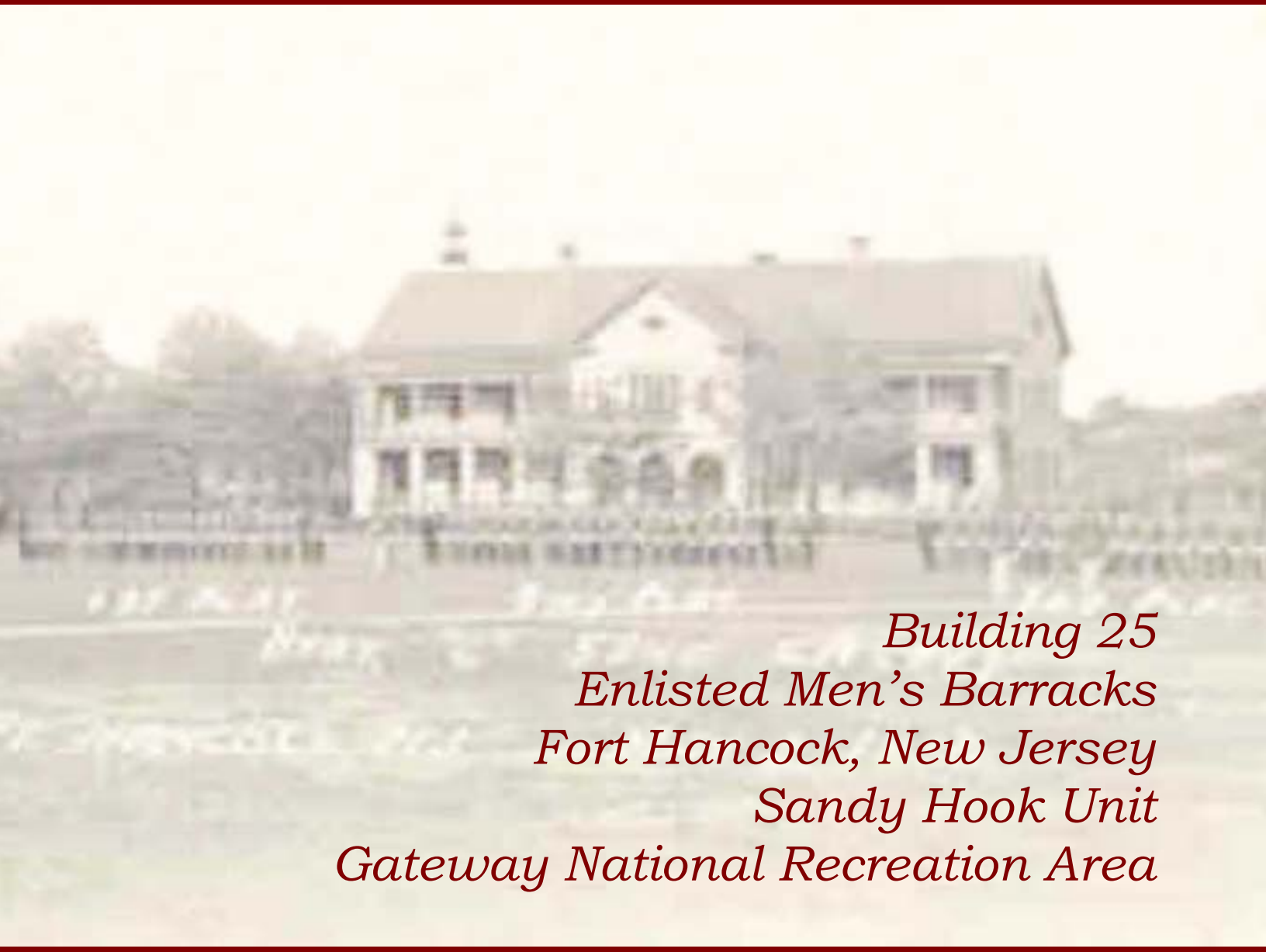
# Historic Structure Report



*Building 25*
*Enlisted Men's Barracks*
*Fort Hancock, New Jersey*
*Sandy Hook Unit*
*Gateway National Recreation Area*

Building Conservation Branch
Cultural Resources Center
Northeast Region
National Park Service

AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

# BUILDING 25
# ENLISTED MEN'S BARRACKS
# Fort Hancock

# HISTORIC STRUCTURE REPORT

**Sandy Hook Unit**
**Gateway National Recreation Area**

By

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# CONTENTS

**LIST OF FIGURES AND CREDITS** ..... vi

**ACKNOWLEDGMENTS** ..... xii

**I. INTRODUCTION** ..... 1

**EXECUTIVE SUMMARY** ..... 3

Significance ..... 3
Integrity ..... 6
Research Conducted to Produce the Historic Structure Report ..... 7
Major Issues Identified in the Scope of Work ..... 8
Recommendations for Treatment or Use ..... 8

**ADMINISTRATIVE DATA** ..... 10

Names, Numbers, and Locational Data ..... 10
Proposed Treatment and Source Document ..... 10
Related Studies ..... 10
Recommendations for Care of Materials Generated ..... 11

**BRIEF ARCHITECTURAL DESCRIPTION** ..... 12

**II. HISTORICAL DATA** ..... 15

**BACKGROUND** ..... 17

**PLANNING THE FORT** ..... 22

**Approval and Initial Estimates** ..... 22
**Site Selection and Plans** ..... 23

**BUILDING THE FORT** ..... 25

**Site Preparations** ..... 25
**Construction of Buildings** ..... 25
**Utilities and Landscaping** ..... 29

**USE OF FORT HANCOCK, 1899 - 1974** ..... 32

**III. CHRONOLOGY OF DEVELOPMENT AND USE** ..... 39

**CONSTRUCTION HISTORY** ..... 41

**ORIGINAL APPEARANCE** ..... 44

**Exterior Elements** ..... 44

Design ..... 44
Foundation ..... 44
Walls ..... 45
Porches ..... 45
Doorways ..... 46
Windows ..... 48
Roofs ..... 51
Finishes ..... 52
Utilities ..... 52

**Structural Elements** ..... 53

Bearing Walls ..... 53
First-Floor Framing ..... 53
Second-Floor Framing ..... 53
Attic-Floor Framing ..... 53
Roof Framing ..... 54

**Interior Elements** ..... 55

Basement Level ..... 55
First Story ..... 57
Second Story ..... 60
Attic Level ..... 63

**Utility Systems** ..... 64

Heating System ..... 64
Plumbing System ..... 65
Lighting System ..... 65
Ventilation System ..... 65

**ALTERATIONS** ..... 87

**Early Improvements and Repairs** ..... 87
**Between the World Wars** ..... 102
**World War II** ..... 111
**Post-World War II** ..... 120

**CURRENT PHYSICAL DESCRIPTION** ..... 149

**Exterior Elements** ..... 149
**Interior Elements** ..... 152

**IV. CHARACTER-DEFINING FEATURES AND RECOMMENDATIONS** ..... 165

**INTRODUCTION** ..... 167

**EXTERIOR ELEMENTS** ..... 168

**INTERIOR ELEMENTS** ..... 171

**V. BIBLIOGRAPHY** ..... 175

**VI. APPENDICES** ..... 179

**APPENDIX A.** Cost Estimates for the Original Buildings at Fort Hancock ..... 181

**APPENDIX B.** Request for Quotation for Masonry Repairs, Building 25, 1998 ..... 185

**APPENDIX C.** Scope of Work for Rear Porch Rehabilitation, Building 25, 1999 ..... 189

**APPENDIX D.** Finishes Study ..... 193

# LIST OF FIGURES AND CREDITS


1. Building 25: original appearance of west (front) elevation, 1896 ..... 13

2. Map of Sandy Hook, 1873, showing locations of lighthouse, old masonry fort, and dock. From "Portions of Middletown and Ocean Townships," in the Beers, Comstock & Cline *Atlas of Monmouth County New Jersey*. Copy of original at Gateway NRA, Sandy Hook (catalog #Gate 2255) ..... 19

3. Map of Sandy Hook, 1889, showing locations of roads, railroads, and structures at Sandy Hook Proving Ground. From "Map of Sandy Hook, New Jersey. Including the United States Reservation in Charge of the Engineer Department," June-July 1889. Surveyed and drawn under direction of Lieut. Col. G.L. Gillespie. Original at the National Archives (RG77, DR 44, ST 106) ..... 20

4. Map of Sandy Hook, 1892, showing proving ground structures, and the first two batteries built for Fort Hancock. Detail of "Map of Sandy Hook, N.J.," June 30, 1892, "showing location of Gun Lift Battery and Mortar Battery and Track-connection with dock for hauling material." Tracing made from survey map of January 30, 1892. Prepared by the Corps of Engineers, U.S.A., Lieut. Colonel G.L. Gillespie. Original at the National Archives (RG 77, OR 77, ST 113); copy at Gateway NRA, Sandy Hook ..... 21

5. "Fort Hancock, Sandy Hook, New Jersey," ca. 1900. Map showing the first 36 buildings constructed at Fort Hancock. Drawn by J.M. Hilton, Quartermaster General's Office. Original at the National Archives (RG 77); copy at Gateway NRA, Sandy Hook ..... 31

6. "Fort Hancock, New Jersey," March 21, 1908. Map showing the fort after the construction of the separate mess halls. Drawn by J.H. Pearson, Superintendent of Construction, Quartermaster General's Office. Original at the National Archives (RG 92, Blueprint file #4); copy at Gateway NRA, Sandy Hook ..... 36

7. "U.S. Military Reservation, Fort Hancock, Sandy Hook and Vicinity of Highlands, New Jersey," May 31, 1927. Map showing the layout of the fort between the World Wars. Drawn by the Army Corps of Engineers. Gateway NRA, Sandy Hook (catalog #Gate 10647) ..... 37

8. "Site Plan of Fort Hancock, Highlands, New Jersey," reprinted March 1967. Map showing expansion of the fort after World War II. Prepared under the direction of the First Army Engineer. Gateway NRA, Sandy Hook (catalog #Gate 9020) ..... 38

*The following 13 figures are part of Plan 107, "Barrack Building," drawn under the direction of the Quartermaster General's Office and dated August 1896. They are filed in "Standard Plans, Army Post Buildings, 1891-1918," Record Group 77, National Archives, with copies at Gateway NRA, Sandy Hook.*


9. Original construction drawing, west elevation (sheet no. 1) ..... 66

10. Original construction drawing, east elevation (sheet no. 2) ..... 67

11. Original construction drawing, transverse section and end elevation (sheet no. 3)..... 68

12. Original construction drawing, basement plan (sheet no. 4) ..... 69

13. Original construction drawing, first -floor plan (sheet no. 5)..... 70

14. Original construction drawing, second-floor plan (sheet no. 6) ..... 71

15. Original construction drawing, details of main cornice and windows (sheet no. 7)..... 72

16. Original construction drawing, details of front and rear porches and cornices (sheet no. 8) ..... 73

17. Original construction drawing, details of exterior doorways and windows (sheet no. 9) ..... 74

18. Original construction drawing, details of interior doorways, stairway, iron columns, cellar windows, and coal chute (sheet no. 10). ..... 75

19. Original construction drawing, details of interior partitions, moldings, wainscot, and shelves and gun rack in armory (sheet no. 11) ..... 76

20. Original construction drawing, details of pantry shelving, mess furnishings, and dormitory lockers (sheet no. 12)..... 77

21. Original construction drawing, steam heating plan (sheet no. 13) ..... 78


*The following seven photographs were owned and donated to Gateway NRA by the family of William F. Oehler (1876-1971). He was a member of the 52nd Coast Artillery, and he appears standing next to Building 25 in figure 24. The 52nd Coast Artillery was housed in Building 25 until it left Fort Hancock on April 8, 1901.*


22. Buildings 23-25, view of west elevations, looking north, ca. 1900. Photograph shows details of front porches and pavilion downspouts. Gateway NRA, Sandy Hook (catalog #Gate 807)..... 79

23. Building 24, view of southeast corner, looking north, ca. 1900. Photograph shows details of cornice and rear porch. Gateway NRA, Sandy Hook (catalog #Gate 805)..... 80

24. Building 25, view of southeast corner of rear porch, ca. 1900. Photograph shows details of porch foundation, steps, and columns. Gateway NRA, Sandy Hook (catalog #Gate 829)..... 81

25. Building 25, northeast corner of mess room, ca. 1900. Photograph shows doorways to hall and kitchen, and pass-through to pantry. Gateway NRA, Sandy Hook (catalog #Gate 810) ..... 82

26. Building 25, northeast corner of kitchen, ca. 1900. Photograph shows five-panel door and hood over range. Gateway NRA, Sandy Hook (catalog #Gate 811) ..... 83

27. Building 25, interior of dormitory, ca. 1900. Photograph shows partition screening NCO rooms, and original wooden lockers. Gateway NRA, Sandy Hook (catalog #Gate 813) ..... 84

28. Building 25, interior of dormitory, ca. 1900. Photograph shows partition screening NCO rooms, original wooden lockers, and original radiator. Gateway NRA, Sandy Hook (catalog #Gate 814) ..... 85

*Some of the following historic photographs do not depict Building 25, but rather one of the other three original barracks. These photographs have been included in this report because they provide information on the possible appearance of the same areas in Building 25. The captions for these figures will simply say "Barracks."*

29. Barracks, view of west pavilion, ca. 1901. Photograph shows details of front steps and first story. Tom Mix, the future cowboy movie star, is at center front. Gateway NRA, Sandy Hook (catalog #Gate 7090) ..... 86

30. View of Fort Hancock from the top of Sandy Hook Light, looking west. Photograph shows the new mess halls built behind the barracks in 1905. Gateway NRA, Sandy Hook (catalog #Gate 16865) ..... 94

31. Basement plan, 1907-08, showing proposed recreation room. Based on original construction drawing sheet no. 4, 1896. From National Archives, RG 92; copy at Gateway NRA, Sandy Hook ..... 95

32. First-floor plan, 1908, showing changes in room use, and proposed alterations to floors and lavatory. Based on original construction drawing sheet no. 5, 1896. From National Archives, RG 92; copy at Gateway NRA, Sandy Hook ..... 96

33. Plan titled "Remodeling Plumbing in Barracks Nos. 22-23-24-25, Fort Hancock, N.J.," August 1908. Gateway NRA, Sandy Hook ..... 97

34. Second-floor plan, 1908, showing proposed alterations to floors. Based on original construction drawing sheet no. 6, 1896. From National Archives, RG 92; copy at Gateway NRA, Sandy Hook ..... 98

35. Building 23, interior of dormitory, ca. 1908. The date is derived from the presence of metal wall lockers (installed here in 1907) and a footlocker belonging to Company 55, which left Fort Hancock in February 1909. Photograph also shows original partition screening NCO rooms, original metal ceiling and wooden lockers, and 1902 electric light fixtures. Gateway NRA, Sandy Hook (catalog #Gate 8147) ..... 99

36. Two-company barracks (Building 74), interior of dormitory, ca. 1909-14. Photograph shows wooden lockers. Gateway NRA, Sandy Hook (catalog #Gate 4263) ..... 100

37. View of main parade ground, looking southeast, ca. 1912. Photograph shows west and north elevations of all four original barracks, and new troop quarters built in 1908-09. Gateway NRA, Sandy Hook (catalog #Gate 16863) ..... 101

38. Building 25, interior of dormitory, ca. 1929. Photograph shows members of the 7th Coast Artillery Headquarters Battery, a unit quartered in Building 25 from 1927 to 1930. Photograph also shows (at rear left) a doorway leading to the center hall. Gateway NRA, Sandy Hook (catalog #Gate 1978) ..... 106

39. Building 25, interior of dormitory (probably original day room) during occupancy by the 52nd Headquarters Battery, 1937. Gateway NRA, Sandy Hook (catalog #Gate 1971)..... 107

40. View of main parade ground, looking east, 1938. Photograph shows west elevation of Building 25. Gateway NRA, Sandy Hook (catalog #Gate 1133) ..... 108

41. Building 25, plan of first floor, ca. 1938-42. *Fort Hancock Post Record Book*, p. 120. Gateway NRA, Sandy Hook (catalog #Gate 221) ..... 109

42. Building 25, plan of second floor, ca. 1938-42. *Fort Hancock Post Record Book*, p. 121. Gateway NRA, Sandy Hook (catalog #Gate 221) ..... 110

43. View of main parade ground, looking northeast, 1943. Photograph shows part of southwest corner of Building 25. Gateway NRA, Sandy Hook (catalog #Gate 1943-404) ..... 113

44. Members of the Women's Army Auxiliary Corps (WAAC) take the Oath of Allegiance to become members of the newly created Women's Army Corps (WAC), September 1943. Photograph shows the second story of Building 25's pavilion. Gateway NRA, Sandy Hook (catalog #Gate 3452) ..... 114

45. Members of the Women's Army Corps celebrating their new status as full members of the Army, by crossing out the second "A" in "WAAC," 1943. Photograph shows details of Building 25's pavilion. Gateway NRA, Sandy Hook (catalog #Gate 1943-683) ..... 115

46. Building 25, interior of dormitory, September 21, 1943. Gateway NRA, Sandy Hook (catalog #Gate 1943-905) ..... 116

47. Building 25, interior, September 21, 1943. Gateway NRA, Sandy Hook (catalog #Gate 1943-904) ..... 117

48. Members of the Women's Army Corps, 1944. Photograph shows part of Building 25's pavilion. Gateway NRA, Sandy Hook (catalog #Gate 1944-302)..... 118

49. Members of the Women's Army Corps and their escorts, 1943-45. Photograph shows front doorway of Building 25. Gateway NRA, Sandy Hook (catalog #Gate 3467) ..... 119

50. Building 24, southeast corner of dormitory, 1956. Photograph shows beds and lockers. Gateway NRA, Sandy Hook (catalog #Gate 11213)..... 127

51. Basement floor plan, 1959. Part of a drawing titled "Permanent Building Plan, Building No. 23, 24 Barracks," September 24, 1959. Prepared by the Office of the Post Engineer; drawing #700-425. Gateway NRA, Sandy Hook (catalog #Gate 9705)..... 128

52. First-floor plan, 1959. Part of a drawing titled "Permanent Building Plan, Building No. 23, 24 Barracks," September 24, 1959. Prepared by the Office of the Post Engineer; drawing #700-425. Gateway NRA, Sandy Hook (catalog #Gate 9705)..... 129

53. Second-floor plan, 1959. Part of a drawing titled "Permanent Building Plan, Building No. 23, 24 Barracks," September 24, 1959. Prepared by the Office of the Post Engineer; drawing #700-425. Gateway NRA, Sandy Hook (catalog #Gate 9705)..... 130

54. Drawing titled "Rehabilitation of Latrine, Building No. 25," July 18, 1960. Prepared by the Office of the Post Engineer; drawing #CFH-4-61. Gateway NRA, Sandy Hook (catalog #Gate 9606..... 131

55. Basement floor plan, 1964. Part of a drawing titled "Permanent Building, Building No. 25, Brigade Hdqtrs. Bldg.," May 6, 1964. Prepared by the Office of the Post Engineer; drawing #700-497. Gateway NRA, Sandy Hook (catalog #Gate 10368)..... 132

56. First-floor plan, 1964. Part of a drawing titled "Permanent Building, Building No. 25, Brigade Hdqtrs. Bldg.," May 6, 1964. Prepared by the Office of the Post Engineer; drawing #700-497. Gateway NRA, Sandy Hook (catalog #Gate 10368)..... 133

57. Second-floor plan, 1964. Part of a drawing titled "Permanent Building, Building No. 25, Brigade Hdqtrs. Bldg.," May 6, 1964. Prepared by the Office of the Post Engineer; drawing #700-497. Gateway NRA, Sandy Hook (catalog #Gate 10368)..... 134

58. Drawing titled "New Fire Escape Ladder to be Installed Rear Bldg. No. 25," June 9, 1964. Prepared by the Office of the Post Engineer; drawing #CFH 32-64. Gateway NRA, Sandy Hook (catalog #Gate 9603)..... 135

59. Drawing titled "New Masonry Steps and Porch Deck, Bldg. No. 25," September 3, 1964. Prepared by the Office of the Post Engineer; drawing #CFH 10-65. Gateway NRA, Sandy Hook (catalog #Gate 9604) ..... 136

60. Army Reserve sign. Gateway NRA, Sandy Hook (catalog #Gate 907.14) ..... 137

61. West elevation, 1976. Part of a drawing titled "Building Elevations, One Company Barracks," September 17, 1976. Drawing no. 646/25,000, package no. 109, sheet 10 of 19. Gateway NRA, Sandy Hook (catalog #Gate 9186) ..... 138

62. North elevation, 1976. Part of a drawing titled "Building Elevations, One Company Barracks," September 17, 1976. Drawing no. 646/25,000, package no. 109, sheet 10 of 19. Gateway NRA, Sandy Hook (catalog #Gate 9186) ..... 139

63. East elevation, 1976. Part of a drawing titled "Building Elevations, One Company Barracks," September 17, 1976. Drawing no. 646/25,000, package no. 109, sheet 10 of 19. Gateway NRA, Sandy Hook (catalog #Gate 9186) ..... 140

64. South elevation, 1976. Part of a drawing titled "Building Elevations, One Company Barracks," September 17, 1976. Drawing no. 646/25,000, package no. 109, sheet 10 of 19. Gateway NRA, Sandy Hook (catalog #Gate 9186) ..... 141

65. "Details and Sections, One Company Barracks and Battery Gunnison," September 17, 1976. Drawing no. 646/25,000, package no. 109, sheet 11 of 19. Gateway NRA, Sandy Hook (catalog #Gate 9187) ..... 142

66. "Details, One Company Barracks," September 17, 1976. Drawing no. 646/25,000, package no. 109, sheet 12 of 19. Gateway NRA, Sandy Hook (catalog #Gate 9188) ..... 143

67. "Details and Sections, One Company Barracks," September 17, 1976. Drawing no. 646/25,000, package no. 109, sheet 13 of 19. Gateway NRA, Sandy Hook (catalog #Gate 9189) ..... 144

68. First-floor plan, October 20, 1998. NPS drawing by David Crotty. Sheet one of a set of four drawings titled "Building 25 Rehab." Gateway NRA, Sandy Hook ..... 145

69. Second-floor plan, December 23, 1998. NPS drawing by David Crotty. Sheet two of a set of four drawings titled "Building 25 Rehab." Gateway NRA, Sandy Hook ..... 146

70. East elevation, January 14, 1999. NPS drawing by David Crotty. Sheet three of a set of four drawings titled "Building 25 Rehab." Gateway NRA, Sandy Hook ..... 147

71. Section of rear porch, December 14, 1998. NPS drawing by David Crotty. Sheet four of a set of four drawings titled "Building 25 Rehab." Gateway NRA, Sandy Hook ..... 148

72. Plan of first story, showing assigned room numbers. NPS drawing by David Crotty, October 20, 1998, Gateway NRA, Sandy Hook; annotated by Naomi D. Kroll ..... 158

73. Plan of second story, showing assigned room numbers. NPS drawing by David Crotty, December 23, 1998, Gateway NRA, Sandy Hook; annotated by Naomi D. Kroll ..... 159

74. West elevation, showing replacement box cornice and fire escape ..... 160

75. East elevation, first-story doorway, showing perimeter infill with replacement door and original transom ..... 160

76. North side of basement, partition and laundry sinks in northeast corner ..... 161

77. North side of basement, center of ceiling, showing concrete slab flanked by concrete beams (added to support concrete floor in first-story lavatory) ..... 161

78. North side of basement, possible remnants of original gas jet ..... 162

79. Doorway from side hall to mess room, showing perimeter infill for replacement door and covered transom ..... 162

80. Pantry cupboard doors stored in south side of attic ..... 163

81. South dormitory, showing 1964 partitions ..... 163

82. Doorway from center hall to south dormitory, showing perimeter infill with replacement door and painted transom ..... 164

83. South side of attic, south wall, showing interior construction of opening for oculus ..... 164

# ACKNOWLEDGEMENTS

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# I. INTRODUCTION

# EXECUTIVE SUMMARY

## Significance

Building 25 is a contributing structure to the Fort Hancock and Sandy Hook Proving Ground Historic District National Landmark, which was listed in the National Register of Historic Places on April 24, 1980, and designated a National Historic Landmark on December 17, 1982. The district includes approximately 380 acres and 90 significant historic buildings, as noted in the National Register nomination. The structures represent the "history of the U.S. Army's Ordnance Department Proving Ground and Fort Hancock Military Reservation."[1] Building 25 was among the first structures built after the site was designated Fort Hancock in 1895. Constructed in 1897-98 to house and support troops who manned the post's batteries, it was one of the 32 buildings included in the carefully designed 1896 master plan for Fort Hancock.

### National Register of Historic Places

Fort Hancock is one of three components (Fort Hancock, Sandy Hook Proving Ground, and the Sandy Hook lighthouse) within the historic district. It is primarily recognized for its role in the defensive network protecting New York Harbor. The National Register denotes the district's period of significance as spanning from 1859, the date of the first masonry fort at the site, to the 1960's, when the importance of the site's Nike missile defenses declined. The period from 1890 through 1908 saw hundreds of thousands of dollars spent on construction and armament of seacoast and mortar batteries at Sandy Hook.[2] The fortifications continued to be improved all the way through the Cold War in the 1950's and 1960's, including the emplacement of Nike missiles beginning in 1954.[3] Thus,

> The Sandy Hook Defenses (Fort Hancock) for nearly 80 years were the key fortification guarding the approaches to America's most important harbor and its largest metropolis. It was during these years that the United States defeated Spain and emerged as a world power; tipped the scales against the Central Powers in World War I; retreated into the isolation of the 1920's and [19]30's; and emerged from World War II as a superpower.[4]

[1] Statement of Significance, National Register of Historic Places nomination, "Fort Hancock and the Sandy Hook Proving Ground Historic District" (Richard E. Greenwood, June 28, 1976).

[2] Statement of Significance, National Register nomination.

[3] "The Defenses of Sandy Hook" (NPS pamphlet, Gateway NRA, Sandy Hook Unit).

[4] Statement of Significance, National Register nomination.

## National Historic Landmark

The district was given National Historic Landmark (NHL) status on December 17, 1982. Landmark status was awarded because:

> Fort Hancock and Sandy Hook Proving Ground Historic District reflects the history of a vital defense installation guarding New York City and its harbor from 1895 to 1974. This Landmark played a key role in the development of advanced weaponry and radar….[5]

The landmark designation elected to recognize the site's significance from the time period of Fort Hancock's original commission in 1895 (excluding any earlier fortification) to the time of the fort's deactivation in 1974.

## Park Legislation

The Congressional act that established Gateway National Recreation Area did not cite the historical merit or period of significance of any of the area's cultural resources as a reason to preserve and protect the tracts involved.

## General Management Plan

A period of significance for the buildings of Fort Hancock is not specifically identified in the park's 1979 general management plan (GMP). It does state the following:

> Fort Hancock served as an important component of the national defense system from before the Spanish-American War through the early Cold War period, when a Nike missile base was installed…. The buildings in the main part of Fort Hancock…are of considerable historical and visual interest."[6]

[5] Statement of Significance, National Historic Landmark Program web site (http://tps.cr.nps.gov/nhl/detail.cfm?ResourceId=1828&ResourceType=District). Prior to the awarding of NHL status, the nomination was amended (by Harry Butowski, dated June 20, 1982) to expand the district to include the entire Sandy Hook peninsula, except for South, Plum, and Skeleton islands. This work incorporated the U.S. Coast Guard area that was omitted from the original nomination.

[6] *General Management Plan, Gateway National Recreation Area, New York/New Jersey.* U.S. Department of the Interior, National Park Service, August 1979, p. 13.

A decade later, an amendment to the 1979 GMP was prepared to evaluate and update "planning, design, and management strategies for the Sandy Hook unit to ensure that its resource management and visitor use programs reflect current administrative policies and economic realities."[7] The amendment introduced the concept of private-sector involvement in the restoration and reuse of the northern portion of the unit, in order to "preserve the historic character of the fort through…adaptive use of as many structures as possible."[8]

The amendment states that Sandy Hook contains 219 historic structures dating "from the last quarter of the 19th through the first half of the 20th century." Included among the fort's most significant cultural resources are the "original buff-brick buildings surrounding both parade grounds," of which Building 25 is one.[9]

## Historic Structure Report

A historic structure report (HSR) completed in 1988 for all of the parade-ground structures defined the historical significance of Fort Hancock as follows:

> The historical significance of Fort Hancock lies in the history of coastal defense structures in the United States, with other significant structures remaining associated with the first official United States Army proving ground….[10]

The report cites a July 7, 1977, memorandum entitled "Preservation at Fort Hancock, Sandy Hook," which reflects decisions made at a June 1977 meeting convened by Regional Director Jack Stark of all interested NPS personnel to reach agreement on the historical period for restoration and interpretation. This memorandum states that parade-ground structures should be restored to the World War -II period. However, the HSR urges caution in adopting any one restoration period for all of the structures, since the amount of documentation available for each individual structure may not be adequate to support that particular date. Instead, the HSR suggests "the structures at Fort Hancock should be restored to any point in their history, based on careful case study of each structure."[11]

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[7] *General Management Plan Amendment, Development Concept Plan and Interpretive Prospectus: Sandy Hook Unit, Gateway National Recreation Area, New York/New Jersey* (National Park Service, January 1990), p. 1. Hereinafter *GMP Amendment.*

[8] *GMP Amendment,* p. 8.

[9] *GMP Amendment,* p. 4.

[10] Douglas S. Walter, Barry Sulam, Susan Simpson, and John B. Marsh, *Historic Structure Report, Architectural Data Section (Volume I), Fort Hancock Parade Ground Structures, 1896-1899, Sandy Hook Unit, Gateway National Recreation Area, New Jersey* (Denver: U.S. Department of the Interior, National Park Service, Denver Service Center, Aug. 1988), p. 10. Hereinafter *HSR.*

[11] *HSR,* pp. 3-5.

**Building 25 and Its Context of Significance**

Building 25 is significant within the context of the National Register nomination, the National Historic Landmark designation. It was one of the 32 original structures built at Fort Hancock in the 1890's. It played a key role as a barracks for the troops manning the Fort Hancock defenses throughout the history of the fort. It has particular significance related to the World War-II period, when it was the barracks of the post's first Women's Army Corps contingent. Its military associations even continued beyond the fort's deactivation in 1974, since it was still being used after that date for U.S. Army Reserve activities.

## Integrity

Integrity, in this context, is defined as the authenticity of a property's historic identity, evidenced by the survival of physical characteristics that existed during its historic period; i.e., the extent to which a property retains its historic appearance.[12] This HSR recognizes the years 1898-1974 as the broad period of significance–or historic period–for Building 25. Thus, all original features and treatments, and all alterations made prior to 1974, are part of the "historic" appearance of the structure. (This would include the ca.-1964 conversion of the interior of the barracks to offices.) The most notable of the original elements and historic alterations are considered to be "character-defining features." Character-defining features (CDFs) are elements or treatments that date to the period of significance, and which give a structure its distinction and character; they are elements whose loss would diminish or destroy the structure's architectural or historical integrity.[13] The CDFs for Building 25 are discussed in greater detail in Chapter IV.

Extant original elements of Building 25 were relatively easy to identify. Documentation that aided this work included the original construction drawings and historic photographs. In addition, the fact that Building 25 was one of four identical enlisted men's barracks built next to each other offered a unique opportunity to compare and evaluate the appearance of existing features in the different buildings. Obtaining dates for alterations was much more difficult, due to a lack of specific available documentation.

Building 25 was found to retain a high degree of integrity from its period of construction through 1974, in terms of location, design, setting, materials, workmanship, feeling, and association. As explained by the draft historic structure report for the parade-ground structures,

> The buildings remaining from the 1898-99 construction program form a strong totality, being built of identical materials, being of compatible design, and being sited to enclose and define several spaces (parade ground, north

[12] *D.O. 28: Cultural Resource Management Guideline*, Release No. 5 (Washington, D.C.: U.S. Department of the Interior, National Park Service, 1997), p. 184.

[13] Carole L. Perrault and Judith A. Quinn [Sullivan], *Building 19 Historic Structure Report, Springfield Armory National Historic Site, Springfield, Massachusetts* (Boston: NPS, Building Conservation Branch, Cultural Resources Center, 1991), Vol. I, pp. 216-216.

> parade ground, [and] Kearney Road). Despite all changes over the years, the effect intended 80 years ago still comes through.[14]

Notable original exterior elements of Building 25 itself include the entire envelope of the building, with its distinctive wall material of buff-colored brick, projecting front entrance pavilion, and symmetrical doorway and window openings. The most notable original exterior features missing today are the two-story front porches and the one-story rear porch. (The rear porch in place today is a reconstruction, not a replica.)

Notable original interior elements remaining include the basic first- and second-floor plans, extraordinary stamped-metal ceilings in all first- and second-story rooms, molded doorway and window surrounds, and matchboard wainscot in the hallways. Sashes appear to be appropriate if not original. The most significant original interior features missing today are the five-paneled doors; most of these have been replaced with smaller doors, with the doorway openings being partially infilled to match. Much of the south basement has been altered, where concrete-block partitions and a walk-in safe have been created.

## Research Conducted to Produce the Historic Structure Report

This historic structure report (HSR) is intended to guide the rehabilitation of Building 25, through (a) the documentation of its evolution, (b) the evaluation of architectural fabric relative to the building's period of significance, and (c) the identification of character-defining features. The level of research for this HSR is classified as a combination of limited and thorough, both as defined in *Director's Order 28*. Archival research was limited primarily to Gateway National Recreation Area (NRA) archives, since these appear to contain copies of much historic documentation extracted from the National Archives by previous research efforts.[15] This material includes historical documents, photographs, and maps. Also reviewed were all existing reports and documents at the Northeast Cultural Resources Center and the Boston Support Office.

[14] Douglas S. Walter, Barry Sulam, and Susan Simpson, *Architectural Data Section, Historic Structures Report, Part One, Fort Hancock Parade Ground Structures, 1896-1899, Sandy Hook Unit, Gateway National Recreation Area [Draft]* (Denver: U.S. Department of the Interior, National Park Service, Denver Service Center, Feb. 1979), pp. 4-5. Hereinafter *HSR Draft*.

[15] The most extensive of these was that conducted by NPS historian Edwin C. Bearss for his *Historic Resource Study, Fort Hancock, 1895-1948, Gateway National Recreation Area, New York/New Jersey* (Denver: U.S. Department of the Interior, National Park Service, May 1981); hereinafter *HRS, 1895-1948*. He states that he performed "an exhaustive search for primary materials" at the National Archives and the Washington National Records Center in Suitland, MD. Copies of all plans and specifications were ostensibly to the Denver Service Center and Gateway NRA. Bearss also examined copies of the *Artillery Journal* and the *Coast Artillery Journal.*

The level of physical investigation, on the other hand, was classified as "thorough." Exterior and interior architectural descriptions have been provided. A list of (CDFs) identifies those elements and features that should be preserved or their alteration avoided.[16] A condition assessment is not part of the HSR, but will be addressed by the architectural/engineering firm hired for the rehabilitation.

## Major Issues Identified in the Scope of Work

All issues identified in the scope of work are addressed in this HSR. The basic goals of the project were: (a) to determine the basic structural evolution and history of the building; (b) to document the existing architectural conditions; (c) to identify the character-defining features; and (d) to provide a written report of the investigative findings.

A broader directive was to discuss the period of significance of the structure, which has received different characterizations in various discussions and publications. Another requirement was to discuss how the period of significance will influence the park's intention to rehabilitate the structure for use as a visitor center, with education facilities, offices for interpretive and cultural-resource operations, and storage for some of the park's museum collection. The primary concern is to formulate the proper treatment for Building 25. Given the GMP-specified treatment of rehabilitation, the exterior could be rehabilitated, preserved, or restored. The selection of preservation would not call for the reconstruction of the dismantled west porches, while the choice of restoration would require their rebuilding. It will also be important to reconcile the proposed new use of the structure with the physical changes required for treatment, in order to ensure that character-defining features are maintained. It is also important to recognize the park's plan to paint the exteriors of all structures with pre-World War II paint colors. In the case of Building 25, the same color scheme was used from the 1930's into at least the 1950's.

## Recommendations for Treatment or Use

The proposed rehabilitation of the structure for use as a visitor center, and as a location for park offices and collections, is in agreement with available planning documents regarding the management of cultural resources at the Sandy Hook Unit of Gateway NRA. The GMP amendment of 1990 states that the management objective is to

> preserve the historic character of the fort through a joint public/private venture involving adaptive use of as many structures as possible.[17]

[16] Kay D. Weeks and Anne E. Grimmer, *The Secretary of the Interior's Standards for the Treatment of Historic Properties, with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings* (Washington, D.C.: U.S. Department of the Interior, National Park Service, Cultural Resource Stewardship and Partnerships, Historic Preservation Services, 1995), p. 62.

[17] *GMP Amendment*, p. 8.

A further goal is to "retain the integrity of the historic scene and to provide adaptive use through rehabilitation of historic structures."[18]

The proposed reuse is also consistent with the treatment recommended for Building 25 in the List of Classified Structures (LCS)—i.e., rehabilitation. *The Secretary of the Interior's Standards for the Treatment of Historic Properties* defines rehabilitation as follows:

> the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.[19]

Additional information is provided by the National Park Service's cultural-resource management guideline, which states that

> Rehabilitation improves the utility or function of a historic structure, through repair or alteration, to make possible a compatible contemporary use while preserving those portions or features that are important in defining its significance.[20]

The treatment of rehabilitation would permit the proposed restoration of the exterior of Building 25. This action would include the reconstruction of the building's original porches, which were important character-defining features prior to their removal in 1989-90. *D.O. 28* requires only that "Repair or replacement of missing features is substantiated by archeological, documentary, or physical evidence." Ample documentary and physical evidence for the porches does exist, ranging from original measured drawings to actual pieces saved at the time of removal. The treatment of rehabilitation would likewise permit the proposed use of the interior of Building 25 for a visitor center, park offices, and collections. All rehabilitation activities should minimize any adverse effects on the existing character-defining features of the building.

[18] *GMP Amendment*, p. 9.

[19] Weeks and Grimmer, p. 61.

[20] *D.O. 28*, p. 129.

# ADMINISTRATIVE DATA

## Names, Numbers, and Locational Data

Building 25 is part of Fort Hancock, situated on Sandy Hook, New Jersey. The "Hook" is a long, slender sandbar that extends northward more than six miles from the New Jersey seacoast into Lower New York Harbor. It is located in Monmouth County, New Jersey. Most of the peninsula is a unit of Gateway National Recreation Area. The northern tip is under the jurisdiction of the U.S. Coast Guard, which maintains a station there.

LSC ID number: 08450
Park structure no.: SH-025
Number of UTM's: 1 Zone/Easting/Northing

## Proposed Treatment and Source Document

The List of Classified Structures places Building 25 in the Management Category "Must Be Preserved and Maintained." The approved ultimate treatment for the structure is rehabilitation; Building 25 is part of the rehabilitation zone described in the General Management Plan (GMP) Amendment of 1990.

## Related Studies

Extant studies that examine Barracks 25 include the following:

Edwin C. Bearss, *Historic Resource Study, Fort Hancock, 1895-1948, Gateway National Recreation Area, New York/New Jersey* (Denver: U.S. Department of the Interior, National Park Service, May 1981).

*General Management Plan Amendment: Development Concept Plan and Interpretive Prospectus: Sandy Hook Unit, Gateway National Recreation Area, New York/New Jersey* (NPS, January 1990).

Richard E. Greenwood, National Register of Historic Places nomination, "Fort Hancock and the Sandy Hook Proving Ground Historic District," June 28, 1976.

*Historic Structure Assessment Report, Fort Hancock–Building 25, Barracks, Gateway National Recreation Area, Sandy Hook Unit* (Douglasville, GA: Architectural Conservation Center,1989-1990).

Douglas S. Walter, Barry Sulam, Susan Simpson, and John B. Marsh, *Historic Structure Report, Architectural Data Section (Volume I), Fort Hancock Parade Ground Structures, 1896-99, Sandy Hook Unit, Gateway National Recreation Area* (Denver: U.S. Department of the Interior, National Park Service, Denver Service Center, August 1988).

## Recommendations for Care of Materials Generated

Most of the materials were copies of documents in Gateway NRA files. The research materials gathered during the production of this report will be filed at the Northeast Building Conservation Branch (NBCB) in Lowell, MA. Copies of any new research material obtained will be sent to the park. Photographs, drawings, and text used for the purposes of report publication will remain at the NBCB. Copies of the final unpublished report will be kept at the park and the NBCB. Copies of the published report, when they become available, will be kept at park, the NBCB, and the Denver Service Center's Technical Information Center.

# BRIEF ARCHITECTURAL DESCRIPTION

Building 25 is located along the north edge of the main parade ground, facing west across the parade ground toward Officers' Row and to Sandy Hook Bay beyond. The main block of the structure is a long, two-story, gable-roofed rectangle oriented north-south; a pedimented projecting pavilion is centered on the west elevation. The foundation consists of a rough ashlar trap rock–probably rhyolite–obtained from the Hudson Palisades. Between the foundation and the wall surface is a limestone water table. The walls are of buff-colored brick with very thin mortar joints and a heavily molded cornice at the eaves. Doorway and window openings are arranged symmetrically. Most window openings are rectangular, with hidden steel lintels supporting buff-brick jack arches and 12-over-12 double-hung sashes. A Palladian-like window ornaments the second story of the pavilion, while elliptical oculi are used in the gable of the pavilion, and in the north and south gable ends of the main block. Only portions remain of two original two-story porches that ran the full length of west (front) elevation on either side of the projecting pavilion. A one-story porch that covers the center four bays of the east (rear) elevation is a 2000 reconstruction. The roof is clad with asphalt shingles, and features one conical galvanized-steel ventilator (a second one is missing) and a corbeled brick chimney. The interior contains two stories, a full basement, and an unfinished attic. Structural elements include brick bearing walls and timber framing.

Stylistically, Building 25 exhibits classic Colonial Revival characteristics. The exaggerated cornice and its returns, the corbeled brick chimney, the limestone belt course, the 12-over-12 window sashes, the jack-arch window lintels, and the yellow color of the brick all may be interpreted as Colonial Revival features.

**Figure 1.** Building 25: original appearance of west (front) elevation.

# II. HISTORICAL DATA

# BACKGROUND

Sandy Hook is a narrow barrier island that extends about six and a half miles northward from the New Jersey coast into the outer harbor of New York City. Its importance derives from the fact that the only natural deepwater channel into the harbor runs very close to the tip of Sandy Hook. As early as 1680, the English governor Nichols suggested building a navigational beacon on Sandy Hook, with a fort to protect it. A lighthouse was finally built in 1764 (see fig. 2), but no fort. As a consequence, a British fleet was able to sail into the harbor in 1776 and land an army that captured New York City. British troops and Tories then erected a stockade around the Sandy Hook lighthouse and placed two six-pound cannon in the tower.[1]

Having learned a hard lesson, the American army during the War of 1812 built and garrisoned a wooden stockade fort named Fort Gates, located about a third of a mile north of the Sandy Hook lighthouse. The fortification prevented British ships from returning to the sheltered anchorage at Sandy Hook, but the American troops were withdrawn at the end of the war, and the temporary fortifications and camps were left to deteriorate.[2] The federal government remained aware of Sandy Hook's importance, though, and in 1817 it acquired title to the entire peninsula from the Hartshorne family.[3]

An integrated system of masonry fortifications was in place to protect New York's inner harbor by the 1850's. The advent of steam-powered ships and longer-range artillery, however, made it necessary to add defenses around the outer portion of the harbor. Planning for a massive granite fort on Sandy Hook was begun in 1857, with construction commencing in 1859. Figure 2 shows the location of the "Fort at Sandy Hook" and the government dock that serviced it. The outbreak of the Civil War accelerated the work, and in 1863 troops were assigned to the fort to man the armament and guard public property.[4] However, the introduction of rifled artillery during the war made the fort obsolete before it could be completed, and work on it was stopped in 1868.[5] Interestingly, the need to keep abreast of just such innovations in weaponry caused the U.S. Army Ordnance Department to establish the nation's first proving ground at Sandy Hook in 1874. A "proof" battery was built by Army engineers and manned by Army Ordnance Officers, to "prove"–or test–new artillery.[6] Figure 3 shows the roads and structures of the Sandy Hook Proving Ground in 1889.

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[1] Douglas S. Walter, Barry Sulam, Susan Simpson, and John B. Marsh, *Historic Structure Report, Architectural Data Section (Volume I), Fort Hancock Parade Ground Structures, 1896-1899, Sandy Hook Unit, Gateway National Recreation Area, New Jersey* (Denver: U.S. Department of the Interior, National Park Service, Denver Service Center, Aug. 1988), p. 16. Hereinafter *HSR.*

[2] Statement of Significance for Fort Hancock, National Register of Historic Places nomination, "Fort Hancock and the Sandy Hook Proving Ground Historic District" (Richard E. Greenwood, June 28, 1976).

[3] George H. Moss, Jr., *Nauvoo to the Hook* (Locust, NJ: Jervey Close Press, 1964), p. 57.

[4] *General Management Plan Amendment, Development Concept Plan and Interpretive Prospectus: Sandy Hook Unit, Gateway National Recreation Area, New York/New Jersey* (National Park Service, January 1990), p. 22. Hereinafter *GMP Amendment.*

[5] Statement of Significance for Fort Hancock, National Register nomination.

[6] "Fort Hancock" (NPS pamphlet, Gateway NRA, Sandy Hook Unit).

Defensive fortifications became an important issue once again toward the end of the 19th century. A number of European nations had begun rebuilding their battle fleets to extend their power and influence around the world. Around 1884 the U.S. Congress began to authorize larger expenditures for the armament program, and in 1886 a powerful board appointed by President Cleveland (the "Endicott Board") called for a comprehensive defense system to protect primary U.S. ports from naval attack.[7] These defenses were to include high-powered guns and mortars mounted in concrete emplacements designed to blend into the seashore environment for protection and camouflage; submarine mine fields; floating batteries and torpedo boats; and rapid-fire guns to protect the minefields.[8]

Because of New York Harbor's geographical and commercial importance, Sandy Hook was chosen as the site for the first of these massive concrete emplacements.[9] Two Endicott batteries were constructed by the U.S. Army Corps of Engineers and armed by the Ordnance Department. First to be finished was the Sandy Hook Mortar Battery, in 1894. This was the first operational concrete gun battery of its type ever built for the defense of American harbors. It contained 16 12-inch mortars designed to lob armor-piercing projectiles through the decks of enemy ships. Completed shortly thereafter was "Lift Gun Battery No. 1" (later renamed Battery Potter), which contained two 12-inch seacoast guns. This was America's first "disappearing" gun battery, and the only one ever to raise and lower its guns by steam power.[10] An 1892 map (fig. 4) shows both of these batteries under construction.

These two Endicott batteries began a nationwide system of concrete coastal defense fortifications constructed between 1890 and 1910. Other batteries constructed at Sandy Hook between 1896 and 1909 were Batteries Reynolds, McCook, Alexander, Bloomfield, Richardson, Granger, Halleck, and Arrowsmith. In addition, the rapid-fire batteries Engle, Urmston, Peck, Morris, and Gunnison were emplaced to protect the fort's minefield.[11]

Some of the most advanced artillery of the time was thus in place by the fall of 1895. However, the fort had no name, no garrison to care for and fire the guns, and no buildings to house such a garrison. The first problem was remedied on October 30, 1895, when the Secretary of War signed General Order 57, designating the fortifications on Sandy Hook as Fort Hancock. Fort Hancock was named after Major General Winfield Scott Hancock (1824-86), a soldier and later politician best known for his leadership during the Civil War.[12] However, no troops were assigned to the newly named Fort Hancock fort at that time.

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[7] Edwin C. Bearss, NPS memorandum, February 20, 1976, p. 2. Boston Support Office Archives.

[8] Statement of Significance for Fort Hancock, National Register nomination.

[9] Thomas J. Hoffman and Howard Kenngott, "Fort Hancock" (NPS booklet, Gateway NRA, Sandy Hook Unit).

[10] Battery Potter proved too expensive to build, and too slow to operate. Subsequent disappearing batteries used a counterbalance system to raise and lower their guns ("The Defenses of Sandy Hook," NPS pamphlet, Gateway NRA, Sandy Hook Unit).

[11] Bearss, NPS memorandum, pp. 5-7.

[12] Edwin C. Bearss, *Historic Resource Study, Fort Hancock, 1895-1948, Gateway National Recreation Area, New York/New Jersey* (Denver: U.S. Department of the Interior, National Park Service, May 1981), pp. 6-8. Hereinafter *HRS, 1895-1948*.

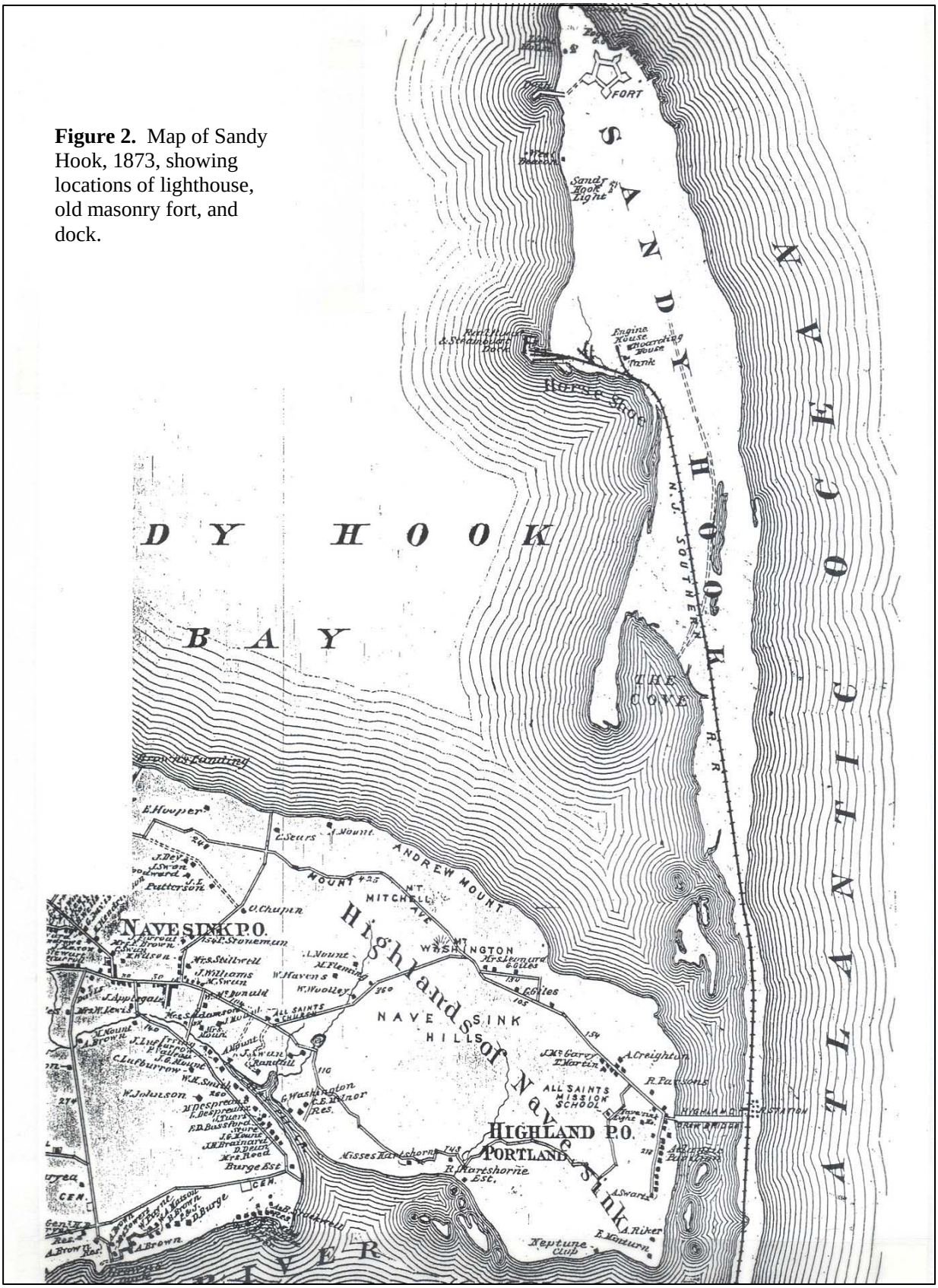


**Figure 2.** Map of Sandy Hook, 1873, showing locations of lighthouse, old masonry fort, and dock.

**Figure 3.** Map of Sandy Hook, 1889, showing locations of roads, railroads, and structures at Sandy Hook Proving Ground.

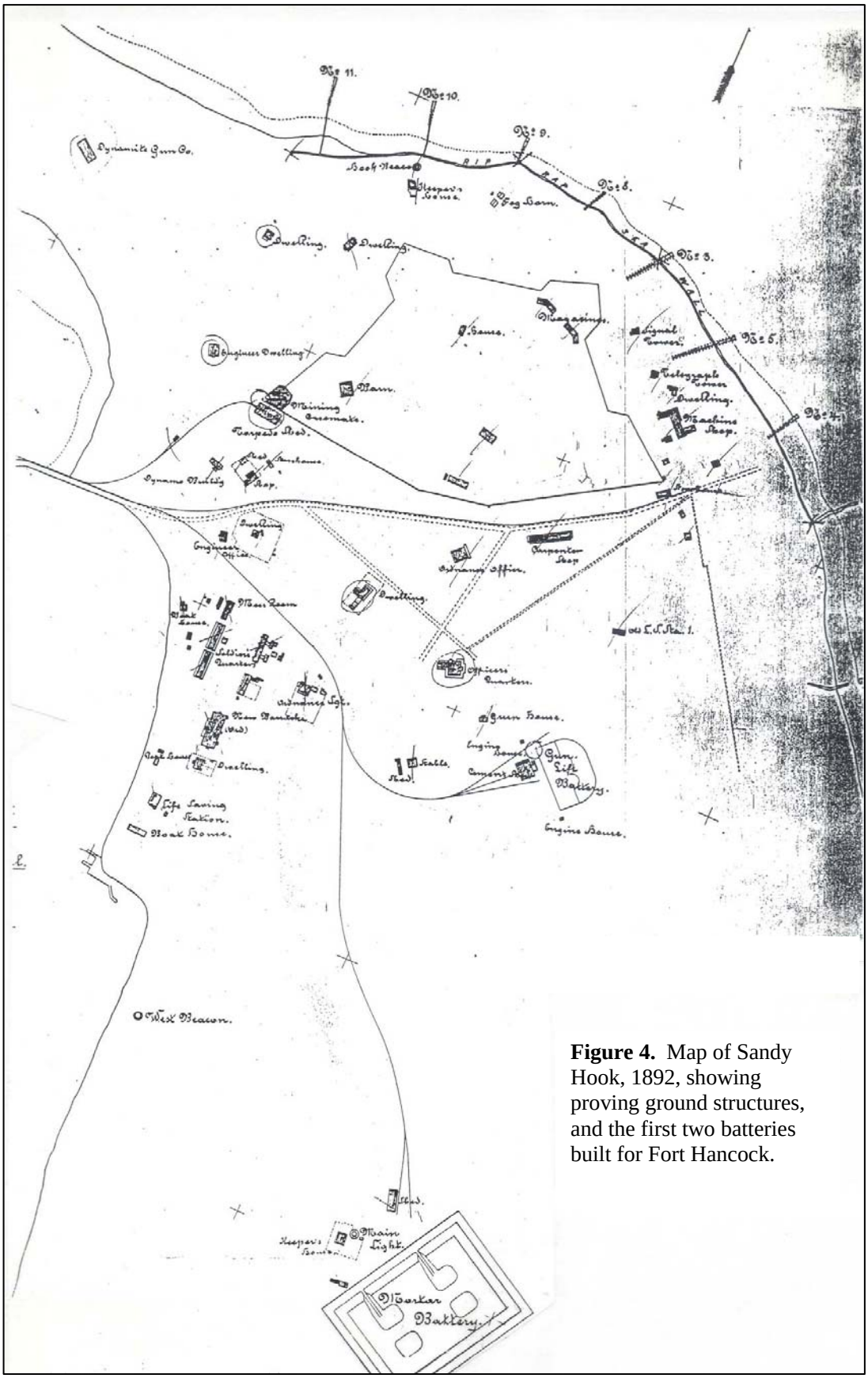


**Figure 4.** Map of Sandy Hook, 1892, showing proving ground structures, and the first two batteries built for Fort Hancock.

