

**ADAPTIVE
REUSE
ANALYSIS**
of
FORT TOMPKINS
at

Fort Wadsworth, Staten Island, New York

**NORTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
Philadelphia, Pennsylvania**

ADAPTIVE REUSE ANALYSIS
OF
FORT TOMPKINS
FORT WADSWORTH, STATEN ISLAND, NEW YORK

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TABLE OF CONTENTS

ADAPTIVE REUSE ANALYSIS OF FORT TOMPKINS

	<u>Page</u>
EXECUTIVE SUMMARY.....	xi
I. INTRODUCTION.....	I- 1
A. Project Description.....	I- 1
B. Methods.....	I- 1
C. Report Organization.....	I- 2
II. HISTORICAL OVERVIEW OF FORT TOMPKINS.....	II-1
A. Overview of Site History.....	II- 1
B. Architectural History of Fort Tompkins.....	II- 3
III. EXISTING CONDITIONS.....	III- 1
A. Site and Landscape.....	III- 1
B. Architectural/Historical Elements.....	III- 1
C. Structural Elements.....	III-21
D. Mechanical Systems.....	III-21
E. Electrical Systems.....	III-24
F. Significant Problem Areas/Use Limitations.....	III-28
1. Prevention of Water Infiltration.....	III-28
2. Constraints Imposed by Guidelines for Rehabilitation.....	III-28
3. Constraints Imposed by Vaulted Construction.....	III-29
4. Use Limitations.....	III-29
5. Limited Access to Parade Area.....	III-30
6. Limited Parking Area.....	III-30
7. Structural Design of Second Tier Walkway.....	III-30
8. Adequacy of Base Utilities, Water Supply Sanitary Sewerage and Electrical Power.....	III-30
9. Correction of Three Hazardous Conditions Before Use..	III-31
G. Public Opinion/Social Acceptability.....	III-31
1. Historical Background.....	III-31
2. National Park Service Preliminary Management Plans...	III-31
3. Social Acceptability.....	III-31
IV. DEVELOPMENT AND EVALUATION OF ALTERNATIVES.....	IV- 1
A. Alternative 1: Retain Unused or for Temporary Storage....	IV- 1
1. Description.....	IV- 1
2. Cost.....	IV- 1
3. Sketch Plan.....	IV- 1
B. Alternative 2: Public Works Complex/Police Station.....	IV- 4
1. Description.....	IV- 4
2. Cost.....	IV- 4
3. Sketch Plan.....	IV- 5

Table of Contents (continued)

	<u>Page</u>
C. Alternative 3: Classroom Facilities/Indoor Recreation....	IV- 8
1. Description.....	IV- 8
2. Cost.....	IV-10
3. Sketch Plan.....	IV-10
D. Alternative 4: Parking Facility.....	IV-13
1. Description.....	IV-13
2. Cost.....	IV-13
3. Sketch Plan.....	IV-13
E. Alternative 5: Supply Storage Facility.....	IV-16
1. Description.....	IV-16
2. Cost.....	IV-16
3. Sketch Plan.....	IV-16
F. Alternative 6a: Indoor Recreation.....	IV-19
1. Description.....	IV-19
2. Cost.....	IV-20
3. Sketch Plan.....	IV-20
G. Alternative 6b: Indoor-Outdoor Recreation.....	IV-23
1. Description.....	IV-23
2. Cost.....	IV-24
3. Sketch Plan.....	IV-24
H. Alternative 7: Unaccompanied Enlisted Personnel Housing..	IV-27
1. Description.....	IV-27
2. Cost.....	IV-28
3. Sketch Plan.....	IV-28
I. Alternative 8: Unaccompanied Officer Personnel Housing..	IV-31
1. Description.....	IV-31
2. Cost.....	IV-32
3. Sketch Plan.....	IV-32
V. MATRIX AND CONCLUSIONS.....	V- 1
A. Description of Summary Matrix.....	V- 1
B. Conclusions.....	V- 1

Table of Contents (continued)

	<u>Page</u>
VI. REFERENCES.....	VI-1
A. Documents.....	VI-1
B. Cartographic Sources.....	VI-2
C. Contacts.....	VI-2
VII. LIST OF PREPARERS.....	VII-1
APPENDIX A COST DETAILS.....	A-1
APPENDIX B COMMENTS ON ADAPTIVE REUSE ANALYSIS.....	B-1

LIST OF FIGURES

	<u>Page</u>
3- 1 Fort Tompkins Environs.....	III- 2
3- 2 Existing Conditions, First Floor Plan.....	III- 6
3- 3 Existing Conditions Second Floor Plan.....	III-14
3- 4 Detail of Typical Steel Bracket	III-22
3- 5 Detail of Steel Bracket At Stairway.....	III-23
4- 1 Fort Tompkins First Floor Plan, Alternative 1; Retain Unsuad Or For Temporary Storage.....	IV- 2
4- 2 Fort Tompkins Second Floor Plan, Alternative 1; Retain Unused Or For Temporary Storage.....	IV- 3
4- 3 Fort Tompkins First Floor Plan, Alternative 2; Public Works Complex/Police Station.....	IV- 6
4- 4 Fort Tompkins Second Floor Plan, Alternative 2; Public Works Complex/Police Station.....	IV- 7
4- 5 Fort Tompkins First Floor Plan, Alternative 3; Classroom Facilities/Indoor Recreation.....	IV-11
4- 6 Fort Tompkins Second Floor Plan, Alternative 3; Classroom Facilities/Indoor Recreation.....	IV-12
4- 7 Fort Tompkins First Floor Plan, Alternative 4; Parking Facility.....	IV-14
4- 8 Fort Tompkins Second Floor Plan, Alternative 4; Parking Facility.....	IV-15
4- 9 Fort Tompkins First Floor Plan, Alternative 5; Supply Storage Facility.....	IV-17
4-10 Fort Tompkins Second Floor Plan, Alternative 5; Supply Storage Facility.....	IV-18
4-11 Fort Tompkins, First Floor Plan, Alternative 6a; Indoor Recreation.....	IV-21
4-12 Fort Tompkins, Second Floor Plan, Alternative 6a; Indoor Recreation.....	IV-22
4-13 Fort Tompkins, First Floor Plan, Alternative 6b; Indoor-Outdoor Recreation.....	IV-25
4-14 Fort Tompkins, Second Floor Plan, Alternative 6b; Indoor-Outdoor Recreation.....	IV-26

LIST OF FIGURES (continued)

	<u>Page</u>
4-15 Fort Tompkins, First Floor Plan, Alternative 7; Unaccompanied Enlisted Personnel Housing.....	IV-29
4-16 Fort Tompkins, Second Floor Plan Alternative 7; Unaccompanied Enlisted Personnel Housing.....	IV-30
4-17 Fort Tompkins, First Floor Plan Alternative 8; Unaccompanied Officer Personnel Housing.....	IV-33
4-18 Fort Tompkins, Second Floor Plan Alternative 8; Unaccompanied Officer Personnel Housing.....	IV-34

LIST OF TABLES

	<u>Page</u>
X-I Fort Tompkins Adaptive Reuse Alternatives: Summary of Ranking	xii
5-1 Fort Tompkins Summary Matrix.....	V-2
5-2 Fort Tompkins Rating Criteria.....	V-3
5-3 Summary Of Project Costs By Alternative.....	V-4

LIST OF PHOTOS

		<u>Page</u>
3-1	General view of glacis looking north toward houses on Mont-Sec Avenue. Trees at right obstruct view toward dry channel moat.....	III-3
3-2	General view of glacis looking east toward line of trees that block view of barbette.....	III-3
3-3	View of roadway on channel front looking south towards Verrazano-Narrows Bridge.....	III-3
3-4	View of Battery Weed and Narrows on channel front; Verrazano-Narrows Bridge is in background.....	III-3
3-5	View of Battery Duane looking west.....	III-4
3-6	View of Battery Duane looking south.....	III-4
3-7	View looking wouthwest at terminus of the counterscarp and glacis in southwest corner of Fort.....	III-4
3-8	View looking west toward former gas station and weigh station on Tompkins Street.....	III-4
3-9	View looking southeast toward one of the bricked-in channel front mates and vaulted brick and stone parade gallery.....	III-7
3-10	View looking northeast at closed-in channel front casemate arches and concrete ramp.....	III-7
3-11	View looking southeast at typical 24' wide channel front casemate and bricked-up arch (with added door). Note how loopholes are closed with windows.....	III-7
3-12	View looking east at typical 18' wide channel front casemate and concreted loop holes.....	III-7
3-13	View looking east at 1950's conveyor access channel front casemate.....	III-8
3-14	View looking west at conveyor access and loading dock in channel front; note filled-in top section of loop hole above door.....	III-8
3-15	View looking east at stair connecting balcony with parade.....	III-8

	<u>Page</u>
3-16	View looking west at south sally port on channel front..... III- 8
3-17	Interior view looking east at south sally port on east (channel) front..... III- 9
3-18	Representative view of four ventilating flues in channel front casemate..... III- 9
3-19	View of cluster of flues on top of east barbette..... III- 9
3-20	View looking northeast at steel deck and elevator in northeast corner..... III- 9
3-21	View of wood door and steel strap hinges into magazine anteroom in northwest corner second floor..... III-11
3-22	Interior of Door in Photo 3-21..... III-11
3-23	Detail of hasp hardware on magazine anteroom door in northwest corner second floor..... III-11
3-24	View looking north at typical casemate entrance door and windows on north elevation..... III-11
3-25	Typical connecting door and frame..... III-12
3-26	Detail of box lock (minus the handle) of door on Photo 3-25..... III-12
3-27	Detail of typical fireplace in land front casemates..... III-12
3-28	View looking north into typical north casemate; loop holes have windows and frames..... III-12
3-29	View looking south into typical south second floor casemate..... III-15
3-30	View looking northwest at steel stair in northwest corner..... III-15
3-31	Typical steel brackets that support second floor walkway..... III-15
3-32	Typical rosette in steel stairway..... III-15
3-33	View of window in access corridor behind northwest magazine that lacks finish stonework..... III-16

	<u>Page</u>
3-34 View of window in a typical corridor behind magazine with finished stonework.....	III-16
3-35 Typical holding cell on south side of second floor.....	III-16
3-36 View looking west toward observation post on barbette of the south land front.....	III-16
3-37 Observation post in southeast corner.....	III-18
3-38 Two buildings in northeast corner of dry channel moat.....	III-18
3-39 View looking east in dry channel moat at building and scrub trees and garbage.....	III-18
3-40 View looking south along west portion of dry channel channel moat.....	III-18
3-41 View looking east along north counterscarp gallery.....	III-19
3-42 Detail of brick groin vaulted ceiling in northeast corner of counterscarp gallery.....	III-19
3-43 Detail of loophole at one of the positions for flank howitzers in northwest corner of counterscarp gallery.....	III-19
3-44 View of collapsed opening in northeast corner of gallery to the glacis gun battery.....	III-19
3-45 View of gallery between counterscarp gallery and glacis gun battery; opening at left is caved-in.....	III-20
3-46 General view of parade looking northwest; note extensive overgrowth on west, north, and east barbettes and deteriorated walkway on east side.....	III-20
3-47 View of room D and large oil fired furnace.....	III-20
3-48 View of insulation material, probably asbestos, on pipes...	III-20
3-49 Standing in vehicle entrance way with view of insulated pipe running between casemate 34 and casemate 35.....	III-25
3-50 Typical view of a radiator section location in casemate 67.....	III-25
3-51 A closed-up fireplace located in casemate 18.....	III-25
3-52 View of a water valve in the sidewalk in front of casemate 14.....	III-25

		<u>Page</u>
3-53	View of water being supplied from the water main to water valves in room Q.....	III-26
3-54	Outside view of sewer pipes in the south casemate	
3-55	area beneath the exterior wall.....	III-26
3-56	Typical view of the deteriorated condition of the existing plumbing fixtures.....	III-26
3-57	View of overhead support to electrical distribution ring in front of casemate 14.....	III-27
3-58	The main breaker located in front of casemate 14.....	III-27
3-59	View of fuse box and disconnected transformers in the southeastern corner of the fort.....	III-27

Executive Summary

EXECUTIVE SUMMARY

Fort Tompkins, located within the Fort Wadsworth installation, is a casemated masonry fortification built by the U.S. Army in the latter part of the 19th century. Fort Tompkins, along with several other cultural resources listed in or determined eligible for the National Register of Historic Places, was included in a Memorandum of Agreement (MOA) among the Navy, Advisory Council on Historic Preservation and New York State Historic Preservation Office. The MOA, prepared and signed in 1986, formalized provisions for avoidance or mitigation of impacts to cultural resources arising from the Navy's Surface Acron Group (SAG) Homeport development on Staten Island.

The Navy is considering the retention and utilization of Fort Tompkins in support of the SAG Homeport facility. To this end, and pursuant to provisions of the MOA, THE Navy has requested a study analyzing potential use alternatives, taking into account the historic architectural character for which Fort Tompkins has been listed in the National Register. The objective of this study is to provide sufficient data to permit the Navy to select the most feasible and economically efficient mission-related use of Fort Tompkins that is at the same time compatible with historic preservation goals and objectives.

A series of investigations was conducted at Fort Tompkins in order to ascertain current conditions of structural, mechanical and electrical systems, architectural features, and overall site and landscape elements. At the same time, documentary research was conducted to compile a history of Fort Tompkins' design, original construction and subsequent uses, in order to identify physical characteristics of historical importance and to assess the nature and extent of past alterations.

A series of nine alternatives were developed, taking into account not only identified engineering, economic and functional constraints, but also those potentially posed by the Secretary of the Interior's Standards for Rehabilitation. Each alternative was then analyzed in terms of cost, operational/functional limitations, use capacity/capability, effects on historic architectural characteristics, and anticipated social acceptability.

A matrix was developed and five factors were used to rank each alternative: total project cost; site usage including access, interior circulation and interaction; adherence to basic facility requirements (BFR); retention of historic/architectural character and, social acceptability (the results of this ranking are summarized in Table EX-1). Alternative 8, unaccompanied Officer Personnel Housing, received the highest number of points for all criteria. Forty modules for unaccompanied officers are provided in this scheme, permitting full use of the casemates suitable for occupation as living quarters. Included in this scheme is a complete range of activities for storage, laundries, office space and testing rooms. Sixty-one (61) parking spaces are provided as well as an outdoor recreation area with two tennis courts and one basketball court. Alternative 8 provides full use of the site at a relatively low cost per square foot of renovation (\$60.72). The second highest ranked alternative was Alternative 7, Unaccompanied Enlisted Personnel Housing which provided similar use of the Fort but scored lower than Alternative 8 in two areas; access to the site and in meeting basic facility requirements (BFR).

Table X-1

FORT TOMPKINS ADAPTIVE REUSE ALTERNATIVES
SUMMARY OF RANKING

HIGHEST

1. Alternative 8, Unaccompanied Officer Personnel Housing
2. Alternative 7, Unaccompanied Enlisted Personnel Housing
3. Alternative 6a, Indoor Recreation
4. Alternative 3, Classroom Facility/Indoor Recreation
5. Alternative 5, Supply Storage Facility
- Alternative 6b, Indoor-Outdoor Recreation
7. Alternative 4, Parking Facility
8. Alternative 2, Public Works Complex/Police Station
9. Alternative 1, Retain Unused or For Temporary Storage

LOWEST

I Introduction

I. Introduction

A. Project Description

In 1985, the U.S. Navy issued a record of decision to locate a Surface Action Group (SAG) Homeport facility on Staten Island, New York. The SAG Homeport facility consists of waterfront development at Stapleton, Staten Island, and development of administrative functions, housing and other support facilities at Fort Wadsworth, Staten Island.

Fort Tompkins, located within the Fort Wadsworth installation, is a casemated masonry fortification built by the U.S. Army in the latter part of the 19th century. Fort Tompkins, along with several other cultural resources listed in or determined eligible for the National Register of Historic Places, was included in a Memorandum of Agreement (MOA) among the Navy, Advisory Council on Historic Preservation and New York State Historic Preservation Office. The MOA was prepared and signed in 1986 and formalized provisions for avoidance or mitigation of impacts to cultural resources arising from Homeport development on Staten Island.

The Navy is considering the retention and utilization of Fort Tompkins in support of the SAG Homeport facility. To this end, and pursuant to provisions of the MOA, the Navy has requested a study analyzing potential use alternatives, taking into account the historic architectural character for which Fort Tompkins has been listed in the National Register. The objective of this study is to provide sufficient data to permit the Navy to select the most feasible and economically efficient mission-related use of Fort Tompkins that is at the same time compatible with historic preservation goals and objectives.

B. Methods

Preparation of the Fort Tompkins feasibility study involved two major tasks: data collection, and development and analysis of alternatives. The purpose of the data collection was to establish detailed baseline conditions from which alternatives could then be developed and analyzed. To this end, a series of investigations was conducted at Fort Tompkins in order to ascertain current conditions of structural, mechanical and electrical systems, architectural features, and overall site and landscape elements. At the same time, documentary research was conducted to compile a history of Fort Tompkins' design, original construction and subsequent uses, in order to identify physical characteristics of historical importance and to assess the nature and extent of past alterations. In this effort, principal repositories of information included the Facilities Engineering Office at Fort Hamilton, Brooklyn, New York; the main branch of the National Archives and Records Administration, Washington, D.C., and the NARA Cartographic Branch in Alexandria, Virginia.

At the outset of the project, the Navy provided a set of ten use alternatives to consider during the analysis and evaluation phase. These alternatives were subsequently modified, in consultation with planning personnel at Naval Facilities Engineering Command Northern Division, to accommodate issues of adjacency and Basic Facility Requirements (BFR). Preliminary plans for use alternatives were developed, taking into account not only identified

engineering, economic and functional constraints, but also those potentially posed by the Secretary of the Interior's Standards for Rehabilitation. Each alternative was then analyzed in terms of cost, operational/functional limitations, use capacity/capability, effects on historic architectural characteristics, and anticipated social acceptability.

C. Report Organization

This report represents the results of the program of data collection and alternatives analysis described above. In Chapter II, a historical overview of the Fort Tompkins site is presented, followed by a discussion of the design, construction and subsequent modifications of the existing structure. The existing conditions at Fort Tompkins are described in Chapter III. Topics addressed include site and landscape, architectural/historical features, and structural, mechanical and electrical systems. This chapter concludes with identification of use limitations inherent in the structure, and discussion of the potential social acceptability of rehabilitating Fort Tompkins for Navy use. The final chapters focus on description and evaluation of use alternatives. In Chapter IV, each alternative is described, with potential limitations noted, costs are presented for each alternative and plan views illustrate the general layout of functions. Chapter V summarizes the findings of the analysis in terms of a matrix and service cost analyses.

II Historical Overview of Fort Tompkins

II. HISTORICAL OVERVIEW OF FORT TOMPKINS

A. Overview of Site History

The site of Fort Tompkins was first utilized for military purposes during the Revolutionary War by the British, who in 1778-9 constructed a signal station, earthen redoubt and other fortifications on a prominence overlooking the Narrows called Flagstaff Hill (Black 1982:22-23). These works, intended to be temporary in nature, were abandoned by the end of the war in 1783. The value of the site, however, was remembered in the 1790s when the United States initiated its first attempt to develop a system of defenses for the Atlantic coast. In the program known as the First System, the individual states were encouraged to contribute to the construction of fortifications, and New York State was among the most active. In 1794, New York State purchased a tract on Staten Island including Flagstaff Hill, and subsequently erected a blockhouse adjacent to the former British redoubt, which the state also renovated at about the same time. By 1806, however, these works, and those also erected by New York State on Ellis and Bedloes Islands and at the tip of Manhattan, had fallen into disrepair, with only Fort Jay, on Governors Island, permanently garrisoned and in usable condition (Black 1982: 30,35,38).

The next period in the history of United States coastal defenses, known as the Second System, was inaugurated in mid-1807 as a result of renewed hostility between Great Britain and the United States. The Federal government embarked upon a new program of construction, with three million dollars authorized by Congress between 1807 and 1812 (Black 1982:39). Among works constructed under this program were Fort Columbus (on the site of old Fort Jay), Castle William, new fortifications on Ellis and Bedloes Islands, Castle Clinton and a small battery at the southern tip of Manhattan. The construction of new defensive works on Staten Island, however, was funded by the State of New York, which perhaps more than the federal government at this time recognized the importance of this site on the west side of the Narrows and believed, unlike the United States, that it could be successfully fortified (Black 1982: 41).

Plans for the Staten Island works were initially developed by Col. Jonathan Williams, a U.S. Army Engineer, and with the support of Governor Daniel Tompkins, were implemented in late 1808. By 1810, a masonry water battery, named Fort Richmond, was completed at the water's edge below Flagstaff Hill, as were two earthen batteries. Construction of the other major work, however, to be located atop Flagstaff Hill to protect the channel-bearing masonry and earthen batteries from a land attack, was not begun until 1814. By 1817, with war with Britain again at an end, both appropriations and the work on the hill fort also ceased (Black 1982: 39-46).

The hill fort, named Fort Tompkins, was a casemated pentagonal structure of solid masonry construction with a large circular bastion at each of the five corners. Reflecting the Fort's landward orientation, the magazine was located in the easternmost bastion, which was slightly larger than the other four (RG.77, Drawer 41, Sheet 3, 1819). When state appropriations for construction ceased in April 1816, Fort Tompkins lacked gun platforms, barracks

and the coping on one wall (Black 1982: 46-51). Between 1816 and 1823, the New York Legislature made small sums available for maintenance of this and the other works on Staten Island, but the amounts were inadequate, and deterioration soon occurred, as the Staten Island defenses were effectively abandoned for military purposes for the next thirty years (Black 1982: 57-61).

The two casemate fortifications extant today on Staten Island, Fort Tompkins and Battery Weed, were erected by the United States government under the Third System of coastal defenses (see Lewis 1970: 37ff.). This program was initiated shortly after the War of 1812, when a board of inquiry headed by Brig. Gen. Simon Bernard embarked upon a detailed study of existing defenses, reports from which were issued in 1821 and 1826. The board found that "the Harbor of New York in its present state is scarcely at all defended against a sea attack" and to remedy the situation it recommended that the Narrows and Throgs Neck (the passage to New York through Long Island Sound) be substantially fortified with works which the board classified as of the first priority (Black 1982:64).

Although construction of fortifications commenced promptly at some New York Harbor locations, for example, Throgs Neck (Fort Schuyler, begun in 1833) and on the Brooklyn side of the Narrows, (Fort Hamilton 1825-31), negotiations between New York State and the federal government over transfer of the Staten Island site were not resolved until 1847 (Black 1982:58-60). During this period, however, Army engineers gave thought to retention of the existing fortifications (the water battery, Fort Richmond, and the unfinished Fort Tompkins), although a report of 1820 had concluded that Fort Tompkins possessed "none of the properties of modern fortifications" and that its circular bastions were features "rejected since ages" by progressive schools of military engineering. This report also recommended that an "advanced work" should be erected to provide a measure of protection for Fort Tompkins from the land side, as it was concluded that any effort expended to make Fort Tompkins itself more resistant to land attack "would require works too expensive" (Black 1982:66).

The decision to build a new water battery was more easily made, with plans completed by Joseph G. Totten, the Army's then Chief Engineer, in 1845. Work on the new battery (also named Fort Richmond, but renamed Fort Wadsworth in 1865, and then Battery Weed in 1902) began almost immediately upon settlement of the land transfer in 1847, although due to delays and funding problems it was not completed until about 1861 (Black 1982:70-71). During this period, Army engineers continued to grapple with the question of old Fort Tompkins, which as late as 1856 they appear to have been considering remodeling, rather than replacing (R.G.77, Drawer 41, Sheet II, 1856-1858).

In April 1858, however, the Secretary of War formally approved plans (drawn by Lt. John C. Paltrey under the direction of the Board of Engineers for the Atlantic Coast) for a new "fort on the site of Fort Tompkins", and demolition of the existing work began that July. Actual construction of the new fort began in 1859, proceeding rapidly over the next year (Chief of Engineers, Annual Report [hereinafter cited as CEAR] for 1858:818). With the Civil War, however, work slowed considerably despite continued appropriations, due to shortage of materials and also to diversion of men and possibly materials to other construction efforts on the Staten Island site,

which had been expanded from the 47 acres ceded by New York State to 70 acres by the mid 1850's (Black 1982: 79-80, 82). Construction resumed with more vigor once the war was concluded, and particularly after 1869 when the new designs for Fort Tompkins' channel front were completed (CEAR for 1869:4) (see below). By 1875 the fort was declared "structurally finished" and ready to receive armament, although many interior details remained incomplete (Black 1982: 91; CEAR for 1877:4).

That year, however, proved to be the last in which Congress appropriated any funds for construction of permanent coastal defenses anywhere in the United States for another 15 years. From 1876 to 1885, small amounts, usually no more than \$100,000, were appropriated for "preservation, protection and repair" of all such defenses. Then for two years, no appropriations of any kind were made. In 1888-9, funding was resumed with \$100,000 each year (CEAR for 1887:4; CEAR for 1888: 4; CEAR for 1889:4). When finally in 1890 Congress authorized over \$1.2 million, it was to inaugurate a radically different, and very much larger program of coastal defenses known, for the board that conceived it, as the Endicott Program (see Lewis 1970: 75ff). This program's impact on the Staten Island site was significant, as it resulted in the reconstruction of six existing works to new specifications, plus the erection of six new batteries on which to mount guns of unprecedented sophistication and size (Black 1982:110). In this new program, however, Fort Tompkins was to play no meaningful defensive role; indeed, with one possible exception, no guns had been mounted on the fort to that time, and no attempt was made even to remodel portions of the facility to receive modern armament (as did occur at, for example, Fort Hamilton, in Brooklyn and Fort Warren in Boston Harbor). Fort Tompkins, essentially obsolete by the time it was "structurally finished", was destined to remain underutilized, although continuously occupied to some degree, until it was substantially rehabilitated in 1939.

B. Architectural History of Fort Tompkins

Unlike Battery Weed, which is essentially an elaborate set of platforms and enclosures for armament, Fort Tompkins was erected not simply for defensive purposes, but to play a supportive role through provision of quarters and storage for the troops who manned the batteries. Thus, whereas each compartment within Battery Weed was designed for a single specialized purpose (to mount a gun or store ammunition), much of the space within Fort Tompkins was designed with more inherent flexibility in terms of the uses to which it could be put.

The polygon of Fort Tompkins is sited with its longest front oriented northeast toward the Narrows. There are four land fronts, oriented roughly north, northwest, southwest and south. To protect these land fronts, a counterscarp was extended around the entire landward perimeter of the fort, creating a ditch or dry moat some 30 feet wide and 40 feet deep. From the northwest and southwest angles of the gallery behind the counterscarp, flank howitzers would be able to fire along all four of the land fronts (R.G.77, Drawer 41, Sheets 26A, 27). Apart from these guns, the armament of Fort Tompkins was to be mounted en barbette on open platforms on the roofs of the casemate structure, rather than within casemates as was the case at Battery Weed (R.G. 77, Drawer 41, Sheet 2, 1886).

Together the land fronts contain two tiers of 30 casemates each, most of which are approximately 20 feet wide and 45 feet deep. Each corner on the landward side (southwest, west and northwest) contains polygonal magazines. Magazines are also located at the north and south corners, adjacent to spiral stone staircases that extend from ground level to the barbette level. The land front casemates were intended to quarter troops, although the garrison never was large enough to justify finishing all the casements as living spaces (and indeed, as of 1885, 26 of 60 were still considered not yet habitable by troops) (CEAR for 1885:20). Nonetheless, some information is available through the Annual Reports of the Chief of Engineers concerning materials and finishes employed during the early period of construction.

The general pattern of fenestration of the parade faces of the land fronts was tripartite and symmetrical, consisting of a center door with flanking windows for each casemate. The original door and window frames, and the "hoisting sash," were of iron, and the doors themselves were of wrought iron (CEAR for 1866:423-40). The interior walls were furred with brick and then whitewashed. The floors were "concreted" and wooden ceilings were installed. It also appears that in those casemates finished for quarters, the loopholes on the outer walls (in the land scarps) were also fitted with window frames and glazed (CEAR for 1866: 423-4; CEAR for 1867:9; CEAR for 1873:11).

As far as can be determined, access to the second tier of casemate quarters was largely confined to a system of iron stairs and balconies hung on the parade faces of the land fronts (CEAR for 1872:11). The balconies were also accessible from the stone staircases within the north and south corners of the fort. A plan dated 1865 indicates that enclosed stair towers were at that time considered for the southwest, west and northwest angles of the parade, but there is no indication that these were ever built (R.G. 77, Drawer 41, Sheet 62, 1865). Presumably, since the floors of the second tier were supported on a system of I-beams and shallow brick arches, it was possible to insert interior stairs at desired locations within the casemates, as was done in the remodeling of 1939 (see below).

In general, the basic structure of the land fronts was erected as originally designed in 1858 (R.G. 77, Drawer 41, Sheets 18, 20, 1858). The principal exceptions were the spaces at the west, southwest and northwest angles, which on the original plans were envisioned as diamond shaped open rooms. Subsequently, these spaces were redesigned and built specifically as magazines -- "rooms within rooms" accessible only by passing through one or more antechambers with several changes in direction (R.G. 77, Drawer 41, Sheet 18; Plan and Sections of Fort Tompkins, 1872).

The land fronts of Fort Tompkins were structurally completed, and some interior finishing begun, by 1865. During this same period, work was begun on the channel front, to the extent, at least, of building the foundations and constructing seven (ultimately eight) small cisterns by the end of 1866 (CEAR for 1866:423-4). Between this date and 1869, however, there occurred a hiatus following which construction of the channel front resumed, but to a revised design.

As originally conceived, the channel front was to mount 10-inch channel-bearing guns en barbette, with a flank defense provided by a polygonal caponniere projecting from the center of the scarp. The channel front was also to contain two tiers of casemates fitted for officers' quarters. There were to be eight sets of quarters (each presumably housing more than one officer), each set arranged in a symmetrical "Georgian" plan with two 18-foot wide rooms, one behind the other, on either side of a 6-foot wide stair hall (R.G. 77, Drawer 41, Sheet 13, 1858).

In the revised design, approved in December 1869, the caponniere was omitted, the channel front casemates reduced to a single tier, and their depth increased from slightly under 40 feet to 75 feet, in order to carry the 15-inch guns that were now intended to be mounted on a high earthen parapet rising above the low masonry channel scarp. As a result of the new design, additional foundations were built on the parade side of the channel front to obtain the required casemate depth. In the process, the original plan to quarter officers in the channel front was also abandoned, and the casemates were ultimately constructed as "bombproof" storage areas (R.G. 77, Drawer 41, Sheet 2; Plan and Sections of Fort Tompkins, 1872; CEAR for 1871:14).

