historic and nonhistoric construction. (See Figure 35, Design Concepts - Inset Casemate Infill.)

5. Select colors which recede in such a fashion that the naturally shaded tonality of the casemate interior will not be interrupted by contrast of hue, value, or intensity of color. (See Figure 36, Design Concepts- Select Recessive Colors.)

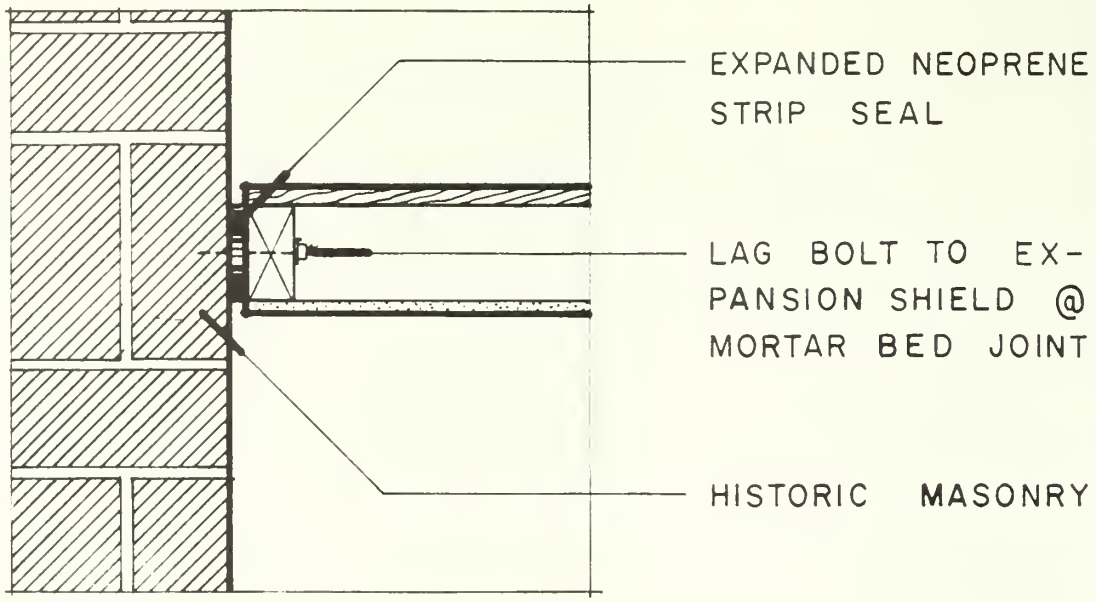
6. Avoid incorporation of imitative design elements which duplicate historic elements in order to afford clear differentiation between historic and nonhistoric construction. (See Figure 37, Design Concepts - Avoid Imitative Design.)

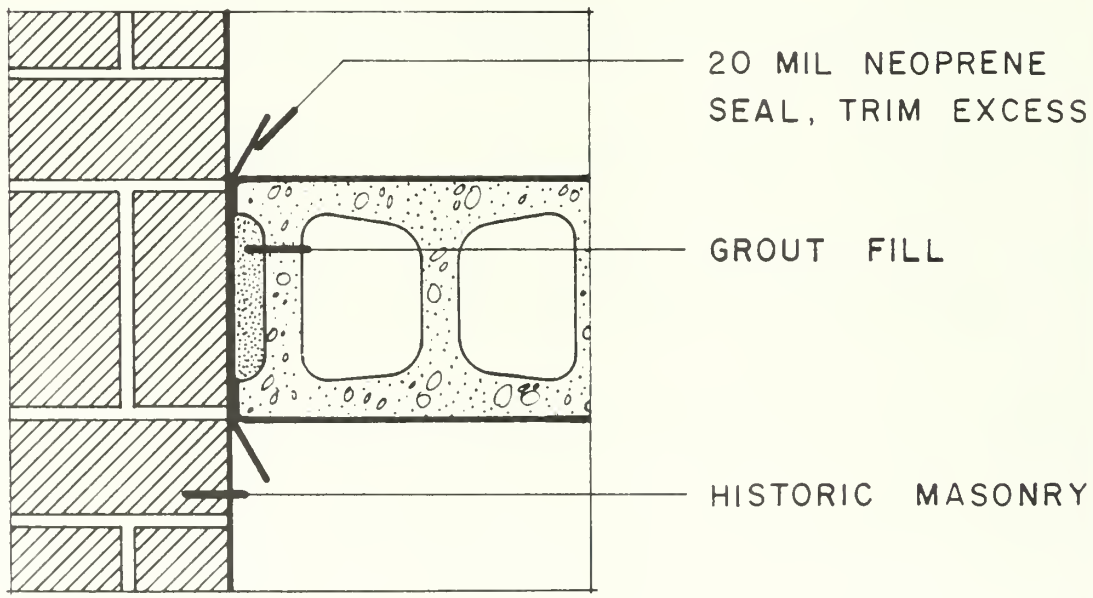
7. Maintain overall continuity of appearance by scale, texture, solid-void relationship, and the compatible selection and use of materials.

8. Locate new adaptive uses to the lower tier, where possible, to avoid additional visual impact to the historic fort.

. HANDICAPPED ACCESS AND USER SAFETY

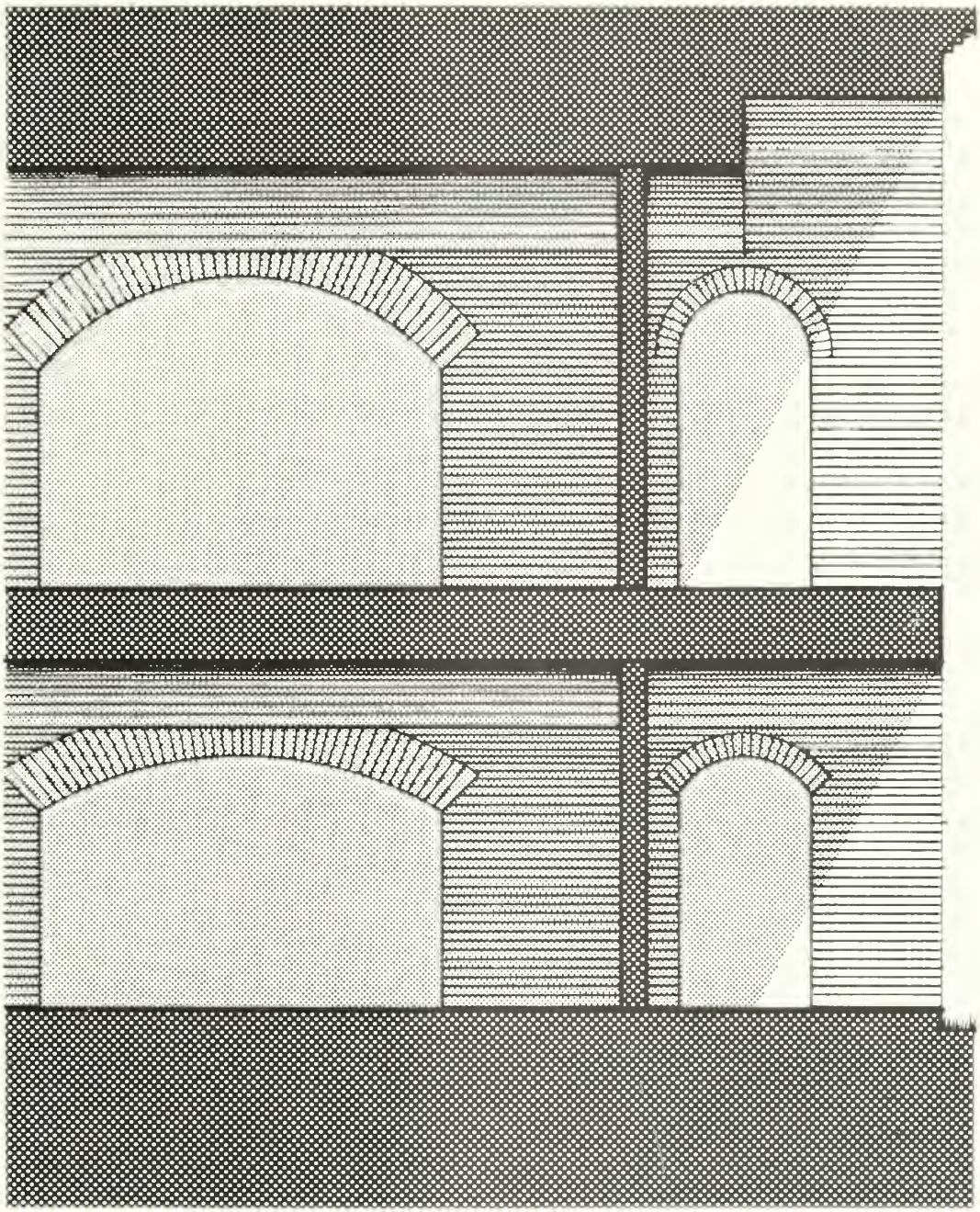
bservation of present use patterns indicates that fewer than two bbility handicapped visitors annually appear at Fort Jefferson. he approach taken by the park staff to ensuring a similar nterpretive experience to handicapped visitors as that available o the nonhandicapped includes the provision of transportation by lectric car around the fort and guided tour by the park nterpreter. (The nonhandicapped tour is self-guided.) For hose portions of the tour route which are not barrier free, the ncorporation of a form of alternative experience such as slides r photographs with accompanying text is suggested. Given urrent use patterns and the visual intrusiveness into the istoric scene which would result, providing ramps or elevator ccess to the upper levels of the fort is not recommended.





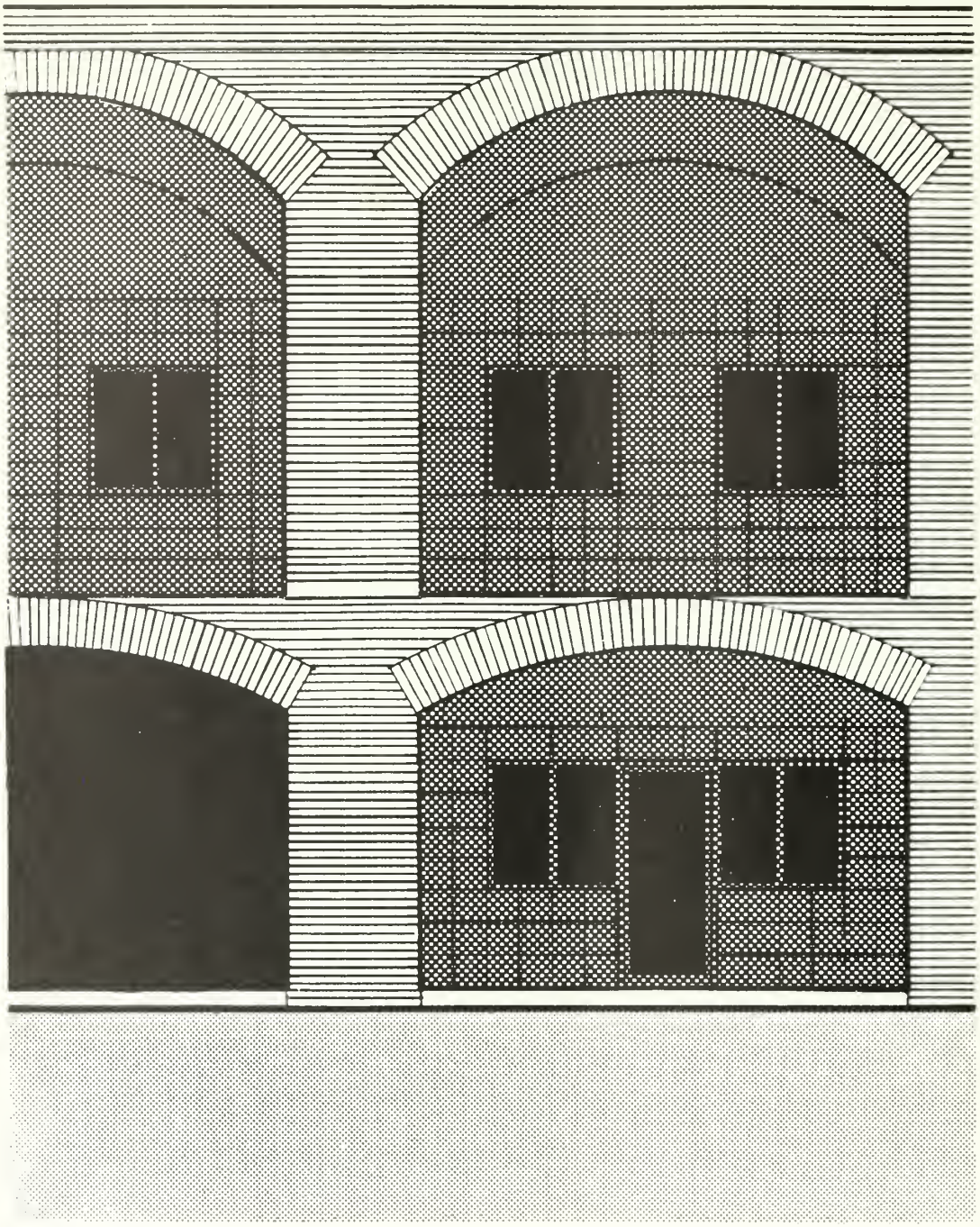
PERFORM REVERSIBLE ATTACHMENTS

Figure 34 DESIGN CONCEPTS



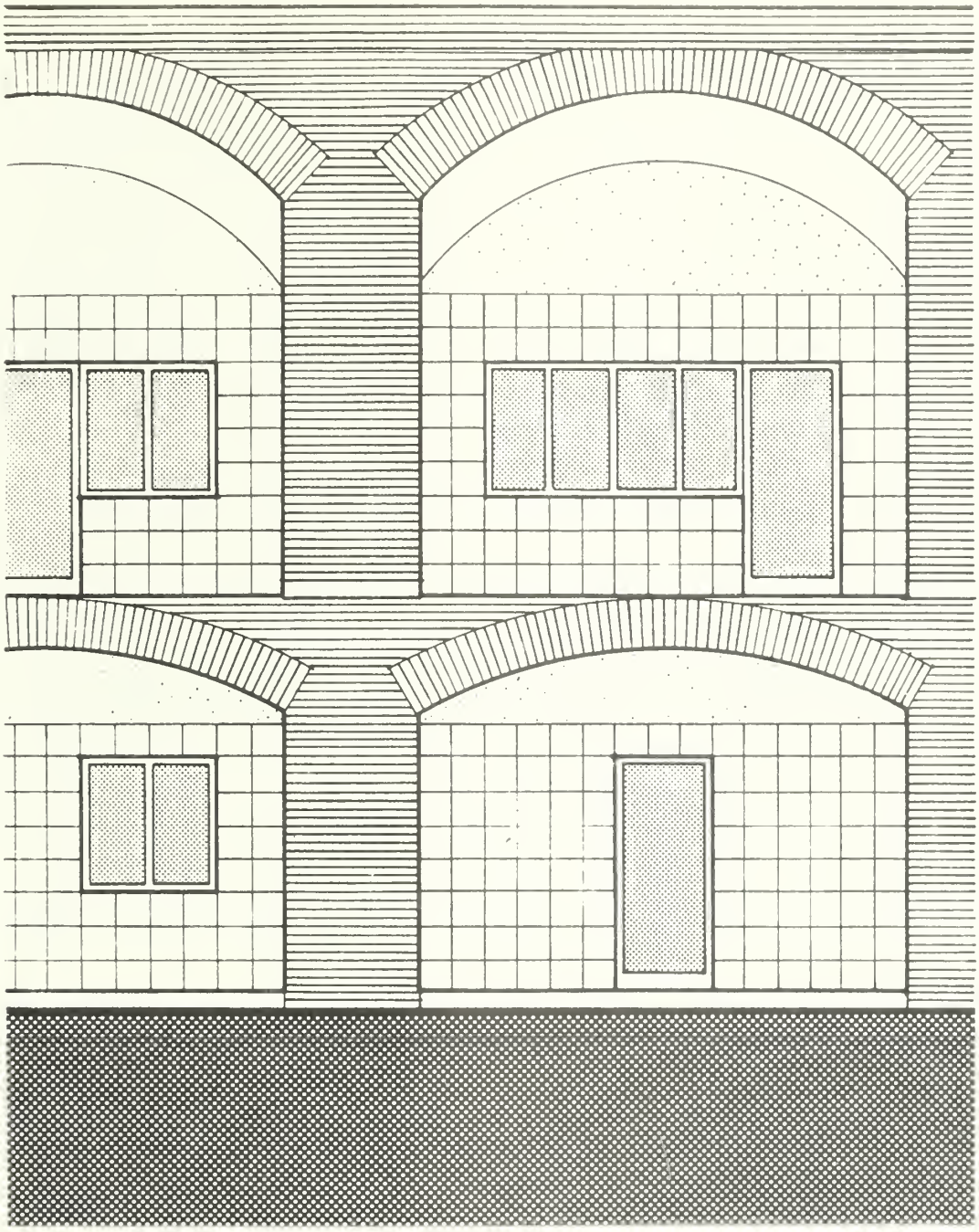
INSET CASEMATE INFILL

Figure 35 DESIGN CONCEPTS



SELECT RECESSIVE COLORS

Figure 36 DESIGN CONCEPTS



AVOID IMITATIVE DESIGN

Figure 37 DESIGN CONCEPTS

For the most part, signage incorporated into the tour route which warns against visitor indiscretions that could result in injury is adequate. However, a visitor was recently injured in a fall from the upper tier. Additional signage warning visitors of the hazard of open casemates is recommended for inclusion along the tour route.

D. ENERGY EFFICIENCY

A previous study of the energy situation at Fort Jefferson suggested that power reductions of as much as 20% could be realized by the installation of solar water heaters and improved air conditioning/dehumidification equipment.

A later investigation into energy demands and expenditures at the fort offered the following recommendations:

1. Through the implementation of solar panels for heating water, a projected savings of 2.0 to 2.75 kw/day (8-10 gal. diesel) could be realized.

2. The incorporation of photovoltaic cells with battery storage in the casemates could provide as much as 50 to 80% of the total energy requirements for the fort.

3. Photovoltaic cells at the dockhouse might operate pumps for sewage and water, as well as provide nighttime lighting if used with storage batteries.[14]

These suggestions, however, do not take into consideration the obvious visual intrusion which would result from these sorts of solar retrofit.

E. FURTHER STUDY

1. Terreplein and Water Catchment System

Efficient park operations depend upon the availability of adequate facilities for administrative, residential, shop, storage and equipment accommodations. The present state of the terreplein poses an obstacle to the reasonable suitability of these casemates for their intended uses. This is due to moisture infiltration resulting from the design of the terreplein as a water catchment system. Prior efforts to remedy moisture problems in the casemates have focused primarily on the alleviation of symptoms and have met with only temporary, if any, success. Treatment of this condition is urgent and acknowledges that its resolution will not

---

[14] Historic Resources Management Plan, p. II 5.

only serve to arrest advancing deterioration of the terreplein itself, but also to upgrade the quality of park facilities in the underlying casemates.

Further investigation is recommended to determine a feasible preservation approach to the terreplein water catchment system. This is of particular importance to the long-term success of efforts to waterproof the fort adaptive uses, but would also involve an assessment of damage to the rainwater collection and structural systems of the fort. Extensive damage to the masonry piers has resulted from the integration of the water catchment system with the fort structural system. Treatment of the cast iron drain pipes in the masonry piers is, in this regard, a specific issue inviting further study. This is because of the amount and difficulty of excavation which would be required in order to make an assessment of the extent and nature of damage. Whether to leave these elements in place to erode and fall into the cisterns, to remove them, or attempt to preserve them in situ, will depend upon the findings of such research.

2. Scarp Wall Cracking

Monitoring of scarp wall cracking was commenced in an underwater archeological project of 1971 and the results were elucidating. An ongoing program of monitoring in these areas is recommended to encourage awareness of potentially hazardous conditions which comparative analysis with such prior studies would facilitate.

3. Adaptive Reuse Areas

Further study is advised to ascertain the preservation/maintenance requirements of park residence quarters. This applies to parade ground structures as well as adaptively used casemates. In particular, the preservation needs of the engineer officers' quarters should be investigated, as the need for some minor structural stabilization in addition to some form of exterior preservation treatment is critical.

4. Casemate Cracking

For purposes of visitor safety, the verification of hazardous conditions associated with cracks in the casemate arches would be desirable. Further study is recommended to determine which, if any, of the numerous cracks in both lower and upper tier casemates pose threats of possible collapse. Ensuring safe conditions

along the tour route would be a primary objective of this investigation.

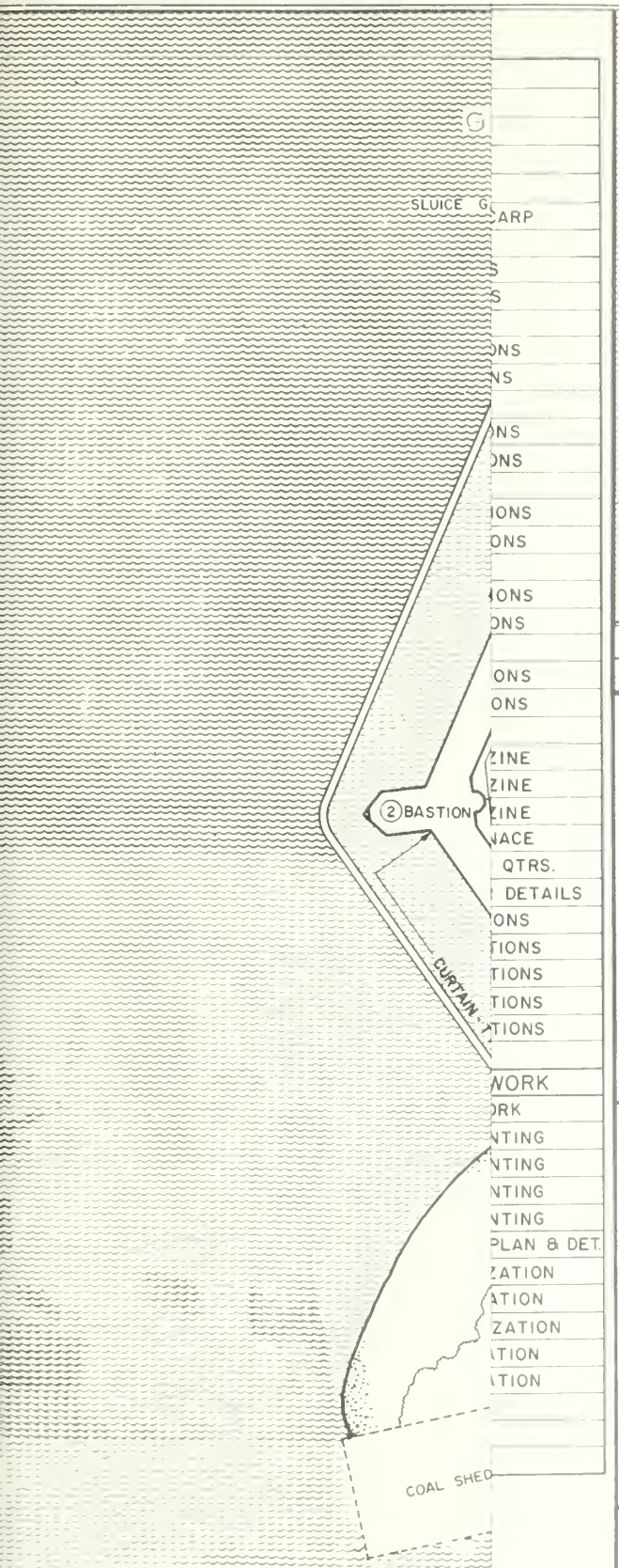
5. Hot Shot Furnace Details

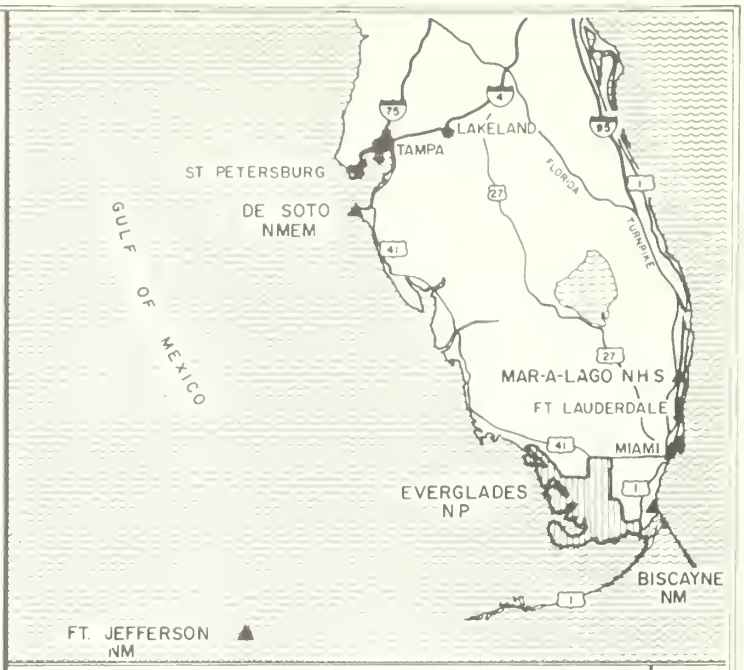
The hot shot furnace is a highly significant interpretive feature of Fort Jefferson. It is one of only three such structures in areas administered by the National Park Service, and may be the largest of these. No extant drawings illustrating the details of this feature are known to exist. Therefore, recording of the entire furnace is strongly recommended before the structure reaches a level of deterioration which would render its details indiscernible. Ideally, such recording work would be coordinated with repairs and stabilization treatment of the structure.

6. Bakery Details and Interpretation

The bakery is a similarly significant element of the fort's interpretive components. Like the shot furnace, the bakery is in need of repairs which could be coordinated with a recording project. In addition, the design of a timed lighting system, perhaps battery powered so as to avoid conduit installation, would provide illumination levels that could contribute much to an improved visitor experience of this feature. The possibility of implementing some or all of these measures merits further study.

APPENDIX 1





SOUTHERN FLORIDA

SCALE 50 0 50 100 MILES

ABBREVIATIONS

APPROX	APPROXIMATELY	EQ	EQUAL	PL	PLATE
BD.	BOARD	EXIST	EXISTING	R	RISER
BM	BEAM	EXT	EXTERIOR	REIN	REINFORCING
BLDG	BUILDING	FT	FEET / FOOT	REQ'D	REQUIRED
CEIL	CEILING			RM	ROOM
CTR	CENTER	FIN	FINISH	SEC	SECTION
COL	COLUMN	FLR	FLOOR	SHT	SHEET
CONC	CONCRETE	INT	INTERIOR	SIM	SIMILAR
CONT	CONTINUOUS	MAX	MAXIMUM	SQ	SQUARE
DET	DETAIL	MIN	MINIMUM	STAB	STABILIZE
DIA	DIAMETER	NPS	NATIONAL PARK SERVICE	TEMP	TEMPORARY
DIM	DIMENSION			T	TREAD
DN	DOWN	NTS	NOT TO SCALE	TYP	TYPICAL
EA	EACH	NO	NUMBER	W/	WITH
ELEV	ELEVATION	OC	ON CENTER		

SYMBOLS

CONCRETE

FLAGSTONE

MASONRY

GRANITE

WOOD

METAL

EARTH

SECTION MARK
SECTION SYMBOL
SHEET WHERE SECTION IS DRAWN

NOTES

PHOTOGRAPHIC ELEVATIONS OF ALL FRONTS, PARADE FACE ELEVATIONS, BASTIONS, LIGHTHOUSE, AND PARADE GROUND BUILDINGS REFLECT THE EXISTING CONDITIONS OF THOSE STRUCTURES IN JUNE AND NOVEMBER, 1982 WHEN THESE PHOTOGRAPHS WERE TAKEN BY H.T. McGRATH. PHOTOGRAPHIC ELEVATIONS OF THE COUNTERSCARP AND STAIRTOWERS REFLECT EXISTING CONDITIONS AS OF AUGUST 1984. PHOTOGRAPHS OF THESE ELEMENTS WERE BY L. ANDERSON.

HISTORIC STRUCT
FORT JEFFER

ERVATION

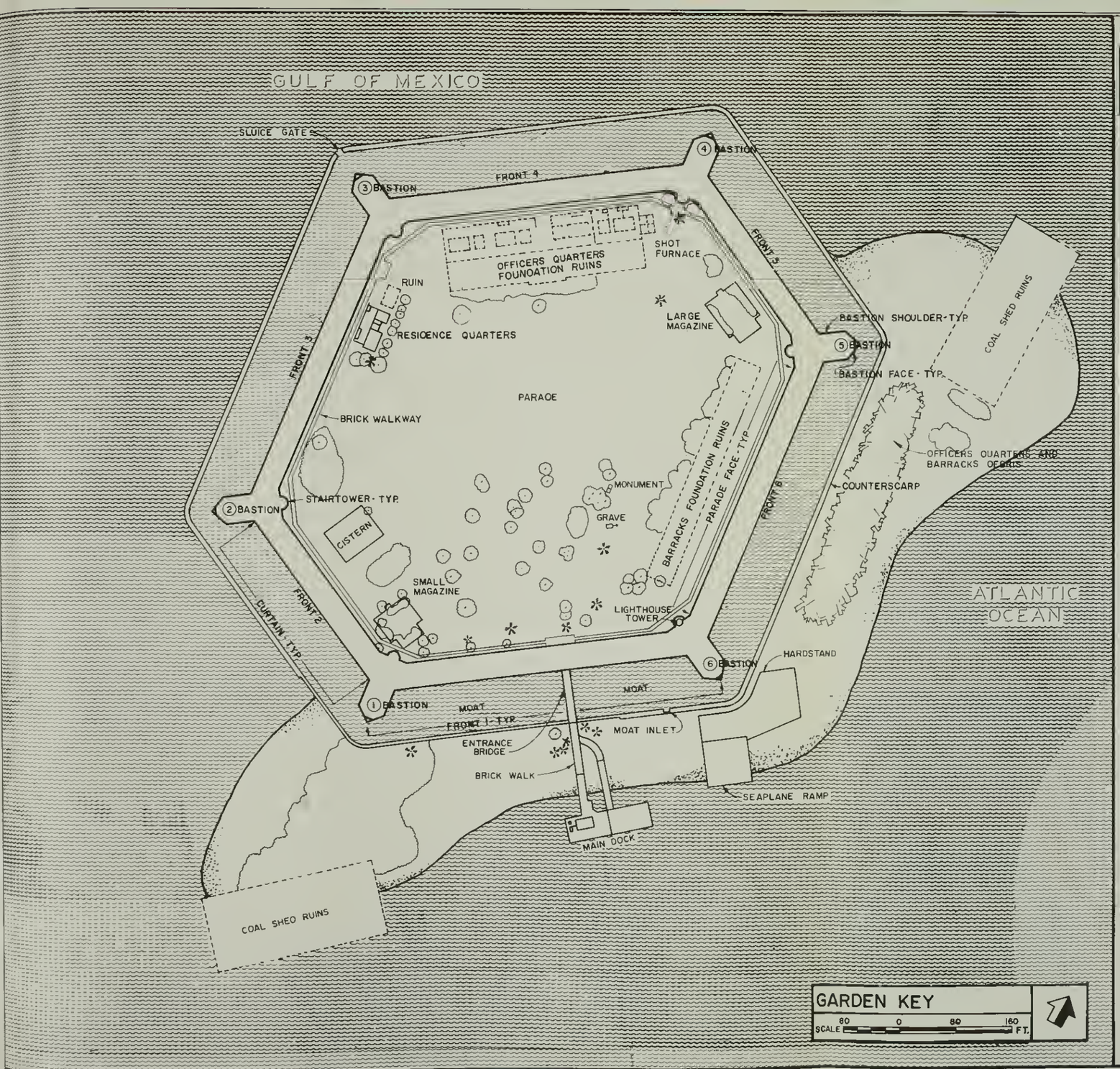
ES
INTERIOR
ERVICE
ENTER

BASIC DATA NM-JEF 5,300, 364/41,000 A

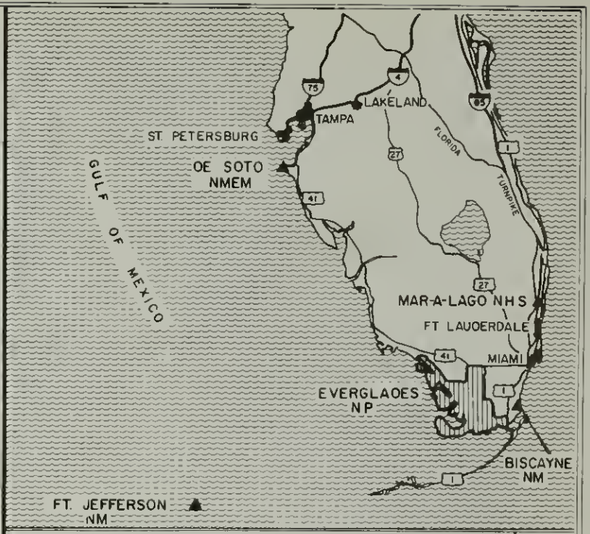
PREPARED McGRATH
DESIGNED
DRAFTING BR
DRAWN THORSON
CHECKED 10/1/84
DATE

TITLE OF DRAWING
COVER SHEET
LOCATION WITHIN PARK
GARDEN KEY
NAME OF PARK
FORT JEFFERSON NATIONAL MONUMENT
SOUTHEAST REGION | DRY TORTUGAS COUNTY | FLORIDA STATE

DRAWING NO
364
25000A
PCP PKG 103
SHEET 1 OF 47



INDEX TO DRAWINGS



ABBREVIATIONS

APPROX.	APPROXIMATELY	EQ	EQUAL	PL	PLATE
BD.	BOARD	EXIST	EXISTING	R	RISER
BM	BEAM	EXT	EXTERIOR	REIN	REINFORCING
BLDG	BUILDING	FT.	FEET / FOOT	REQ'D	REQUIRED
CEIL.	CEILING			RM	ROOM
CTR	CENTER	FIN	FINISH	SEC	SECTION
COL.	COLUMN	FLR	FLOOR	SHT	SHEET
CONC	CONCRETE	INT	INTERIOR	SIM.	SIMILAR
CONT.	CONTINUOUS	MAX	MAXIMUM	SQ	SQUARE
DET	DETAIL	MIN	MINIMUM	STAB.	STABILIZE
DIA	DIAMETER	N.P.S.	NATIONAL PARK SERVICE	TEMP	TEMPORARY
DIM	DIMENSION			T	TREAD
DN	DOWN	N.T.S.	NOT TO SCALE	TYP	TYPICAL
EA	EACH	NO.	NUMBER	W/	WITH
ELEV	ELEVATION	O.C.	ON CENTER		

SYMBOLS

CONCRETE
FLAGSTONE
MASONRY
GRANITE
WOOD
METAL
EARTH
SECTION MARK
SECTION SYMBOL
SHEET WHERE SECTION IS DRAWN

NOTES

PHOTOGRAPHIC ELEVATIONS OF ALL FRONTS, PARADE FACE ELEVATIONS, BASTIONS, LIGHTHOUSE, AND PARADE GROUND BUILDINGS REFLECT THE EXISTING CONDITIONS OF THOSE STRUCTURES IN JUNE AND NOVEMBER, 1982 WHEN THESE PHOTOGRAPHS WERE TAKEN BY H.T. McGRATH. PHOTOGRAPHIC ELEVATIONS OF THE COUNTERSCARP AND STAIRTOWERS REFLECT EXISTING CONDITIONS AS OF AUGUST 1984. PHOTOGRAPHS OF THESE ELEMENTS WERE BY L. ANDERSON.

HISTORIC STRUCTURE REPORT DRAWINGS
FORT JEFFERSON, DRY TORTUGAS

BASIC DATA NM-JEF 5300, 364/41,000 A

Mark	Sheet	REVISION	Date	Initial
	1-47	MINOR REVISIONS	6/87	

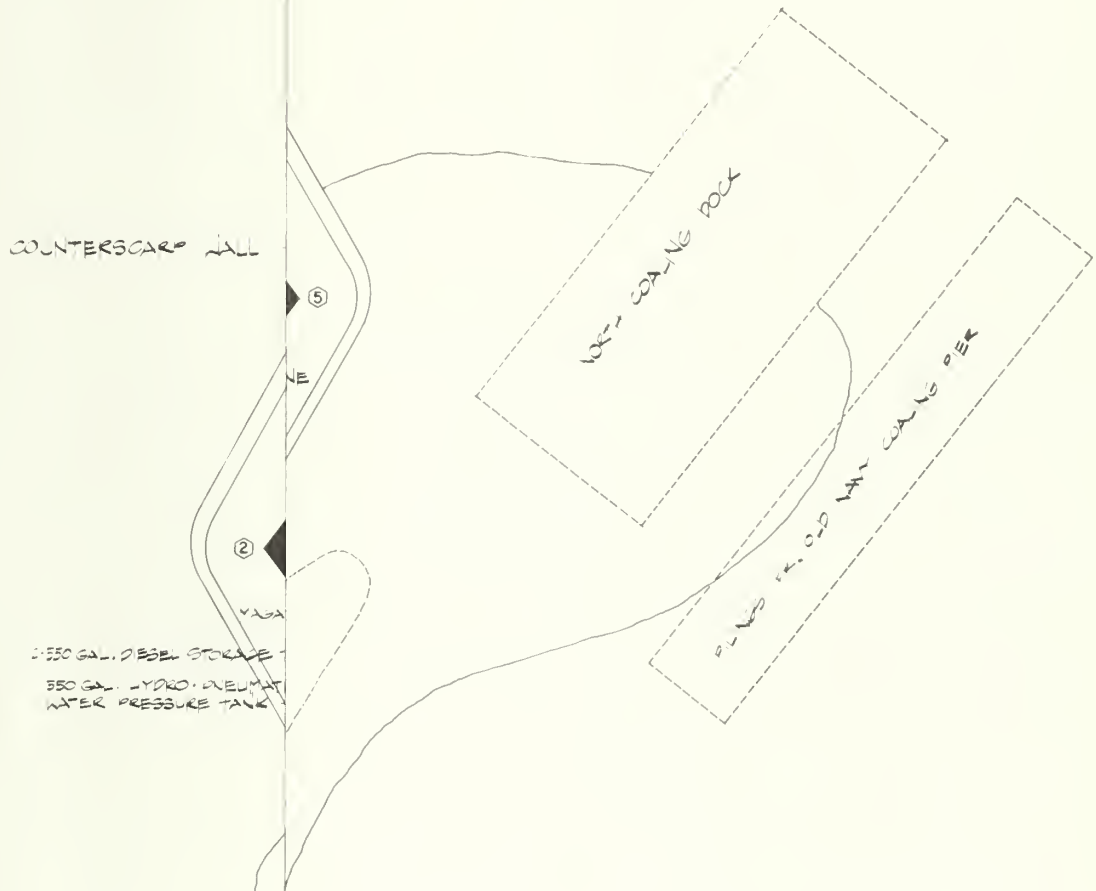
TSE - HIST. PRESERVATION

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
DENVER SERVICE CENTER

PREPARED McGRATH
DESIGNED
DRAFTING BR.
DRAWN THORSON
CHECKED 10/1/84
DATE

TITLE OF DRAWING
COVER SHEET
LOCATION WITHIN PARK
GARDEN KEY
NAME OF PARK
FORT JEFFERSON NATIONAL MONUMENT
SOUTHEAST (REGION) DRY TORTUGAS (COUNTY) FLORIDA (STATE)

DRAWING NO 364 25000A
PCIP PKG 103
SHEET 1 OF 47

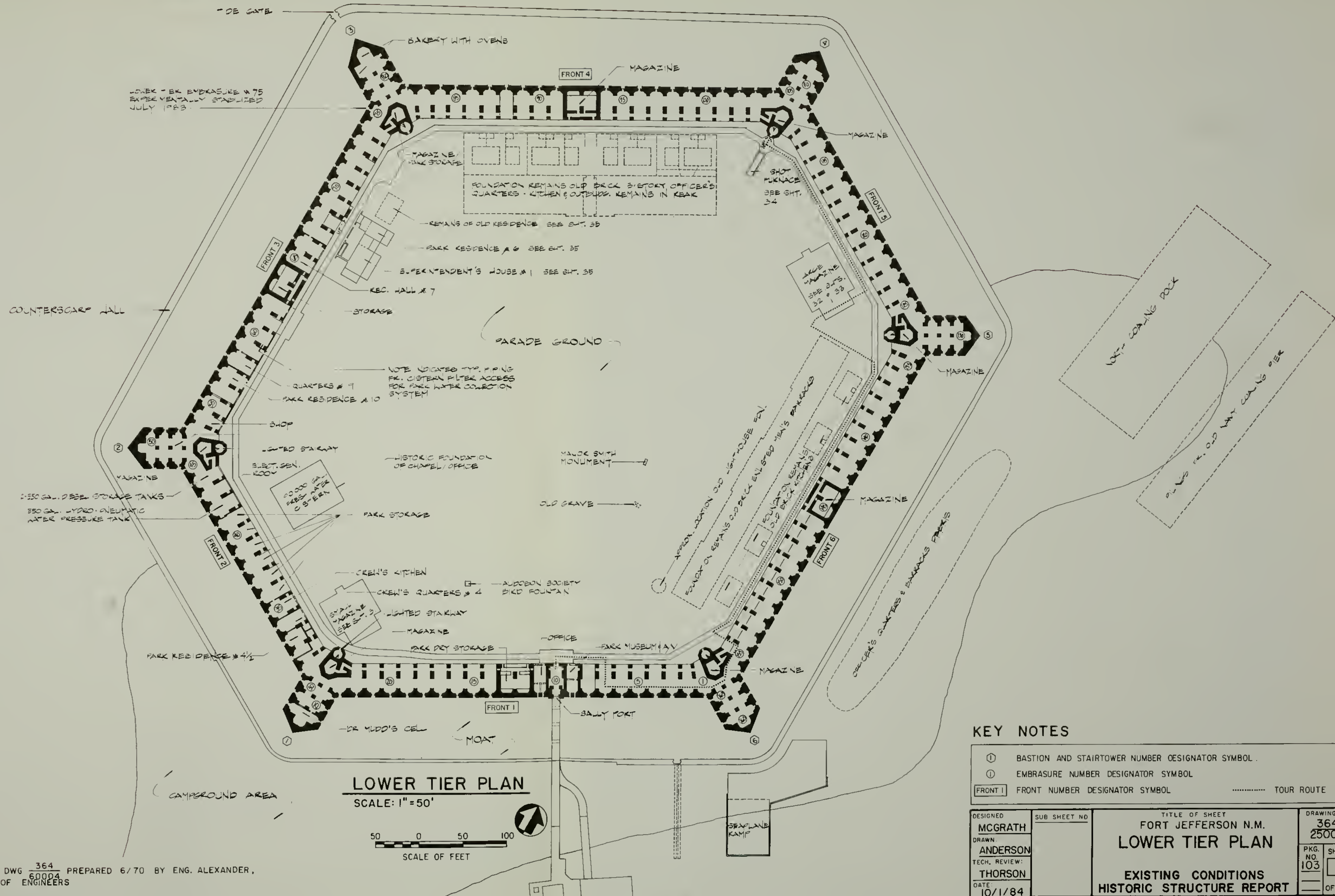


KEY NOTES

ⓘ	BASTION AND STAIRTOWER NUMBER DESIGNATOR SYMBOL
①	EMBRASURE NUMBER DESIGNATOR SYMBOL
FRONT I	FRONT NUMBER DESIGNATOR SYMBOL
.....	TOUR ROUTE

BASIC DATA: NPS DWG 364/60004 PREPARED 6/7
U.S. ARMY CORPS OF ENGINEERS

DESIGNED MCGRATH	SUB SHEET NO	TITLE OF SHEET FORT JEFFERSON N.M. LOWER TIER PLAN EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364/25000A
DRAWN ANDERSON			PKG. NO. 103
TECH. REVIEW THORSON			SHEET 2 OF 47
DATE 10/1/84			



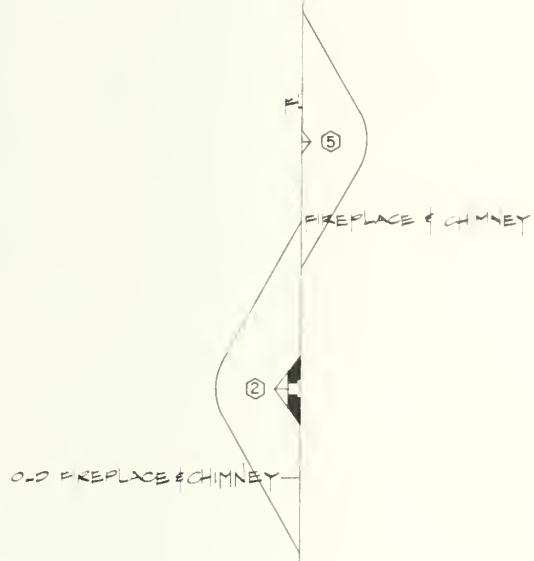
BAKERY WITH OVENS
FRONT 4
MAGAZINE
LOWER TIER EMBRASURE # 75 EXPERIMENTALLY STABILIZED JULY 1983
MAGAZINE
MAGAZINE PARK STORAGE
FOUNDATION REMAINS OLD BRICK 3-STORY OFFICER'S QUARTERS - KITCHEN & OUTBLDG. REMAINS IN REAR
SHOT FURNACE SEE SHT. 34
FRONT 5
REMAINS OF OLD RESIDENCE SEE SHT. 35
PARK RESIDENCE # 6 SEE SHT. 35
SUPERINTENDENT'S HOUSE # 1 SEE SHT. 35
FRONT 3
REC. HALL # 7
COUNTERSCARP WALL
STORAGE
PARADE GROUND
MAGAZINE
QUARTERS # 9
PARK RESIDENCE # 10
SHOP
LIGHTED STAIRWAY
ELECT. GEN. ROOM
MAGAZINE
2-550 GAL. DIESEL STORAGE TANKS
350 GAL. HYDRO-PNEUMATIC WATER PRESSURE TANK
HISTORIC FOUNDATION OF CHAPEL / OFFICE
MAJOR SMITH MONUMENT
OLD GRAVE
PARK STORAGE
MAGAZINE
FRONT 2
FRONT 6
CREW'S KITCHEN
CREW'S QUARTERS # 4
AUDUBON SOCIETY BIRD FOUNTAIN
LIGHTED STAIRWAY
MAGAZINE
PARK DRY STORAGE
OFFICE
PARK MUSEUM & AV
MAGAZINE
PARK RESIDENCE # 4½
FRONT 1
SALLY PORT
DR. MUDD'S CELL
MOAT
CAMPGROUND AREA
SEAPLANE RAMP
OFFICER'S QUARTERS & BARRACKS PIERS
NORTH COALING DOCK
RUINS OF OLD NAVY COALING PIER
LOWER TIER PLAN
SCALE: 1" = 50'
50 0 50 100
SCALE OF FEET

KEY NOTES

- ⓘ BASTION AND STAIRTOWER NUMBER DESIGNATOR SYMBOL.
- ⓘ EMBRASURE NUMBER DESIGNATOR SYMBOL
- FRONT 1 — FRONT NUMBER DESIGNATOR SYMBOL
- .... TOUR ROUTE

BASIC DATA: NPS DWG $\frac{364}{60004}$ PREPARED 6/70 BY ENG. ALEXANDER, U.S. ARMY CORPS OF ENGINEERS

DESIGNED: MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: 10/1/84	SUB SHEET NO	TITLE OF SHEET: FORT JEFFERSON N.M. LOWER TIER PLAN EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG. NO 103 SHEET 2 OF 47

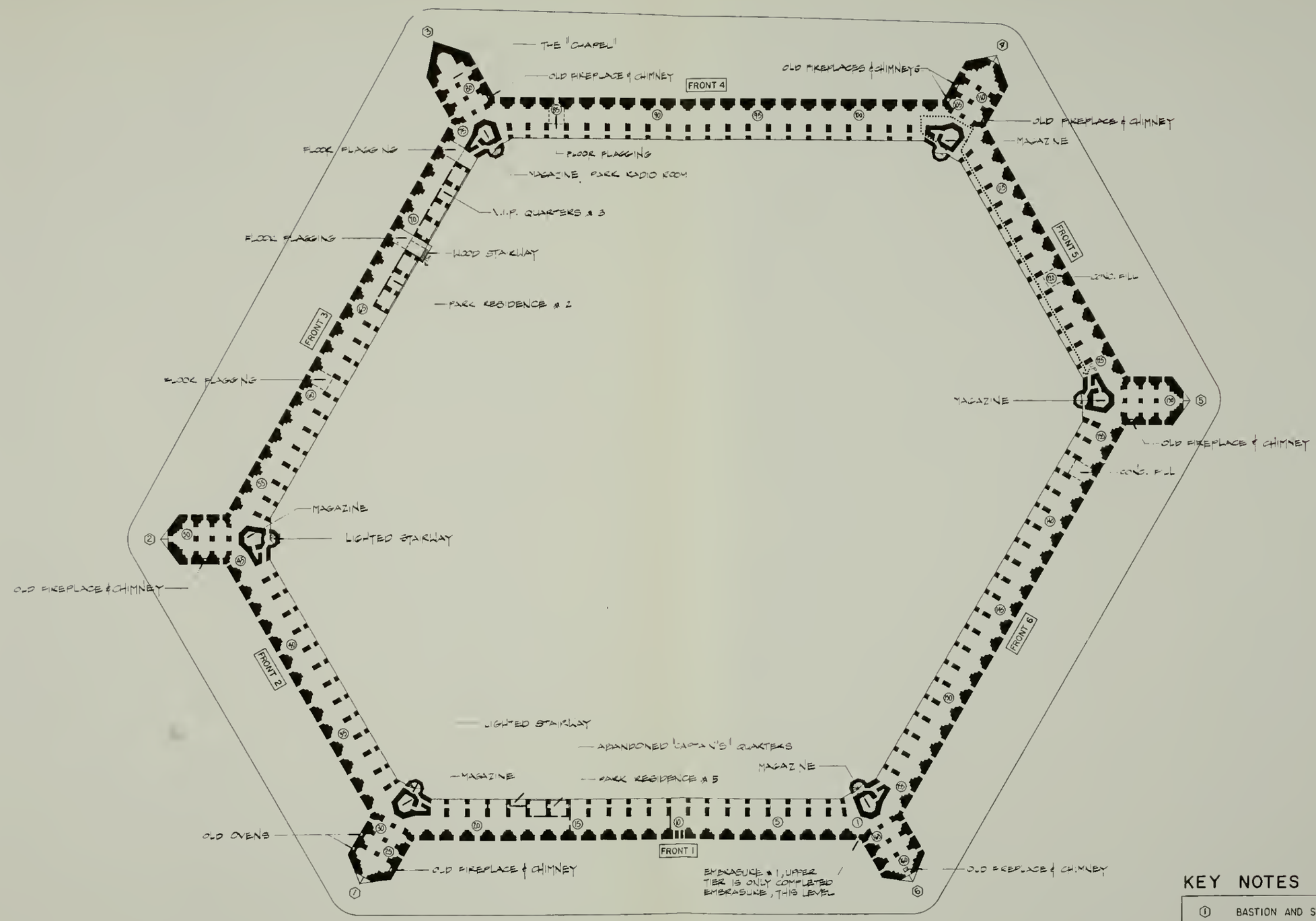


KEY NOTES

①	BASTION AND STAIRTOWER NUMBER DESIGNATOR SYMBOL
①	EMBRASURE NUMBER DESIGNATOR SYMBOL
FRONT I	FRONT NUMBER DESIGNATOR SYMBOL
.....	TOUR ROUTE

BASIC DATA: NPS DWG 364/60004 PREPARED 6/7
U.S. ARMY CORPS OF ENGINEERS

DESIGNED MCGRATH	SUB SHEET NO	TITLE OF SHEET	DRAWING NO. 364/25000A
DRAWN ANDERSON		FORT JEFFERSON N.M.	
TECH. REVIEW THORSON		UPPER TIER PLAN	PKG NO. 103
DATE 10/1/84		EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	SHEET 3 OF 47



UPPER TIER PLAN

SCALE: 1" = 50'

50 0 50 100

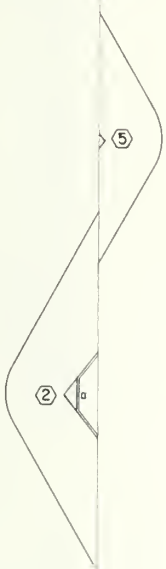
SCALE OF FEET

IC DATA: NPS DWG 364/60004 PREPARED 6/70 BY ENG. ALEXANDER, ARMY CORPS OF ENGINEERS

KEY NOTES

①	BASTION AND STAIRTOWER NUMBER DESIGNATOR SYMBOL
①	EMBRASURE NUMBER DESIGNATOR SYMBOL
FRONT 1	FRONT NUMBER DESIGNATOR SYMBOL
.....	TOUR ROUTE

DESIGNED: MCGRATH	SUB SHEET NO	TITLE OF SHEET: FORT JEFFERSON N.M. UPPER TIER PLAN	DRAWING NO. 364/25000A
DRAWN: ANDERSON		EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	PKG. NO. 103
TECH. REVIEW: THORSON			SHEET 3 OF 47
DATE: 10/1/84			

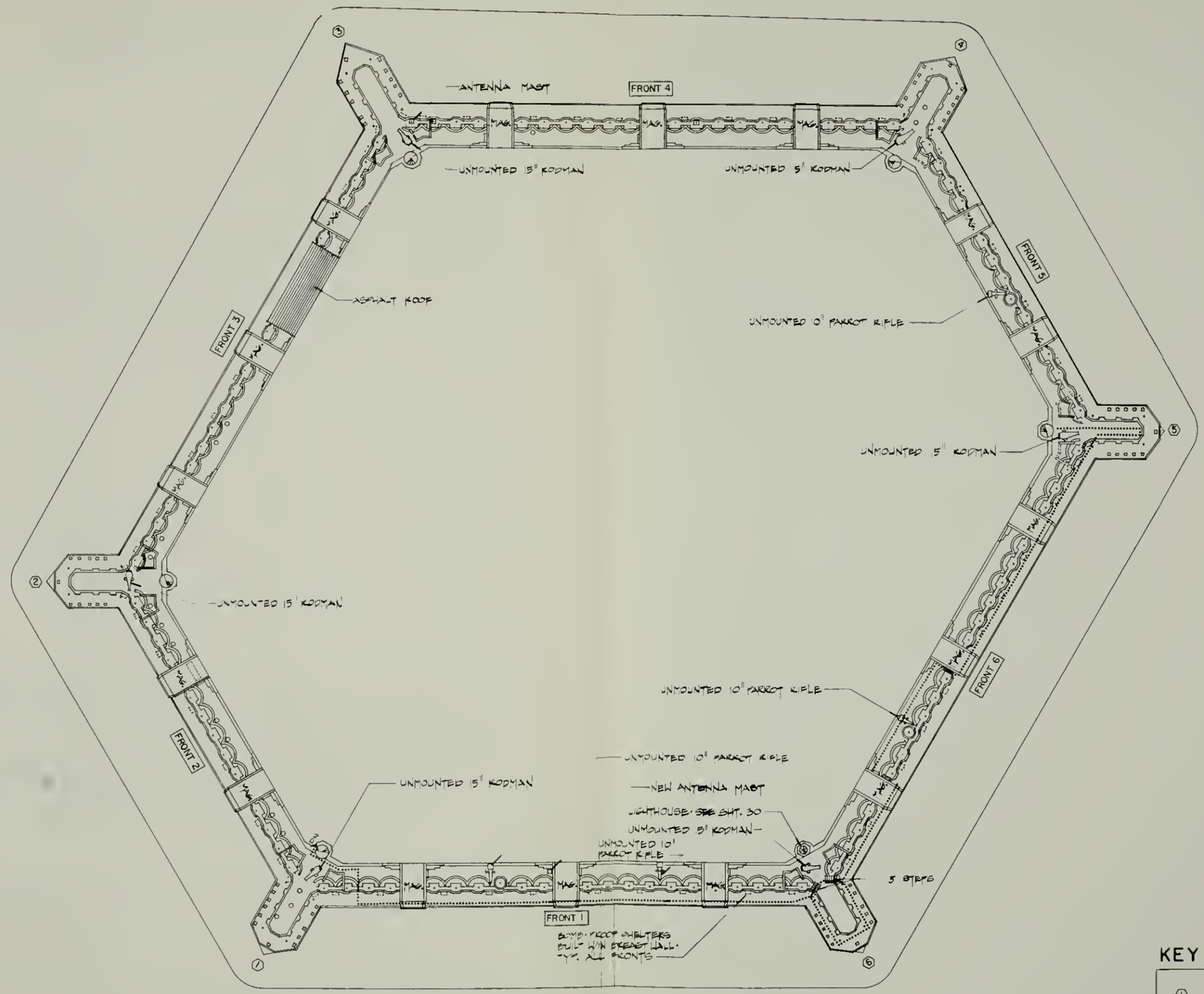


KEY NOTES

①	BASTION AND STAIRTOWER NUMBER DESIGNATOR SYMBOL
FRONT 1	FRONT NUMBER DESIGNATOR SYMBOL
.....	TOUR ROUTE

BASIC DATA: NPS DWG 364/60004 PREPARED 6/70
U.S. ARMY CORPS OF ENGINEERS

DESIGNED MCGRATH	SUB SHEET NO	TITLE OF SHEET FORT JEFFERSON N.M. TERREPLEIN PLAN EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364/25000A
DRAWN ANDERSON			PKG. NO. 103
TECH. REVIEW THORSON			SHEET 4 OF 47
DATE 10/1/84			



TERREPLEIN PLAN

SCALE: 1" = 50'

50 0 50 100

SCALE OF FEET

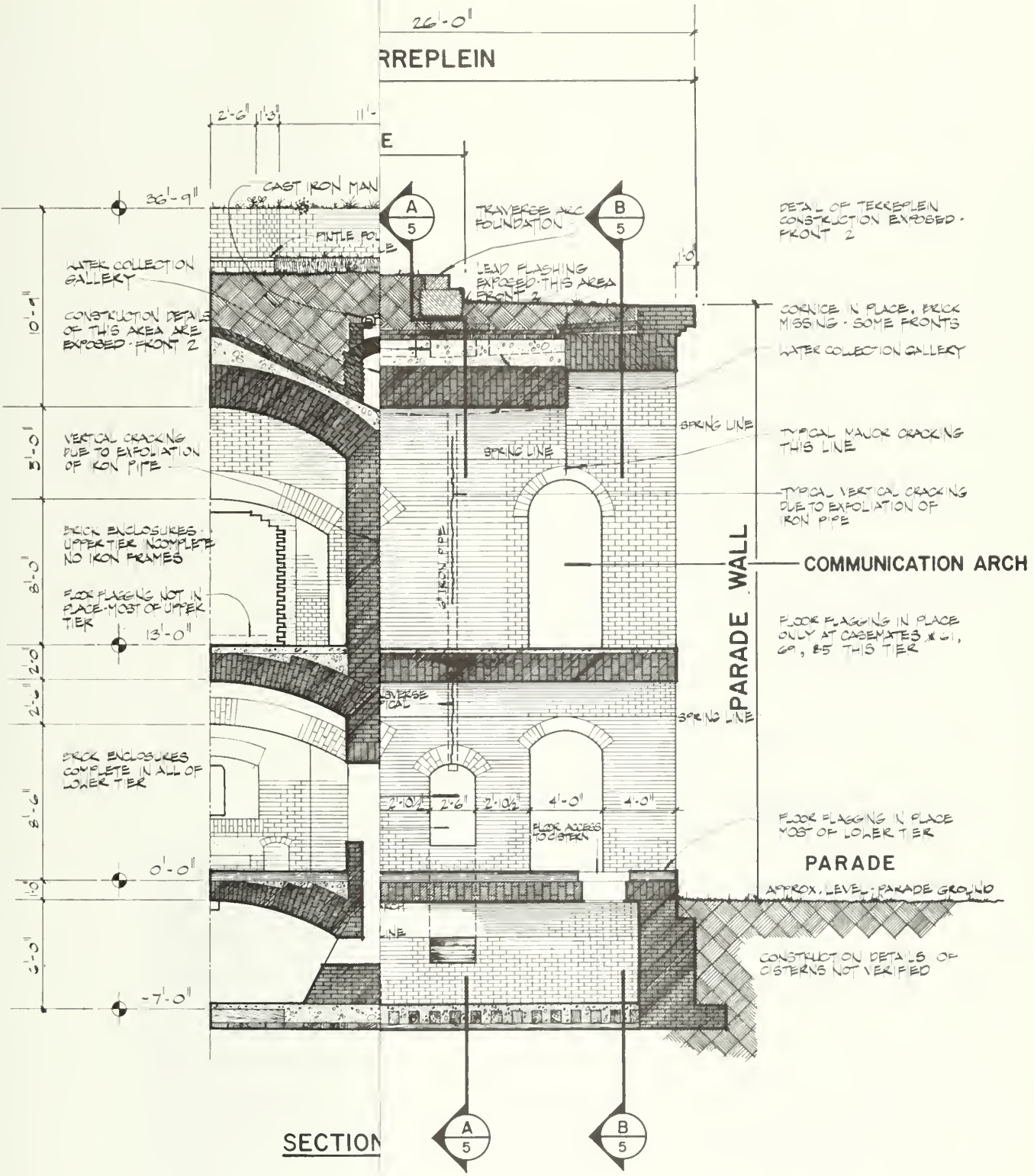
BASIC DATA: NPS OWG 364/60004 PREPARED 6/70 BY ENG. ALEXANDER, U.S. ARMY CORPS OF ENGINEERS

KEY NOTES

① BASTION AND STAIRTOWER NUMBER DESIGNATOR SYMBOL.