# PLANNING THE FORT

## Approval and Initial Estimates

The Commander of the Department of the East–Major General Thomas Ruger—was concerned about the lack of a garrison at Sandy Hook. On March 27, 1896, he sent a letter to the War Department recommending that facilities for a garrison of four batteries be built at Fort Hancock. He noted that such action would not only make the Sandy Hook batteries operational, but also provide a place for other artillery commands to train while their batteries were being constructed elsewhere.[13]

The military post was to share Sandy Hook with the already-established proving ground located on the northeast portion of the peninsula. The proving ground operated under the direction of the Ordnance Department. The military post would operate under the direction of the U.S. Army Corps of Artillery. To avoid friction between the branches, the proving ground and the military post were to be run by separate commanding officers. Also occupying the north end of Sandy Hook were the U.S. Army Corps of Engineers, the U.S. Life-Saving Service, and an office of the Western Union Telegraph Company.[14]

General Ruger forwarded with his recommendation a topographical map of Sandy Hook, a sketch "showing how the necessary Buildings for a Military Post of Four Batteries of Artillery" might be positioned, and estimates for the cost of constructing those buildings. These documents were based on information gathered by General Ruger during a visit to Sandy Hook earlier in March, accompanied by his chief quartermaster, Colonel Charles G. Sawtelle. It was Colonel Sawtelle who prepared the construction estimates (see Appendix A), in accordance with General Ruger's instructions.[15]

Sawtelle based his computations on the assumption that the basic construction material would be brick, although wooden buildings would cost about one-quarter less. He believed that the use of brick was justified by the following factors: permanency of occupation, necessity for solid construction to withstand high winds, low cost of repairs, and the desirability of keeping combustible materials to a minimum in buildings so close to the batteries.[16] His estimates were based on the cost of similar structures erected at other army posts, particularly at Fort Ethan Allen.[17] Sawtelle's estimate provides a brief description of 22 of the original buildings erected at Fort Hancock.

Apparently General Ruger received a favorable response to his letter, because planning for the fort continued. Colonel Sawtelle instructed Captain Arthur Murray, a Quartermaster Officer, to draw up a master plan for the site and construction plans for post buildings.

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[13] *HRS, 1895-1948*, p. 9.

[14] *HRS, 1895-1948*, p. 14.

[15] *HRS, 1895-1948*, p. 9.

[16] *HRS, 1895-1948*, p. 10.

[17] *HRS, 1895-1948*, pp. 9-11.

## Site Selection and Plans

Captain Murray chose a site southwest of the proving ground for Fort Hancock, and his selection was confirmed by the Quartermaster General's Office in May 1896.[18] His first consideration seems to have been the location of the barracks for the enlisted men, including Building 25. He wanted these barracks to be positioned on

> the high ground west of the batteries…. To keep the post's facilities from becoming too scattered, and to permit the men to be near the parade ground, the barracks were to be sited southwest of the mortar battery.[19]

(See figure 6 for the relationship of the barracks to the mortar battery.) The quarters for the officers were to be "located with reference to the barracks for the organizations to which they belong."[20] These considerations were addressed in Murray's master plan, which was based on the juxtaposition of two parade grounds, a central and a secondary parade. The central and secondary parades were set on a north/south axis with the buildings organized around the perimeters of the parades. The central parade was semicircular, with the arc facing east. A row of officers' quarters defined the western perimeter of the central parade and faced Sandy Hook Bay. Four enlisted-men's barracks were planned for the eastern arc of the central parade facing the parade. The hospital anchored the southern bound of the central parade.

The secondary parade adjoined the central parade on the north. It was long and triangular, with its apex to the north. Like the central parade, its western perimeter was defined by a row of officers' quarters facing Sandy Hook Bay. The east leg of the parade triangle was occupied by utilitarian and service-related buildings essential to the efficient operation of the fort. Among the buildings planned for the east leg of the secondary parade were the stables, wagon shed, shops, bakery, storehouses, fuel shed, and guardhouse. Anchoring the south boundary of the secondary parade was an officer's quarters and the administration building.

Captain Murray also had strong opinions as to how the post's structures should be designed. While at least some of his building plans were virtual copies of similar structures at other posts, such as that for the quartermaster and commissary storehouse (Building 32), his plans for housing reflected thoughtful concern. For example, he believed that the plan for the new barracks should be governed by the factors of utility, comfort, "beauty of architecture," and cost of construction. Apparently little attention had been paid to the first two of these factors in the construction of earlier barracks elsewhere.[21] He changed the original concept for two double sets of two-company barracks to four single-company barracks, and he provided front and rear porches, to make the barracks as comfortable as possible in the summer.

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[18] *HRS, 1895-1948*, p. 23.

[19] *HRS, 1895-1948*, pp. 15-16.

[20] *HRS, 1895-1948*, p. 16.

[21] *HRS, 1895-1948*, p. 18.

The following passage in the HRS, made concerning the officers' quarters, explains Murray's actions.

> The double sets of quarters that had been built during recent years at most army posts were not deemed suitable for Sandy Hook, where the slightest summer breeze was "hailed with delight," and where only one of a double set, depending upon the direction of the prevailing winds, received what breeze there was.[22]

Captain Murray argued that it would be cheaper in the long run to build "rather substantial masonry" porches, rather than wooden ones that would need frequent repairs. He also avoided the use of any "gingerbread work" that would need continual maintenance. Murray's designs for the buildings were influenced by his consultations with the architectural firm of John M. Carrère and Thomas Hastings (personal friends of Murray's), as well as by existing precedents at similar military installations.[23]

Estimates for the construction of a four-battery post at Fort Hancock were finalized by the Quartermaster General's office by the end of July 1896. On August 3, Acting Quarter Master General George H. Weeks recommended to Secretary of War Daniel S. Lamont that an expenditure of $339,600 be authorized for site preparation and the 32 necessary structures. Facilities for the new garrison were to include four permanent enlisted men's barracks, officers' quarters, storehouses, a hospital, a guardhouse, and an administration building. Two days later, Secretary Lamont approved the recommended expenditure.[24]

Technicians in the Quartermaster General's office had also prepared a revised site plan and construction drawings based on Murray's site plan and conceptual drawings. Captain Murray had been transferred to Yale University by that time, but he was given the opportunity to review the revised site plan and drawings, and he made a few suggestions that were incorporated into those documents.[25] On September 14, 1896, the final site plan and construction plans for 14 of the 32 structures were forwarded to the Secretary of War and promptly approved. This original site plan remains the core of Fort Hancock today, as shown in figure 5.

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[22] *HRS, 1895-1948*, p. 19.

[23] *HRS, 1895-1948,* pp. 19-20. Carrère and Hastings was a distinguished New York architectural firm that executed "an impressive array of commissions for country estates, public buildings, commercial structures, and city-planning schemes" [*Long Island Country Homes and Their Architects, 1860-1940*, edited by Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor (Society for the Preservation of Long Island Antiquities, in association with W.W. Norton & Company, New York and London, 1997), pp. 27, 98].

[24] *HRS, 1895-1948*, pp. 25-27.

[25] *HRS, 1895-1948*, pp. 24-25.

# BUILDING THE FORT

## Site Preparations

Once the plans were approved and monies appropriated, the construction of Fort Hancock began in earnest. Site preparation had begun in July 1896 under the direction of Col. James M. Moore of the Quartermaster General's office. The first task was to clear the site of underbrush. This was accomplished by late August.[26] The next project was to level and grade the area, which had "hills and hollows varying from 3 to 15 feet in depth and extending from 50 to 300 feet in length."[27] This work was completed by early spring of 1897.[28] Another task was to construct a railroad spur from the ordnance railroad to run behind the storehouses along the eastern bound of the secondary parade. A standard-gauge 2,200-foot railroad spur was completed in January 1897.[29] Roadways also needed to be opened,[30] and artesian wells needed to be drilled.[31]

## Construction of Buildings

Moore was also the New York depot quartermaster, and he soon found that he did not have enough time to directly supervise the work at Fort Hancock. This task was assigned to his assistant, Captain Carroll A. Devol, in September 1896.[32] On October 31, 1896, Devol advertised for bids for erecting 32 buildings and a bake oven. He received 39 proposals. The low bid of $218,115 was offered by Thomas J. Regan of Newark, New Jersey. On December 15, 1896, Regan signed a contract that included the construction of four barracks at $16,975 each.[33]

It should be noted that Regan's contract for 32 buildings and a bake oven was only one of several construction efforts at Fort Hancock in the years 1897-99. Running concurrently with his contract was one with Warren H. Jenkins & Co. of Philadelphia, to build one bachelor officers' quarters and a quarters for the engineer in charge of the pumping station.[34] Neither contract included a hospital and a hospital steward's quarters, both of which had been part of Colonel Sawtelle's

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[26] *HRS, 1895-1948*, pp. 34-35.

[27] *HRS, 1895-1948*, p. 35.

[28] *HRS, 1895-1948*, p. 41.

[29] *HRS, 1895-1948*, pp. 42-43.

[30] *HRS, 1895-1948*, p. 36.

[31] *HRS, 1895-1948*, pp. 43-44.

[32] *HRS, 1895-1948*, p. 36.

[33] *HRS, 1895-1948*, p. 52.

[34] *HRS, 1895-1948*, pp. 74-76.

original proposal.[35] These were built separately, as buildings 19 and 20. Three other structures were added at about the same time: a Plumber's Quarters (21), a Firemens' Dormitory (34), and a Quartermaster Latrine (44).[36]

The exterior walls of Regan's buildings were to consist of buff-colored face brick. Captain Murray had apparently specified this material in his original plans, even though his architect friends Carrere and Hastings advised him that it would be more expensive. Buff brick would cost $32 per thousand for bricks, mortar, and labor, as opposed to $22 per thousand for red brick. The $10 difference was largely "because better quality brick necessitated more careful workmanship."[37] Captain Devol made a study of possible brick types before requesting bids for construction. He liked a type called the Ridgeway, made by Orrin D. Person, which was endorsed by the Quartermaster General.[38] However, Regan was apparently allowed to specify a different buff-colored brick in his proposal.[39] His bricks were to come from the Clearfield Clay Working Company of Clearfield, Pennsylvania.[40] The brick was to be laid with rowlock joints.[41] Sand from Sandy Hook beaches may have been employed in the common mortars used in the masonry construction.[42]

The foundation and underpinning material was to be dark "trap rock" from the Hudson Palisades.[43] Captain Devol had initially intended for these features to be of light-colored limestone classed as marble. However, the quarry intended to supply the limestone (located on the upper part of Manhattan Island near King's Bridge) did not have enough to supply all the buildings. At Regan's suggestion, the foundation and underpinning material was changed to the trap rock. Doorway and window lintels and sills ("trimmings") were to be of limestone described as "a dark or colored stone classed as blue."[44]

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[35] *HRS, 1895-1948*, pp. 11, 26.

[36] *HSR*, pp. 13-14.

[37] *HRS, 1895-1948*, p. 23.

[38] *HRS, 1895-1948*, p. 46.

[39] *HRS, 1895-1948*, pp. 49-50.

[40] *HRS, 1895-1948*, p. 67-68.

[41] *HRS, 1895-1948*, p. 55.

[42] *HRS, 1895-1948*, p. 65. Bearss' discussion of materials used for interior plastering refers to specifications that call for common lime mortar made with sand from Sandy Hook. It is not known if this mortar was used for masonry construction at the fort.

[43] *Webster's New Collegiate Dictionary* defines trap rock as "any [of] various dark-colored fine-grained igneous rocks used esp. in road making."

[44] *HRS, 1895-1948*, p. 54.

Slate was to be Brownsville roofing slate measuring 14 by 10 inches, 14 by 12 inches, 16 by 12 inches, or 16 by 11 inches. The slate actually employed in Building 25 is believed to have been Peach Bottom (PA. S-2).[45]

Woodwork and finished lumber such as the window frames were to be furnished by the Chapin Hall Lumber Co. of Newark, New Jersey. A visit by Captain Devol to the Chapin Hall factory found the firm's workmanship and materials to be of high quality.[46]

Three other bids were accepted for additional items, as follows:

> Proposal 20, Leonard & Stratton of Columbus, Ohio, for installing plumbing in the buildings for $14, 243.
>
> Proposal 37, A.W. Rutherford & Co. of New York City, New York, for installing steam heating in 24 buildings for $22,066.
>
> Proposal 20, Leonard & Stratton, for installing gas pipes in 28 buildings for $1,327.[47]

Construction was slated to begin about March 1, 1897, after clearing and grading was complete.[48] However, Regan abandoned the contract on April 8, 1897. The contract was assumed by his bondsmen: local businessmen Gottfried Krueger, M.A. Mullin, and Martin Burne. After some renegotiations between these men and the U.S. government, work began at the end of April, with no change in the materials to be used or the completion date of October 31.[49]

The work proceeded very slowly throughout the summer, due to multiple subcontractors operating without coordination, labor and materials shortages, strikes, storms, and the sandy topography and general inaccessibility of the site. (Edwin Bearss' historic resource study contains a detailed account of the difficulties.) An inspection of the site on June 14, 1897, revealed that the work was well behind schedule.[50] Obtaining buff bricks of consistent size and color was a major problem. Captain Devol finally had to go out to the kiln in Pennsylvania to supervise the selection of the face brick.[51] None of the structures at Fort Hancock was completed before winter set in, so work was suspended until the spring of 1898.

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[45] *HRS, 1895-1948,* p. 56. Peach Bottom (PA. S-2) slate is the type found on all of the Fort Hancock buildings examined or treated thus far.

[46] *HRS, 1895-1948*, p. 55.

[47] *HRS, 1895-1948*, p. 51.

[48] *HRS, 1895-1948*, p. 52.

[49] *HRS, 1895-1948*, pp. 56-60.

[50] *HRS, 1895-1948*, pp. 61-63.

[51] *HRS, 1895-1948*, p. 68.

Pressure to finish the structures at Fort Hancock intensified unexpectedly with the sinking of the battleship *Maine* on February 15, 1898. Four days later, a 20-man detachment from the Fifth U.S. Artillery landed at Fort Hancock as an advance echelon, to prepare a camp for a battalion of heavy artillery. Tents were pitched and a camp site was cleared behind the old masonry fort. On March 14, Fort Hancock was officially garrisoned by the arrival of two full batteries from the Fifth Artillery; they were reinforced on March 19 by two additional batteries.[52] Captain Devol had requested a transfer to "any active service," and he was ordered to the Philippine Islands on May 24, 1898. He turned over his Fort Hancock duties to 1st Lt. Edward F. McGlacklin and "boarded the first train leaving New York for San Francisco."[53] Less than four weeks later, on June 17, McGlacklin was replaced on the project by Captain George G. Bailey. Bailey had been Captain Devol's chief clerk at Fort Hancock since September 1896.

Despite the pressure generated by the war and the presence of inadequately housed troops on Sandy Hook, work on the buildings progressed as slowly during the summer of 1898 as it had done the previous year, due to the same problems. Seven of the contracted 32 buildings were finally completed by August 11. They were the two double sets of noncommissioned officers' quarters, the coal shed, the quartermaster and commissary storehouse, the bake house and ovens, the workshop, and the wagon shed. However, now Bailey faced a new problem. The garrison–which now included three batteries of regular artillery and two companies of New Jersey volunteers–had moved into four of the structures before they were formally accepted and full and final payment made for them.[54]

This placed the Army in a hard position. Article 5 of its contract allowed it to withhold 20 percent of the cost of a building until the structure was completely finished and accepted. However, the occupation of a building by troops amounted to its *de facto* acceptance. The army would have to release the retained 20 per cent to the contractors and give up any hope of getting them to complete any work remaining to be done. Extremely complicated negotiations ensued. Full payment for the two noncommissioned officers' quarters (Buildings 29 and 30) was authorized October 3. Full payment was authorized for the other five structures (Buildings 31-35) at about the same time, but apparently only the 80 percent was actually paid.[55]

Work continued to drag through the fall, due primarily to labor and materials shortages. On September 27, post commander Captain Foster called for Captain Bailey to

> accept four sets of officers' quarters, two barracks, and the post hospital, as soon as they were completed by the contractors…. These buildings, Foster had been told, would be finished by mid-October, and it was "very desirable that the garrison…get out of camp and under roof by that date on account of cold weather."[56]

[52] *HRS, 1895-1948*, pp. 168.

[53] *HRS, 1895-1948*, p. 90.

[54] *HRS, 1895-1948*, p. 96.

[55] *HRS, 1895-1948*, pp. 96-100.

[56] *HRS, 1895-1948*, p. 109.

The slow pace of construction continued. Bailey had told Captain Foster that "none of the structures were to be used for any purpose by the garrison until they were [completely finished and] ready to be turned over."[57] By mid-November, however, Captain Foster and his officers had moved into lieutenants' quarters 1-3, and the troops had broken camp and moved into barracks 24 and 25. The Army thus decided to release the retained percentages on the lieutenants' quarters 1-3, barracks 24 and 25, coal shed 31, quartermaster and commissary storehouse 32, bake house 33, workshop 34, and wagon shed 35.[58]

Work continued, albeit slowly, through the winter. On January 25, 1899, Captain Bailey reported that 16 of the 32 buildings were completed, and most of them were occupied by the garrison. Seven were near completion, and nine were about half finished.[59] Krueger, Mullin, and Burne were placed on notice that any work not completed by June 30 would be taken out of their hands.[60] On June 26, Captain Bailey listed 16 structures as completed, accepted, and paid for. These were lieutenants' quarters 1-6, barracks 24 and 25, noncommissioned officers' quarters 29 and 30, coal shed 31, quartermaster and commissary storehouse 32, bake house and bake oven 33, workshop 34, wagon shed 35, and quartermaster stable 36. Finally, in late September 1899, the last of the 32 structures in Thomas Regan's original contract were accepted by Captain Bailey and turned over to the post commander. These were lieutenants' quarters 7-8 and 16-18, captains' quarters 9-11 and 13-15, commanding officer's quarters 12, and barracks 22-23. Figure 5 shows the locations of most of the earliest buildings.

## Utilities and Landscaping[61]

Additional concerns for the Constructing Quartermasters at Fort Hancock were the installation of sewage and lighting systems, and landscaping. The sewer system was completed (wells drilled, pumping plant erected, water tanks in place, pump connections made, and boilers installed) by April 30, 1899.[62]

[57] *HRS, 1895-1948*, p. 119.

[58] *HRS, 1895-1948*, p. 121.

[59] *HRS, 1895-1948*, p. 123.

[60] *HRS, 1895-1948*, p. 127.

[61] This section relies heavily on documentary research performed for the historic structure report for Building 32 at Fort Hancock, written in 1993 by Judith Q. Sullivan of the Northeast Cultural Resources Center.

[62] *HRS, 1895-1948*, p. 138.

Information about the gas lighting system at Fort Hancock is minimal. The use of gas street lighting at the fort was approved on November 28, 1898,[63] and 26 of the original 32 buildings were built with interior gas lighting.[64] The source of the gas is unclear. The most common method of making gas in the 19th century was by processing coal.[65] The most logical way of supplying gas to the fort's street lights and numerous buildings would have been via a central gas-generating plant and underground pipes. No such generating plant was included in the lists of original buildings,[66] and none of the early maps show underground gas lines.[67] These facts might suggest that each building had its own separate gas-producing equipment. However, this seems unlikely. While such equipment was available at the time, primarily for use at country estates,[68] it would have been impractical for such a large site as Fort Hancock. Also, underground gas lines must have existed for the streetlights, so their absence from early maps does not prove they did not exist. Original buildings that may have related to gas production at Fort Hancock include the "fuel" or coal shed (31) and the Firemen's Dormitory (33).[69]

Landscaping was an ongoing struggle in the shifting sands of Sandy Hook. Efforts began in September 1898 when $33,133.30 was allotted for constructing roads, curbs and walks, and putting down topsoil.[70] However, in 1900 the post commander wrote that the parade ground and areas around the buildings were "a waste of loose sand." Thousands of tons of drift sand had blown over the macadamized roads and brick walks during the winter. Some of the dunes were level with the tops of the lampposts. In other areas "the former surface had been cut out and swept away to a depth of from two to five feet."[71] A second landscaping effort of the main parade ground and areas around staff noncommissioned officers' quarters, the guardhouse, and barracks was begun in August 1901; it included grading, application of top soil, and reseeding. In addition, many gravel walks were replaced with flagstone, concrete walkways were laid, and macadam roadways constructed over former sand trails.[72]

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[63] *HRS, 1895-1948*, p. 138.

[64] *HRS, 1895-1948*, p. 108.

[65] Denys Peter Myers, *Gaslighting in America: A Guide for Historic Preservation* (Washington, D.C.: U.S. Department of the Interior, Heritage Conservation and Recreation Service, Office of Archeology and Historic Preservation, Technical Preservation Services Division), p. 7.

[66] *HRS, 1895-1948*, pp. 10-11, 26; *HSR*, pp. 13-14.

[67] Sandy Hook Unit historian Thomas Hoffman to Sharon Ofenstein, Jan. 29, 2002.

[68] Barbara A. Yocum, *The House at Glenmont, Home of Thomas Edison, Historic Structure Report* (Lowell, MA: U.S. Department of the Interior, National Park Service, North Atlantic Region, Cultural Resources Center, 1998), p. 824.

[69] *HSR*, pp. 13-14.

[70] *HRS, 1895-1948*, p. 141.

[71] *HRS, 1895-1948*, p. 210.

[72] *HRS, 1895-1948*, pp. 218-221.

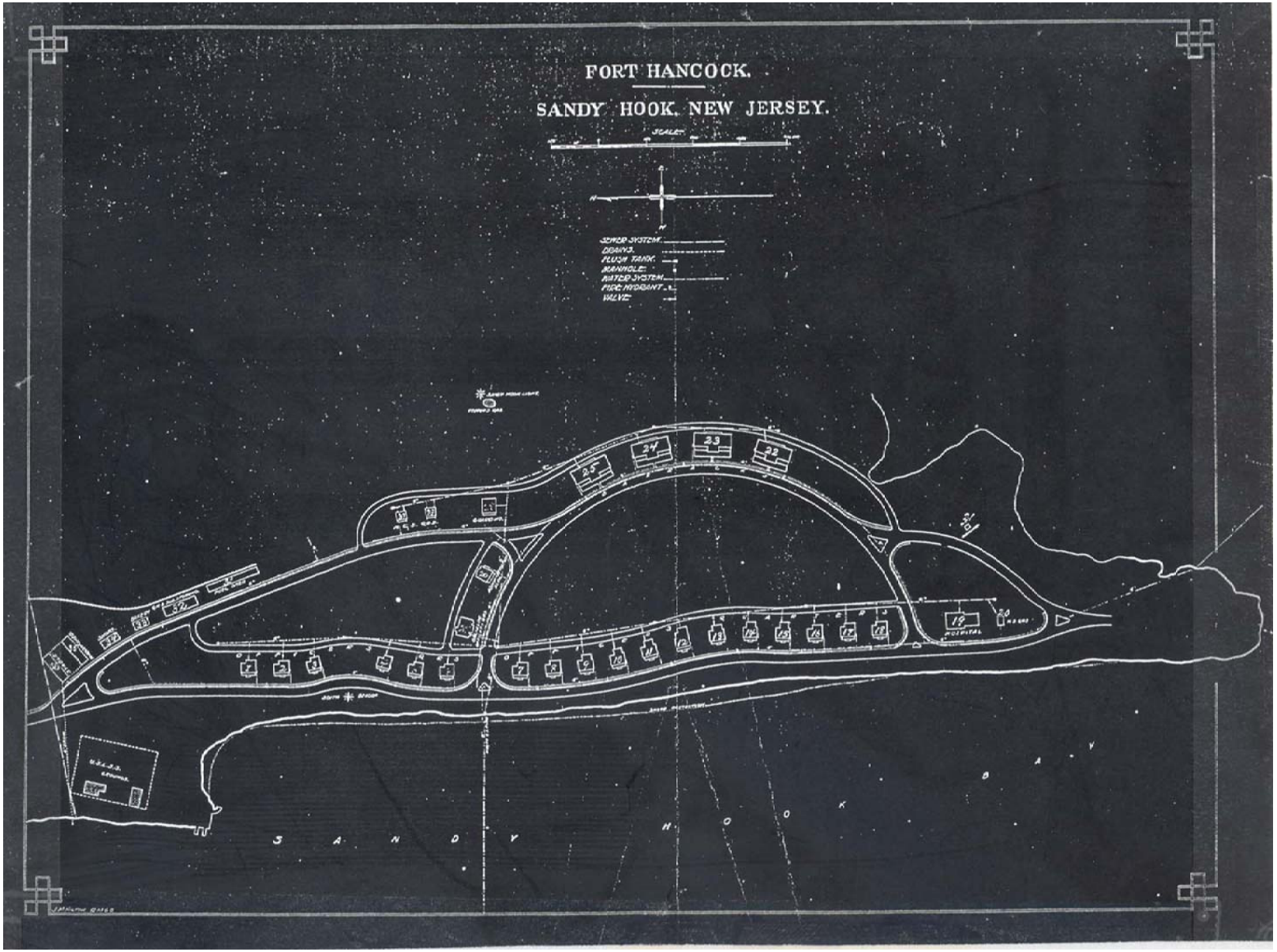


**Figure 5.** "Fort Hancock, Sandy Hook, New Jersey," ca. 1900. Map showing the first 36 buildings constructed at Fort Hancock.

## USE OF FORT HANCOCK, 1899-1974[73]

By 1898, Fort Hancock was occupied by two companies of the Fifth U.S. Artillery, whose job it was to man the mortar and rapid-gun batteries of the New York harbor defenses. A U.S. Engineer Battalion, New Jersey Volunteer Infantry battalions, the Ordnance Department, and the U.S. Corps of Engineers were also present at Fort Hancock in 1898-99.

Fort Hancock became an important post between 1900 and 1914, garrisoned by four to six companies of the U.S. Coast Artillery, whose mission was the "care and use of the fixed and movable elements of land and coast fortifications, including the submarine mine and torpedo defenses."[74] In addition, the Coast Artillery and the National Guard held training, practice, drills, and exercises at the post.[75] Some 25 permanent buildings were added to the post during this period, as evidenced by a 1908 site plan (fig. 6). Among the new buildings were the Saw Mill (48), Ordnance Storehouse (50), Fire House (51), NCO Quarters duplex (52), Mess Halls (55-58), Hothouse (59), Icehouse (60), Civilian Employee Bldg. (63), Firemen's Quarters (64), Ordnance Storehouse (65), Civilian Quarters (66), Trestle Guardhouse (67), Quarantine Stables (68), New Crematory (69), NCO Quarters (71-72), Artillery Barracks (74), NCO Quarters duplex (75), Fire Station (76), Firemen's Quarters (77), Oil and Paint Storehouse (79), Civilian Barracks (80), YMCA Building (40), Post Exchange Bldg. (53), and Gymnasium and Bowling Alley (70).

During World War I the forces assigned to Sandy Hook were strengthened. In addition, Fort Hancock served as a training base for artillery units before they were sent to France.[76] Temporary cantonments (barracks, mess halls, quarters, and latrines) were constructed to house the swelling population. At the height of the war 4,043 officers and men were stationed there, excluding the proving-ground and ordnance-supply personnel.[77] That number fell to 2,324 by November 1918 (Armistice Day), and Fort Hancock became an entry post for returning troops to demobilize.[78] Demobilization was rapid, and by June 1919 the force assigned to the Sandy Hook defenses had been reduced to eight officers and 362 men (four companies).[79] Temporary cantonment buildings were slowly salvaged, demolished, razed, or destroyed by fire.[80]

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[73] This section relies partially on documentary research performed for the historic structure report for Building 32 at Fort Hancock, written in 1993 by Judith Q. Sullivan of the Northeast Cultural Resources Center.

[74] *HRS, 1895-1948*, p. 176.

[75] *HRS, 1895-1948*, p. 189.

[76] Bearss, NPS memorandum, p. 6.

[77] *HRS, 1895-1948*, p. 365.

[78] *HRS, 1895-1948*, p. 399.

[79] *HRS, 1895-1948*, pp. 403-404.

[80] *HRS, 1895-1948*, pp. 474-480.

America after World War I was strongly isolationistic, and military policy focused on a small army, a reserve force, and a large navy. As a result, activity at Sandy Hook slowed considerably, and the force of the garrison fluctuated from 300 to 700 men throughout the 1920's and 1930's. During this time, Fort Hancock hosted summer encampments and training for the National Guard, the Citizen Military Training Camp (CMTC), and the Army Reserve.[81] It also participated in Army-Navy war games, maneuvers, and communication exercises. No significant permanent buildings were added to the post in the 1920's. Figure 7 shows the layout of the fort in 1927. However, during the 1930's (especially after the New Deal's public works programs began) a number of structures were built, and many existing structures were repaired and improved.

During World War II Fort Hancock played a "vital role in the coastal and anti-aircraft defense of America's most important port and metropolitan area…."[82] Fort Hancock was part of a Joint Defense Plan, under which it had the mission of

> maintaining a close surveillance of all beaches, resisting hostile landings, providing antiaircraft defense, and establishing a liaison between all elements of the command–the navy and units in adjacent subsectors.[83]

In addition, Fort Hancock served as a training base and staging area for units being readied for service overseas. As Edwin Bearss writes:

> In 1943, the modernization program being rushed to completion, the New York subsector and the harbor defenses reached their apogee of strength and efficiency.[84]

The number of troops stationed at Fort Hancock fluctuated from 7,000 to more than 12,000. A vast construction program was carried out to service the exploded population. More than 200 temporary structures were erected, including barracks, mess halls, latrines, recreation halls, infirmaries, nurses' quarters, garages, and warehouses.[85]

By March 1944, Allied successes and the need to reinforce troops in combat led to a reduction in the personnel of the harbor defenses of New York. The command was pared to 71 officers, 22 warrant officers, and 1,917 enlisted men.[86] However, during the redeployment of troops following V-E Day (May 8, 1945), and during the rapid demobilization that followed V-J Day (August 14, 1945), Fort Hancock became one of the Atlantic Coast's busiest reception centers for troops returning from the European Theater of operations.[87]

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[81] *HRS, 1895-1948*, pp. 433-437.

[82] HRS, 1895-1948, p. 573.

[83] *HRS, 1895-1948*, p. 534.

[84] *HRS, 1895-1948*, p. 549.

[85] *HRS, 1895-1948*, p. 598.

[86] *HRS, 1895-1948*, p. 560.

[87] *HRS, 1895-1948*, p. 573.

The immediate postwar years saw the United States drastically reduce its defense spending. The atomic bomb, missiles, and innovations in radar and air power rendered the big guns of the coastal defense obsolete. Fort Hancock was designated a post surplus to the country's needs until the autumn of 1947, when it was given a mission in the National Guard and reserves program. Once again, training and outdoor exercises for the Coast Artillery Reserve and National Guard harbor defense units were held at Sandy Hook.[88] However, the fort became increasingly inactive. The residency of the 1225th Army Service Unit, Second Service Command, ended on December 31, 1949.[89] (This unit had been organized at Sandy Hook in 1941 to provide administrative and logistical support to tactical commands.[90]) On June 25, 1950, the facility was deactivated.[91] The only inhabitants thereafter were the crew of the Sandy Hook Coast Guard Station and the keepers of the Sandy Hook lighthouse.[92]

The advent of the Korean War caused the fort to be reactivated on April 10, 1951, to provide anti-aircraft defense for the New York City area, and to serve as a training center for anti-aircraft units.[93] The 1225th Army Service Unit was reorganized,[94] and a limited rehabilitation was undertaken of the buildings and grounds.[95] After the war Fort Hancock was deactivated again, on May 1, 1953.[96] However, it continued to be occupied by the 1225th, which provided logistical and administrative support to the radar and antiaircraft installations on Sandy Hook. Between 1953 and 1956, the average population of the post was 914, and approximately half of the troop quarters were occupied.[97]

Beginning in 1953, the antiaircraft guns at Sandy Hook started to be replaced by Nike-Ajax surface-to-air missiles. These were designed to defend U.S. air space from Soviet inter-continental ballistic missiles.[98] This type of weapon became increasingly important to the Defense Department as a means of protecting metropolitan centers such as New York City. The need to support the missile launching and tracking facilities at Sandy Hook caused Fort Hancock to be reactivated yet

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[88] *HRS, 1895-1948*, p. 613.

[89] Bearss, *Historic Resource Study, Fort Hancock: 1948-1974, Sandy Hook Unit, Gateway National Recreation Area, Monmouth County, New Jersey* (Denver: U.S. Department of the Interior, National Park Service, Denver Service Center, Historic Preservation Division, Nov. 1982), p. 3. Hereinafter *HRS, 1948-1974*.

[90] *HRS, 1948-1974*, p. 3.

[91] *HRS, 1948-1974*, p. 18.

[92] *HRS, 1948-1974*, pp. 22-23.

[93] *HRS, 1948-1974*, pp. 21-23.

[94] *HRS, 1948-1974*, p. 24.

[95] *HRS, 1948-1974*, p. 25.

[96] *HRS, 1948-1974*, p. 29.

[97] *HSR, 1948-1974*, pp. 29, 53.

[98] Bearss, NPS memorandum, p. 7.

again, on July 1, 1956.[99] In 1957 the NIKE-AJAX emplacements were converted to the nuclear-armed NIKE-HERCULES missiles system, a "vital element in supersonic weaponry."[100] The missile system remained in active use until May 1974, although it was largely obsolete by the late 1960's.

Throughout the 1950's two to four units (generally comprised of antiaircraft artillery missile battalions, military police, and radar signal detachments) were housed at Fort Hancock, totaling approximately 650 to 1,300 men.[101] During the 1960's four to six units (generally comprised of military police, missile battalions, and air defense artillery brigades) were stationed at Fort Hancock, numbering approximately 1,300 to 2,000 men.[102] Figure 8 shows the layout of the fort in 1967. Interestingly, this map also includes a dotted outline of the former location of the ca.-1860 fort.

On October 27, 1972, President Nixon signed into law legislation authorizing the establishment of Gateway National Recreational Area. At that time, Fort Hancock was still providing facilities for:

- tactical positions for NIKE missiles
- family housing
- a U.S. Army Reserve Center
- the First Army Recreation Area beach
- the Fort Monmouth Officers' Club beach.

Tenants at Fort Hancock included the U.S. Coast Guard, the U.S. Navy, a First Army recreation facility, the U.S. Department of Commerce, and the Electronics Support Command. The population at the fort was 1,687, including military personnel and dependents. The total number of buildings in use was 230, including 13 buildings for Administration, 40 buildings for storage, 43 buildings for family housing, 18 buildings for troop housing, and 116 buildings for miscellaneous use.[103]

On August 15, 1974, a deactivation ceremony took place for the last Army missile units at Fort Hancock. The fort itself was deactivated on December 31, and it was transferred to the jurisdiction of the Department of the Interior.[104]

[99] *HRS, 1948-1974*, p. 54.

[100] *HRS, 1948-1974*, p. v.

[101] *HRS, 1948-1974*, pp. 58-61.

[102] *HRS, 1948-1974*, pp. 86-88.

[103] *HRS, 1948-1974*, p. 161.

[104] Sandy Hook Unit historian Thomas Hoffman to Sharon Ofenstein, Jan. 29, 2002.

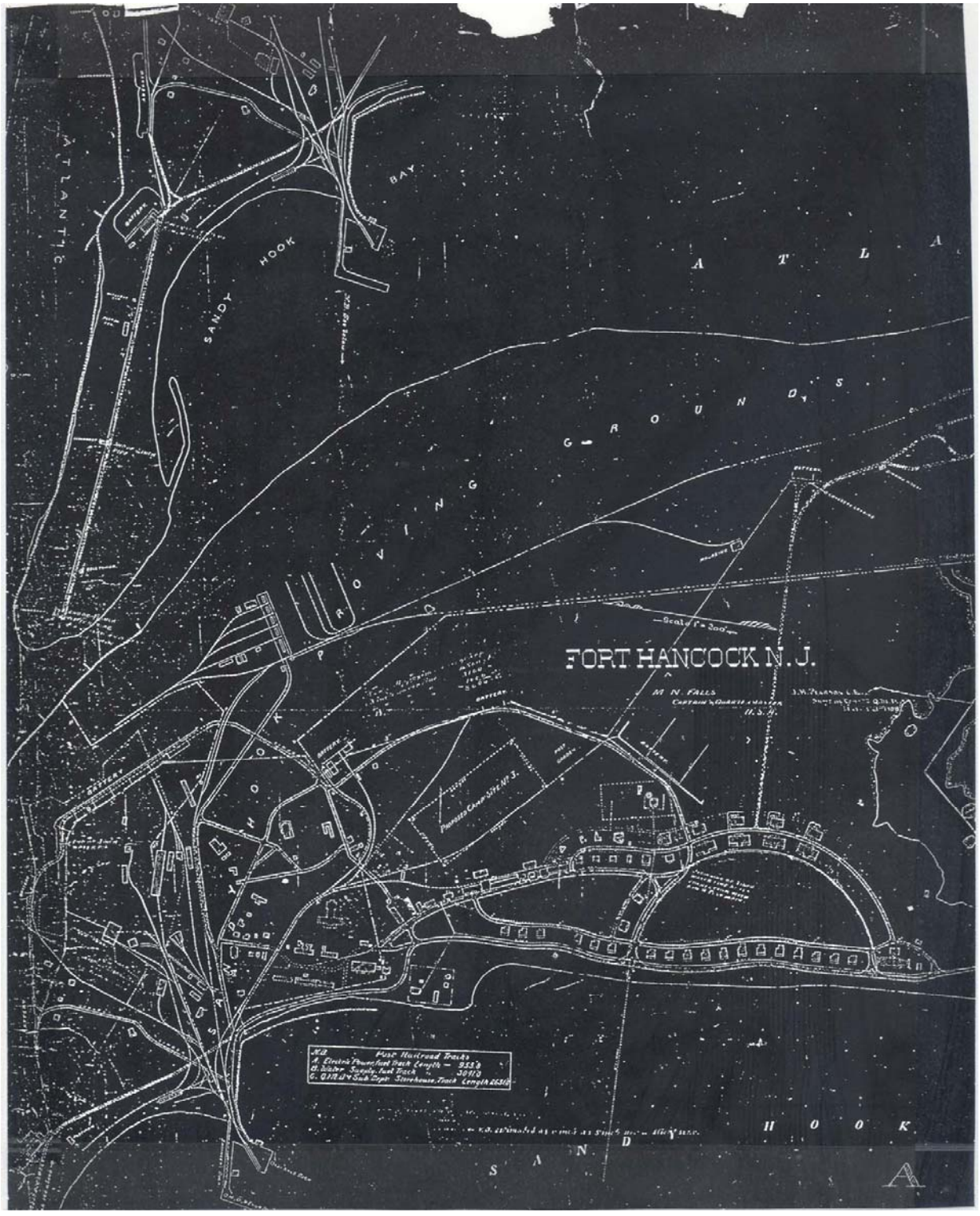


**Figure 6.** "Fort Hancock, New Jersey," March 21, 1908. Map showing the fort after the construction of the separate mess halls.

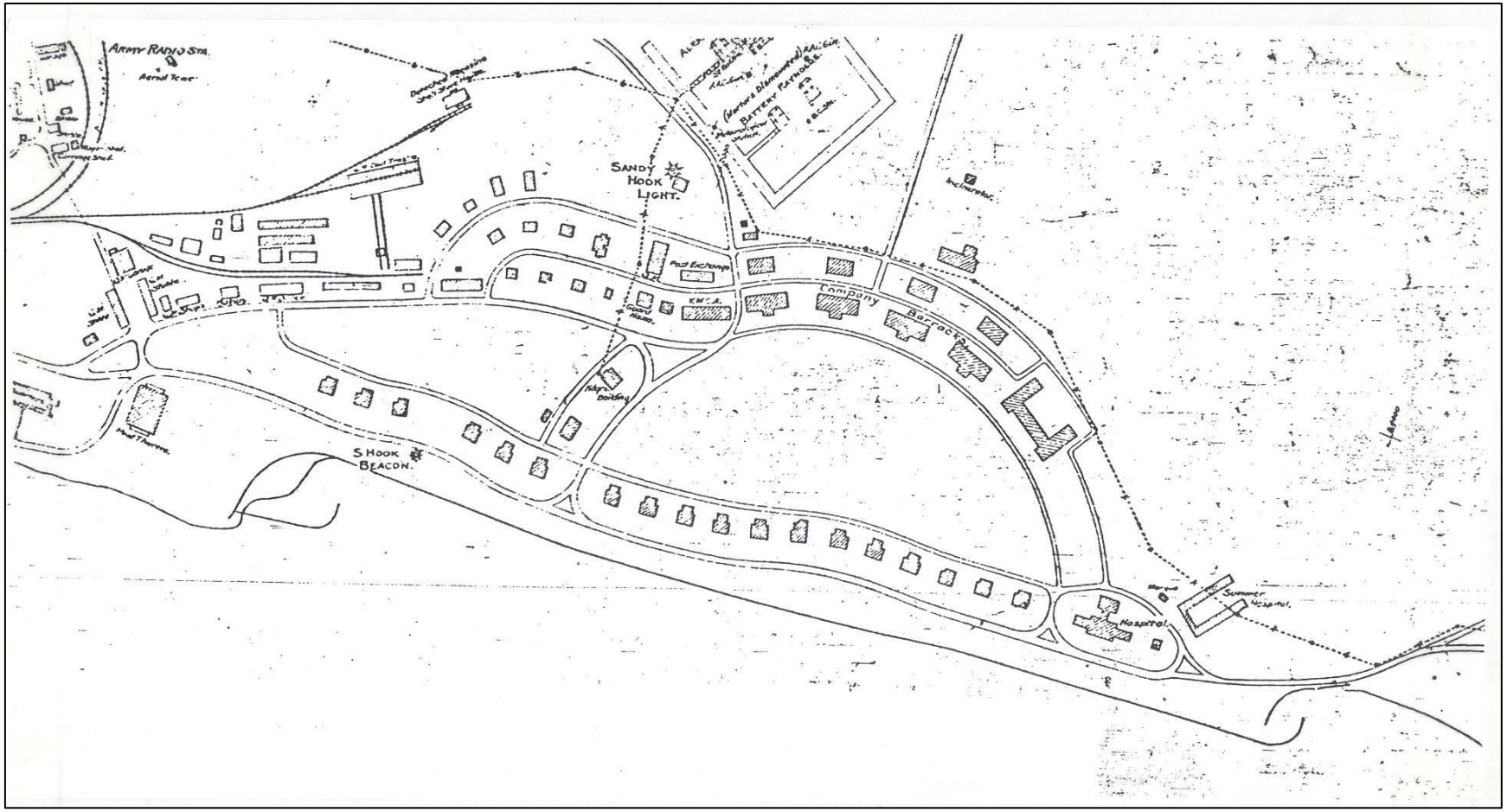


**Figure 7.** "U.S. Military Reservation, Fort Hancock, Sandy Hook and Vicinity of Highlands, New Jersey," May 31, 1927. Map showing the layout of the fort between the World Wars.

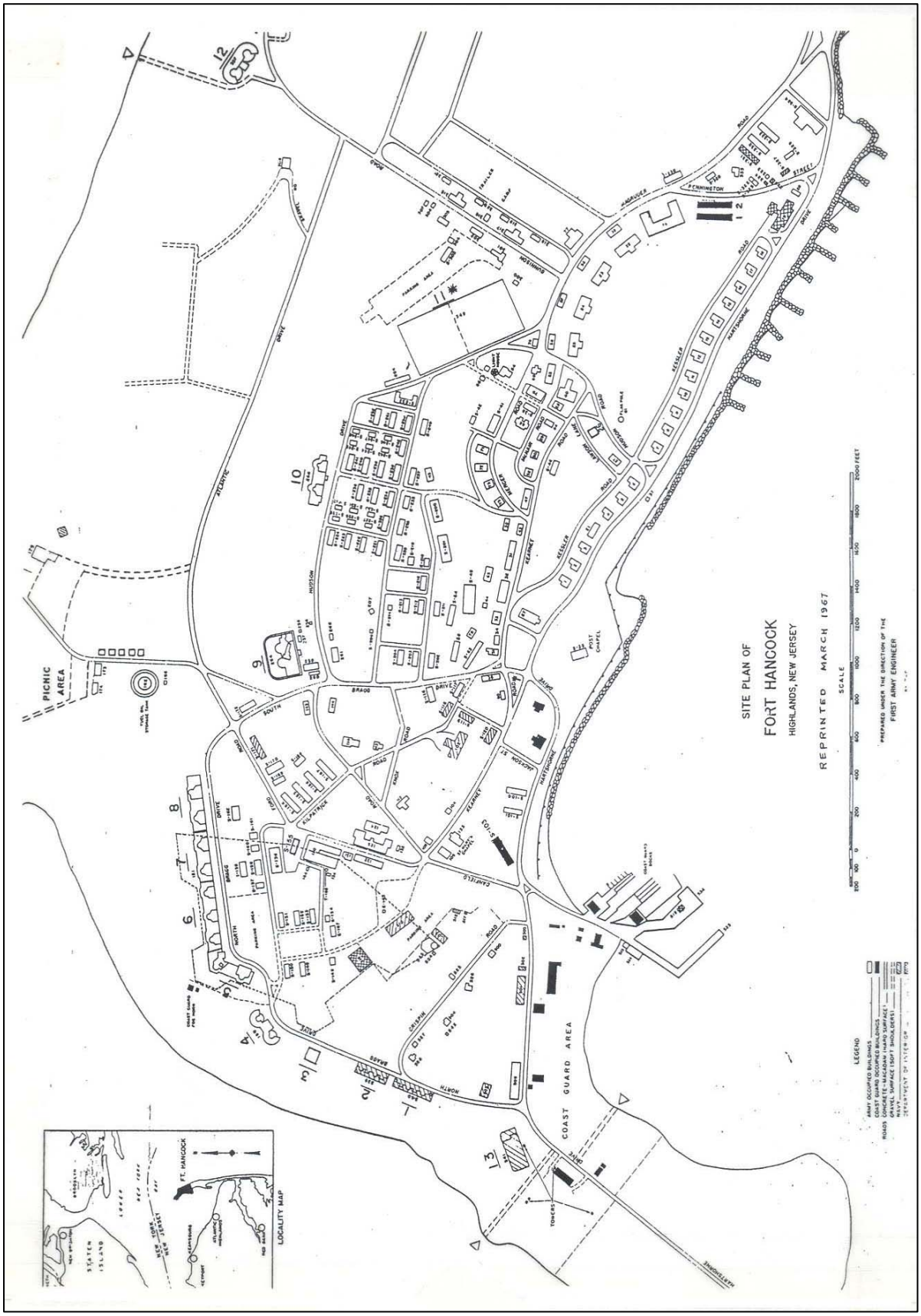


**Figure 8.** "Site Plan of Fort Hancock, Highlands, New Jersey," reprinted March 1967. Map showing expansion of the fort after World War II.

# III. CHRONOLOGY OF DEVELOPMENT AND USE

# CONSTRUCTION HISTORY

The building materials specified by Thomas Regan in his original bid generally were retained during the renegotiation of the contract with his bondsmen. These included buff-colored face brick for the walls, laid with rowlock joints. Dark "trap rock" obtained from the Hudson Palisades was to be used for foundations and underpinnings.[1] Limestone described as "a dark or colored stone classed as blue" was specified for doorway and window lintels and sills ("trimmings").[2] Roofing slate was to be Brownsville roofing slate measuring 14 by 10 inches, 14 by 12 inches, 16 by 12 inches, or 16 by 11 inches. However, the slate actually employed is believed to have been Peach Bottom (PA. S-2).[3] The interior plaster was changed from a common lime plaster to the higher-quality King's Windsor cement plaster.[4]

As previously explained, the work proceeded very slowly throughout the summer of 1897. The inspection of the site on June 14, 1897, found that the foundations for barracks 24 and 25 were practically completed, but that only the excavations for the foundations for Buildings 22 and 23 were completed.[5] A second inspection in mid-August of 1897 revealed that Building 25 was the most completed of the four barracks. It "had its brick walls raised to one story in height, the iron columns set, and the second-floor joists laid." Building 24 had its brick walls laid to a height of 4 feet, and five doorway and 15 window frames were set.[6]

Following the mid-August inspection, Captain Devol issued a change order concerning the size of the barracks' first-story window glass, as follows:

> All 10" x 16" to read 10" x 13"
> All 10" x 15" to read 10" x 12"
> All triplet windows to be 9" x12"[7]

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[1] *Webster's New Collegiate Dictionary* defines trap rock as "any [of] various dark-colored fine-grained igneous rocks used esp. in road making."

[2] Edwin C. Bearss, *Historic Resource Study, Fort Hancock, 1895-1948, Gateway National Recreation Area, New York/New Jersey* (Denver: U.S. Department of the Interior, National Park Service, May 1981), p. 54. Hereinafter *HRS, 1895-1948*.

[3] *HRS, 1895-1948*, p. 56. Peach Bottom (PA. S-2) slate is the type found on all of the Fort Hancock buildings examined or treated thus far.

[4] *HRS, 1895-1948*, pp. 64-65.

[5] *HRS, 1895-1948*, p. 62.

[6] *HRS, 1895-1948*, p. 70.

[7] *HRS, 1895-1948*, p. 72. The HRS says that the dimensional changes pertained to the size of the window frames, but an examination of the original plans indicates the dimensions are those of the window panes.

Unfortunately, the frames of many of the first-story windows of Buildings 24 and 25 were already set and bricked in place by the time the change order was issued. To shorten the frames to accommodate the smaller glass size, the contractors had to tear out and reconstruct the brick lintel arches.[8]

The delivery of the brick arches for the first stories of the barracks' pavilions had been sporadic, and when they did arrive, they were found to be of incorrect design and poor quality. Devol was eventually able to remodel the arches sufficiently well that they did not have to be rejected and replaced.[9]

As late as December 9, 1897, army inspectors still thought that approximately two-thirds of the buildings contracted for (including barracks 24 and 25) could be completed before spring. The weather then turned bitterly cold, and work was halted until on or before March 1, 1898.[10]

The contractors were slow to resume operations in the spring. One of the tasks that Captain Devol wanted them to do was complete at once the brickwork for "2 Fronts or 'Ls' to Barracks Nos. 24 and 25." Presumably the "Ls" means "ells," which probably refers to the projecting pavilions. Devol's list of work items also included (under "Stonework") "Hatchways, rear of Barracks, [to be] built in and coping set."[11] Some 10 days later, Devol reported that there were "two barracks [22 and 23] and two captains' quarters with water table set, and two fronts of barracks [24 and 25] 'with walls all ready for men—room enough for a hundred men.'"[12]

By early September 1898, Bailey was hopeful that barracks 24 and 25 could be ready for occupancy by September 30, with barracks 22 and 23 prepared by November 30. The installation of the steam-heating system in the barracks lagged, however, as did the plumbing and gas-fitting.[13] One problem involved the need to cut out a portion of the cement basement floor in Buildings 24 and 25, to accommodate the return steam main.[14] On November 1, Bailey considered barracks 24 and 25 to be "practically completed"; they only lacked the galvanized iron shafts connecting the roof ventilators and a few other items. However, he was concerned about the legal consequences of troops moving into the buildings until the structures were "entirely completed" and fully paid for.[15] The troops and their commander settled the matter for him. In mid-November, the garrison broke camp and moved into barracks 24 and 25. Sometime during the next several weeks, the army paid to

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[8] *HRS, 1895-1948,* p. 132. Bearss says here that the glass size was reduced from 10 by 16 inches to 11 by 13 inches, but the "11" seems to be a misprint, based on two facts. First, on page 72, he quotes Devol's change order as reducing the glass size from 10 by 16 inches to 10 by 13 inches. Second, changing the glass size to 11 by 13 inches would have necessitated widening the window openings as well as shortening them, and there is no evidence that this occurred.

[9] *HRS, 1895-1948,* pp. 72-73.

[10] *HRS, 1895-1948,* p. 83.

[11] *HRS, 1895-1948,* p. 86.

[12] *HRS, 1895-1948,* p. 87.

[13] *HRS, 1895-1948,* pp. 107-108.

[14] *HRS, 1895-1948,* p. 132.

[15] *HRS, 1895-1948,* pp. 114-115.

the contractors the retained percentages for a number of buildings, including the two barracks. This amounted to an official acceptance.