Because the construction of the channel front was halted during the reconsideration of its design, resumption of work appears to have required little alteration or removal of existing work, which apparently had progressed no further than the foundations. The legacy of the original design remains only in the casemate dimensions, which (excluding the sally ports at either end) alternate between 18 feet and 24 feet in width, with the central 24-foot wide casemate marking the intended position of the unbuilt caponniere.

Due to the lack of appropriations for construction of coastal defense works, which lasted from 1876 to 1890, Fort Tompkins was never really completed in the manner originally intended. In 1877, Fort Tompkins was reported to have been "in readiness to receive armament for some years," and eight years later this was still the case (CEAR for 1877:14; CEAR for 1885:20). Lack of funding not only prevented the mounting of armament, but also left almost half the land front casemates unfinished, and thus unusable for troops as late as 1885 (CEAR for 1885: 20). With regard to the large channel front casemates, the practice of closing off one or more of the parade side for various storage purposes was begun at this time, when eight casemates were utilized for storage of torpedo mines and equipment (Black 1982:92). The remainder, however, remained unfinished in 1885 (CEAR for 1885:20).

The million-dollar appropriation of 1890, which inaugurated implementation of the Endicott Board's sweeping recommendations for coastal defenses, also marked the beginning of a major new construction phase for the Staten Island installation, but it was a phase in which Fort Tompkins would play only a very minor role. As Black has observed, "neither of the old forts (Fort Tompkins or Battery Weed) had features of great value in the new era of coastal defense," and the Army itself ceased referring to them by name, citing them instead as "an old stone fort" or "old casemates" (Black 1982:116).

The principal impact of the Endicott program on Fort Tompkins appears to have been the demolition of the south counterscarp, the gallery from the fort to the counterscarp gallery, the gallery connecting Fort Tompkins with the glacis mortar battery, and most of the glacis mortar battery itself, as well as the regrading of the remains of the south glacis. The purpose of this removal was to provide an adequate site for Battery Duane, which with its five 8-inch breech loading rifles was the largest of the six new batteries built at Fort Wadsworth under the Endicott Program. Physical evidence of this alteration is very difficult to discern, due to the extreme care with which the truncated sections appear to have been finished off. The documentary record, however, provides several indications that the counterscarp did originally extend along the south land front, as designed. The annual report for 1870 specifically locates the position of a new soldiers' latrine in the "south ditch" (the term by which the dry moat was called in the Army's reports and plans) of Fort Tompkins (CEAR for 1870:19). The annual report for 1875 included a reference to "passages leading to the counterscarp gallery" being paved with concrete; as only two such passages were included in the plan of Fort Tompkins (at the extreme northeast and southeast corners) the reference to passages in the plural strongly suggests that both were indeed built (CEAR for 1875:13; Plan and Sections of Fort Tompkins, 1872). Another clue lies in references to the readiness of Fort Tompkins to receive armament. A drawing showing the "state of armament" as of December 1, 1873, specifically notes the existence of 12 "casemate platforms," 6 of which are located in the northwest angle of the counterscarp gallery, and 6 in the southwest angle of that gallery, all of which were at that time fitted with 3-inch pintles "and ready for howitzers to be mounted" (R.G. 77, Drawer 250, Sheet 16-3; 1873). A second reference is contained in the 1883 annual report, which mentions 12 platforms for "24 pdr. flanking howitzers" in the counterscarp gallery (R.G. 77, Drawer 250, Sheet 16-5, 1883). (The southwest angle of the counterscarp gallery today has only 5 positions for flank howitzers, and due to the angle at which the coping of the counterscarp now approaches the ground, it is difficult to see how the southernmost of the 5 positions could hold both a gun and the men required to load and fire it.) A final clue is contained in two plans of Fort Wadsworth in which land contours were carefully delineated: comparison of one (dated 1888) with the other (dated 1894) clearly indicates both the recontouring of the remains of the south glacis and the truncation of the south counterscarp and gallery (R.G. 77, Drawer 41, Sheet A, 1888; R.G. 77, Drawer 43, Sheet 77-1, 1894).

The Endicott period was also likely the time when electricity was introduced to Fort Tompkins, at least on a limited scale. Located at the highest elevation on the installation, the old fort was brought into the new defensive system by erection of position finders and battery and fire control stations on the barbette of the south front. It is likely, therefore, that the installation of electrical generating apparatus in two casemates of "an old work" in 1902, to serve Batteries Upton and Barry, took place at Fort Tompkins (Black 1982:125-6).

By 1920, the soldiers' latrine had been removed from the "south ditch", and its location occupied by a gas station and truck weighing platform (R.G. 77, Drawer 43, Sheet 90-20). It is likely that the two brick structures still extant in the north ditch date from the Endicott period as well.

Although Fort Tompkins' defensive utility was, at best, limited, the structure (unlike Battery Weed, which served only as a storage site for Navy torpedoes) remained an important support facility at Fort Wadsworth, continuing to quarter troops through World War I and also, during that war, housing the post's main guardhouse and shops for Quartermaster, Ordnance officers, and artillery engineer (Black 1982:125).

In the late 1930's, perhaps in anticipation of the coming of World War II, Fort Tompkins was substantially "rehabilitated" by the Army through the WPA program; many traces of this rehabilitation, in terms of interior finishes and mechanical systems, remain in evidence today. According to plans prepared for the work, commissary functions were to occupy the entire channel front. The first tier of land front casemates contained carpenter shops (southwest), unspecified "shops" (northwest) and electrical shop (north). The entire south land front was to be occupied by a guardhouse with guardrooms in the first tier of casemates and cells in the second. The remainder of the second tier was refurbished for Coast Artillery and Engineers (southwest), Quarter Master offices (northwest) and clothing warehouse (north) (Second Corps Area...Quadrangle Building, Drawing No. 133-01-1, 2, 1939).

While the basic structure of the fort remained intact, almost all interior spaces appear to have been gutted and refitted. Existing wood and concrete flooring was removed and replaced; walls and ceilings received new metal lathe and plaster; new doors, windows and transoms were installed, as were several interior metal staircases. The fort received new electrical systems and possibly its first comprehensive heating system (for which a boiler room was built in the parade at the angle of the northwest and southwest fronts), as well as new toilet and washroom facilities. Several of the channel front casemates were partitioned for office and storage purposes, and others filled with built-in shelving. The openings of the channel front casemates were given brick "fronts," installed just behind the first line of arches, with windows and doorways suited to the function of each (for example, wide double-leaf entries for casemates intended for bulk storage or vehicle repair or maintenance). Portions of the iron stair and balconies that ringed the parade were also replaced, although specifications indicate that this was to be done "to match [the] present features" (Second Corps Area... Quadrangle Building, Drawing No. 133-01-1,2,9,E-1, H-2, 1939).

Thus, although the original functions of Fort Tompkins had become either obsolete (defense) or were relocated (quarters), its basic plan provided flexibility with which to meet a variety of the Army's support requirements well into the 20th century. The fort continued to serve commissary uses through the 1950s, as in 1958 a loophole in one of the channel front casemates was opened to accommodate a conveyor for supplies (for which the heavy double-leaf door and stone and concrete platform remain today) (Proposed Removal of Blocks...1958). Among the last uses of Fort Tompkins were a Chaplains' school and a small museum.

The present study has located only a limited amount of information concerning the early "infrastructure" of Fort Tompkins, i.e., its sanitation, heating, lighting and other systems. However, the annual reports provide occasional details of interest. With regard to sanitation, the Army appears

to have originally planned to build a row of latrines (two for troops, eight for officers) on the slope in front of the channel scarp, with waste conveyed through a brick sewer to an outlet near Battery Weed. Of these only one, for "soldiers," appears to have been erected, on the slope toward the south end of the channel scarp, in 1868 (R.G. 77, Drawer 41, Sheet 74, 1868). This facility was replaced, in 1870, by another latrine with ten "earth closets" located in the "south ditch" toward the east end of the south land front (CEAR for 1870:19). The south soldiers' latrine, shown on an 1886 plan of Fort Wadsworth, (R.G. 77, Drawer 41, Sheet A, 1886) is believed to have been remodeled about 1895 (R.G. 77 Drawer 41 Sheets 94, 94A, 1895), but was subsequently replaced with the fuel and weighing stations. Sanitary facilities appear to have then been relocated within the fort, as several were present at the time the fort was rehabilitated in 1939-40. (It may be that officers, at least, were provided with latrines within the fort during the 19th century, as a sewer line running "under the center of the channel front" was, in 1871, connected to that from the south soldiers' latrine (CEAR for 1871:14).

Concerning water supply, the 1858 plans for Fort Tompkins located three cisterns within the parade, of which two, toward the northwest and southwest corners, were in place by 1866. (R.G. 77, Drawer 41, Sheet 18, 1858; CEAR for 1866:423-4). In addition, eight small cisterns were built beneath the channel front casemates, originally intended to serve the officers' quarters planned for this front (R.G. 77, Drawer 41, Sheet 18, 1855). Water for the cisterns appears to have been collected from the roofs of the casements as indicated by reference to "cast iron pipes in the piers of the channel front casemates to conduct rainwater... to the cisterns" (CEAR for 1874:13). In a report the following year, reference was made to the enclosure of "central communications through the casemate piers, including pier-recesses for vertical drainage pipes" with brick, and the pipes surrounded by sawdust to prevent freezing (CEAR for 1875:14). Another possible source of water is suggested on the 1886 plan, which shows a spring and well located beneath the southwest corner of Battery Weed. This supply was connected via a "suction pipe" to a pump located within the battery, from which it appears to have been pumped to a reservoir located on the glacis at the southwest corner of Fort Tompkins (R6 77, Drawer 41, Sheet A, 1886). The water supply may have been improved during the Endicott period, though to what extent is not known, as reference is made simply to "installation of water supply systems" on Staten Island at sites unspecified, in the annual report for 1902 (CEAR for 1902:689).

The 1874 annual report includes mention of the construction of fireplaces in at least some of the land front casemates that were finished for troop quarters; it is likely that stoves or coal grates were the actual sources of heat within these casemates (CEAR for 1874: 14). Fireplaces were originally proposed for the officers' quarters in the channel front casemates, but were omitted when that front was redesigned for storage (R6 77, Drawer 41, Sheet 18, 1858). The flues opened in the soffits of the channel front casemate arches were apparently intended for ventilation (Plan and Sections of Fort Tompkins, 1872). An extensive heating system was installed in the 1939 renovation. (Second Corps Area... Quadrangle Building, Drawing No. 133-01-E1, 1939).

III Existing Conditions

III. EXISTING CONDITIONS

A. Site and Landscape

As it presently exists, the site surrounding Fort Tompkins appears much as it did in the early twentieth century (Figure 3-1). Along the west side, the grassy, neatly cut glacis slopes down toward New York Avenue to the west and toward the houses along Mont-Sec Avenue to the northwest (Photo 3-1). At the crest of the glacis, along the counterscarp, stands a row of scrub twenty-year old trees that block the visual link to the west barbette levels of the northwest and southwest land fronts (Photo 3-2).

A small brick electrical building is situated on the glacis at the west angle of the counterscarp (see Figure 3-1). It presently contains three transformers with cut outs (see Mechanical/Electrical subsection in this Chapter); although it is rather low to the ground and surrounded by the scrub trees, the building still occupies a rather prominent location at the crest of the glacis.

Along the north counterscarp, a semi-mature stand of deciduous trees completely obscures the remnants of the five post glacis gun battery and magazines. It also blocks the visual link to the dry channel moat and bar-bette level of the north land front. The roadway that intersects Mont-Sec Avenue near Building 109 climbs the ridge adjacent to the glacis gun battery and forms a boundary along the channel scarp of Fort Tompkins (Photos 3-3 and 3-4). The roadway also provides access to the interior of the Fort through the sally ports at the north and south ends of the channel front.

The truncated remains of Battery Duane and Tompkins Street delineate the site and establish a border on the south side (Photos 3-5 and 3-6). The dry channel moat, which is banked by the glacis to the west, terminates in the southwest corner; the glacis returns abruptly into itself as well (Photo 3-7), thus providing a level grassy area adjacent to the south wall of the Fort for two one-story brick buildings (Photo 3-8). These structures, erected between 1900-1920 for fueling and storage, are situated along Tompkins Street and obstruct the southeast corner of the Fort. Similarly, the metal frame storage building across the roadway in the southeast corner of the site is intrusive to the character of the area and blocks part of the visual link to Battery Weed on the water.

In general, the site and surrounding area around Fort Tompkins has not been dramatically altered since the Endicott period. Aside from the tree growth on the west and north sides, and the four inappropriate buildings on the west and south sides and in the southeast corner of the site, the landscape retains much of its original characteristics.

B. Architectural and Historical Elements

The Fort has been modified numerous times in the past hundred years; it has also been left in a state of benign neglect. However, it is still in surprisingly good condition and many of its original architectural features survive intact.

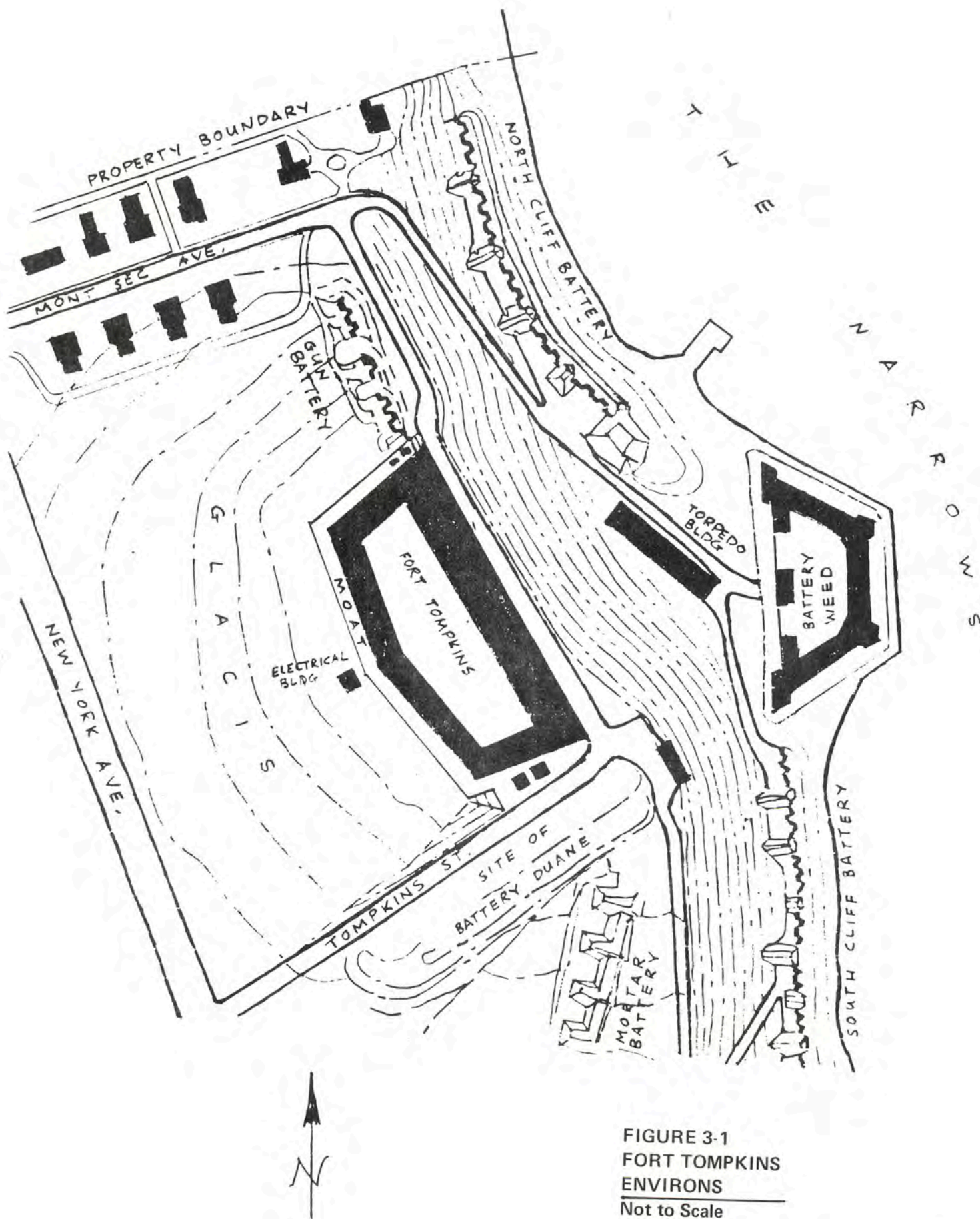




Photo 3-1

General view of glacia looking north toward houses on Mont-Sec Avenue.
Trees at right obstruct view toward dry channel moat.



Photo 3-2

General view of glacia looking east toward line of trees that block view of barquette.

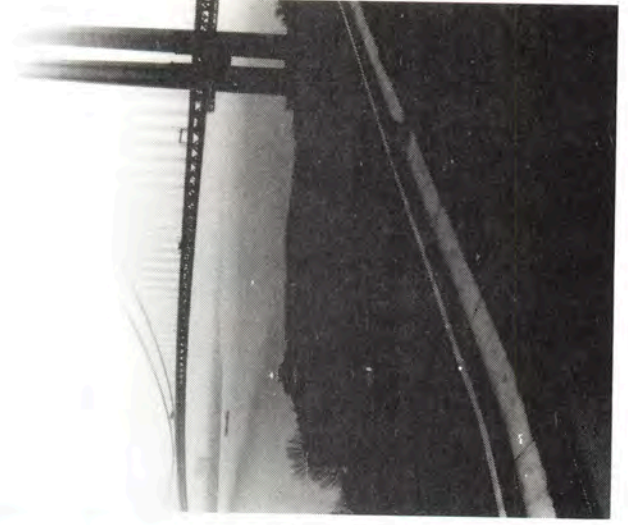


ABOVE: Photo 3-3

View of roadway on channel front looking south towards Verrazano-Narrows Bridge.

AT RIGHT: Photo 3-4

View of Battery Weed and Narrows on channel front; Verrazano-Narrows Bridge is in background.



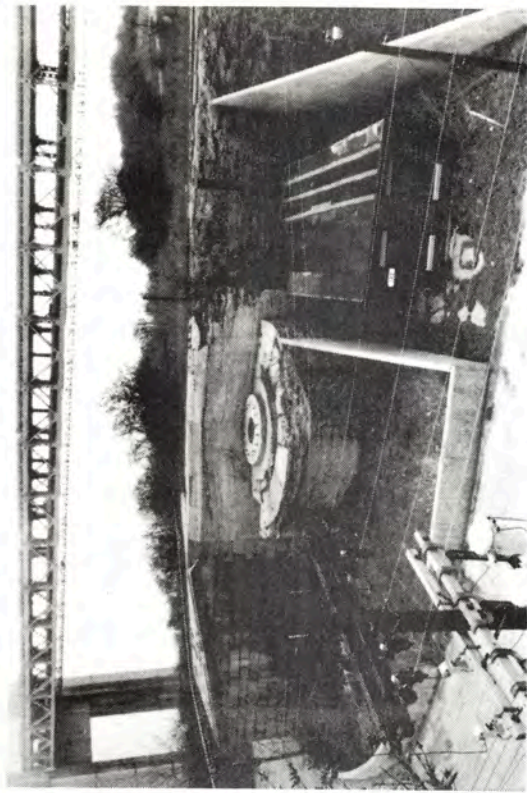


Photo 3-6
View of Battery Duane looking south.



Photo 3-5
View of Battery Duane looking west.



Photo 3-8
View looking west toward former gas station and weigh station on Tompkins Street.



Photo 3-7
View looking southwest at terminus of the counterscarp and glacis in southwest corner of Fort.

On the channel front the large casemates are all fitted with closures that are recessed behind the first row of arches, thereby creating an "arcade" along the edge of the parade (Photo 3-9). Figure 3-2, shows the casemate closure portions; some are stuccoed concrete masonry units with infilled doors and windows; others are brick while still others are wood frame. As suggested by the historical record, whenever space was needed for storage or offices, these casemates were enclosed as required with whatever infill material was available. As a result, the present configuration of the casemate closure partitions is random and somewhat haphazard. In addition, a double loaded concrete ramp and loading dock provide a point of transfer for supplies and storage materials (Photo 3-10); however, the entrances in two of the casemate bays are blocked up at the building line. This prevents circulation into the casemate, and down the arcade as well.

In general, the interior arches between the channel front casemates are closed with brick, concrete block or wood frame infill partitions (Photo 3-11); however, some of the openings have been left intact. The casemates themselves are largely left as open rooms, with only small modifications for mechanical rooms and toilets. The loop holes in the east wall of each casemate (2 for the 18' wide rooms, 3 for the 24' wide rooms) have all been made weathertight with windows or else by closing in the openings with concrete (Photo 3-12). The effect of closure with windows is not visually offensive and does not irreversibly damage the building's fabric; however, the concreted openings are permanent and significantly interrupt the pattern of the loop holes, particularly as seen on the channel front. Another noticeable alteration is the loading dock and platform opened in the channel scarp C. 1958 to accommodate a conveyor system (Photos 3-13 and 3-14).

Above the concrete-reinforced brick arches of the channel front casemates, the minimum 21' thick earthen parapet of the barbette lies overgrown with scrub vegetation. In the midst of the growth, 5 pairs of pivot pins and guide rails remain to show the intended mounting locations of 10 heavy guns. The magazines that would have supplied the ordnance for these guns are positioned between the pairs. Their floors are sandy and show no signs of a wood deck; in addition, their doors and hinges appear to be intact; no hardware remains. A walkway composed of welded steel brackets that cantilever the wood deck off the stone parapet 38' above the parade level, links the 4 magazines together. The wood decking is deteriorated and missing in many places and several brackets appear to have structural problems (see Structural subsection in this Chapter). In addition, the three-stringer steel stairway that connects the deck with the parade (Photo 3-15) has many deteriorated and missing wood treads.

Two internal stone stairways in the southeast and northeast corners of the Fort connect the barbette level of the channel front with the second tier of the land fronts and the parade level. Aside from the dangerous run of electrical wiring that travels in the air from the ventilation flue to the transformer room in the southeast corner of the second tier (see Mechanical/Electrical subsection in this Chapter), the stairways appear to be in good condition.

Two pedimented sally ports are also positioned near the south and north ends of the channel front (Photos 3-16 and 3-17). The large pairs of doors (4'-6"x9'-0" per leaf) are constructed with two full 3-inch thick sets of boards.

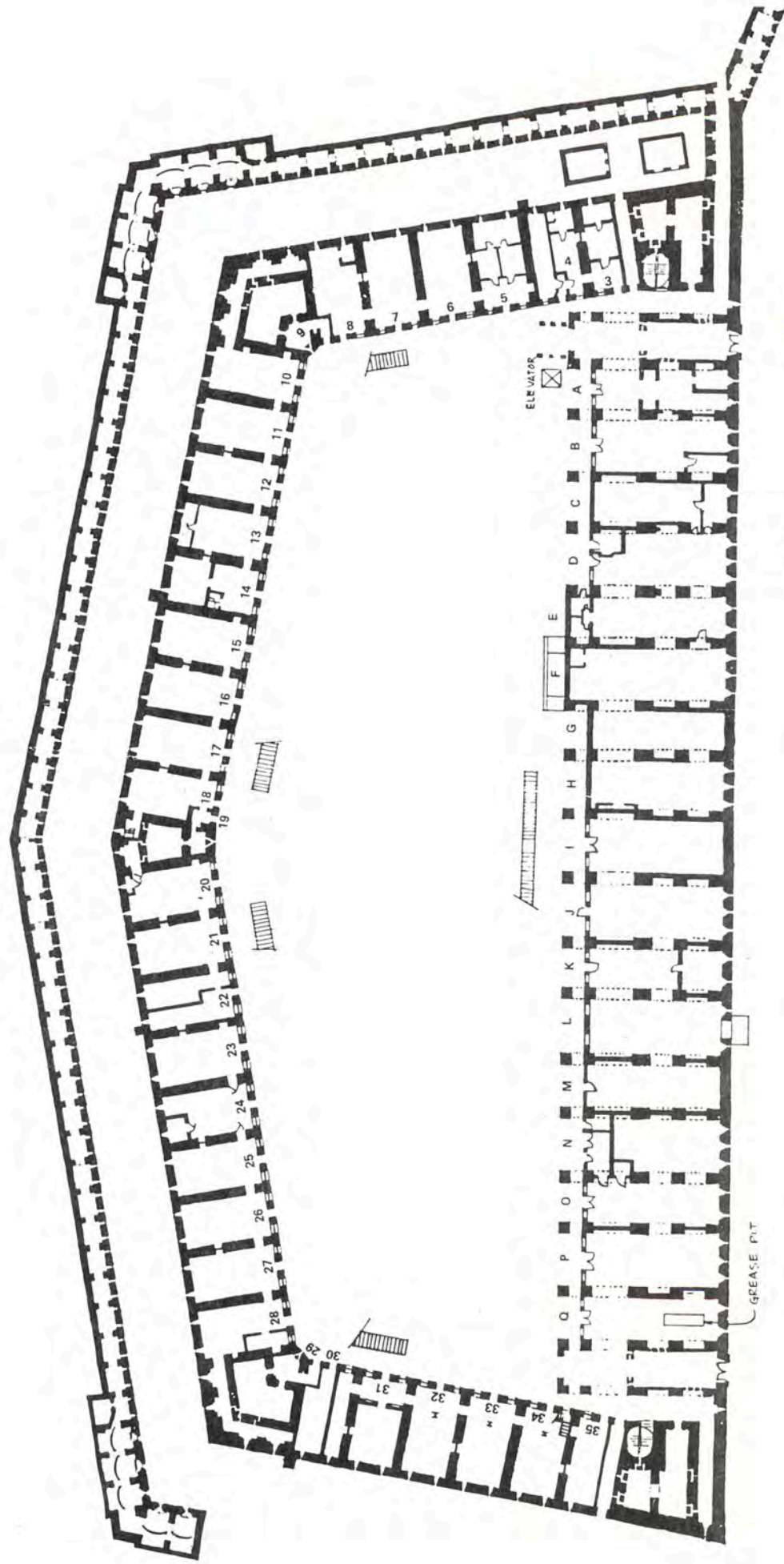


FIGURE 3-2
FORT TOMPKINS
EXISTING CONDITION
FIRST FLOOR PLAN
SCALE: SHOWN





Photo 3-9
View looking southeast toward one of the bricked-in channel front casemates and vaulted brick and stone parade gallery.



Photo 3-10
View looking northeast at closed-in channel front casemate arches and concrete ramp.

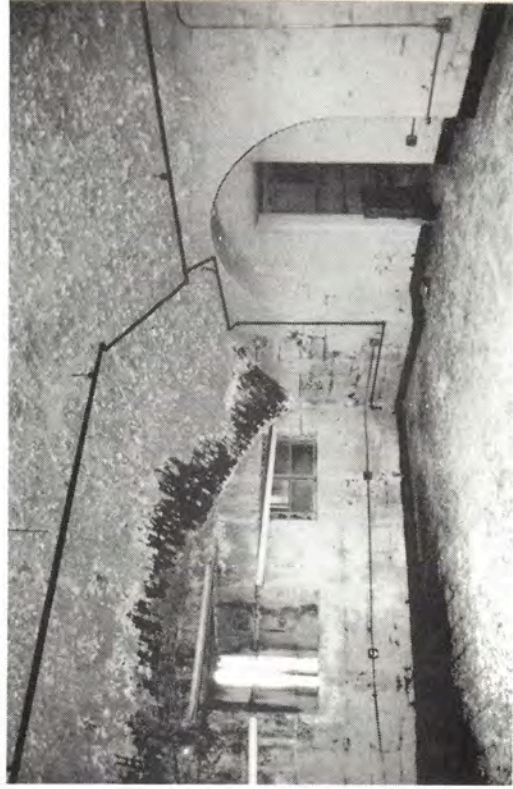


Photo 3-11
View looking southeast at typical 24 foot wide channel front casemate and bricked-up arch (with added door). Note how loop holes are closed with windows.

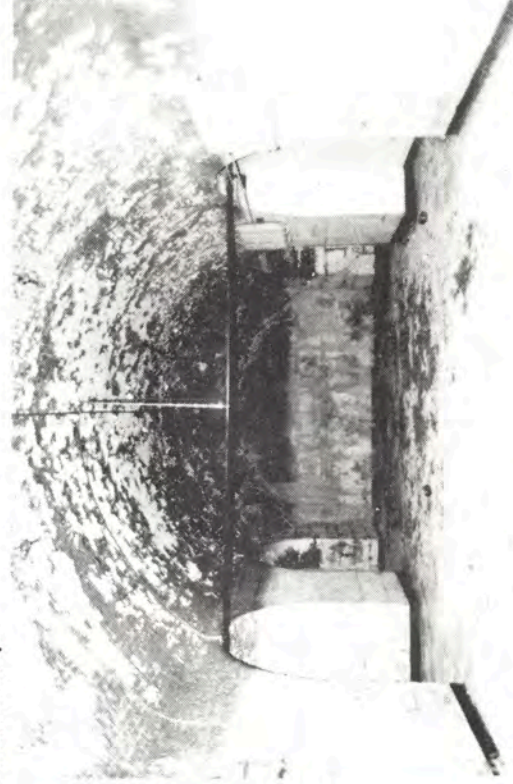


Photo 3-12
View looking east at typical 18 foot wide channel front casemate and con-creted loop holes.

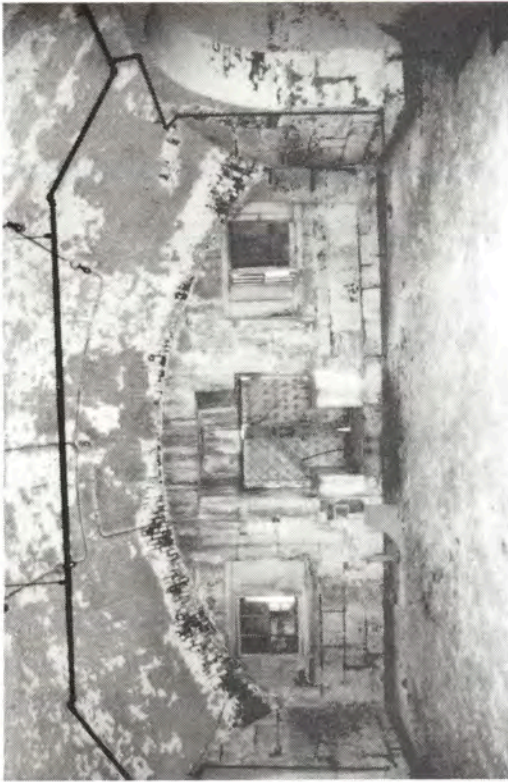


Photo 3-13
View looking east at 1950's conveyor access in channel-front casemate.