FRONT 1 FRONT NUMBER DESIGNATOR SYMBOL. ····· TOUR ROUTE

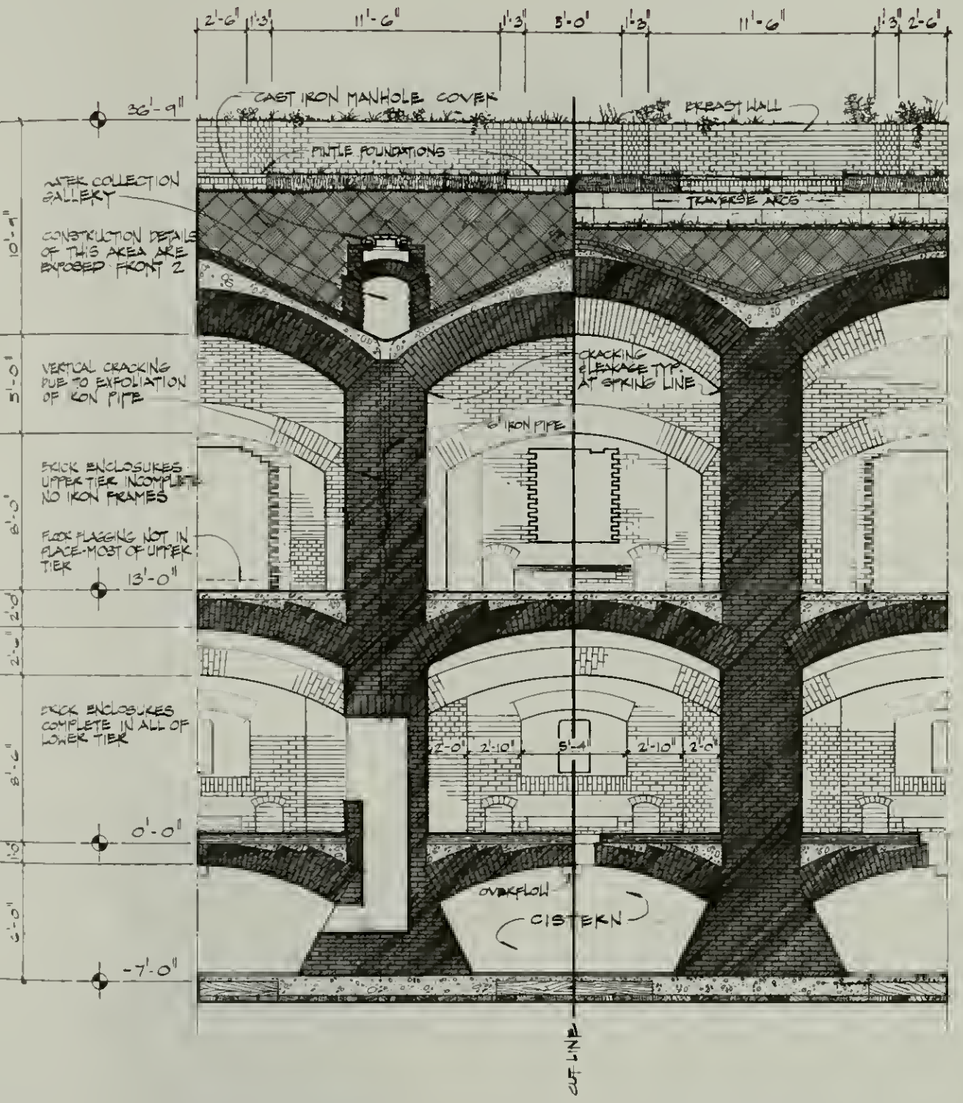
DESIGNED: MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: 10/1/84	SUB SHEET NO.	TITLE OF SHEET FORT JEFFERSON N.M. TERREPLEIN PLAN EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364/25000A PKG NO. 103 SHEET 4 OF 47



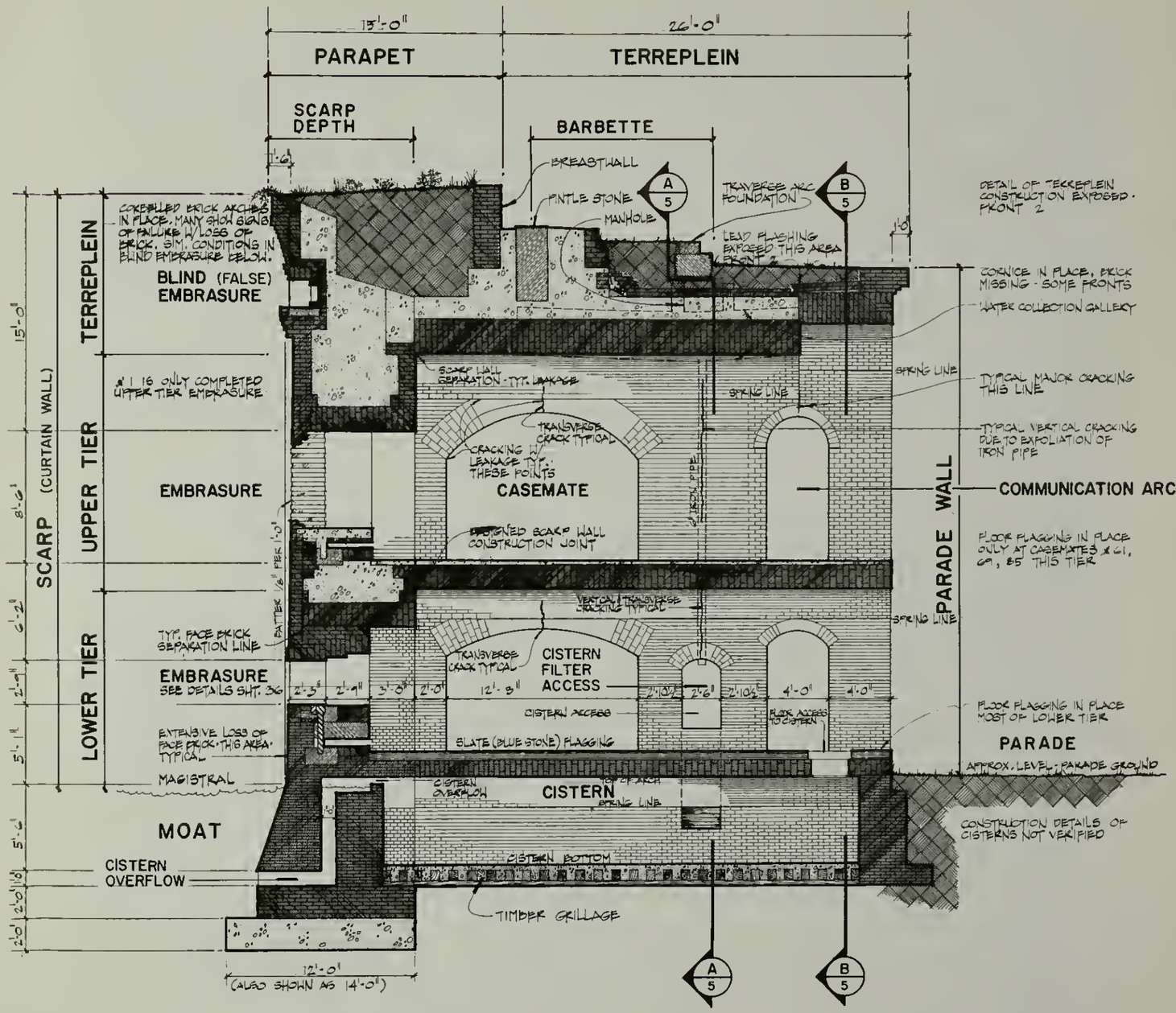
FORT JEFFERSON N.M.

DESIGNED MCGRATH	SUB SHEET NO	TITLE OF SHEET: TYPICAL SECTION THROUGH CASEMATES AND SCARP WALL — EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 / 25000A
DRAWN ANDERSON			PKG. NO. 103
TECH. REVIEW THORSON			SHEET 5 OF 47
DATE 10/1/84			

BASIC DATA: NPS DWG 364/60004 PREPARED 6/
U.S. ARMY CORPS OF ENGINEERS



SECTION A/5



SECTION B/5

TYPICAL SECTION THROUGH CASEMATES AND SCARP WALL

SCALE: 1/4"=1'-0"

4 0 4 8

SCALE OF FEET

BASIC DATA: NPS OWG 364/60004 PREPARED 6/70 BY ENG. ALEXANDER, U.S. ARMY CORPS OF ENGINEERS

FORT JEFFERSON N.M.

DESIGNED: MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: 10/1/84	SUB SHEET NO.	TITLE OF SHEET TYPICAL SECTION THROUGH CASEMATES AND SCARP WALL EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364/25000A PKG NO. 103 SHEET 5 OF 47

(12)

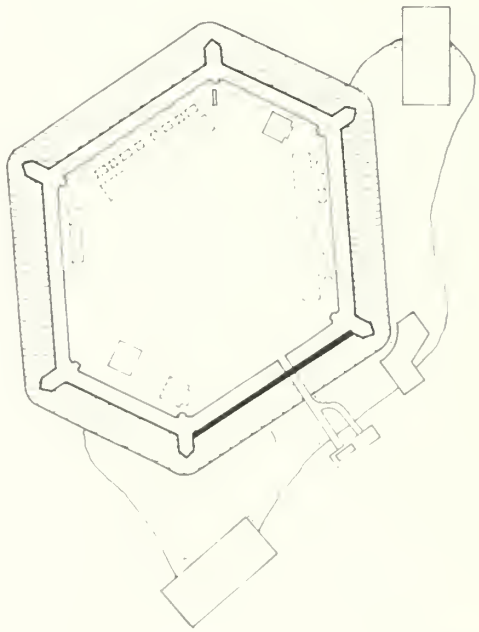
MATCHLINE

(11) (10) SURE NO.

MATCHLINE

CURTAIN-EAST S

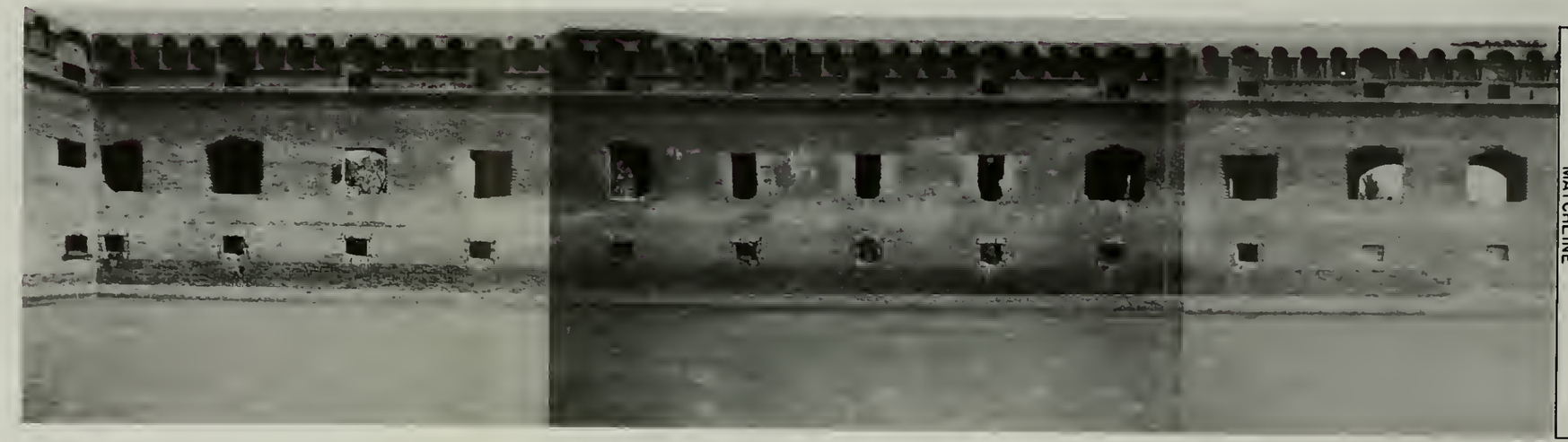
SCALE: 3/32"= 1'-0"



KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

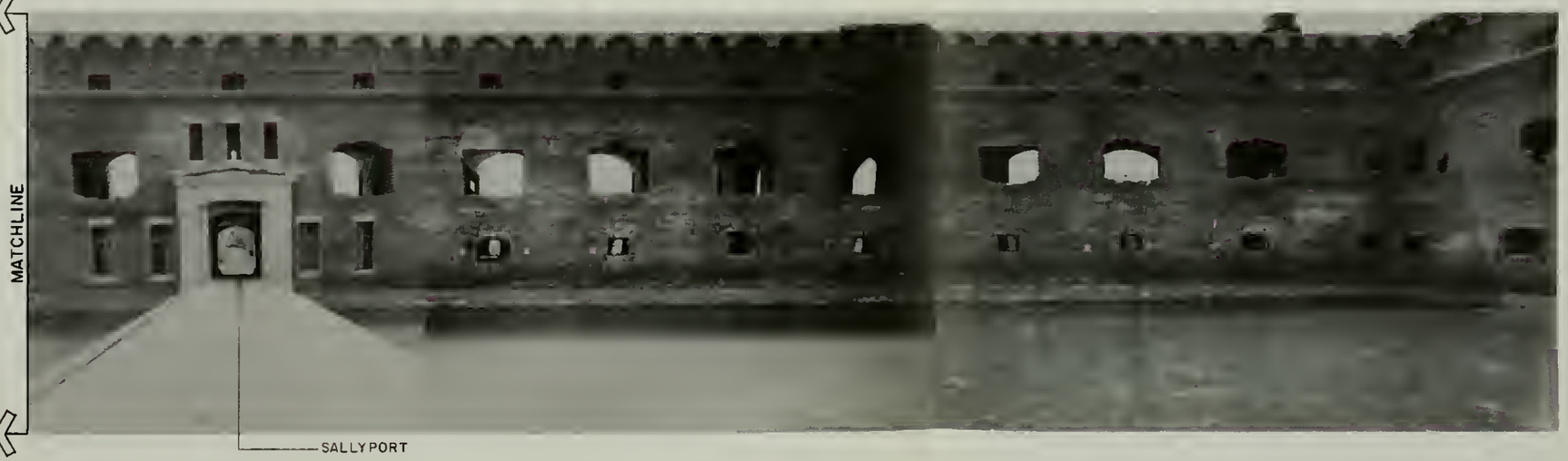
DESIGNED MCGRATH DRAWN MCGRATH TECH REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT I CURTAIN ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG NO 103 SHEET 6 OF 47

23 20 15 12

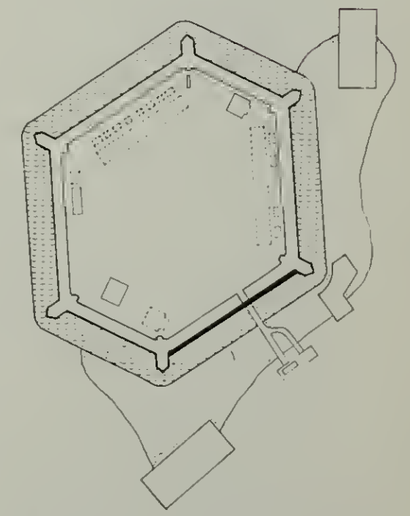


CURTAIN - WEST SECTION
SCALE: 3/32" = 1'-0"

11 10 5 1 EMBRASURE NO.



CURTAIN - EAST SECTION
SCALE: 3/32" = 1'-0"

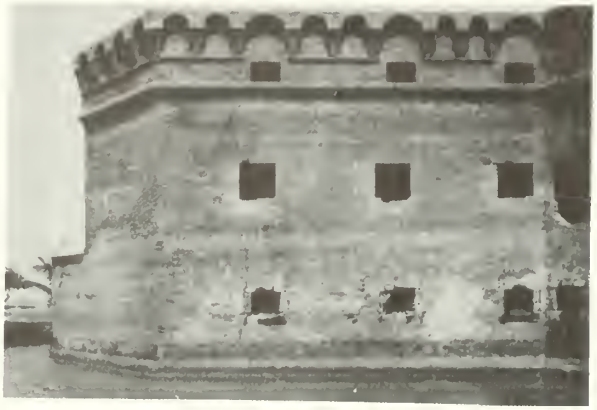


KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

12 0 12 24
SCALE OF FEET

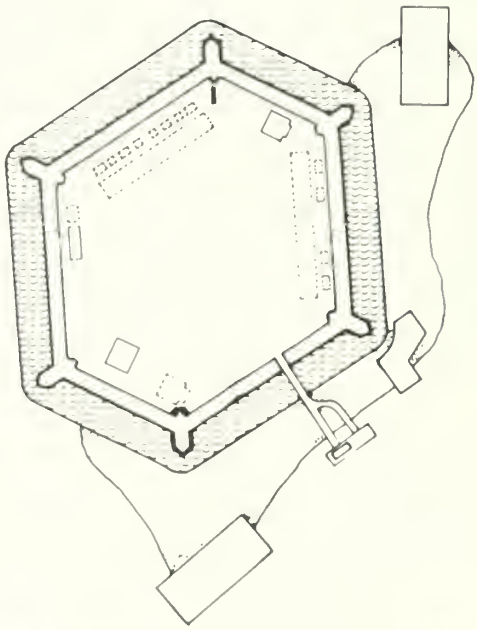
DESIGNED MCGRATH DRAWN MCGRATH TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT I CURTAIN ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG NO 103 SHEET 6 OF 47

BASTION - RIGHT
SCALE: 3/32" = 1'-0"



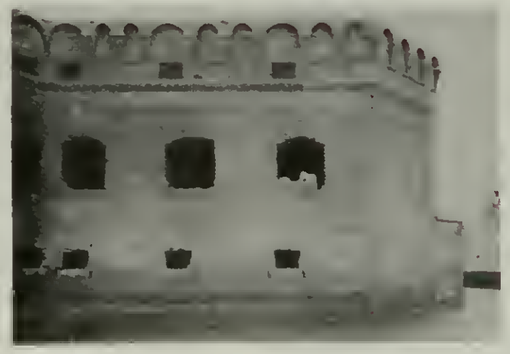
BASTION - LEFT SHOULDER
SCALE: 3/32" = 1'-0"

STAIRTOWER - EA
SCALE: 3/32" = 1'-0"



KEY PLAN
NOT TO SCALE

DESIGNED HISTORIC DRAWN ANDERSON TECH. REVIEW THORSON DATE /	SUB SHEET NO	TITLE OF SHEET TOWER BASTION I SIDE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG NO 103	SHEET 7 OF 47

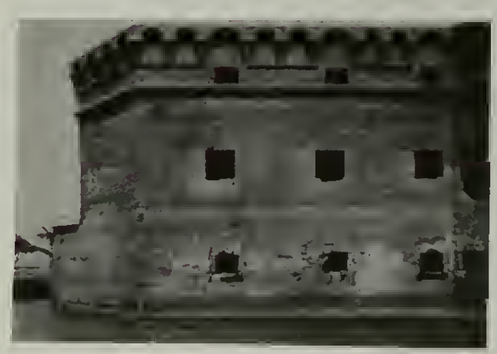


BASTION - RIGHT SHOULDER
SCALE: 3/32" = 1'-0"

BASTION - RIGHT FACE
SCALE: 3/32" = 1'-0"

BASTION - CAPITAL AXIS
SCALE: 3/32" = 1'-0"

BASTION - LEFT FACE
SCALE: 3/32" = 1'-0"

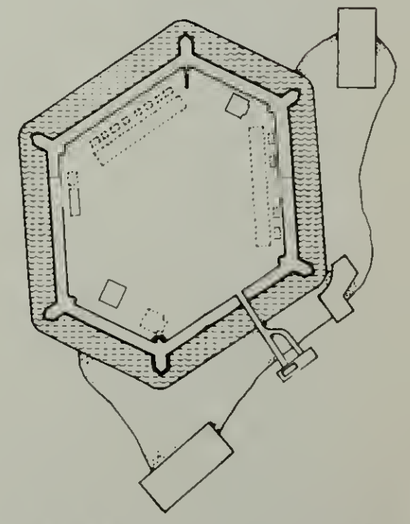


BASTION - LEFT SHOULDER
SCALE: 3/32" = 1'-0"

STAIRTOWER - EAST SIDE ELEVATION
SCALE: 3/32" = 1'-0"

STAIRTOWER - ENTRY
SCALE: 3/32" = 1'-0"

STAIRTOWER - WEST SIDE
SCALE: 3/32" = 1'-0"



KEY PLAN
NOT TO SCALE

DESIGNED: HISTORIC DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: /	SUB SHEET NO.	TITLE OF SHEET TOWER BASTION I SIDE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25000A PKG. NO. 103 SHEET 7 OF 47

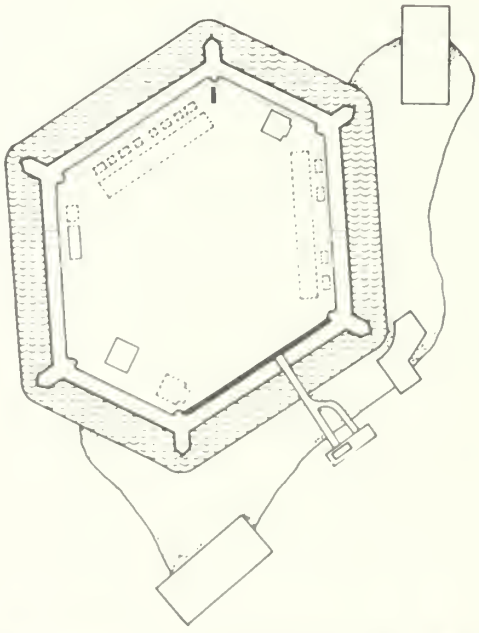
(20) (22)

NED CAPTAIN'S QUARTERS

(1)

CASEMATE NO.

MATCHLINE



KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

PARADE FACE

SCALE: 3/32"=1'-0"

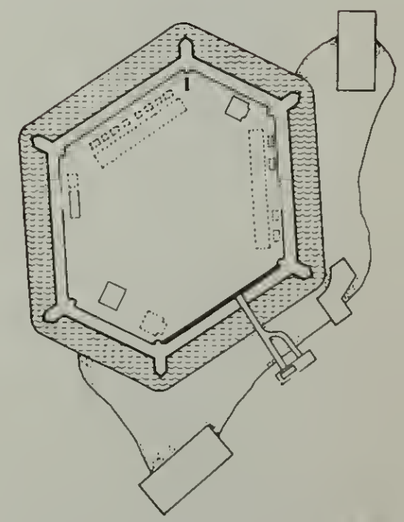
DESIGNED MCGRATH DRAWN MCGRATH TECH. REVIEW: THORSON DATE: 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 1 PARADE FACE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364/25000A PKG. NO. 103 SHEET 8 OF 47

PARADE FACE - WEST SECTION

SCALE: 3/32"=1'-0"

PARADE FACE - EAST SECTION

SCALE: 3/32"=1'-0"

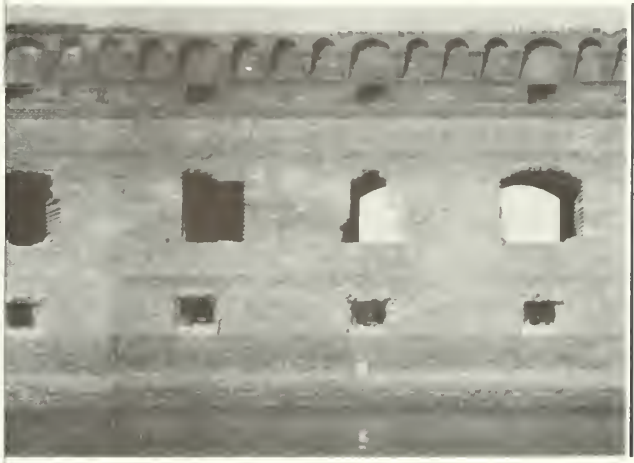


KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

12 0 12 24
SCALE OF FEET

DESIGNED: MCGRATH DRAWN: MCGRATH TECH. REVIEW: THORSON DATE: 10/1/84	SUB SHEET NO.	TITLE OF SHEET FRONT I PARADE FACE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 / 25000A PKG. NO. 103 SHEET 8 OF 47

(40) (38)



MATCHLINE

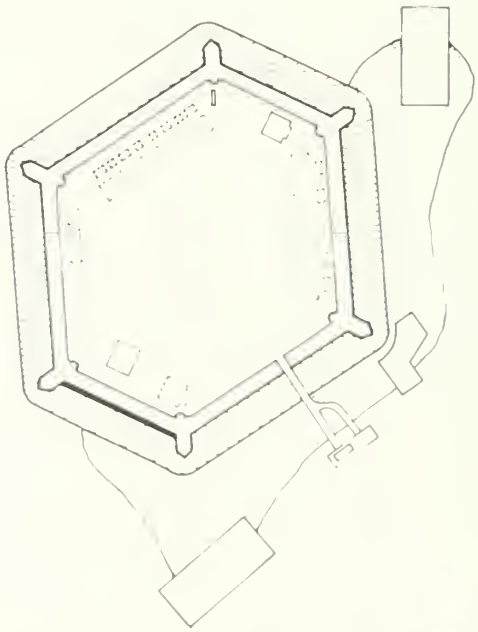
ROOM

(37)

MATCHLINE

CURTAIN – EAST

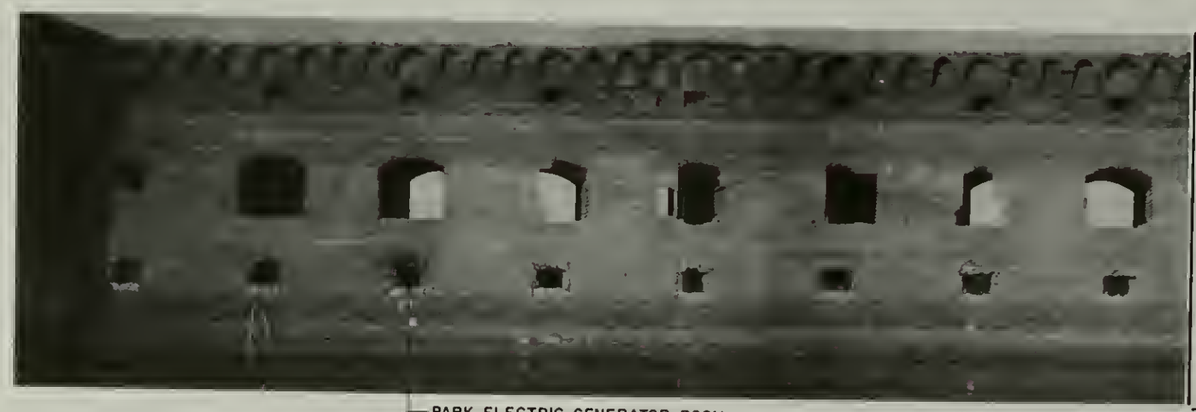
SCALE: 3/32" = 1'–0"



KEY PLAN – FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN MCGRATH TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 2 CURTAIN ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25,000A PKG NO. 103 SHEET 9 OF 47	

(45) (40) (38)



CURTAIN – WEST SECTION

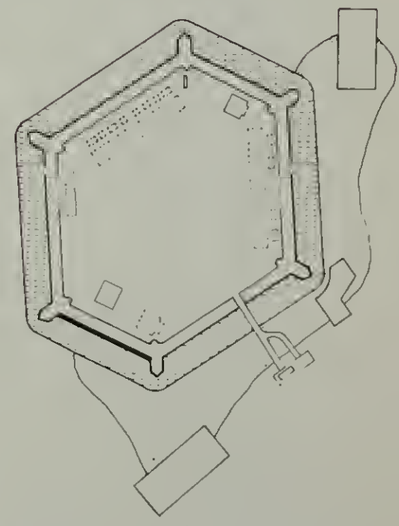
SCALE: 3/32" = 1'-0"

(37) (35) (31)

EMBRASURE NO.

CURTAIN – EAST SECTION

SCALE: 3/32" = 1'-0"



KEY PLAN – FORT JEFFERSON N.M.
NOT TO SCALE

12 0 12 24
SCALE OF FEET

DESIGNED MCGRATH	SUB SHEET NO	TITLE OF SHEET: FRONT 2 CURTAIN ELEVATIONS	DRAWING NO 364 25,000A
DRAWN MCGRATH		EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	PKG. NO. 103
TECH. REVIEW THORSON			SHEET 9
DATE 10/1/84			OF 47

BASTION-RIGHT S

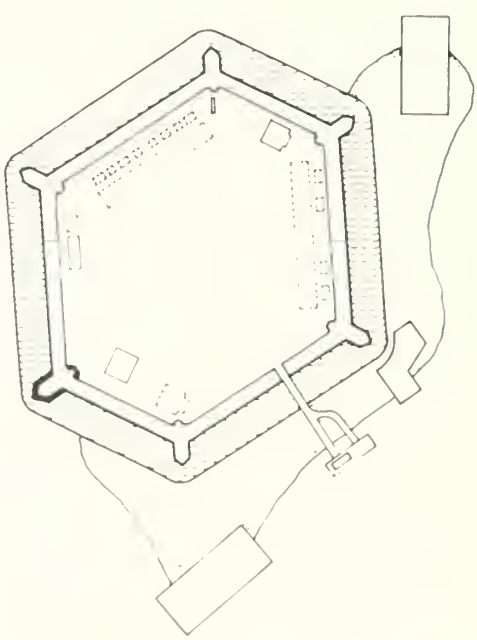
SCALE: 3/32"=1'-0"

BASTION-LEFT SHOULDER

SCALE: 3/32"=1'-0"

STAIRTOWER-EASIDE ELEVATION

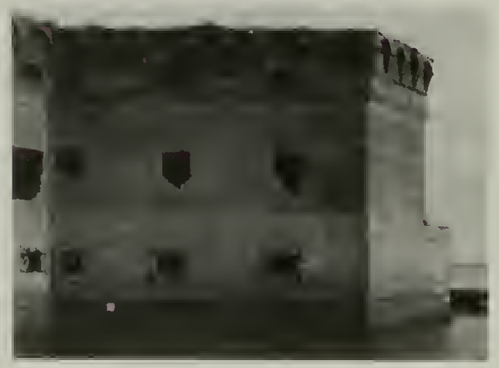
SCALE: 3/32" = 1'-0"



KEY PLAN - FORT JEFFERSON N.M.

NOT TO SCALE

DESIGNED HISTORIC DRAWN ANDERSON TECH REVIEW THORSON DATE /	SUB SHEET NO	TITLE OF SHEET TOWER BASTION 2 SIDE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG NO. 103 SHEET 10 OF 47



BASTION-RIGHT SHOULDER
SCALE: 3/32"=1'-0"

BASTION-RIGHT FACE
SCALE: 3/32"=1'-0"

BASTION-CAPITAL AXIS
SCALE: 3/32"=1'-0"

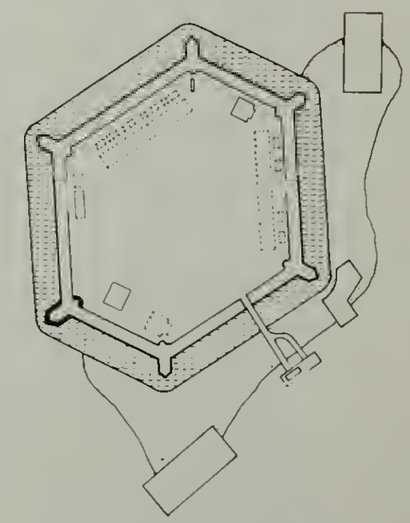
BASTION-LEFT FACE
SCALE: 3/32"=1'-0"

BASTION-LEFT SHOULDER
SCALE: 3/32"=1'-0"

STAIRTOWER-EAST SIDE ELEVATION
SCALE: 3/32"=1'-0"

ENTRY-ELEVATION
SCALE: 3/32"=1'-0"

STAIRTOWER-WEST SIDE ELEVATION
SCALE: 3/32"=1'-0"



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

12 0 12 24
SCALE OF FEET

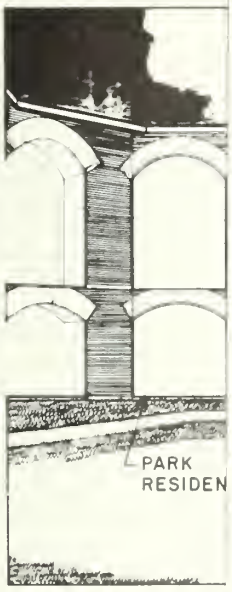
DESIGNED HISTORIC DRAWN ANDERSON TECH. REVIEW THORSON DATE /	SUB SHEET NO	TITLE OF SHEET TOWER BASTION 2 SIDE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25000A PKG. NO. 103 SHEET 10 OF 47

(33)

PARADE FAC

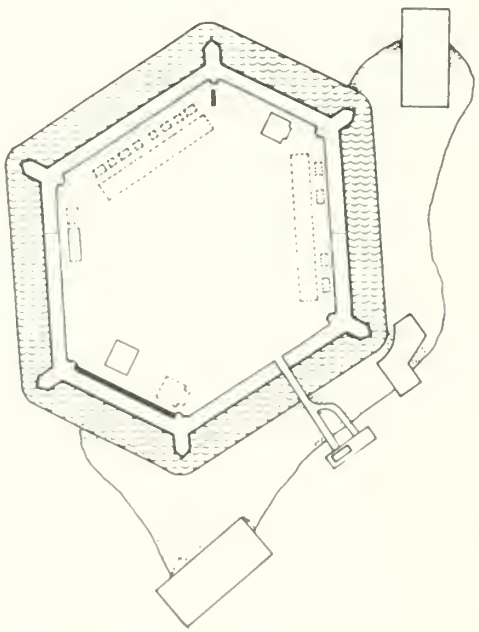
SCALE: 3/32" = 1'-

(31)



PARADE FA

SCALE: 3/32" = 1'

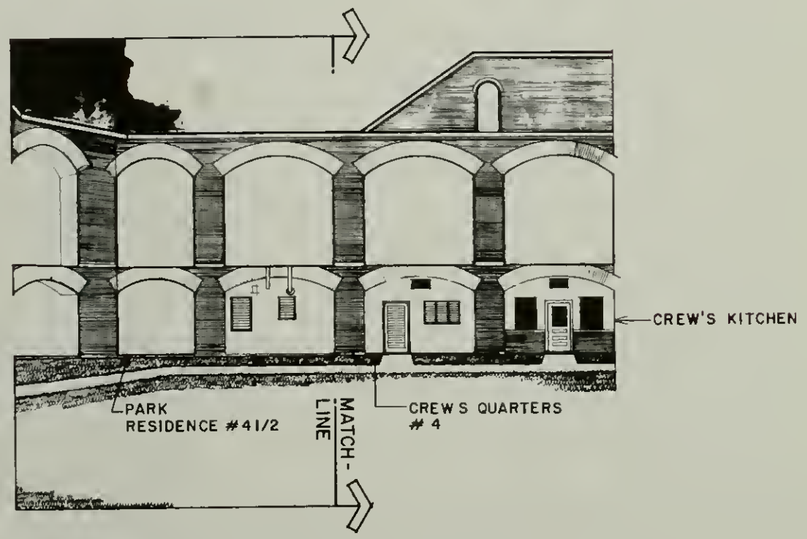


KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 2 PARADE FACE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25000A PKG. NO. 103 SHEET 11 OF 47

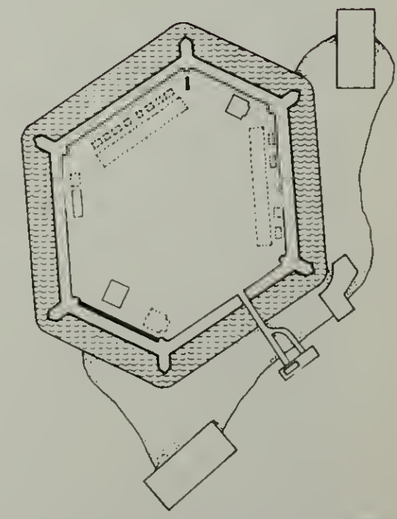
PARADE FACE - WEST SECTION

SCALE: 3/32" = 1'-0"



PARADE FACE - EAST SECTION

SCALE: 3/32" = 1'-0"



KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

12 0 12 24
SCALE OF FEET

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 2 PARADE FACE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364/25000A PKG. NO. 103 SHEET 11 OF 47

(65) (62)

MATCHLINE

PARK REC. HALL #7

C

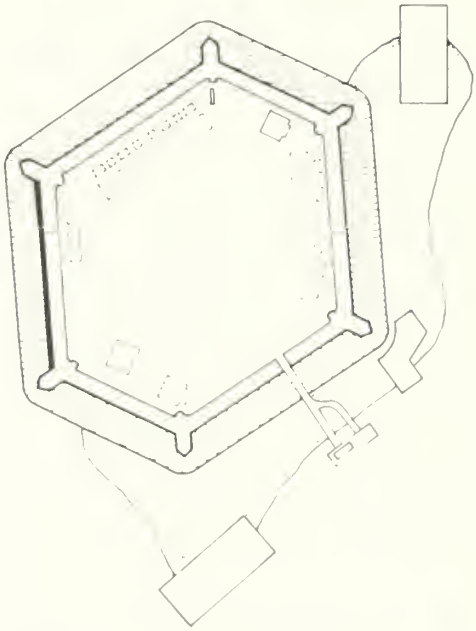
S(

(61)

MATCHLINE

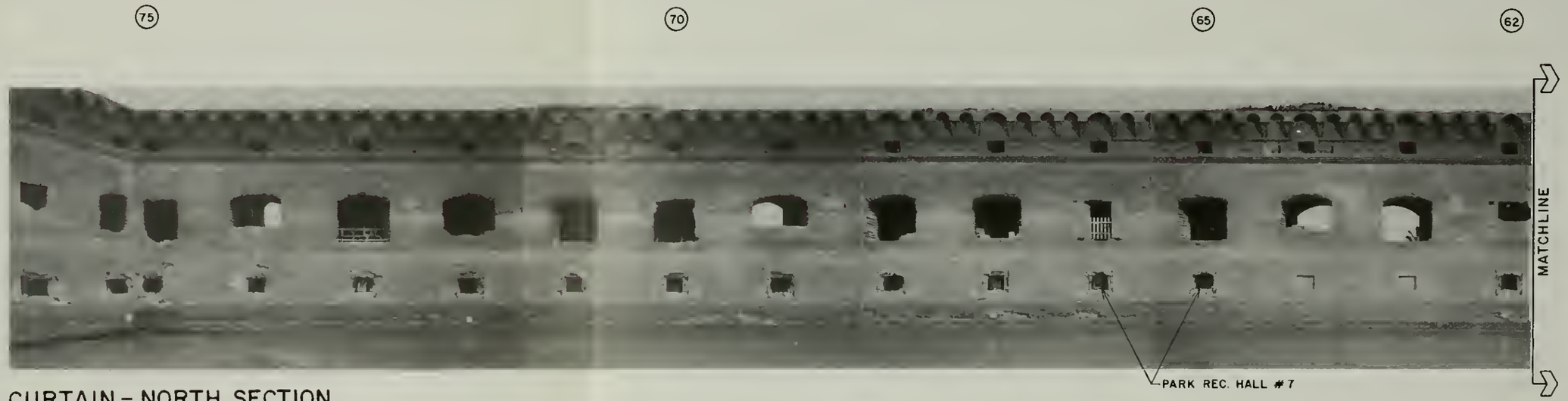
CURTAIN—SOU

SCALE: 3/32"=1'-0"



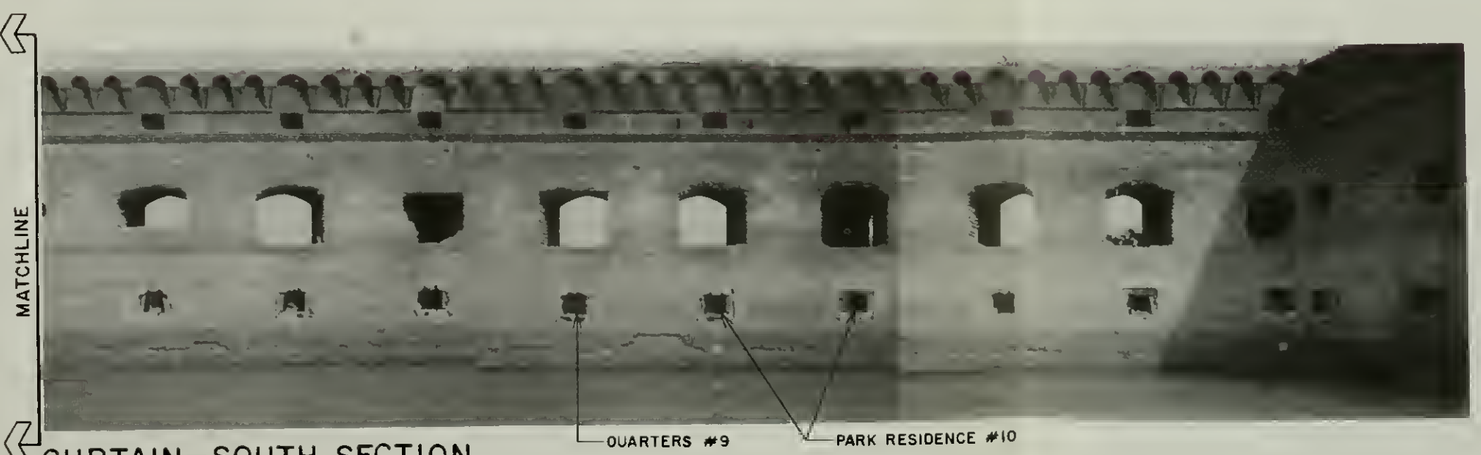
KEY PLAN—FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 3 CURTAIN ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG. NO. 103 SHEET 12 OF 47



CURTAIN - NORTH SECTION

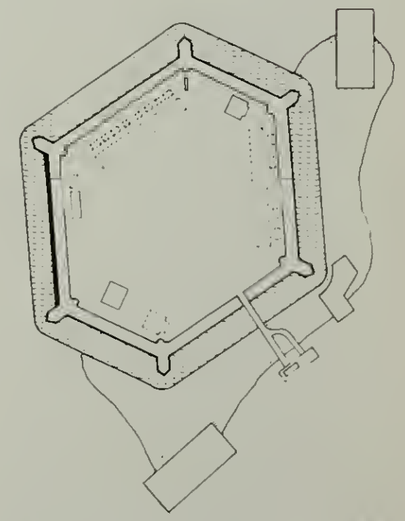
SCALE: 3/32" = 1'-0"



EMBRASURE NO.