Apparently the contractors did continue to finish up items on the buildings after that time. On December 10, Captain Bailey recommended the approval of a change order concerning the railings on the rear porches and at the cellar hatchways. As explained in the HRS,

> The specifications for the barracks called for all rear porch and hatchway railings to be 1½-inch gas piping, with ends threaded and screwed in malleable iron railing fittings. The standards were to be 2 ½-inch pipe. However, Krueger, Mullin, and Burne claimed that Captain Devol had agreed to the use of 2 ½-inch iron standards through which they were to run the 1 ½-inch pipe railings, and the end bearings were to enter 2 ¼-inch posts secured by a top screw and drilled through the cast-iron post.
>
> Although Bailey did not consider the cast-iron posts and screws, in lieu of the materials specified, "a good construction practice," the subject iron work had been delivered. If properly set, he determined that it would make a substantial railing….[16]

One alteration occurred so soon after the completion of Building 25 that it can be considered part of the original construction. This was the installation of screen doors and window screens. Early in 1899, the army solicited proposals from various firms to install these on a number of buildings at Fort Hancock. Quartermaster General Ludington favored the submittal made by S. Roebuck. It proposed window screens having bronze mesh and ash frames, with patented iron corner pieces that would help hold the frame together. The screens would be installed on the inside of the windows, because it was a saltwater environment. They would slide on a strip and be weather-stripped top and bottom. The screen doors would have ash frames divided into five panels filled with bronze mesh, corresponding to the five-panel design of other doors in the buildings. This proposal was accepted and carried out, with one change: due to erroneous assumptions on the part of the manufacturer, the window screens had to be installed on the outside of the windows.[17]

[16] *HRS, 1895-1948*, p. 122.

[17] *HRS, 1895-1948*, pp. 128-129.

# ORIGINAL APPEARANCE

Building 25 was one of the 32 buildings included in the original master plan for Fort Hancock. It was begun in 1897 and completed late in 1898. It constituted the northernmost of four identical barracks for enlisted men built along the east, curved side of the main parade ground. This placed it near the intersection of Magruder and Hudson Roads (see figure 8).

According to the original construction drawings for the barracks (figs. 9-21), each of the four buildings was designed to house 70 men–60 enlisted men, nine noncommissioned officers, and one first sergeant. The original appearance of Building 25 is assumed to correspond to these 13 construction drawings. Any departures made from the drawings that were discovered during the physical investigation are cited here.

## Exterior Elements

### Design

Building 25, like most of the other original buildings at Fort Hancock, was built in the Colonial Revival style. It consisted of a two-story main block measuring 45 feet 6 inches deep by 122 feet 6 inches long, whose main axis ran north/south. It was two stories high, with a full basement and attic. A two-story pedimented entrance pavilion projected from the center of the west, front elevation (fig. 9); it was 31 feet 6 inches wide. All four elevations displayed a high degree of symmetry.

Masonry and metal (rather than wood) were used for an unusual number of exterior elements. This presumably reflects Captain Murray's desire to make his buildings as durable and maintenance-free as possible.[18]

### Foundation

The foundation rested on concrete footings. The foundation walls themselves were of "trap rock." This colloquial term applies to a variety of dark, igneous, fine-grained rocks, including basalt and rhyolite. The rock used for Building 25's foundation is relatively lighter in color, and appears to have a high quartz content; it is therefore thought to be rhyolite. The trap rock was ashlar-cut and random-coursed, with a rock-face finish (see fig. 23). Mortar joints were tooled with a quarter-inch raised bead. The walls were backed on the interior by common red brick. Light-colored limestone was used for the water table (see fig. 23). The water table on the west elevation displayed a horizontally chiseled surface.

The historical documentation states that a light-colored limestone was initially specified for the foundations and trimmings, including the water table. The limited local availability of this stone led to the substitution of the dark trap rock for the foundation. An inspector from the Quartermaster Department was concerned that the light-colored limestone would not harmonize with the dark trap

[18] *HRS, 1895-1948*, p. 19.

rock, so "a dark or colored [lime]stone classed as blue" was for a time favored.[19] However, the water table extant today consists of light-colored limestone, so apparently the light-colored stone was ultimately selected for the "trimmings."

## Walls

Exterior walls were of brick, with limestone doorway and window sills and lintels ("trimmings"). They were three wythes thick. The exterior wythe was pressed buff-colored buff face brick laid in running bond with narrow joints (an eighth of an inch or less). The two interior wythes, together approximately 1 foot thick, consisted of larger red bricks laid in a common bond with one row of headers for every five or six rows of stretchers. Change orders submitted on February 26, 1897, contained the following information about the brick walls:

> The [face] brick was to be laid with rowlock joints. In backing brick, every eighth course was to be face brick. Bats of less than one-half size would not be allowed as backing brick. Furring strips were to be nailed into mortar joints of brickwork with cut nails.[20]

A completion report prepared for repair work done in 1991-93 includes photographs of several buildings where the buff brick veneer had fallen from the wall, exposing the substrate backing brick and the method of attaching the buff brick to it. The report makes the following observations about the original wall construction:

> The original brick are bonded in place by diagonally toothing the substrate every six courses and notching the back of the veneer to fit. The space between the veneer and substrate was filled with mortar, however it was of a high lime content which did not hold up well to time and the elements. Water collected inside the wall cavities, freezing in the winter and jacking the 4" brick veneer out of place.[21]

The first story of the projecting pedimented pavilion had arched openings at the first-story level, three on the front, west side and one each on the north and south sides. The west face of the pavilion was highly ornamented. The first story featured rusticated brickwork around the three arches, and a projecting belt course at the springing line of the arches (see fig. 29). A limestone belt course marked the transition from the first story to the second story.

[19] *HRS, 1895-1948,* pp. 54-55.

[20] *HRS, 1895-1948*, p. 55.

[21] C. Thomas Ballos, "Completion Report, Emergency Stabilization of Historic Fort Hancock, Gateway National Recreation Area, Sandy Hook Unit" (Building Conservation Branch, Cultural Resources Center, North Atlantic Region, NPS, 1993), pp. 39-40.

## Porches

### West Porches

The west elevation of Building 25 originally had a two-story loggia-type porch on either side of the projecting pavilion (see figs. 9 and 22). These porches extended from the pavilion almost to the ends of the building.

The foundation of the porches consisted of trap-rock piers, each of which was capped with a section of limestone water table. The sections of water table displayed a vertically chiseled surface. Wooden lattice panels were secured between the trap-rock piers to screen the area below the porches (see fig. 22). The lattice was to consist of pieces measuring 1 1/8 by 2 inches, "halved together" (see fig. 16).

The first story of each porch featured six piers of buff-colored brick with molded brick bases and caps. The brick piers were positioned directly over the trap-rock piers. One pier abutted the wall of the main block; one pier abutted the wall of the pavilion; and four piers were freestanding, including an L-shaped corner pier (see fig. 13).

The second story of each porch had hollow wooden Tuscan columns with molded cast-iron bases. Again, the columns were positioned directly over the first-story piers. The columns over the piers that abutted walls were accompanied by a pilaster against the walls, also with molded cast-iron bases. A cluster of three columns sat above each L-shaped corner pier (see fig. 14). The floor had floor joists measuring 2 by 8 inches, spaced 16 inches on center, resting on 6- by 8-inch girders. Between the joists was cross-bridging. The ceilings were seven-eighths of an inch thick. Both stories had cast-iron balustrades of classic urn-shape design running between the piers and columns. Figure 16 shows details of the brick piers and wood columns, porch cornice, and cast-iron balustrade.

The pavilion was accessed by a flight of steps up to the center arch. The steps' composition was not cited in the original construction documents, but they were probably limestone: the top five steps extant today are limestone. (The bottom two steps are concrete, and not original.)

### East Porch

The east elevation of Building 25 had a one-story rear porch covering the center five bays of the 11-bay wall (fig. 10). It consisted of six wooden Tuscan columns along the outer edge, and two pilasters against the wall of the main block in line with the end columns (see fig. 13). Wooden steps at either end of the porch led up to a wooden deck (see figs. 23, 24). The ceiling was also wood, seven-eighths of an inch thick. A metal pipe balustrade ran between the six columns.

Details of the porch's columns, cornice, and handrail are provided in figure 16. However, the balustrade as actually constructed differed somewhat from intended design. As explained previously on pages 42-43, a change order approved in December 1898 allowed iron standards to be substituted for standards made of gas piping, and permitted the handrails to run through the standards, rather than attach to them.[22]

[22] *HRS, 1895-1948*, p. 122.

## Doorways

All doorways had limestone sills displaying a horizontally chiseled surface. All but the east basement entrance had lintels consisting of buff-brick jack (flat) arches resting on steel shelf angles (see fig. 17). The vertical bricks in the center of the arch projected to form a keystone motif.

### West (Front) Elevation

This elevation is absolutely symmetrical. The center pavilion is three bays wide, with four bays extending to either side of the pavilion

#### *First Story*

The main entrance was centered on the elevation, such that it aligned with the centermost of the three arches of the pavilion (see fig. 9). The head of the doorway opening incorporated three 6-inch I beams, to support the brickwork above the doorway (see fig. 17). The double doorway had narrow sidelights and a large transom. The sidelights consisted of 16 panes above one raised vertical panel. The transom was divided into three parts: a four-light sash above each of the sidelights, and a 12-light sash above the doors. Each of the double doors had a 21-light panel above two raised horizontal panels, and measured 2 feet 6 inches wide by 8 feet high by 2 ¼ inches thick. The design of the main entrance is depicted in an original construction drawing (fig. 17), and in two historic photographs (figs. 29, 49).

The west elevation also had two single doorways opening to the first story of the porch, one each in the second bay from the outer ends of the main block. The northern one provided access to the day room, while the southern one entered the mess hall. The doorways featured a six-light transom and a door with 28 lights above two raised horizontal panels. The doors measured 3 feet wide by 8 feet high by 2 ¼ inches thick. Figure 17 shows details of the single doorways.

#### *Second Story*

Two single doorways were also installed at the second-story level, one each in the third bay from the outer ends of the main block. They allowed access to the second story of the porch. The design and dimensions of these doorways and doors were the same as those for the first-story doorways. The doorways featured a six-light transom and a door with 28 lights above two raised horizontal panels. The doors measured 3 feet wide by 8 feet high by 2 ¼ inches thick. Figure 17 shows details of the single doorways.

### East (Rear) Elevation

This side of Building 25 was similar to the west elevation, in that it had 11 bays and a center entrance. However, it was slightly less symmetrical, due to the need for a separate doorway and additional windows for the kitchen along this wall (see fig. 10).

#### *Basement Level*

The only original exterior access to the basement was located at the center of the east wall. This was a double doorway with a limestone lintel. It had no transom or sidelights, and contained two doors having 20 lights above two raised horizontal panels. Each door measured 2 feet 10 inches wide by 7 feet high by 2 ¼ inches thick. The doorway was accessed by a stairwell formed by trap-

rock retaining walls. The material used for the steps is not known. The sides of the stairwell at ground level were edged with a pipe railing resembling that used around the perimeter of the roof deck.

***First Story***

A double doorway in the center of the elevation led to the center hall. It had a 12-light transom but no sidelights. Each door had 21 lights above two raised horizontal panels, and measured 2 feet 6 inches wide by 8 feet high by 2 ¼ inches thick.

There was also a single doorway here, in the fourth bay from south end of the main block. It provided direct access from the rear porch to the kitchen. Its design was the same as for the single doorways on the west elevation: a six-light transom, and a door with 28 lights above two raised, horizontal panels. The door measured 3 feet 10 inches wide by 8 feet high by 2 ¼ inches thick.

***Second Story***

A single doorway in the center of the elevation led to the second-story center hall. It provided access to the roof deck over the rear porch deck, where soldiers could air their bedding.[23] This doorway had a three-light transom, no sidelights, and the typical glazed and paneled door 3 feet wide by 8 feet high by 2 ¼ inches thick.

**South and North (Side) Elevations**

Originally there were no doorways in either of these elevations (see figs. 12-13).

## Windows

All windows, except for the oculi, had limestone sills. The sills of the basement windows displayed a vertically chiseled surface, while the sills of the first- and second-story windows had a horizontally chiseled surface.

The west elevation's basement windows had limestone lintels in addition to the limestone water table here. The basement windows on the other three elevations, however, had only the limestone water table running above them as lintels (see fig. 23). The lintels of first- and second-story windows were similar to those of the doorways: brick jack (flat) arches with projecting keystones, carried on steel shelf angles (see fig. 17).

**West (Front) Elevation**

The fenestration of this side was completely symmetrical at all three levels, for the three bays in the center pavilion and the four bays on either side of the pavilion (fig. 9).

[23] *HRS, 1895-1948*, p. 316.

***Basement Level***

One window opening was situated in all eight bays of the main block (see fig. 12). They are not seen in the original construction drawing (fig. 9), being concealed by the front porches, but their sashes undoubtedly were the same as those on the east elevation (see fig. 10). These sashes had eight lights measuring 10 inches square, and were hinged at the top to open awning-style. Figure 18 shows details of the basement windows' construction.

***First Story***

The west side had identical double-hung windows in all bays not containing a doorway. This includes the pavilion area, where two windows flank the center entrance. Sashes were 12-over-12 with panes measuring 10 by 13 inches. This is the standard window design for most areas of Building 25. Construction details are provided in figure 17. However, the height of the panes was reduced by a change order during construction, from 15 inches to 13 inches. This reduction in the total height of the windows meant that the tops of the window openings (i.e., the elaborate jack-arch lintels) had to be rebuilt.[24]

***Second Story***

This level also had one standard double-hung window (i.e., 12-over-12 sashes with 10- by 13-inch panes) in all bays of the main block not containing a doorway.

The pavilion featured a Palladian-motif window opening centered over the front entrance. The arch over the center section was filled with a terra-cotta element resembling a fan or shell. Figure 15 shows details of the "Palladian" window. The sill of the window was stone; below it were two bands of brickwork, a thin one and a lower, thicker one. The outer edges of the window opening were ornamented with Corinthian pilasters; the center window was flanked by Corinthian columns; and all were capped by a simple terra-cotta entablature. The center opening contained double-hung, 15-over-15 sashes (five across by three down) having panes measuring 9 by 12 inches. The side sashes were fixed, with 12 lights (two across by six down) measuring 5 ½ inches wide by 12 inches high. Each of the two bays on either side of the "Palladian" window contained a narrower double-hung window; sashes were nine-over-nine, with 10- by 13-inch panes.

***Attic Level***

In the tympanum of the pavilion's gable was an elliptical oculus in a terra-cotta frame ornamented with four key blocks. The sash had a border of small lights; the area inside the border was divided by muntins into wedges, like a pie. Figure 15 indicates that this oculus was originally intended to have a different design, with vertical and horizontal muntins dividing the center into four equal sections. Instead, it was built to match the sashes of the oculi in the south and north gable ends.

**East (Rear) Elevation**

The symmetrical design of this side is chiefly due to its regular fenestration.

[24] *HRS, 1895-1948*, p. 132.

***Basement Level***

Not all of the 11 bays had a window at this level. Counting from the south end northward (see fig. 10), bay 1 had an opening to the small coal chute in the southeast corner of the basement. Bay 2 had a window and a coal-chute opening just north of it. Bay 3 had no window because of its proximity to the porch steps. Bays 4 and 5, under the porch, each had a window. Bay 6 contained the basement doorway. Bays 7 and 8, also under the porch, each had a window. Bay 9 had none, due to its proximity to the porch steps. Bays 10 and 11 each had a window.

Basement window sashes were single, eight-light sashes (four across by two down) with panes measuring 10 inches square. They were hinged at the top to open awning-style. Figure 18 shows details of the basement windows and the coal-chute openings.

***First Story***

Using same method of numbering bays as with the basement windows, bays 1-3 contained typical double-hung windows. Bay 4 had the kitchen doorway, described previously. Bay 5 had two windows, probably for better light for the kitchen. These windows are narrower than the typical windows; their double-hung sashes are nine-over-nine, with the usual 10- by 13-inch glass size. Bay 6 contained the rear doorway. Bays 7-11 each had one typical window.

***Second Story***

There was one standard double-hung window in all bays except for the one in the center, which contained the doorway to the rear porch deck.

**South and North (Side) Elevations**

The fenestration of these end walls was fairly symmetrical, except that the spacing of their four bays was not equidistant: the two center bays were close together (see fig. 11).

***Basement Level***

One window was situated in all four bays on each elevation. They are identical to the basement windows on the west and east elevations, containing top-hinged single sashes with eight lights measuring 10 inches square.

***First and Second Stories***

One standard double-hung window was located in all four bays at each level on both elevations.

***Attic Level***

The tympanum of each gable end had an elliptical oculus in a terra-cotta frame ornamented with four key blocks. They resembled the oculus on the pavilion, but the center of the sash was divided by muntins into wedges, like a pie. Figure 15 depicts both types of oculi.

## Roofs

### Main Roof

#### *Covering*

The main block and pavilion had gable roofs covered with slate. The original specifications called for the use of Brownsville roofing slate, but it appears that another was used instead: Peach Bottom (PA. S-2).[25]

Asbestos Fire Felt (Navy Brand) was used somewhere in Buildings 24 and 25, and in five sets of officers' quarters, to expedite their completion in late 1898. A letter from Quartermaster General Ludington to Captain Bailey dated October 12, 1898, authorized this action.[26] Unfortunately, the letter does not state where the felt was used, or for what purpose. One typical use for such material was as roof underlayment.

#### *Cornices and Gutters*

A large-scale cornice of stamped galvanized iron ran along all of the eaves, including the raking eaves of the north and south gable ends and the pedimented pavilion.[27] This cornice returned on the end walls, and on the face of the pavilion. It featured modillions and dentils. Figure 15 shows the design of the cornice and gutter.

#### *Chimney*

The roof of the main block had one large chimney, abutting but perpendicular to the east wall. It was located south of the center of the roof, since its stack was built into the south wall of the center hall (see fig. 12). The chimney was built of buff brick, with a corbeled neck and cap. The original construction drawing (fig. 11) shows some type of reinforcing wall or cricket running between the roof slope and the chimney.

#### *Ventilators*

The roof of the main block also had two round metal ventilators on the ridge, measuring 36 inches in diameter by 6 feet tall. They were located between the third and fourth bays from either end. These will be discussed subsequently in the section "Utilities."

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[25] *HRS, 1895-1948*, p. 56. Peach Bottom (PA. S-2) slate is the type found on all of the Fort Hancock buildings examined or treated thus far.

[26] Lt. Col., Quartermaster's Department, to Captain G.G. Bailey, October 12, 1898 (doc. 93,924, General Correspondence, 1890-1914, Record Group 92, National Archives).

[27] *HRS, 1895-1948*, p. 82.

### Porch Roofs

#### *West Porches*

The roofs of the west porches were clad with flat-seam sheet metal. A large, stamped-metal cornice with modillions and dentils ornamented the eaves of the porches. Figure 16 shows the design of the porches' cornice and gutter.

#### *East Porch*

The roof of the east porch was topped with wood flooring, so that it could be used as a deck. The same type of pipe railing used between the columns encircled the roof deck. The eave line displayed a dentiled cornice. Figure 16 shows the design of the porch's cornice and gutter.

### Downspouts

There were two 4-inch downspouts at the outer corners of the west elevation, and two more 4-inch downspouts at the outer corners of the pavilion. The east elevation had two 4-inch downspouts on either side of the east porch. Two more downspouts measuring 2 ½ inches were located on the outer edge of the east porch, on the second column from the ends. See figure 12 for the locations of downspouts.

## Finishes

All exterior woodwork and metalwork was primed and painted white (see Appendix D).

## Utilities

### Ventilation Equipment

The most obvious pieces of original ventilation equipment were the two conical ventilators on Building 25's roof ridge. Similar ventilators were used elsewhere at Fort Hancock (e.g., on the roof of Building 32). The section "Construction History" notes that the "galvanized iron shafts connecting the roof ventilators" were among the last items to be finished on the barracks.[28] The ventilators vented only the attic, as will be explained in the description of interior elements.

Less noticeable pieces of original ventilation equipment were rectangular vent openings in the walls' brickwork just below the sills of most second-story windows. Each opening led to a thin duct that descended within the wall to baseboard level. There it turned and opened to the interior of the building below the radiator under that window, bringing fresh air into the dormitories. These vents are not shown on the original construction drawings. However, they appear in the earliest photographs (figs. 22-23), and they have the same early paint stratigraphy as other original exterior trim elements.

[28] *HRS, 1895-1948*, p. 115.

## Structural Elements

### Bearing Walls

The masonry exterior walls were load-bearing. They rested on a footing 3 feet 4 inches wide. Above the footing was the trap-rock foundation, 24 inches thick. The walls above the foundation were of buff exterior and red interior bricks, being 17 inches thick. There were also two interior bearing walls, made of red brick. They ran east-west and formed a center hall at all levels (see fig. 12). They measured 20 inches thick in the basement, but were thinner in the first and second stories.

### First-Floor Framing

The two large rooms on either side of the center hall in the basement each contained four pairs of red-brick piers measuring 21 inches square. The piers rested on footings 3 feet square; they had a band of trap rock 8 inches thick set into their middles, to prevent spreading, and a trap-roc cap 6 inches thick. These pairs of piers defined bays of similar but not identical size. (For complete dimensions, see figure 12.) The interior thus had 11 bays–five in the north side, one in the center hall, and five in the south side. These corresponded to the 11 bays of the exterior.

The piers carried two lines of wooden girders running north-south from the end walls to the walls of the center hall. These girders measured 10 inches wide by 14 inches high; they supported the floor joists of the first story, which measured 2 by 12 inches, 12 inches on center. The total thickness of the first floor was to be 15 inches.

### Second-Floor Framing

As with the first-floor framing, the second-floor framing had floor joists measuring 2 by 12 inches, 12 inches on center, resting on 10- by 14-inch wood girders running north-south. The girders were supported by cast-iron columns in the first story (see figs. 18, 25), positioned directly above each pier in the basement. The columns were 6 ¾ inches in diameter, with a three-quarter-inch shell, and they featured molded bases, necks, and caps. Above each cap was a metal plate one-eighth of an inch thick, recessed into the underside of the girder, to provide a good bearing surface. The total thickness of the second floor was to be 16 inches.

### Attic-Floor Framing

The attic-floor framing had floor joists measuring 2 by 10 inches, spaced 16 inches on center, with cross-bridging between the joists. The floor was not supported by the usual system of wood girders and iron columns. Rather, the floor of the attic (and ceiling of the second story) were suspended from a system of heavy wooden trusses in the attic (see fig. 11). Four trusses were used in each side of the building, running east-west in alignment with the pairs of columns and piers in the lower stories.

The construction of the trusses and their connection at the outer walls is depicted in figure 15. Each truss had a horizontal bottom timber consisting of five 2 by 10's (i.e., five floor joists) bolted together. The outer ends of this timber rested on 17-inch-square cast-iron plates sitting on the west and east brick walls. Rising from the bottom timber in a direction parallel to the west and east roof slopes were two diagonal members consisting of five 2 by 12's bolted together. The lower ends of the diagonal members were joined to the bottom timber by a bird's-mouth joint, and further secured to it by a strap bolted to both members. The upper ends of the diagonal members terminated approximately halfway up the roof slopes, where they were connected to each other by a 10- by 12-inch cross piece. A 6-inch-square vertical piece rose from the center of the cross piece to the ridge board of the roof framing.

Three iron rods hanging from each truss supported the second-story ceiling and attic floor. The middle one was 1¼ inches in diameter; the two end ones, below the purlins, measured 1¾ inches in diameter.

## Roof Framing

### Main Roof

Figure 11 shows the design of the roof framing. The wall plates consisted of two 2- by 10-inch planks, one on top of the other, topped by a 2 by 4. The rafters measured 2 by 8 inches, being 16 inches on center. The way in which their lower ends passed over the plates is depicted in figure 15. The rafters were notched at their midpoints to rest on a line of 8- by 10-inch purlins that rested on the outer ends of the cross pieces of the trusses. The top ends of the rafters abutted the ridge board, measuring 2 by 10 inches.

### Porch Roofs

The roofs of the west porches had rafters measuring 2 by 6 inches, spaced 18 inches on center. Figure 16 shows how the west and east porches' roofs were connected to the columns that supported them.

## Interior Elements

### Basement Level

#### Plan

This level is depicted in figure 12. It contained a center hall running the depth of the building. The hall was 10 feet 5 inches wide for most of its length; the east end was narrower, because the south wall projected out due to the presence of the chimney stack. The stack at this level contained three flues.

The center hall separated the basement into north and south sides. The north side was a single open space. The south side was mostly a single open space, except for two coal bins along the south end of the east wall.

#### Floors

The original floor material was cement. This is known because an extra sum was paid to the contractor at the end of the entire project, because a portion of the cement floors in Buildings 24 and 25 had to be cut out to accommodate each building's return steam main.[29] The area where the boiler sat was recessed to a depth of 1 foot.

#### Walls

Most basement walls, including the two east-west interior bearing walls, consisted of the exposed trap-rock foundation. The east end of the center hall's south wall juts in slightly, to accommodate the chimney stack. This part of the wall is of brick, being part of the chimney stack. The walls of the coal bins were probably built of wood planks over studs.

The original basement floor plan (fig. 12) bears two notations calling for wall footings to be lowered in two locations: at the exterior doorway at the rear of the center hall, and at the interior doorway in the south wall of the center hall. It is not known why this work would have been needed.

#### Ceilings

The height of the basement ceiling was to be 8 feet. All ceilings consisted of the exposed framing and subflooring of the first-story floors.

#### Doorways

The double doorway to the exterior at the east end of center hall has already been described as an exterior feature. There were also two double doorways in the side walls of the center hall. The one in the north wall, leading to the north side of the basement, was located near the east end of the wall. The one in the south wall, leading to the south side of the basement, was fairly centered on the wall.

[29] *HRS, 1895-1948*, p. 132.

An original construction drawing (fig. 11) indicates that the interior doors were to be two-paneled, with diagonal boarding. The dimensions of the doors were to be 2 feet 10 inches wide by 6 feet 8 inches high by 1 ¾ inches thick. It is not known if this design was actually used. No original interior basement doors remain in Building 25. However, one old door remains in the basement of Building 24; it is a board-and-batten door with upper and lower battens and two diagonal cross braces (forming a design resembling the Roman numeral 10).

**Windows**

The basement windows' sashes have been described as exterior elements. Exterior and interior construction details are shown in figure 18.

**Other Features**

***Stairway to First Story***

This stairway was located along the center of the north wall of the center hall. Its south side was open, probably featuring a handrail consisting of two plain boards, as exists now. At the top of the stairway, a 15-inch-high band of matchboard wainscoting with cap molding was installed around the three sides of the stairwell; this band is extant today.

**Utilities**

***Heating Equipment***

A coal-fired steam boiler was located in northeast corner of the south side of the basement. Its smoke pipe vented into the southernmost of the three flues in the chimney; this flue measured 16 ½ inches square (see fig. 11). The basement also contained a network of piping for the steam-heat radiator system (see fig. 21).

***Plumbing Fixtures***

A water heater and presumably a water tank were situated just west of the boiler, underneath the easternmost north-south girder (see fig. 21). The water heater seems to have had its own heat source: it had its own smoke pipe that vented into the northernmost of the three flues in the chimney. This flue measured 11 ½ inches square.

***Lighting Fixtures***

The basement was illuminated by wall-mounted gas fixtures. This is based on two facts: the knowledge that the primary buildings at Fort Hancock were originally piped for gas lighting,[30] and the repeated use of a symbol (a circle on a rod) on the original basement floor plan (fig. 12) that appears to represent a wall fixture. There is also what may be the remains of a gas jet on the west side of the brick pier closest to the northwest corner of the building.

[30] *HRS, 1895-1948*, p. 51.

## First Story

### Plan

This level is depicted in figure 13. The front-to-back center hall formed by the two east-west bearing walls divided the building into north and south sides. The hall was 11 feet wide for most of its length. The east end was narrower: the south wall projected out to accommodate the chimney stack, and the north wall was built out to form a shallow broom closet.

The portion of the building north of the center hall contained a day room along the entire north end, a large lavatory (27 by 29 feet) along the east wall, and an office and an armory along west wall. The south side of the building had a kitchen, a pantry, and a cook's room along the east wall; a 6-foot-wide side hall leading to a large mess room in the southwest corner, and small rooms for a tailor and a barber along the west wall.

### Floors

The original finish floors were probably maple. This is based on specifications written for repairs in 1908, which call for the original finish flooring to be replaced with the same material. Since hard rock maple was used for the 1908 replacement, one could infer that the original flooring material was maple, as well.[31]

### Walls

Walls consisted of plaster on wood lath. The lath was attached to furring strips nailed into the mortar joints of the brickwork with cut nails.[32] Common lime mortar containing Sandy Hook sand was originally specified, but Clinton Smith of the Quartermaster Department's Construction and Repair division persuaded Captain Devol to switch to King's Windsor cement plaster, resulting in a $2,000 change order.[33]

Most rooms featured rather elaborately molded baseboards (see fig. 19). Matchboard wainscot with a simple baseboard was used in the center hall, along the north wall of the stairway to the second story, and in the side hall to the mess room. Wainscot construction details are shown in figure 19. The wainscot baseboard was to project from the plaster line the same distance as did the band molding on the adjacent doorway casings.

Figure 19 also shows a profile of a chair rail, with no location specified. It matches the profile of the chair rail extant today on the south wall of the original day room. It is possible that the interior details were of yellow pine, as recommended by architects Carrère and Hastings.[34]

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[31] *HRS, 1895-1948*, pp. 316, 318.

[32] *HRS, 1895-1948*, p. 55.

[33] *HRS, 1895-1948*, p. 65.

[34] *HRS, 1895-1948*, p. 21.

**Ceilings**

The first-story ceilings were 12 feet high.[35] All of them were covered with elaborate stamped-metal ceilings with borders in a variety of patterns. Such ceilings were extremely popular at the time Building 25 was constructed. An additional advantage was that the metal was more able than plaster to withstand the concussion "when the big guns were fired," as noted by architects Carrère and Hastings.[36]

**Doorways**

Interior doorways were located as indicated on figure 13. All but two had transoms with operative sashes; 12-light sashes (six across by two down) were used over double doorways, and six-light sashes (three across by two down) were used over single doorways. Elevations and a section of the interior doorways are shown in figure 18. Doorways without transoms were those connecting the original pantry and the cook's room, and connecting the original company office and the armory.

All doorway openings had heavy molded casings with flat plinth blocks. Oddly, the original plans do not show a molding profile specifically for them. Figure 18 depicts a profile for a window casing titled "Inside Casing & Cap." This type of casing was also used for the doorways, judging by the profile of the casings extant today.

Interior doors had five recessed, molded horizontal panels, with the bottom one slightly larger than the others (see fig. 26). This design differs from the one shown in the construction drawings (figs. 11, 18). Presumably the dimensions were the same as specified: double doors being 2 feet 6 inches wide by 8 feet high by 1 ¾ inches thick, and single doors being 3 feet wide by eight feet high by 1 ¾ inches thick. The one exception to these dimensions was at the double doorway from the kitchen to the mess room, where the two swinging doors each measured 2 feet 8 inches wide.

The double doorway in the south wall of the center hall, leading to the side hall to the mess room, did not contain doors (see fig. 13). The three doorways with doors seen in the original transverse section (fig. 11) are, from right to left, the double doorway from the side hall to the mess room, the double doorway from the kitchen to the mess room, and the single doorway from the kitchen to the pantry. The two double doorways are visible in a ca.-1900 photograph (fig. 25). The type and design of the original door hardware is not known.

**Windows**

The double-hung sashes have already been described as exterior elements. A section, plan, and elevation of the windows is shown in figure 17; the profiles of the windows' casing, denticulate cap, and stool are depicted in figure 19.

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[35] Douglas S. Walter, Barry Sulam, Susan Simpson, and John B. Marsh, *Historic Structure Report, Architectural Data Section (Volume I), Fort Hancock Parade Ground Structures, 1896-1899, Sandy Hook Unit, Gateway National Recreation Area, New Jersey* (Denver: U.S. Department of the Interior, National Park Service, Denver Service Center, Aug. 1988). Hereinafter *HSR*. Page 206 of this report says that the ceiling height is 14 feet 6 inches, but the original construction drawing shows this to be the height of the second story, not the first.

[36] *HRS, 1895-1948*, p. 21.

## Finishes

The metal ceilings were painted buff.[37] Paint evidence indicates that all of the original woodwork received a red shellac finish (uncolored shellac followed by red pigmented shellac) in 1907. It is likely that a similar finish was used originally.

## Other Elements

### *Main Stairway*

The main stairway to the second story rises along the middle of the north wall of the center hall. An original construction drawing (fig. 18) provides design details for the newels, balustrade, and stringer. The designs shown for the balustrade and stringer were followed, based on the appearance of extant elements. The main newel extant today is much plainer than the one shown, however, lacking side paneling and an urn-shaped finial. Paint evidence indicates that it is a replacement; it is not known if the original newel conformed to the design seen in figure 18.

### *Partitions in Lavatory*

The lavatory had five bathtubs along its west wall, each in an individual "bath room." Figure 19 shows an elevation, section, and details of the wooden partitions that formed the bath enclosures. The "bath room" partitions were 12 inches above the floor, 4 feet 6 inches high, and 7 feet deep. There was also a group of six toilets ("water closets") in the center of the room. Again, figure 19 provides an elevation and section of the wooden partitions that enclosed the toilet stalls. The "water closet" partitions were similar to those of the "bath rooms," but were only 5 feet deep. Both bathtub and toilet partitions had doors featuring a louvered upper section above one raised horizontal panel.

### *Built-in Furniture in Pantry and Armory*

The pantry was to have built-in shelving and cupboards on all four of its walls. Figure 20 shows elevations and details of these storage units. Glass-fronted wall cupboards were used above drawer units, and open shelves were used over base cabinets.

The armory was to be fitted with 8-foot-long shelves and a 5-foot-long gun rack. Figure 19 depicts plans, elevations, and sections of these features. The bottom shelf was to be 3 feet above the floor, with the next shelf 2 feet higher, and the top shelf 2 feet higher yet.

[37] *HSR*, p. 214.

## Utilities

### *Heating Equipment*

Steam radiators were located under most of the windows, except for those of the kitchen and the lavatory (see fig.13). Not surprisingly, the day room (on the cold north side of the building) had radiators below six of its seven windows, but the mess room (in the sunny southwest corner of the building) had radiators below only three of its six windows. Smaller rooms having two windows, such as the company office, had a radiator below only one of them.

The kitchen had no radiators; presumably it was thought that the cooking range here (see fig. 26) would have generated sufficient warmth. The range vented into the middle of the three flues in the chimney (see fig. 31). The lavatory had a row of sinks under its three windows, so its two radiators were positioned one each on the north and south walls. The center hall also had two radiators, both on its south wall.

The design of the radiators was probably similar to the second-story radiator seen in figure 28.

### *Plumbing Fixtures*

It is assumed that toilets, bathtubs, and sinks were installed as depicted in the original construction drawings (see fig. 13); repeated alterations to this area have erased all physical evidence of original fixtures. Figure 19 includes a design for the overhead water tanks for the toilets. The kitchen had two sinks, one in the southeast corner and one in the northwest corner. The cast-iron vent pipes for these fixtures ran exposed in the lavatory, kitchen, and center hall.[38]

### *Lighting Fixtures*

As with the basement plan, the first-floor plan (fig. 13) shows symbols suggestive of wall-mounted lighting fixtures on the main lavatory partition. Also shown is another symbol (a circle with a rod over it) that seems to indicate a single ceiling-mounted fixtures; these are seen in the center hall and the cook's room. Yet another symbol (two circles connected by a rod) is shown in all other first-story rooms. This presumably represents a double ceiling-mounted fixture. All fixtures were presumably gas fixtures.

[38] *HRS, 1895-1948*, p. 103.

## Second Story

### Plan

The second story is depicted in figure 14. Again, the front-to-back center hall formed by the two east-west bearing walls divided the building into north and south sides. The east end of the south wall projected out due to the presence here of the chimney stack. Opposite this, on the north wall, was a shallow broom closet built out from the wall. The west end of hall was open to the second story of the pavilion. Two small rooms (about 9 by 10 feet) were located in the pavilion on either side of the hall; the north one was assigned to the 1st sergeant of the company, while the south one was for the company's other sergeant.[39]

The north and south sides of the building flanking the center hall were mirror images of each other. Each consisted of a large dormitory, or squad room, measuring 53 by 42 feet. The outer ends of both dormitories were partitioned off to form four small rooms measuring about 9 by 10 feet. The floor plan calls the small rooms "NCO" rooms; they were occupied by the sergeants or corporals that led the company's squads.

### Floors

Finish flooring was probably of yellow pine. Specifications written in 1908 call for the original finish floor to be replaced with the same material. Georgia pine was used for the 1908-09 repairs, which suggests that the original flooring material was pine, as well.[40] An inspection report dated December 1908 noted that the original second-story flooring in the barracks was "good edge grain flooring," with only a few pieces of flat grain being found.[41]

### Walls and Ceilings

These were generally same as those of the first story. Most walls consisted of cement plaster over wood lath; matchboard wainscot was used in the center hall, including on the west wall under the "Palladian" window. The ceiling height was probably 14 feet 6 inches.[42] Stamped-metal ceilings in different patterns with borders were used in all rooms.

It is possible but unlikely that each dormitory was divided in two by a strong wire screen, to create two separate rooms. Captain Murray recommended that this be done, to form a total of four squad rooms. Four dormitory spaces would have matched the number of squads in a battery, "thus affording a better means for the maintenance of discipline." The HRS suggests that this recommendation was incorporated into the plan.[43] However, there is no indication of such screens in the original construction drawing, or in the ca.-1900 photographs.

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[39] The notation "N.C.O." on the drawing refers to "Non Commissioned Officer." The two ranks of NCOs in the Army are sergeants and corporals.

[40] *HRS, 1895-1948*, pp. 316, 318.

[41] *HRS, 1895-1948*, p. 315.

[42] Page 206 of the *HSR* says that the ceiling height is 12 feet, but the original construction drawing shows this to be the height of the first story, not the second.

[43] *HRS, 1895-1948*, p. 25.

## Doorways and Windows

Second-story doorways were located as indicated on figure 14. They were similar to those in the first story; they had operative transom sashes, the same type of casings, and the same type and size of five-paneled doors. The primary difference was that the transom sashes had only a single row of six lights (see fig. 11, transverse section). The two doorways seen in the original transverse section (see fig. 11) led to the dormitories. As explained previously, the original construction drawings show a different design for the doors than was actually used.

## Other Features

### *Stairway to First Story*

The stairwell was edged by the same type of balustrade running up the stairway.

### *Stairway to Attic*

An enclosed stairway above the main stairway ascended to the attic. It was accessed by a standard doorway with no transom and a five-panel door. There was no handrail, but a molding resembling a chair rail ran along the south side of the stairway enclosure at the level of the attic floor.

### *Partitions and Lockers in Dormitories*

As stated previously, the north and south ends of Building 25's second story were each partitioned off into four small bedrooms for corporals. An elevation drawing of the main, east-west partition is included in figure 19; one of them can be seen in two ca.-1900 photographs (figs. 27-28), and in a third photograph dated ca. 1908 (fig. 36). The partitions did not extend to the ceiling. This can be inferred from the elevation drawing, in which the partition is no taller than the doorways within it. It can also be confirmed by examining figure 28. The drawing indicates that the partitions were made of matchboard sheathing, with a plain baseboard and a cap molding.

Each east-west partition contained four doors, grouped as indicated in figure 14. The design of the doors shown in figure 19 is two vertical panels above one horizontal panel above two shorter vertical panels. This is the same design shown in figure 18 but not used for the other doors in Building 25. The partition doors thus probably displayed the same five-panel form actually used for those other doors.

Based on figure 14, wooden wardrobe lockers were to be installed in the dormitories in the following locations: (a) all along the south side of the partitions forming the NCO rooms; (b) all along the north side of the south walls; and (c) on the east wall between the windows. There was also one locker in each of the four NCO rooms. Counting all of the lockers shown in the dormitories, and the north and south NCO rooms, and adding the two lockers in the two NCO rooms in the pavilion, yields a total of 70 lockers. This matches the assertion that the building was originally designed to house 70 men. Figure 20 includes an elevation and section drawing for the lockers; this design matches that seen in the ca.-1900 photographs (figs. 27-28).

### Utilities

#### *Heating Equipment*

Steam radiators were located under all of the windows in the dormitories, and under the north and south windows in the NCO rooms (see fig.14). The center hall also had two radiators, both on its south wall.

#### *Plumbing Fixtures*

There were no plumbing fixtures on the second story.

#### *Lighting Fixtures*

The second-floor plan, like the first-floor plan, shows symbols indicative of wall-mounted and ceiling-mounted lighting fixtures. Single wall-mounted fixtures were used in the NCO rooms and First Sergeant's room; single ceiling-mounted fixtures were employed in the center hall; and double ceiling-mounted fixtures illuminated the dormitories. All fixtures were presumably gas fixtures, since gas lighting was part of the original construction package.

#### *Ventilation Equipment*

Each dormitory was ventilated by four 12-inch-square ducts located in the corners of the room. Each duct had two registers measuring 8 by 12 inches and positioned as seen in figure 11 (transverse section). The ducts opened to the attic.

Additional ventilation was provided to the dormitories by sheet-metal ducts in the baseboard below all radiators. These have been described more fully in the section "Exterior Elements."

## Attic Level

### Plan

This level was not depicted in the original plans. It probably consisted of the usual north-south center hall–formed by the two interior bearing walls–with one large open space on either side.

### Floors, Walls, and Ceilings

The finish flooring was pine.[44] The walls were of brick, as follows:

- the north-south walls dividing the center hall from the side areas. These were the brick bearing walls extending up from the basement.
- the end walls of the side areas. These were the triangular gable ends of the north and south exterior walls.
- the west wall of the center hall. This was the triangular gable end of the west pavilion.

[44] *HSR, 1895-1948*, p. 206.

There were no walls, but only roof slopes, in the following areas:

- the east end of the center hall.
- the east and west sides of the two large open spaces.
- the north and south sides of the center hall within the pavilion.

**Doorways and Windows**

The north and south walls of the center hall each had one doorway accessing the north and south sides of the attic. The openings had segmentally arched heads, as shown in fig. 15 (transverse section). The north-side doorway may have had a door originally; what appears to be screw holes for hinges are visible in the doorjamb. It is not known if the south-side doorway had a similar door.

Three elliptical oculi provided some light to the attic. One sat in the gable end of the front pavilion, and one each sat in the north and south gable ends. Their sashes have already been described as exterior elements. The interior construction of the oculi openings was unusual. On the exterior, the oculi appeared simply as elliptical openings in the smooth yellow-brick face wall (see fig. 11). However, on the interior, the window openings in the red backing brick consisted of rectangular openings with segmentally arched heads. Each opening was fitted with a rectangular wooden frame. The frame contained a wooden panel into which the elliptical sash was inserted. The arched area above the frame was infilled with wood. Presumably the design was used for structural reasons.

**Other Features**

***Stairway to the Second Story***

The stairwell down to the second story was edged with a balustrade consisting of two plain boards, as extant today.

***Truss System***

The north and south sides of the attic each contained four trusses, positioned as indicated in figure 14. They are more fully depicted in figure 11 (transverse section).

**Utilities**

***Lighting Fixtures***

Since no floor plan was drawn for the attic, the locations of original gas fixtures (if any) are not known. There are no physical remains of such fixtures in the attic today.

***Ventilation Equipment***

The ventilation ducts in the corners of the second-story dormitories opened directly into the north and south sides of the attic. These spaces were vented in turn by the two exterior ventilators mounted on the roof ridge.

## Utility Systems

### Heating System

Steam-heating systems were part of the original construction for 24 buildings at Fort Hancock, including Building 25.[45] Radiators were freestanding, based on the original floor plans; their locations have been discussed in connection with individual stories. Figure 21 shows the original steam-heating plan.

### Plumbing System

Indoor plumbing was part of the original construction for 28 of Fort Hancock's first 32 buildings.[46] The locations of original fixtures in the first-story lavatory and kitchen are seen in figure 13. Waste lines were tied into the fort's original sewage system.

### Lighting System

Gas lighting was also part of the original construction for 26 of the fort's first 32 buildings, including Building 25.[47] The 1896 floor plans indicate that single wall fixtures, and single and double ceiling-mounted fixtures, were apparently used in the various rooms. As explained in Chapter II, "Building the Fort, Utilities and Landscaping," the source of the gas is not known.

### Ventilation System

Ventilation of Building 25 was accomplished primarily by the use of doorways and windows. As described previously, the dormitories were further vented by two sets of ducts. One set consisted of four large vertical ducts in each corner of the room, venting to the attic, which in turn was vented by the two exterior roof ventilators. The other set consisted of sheet-metal ducts in the baseboard below all radiators.

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[45] *HRS, 1895-1948*, p. 51.

[46] *HRS, 1895-1948*, p. 108.

[47] *HRS, 1895-1948*, p. 108. On page 51, Bearss says that gas lighting was to be installed in 28 buildings, but this figure may have been confused with the number of buildings receiving plumbing.