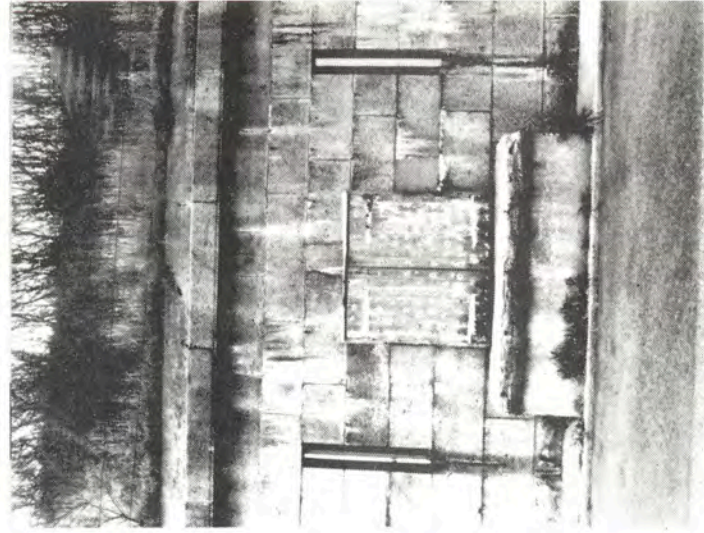


Photo 3-14
View looking west at conveyor access and loading dock in channel front; note filled-in top section of loop hole above door.

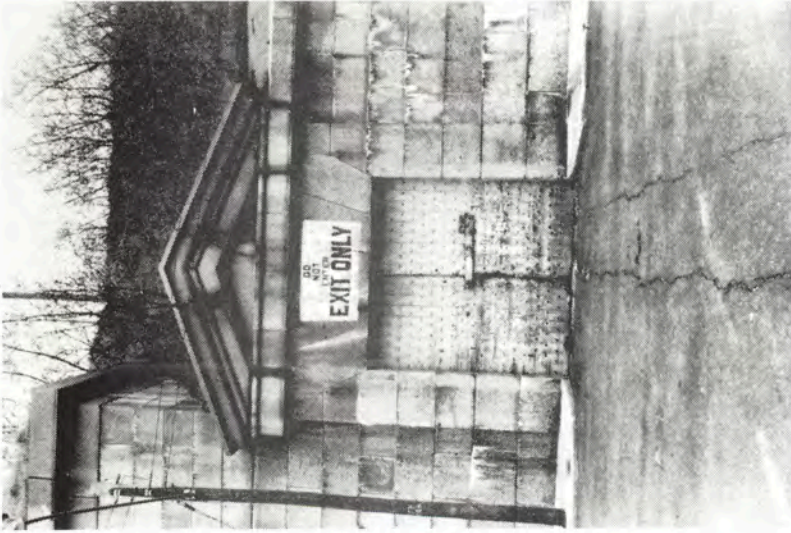


Photo 3-16
View looking west at south sally port on channel front.

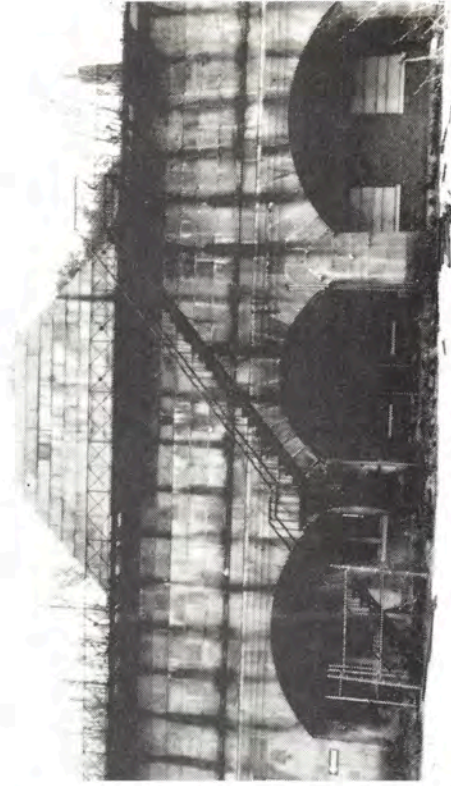
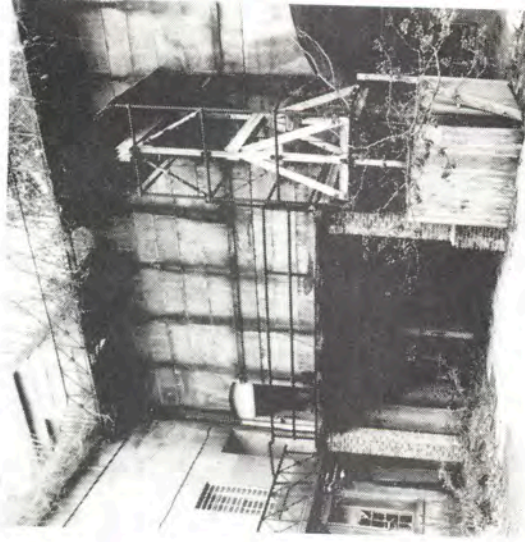
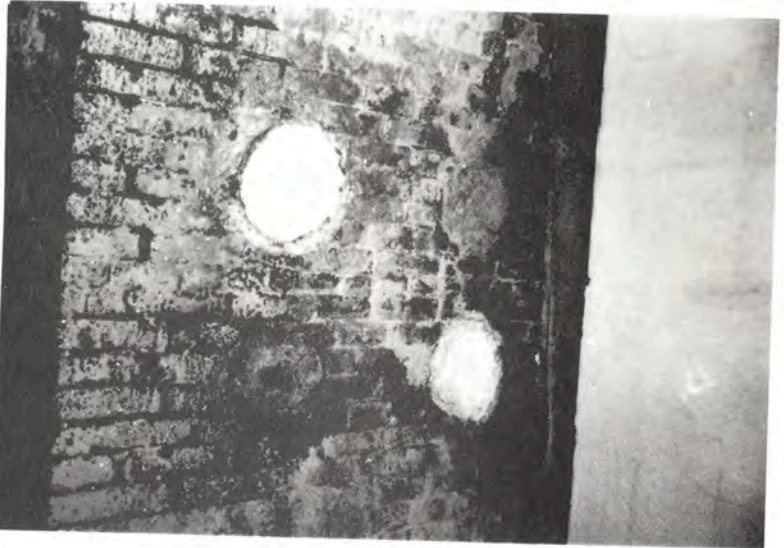


Photo 3-15
View looking east at stair connecting balcony with parade.



AT RIGHT: Photo 3-17
 Interior view looking east at south sally port on east (channel) front.
 BOTTOM LEFT: Photo 3-18
 Representative view of four ventilating flues in channel-front casemate.
 BOTTOM CENTER: Photo 3-19
 View of cluster of flues on top of east barbette.
 BOTTOM RIGHT: Photo 3-20
 View looking northeast at steel deck and elevator in northeast corner.



These doors pivot on hinges that are set down into the ground and up into the stone lintel; the straps are concealed in the middle of the boards. In spite of their large size and weight, the doors are surprisingly well balanced and move easily. No original hardware survives, but the wood appears to be in good condition.

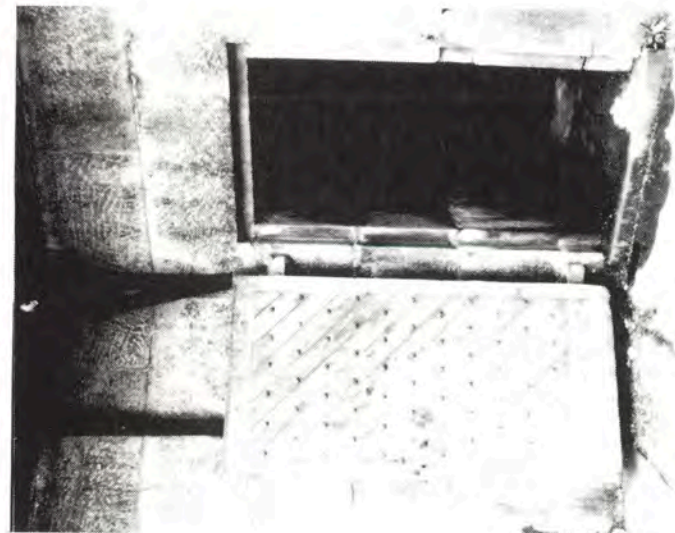
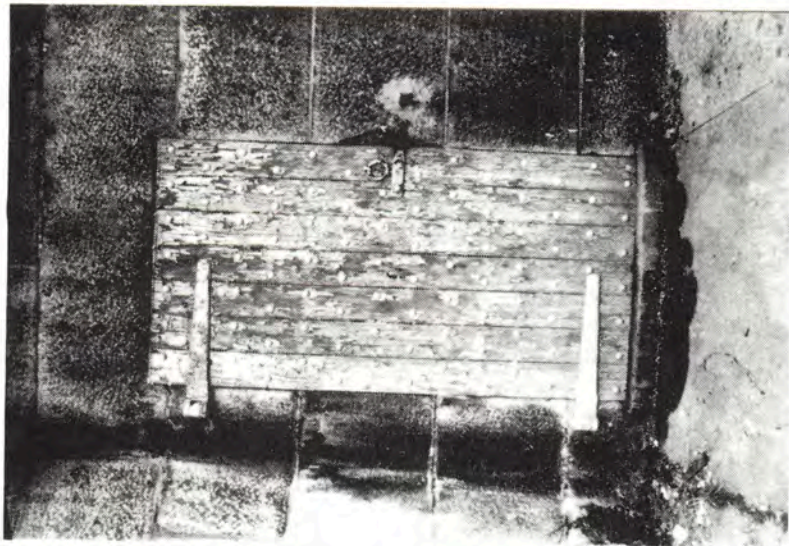
No on-site evidence survives that might provide a clue on the heating for the channel front casemates. However, between each pair of casemates in the center of the soffit of the large brick arch adjacent to the interior wall, clusters of four closed-in flues were found (Photo 3-18). The existence of these clusters of flues was confirmed on the barbette level (Photo 3-19) graphic evidence discussed in the "Architectural History" subsection of this report suggests that these flues were used for ventilation; this is substantiated by the fact that no stove supports or traces of soot could be found.

In the northeast corner of the parade, a brick-piered steel deck that spans across the top of the sally port, connects the second floor balcony with an elevator (Photo 3-20). The deck and elevator are visually inappropriate; however, they are necessary to move heavy objects up to and down from the second floor, and they do not permanently damage any parts of the building (see Mechanical/Electrical subsection in the Chapter for an analysis of the elevator).

In each of the five corners of the fort are two tiers of magazines for safe storage of ordnance. The magazines are all located in ventilated but windowless rooms with large anterooms that provide a second layer of safety and protection. No doors survive that separate the magazines from the anterooms; however, all of the wood doors to the anterooms are intact and in good condition (Photos 3-21 and 3-22). Most of the large strap hinges and door pulls are in place, but little hardware survives (Photo 3-23).

In the four land fronts, the two tiers of casemates, with thirty units per floor, are largely unchanged from when they were constructed (except for some finish materials, which were installed in 1939). Each unit contains an entrance door and flanking double-hung windows facing the parade (Photo 3-24). Many of the doors, window, and frames are deteriorated or damaged and most of the hardware is missing; however, enough units survive in different areas to enable proper reconstruction reminiscent of the 1939 reconstruction to take place. Inside each casemate, connecting doors enable circulation to take place without going outside. The on-site evidence indicates that each unit had a door on both sides of the connection through the 5' thick stone wall; only a few of these doors survive (Photos 3-25 and 3-26).

Each of the land front casemates had a fireplace built into the side wall (Photo 3-27). At present, all of the flues and even some of the fireplaces on the second floor are sealed shut; however, the flues are easily seen on the barbette level. In addition, none of the fireplaces show any signs of soot or creosote which might suggest that the fireplaces were never used for heat. It might also suggest that the rooms were fitted with stoves from the beginning and it is also possible that, the 1930s renovation contract had the fireplaces plastered and painted over.



FAR LEFT: Photo 3-21
View of wood door and steel strap hinges
into magazine anteroom in northwest
corner.
LEFT: Photo 3-22
Interior of door in Photo 3-21.

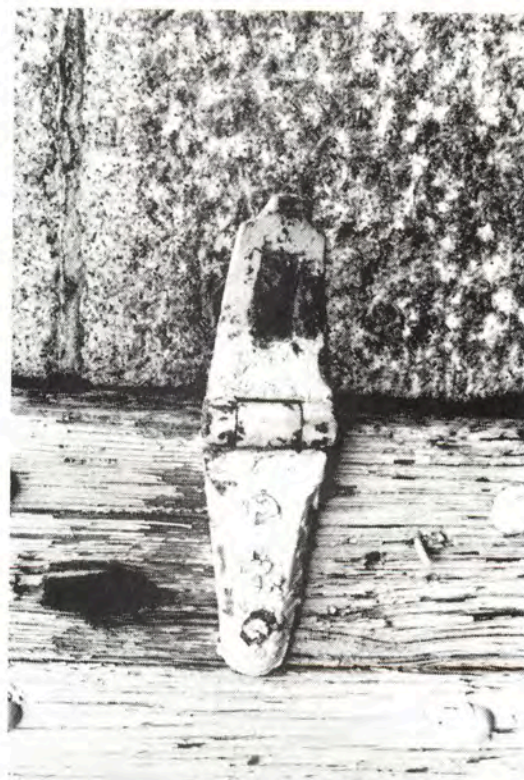


Photo 3-23
Detail of hasp hardware on magazine anteroom door in northwest corner,
second floor.

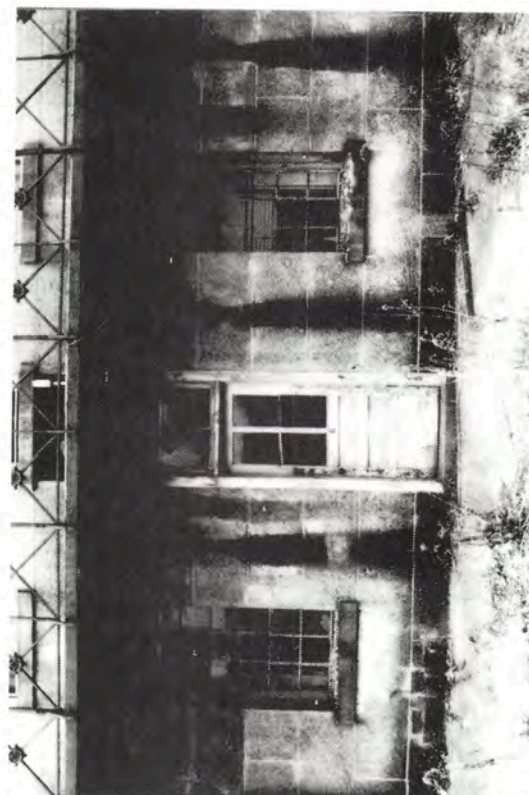


Photo 3-24
View looking north at typical casemate entrance door and windows on north
elevation.



RIGHT: Photo 3-25
Typical connecting door and frame.
FAR RIGHT: Photo 3-26
Detail of box lock (minus the handle)
of door in Photo 3-25.

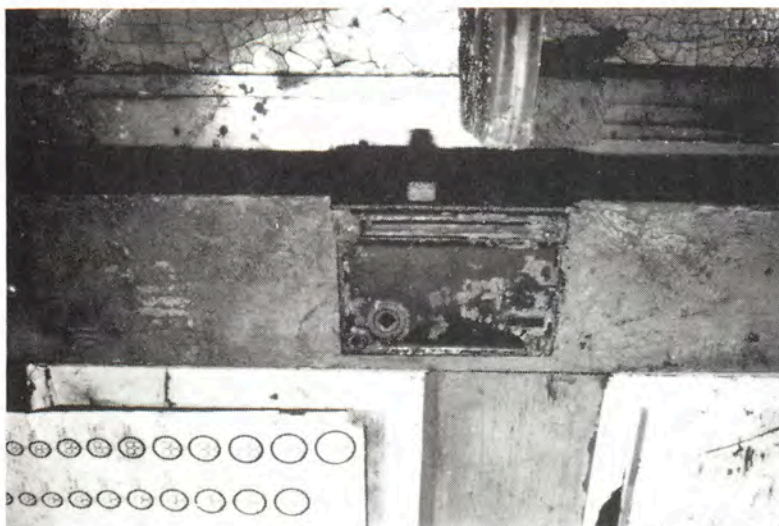


Photo 3-27
Detail of typical fireplace in land-front casemates.



Photo 3-28
View looking north into typical north casemate; loop holes have windows and frames.

Two loop holes in each casemate provide limited views of the dry channel moat and counterscarp beyond. These openings, which are similar to the loop holes in the channel front are closed in with windows and frames (Photo 3-28); fortunately, none of the openings have been permanently sealed shut with concrete.

The casemate units on the first floor are basically similar in layout to those on the second floor except for the ceilings. In the first floor units, as seen in Photo 3-28, the second floor structure (brick shallow arches spanning between steel beams that are set in the side walls) is exposed. In the second floor units, the masonry arches that carry the barbette level are concealed above a finished ceiling that consists of angled tongue-and-groove wood boards set into a wood frame (Photo 3-29). All of the second floor units contain this type of decorative treatment and it appears to be in sound condition (see Figure 3-3, Existing Conditions, Second Floor Plan).

Access to the second floor is through the stair towers in the southeast and northeast corners of the Fort, as was previously mentioned; it is also obtained through four evenly distributed, steel stairways along the northwest and south sides (Photo 3-30). These stairways link into the steel walkway that provides access to all the casemates on the second floor. The structural characteristics of the walkway and stairway are discussed in the Structural subsection of this Chapter; however, the condition of these elements is suspect because of rust and corrosion that are contributing to possible member failure in certain brackets (Photo 3-31). The walkway railing is a prominent, visually attractive element as well; however, many of the cast iron rosettes are missing and cause the railing to look incomplete (Photo 3-32). Additional access to the second floor is had through several interior stairs that were added in the 1930s.

A rather curious condition exists in the loop hole access corridor behind the magazine in the northwest corner of the Fort; the windows and frames that make the loop holes weathertight were installed (probably at the time this section of the Fort was constructed) but the finish stonework or brickwork surrounding them was never put in place (Photo 3-33). When compared to the completed surrounds in the areas behind the southwest and center-west magazines, it becomes obvious that this was the only section not completed (Photo 3-34). It seems likely that capital funding was in short supply when the Fort was nearing completion.

Presently, the middle four casemates of the second floor south side are devoted to a detention area. These cells each contain steel restraining bars set in a brick framework for physical strength and a visual sense of impenetrability; steel doors with cast steel hardware and hasps are also set in reinforced brick jambs (Photo 3-35). As was mentioned in the "Architectural History" subsection, it seems likely that this modification was made in the 1930s.

On all four land fronts, the earthen parapet of the barbette level lies overgrown with brush and scrub trees, virtually obscuring the historical link across the dry channel moat to the counterscarp and glacis beyond. All of the doors, hinges, and hardware for the magazines that were designed to supply ordnance to the gun stations on the barbette, appear to be intact

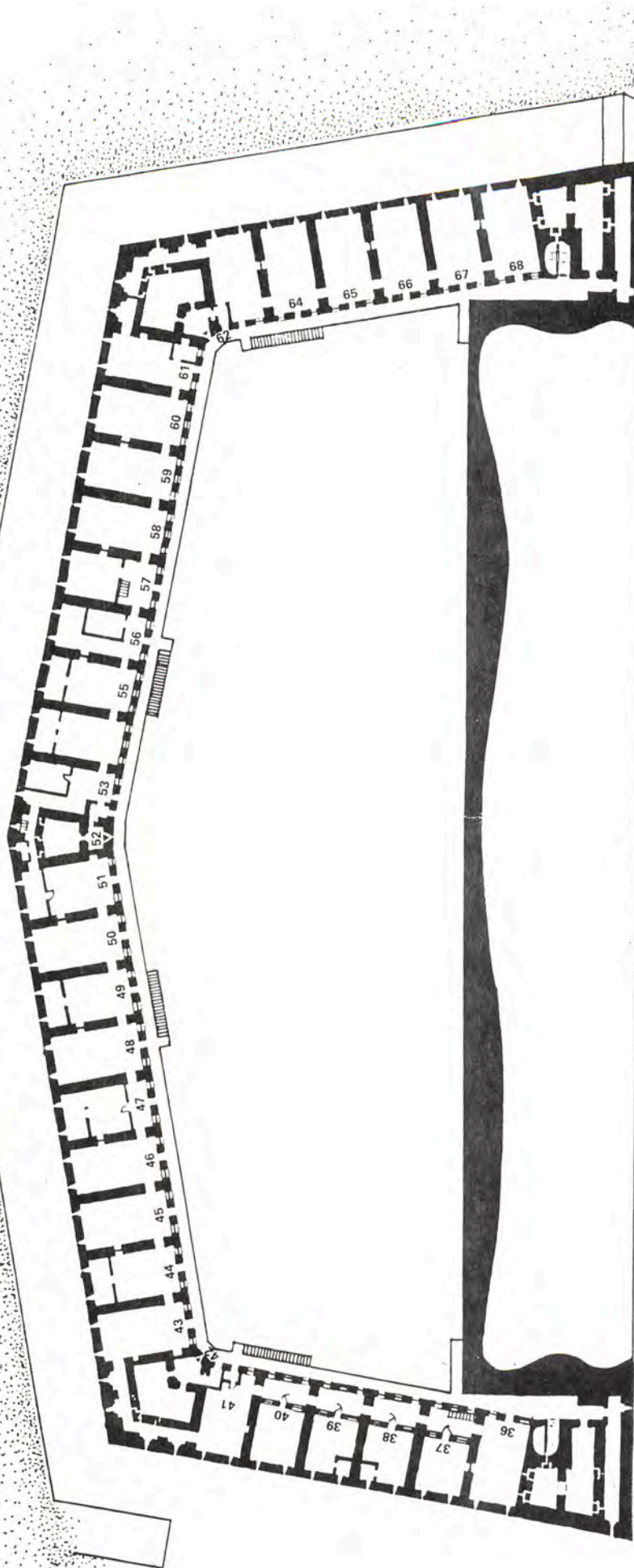


FIGURE 3-3
FORT TOMPKINS
EXISTING CONDITION
SECOND FLOOR PLAN
SCALE : SHOWN

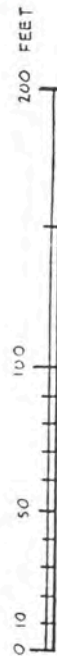




Photo 3-29
View looking south into a typical south second floor casemate.



Photo 3-30
View looking northwest at steel stair in northwest corner.

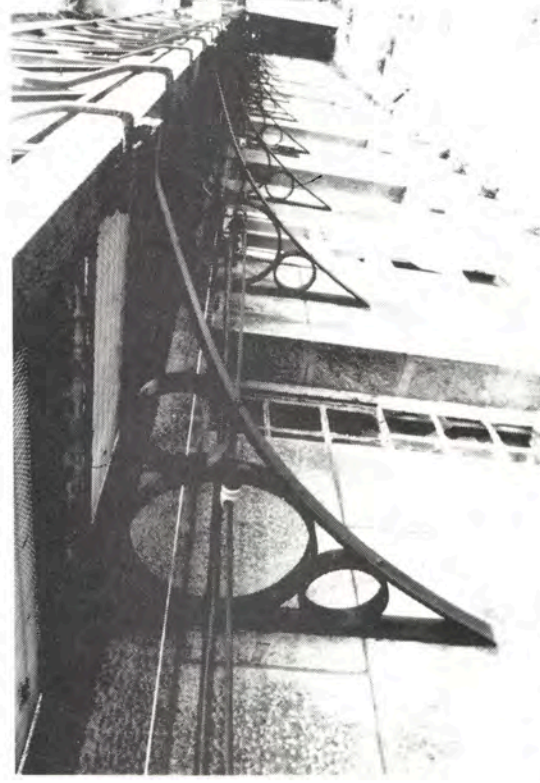


Photo 3-31
Typical steel brackets that support second floor walkway.

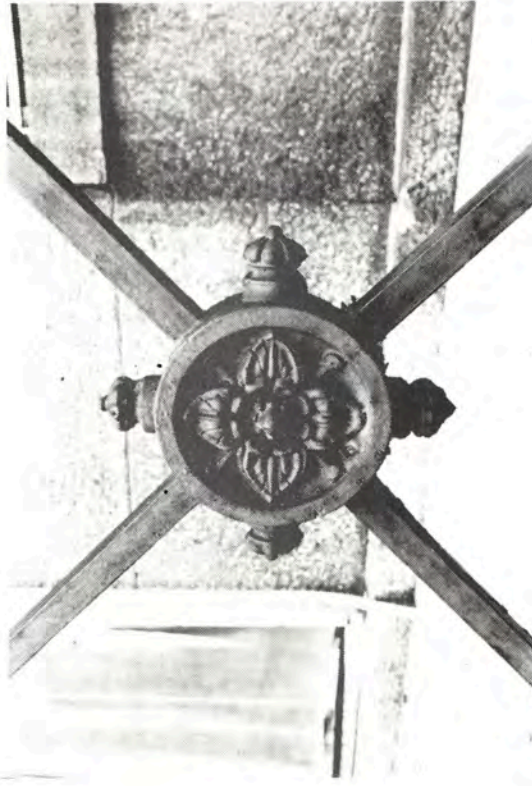


Photo 3-32
Typical rosette in steel stairway.

RIGHT: Photo 3-33
View of window in access corridor behind northwest magazine that lacks finish stonework.

FAR RIGHT: Photo 3-34
View of window in a typical corridor behind magazine with finished stonework.



Photo 3-35
Typical holding cell on south side of second floor.

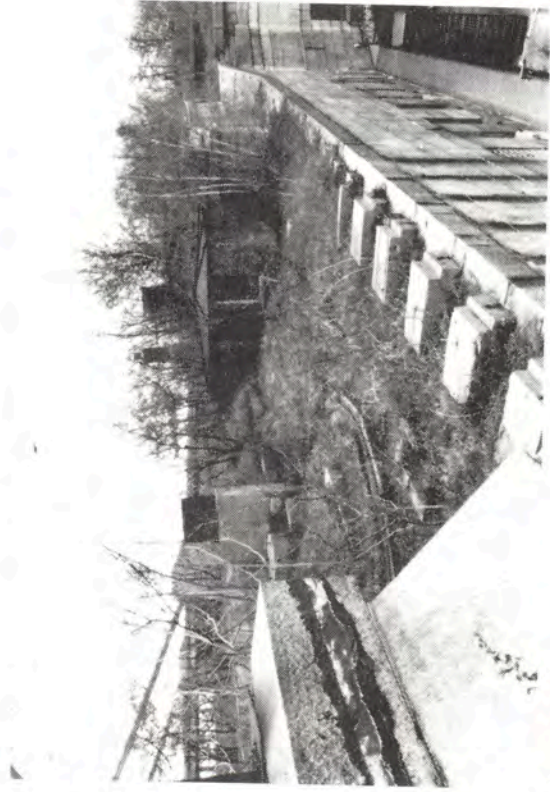


Photo 3-36
View looking west toward observation post on barrette of the south land front.

and in good condition; however, the entrance to the magazine on the west side in the southwest corner was blocked during field visits and it could not be inspected. On the south side, the two brick frame and metal-roofed observation posts that were installed during the Endicott period appear to be in sound condition except for broken glass (Photos 3-36 and 3-37).

The dry channel moat between the land front scarp and the counterscarp has become the recipient of 2 one-story brick structures in the northeast corner, (Photo 3-38) probably built during the Endicott period and apparently used for paint shops and storage during the 1930s renovation. These buildings strongly detract from the historical purpose of the dry channel moat and visually block the long-view of the loop holes in the stone connecting tunnel in the northeast corner. In addition, the dry channel moat, like other areas, has become the setting for a maturing stand of deciduous trees and scrub brush that are inappropriate to its historical context (Photos 3-39 and 3-40). Also, the open corner of the moat in the southwest corner of the Fort which opens onto Tompkins Street, is presently secured by an unsightly chain link and barbed wire fence.

The counterscarp gallery, which parallels the land fronts on the north, northwest, and southwest sides, consists of a series of spaces with stone walls, vaulted ceilings, and narrow loop holes that look into the moat (Photos 3-41 and 3-42). At the southwest and northwest corners, mountings for large guns and steel-framed openings indicate the originally intended locations of flank howitzers capable of firing the length of the dry moat (Photo 3-43). Interestingly, the counterscarp gallery is built up with a combination of red sandstone and micaceous schist, with granite used only to face the counterscarp itself. It would seem that this economy of construction materials is now beginning to show itself in the erosion and delamination of many areas of the sandstone. The brick vaults and the schist appear to be withstanding the hydrostatic pressure in the soil above and to the side of them, but the sandstone has weathered significantly throughout. Off the northeast end of the counterscarp gallery is a short gallery with loop holes that open into the channel scarp. These four rooms exhibit the same variety of construction materials but contain two openings into the earth-beyond and dirt (Photos 3-44 and 3-45). This gallery probably was built to provide a safe passage from Fort Tompkins to the glacis gun battery, but this has not been fully substantiated.

In the center of the Fort, the parade area is a large open space that is presently becoming overgrown with scrub trees and brush that is inconsistent with the historical use of the area (Photo 3-46).

In general, the architectural elements of the Fort are in good condition in spite of the many changes that have taken place over the past hundred years; many of the historically significant features that contribute to the character of the building are still intact, and those that have been removed or are deteriorated can easily be copied from remaining elements. Surprisingly, the building has not suffered greatly from the many changes, and it is only now beginning to show signs of wear from its recent history of benign neglect.



Photo 3-38
Two buildings in
northeast corner of
dry channel moat.



Photo 3-40
View looking south along west portion of dry channel moat.