CURTAIN - SOUTH SECTION

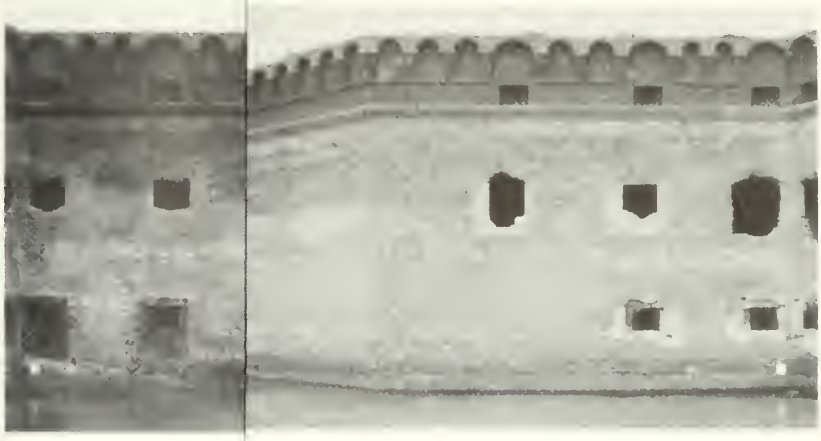
SCALE: 3/32"=1'-0"



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

12 0 12 24
SCALE OF FEET

DESIGNED MCGRATH DRAWN: ANDERSON TECH. REVIEW THORSON DATE: 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 3 CURTAIN ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG. NO. 103 SHEET 12 OF 47

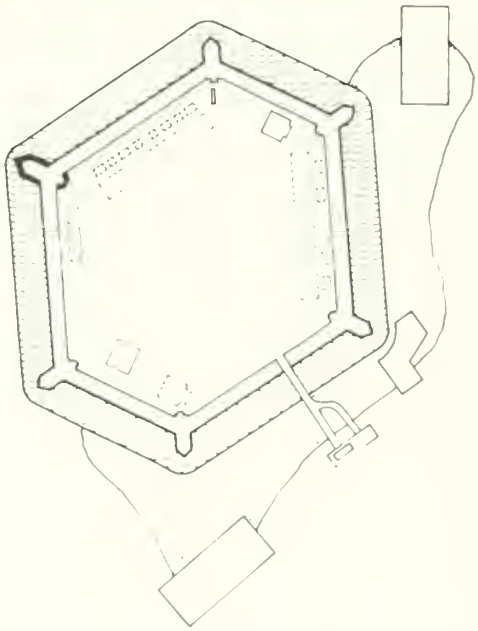


BASTION-RICTION-LEFT SHOULDER

SCALE: 3/32"= 1'-0" : 3/32" = 1'-0"

STAIRTOWERDE ELEVATION

SCALE: 3/32" = 1'-0



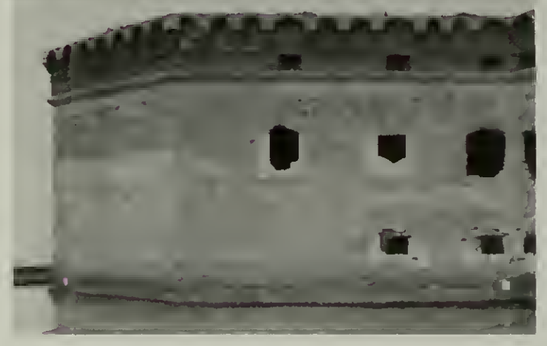
KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED HISTORIC DRAWN ANDERSON TECH. REVIEW THORSON DATE /	SUB SHEET NO	TITLE OF SHEET TOWER BASTION 3 SIDE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG. NO. 103 SHEET 13 OF 47

BASTION-RIGHT SHOULDER
SCALE: 3/32"= 1'-0"

BASTION-RIGHT FACE
SCALE: 3/32" = 1'-0"

BASTION-LEFT FACE
SCALE: 3/32" = 1'-0"

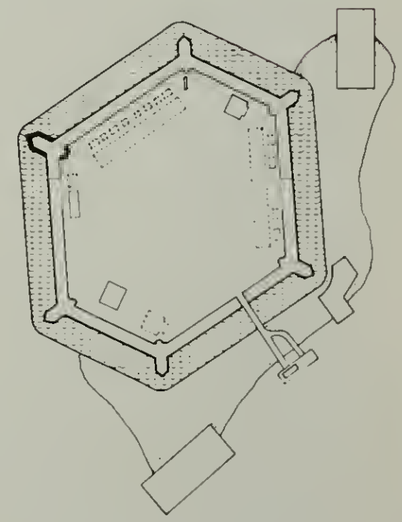


BASTION-LEFT SHOULDER
SCALE: 3/32" = 1'-0"

STAIRTOWER-SOUTH SIDE ELEVATION
SCALE: 3/32" = 1'-0"

STAIRTOWER-ENTRY ELEVATION
SCALE: 3/32" = 1'-0"

STAIRTOWER-NORTH SIDE ELEVATION
SCALE: 3/32"-1'-0"

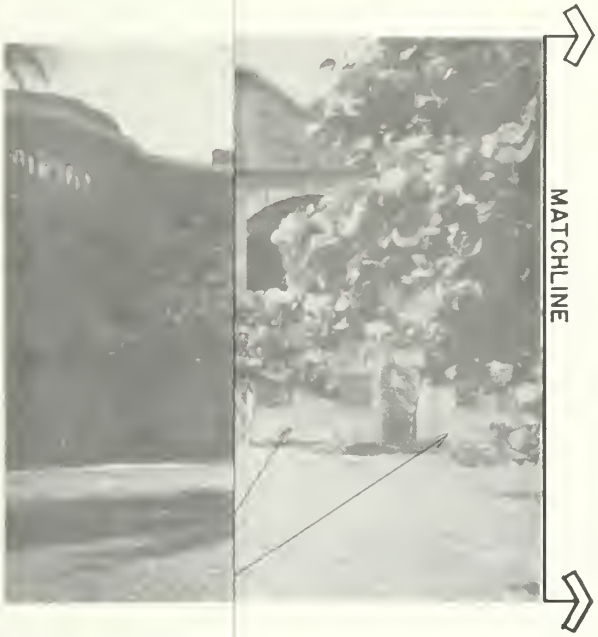


KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

12 0 12 24
SCALE OF FEET

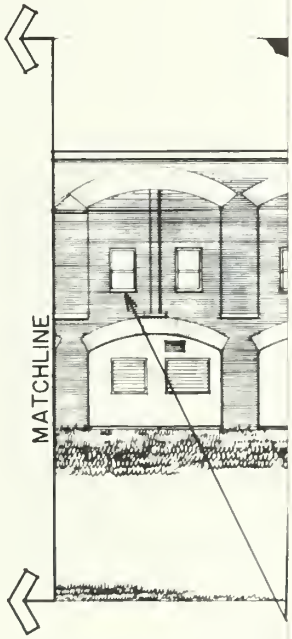
DESIGNED: HISTORIC DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: /	SUB SHEET NO	TITLE OF SHEET TOWER BASTION 3 SIDE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG. NO. 103 SHEET 13 OF 47

(53) (65)

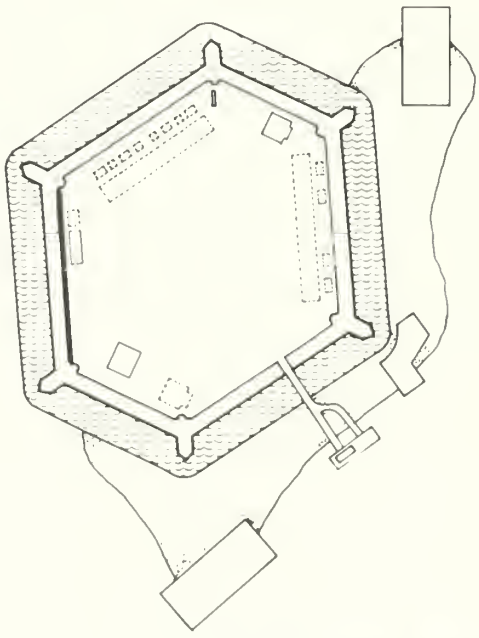


PARADE FAC
SCALE: 3/32" = 1'

(67)



PARADE FAC
SCALE: 3/32" = 1'

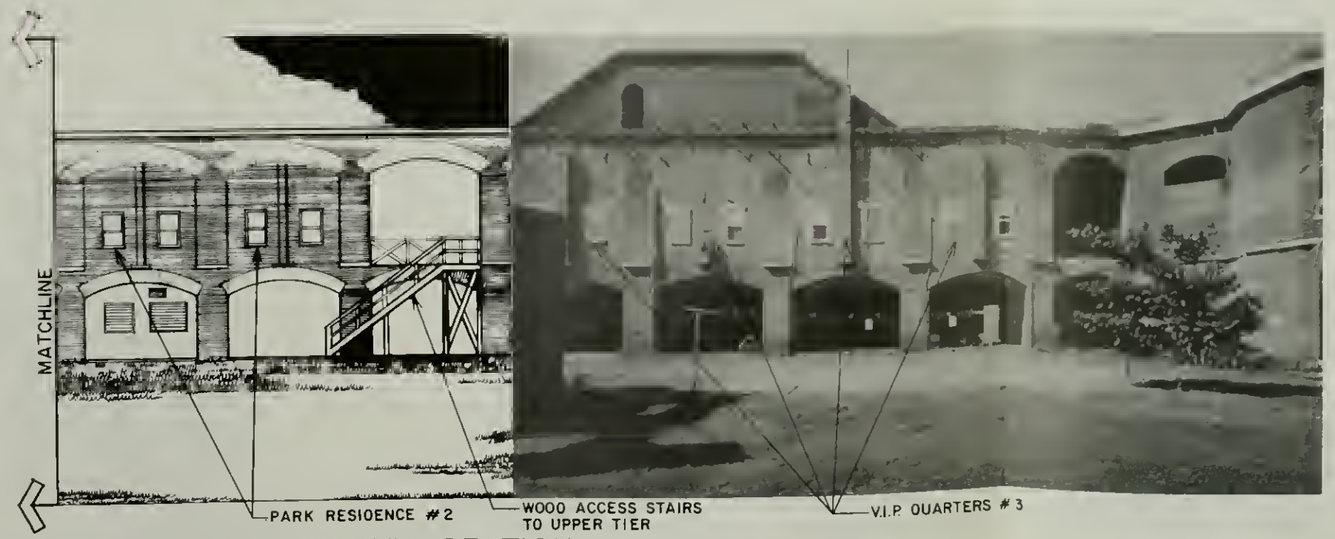


KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED: MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 3 PARADE FACE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25000A	PKG NO. 103 SHEET 14 OF 47

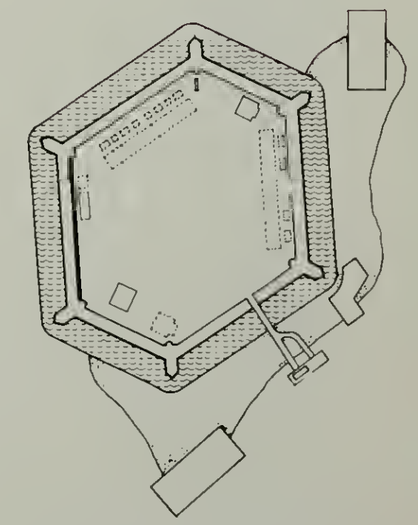
PARADE FACE - SOUTH SECTION

SCALE: 3/32" = 1'-0"



PARADE FACE - NORTH SECTION

SCALE: 3/32" = 1'-0"



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

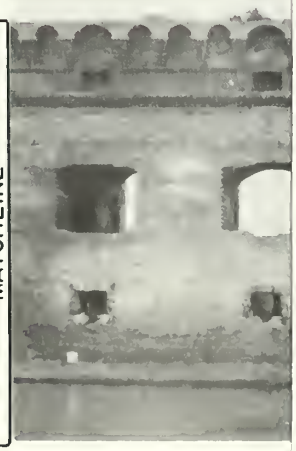
12 0 12 24
SCALE OF FEET

DESIGNED: MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: 10/1/84	SUB SHEET NO	TITLE OF SHEET: FRONT 3 PARADE FACE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25000A PKG. NO. 103 SHEET 14 OF 47

(95) (92)

MATCHLINE

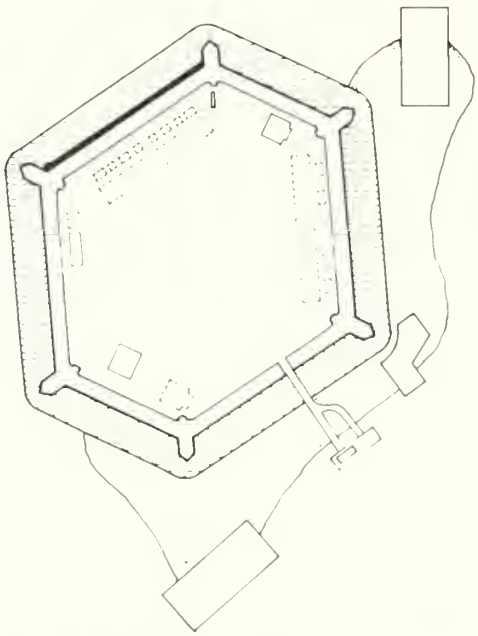
(90)



MATCHLINE

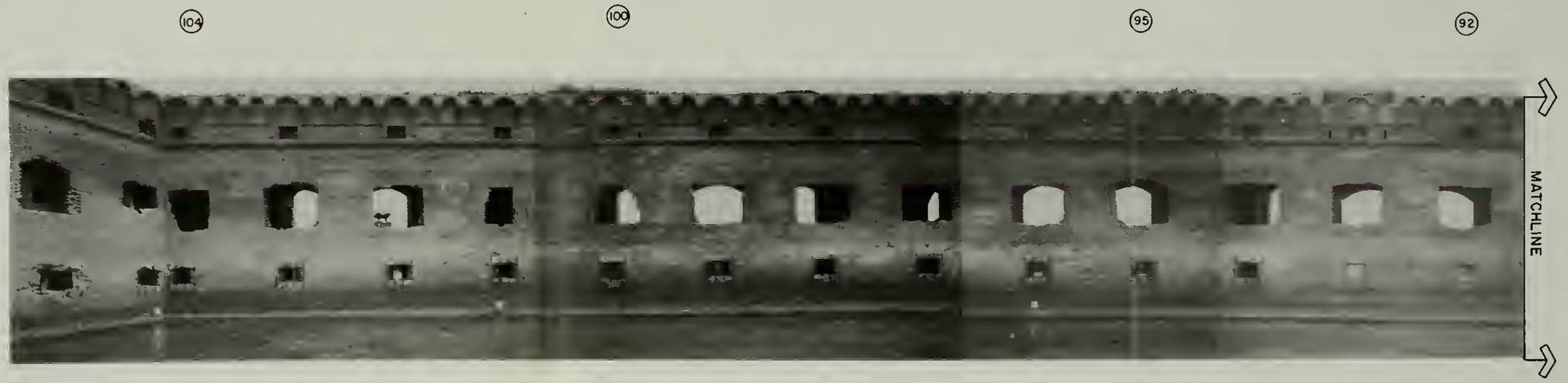
CURTAIN-WEST

SCALE: 3/32" = 1'-0"

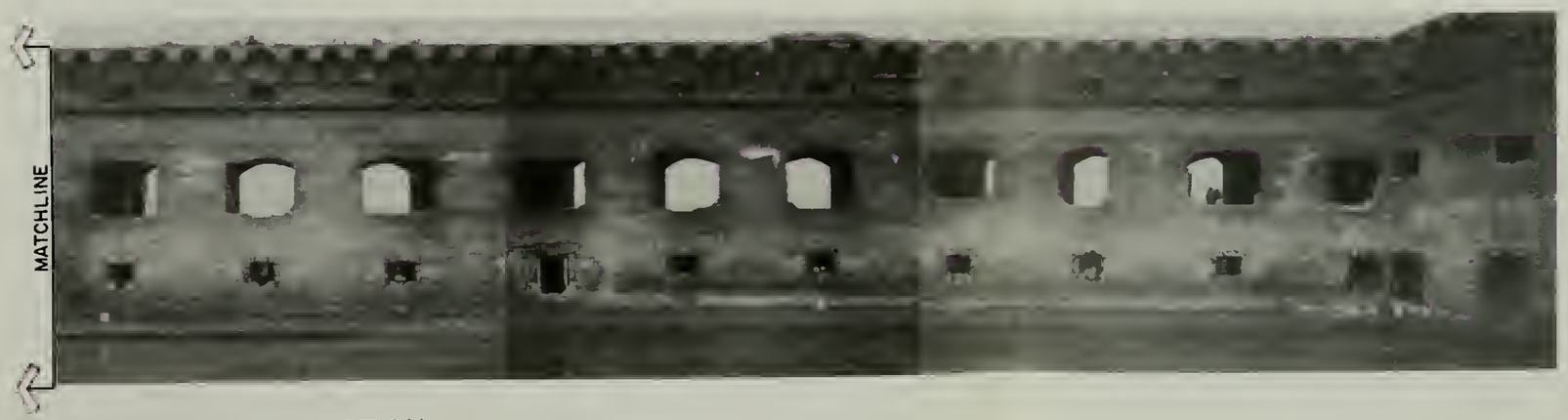


KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 4 CURTAIN ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364/25000A PKG. NO. 103 SHEET 15 OF 47	

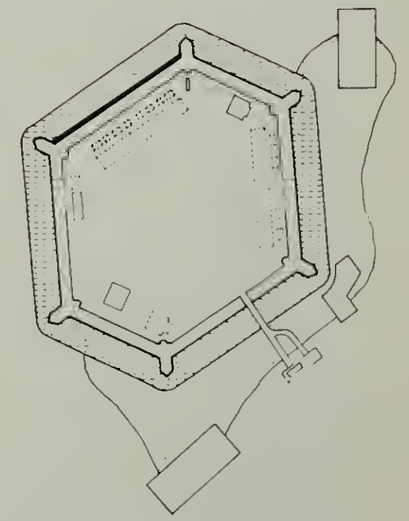


CURTAIN-EAST SECTION
SCALE: 3/32" = 1'-0"



CURTAIN-WEST SECTION
SCALE: 3/32" = 1'-0"

EMBRASURE NO.



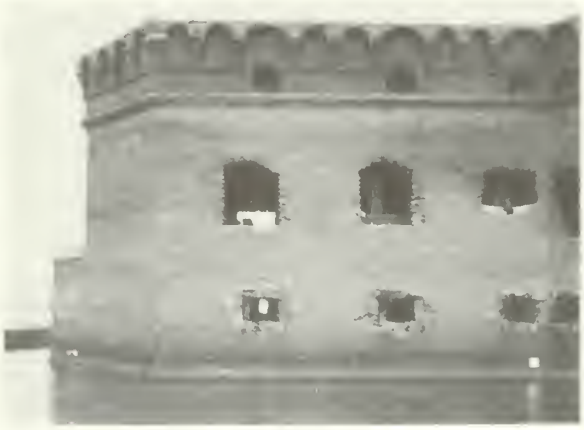
KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

12 0 12 24
SCALE OF FEET

DESIGNED MCGRATH DRAWN: ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO.	TITLE OF SHEET FRONT 4 CURTAIN ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25000A PKG. NO. 103 SHEET 15 OF 47

BASTION – RIGHT

SCALE: 3/32" = 1'–0"

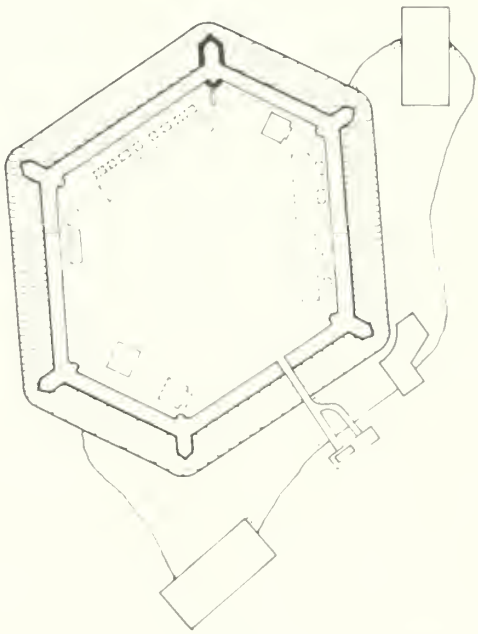


BASTION-LEFT SHOULDER

SCALE: 3/32" = 1'–0"

STAIRTOWER – WEDE ELEVATION

SCALE: 3/32" = 1'–0"



KEY PLAN-FORT JEFFERSON N.M.

NOT TO SCALE

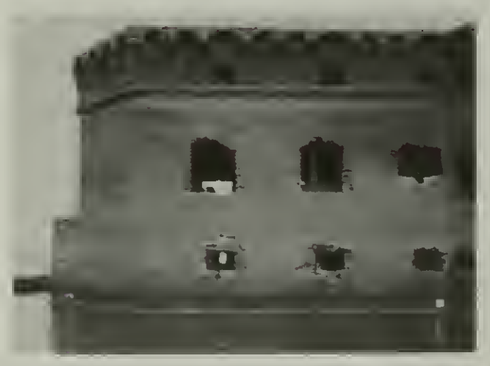
DESIGNED HISTORIC DRAWN ANDERSON TECH. REVIEW THORSON DATE /	SUB SHEET NO	TITLE OF SHEET TOWER BASTION 4 SIDE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG NO 103 SHEET 16 OF 47

BASTION – RIGHT SHOULDER
SCALE: 3/32" = 1'-0"

BASTION – RIGHT FACE
SCALE: 3/32" = 1'-0"

BASTION-CAPITAL AXIS
SCALE: 3/32" = 1'-0"

BASTION-LEFT FACE
SCALE: 3/32" = 1'-0"

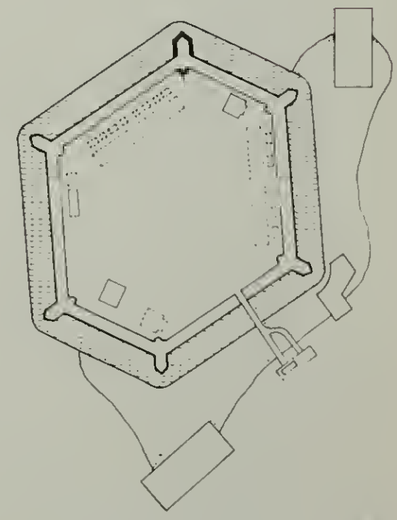


BASTION-LEFT SHOULDER
SCALE: 3/32" = 1'-0"

STAIRTOWER - WEST SIDE ELEVATION
SCALE: 3/32" = 1'-0"

STAIRTOWER - ENTRY ELEVATION
SCALE: 3/32" = 1'-0"

STAIRTOWER - EAST SIDE ELEVATION
SCALE: 3/32" = 1'-0"



KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

12 0 12 24
SCALE OF FEET

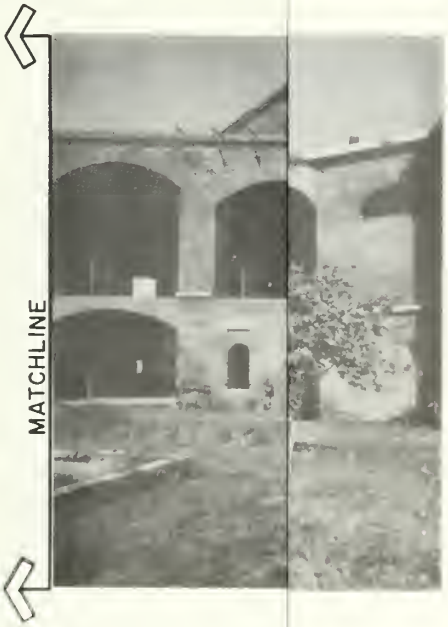
DESIGNED HISTORIC DRAWN: ANDERSON TECH. REVIEW THORSON DATE /	SUB SHEET NO	TITLE OF SHEET TOWER BASTION 4 SIDE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25000A PKG. NO. 103 SHEET 16 OF 47

(82)

PARADE FACI
SCALE: 3/32" = 1'

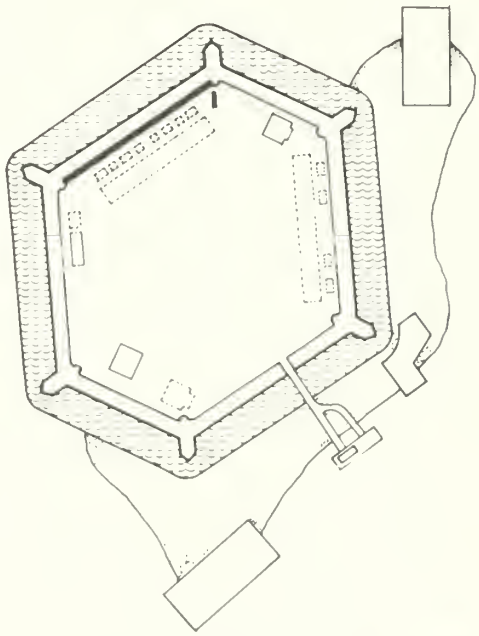
(91)

(104) EMBRASURE NO.



MATCHLINE

PARADE FAC
SCALE: 3/32" = 1



KEY PLAN FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO.	TITLE OF SHEET FRONT 4 PARADE FACE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 / 25000A PKG. NO. 103 SHEET 17 OF 47

(82) (85) (90)

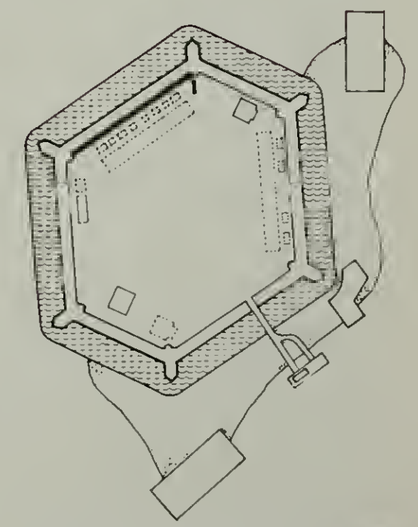
PARADE FACE - WEST SECTION

SCALE: 3/32" = 1'-0"

(91) (95) (100) (104) EMBRASURE NO.

PARADE FACE - EAST SECTION

SCALE: 3/32" = 1'-0"

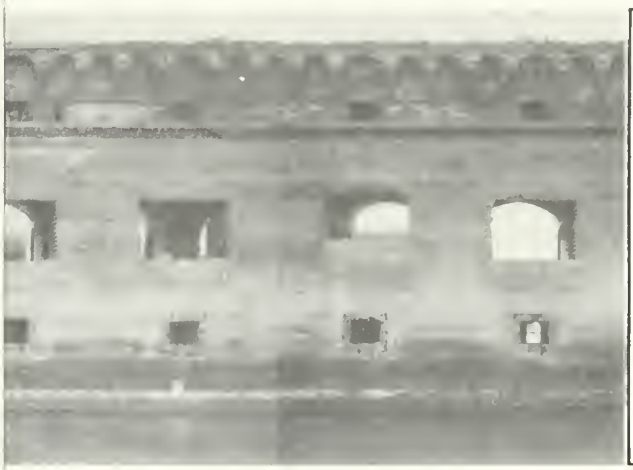


KEY PLAN FORT JEFFERSON N.M.
NOT TO SCALE

12 0 12 24
SCALE OF FEET

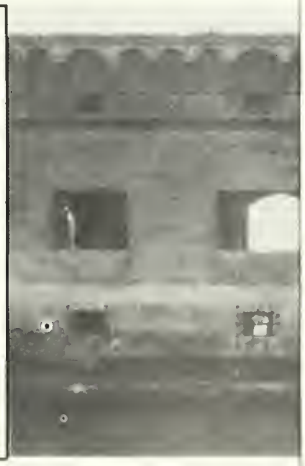
DESIGNED: MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: 10/1/84	SUB SHEET NO.	TITLE OF SHEET FRONT 4 PARADE FACE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 / 25000A PKG. NO. 103 SHEET 17 OF 47

(120) (119)



MATCHLINE

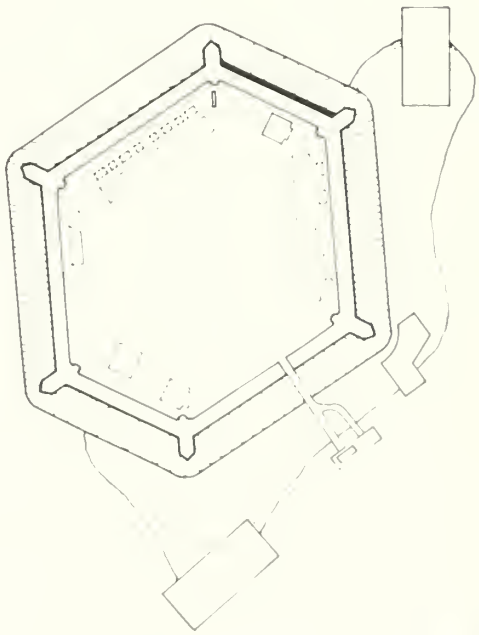
(118)



MATCHLINE

CURTAIN - WEST

SCALE: 3/32"=1'-0"

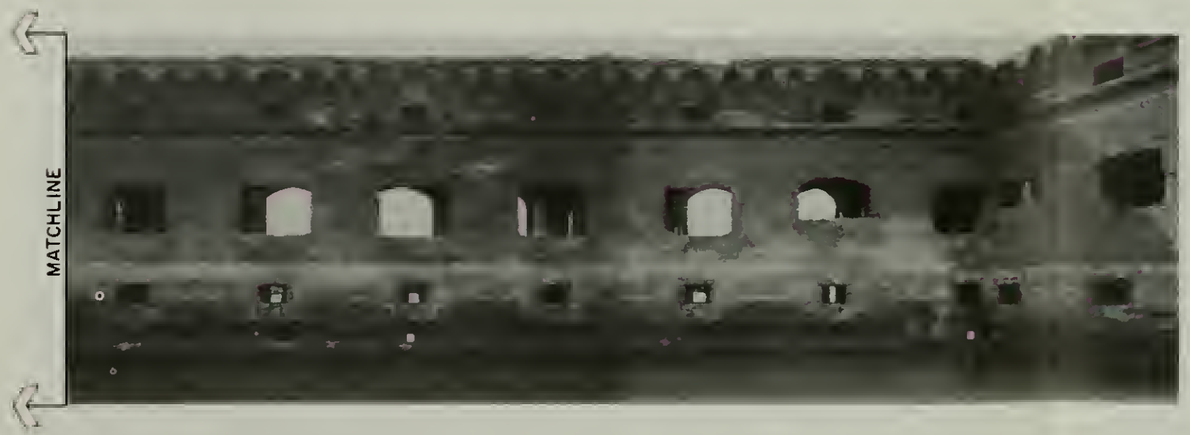


KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 5 CURTAIN ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 / 25000A PKG NO 103 SHEET 18 OF 47

CURTAIN - EAST SECTION

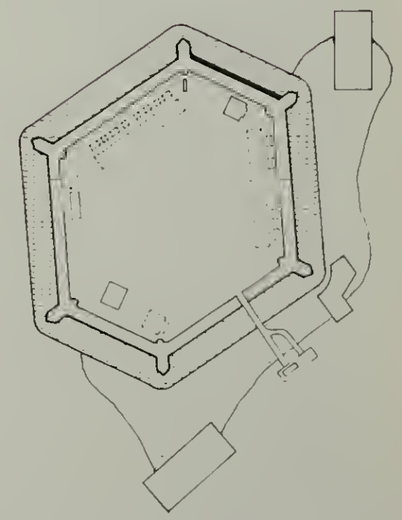
SCALE: 3/32"=1'-0"



CURTAIN - WEST SECTION

SCALE: 3/32"=1'-0"

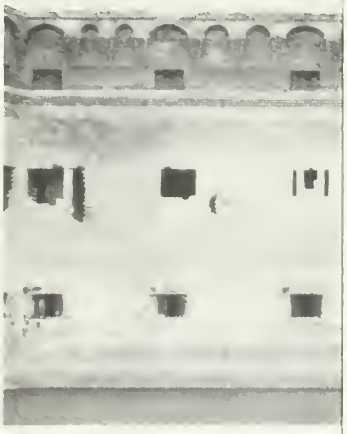
EMBRASURE NO.



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

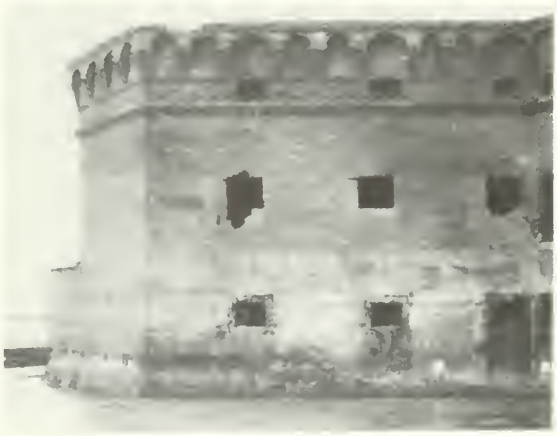
12 0 12 24
SCALE OF FEET

DESIGNED: MCGRATH	SUB SHEET NO.	TITLE OF SHEET: FRONT 5 CURTAIN ELEVATIONS	DRAWING NO. 364 / 25000A
DRAWN: ANDERSON			PKG. NO. 103
TECH. REVIEW: THORSON		EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	SHEET 18 OF 47
DATE 10/1/84			



BASTION - RIGHT S

SCALE: 3/32" = 1'-0"

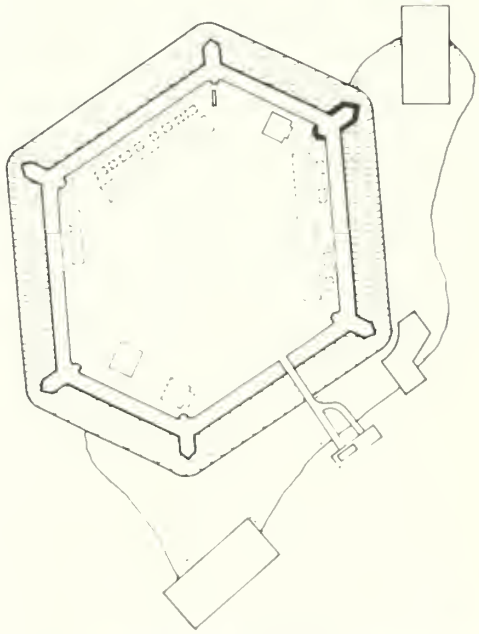


BASTION - LEFT SHOULDER

SCALE: 3/32" = 1'-0"

STAIRTOWER - NORTH SIDE ELEVATION

SCALE: 3/32" = 1'-0"



KEY PLAN - FORT JEFFERSON N.M.

NOT TO SCALE

DESIGNED: HISTORIC DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: /	SUB SHEET NO	TITLE OF SHEET TOWER BASTION 5 SIDE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25000A PKG. NO. 103 SHEET 19 OF 47

BASTION - RIGHT SHOULDER
SCALE: 3/32" = 1'-0"

BASTION - RIGHT FACE
SCALE: 3/32" = 1'-0"

BASTION - CAPITAL AXIS
SCALE: 3/32" = 1'-0"

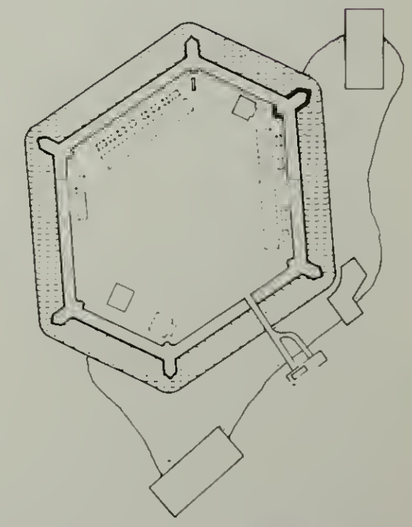
BASTION - LEFT FACE
SCALE: 3/32" = 1'-0"

BASTION - LEFT SHOULDER
SCALE: 3/32" = 1'-0"

STAIRTOWER - NORTH SIDE ELEVATION
SCALE: 3/32" = 1'-0"

STAIRTOWER - ENTRY ELEVATION
SCALE: 3/32" = 1'-0"

STAIRTOWER - SOUTH SIDE ELEVATION
SCALE: 3/32" = 1'-0"



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

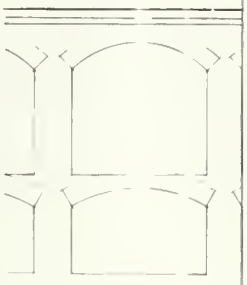
12 0 12 24
SCALE OF FEET

DESIGNED: HISTORIC	SUB SHEET NO.	TITLE OF SHEET: TOWER BASTION 5 SIDE ELEVATIONS	DRAWING NO. 364 25000A
DRAWN: ANDERSON		EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	PKG. NO. 103
TECH. REVIEW: THORSON			SHEET 19 OF 47
DATE: /			

(112)

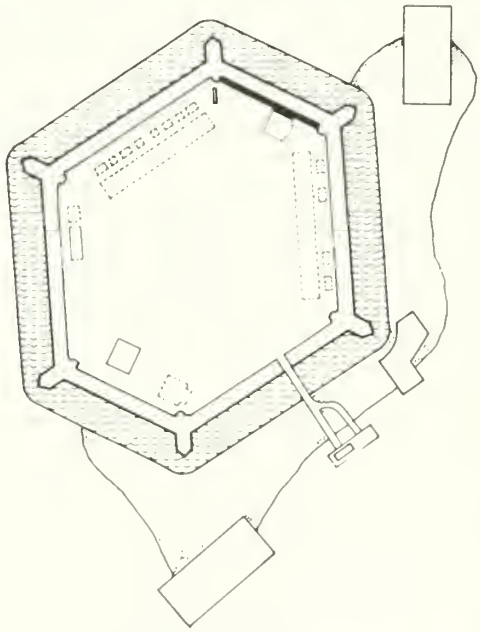
PARADE FACE

SCALE: 3/32" = 1'-0



PARADE FACE

SCALE: 3/32" = 1'-



KEY PLAN – FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO.	TITLE OF SHEET FRONT 5 PARADE FACE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25,000A PKG. NO. 103 SHEET 20 OF 47	

(112) (115) (119)

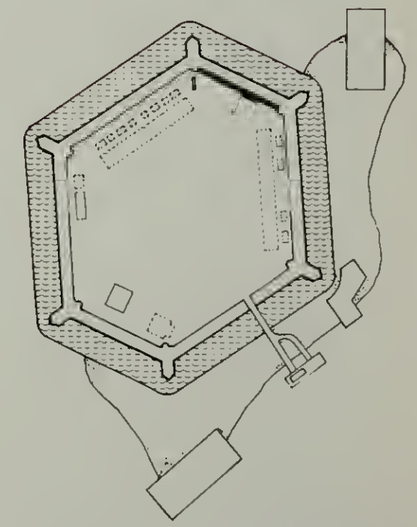
PARADE FACE - WEST SECTION

SCALE: 3/32" = 1'-0"

(120) (125) (126) EMBRASURE NO.

PARADE FACE - EAST SECTION

SCALE: 3/32" = 1'-0"



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

12 0 12 24
SCALE OF FEET

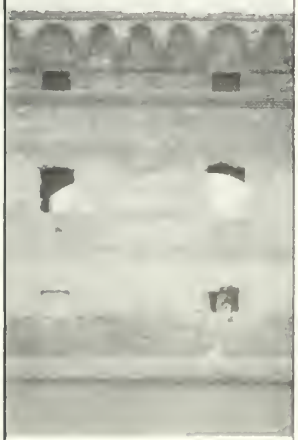
DESIGNED: MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 5 PARADE FACE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25,000A PKG. NO. 103 SHEET 20 OF 47

(145)

MATCHLINE

RE NO.

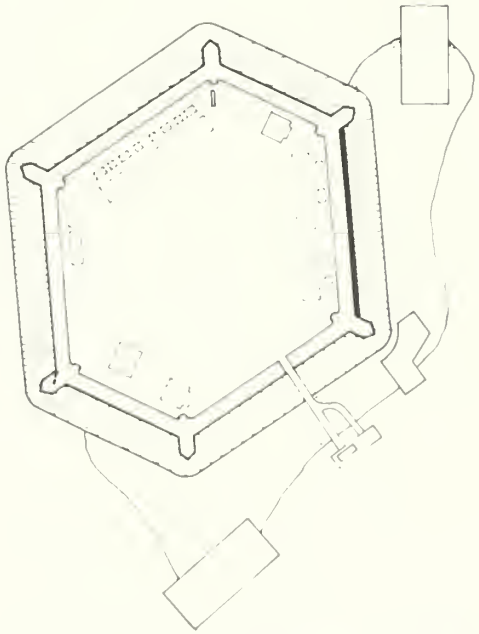
(144)



MATCHLINE

CURTAIN- NORT

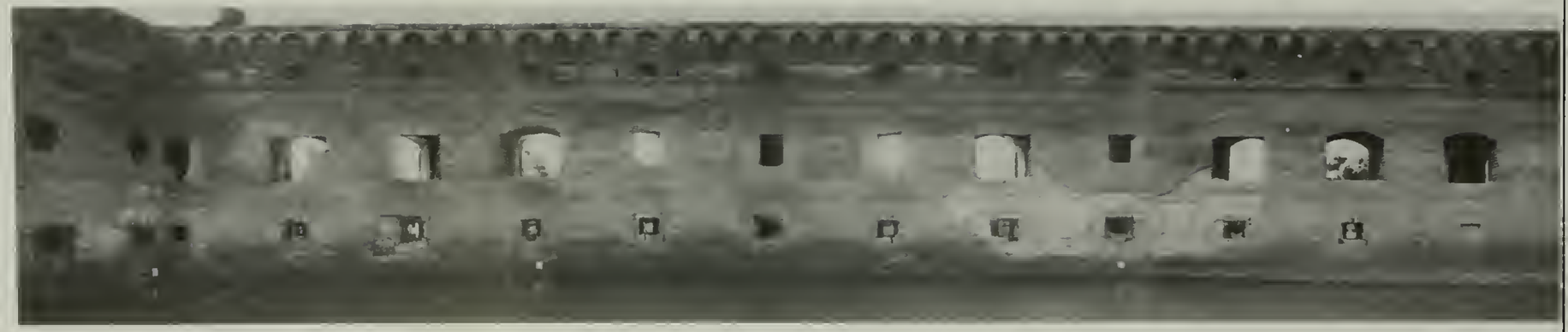
SCALE: 3/32" = 1'-0"



KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 6 CURTAIN ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG. NO. 103 SHEET 21 OF 47

156 155 150 145



MATCHLINE

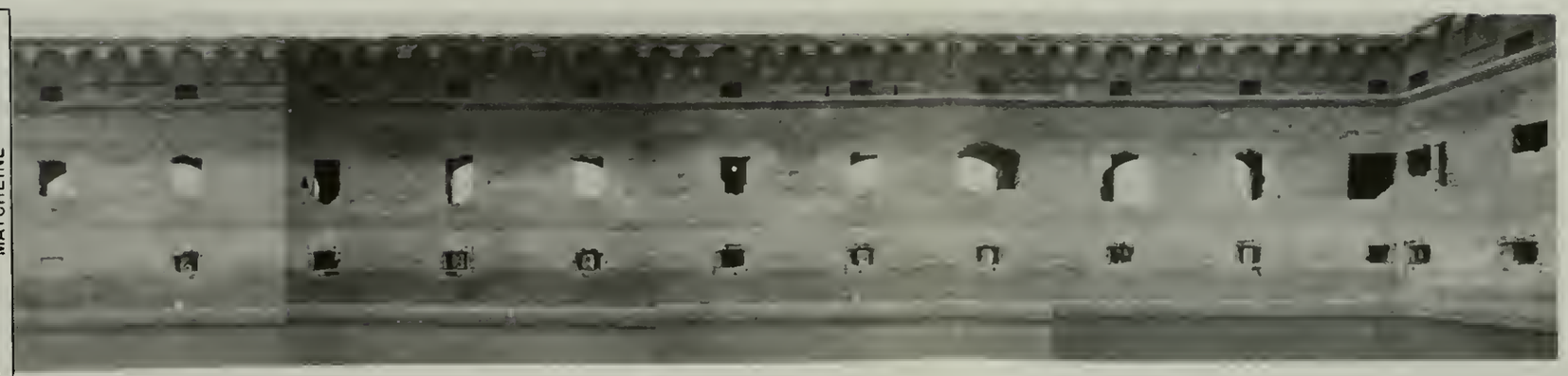
CURTAIN – SOUTH SECTION

SCALE: 3/32" = 1'-0"

144 140 135 134

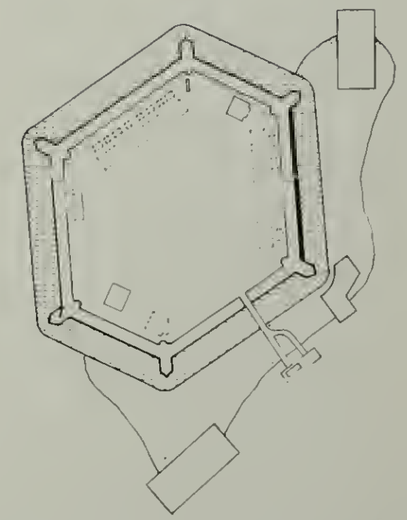
EMBRASURE NO.

MATCHLINE



CURTAIN – NORTH SECTION

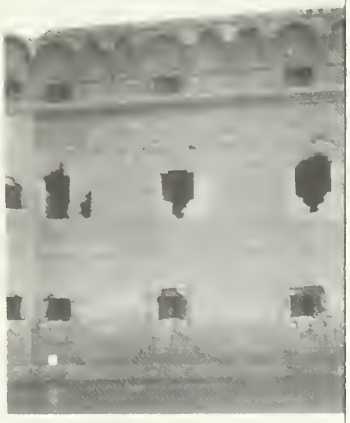
SCALE: 3/32" = 1'-0"



KEY PLAN – FORT JEFFERSON N.M.
NOT TO SCALE

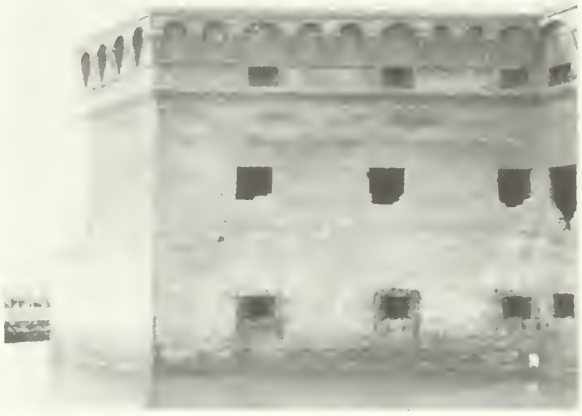
12 0 12 24
SCALE OF FEET

DESIGNED: MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 6 CURTAIN ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG. NO. 103 SHEET 21 OF 47



BASTION - RIGHT

SCALE: 3/32"=1'-0"

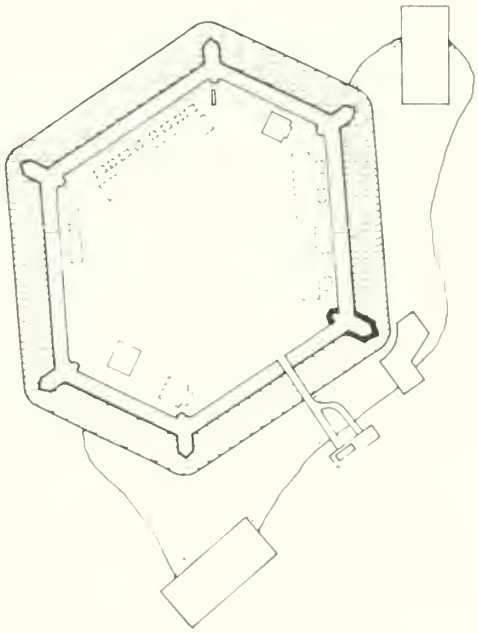


BASTION - LEFT SHOULDER

SCALE: 3/32" = 1'-0"

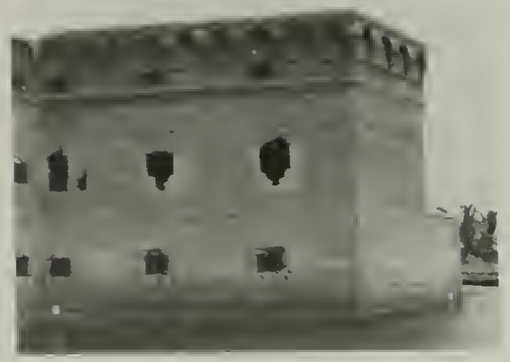
STAIRTOWER - NORTH SIDE ELEVATION

SCALE: 3/32" = 1'-0"



KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED HISTORIC DRAWN ANDERSON TECH. REVIEW THORSON DATE /	SUB SHEET NO	TITLE OF SHEET TOWER BASTION 6 SIDE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25,000A PKG. NO 103 SHEET 22 OF 47



BASTION - RIGHT SHOULDER

SCALE: 3/32" = 1'-0"

BASTION - RIGHT FACE

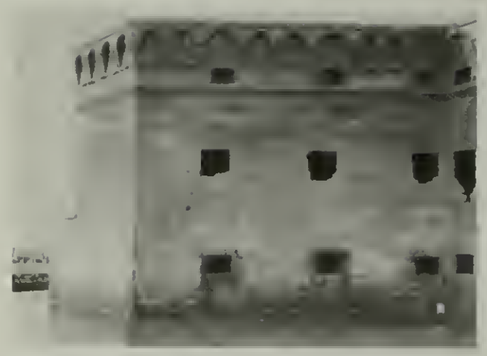
SCALE: 3/32" = 1'-0"

BASTION - CAPITAL AXIS

SCALE: 3/32" = 1'-0"

BASTION - LEFT FACE

SCALE: 3/32" = 1'-0"



BASTION - LEFT SHOULDER

SCALE: 3/32" = 1'-0"

STAIRTOWER - NORTH SIDE ELEVATION

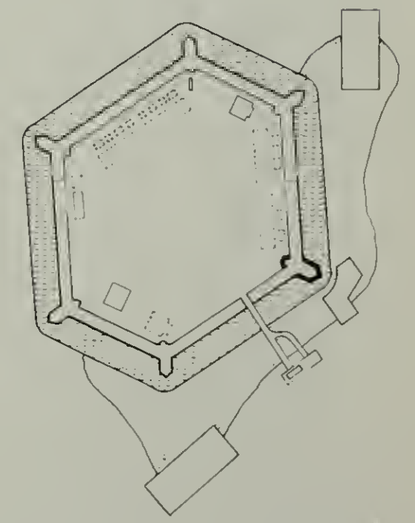
SCALE: 3/32" = 1'-0"

STAIRTOWER - ENTRY ELEVATION

SCALE: 3/32" = 1'-0"

STAIRTOWER - SOUTH SIDE ELEVATION

SCALE: 3/32" = 1'-0"



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

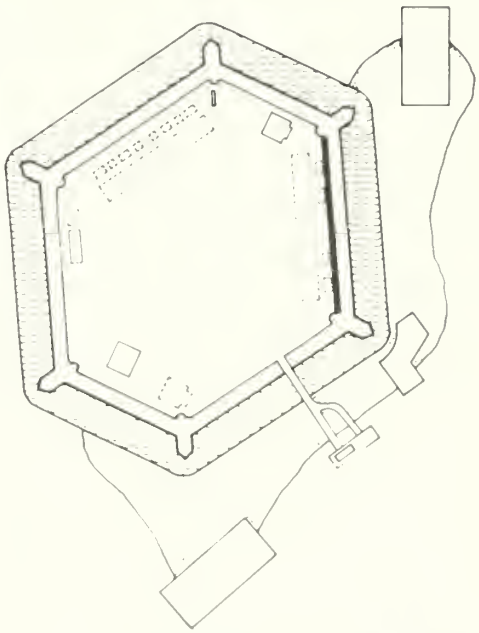
12 0 12 24
SCALE OF FEET

DESIGNED HISTORIC DRAWN ANDERSON TECH. REVIEW THORSON DATE /	SUB SHEET NO	TITLE OF SHEET TOWER BASTION 6 SIDE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25,000A PKG. NO. 103 SHEET 22 OF 47

(134) (135) (149)

PARADE FACE

SCALE: 3/32" = 1'-0



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

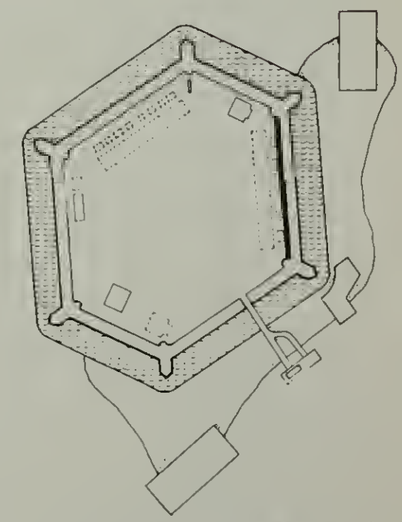
DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1 /84	SUB SHEET NO	TITLE OF SHEET FRONT 6 PARADE FACE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364/25000A PKG NO 103 SHEET 23 OF 47

(134) (135) (140) (145) (149)

PARADE FACE - NORTH SECTION
SCALE: 3/32" = 1'-0"

(150) (155) (156) EMBRASURE NO.

PARADE FACE - SOUTH SECTION
SCALE: 3/32" = 1'-0"

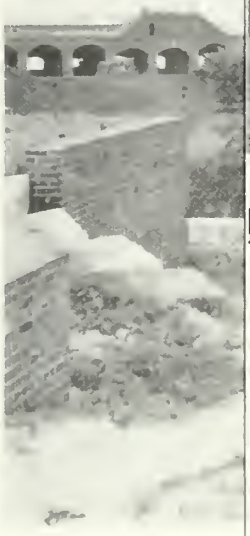


KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

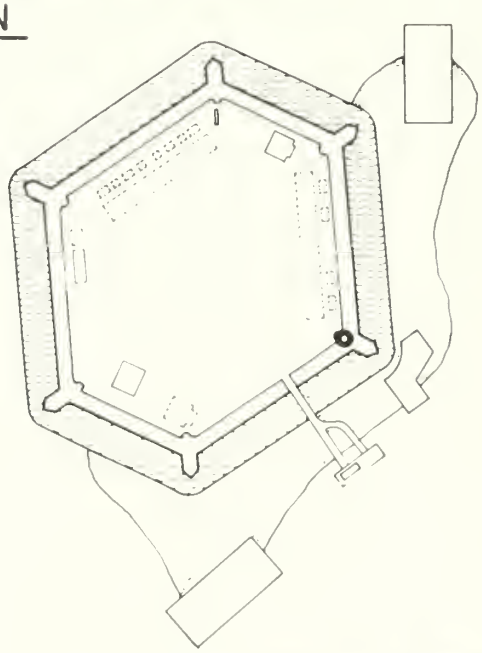
12 0 12 24
SCALE OF FEET

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 6 PARADE FACE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25000A PKG. NO. 103 SHEET 23 OF 47

EAST ELEVATION
SCALE: 1/4" = 1'-0"



SOUTHEAST
SCALE: 1/4" = 1'-0"



KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET LIGHTHOUSE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG NO 103 SHEET 24 OF 47

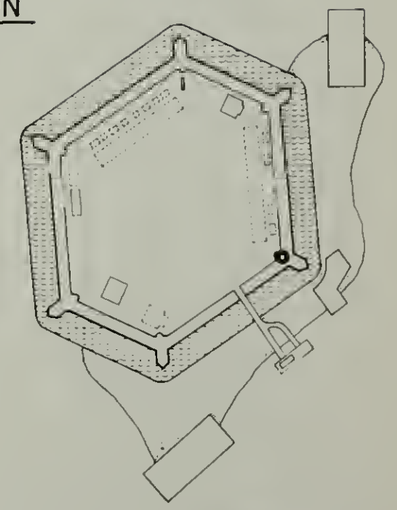
SOUTHEAST ELEVATION
SCALE: 1/4" = 1'-0"

SOUTH ELEVATION
SCALE: 1/4" = 1'-0"

EAST ELEVATION
SCALE: 1/4" = 1'-0"

NOTE

PRESERVATION MAINTENANCE WAS PERFORMED ON THE LIGHTHOUSE IN JULY, 1983 MAJOR ELEMENTS OF THIS WORK INCLUDED: SANDBLAST CLEANING AND REPAINTING THE EXTERIOR, REPLACING ALL LANTERN GLASS, REPAINTING THE LIGHTHOUSE INTERIOR, REPLACEMENT OF DOOR AND WINDOW HARDWARE AND REPAINTING AND REFINISHING LIGHTHOUSE DOORS AND WINDOWS. ELEVATIONS SHOW EXISTING CONDITIONS PRIOR TO ABOVE WORK.



KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

4 0 4 8
SCALE OF FEET

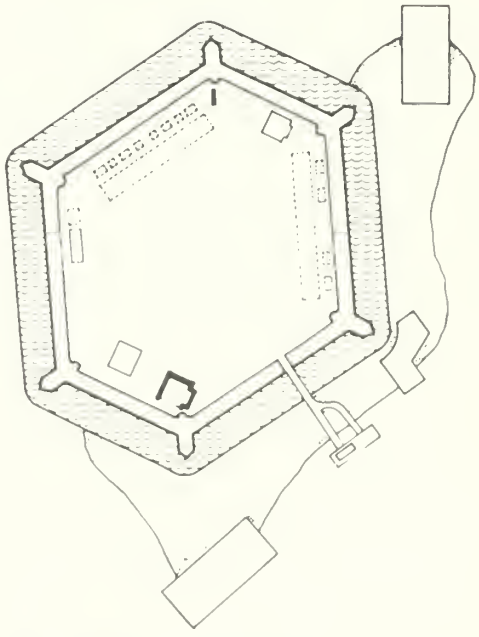
DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET LIGHTHOUSE ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG. NO. 103 SHEET 24 OF 47

WEST ELEVA

SCALE: 1/4" = 1'-0

NORTH ELEV

SCALE: 1/4" = 1'-0



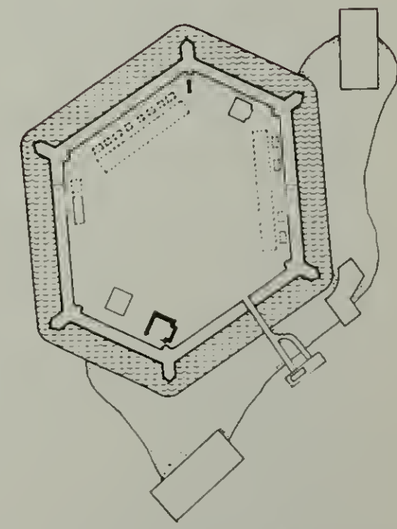
KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET PARADE GROUND BUILDINGS SMALL MAGAZINE EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 / 25000A PKG NO 103 SHEET 25 OF 47	

WEST ELEVATION
SCALE: 1/4" = 1'-0"

EAST ELEVATION
SCALE: 1/4" = 1'-0"

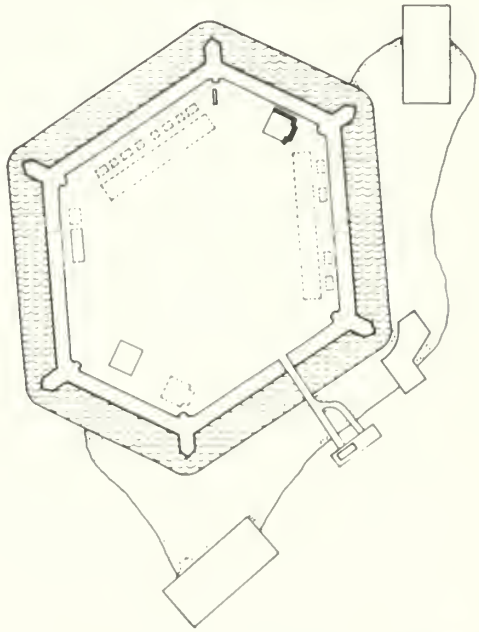
NORTH ELEVATION
SCALE: 1/4" = 1'-0"



KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

4 0 4 8
SCALE OF FEET

DESIGNED: MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: 10/1/84	SUB SHEET NO	TITLE OF SHEET PARADE GROUND BUILDINGS SMALL MAGAZINE EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25000A PKG. NO. 103 SHEET 25 OF 47

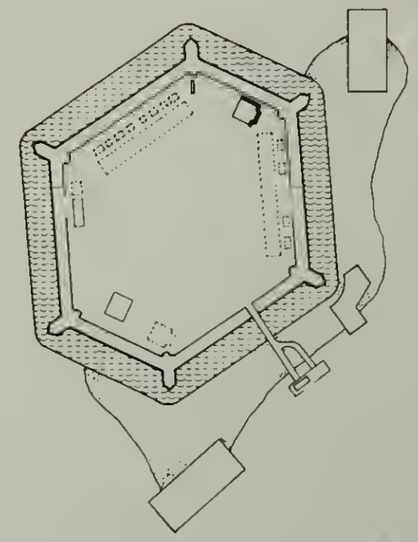


KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET PARADE GROUND BUILDINGS LARGE MAGAZINE EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 / 25000A PKG. NO. 103 SHEET 26 OF 47

NORTH ELEVATION
SCALE: 1/4" = 1'-0"

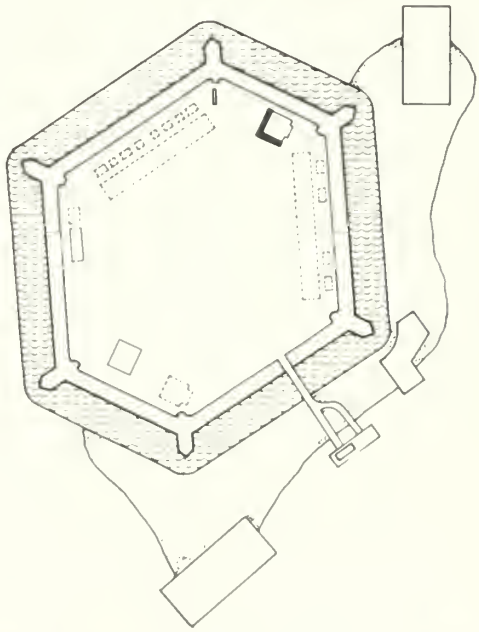
EAST ELEVATION
SCALE: 1/4" = 1'-0"



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

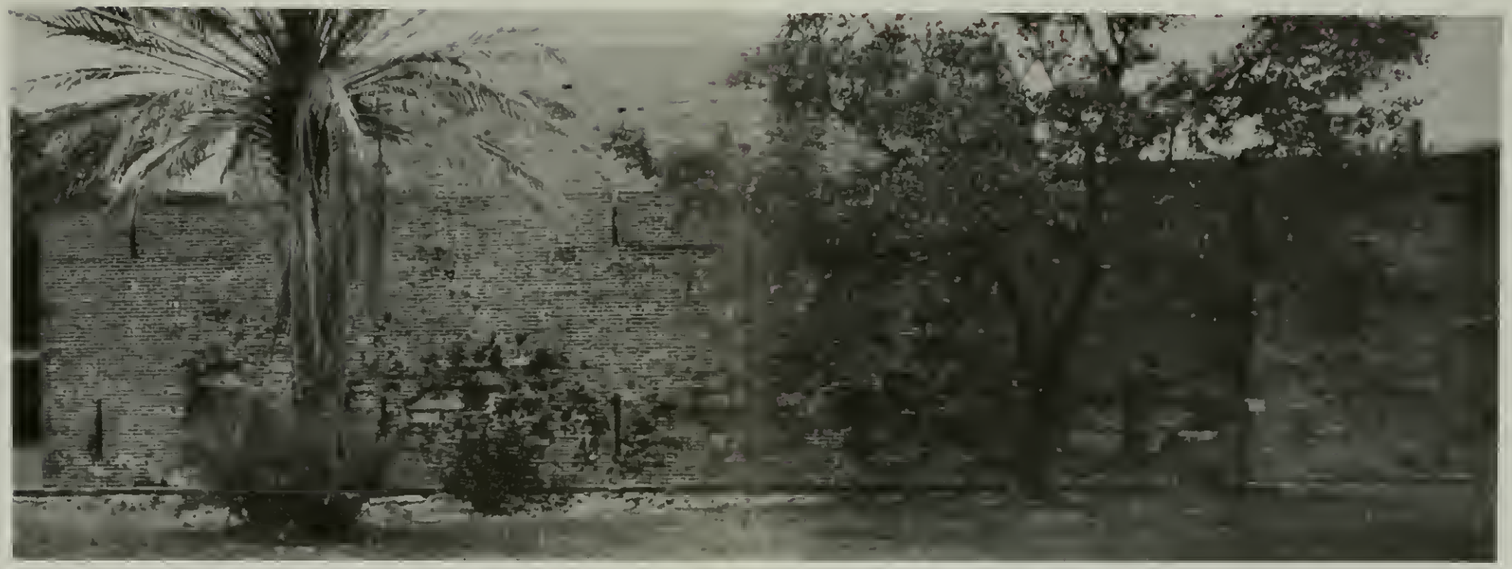
4 0 4 8
SCALE OF FEET

DESIGNED: MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: 10/1/84	SUB SHEET NO	TITLE OF SHEET PARADE GROUND BUILDINGS LARGE MAGAZINE EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25000A PKG. NO. 103 SHEET 26 OF 47



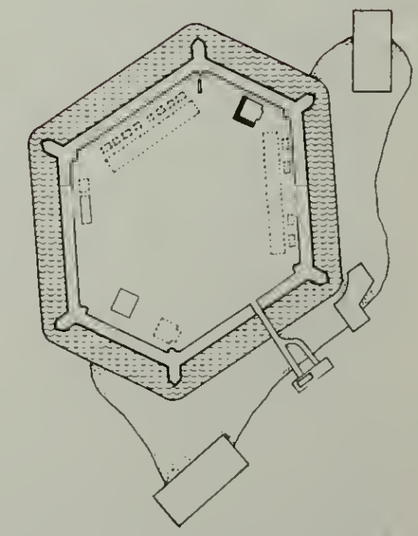
KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET PARADE GROUND BUILDINGS LARGE MAGAZINE EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25000A PKG. NO. 103 SHEET 27 OF 47



SOUTH ELEVATION
SCALE: 1/4" = 1'-0"

WEST ELEVATION
SCALE: 1/4" = 1'-0"



KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

4 0 4 8
SCALE OF FEET

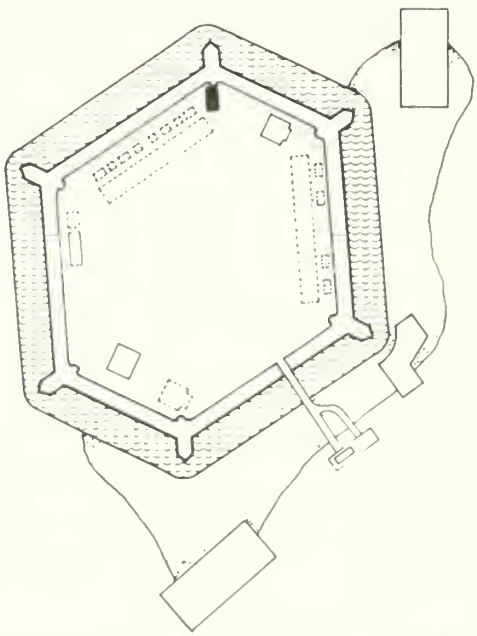
DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO.	TITLE OF SHEET PARADE GROUND BUILDINGS LARGE MAGAZINE EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25000A PKG. NO. 103 SHEET 27 OF 47

EAST ELEVA

SCALE: 1/4" = 1'-0"

NORTH ELEV

SCALE: 1/4" = 1'-0"



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

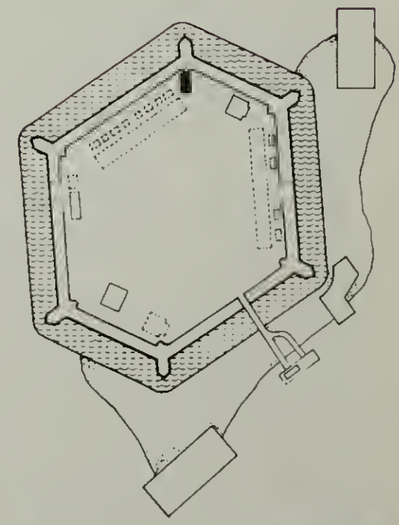
DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET PARADE GROUND BUILDINGS SHOT FURNACE EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 / 25000A PKG NO. 103 SHEET 28 OF 47

EAST ELEVATION
SCALE: 1/4" = 1'-0"

SOUTH ELEVATION
SCALE: 1/4 = 1'-0"

NORTH ELEVATION
SCALE: 1/4" = 1'-0"

WEST ELEVATION
SCALE: 1/4" = 1'-0"



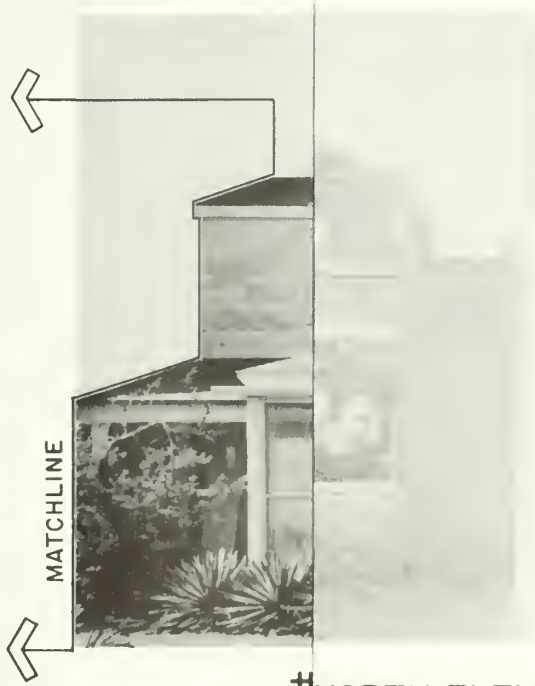
KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

4 0 4 8
SCALE OF FEET

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW: THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET PARADE GROUND BUILDINGS SHOT FURNACE EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG. NO. 103 SHEET 28 OF 47

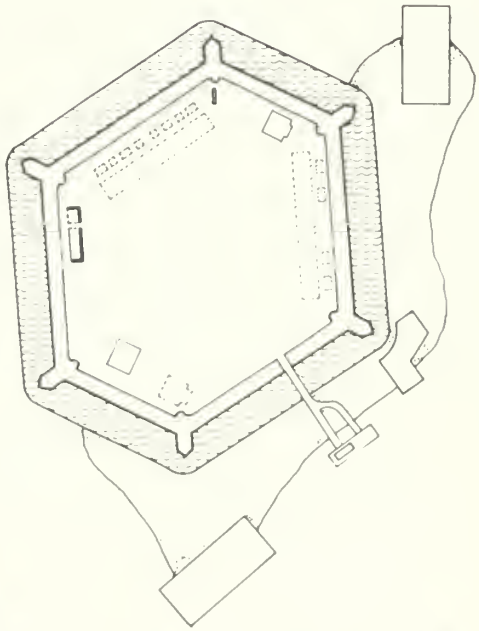
SUPERINTENDE

SCALE: 1/4" = 1'-0"



RESIDENCE # NORTH ELEVATION

SCALE: 1/4" = 1'-0"



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET RESIDENCE QUARTERS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG NO. 103 SHEET 29 OF 47

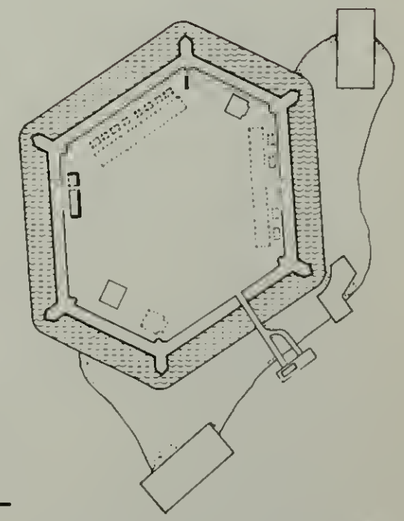
SUPERINTENDENTS HOUSE-SOUTH ELEVATION
SCALE: 1/4"=1'-0"

SUPERINTENDENTS HOUSE-EAST ELEVATION
SCALE: 1/4"=1'-0"

RESIDENCE #6-EAST ELEVATION
SCALE: 1/4"=1'-0"

RESIDENCE RUINS-EAST ELEVATION
SCALE: 1/4"=1'-0"

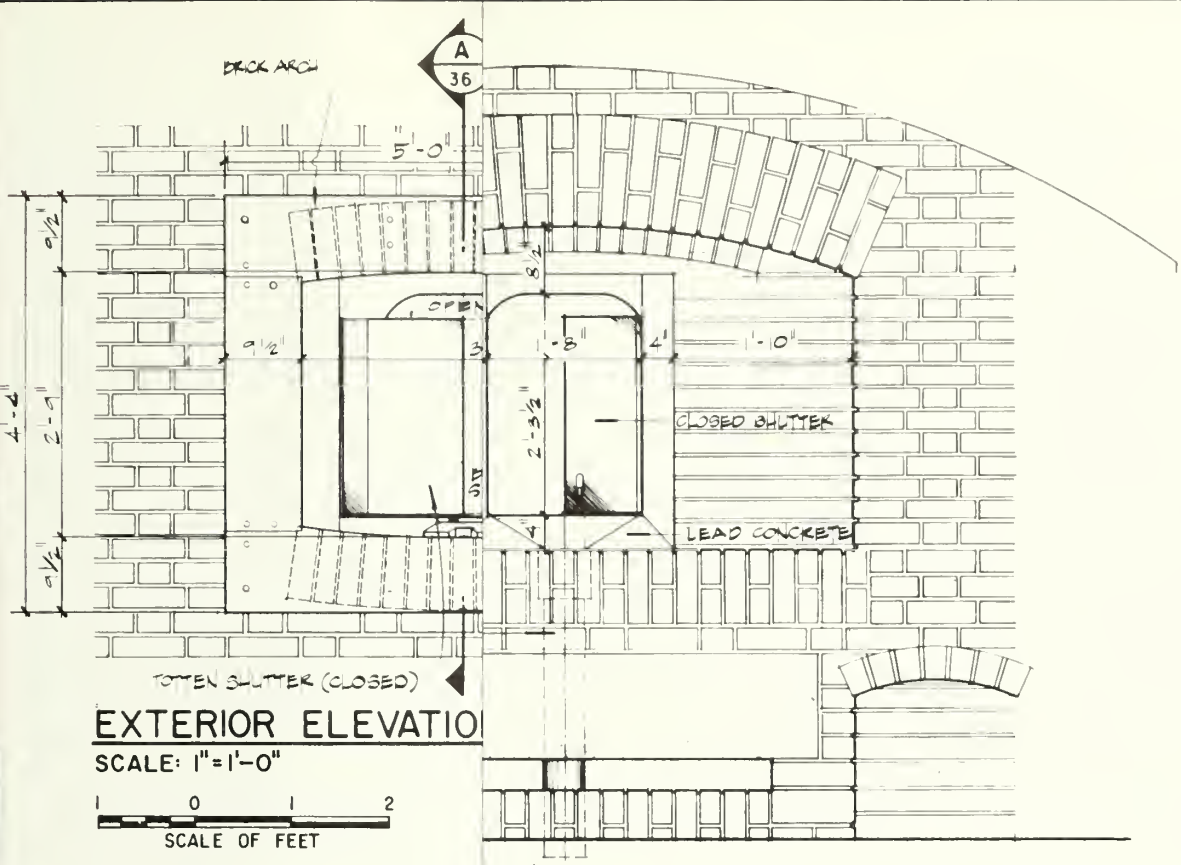
RESIDENCE RUINS-NORTH ELEVATION
SCALE: 1/4"=1'-0"



KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

4 0 4 8
SCALE OF FEET

DESIGNED: MCGRATH	SUB SHEET NO.	TITLE OF SHEET: RESIDENCE QUARTERS	DRAWING NO. 364 25000A
DRAWN: ANDERSON		EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	PKG. NO. 103
TECH. REVIEW: THORSON			SHEET 29 OF 47
DATE: 10/1/84			

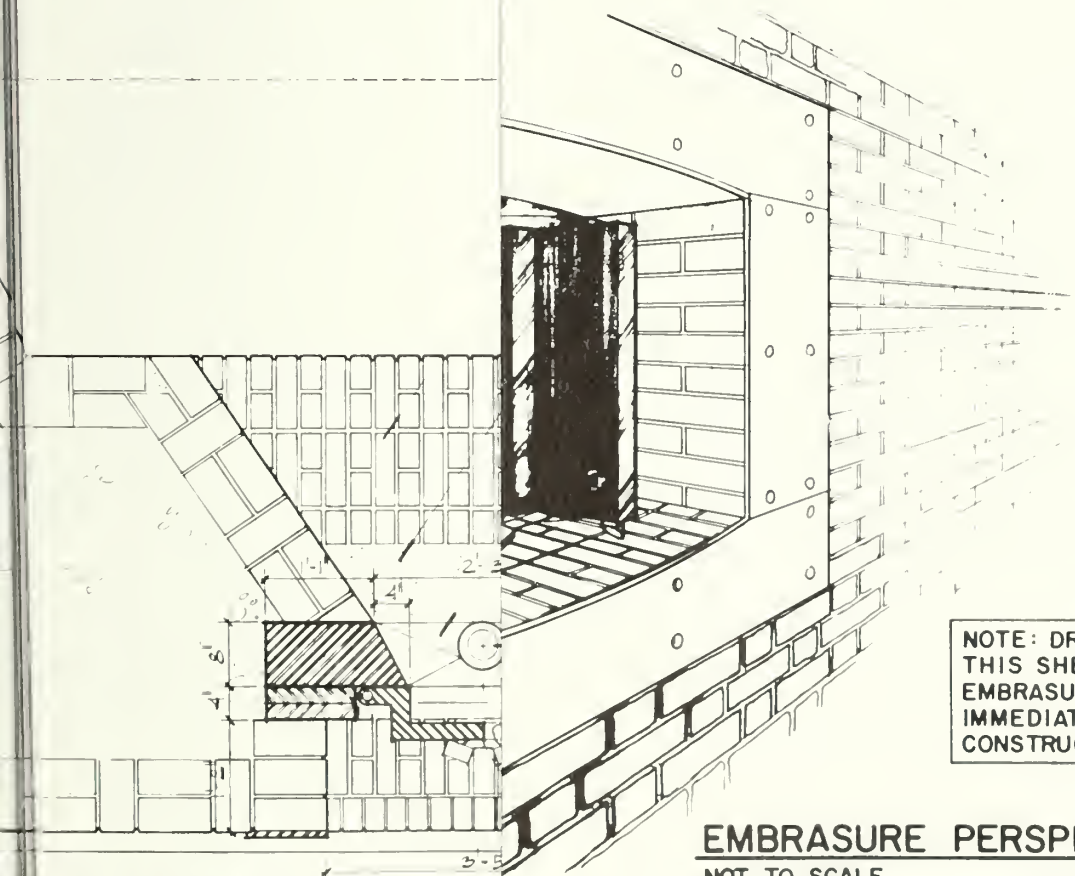


EXTERIOR ELEVATIO

SCALE: 1"=1'-0"

1 0 1 2

SCALE OF FEET



PLAN OF EMBRASU

SCALE: 1"=1'-0"

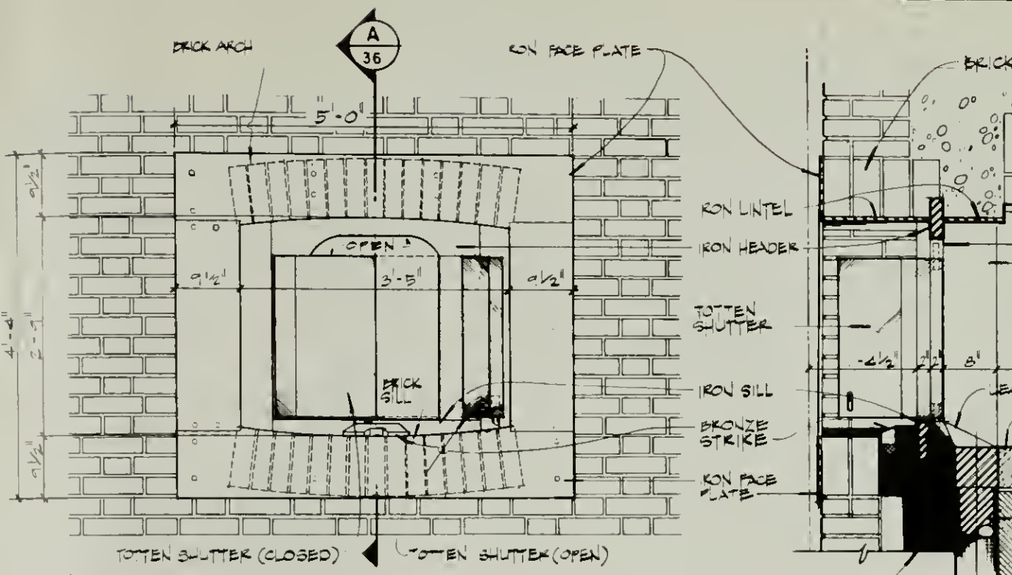
EMBRASURE PERSPECTIVE

NOT TO SCALE

NOTE: DRAWINGS SHOWN ON THIS SHEET INDICATE EMBRASURE CONDITIONS IMMEDIATELY FOLLOWING CONSTRUCTION. (CIRCA 1860'S)

DATA ORIG. CONSTRUCTION DRAWING PREPARED 6/1858, DWG

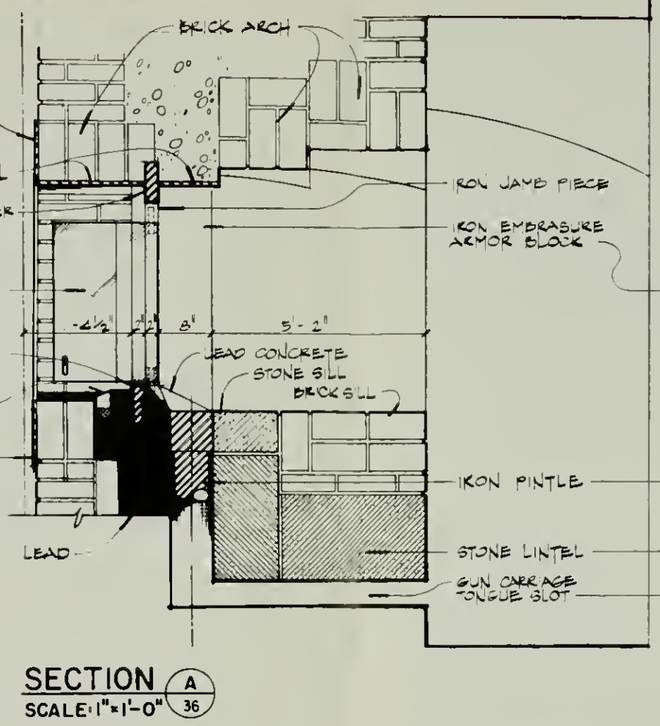
DESIGNED: MCGRATH	SUB SHEET NO	TITLE OF SHEET: FORT JEFFERSON N.M. TYPICAL LOWER TIER EMBRASURE & TOTTEN SHUTTER DETAILS HISTORIC STRUCTURE REPORT EXISTING CONDITIONS	DRAWING NO. 364 25000A
DRAWN: ANDERSON			PKG. NO. 103
TECH. REVIEW: THORSON			SHEET 30 OF 47
DATE: 10/1/84			



EXTERIOR ELEVATION

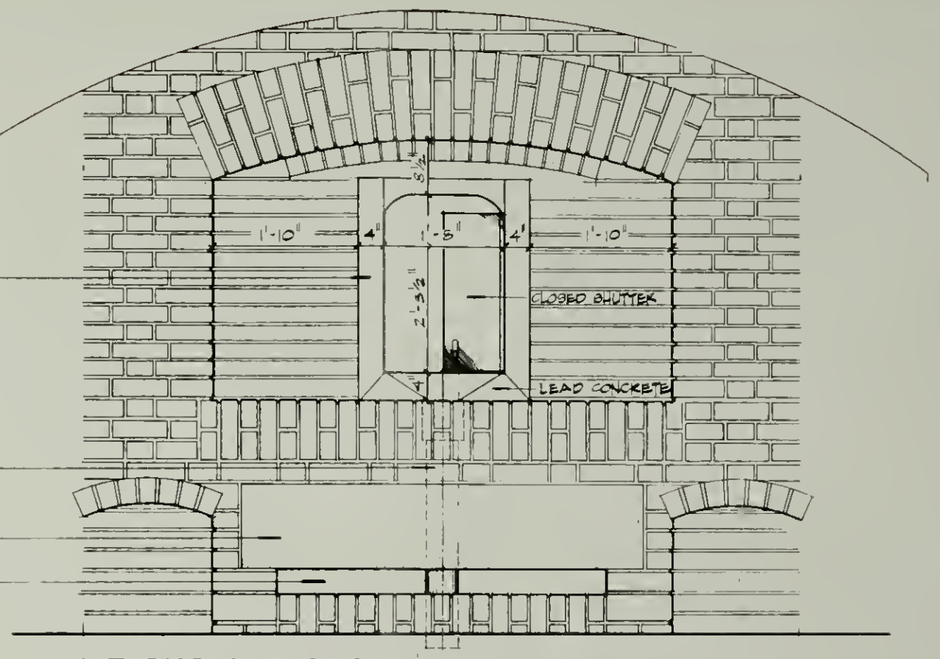
SCALE: 1"=1'-0"

1 0 1 2
SCALE OF FEET



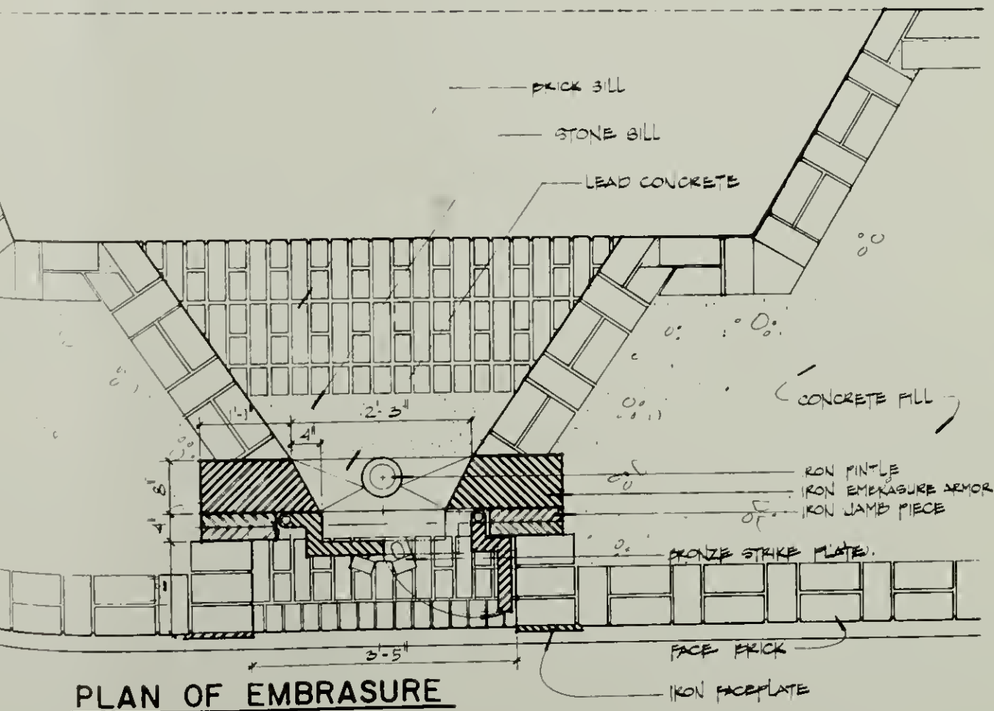
SECTION A 36

SCALE: 1"=1'-0"



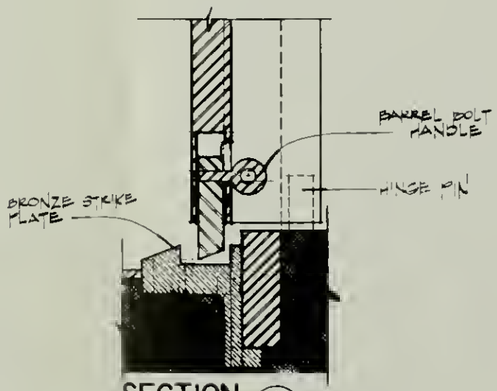
INTERIOR ELEVATION

SCALE: 1"=1'-0"



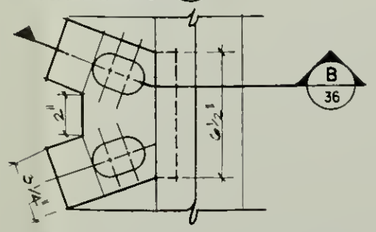
PLAN OF EMBRASURE

SCALE: 1"=1'-0"



SECTION B 36

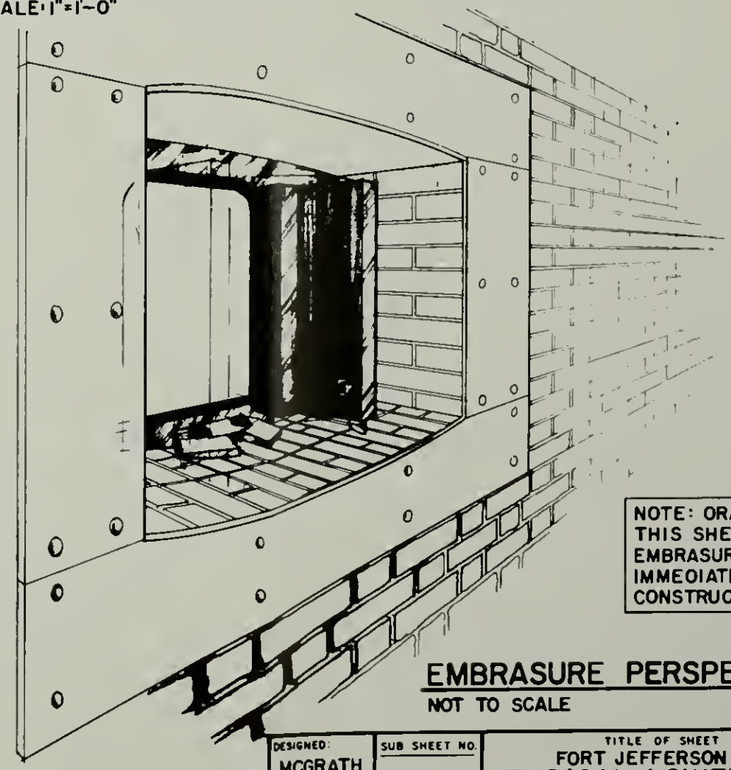
SCALE: 3"=1'-0"



BRONZE STRIKE PLATE

SCALE: 3"=1'-0"

6 0 6
SCALE OF INCHES



NOTE: DRAWINGS SHOWN ON THIS SHEET INDICATE EMBRASURE CONDITIONS IMMEDIATELY FOLLOWING CONSTRUCTION. (CIRCA 1860'S)

EMBRASURE PERSPECTIVE

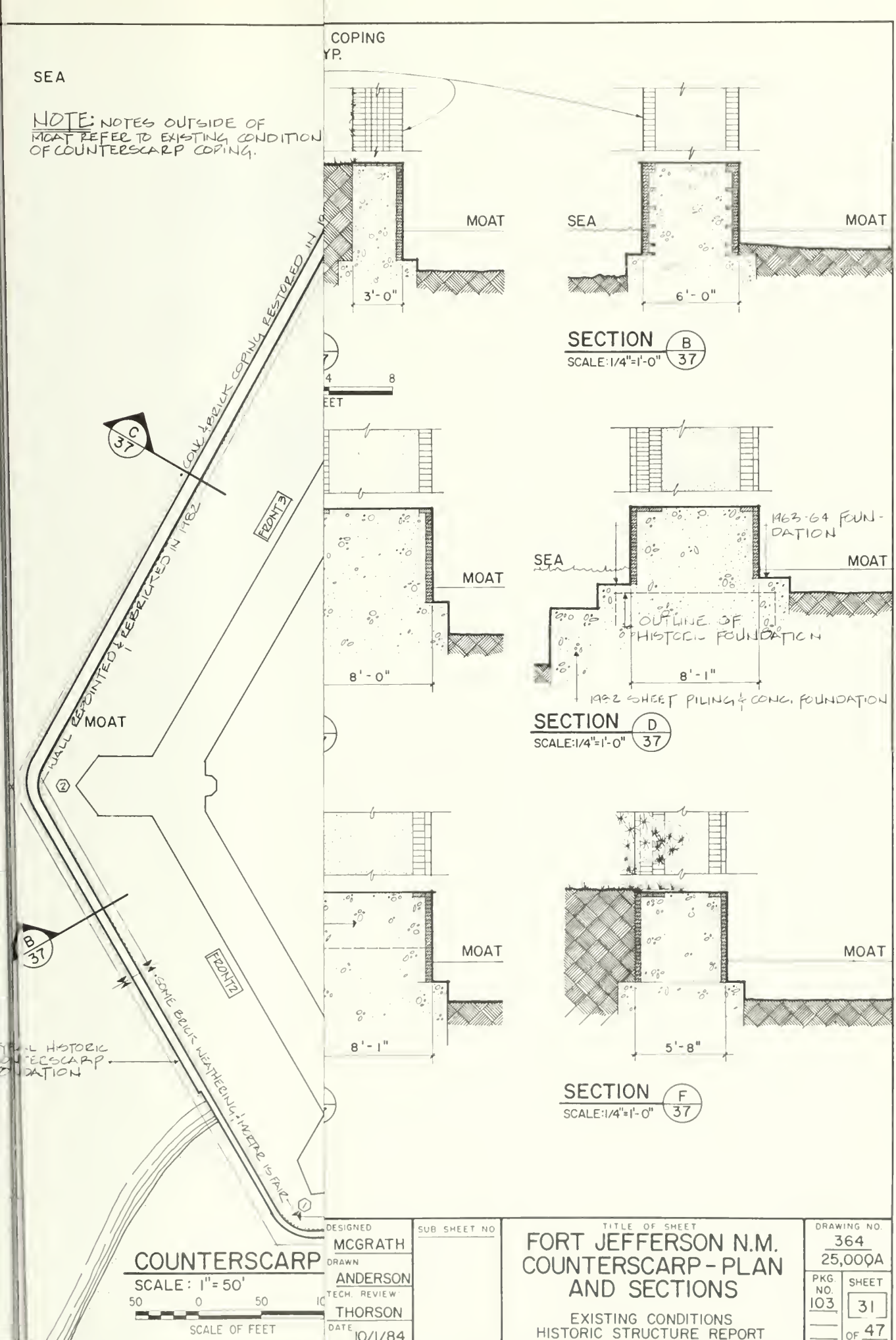
NOT TO SCALE

DESIGNED: MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: 10/1/84	SUB SHEET NO.	TITLE OF SHEET FORT JEFFERSON N.M. TYPICAL LOWER TIER EMBRASURE & TOTTEN SHUTTER DETAILS HISTORIC STRUCTURE REPORT EXISTING CONDITIONS	DRAWING NO. 364 25000A PKG. NO. 103 SHEET 30 OF 47

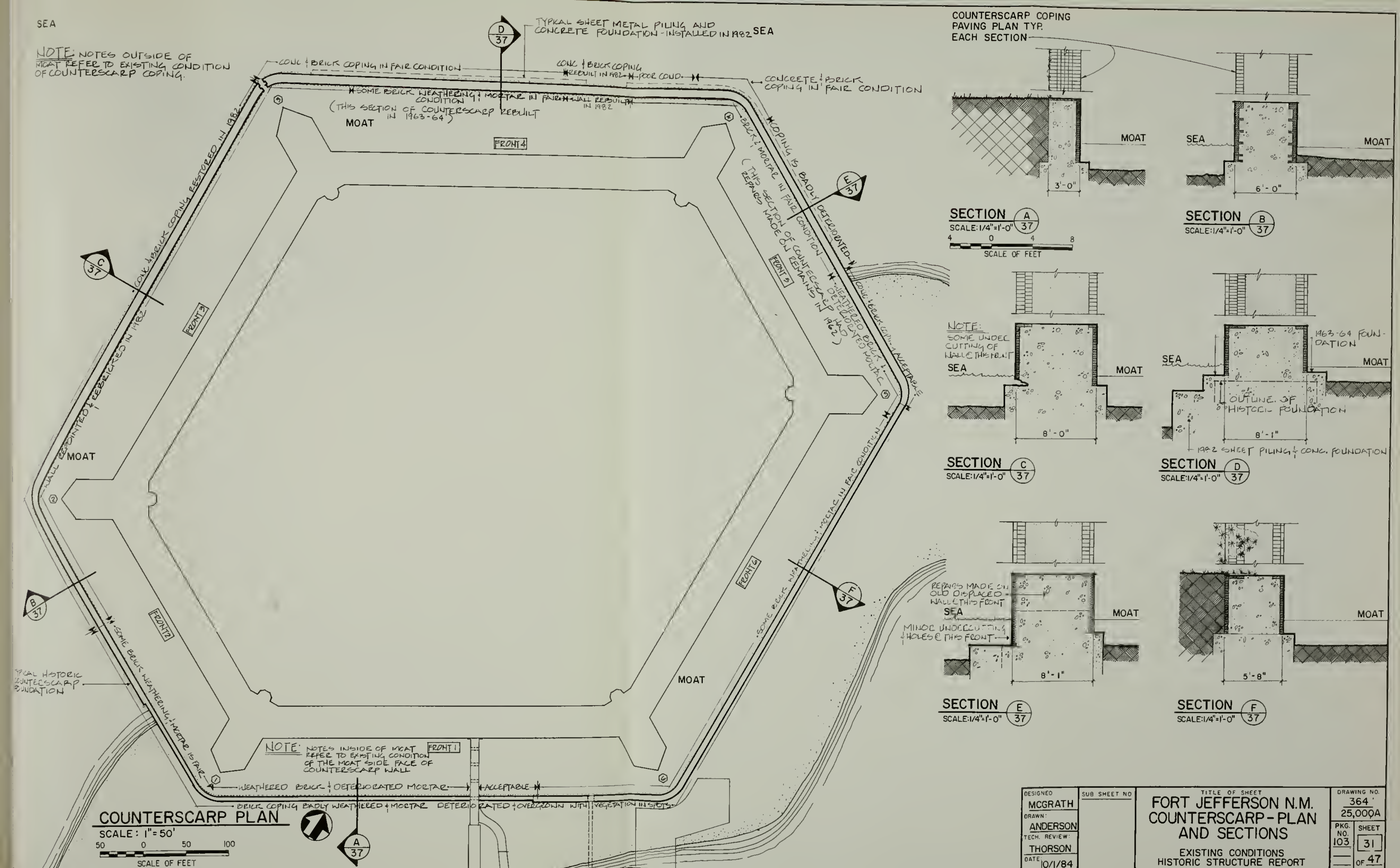
BASIC DATA DRIG. CONSTRUCTION DRAWING PREPARED 6/1858. DWGS. BY HOWARD ENGLAND 9/75. DWGS. PREPARED BY M.P. DDELGER 7/83. PHOTOS HT MCGRATH 3/84

SEA

NOTE: NOTES OUTSIDE OF MOAT REFER TO EXISTING CONDITION OF COUNTERSCARP COPING.



DESIGNED	SUB SHEET NO	TITLE OF SHEET	DRAWING NO.
MCGRATH		FORT JEFFERSON N.M. COUNTERSCARP - PLAN AND SECTIONS	364 25,000A
DRAWN ANDERSON			PKG. NO. 103
TECH. REVIEW THORSON		EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	SHEET 31 OF 47
DATE 10/1/84			

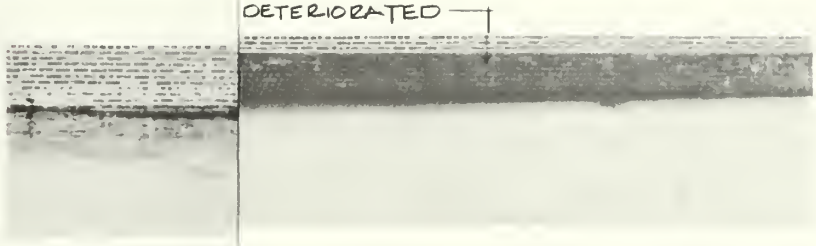

SEA
NOTE: NOTES OUTSIDE OF MOAT REFER TO EXISTING CONDITION OF COUNTERSCARP COPING.
TYPICAL SHEET METAL PILING AND CONCRETE FOUNDATION - INSTALLED IN 1982
SEA
CONC. & BRICK COPING IN FAIR CONDITION
CONC. & BRICK COPING REBUILT IN 1982
POOR COND.
CONCRETE & BRICK COPING IN FAIR CONDITION
SOME BRICK WEATHERING & MORTAR IN FAIR CONDITION
WALL REBUILT IN 1982
(THIS SECTION OF COUNTERSCARP REBUILT IN 1963-64)
MOAT
FRONT 4
COPING IS BADLY DETERIORATED
BRICK & MORTAR IN FAIR CONDITION
(THIS SECTION OF COUNTERSCARP HAD REPAIRS MADE ON REMAINS IN 1962)
WEATHERED BRICK & DETERIORATED MORTAR
CONC. & BRICK COPING ACCEPTABLE
FRONT 5
CONC. & BRICK COPING RESTORED IN 1982
WALL REPOINTED & REBRICKED IN 1982
FRONT 3
MOAT
MORTAR IN FAIR CONDITION
SOME BRICK WEATHERING
FRONT 6
FRONT 2
SOME BRICK WEATHERING & MORTAR IS FAIR
TYPICAL HISTORIC COUNTERSCARP FOUNDATION
MOAT
NOTE: NOTES INSIDE OF MOAT REFER TO EXISTING CONDITION OF THE MOAT SIDE FACE OF COUNTERSCARP WALL
FRONT 1
WEATHERED BRICK & DETERIORATED MORTAR
ACCEPTABLE
BRICK COPING BADLY WEATHERED & MORTAR DETERIORATED & OVERGROWN WITH VEGETATION IN SPOTS
COUNTERSCARP PLAN
SCALE: 1"= 50'
50 0 50 100
SCALE OF FEET
COUNTERSCARP COPING PAVING PLAN TYP. EACH SECTION
MOAT
3'-0"
SECTION A 37
SCALE: 1/4"=1'-0"
4 0 4 8
SCALE OF FEET
SEA
MOAT
6'-0"
SECTION B 37
SCALE: 1/4"=1'-0"
NOTE: SOME UNDERCUTTING OF WALL @ THIS FRONT
SEA
MOAT
8'-0"
SECTION C 37
SCALE: 1/4"=1'-0"
1963-64 FOUNDATION
SEA
MOAT
OUTLINE OF HISTORIC FOUNDATION
8'-1"
1982 SHEET PILING & CONC. FOUNDATION
SECTION D 37
SCALE: 1/4"=1'-0"
REPAIRS MADE ON OLD DISPLACED WALL @ THIS FRONT
SEA
MINOR UNDERCUTTING & HOLES @ THIS FRONT
MOAT
8'-1"
SECTION E 37
SCALE: 1/4"=1'-0"
MOAT
5'-8"
SECTION F 37
SCALE: 1/4"=1'-0"
DESIGNED MCGRATH
DRAWN: ANDERSON
TECH. REVIEW: THORSON
DATE 10/1/84
SUB SHEET NO
TITLE OF SHEET
FORT JEFFERSON N.M.
COUNTERSCARP - PLAN AND SECTIONS
EXISTING CONDITIONS
HISTORIC STRUCTURE REPORT
DRAWING NO. 364 25,000A
PKG. NO. 103
SHEET 31 OF 47

AL FOR THIS SHEET)

ELEVATION

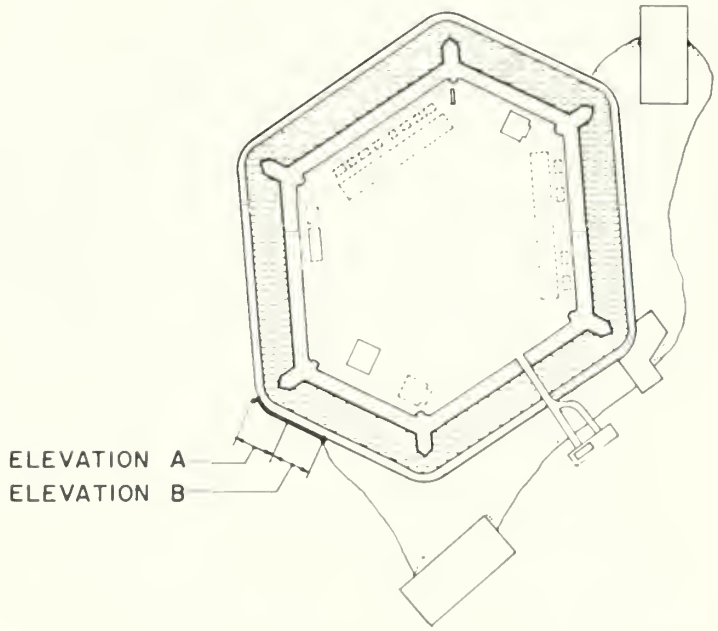
SCALE: 1/4" = 1'-

DETERIORATED



ELEVATION

SCALE: 1/4" = 1'-

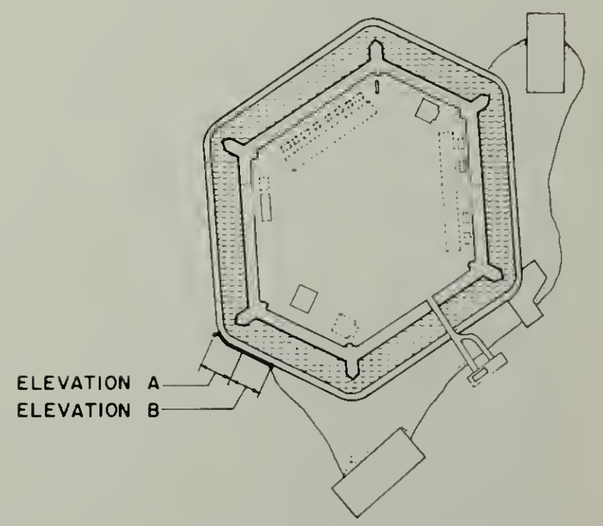


KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 2 COUNTERSCARP ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25,000A PKG NO. 103 SHEET 32 OF 47

ELEVATION A
SCALE: 1/4" = 1'-0"

ELEVATION B
SCALE: 1/4" = 1'-0"



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

4 0 4 8
SCALE OF FEET

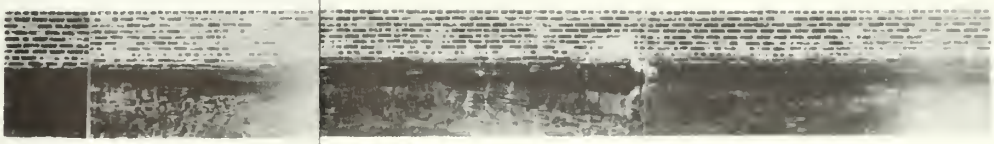
DESIGNED: MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: 10/1/84	SUB SHEET NO.	TITLE OF SHEET FRONT 2 COUNTERSCARP ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25,000A PKG. NO. 103 SHEET 32 OF 47

SHEET

ELEVATION A
SCALE: 1/4" = 1'-0"

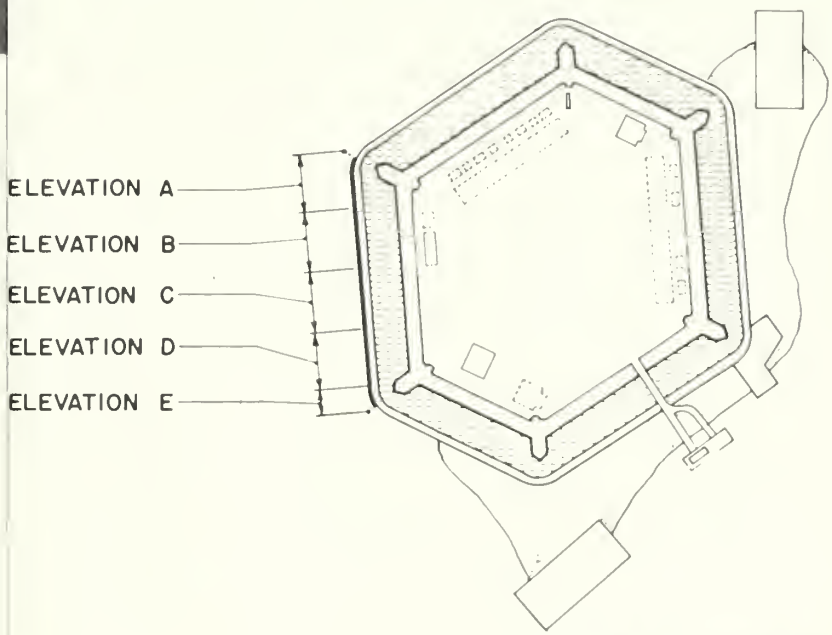
ELEVATION B
SCALE: 1/4" = 1'-0"

ELEVATION C
SCALE: 1/4" = 1'-0"



ELEVATION D
SCALE: 1/4" = 1'-0"

ELEVATION E
SCALE: 1/4" = 1'-0"

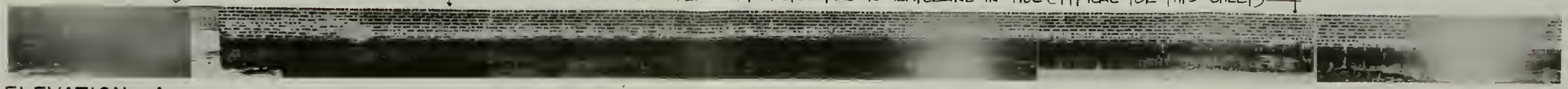


KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 3 COUNTERSCARP ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO 364 25,000A PKG NO. 103 SHEET 33 OF 47	

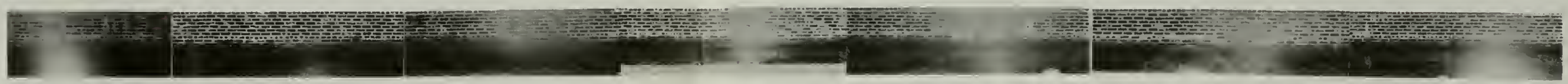
TIDE GATE

SEAWARD FACE OF COUNTERSCARP REPOINTED TO WATERLINE IN A82 (TYPICAL FOR THIS SHEET)



ELEVATION A
SCALE: 1/4" = 1'-0"

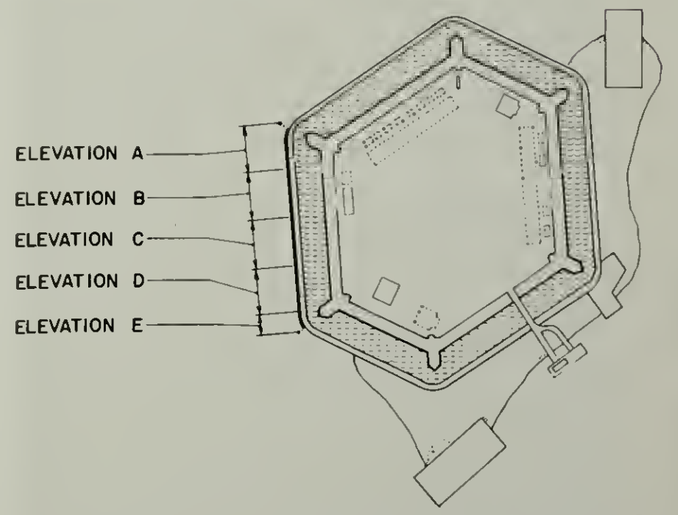
ELEVATION B
SCALE: 1/4" = 1'-0"



ELEVATION C
SCALE: 1/4" = 1'-0"

ELEVATION D
SCALE: 1/4" = 1'-0"

ELEVATION E
SCALE: 1/4" = 1'-0"



KEY PLAN · FORT JEFFERSON N.M.
NOT TO SCALE

4 0 4 8
SCALE OF FEET

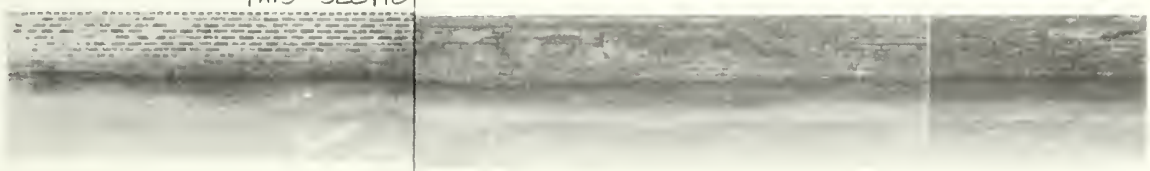
DESIGNED: MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE 10/1/84	SUB SHEET NO.	TITLE OF SHEET FRONT 3 COUNTERSCARP ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25,000A PKG. NO. 103 SHEET 33 OF 47