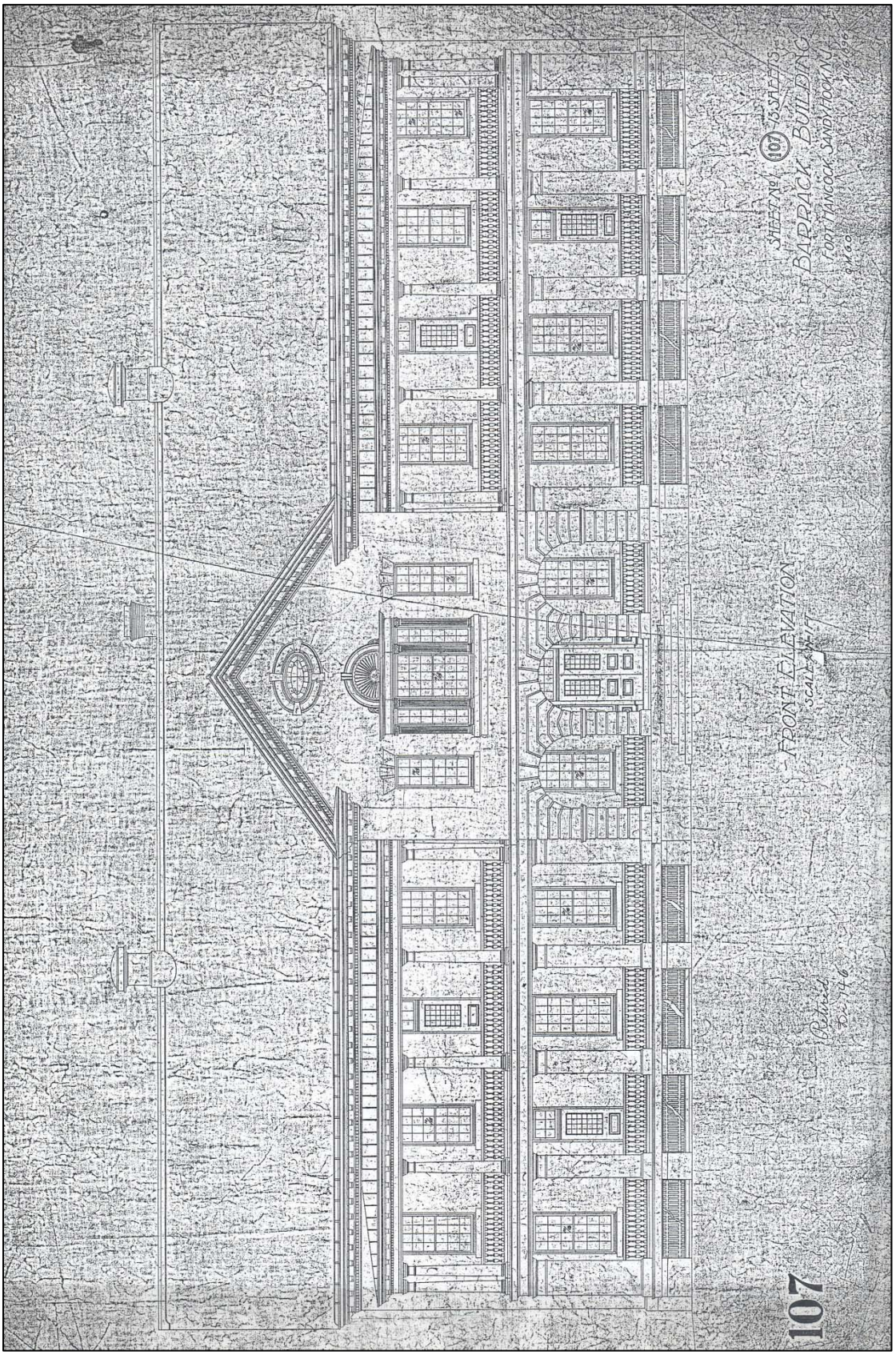


**Figure 9.** Original construction drawing, west elevation (1896).

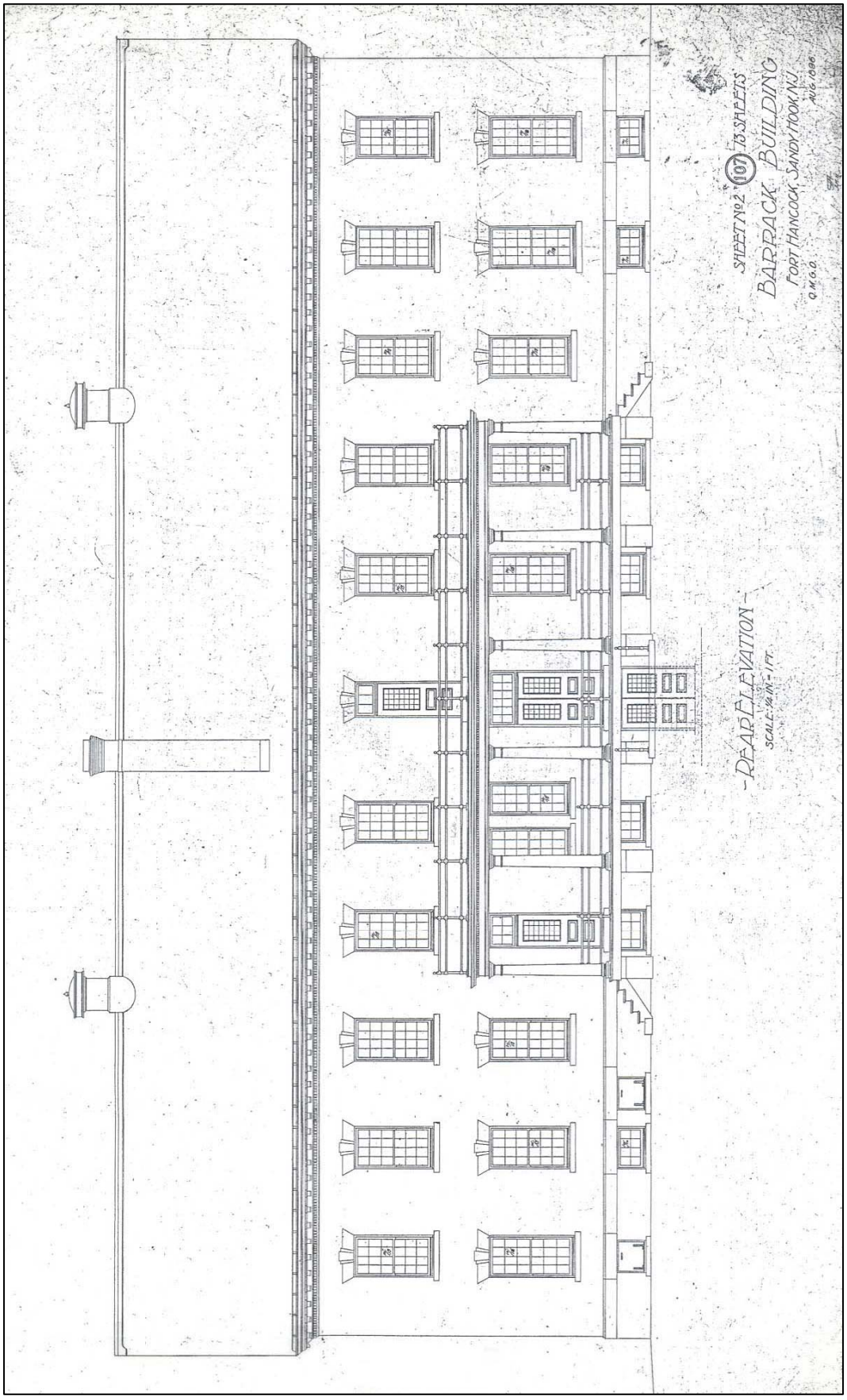


**Figure 10.** Original construction drawing, east elevation (1896).

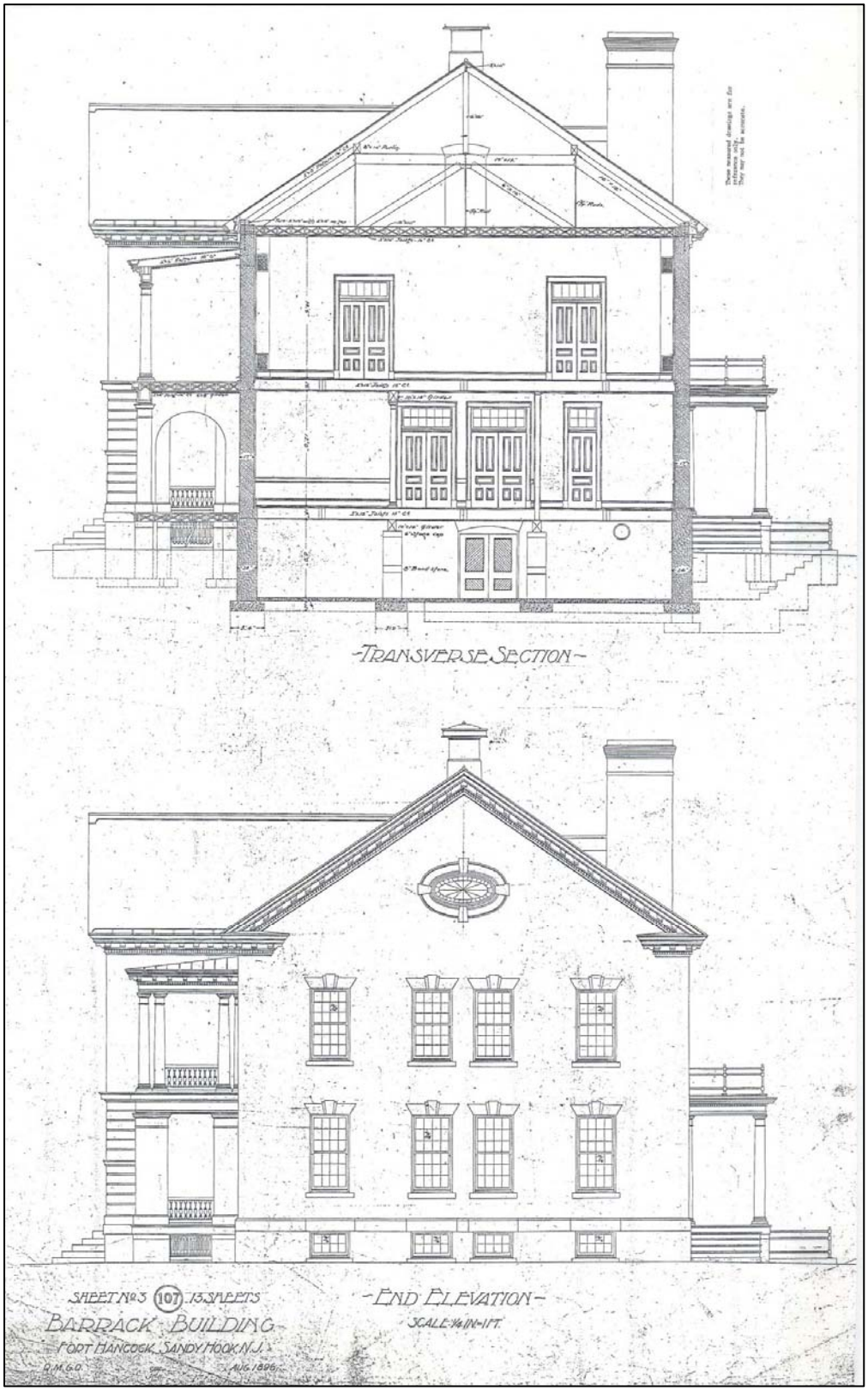


**Figure 11.** Original construction drawing, transverse section and end elevation (1896).

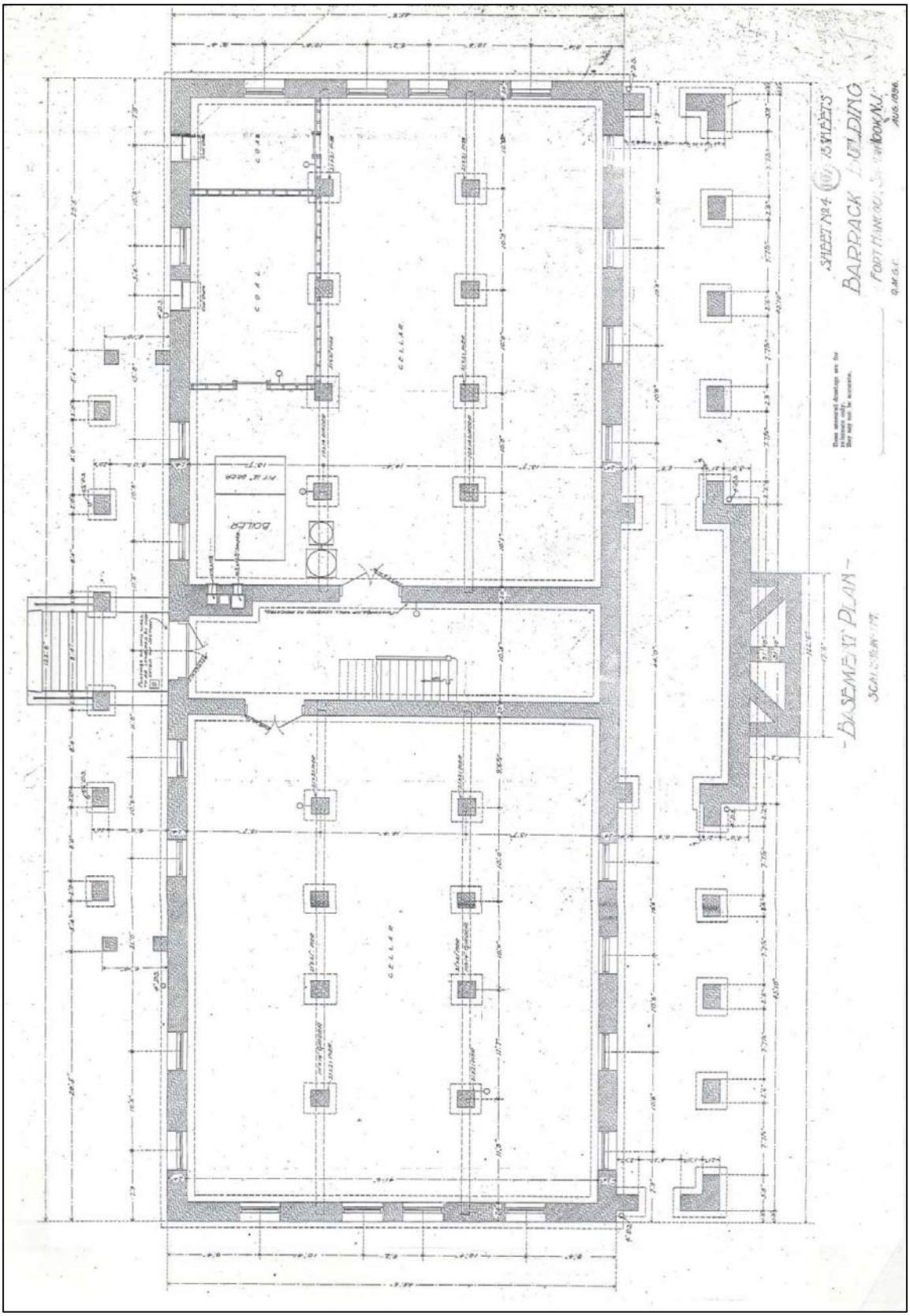


**Figure 12.** Original construction drawing, basement plan (1896).

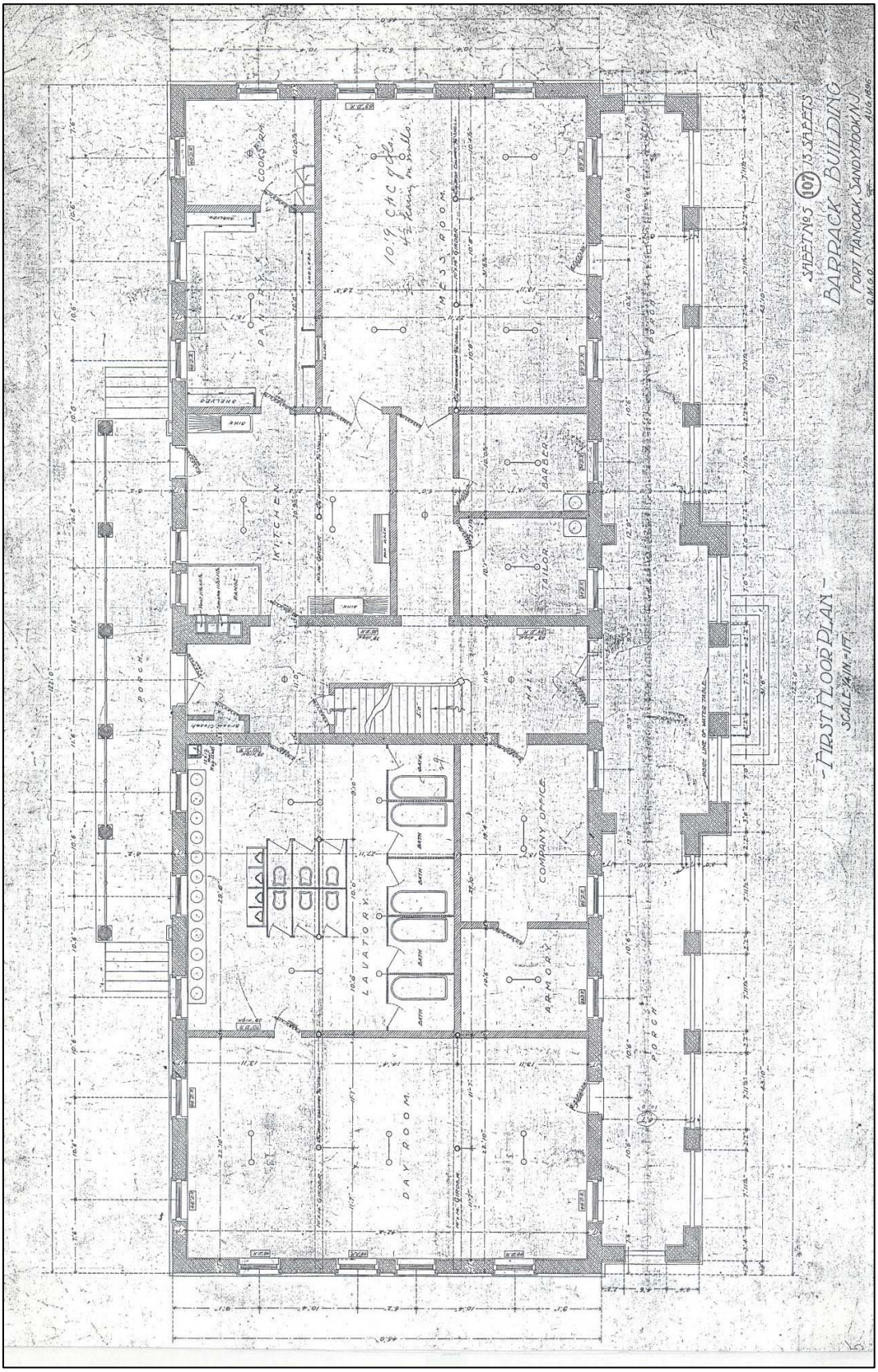


**Figure 13.** Original construction drawing, first-floor plan (1896).

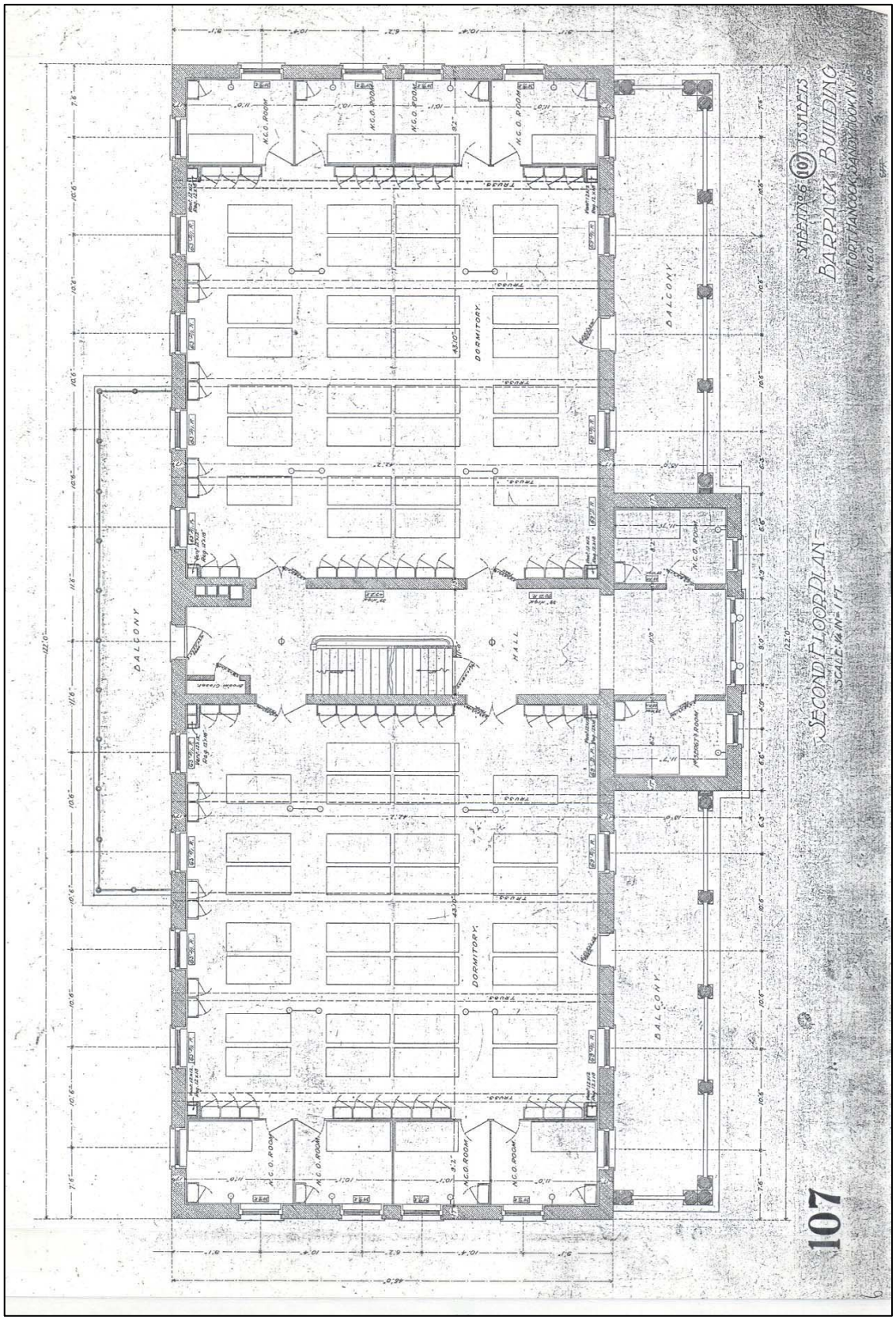


**Figure 14.** Original construction drawing, second-floor plan (1896).

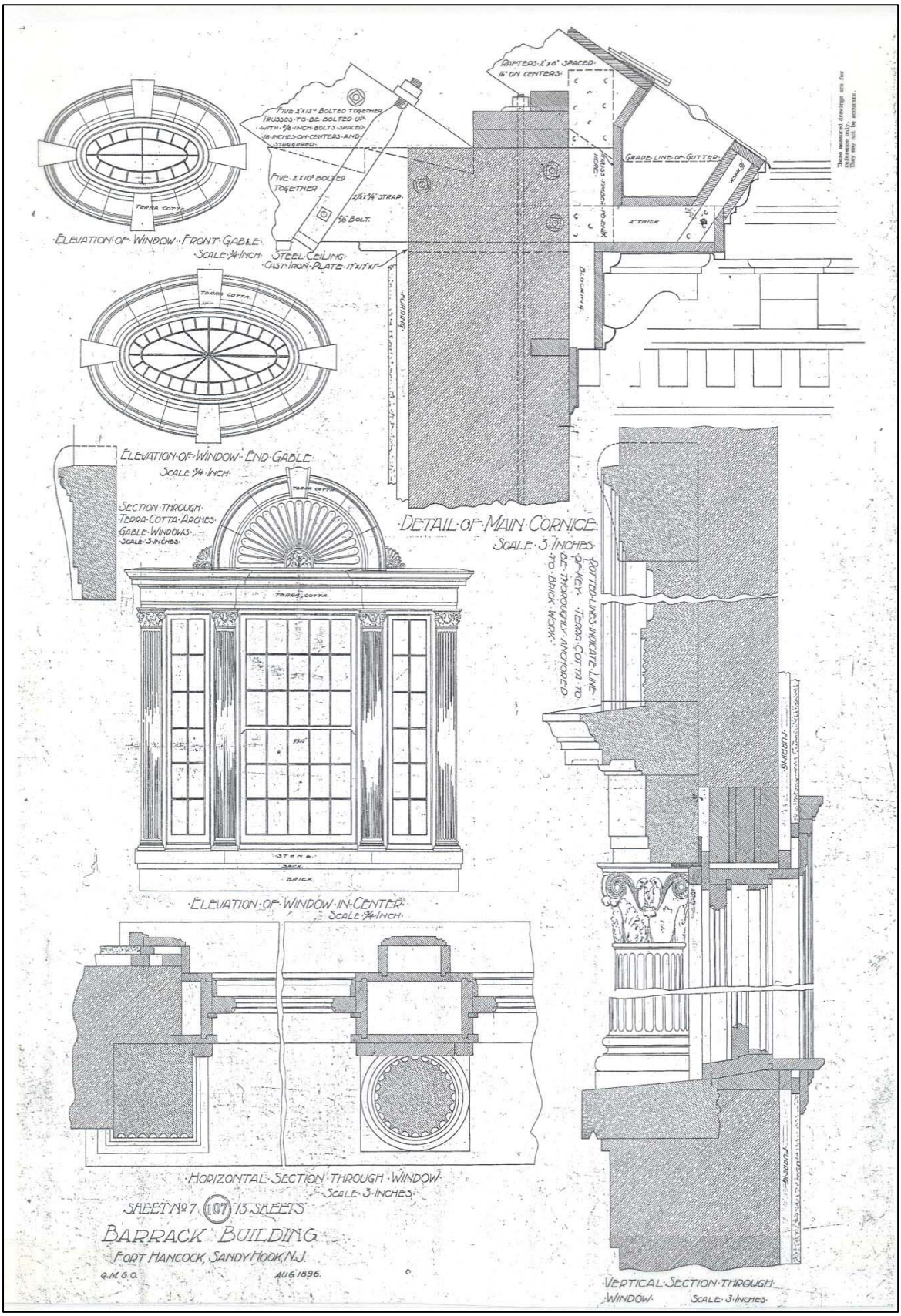


**Figure 15.** Original construction drawing, details of main cornice and windows (1896).

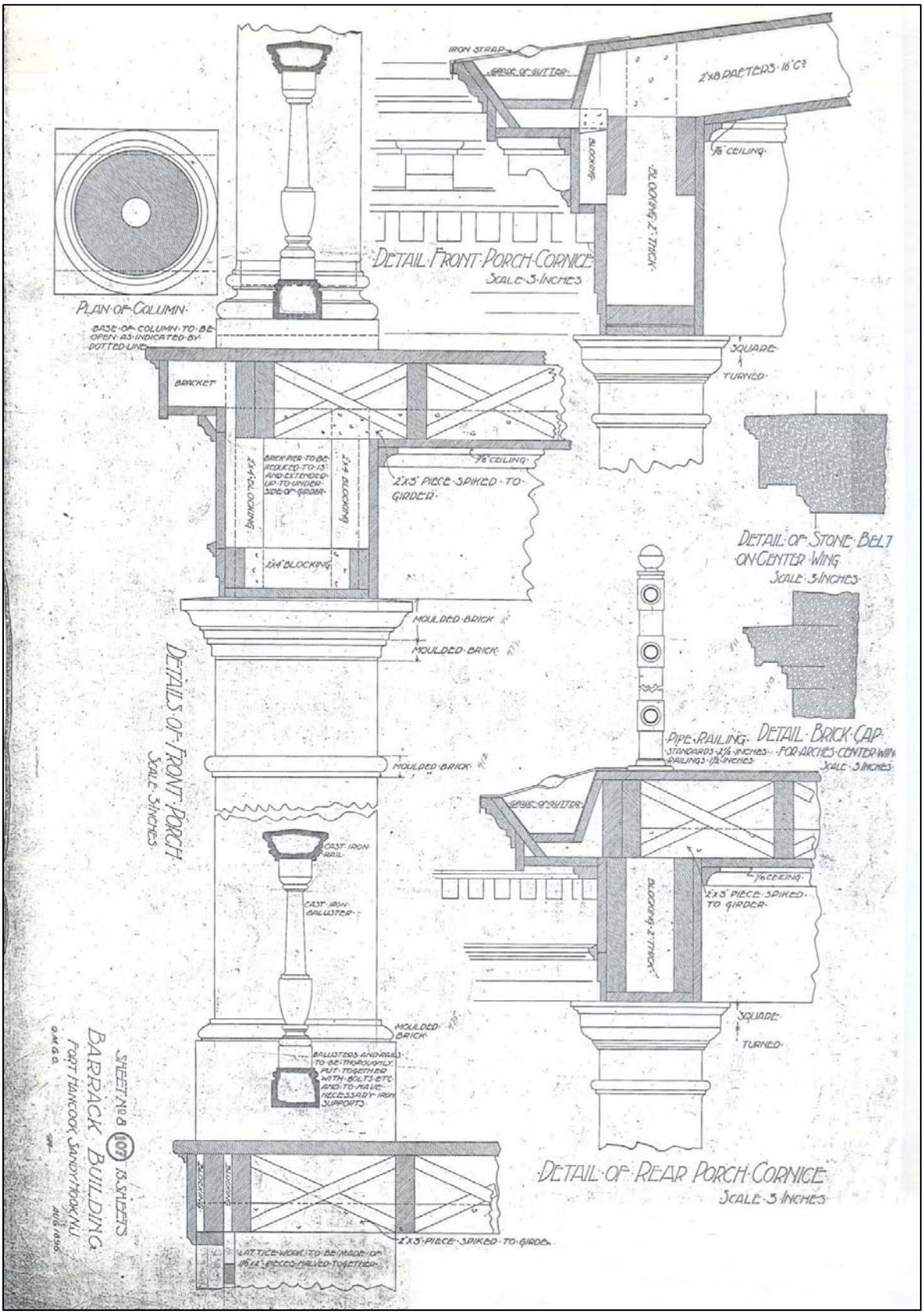


**Figure 16.** Original construction drawing, details of front and rear porches and cornices (1896).

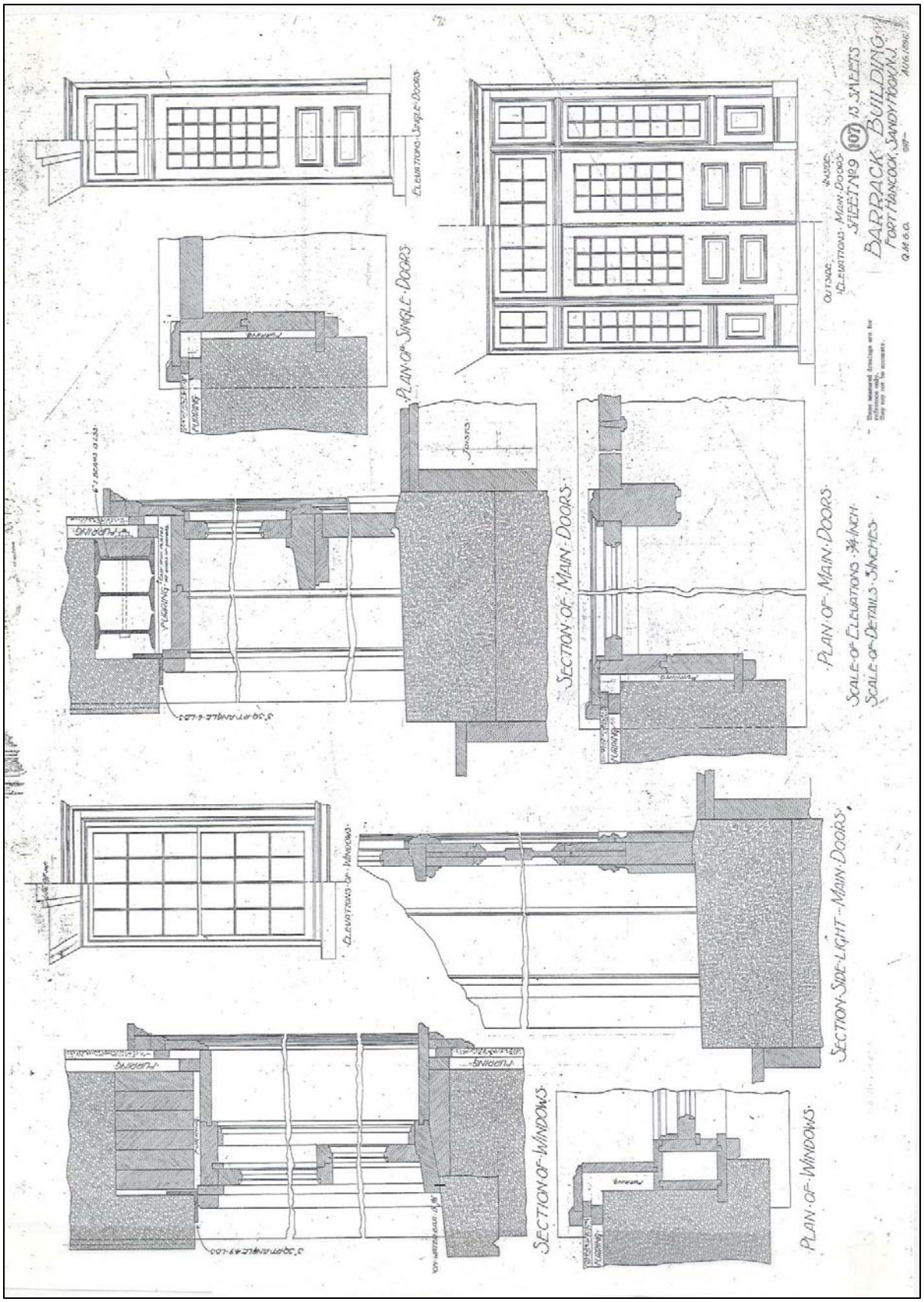


**Figure 17.** Original construction drawing, details of exterior doorways and windows (1896).

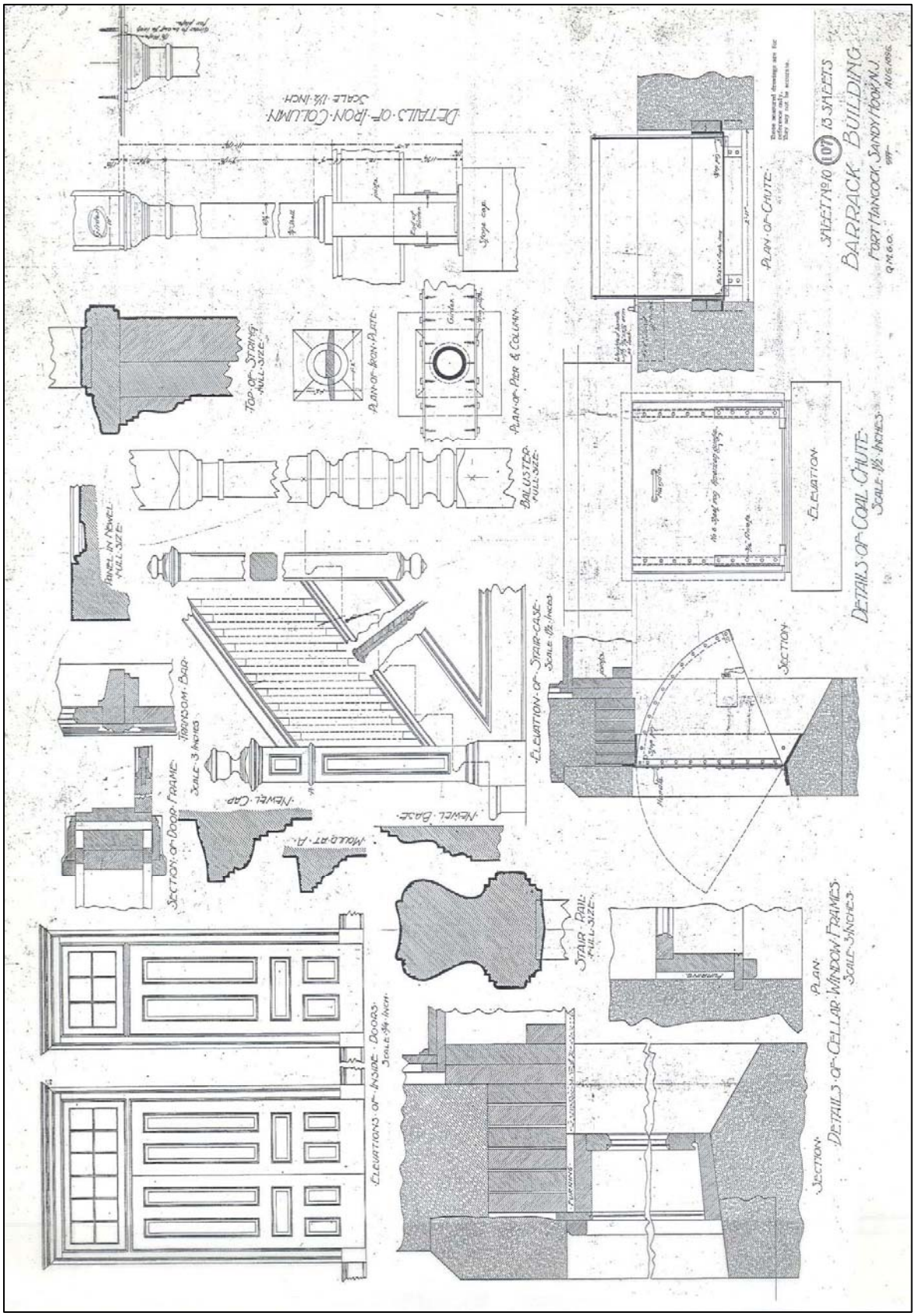


**Figure 18.** Original construction drawing, details of interior doorways, stairway, iron columns, cellar windows, and coal chute (1896).

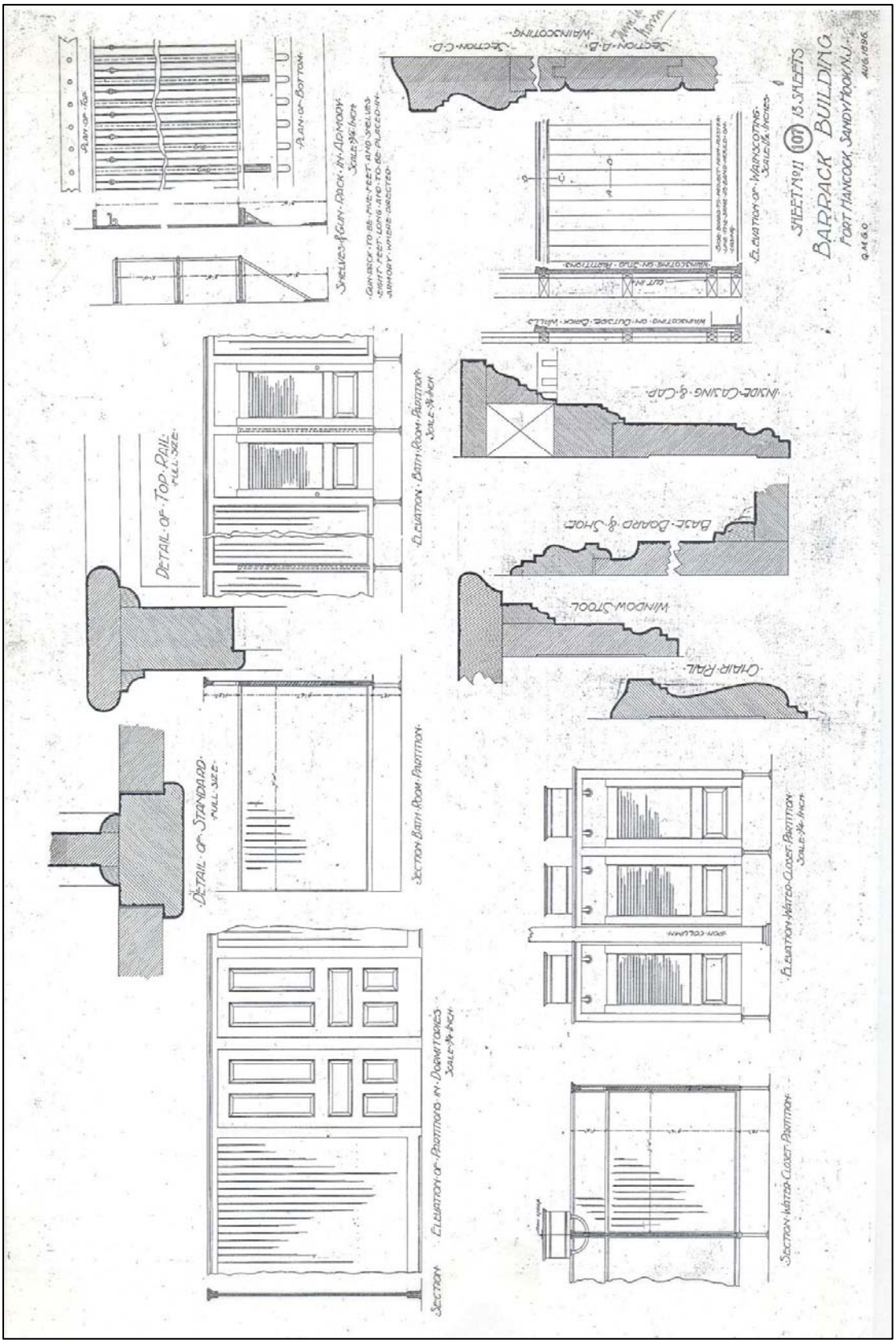


**Figure 19.** Original construction drawing, details of interior partitions, moldings, wainscot, and shelves and gun rack in armory (1896).

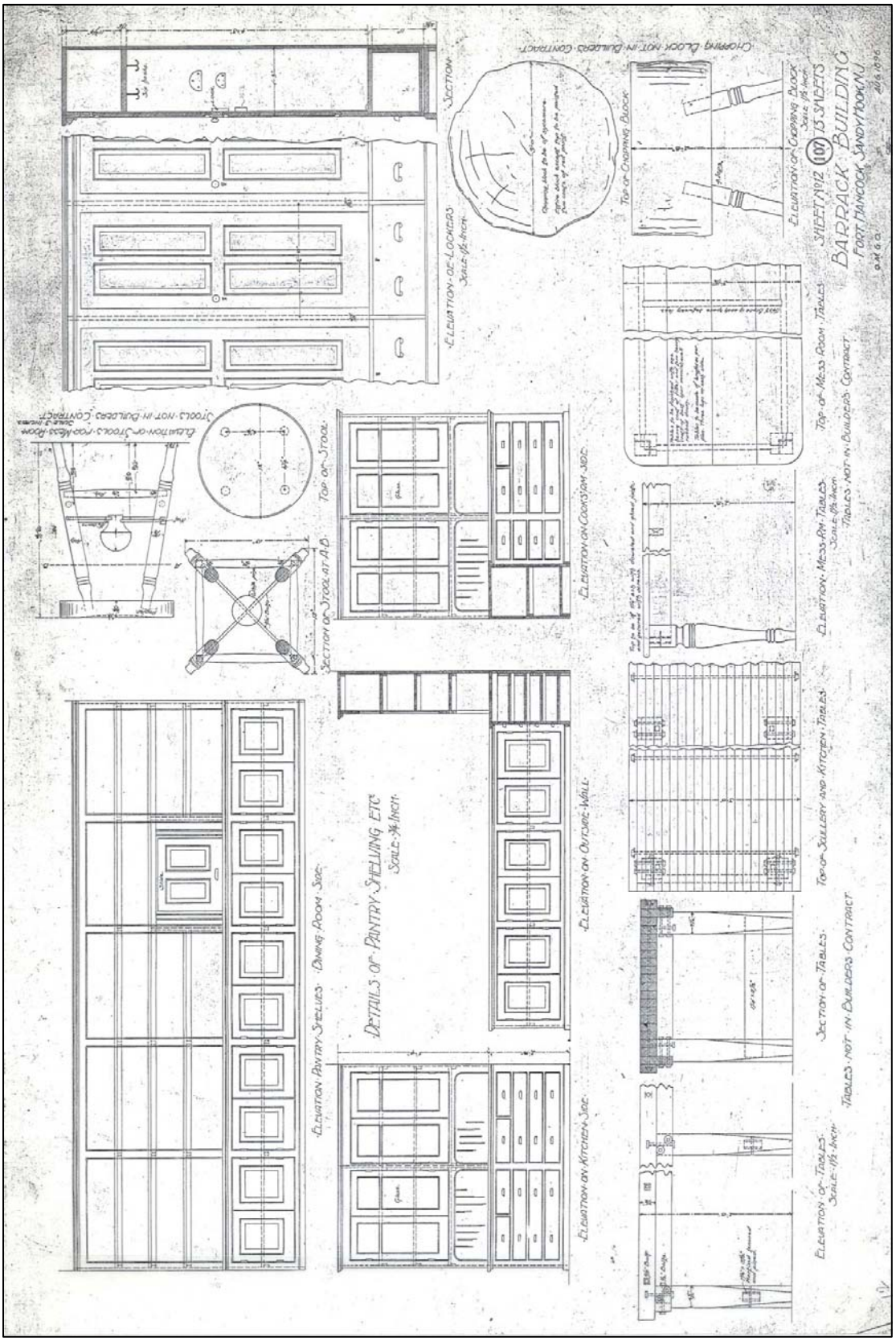


**Figure 20.** Original construction drawing, details of pantry shelving, mess furnishings, and dormitory lockers (1896).

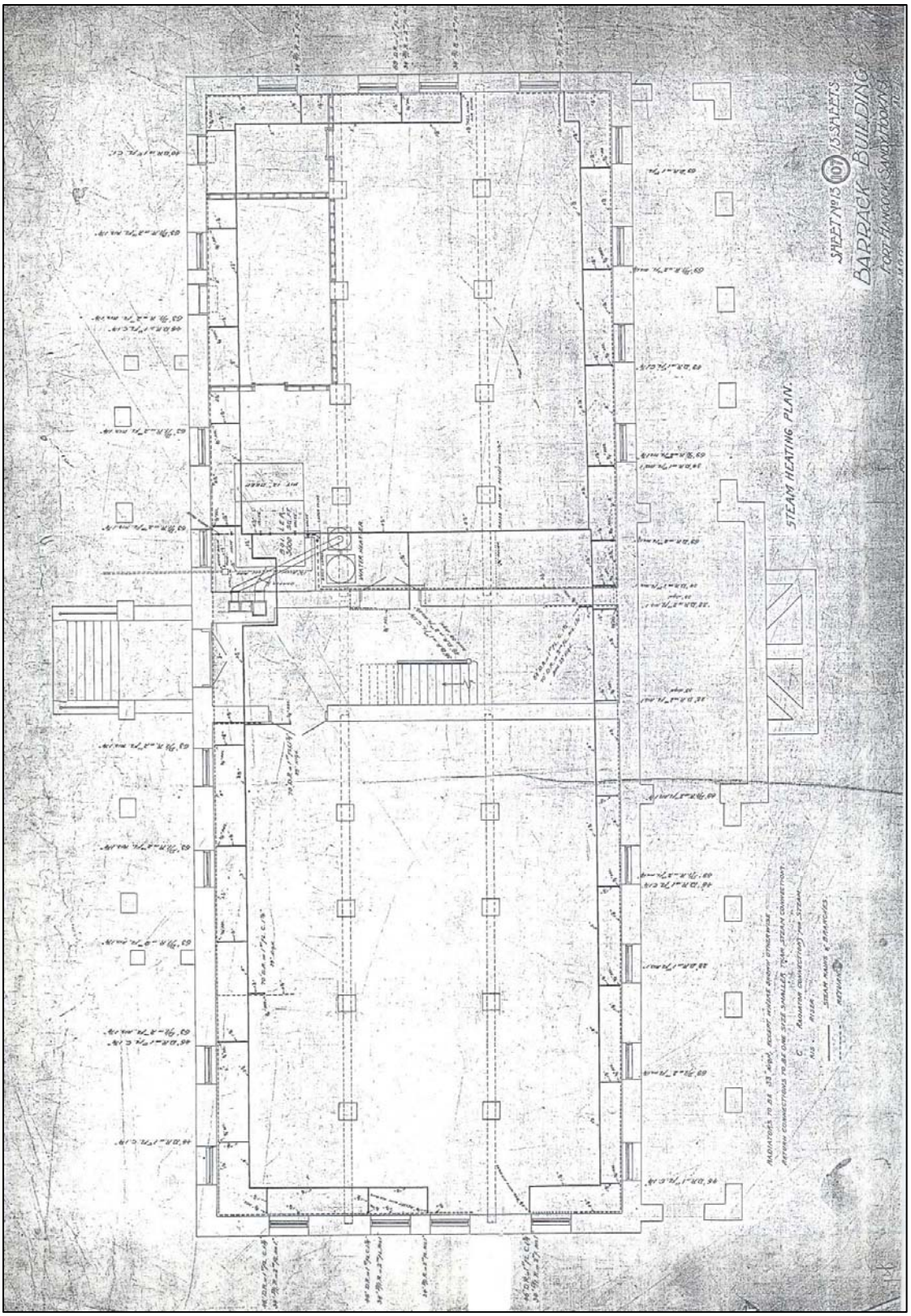


**Figure 21.** Original construction drawing, steam heating plan (1896).

**Figure 22.** Buildings 23-25, view of west elevations, looking north, ca. 1900. Photograph shows details of front porches and pavilion downspouts.

**Figure 23.** Building 24, view of southeast corner, looking north, ca. 1900. Photograph shows details of cornice and rear porch.

**Figure 24.** Building 25, view of southeast corner of rear porch, ca. 1900. Photograph shows details of porch foundation, steps, and columns.

**Figure 25.** Building 25, northeast corner of mess room, ca. 1900. Photograph shows doorways to hall and kitchen, and pass-through to pantry.

**Figure 26.** Building 25, northeast corner of kitchen, ca. 1900. Photograph shows five-panel door and hood over range.

**Figure 27.** Building 25, interior of dormitory, ca. 1900. Photograph shows partition screening NCO rooms, and original wooden lockers.

**Figure 28.** Building 25, interior of dormitory, ca. 1900. Photograph shows partition screening NCO rooms, original wooden lockers, and original radiator.

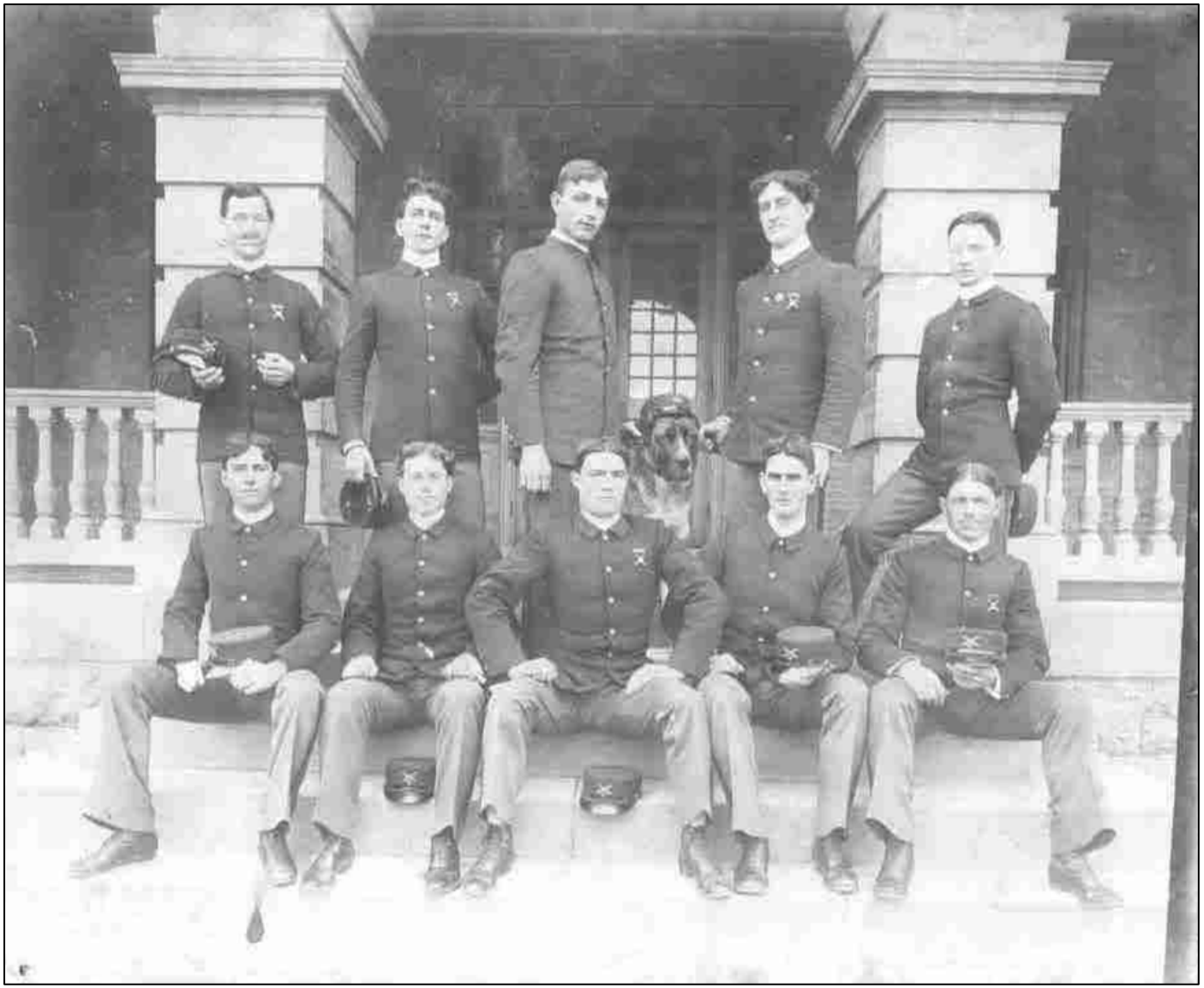

**Figure 29.** Barracks, view of west pavilion, ca. 1903. Photograph shows details of front steps and first story. Tom Mix, the future cowboy movie star, is at center front.

# ALTERATIONS

## Early Improvements and Repairs

### 1901

#### Installation of Flagging

During the summer of 1901, bluestone flagging from the terreplein of Battery Potter was salvaged and positioned as walkways behind the barracks, around the bake house, and around the quartermaster and commissary storehouse.[48]

#### Maintenance of Floors

The post quartermaster reported that the floors in the barracks and quarters were waxed with a formula of 1 pint of paraffin, 2 pints of raw linseed oil, and some wood shavings. Two pints of liquid dryer and sufficient turpentine to thin it to the desired consistency were then added. (This mixture would provide a glossy surface. If a matte finish were desired, the amount of paraffin would be reduced by half.) The mixture was applied with a brush, like varnish. A high gloss could be obtained by rubbing the mixture in with a polishing brush. One gallon would cover about 200 square feet of floor.[49]

### 1902

#### Introduction of Electricity

The use of gas street lighting at Fort Hancock was approved on November 28, 1898. Three years later, in 1901, the General Electric Company surveyed the grounds to prepare an estimate for wiring the grounds and the buildings.[50] Electrification of the buildings was accomplished in 1902. Wiring was run in concealed tubing in 19 officers' quarters, but all other buildings had wiring run in "molding and cleats."[51]

[48] *HRS, 1895-1948*, p. 216.

[49] *HRS, 1895-1948*, pp. 311-312.

[50] *HSR, 1895-1948*, p. 21.

[51] *HRS, 1895-1948*, p. 173.

## 1903

### Installation of Storm Doors and Windows

The cold northwest winds that buffeted Sandy Hook in the winter led to the installation of storm doors and windows on some of the dormitories' openings. The two doorways on the west elevation, leading from the dormitories to the second-story porches, received storm doors. Storm windows were placed on all of the second-story windows on the west and north elevations – eight on the west side and four on the north side.[52]

## 1905

### Removal of the Mess Facilities

The four barracks were considered to be too small by December 1899, only a year after construction.[53] A report conducted in November 1903 found that the barracks, each of which had been built for 65-70 men, were actually housing artillery companies with an authorized strength of 108 enlisted men.[54] A variety of options were considered to gain more room. Nothing was done until 1904-05, when separate mess halls were built, one behind each of the four barracks (see fig. 30). Not only did each mess hall include a kitchen, a pantry, a cook's room, and seating for 109 men, it also housed a tailor shop, a barbershop, and a latrine.[55]

This transfer of functions to the new mess halls freed up rooms in the original barracks to be used for other purposes. However, it appears that no substantive changes were made to Building 25 at that time, other than improvements to the lavatory. Floor plans prepared in 1907-08 (figs. 32, 34) show room layouts identical to those depicted in the original drawings, with changes only in the usage of some spaces, as follows:

***First Story***

| **1896 Room Names** | **1907-08 Room Names** |
|---|---|
| mess room (at southwest corner) | dormitory |
| kitchen (at southeast wall) | dormitory |
| pantry (at southeast wall) | store room |
| cook's room (at southeast corner) | no label – presumably part of store room |
| tailor's room (at southwest wall) | NCO room |
| barber's room (at southwest wall) | NCO room |

[52] *HRS, 1895-1948*, pp. 312-313.

[53] *HRS, 1895-1948*, pp. 261-262.

[54] *HRS, 1895-1948*, p. 312.

[55] *HRS, 1895-1948*, p. 266.

***Second Story***

The north and south dormitories and their eight NCO rooms remained unchanged. The same is thought to be true for the two small west rooms on either side of the center hall, in the pavilion. The north room was the "1st Sergt's Room" on the 1896 second-floor plan, while the south room was a NCO Room. The 1908 second-floor plan does not label them, but there is no reason for their usage to have changed.

## 1907-1908

### Basement Improvements

Approval was obtained on September 25, 1907, to partition off the north end of the basement of Building 25, to create a recreation room for the men of the resident 95th Coast Artillery Company, and for the men of the 136th Company. A stove was included in the request, to heat the room during the cold Sandy Hook winters.[56] Figure 31 shows the proposed recreation room.

In 1908, "sheetrock" was installed somewhere in the basement, according to the 1938-42 *Post Record Book*.[57] This is a confusing entry. "Sheetrock," or gypsum board, did not come into use until the late 1930's. Obviously the compilers of the *Post Record Book* used contemporary language in 1938-42 to describe alterations that had occurred in 1908. Furthermore, it is possible that the entry mistook plaster on wood lath for "sheetrock." The west and middle thirds of the ceiling in the south side of the basement are finished today with wood lath and plaster, a type of construction not used elsewhere in the building for other alterations.

### Additional Lockers Installed

The November 1903 report had cited a severe shortage of wall lockers in the barracks. All of the barracks should have had 110 lockers for the 108 enlisted men that comprised a fully staffed artillery company. Building 25 had only 74. Thus, some of the men had to keep their clothes and gear in footlockers, which aggravated the already crowded conditions in the dormitories.[58] Nothing was done about the lockers in 1903. However, 37 additional lockers were purchased for Building 23 in 1907; the next year, 32 lockers were installed in Building 25, and 38 lockers in Buildings 22 and 24. The new lockers (fig. 35, right) were enameled steel wall lockers, rather than wooden wardrobe lockers like the original ones. The Quartermaster Department had switched from wooden lockers to metal lockers because they were easier to obtain and cheaper.[59] Interestingly, figure 36 suggests that wooden lockers were used in the large, two-company barracks (Building 74) built at Fort Hancock at this same time (1908-09).

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[56] *HRS, 1895-1948*, p. 314.

[57] U.S. Army, *Fort Hancock Post Record Book* (Fort Hancock, NJ: compiled between 1938 and 1942). Hereinafter *Post Record Book*.

[58] *HRS, 1895-1948*, pp. 312-313.

[59] *HRS, 1895-1948*, p. 313.

## 1908-1909

### Improvements to Heating System

Early in 1908 a new heating boiler was installed in a number of buildings, including Building 25.[60] However, the radiator valves were observed to be in poor condition in December 1908.[61] There is no record of their replacement.

### Remodeling of Lavatory

The lavatories in all four barracks were rehabilitated in 1908-09. The first documentation found for the work is a first-floor plan done sometime prior to August 1908; superimposed over the lavatory appears the text, "Showing new arrangement of fixtures approved, 5 [th?] - 1908." A subsequent version of this plan (fig. 32) has additional text as follows: "Changed again Aug. 1908 and plan 2-877." Plan 2-877 (fig. 33) is titled "Remodeling Plumbing in Barracks Nos. 22-23-24-25," and is clearly dated August 1908. Augmenting these plans was a "Specification for Plumbing and Construction, Barracks 22, 23, 24, and 25, Fort Hancock, N.J.," dated September 1908.[62]

Shortly thereafter, Constructing Quartermaster Lt. Hawkins called for proposals to rehabilitate the lavatories. Proposals were opened and abstracted on November 18.[63] Before the contract could be awarded, a civil engineer named Adams inspected the barracks in mid-December and made a "supplementary report on plumbing."[64] He found the plumbing in the barracks to be in "poor and unsanitary condition." Adams recommended the installation of waterproof floors and new fixtures to make the plumbing sanitary. Fortunately, these work items were already in Hawkins' specifications.

The contract was awarded on December 22 to a George W. Wines, and the work was completed in May 1909. All of the plumbing fixtures and the wooden partitions were removed from the lavatories, as well as the soil, waste, and vent pipes. New main soil pipes 6 inches in diameter were installed. New partitions were built of slate and brass. New fixtures included bathtubs, water closets with tanks, lavatories (sinks), urinals with tanks, showers with slate stalls, laundry tubs with traps, floor traps, and wall hydrants. All breaks in the plaster were patched and painted, and the woodwork was given three coats of paint.[65]

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[60] *HRS, 1895-1948*, p. 319.

[61] *HRS, 1895-1948*, p. 315.

[62] *HRS, 1895-1948*, p. 320. "Specifications for Plumbing and Construction, Barracks 22, 23, 24, 25," September 1908, doc. 217,982, Correspondence 1890-1914, Record Group 92, National Archives.

[63] *HRS, 1895-1948*, p. 319.

[64] R.E. Adams, Civil Engineer, to Quartermaster General, Dec. 15, 1908 (doc. 250,934, General Correspondence, 1890-1914, Record Group 92, National Archives).

[65] *HRS, 1895-1948*, pp. 319-320.

In each lavatory the finish floor was taken up and the subfloor patched as necessary. The entire floor was then covered with gray asbestolith floor tiles that sloped toward the floor traps and traps in the shower stalls. The tiles continued to the top of the baseboards.[66] At the doorways to the latrines, a beveled yellow-pine threshold was installed, being rabbeted to fit closely to the wood flooring outside the latrine and the tile inside.

**Improvements to Floors and Stairways**

The floors in all four barracks also were rehabilitated at about the same time as the lavatories were remodeled. The first-floor plan that has the August 1908 notations about the lavatory work (fig. 32) also has the following text in the lower left corner: "all rooms of this floor, except lavatory, to have new upper [finish] floors. Stairs to have new treads and risers. Also metal treads and toe plates. Hall to have metal treads as shown." Based on the plan, the hall "treads" actually resembled a continuous surface covering high-traffic areas in the center hall.

A similar, second-floor plan–also from August 1908–has a title block containing the following text: "Repairs of Barracks Floors &c. Barracks Nos. 22, 23, 24 & 25." This drawing was done by "M.N. Falls, Captain and Quartermaster, and J.H. Pearson, C.E. and Supt. of Constn., Q.M.D." Interestingly, it specifies no work whatsoever. A later version of the same plan (fig. 34) has no text in the title block area, but the lower left corner bears the following text: "N.B. This floor to have all worn or damaged upper [finish] flooring repaired, as per specifications, where directed by officer in charge." The plan also shows what appears to be a metal threshold at the east doorway between the center hall and the north dormitory. The first- and second-story plans were apparently supplemented by "Specifications for the Repairs of the Four Barracks Buildings…at Fort Hancock," dated August 1908 and prepared by Quartermaster General Aleshire's staff.[67]

Again, before the contract could be awarded, Civil Engineer Adams inspected the barracks in mid-December and made a "supplementary report on flooring in Barracks Nos. 22, 23, 24, and 25."[68] He found the floors, like the plumbing, to be in poor condition. The sandstone sills of the barracks' exterior doorways were badly worn. Those of Building 25 were the worst: the front doorway sill was worn down 1 $^{3}/_{8}$ inches, and the rear 1 $^{3}/_{16}$ inches. Adams recommended their replacement with granite. He also observed that the floors in all the first-story halls were worn "clear through the upper [finish] flooring and partially through the lower [subflooring]."[69] The finish flooring in the second-story halls was worn below the tongue. Adams thus recommended the replacement of all first-story flooring (except in the latrines), of the treads of the main stairway, and of the flooring in the second-story hall. He also called for the repair of flooring around the second-story doorways and in other areas where wear had been excessive. Metal treads were recommended for the stair treads, and for use at the front and rear entrances. Fortunately, these concerns had already been addressed in the specifications prepared by General Aleshire's staff.