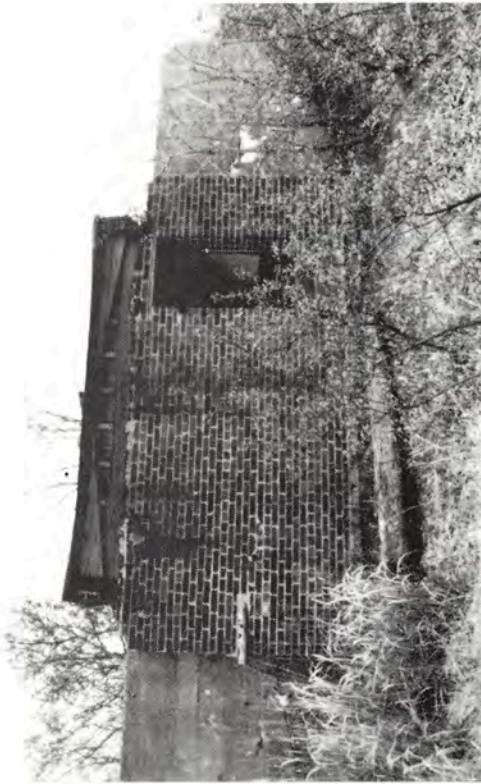


Photo 3-37
Observation post in southeast corner.



Photo 3-39
View looking east in dry channel moat at
building and scrub trees and garbage.

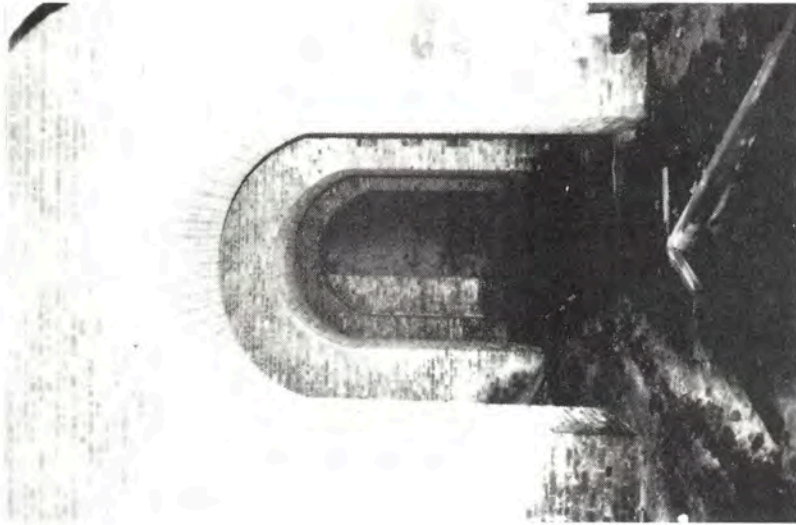


Photo 3-41
View looking east along north counterscarp gallery.

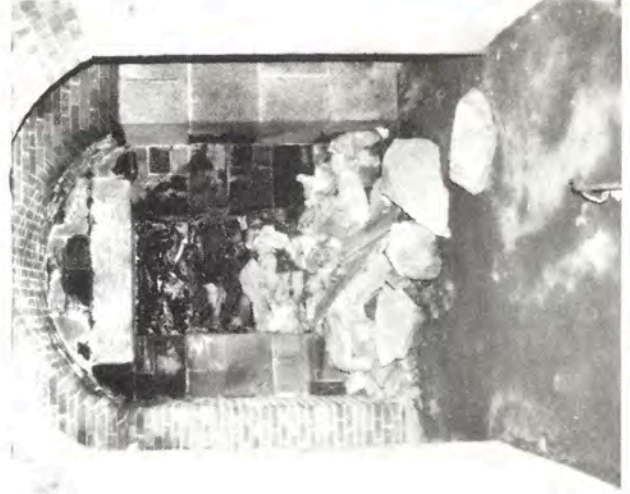
RIGHT: Photo 3-43
Detail of loophole at one of the positions for flank howitzers in northwest corner of counterscarp gallery.

FAR RIGHT: Photo 3-44

View of collapsed opening in northeast corner of gallery to the glacis gun battery.



Photo 3-42
Detail of brick groin vaulted ceiling in northeast corner of counterscarp gallery.



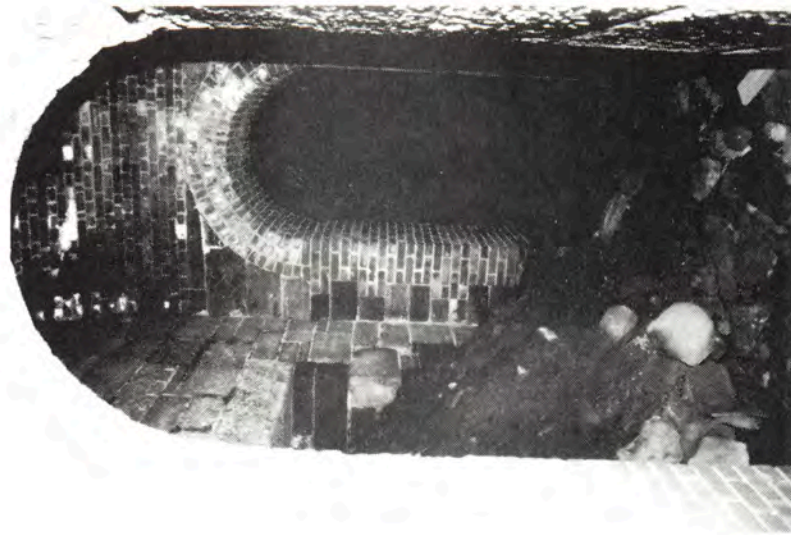


Photo 3-45
View of gallery between counterscarp gallery and glacis gun battery; opening at left is caved-in.



Photo 3-46
General view of parade looking northwest; note extensive overgrowth on west, north, and east barbettes and deteriorated walkway on east side.

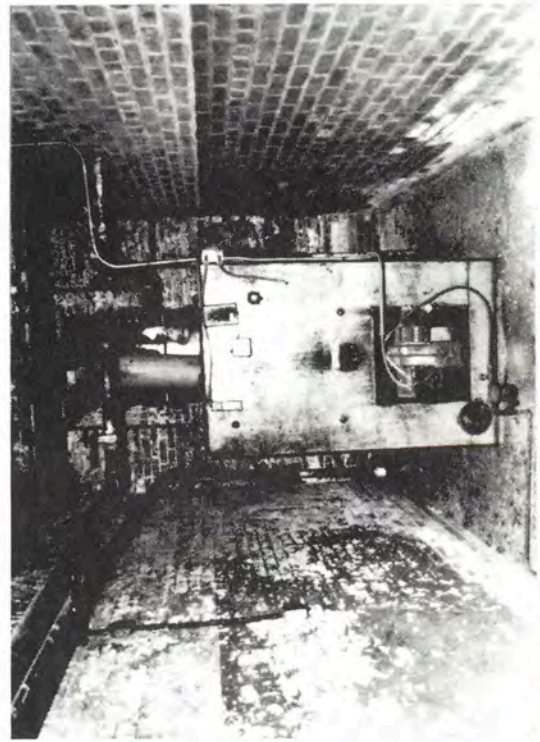


Photo 3-47
View of room D and large oil fired furnace.



Photo 3-48
View of insulation material, probably asbestos, on pipes.

C. Structural Elements

At the present time, the basic structural system of the building does not show any signs of stress or undue movement. This is undoubtedly due to the very large safety factor calculated into the system's design, which was required to support barbettes that contain at least a 21' depth of earthwork.

On the channel front casemates, 5' thick solid brick masonry walls support brick vaults that alternate in width between 18' and 24'. On top of the vaults, according to original drawings, is a concrete deck that follows the basic contour of the vaults. The earthwork is placed on top of the concrete and there is surprisingly little evidence of any moisture leakage in the vaults which indicates continuity of the masonry and a lack of cracking from either shrinkage or settlement. This is somewhat surprising considering the sedimentary characteristics of the soil in the area and the amount of disturbance that has taken place over the years prior to the construction of the Fort.

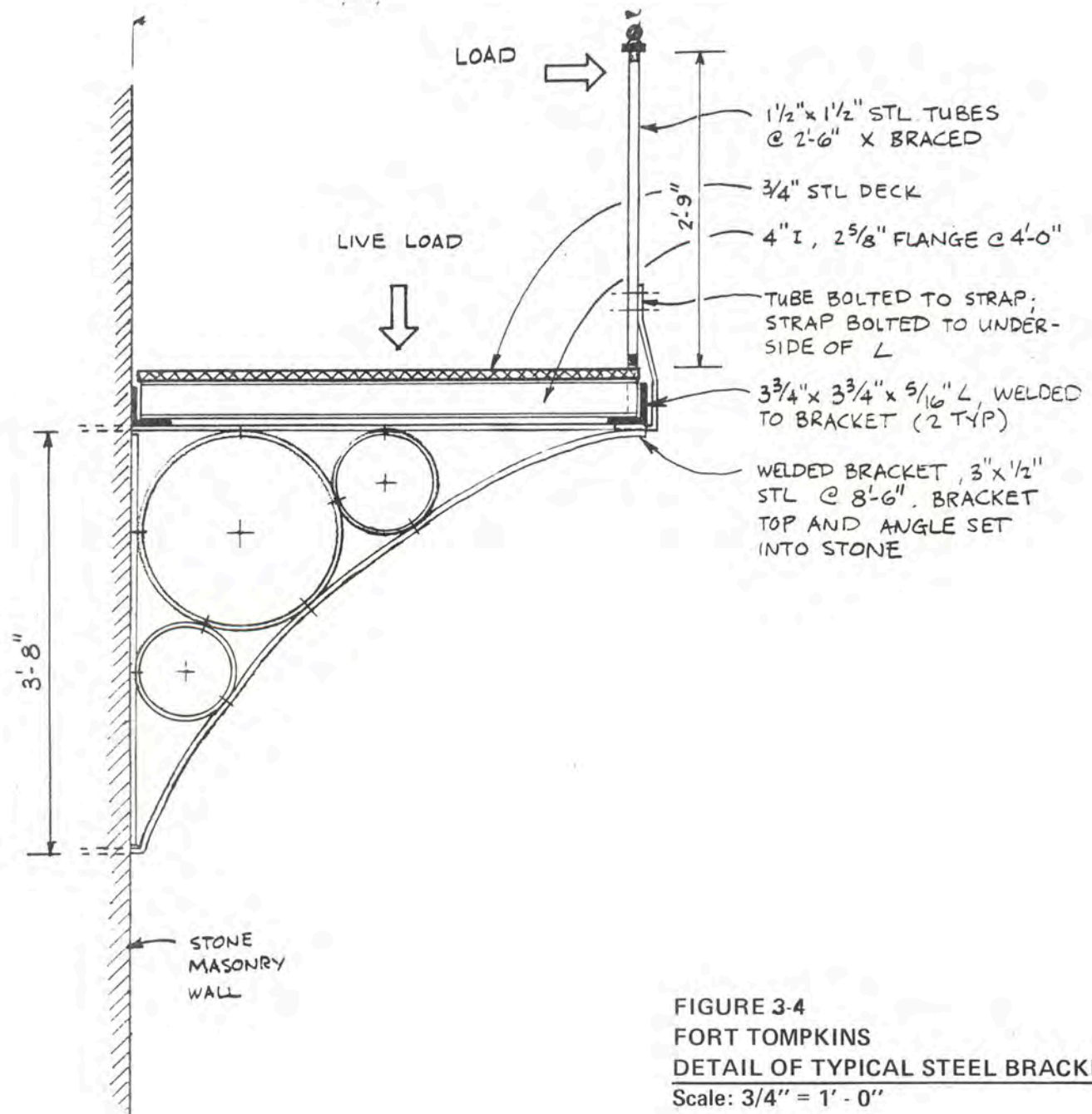
The land front casemates are similar in their relative overdesign to accommodate the barbette. Unfortunately, the wood ceilings in the second tier casemates hide any potential problems from view, so it cannot be authoritatively determined if there are any areas of masonry weakness. However, it seems reasonable to suggest that if moisture, and hence structural problems have occurred in the masonry, they would have stained or deteriorated sections of the woodwork directly below.

A peculiar problem exists in the steel decking and stairways on the second floor and on the east side at the parapet level (Figures 3-4 and 3-5). By their respective designs, the walkways and stairway landings can support a live load of 50 p.s.f.. However, as mentioned in the Architectural and Historical subsection of this Chapter, corrosion and rust have made many members unsafe. This is taking place largely at endpoints where the diagonal members are welded onto the horizontal members, and at the points where they both penetrate the masonry to provide anchorage. In addition, rust is beginning to show in many areas on the supporting sections of the brackets and this will begin to decrease their effective material sections and hence, their moduli of elasticity.

In general, however, the Fort's structural system is largely intact and sound. Its tremendous overdesign has made it a durable and lasting building that has withstood over a century of exposure to the soil and its water and the harsh climate associated with its waterfront position.

D. Mechanical Systems

The most recent heating plan for the Fort Tompkins is a sectionalized, hot water heating system comprised of six heating area sections. The larger oil fed furnaces; Weil Mc Lain, 720 MBH as shown in Photo 3-47, are located in casements 14, 30 and Room D. The other three smaller furnaces are located in casements 4, 22 and Room N. The heated hot water is recirculated as to the second floor areas by means of a piped recirculation system. These pipes are insulated with a material which appears to be asbestos in casemates 12, 13, 14, 31, 33 and 35, as shown in Photos 3-48 and 3-49. Over 170



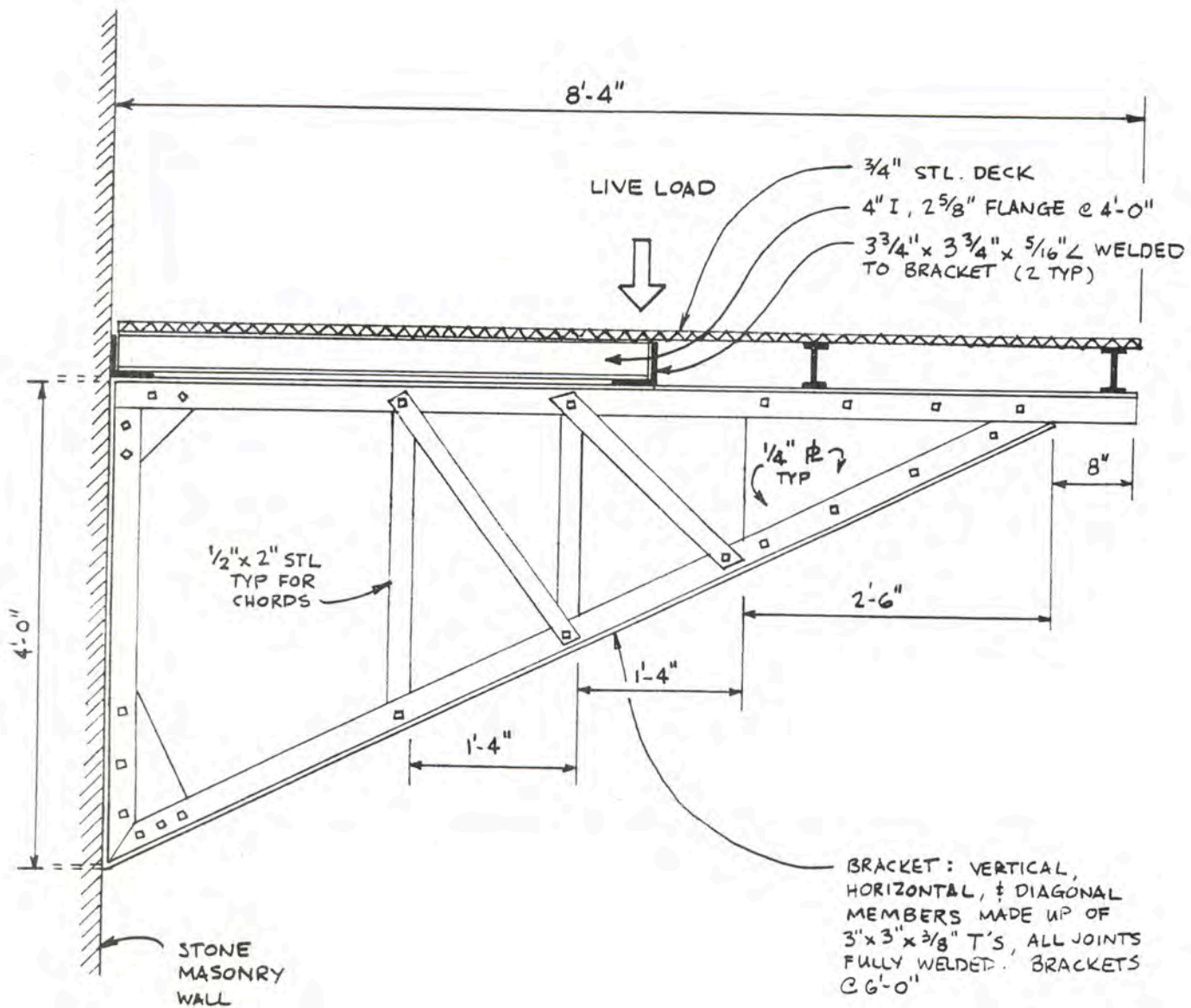


FIGURE 3-5
DETAIL OF STEEL BRACKET
AT STAIRWAY

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

radiator sections are located in the casemates, rooms and hallways for heating, (Photos 3-50). Although there were fire places in many of the casemates (Photo 3-51), there is no evidence that they were ever used as such as indicated in the architectural subsections of this study.

Water is supplied to Fort Tompkins by two water mains which traverse the parade area from north to south. The larger main, eight inches in diameter, supplies water to two fire hydrants in the parade area. A smaller six inch diameter pipe line, in parallel, supplies water to the west and east sides of the Fort. A water valve located in the sidewalk in front of casemate 14 is shown in Photo 3-52. There is also evidence of water being supplied from the six inch water main to water valves in Room Q as shown in Photo 3-53.

An eight inch diameter sewer line traverses the parade area from south to north and connects to the main sewer along the channel in front of Fort Tompkins. There are also existing sewers along the south side of the southern casemates and along the dry moat behind the casemates on the west side of the Fort. The available General Sanitary-Sewer Map for Fort Wadsworth identifies only the sewer that traverses the parade area. The sewers in the south casemate area, however, pass directly through or beneath the exterior wall of the Fort and discharge into the collection sewer paralleling the exterior wall on the south side as is shown in Photos 3-54 and 3-55. Photo 3-56 provides a typical view of the poor condition of the plumbing fixtures.

A motorized chain operated lift is located between room A and the adjacent sally port entrance along the west parade wall of the channel front to service the second floor walkway. It is non-functional.

E. Electrical Systems

Electrical power is supplied to Fort Tompkins by means of a direct buried underground cable extending from pole number 118, located behind building 123, to building 125, an electrical vault on the West Glacis. Three 50 kVA transformers located in this building convert the primary high voltage to 220/110 before it is delivered to Fort Tompkins, (building 137). It should be noted that contrary to the General Electrical Map for Fort Wadsworth, this secondary 3 phase, 4 wire system spans over the dry moat from the west glacis, across the barbette on the casemates on the west side of the parade area and down the wall facing the parade to a main breaker located in front of casemate #14 as shown in Photo 3-57.

The three phase power is transmitted from the main breaker to the exterior electrical distribution ring which is suspended below the second floor walkway, shown in Photo 3-58, along the south, west and north interior walls of Fort Tompkins and is attached to the west parade wall of the channel of the Fort.

There are three disconnected 50 kVA transformers located in a room on the third floor in the southeastern corner of the Fort adjacent to the stair tower. Photo 3-59 shows these transformers and associated electrical apparatus.

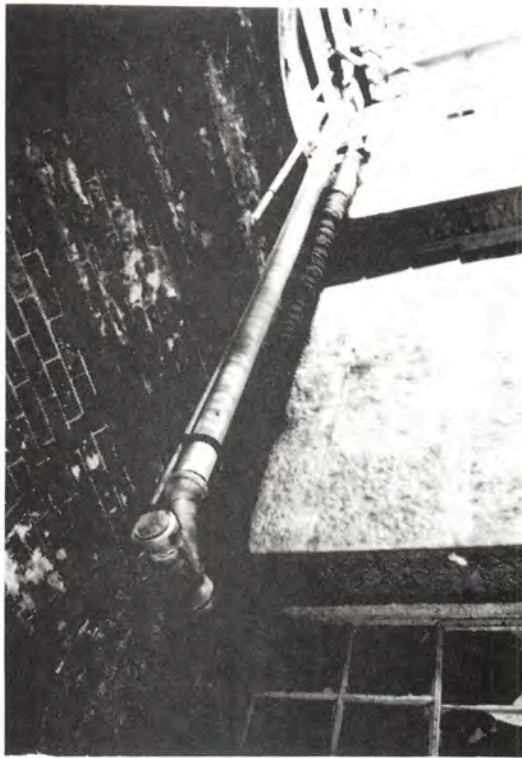


Photo 3-49
Standing in vehicle entranceway with view of insulated pipe running between casemate 34 and casemate 35.



Photo 3-50
Typical view of a radiator section located in casemate 67.

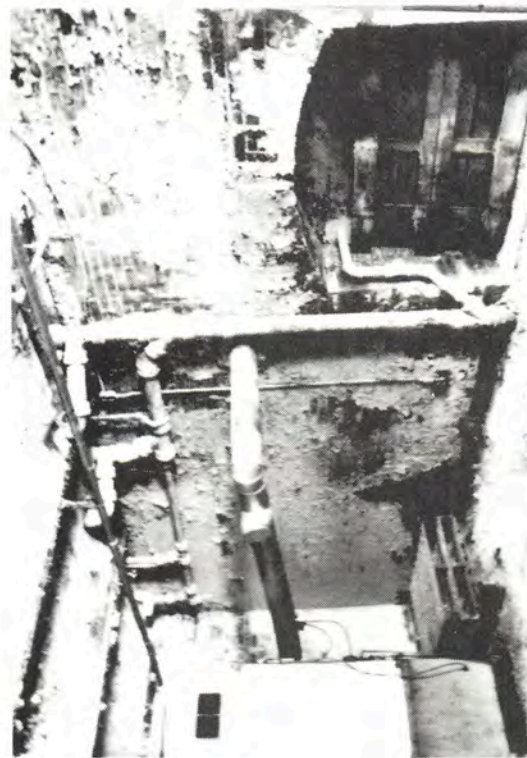


Photo 3-51
A closed-up fireplace located in casemate 67.

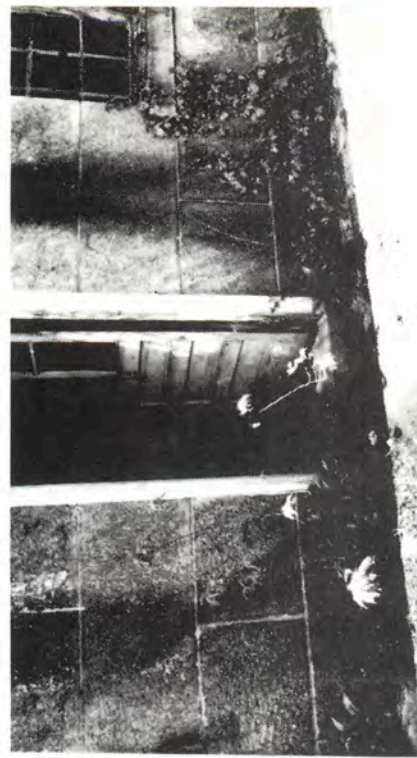


Photo 3-52
View of a water valve in the sidewalk in front of casemate 14.



Photo 3-53
Photo of water being supplied from the water main to water valves in Room Q.



Photo 3-54
View of sewer pipes in the south casemate area beneath the exterior wall.



Photo 3-55
Outside view of sewer pipes in the south casemate area beneath the exterior wall.



Photo 3-56
Typical view of the deteriorated condition of the existing plumbing fixtures

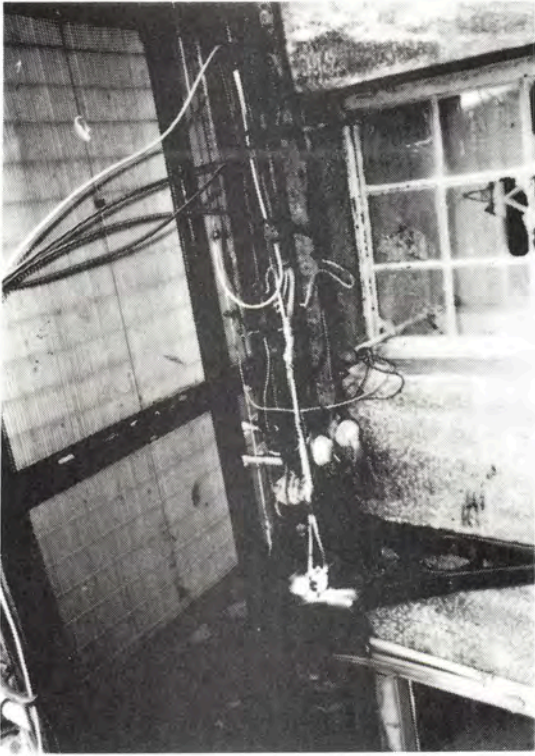


Photo 3-57
View of overhead support to electrical distribution ring in front of casemate 14.

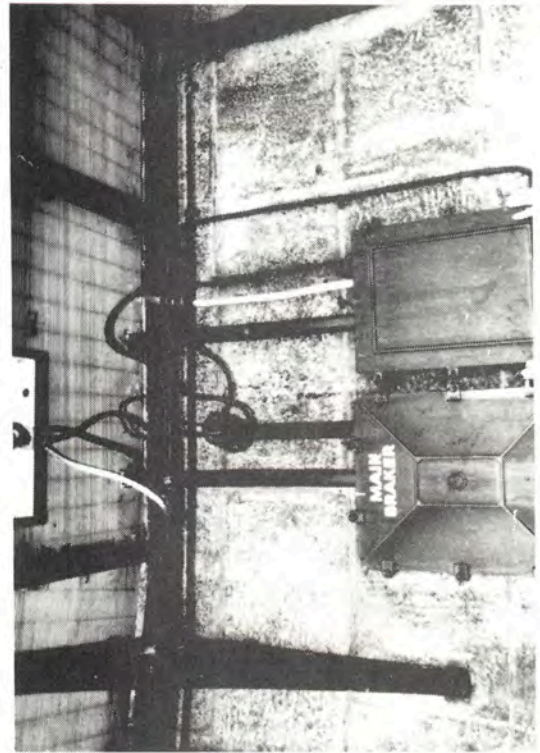


Photo 3-58
The main breaker located in front of casemate 14.

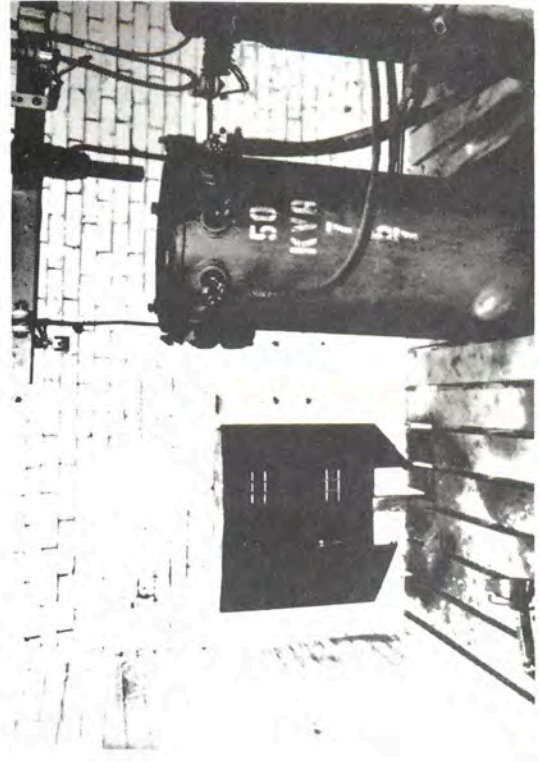


Photo 3-59
View of the fuse box and disconnected transformers in the southeastern corner of the fort.

F. Significant Problem Areas and Use Limitations

Adaptive re-use of Fort Tompkins, under the nine alternatives discussed in this report, must take into account several inherent problems and limitations. They may be summarized as follows:

- Prevention of water infiltration.
- Limitations on alterations to the structure due to:
 - a) constraints imposed by the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings.
 - b) the massive vaulted construction.
- Relative adaptability of the spaces for the considered purposes (use limitations).
- Limited access to parade area, from which access is gained to all interior spaces.
- Limited parking area, both on the site and in the parade area.
- Structural design of the second tier walkway support brackets, which are only capable of withstanding one-half of present day live load requirements.
- Adequacy of base utilities, water supply, sanitary sewerage and electrical power.
- Correction of three hazardous conditions before use.

These problem areas are discussed briefly below and will also be addressed separately under the various alternatives.

1. Prevention of Water Infiltration

Because of the massive earthworks on the barbettes (over twenty-one feet thick in some areas), it is not practical to waterproof the brick and concrete vaults of the casemates from above. Although most roof vaults do not appear to leak, some do, and some, in the channel front casemates, maintain a constant state of dampness. Waterproofing or dampproofing should be accomplished by installing membranes above finish ceilings on the undersides of the vaults; applied sealants should be avoided. The second story casemates have wooden ceilings that obscure the brick vaults above, and thus, access to these vaults cannot easily be achieved. Fortunately, these areas appear to be generally dry, with the exception of several isolated areas.

2. Constraints Imposed by Guidelines For Rehabilitation

The Secretary of the Interior's Standards for Rehabilitation preclude extensive or material alterations to the appearance and basic structure of the Fort. This imposes constraints upon the adaptability of the Fort to uses foreign to its original purposes of defense and housing of troops. For example, existing entrances should not be enlarged, and new entrances cannot easily be constructed without materially altering the Fort's historical

appearance; nor can the loop holes be widened to provide more light and ventilation. While constraints such as these do not preclude the adaptive reuse of the Fort, they should be recognized as factors to be considered if any one of the alternatives is to be pursued.

There are three basic casemate sizes which may be subdivided, but cannot be enlarged because of the rigidity of the existing configuration. They are:

- Large Channel Front (east) casemates; 24' x 60' = 1,440 sq.ft.; 9 total.
- Smaller Channel Front casemates; 18' x 60' = 1,080 sq.ft.; 8 total.
- Land Front (south, west, and north) casemates, both floors; 20' x 40' = 800 sq.ft.; 60 total.

3. Constraints Imposed by Vaulted Construction

Alterations to the massive, vaulted existing structure, if carried out, would not be very cost effective because of the expenditure relative to the benefits gained. In addition, such alterations would seriously alter the original appearance of the Fort, which would not be permitted under the Secretary of the Interior's guidelines. Therefore, existing spaces should be utilized as much as possible in their present forms, except for minor alterations that would not materially alter the integrity of the Fort.