COUNTERSCARP [illegible]RLINE (TYPICAL THIS SHEET)

ELEVATION A

SCALE: 1/4" = 1'-0"

THIS SECTIO



ELEVATION B

SCALE: 1/4" = 1'-0"

ELEVATION C

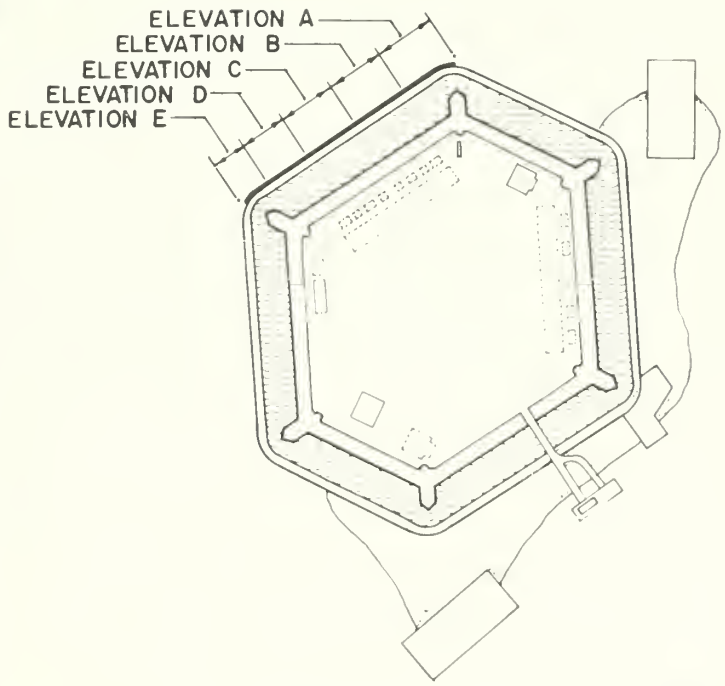
SCALE: 1/4" = 1'-0"

ELEVATION D

SCALE: 1/4" = 1'-0"

ELEVATION E

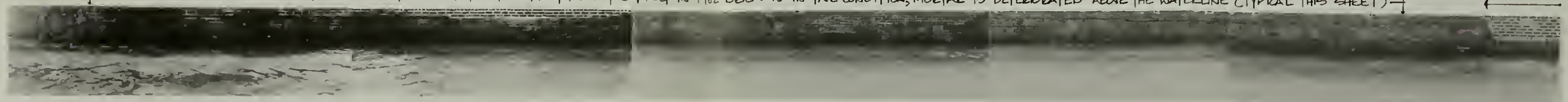
SCALE: 1/4" = 1'-0"



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED: MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 4 COUNTERSCARP ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO: 364 / 25,000A PKG NO: 103 SHEET: 34 OF 47

COUNTERSCARP WAS REBUILT IN 1963-64 & HAD SPOT REPOINTING ALONG COPING IN 1982 BRICK IS IN FAIR CONDITION, MORTAR IS DETERIORATED ABOVE THE WATERLINE (TYPICAL THIS SHEET)

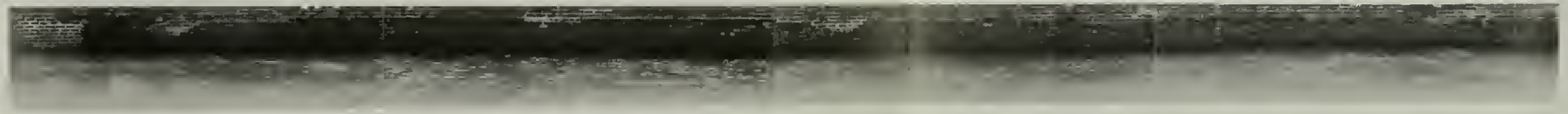


ELEVATION A
SCALE: 1/4" = 1'-0"

THIS SECTION OF COUNTERSCARP REBUILT IN 1982

ELEVATION B
SCALE: 1/4" = 1'-0"

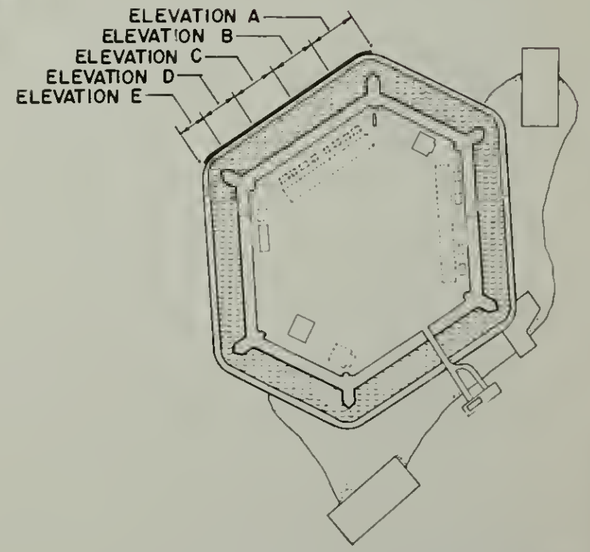
ELEVATION C
SCALE: 1/4" = 1'-0"



ELEVATION D
SCALE: 1/4" = 1'-0"

TIDE GATE

ELEVATION E
SCALE: 1/4" = 1'-0"



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

4 0 4 8
SCALE OF FEET

DESIGNED: MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: 10/1/84	SUB SHEET NO.	TITLE OF SHEET FRONT 4 COUNTERSCARP ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25,000A PKG. NO. 103 SHEET 34 OF 47

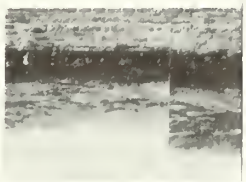
WISE)

ELEVATION

SCALE: 1/4" = 1'-0"

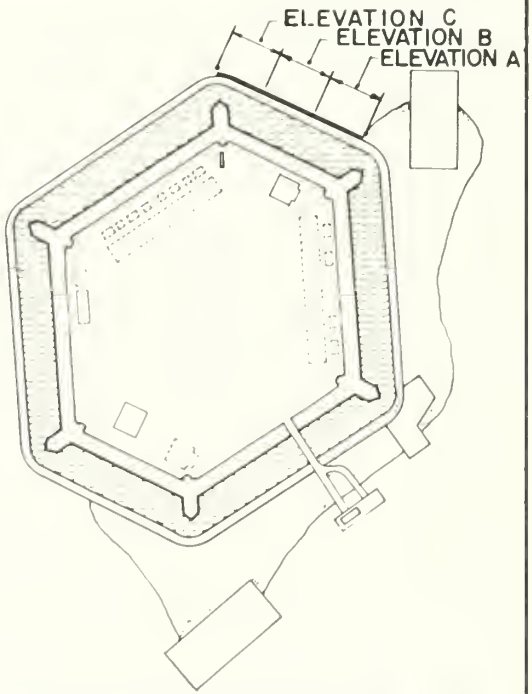
ELEVATION

SCALE: 1/4" = 1'-0"



ELEVATION

SCALE: 1/4" = 1'-0"

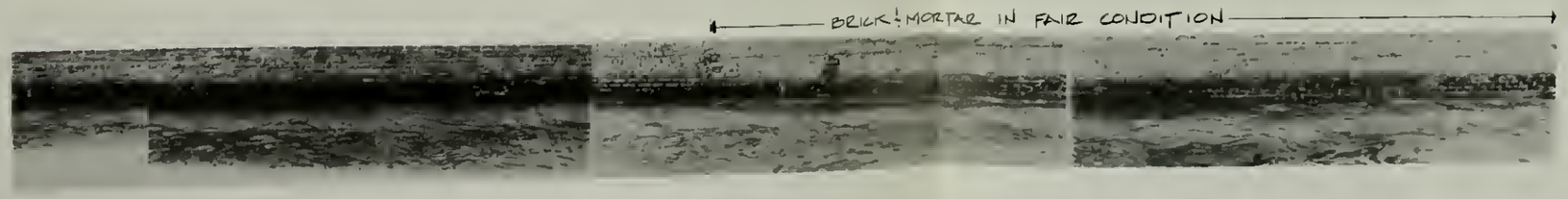


KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

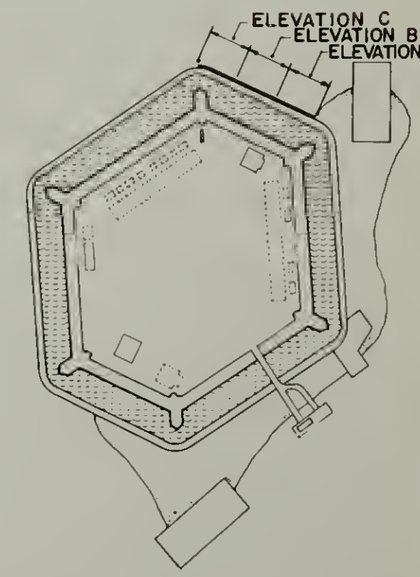
DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 5 COUNTERSCARP ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25,000A PKG NO. 103 SHEET 35 OF 47

ELEVATION A
SCALE: 1/4" = 1'-0"

ELEVATION B
SCALE: 1/4" = 1'-0"



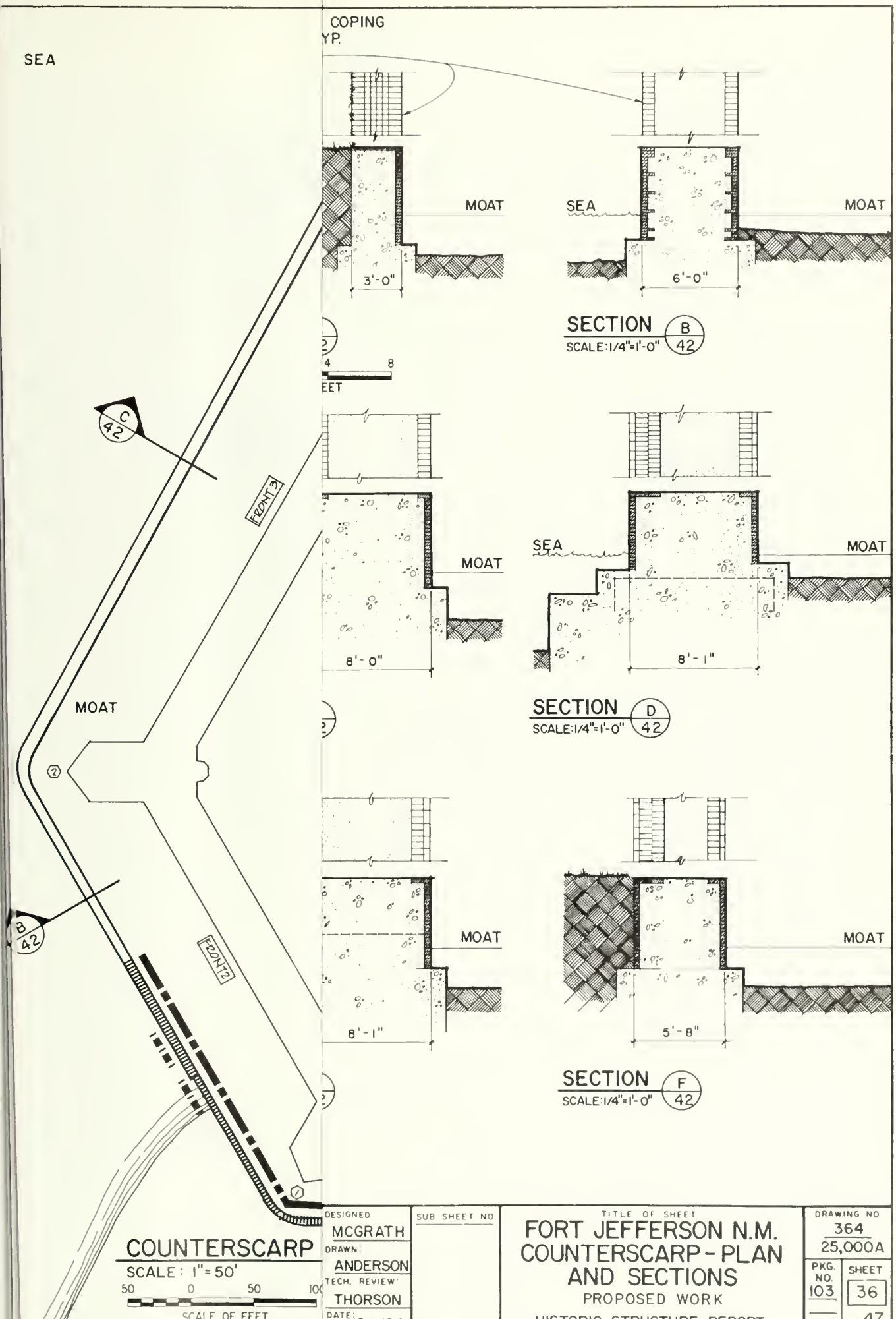
ELEVATION C
SCALE: 1/4" = 1'-0"



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

SCALE OF FEET
4 0 4 8

DESIGNED: MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: 10/1/84	SUB SHEET NO.	TITLE OF SHEET FRONT 5 COUNTERSCARP ELEVATIONS EXISTING CONDITIONS HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25,000A PKG. NO. 103 SHEET 35 OF 47



DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FORT JEFFERSON N.M. COUNTERSCARP - PLAN AND SECTIONS PROPOSED WORK HISTORIC STRUCTURE REPORT	DRAWING NO 364 25,000A PKG. NO. 103 SHEET 36 OF 47

SEA

SEA

MOAT

FRONT 4

FRONT 3

FRONT 5

FRONT 2

FRONT 6

FRONT 1

MOAT

MOAT

PROPOSED COUNTERSCARP WORK KEY

NOTE: TASK AREAS ARE LISTED IN ORDER OF PRIORITY

1. CONSOLIDATE, REBRICK, AND REPOINT SEAWARD FACE OF COUNTERSCARPS.
2. REPOINT SEAWARD FACE OF COUNTER-SCARP.
3. PAVE, REBRICK, AND REPOINT COUNTER-SCARP COPING.
4. REPOINT MOAT FACE OF COUNTERSCARP.

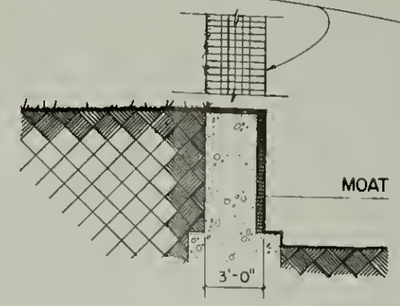
COUNTERSCARP PLAN

SCALE: 1"=50'

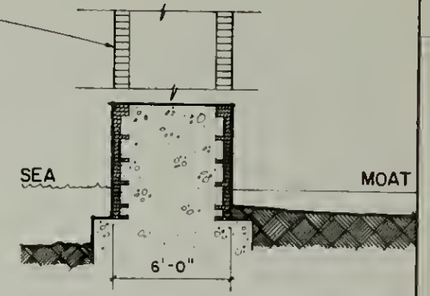
50 0 50 100

SCALE OF FEET

COUNTERSCARP COPING PAVING PLAN TYP. EACH SECTION



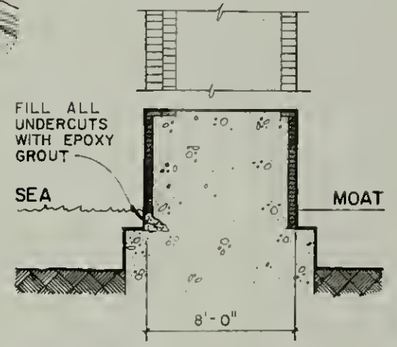
SECTION A/42
SCALE: 1/4"=1'-0"



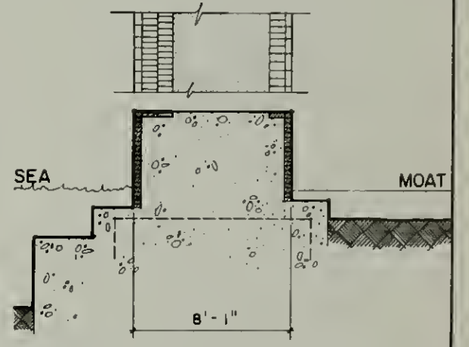
SECTION B/42
SCALE: 1/4"=1'-0"

4 0 4 8

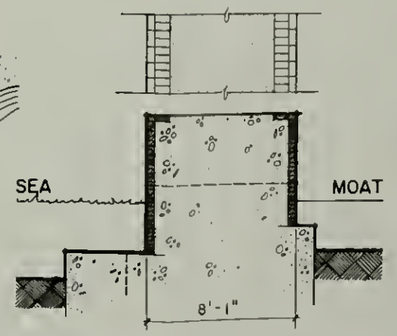
SCALE OF FEET



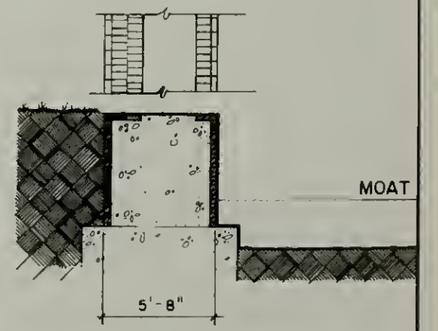
SECTION C/42
SCALE: 1/4"=1'-0"



SECTION D/42
SCALE: 1/4"=1'-0"



SECTION E/42
SCALE: 1/4"=1'-0"



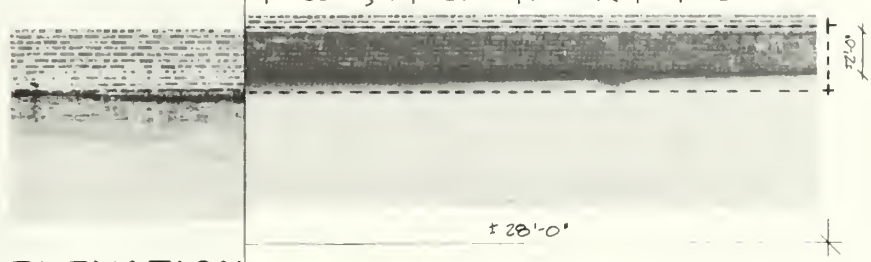
SECTION F/42
SCALE: 1/4"=1'-0"

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FORT JEFFERSON N.M. COUNTERSCARP - PLAN AND SECTIONS PROPOSED WORK HISTORIC STRUCTURE REPORT	DRAWING NO 364 25,000A PKG. NO. 103 SHEET 36 OF 47

ELEVATION

SCALE: 1/4" = 1'-

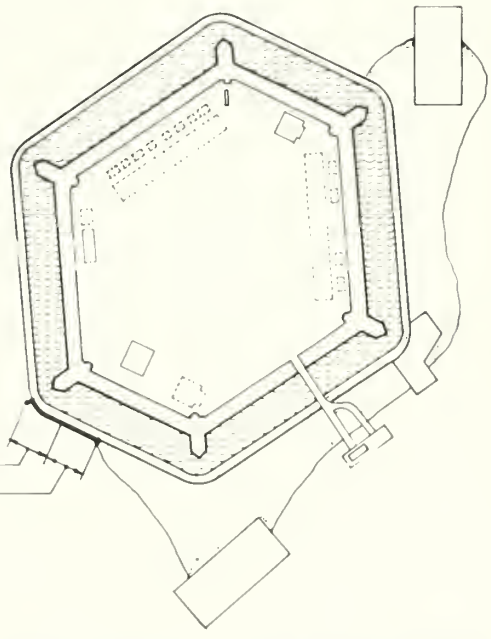
UT ± 56 SQ. FT. COUNTERSCARP FACE



ELEVATION

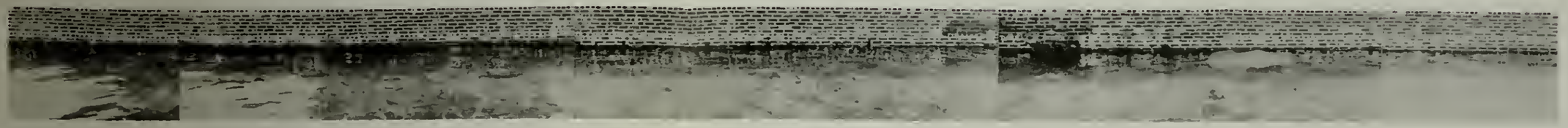
SCALE: 1/4" = 1'-

NOTE: TOTAL PRO
SEAWARD FACE O
FRONT 2 IS 146



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 2 COUNTERSCARP ELEVATIONS PROPOSED WORK HISTORIC STRUCTURE REPORT	DRAWING NO 364 25,000A PKG. NO. 103 SHEET 37 OF 47



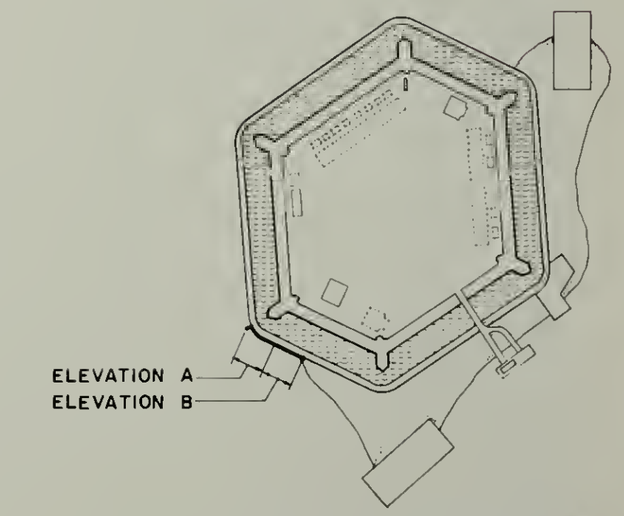
ELEVATION A

SCALE: 1/4" = 1'-0"

ELEVATION B

SCALE: 1/4" = 1'-0"

NOTE: TOTAL PROPOSED REPOINTING FOR SEAWARD FACE OF COUNTERSCARP @ FRONT 2 IS 146 SQ FT



KEY PLAN- FORT JEFFERSON N.M.
NOT TO SCALE

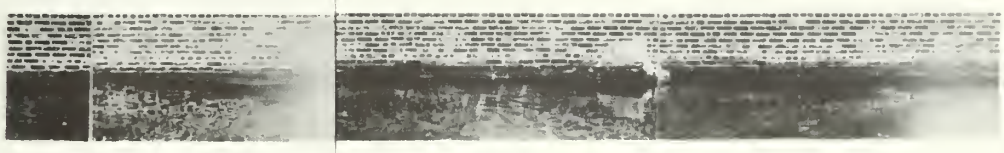
4 0 4 8
SCALE OF FEET

DESIGNED: MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: 10/1/84	SUB SHEET NO.	TITLE OF SHEET FRONT 2 COUNTERSCARP ELEVATIONS PROPOSED WORK HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25,000A PKG. NO. 103 SHEET 37 OF 47

ELEVATION A
SCALE: 1/4" = 1'-0"

ELEVATION B
SCALE: 1/4" = 1'-0"

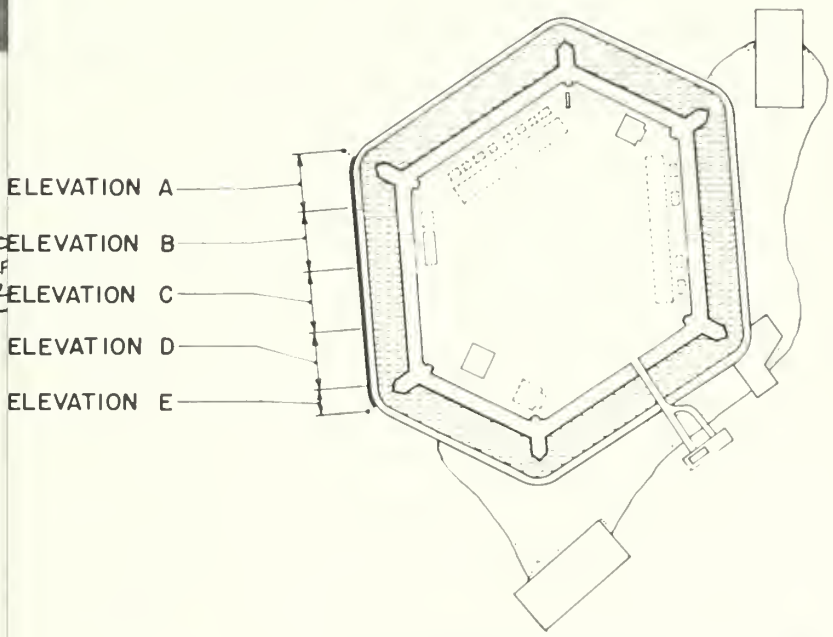
ELEVATION C
SCALE: 1/4" = 1'-0"



ELEVATION D
SCALE: 1/4" = 1'-0"

ELEVATION E
SCALE: 1/4" = 1'-0"

NOTE: PROPOSED WORK
OF THE COUNTERSCARP
GROUTING OF UNDER
FACE SEE SHEET 42 -



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 3 COUNTERSCARP ELEVATIONS PROPOSED WORK HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25,000A PKG NO. 103 SHEET 38 OF 47

ELEVATION A
SCALE: 1/4" = 1'-0"

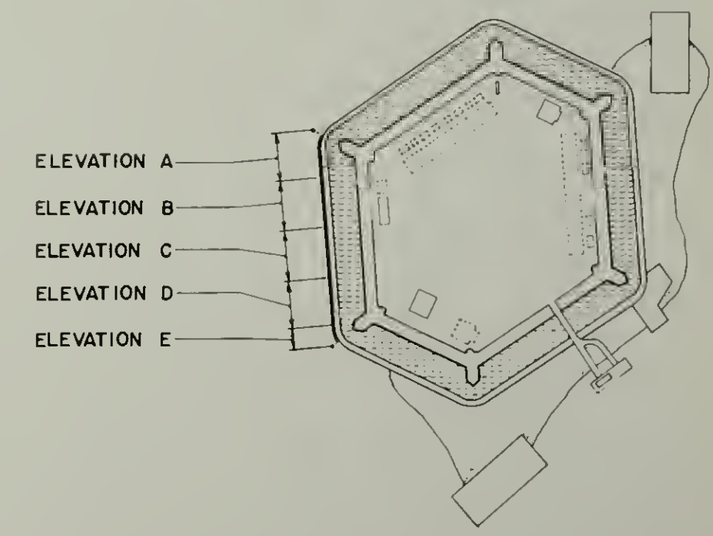
ELEVATION B
SCALE: 1/4" = 1'-0"

ELEVATION C
SCALE: 1/4" = 1'-0"

ELEVATION D
SCALE: 1/4" = 1'-0"

ELEVATION E
SCALE: 1/4" = 1'-0"

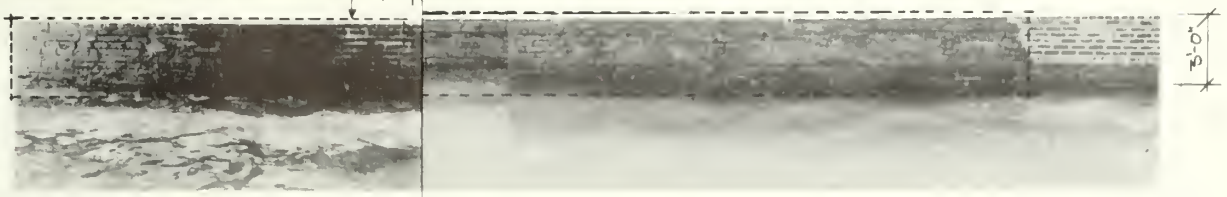
NOTE: PROPOSED WORK FOR THE SEAWARD FACE OF THE COUNTERSCARP @ FRONT 3 CONSISTS OF EPOXY GROUTING OF UNDERCUT AREA'S AT BASE OF BRICK FACE. SEE SHEET 42 - SECTION 'C'



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

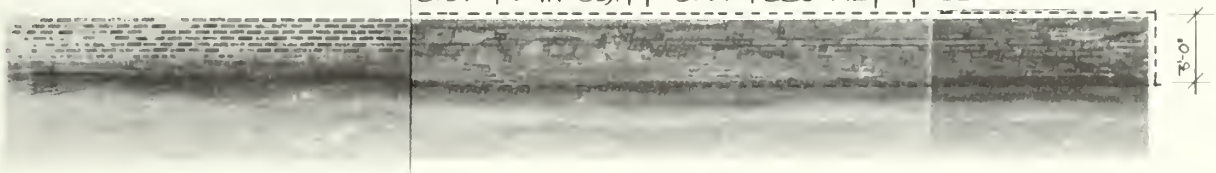
4 0 4 8
SCALE OF FEET

DESIGNED: MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 3 COUNTERSCARP ELEVATIONS PROPOSED WORK HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25,000A PKG. NO. 103 SHEET 38 OF 47



ELEVATION A

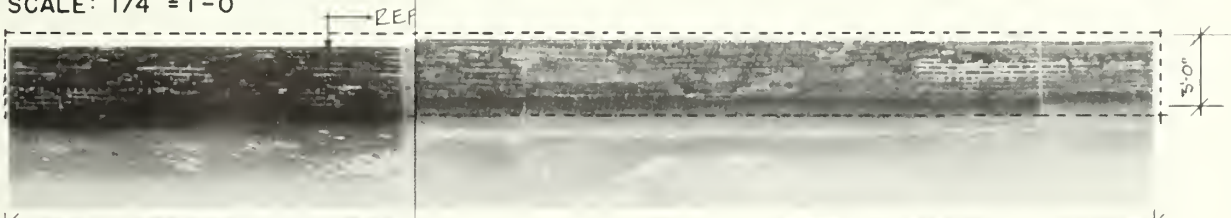
SCALE: 1/4" = 1'-0"



± 34'-0"

ELEVATION B

SCALE: 1/4" = 1'-0"

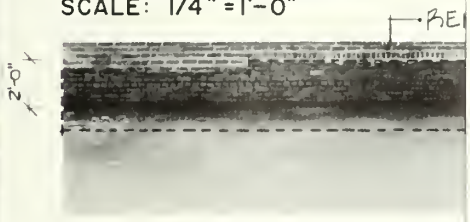


ELEVATION C

SCALE: 1/4" = 1'-0"

ELEVATION D

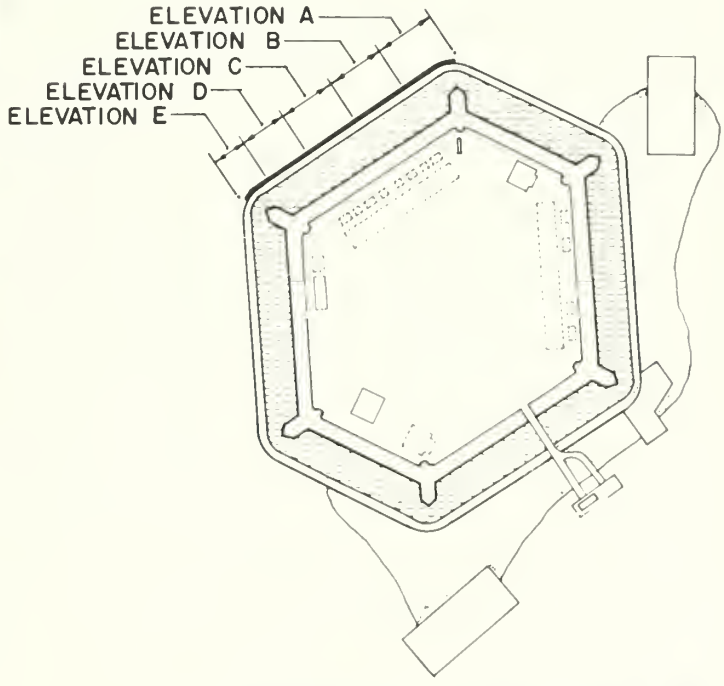
SCALE: 1/4" = 1'-0"



ELEVATION E

SCALE: 1/4" = 1'-0"

NOTE: TOTAL PROPOSED SEAWARD FACE OF COUNTE
4 15 ± 1018 SQ FT.

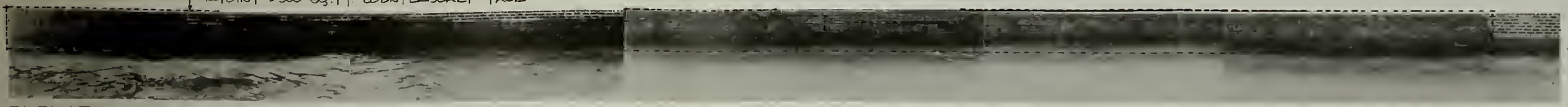


KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 4 COUNTERSCARP ELEVATIONS PROPOSED WORK HISTORIC STRUCTURE REPORT	DRAWING NO 364 25,000A PKG. NO. 103 SHEET 39 OF 47

± 119'-0"

REPOINT ± 300 SQ. FT. COUNTERSCARP FACE



5'-0"

ELEVATION A
SCALE: 1/4" = 1'-0"

REPOINT ± 114 SQ. FT. COUNTERSCARP FACE

5'-0"

± 34'-0"

ELEVATION B
SCALE: 1/4" = 1'-0"

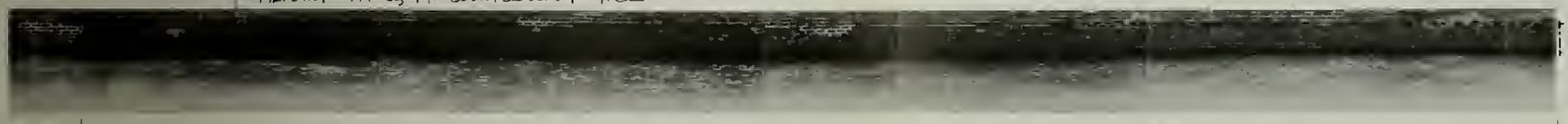
REPOINT ± 372 SQ. FT. COUNTERSCARP FACE

5'-0"

± 119'-0"

ELEVATION C
SCALE: 1/4" = 1'-0"

REPOINT ± 194 SQ. FT. COUNTERSCARP FACE



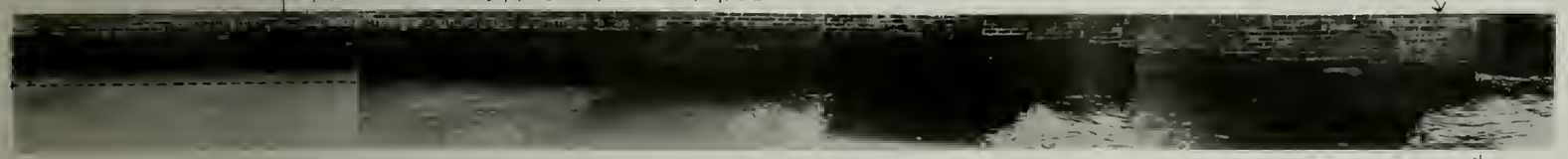
11'-2"

± 92'-0"

ELEVATION D
SCALE: 1/4" = 1'-0"

REPOINT ± 152 SQ. FT. COUNTERSCARP FACE

SIDE GATE



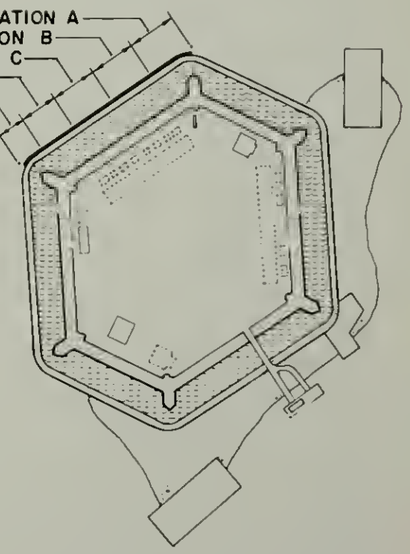
20'-0"

± 76'-0"

ELEVATION E
SCALE: 1/4" = 1'-0"

NOTE: TOTAL PROPOSED REPOINTING OF THE SEAWARD FACE OF COUNTERSCARP @ FRONT 4 IS ± 1018 SQ. FT.

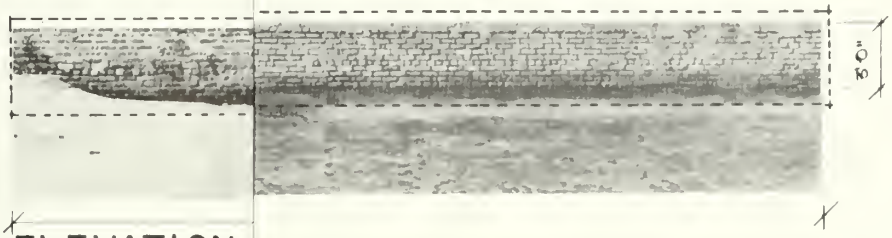
ELEVATION A
ELEVATION B
ELEVATION C
ELEVATION D
ELEVATION E



KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

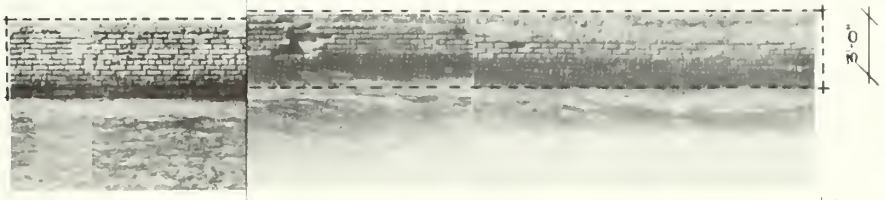
4 0 4 8
SCALE OF FEET

DESIGNED: MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE: 10/1/84	SUB SHEET NO.	TITLE OF SHEET FRONT 4 COUNTERSCARP ELEVATIONS PROPOSED WORK HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25,000A PKG. NO. 103 SHEET 39 OF 47



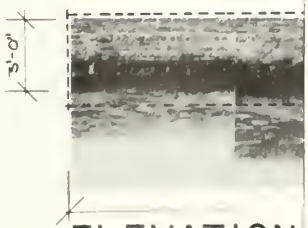
ELEVATION

SCALE: 1/4" = 1'-0"



ELEVATION

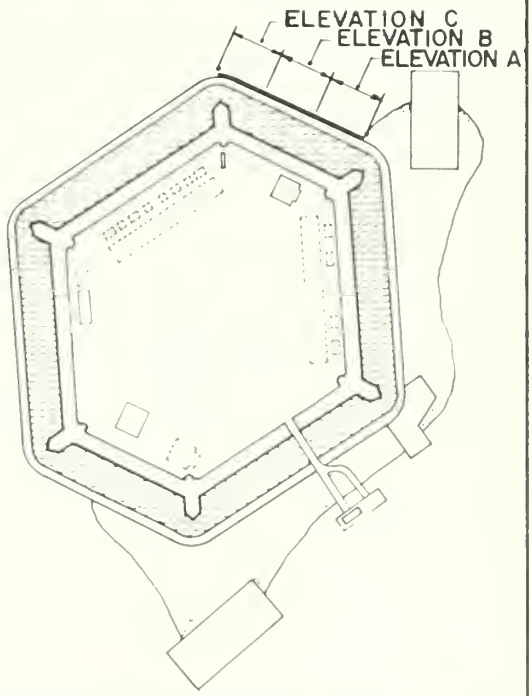
SCALE: 1/4" = 1'-0"



ELEVATION

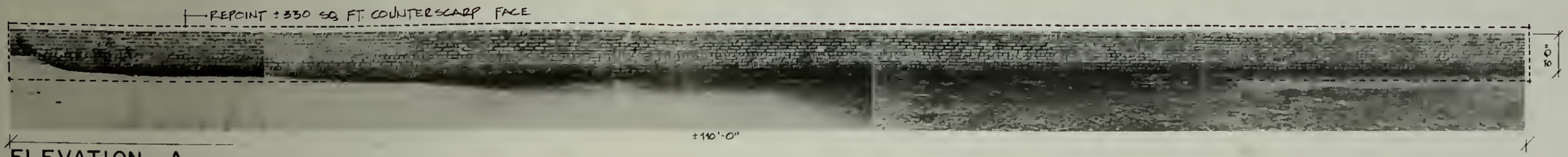
SCALE: 1/4" = 1'-0"

NOTE: TOTAL PR
FACE OF THE COU
TOTAL PROPOSED
OF COUNTERSCAR
EPOXY GROUT LI
WATERLINE AT



KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH	SUB SHEET NO	TITLE OF SHEET FRONT 5 COUNTERSCARP ELEVATIONS	DRAWING NO 364 25,000A
DRAWN ANDERSON			PKG NO. 103
TECH. REVIEW THORSON		PROPOSED WORK HISTORIC STRUCTURE REPORT	SHEET 40 OF 47
DATE 10/1/84			

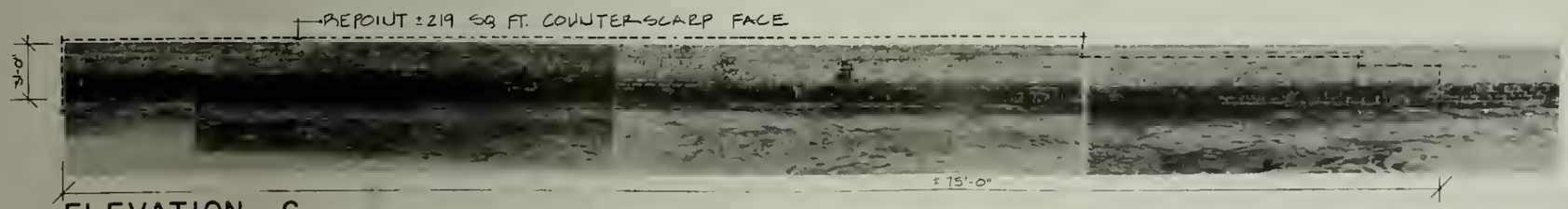


ELEVATION A

SCALE: 1/4" = 1'-0"

ELEVATION B

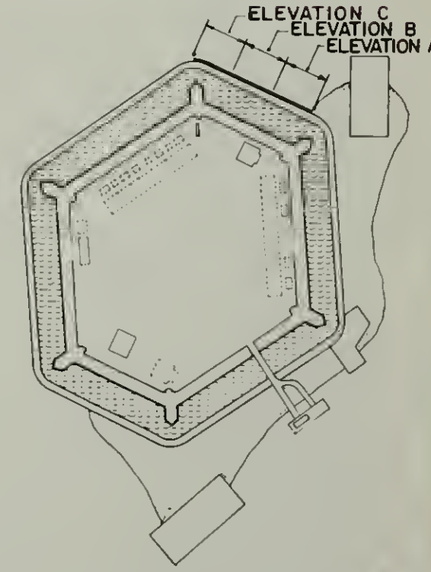
SCALE: 1/4" = 1'-0"



ELEVATION C

SCALE: 1/4" = 1'-0"

NOTE: TOTAL PROPOSED REPOINTING OF THE SEAWARD FACE OF THE COUNTERSCARP @ FRONT # 5 IS ± 549 SQ FT.
TOTAL PROPOSED CONSOLIDATION, REBRICKING & REPOINTING OF COUNTERSCARP SEAWARD FACE IS ± 330 SQ FT.
EPOXY GROUT UNDERCUT AREAS & CRACKS BELOW THE WATERLINE AT THIS FRONT.



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

4 0 4 8
SCALE OF FEET

DESIGNED MCGRATH	SUB SHEET NO.	TITLE OF SHEET: FRONT 5 COUNTERSCARP ELEVATIONS — PROPOSED WORK HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25,000A
DRAWN ANDERSON			PKG. NO. 103
TECH. REVIEW THORSON			SHEET 40 OF 47
DATE 10/1/84			

REBUILD BRICK ARCH & BRICK SILL TO MATCH HISTORIC

A
47

VARIES

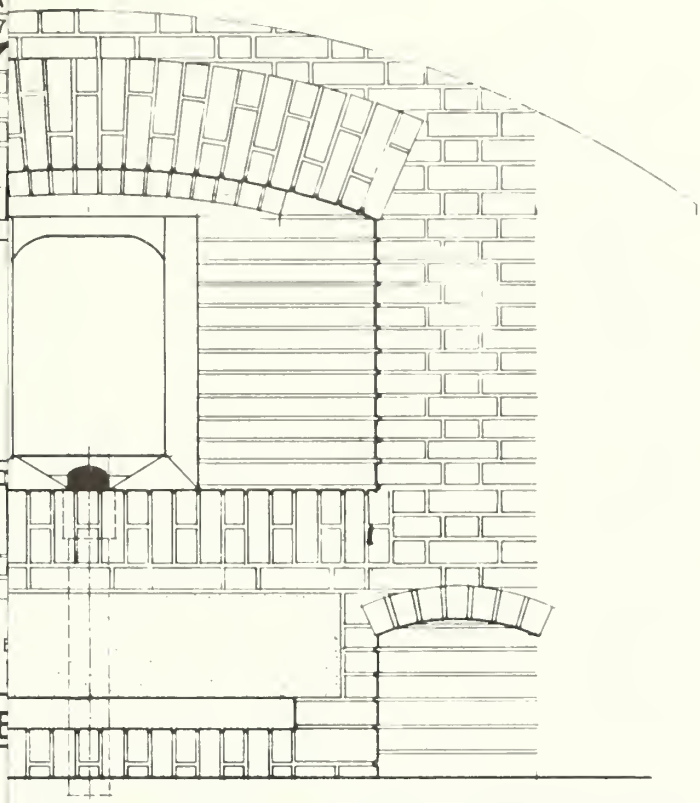
VARIE

EXTERIOR ELEVAT

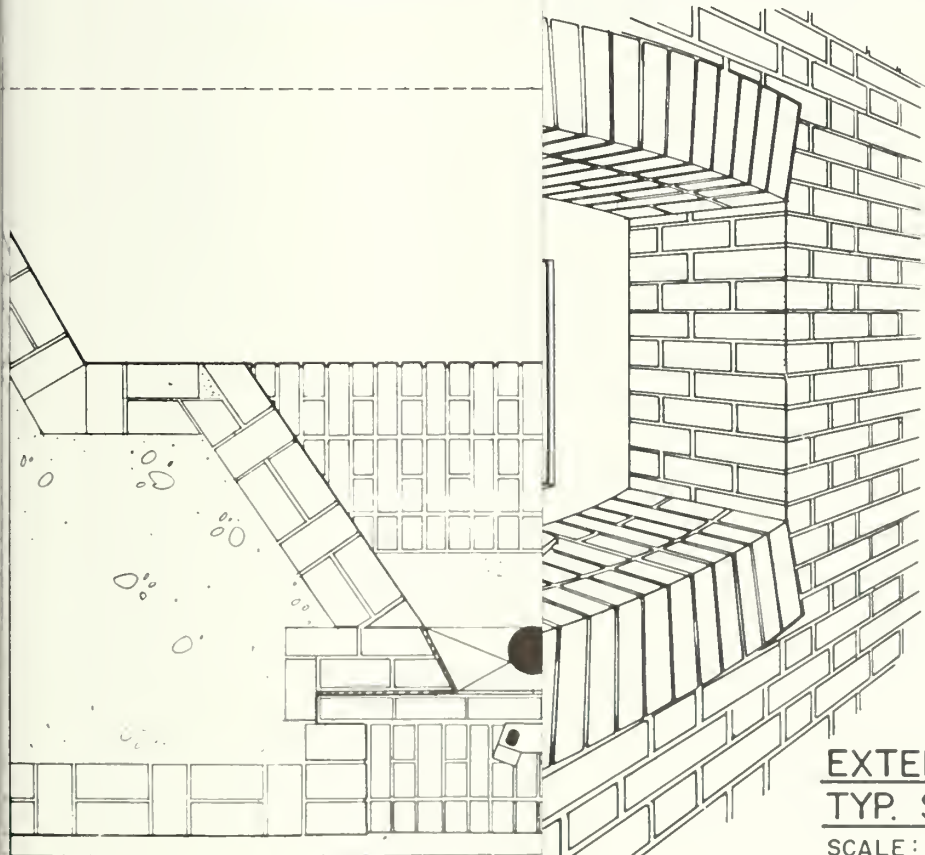
TYPICAL STABILIZE

SCALE: 1" = 1'-0"

1 0 1 2
SCALE OF FEET



TYPICAL STABILIZED EMBRASURE



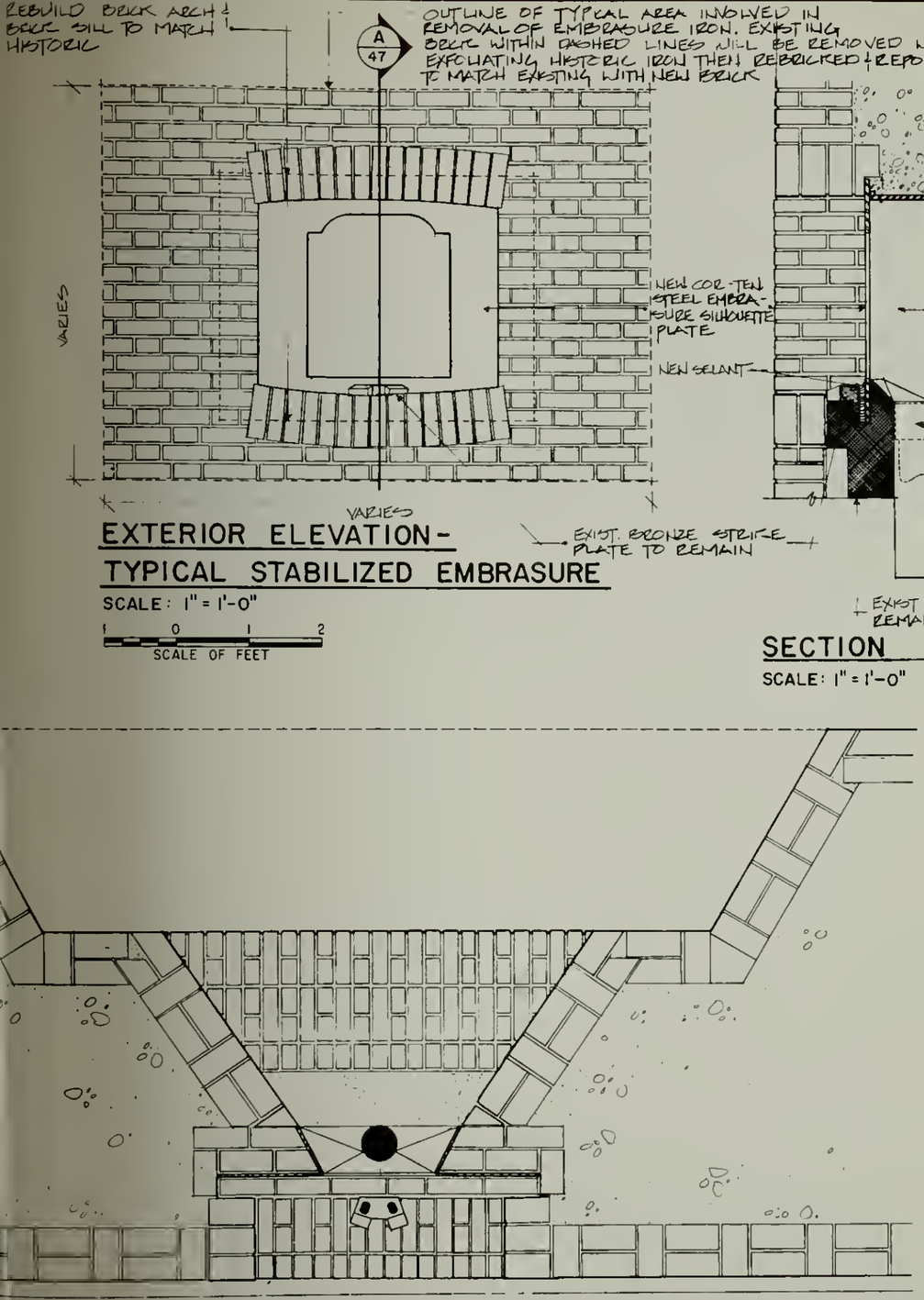
PLAN OF TYPICAL ST

SCALE: 1" = 1'-0"

EXTERIOR PERSPECTIVE
TYP. STABILIZED EMBRASURE

SCALE: 1" = 1'-0"

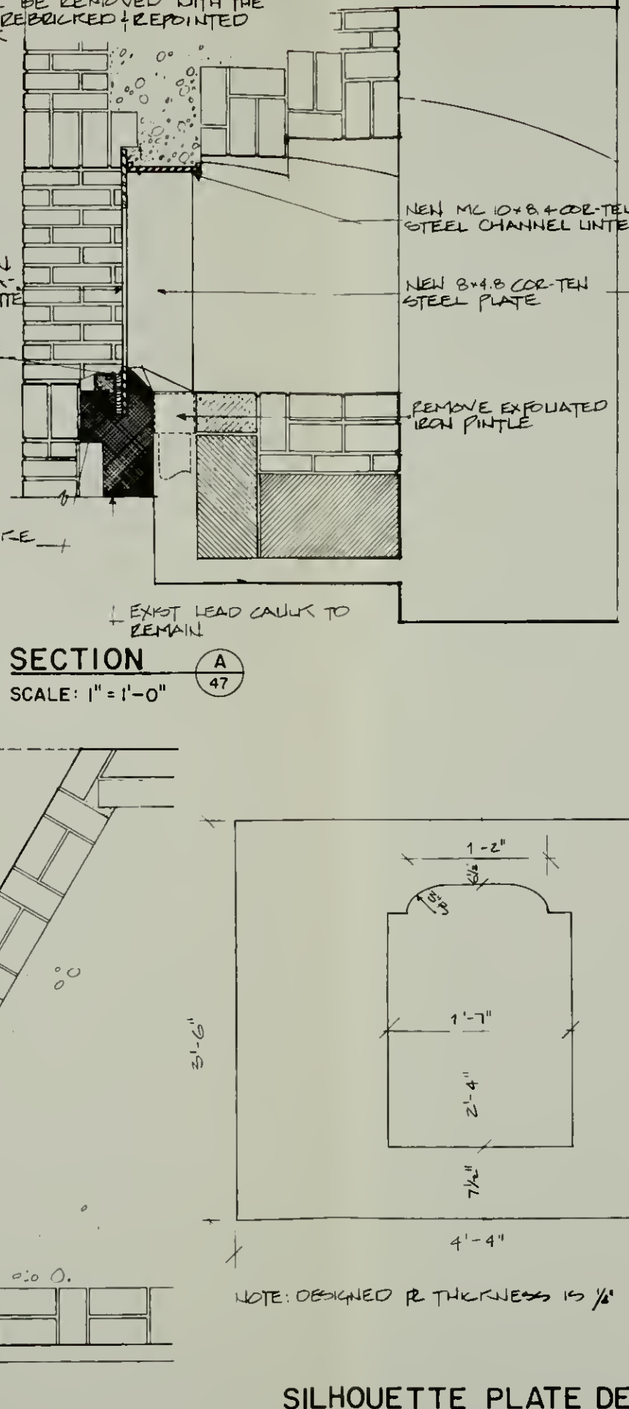
DESIGNED MCGRATH	SUB SHEET NO	TITLE OF SHEET FORT JEFFERSON N.M. TYPICAL EMBRASURE STABILIZATION PLANS AND DETAILS PROPOSED STABILIZATION WORK HISTORIC STRUCTURE REPORT	DRAWING NO 364 25,000A
DRAWN MCGRATH			PKG NO. 103
TECH. REVIEW THORSON			SHEET 41 OF 47
DATE 10/1/84			



EXTERIOR ELEVATION - TYPICAL STABILIZED EMBRASURE

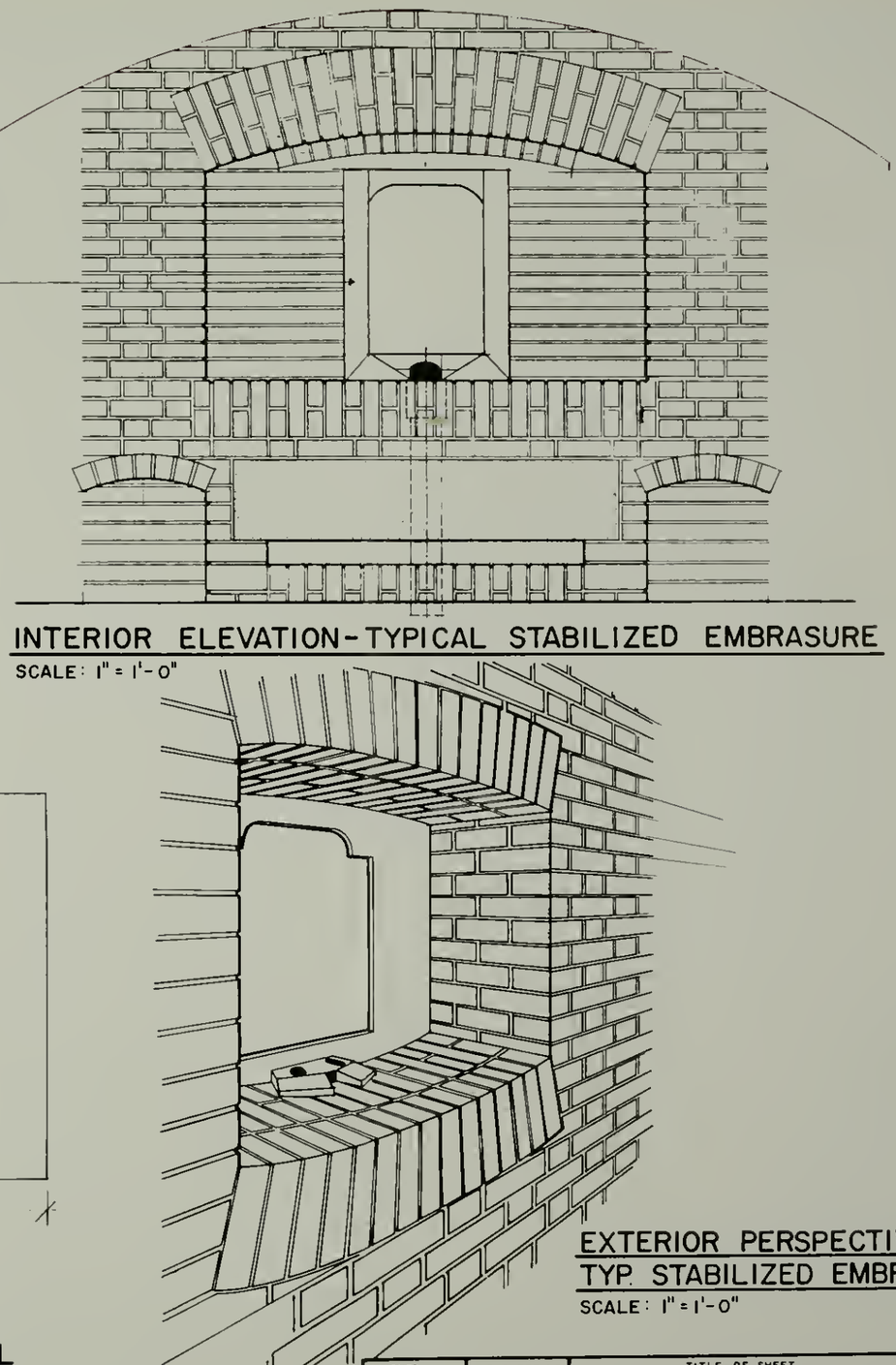
SCALE: 1" = 1'-0"

SCALE OF FEET 0 1 2



SECTION A/47

SCALE: 1" = 1'-0"



INTERIOR ELEVATION - TYPICAL STABILIZED EMBRASURE

SCALE: 1" = 1'-0"

PLAN OF TYPICAL STABILIZED EMBRASURE

SCALE: 1" = 1'-0"

NOTE: DESIGNED FOR THICKNESS IS ½"

SILHOUETTE PLATE DETAIL

SCALE: 1 1/2" = 1'-0"

EXTERIOR PERSPECTIVE TYP. STABILIZED EMBRASURE

SCALE: 1" = 1'-0"

DESIGNED: MCGRATH	SUB SHEET NO.	TITLE OF SHEET: FORT JEFFERSON N.M. TYPICAL EMBRASURE STABILIZATION PLANS AND DETAILS PROPOSED STABILIZATION WORK HISTORIC STRUCTURE REPORT	DRAWING NO. 364 25,000A
DRAWN MCGRATH			PKG. NO. 103
TECH. REVIEW: THORSON			SHEET 41 OF 47
DATE 10/1/84			

(52)

(50)

(46) EMBRASURE NO.