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[66] *HRS, 1895-1948*, p. 319.

[67] *HRS, 1895-1948*, p. 317. "Specifications for the Repairs of the Four Barracks Buildings…at Fort Hancock," August 1908, doc. 206,541, Correspondence 1890-1914, Record Group 92, National Archives.

[68] Adams to Quartermaster General, Dec. 16, 1908 (doc. 250,934, General Correspondence, 1890-1914, Record Group 92, National Archives).

[69] *HRS, 1895-1948*, pp. 315-316.

On March 12, 1909, Constructing Quartermaster Lt. Hawkins invited proposals for the floor work. The proposal submitted by the same George W. Wines who had rehabilitated the lavatories was accepted in early May, even though it did not include all of the work items desired. Wines' men laid new maple flooring in the first story of all four barracks (except for the latrines). They repaired the second-story flooring with Georgia pine; they repaired the stair treads and risers; and they provided and installed iron thresholds. However, Lt. Hawkins had to readvertise for the remainder of the work. In late May, he accepted three proposals: that of Marbleoid to install composition flooring in the hallways of the barracks; that of the American Mason Company for installing metal treads on the stairways; and that of George W. Wines to install toe plates on the stairways. Wines and Marbleoid accomplished their tasks in the summer of 1909.[70]

It is assumed that all work adhered to the August 1908 specifications. If so, the new maple flooring was seven-eighths of an inch thick, showing a 3 ½-inch face. It was a no. 1 hard rock maple, kiln dried, tongue-and-groove, "in edge and edge, bored for blind nailing." It was finished with one heavy coat of raw linseed oil well rubbed in. The pine repairs were accomplished with tongue-and-groove, "kiln dried heart faced quarter sawed long leaf yellow pine, free from sap stains pitch pockets," and knots. The pine floorboards were to receive two coats (both being well rubbed in) of raw linseed oil, the second applied 24 hours after the first. One layer of floor felt was to be placed between the upper and lower flooring on each story.[71]

The specifications also describe how the stairways were to be repaired. The stair treads and risers were to be removed as required and replaced with the same types of wood selected for the new flooring. The new elements were also to be of the same dimensions and shape as the ones replaced. They would be joined tongue-and-groove, each riser into the tread above, and each tread fitted into the riser behind it, with both being let into the outside wall string. A new wall string was to be secured to the old wall string with round-headed brass screws. The new stringer was to be seven-eighths of an inch thick, with the quarter-round edge sawed to fit closely over the steps. Finally, new iron thresholds were to be inserted into the sandstone sills of the exterior doorways.[72]

**Work Not Accomplished**

***Roof Repairs***

Civil Engineer Adams also noted that the troops' heavy use of the roofs of the barracks' rear porches had caused the roofs to pull away from their flashings, which caused leaks over the rear doorways below.

> To correct this, Adams urged that "the wooden platform be covered with flashings to keep water from passing the supports and not rest directly onto the roof."[73]

However, the documentation suggests that the work was not done at this time.

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[70] *HRS, 1895-1948*, p. 318.

[71] *HRS, 1895-1948*, pp. 316-317.

[72] *HRS, 1895-1948*, p. 317.

[73] *HRS, 1895-1948*, p. 316.

## 1912-1918

A historic photograph shows the Fort Hancock barracks ca. 1912 (fig. 37). An inspection of the Sandy Hook Defenses in December 1918 found the general condition of quarters and barracks to be very good. The permanent buildings, which included Building 25, had been recently repainted and were in good repair.[74]

[74] *HRS, 1895-1948*, p. 402.

**Figure 30.** View of Fort Hancock from the top of Sandy Hook Light, looking west. Photograph shows the new mess halls built behind the barracks in 1905.

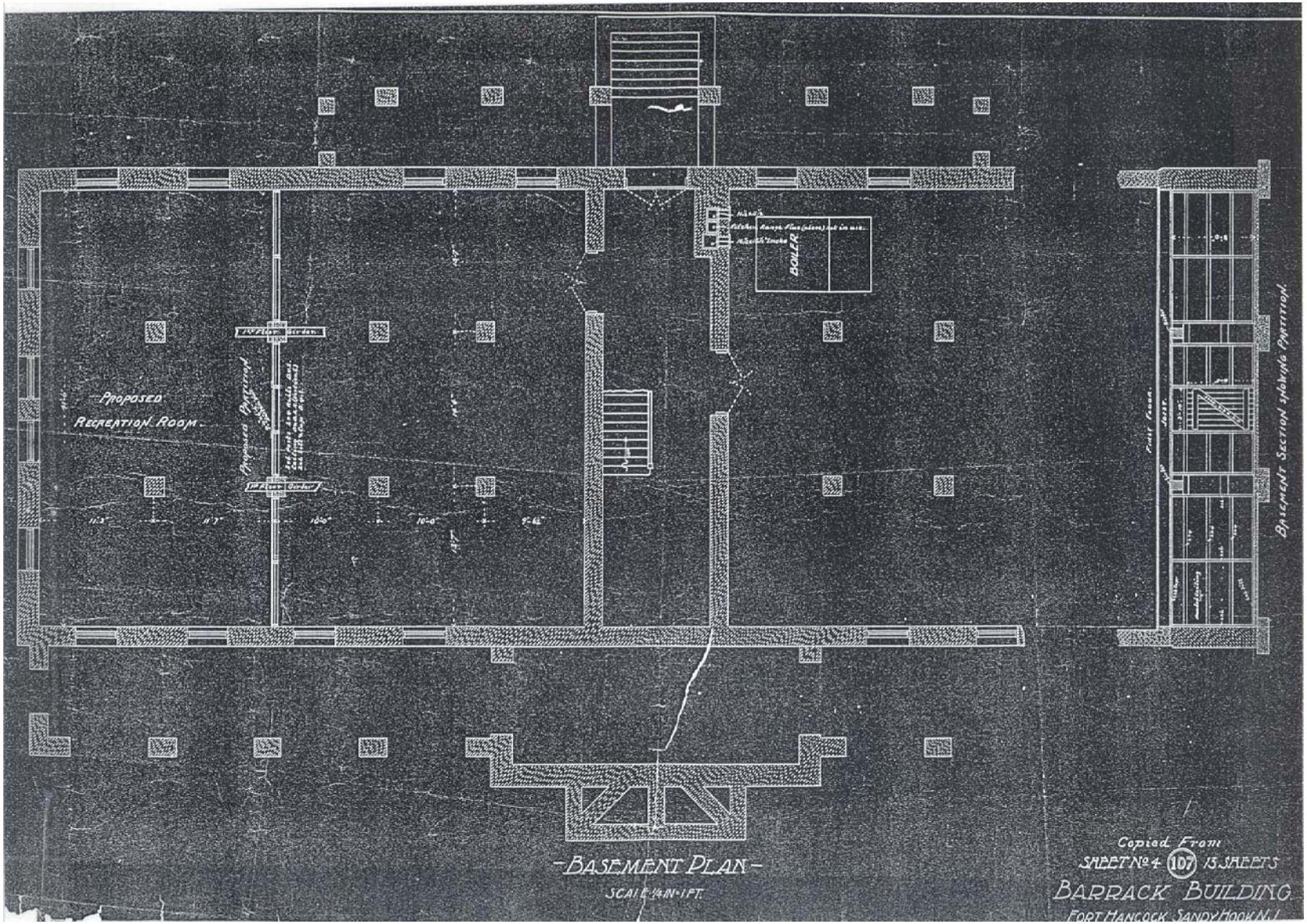


**Figure 31.** Basement plan, 1907-08, showing proposed recreation room.

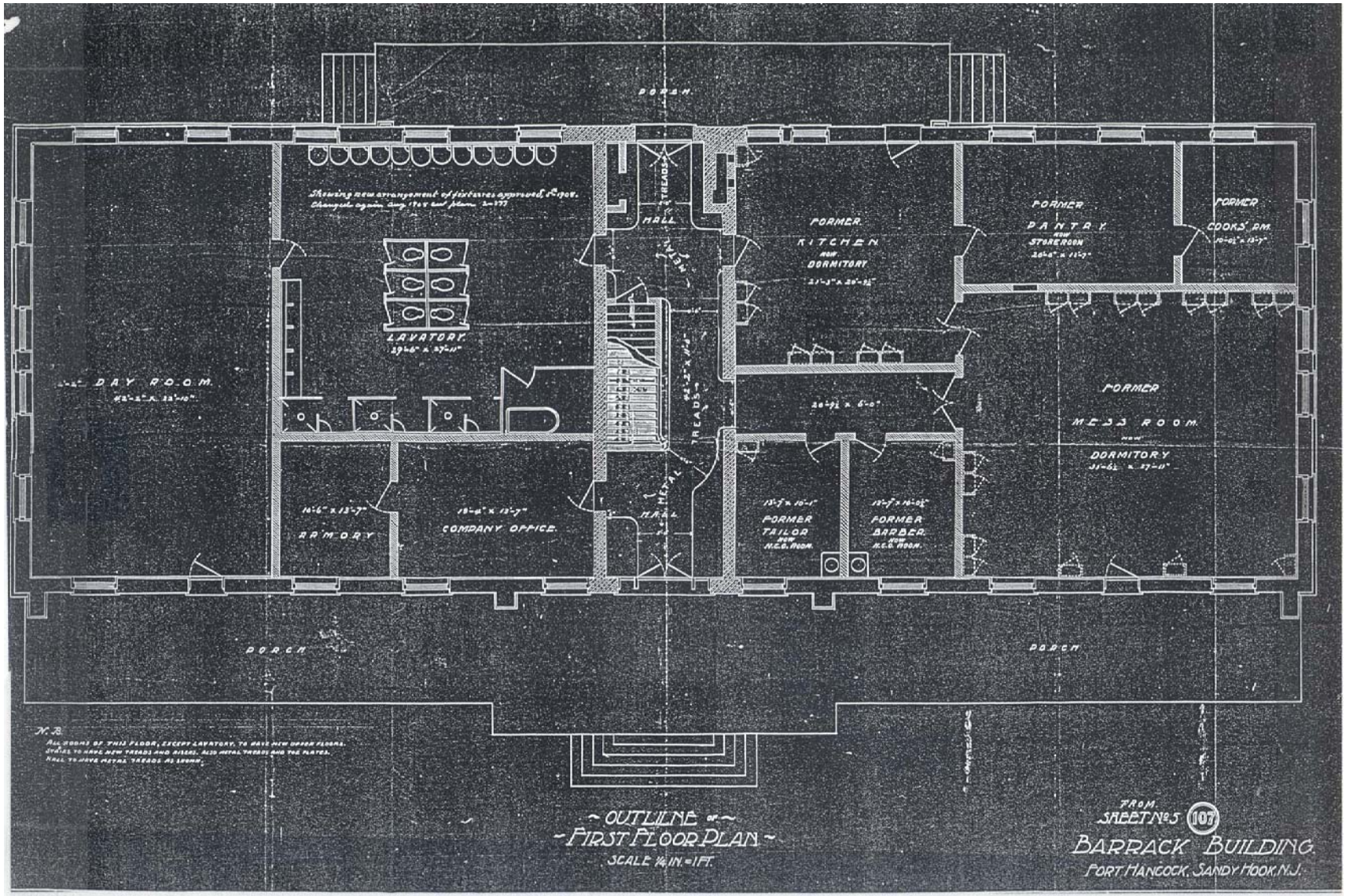


**Figure 32.** First-floor plan, 1908, showing changes in room use, and proposed alterations to floors and lavatory.

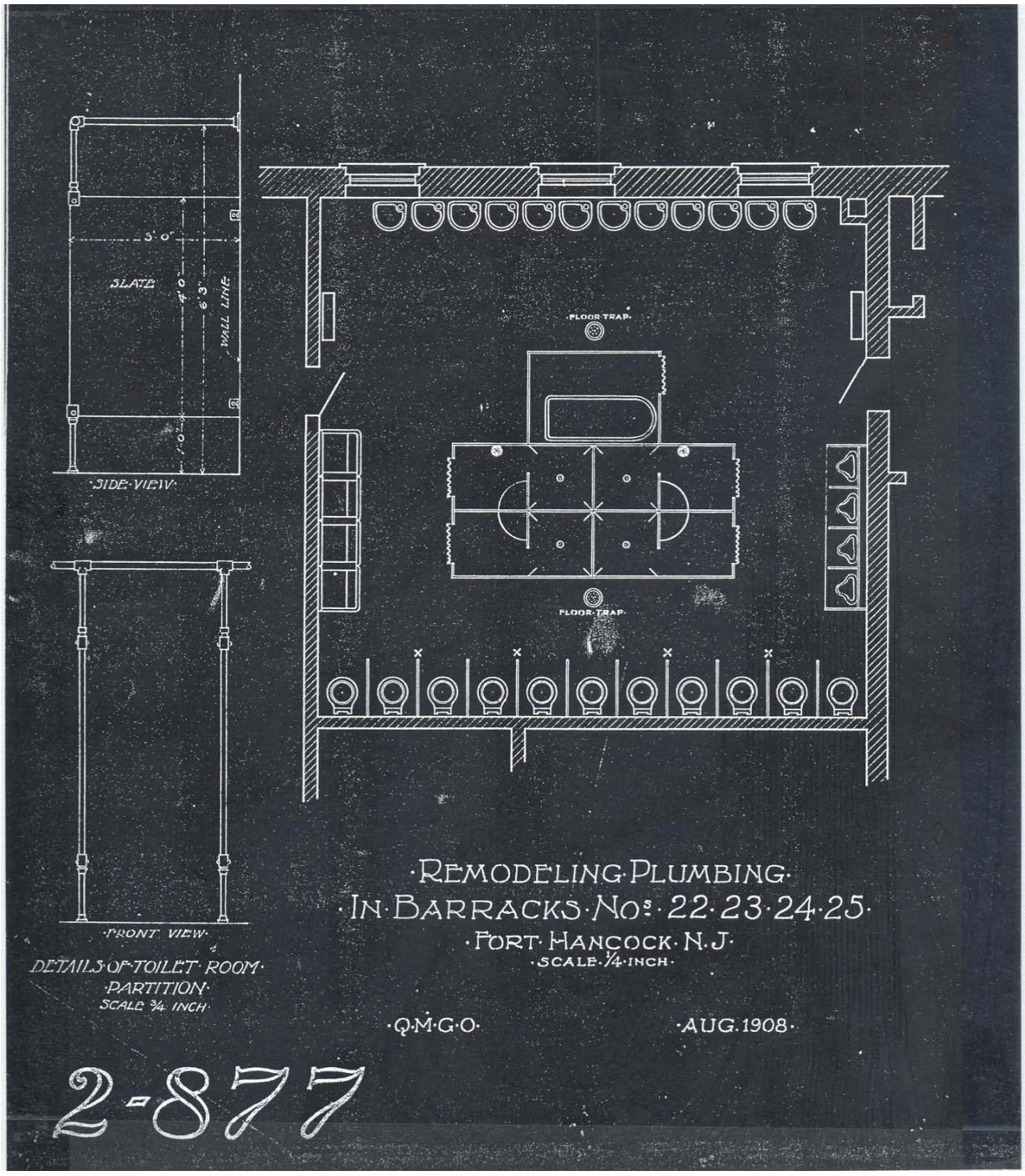


**Figure 33.** Plan titled "Remodeling Plumbing in Barracks Nos. 22-23-24-25, Fort Hancock, N.J.," August 1908.

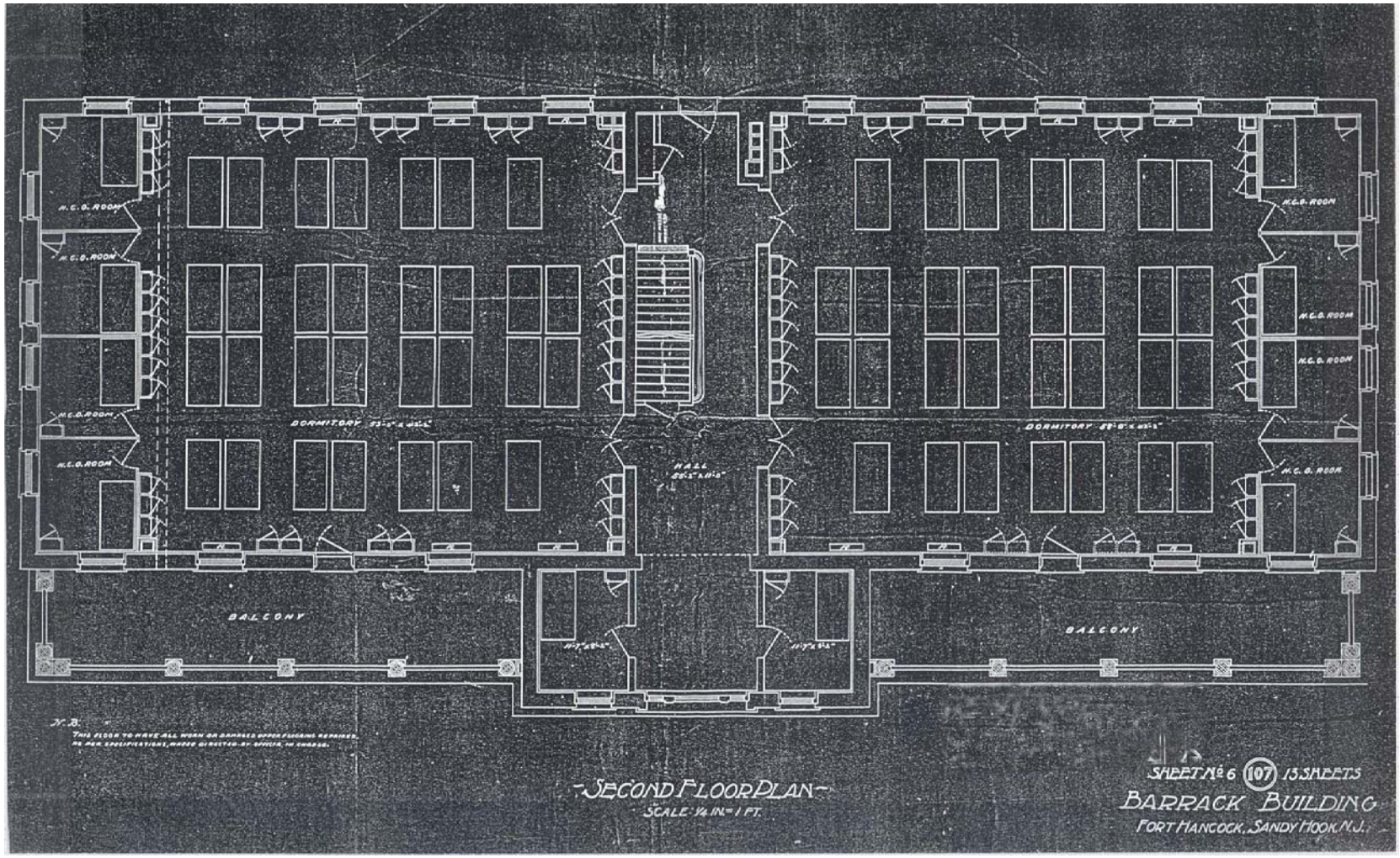


**Figure 34.** Second-floor plan, 1908, showing proposed alterations to floors.

**Figure 35.** Building 23, interior of dormitory, ca. 1908. The date is derived from the presence of metal wall lockers (installed here in 1907) and a footlocker belonging to Company 55, which left Fort Hancock in February 1909. Photograph also shows original partition screening NCO rooms, original metal ceiling and wooden lockers, and 1902 electric light fixtures.

**Figure 36.** Two-company barracks (Building 74), interior of dormitory, ca. 1909-14. Photograph shows wooden lockers.

**Figure 37.** View of main parade ground, looking southeast, ca. 1912. Photograph shows west and north elevations of all four original barracks, and new troop quarters built in 1908-09.

## 1925

Exterior repairs were badly needed at barracks 22-25. One inspector reported that the "weather now beats through in places and threatens" the buildings structurally.[75] He recommended the painting and repair of the valleys, gutters, downspouts, ridges, and rotted exterior woodwork. Replacement materials were to be galvanized iron gutters and downspouts, longleaf yellow pine flooring measuring 1 ½ inches by 2 ½ inches, 6-inch crown molding for cornices, 1 ¼-inch cove moldings for porches, and paint that conformed to U.S. specifications.

Building 25 was further damaged on August 29, when a "harmless" shell put along the roadway at the corner of Magruder and Hudson Roads exploded due to the placement next to it of a bucket of hot tar. The ensuing explosion caused $496.89 worth of damage, mostly broken glass, to the post exchange, fire station, mess hall 58, and barracks 25.[76]

Buildings 22 and 23 were repaired in 1925-26, and work on Buildings 24, 25, 58, and 82 was finished by April 1926, except for the painting. Purchase orders had been issued to local tinsmiths for repair or renewal of "tindecks," gutters, and downspouts.[77] Repairs to porch flooring and steps, window sashes, and cornices were carried out by the troops. The painting was finished by mid-May.[78]

The troops' repair of cornices may have included the replacement of the metal denticulate elements of the west porches' cornices with duplicates of wood. It is known that this work was performed sometime prior to 1989.[79] Graphic documentation cannot help date this change, since both metal and wooden dentils look the same in photographs and drawings. Another possible date for this work is 1930-31, when repairs were made to many elements, including the metal cornices."[80] Both dates seem rather early for the metal dentils to have deteriorated, but this could be explained by the fact that the gutters above them had failed.

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[75] *HRS, 1895-1948*, p. 492.

[76] *HRS, 1895-1948*, p. 492.

[77] A strict interpretation of the language of the 1926 purchase orders would suggest that the galvanized-iron gutters and downspouts originally specified had been omitted in favor of tin gutters and downspouts. However, popular parlance often called any thin sheet metal "tin," even when it was actually zinc, copper, iron, or steel [Pamela H. Simpson, *Cheap, Quick, and Easy: Imitative Architectural Materials 1870-1930* (University of Tennessee Press, 1999), p. 71].

[78] *HRS, 1895-1948*, p. 494.

[79] *Historic Structure Assessment Report, Fort Hancock-Building 25, Barrack, Gateway National Recreation Area, Sandy Hook Unit* (Douglasville, GA: Architectural Conservation Center, Georgia Institute of Technology, College of Architecture, 1989-1990), p. 13. Hereinafter *Assessment Report*.

[80] *HRS, 1895-1948*, pp. 495-496.

## 1928-1929

The documentation indicates that Buildings 22-24 were repaired, but not Building 25.[81] Various latrine fixtures were installed in November and December.[82] A dormitory in Building 25 is shown in a photograph dated ca. 1929 (fig. 38). That same year some "faulty interior wiring [was] corrected."[83]

## 1930-1934

More than $8,440 was expended in fiscal year 1931 on improvements to the four barracks.[84] A contract was let to install metal weather stripping on 20 windows and five doors at Building 25. The work ran from September 15 to November 26, 1930, and cost $85. A larger group of repairs was also begun in September 1930 but not completed until March 31, 1931. This work included "Repairs to metal cornice, gutters and downspouts; replacing porch steps and flooring, cornice and repairs to columns [probably all at east porch]; repairs to doors and windows; repairs to wood floors [probably interior floors]; repairs to plaster walls and ceilings [?]; replace lavatories [toilet bowls], repairs to showers, urinals and wash sinks; metal weather strips on doors and windows; repairs to light fixtures; replacing window and door screens [as needed]; painting of porches."[85]

Despite all this work, Building 25 was vacant in April 1934. The floors in some of the rooms needed to be replaced before the building could once again be used as a barracks, and the roof of the rear porch needed to be repaired.[86] However, a new 350-gallon water heater was installed in July of that year.[87] This suggests that a resumption of use was anticipated.

## 1936

A great deal of work was performed beginning in March 1936 and ending in January 1937. This apparently coincided with the occupancy of Building 25 by the 52nd Coast Artillery Headquarters Battery, which was quartered there from 1937 to 1940. The office of the fort's military police was on the first floor. It was small, since the force consisted of only four to five men. They were not referred to as MPs at the time.[88]

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[81] *HRS, 1895-1948*, pp. 494-495.

[82] *Post Record Book.*

[83] *Post Record Book.*

[84] *HRS, 1895-1948*, p. 496.

[85] *HRS, 1895-1948*, pp. 495-496, and *Post Record Book.*

[86] *HRS, 1895-1948*, p. 498.

[87] *Post Record Book.*

[88] Sandy Hook Unit curator Mary (Trocchia) Rasa, from a conversation with Albin Zwiezak, a private with the 52nd Coast Artillery. Mr. Zwiezak explained that prior to the official creation of the Military Police in 1942, the function was the responsibility of a detachment formed by taking a few soldiers from each company for a time.

Work items included:

> Repairing interior water pipes with copper; installation of new urinals, wash bowls and water closets; replacement of latrine floors, complete repainting of interior; renovation and replacement of doors and locks; replacement of electric light fixtures; replacement of porch flooring and repairs to downspouts and gutters.

The phrase "replacement of latrine floors" may have referred to the pouring of the current concrete floor in the lavatory. Interestingly, concrete supports for it can be seen today in the ceiling of the north side of the basement.

A photograph taken in 1937 (fig. 39), during the occupancy of Building 25 by the 52nd Coast Artillery Headquarters Battery, suggests that some changes in first-story room usage had occurred since 1907-09. These changes are documented on a first-floor plan taken from the 1938-42 *Post Record Book* (fig. 41). They are as follows:

| **1896 Room Names** | **1907-1909 Room Names** | **1938-42 Room Names** |
|---|---|---|
| day room | same | dormitory |
| mess room | dormitory | day room |
| kitchen | dormitory | reading room |
| pantry | store room | master gunner's office |
| cook's room | none | store room |
| tailor's room | NCO room | same |
| barber's room | NCO room | same |
| company office | same | orderly room |
| armory | same | "B.C. Office" |

Figure 39 shows the interior of a dormitory. The section of wall seen at the back is uninterrupted by doorways or windows. The only room in the entire building that had such a wall was the original first-story day room. This suggests that the former day room had been converted to a dormitory by 1937. Figure 40 is an exterior view of Building 25 at about this time.

## 1938-1940

Building 25 was one of four structures that underwent extensive rehabilitation in fiscal years 1938-40. The FY 1938 work on Building 25 was described as follows:

> Carpenter repairs to interior and exterior; repaired all screens. Repaired all plumbing fixtures and replaced new pipe where needed. Pointed up brickwork and retopped chimney. Inspected and repaired all electrical fixtures and wiring. Repaired and replaced gutters and downspouts. Installed one panel switchboard.[89]

[89] *Post Record Book.*

Work must have continued past FY 1938, since the *Post Record Book* indicates that $4,070 was expended on Building 25 in FY 1939, with an additional $2,646 being spent in FY 1940. By contrast, only $461 was spent in FY 1941.

Tasks accomplished in FY 1940 by the Works Progress Administration were as follows:

> Sheet metal repairs to roof. Repair of heating boilers. Repair of smoke pipe and plumbing repairs. Plaster repairs to walls and ceiling. Sanding and finishing of all new floors. Removing and replacing of radiators for carpenters. Laying of new floors and overhauling doors and sash. Repair of metal ceilings. Checking of entire electrical system and installation of necessary electrical fixtures. Painting of Q.M. squadroom and walls of dayroom. Patching of plaster in squadroom, latrine and two (2) Sergeants' rooms.[90]

First- and second-floor plans from this period are included in the 1938-42 *Post Record Book* (see figs. 41-42). As explained previously, the first-floor plan shows that changes in room usage had occurred since 1907-09. The second-floor plan shows that no changes had been made to this level; the NCO rooms at the north and south ends were still in place.

These plans suggest that all of the steam radiators were replaced as part of the 1938-40 work. It is known that most of the radiators currently in place have fewer fins than the original radiators, based on the location of the holes in the floorboards left by the original radiator pipes. The written documentation does not give any date for the radiators' replacement. However, figures 41-42 include notations giving a height measurement and the number of fins for each unit. The fin numbers mostly correspond to the radiators present today. More significantly, the height measurements given are taller than the actual radiators, whose height had to be reduced for them to fit under the windows. If the radiators shown in figures 41-42 had been in place when the drawings were made, the correct height measurements would probably have been given. This suggests that the current radiators were an unknown quantity at that time, i.e., in the process of being installed.

[90] *Post Record Book.*

**Figure 38.** Building 25, interior of dormitory, ca. 1929. Photograph shows members of the 7th Coast Artillery Headquarters Battery, a unit quartered in Building 25 from 1927 to 1930. Photograph also shows (at rear left) a doorway leading to the center hall.

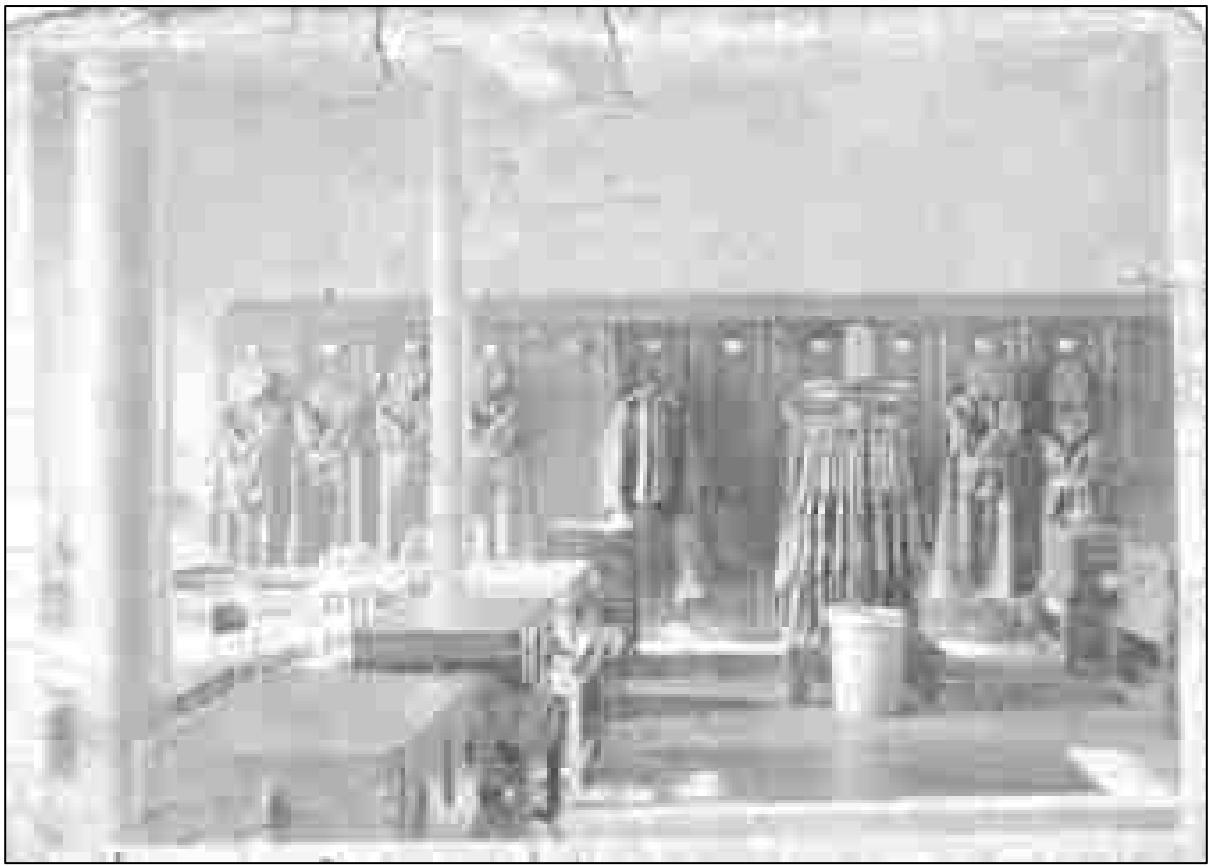

**Figure 39.** Building 25, interior of dormitory (probably original day room) during occupancy by the 52nd Headquarters Battery, 1937.

**Figure 40.** View of main parade ground, looking east, 1938. Photograph shows west elevation of Building 25.

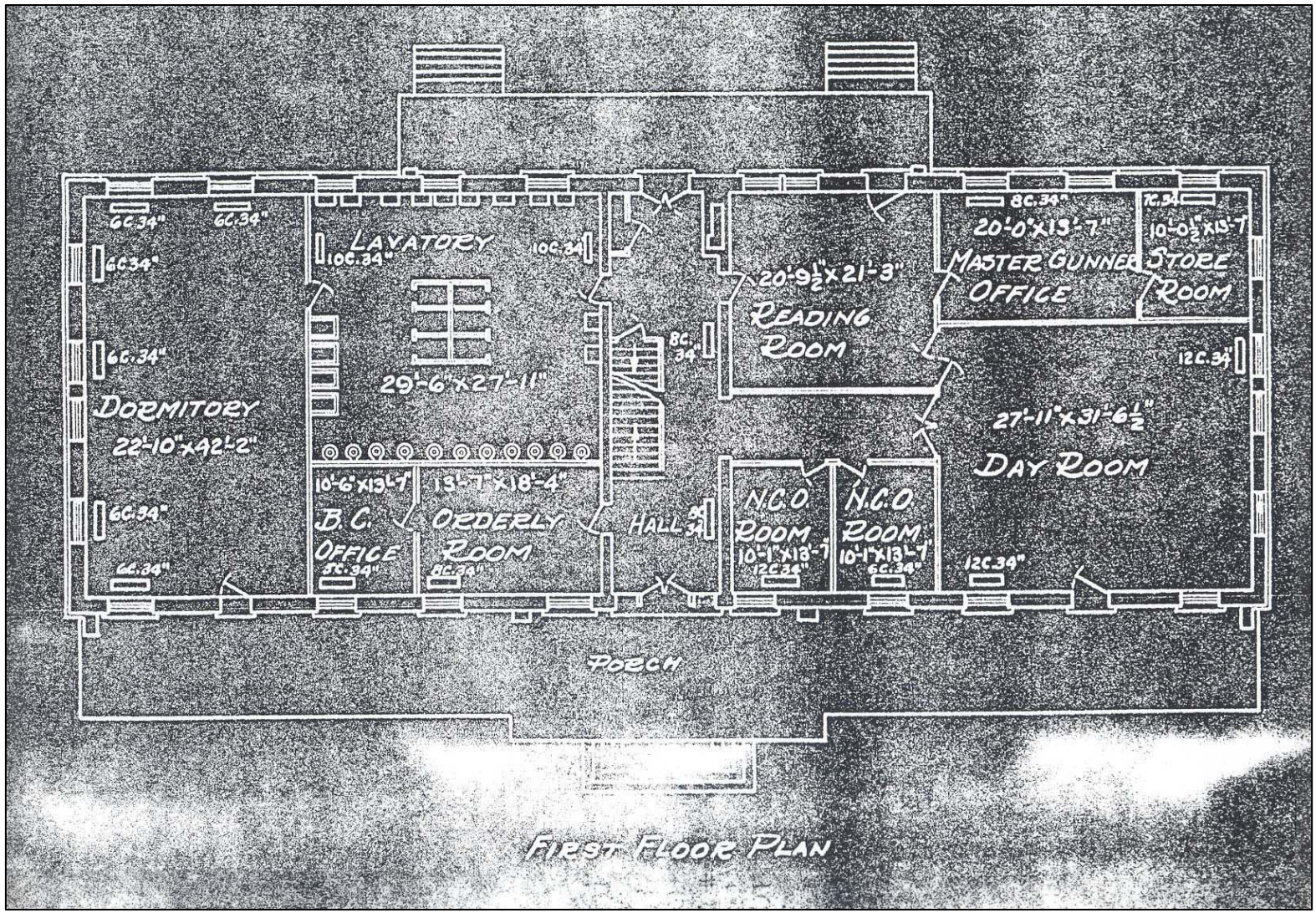


**Figure 41.** Building 25, plan of first floor, ca. 1938-42.

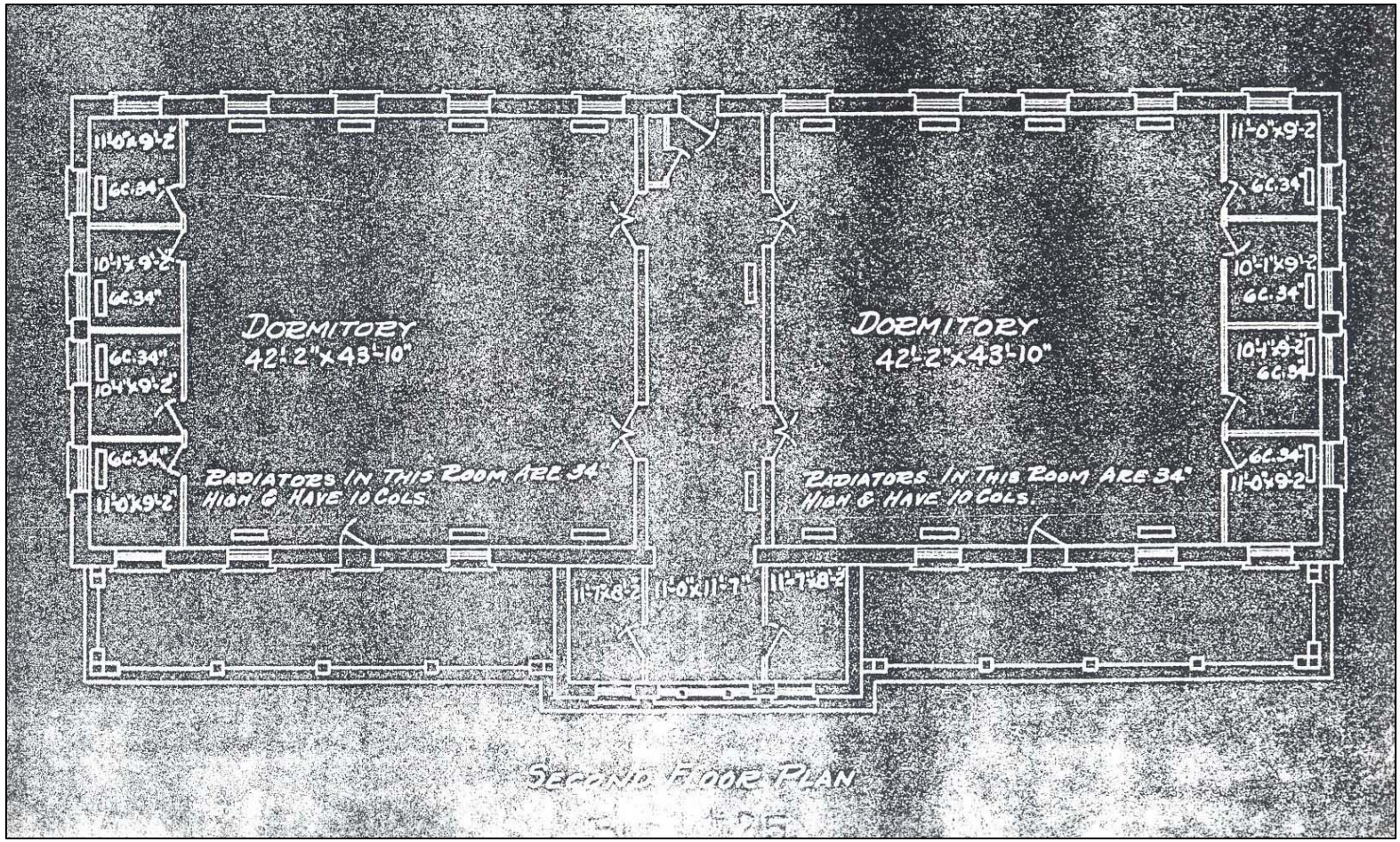


**Figure 42.** Building 25, plan of second floor, ca. 1938-42.

The exterior of Building 25 is seen in a photograph showing activity on the parade ground in 1943 (fig. 43).

## Refurbishment for WAACs, 1943

In the summer of 1943, Fort Hancock received an initial contingent of members of the Women's Army Auxiliary Corps (WAACs). The army was the first of America's military branches to enlist women. The mission of the WAACs was to provide support to the Army by releasing men from administrative duties to serve in combat. Despite opposition on several fronts, Congress passed the Women's Army Auxiliary Corps bill, and it was signed into law on May 14, 1942.[91]

Considerable thought was given to where the women would be quartered at Fort Hancock. The army had great concerns about the living arrangements for women. Army regulations required that men's and women's barracks be separated by either 150 feet or an intervening structure. At Fort Hancock, it was decided to quarter the WAACs in Building 25, and to convert the adjacent barracks 24 into the post headquarters building.[92] Refurbishment work apparently began in June 1943, but it was not completed by the time the first contingent–seven WAACs and two officers–arrived on June 23. They were quartered at the nurses' quarters at the Station Hospital until Building 25 was finished.[93] The WAAC detachment was assigned to the 1225th Army Service Unit, Second Service Command. This unit had been organized at Sandy Hook in 1941 to provide administrative and logistical support to tactical commands.[94] The women were soon at work at the post exchange, motor pool, post headquarters, mess halls, commissary, finance office, and dental office.[95]

[91] Mary (Trocchia) Rasa, "The Women's Army Corps" (NPS pamphlet, Gateway NRA, Sandy Hook Unit.)

[92] "The Women's Army Corps."

[93] *The Foghorn*, June 24, 1943.

[94] Bearss, *Historic Resource Study, Fort Hancock: 1948-1974, Sandy Hook Unit, Gateway National Recreation Area, Monmouth County, New Jersey* (Denver: U.S. Department of the Interior, National Park Service, Denver Service Center, Historic Preservation Division, Nov. 1982), p. 3. Hereinafter *HRS, 1948-1974*.

[95] *The Foghorn*, June 24, 1943.

The post newspaper *The Foghorn* described the repairs and renovation of the interior of Building 25 as follows:

> The interior of the two-story building, formerly the headquarters of the Guardsmen unit,[96] has been done over completely. All walls and ceilings have been repainted, floors scraped and shellacked, and additional showers and wash basins installed. A room on the south side of the main floor of the building has been converted into a day room and the basement into a laundry, equipped with wash tubs, drying racks and ironing boards.[97]
>
> Sleeping accommodations for the WAAC contingent will not differ from those of enlisted men. The WAACs will sleep in double deck wooden beds. Each auxiliary will be provided with a GI foot locker and wall locker.
>
> WAAC day room equipment is expected to arrive shortly. The room will be equipped with easy chairs, settees, card and writing tables, a piano, radio, ping pong table and reading lamps.
>
> …The Day Room will be painted in a color scheme selected by the commanding officer of the contingent.[98]

Unlike the men, the WAAC barracks received sheets, window shades, showers and toilets with curtains, in addition to a laundry.[99]

The *Post Record Book* cites some of the plumbing and electrical work done, but does not include painting.

Shortly after the first WAACs arrived at Fort Hancock, their status changed. President Roosevelt signed legislation the first week in July 1943 that created the Women's Army Corps (WAC). This allowed women to become regular Army personnel, rather than auxiliary personnel, with benefits, privileges, and rights equal to those of men.[100] Figure 44 shows the Fort Hancock WAACs taking the Oath of Allegiance to become WACS in September 1943, with Building 25 in the background. Figure 45 shows the sign on the front of Building 25 being changed accordingly. Figures 46-47 show the interior of Building 25 on September 21, 1943.

By February 1944, there were approximately 70 WACs assigned to Fort Hancock.[101] Figure 48 shows WACs being honored in 1944, again with Building 25 in the background. Figure 49 clearly shows the front doorway at the time of WAC occupancy of Building 25; the doorway's appearance matches that seen in the original construction drawings from 1896 (fig. 17).

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[96] This phrase probably refers to the military police that had occupied an office in the first story of Building 25.

[97] Presumably the "room on the south side of the main floor" is the original mess room

[98] *The Foghorn*, June 24, 1943.

[99] "The Women's Army Corps."

[100] *The Foghorn*, July 8, 1943.

[101] *The Foghorn*, February 17, 1944.

**Figure 43.** View of main parade ground, looking northeast, 1943.

**Figure 44.** Members of the Women's Army Auxiliary Corps (WAAC) take the Oath of Allegiance to become members of the newly created Women's Army Corps (WAC), September 1943.

**Figure 45.** Members of the Women's Army Corps celebrating their new status as full members of the Army, by crossing out the second "A" in "WAAC," 1943.

**Figure 46.** Building 25, interior of dormitory, September 21, 1943.

**Figure 47.** Building 25, interior, September 21, 1943.

**Figure 48.** Members of the Women's Army Corps, 1944. Photograph shows part of Building 25's pavilion.

**Figure 49.** Members of the Women's Army Corps and their escorts, 1943-45. Photograph shows front doorway of Building 25.

# Post-World War II

## Circa 1950

### Repairs

In the fall of 1947, Fort Hancock began to be used for National Guard and Army Reserve activities. Some repairs were made to barracks 24 and 25 in December 1948.[102] Flashings were recaulked, and railings and posts were repaired and repainted. Barracks 24 was reroofed with 90-lb. asphalt shingles.

### Return of WACs

The 1225th Army Service Unit–to which the World War-II WACs were assigned–finished its service at Fort Hancock on December 31, 1949, and Fort Hancock was deactivated in June 1950.[103] However, the advent of the Korean War caused the fort to be reactivated in April 1951, to provide anti-aircraft defense and training. The 1225th Army Service Unit was reorganized to provide support.[104] Fort Hancock was closed again after the Korean War, in 1953. However, this time the 1225th remained active, to provide logistical and administrative support to the radar and anti-aircraft installations elsewhere at Sandy Hook.[105] Apparently a second contingent of WACs arrived in 1955: Building 25 was updated in the summer of that year for their occupancy.[106] Women's lavatory facilities were installed in the latrine, after urinals were removed. (As described previously, work performed in 1943 for the building's first occupancy by WACs included the installation of additional showers and wash basins, but apparently not new toilets.) Laundry facilities for 142 WACS were also added; the facilities installed in 1943 would not have been sufficient for such a large number group. A 1956 photograph shows one of the dormitories in Building 24 (fig. 50); it is possible that the interior of Building 25 looked similar.

## Circa 1960

### Documentation of Permanent Buildings

A set of three floor plans were prepared for Buildings 23 and 24 in 1959 (figs. 51-53). No similar drawings were found for Building 25. However, figures 59-61 may indeed be applicable to Building 25. First, they show the same room arrangement as seen in the 1938-42 drawings done for Building 25. Second, they show alterations that we know were also done to Building 25. For example, figure 60 shows that the steps originally at both ends of the barracks' east porches had been

[102] *HRS, 1948-1974*, p. 173.

[103] *HRS, 1948-1974*, pp. 3, 18.

[104] *HRS, 1948-1974*, pp. 21-24.

[105] *HRS, 1948-1974*, p. 29.

[106] *HRS, 1948-1974*, p. 173.

removed by 1959, and new ones built on either side of the basement entrance. This work was also accomplished at Building 25 sometime before 1964 (fig. 64).

**Lavatory Changes**

A July 18, 1960, drawing titled "Rehabilitation of Latrine, Building No. 25" (fig. 54) was prepared for the first-story lavatory. It called for a new north-south partition to be built in the middle of the room, with sinks on either side and containing electrical outlets.

## 1964

The Headquarters and Headquarters Battery of the 52nd Artillery (Air Defense) Brigade transferred to Fort Hancock from the Highlands Army Air Defense site on January 26, 1964. It is likely that the brigade's headquarters moved into Building 25 at about that time. This is inferred from a set of floor plans dated May 1964 (figs. 55-57); the set's title block documents the presence of the headquarters, and suggests that the plans depicted existing conditions, rather than proposed changes. The drawings show that numerous changes were made to accommodate this change from housing to offices. The most noticeable alteration was the subdivision of larger spaces, as follows:

- the south side of the basement had a vault and a message center along the south end of the east wall, and a "reproduction room" in the northwest corner;
- the original mess room in the southwest corner of the first story was subdivided into four offices;
- the lavatory was subdivided into separate latrines for officers and enlisted men;
- the original day room at the north end had two small rooms created in its northeast corner; and
- the south dormitory was partitioned to create three small offices along the south wall, with the remaining space divided in two.

Paint study indicates that nearly all exterior and interior doors were replaced with modern doors at this time. This work generally included modification of the doorway openings in which the doors were hung; typically, double doorways were reduced in size to accommodate single doors.

Another alteration seen for the first time in the plans is the basement entry along the south wall. It may have been needed to provide sufficient egress for the new activities in the basement. Two other alterations that also seem to have been part of the conversion were performed in June and September 1964. One of these changes is documented by a June 9 drawing titled "New Fire Escape Ladder to be Installed Rear Bldg. No. 25" (fig. 58). This was a metal ladder attached to the east side of the rear porch at a point 5 feet 3 inches from the south end. Again, it may well have been needed to provide sufficient egress for the new second-story offices. The second change is documented by a September 3 drawing titled "New Masonry Steps and Porch Deck, Bldg. No. 25" (fig. 59). It calls for the wooden porch steps on the north side of the basement entryway to be removed; the steps on the south side of the entryway were to receive "new conc. steps to replaced exist. wood steps." This work may have been needed to accommodate the traffic generated by the conversion to brigade headquarters.

The conversion of Building 25 from a barracks to brigade headquarters may also have included the replacement in kind of all of the building's wooden window sashes. There is no documentation for such work as part of the conversion. However, it is known that this replacement

was accomplished prior to 1989,[107] and 1964 seems the most likely time, for several reasons. First, the 1988 historic structure report for the parade-ground structures calls for the refinishing of 80 sashes at Building 25, which suggests that the sashes had been in place long enough to need some work by that time.[108] Second, paint study indicates a 1964 date for the sash replacement. Third, the documentation suggests that Building 25's sashes were replaced when the sashes of the other barracks were not–i.e., at a time when Building 25 was treated differently and better than the other barracks. (For example, the draft historic structure report states that 21 sashes in Building 22 were still "extremely deteriorated" in 1979.[109])

## Circa 1970

### Use by the U.S. Army Reserve

The Headquarters and Headquarters Battery of the 52nd Artillery (Air Defense) Brigade probably occupied Building 25 until the unit was reassigned back to the Highlands Army Air Defense Site in September 1967.[110] The departure of the regular Army was followed by the establishment of a U.S. Army Reserve Center at Fort Hancock circa 1967-69 (see fig. 60). By April 1974, the Army Reserve Center consisted of Buildings 24 and 25, Mess Halls 55-56-57, and a fenced-in motor pool area along the north side of Gunnison Road. The barracks' dormitories became classrooms and drill halls, while the offices and the lavatories remained same. This occupation kept the interiors of the two buildings well maintained.

### Replacement of Slate Roof

In 1973, the original slate roof was replaced with asphalt composition shingles.[111]

## 1976

### Stabilization Program

A stabilization program was proposed in 1976 for 28 masonry buildings in the area of Fort Hancock's Parade Ground, including Building 25. Water penetration and structural problems were cited as the reason such work was needed. The project was to be "performed under the direction and supervision of a Denver Service Center Exhibit Specialist and Historical Architect."[112] A set of 19 sheets of drawings was prepared for all of the structures involved, with various building elements

[107] *Assessment Report*, p. 7.

[108] *HSR*, p. 234.

[109] *HSR Draft*, p. 189.

[110] Thomas Hoffman, Sandy Hook Unit historian, to Sharon Ofenstein, Sept. 26, 2001.

[111] *HSR*, p. 233.

[112] Letter, Jack E. Stark, Regional Director, North Atlantic Region, NPS, to David J. Bardin, Commissioner, Department of Environmental Protection, New Jersey, November 1, 1976.

annotated with a numbering system. One sheet (no. 10) depicts all four elevations of the enlisted men's barracks (see figs. 61-64). Three additional sheets (nos. 11-13) show details. Unfortunately, no specifications or completion report could be found at either the park or the Denver Service Center to explain what work related to the various numbers. The building elements so numbered include the oculi, the main cornice, the Palladian-style window, the front porch, the cornices of the front and rear porches, the stone belt course and brick arch caps on the front pavilion, and all doorways and windows. Presumably the stabilization program focused on these elements. However, it is not known if all of the elements were treated on all four barracks, nor is it known how long the project continued. For example, Building 25's porches were still in poor condition in 1978-79.[113] Either these porches were not part of the 1976 stabilization, or else the project was still ongoing in 1979.

### Replacement of Portions of Main Cornice

At some point prior to the removal of the west porches in 1989-90, the horizontal sections of the main roof's metal cornice, including the eave returns, were removed and replaced with a simple wooden box cornice.[114] It is possible that this work was done in 1976. A 1943 photograph (fig. 44) shows the cornice as being intact. The elevation drawings done for the 1976 stabilization (figs. 61-64) show the original cornice still in place; no number is assigned to it, which suggests that it was not part of the work. The 1979 draft HSR states that the "pressed metal cornice" on Building 22 was still deteriorated at that time, and that the conditions at Building 25 were "similar to Building No. 22."[115] However, there is no record of cornice replacement anytime after 1976 but before 1989.

## Circa 1980

### Occupancy by the Marine Academy of Science and Technology

The U.S. Army Reserve Center relocated circa 1981-82 from Fort Hancock to Lincroft, NJ. The buildings that it vacated–Barracks 24 and 25, and Mess Halls 55-56-57–were soon reoccupied, by the Marine Academy of Science and Technology (MAST). This organization used Building 25 as classrooms until the end of the 1997-98 school year.[116]

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[113] *HSR Draft*, p. 208.

[114] *Assessment Report*, p. 13.

[115] *HSR Draft*, pp. 184, 208.

[116] Principal's office, Marine Academy of Science and Technology.