4. Use Limitations

The above mentioned problem areas are, in themselves, limitations to the proposed alternatives, which will require further study in future design analyses. Limitations imposed by the existing Fort configuration vary with each alternative use. Some uses could be readily adapted to the Fort's limitations, while others would require innovation on the part of the design team.

As an example, the land front casemates lend themselves readily to use as bachelor living quarters because the basic casemate size can be easily subdivided into individual bedrooms, toilets, etc. The adjoining doors between casemates permit development of a corridor serving the rooms. The problem of limited daylight from the loop holes facing the moat will need to be addressed during the design phase.

On the other hand, the long series of casemates does not readily lend itself to the normally conceived type of exchange store, in which large open spaces might be deemed preferable to the series of small spaces available. Again, with imaginative design, this constraint can be used advantageously. Similarly the height limitations of the casemates prevent activities such as basketball, volleyball and tennis. Such activities would have to be in the parade, and connected to the existing Fort as ancillary space.

Usable site available for development is limited to the interior parade area and the dry moat. The latter, because of its configuration, is of questionable utilitarian value. The parade area, however, is very adaptable to parking and outdoor activities.

The only site space available for new construction, such as a gymnasium building, is in the parade area. Construction of new buildings in the parade area would detract from its historical visual aspects and its relationship to the interior walls of the Fort. Outdoor parking, playing courts and landscaping, on the other hand, would have minimal adverse effect upon these relationships, and are good examples of adaptive re-use.

5. Limited Access to Parade Area

All interior spaces are entered from the parade area; some access between floors is available through interior staircases. Access to the parade itself is gained principally through two pairs of heavy wood doors in the channel front sally ports providing 9' x 9' openings, each opening into a nine-foot wide passageway. A single passage door opening into a pedestrian corridor leading from the northeast end of the dry moat; and a matching passage on the southeast wall to the parade area, provide the only other access to the interior, with the exception of a single pass-through loading dock into channel front casemates from the road. The two sally ports are the major architectural statements on the channel front of the Fort, facing the Narrows; alteration of these openings to provide more ample access to the parade would be historically inappropriate. Therefore, these entrances become limiting factors for vehicular access to the parade and consequently to all the interior spaces. Practical access would be limited to delivery vans, pick-up trucks and smaller vehicles.

6. Limited Parking Area

If used entirely for parking, the parade area can accommodate 130 to 140 vehicles of sizes that can gain access through the sally ports. Parking in the road east of the Fort is assumed to be unavailable because it has been reserved for other activities under consideration by the Navy. West of the glacis, parking spaces to be developed under the Fort Wadsworth Master Plan would provide convenient additional open parking, should it be required by a particular usage.

7. Structural Design of Second Tier Walkway

As outlined in the structural subsection of this chapter, the brackets that support the walkways linking the rooms on the second tier are not adequately sized; as a result, they cannot carry the required live load. Detailed engineering analysis will need to be undertaken during future design phases to determine how the brackets can be made structurally adequate without affecting their historical appearance.

8. Adequacy of Base Utilities, Water Supply, Sanitary Sewerage and Electrical Power

Base utilities, water supply, sanitary sewerage and electrical power are available within the parade area of Fort Tompkins. Their adequacy to supply the demands of specific alternatives and their impact on the base utilities requirements will need to be determined when a more detailed design is developed.

9. Corrections of Three Hazardous Conditions Before Use

Three hazardous conditions exist which demand correction before the facility can be used for any purpose. First, existing asbestos insulation must be removed from piping; secondly, paint containing lead must be removed from all wall and ceiling surfaces; and, thirdly, hazardous chemicals must be removed from the site.

The asbestos pipe covering occurs in six or seven isolated casemates on the first floor level. Paint, presumed to contain lead, (although not so analyzed) occurs on virtually all interior surfaces of the casemates. Three abandoned transformers in the east stairway may contain PCB's, and several drums of hazardous liquids are stored in the north magazine area.

G. Public Opinion/Social Acceptability

1. Historical Background

Draft and Final Environmental Impact Statements for the Surface Action Group Homeporting were filed by the Department of Navy in October 1984 and February 1985, respectively. Draft and Final Supplemental Environmental Impact Statements which addressed the proposed changes/additions to the Navy's planned Homeport facility were filed by the Navy and Army Corps of Engineers in December 1985 and March 1986, respectively.

Under a revised concept plan, approximately 30 acres of land, including 2,925 feet of wooded shoreline and a vehicular access corridor from the Bay Street/main base entrance, would be transferred to the National Park Service for the Gateway National Recreation Area. Although at one time Fort Tompkins was under consideration as part of this transfer, the transfer alternative outlined in the Final Supplemental Environmental Impact Statement (EIS) did not include the Fort.

The following local, regional and state agencies, as well as private citizen groups commented on the Draft EIS and Draft Supplemental EIS, expressing interest in the outcome of Fort Tompkins:

- Advisory Council on Historic Preservation
- Army Corps of Engineers, New York District
- Department of Housing and Urban Development
- Department of the Interior, Office of the Secretary
- Department of the Interior, National Park Service
- New York State Office of Parks, Recreation and Historic Preservation
- Preservation League of Staten Island
- Professional Archaeologists of New York

2. National Park Service Preliminary Management Plans

In discussions with the National Park Service, Gateway National Recreation Area (NRA), Superintendent Robert MacIntosh indicated that, at the time Fort Tompkins was under consideration for transfer to Gateway NRA, the following preliminary plans were being formulated:

- NPS envisioned Fort Tompkins, Battery Weed, the temporary ROICC Office and waterfront area as a waterfront promenade/public recreation area with access to New York's Arthur Von Briessen Park.
- Battery Weed renovation would be at a minimum; all safety hazards would be removed; the public would be allowed free access to the site; activities could include theater and music performances/concerts.
- Munitions storage shed behind Battery Weed would be redesigned to accommodate public restrooms and administrative support facilities.
- Munitions Pier would be rehabilitated to accommodate passenger ferries.
- Temporary ROICC Office (old Officers Club) would be redesigned to provide a visitor station/interpretive center for the Gateway NRA Fort Wadsworth area.
- Fort Tompkins would be rehabilitated to include conference/educational facilities for use by non-profit groups, storage of maintenance vehicles and possibly the joint operation of the Army museum which once occupied a portion of Fort Tompkins.
- Remaining waterfront property would be largely undeveloped with the exception of pedestrian and bicycle paths.

Currently, the National Park Service is meeting with the City of New York Department of Parks and Recreation as well as the Department of Navy in order to revise the NPS management plan for the 30 acres of land transferred to the Gateway NRA.

3. Social Acceptability

In order to determine social acceptance of any or all of the proposed alternatives a federal agency, the Advisory Council on Historic Preservation and a state agency, the New York Office of Parks, Recreation and Historic Preservation, were contacted. These agencies were notified of the ongoing Adaptive Reuse Analysis and advised that all use alternatives would take into consideration the Secretary of Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Structures. Comments from the reviewing agencies are included in this document as Appendix B and are summarized as follows:

Advisory Council on Historic Preservation:

The Advisory Council had a number of concerns regarding the proposed alternatives. First, the ideal reuse of the Fort would maximize the use potential of the structure to the fullest while preserving the bulk of its historic fabric. The Council stated that a use which fully integrates the

Fort into the life of the base and allows it to be fully utilized by a wide variety of people, would offer the greatest benefits, and would permit the fullest appreciation and exploitation of the structure's aesthetic and historic significance.

Therefore, the Council indicated that the least desirable uses of the Fort would be Alternative 1 (No Action), Alternative 4 (Parking Facility) and Alternative 5 (Supply Storage Facility) which would underutilize the structure. Although the base police component of Alternative 2 (Public Works Complex/Police Station) is more in keeping with the original use of the Fort, the Council felt that this alternative appears to suffer from the same disadvantages as Alternative 1, 4 and 5. The Council indicated that the most desirable uses of the Fort therefore, were Alternatives 3 (Classroom Facilities/Indoor Recreation), 6a/6b (Recreation Facilities), 7 (Unaccompanied Enlisted Personnel Housing) and 8 (Unaccompanied Officer Personnel Housing), which fully utilize the facility and permit a variety of base personnel to use and appreciate the building.

In general, the Council indicated that if the Fort is reused, parking on the interior of the structure should be eliminated or minimized as much as possible in order to preserve the spatial and historic integrity of the parade. Additionally, the Council suggested that reuse alternatives should be developed with an interpretive component to promote appreciation of the structure's significance, particularly if the structure were to be used by a large number of base personnel. The Council noted that "an interpretive component would be important if, as envisioned in the project's Memorandum of Agreement, future coordination with the National Park Service leads to limited public access to the structure".

New York Office of Parks, Recreation and Historic
Preservation (State Historic Preservation Officer)

This agency indicated concerns very similar to those of the Advisory Council, namely that the Fort should be utilized to its fullest extent and that the preferred use should be people-oriented (i.e., living quarters, classroom training facilities, etc.) In a letter dated June 25, 1987, Bruce Fullem, Project Review Coordinator, indicated that their preferred alternative would be one "which preserves the Fort with the maximum non-destructive reuse of historic fabric and maintenance of original spatial configurations to the maximum extent practicable."

IV Development and Evaluation of Alternatives

IV. Development and Evaluation of Alternatives

A. Alternative 1: Retain Unused or for Temporary Storage

1. Description

This usage does not envision the spending of funds for alterations to the facility. However, Alternative 1 includes the correction of the three hazardous conditions and a general cleaning up of the premises. The facility can be used as is for general storage or for long term storage of organizational or non-organizational vehicles of sizes that can negotiate the entrance portals.

2. Cost

The total cost for Alternative 1 is \$445,440. The gross renovated floor area is 115,782 sq.ft. at a cost of \$3.93 per sq.ft. Costs by activity are as follows:

Demolition:	\$318,000
Asbestos/Toxic Removal:	\$ 30,000
Site Work:	0
Architectural/Structural:	0
Mechanical (HVAC, Plumbing):	0
Electrical:	0
Total	\$348,000
Total including N.Y. Area Cost Factor (28%):	\$445,440

3. Sketch Plan

Planning schematics for the first and second floor plans for Alternative 1 are provided in Figures 4-1 and 4-2.

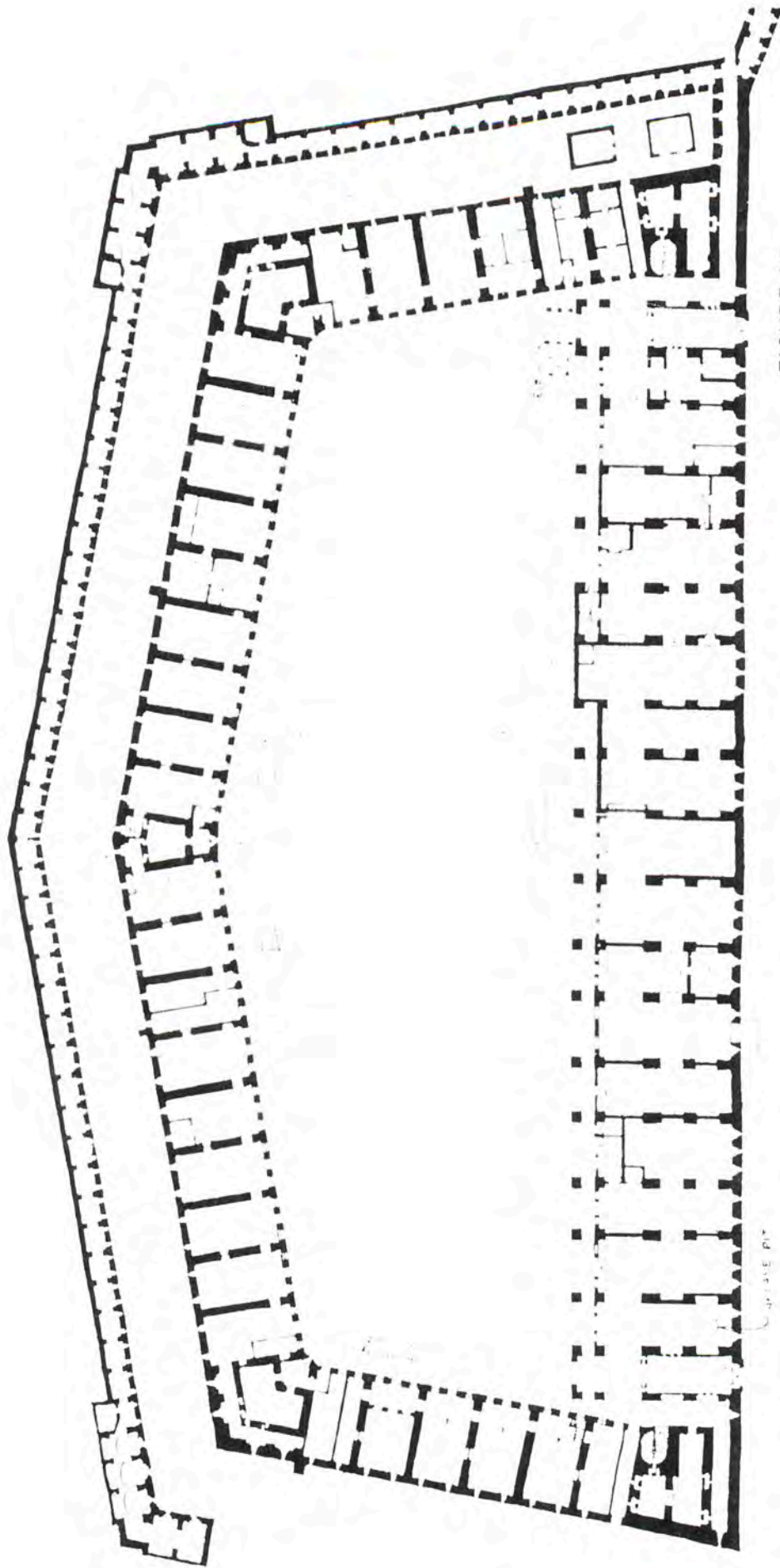


FIGURE 4-1
FORT TOMPKINS
FIRST FLOOR PLAN
ALTERNATIVE 1

RETAIN UNUSED OR
TEMPORARY STORAGE



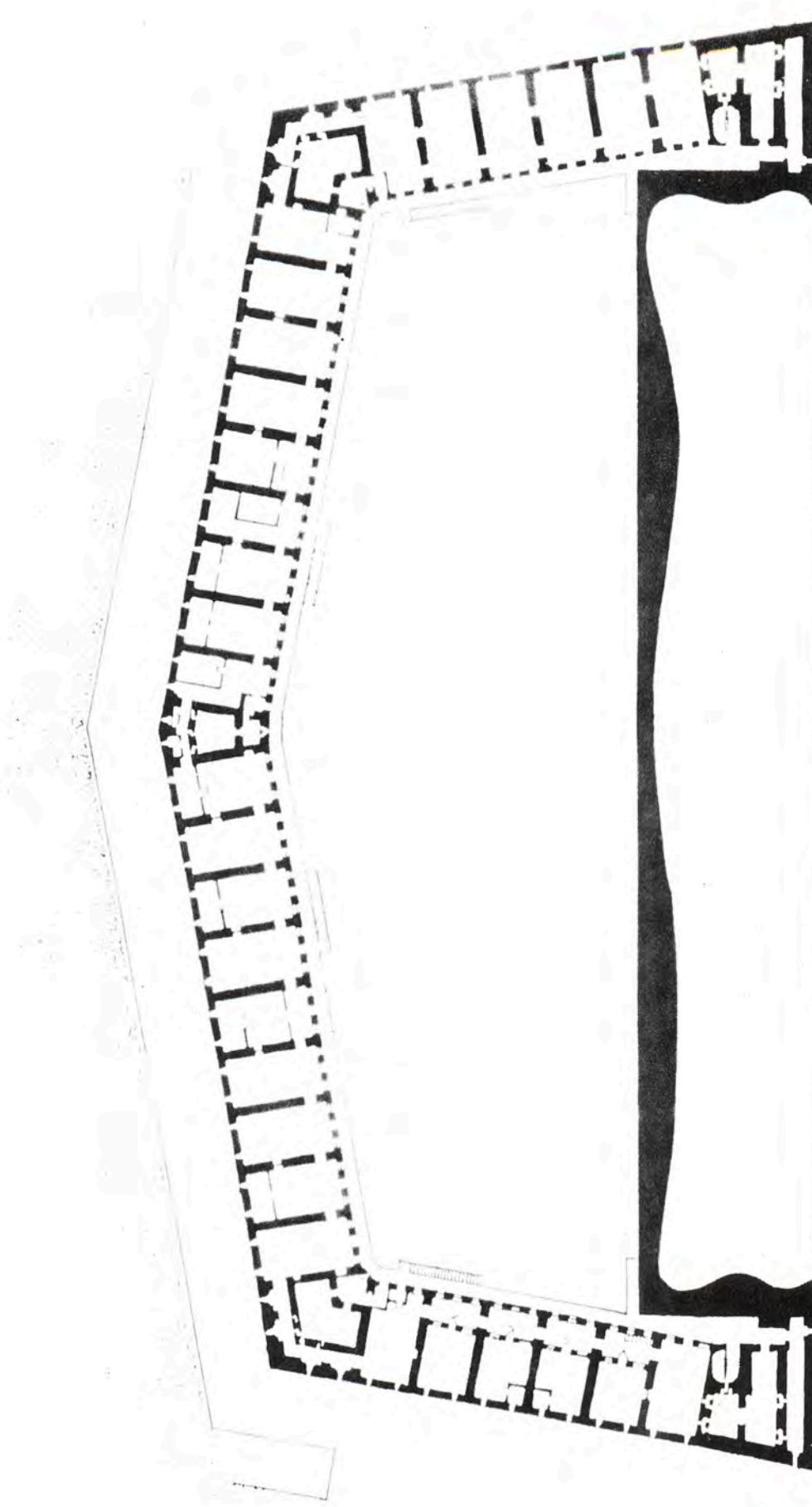


FIGURE 4-2
FORT TOMPKINS
SECOND FLOOR PLAN
ALTERNATIVE 1
RETAIN UNUSED OR
TEMPORARY STORAGE



B. Alternative 2: Public Works Complex, Police Station

1. Description

Access to all spaces in the Fort is from the interior parade ground. In turn, access to the parade area is through the two sally ports, each measuring nine by nine feet. This entrance limits the vehicles which may enter the parade area to those of small and intermediate size, such as automobiles, pick-up trucks, vans and two-ton trucks. This limitation may also affect the range of activities intended for the Public Works Shops and Pavement and Grounds Equipment Shed.

Public Works Administration:

Facilities for the Public Works Administration have been placed on the second floor since there is no requirement for vehicular access. The linear arrangement of the casemates, which would serve as the administrative offices will severely limit the relationships between offices since an interior corridor running adjacent to the exterior wall facing the parade area would serve as the only circulation spine. Secondary vertical circulation to the shops below could be achieved through internal staircases.

Public Works Shops:

The Public Works Shops would require the majority of the ground level spaces available. The shops will be subject to the previously discussed vehicular access limitations. It is necessary to locate over half of the required for Public Works Shops in the west and north land front casemates which have passage door access only. Cutting larger openings in the existing granite walls would not be consistent with the Secretary of the Interior's Standards for Rehabilitation and would be extremely expensive to achieve as well. The land front casemates provide a series of individual room sizes of approximately 800 net square feet, and those of the channel front are alternately 1,080 and 1,440 net square feet.

2. Cost

The total cost for Alternative 2 is \$7,001,600. The gross renovated floor area is 113,485 sq.ft. at a cost of \$61.70 per sq.ft. Costs by activity are as follows:

Demolition:	\$ 434,000
Asbestos/Toxic Removal:	\$ 30,000
Site Work:	\$ 238,000
Architectural/Structural:	\$ 2,628,000
Mechanical (HVAC, Plumbing):	\$ 1,066,000
Electrical:	\$ 1,074,000
Total:	\$ 5,470,000
Total including N.Y. Area Cost Factor (28%):	\$ 7,001,600

3. Sketch Plans:

Planning schematics for the first and second floor plan for Alternative 2 are provided in Figures 4-3 and 4-4.

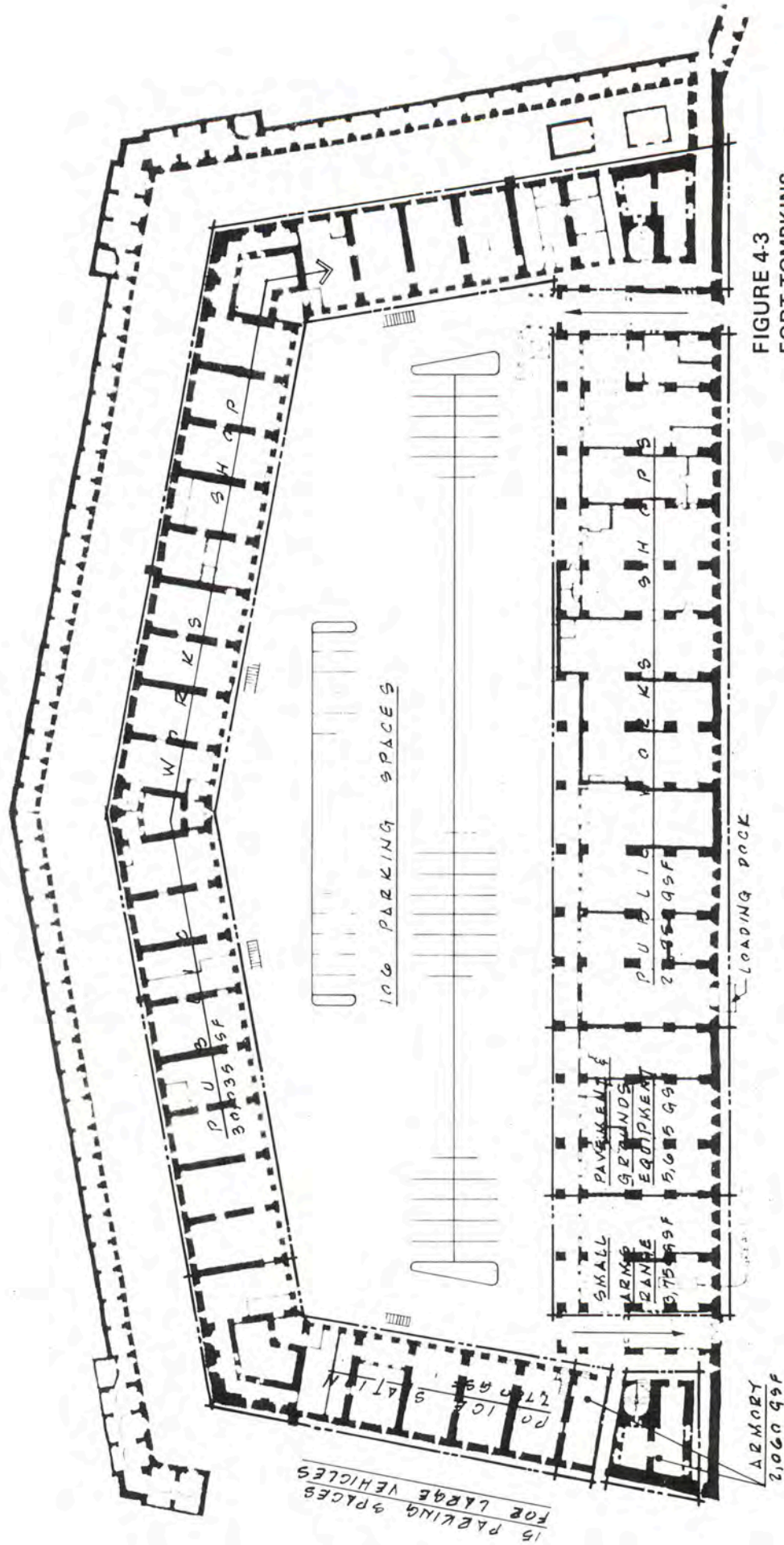


**FIGURE 4-3
FORT TOMPKINS
FIRST FLOOR PLAN
ALTERNATIVE 2**

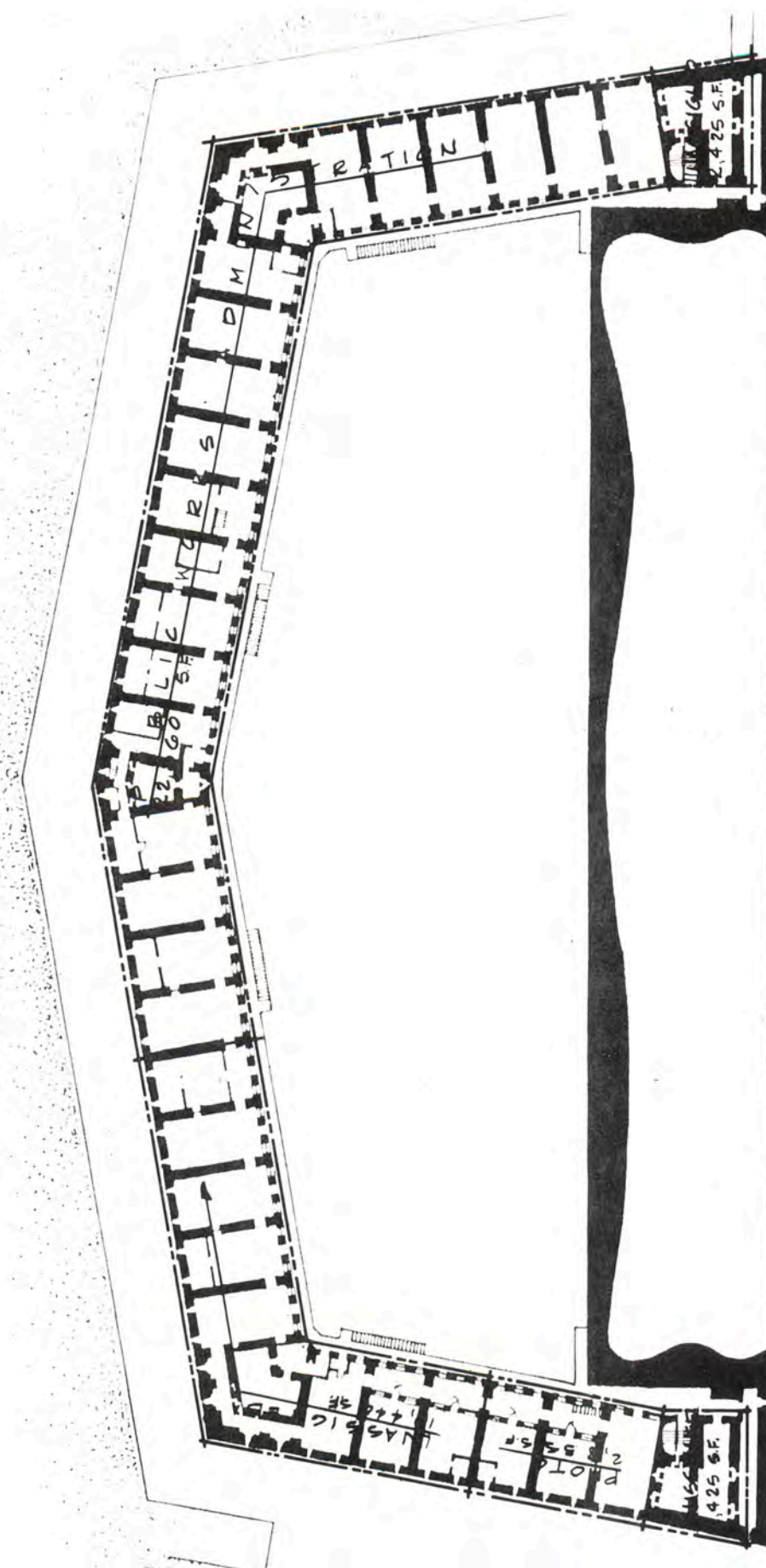


FIGURE 4-4
FORT TOMPKINS
SECOND FLOOR PLAN
ALTERNATIVE 2
PUBLIC WORKS COMPLEX/
POLICE STATION



C. Alternative 3: Classroom Facilities, Indoor Recreation

1. Description

In addition to classrooms and recreational facilities, this use also includes an educational service center, a Class VI package store, exchange retail store, post office, bank, and credit union.

Spaces requiring vehicular access are located on the first floor level. These include the post office, package store, auto hobby shop part of arts and crafts, and retail store. The special service center is located in the remaining first floor space. The bank, credit union, educational services office, youth center, multi-purpose meeting rooms, and balance of arts and crafts occupy the second floor.

Personnel Support Activity:

This activity is basically a classroom facility to accommodate 100 seats. Sizes of casemates are such that the net area available in a casemate is 640 square feet, which will accommodate 40 seats. Classroom size is therefore, limited to a maximum capacity of 40 seats. Ample space is available, however, to accommodate 100 seats in a series of separate rooms.

Educational Services Office:

This classroom activity requires lecture space for 200 persons which, because of the limitations of casemate size must be accommodated in 5 separate rooms of 40 persons each. The required spaces for instructors, storage, and reception are more easily accommodated.

Basewide Multi-Purpose Meeting Rooms:

Two casemates, with a total net usable area of 1,280 square feet, have been assigned to this undefined activity for non-official public meetings or gatherings.

Hobby Shop/Arts and Crafts:

As with all large area requirements, the arts and crafts shop must be segmented into a number of small individual rooms on 2 levels with the maximum net area for a single room of 800 square feet. However, interior staircases could be installed to provide vertical circulation.

Hobby Shop/Automotive:

The automotive hobby shops have been grouped in six large channel front casemates on the east side of the Fort with an outdoor area of approximately 6,000 square feet in the parade area. The casemates contain alternately 1,440 and 1,080 square feet each. These spaces should adapt very well to the intended purpose. The outdoor area will be separated from the remainder of the parade area, which serves as parking for the other facilities provided in this usage.

Youth Center:

The youth center, located on the second floor, consists of a linear series of casemates connected by a single-loaded corridor.

Special Service Center:

The special service center, located at ground level, is also a linear series of casemates with interconnecting doorways.

Class VI Package Store:

The package store is located in a group of channel front casemates on the east side and contains the only existing pass-through loading dock in the Fort. This opening will permit delivery of alcoholic beverages directly to the store via large trucks, and will also permit transfer of beverages to the clubs and open messes elsewhere on the base. The massive barrel vaults and heavy arches of the casemates should provide an architecturally attractive setting for the store. Parking is provided adjacent to the store in the parade area.