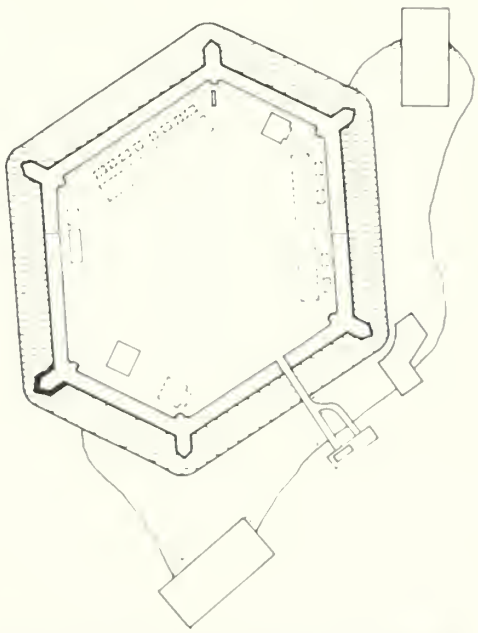
STABILIZE LOWER TIER EMBRASURES #46+47 REBRICK+ REPOINT ± 288 SQ. FT. OF BASTION SHOULDER. SEE SHT #47

BASTION - RIGHT S

SCALE: 3/32"=1'-0"

BASTION - LEFT SHOULDER

SCALE: 3/32"=1'-0"



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET BASTION 2 SIDE ELEVATIONS EMBRASURE STABILIZATION PROPOSED WORK HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG. NO. 103 SHEET 42 OF 47

(52) (50) (49) (46) EMBRASURE NO.

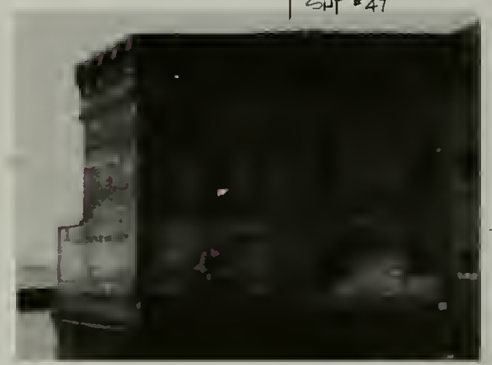
STABILIZE LOWER TIER EMBRASURES #46+47 REBRICK + REPOINT ± 288 SQ. FT. OF BASTION SHOULDER. SEE SHT #47

BASTION-RIGHT SHOULDER
SCALE: 3/32"=1'-0"

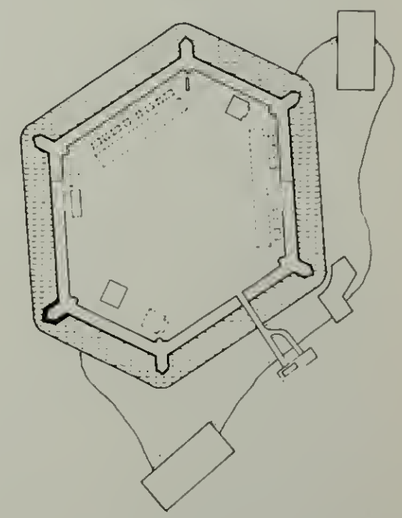
BASTION-RIGHT FACE
SCALE: 3/32"=1'-0"

BASTION-CAPITAL AXIS
SCALE: 3/32"=1'-0"

BASTION-LEFT FACE
SCALE: 3/32"=1'-0"



BASTION-LEFT SHOULDER
SCALE: 3/32"=1'-0"



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

12 0 12 24
SCALE OF FEET

DESIGNED MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET BASTION 2 SIDE ELEVATIONS EMBRASURE STABILIZATION PROPOSED WORK HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG. NO. 103 SHEET 42 OF 47

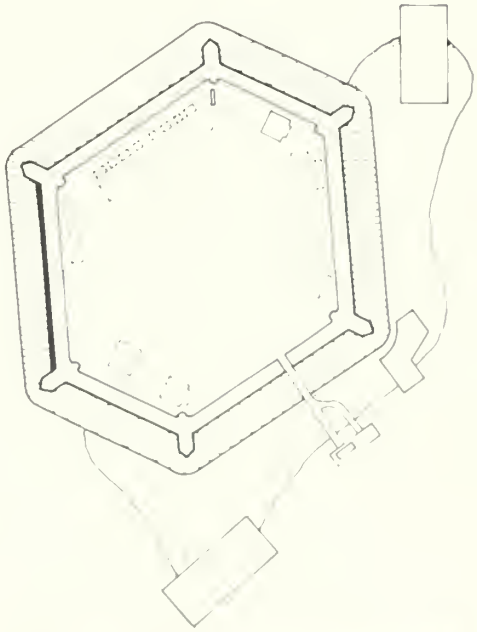
(65) (62)

12'-0"

CI
SC

(61)

CURTAIN—SOU
SCALE: 3/32"=1'-0"



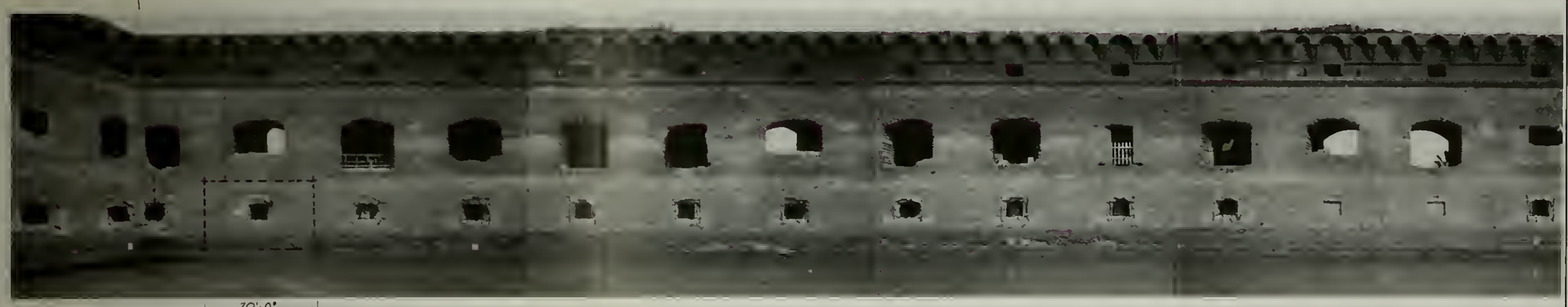
KEY PLAN—FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 3 CURTAIN ELEVATIONS EMBRASURE STABILIZATION PROPOSED WORK HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG. NO. 103 SHEET 43 OF 47	

LOWER TIER EMBRASURE #75 WAS EXPERIMENTALLY STABILIZED IN 1983. INSTALL COR-TEN STEEL 'SILHOUTTE' PLATE TYPICAL FOR STABILIZED EMBRASURES SEE SHT #47

STABILIZE LOWER TIER EMBRASURE #74 REBRICK / REPOINT : 240 SQ FT. OF CURTAIN WALL. SEE SHT. #47

(75) (70) (65) (62)



12'-0"

20'-0"

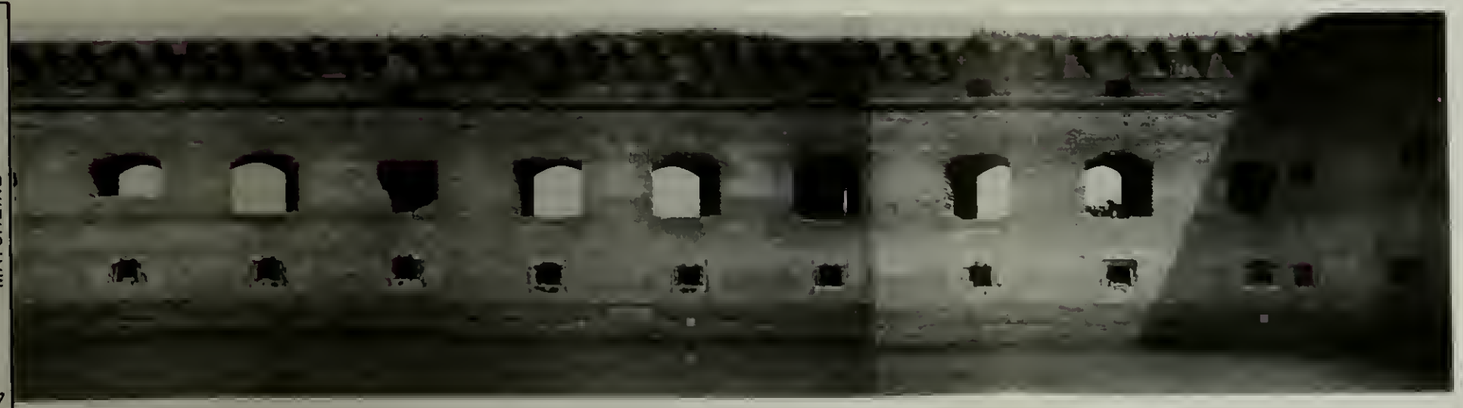
MATCHLINE

CURTAIN - NORTH SECTION

SCALE: 3/32" = 1'-0"

(61) (60) (55) (53)

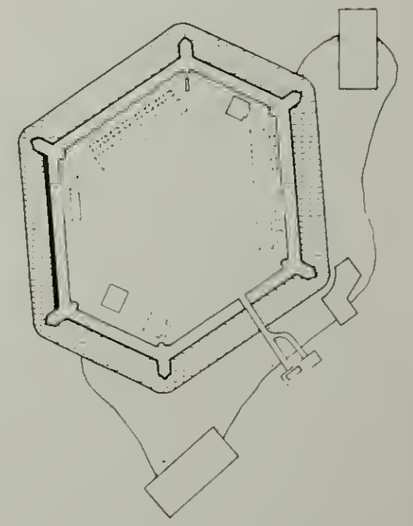
EMBRASURE NO.



MATCHLINE

CURTAIN - SOUTH SECTION

SCALE: 3/32" = 1'-0"



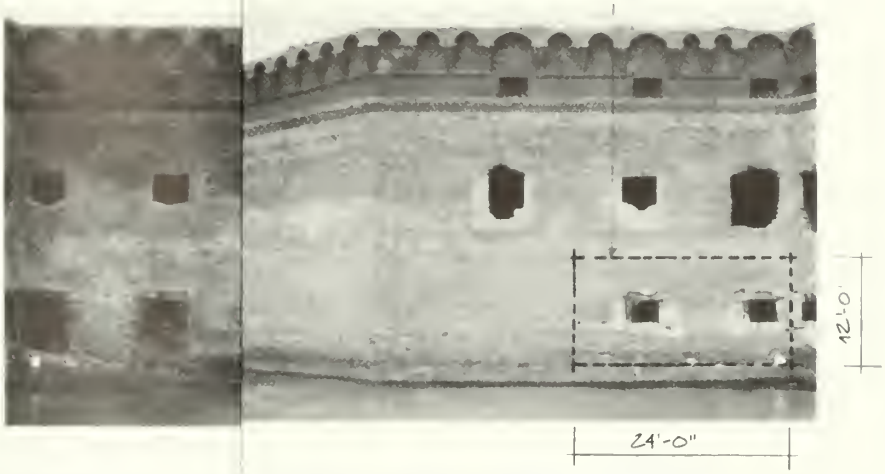
KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

12 0 12 24
SCALE OF FEET

DESIGNED MCGRATH	SUB SHEET NO	TITLE OF SHEET FRONT 3 CURTAIN ELEVATIONS EMBRASURE STABILIZATION PROPOSED WORK HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A
DRAWN ANDERSON			PKG. NO. 103
TECH. REVIEW THORSON			SHEET 43 OF 47
DATE 10/1/84			

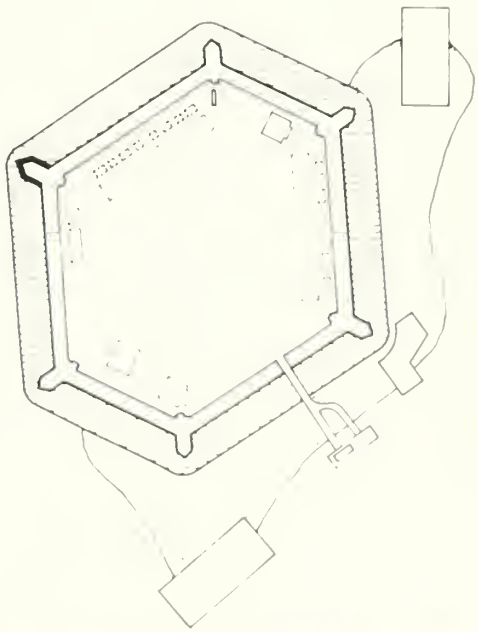
STABILIZE LOWER TIER EMBRASURE #76:77 REBRICK AND REPOINT ± 288 SQ. FT. BASTION SHOULDER SEE SHT# 47

(81) (80) (76) EMBRASURE NO.



BASTION-RIGHT SHOULDER-LEFT SHOULDER

SCALE: 3/32"= 1'-0" E: 3/32" = 1'-0"



KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET BASTION 3 SIDE ELEVATIONS EMBRASURE STABILIZATION PROPOSED WORK HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG NO. 103 SHEET 44 OF 47

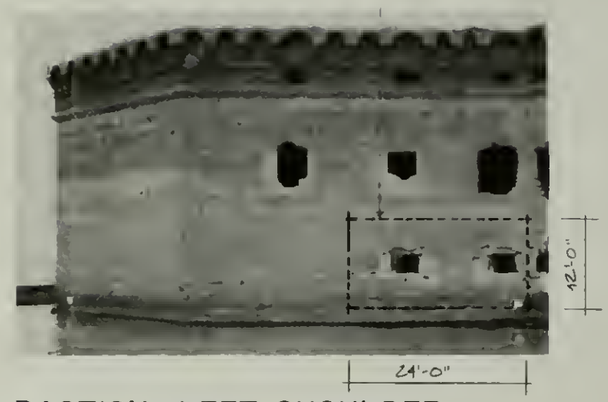
STABILIZE LOWER TIER EMBRASURE #76:77 REBRICK AND REPOINT: 288 SQ. FT. BASTION SHOULDER SEE SHT# 47

(81) (80) (76) EMBRASURE NO.

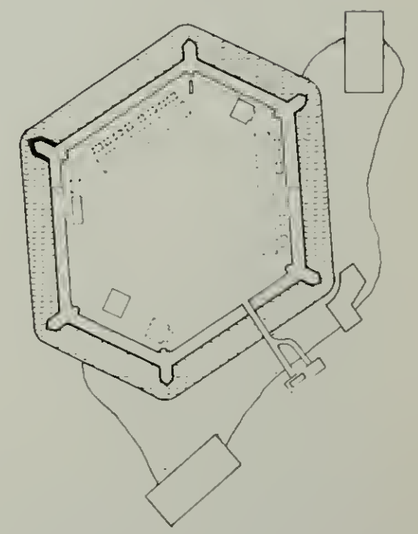
BASTION–RIGHT SHOULDER
SCALE: 3/32"= 1'-0"

BASTION–RIGHT FACE
SCALE: 3/32" = 1'-0"

BASTION–LEFT FACE
SCALE: 3/32" = 1'-0"



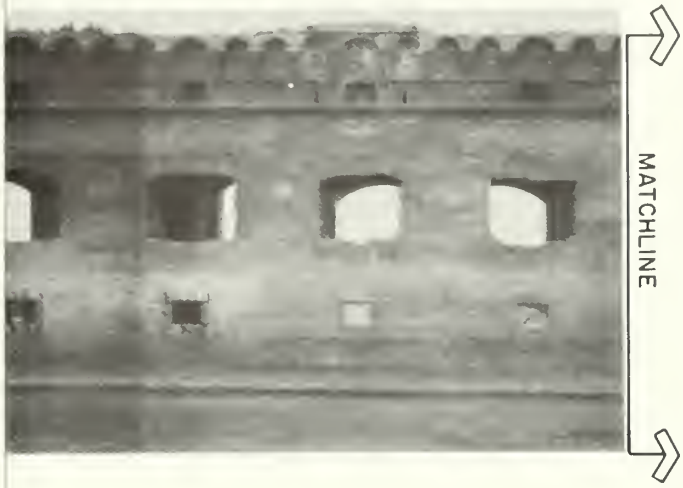
BASTION–LEFT SHOULDER
SCALE: 3/32" = 1'-0"



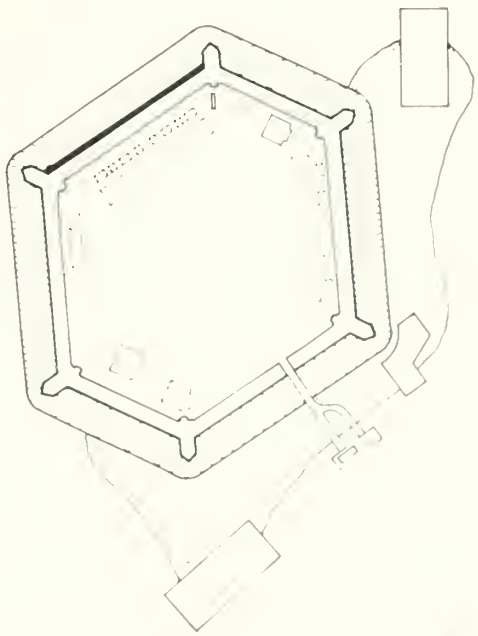
KEY PLAN–FORT JEFFERSON N.M.
NOT TO SCALE

12 0 12 24
SCALE OF FEET

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET BASTION 3 SIDE ELEVATIONS EMBRASURE STABILIZATION PROPOSED WORK HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG. NO 103 SHEET 44 OF 47



CURTAIN-WEST
SCALE: 3/32" = 1'-0"

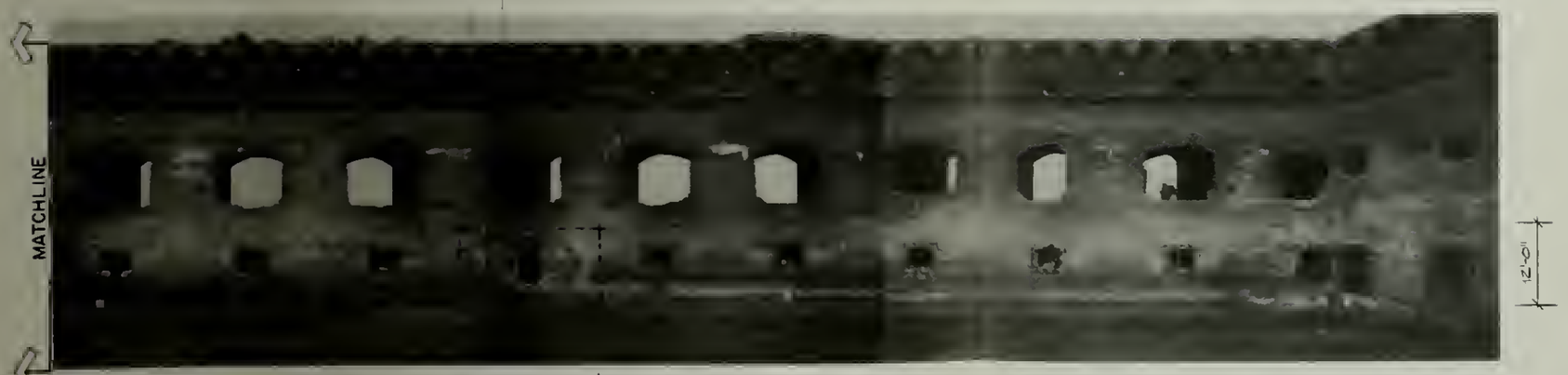


KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 4 CURTAIN ELEVATION EMBRASURE STABILIZATION PROPOSED WORK HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG NO 103 SHEET 45 OF 47

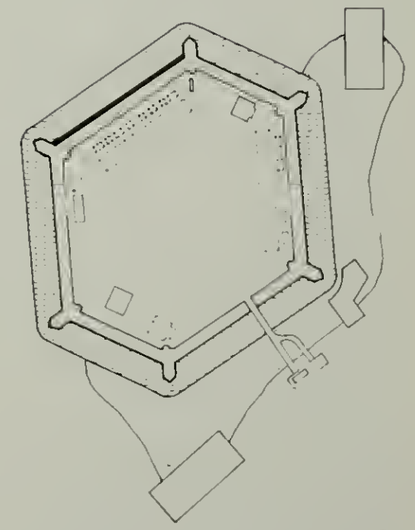
CURTAIN-EAST SECTION
SCALE: 3/32" = 1'-0"

STABILIZE LOWER TIER EMBRASURE #88. REBRICK & REPOINT ± 240 SQ. FT. OF CURTAIN WALL. SEE SHT # 47



CURTAIN-WEST SECTION
SCALE: 3/32" = 1'-0"

EMBRASURE NO.



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

12 0 12 24
SCALE OF FEET

DESIGNED MCGRATH DRAWN: ANDERSON TECH. REVIEW: THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 4 CURTAIN ELEVATION EMBRASURE STABILIZATION PROPOSED WORK HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG NO. 103 SHEET 45 OF 47

(145)

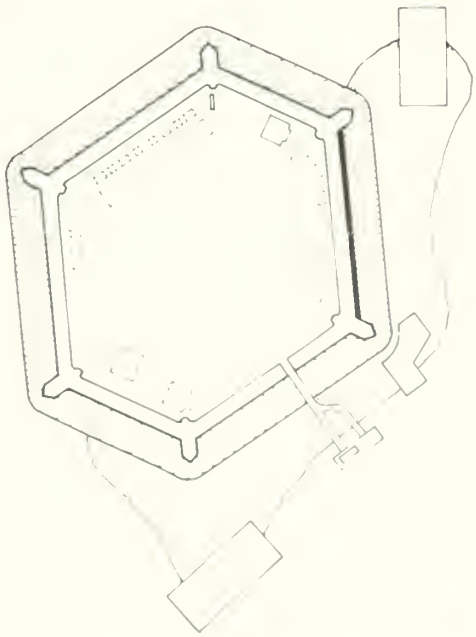
MATCHLINE

RE NO.

MATCHLINE

CURTAIN- NORT

SCALE 3/32" = 1'-0"

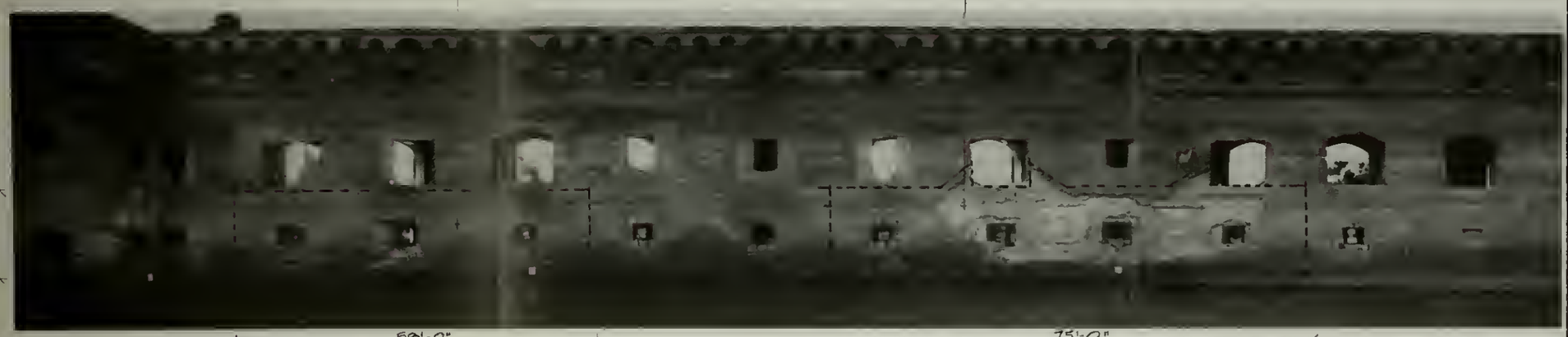


KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET FRONT 6 CURTAIN ELEVATION EMBRASURE STABILIZATION PROPOSED WORK HISTORIC STRUCTURE REPORT	DRAWING NO 364 25000A PKG NO 103 SHEET 46 OF 47

STABILIZE LOWER TIER EMBRASURE # 147, 148, 149, 150, 153, 154, & 155. REBRICK & REPOINT ± 1862 SQ FT. CURTAIN WALL. SEE SHT. 47

(156) (155) (150) (145)



14'-0"

MATCHLINE

50'-0" 75'-0"

CURTAIN – SOUTH SECTION

SCALE: 3/32" = 1'-0"

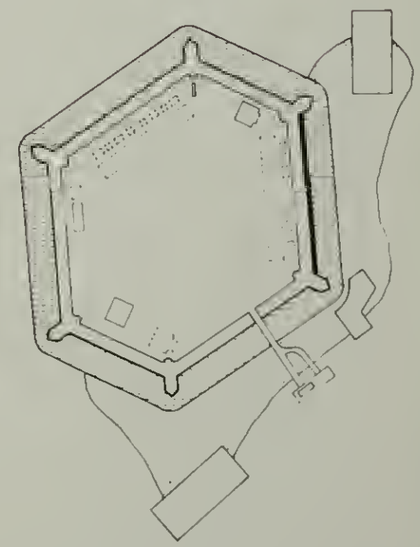
(140) (135) (134)

MATCHLINE

CURTAIN – NORTH SECTION

SCALE: 3/32" = 1'-0"

EMBRASURE NO.



KEY PLAN–FORT JEFFERSON N.M.
NOT TO SCALE

12 0 12 24
SCALE OF FEET

DESIGNED: MCGRATH	SUB SHEET NO	TITLE OF SHEET: FRONT 6 CURTAIN ELEVATION EMBRASURE STABILIZATION	DRAWING NO: 364 25000A
DRAWN: ANDERSON		PROPOSED WORK HISTORIC STRUCTURE REPORT	PKG. NO. 103
TECH. REVIEW: THORSON			SHEET 46 OF 47
DATE: 10/1/84			

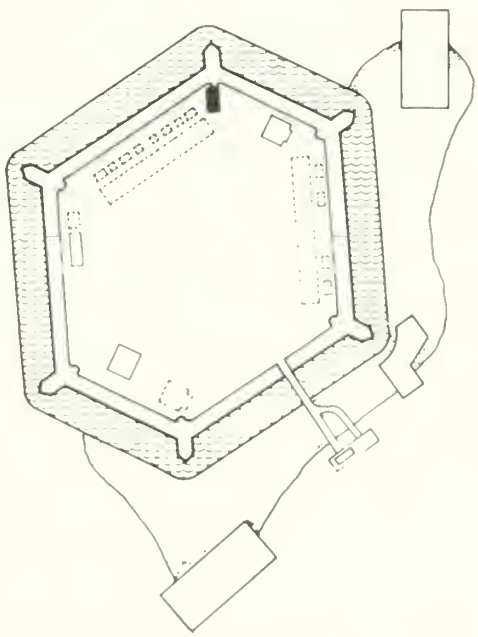
EAST ELEV

SCALE: 1/4" = 1'-

BLE FURNACE TOP.

NORTH ELE

SCALE: 1/4" = 1'-

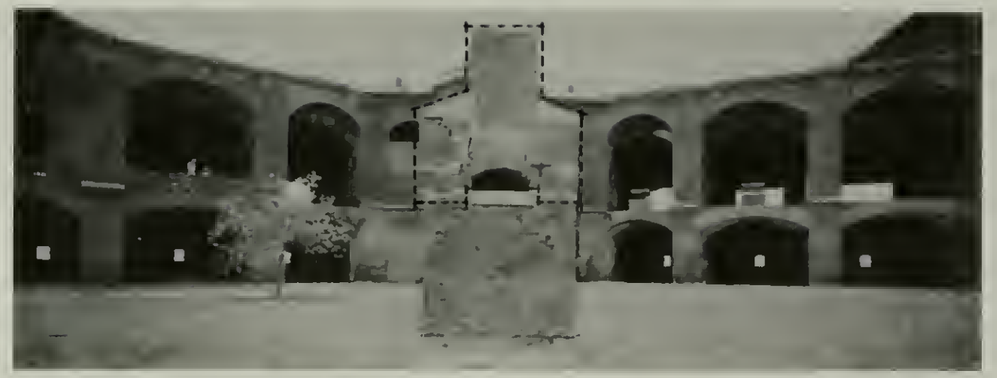


KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

DESIGNED MCGRATH DRAWN ANDERSON TECH. REVIEW THORSON DATE 10/1/84	SUB SHEET NO	TITLE OF SHEET SHOT FURNACE RESTORATION PROPOSED WORK HISTORIC STRUCTURE REPORT	DRAWING NO 364 25,000A PKG. NO. 103 SHEET 47 OF 47

EAST ELEVATION

SCALE: 1/4" = 1'-0"



SOUTH ELEVATION

SCALE: 1/4" = 1'-0"

RESTORATION/STABILIZATION NOTE

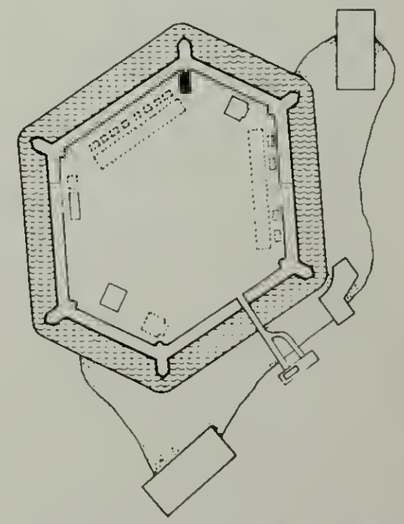
HISTORIC DRAWINGS FOR THE SHOT FURNACE HAVE NOT BEEN LOCATED, THEREFORE INTERIOR DETAILS OF THIS STRUCTURE ARE UNKNOWN. THE AREAS WITHIN THE DASHED LINES ARE SEVERELY DETERIORATED AND WILL REQUIRE A MAJOR INTERVENTION TO SAVE THIS STRUCTURE. ANTICIPATED WORK WOULD INCLUDE: CAREFUL DISMANTLING OF ALL AREAS WITHIN DASHED LINES, RECORDING OF EXPOSED DETAILS, REMOVAL OF EXFOLIATED IRON, TREATMENT AND/OR REPLACEMENT OF THE HISTORIC IRON FABRIC, REBUILDING DISMANTLED AREAS & WATERPROOF DETAILING CORAL RUBBLE FURNACE TOP.

NORTH ELEVATION

SCALE: 1/4" = 1'-0"

WEST ELEVATION

SCALE: 1/4" = 1'-0"



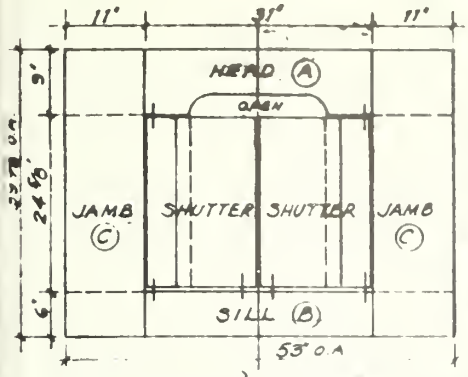
KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

4 0 4 8
SCALE OF FEET

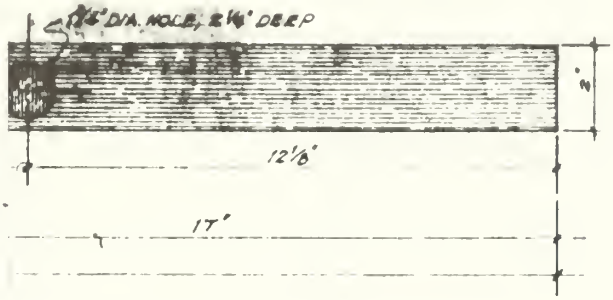
DESIGNED MCGRATH	SUB SHEET NO.	TITLE OF SHEET: SHOT FURNACE RESTORATION PROPOSED WORK HISTORIC STRUCTURE REPORT	DRAWING NO 364 25,000A
DRAWN ANDERSON			PKG. NO. 103
TECH. REVIEW THORSON			SHEET 47 OF 47
DATE 10/1/84			

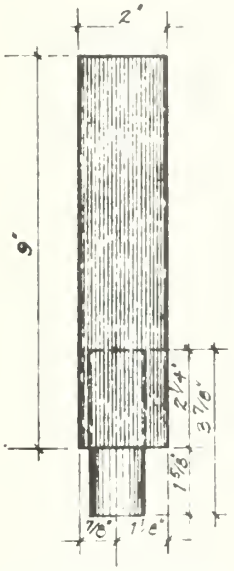
APPENDIX 2

COMPARATIVE DATA - FORT ZACHARY TAYLOR

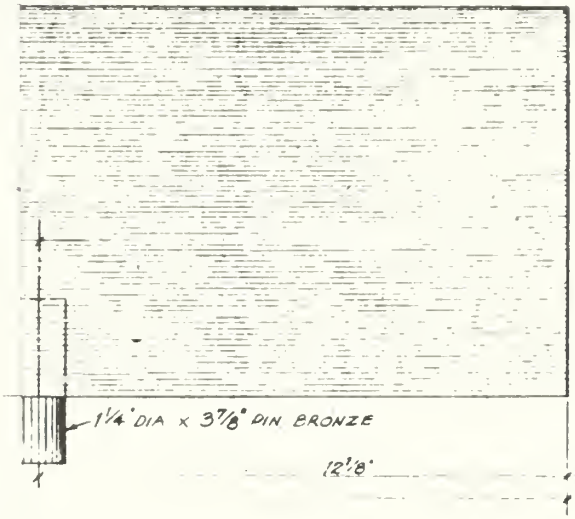


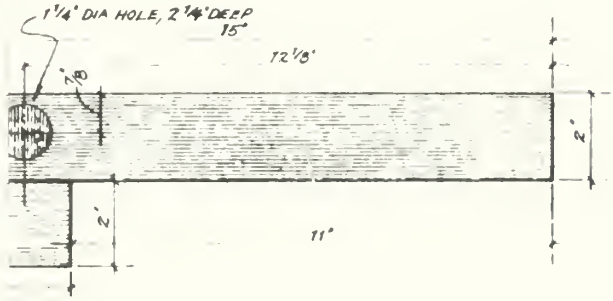
• OUTSIDE ELEVATION OF EMBRASURE •
SCALE 1" = 1'-0"

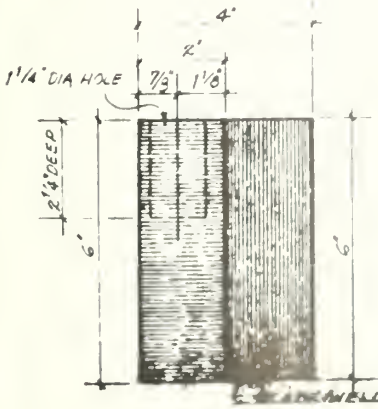


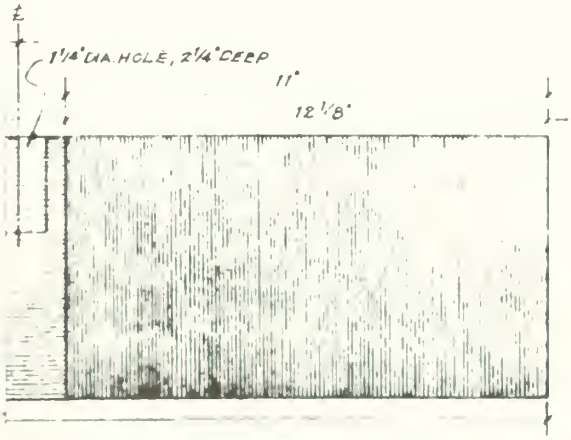


• END VIEW (HALF SIZE) •





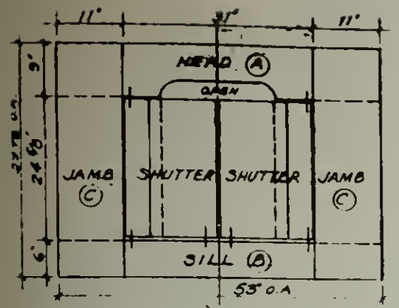




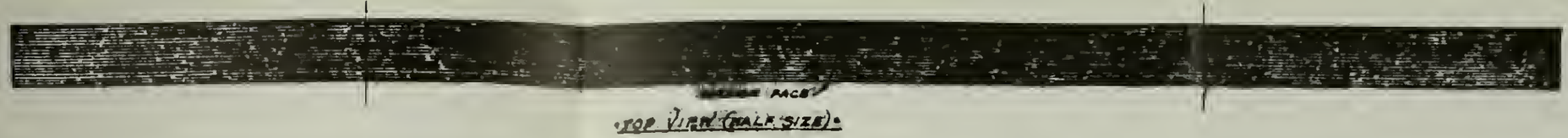
• END VIEW (HALF SIZE) •

SHEET No 1

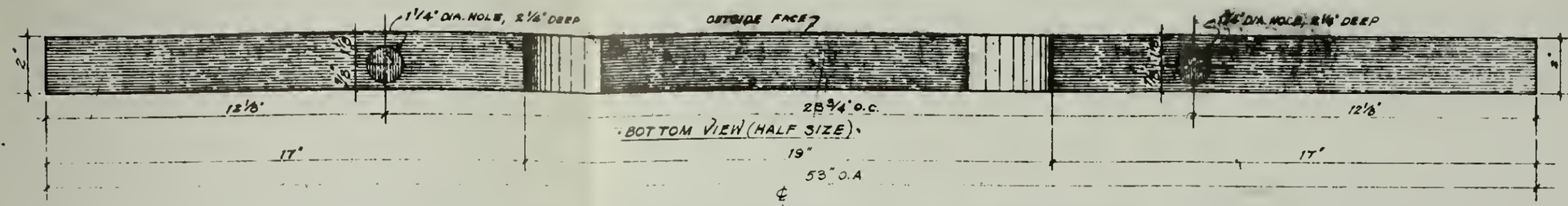
DRAWN BY HOWARD S ENGLAND



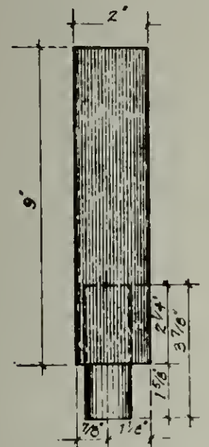
·OUTSIDE ELEVATION OF EMBRASURE·
SCALE 1" = 1'-0"



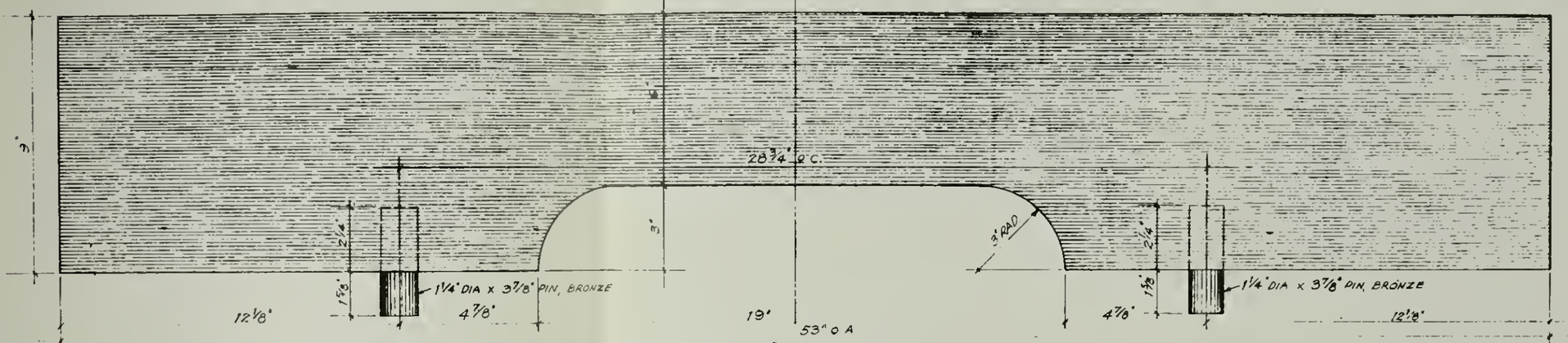
·TOP VIEW (HALF SIZE)·



·BOTTOM VIEW (HALF SIZE)·

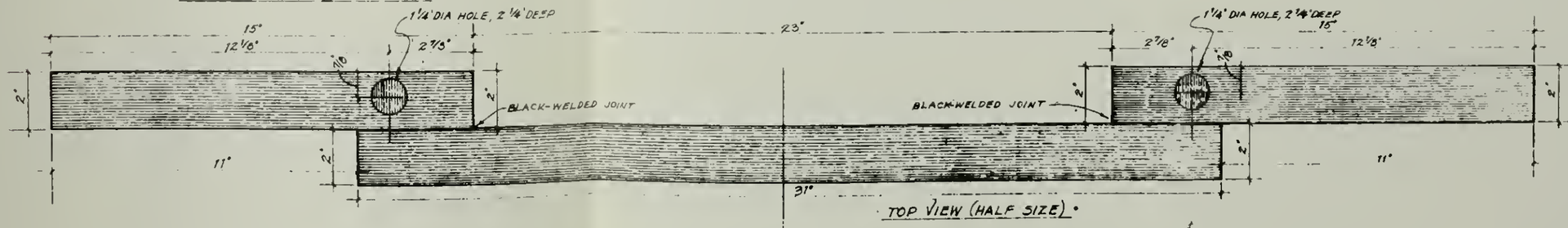


·END VIEW (HALF SIZE)·

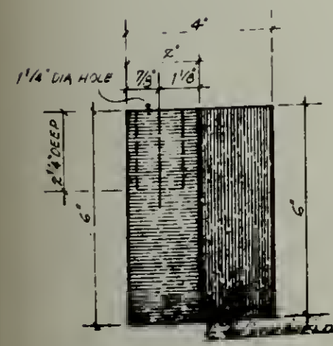


·HEAD PIECE (A) DETAILS·

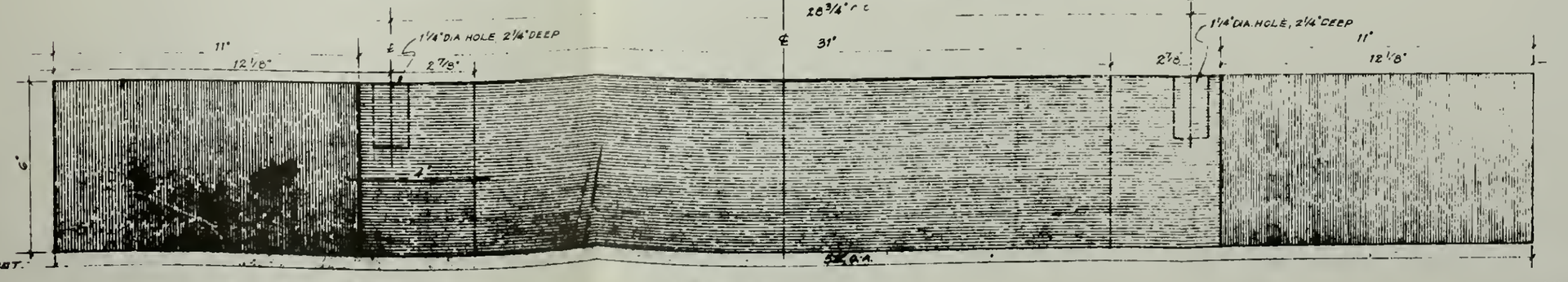
·FRONT VIEW (HALF SIZE)·



·TOP VIEW (HALF SIZE)·



·END VIEW (HALF SIZE)·



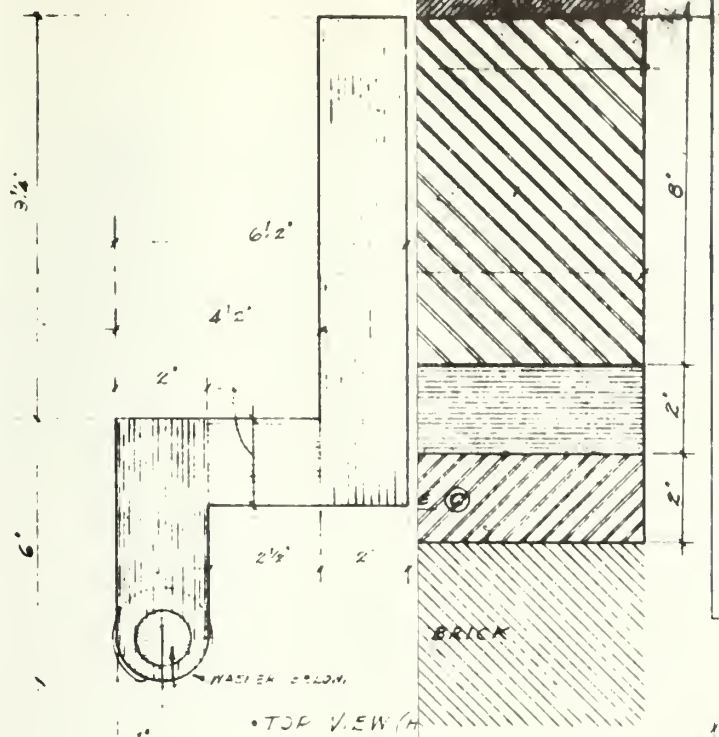
·FRONT VIEW (HALF SIZE)·

SHEET No 1

DRAWN BY: HOWARD S. EVELAND

COMPARATIVE DATA - FORT ZACHARY TAYLOR

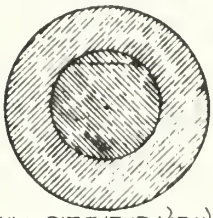
SHT. 1 of 3



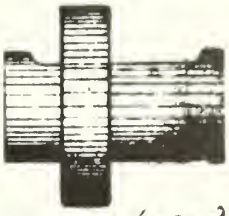
• TOP VIEW (H

• FULL SIZE (TOP VIEW)

MATERIAL: BRONZE

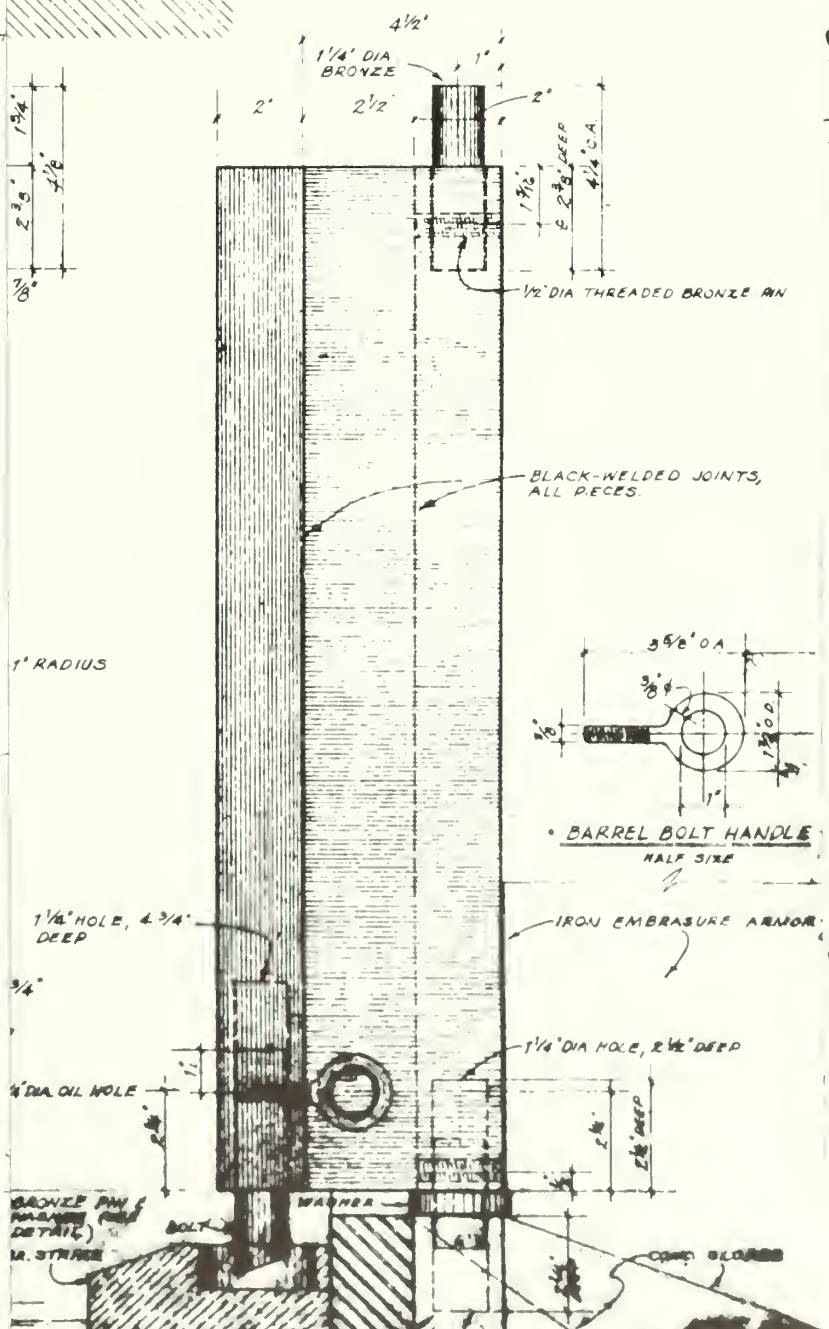


• FULL SIZE (END VIEW) •



• FULL SIZE (SIDE V

• DETAIL OF HINGE PIN & WASHER •



• BARREL BOLT HANDLE •
HALF SIZE

COMPARATIVE DATA - FORT ZACHARY TAYLOR SHT. 2 of 2

COMPARATIVE DATA - FORT ZACHARY TAYLOR SHT. 2 of 2

EMBRASURE ARMOR

SILL PIECE (B)

JAMB PIECE (C)

"TOTTEN" SHUTTER HALF OPEN

FULL OPEN

BRICK

BOLT STRIKE BRONZE (SEE DETAIL ON SHT. 1)

28 3/4" O.C.