## Circa 1990

### Dismantling of the West Porches

A contract that ran from October to December 1989 "removed 10 wood porches" from the enlisted men's barracks at Fort Hancock.[117] The total of 10 probably included the two west porches on all four barracks, and the rear porches of barracks 23 and 24. (The rear porches of Buildings 22 and 25 were excluded from the contract.) The completion report for the work said the following:

> With replacement of the gutter and cornice system by undersized modern components and the lack of any maintenance over the past 25 years the porches of the barracks have rapidly rotted to where they are in advanced stages of collapse….
>
> Because of the lack of funds to restore the porches via the cyclical maintenance program and the eminent [sic] safety hazard the porches presented to the public it was decided in the summer of 1989 that they should be documented, dismantled and key architectural components salvaged….
>
> The aim of this contract was first to remove the porches so further damage to the barracks would be arrested and to eliminate the public safety hazards…. reusable and salvageable architectural components would be saved for later actual reuse or as patterns when the porches are to be reconstructed. Since the original 1896 drawings for the Barracks and its porches still exist showing clearly original design, the field measuring and recording was focused on construction/framing details and full-size profiles. These field notes were augmented by both b/w photographs and color slides. All documentation has been compiled in a project note book.[118]

All of the porches' components were removed except for the brick piers of the west porches, the several sections of cast-iron balustrade that were still firmly attached to the piers, and the center portions of the porches' first floor (to maintain access to the main entrance). The park staff saved representative pieces of the porches, and labeled and stored them in Building 125 for future reuse in situ or as models for reproduction.[119] The piers were braced and capped with wood. The remaining sections of cast-iron balustrade and the metal anchors that attached the balustrades to the piers were wire-brushed and primed.

This demolition work eliminated the immediate safety hazards related to the porches, but it did not address the failed gutter and drainage system that had caused the porches' deterioration. There was clear evidence afterward that moisture was still getting into masonry walls.[120]

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[117] CX1600-9-0044, "Dismantling of Historic Porches, Enlisted Men's Barracks, Fort Hancock, Sandy Hook, NJ." Awarded to Tri-Gem Builders. For further information, see W. Lewis Barlow IV, AIA, "Completion Report, Historic Porches Dismantling, Fort Hancock – Sandy Hook Unit, Gateway National Recreation Area, Sandy Hook, New Jersey" (NPS: North Atlantic Region, Cultural Resources Center, Building Conservation Branch, Feb. 1990).

[118] "Completion Report, Historic Porches Dismantling," Project Summary. The "project note book" referenced has not been found at the Cultural Resources Center.

[119] The porch elements have since been moved to Building 49.

[120] NPS memorandum, Manager, Cultural Resources Center, to Superintendent, Gateway NRA, March 13, 1990.

**Emergency Stabilization, 1991-1993**

During this period, 26 of Fort Hancock's "highest priority" buildings were stabilized. The completion report describes the work as follows:

> The major project objective was to stabilize the worst of the exterior envelope failures so as to allow them to function properly for a period of five years. Our priorities were to focus on repair of bulging brick walls, repair to leak roof covers, replacement of caulk at joints, closing in cornices, installing vent and light panels in the unoccupied structures, installing temporary gutters, and replacing missing window panes.[121]

Building 25 continued to be occupied by MAST, so it was in better condition than the unoccupied barracks (Buildings 23 and 24). Even so, its brickwork needed repointing, and metal and wooden trim elements needed painting. A small tree was growing out of the south wall just below the oculus. The ends of the porch floor joists outside the main entrance had rotted where they were let into the masonry building wall. The eave returns on the south wall of Building 25 were falling off. Approximately three-quarters of the gutters and leaders were missing, especially on the west elevation and the sides of the pavilion. Several window panes were broken.

Stabilization work on Building 25 included the following:

- rotted porch floor joists were replaced with pressure-treated material.
- the open pockets left in the masonry by removed joists were cleaned out and filled with a closed-cell polyurethane foam, which was tooled into place and painted with two coats of an acrylic latex paint.
- minimal repairs were made to the roof.
- both eave returns were repaired
- aluminum ogee gutters were installed as a temporary replacement.
- window sashes were reglazed rather than boarded over, since the building continued to be occupied.
- joints at window and doorway openings were caulked.

This project may have included the removal of the northern roof ventilator, of which only the base remains today. Both ventilators were in place in 1989; one was in good condition (presumably the extant southern one), and one was in poor condition (presumably the missing northern one).[122]

In 1996, the current temporary wooden fire escapes were built on both sides of the west elevation, to enable MAST to meet safety-code requirements.[123]

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[121] C. Thomas Ballos, "Completion Report, Emergency Stabilization of Historic Fort Hancock, Gateway National Recreation Area, Sandy Hook Unit" (Building Conservation Branch, Cultural Resources Center, North Atlantic Region, 1993), Face Sheet.

[122] *Assessment Report*, p. 13.

[123] Sandy Hook Unit curator Mary (Trocchia) Rasa to Sharon Ofenstein, Jan. 8, 2002, and MAST principal Dr. Paul Christopher to Sharon Ofenstein, Feb. 19, 2002.

**1998**

In the late 1990's, the Sandy Hook Unit was contemplating converting Building 25 into a new visitor center. The park architect thus prepared a set of existing-conditions drawings for the structure in October 1998. The set included a first- and second-floor plan, an east elevation, and a section through the rear porch (figs. 65-68).

A masonry-repair contract was let in 1998-99 to Santamauro Contracting of Belmar, NJ, to repair 12 of Building 25's brick jack-arch lintels. The original steel lintel supports were to be replaced with stainless-steel supports; 56 custom-cut bricks were to be installed to recreate each jack-arch lintel; and the surrounding masonry was to be repaired. It was estimated that each of the 12 lintels would require 15 square feet of repairs, for a total of 180 square feet. However, by the time the repairs started, the brickwork was so deteriorated that much more extensive repairs needed to be done. The 180 square feet became 450 square feet, and the project ran out of money. Thus, only seven lintels were replaced, six on the west side and one on the south side.[124]

In 2000, the rear porch was rebuilt by SAHO park staff, in an effort to prevent the porch from collapsing while retaining all extant original elements. As much original fabric was saved and reused as possible, including the columns, the roof framing, and some molding and trim elements. The roof was repaired, and reproduction molding and trim was made to replace missing pieces. The floor framing and decking were deteriorated beyond repair, so they were replaced with reproduction material. The arrangement of steps up to the porch was not changed back to the original appearance, in which two sets of steps were present, one at each end of the porch.

[124] Sandy Hook Unit architect David Crotty to Sharon Ofenstein, Feb. 15, 2002.

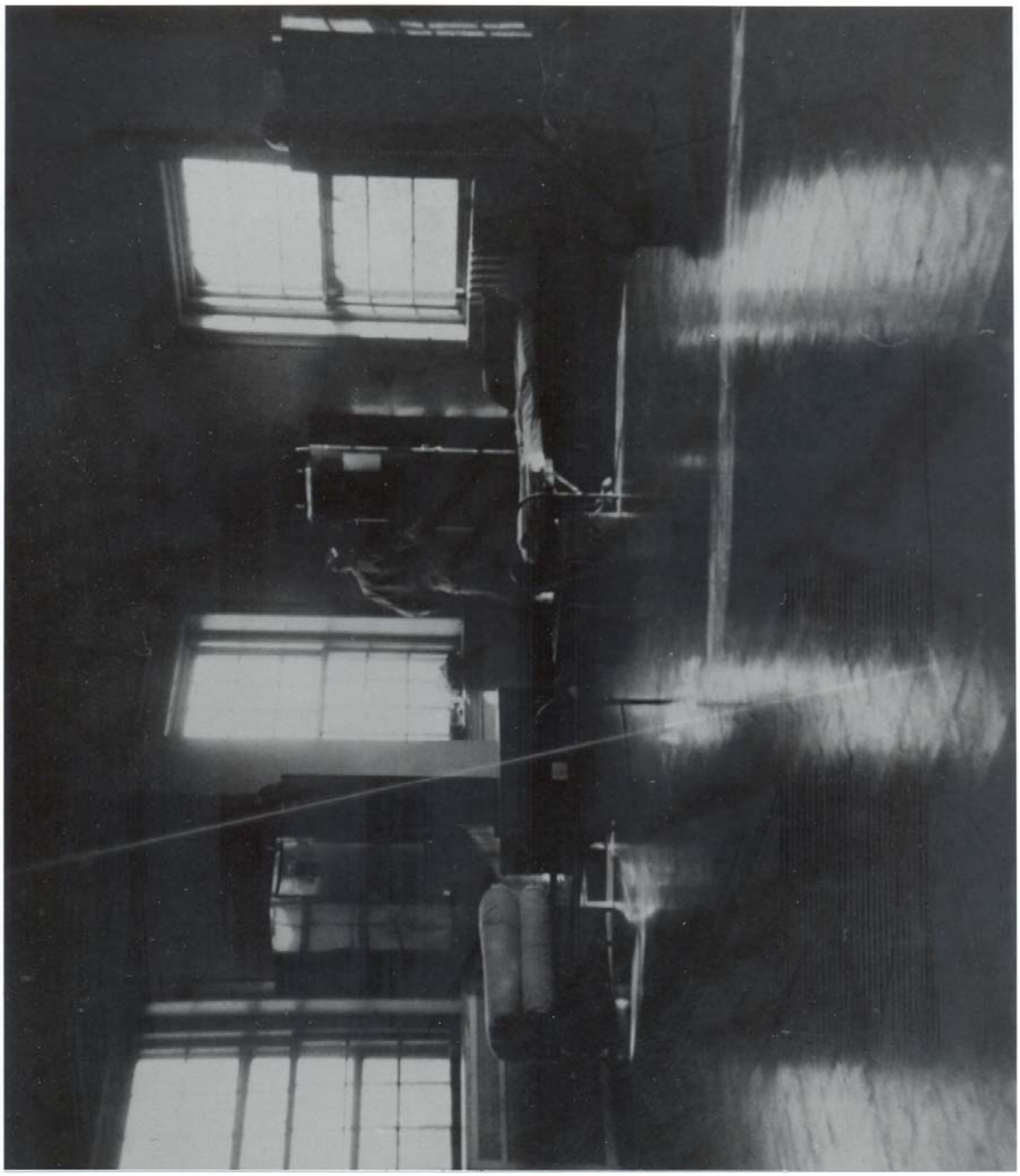

**Figure 50.** Building 24, southeast corner of dormitory, 1956.

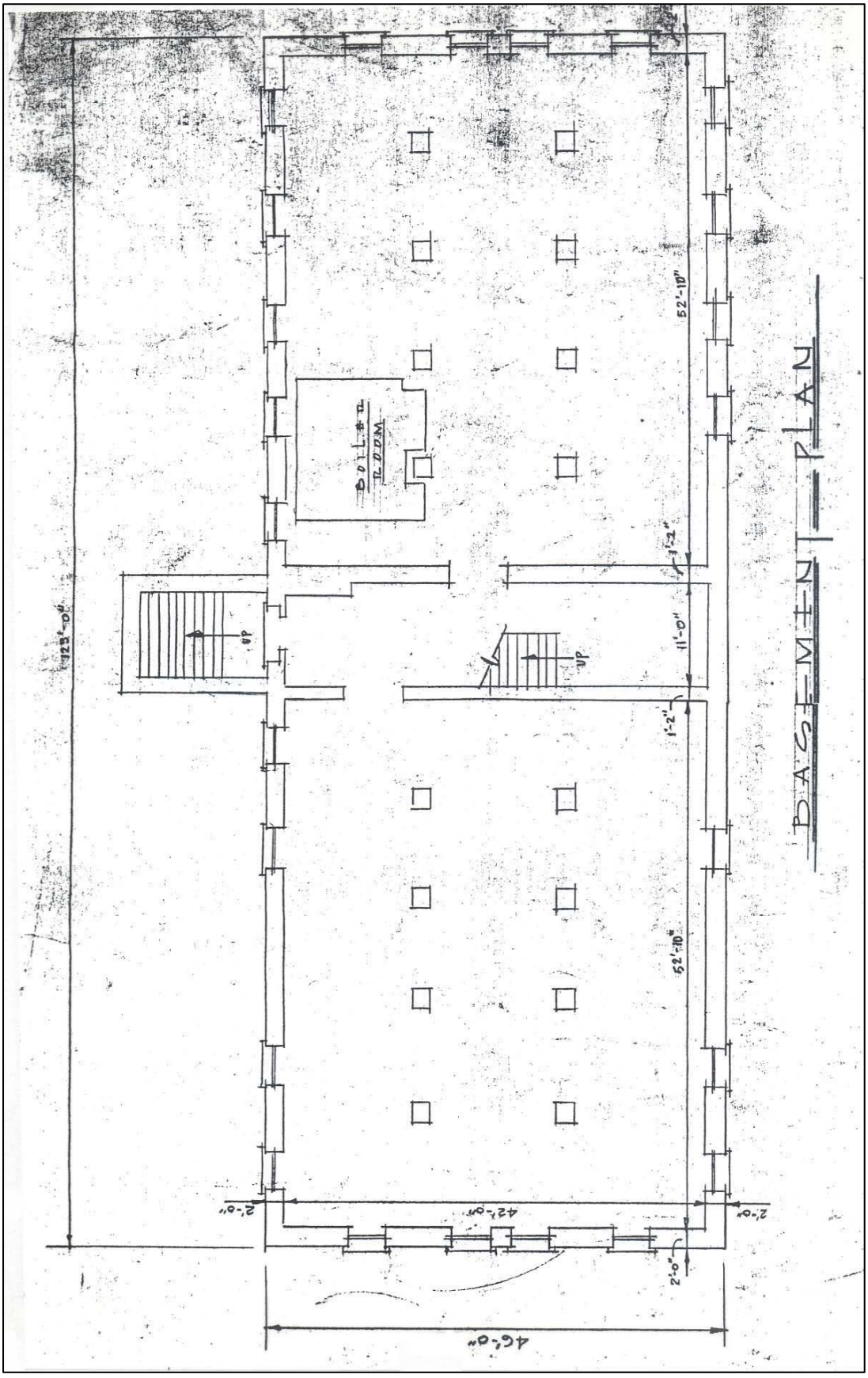


**Figure 51.** Basement floor plan, 1959. Part of a drawing titled "Permanent Building Plan, Building No. 23, 24 Barracks," September 24, 1959.

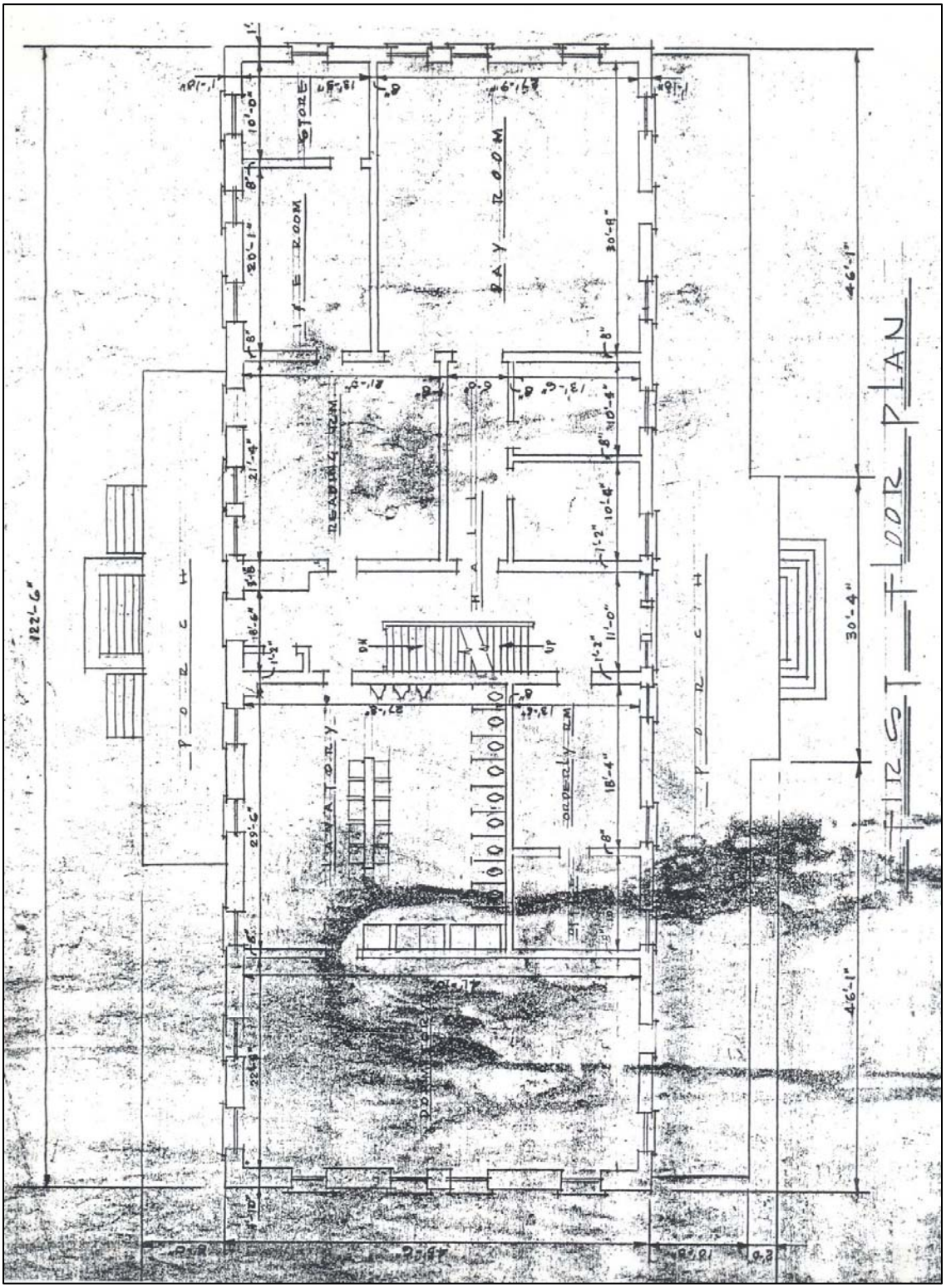


**Figure 52.** First-floor plan, 1959. Part of a drawing titled "Permanent Building Plan, Building No. 23, 24 Barracks," September 24, 1959.

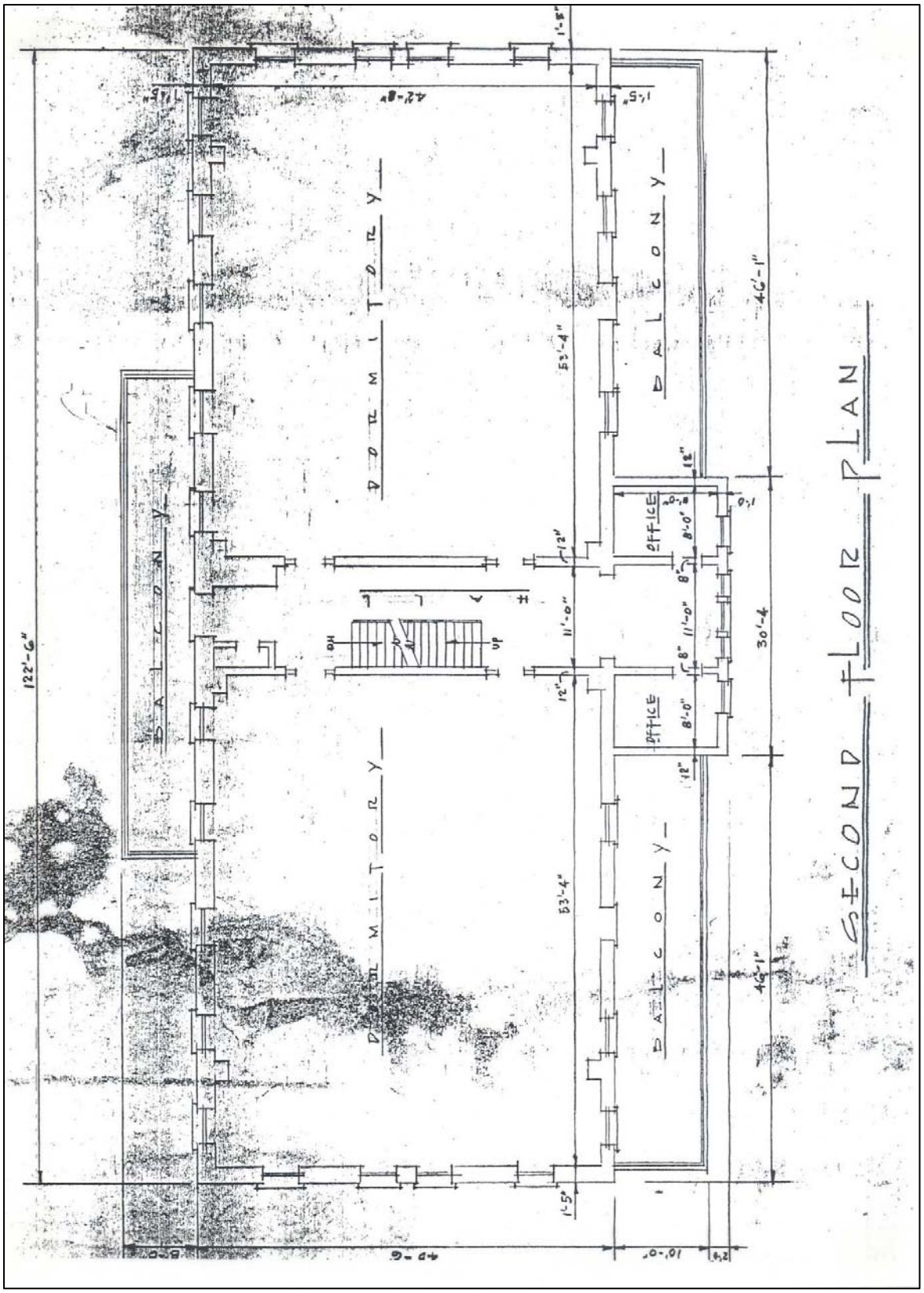


**Figure 53.** Second-floor plan, 1959. Part of a drawing titled "Permanent Building Plan, Building No. 23, 24 Barracks," September 24, 1959.

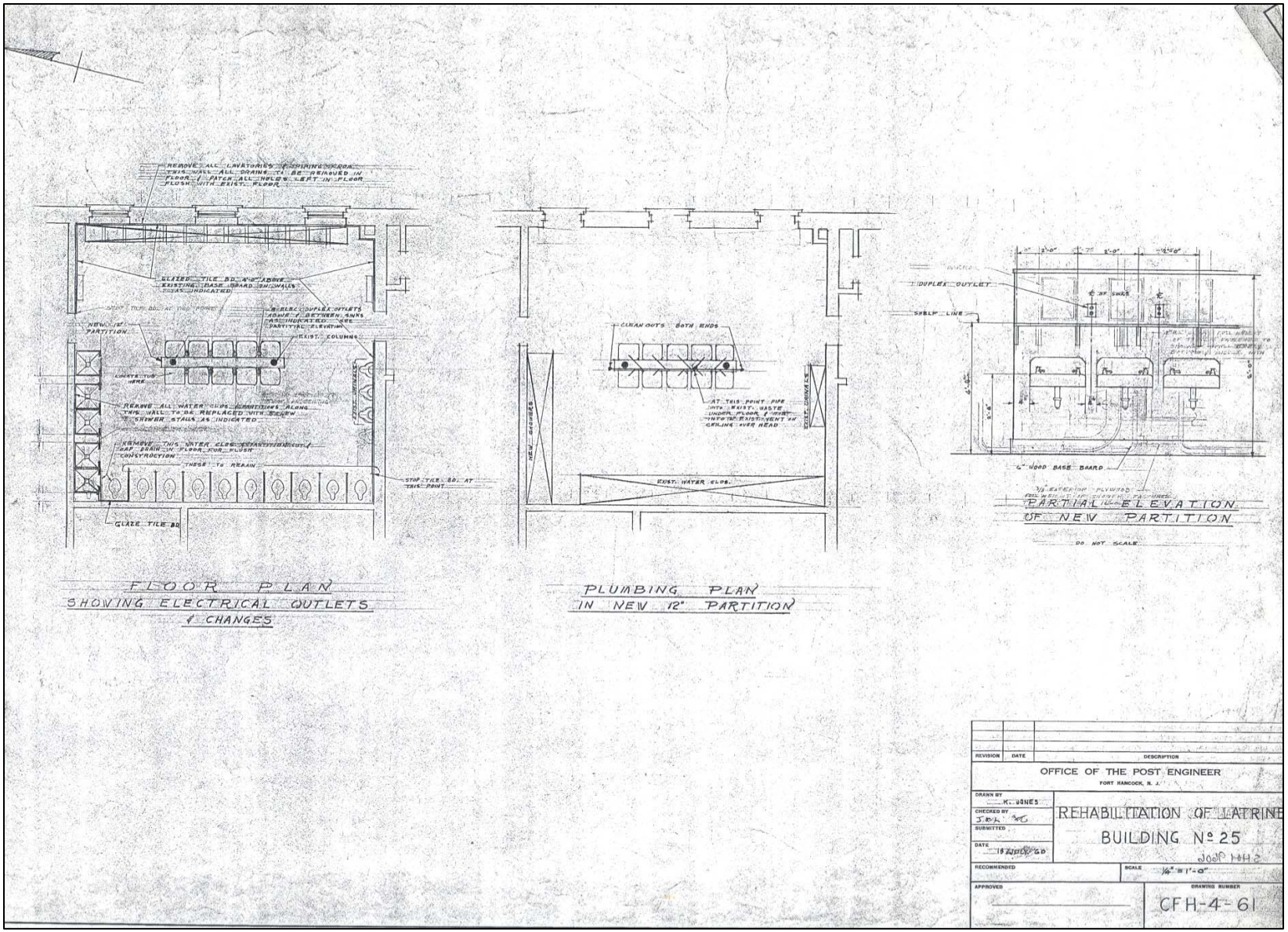


**Figure 54.** Drawing titled “Rehabilitation of Latrine, Building No. 25,” July 18, 1960.

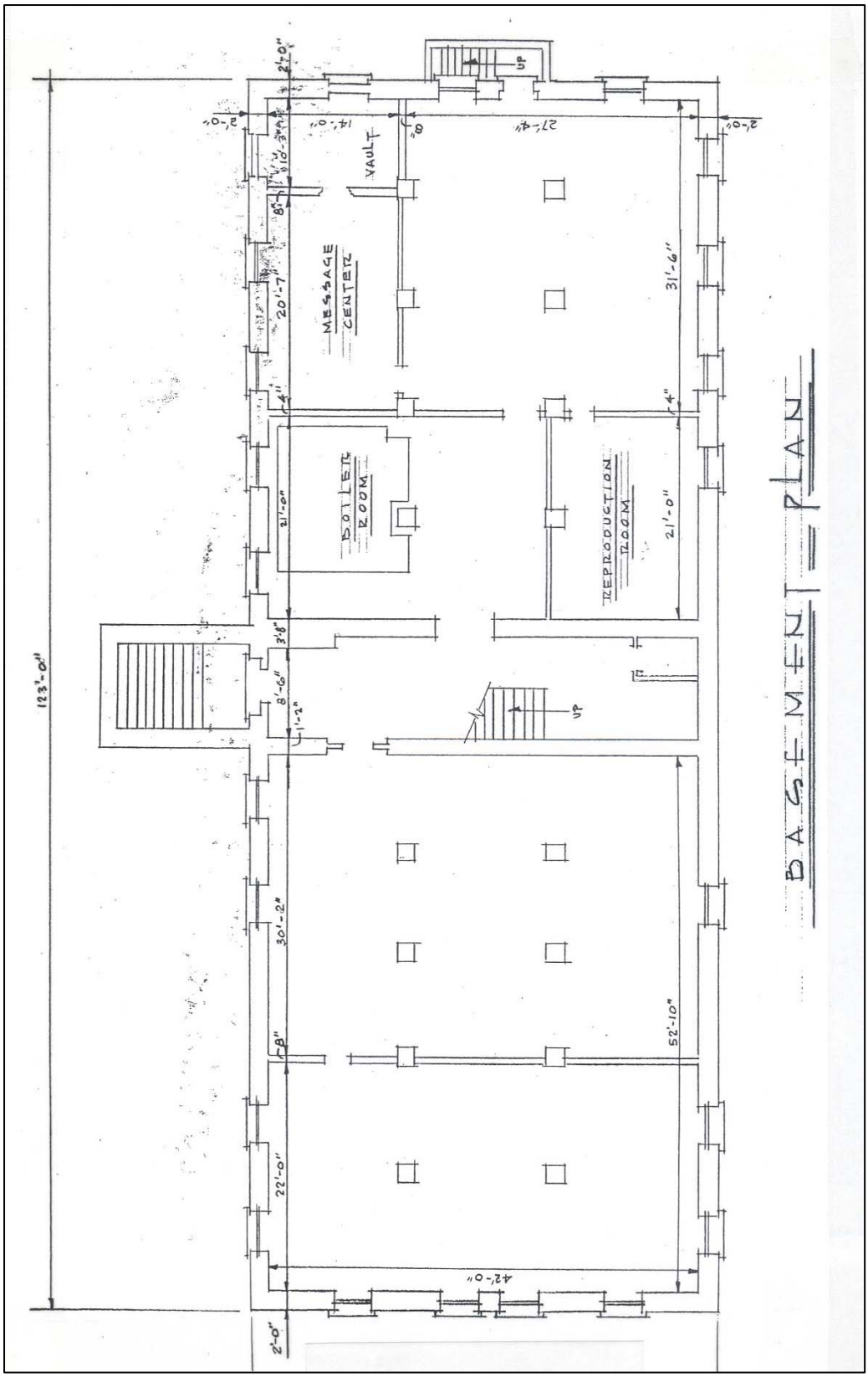


**Figure 55.** Basement floor plan, 1964. Part of a drawing titled "Permanent Building, Building No. 25, Brigade Hdqtrs. Bldg.," May 6, 1964.

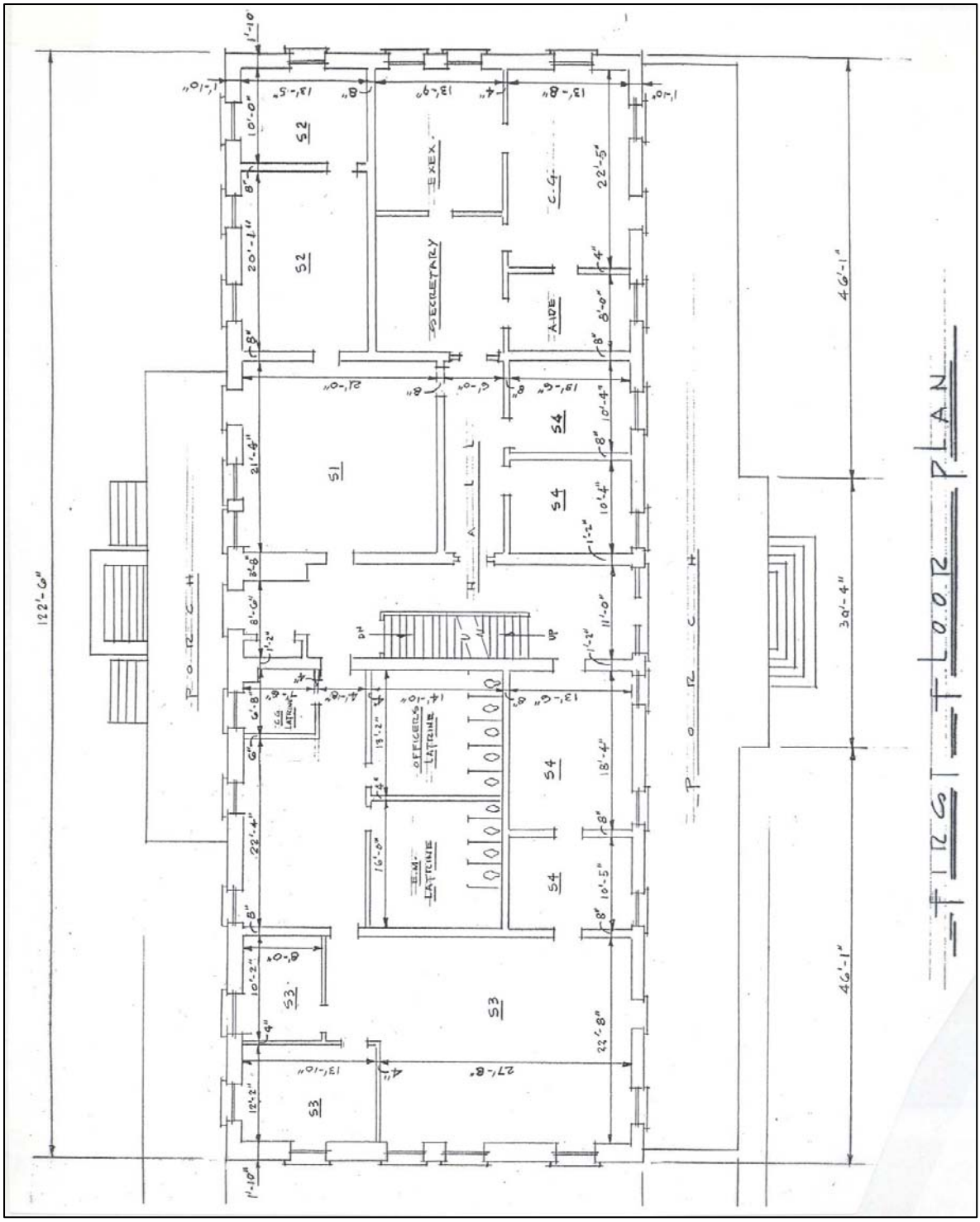


**Figure 56.** First-floor plan, 1964. Part of a drawing titled "Permanent Building, Building No. 25, Brigade Hdqtrs. Bldg.," May 6, 1964.

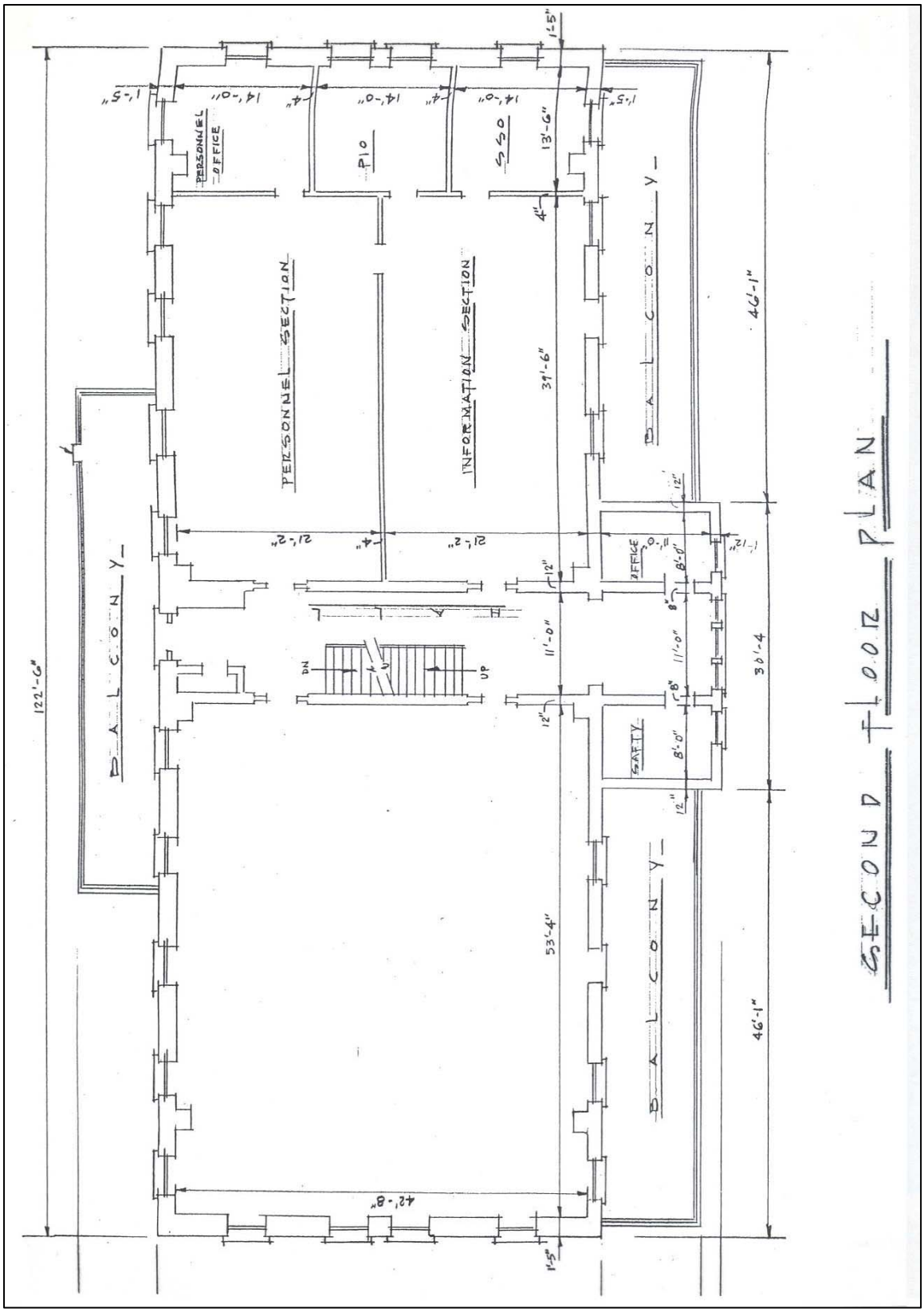


**Figure 57.** Second-floor plan, 1964. Part of a drawing titled "Permanent Building, Building No. 25, Brigade Hdqtrs. Bldg.," May 6, 1964.

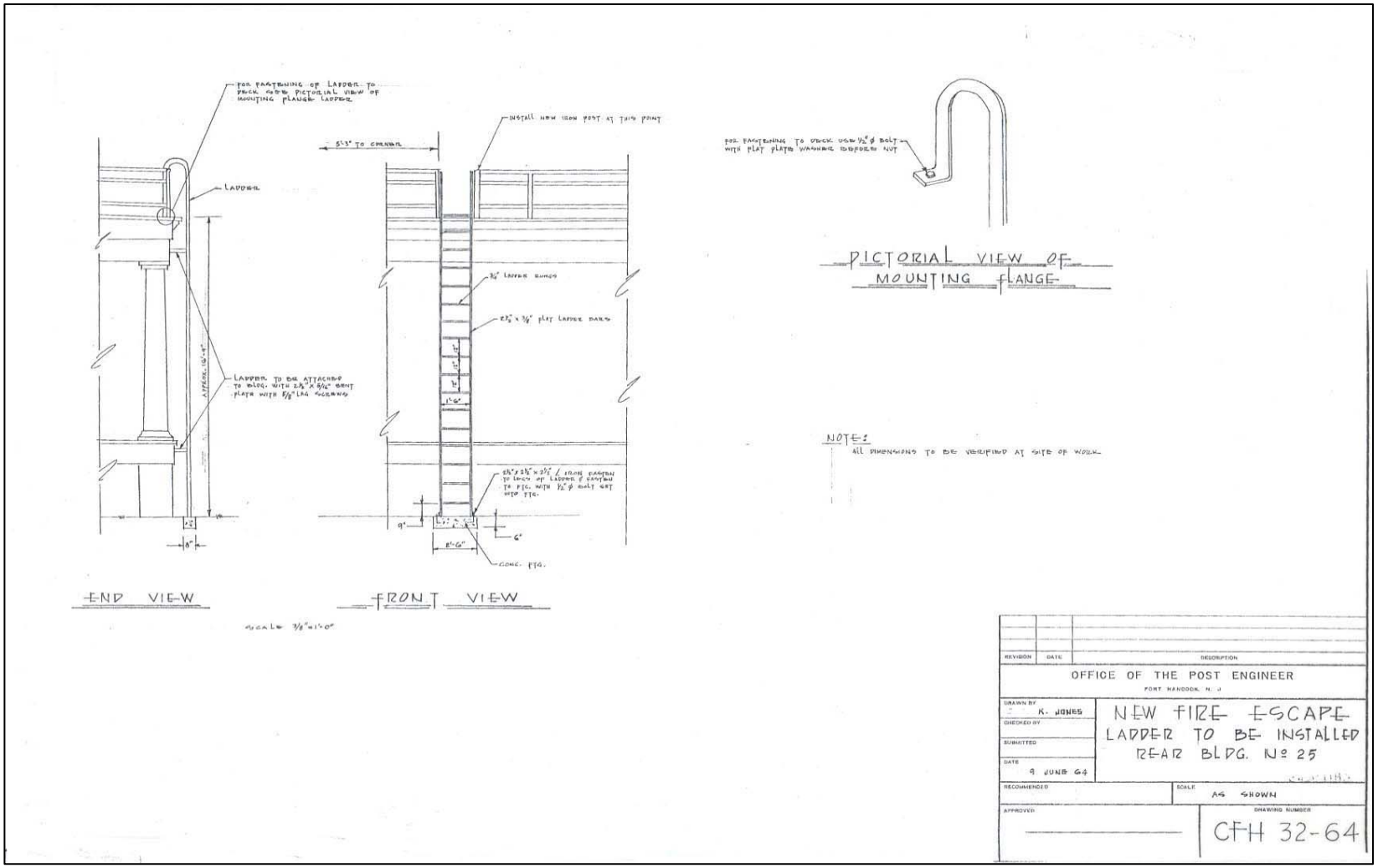


**Figure 58.** Drawing titled “New Fire Escape Ladder to be Installed Rear Bldg. No. 25,” June 9, 1964.

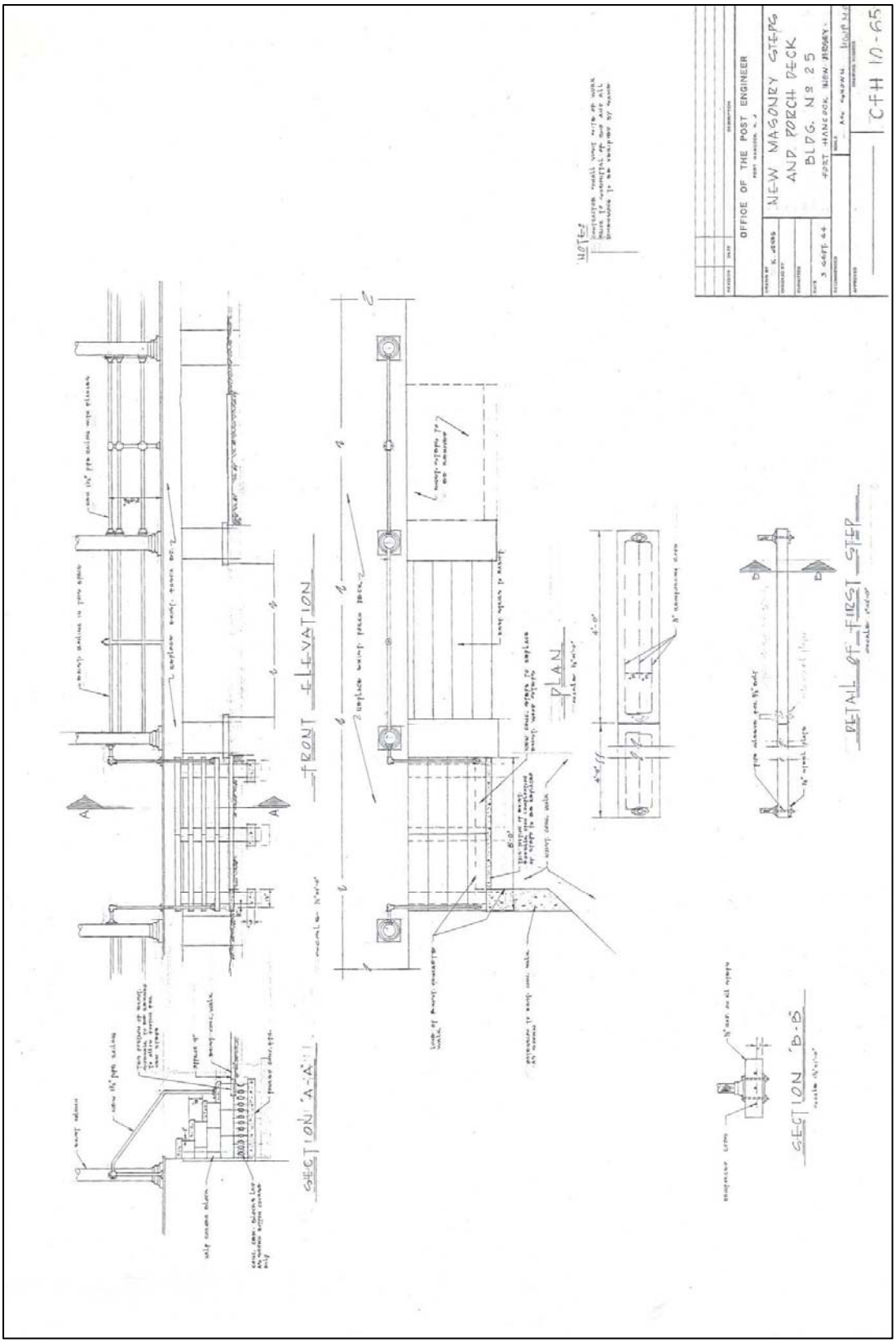


**Figure 59.** Drawing titled "New Masonry Steps and Porch Deck, Bldg. No. 25," September 3, 1964.

**Figure 60.** Army Reserve sign.

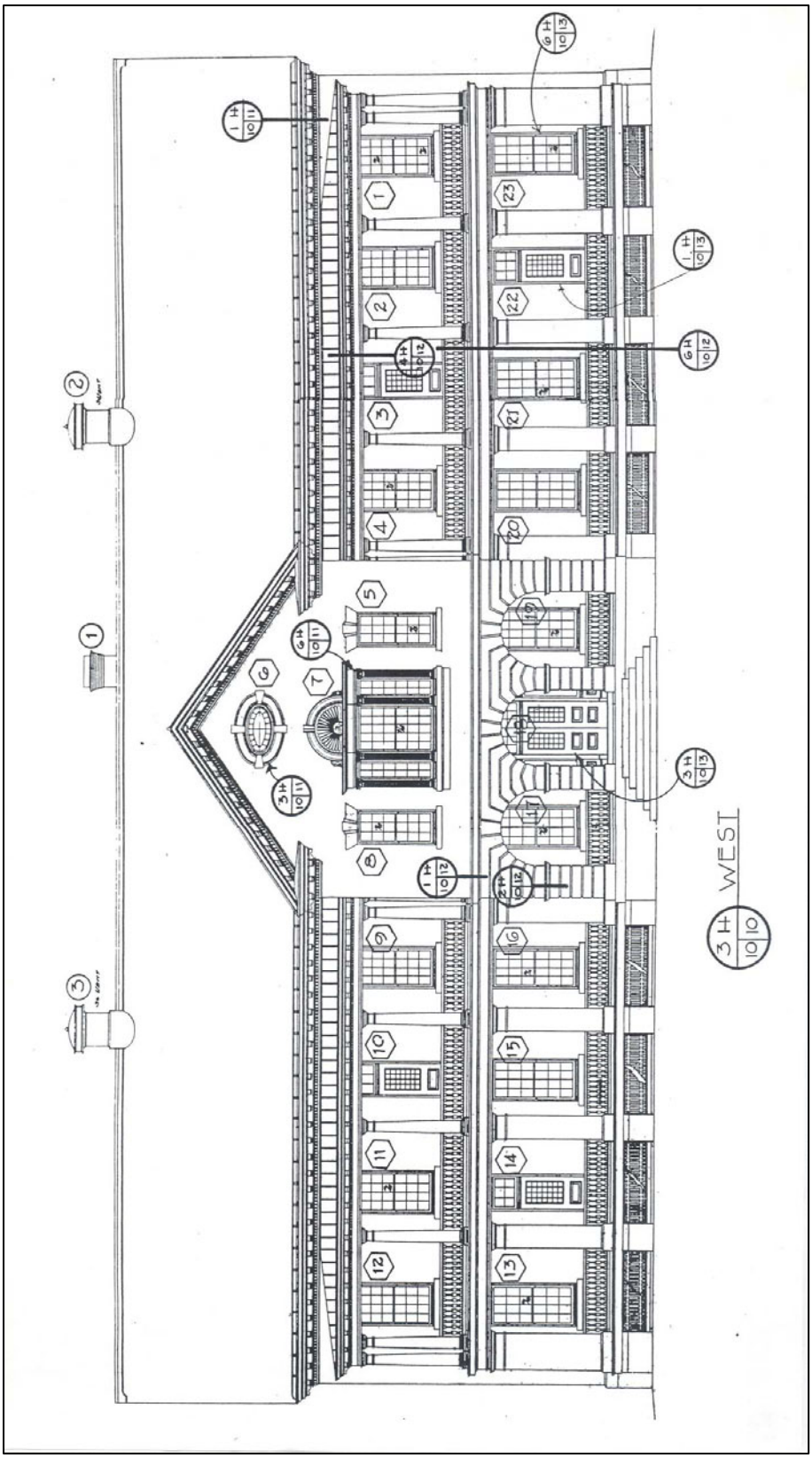


**Figure 61.** West elevation, 1976. Part of a drawing titled "Building Elevations, One Company Barracks," September 17, 1976.

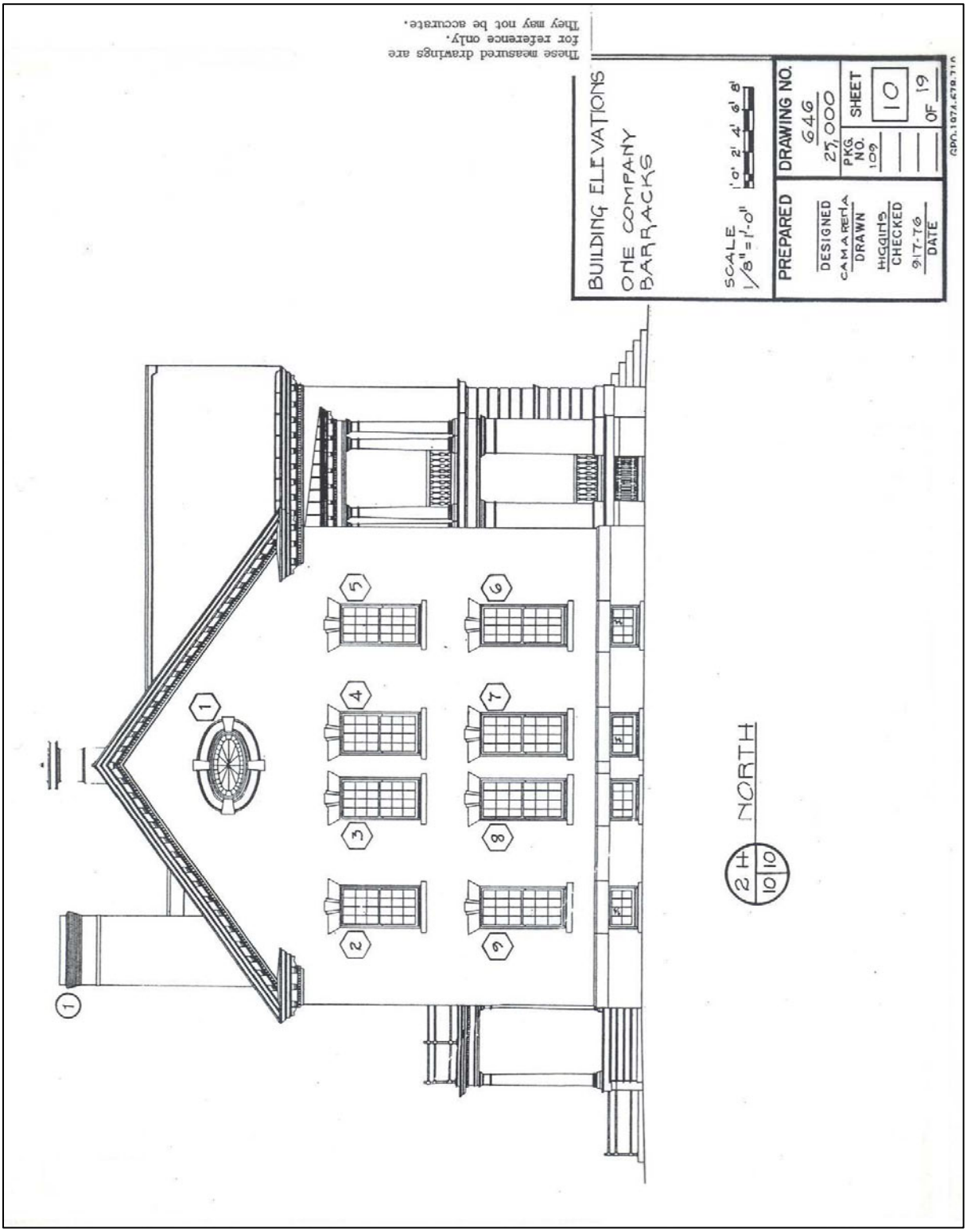


**Figure 62.** North elevation, 1976. Part of a drawing titled "Building Elevations, One Company Barracks," September 17, 1976.

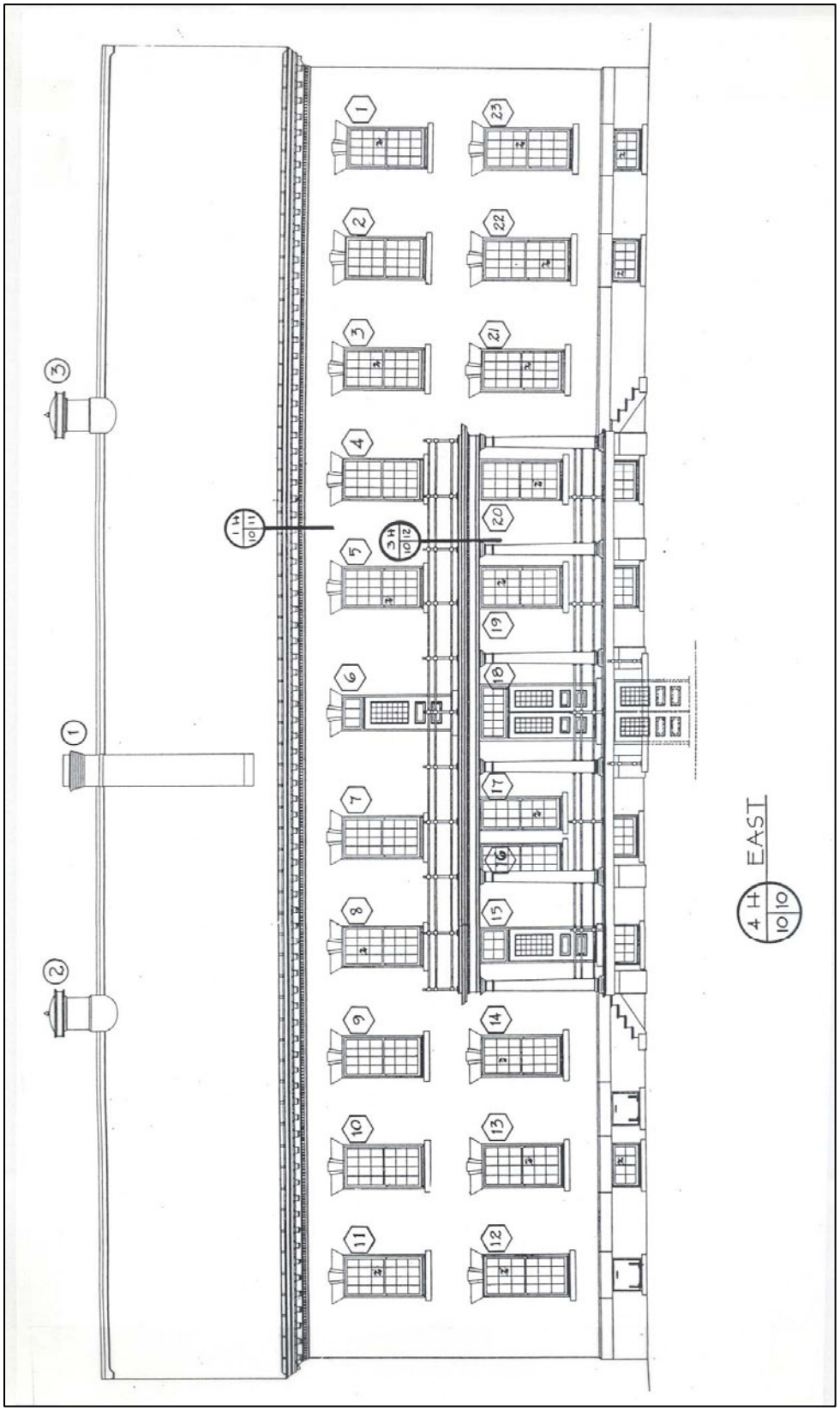


**Figure 63.** East elevation, 1976. Part of a drawing titled "Building Elevations, One Company Barracks," September 17, 1976.