Exchange Retail Store:

The retail store occupies most of the west and north ground floor casemates, with parking adjacent in the parade area. The linear arrangement of the casemates forms the retail space into a series of sales rooms with interconnecting doors between rooms.

Post Office:

The post office is a group of four of the larger casemates. Postal deliveries may pose a design problem because of the limited 9'x 9' access to the parade. Parking in the parade area is available adjacent to the post office.

Bank:

The bank is located on the second floor level of the south casemates.

Credit Union:

The credit union is also located on the second floor level, adjacent to the bank, and occupying the remainder of the south casemates and several of the west casemates.

Parking:

There is space available for 107 vehicles in the parade area. In addition to the previously mentioned screened off area for the automotive hobby shop.

2. Cost

The total cost for Alternative 3 is \$9,004,800. The gross renovated floor area is 115,782 sq.ft. at a cost of \$78.13 per sq.ft. Costs by activity are as follows:

Demolition:	\$ 436,000
Asbestos/Toxic Removal:	\$ 30,000
Site Work:	\$ 238,000
Architectural/Structural:	\$3,802,000
Mechanical (HVAC, Plumbing):	\$1,341,000
Electrical:	\$1,188,000
Total:	\$7,035,000
Total Including N.Y. Area Cost Factor (28%):	\$9,004,800

3. Sketch Plan

Planning schematics for the first and second floor plans for Alternative 3 are provided in figures 4-5 and 4-6.

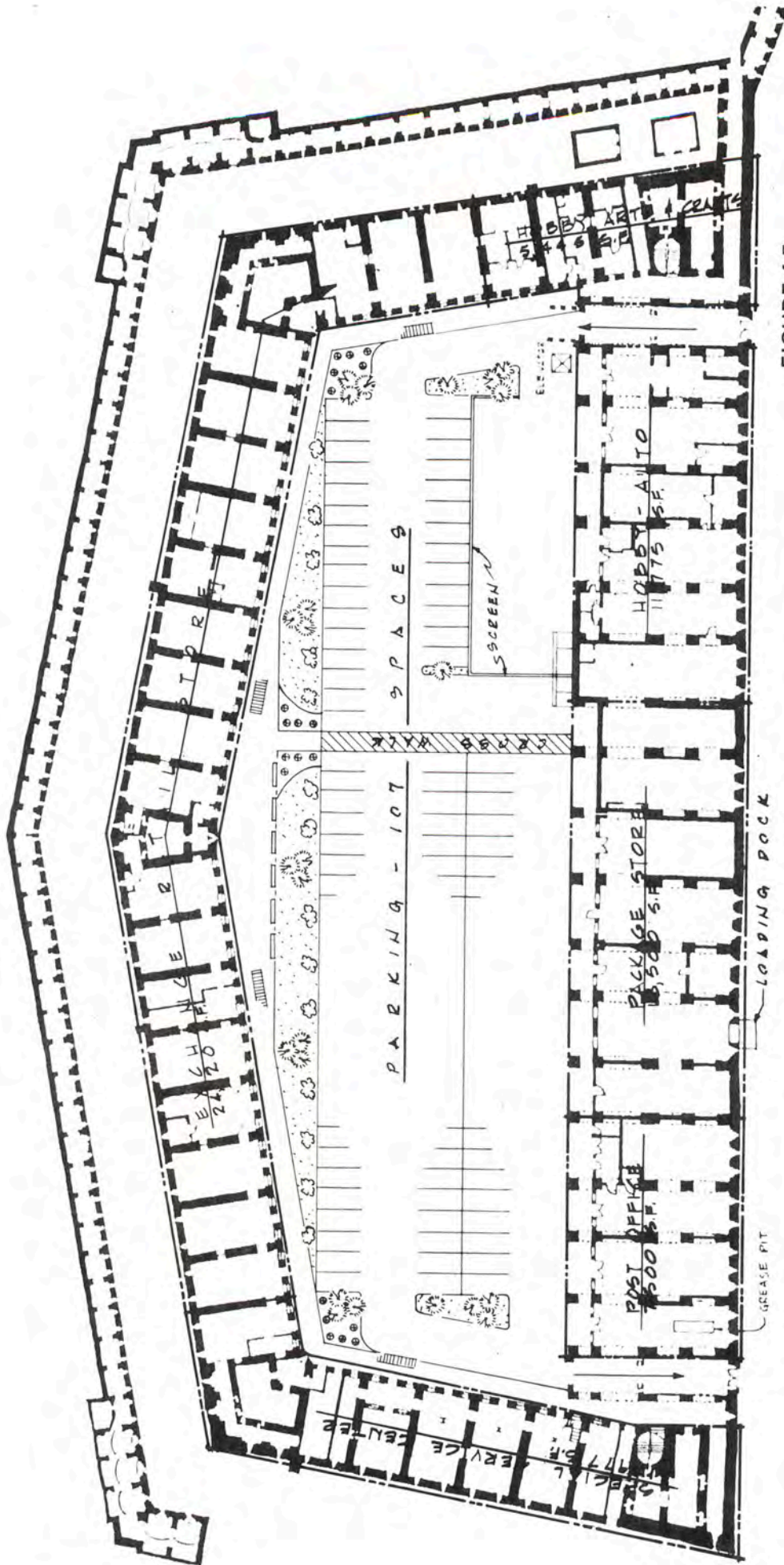


FIGURE 4-5
FORT TOMPKINS
FIRST FLOOR PLAN
ALTERNATIVE 3

CLASSROOM FACILITIES/
INDOOR RECREATION



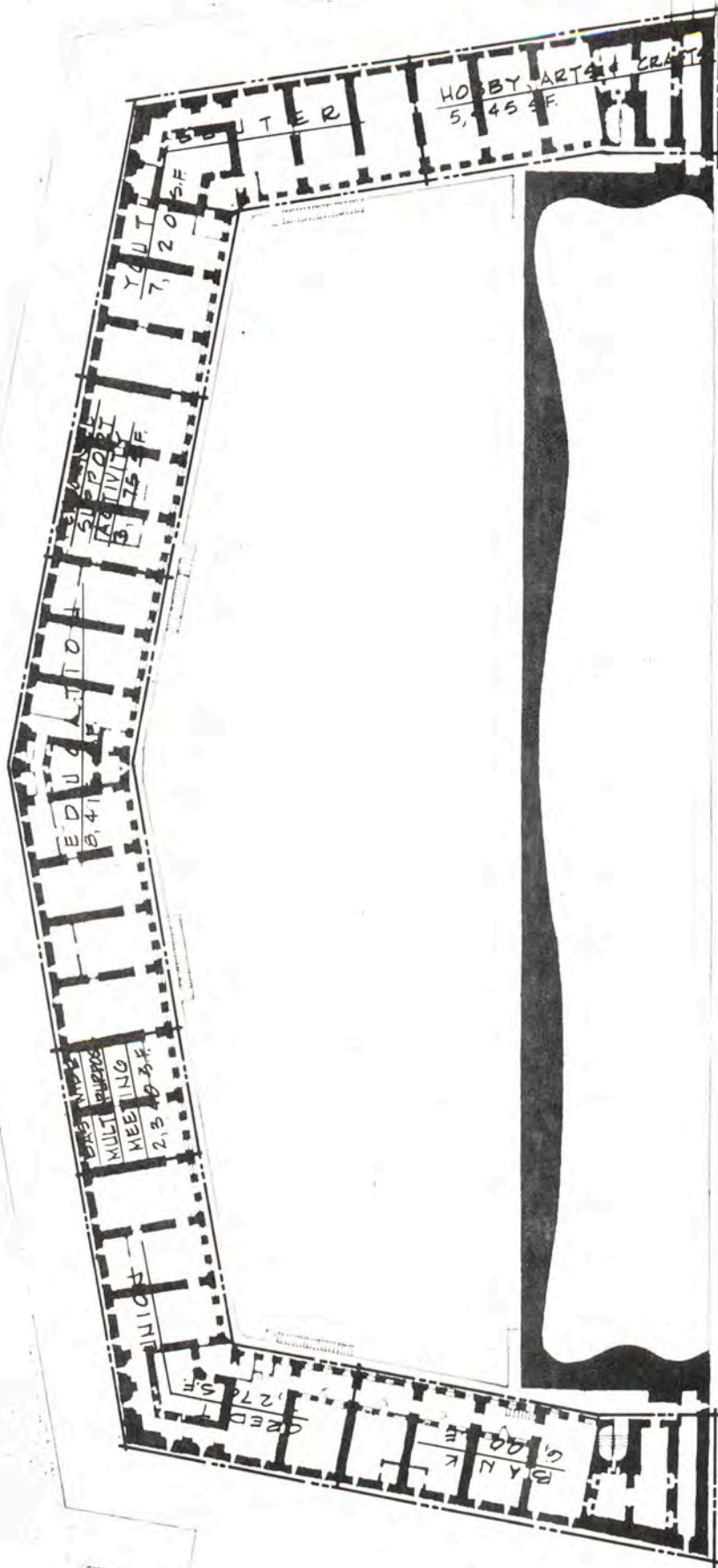


FIGURE 4-6
FORT TOMPKINS
SECOND FLOOR PLAN
ALTERNATIVE 3
CLASSROOM FACILITIES/
INDOOR RECREATION



D. Alternative 4: Parking Facility

1. Description

This usage alternative provides for sailor long-term parking for cars and boats, and for daily garage storage of organizational ambulances, police cars, and pickup trucks.

Covered storage can be accommodated in the channel front (east) casemates only, as these are the only casemates having sufficiently large entrances to allow passage of vehicles. These 17 casemates will accommodate 102 vehicles in three deep mode.

The parade area can accommodate 137 cars and/or boats in open air parking.

A dispatcher's office is located in one of the land front casemates adjacent to the south entrance to the Fort.

Parking can be provided only for vehicles that can pass through the existing 9' x 9' sally ports.

The second floor is unassigned for this scheme, since it is inaccessible for parking.

2. Cost

The total cost for Alternative 4 is \$1,821,440. The gross renovated floor area is 32,950 sq.ft. at a cost of \$55.28 per sq.ft. Costs by activity are as follows:

Demolition:	\$ 396,000
Asbestos/Toxic Removal:	\$ 30,000
Site Work:	\$ 223,000
Architectural/Structural:	\$ 141,000
Mechanical (HVAC, Plumbing):	\$ 27,000
Electrical:	\$ 606,000
Total:	\$1,423,000
Total including N.Y. Area Cost Factor (28%):	\$1,821,440

3. Sketch Plan

Planning schematics for the first and second floor plans for Alternative 4 are provided in Figures 4-7 and 4-8.

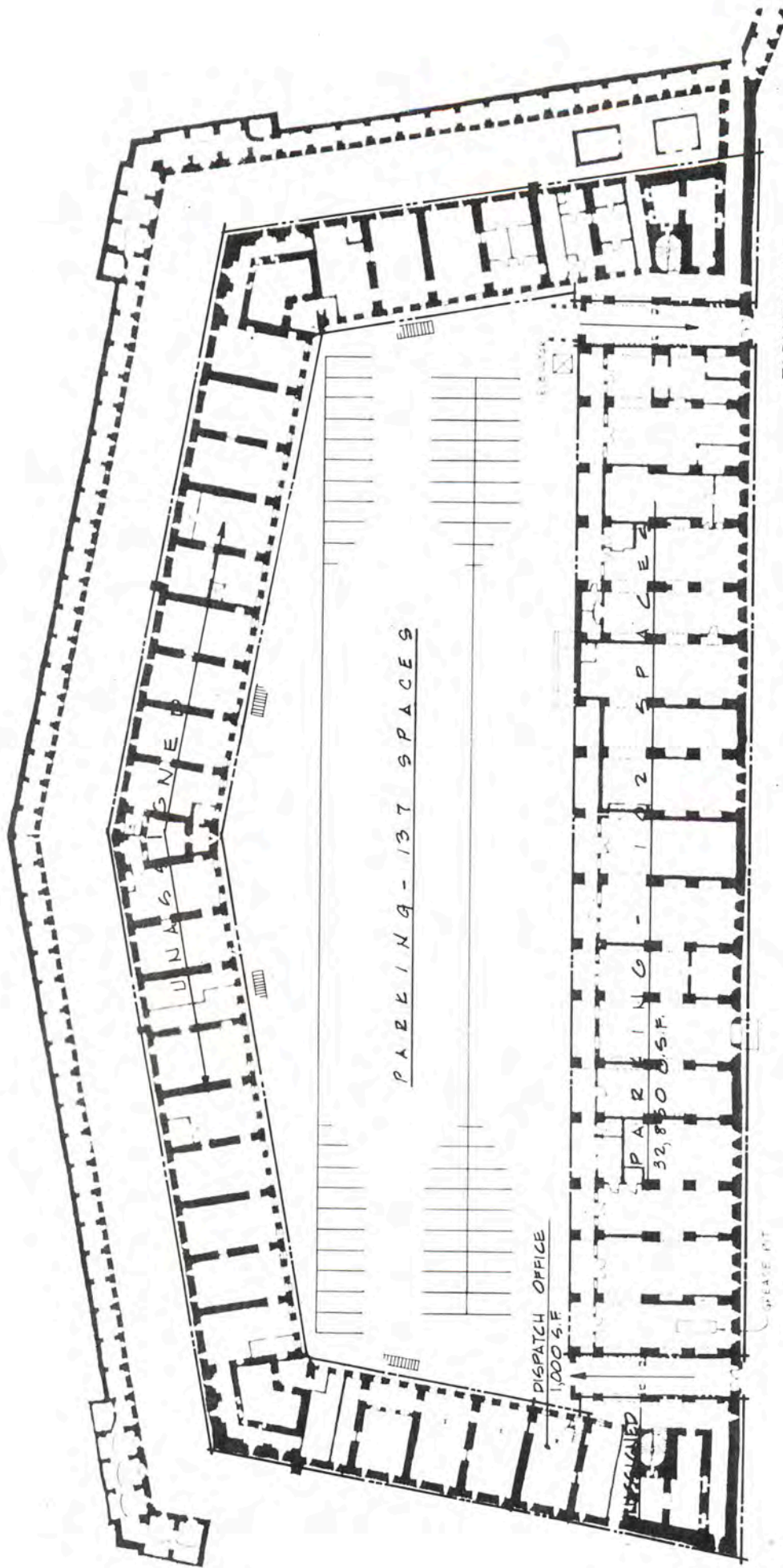


FIGURE 4-7
FORT TOMPKINS
FIRST FLOOR PLAN
ALTERNATIVE 4
PARKING FACILITY



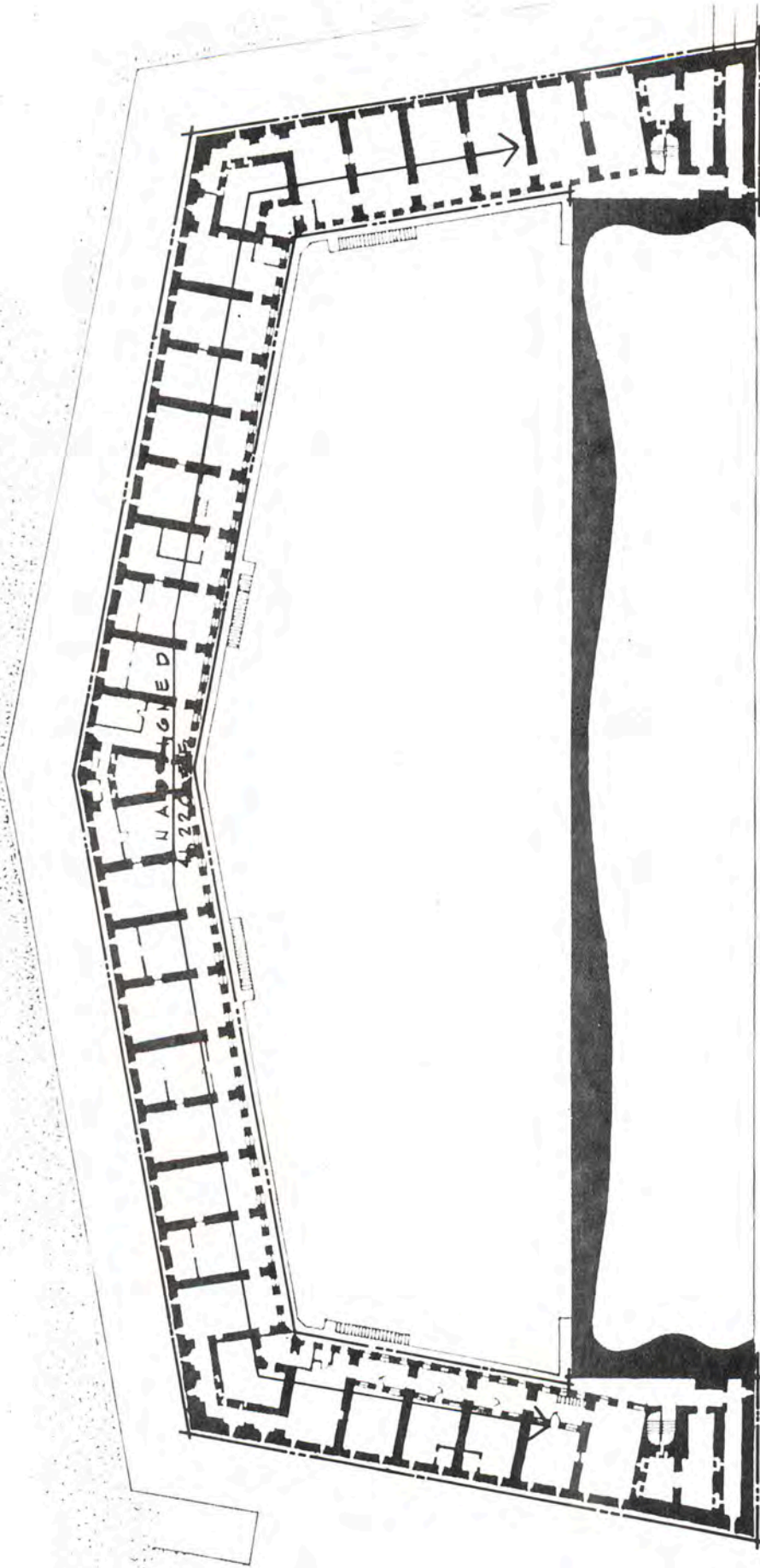


FIGURE 4-8
FORT TOMPKINS
SECOND FLOOR PLAN
ALTERNATIVE 4
PARKING FACILITY

E. Alternative 5: Supply Storage Facility

1. Description

Alternative 5 comprises three elements: 1) organizational and nonorganizational parking for an unspecified number of vehicles; 2) warehousing for an exchange, and; 3) parts storage for 400 housing units, bachelor quarters storage operational storage, and long-term seasonal recreational storage.

The channel front casemates are utilized for covered parking for 102 vehicles in three-deep mode. The parade area is utilized for maximum parking of 126 vehicles. Access is limited, as in all alternatives, to those vehicles which can negotiate the 9' x 9' entrance and exit portals.

The first floor north casemates are utilized for exchange storage and the south and west casemates on the first floor are assigned to the housing and long-term seasonal recreational storage. All storage in these land front casemates is in individual rooms of 800 square foot size each divided by the existing structure into a three foot wide passage door from the parade area.

The second floor casemates are not utilized for storage because of difficulty of access.

2. Cost

The total Cost for Alternative 5 is \$2,388,480. The gross renovated floor area is 59,385 sq.ft. at a cost of \$40.77 per sq.ft. Costs by activity are as follows:

Demolition:	\$ 417,000
Asbestos/Toxic Removal:	\$ 30,000
Site Work:	\$ 223,000
Architectural/Structural:	\$ 347,000
Mechanical (HVAC, Plumbing):	\$ 243,000
Electrical:	\$ 606,000
Total:	\$1,866,000
Total including N.Y. Area Cost Factor (28%):	\$2,388,480

3. Sketch Plan

Planning schematics for the first and second floor plans for Alternative 5 are provided in Figures 4-9 and 4-10.

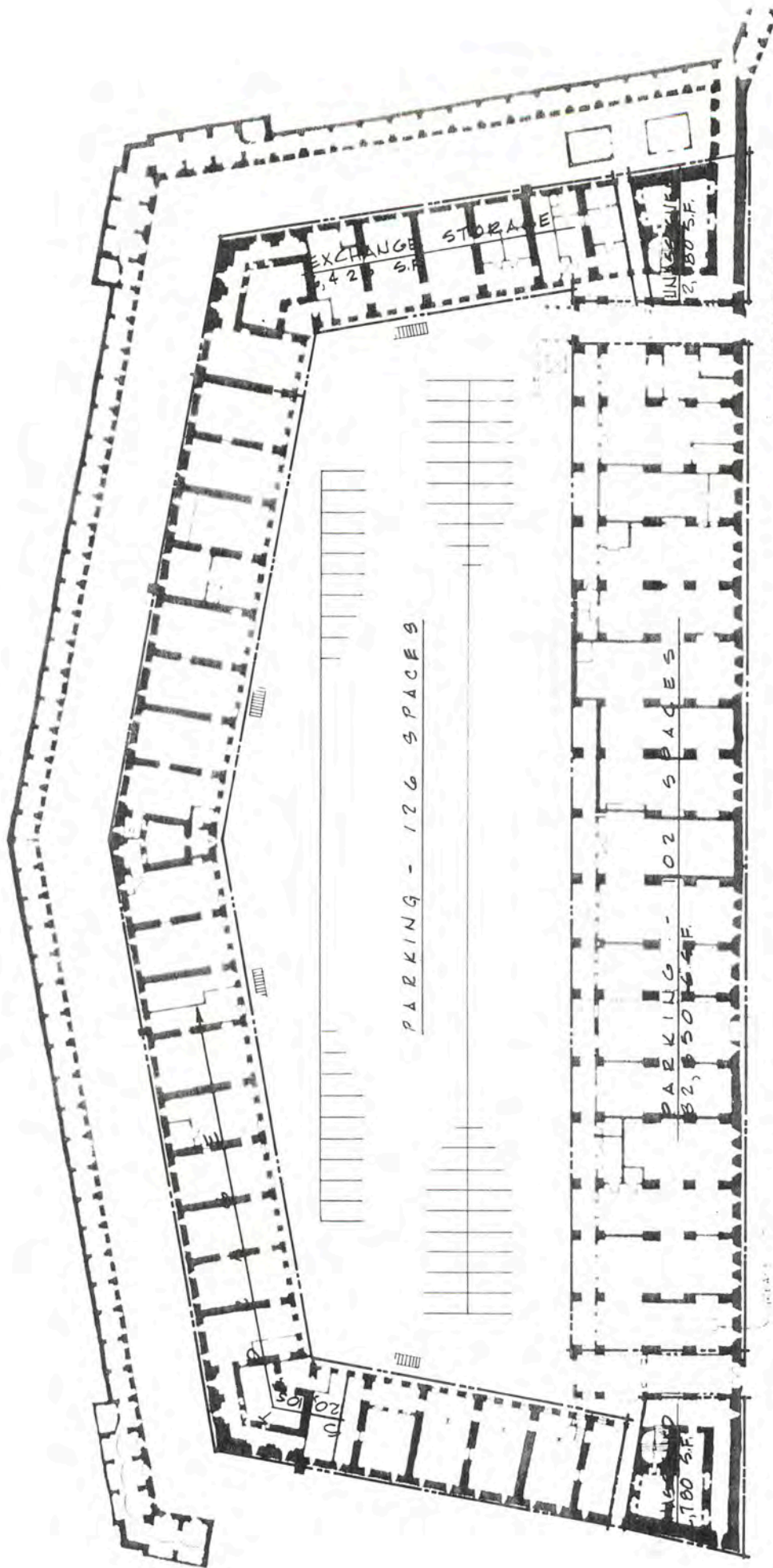


FIGURE 4-9
FORT TOMPKINS
FIRST FLOOR PLAN
ALTERNATIVE 5

SUPPLY STORAGE FACILITY



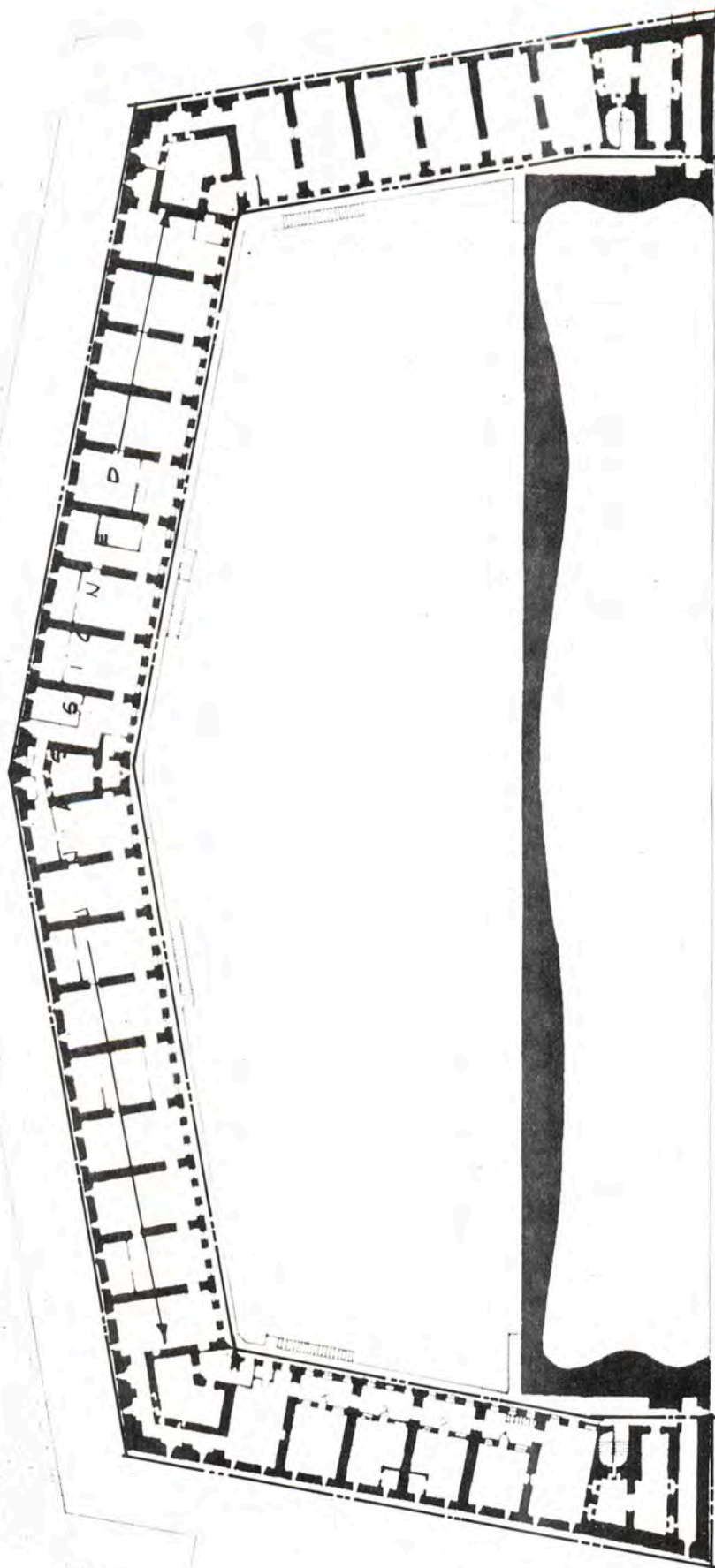


FIGURE 4-10
FORT TOMPKINS
SECOND FLOOR PLAN
ALTERNATIVE 5

SUPPLY STORAGE FACILITY



F. Alternative 6a: Indoor Recreation

1. Description

Indoor facilities for this scheme include an arts and crafts shop, Automotive hobby shop, special services center, youth center, multi-purpose meeting rooms, package store, exchange retail store, post office, bank, and credit union.

Arts and Crafts Hobby Shop:

Located on the first and second floors of the north casemates, this facility is divided by existing structure into a number of individual rooms of not over 800 square feet each.

Automotive Hobby Shop:

Shops are located in large east casemates, which divide into 6 main spaces alternately, 1,080 and 1,440 net square feet each. A screened outdoor area adjacent to the shops is provided in the parade.

Special Service Center:

This center is located at ground level in the south casemates, in a linear series of rooms which can be connected by a single-loaded corridor or by interconnecting doors.

Youth Center:

The youth center is located on the second floor level of the northwest casemates. A single-loaded corridor connects the linear series of rooms.

Basewide Multi-Purpose Meeting Space:

These rooms for non-official public meetings are on the second floor of the west casemates.

Package Store:

A Class VI package store is located in a group of the large east casemates where an existing pass-through loading dock may be utilized for deliveries via large trucks, and can also accommodate transfer of beverages to clubs and open messes on the base.

Exchange Retail Store:

The retail store occupies the west and north ground floor casemates in a linear arrangement of rooms connected by a long, single loaded corridor. This arrangement, dictated by the Fort configuration, forces the store into a large number of small spaces of from 600 to 800 square feet each.

Bank:

The bank is located on the second floor of the south casemates.

Credit Union:

Also on the second floor level, the credit union is in a series of rooms in the southwest corner of the Fort.

Parking:

The remainder of the parade area, not utilized for the automotive hobby shop, is developed for parking for 107 vehicles. This area is conveniently adjacent to the various elements of the scheme but is insufficient to accommodate the parking demand. However, with development of the master plan for Fort Wadsworth, additional parking west of the Fort Tompkins glacis will be available for overflow parking.

2. Cost

The total cost for Alternative 6a is \$8,744,960. The gross renovated floor area is 115,417 sq.ft. at a cost of \$75.77 per sq.ft. Costs by activity are as follows:

Demolition:	\$ 436,000
Asbestos/Toxic Removal:	\$ 30,000
Site Work:	\$ 238,000
Architectural/Structural:	\$3,626,000
Mechanical (HVAC, Plumbing):	\$1,314,000
Electrical:	\$1,188,000
Total:	\$6,832,000
Total including N.Y. Area Cost Factor (28%):	\$8,744,960

3. Sketch Plan

Planning schematics for the first and second floor plans for Alternative 6a are provided in Figure 4-11 and 4-12.