• SECTION (HALF SIZE) •

• TOP VIEW (HALF SIZE) •

MATERIAL: BRONZE

• FULL SIZE (TOP VIEW) •

• FULL SIZE (END VIEW) •

• FULL SIZE (SIDE VIEW) •

• DETAIL OF HINGE PIN & WASHER •

WROUGHT IRON

OUTSIDE FACE

INSIDE FACE

1 1/4" DIA THREADED 4" BRONZE PIN

1 1/4" DIA x 5 1/4" LONG BOLT BRONZE

1 1/4" DIA BRONZE

12 7/16" O.C.

15 1/4"

• OUTSIDE ELEVATION (HALF SIZE) •

1 1/4" DIA., BRONZE

18 7/16" O.C.

15 1/4"

• INSIDE ELEVATION (HALF SIZE) •

1 1/2" DIA THREADED BRONZE PIN

BLACK-WELDED JOINTS, ALL PIECES.

1" RADIUS

1 1/2" HOLE, 2 3/4" DEEP

1 1/4" DIA OIL HOLE

1 1/4" DIA HOLE, 2 1/2" DEEP

IRON EMBRASURE ARMOR

• BARREL BOLT HANDLE •

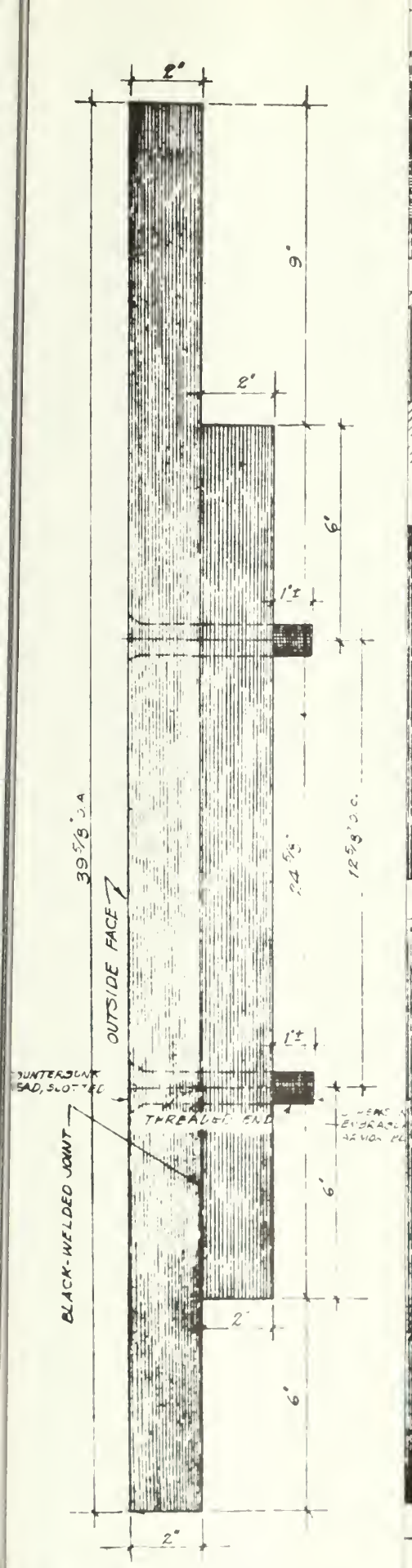
HALF SIZE

WASHER

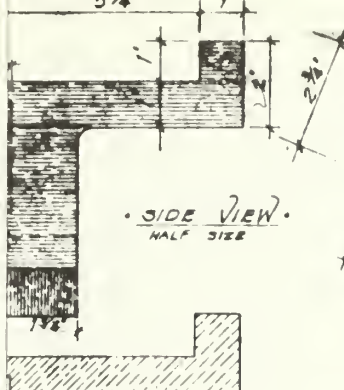
BOLT

BRONZE PIN & WASHER (SEE DETAILS)

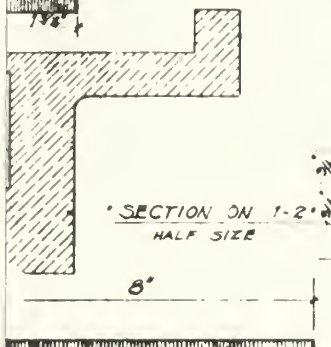
GR. STRIKE



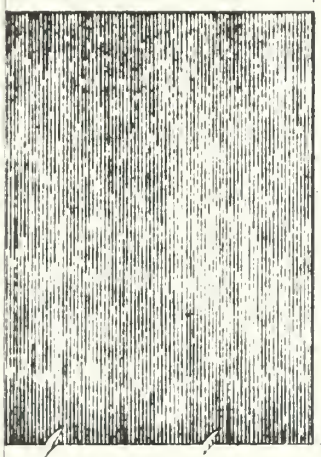
• SIDE VIEW (HALF SIZE) •

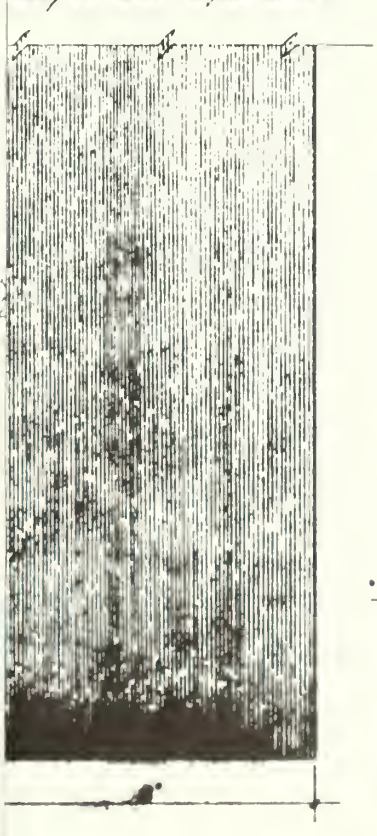


• SIDE VIEW •
HALF SIZE

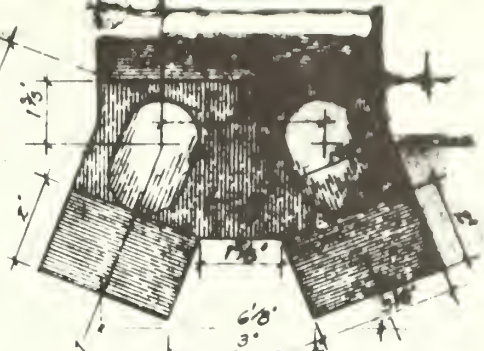


• SECTION ON 1-2 •
HALF SIZE

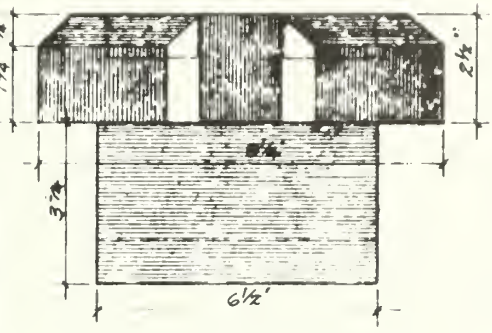




• JAMB PIEC



• TOP VIEW (HALF SIZE) •

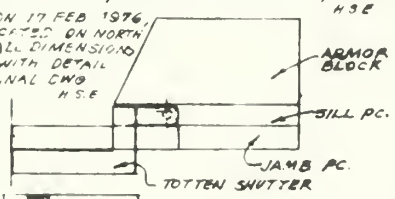


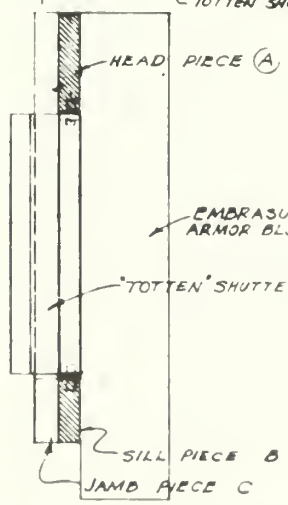
• FRONT VIEW (HALF SIZE) •

• DETAILS OF BRONZE BOLT STRIKE •

NOTE TO DATE NO BOLT STRIKES HAVE BEEN FOUND, LOOSE OR IN PLACE. DETAIL TAKEN FROM ORIGINAL PLANS, (SHEET #2) FILED IN DRAWER 75, # 91 H.S.E.

NOTE ON 17 FEB 1976, ONE LOCATED ON NORTH FACE ALL DIMENSIONS AGREE WITH DETAIL OF ORIGINAL CWO H.S.E.



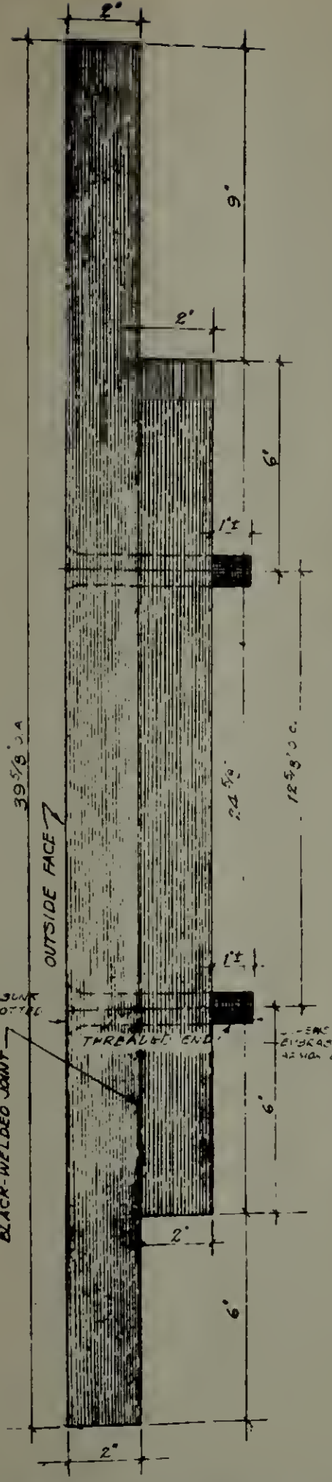


• SECTION @ ℄ OF EMBRASURE •
SCALE 1½" = 1'-0"

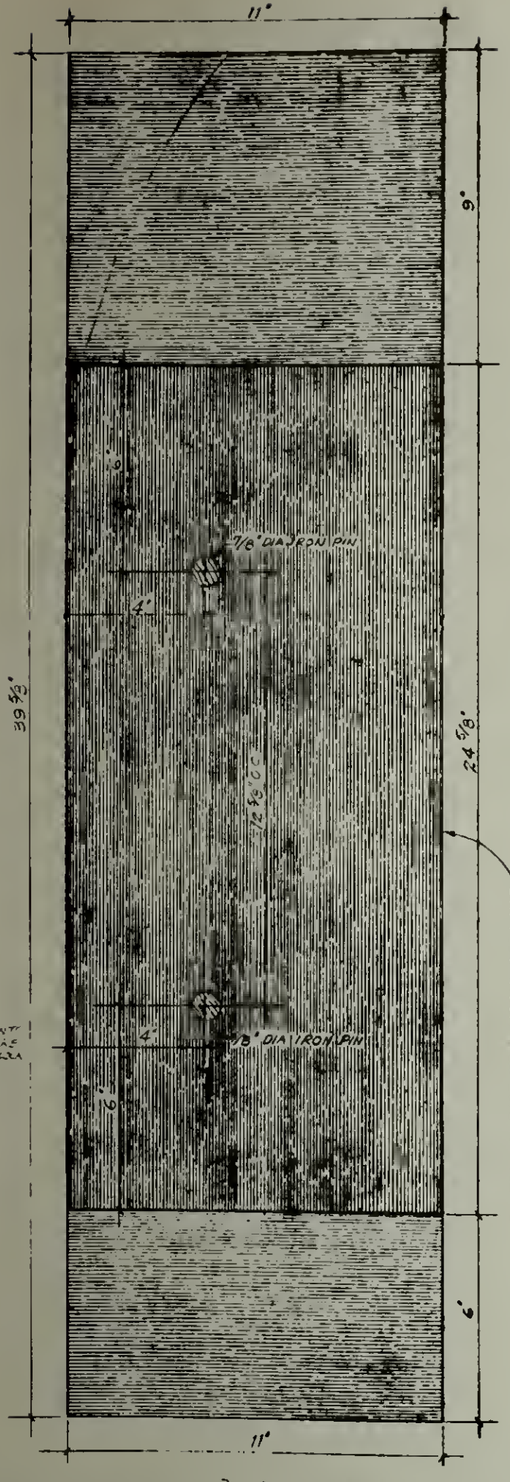
COMPARATIVE DATA - FORT ZACHARY TAYLOR

SHT. 2 of 3

SHEET NO. 3

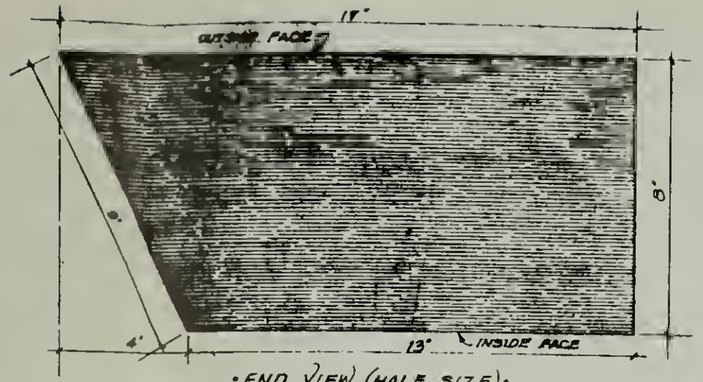


• SIDE VIEW (HALF SIZE) •

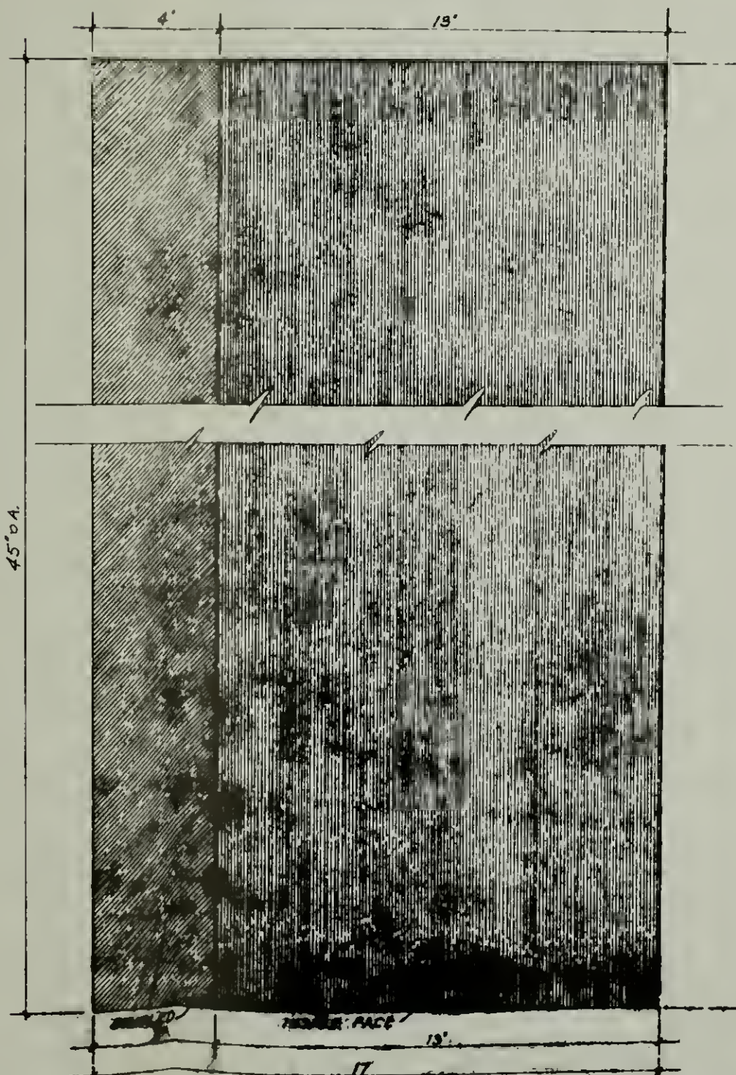


• BACK VIEW (HALF SIZE) •

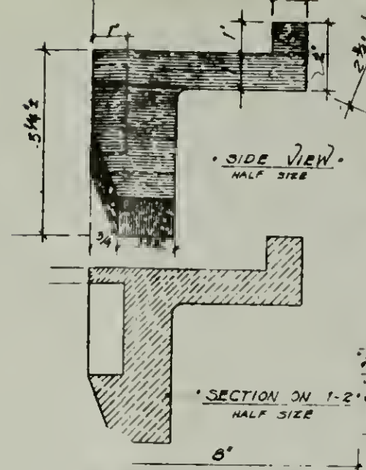
• JAMB PIECE C DETAILS •



• END VIEW (HALF SIZE) •

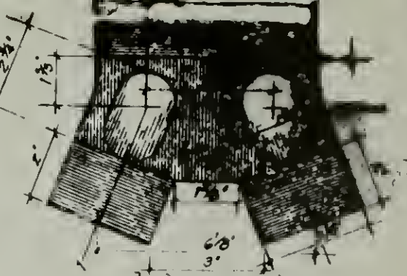


• BACK VIEW (HALF SIZE) •

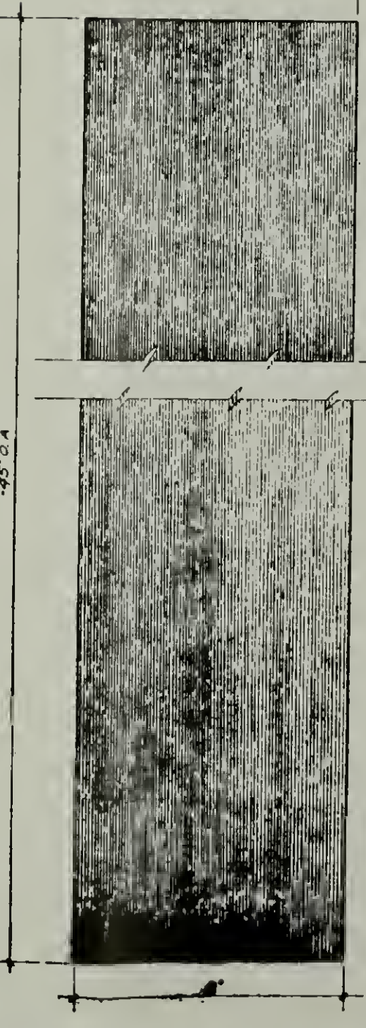


• SIDE VIEW • HALF SIZE

• SECTION ON 1-2 • HALF SIZE



• FRONT VIEW (HALF SIZE) •



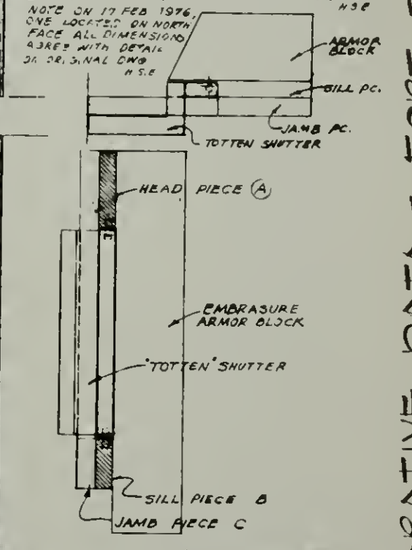
• SIDE VIEW (HALF SIZE) •

• TOP VIEW (HALF SIZE) •

• DETAILS OF BRONZE BOLT STRIKE •

NOTE TO DATE NO BOLT STRIKES HAVE BEEN FOUND; LOOSE OR IN PLACE. DETAIL TAKEN FROM ORIGINAL PLANS, (SHEET #2) FILED IN DRAWER 75, # 91 H.S.E.

NOTE ON 17 FEB 1976, ONE LOCATED ON NORTH FACE ALL DIMENSIONS AGREE WITH DETAIL ON ORIGINAL DWG H.S.E.



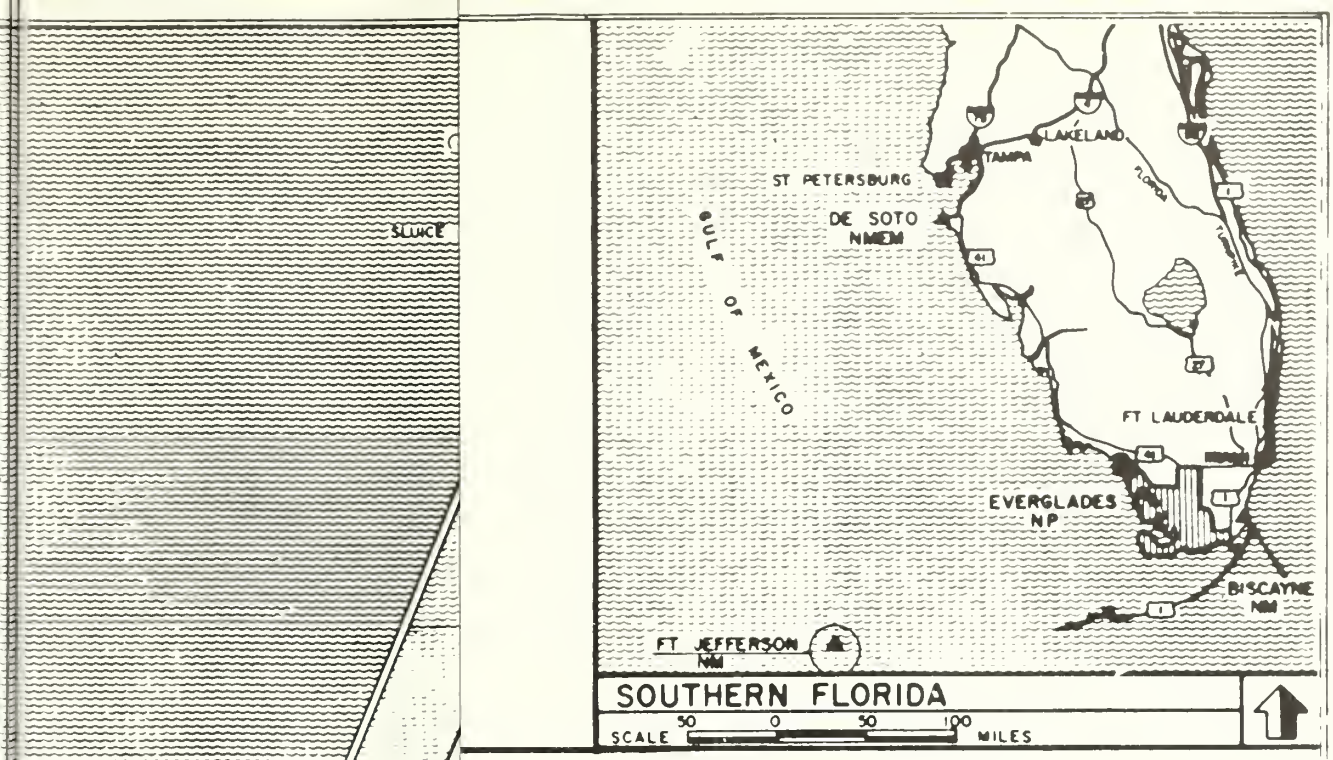
• SECTION @ ℄ OF EMBRASURE •

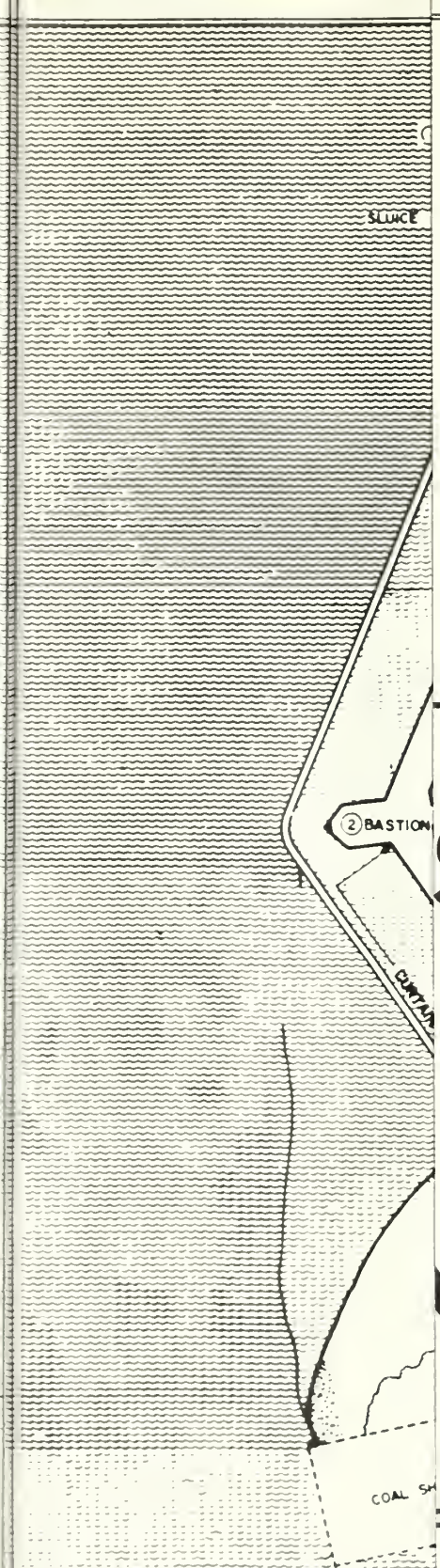
SCALE: 1½" = 1'-0"

COMPARATIVE DATA - FORT ZACHARY TAYLOR

SHT. 2 OF 2

APPENDIX 3





SERVATION

OF THE

NTERSCARP

RSON NATIONAL MONUMENT

SOUTHEAST CULTURAL RESOURCES PRESERVATION CENTER

ORT JEFFER

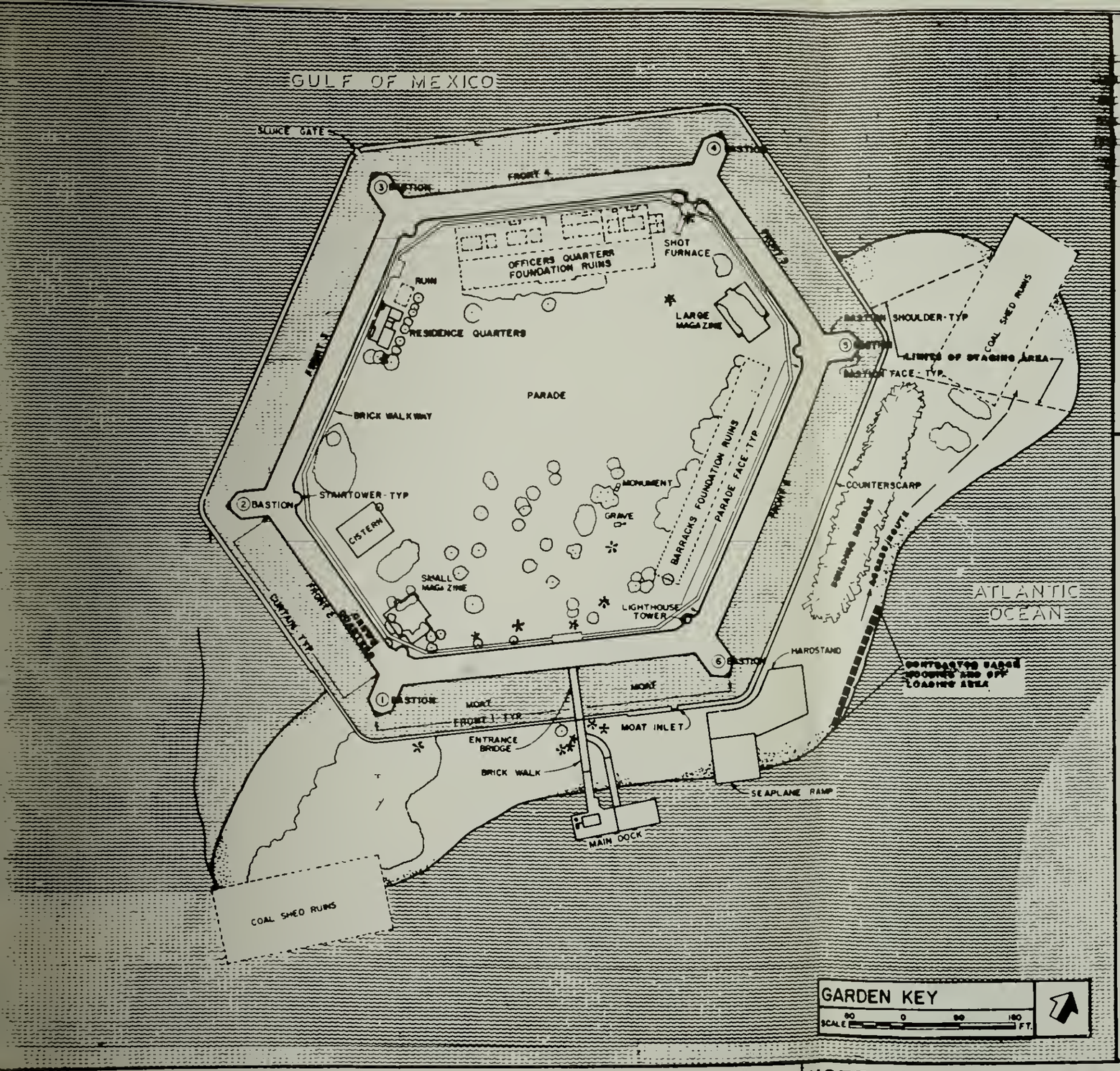
TES
INTERIOR
SERVICE

PREPARED
DESIGNED
DRAWN
CHECKED
4-10-85
DATE

TITLE OF DRAWING
COVER SHEET
LOCATION WITHIN PARK
GARDEN KEY
NAME OF PARK
FORT JEFFERSON NATIONAL MONUMENT
SOUTHEAST REGION DRY TORTUGAS COUNTY FLORIDA STATE

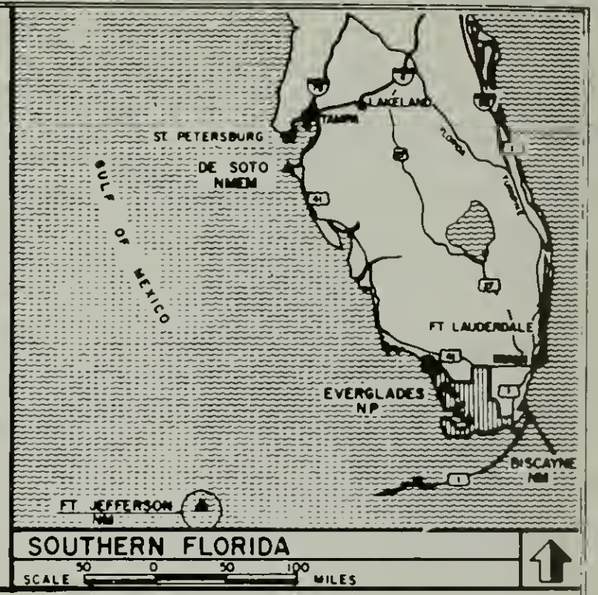
DRAWING NO
160
80,000

PCTP PKG
SHEET
OF



SHEET INDEX:

1. COVER SHEET
2. PLAN & DETAILS
3. ELEVATIONS - CS. #4
4. ELEVATIONS - CS. #4
5. ELEVATIONS - CS. #5
6. ELEVATIONS - CS. #5
7. ELEVATIONS - CS. #5
8. ELEVATIONS - CS. #6



PRESERVATION OF THE COUNTERSCARP

FORT JEFFERSON NATIONAL MONUMENT

FORT JEFFERSON, DRY TORTUGAS

NOTE: ALL DIMENSIONS AND QUANTITIES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

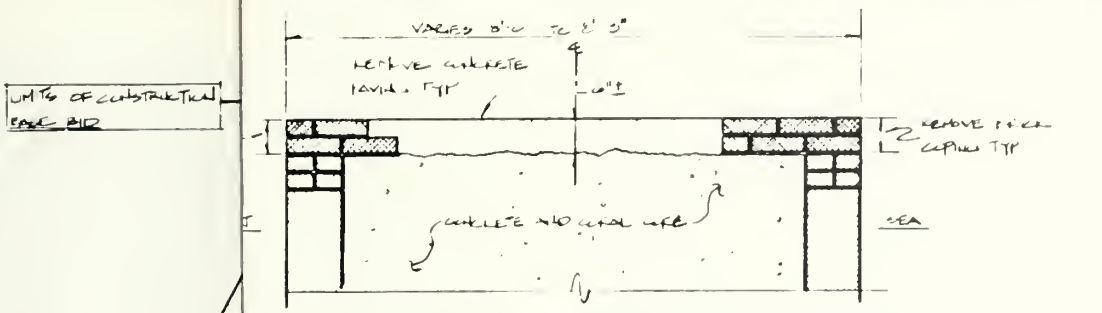
SOUTHEAST CULTURAL RESOURCES PRESERVATION CENTER

PREPARED
DESIGNED
DRAWN
CHECKED
4-10-85
DATE

TITLE OF DRAWING
COVER SHEET
LOCATION WITHIN PARK
GARDEN KEY
NAME OF PARK
FORT JEFFERSON NATIONAL MONUMENT
SOUTHEAST REGION DRY TORTUGAS COUNTY FLORIDA STATE

DRAWING NO
160
80,003

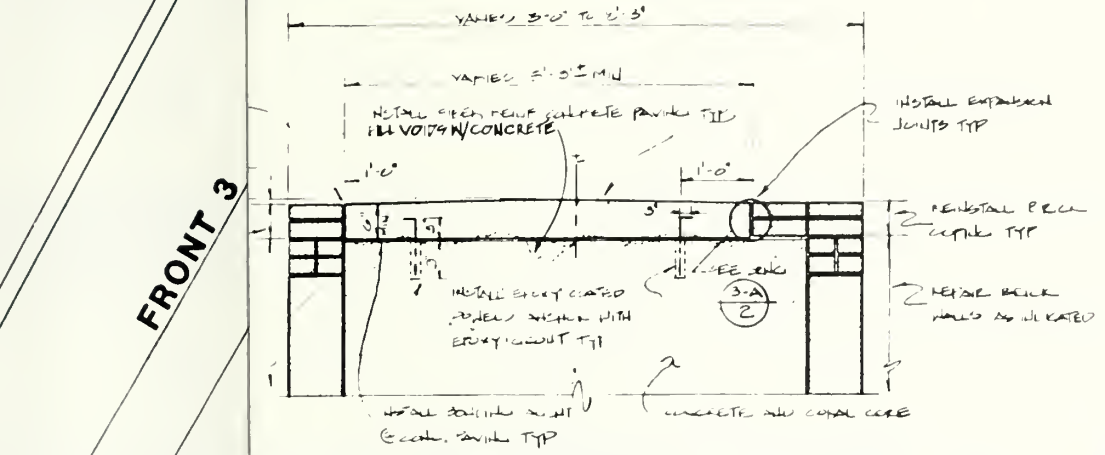
PCTP PRO
SHEET
1 OF



TYP. SECTION – EXISTING

SCALE: 3/4" = 1'-0"

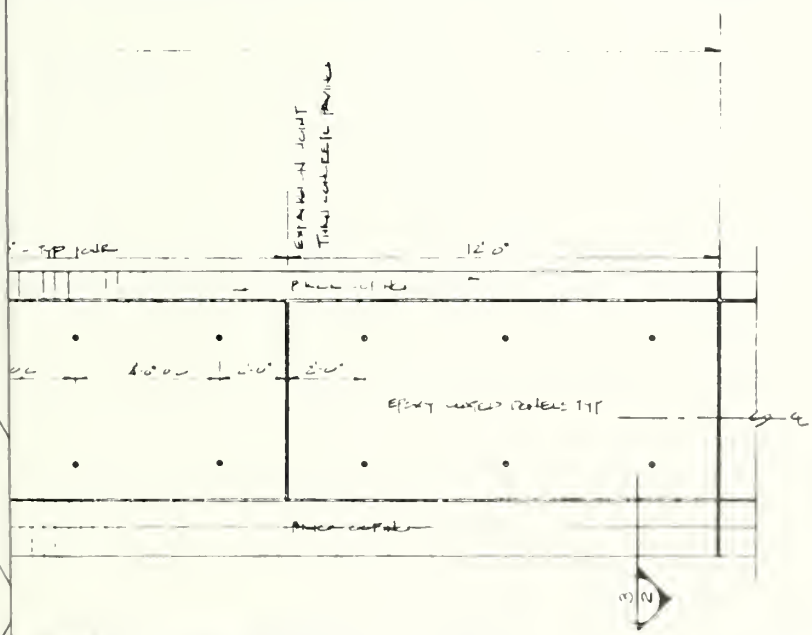
2/2



TYP. SECTION – FINISHED

SCALE: 3/4" = 1'-0"

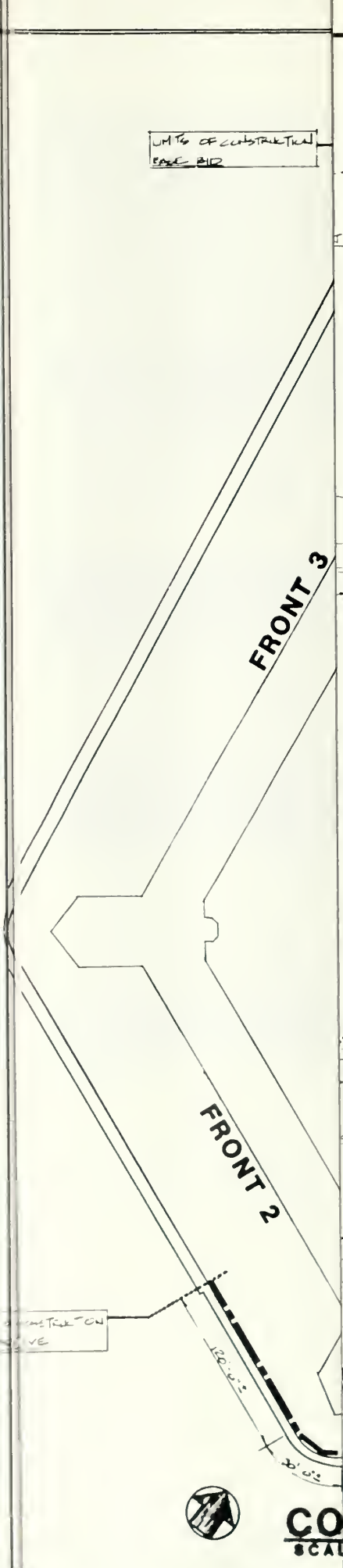
3/2



AN – FINISHED

1'-0"

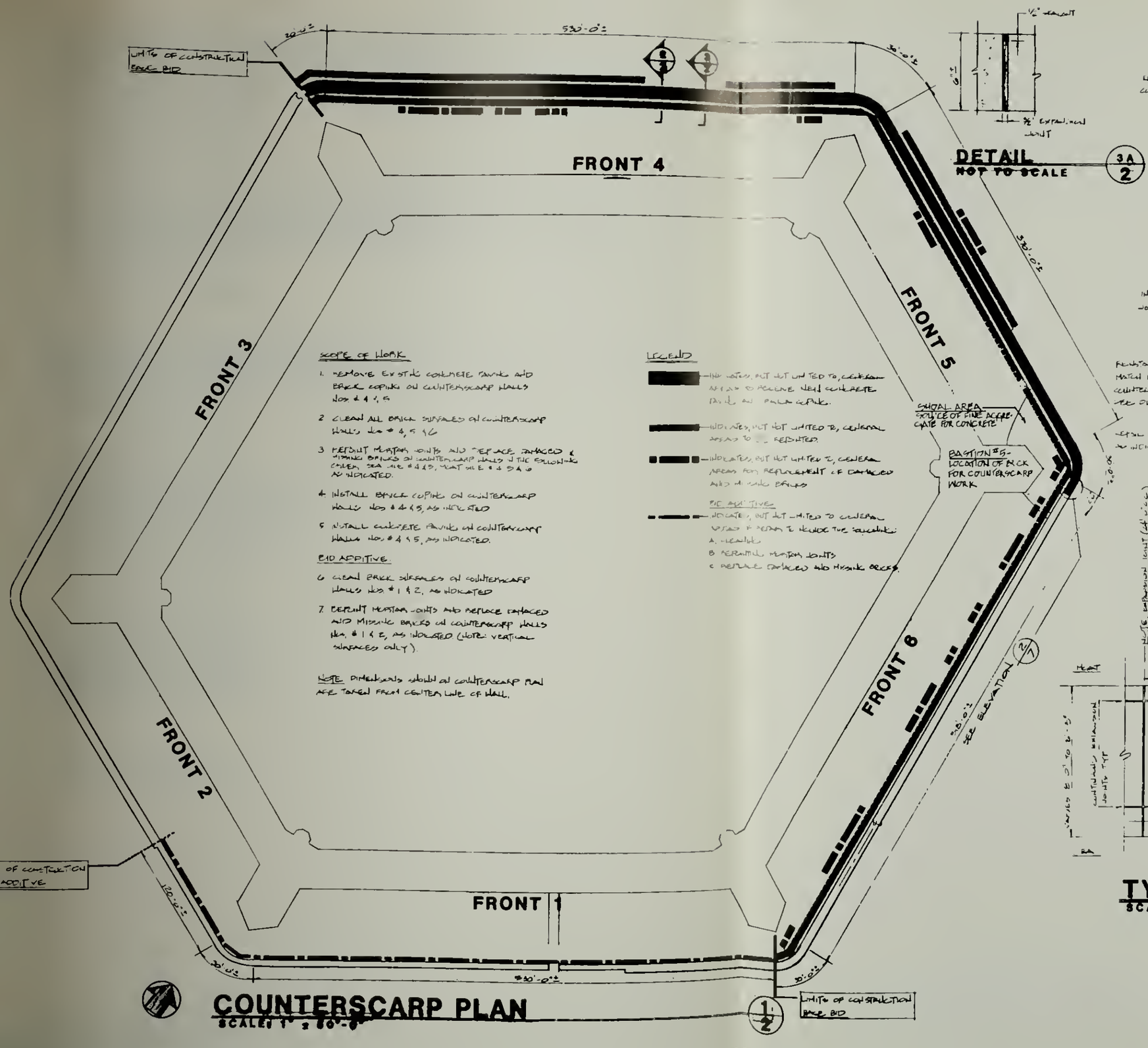
4/2



CO
SCAL

REVISED	
DATE	INITIAL

PREPARED	DRAWING NO.
DESIGNED	160
DRAWN	PCTP PKG. / SHEET
CHECKED	
4-17-85 DATE	OF



COUNTERSCARP PLAN

SCALE: 1" = 80'-0"

1/2

SCOPE OF WORK

1. REMOVE EXISTING CONCRETE PAVING AND BRICK COPING ON COUNTERSCARP WALLS NOS # 4, 5
2. CLEAN ALL BRICK SURFACES ON COUNTERSCARP WALLS NOS # 4, 5, 16
3. REPOINT MORTAR JOINTS AND REPLACE DAMAGED & MISSING BRICKS ON COUNTERSCARP WALLS AS THE FOLLOWING CALLED FOR SEE NOS # 4 & 5, MORTAR MIX # 1 & 3 & 6 AS INDICATED.
4. INSTALL BRICK COPING ON COUNTERSCARP WALLS NOS # 4 & 5, AS INDICATED
5. INSTALL CONCRETE PAVING ON COUNTERSCARP WALLS NOS # 4 & 5, AS INDICATED.

BID ADDITIVE

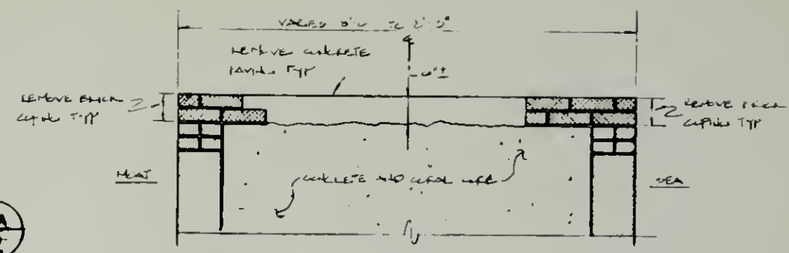
6. CLEAN BRICK SURFACES ON COUNTERSCARP WALLS NOS # 1 & 2, AS INDICATED
7. REPOINT MORTAR JOINTS AND REPLACE DAMAGED AND MISSING BRICKS ON COUNTERSCARP WALLS NOS. # 1 & 2, AS INDICATED (NOTE: VERTICAL SURFACES ONLY).

NOTE DIMENSIONS SHOWN ON COUNTERSCARP PLAN ARE TAKEN FROM CENTER LINE OF WALL.

LEGEND

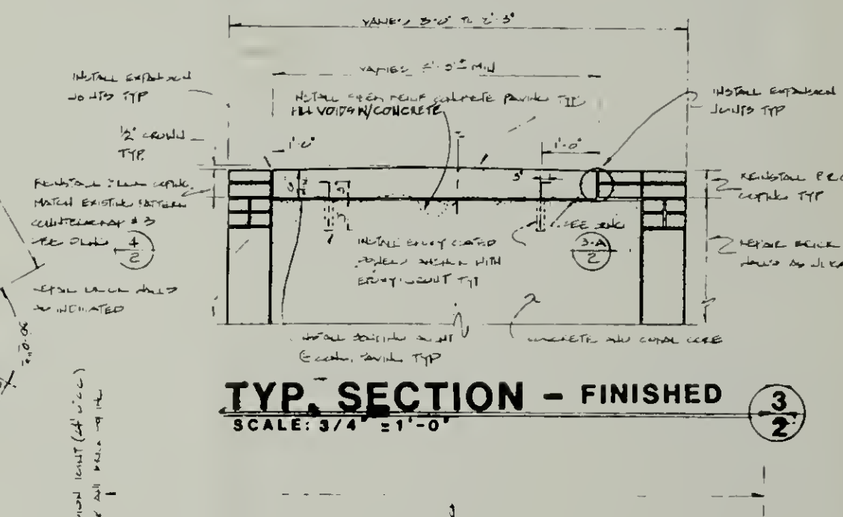
- INCLUDES, BUT NOT LIMITED TO, CLEANING AS AN ALTERNATIVE TO REMOVING NEW CONCRETE PAVING AND BRICK COPING.
- INDICATES, BUT NOT LIMITED TO, GENERAL AREAS TO BE REPOINTED.
- INDICATES, BUT NOT LIMITED TO, GENERAL AREAS FOR REPLACEMENT OF DAMAGED AND MISSING BRICKS
- BID ADDITIVE INDICATES, BUT NOT LIMITED TO, GENERAL AREAS OF WORK TO INCLUDE THE FOLLOWING: A. CLEANING B. REPOINTING MORTAR JOINTS C. REPLACE DAMAGED AND MISSING BRICKS.