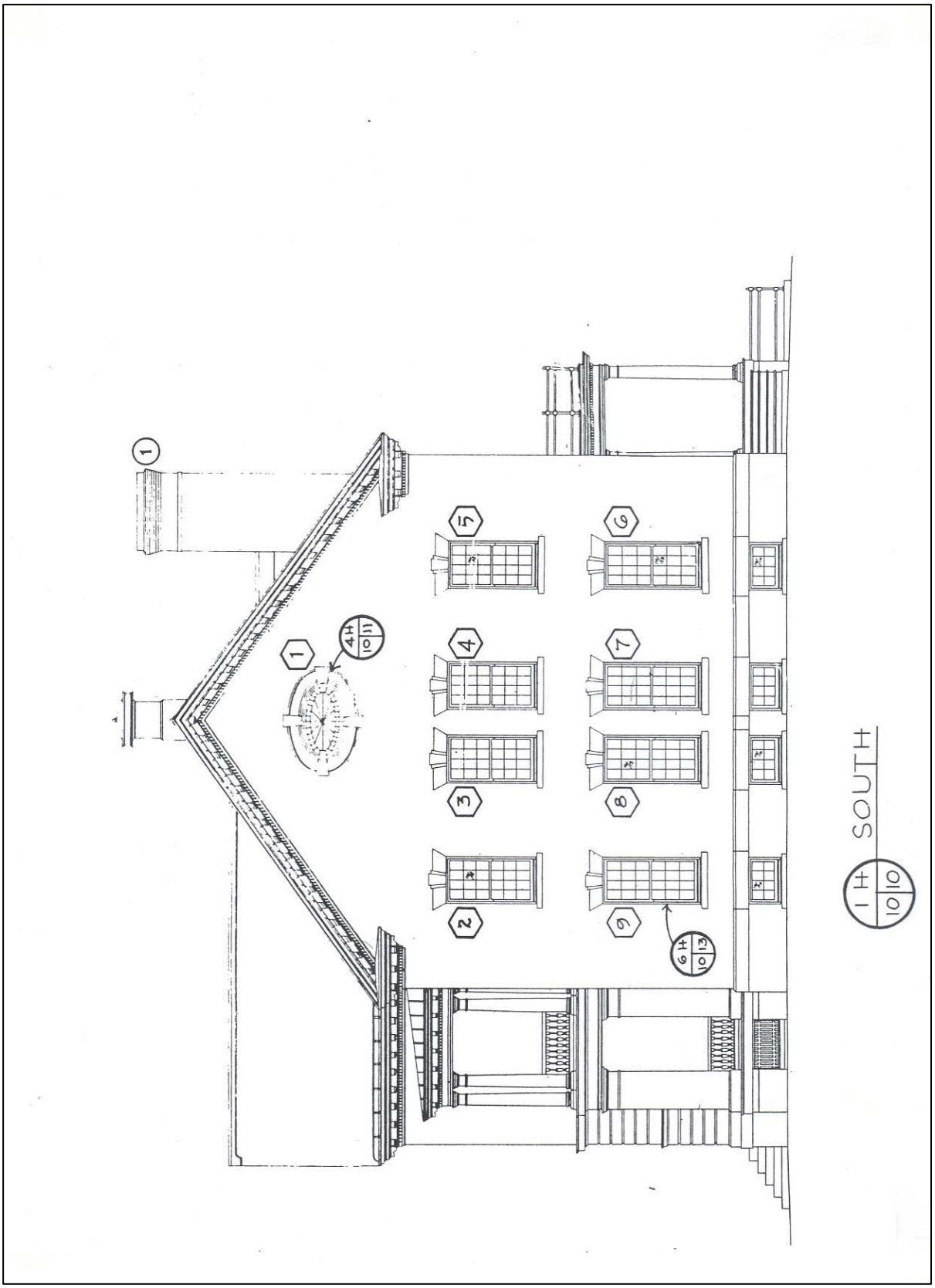


**Figure 64.** South elevation, 1976. Part of a drawing titled "Building Elevations, One Company Barracks," September 17, 1976.

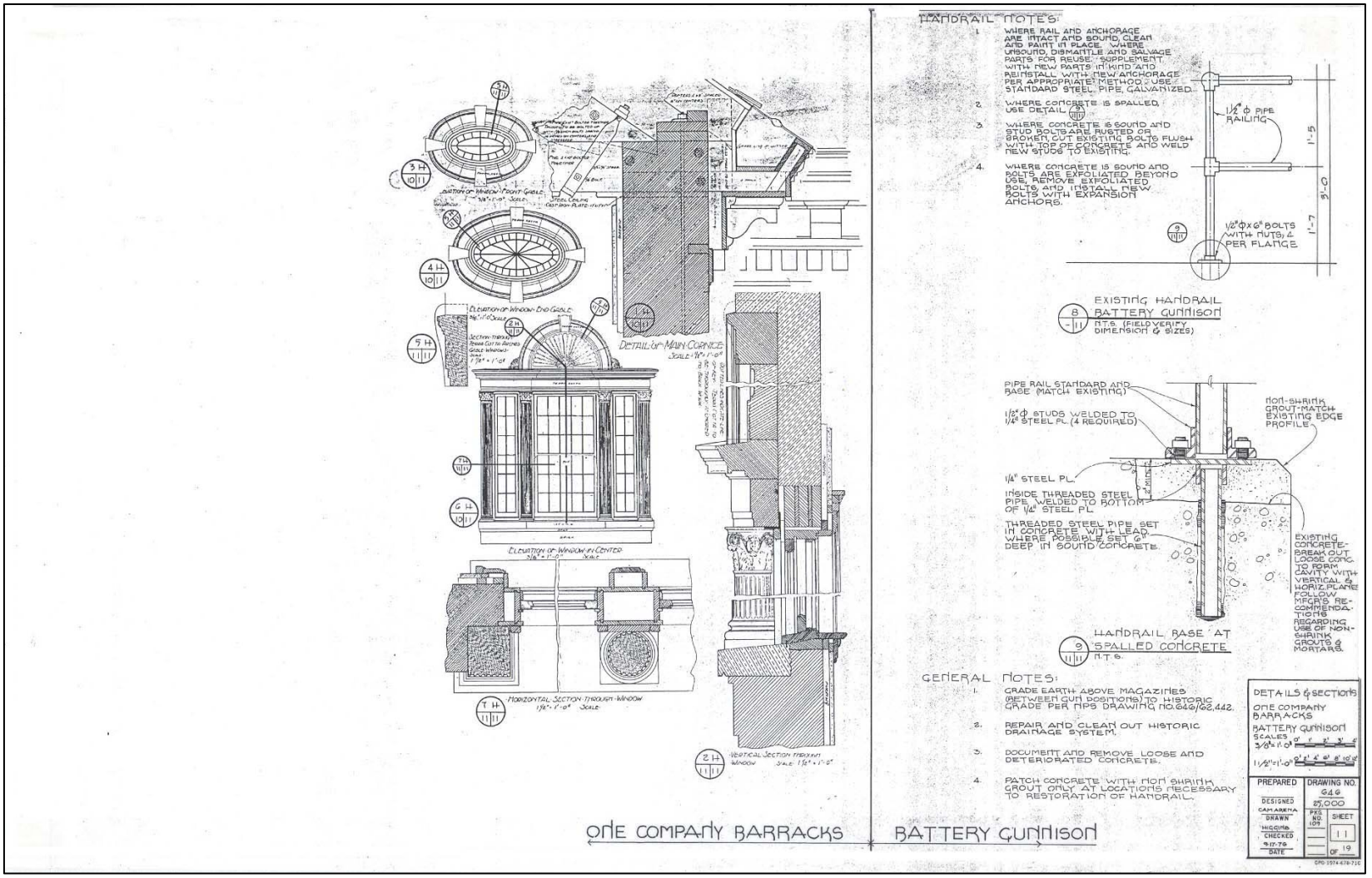


**Figure 65.** "Details and Sections, One Company Barracks and Battery Gunnison," September 17, 1976.

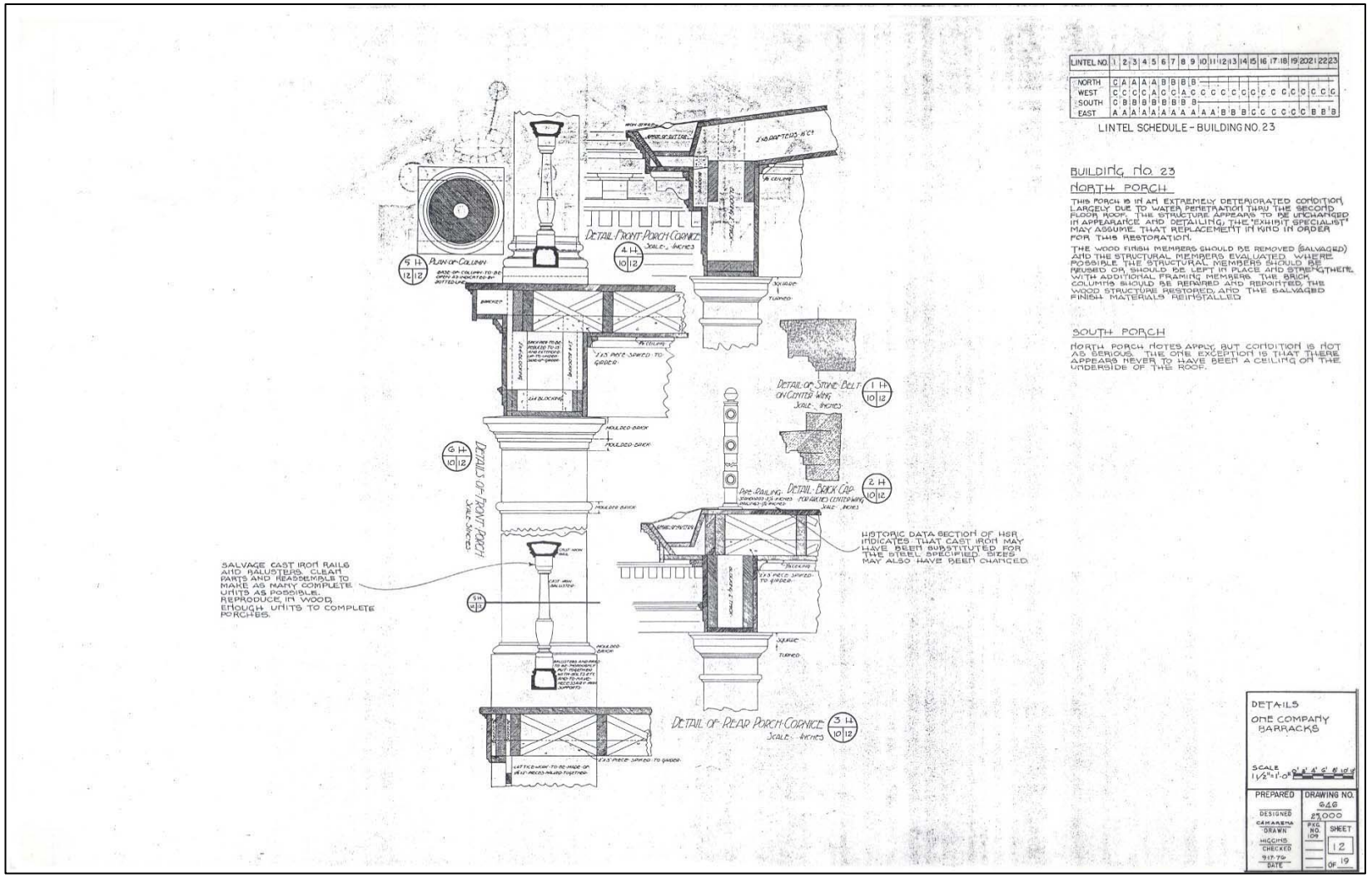


**Figure 66.** "Details, One Company Barracks," September 17, 1976.

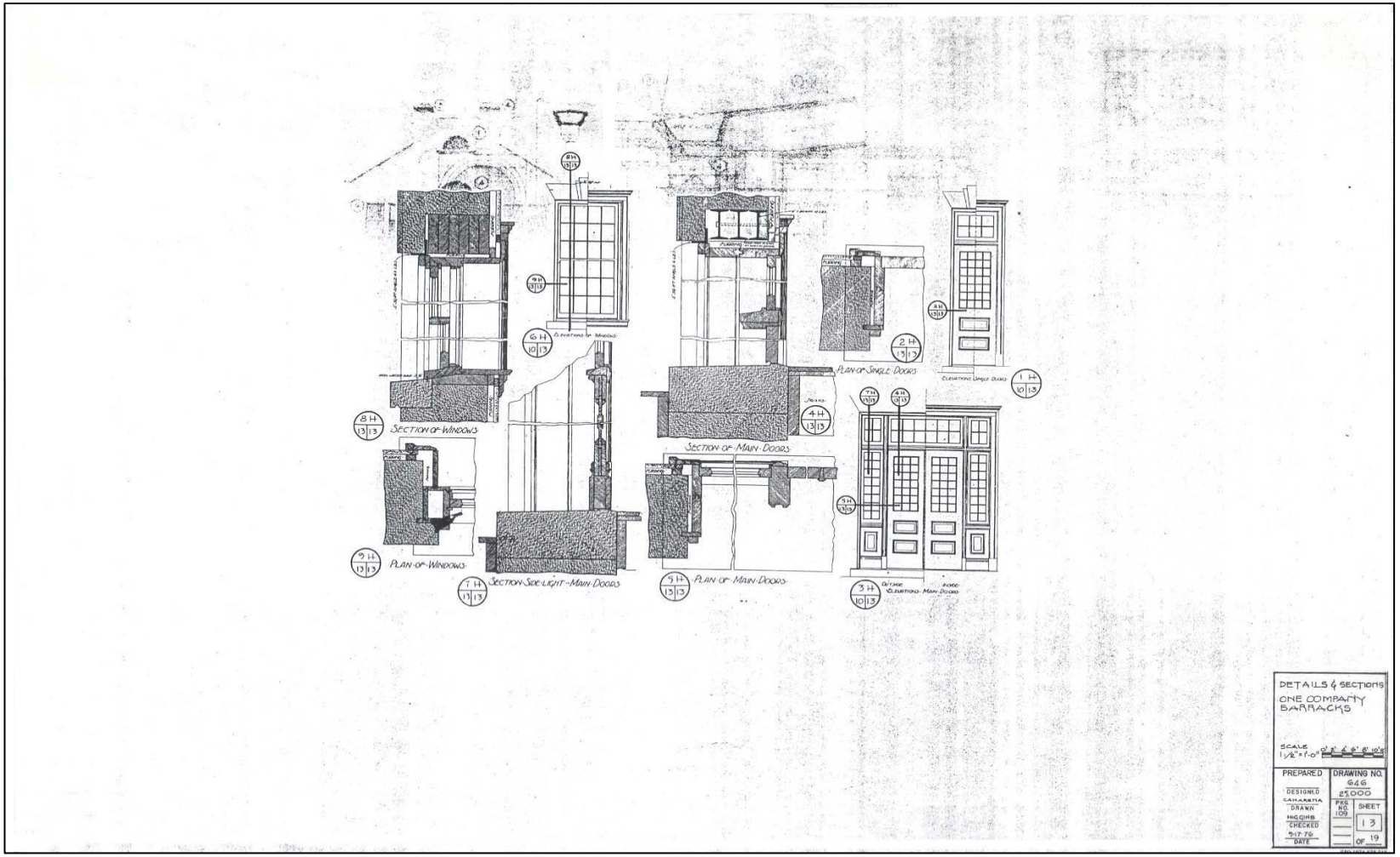


**Figure 67**. "Details and Sections, One Company Barracks," September 17, 1976.

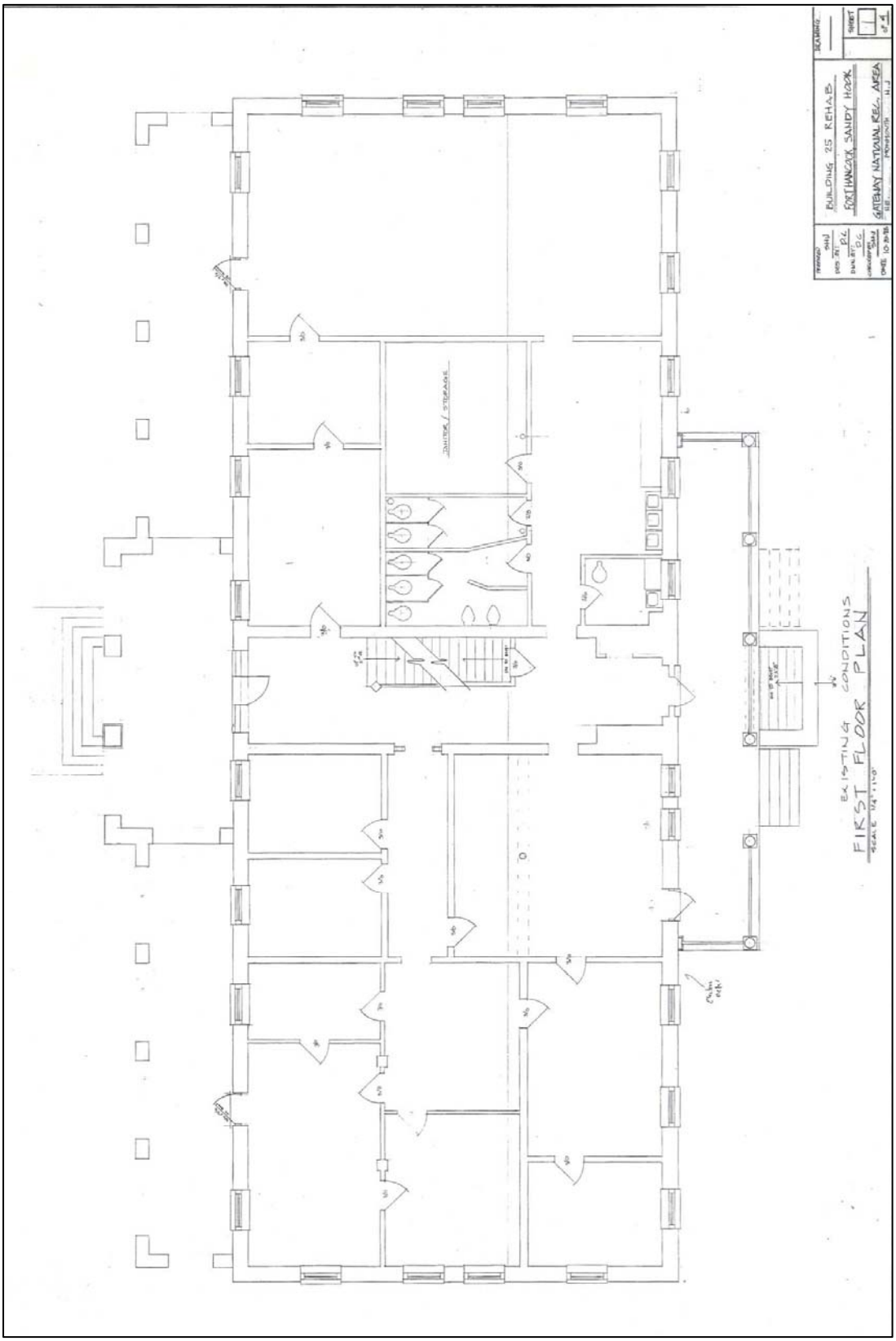


**Figure 68.** First-floor plan, October 20, 1998.

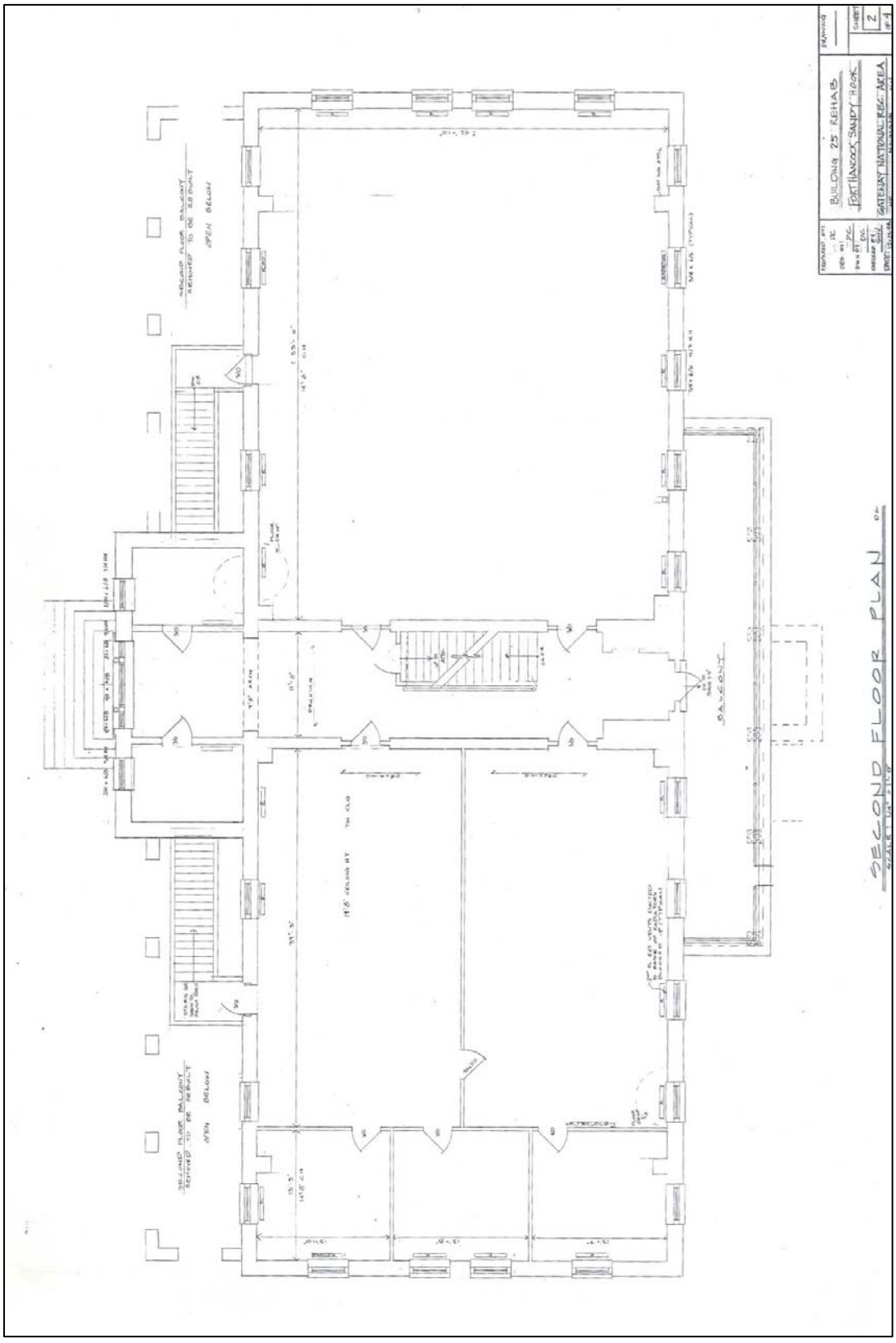


**Figure 69.** Second-floor plan, December 23, 1998.

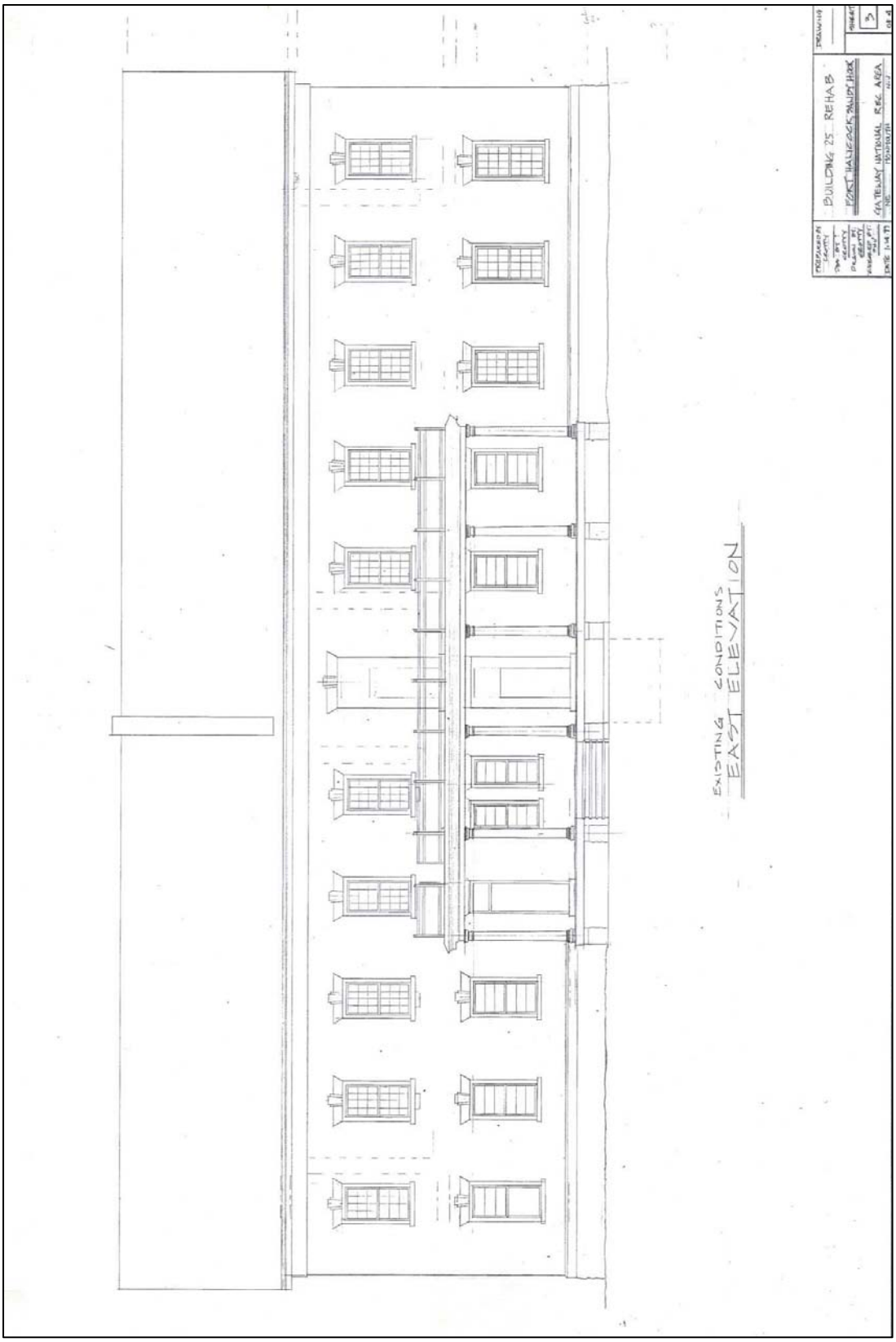


**Figure 70.** East elevation, January 14, 1999.

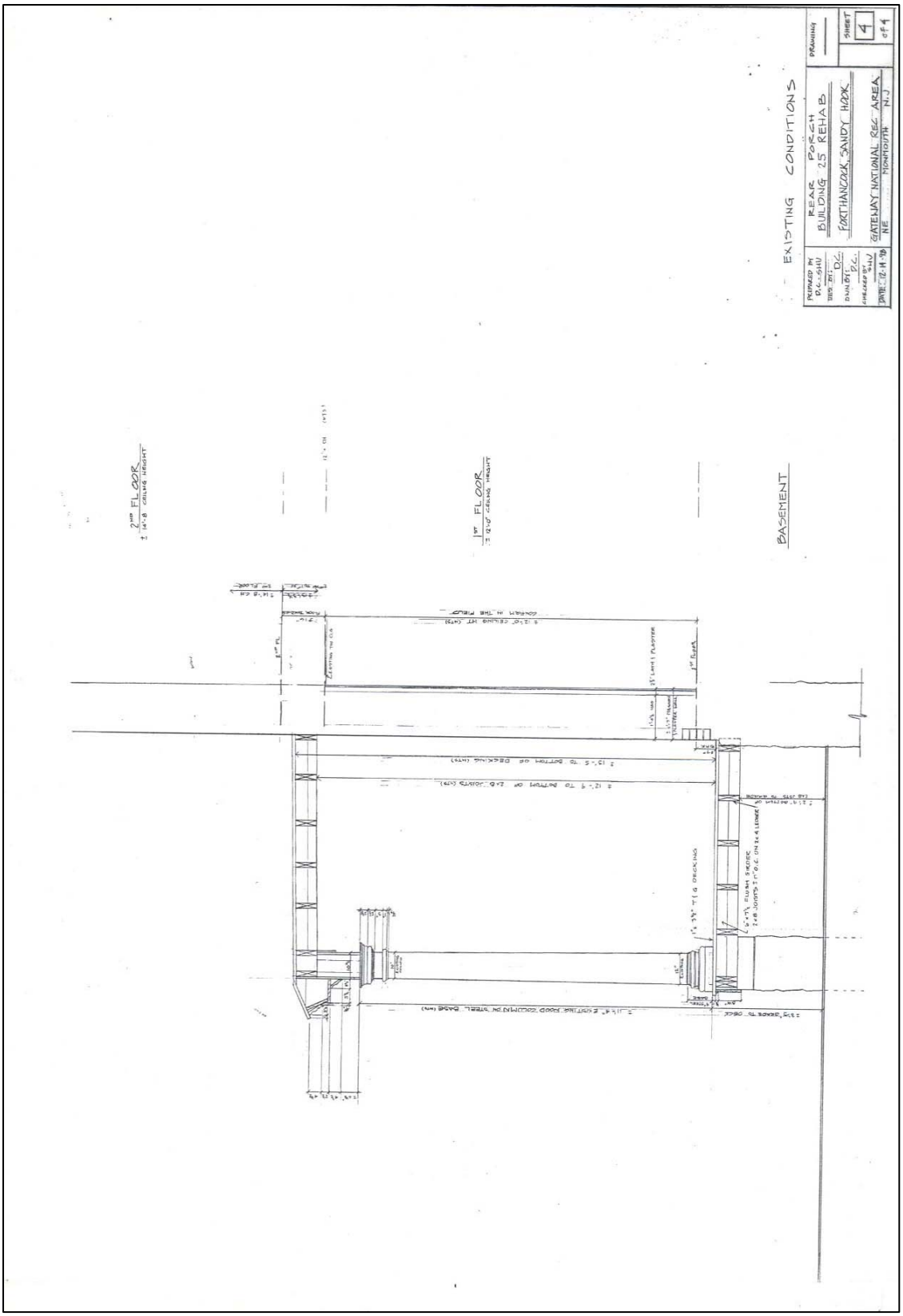


**Figure 71.** Section of rear porch, December 14, 1998.

# CURRENT PHYSICAL DESCRIPTION

A number of modifications were made to Building 25 over the years. Many of these were relatively minor, however; the appearance of the barracks today is essentially similar to its appearance following its completion in 1898. Thus, the following section discusses only the aspects of Building 25 that differ from their original appearance. All other elements of the building are assumed to be the same as described previously in "Original Appearance." All dates given for the alterations have been cited and discussed previously in "Alterations."

## Exterior Elements

### Foundations

The bottom several courses of the pavilion's trap-rock foundation have been replaced with a stone that appears similar to gneiss (metamorphosed granite). The relatively careless workmanship used for the mortar joints suggests that this was an alteration, and not original construction.

### Walls

The original stamped galvanized-iron main cornice, with its modillions and dentil moldings, remains on all of the raking eaves: on the north and south gable ends, and on the west pavilion's pediment. The horizontal runs of the original cornice, on the west and east elevations, have been replaced with a simple plywood box cornice (fig. 74). The replacement cornice predates the 1989-90 removal of the west porches; it may have been part of the 1976 stabilization. The red structural brick of the walls' interior can be seen below the line of the replacement wood cornice at the north end of the west elevation.

The small, rectangular vent openings originally located beneath most of the second-story windows remain in place. Those on the west, north, and south elevations of the building remain open, but those on the east elevation have been covered over with sheet metal.

### Porches

#### West Porches

All that remains of the two west porches (one on either side of the pavilion) are the brick and trap-rock piers at first-story level, some with fragmentary capitals, and portions of the cast-iron balustrade between them. Many of the urn-shaped balusters are missing or are in fragmentary condition. The red structural brick of the walls' interior can be seen at the level of the missing porch floors on the piers and wall, in the course above the pier water table, and above the basement windows. Within each former porch space is a wooden fire-escape stairway (installed in 1996) that ascends from the pavilion floor up to the west elevation's second-story doorways (see fig. 74).

Of the seven steps ascending to the pavilion on the west elevation, the top five are original tooled limestone, but the bottom two are concrete replacements. They probably date to porch repairs conducted in 1930-31.

### East Porch

The east porch as rebuilt in 2000 has a plain wood cornice that differs from the original metal denticulate cornice. The porch does not retain its original metal-pipe balustrade and roof railing, but part of a similar balustrade remains to the south of the stairway to the basement entrance. The flight of wooden steps up to the porch floor–also located to the south of the basement entrance–dates to 2000. It replaced concrete steps installed here in 1964; the concrete steps had replaced a pair of wooden stairs, which had in turn replaced the two wooden stairways originally at either end of the porch.

## Doorways

Nearly all exterior and interior doors were replaced with modern doors at some point, probably in 1964, when Building 26 was converted to brigade headquarters. This work generally included modification of the doorway openings in which the doors were hung, as described subsequently.

### West (Front) Elevation

#### *First Story*

The original double doorway opening has been reduced in size to accommodate a single, shorter replacement door (three horizontal lights over three panels). The perimeter of the opening, and the transom and sidelights, have been closed off with plywood.

#### *Second Story*

Single, shorter replacement doors (three horizontal lights over three panels) have been installed in the two original doorways, which now lead to the two wooden fire escapes. The doorways' transoms have been retained; the area between each transom and the top of the replacement door is covered with painted galvanized sheet metal.

### South Elevation

#### *Basement Level*

A doorway exists in the foundation wall in the third bay from the east, in the location of an original window. The door is the same as other replacements (three horizontal lights over three panels, probably dating from 1964, when this entry was added), with concrete surrounding the frame. The exterior of this opening is now covered with particleboard.

**East Elevation**

***Basement Level***

The double doorway in the center of this elevation contains the only original exterior doors remaining on the building. The steps that lead down to the doorway have bluestone treads; the trap-rock retaining walls on either side of the stairwell are capped with bluestone. The bluestone was probably added in 1901, when the same material was laid as paving. As stated previously, a remnant of the original metal-pipe handrail stands to the south of the stairwell.

***First Story***

A single, shorter replacement door (three horizontal lights over three panels) is inserted in the center of the original double doorway (fig. 75). The perimeter is closed off with plywood; the transom remains unchanged. There is also a shorter replacement door in the kitchen doorway (in the fourth bay from the south end), with the area between the transom and door covered with painted galvanized sheet metal.

***Second Story***

A single, shorter replacement door (three horizontal lights over three panels) has been inserted into the original doorway. The area between the transom and door is covered with painted galvanized sheet metal.

**Windows**

All of the wooden window sashes in the building are recent replacements matching the appearance of the original window sashes.

**East Elevation**

***Basement Level***

The three window openings to the south of the porch (bays 1-3) contain ventilation pipes surrounded by concrete infill. Bays 4-5, under the porch, are covered with plywood; the plywood covering of bay 4 has a louvered ventilation grate inserted into it. The windows in bays 7, 8, and 11 are each covered with a woven-wire grate.

**South and North Elevations**

***Basement Level***

On the south elevation, the window opening in the first bay from the east contains protruding pipes surrounded by concrete infill. The window opening in the third bay from the east has been replaced with a doorway, now covered (see “Doorways, South Elevation”). The other two windows are each covered with a woven-wire grate.

Woven-wire grates cover each of the three windows on the north elevation.

## Roof and Gutter System

The main block and pavilion have asphalt composition shingle roofs installed in 1973. The west side of the building features a gutter along the south half of the west roof edge, along the south side of the pavilion, and along part of the north half. These gutters are served by drainpipes at the south and north ends of the main block, and at the south pavilion corner. The east side of the building has a gutter served by drainpipes between bays 3 and 4 and between bays 9 and 10. This system dates to 1991-93. There appears to be a concrete cap on top of the chimney. The south roof ventilator is intact. Only the base of the north one remains; the remainder was probably removed in 1991-93.

The east porch has an asphalt composition shingle roof, with pitched edges. (It was originally completely flat.)

# Interior Elements

For the purposes of this report, rooms within Building 25 were assigned sequential numbers to facilitate discussion of their current appearance. The first time a room is mentioned, its original 1896 name is also given, to help establish context.

## Basement

### Plan

A stud and particleboard wall (built post-1964) separates the east third of the south basement from the rest of the space. Cinderblock partitions (built 1964) enclose two small rooms in the south of this space, labeled "vault" and "message center" in the 1964 drawings.

The north half of the basement has a small room at the north end, formed by a stud and plywood wall built in 1964 that separates the two northernmost two bays from the rest. A doorway in the south end of the partition leads to the smaller room, which contains two additional partitions. One is a low stud partition between the northwesternmost pier and the west wall; the other is a stud and plywood partition parallel to the east wall. These partitions do not appear on the 1964 basement plan. However, at least the one near the east wall (fig. 76) looks to be fairly old: it features horizontal matched boarding, and may have been built in 1943 as part of laundry facilities for the World War-II WACs.

### Ceilings

The west and middle thirds of the ceiling in the south side of the basement are finished with plaster on wood lath, possibly from 1908. The rest of the area has a particleboard drop ceiling. Most of the north side of the basement has a plywood drop ceiling. The center bay has a concrete slab flanked by concrete beams (fig. 77). This was probably added in 1936 to support the concrete floor installed in the first-story lavatory at that time.

### Doorways

Both doorways from the center hall to the north and south sides have been narrowed with particleboard infill to accommodate a single hollow-core door. This was probably done in 1964.

### Utilities

#### *Plumbing Fixtures*

Two laundry sinks sit along the east side of the stud and plywood partition parallel to the east wall (see fig. 76). The style of the tubs suggests that they may remain from the WAC period of residency during World War II.

#### *Lighting Fixtures*

The basement is illuminated with fluorescent light fixtures. There is also what may be the remains of a gas jet (fig. 78) on the west side of the brick pier closest to the northwest corner of the building.

## First Story

### Plan

The current plan is depicted in figure 72. The basic configuration differs from the original in only two respects: the original mess room (Room 110) has been subdivided into four smaller rooms, and the lavatory (Room 105) has been subdivided into five smaller rooms. All of the partitioning of the mess room occurred in 1964. The lavatory was partitioned into four spaces in 1964; the southwest corner room was further subdivided into two bathrooms, probably ca. 1980 when the Marine Academy of Science and Technology (MAST) occupied the building.

### Floors

In most of the rooms, a plywood subfloor is covered with vinyl tile printed to imitate linoleum or (in the case of Room 107) wood parquet flooring. This probably dates from 1964. It is not known if an earlier wood finish floor lies beneath the plywood subfloor. The lavatory's floor is painted concrete (probably installed during the 1936 rehabilitation). The original day room (Room 104) has looped-pile synthetic "indoor-outdoor" carpet that appears to be a relatively recent addition.

### Walls

The nonoriginal partition walls dividing Room 105 are constructed of gypsum board on stud supports; those dividing Room 110 are wood-grain laminate paneling (three-sixteenths of an inch thick) and gypsum board on studs. All partition walls date from 1964. All of the matchboard wainscoting in the halls is still intact, as are the original baseboards in most of the rooms.

**Ceilings**

The four rooms comprising the original mess room (Room 110) have drop ceilings consisting of acoustic tiles suspended on a metal frame. The original stamped metal ceiling of Room 110 remains in place above the drop ceilings. All other rooms have their original stamped-metal ceilings showing.

**Doorways**

All extant doorways retain their original casings but have been shortened with plywood infill to accommodate smaller, hollow-core laminate doors. The original transoms are in place, but have been painted over. There is no original transom hardware in evidence.

The double doorway opening in the south wall of the center hall has a three-light replacement transom (one row across) and no molded casing; the doorway opening is filled in with plywood and trim to accommodate a single door. The double doorway from the side hall to the mess room (Room 106 to 110) has no transom today, and has been filled in to accommodate a single door (fig. 79). The transom over the doorway between the hallway and Room 102 has also been covered.

The double doorway between the kitchen (Room 107) and mess hall (Room 110) has been removed. Doorways have been added between Room 103 and 104, and Rooms 110a and 108.

There is no original door hardware extant in the building.

**Windows**

Although the window sashes are not original, they closely resemble the originals in design.

**Finishes**

Most of the walls and woodwork are painted a light green color. The metal ceilings are painted white. The two westernmost rooms that were formed from Room 110 (Rooms 110c and 110d) are clad in wood-grain laminate paneling measuring three-sixteenths of an inch thick.

**Other Elements**

***Main Stairway***

Based on the original drawings and paint evidence, the bottom newel, face stringer, and most balusters are replacements, probably dating to 1964. The newel is simpler in profile than the original (see fig. 18).

***Partitions in Lavatory***

The lavatory, Room 105, is partitioned along its north-south axis into two halves, each with smaller divisions. The northwest quadrant is a storage closet, with the southwest quadrant divided into toilet stalls; there is a private washroom in the southeast corner. As explained previously, this configuration probably dates from circa 1980.

#### *Built-in Furniture in Pantry, Armory*

Nothing remains of the original built-in furniture in Rooms 108 (the Pantry) and 103 (the Armory). Two wood-framed, glass-fronted cabinet doors were found in the attic, resting high up on the roof-frame purlins in the south room (fig. 80). These appear to match the pantry furniture shown in the original drawings, and they have the shellac finish characteristic of Building 25's early woodwork.

### Utilities

#### *Heating Equipment*

The steam radiators in all rooms probably date from 1938-40. There are steam risers in all rooms except for Room 103.

#### *Plumbing Fixtures*

No original fixtures remain in Rooms 105 and 107. However, these spaces do contain toilets, urinals, and sinks of the same style that date to the historic (pre-1974) period. The toilets bear the manufacturer name "Standard," and the date of November 10, 1927, is stamped on the inside of their lids. There is also a row of sinks along the east wall, under a wooden cover probably installed during the MAST period. The sinks have no date, but bear the stamp "Kohler USA # 220-24x201-s."

#### *Lighting Fixtures*

There are incandescent and fluorescent fixtures mounted on the ceilings, with their wiring carried in rigid conduits attached to the wall and ceiling surfaces.

#### *Fire-Protection Equipment*

There are remnants (call boxes and alarm boxes) throughout the floor of a fire-protection system that is no longer in use.

## Second Story

### Plan

The plan for this story is depicted in figure 73. The north dormitory room (Room 204) is one large open space. The south dormitory room (Room 205) has been subdivided into three small rooms at the southern end, with the remainder divided into two rooms along the north-south axis (fig. 81). This work was done in 1964.

### Floors

Room 204 has looped pile synthetic "indoor-outdoor" carpet that appears to be a recent addition. The other finish floors are wood. The documentation suggests that they are the original Georgia yellow pine floors with pine repairs made in 1908. Some areas have been painted gray.

## Walls

The 1964 partitions in Room 205 are constructed of gypsum board on stud supports.

## Doorways

The four double doorways (two on each side) leading from the hallway to the dormitories are filled in with plywood to accommodate single, shorter, hollow-core laminate doors (fig. 82). The doorways' original transom windows (one row of six lights) all remain in place, but have been painted over.

The single doorways leading to the small rooms in the pavilion have been shortened with plywood infill to accommodate smaller, hollow-core laminate doors. Their original transoms have been painted over. The transom of the doorway to the south room has a small piece of hardware attached to its room side; it is not known if this piece is original.

## Other Features

### *Stairway to Attic*

The doorway to this stairway contains the only original interior door remaining in the building.

### *Partitions and Lockers in Dormitories*

None of the original partitions or lockers remain. The modern partitions in Room 205 have been described previously in "Plan" and "Walls."

## Utilities

### *Heating Equipment*

The steam radiators in all rooms probably date from 1938-40. The only steam risers in this story are in the hallway, and in Room 204 between the two southeasternmost windows.

### *Lighting Fixtures*

Fluorescent fixtures are mounted on the ceilings. The lengths of conduit that carry the wiring over the walls and ceiling are not as carefully integrated into the ceiling design as the ones on the first floor are.

### *Ventilation Equipment*

The original vertical ducts in the four corners of both dormitories are still in place, but their vents have been sealed. The original vents in the baseboard under the radiators also remain in place, but have been covered over with sheet metal.

## Attic Level

### Finishes

The woodwork associated with the attic stairway has the original clear shellac finish followed by the red-pigmented shellac applied in 1907, a combination seen on all of the original woodwork that has not been covered with multiple later paint layers as elsewhere throughout the building.

### Utilities

#### *Lighting Fixtures*

Illumination is provided by bare light bulbs screwed into sockets attached to the exposed electrical lines. These supplement the natural light obtained from the gable oculi (fig. 83).

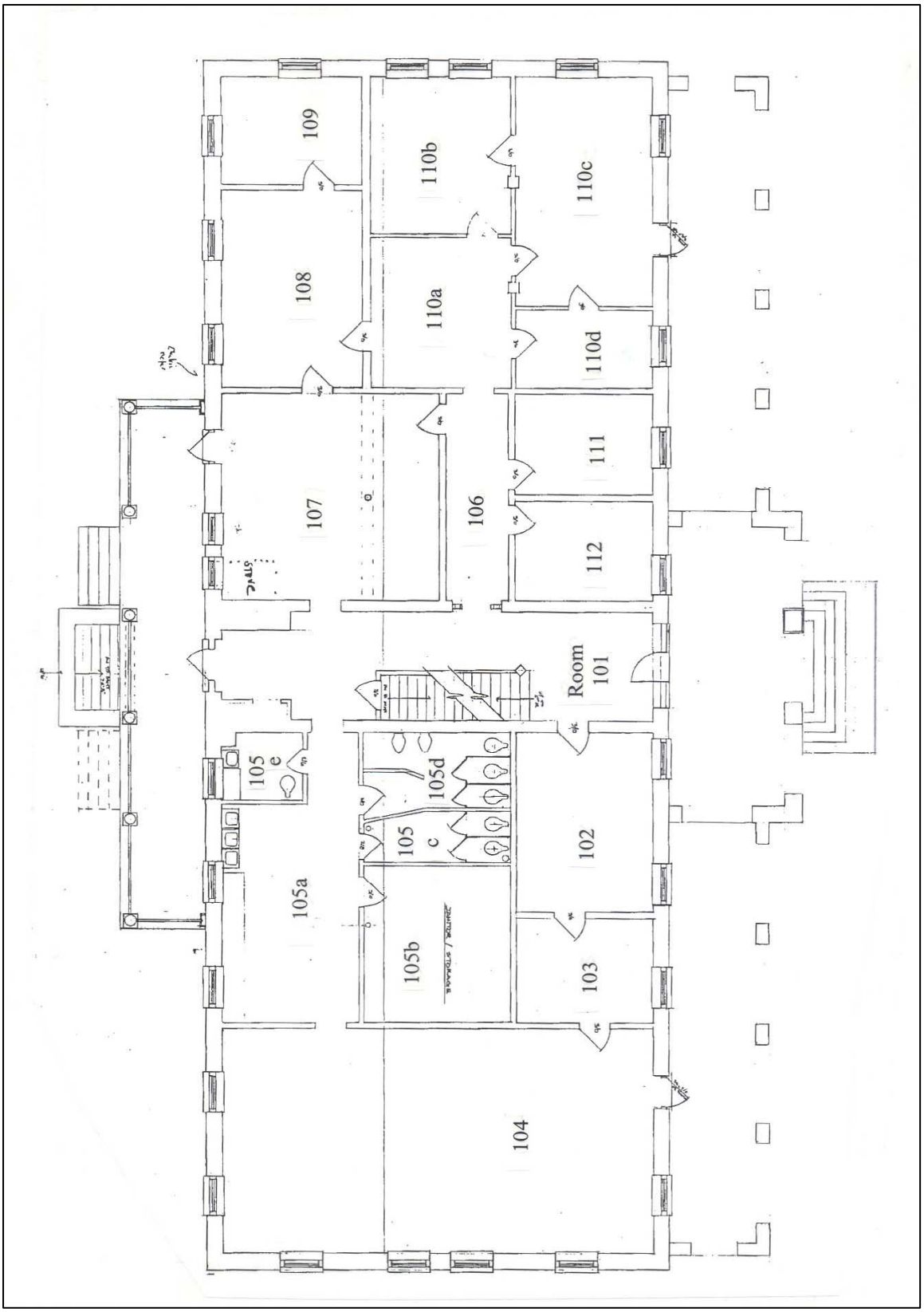


**Figure 72.** Plan of first story, showing assigned room numbers.

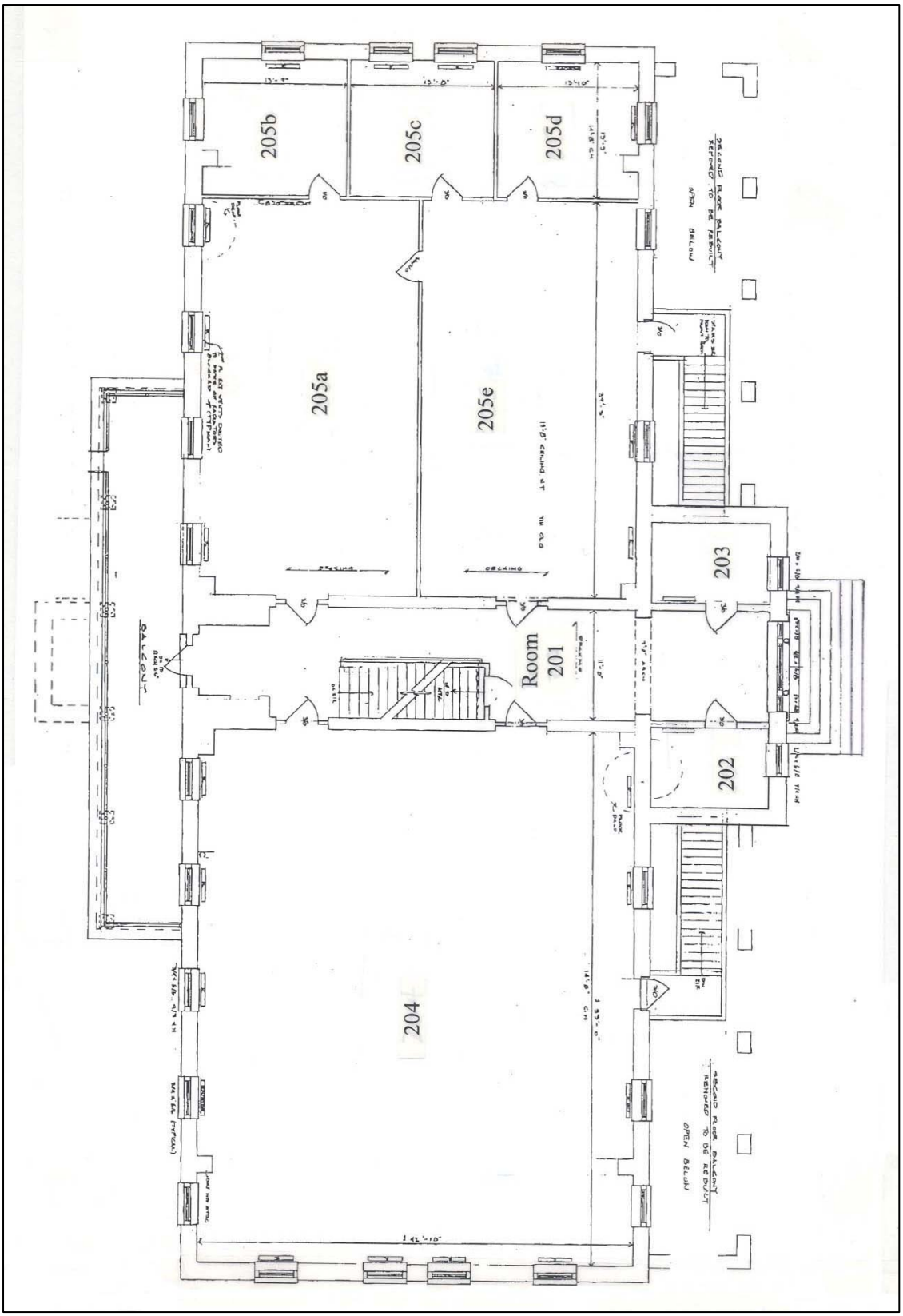


**Figure 73.** Plan of second story, showing assigned room numbers.

**Figure 74.** West elevation, showing replacement box cornice and fire escape.

**Figure 75**. East elevation, first-story doorway, showing perimeter infill with replacement door and original transom.

**Figure 76.** North side of basement, partition and laundry sinks in northeast corner.

**Figure 77.** North side of basement, center of ceiling, showing concrete slab flanked by concrete beams (added to support concrete floor in first-story lavatory).