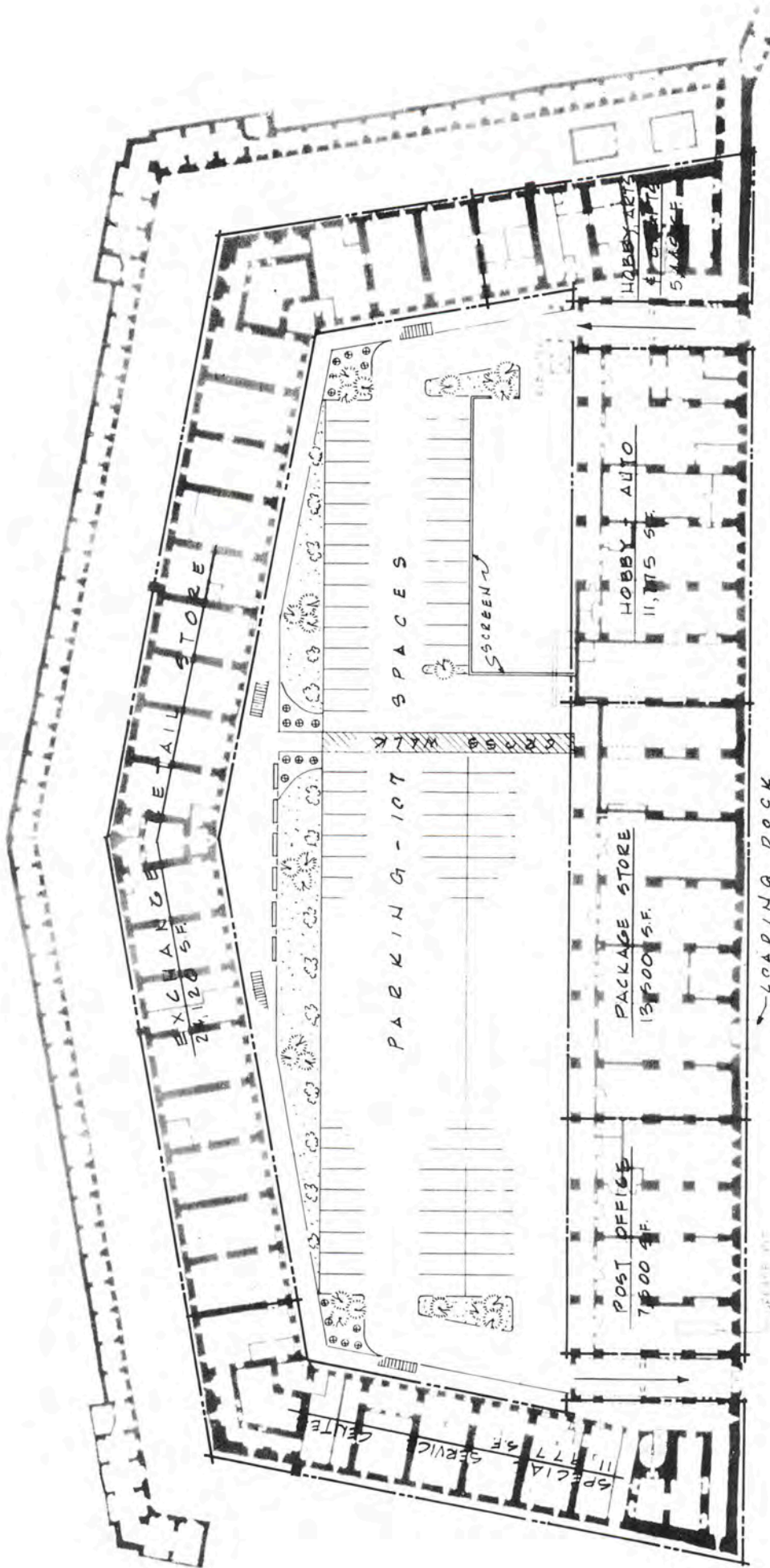


FIGURE 4-11
FORT TOMPKINS
FIRST FLOOR PLAN
ALTERNATIVE 6a
INDOOR RECREATION



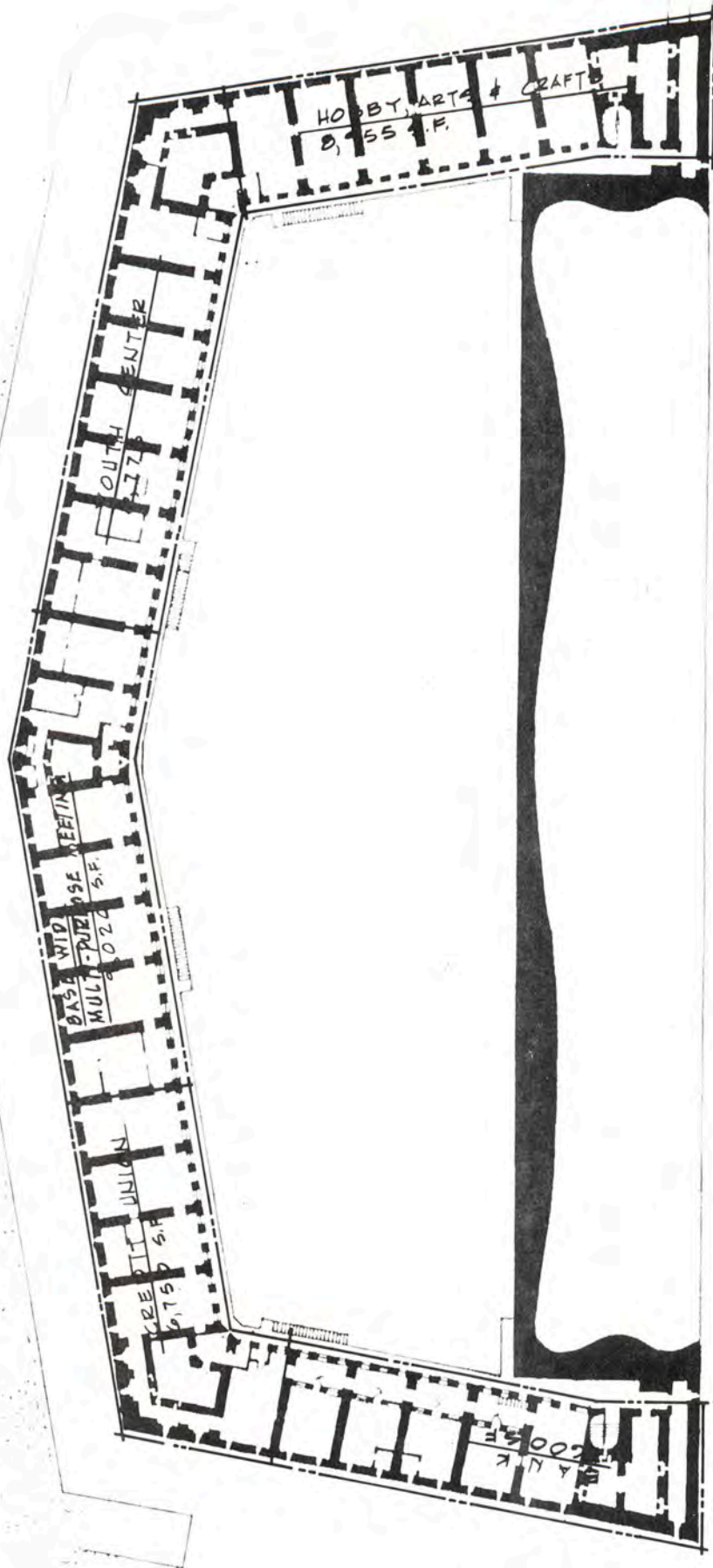


FIGURE 4-12
FORT TOMPKINS
SECOND FLOOR PLAN
ALTERNATIVE 6a
INDOOR RECREATION



G. Alternative 6b: Indoor-Outdoor Recreation

1. Description

This alternative includes most of the elements found in Alternative 6a, but also includes a gymnasium, conceived as a new independent structure in the parade area, and two outdoor tennis courts. Not included in this alternative are the basewide multi-purpose meeting rooms and a considerable amount of parking, for which space does not exist.

The post office, package store, auto hobby shop, arts and crafts, special service center, and credit union are arranged as in Alternative 6a. The exchange retail store is split between the first and second levels of the west casemates as is the youth center.

Gymnasium:

The gymnasium building is located in the south end of the parade and is connected to the west casemates with a corridor. The new building will house two high school size basketball courts. College size courts cannot be accommodated because of space limitations in the parade area. Ancillary spaces such as locker rooms, toilets, storage, exercise rooms, office, etc. are located on the first and second floors of the southwest casemates, connected to the gymnasium building by a new corridor.

The insertion of the gymnasium into the parade area, (the only possible location on the site), even if designed to complement the Fort, is architecturally inappropriate to the historic character of the Fort, and will be subject to review by state and federal agencies.

Tennis Courts Basketball:

There is a NAVSTA NY requirement for 26 outdoor playing courts (tennis, volleyball, basketball, hardball and badminton) located throughout the base. Two tennis courts have been included in this alternative, located in the parade area adjacent to the gymnasium. Space limitations preclude the inclusion of more courts in the scheme.

Parking:

Space required in the parade area for the gymnasium, tennis courts, and auto hobby yard leaves parking space for only 29 vehicles in the parade. This parking is located adjacent to the exchange retail store. Additional parking will be available west of the Fort Tompkins glacis, with the development of the Fort Wadsworth master plan.

2. Cost

The total cost for Alternative 6b is \$10,140,160. The gross renovated floor area is 127,117 sq.ft. at a cost of \$79.77 per sq.ft. Costs by activity are as follows:

Demolition:	\$ 435,000
Asbestos/Toxic Removal:	\$ 30,000
Site Work:	\$ 210,000
Architectural/Structural:	\$4,458,000
Mechanical (HVAC, Plumbing):	\$1,527,000
Electrical:	\$1,262,000
Total:	\$7,922,000
Total including N.Y. Area Cost Factor (28%):	\$10,140,160

3. Sketch Plan

Planning schematics for the first and second floor plans for Alternative 6b are provided in Figures 4-13 and 4-14.

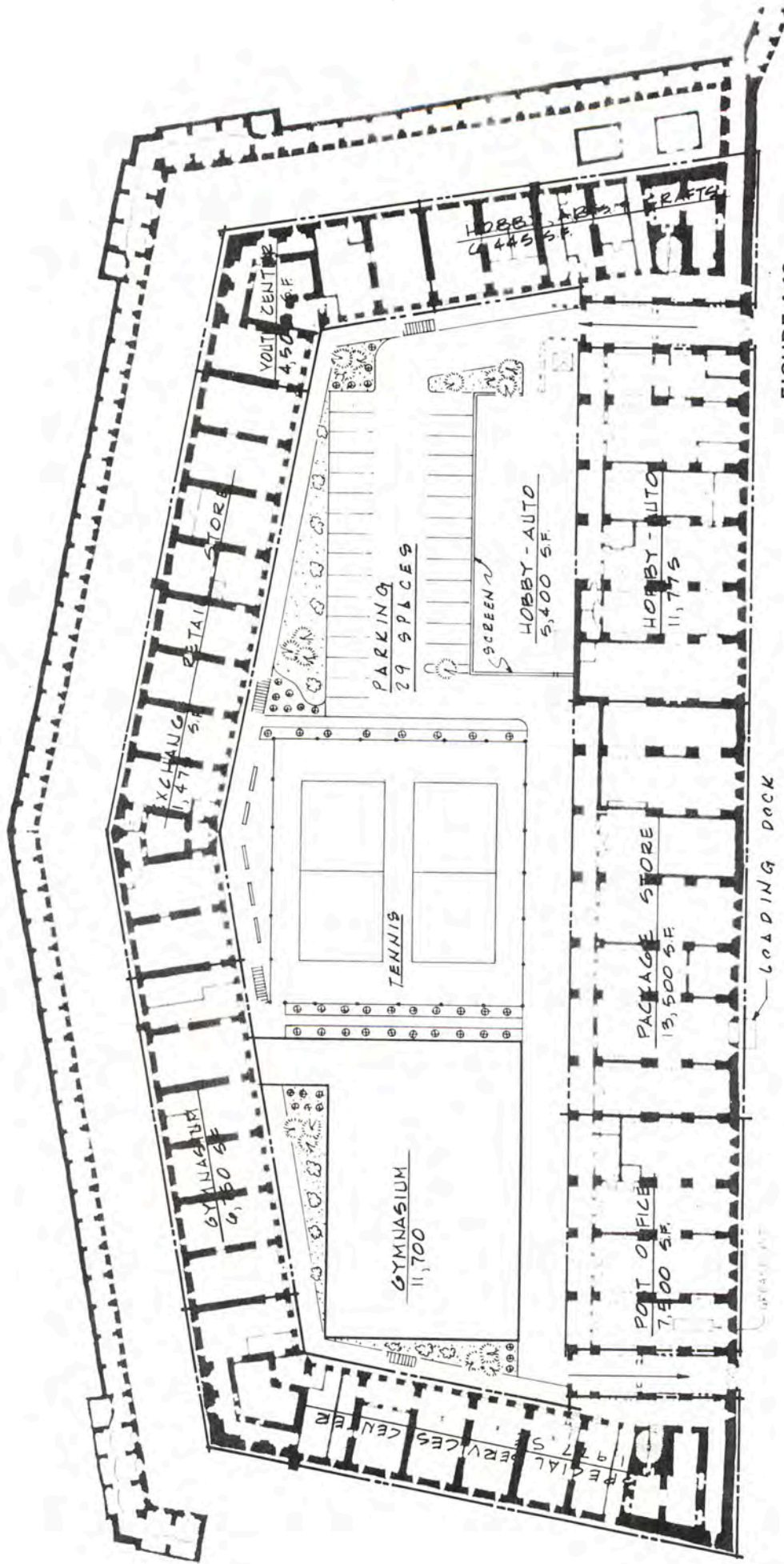


FIGURE 4-13
FORT TOMPKINS
FIRST FLOOR PLAN
ALTERNATIVE 6b

INDOOR- OUTDOOR RECREATION

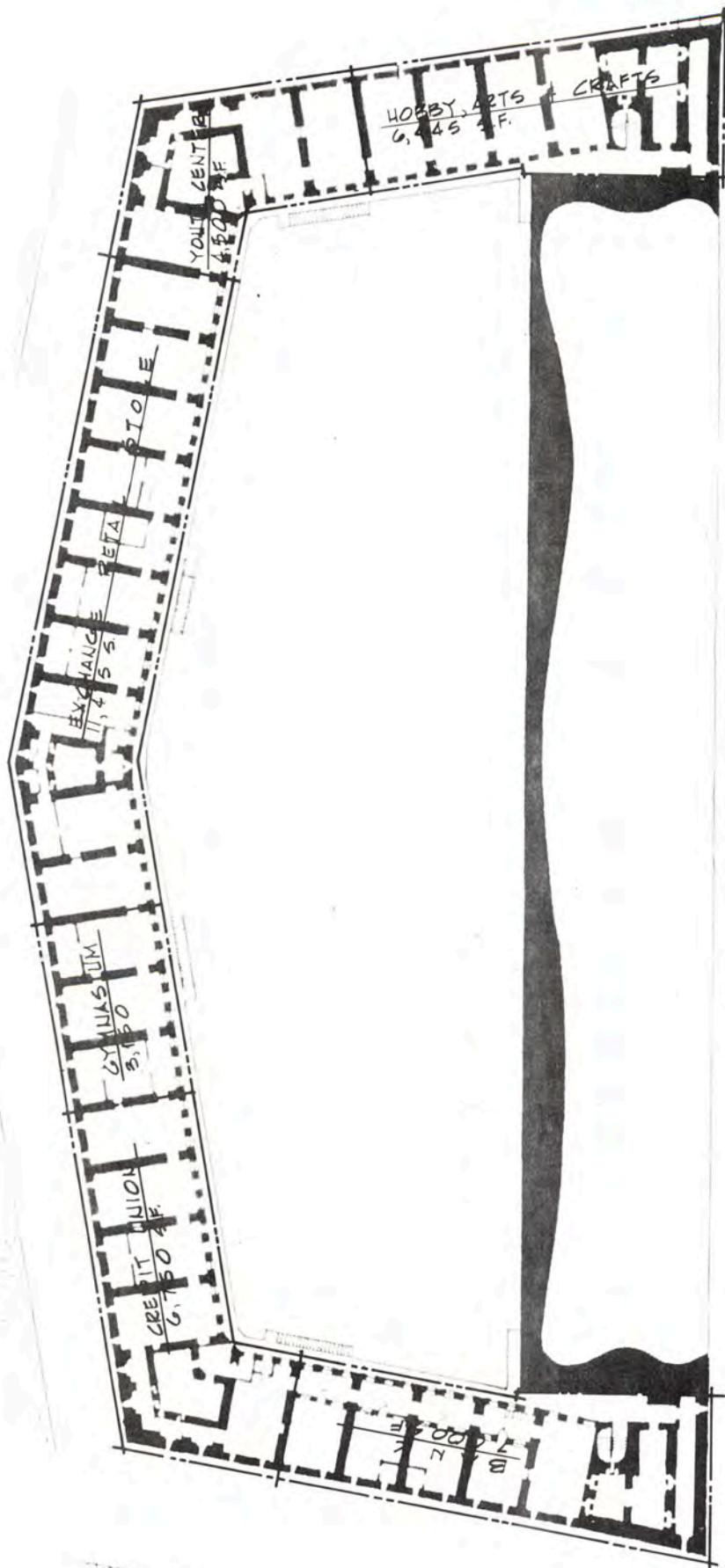


FIGURE 4-14
FORT TOMPKINS
SECOND FLOOR PLAN
ALTERNATIVE 6b

INDOOR-OUTDOOR RECREATION

H. Alternative 7: Unaccompanied Enlisted Personnel Housing

1. Description

This alternative provides 56 room modules, which equates to approximately 156 enlisted personnel, plus laundry facilities, dayroom, office, and bachelor storage space. One basket-ball court and one tennis court as well as parking are included.

Two additional activities, tangentially associated with the UEPH (Personnel Support Activity and Basewide Multi-Purpose Meeting rooms) are included.

Unaccompanied Enlisted Personnel Housing:

The 56 modules are located on both floors of the south, west, and north casemates. Because of the configuration of these land front casemates, the room layout for the modules will vary from the standard layout recommended in the NAVFAC criteria for UEPH. However, the size of the casemates exceeds the 564 square foot gross area required and adequate module layouts can be achieved.

Dayroom/Office Space:

Space for common use lounges, vending and offices is located in three of the channel front casemates, adjacent to the parade exit.

Laundries:

Four common use laundries are positioned in the southwest and northwest corners of the two-story casemates, two on the first floor and two on the second floor.

Bachelor Quarters Storage:

Storage space is located in several channel front casemates adjacent to the office area, on the east side of the Fort.

Outdoor Recreation:

One basketball court and one tennis court are provided in this alternative centrally located in the parade area, and set in a landscaped environment. Several variations of this arrangement are possible:

- 1) An additional basketball court could be substituted for the tennis court.
- 2) An additional basketball court could be added by eliminating a portion of the landscaping.
- 3) Three basketball courts could be provided by eliminating the majority of the landscaping.

Parking:

Fourteen covered parking spaces are located in the east casemates. These spaces are configured such that they can accommodate trailers or boats in addition to the vehicles. Outdoor parking for 54 vehicles is provided in the parade area. Ninety-nine spaces are required by criteria in addition to other undetermined spaces for office, personnel support activity, and base-wide multi-purpose meeting rooms. Adequate parking to meet criteria will be available west of the Fort Tompkins glacis, upon development of the Fort Wadsworth master plan.

Personnel Support Activity:

The personnel support activity requires large spaces for testing and has been assigned to three of the large channel front casemates.

Basewide Multi-Purpose Meeting Space:

This facility is likewise located in the channel front casemates to provide the largest possible room sizes for meetings.

It should be noted that this scheme fully utilizes all of the casemates that are suitable for occupation as living quarters and, thus, represents the maximum number of modules that the Fort can accommodate. The large east casemates are not considered suitable for living modules because of the lack of daylight. They do, however, lend themselves well to the usages assigned in this alternative.

2. Cost

The total cost for Alternative 7 is \$6,977,280. The gross renovated floor area is 99,417 sq.ft. at a cost of \$70.18 per sq.ft. Costs by activity are as follows:

Demolition:	\$ 424,000
Asbestos/Toxic Removal:	\$ 30,000
Site Work:	\$ 265,000
Architectural/Structural:	\$3,197,000
Mechanical (HVAEC, Plumbing):	\$ 793,000
Electrical:	\$ 742,000
Total:	\$5,451,000
Total including N.Y. Area Cost Factor (28%):	\$6,977,280

3. Sketch Plan

Planning schematics for the first and second floor plans for Alternative 7 are provided in Figures 4-15 and 4-16.

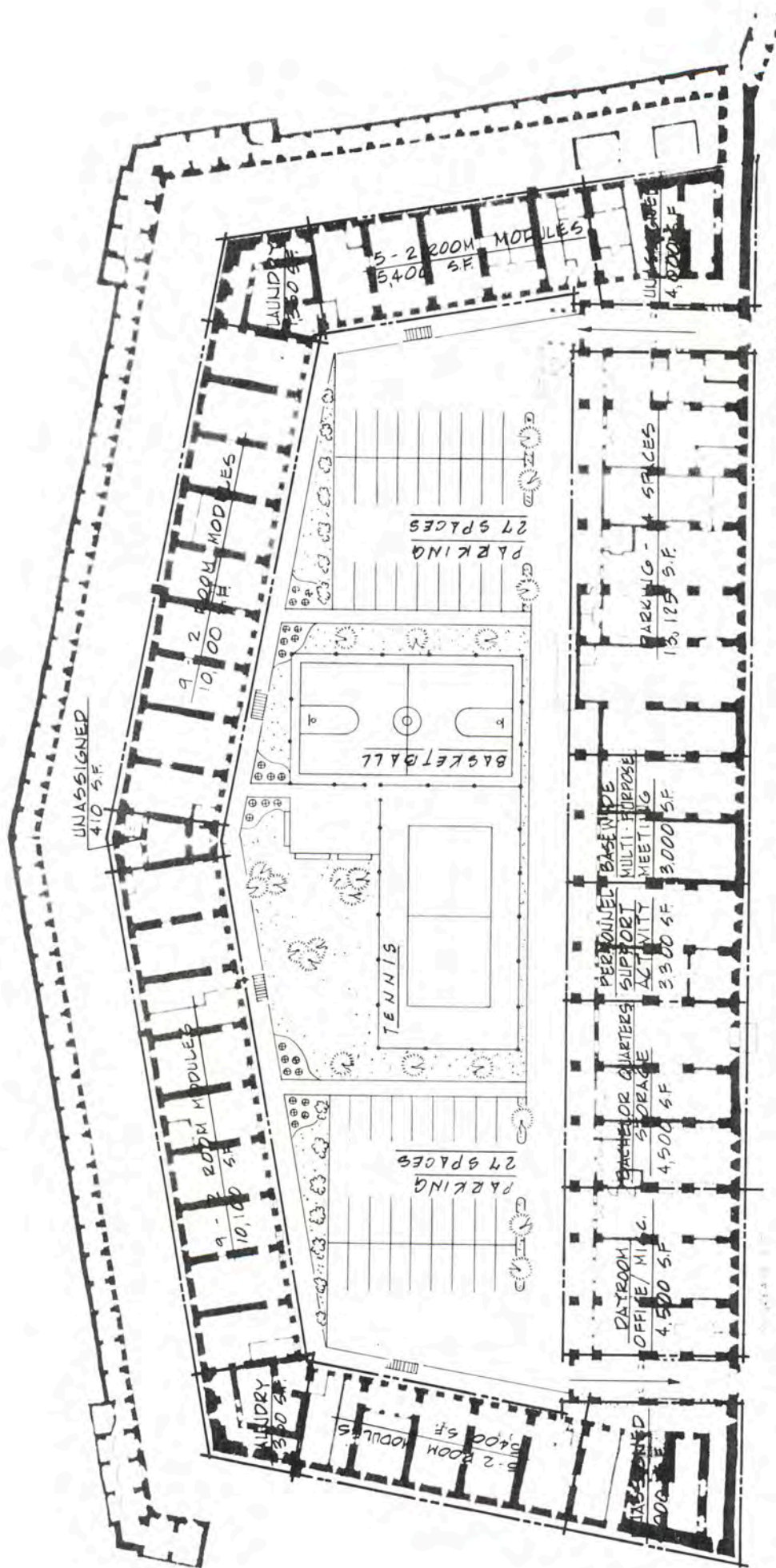


FIGURE 4-15
FORT TOMPKINS
FIRST FLOOR PLAN
ALTERNATIVE 7

UNACCOMPANIED ENLISTED
PERSONNEL HOUSING

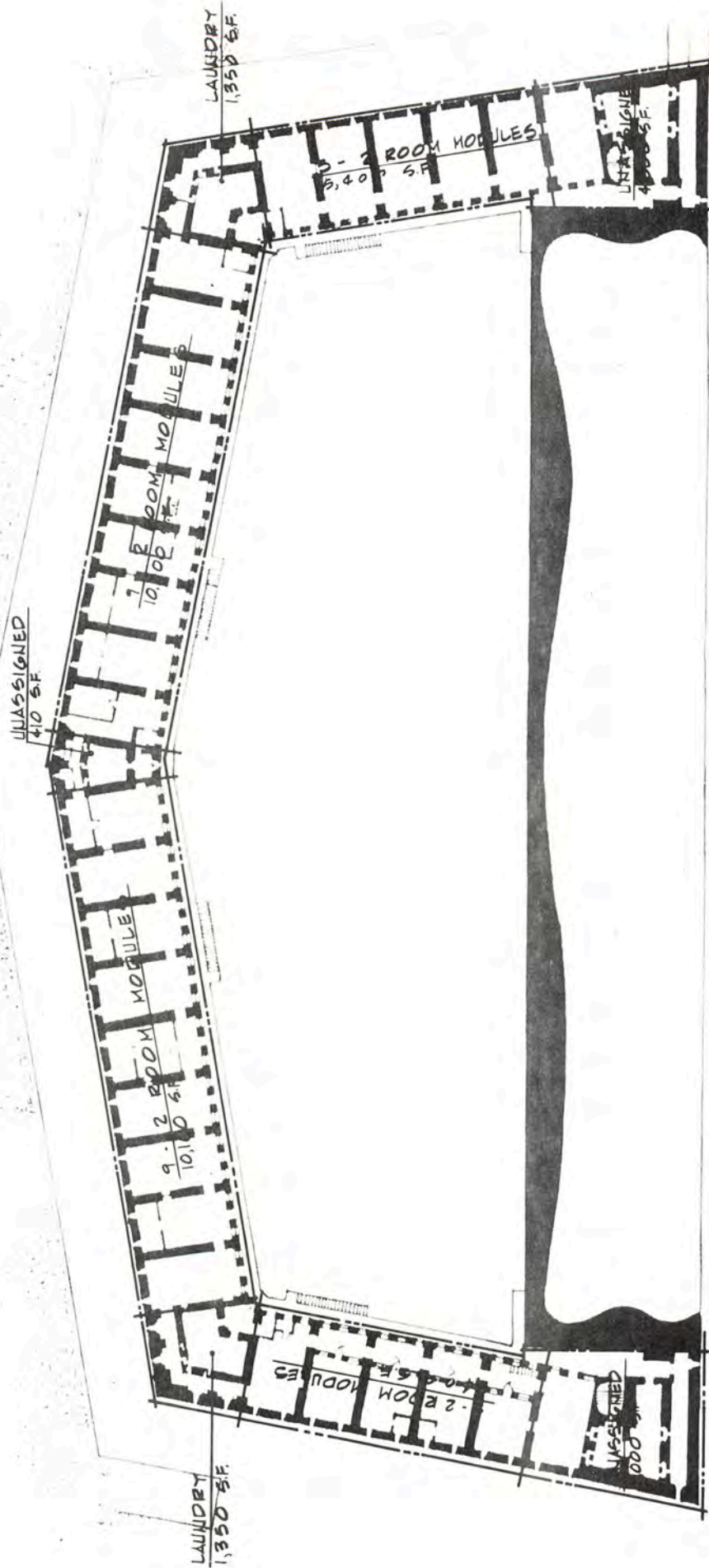


FIGURE 4-16
FORT TOMPKINS
SECOND FLOOR PLAN
ALTERNATIVE 7
UNACCOMPANIED ENLISTED
PERSONNEL HOUSING



1. Alternative 8: Unaccompanied Officer Personnel Housing

1. Description

Forty modules for unaccompanied officers are provided in this scheme. Because of the existing standard casemate size, all modules will be of approximately the same size, namely, about 600 net square feet, which approximates criteria for 3-10 personnel. Two hundred square feet from each module would be used for the connecting corridor. Thirty-five modules are located on the first and second floors of the west casemates while the remaining five modules are on the second floor level of the south casemates. The modules would be connected by means of a single-loaded corridor along the wall adjacent to the parade.

Bachelor Quarters Storage:

Five thousand nine hundred gross square feet of storage is provided in four separate areas; two in the south casemates and two at the juncture of the west and north casemates.

Laundries:

Two common use laundry areas are located at the juncture of the west and south casemates, one on each floor.

Day Room and Office:

Five of the first floor south casemates are designated for day room, vending, common lounge, and office space.

Personnel Support Activity:

This activity, not directly related to the officers' quarters, is on the first floor of the north casemates. Casemate size is limited to 800 net square feet for testing rooms, whereas 1,600 net square feet are required by criteria. Thus, testing for one hundred persons would have to be split into two groups of fifty each.

Educational Services Office:

Educational Services are located on the first and second floors of the north casemate. The size limitations of the casemates again limits the maximum room size to 800 net square feet, which may be very crippling for the requirement of 3,780 gross square feet of lecture space. The remaining space requirements for this office can be easily met within the existing structure.

Parking:

Thirty-four covered parking spaces are available in the large east casemates. Configuration of the casemates makes it possible to store boats or trailers in the available space without reduction of capacity. Twenty-seven additional outdoor spaces are provided in the parade area for a total of 61 parking spaces.

Outdoor Recreation:

Two tennis courts and one basketball court are provided in the landscaped parade area.

2. Cost

The total cost for Alternative 8 is \$6,309,120. The gross renovated floor area is 103,897 sq.ft. at a cost of \$60.72 per sq.ft. Costs by activity are as follows:

Demolition:	\$ 434,000
Asbestos/Toxic Removal:	\$ 30,000
Site Work:	\$ 261,000
Architectural/Structural:	\$2,965,000
Mechanical (HVAE, Plumbing):	\$ 633,000
Electrical:	\$ 606,000
Total:	\$4,929,000
Total including N.Y. Area Cost Factor (28%):	\$6,309,120

3. Sketch Plan

Planning schematics for the first and second floor plans for Alternative 8 are provided in Figures 4-17 and 4-18.