DETAIL NOT TO SCALE 3A/2



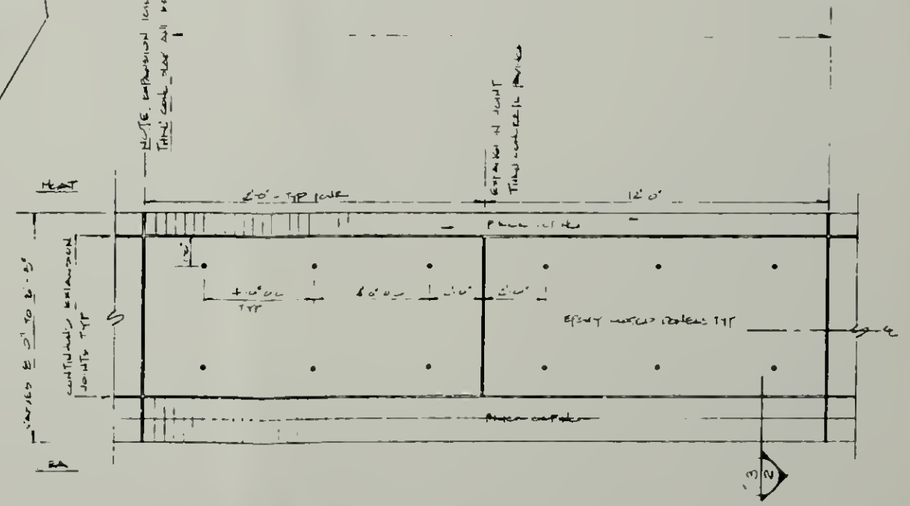
TYP. SECTION - EXISTING

SCALE: 3/4" = 1'-0" 2/2



TYP. SECTION - FINISHED

SCALE: 3/4" = 1'-0" 3/2

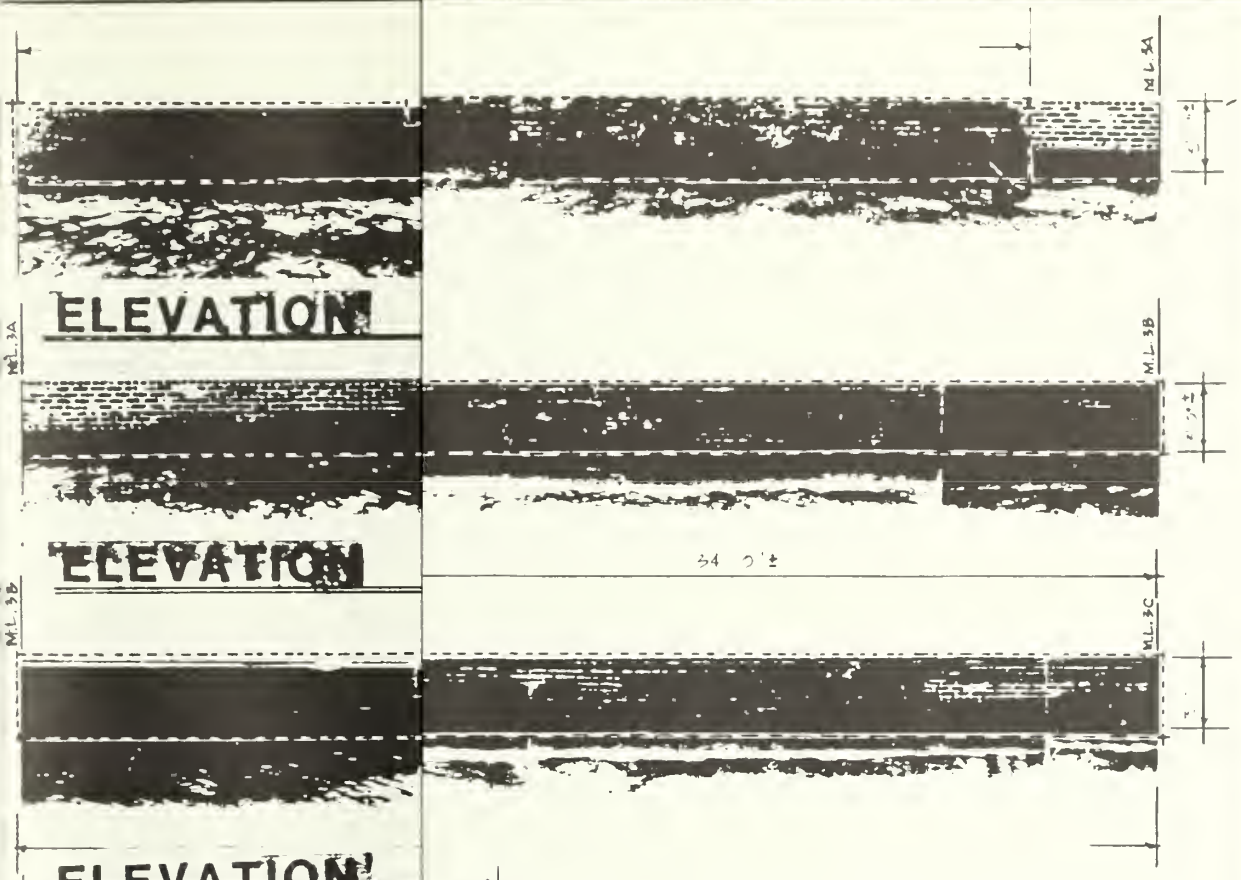


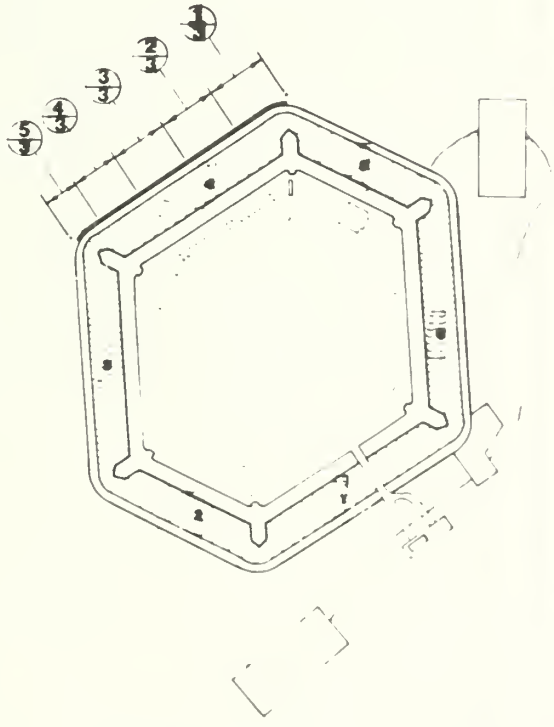
TYP. PLAN - FINISHED

SCALE: 3/8" = 1'-0" 4/2

REVISED	
DATE	INITIAL

PREPARED	DRAWING NO.
DESIGNED	160
DRAWN	BLOCK
CHECKED	PCIP PKG. / SHEET
DATE 4-17-85	OF





KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

ESTIMATED QUANTITIES
LENGTH 1122 ± F
EXCAVATION — C.F

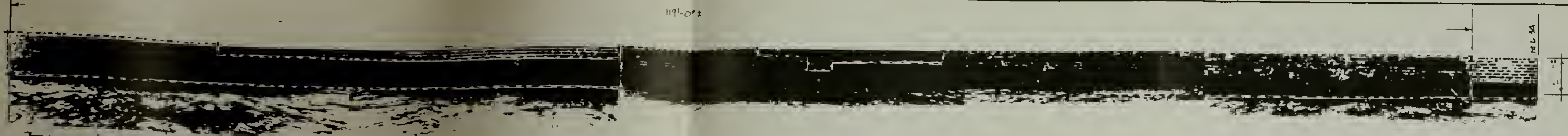
NOTE: ELEVATIONS NOT TO S

PATIONS: SEA SIDE C

DRAWING NO

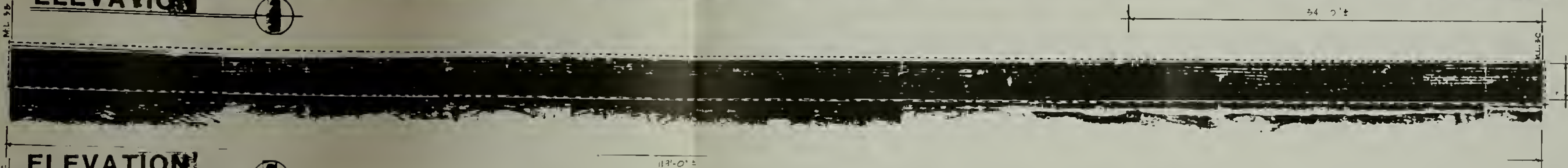
PKG. NO

SHEET 3 OF 8

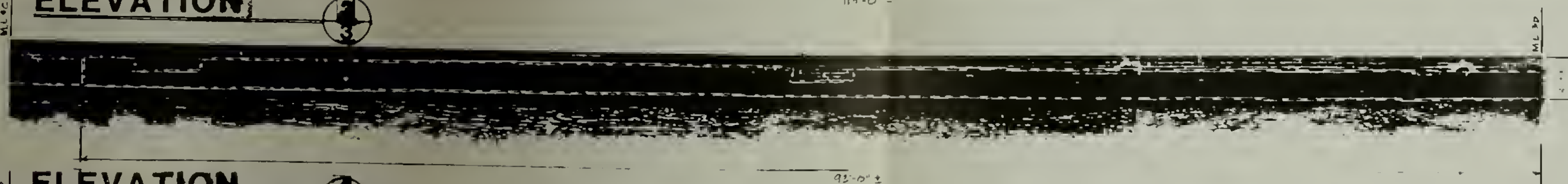


ELEVATION 1/3

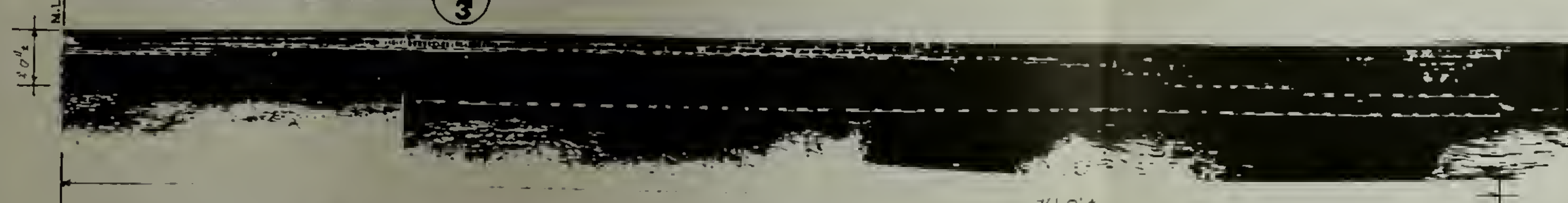
ELEVATION 2/3



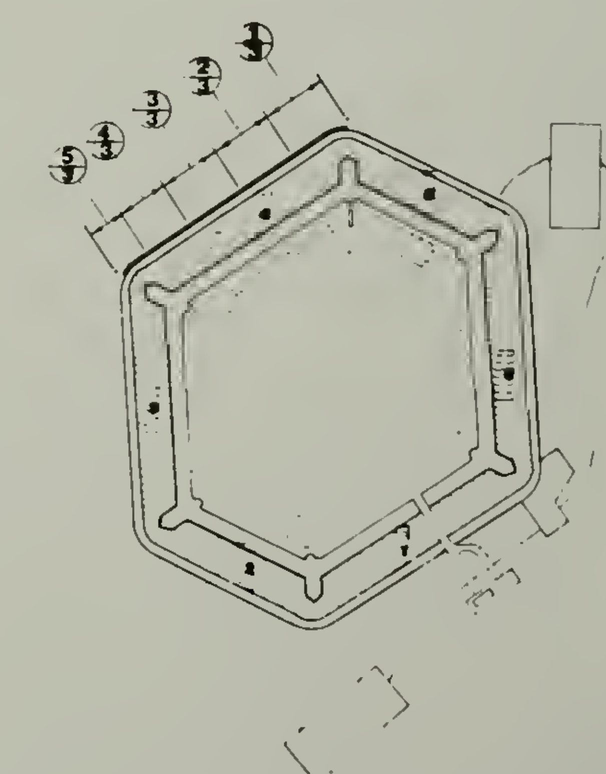
ELEVATION 3/3



ELEVATION 4/3



ELEVATION 5/3



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE

LEGEND: [dashed box] INDICATES, BUT NOT LIMITED TO, GENERAL AREAS OF REPAIR, TO INCLUDE THE FOLLOWING: A. REPOINT MORTAR JOINTS B. REPLACE DAMAGED & MISSING MASONRY

TOTAL ESTIMATED QUANTITIES
A. REPOINTING 1132 SF
B. REPLACEMENT: [illegible] SF

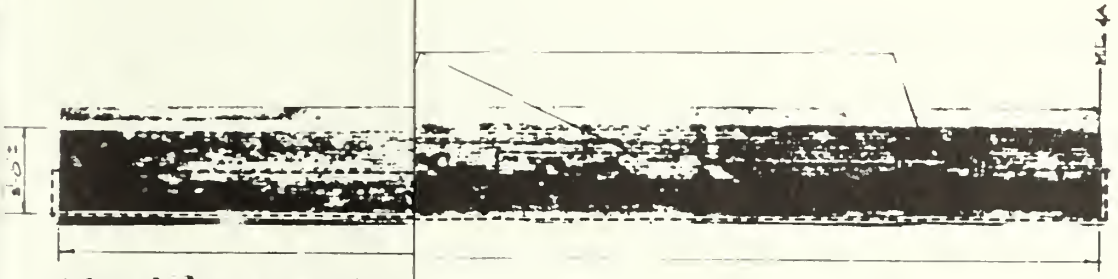
GENERAL NOTE: REMOVE [illegible] AND INSTALL NEW CONCRETE PAVING AND BRICK COPING @ COUNTERSCARP [illegible] NOS. 4, 4, 5 TYP. SEE SHEET NO. 2.

NOTE: PHOTOGRAPHS & ESTIMATED QUANTITIES OF WORK ON THIS SHEET ARE TAKEN FROM HISTORIC STRUCTURES REPORT DRAWINGS FORT JEFFERSON PREPARED BY DENVER SERVICE CENTER [illegible]

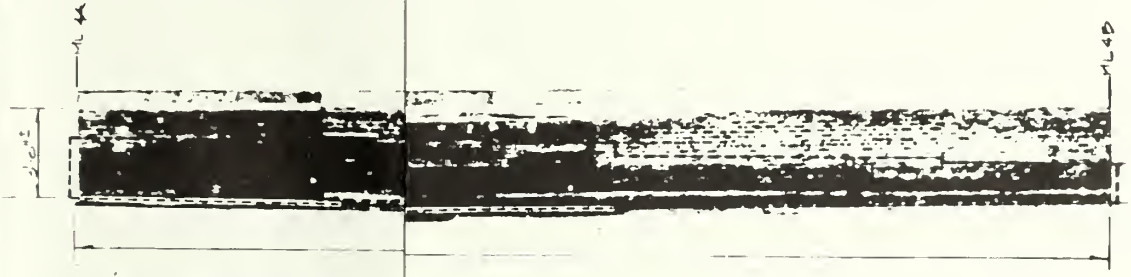
NOTE: ELEVATIONS NOT TO SCALE

ELEVATIONS: SEA SIDE COUNTERSCARP

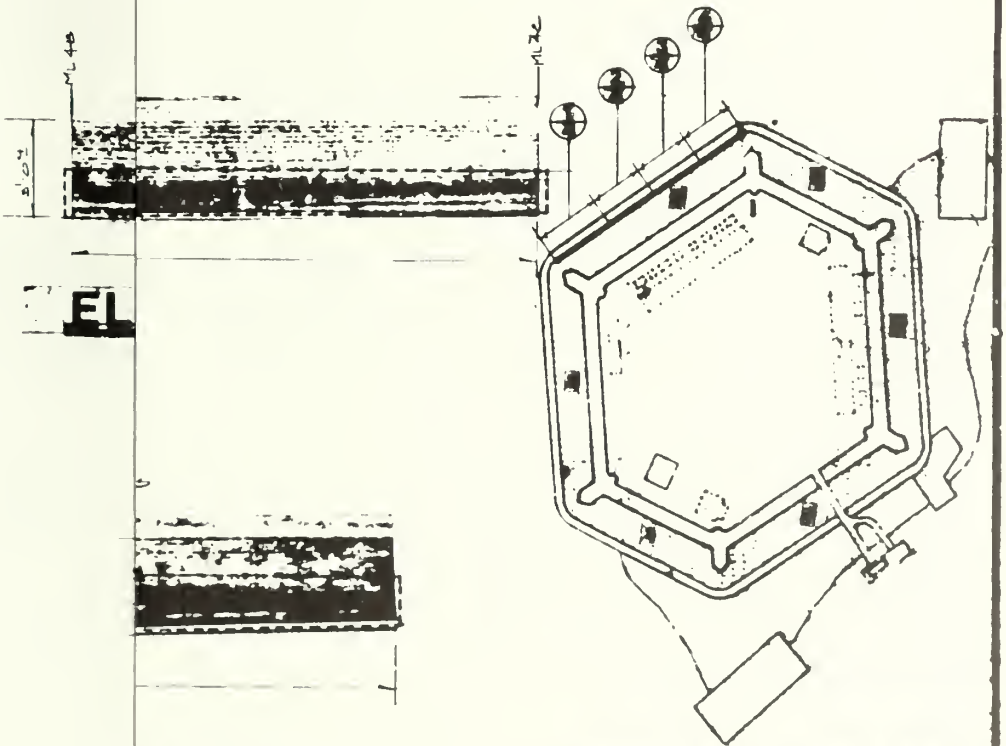
PREPARED		DRAWING NO.
DESIGNED	DATE / INITIAL	
CHECKED		PKG. NO.
		SHEET 3 OF 8



ELEVATION



ELEVATION



EL

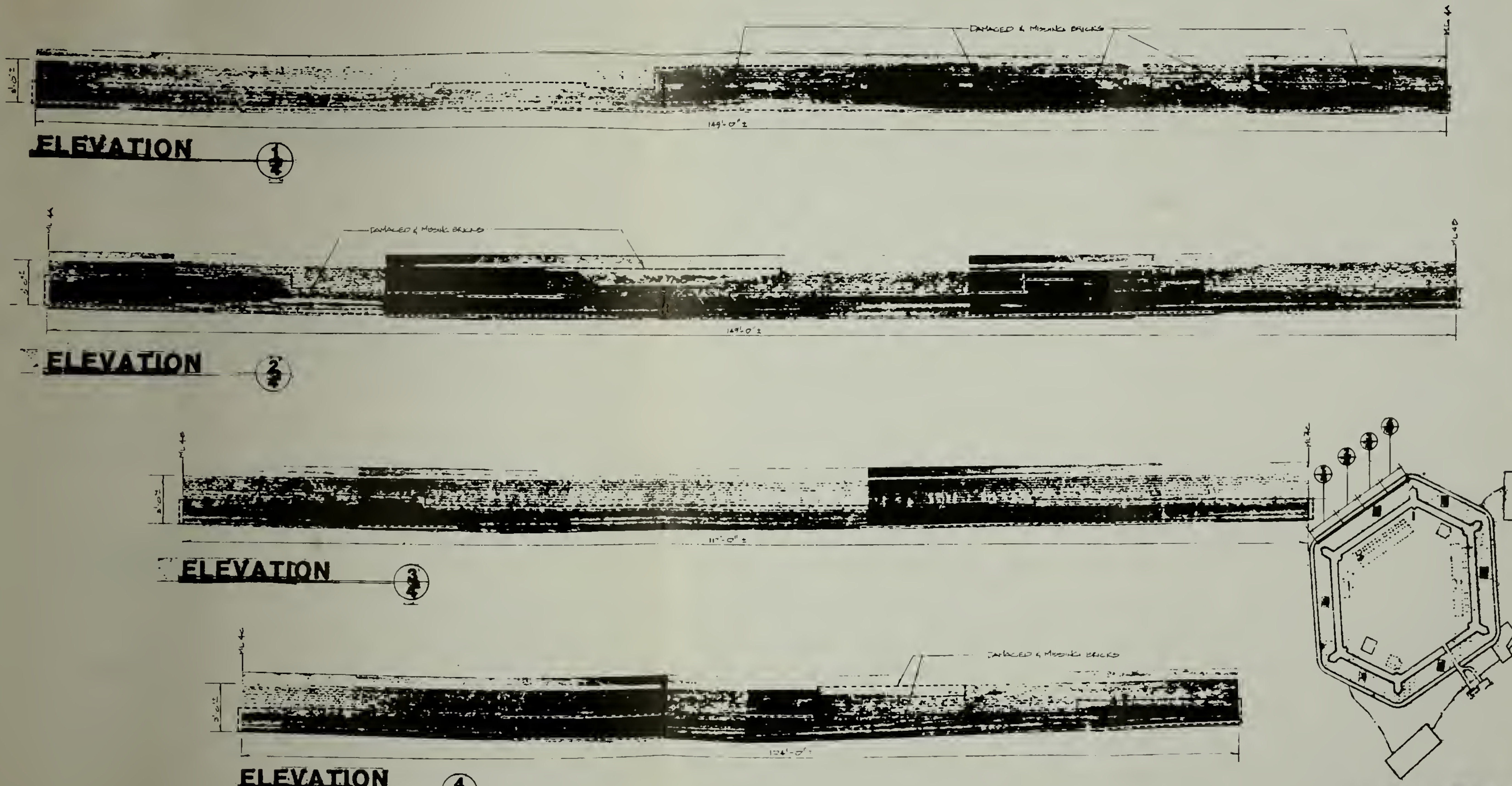
ITEM QUANTITIES
[illegible] SQ. FT.
ENT 12 C.F.

KEY PLAN - FORT JEFFERSON MOAT
NOT TO SCALE

REVISED	PREPARED	DRAWING NO.
	DESIGNED	160
	DRAWN	80,004
	CHECKED	SCALE / SHEET
	DATE 1-12-87	OF

ELEVATIONS NOT TO SCALE

ELEVATIONS: MOAT SIDE



KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

LEGEND

INDICATES, BUT NOT LIMITED TO, GENERAL AREAS OF REPAIR, TO INCLUDE THE FOLLOWING:
A. REPOINT MORTAR JOINTS
B. REPLACE DAMAGED & MISSING BRICKS.

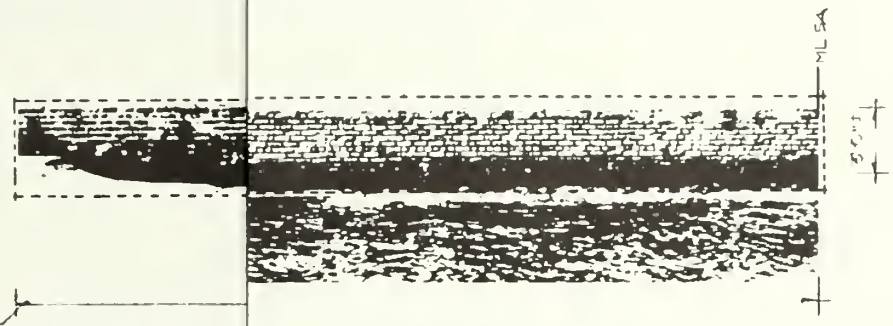
TOTAL ESTIMATED QUANTITIES
A. REPOINTING ___ SF
B. REPLACEMENT: ___ SF

GENERAL NOTE: REMOVE EXISTING AND INSTALL NEW CONCRETE PAVING AND BRICK COPING @ COUNTERSCARPS NOS. 4 & 5 TYP. SEE SHEET NO 2.

NOTE: ELEVATIONS NOT TO SCALE.

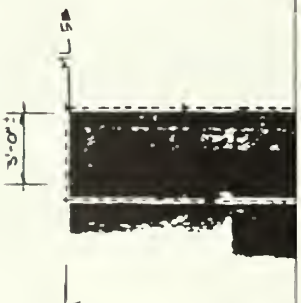
ELEVATIONS: MOAT SIDE COUNTERSCARP #4

REVISED		PREPARED	DRAWING NO.
		HACKETT/DALZELL DESIGNED	160 / 80,004
		HACKETT DRAWN	
		DALZELL CHECKED	SHEET
		4-12-82 DATE	

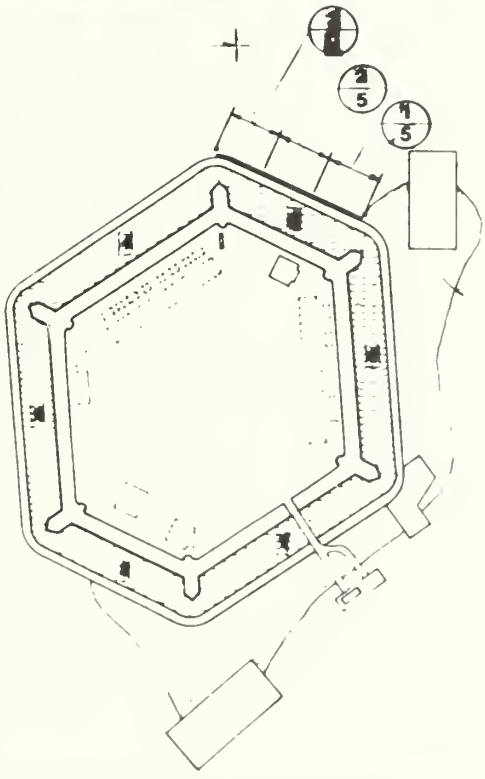


ELEVATI

ELEVATI



ELEVATI



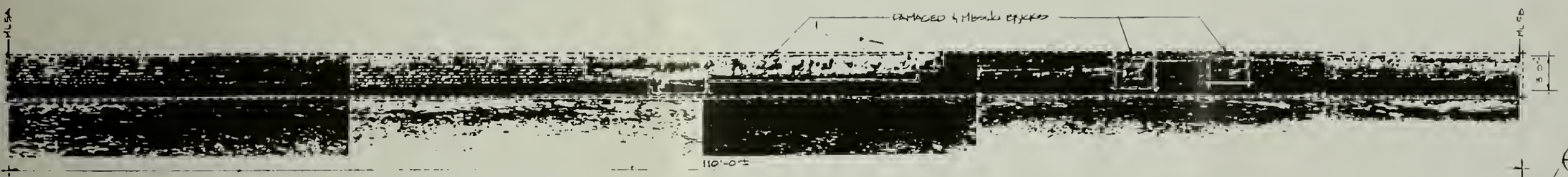
KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

ELEVATIONS NOT TO SCALE

VATIONS: SEA SIDE

RELEASED	REVISED		DRAWING NO
	DATE	INITIAL	
			PKG NO
			SHEET 5 OF 8

ELEVATION



ELEVATION

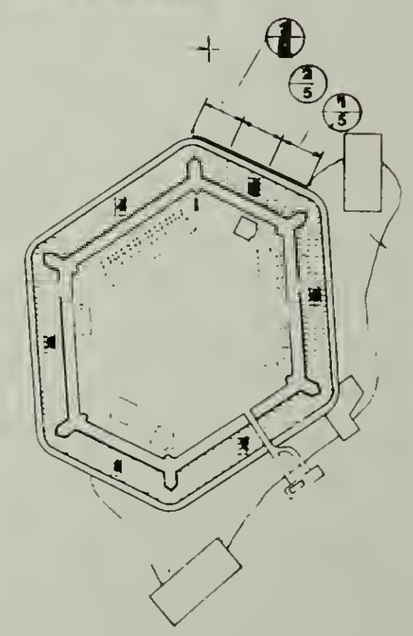
ELEVATION

LEGEND:

[ ] INDICATES, BUT NOT LIMITED TO, GENERAL AREAS OF REPAIR, TO INCLUDE THE FOLLOWING.
A REPOINT MORTAR JOINTS
B REPLACE MISSING & DAMAGED BRICKS

GENERAL NOTE: REMOVE EXISTING AND INSTALL NEW CONCRETE PAVING AND BRICK COPING @ COUNTERSCARPS WORK # 4 & 5 TYP. SEE SHEET NO # 2.

TOTAL ESTIMATED QUANTITIES
A REPOINTING 750 S.F.
B REPLACEMENT 22 C.F.

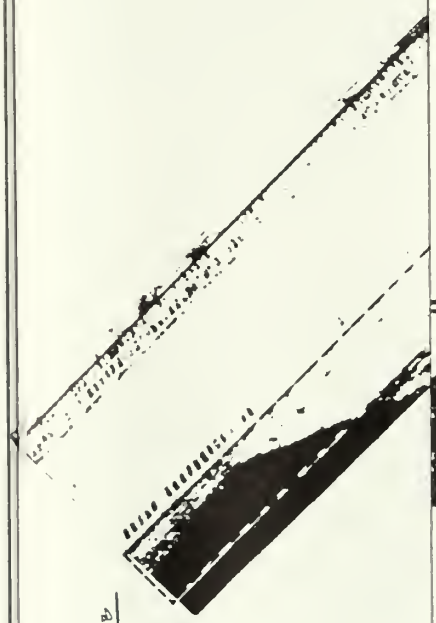


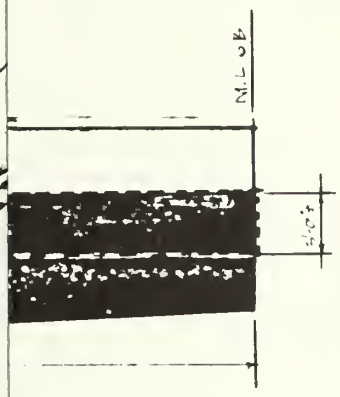
KEY PLAN-FORT JEFFERSON N.M.
NOT TO SCALE

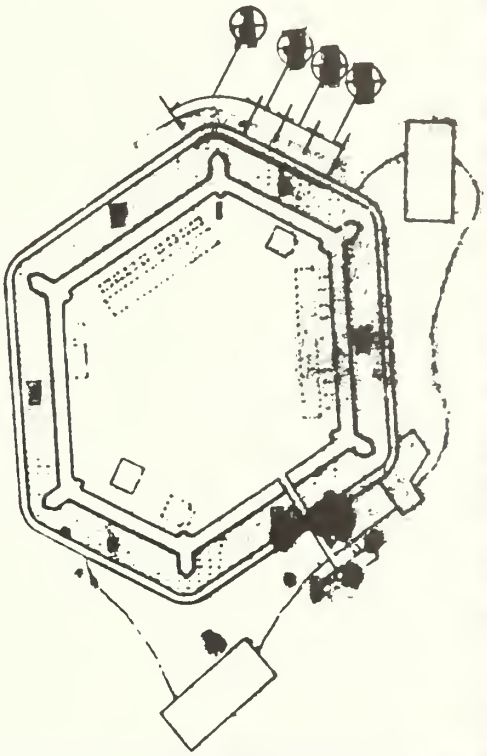
NOTE: PHOTOGRAPHY & ESTIMATED QUANTITIES OF WORK ON THIS SHEET ARE BASED FROM HISTORIC STRUCTURES REPORT-DRAWINGS-FORT JEFFERSON, PREPARED BY DENVER SERVICE CENTER (10/64) SHEET #66

ELEVATIONS SEA SIDE COUNTERSCARP #6

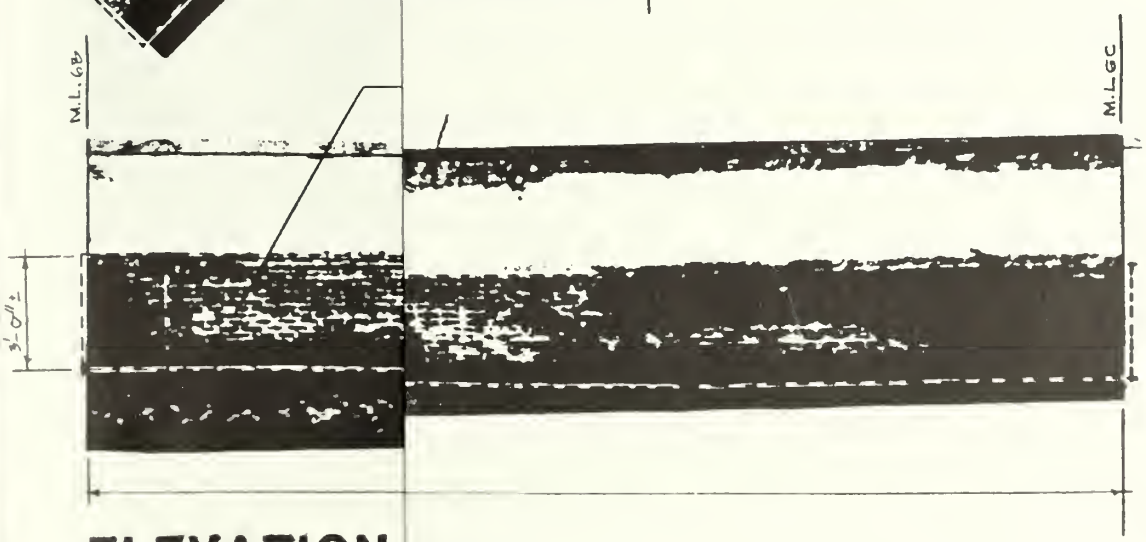
PREPARED	REVISED DATE	REVISED INITIAL	DRAWING NO
			E-051
			PKG NO. / SHEET 5 OF 8



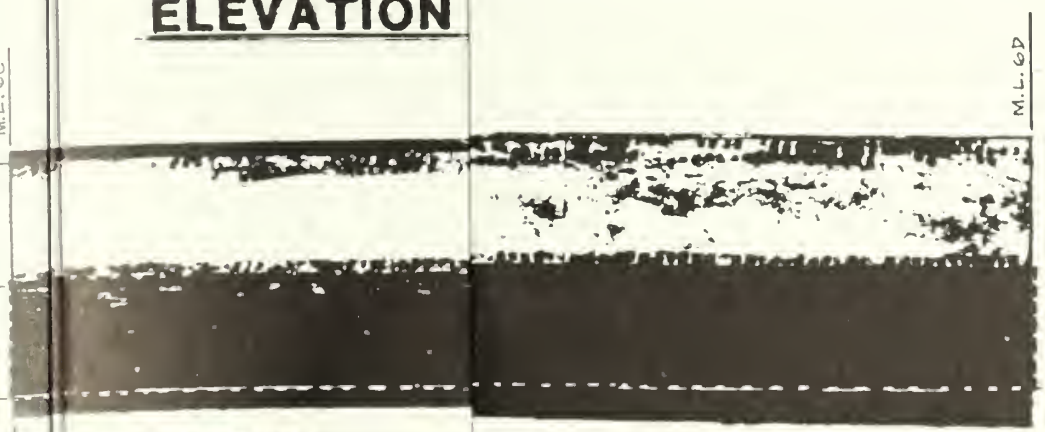




KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE



ELEVATION

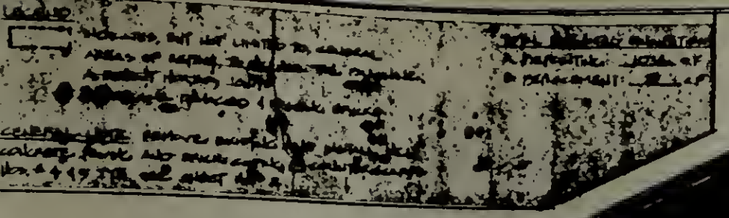


EVATION

AT SIDE COUNTER

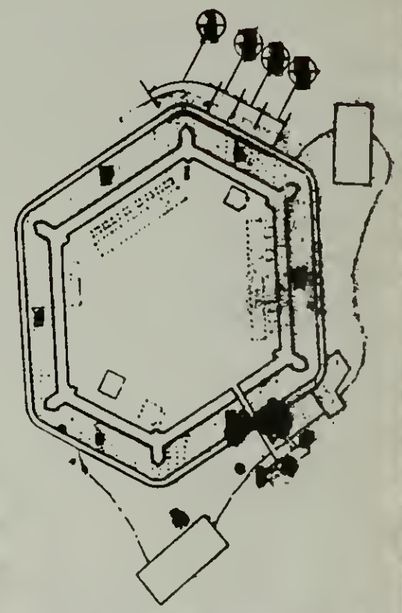
REVISED	
DATE	INITIAL

PREPARED	DRAWING NO.
DESIGNED	160
DRAWN	50,004
CHECKED	PCP PROJ. / SHEET
4-13-64 DATE	OF

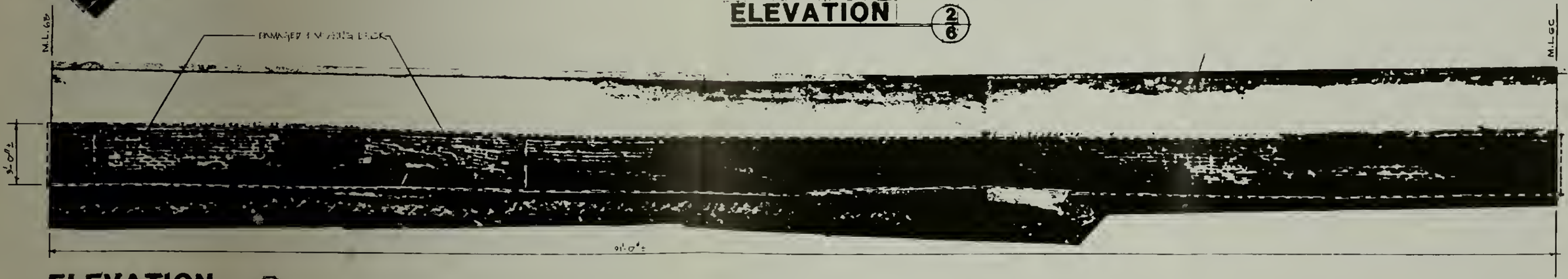


ELEVATION 1/6

ELEVATION 2/6



KEY PLAN - FORT JEFFERSON N.M.
NOT TO SCALE



ELEVATION 3/6

ELEVATION 4/6

REVISED	
DATE	INITIAL

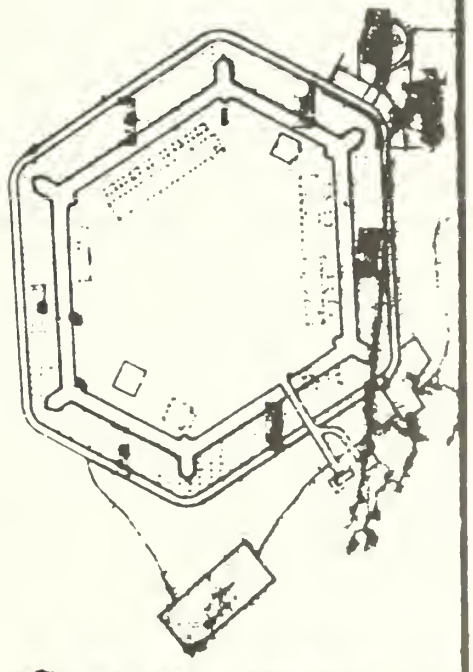
PREPARED	DRAWING NO.
DESIGNED	169
DRAWN	50,004
CHECKED	SHEET
4-19-56 DATE	1 OF 1

ML 7A

ML 7A

ELEVATION

ELEVATION

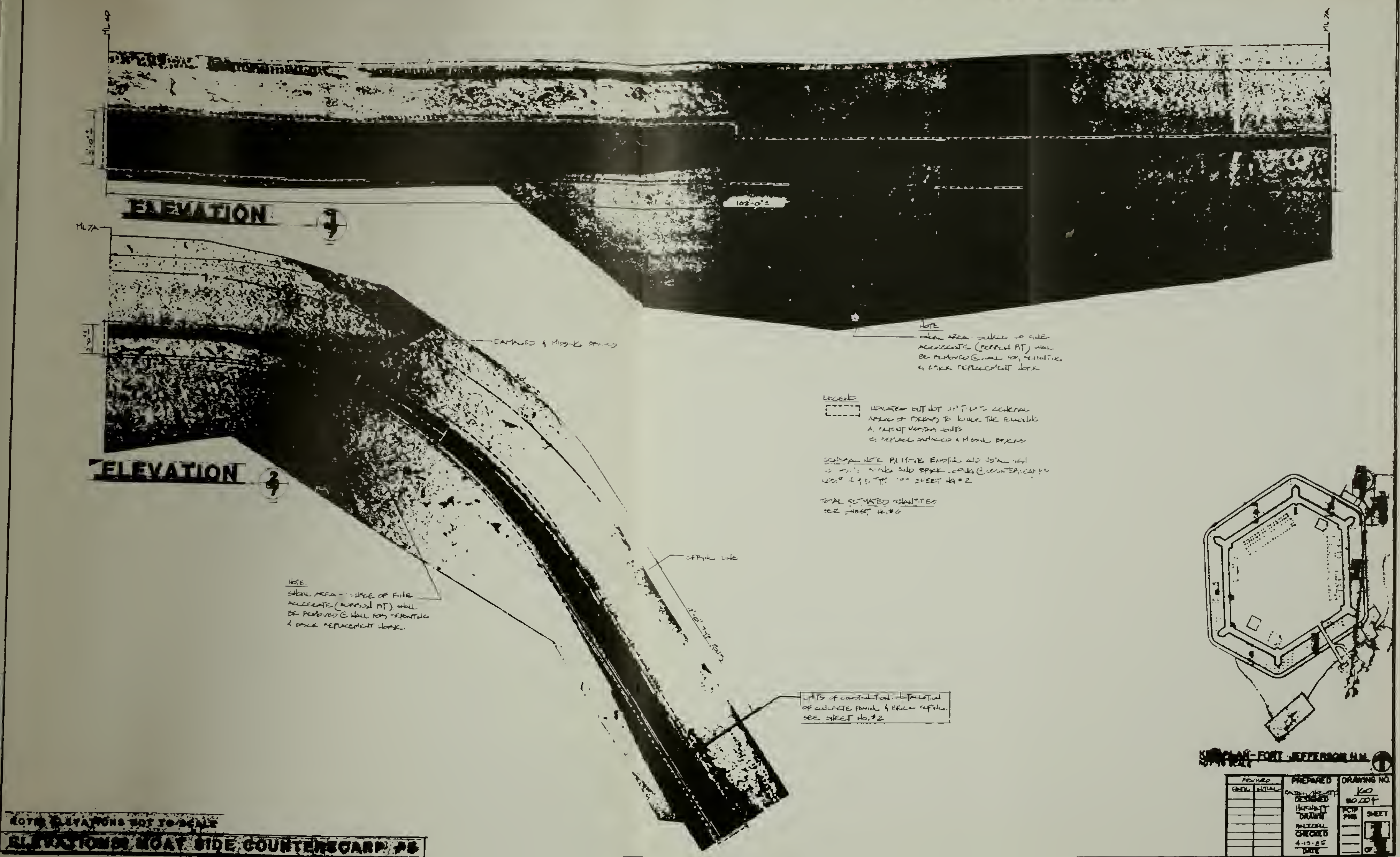


KEY PLAN - FORT JEFFERSON N.M.

REVISED		PREPARED	DRAWING NO.
DATE	INITIAL	DESIGNED	K60
		DRAWN	
		CHECKED	PICTP PHOTO / SHEET
		4-10-85 DATE	OF

ELEVATIONS NOT TO SCALE

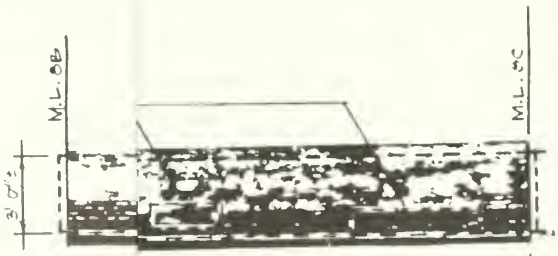
SECTIONS MOAT SIDE



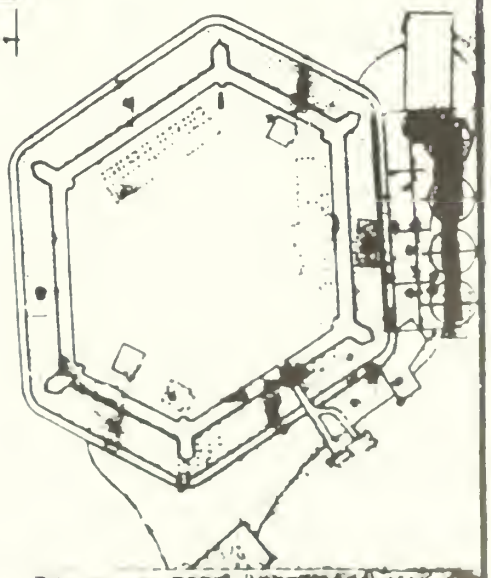
ML7A
102'-0" ±
ELEVATION
ML7A
DAMAGED & MISSING BRICKS
NOTE
LEGEND
ELEVATION
SPRING LINE
NOTE
SHOWN AREA - SURFACE OF FINE AGGREGATE (BORROW PIT) SHALL BE REMOVED @ WALL FOR REPOINTING & BRICK REPLACEMENT WORK.
LIMITS OF CONSTRUCTION. INSTALLATION OF CONCRETE PAVING & BRICK COPING. SEE SHEET NO. #2
TOTAL ESTIMATED QUANTITIES
SEE SHEET NO. #6
FORT JEFFERSON N.M.
PREPARED
DESIGNED
DRAWN
CHECKED
4-19-85
DATE
DRAWING NO.
SHEET
NOTE: ELEVATIONS NOT TO SCALE
MOAT SIDE COUNTERSCARP

ELEVATION 1

ELEVATION



EL

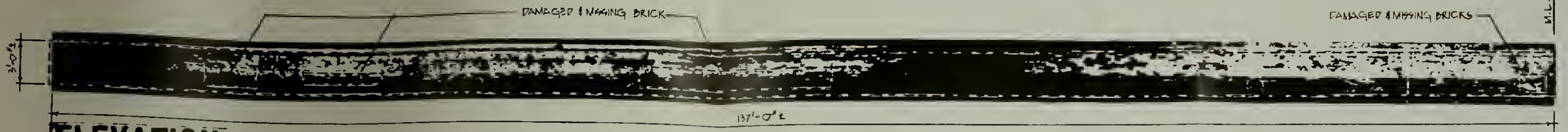


KEY PLAN- FORT JEFFERSON MOAT

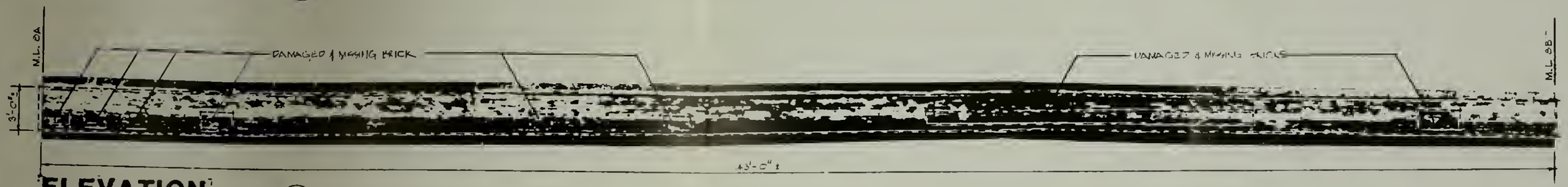
NOT TO SCALE

NOTE: ELEVATIONS NOT TO SCALE

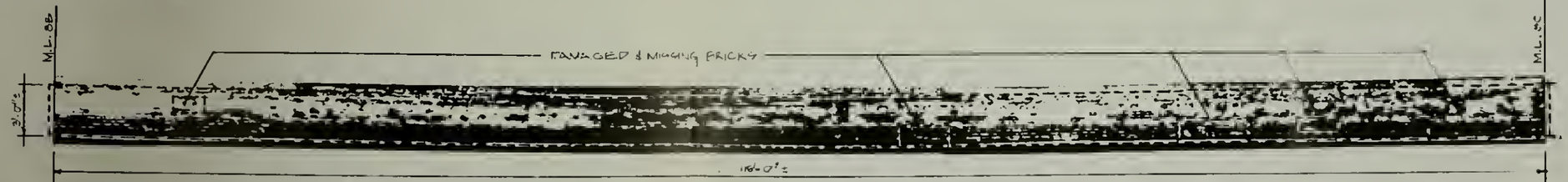
ELEVATIONS: MOAT SIDE



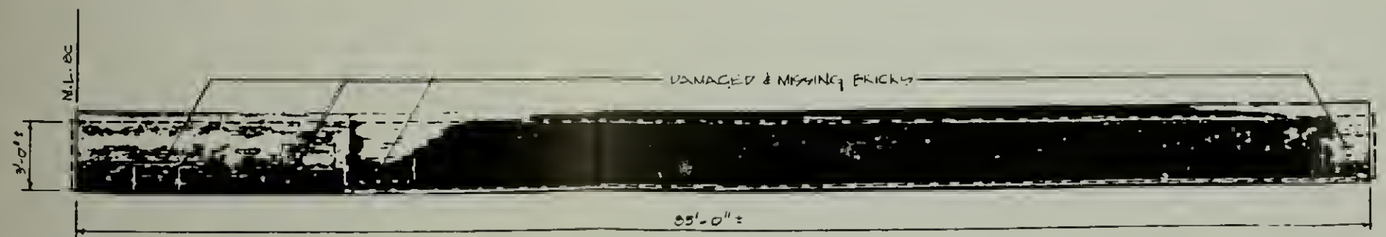
ELEVATION 1/8



ELEVATION 2/8



ELEVATION 3/8

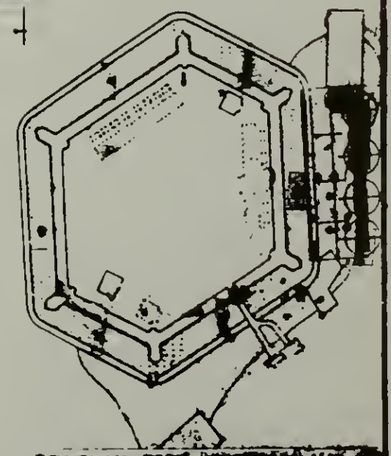


ELEVATION 4/8

LEGEND:

INDICATES, BUT NOT LIMITED TO, GENERAL AREAS OF REPAIR. TO INCLUDE THE FOLLOWING:
A. REPOINT MORTAR JOINTS
B. REPLACE DAMAGED & MISSING BRICKS

TOTAL ESTIMATED QUANTITIES
A. REPOINTING 1336 SF
B. REPLACEMENT: 44 CF



KEY PLAN- FORT JEFFERSON MOAT
NOT TO SCALE

REVISED		PREPARED	DRAWING NO.
DATE	INITIAL	DESIGNED	160
		DRAFTED	80,074
		CHECKED	SHEET
		4-13-82 DATE	OF

NOTE: ELEVATIONS NOT TO SCALE

ELEVATIONS: MOAT SIDE COUNTERSCARP 8

GLOSSARY

The various sources of the glossary include:

- Thomas Wilhelm, A Military Dictionary and Gazeteer, Philadelphia, 1881.
- Colonel H.L. Scott, Military Dictionary, New York, D. Van Nostrand, London, Trubner and Co., 1862.
- Willard B. Robinson, American Forts: Architectural Form and Function, Urbana, University of Illinois Press, 1977.
- Albert C. Manucy, "A Constructional History of Fort Jefferson 1846-1874," 1961.

Barbette: Platform in fortification on which guns are mounted to fire over parapet. (See Appendix 1, Sheet 5 of HSR Drawings.)

Bastion: Work consisting of two faces and two flanks, all the angles being salient. Two bastions are connected by means of a curtain which is screened by the angle made by the prolongation of the corresponding faces of two bastions, and flanked by the line of defense. Bastions contain, sheltered by their parapets, marksmen, artillery, platform and guards.

Batter: Backward slop of retaining wall. (See Appendix 1, Sheet 5 of HSR Drawings.)

Battery: Place where cannon or mortars are mounted for attach or defense.

Blind Embrasure (False Embrasure): Surface indentation in a walled fortification of such details and dimensions as would simulate the appearance of an actual embrasure or gunport. In the case of Fort Jefferson, the barbette tier armament surmounts the illusory blind embrasures immediately below the parapet. (See Appendix 1, Sheet 5 of HSR Drawings.)

Breastwall: Interior slope of parapet, against which the garrison lean in firing.

Capital Axis: An imaginary line which bisects the salient angle of a bastion.

Casemate: Bombproof chamber in which cannon may be placed to be fired through embrasures in its front. (See Appendix 1, Sheet 5 of HSR Drawings.)

Coping: Highest or covering course of masonry in wall, often with sloping edges to carry off water. (See Appendix 1, Sheet 31 of HSR Drawings.)

Corbel: Masonry or brick construction which consists of one of a series of brick courses projecting slightly by steps from the wall surface. Essentially a short cantilever.

Cordon: Coping or top course of scarp wall, normally designed to project beyond the face of the wall to afford protection from weathering.

Counterscarp: Vertical or nearly vertical side of the ditch nearest to the besiegers and opposite to the scarp; exterior slope of ditch or moat opposite the scarp; moat wall.

Curtain: That part of the rampart or scarp wall which extends between two bastions or gates.

Embrasure: Opening in a fort wall or hole in the mask wall of a casemate through which guns are pointed. The throat of the embrasure is sometimes closed with iron shutters. (See Appendix 1, Sheet 30 of HSR Drawings.)

Embrasure Iron: Massive piece of wrought iron armor which is integrally constructed with the brickwork of an embrasure and is located immediately behind the jambs of the gunport. In the case of Fort Jefferson, these irons measure 8 inches in thickness.

En Barbette: Guns are said to be en barbette when they are elevated by raising the earth behind the parapet or by placing them on a high carriage so that instead of firing through the embrasures, they can be fired over the crest of the parapet. In this position the guns have a wide range instead of being limited, as in firing through embrasures.

Enrockment: Protective layer of loose stone to prevent undermining of counterscarp foundation.

Exfoliation: Condition of advanced iron corrosion characterized by swelling and detachment of material in flakes, scales or layers.

Faces: Name given to several parts of a fortification, as the face of the bastion which is the two sides reaching from the flanks to the salient angles. Also a particular elevation of a fortified work, as the parade face.

Flagging: Pavement of flagstones; sometimes used to denote a single flagstone.

Front: At Fort Jefferson, designation of a side of the hexagonal figure; curtain.

Grillage: Arrangement of sleepers and crossbeams forming a foundation in loose or marshy soil. At Fort Jefferson, the

grillage was placed under casemate and bastion piers and extended between those elements to form the understructure for cistern floors. (See Appendix 1, Sheet 5 of HSR Drawings.)

Magazine: Building or room in a fortification for the protected storage of powder or explosives, or more generally for provisions. (See Appendix 1, Sheets 25-27 of HSR Drawings.)

Magistral: Baseline from which the positions of various units of the fortification are determined.

Moat: Deep ditch around a fort, usually containing water.

Ordnance: Artillery.

Parade: Courtyard or enclosure in fortification where troops are mustered for assembly or drilled.

Parapet: Wall crowning curtain to protect soldiers from enemy fire.

Parrott: Early piece of rifled artillery firing an elongated projectile and bearing the name of its designer, Robert P. Parrott.

Pier: Mass of detached masonry, distinct from a column, from which an arch springs.

Pintle: Pivot about which the chassis of the gun carriage sweeps. (See Appendix 1, Sheet 30 of HSR Drawings.)

Rampart: Broad embankment round a place upon which the parapet is raised.

Rodman: Large piece of smoothbore ordnance firing a spherical projectile and named after its designer, Thomas J. Rodman.

Salient: Angular work which projects outward from the interior.

Sally Port: Gate or passage by which the garrison of a fortress may make a sally against attackers.

Scarp: Slope of the protecting ditch or moat which touches the wall or parapet; inner slope of the protecting ditch at the foot of the parapet, nearly perpendicular.

Shot Furnace: Furnace in which round shot were heated, and subsequently conveyed and loaded into muzzle-loading cannon with a ladle to be then fired as red-hot projectiles. (See Appendix 1, Sheet 28 of HSR Drawings.)

Shoulder: Interior angle formed by the meeting of the face of a bastion and its flank or other work.

Springline: Line at which a barrel vault springs from its supports. (See Appendix 1, Sheet 5 of HSR Drawings.)

Stairtower (Bastion Tower): Section of the bastion enclosing a spiral stairway.

Subsidence: Sinking or settling of earth.

Terreplein: Main upper level of a rampart, between the parapet and the parade face, where guns are mounted; roof of the fort.

Tier: Level of fortification.

Totten Shutters: Iron shutter assembly developed by Engineer Joseph G. Totten. The shutters were part of an entire lining and enclosure for the embrasure and permitted the embrasure to be closed to enemy fire after discharging cannon through the gunport. In the case of Fort Jefferson, the shutters themselves were of wrought iron 2 inches thick.

Traverse Arc: Arc of part of a circle described by the movement of a gun carriage about the pintle or center point; the stone support and iron track upon which the gun carriage rolls to aim the gun right or left.

BIBLIOGRAPHY

Hughes, Quentin
1974. Military Architecture. New York: St. Martins Press.

Lewis, Emanuel Raymond
1970. Seacoast Fortifications of the United States. Washington, D.C.: Smithsonian Institution Press.

Mack, Robert C. and Askins, James S.
1979. The Repointing of Historic Masonry Buildings. Downers Grove, Illinois: Service Master Industries, Inc.

Prucha, Francis Paul
1964. A Guide to the Military Posts of the United States. Madison: State Historical Society of Wisconsin.

Robinson, Willard B.
1977. American Forts, Architectural Form and Function. Chicago: University of Illinois Press.

U.S. Department of the Interior, National Park Service
Not dated. "Fort Jefferson National Monument Resource Management Plan and Environmental Assessment." Unapproved draft. On file at Everglades National Park.

Not dated. "Fort Jefferson Underwater Archeological Survey." Draft. Tallahassee: Southeast Archeological Center.

1942. "A Handbook for Fort Jefferson History.," By Albert C. Manucy.

1961. "A Constructional History of Fort Jefferson 1846-1874." By Albert C. Manucy.

1965. "Historic Structure Report." Draft. By Homer Robinson.

1966. "Historic Structure Report, Part II, Fort Jefferson National Monument." Draft. By C.A. Burroughs and Albert C. Manucy. Everglades National Park.

1967. Master Plan, Fort Jefferson National Monument. Draft. Everglades National Park.

1970. "Historic Structure, Physical Status Report, Fort Jefferson National Monument, Dry Tortugas, Florida." By William M. Alexander. Everglades National Park.

1970. "Historic Structure, Physical Status Report, Part II: Fort Jefferson National Monument." By William M. Alexander. Everglades National Park.

1971. "Underwater Archeological Research." By Daniel J. Lenihan. Santa Fe: Southwest Regional Office.

1973. Special History Study, Masonry Forts of the National Park Service. By F. Russ Holland, Jr. and Russell Jones. Denver Service Center.

1976. "Assessment of Conditions, Fort Jefferson National Monument." By Frederik C. Gjessing. Everglades National Park.

1977. "Historic Resources Management Plan, Fort Jefferson National Monument." Draft. Everglades National Park.

1977. "Statement for Management, Fort Jefferson National Monument." Everglades National Park.

1978. "106 Compliance Statement, Fort Jefferson National Monument." By Frederik C. Gjessing. Everglades National Park.

1979. "Foundation Condition Appraisal and Improvements Recommended for the Counterscarp Rehabilitation." By Jacksonville Corps of Engineers for Southeast Regional Office.

1981. "Interim Cultural Resources Management Data." Denver Service Center.

1981. "Fort Jefferson General Management Plan, Cultural Resources Management." By David R. Stuart. Denver Service Center

1981. "Report on Threats to Cultural Resources."

1982. "Task Directive, Historic Structure Report, Fort Jefferson National Monument, Dry Tortugas, Florida." Denver Service Center.

1983. "Historic Structure Report, Vol. I, Historical Data Section, Fort Jefferson 1846-1898, Fort Jefferson National Monument, Mcnroe County, Florida." By Edwin C. Bearss, Denver Service Center.

1983. "General Management Plan, Development Concept Plan, Fort Jefferson National Monument, Florida." By David R. Stuart. Denver Service Center.

1983. "Vegetative Threats to Historic Sites and Structures. By Robert A. Warnock.

1984. "Inspection Report." By Tom Baltzell, Paul Hatchett and Sam May.

1986. "Project Analysis Report - Preservation of lower tier embrasures." By Tom Baltzell, Paul Hatchett. Southeast Regional Office.

As the nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, and parks and recreation areas, and to ensure the wise use of all these resources. The department also has major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

Publication services were provided by the graphic staff of the Denver Service Center.
NPS D–12 September 1988