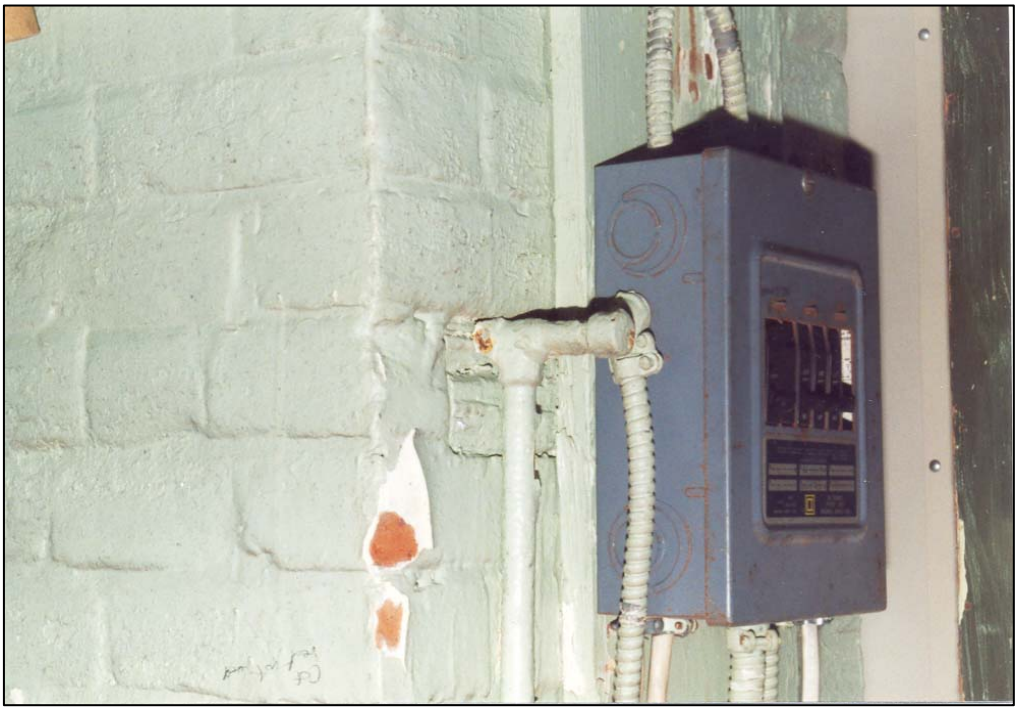

**Figure 78.** North side of basement, possible remnants of original gas jet.

**Figure 79.** Doorway from side hall to mess room, showing perimeter infill for replacement door and covered transom.

**Figure 80.** Pantry cupboard doors stored in south side of attic.

**Figure 81.** South dormitory, showing 1964 partitions.

**Figure 82.** Doorway from center hall to south dormitory, showing perimeter infill with replacement door and painted transom.

**Figure 83.** South side of attic, south wall, showing interior construction of opening for oculus.

# IV. CHARACTER-DEFINING FEATURES AND RECOMMENDATIONS

# Introduction

The proposed treatment for Building 25 is rehabilitation. The Secretary of the Interior's standards for the treatment of historic properties defines rehabilitation as

> ...the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.[1]

The "portions or features" to be preserved are known as character-defining features (CDFs), aspects of a building that give the building its particular aesthetic quality, and without which its architectural or historical integrity would be diminished or lost. CDFs may be architectural features and details, materials, craftsmanship, surface finishes, interior spaces and spatial relationships, or architectural context.

Many of the Secretary of the Interior's standards for rehabilitation specifically address the retention of character-defining features.[2] These include the following:

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

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

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

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

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

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

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[1] Kay D. Weeks and Anne E. Grimmer, *The Secretary of the Interior's Standards for the Treatment of Historic Properties, with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings* (Washington, DC: U.S. Department of the Interior, National Park Service, Cultural Resource Stewardship and Partnerships, Historic Preservation Services, 1995), p. 61. Familiarity with this document should be a prerequisite for all those participating in any decision-making concerning the rehabilitation and preservation of Building 25.

[2] Weeks and Grimmer, p. 62.

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

Therefore, any rehabilitation treatment must begin with an assessment of the structure's CDFs, to ensure that these crucial features are protected from alteration or demolition. A primary goal of this HSR has been the definition of Building 25's CDFs. These CDFs, listed subsequently, should be carefully considered during the planning and construction phases of Building 25's rehabilitation.

CDFs may also be missing or removed elements that were important to the historic character of the structure. The Secretary of the Interior's guidelines for rehabilitating historic buildings states that

> …where an important architectural feature is missing, its replacement is always recommended…if adequate historical, pictorial, and physical documentation exists so that the feature may be accurately reproduced….[3]

The recommendations listed subsequently address the retention of existing CDFs and the replacement of missing ones. They generally do not consider the condition of these elements, or make specific recommendations for their conservation treatment. A condition report and treatment assessment will be performed by an architectural/engineering firm at a later date, prior to the beginning of construction, and will be appended to the body of this HSR.

It should be noted that these recommendations apply only to Building 25, and not to the other three barracks (Buildings 22, 23, and 24). A similar set of character-defining features and recommendations should be prepared prior to the rehabilitation of any of the other three structures. However, this historic structure report can serve as a useful reference for that effort.

## Exterior Elements

### Design and Context

#### CDFs

- Institutional interpretation of the Colonial Revival style.
- Long, narrow length and gable-end design, with pedimented entrance pavilion projecting from the front elevation.
- Identical design to the three adjacent barracks buildings to the south (Buildings 22-24), constructed at the same time.
- Its context within an institutional ensemble: the similarity of style, material palette, and detailing to the other 31 buildings of Fort Hancock's original master plan.

[3] Weeks and Grimmer, p. 65.

**Recommendations**

- Preserve the elements that contribute to the decorative institutional style of the building (listed subsequently).
- Preserve the straightforward massing of the building in its current form.
- Preserve the stylistic and material elements common to all of the structures in the initial master plan.

## Porches

**CDFs**

- West porches (before their removal in 1989-90): one two-story loggia-type porch on either side of the pavilion, consisting of first-story brick piers supporting second-story wooden columns on cast-iron bases, with cast-iron balustrades running between the piers and columns, and wooden lattice panels running between the trap-rock foundation piers (see figs. 9, 20, and 22).
- Tooled limestone steps leading up to the west pavilion (originally seven in number before the replacement of the bottom two with concrete, probably in 1930-31).
- East porch: one-story wooden porch centered on the rear elevation (see fig. 10), with six wooden columns and pipe railing along its outer edge that corresponds with the porch of Building 58 opposite it.

**Recommendations**

- Recreate front porches, using as many of the original wooden columns and cast-iron column bases and balustrades (currently in storage) as possible, conserving these elements where possible and replacing missing or heavily deteriorated elements in kind or with compatible materials. Recreate flat-seam sheet-metal roofs, stamped-metal cornices with modillions and dentils, and wooden decking and lattice panels (see fig. 16).
- Replace two bottom steps leading to front porch with limestone matching the original upper five steps. (The chiseled tooling may be omitted to distinguish the new material at close range.)
- Retain reconstructed east porch, but remove center stairway. Build two stairways as per figure 10 (1898 appearance), figure 41 (ca. 1938-42 appearance), or figure 52 (1959 appearance). Add dentil molding to existing cornice as per original design (see fig. 16).
- Replace metal-pipe balustrades on rear porch that originally ran between the six columns and around the porch roof edge; some, if not all, of these are currently stored in Room 107 of Building 25.

## Doorways and Fenestration

### CDFs

- Symmetry of doorway and window openings on front and side elevations, and slight asymmetry of doorway and window openings (following interior functional needs) on rear elevation.
- Double-hung, 12-over-12 sashes in most window openings; nine-over-nine sashes in the windows flanking the pavilion's "Palladian" window and kitchen (Room 107) windows; and fixed 12-light sidelights on either side of the "Palladian" window.
- Sheet metal-lined vent openings below the sills of most second-story windows.
- Occuli in west, north, and south gables.
- Double doors in front and rear center doorways, each with a 21-light panel above two raised horizontal panels (before their replacement in 1964). Narrow sidelights (16 panes above one raised vertical panel; see figure 17) on either side of front entrance.
- Single doors in all other doorways, with 28 lights above two raised horizontal panels (before their replacement in 1964; see figure 17)
- Transoms with multiple lights above each doorway, as described previously in the section "Original Appearance, Exterior Elements, Doorways."

### Recommendations

- Maintain configuration of original doorway and window openings.
- Remove metal covering from second-story vent openings and conserve surrounding sheet-metal "trim" (formed from the end of the vent-shaft lining).
- Remove plywood infill from all doorways.
- Replace all doors (except extant original rear basement door) with single or double panel-and-sash doors matching the original doors in dimensions and configuration.
- Recreate multi-pane tripartite transom over front entrance (see figure 17); retain six-light transoms over other doorways.
- Install interior storm windows that are reversible, and that don't detract from the exterior or interior appearance of the sashes.

## Roof and Related Features

### CDFs

- Slate roof (prior to removal in 1973).
- Chimney with corbeled cap on the east roof slope, slightly to the south of center.
- Two metal ventilators on the roof ridge, between the third and fourth bays on each end (prior to the removal of the north ventilator).
- Stamped-metal cornice with modillions and dentils along all of the eaves (prior to its removal from the horizontal, east and west eaves, possibly in 1976).
- Built-in gutters on the main roof and the front and rear porches.

**Recommendations**

- Replace asphalt roof shingles with slate if feasible.
- Retain chimney in current configuration.
- Rebuild sheet-metal north ventilator to match the south one (probably original). These need not, and should not, be operational.
- Remove plywood box cornice along the east and west eaves; install new cornice made to match extant sections of original cornice on raking, north and south eaves. New cornice sections need not be of stamped metal, but must have the same appearance as the originals.
- Recreate the built-in gutters on the main roof and the front and rear porches, as per the original construction drawings.

## Materials

**CDFs**

- Buff-colored face brick with thin mortar joints on walls and front-porch piers; includes jack-arch lintels with projecting keystone motif over all doorways and windows (except basement windows), and rusticated first story of pavilion.
- Trap-rock foundation.
- Tooled limestone trim: doorway and window sills, water table, lintels of basement doorway and west basement windows, pavilion's belt course and front steps.
- Terra-cotta details of pavilion's Palladian window (arch tympanum, colonnettes, lintel, and sill) and all three occuli (frames and keystones).
- Wooden elements: doorway and window frames, doors, window sashes, front and rear porch columns, porch floors, and lattice panels between front-porch foundation piers
- Metal elements: stamped metal cornice, sheet-metal ventilators, cast-iron porch balustrades and column bases, and rear-porch pipe balustrades.
- Slate roof (prior to removal in 1973).

**Recommendations**

- Preserve all existing historic materials identified as CDFs; where preservation is not possible because of advanced deterioration, materials should be replaced in kind.
- Monitor all existing historic materials identified as CDFs over time to detect the progress of deterioration due to moisture penetration, weathering, and structural change.

## Finishes

**CDFs**

- All wooden and cast-iron elements, including trim, window sashes, doors, porch balustrades, and cornice, were originally painted white; in 1907 they were light gray. In the World War II era the doors, window sashes, cornice, balustrade rails, and porch fascias were painted dark green, while the porches' columns, pilasters, and balusters were painted white (see Appendix D, "Finishes Study").
- Original chiseled finish of limestone trim.

**Recommendations**

- Repaint wooden and cast-iron elements to desired interpretive period (original, 1907, or WWII).
- Maintain original chiseled surface finish of limestone trim when cleaning exterior by using non-abrasive methods.

## Interior Elements

The system of assigning numbers to rooms within Building 25–used in the previous section "Current Physical Description" and shown on figures 72-73–is also employed here.

### Style

**CDFs**

- Late 19th-century institutional quality; relative simplicity and repetition of detailing and functionality of spaces.

**Recommendations**

- Preserve the elements that contribute to the simple but decorative functionalism of the building's interior (listed subsequently).

### Plan

**CDFs**

- Central front-to-back hall, with open stairway, that divides the basement, first and second stories, and attic into two equal halves.
- Wide span and openness of the rooms originally intended as communal living areas, including the day room (Room 104), mess room (Room 110, prior to its subdivision in 1964), and the two second-story dormitories (Rooms 204 and 205).
- Exposed cast-iron columns in first-story Rooms 104, 105, and 110.

**Recommendations**

- Retain central hallway as the main axis.
- Retain openness of main stairway.
- Remove all 1964 and 1976 partition walls (all nonoriginal walls).
- When repartitioning the space, preserve the original feeling of spaciousness in the areas that will be open to the public.
- When repartitioning the space, preserve the rhythm of the original plan and structure (expressed in the ceiling configuration and cast-iron columns) as much as possible (see figs. 13-14).

- Construct new stud walls carefully so that they do not appear to be as obviously recent and poorly constructed as those from 1964.

## Floors

### CDFs

- Wood strip finish flooring (original/repaired 1908)

### Recommendations

- Retain all extant wood finish flooring. Strip areas covered with gray paint and refinish with a clear coating.
- Remove vinyl tiles, carpeting, and plywood subfloor in the areas that will be open to the public; retain and refinish any underlying early finish flooring.

## Ceilings

### CDFs

- Original stamped-metal ceilings with borders.
- High ceilings.

### Recommendations

- Remove 1964 drop ceiling in mess room (Room 110).
- Retain all extant stamped-metal ceilings (thus also preserving the ceiling height).
- Restore extant stamped-metal ceilings: scrape flaking paint, prime, and repaint with buff color similar to original or to desired interpretive period (see Appendix D, "Finishes Study").

## Doorways

### CDFs

- Transoms with operative sashes: 12-light sashes (six across by two down) over double doorways, and six-light sashes (three across by two down) over single doorways (except for between Rooms 108-109 and Rooms 102-103)
- Doors with five recessed, molded horizontal panels (see fig. 26).

### Recommendations

- Retain extant transom windows and strip paint from those that have been overpainted.
- Replace transom between the hallway and Room 102 with a six-light sash (three across by two down) matching the original transom here.
- Remove all 1964 replacement doors and particleboard infill from single and double doorways.

- Install single and double replacement doors where desired that fully fill the original frames. The park is currently salvaging original doors from Building 24 for this purpose; any new doors should match these, and should be of solid-panel construction.

## Woodwork

### CDFs

- Heavily molded doorway and window casings with flat plinth blocks and small dentil course in cornice.
- Matchboard wainscot with simple baseboards in the center hall, along the north wall of the main stairway to the second story, and in the side hall to the mess room.
- Details of the main stairway, including the nonoriginal main newel and balusters.
- Heavy, elaborately molded baseboards.

### Recommendations

- Retain extant original doorway and window casings, wainscot, baseboards, chair-rail fragment in Room 104, and all elements of the main stairway.
- Replace missing elements in kind, using the same type of wood and finish (although not necessarily the identical profile) so that they blend with remaining original elements.

## Finishes

### CDFs

- Shellac finish on all woodwork (doorway and window casings, stairway elements, wainscot, baseboards, and presumably the doors). See Appendix D, "Finishes Study."
- Neutral color paint on plaster walls. See Appendix D, "Finishes Study."
- World War II colors: white doorway and window trim, blue-gray baseboards and wainscot, and various wall colors; see Appendix D, "Finishes Study."
-

### Recommendations

- Strip woodwork of later paint layers and refinish with a translucent coating, similar to the original finish of clear shellac.
- Paint walls with a neutral-tone palette similar to that used originally. It is not necessary to match the colors exactly.
- Alternatively, repaint walls, wooden trim, and cast-iron to reflect elements as per desired interpretive period (1898, 1907, or World War II; see Appendix D, "Finishes Study").

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# VI. APPENDICES

# APPENDIX A.

## Cost Estimates for the Original Buildings at Fort Hancock

Prepared by Col. Charles G. Sawtelle, Chief Quartermaster for Major General Thomas Ruger, Commander of the Department of the East, March 1896. From Edwin C. Bearss, *Historic Resource Study, Fort Hancock, 1895-1948, Gateway National Recreation Area, New York/New Jersey* (Denver: U.S. Department of the Interior, National Park Service, May 1981), pp. 10-11.

## Estimate for "the necessary Buildings for a Military Post of Four Batteries of Artillery"

| | |
|---|---|
| Two double sets of two-company barracks, similar to those constructed at Fort Ethan Allen, Vermont, $40,000 each | $80,000 |
| Five double sets of officers' quarters, similar to those at Fort Columbus, New York, $16,500 each | $82,500 |
| One structure with five sets of bachelor officers' quarters, similar to the one at David's Island, New York | $26,000 |
| Administration building, similar to that at Fort Ethan Allen | $13,000 |
| Guardhouse, similar to that at Fort Ethan Allen | $ 8,000 |
| Quartermaster and commissary storehouse, similar to that at Fort Ethan Allen | $ 8,500 |
| Hospital, similar to that at Fort Ethan Allen | $18,000 |
| Hospital steward's quarters | $ 2,000 |
| One double set of noncommissioned officers' quarters, similar to those at Fort Ethan Allen | $ 4,200 |
| Fuel storehouse, similar to that at Fort Ethan Allen | $ 2,200 |
| Quartermaster stable, similar to that at Fort Ethan Allen | $ 5,400 |
| Wagon shed, similar to that at Fort Ethan Allen | $ 2,300 |
| Blacksmith shop, similar to that at Fort Ethan Allen | $ 2,200 |
| Shop building-mechanic shops, similar to those at Fort Ethan Allen | $ 3,000 |
| Bakery | $4,875 |
| Oilhouse | $ 200 |
| Scale house | $ 500 |
| TOTAL | $262,825 |

# APPENDIX B.

## Request for Quotation for Masonry Repairs, Building 25, 1998

***Request for Quotation***

The scope of work outlined in this Request for Quotation (RFQ) includes the selective, controlled demolition ,salvage brick and disposal of construction items to accommodate the repair work. The work consists of rebuilding buff brick veneer walls using salvaged and new brick , The new brick the Government will provide and the contractor is responsible to transport brick to the site. ( Voussoir Brick will not be provided by the Government and contractor shall cut government supplied brick to match existing . The project will be broken down into separate line items and contractor shall confirm the areas of work.

The project involves the masonry repair of historic Barracks Building 25 in Fort Hancock located at Sandy Hook, New Jersey. The two story buff brick building ,an example of classical revival architecture with Palladian windows and two story porches

Please review the following scope of work ,identify a cost for the work outlined and fax this quotation sheet to the attention of David B. Crotty , Architect at fax # 732-872-5925 no later than October 19,1998. A site visit and project walk through will take place October 14,1998 10:30 am .

Scope of work :

**A** .. Building 25 Rear, East side off Magruder Road, dismantle **(2)** areas of bulging brick veneer **+/- 50square feet** each as described in the Selective Demolition Section and approved by the COR. Protect and structural support masonry to remain which surrounds the removal area as described. Remove loose masonry units to be removed by hand . Damaged brick and residue mortar to be removed with a chisel. Prepare the surface to be free and clean of all loose material. Install stainless steel lintels ; lintels shall have an even and equal bearing on sound brick . Bricks are to be reset in a solid and evenly filled bed of mortar. The bricks are to be set true and level matching the existing bond pattern. Brick ties as described in the specifications, shall be securely attached to existing masonry, place on the brick centers. Clean the site and the building while working .

$\$$ _____ .

**B.** Building 25 Front off parade field , dismantle areas of bulging brick veneer **+/-50 square feet** as described in the Selective Demolition Section and approved by the COR. The area is over the front porch under the window and sill. Protect and structural support masonry to remain which surrounds the removal area as described. Remove loose masonry units to be removed by hand. Damaged brick and residue mortar to be removed with a chisel. Prepare the surface to be free and clean of all loose material. Install stainless steel lintels ; lintels shall have an even and equal bearing on sound brick . Bricks are to be reset in a solid and evenly filled bed of mortar. The bricks are to be set true and level matching the existing bond pattern. Brick ties as described in the specifications shall be securely attached to existing masonry ,place on the brick centers. Clean the site and the building while working.

$\$$ _____ .

C. Building 25 Windows , dismantle decorative brick above each window +/- **15 square feet,** areas of bulging brick veneer as described in the Selective Demolition Section and approved by the COR Protect and structural support masonry to remain which surrounds the removal area as described. Remove loose masonry units to be removed by hand. Damaged brick and residue mortar to be removed with a chisel. Prepare the surface to be free and clean of all loose material. Install stainless steel lintels ; lintels shall have an even and equal bearing on sound brick . Bricks are to be reset in a solid and evenly filled bed of mortar. The bricks are to be set true and level matching the existing bond pattern. Brick ties, as described in the specifications shall be securely attached to existing masonry ,place on the brick centers. Clean the site and the building while working.

***Quote price per window***

***$*** _____ .

***Add Alternate Items :***

# APPENDIX C.

## Scope of Work for Rear Porch Rehabilitation, Building 25, 1999

December 29 , 1999

Memorandum

To: Lou Hansen / Facility Manager/ SHU

From: David B. Crotty / Architect /SHU

Subject: ***Building 25 Scope of Work for Rear Porch Rehabilitation***

***Project Description :***

The project involves the adaptive rehabilitation of historic Barracks building 25 rear porch , in Historic Fort Hancock . Barracks Building 25 was built in 1899 and is approximately 17,000 square feet. The two story buff brick building ,an example of classical revival architecture with Palladian windows and two story porches.

The barracks overlook the historic parade ground and are 100 yards from the Sandy Hook lighthouse. The development of the building will provide NPS presence in the highly visited area of Fort Hancock . The exterior restoration of the building and the grounds will restore their historical appearance and provide a model for the historic leasing plan. The work will be maintenance and rehab of porch to match existing in kind and to be used for the main entrance into the proposed Visitor Center/ HQ that will be accessible by a ramp once approved.

The future plan is to consolidate management, administrative and interpretative staff in one building instead of 5 current staff buildings . The project will provide a Fort Hancock Visitor Center, proper storage and display areas for the museum collections .

The proposed rehabilitation of the existing porch deck, handrails, roof and columns. The project would entail the stabilization of the roof structure and porch structure that is fair condition while the decking, trim and roof are in poor condition .The rear porch pose a health and safety issue to park visitors and park employees. The work will prevent further deterioration or collapse . Work to include the cleaning up of debris under the porch from the previous tenant and removal of 2 bushes on the ends of the porch

Work would require stabilizing the roof and install temporary supports so the 11'-4 " wood columns and steel bases could be removed and repaired in house in the carpentry shop during the winter months . The existing wood columns would be scraped and repaired, while the steel bases would be stripped and treated with POR-15 , a rust preventive paint that has been used out in SHU in the past. POR 15 would be used on all metal and steel bases and handrails. The handrails on the first floor deck would be removed and sent out to be dipped to remove the levels of paint. The second floor handrails would be left in placed and scraped, wire brush and painted with POR15.he removal of approximately 60 % of the 1"x 3" T&G decking , replace in kind to match existing , prime all 4 sides of the decking and paint grey to match the painting plan. The existing 2x 8 joists 17" on center are in good condition and should be repaired as required.

The rehab of the existing porch dropped girder boxed out in pine would be repaired in kind to match existing and all wood will be primed on all 4 sides . The existing fascia and soffit with decorative crown moulding will be replaced in kind to match the existing profile. The existing T& G wood decking for the roof is in good condition and approximately 15 % may be replaced once the rolled roofing is removed. The roof will stripped down to the sheathing and inspect sheathing, replace sheathing in kind to match existing. The installation of ½ " plywood on top of the existing T&G , 15 pound felt, install 3'-0" wide ice and water shield at the edges and rolled roofing to match existing. The handrails would remain in place, repaired and painted with POR 15

Carefully dismantle all wood porch structure needed as for repair. All salvaged porch components to be tagged and indexed if not re used. All electrical wiring shall be disconnected prior to rehab. Temporary railings should be installed at all doorways and closed area signs shall be posted. All debris will be removed at the end of each day and the area shall be secured with a temporary fence. Photographs and drawings have documented all existing conditions

Dave

file 25porchSCOPE
cc: Bldg Foreman
Venuto
Thomas

# APPENDIX D.

## Finishes Study

# Introduction

## Project Scope

Building 25, one of the four original enlisted men's barracks, will be rehabilitated to house the park's visitor center, educational facilities, interpretive and cultural resource operations, and museum collections. This report describes the findings of a finishes investigation of the painted exterior and interior elements of the building. The historical sequence of finishing campaigns is described, with selected matches to a standardized color-notation system for three periods of interpretive interest: as constructed in 1897-98; 1906-07, when the building's troop capacity increased; and World War II (1943), when the building housed the Women's Army Auxiliary Corps (later the Women's Army Corps). The conclusions are based on the microscopic examination of extracted finish samples.

The information in this report can be used to recreate the historic finishes of the building exterior or portions of the interior for any of the periods specified above. The general color palettes used during periods of interpretive interest are considered to be character-defining features (CDFs) of the structure, and should be recreated where appropriate (discussed in Chapter IV, "Character-Defining Features and Recommendations").

Additionally, information gleaned from this study made it possible to date several of the building's elements and alterations. These dates have been included in Chapter III, "Chronology of Development and Use, Alterations," and they will be explained subsequently in the "Conclusions" section of this study, under the heading "Elements Dated by Paint Evidence."

## Methodology

Site visits were made to Sandy Hook on August 27-30, 2001; September 10-11, 2001; and February 13, 2002. Ninety-one paint samples (each approximately one-quarter-inch square) were removed from all accessible exterior and interior painted elements of the building using an X-acto knife.[1] In the laboratory of the Northeast Cultural Resources Center's Building Conservation Branch (BCB) in New York City, all samples were examined with an American Optical stereobinocular zoom microscope under 68x magnification, with tungsten fiber-optic light. Representative samples (42 in total) were mounted in a polyester resin cube (Bio-Plastic® Liquid Casting Plastic) and abraded to a high polish so that their finish sequences could be read more clearly.[2]

The chronological finish stratigraphy from each sample was recorded in chart form; these sequences were correlated to one another through their common color layers. These "chromochronologies" are given in Tables 1 through 6; each horizontal row represents the elements' finishes at one period in time. Dates were assigned to some of the rows using archival references to

[1] The sheet metal cornice on the west, north, and south gables could not be sampled because the park did not have a sufficiently tall ladder; this element will have to be sampled this spring, when the building is scaffolded for restoration.

[2] The Munsell Color System is an internationally recognized standard of color measurement that identifies color in terms of three attributes, hue (color), value (lightness/ darkness, or degree of white/ black mixed into the color) and chroma (saturation, or intensity of the color).

finishing campaigns (detailed in Chapter III, "Alterations"), black-and-white historic photographs (which show relative color values), and benchmarks within samples (layers for which a date can be firmly assigned). The specific sources used to determine dates are footnoted in the chromochronology tables.

Half of each sample selected for mounting was reserved for use in color matching, which was performed under the same magnification and lighting conditions as described previously. The desired layer in the sample was exposed with a scalpel and was matched to Munsell System color cards, glossy finish. This information is summarized in Table 7.

All mounted and unmounted paint samples will be stored at the main office of the BCB in Lowell, Massachusetts, and will be available for further study.

## Data and Conclusions

### Data

The paint layers comprising the stratigraphic finish chronology for each element are listed sequentially in Tables 1-6. All color names used are subjective designations intended to distinguish between paint layers only. In Table 7, this information is summarized, and finishes from selected historical periods (1898, 1906-07, and 1943) are matched to Munsell color standards. Munsell color notations provide a standard method of color description, but are approximations of the paint colors that were originally used. In addition to the fact that Munsell color chips provide a close but not exact match to most paint colors, aging paint can change colors over time. Paints (particularly those that are oil-based) darken or yellow, especially when not exposed to the bleaching effects of light, and certain pigments fade. It should also be noted that color is but one factor affecting a coating's appearance; sheen, opacity, texture, and application techniques also play a role.

**TABLE 1:**
**EXTERIOR ELEMENTS: BUILDING 25**

| Sample # | 61 | 81 | 66 | 82 | 79, 80 | 84 |
|---|---|---|---|---|---|---|
| | **Doorway jamb, back 1st story** | **Doorway jamb, back basement** | **Second-story doorway** | **Second-story vent** | **Front porch balustrade rail** | **Window sashes** |
| **Substrate** | | | | Rust | Rust | Wood |
| **1898**[1] | Off-white x 2 (dirt) | Off-white x 2 | White (dirt) | Off-white (dirt) | Off-white x 2 | |
| **1907**[2] | Lt. gray-yellow brown (dirt) | | Lt. gray-yellow brown x 2 (dirt) | Lt. gray-yellow brown | Lt. gray-yellow brown | |
| | Purplish gray (dirt) | Purplish gray x 2 | Purplish gray (dirt) | Purplish gray x 2 | Purplish gray x 2 | |
| | | | Blue-gray | Lt. gray | | |
| **1912**[3] | Green-gray | Green-gray | Green-gray | Green-gray | Green-gray | |
| | Green | | | | | |
| | Apple green | Lt. green | | | Med. gray | |
| | Dk. gray-green | Dk. gray-green | | | | |
| **1925?**[4] | Blue-gray x 4 | Dk. gray | Blue-gray x 2 | Dk. gray | Dk. gray | |
| **1930?**[5] | Yellow-tan x 2 | | Yellow-tan | Yellow-tan | Yellow-tan | |
| **1936-38**[6] | Green | Green | Green | Green | Orange primer | |
| | | | | | Green | |
| **1943**[7] | Green | | Green | Green | Green | |
| | Greens x 12 | | Green | Green | Green | |
| **1964**[8] | | | Green | Green | Green | White (P) |
| | | | | | | Green |
| | | | Greens x 2 | Greens x 2 | Greens x 2 | Greens x 2 |

[1] 1900 photographs (figs. 26-28, 33).

[2] Edwin Bearrs' *Historic Resource Study, Fort Hancock 1895-1948* (p. 296) cites a 1906 source specifying colors for the exterior of the barracks: "paint the…ceiling and porches French gray; and the exterior trim a matching color that had been used for similar features on other post buildings."

[3] A 1912 photograph shows the buildings with uniform light trim (fig. 37); Bearrs (p. 402) states that the buildings had been recently repainted.

[4] The building exterior was extensively restored this year (Bearrs, p. 492).

[5] The building exterior had additional extensive work performed this year (Bearrs, pp. 495-496).

[6] This complete exterior repainting coincides with a documented complete repainting of the interior (this report, p. 103); 1938 photographs of Barracks 22 or 23 (park catalog numbers 1650, 1713-1714, and 1910-1911; not included here) show the trim to be a uniform, medium-to-dark tone.

[7] 1943 photographs (figs. 43, 44, 48, 49).

[8] Benchmark of 1964 window-sash interior.

**TABLE 2:**
**EXTERIOR ELEMENTS: BUILDING 25 (Con't.)**

| Sample # | 74, 77, 78 | 64, 65 | 68 | 69 | 75 | 63 | 76 |
|---|---|---|---|---|---|---|---|
| | **Front porch baluster** | **Front porch baluster** | **Front porch column** | **Front porch column** | **Front porch column base** | **Back porch pilaster base** | **Pavilion ceiling** |
| **Substrate** | Rust | | | Wood | | | |
| **1898**[1] | Off-white (dirt) | Off-white | Off-white (dirt) | Off-white | White | Off-white | Off-white |
| **1907**[2] | Lt. gray-yellow brown<br>Lt. gray-yellow brown (dirt) | Lt. gray-yellow brown<br>Lt. gray-yellow brown | Lt. gray-yellow brown | Lt. gray-yellow brown | Lt. gray-yellow brown (dirt) | Lt. gray-yellow brown (dirt) | White |
| | Purplish gray | Purplish gray | Purplish gray x 2 (dirt) | | Purplish gray x 2 (dirt) | Purplish gray (dirt) | Very lt. blue |
| | | Dk. gray | | Dk. gray | | | |
| **1912**[3] | Lt. green (dirt) | Lt. green | Lt. green (dirt) | | | Green-gray | Green-gray |
| | | | | | | Lt. gray | Med. gray |
| **1925?**[4] | Dk. blue-gray | Dk. blue-gray | Blue-gray | Blue-gray | Blue-gray | Blue-gray (dirt) | |
| | | | | Dk. gray | Dk. blue-gray | | |
| **1930?**[5] | Yellow-tan | Yellow-tan | Yellow-tan | | | Yellow-tan | Yellow-tan |
| **1936-** | Orange primer | Orange primer | Red primer | Red primer | Orange primer | | Off-white |
| **1938**[6] | Green | Green | Off-white x 2 | Off-white x 2 | Green | Green | |
| **1943**[7] | Off-white | White | Off-white | Off-white | White | Off-white | Off-white |
| | White x 2 | | Off-white | Off-white | Off-white | Off-white | Off-white |
| **1964**[8] | Greens x 3 | Greens x 5 | Green | Greens x 3 | Greens x 3 | Greens x 5 | Aqua blue x 3 |
| | | Gray | | | | | Greens x 2 |
| | | | | | | | |

[1] 1900 photographs (figs. 26-28, 33).

[2] Bearrs' *Historic Resource Study, Fort Hancock 1895-1948* (p. 296) cites a 1906 source specifying colors for the exterior of the barracks: "paint the…ceiling and porches French gray; and the exterior trim a matching color that had been used for similar features on other post buildings."

[3] A 1912 photograph shows the buildings with uniform light trim (fig. 37); Bearrs (p. 402) states that the buildings had been recently repainted.

[4] The building exterior was extensively restored this year (Bearrs, p. 492).

[5] The building exterior had additional extensive work performed this year (Bearrs, pp. 495-496).

[6] This complete exterior repainting coincides with a documented complete repainting of the interior (this report, p. 103); 1938 photographs of Barracks 22 or 23 (park catalog numbers 1650, 1713-1714, and 1910-1911; not included here) show the trim to be a uniform, medium-to-dark tone.

[7] 1943 photographs (figs. 43, 44, 48, 49).

[8] Benchmark of 1964 window-sash interior.

**TABLE 3:**
**INTERIOR TRIM: BUILDING 25**

| **Sample #** | **1** | **5** | **53** | **91** | **2** | **33** | **28** | **20** | **6** |
|---|---|---|---|---|---|---|---|---|---|
| **Room #** | **101** | **101** | **201** | **110** | **101** | **106** | **111** | **108** | **101** |
| **Element** | **Doorway trim** | **Doorway trim** | **Doorway trim** | **Window sill** | **Wainscot** | **Wainscot** | **Baseboard** | **Baseboard** | **Newel Post** |
| **Substrate** | | | | | | | Wood | | Wood |
| **1898**[1] | Shellac x 2 | Shellac x 2 | | | Shellac x 2 | Shellac | | | |
| **1907**[2] | Red shellac | Red shellac | Red shellac | Red shellac | Clear shellac | Clear shellac | Red shellac | Red shellac | |
| | Blue-gray | Blue-gray | Off-white x 2 | Lt. gray | | | Lt. gray | | |
| | Blue-gray | Blue-gray | Blue-gray | Blue-gray | Blue-gray | Blue-gray | Blue-gray | Blue-gray | |
| | Blue-gray | Blue-gray | Blue-gray | Blue-gray | Blue-gray | Blue-gray | Blue-gray | Blue-gray | |
| | Off-white | Off-white | Off-white | | Lt. gray | Lt. gray | White | White | |
| | Off-white | Off-white | Off-white | Off-white | Blue-gray | Blue-gray | Blue-gray x 5 | Blue-gray x 5 | |
| | White | White | Gray-white | | Blue-gray x 2 | Blue-gray x 2 | | | |
| | White | White | Off-white x 2 | | Lt. gray | Off-white x 2 | Lt. blue-gray | Lt. blue-gray | |
| **1943**[3] | Pale orange-yellow | Pale orange-yellow | Pale orange-yellow | Pale orange-yellow | Blue-gray | White | Blue-gray | Blue-gray | |
| | Off-white | Off-white | Off-white | | Dark gray | Blue-gray | Med. dk. blue-gray | Med. dk. blue-gray | |
| | Off-white | Off-white | Off-white | Off-white | Blue-gray<br>White | Blue-gray<br>White | | Bright green-blue | |
| | | Lt. gray | Lt. gray | | Blue-gray | Blue-gray | Lt. blue-gray | Lt. blue-gray | |
| | | Yellow | Thin white | | Thin dark | | White | White<br>Off-white | |
| **1964**[4] | Thin blue green | Thin blue green | Lt. blue | Thin blue-green | Blue-gray | Blue-gray | Lt. green | Thin blue-gray | Thin gray |
| | Lt. blue-gray x 2 | Lt. gray | Lt. gray | | | | White | | Lt. gray |
| | | Whites x 5 | Off-white | | Whites x 6 | Whites x 3 | Lt. blue-green | | Whites x 4 |
| | Lt. blue-green x several | Lt. blue-green x 3 | Lt. blue-green & whites x 6 | | | Lt. blue green x 2 | White<br>Off-white | Lt. blue-green x several | Lt. blue-green |

[1] Photographs from 1900 depict the dark appearance of the shellac-coated woodwork (figs. 29-32).

[2] Bearrs' *Historic Resource Study, Fort Hancock 1895-1948* (p. 296) cites a 1906 source specifying colors for the interior of the barracks: "paint the ceilings a rich buff, the door panels, dados, and interior of the window sash Indian tan; the chair rails and baseboards leather." Photographs of barracks dormitories (but not necessarily Bldg. 25) from 1907-1908 (figs. 35-36) corroborate that the trim was still dark (finished with shellac) at this time.

[3] Interior photographs from the WAAC period (1943) show white window and doorway trim and darker-painted baseboards (figs. 46, 47).

[4] This date is a benchmark taken from sample 91, the side of the window trim in Room 110. The last layer of paint dates from the 1964 division of the room into smaller offices, when this section of trim was covered with abutting gypsum board.

**TABLE 4:**
**FIRST-STORY INTERIOR WALLS: BUILDING 25**

| Sample # | 22 | 24 | 31 | 35 | 37 | 39 | 45 | 87 | 89 |
|---|---|---|---|---|---|---|---|---|---|
| | **Pantry** | **Cook's/Store Rm.** | **Tailor/ NCO Rm.** | **Company Office** | **Armory/ B.C. Office** | **Dayroom/ Dormitory** | **Bathroom** | **Hallway** | **Mess room/ Dormitory/ day room** |
| **Room #** | **108** | **109** | **112** | **102** | **103** | **104** | **105** | **101** | **110** |
| **Substrate** | Plaster | Plaster | Plaster | Plaster | Plaster | Plaster | Plaster | Plaster | Plaster |
| **1898** | | Primer | Primer (thin) | Primer (thin) | Primer (thin) | Primer (thin) | Sizing (in plaster) | | |
| | | Lt. olive-brown | Lt. olive-brown | Lt. olive-brown | Lt. olive-brown (thin) | Lt. olive-brown | Lt. olive-brown | Lt. olive-brown | |
| | | Lt. yellow | Lt. yellow | Lt. yellow | Lt. yellow | Lt. yellow | Lt. yellow | | Lt. yellow [SMOKE] |
| | | | Tan | Lt. blue (P) | | | Tan | | Tan [SMOKE] |
| | | | | Tan | | | | | |
| **1907**[1] | Primer | Lt. green-blue | Lt. green-blue | Lt. green-blue | Lt. green-blue | Lt. green-blue | Black | Lt. green-blue | Strong yellow-brown |
| | Lt. green-blue | | Yellow | | | | | | |
| | Lt. blue | Lt. blue | Lt. blue | Lt. blue | Lt. blue | Lt. blue | Off-white x 3 | Lt. blue | |
| | Yellow x 3 | Yellow x 2 | White | Lt. yellow | Lt. yellow | Yellow x 4 | Plaster skim coat Lt. yellow | Yellow x 3 | Lt. yellow |
| | | | Yellow | | | | | | |
| **1925?** [2] | Dk. tan | Tan | Red (thin) | Tan x 2 | Dk. tan x 3 | Dk. tan | Blue-gray | Orange-pink | Orange-pink |
| | | | | Yellow-white | Yellow-white | | Blue-gray | Yellow x 2 | Lt. yellow |
| | | | | Lt. green | Lt. gray | | White x 4 | | |
| | | | | | Lt. green | | | | |
| | | | | Med. green x 3 | V. lt. gray | | Gray-blue x 2 | | |
| | | | | Lt. tan | Lt. tan | | | | |
| **1943**[3] | Yellow-white x 6 | Lt. yellow x 10 | Yellow-white x 9 | Yellow-white x 10 | Yellow-white x 12 | Lt. yellow x 10 | Gray-blue x 9 | Yellow-white x 11 | Yellow-white x 7 |
| **1964**[4] | | Lt. green-blue x 7 | Lt. green-blue x 5 | Lt. green-blue x 3 | Lt. green-blue x 5 | Lt. green-blue x 4 | Greens and blues x 4 | Lt. green-blues and whites x 6 | Lt. green-blues and whites x 6 |

[1] This date is a benchmark from sample 22, Room 108, in what was originally the pantry. The earliest paint color dates from 1907, when all cooking and eating functions were moved to the newly constructed mess halls and the built-in cabinets lining the walls of the pantry were removed.

[2] The orange-pink color in Rooms 101 and 110 corresponds to a layer on the cast-iron columns in Room 104 that possibly has this date (see Table 6).

[3] It is not possible to assign this date to an exact layer. Interior photographs during WAAC residency show very light-colored walls (figs. 46-47).

[4] This date is a benchmark from sample 89, Room 110. The last layer of paint dates from the 1964 division of the room into smaller offices, when the original plaster walls were covered with gypsum board and wood-laminate paneling.

**TABLE 5:**
**SECOND-STORY INTERIOR WALLS: BUILDING 25**

| Sample # | 54 | 55 | 56 | 57 | 58 | 59 |
|---|---|---|---|---|---|---|
| | Hallway | Pavilion closet | Pavilion closet | Dormitory | Dormitory | Dormitory |
| Room # | 201 | 203 | 202 | 204 | 205 | 205 |
| Substrate | Plaster | Plaster | Plaster | | Plaster | Plaster |
| 1898 | Primer (thin) | Primer (thin) | | | Primer (thin) | Primer (thin) |
| | Lt. olive-brown | Lt. olive-brown (thin) | Lt. olive-brown (thin) | Lt. olive-brown | Lt. olive-brown | Lt. olive-brown |
| | Lt. yellow | Lt. yellow | Lt. yellow | Lt. yellow | Lt. yellow x 2 | Lt. yellow x 2 |
| 1907[1] | Lt. green-blue | Lt. green-blue | Lt. green-blue | Lt. green-blue | Lt. green-blue | Lt. green-blue |
| | Blue | Blue (dirt) | Blue | Blue (dirt) | Blue (dirt) | Blue (dirt) |
| | Yellow x 2 | Lt. yellow | | | | |
| 1925?[2] | Lt. orange-pink | Lt. blue x 2 | White (P) | Lt. orange-pink | Lt. orange-pink | Lt. orange-pink |
| | | | Lt. orange-pink | | | |
| | Yellow | Off-white (thin) | Bright yellow | Lt. yellow x 2 | Lt. yellow x 2 | Lt. yellow x 2 |
| | | Blue-gray x 3 | Yellow-tan | Blue-gray x 5 | Blue-gray x 2 | Blue-gray x 2 |
| | | | | | Yellow x 2 | Yellow x 2 |
| | | | | | Blue-gray | Blue-gray |
| 1943[3] | Yellow x 7 | Yellow x 2 | Yellow x 4 | Yellow x 3 | Yellow x 3 | Yellow x 3 |
| | | White x 4 | White x 2 | White x 3 | White x 3 | White x 3 |
| 1964[4] | Yellows and whites x 6 | Lt. green-blue x 6 | Lt. green-blue x 6 | Lt. green-blue x 7 | Lt. green-blue x 5 | Lt. green-blue x 5 |
| | Lt. green-blue | | | | | |

[1] This date is a benchmark from sample 22, Room 108, in what was originally the pantry. The earliest paint color dates from 1907, when all cooking and eating functions were moved to the newly constructed mess halls and the built-in cabinets lining the walls of the pantry were removed.

[2] The orange-pink color corresponds to a layer on the cast-iron columns in Room 104 that possibly has this date (see Table 6).

[3] It is not possible to assign this date to an exact layer. Interior photographs during WAAC residency show very light-colored walls (figs. 46-47).

[4] This date is a benchmark from sample 89, Room 110. The last layer of paint dates from the 1964 division of the room into smaller offices, when the original plaster walls were covered with gypsum board and wood-laminate paneling.

**TABLE 6:**
**INTERIOR METAL FINISHES: BUILDING 25**

| **Sample #** | **41A** | **41B** | **49** | **50** |
|---|---|---|---|---|
| **Room #** | **104: Dormitory/dayroom** | **104: Dormitory/dayroom** | **107: Kitchen** | **109: Cook's room/ storeroom** |
| **Element** | **Cast-iron column** | **Cast-iron column** | **Ceiling** | **Ceiling** |
| **1898**[1] | | Dark blue-gray | Off- white | Yellowish white (dirt) |
| **1907**[2] | | Dark gray x 3 | Lt. yellow | Lt. yellow |
| | | | White x 4 | |
| | Lt. gray | Green | Lt. blue | |
| | Lt. pink | Dk. gray | Lt. yellow | White |
| | Tan | Dk. gray | | |
| | Black | Black | Lt. yellow | Very lt. gray |
| | Light green-gray<br>Thin white | Light green-gray<br>Thin white | | |
| | Pink-tan | Pink-tan | Pink-tan | Pink-tan |
| | Thin black | Thin black | | |
| | Lt. blue-gray x 2 (dirt) | Lt. blue-gray x 2 (dirt) | White | |
| | Tan (dirt) | Tan (dirt) | | |
| **1925?**[3] | Orange-pink x 2 | Orange-pink x 2 | Orange-pink x 2 | Orange-pink |
| **1930?**[4] | Yellow-tan | Yellow-tan | Tan | Tan |
| | Dk. gray x 2 | Dk. gray x 2 | | |
| | Green | Green | | |
| | Olive | Olive | | |
| | Blue-green-gray | Blue-green-gray | | |
| **1943**[5] | Lt. blue-gray x 15 | Lt. blue-gray x 15 | light yellows and whites x 11 | light yellows and whites x 11 |

[1] A photograph from 1900 (fig. 29) shows that the columns were originally two-toned.

[2] Bearrs' *Historic Resource Study, Fort Hancock 1895-1948* (p. 296) cites a 1906 source specifying colors for the interior of the barracks: "paint the ceilings a rich buff…"

[3] The building received an overall painting this year (Bearrs, p. 492); if 1930 is in fact the date of the next layer, it makes sense that this consistent layer would date from 1925.

[4] The yellow tan paint on the columns appears to correspond with a layer on the exterior metal elements, which was probably applied in 1930.

[5] A photograph from 1937 (fig. 39) shows that by this date the columns were a single, light tone.

## Conclusions

### Colors Used during Various Periods

#### *Exterior Finishes*

All exterior trim, including the cornice, was originally off-white. In 1907 it was painted a light grayish-yellowish brown color. In 1943 the doors, doorway trim, window-vent trim, front-porch balustrade railing, and cornice were painted dark green;[1] the window sashes, porch columns and pilasters, and front-porch balusters were off-white.

#### *Interior Finishes*

All interior woodwork was originally coated with naturally colored shellac.[2] In 1907, shellac colored with a reed lake pigment was used for all trim except the window sashes and wainscot paneling, which were given another coat of clear shellac. In 1943, all trim was painted light yellow except for the wainscot, baseboards, and stairway handrail, which were painted gray.

The walls were originally painted a light olive-brown color. In 1907 they were a light green-blue (except for those of Room 110, which were a strong yellowish brown), and in 1943 they were a pale orange-yellow color. The porch ceilings and interior ceilings were painted slightly varying shades of yellow-white in all three periods.

### Elements Dated by Paint Evidence

#### *Window Vents*

A full early paint chronology on the window-vent trim revealed that these features were original to the structure, even though they do not appear in the original drawings.

#### *Replacement Window Sashes*

The lowest layer of paint on the interior side of the window sashes was the 1964 benchmark color, taken from an area of window trim in Room 110 that had been covered with abutting gypsum board in that year.

#### *Newel Post and Balusters*

These elements had approximately six layers of paint on them, suggesting that they were also replaced during the 1964 rehabilitation.

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[1] Sections of original cornice on the raking eaves could not be accessed for sampling; its appearance in historic photographs (fig. 26), however, confirms its light color originally and its dark color in 1943 (fig. 44).

[2] The ready solubility of this coating in acetone suggests that it is shellac.

**TABLE 7:**
**FINISH COLORS WITH MUNSELL COLOR SYSTEM NOTATIONS**

| | Original: 1897-98 | 1906-1907 | World War II: 1943 |
|---|---|---|---|
| Exterior Doors, Doorway Trim, Window Vent Trim, Front Porch Balusters, Cornice,[1] Window Sashes[2] | Off-white: 5 Y 9/1 | Light gray-yellow brown: 10 YR 6/1 | Dark green: 10 GY 3/4 |
| Porch Columns, Porch Pilasters, Porch Balusters | Off-white: 5 Y 9/1 | Light gray-yellow brown: 10 YR 6/1 | Off-white: 10 YR 9/1 |
| Porch Ceilings | Off-white: 5 Y 9/1 | White | Off-white: 10 YR 9/1 |
| Interior Doors, Doorway Trim, Window Trim | Clear shellac[3] | Red shellac[4] | Pale orange-yellow: 10 YR 9/4 |
| Interior Window Sashes[5] | Clear shellac | Clear shellac | Pale orange-yellow: 10 YR 9/4 |
| Wainscot | Clear shellac | Clear shellac on paneling; red shellac on chair rail | Blue-gray: 10 GY 6/1 |
| Baseboards, Stairway Handrail | Clear shellac | Red shellac | Blue-gray: 10 GY 6/1 |
| Interior Walls | Light olive-brown: 2.5 Y 6/2 | Light green-blue: 10 GY 7/2<br><br>Room 110 – strong yellow-brown: 7.5 YR 5/6 | Pale orange-yellow: 10 YR 8/4 |
| Ceilings | Yellowish white: 5 Y 8.5/2 | Lt. yellow: 2.5 Y 8/4 | Beige: between 10 YR 8/2 and 10 YR 8/4 |
| Cast-iron Columns [6] | Upper – yellowish white: 5 Y 8.5/2<br>Lower - dark gray to black[7] | Upper - lt. yellow: 2.5 Y 8/4<br>Lower - dark gray to black | Blue-gray: 10 GY 6/1 |

[1] The remaining sections of original cornice on the raking eaves could not be accessed for sampling; its appearance in historic photographs, however, confirms its light color originally (fig. 26) and its dark color in 1943 (fig. 44).

[2] The sashes are replacements dating from 1964; a 1943 photograph (fig. 44), however, shows that they were the same dark color as the cornice and doors.

[3] Although no colorant is added, shellac has a naturally reddish brown cast.

[4] Shellac with bright red lake pigment added. This layer could not be color-matched because of its transparency; however, it is still the top layer on the attic-stairway trim, where it was never overpainted. A new finish can be matched to this appearance.

[5] Because the sashes are replacements dating from 1964, this chronology is conjectural; in 1907, they are specified to be the same "Indian Tan" as the wainscot (Bearrs, p. 296), and a 1943 photograph (fig. 46) clearly shows that they are light-colored.

[6] These were originally two-toned (fig. 29); the paint evidence suggests that they were still two-toned in 1907.

[7] The sample available was not large enough for color-matching the lowest dark layers.

**TABLE 8:**
**1896 COLORS**

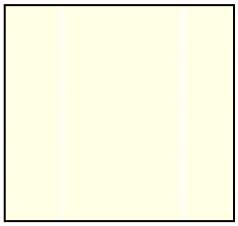
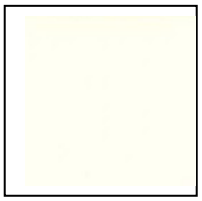
| | |
|---|---|
| *Exterior Elements* | |
| Doors, Doorway Trim, Window Sashes, Window Vent Trim, Front Porch Balustrade, Porch Columns and Pilasters, Porch Ceilings, Cornice |  **5 Y 9/1** (off-white) |
| **Interior Elements** | |
| Interior Doors, Doorway Trim, Window Trim, Window Sashes, Wainscot, Baseboards, Stairway Trim | **Natural Shellac** (clear with reddish-brown cast) |
| Walls, Cast-Iron Columns (upper third; see fig. 29) | **2.5 Y 6/2** (light olive-brown) |
| Cast-Iron Columns (lower two-thirds; see fig. 29) | **Dark Gray To Black** |
| *Ceilings* |  **5 Y 8.5 /2** (yellowish white) |

**TABLE 9:**
**1906-1907 COLORS**

| | |
|---|---|
| *Exterior Elements* | |
| Exterior Doors, Doorway Trim, Window Sashes, Window Vent Trim, Front Porch Balustrade, Porch Columns and Pilasters, Cornice | **10 YR 6/1** (light gray-yellow brown) |
| ***Porch Ceilings*** | **White** |
| **Interior Elements** | |
| Interior Doors, Doorway Trim, Window Trim, Wainscot Cap, Baseboards, Stairway Trim | **Red Shellac** (Shellac with red lake pigment; see existing finish on attic-stairway trim) |
| Window Sashes, Wainscot Paneling | *Natural Shellac* (clear with reddish-brown cast) |
| Walls, Cast-Iron Columns (upper third) | **10 GY 7/2** **except Rm. 110** (light blue-green)<br> **7.5 YR 5/6** **Room 110** (strong yellow-brown) |
| Cast-Iron Columns (lower two-thirds) | **Dark Gray To Black** |
| Ceilings |  **2.5 Y 8/4** (light yellow) |

**TABLE 10:**
**1943 COLORS**

| | | |
|---|---|---|
| **Exterior Elements** | | |
| Exterior Doors, Doorway Trim, Window Sashes, Window Vent Trim, Front Porch Balustrade Rails, Cornice | | **10 GY 3/4** (dark green) |
| Porch Columns and Pilasters, Porch Balusters, Porch Ceilings |  | **10 YR 9/1** (off-white) |
| **Interior Elements** | | |
| Interior Doors, Doorway Trim, Window Trim, Window Sashes |  | **10 YR 9/4** (pale orange-yellow) |
| Wainscot, Baseboards, Stairway Trim, Cast-iron Columns | | **10 GY 6/1** (blue-gray) |
| Walls |  | **10 YR 8/4** (pale orange-yellow) |
| Ceilings |  | **Between 10 YR 8/4 (above) and 10 YR 8/2** (beige) |