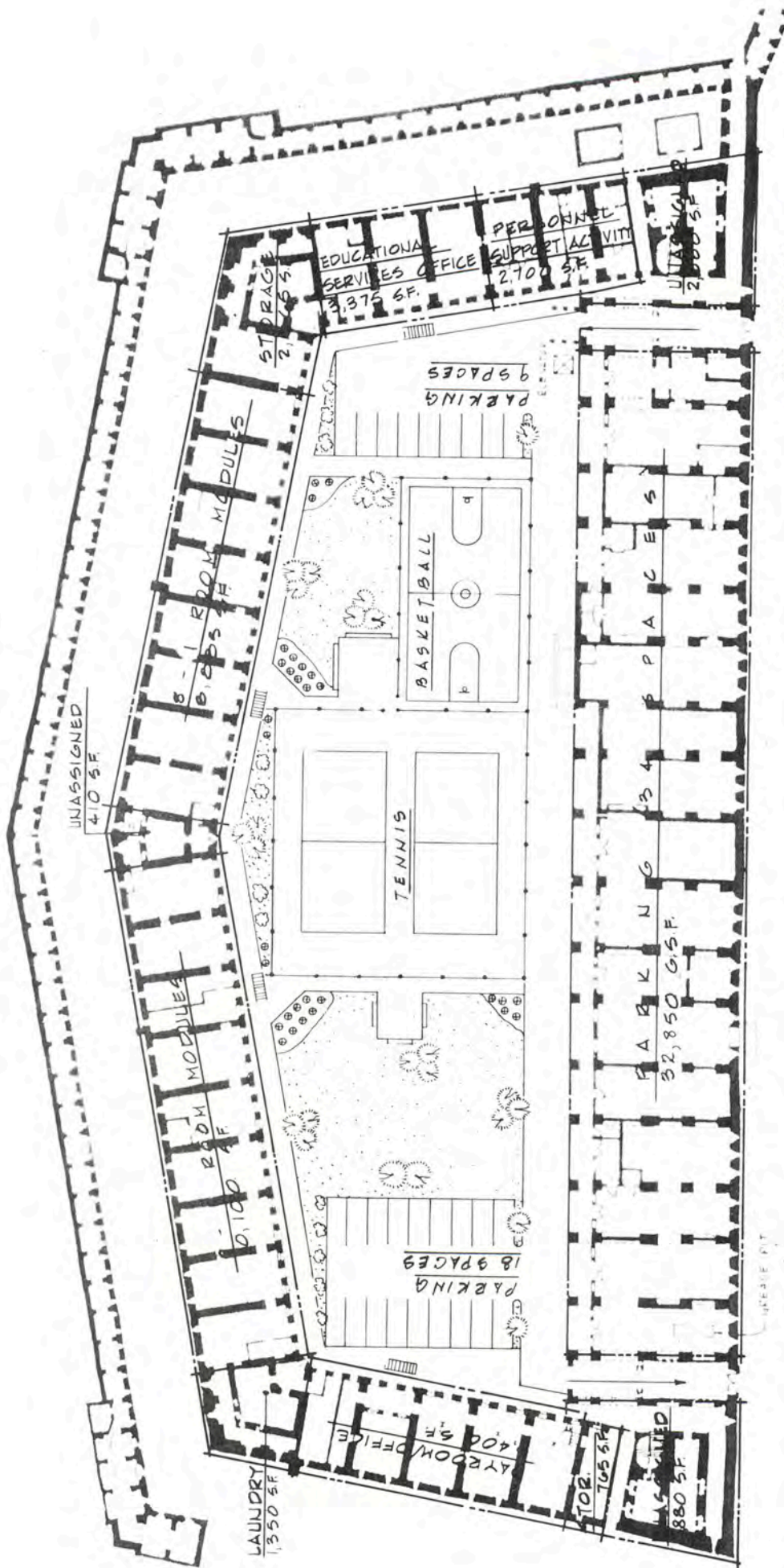


FIGURE 4-17
FORT TOMPKINS
FIRST FLOOR PLAN
ALTERNATIVE 8

UNACCOMPANIED OFFICER
PERSONNEL HOUSING

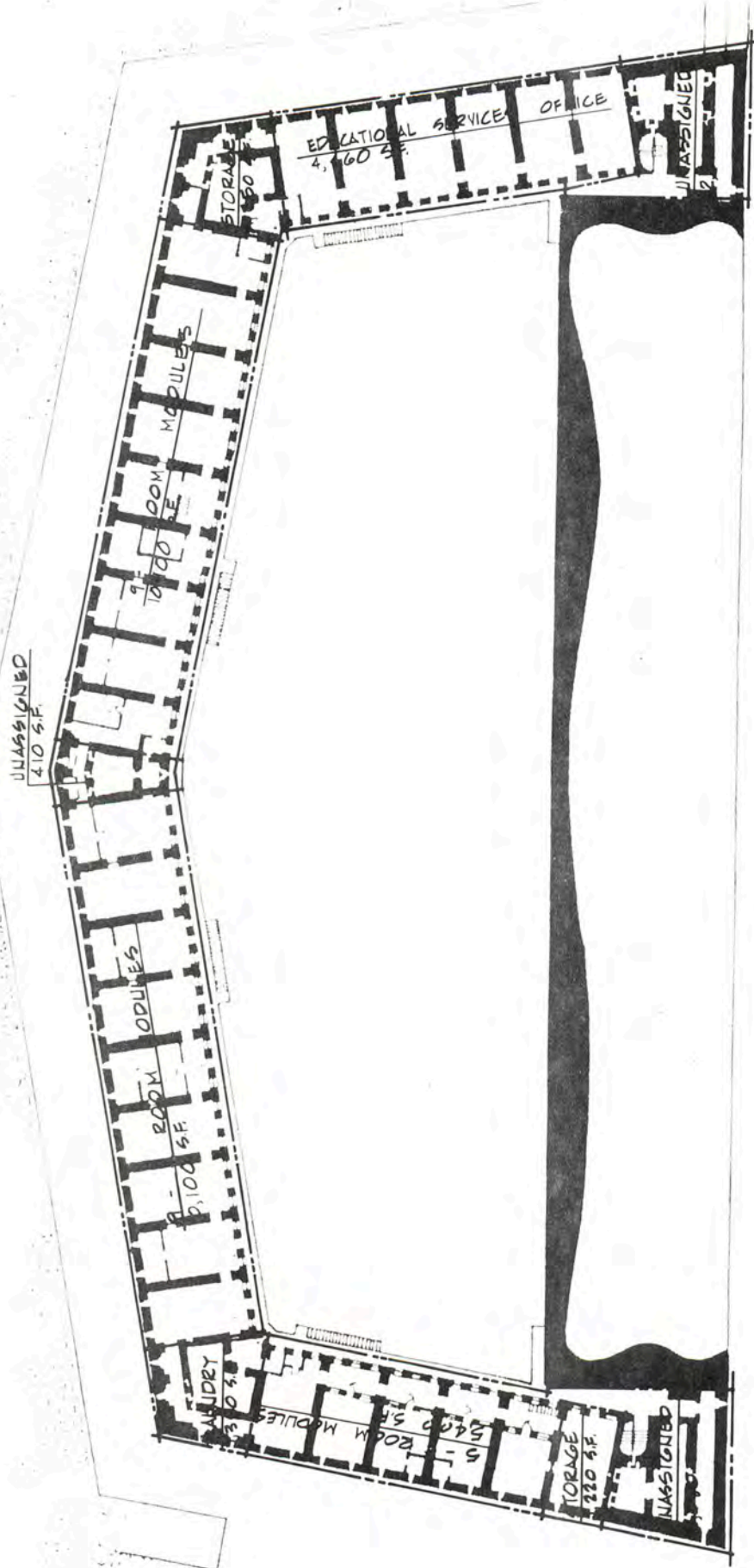


FIGURE 4-18
FORT TOMPKINS
SECOND FLOOR PLAN
ALTERNATIVE 8



UNACCOMPANIED OFFICER
PERSONNEL HOUSING

V Matrix and Conclusions

V. MATRIX AND CONCLUSIONS

A. DESCRIPTION OF SUMMARY MATRIX

The findings of the previous sections are summarized in Table 5-1. Five factors were evaluated to rank each alternative: total project cost; site usage including access, interior circulation and interaction; adherence to basic facility requirements (BFR); retention of historic/architectural character; and, social acceptability. Table 5-2 presents the rating criteria used for each factor ranging from a low of 1 for the least acceptable or poor use to a rank of 3 for the most acceptable or preferred use. The total score by alternative is shown at the bottom of the Summary Matrix (Table 5-1). Higher scores indicate preferability with respect to the factors evaluated.

B. CONCLUSIONS

In rank order, alternative 8, Unaccompanied Officer Personnel Housing, received the highest number of points. This alternative makes full use of all the casemates suitable for occupation as living quarters and represents the maximum number of modules the Fort can accommodate. Forty modules are included for unaccompanied officers with a complete range of facilities for storage, laundries, office space, and testing rooms. There are 61 parking spaces and an outdoor recreation area with two tennis courts and one basketball court.

Alternative 8 received the highest number of points for all criteria. The total cost of \$6,309,120 clearly makes this one of the lowest cost alternatives as indicated in Table 5-3 which presents a summary of project costs by alternative. Excluding alternative 1, basically a no-action alternative, alternative 8 provides for full use of the facility at a relatively low cost per square foot as compared to the other alternatives. Alternative 8 received highest ratings for access to site, meeting basic facility requirements (BFR), retention of historic architectural character and social acceptability. Interior circulation and interaction received average to high ratings due to the continued usage of a single loaded corridor on the first and second floors.

Alternative 7, Unaccompanied Enlisted Personnel Housing, scored the second highest number of points. Fifty six modules would be provided to accommodate housing for 156 enlisted personnel with facilities for laundries, office space, storage and outdoor recreation. The total cost of \$6,977,280 is more than Alternative 8 but a slightly larger gross area would be renovated (103,897 sq.ft.) at a cost of \$70.18 per square foot. Alternative 7 scored lower than Alternative 8 in two areas; access to the site and in meeting basic facility requirements.

Alternative 6a, Indoor Recreation scored third. This scheme provides indoor facilities for an Arts and Crafts Hobby Shop, an Automotive Hobby Shop, a Special Service Center, a Youth Center, Basewide Multi-purpose Meeting Rooms, a Package Store, an Exchange Retail Store, a Bank, a Credit Union and parking for 107 vehicles. Total cost is \$8,744,960 based on renovating 115,417 sq. ft. at a unit cost of \$75.77 per sq. ft.

Alternative 3, Classroom Facilities and Indoor Recreation scored fourth. In addition to the Classroom Facilities and Indoor Recreation, this scheme includes a Personnel Support Activity, an Educational Service Office, Base-wide Multi-purpose Meeting Rooms, a Class VI Package Store, a Post Office, a Bank, a Credit Union and 107 parking spaces. The total cost of Alternative 3 is \$9,004,800 based upon renovating 115,782 sq. ft. of space at a unit cost of \$78.13 per sq. ft.

Alternative 5, Supply Storage Facility scored fifth. This alternative provides for the storage of organizational and non-organizational vehicles, warehousing for an exchange and parts storage for housing units as well as long term recreational storage. The total cost of Alternative 5 is \$2,388,480 based upon renovating 59,385 sq. ft. at a unit cost of \$40.77 per sq. ft.

Alternative 6b, Indoor-Outdoor Recreation scored sixth. In addition to the facilities provided in Alternative 6a, a Gymnasium conceived as a new independent structure and two outdoor Tennis Courts are provided in the parade area. Basewide Meeting Rooms and a considerable amount of parking space is sacrificed to incorporate these added features. The total cost of Alternative 6b is \$10,140,160 based upon renovating 127,117 sq. ft. at a unit cost of \$79.77 per sq. ft.

Alternative 4, Parking Facility scored seventh. This provides long-term sailor's cars and boats, daily storage for organizational vehicles and covered storage. The total cost of Alternative 4 is \$1,821,440 based upon renovating 32,950 sq. ft. at a unit cost of \$55.28 per sq. ft.

Alternative 2, Public Works Complex and Police Station scored eighth. This scheme provides for Public Works Administration and Shops, a Police Station, a Small Arms Range, an Armory, a Photo Center and parking for 106 vehicles. The total cost for Alternative 2 is \$7,001,600 based upon renovating 113,485 sq. ft. at a unit cost of \$61.70 per sq. ft.

Alternative 1, retain unused for Temporary Storage, scored the lowest, ninth. This alternative does not envision the expenditure of any funds for construction, but is limited to the cost of clean up and removal of potential hazardous problems. The total cost for Alternative 1 is \$445,440 based upon renovation of 115,782 sq. ft. at a unit cost of \$3.93 per sq. ft.

TABLE 5-1
FORT TOMPKINS
SUMMARY MATRIX*

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6a	Alt. 6b	Alt. 7	Alt. 8
1. Total Cost	3	1	1	2	2	1	1	2	2.5
2. a. Access to Site	0	1	2	2	1.5	2	2	2.5	3
b. Interior Circulation	0	1	2	2	1	1.5	1.5	2.5	2.5
c. Interaction	0	2	2	2	2	2	2	2	2
3. Meets Basic Facility Requirements (BFR)	0	3	3	0	3	3	3	2	3
4. Retention of Historic/ Architectural Character	3	1.5	2	3	3	3	1	3	3
5. Social Acceptability	1	2	3	1	1	3	3	3	3
TOTAL	7	11.5	15	12	13.5	15.5	13.5	17	19

*Raw Score

0 = Not Applicable
1 = Lowest Rating
2 = Average
3 = Highest Rating

TABLE 5-2
FORT TOMPKINS
RATING CRITERIA*

	1	2	3
1. Total Cost	High	Neutral	Low/Economical
2. a. Access to Site	Unacceptable	Neutral	Acceptable
b. Interior Circulation	Poor	Good	Excellent
c. Interaction	Poor	Good	Excellent
3. Meets BFR	Poor	Partial	Complete
4. Retention of Historic/Architectural Character	Poor	Good	Excellent
5. Social Acceptability	Least-Appropriate	Neutral	Acceptable/Preferred

*Raw Score

- 1 = Lowest Rating
- 2 = Average
- 3 = Highest Rating

Table 5-3

SUMMARY OF PROJECT COSTS BY ALTERNATIVE

Alternative Use	Demolition	Asbestos/ Toxic Removal	Site	Renovation/* Construction	Total	N.Y. Area Cost Factor 28%	Renovation Cost/ Sq. Ft.	Renovated Floor Area (Gross)
1	\$318,000	\$30,000	-	-	\$ 348,000	\$ 445,440	\$ 3.93	115,782
2	434,000	30,000	\$238,000	\$4,768,000	5,470,000	7,001,600	61.70	113,485
3	546,000	30,000	238,000	6,331,000	7,035,000	9,004,800	78.13	115,782
4	396,000	30,000	223,000	774,000	1,423,000	1,821,440	55.28	32,950
5	417,000	30,000	223,000	1,196,000	1,866,000	2,388,480	40.77	59,385
6a	436,000	30,000	238,000	6,128,000	6,832,000	8,744,960	75.77	115,417
6b	435,000	30,000	210,000	7,247,000	7,922,000	10,140,160	79.77	127,117
7	424,000	30,000	265,000	4,732,000	5,451,000	6,977,280	70.18	99,417
8	434,000	30,000	261,000	4,204,000	4,929,000	6,309,120	60.72	103,897

*See Appendix A for complete cost breakdown for architectural, mechanical (HVAC and Plumbing) and electrical.

VI References

VI. REFERENCES

A. Documents

Black, Fredrick P., "A History of Fort Wadsworth, New York Harbor" prepared for National Park Service, Order No. PX-1600.0-0814, 1982.

Chief of Engineers Annual Reports. Printed in U.S. Serials, in Annual Report of the Secretary of War to the Congress [1857-1902].

Lewis, Emanuel Raymond, Seacoast Fortifications of the United States: An Introductory History. Smithsonian Inst. Press, Washington, D.C., 1970.

Louis Berger & Associates, Inc. "Programming For Use Alternatives, Adaptive Reuse for Fort Tompkins at Fort Wadsworth, Staten Island, New York." March 23, 1987. Submitted to NAVFAC Engineering Command, Northern Division, Philadelphia.

Plan and Sections of Fort Tompkins, Staten Island, New York Harbor, showing the Channel Front as arranged for 15 Guns. 1872 (Traced in Office of Quartermaster, Fort Wadsworth, 1940). On file at Facilities Engineering Office, Fort Hamilton, N.Y.

Second Corps Area, Fort Wadsworth, Staten Island, New York Quadrangle Building 1939. Plan of First Floor (133-01-1), Plan of Second Floor (133-01-2) Detail of Stairs (133-01-9) First Floor Electrical (133-01-E-1) Plan of Second Floor Heating (133-01-H2) On file at Facilities Engineering Office, Fort Hamilton, New York.

U.S.A. Work Program, WPA Second Corps Area, Ft. Wadsworth, Project 265-97-2001. Rehabilitation for Quadrangle Building (No Date) On file at Facilities Engineering Office, Fort Hamilton, N.Y.

U.S. Department of the Army, Fort Wadsworth, S.I., N.Y. Office of the Post Engineer. Proposed Removal of Blocks in Quadrangle...to install Conveyor in Commissary Section. Drawing No. 30-122-3310-30-12(1982). On file at Facilities Engineering Office, Ft. Hamilton, N.Y.

U.S. Department of the Army, Army Corps of Engineers, New York District. "Draft and Final Supplemental Environmental Impact Statement" March, 1980.

U.S. Department of the Army, Ft. Wadsworth S.I., N.Y. Office of the Post Engineer. Warehouse in Quadrangle June 6, 1951 (2 sheets). On file at Facilities Engineering Office, Ft. Hamilton, New York.

U.S. Department of the Navy. Draft and Final Environmental Impact Statement: Surface Action Group Homeporting. Stapleton-Fort Wadsworth Complex, Staten Island, New York. February 1985. On File, NAVFAC Engineering Command, Northern Division, Philadelphia.

U.S. Department of the Navy. "Draft Master Plan, Naval Station, New York, Stapleton/Ft. Wadsworth, Staten Island, New York. August, 1985. On File, NAVFAC Engineering Command, Northern Division, Philadelphia.

B. Cartographic Sources: (Curated at National Archives and Records Administration, Cartographic Branch, Alexandria, Virginia).

RG77, Fortifications File, Drawer 41, Sheet 3: State of New York, Fort Tompkins, Fort Richmond. Drawn by Capt. Poussin, 1819.

R.G. 77 Fortifications File, Drawer 41, Sheet 11: Project for Repair and Improvement of Fort Tompkins... laid before the Board of Engineers 15 July 1856 for Discussion.

RG77 Fortifications File, Drawer 41, Sheets 13-17, 18-22, 23-26. Fort Tompkins Projected by the Board of Engineers for the Atlantic Coast. Drawn Under the Direction of the Board by John C. Palfrey, 2nd Lt. U.S.E. 1858. Plus Set of "Modifications" as approved by Col. R.E. DeRussy, U.S.E. Acting Chief Engineer (17 A,22A,26A)

RG77, Fortifications File, Drawer 41, Sheet 62: Fort Tompkins. Sept 4, 1865.

RG77, Fortifications File, Drawer 41, Sheet 74: Sketch of Proposed Method of Draining the Now Unfinished Portion of Main Slope in Front of Ft. Tompkins, S. Island, Sept. 2, 1868.

RG77, Fortifications File, Drawer 41, Sheet 83: Barbette Plan of Fort on Site of Fort Tompkins, Oct. 5, 1871.

RG77, Fortifications File, Drawer 41, Sheet A: Defenses on Staten Island, N.Y.H. As proposed by the Board of Engineers 1869 to 1880. Drawn in office of Chief of Engineers, June 1886.

R.G. 77 Fortifications File, Drawer 43, Sheet 77-1: Defense of the Narrows. U.S. Reservation at Fort Wadsworth, N.Y. Surveyed and Drawn Under the Direction of Lieut. Col. Henry M. Roberts, Corps of Engineers, U.S.A., November, 1894.

RG77, Fortifications File. Drawer 41, Sheet 77-2: United States Reservation, Fort Wadsworth, New York Map Compiled in 1897 and Corrected as to Boundary Lines and Fortifications, November 1900.

RG77, Fortifications File, Drawer 43, Sheet 90-20: New York Harbor, N.Y. Locations for Search Light Shelters at Fort Wadsworth, May 1920.

C. Personal Contacts

Mr. Kenneth Ahern, Facilities Engineering Office, Fort Hamilton, Brooklyn, New York.

Mr. Bruce Fullem, Project Review Coordinator, New York State Office of Parks, Recreation and Historic Preservation, Albany, New York.

Mr. Robert W. McIntosh, Jr., General Superintendent, Gateway National Recreation Area, Brooklyn, New York.

Ms. Drucilla Null, Advisory Council on Historic Preservation, Washington,
D.C.

Mr. Ciro Poggioreale, Facilities Engineering Office, Fort Hamilton,
Brooklyn, New York.

VII List of Preparers

VII. LIST OF PREPARERS

Charles D. Wood, P.E.	-	Project Manager
Howard L. Hyde, AIA	-	Architect
Myra Strausfeld	-	Senior Planner
Suzanne McAdams	-	Senior Planner
Martha H. Bowers	-	Architectural Historian
John R. Bowie, AIA	-	Historical Architect

Appendix A

Table 1

Fort Tompkins Adaptive Use Alternatives
Cost Summary By Discipline

Alternative Use No.	Architecture Structure *	HVAC **	Plumbing ***	Electrical ****	Total	Total Including N.Y. Area Cost Factor (28%)
1	\$348,000	-	-	-	\$348,000	\$445,440
2	\$3,330,000	\$611,000	\$455,000	\$1,074,000	\$5,470,000	\$7,001,600
3	\$4,506,000	\$813,000	\$528,000	\$1,188,000	\$7,035,000	\$9,004,800
4	\$790,000	\$13,000	\$14,000	\$606,000	\$1,423,000	\$1,821,440
5	\$1,017,000	\$229,000	\$14,000	\$606,000	\$1,866,000	\$2,388,480
6a	\$4,330,000	\$784,000	\$530,000	\$1,188,000	\$6,832,000	\$8,744,960
6b	\$5,133,000	\$910,000	\$617,000	\$1,262,000	\$7,922,000	\$10,140,160
7	\$3,916,000	\$426,000	\$367,000	\$742,000	\$5,451,000	\$6,977,280
8	\$3,690,000	\$328,000	\$305,000	\$606,000	\$4,929,000	\$6,309,120

Source: Louis Berger & Associates, Inc., June 1987.

- * Cost Detail in Table 2
- ** Cost Detail in Table 3
- *** Cost Detail in Table 4
- **** Cost Detail in Table 5

Table 2

Fort Tompkins Adaptive Use Alternatives
Architectural Costs

Alternative Use No.	Demolition	Asbestos/ Toxic Removal	Site	Renovation/ Construction	Total
1	\$318,000	\$30,000	-	-	\$348,000
2	\$384,000	\$30,000	\$198,000	\$2,718,000	\$3,330,000
3	\$384,000	\$30,000	\$198,000	\$3,894,000	\$4,506,000
4	\$368,000	\$30,000	\$183,000	\$209,000	\$790,000
5	\$368,000	\$30,000	\$183,000	\$436,000	\$1,017,000
6a	\$384,000	\$30,000	\$198,000	\$3,718,000	\$4,330,000
6b	\$384,000	\$30,000	\$175,000	\$4,544,000	\$5,133,000
7	\$384,000	\$30,000	\$210,000	\$3,292,000	\$3,916,000
8	\$384,000	\$30,000	\$216,000	\$3,060,000	\$3,690,000

Source: Louis Berger & Associates, Inc., June 1987.

Table 3

Fort Tompkins Adaptive Use Alternatives
Plumbing Costs

Alternative Use No.	Demolition	Site	Renovation/ Construction	Total
1	-	-	-	-
2	\$4,000	\$10,000	\$441,000	\$455,000
3	\$5,000	\$10,000	\$513,000	\$528,000
4	\$1,000	\$10,000	\$3,000	\$14,000
5	\$4,000	\$10,000	-	\$14,000
6a	\$5,000	\$10,000	\$515,000	\$530,000
6b	\$4,000	\$15,000	\$598,000	\$617,000
7	\$3,000	\$15,000	\$349,000	\$367,000
8	\$4,000	\$15,000	\$286,000	\$305,000

Source: Louis Berger & Associates, Inc., June 1987.

Table 4

Fort Tompkins Adaptive Use Alternatives
HVAC Costs

Alternative Use No.	Demolition	Site	Renovation/ Construction	Total
1	-	-	-	-
2	\$28,000	-	\$583,000	\$611,000
3	\$29,000	-	\$784,000	\$813,000
4	\$9,000	-	\$4,000	\$13,000
5	\$27,000	-	\$202,000	\$229,000
6a	\$29,000	-	\$755,000	\$784,000
6b	\$29,000	-	\$881,000	\$910,000
7	\$19,000	-	\$407,000	\$426,000
8	\$28,000	-	\$300,000	\$328,000

Source: Louis Berger & Associates, Inc., June 1987.

Table 5

Fort Tompkins Adaptive Use Alternatives
Electrical Costs

Alternative Use No.	Demolition	Site	Renovation/ Construction	Total
1	-	-	-	-
2	\$18,000	\$30,000	\$1,026,000	\$1,074,000
3	\$18,000	\$30,000	\$1,140,000	\$1,188,000
4	\$18,000	\$30,000	\$558,000	\$606,000
5	\$18,000	\$30,000	\$558,000	\$606,000
6a	\$18,000	\$30,000	\$1,140,000	\$1,188,000
6b	\$18,000	\$20,000	\$1,224,000	\$1,262,000
7	\$18,000	\$40,000	\$684,000	\$742,000
8	\$18,000	\$30,000	\$558,000	\$606,000

Source: Louis Berger & Associates, Inc., June 1987.

Table 6

Fort Tompkins Adaptive Use Alternatives
Cost Summary By Activity

Alternative Use No.	Demolition	Asbestos/ Toxic Removal	Site Preparation	Renovation Construction	Total	Total Including N.Y. Area Cost Factor (28%)
1	\$318,000	\$30,000	-	-	\$348,000	\$445,440
2	\$434,000	\$30,000	\$238,000	\$4,768,000	\$5,470,000	\$7,001,600
3	\$436,000	\$30,000	\$238,000	\$6,331,000	\$7,035,000	\$9,004,800
4	\$396,000	\$30,000	\$223,000	\$774,000	\$1,423,000	\$1,821,440
5	\$417,000	\$30,000	\$223,000	\$1,196,000	\$1,866,000	\$2,388,480
6a	\$436,000	\$30,000	\$238,000	\$6,128,000	\$6,832,000	\$8,744,960
6b	\$435,000	\$30,000	\$210,000	\$7,247,000	\$7,922,000	\$10,140,160
7	\$424,000	\$30,000	\$265,000	\$4,732,000	\$5,451,000	\$6,977,280
8	\$434,000	\$30,000	\$261,000	\$4,204,000	\$4,929,000	\$6,309,120

Source: Louis Berger & Associates, Inc., June 1987.

Appendix B

Advisory Council On Historic Preservation

The Old Post Office Building
1100 Pennsylvania Avenue, NW, #809
Washington, DC 20004

JUL 10 1987

Ms. Suzanne McAdams
Senior Planner
Louis Berger and Associates, Inc.
100 Halsted Street
P.O. Box 270
East Orange, NJ 07019

REF: Adaptive Reuse Analysis of Fort Tompkins
Fort Wadsworth, Staten Island, New York

Dear Ms. McAdams:

Thank you for your request for input regarding potential reuses of Fort Tompkins. As indicated by Druscilla Null of our staff during a recent phone conversation, we have considered your preliminary alternatives to determine which appear more desirable and appropriate. In our opinion, an ideal reuse would maximize the use potential of the structure to the fullest while preserving the bulk of its historic fabric. Likewise, we feel that a use which would fully integrate the fort into the life of the base and make it well-used by a wide variety of people would offer the greatest benefits, permitting full appreciation and exploitation of the structure's aesthetic and historic significance.

With these considerations in mind, we rate the alternatives as follows:

- a) Alternatives 1, 4, 5: These would appear to underutilize the building and not allow it to be appreciated as a resource. They are the least desirable options.
- b) Alternative 2: While use by the base police might be most in keeping with the building's original use, this use coupled with the public works complex appears to suffer from the same disadvantages as Alternatives 1, 4, and 5. This also does not appear to be a desirable alternative.

c) Alternatives 3, 6, 7, 8: These mixed-use alternatives appear most desirable. They fully utilize the facility and permit a variety of base personnel to use and appreciate the building.

If the fort is reused, for whatever purpose, we recommend that parking on the interior of the structure be eliminated or minimized as much as possible in order to preserve the spatial and historic integrity of the interior court. We also suggest that reuse alternatives be developed with an interpretive component. Particularly if the structure would be used by a large number of base personnel, some interpretive system for the structure would permit them to better appreciate its significance. Likewise, such an interpretive component would be important if, as envisioned in the project's Memorandum of Agreement, future coordination with the National Park Service leads to limited public access to the structure.

Thank you very much for the opportunity to provide our opinions at this very early stage in planning. If you have any questions, please call Druscilla Null at (202) 786-0505. Fort Tompkins is a significant and exciting resource, and we look forward to learning of the results of your study.

Sincerely,

A handwritten signature in black ink, appearing to read "Don L. Klima", with a horizontal line extending to the right.

Don L. Klima
Chief, Eastern Division
of Project Review



New York State Office of Parks, Recreation and Historic Preservation

The Governor Nelson A. Rockefeller Empire State Plaza
Agency Building 1, Albany, New York 12238

June 25, 1987

Ms. Suzanne McAdams
Sr. Planner
Louis Berger & Associates, Inc.
100 Halsted Street
P.O. Box 270
East Orange, NJ 07019

Dear Ms. McAdams:

Re: NAVY

SAG - Homeporting - Adaptive Reuse of Fort Tompkins
Staten Island, Richmond Co.

Thank you for requesting our comments on the above referenced project. With the limited information available at this time, it is difficult for us to respond with specific recommendations on proposed alternatives. In general, our preferred alternative would be the one which preserves the Fort with the maximum non-destructive reuse of historic fabric and maintenance of original spacial configurations to the maximum extent practicable.

We will be pleased to offer further comments under the Advisory Council on Historic Presevation's regulations once the navy has narrowed down the alternatives and has more specific information on which we can comment. If you have any questions, please contact Rebecca Harrison at (518) 474-3176.

Sincerely,

Bruce Fullem
Project Review Coordinator

BF:sm

