National Park Service
U.S. Department of the Interior

Historic Architecture Program
Northeast Region

BUILDING 27

Springfield Armory National Historic Site
Springfield, Massachusetts

Historic Structure Report

BUILDING 27

HISTORIC STRUCTURE REPORT

Springfield Armory National Historic Site
Springfield, Massachusetts

By

James J. Lee III
Architectural Conservator

Historic Architecture Program
Northeast Region, National Park Service
U.S. Department of Interior
Lowell, Massachusetts

2011

CONTENTS

LIST OF FIGURES AND CREDITS xiii

ACKNOWLEDGMENTS xxv

INTRODUCTION 1

EXECUTIVE SUMMARY 3

Purpose and Scope 3

Brief Description 3

Research Conducted 4

Research Findings 5

Additional Research 5

Recommended Treatment and Use 6

ADMINISTRATIVE DATA 7

Location of Site 7

National Historic Landmark 7

National Register of Historic Places 7

Proposed Treatment and Use 8

Related Studies 8

DEVELOPMENTAL HISTORY 13

HISTORICAL BACKGROUND AND CONTEXT 15

Introduction 15

Establishment of the Springfield Arsenal 16

Early Years of the Springfield Armory (1794–1815) 17

Colonel Roswell Lee, Superintendent (1815–1833) 18

Major James W. Ripley, Commanding Officer (1841–1854) 24

The Springfield Armory, Later Years (1854–1968) 31

Pre–Civil War Development 31

Civil War Growth and Production 32

Post–Civil War Progress 37

Early Twentieth Century through the World Wars 42

Post–World War II through Deactivation 43

Establishment of the Springfield Armory 44

National Historic Site 44

CHRONOLOGY OF DEVELOPMENT AND USE 47

Introduction 47

Historic Appearance and Use 49

The Brick Forging Shop 49

Alterations 53

Additions to the Forging Shop 53

Extension of the Machine Shop 53

Additions to the Machine Shop/Workshops 58

Alterations to Building 27 71

Early Twentieth–Century Alterations to Building No. 27/Annex Building 71

Additions during World War II 79

Alterations Post–World War II through Deactivation 100

Alterations by Springfield Technical Community College 101

CURRENT PHYSICAL DESCRIPTION 107

Introduction 107

Exterior Elements 108

Main Block 108

Design 108
Foundation 108
Walls 108
Doorways 109
Windows 109
Roof 110
Porches/Porticos and Loading Docks 110

Northeast Block and West Ell 111

Design 111
Foundation 111
Walls 111
Doorways 112
Windows 113
Roof 114
Porches/Porticos/Loading Docks and Fire Escapes 114
Related Structures 115

Northwest wing 115

Design 115
Foundation 115
Walls 116
Doorways 116
Windows 117
Roofs 117
Porches/Porticos/Loading Docks and Fire Escapes 117

North Wing 118

Design 118
Foundation 118
Walls 118
Doorways 118
Windows 119
Roofs 119

Porches/Porticos/Loading Docks and Fire Escapes 119

Interior Elements 133

Introduction 133

General Description 133

Basement 137

General Description 137

Tunnels 137

Main Block 137

Plan 137

Floors 138

Walls 138

Doorways 139

Windows 140

Ceilings 141

Stairs 142

Northeast Block and West Ell 142

Plan 142

Floors 142

Walls 142

Doorways 143

Windows 144

Ceilings 144

Stairs 144

Northwest Wing 145

Plan 145

Floors 145

Walls 145

Doorways 145

Windows 145

Ceilings 146

North Wing 146

Plan 146

Floors 146

Walls 146

Doorways 146
Windows 146
Ceilings....146

First Story 147

General Description 147
Main Block....147
Plan....147
Floors 147
Walls....147
Doorways 148
Windows 149
Ceilings....150
Stairs....150
Northeast Block and West Ell....150
Plan....150
Floors 150
Walls....150
Doorways 150
Windows 151
Ceilings....151
Stairs....151
Northwest Wing 151
Plan....151
Floors 152
Walls....152
Doorways 152
Windows 152
Ceilings....153
North Wing....153
Plan....153
Floors 153
Walls....153
Doorways 153
Windows 153
Ceilings....154

Second Story....154
General Description....154
Main Block....154
Plan....154
Floors....154
Walls....154
Doorways....155
Windows....155
Ceilings....155
Stairs....156
Northeast Block and West Ell....156
Plan....156
Floors....156
Walls....156
Doorways....157
Windows....157
Ceilings....157
Northwest Wing....157
Plan....157
Floors....158
Walls....158
Doorways....158
Windows....158
Ceilings....158
North Wing....159
Plan....159
Floors....159
Walls....159
Doorways....159
Windows....159
Ceilings....159

Attic 160

General Description 160

Plan 160

Floors 160

Walls 160

Doorways 160

Windows 160

Ceilings 160

Structural Elements 161

CHARACTER-DEFINING FEATURES AND GENERAL RECOMMENDATIONS 195

INTRODUCTION 197

CHARACTER-DEFINING FEATURES 199

Exterior Elements 199

Design and Context 199

Walls 199

Doorways and Related Elements 199

Windows 199

Roofs and Related Elements 200

Related Structures 200

Interior Elements 200

Plan 200

Floors 200

Walls 200

Ceilings 200

Doorways 200

Windows 200
Staircases 200
GENERAL RECOMMENDATIONS....201
Exterior Elements 201
Design and Context 201
Walls 201
Doorways and Related Elements 201
Windows 202
Roofs and Related Elements 202
Related Structures 202
Interior Elements 203
Plan 203
Floors 203
Walls 203
Ceilings 203
Doorways 204
Windows 204
Staircases 204
BIBLIOGRAPHY 205
PRIMARY SOURCES 207
SECONDARY SOURCES 209
GLOSSARY 211
Brick Bonds and Terminology 213
Molding Terminology 214

APPENDICES.....215

APPENDIX A: Correspondence from Major James W. Ripley to Colonel George Talcott, Chief of Ordnance.....217

APPENDIX B: Transcribed "Report of the Principal Operations at Springfield Armory during the fiscal year ended June 30, 1863".....221

APPENDIX C: Springfield Armory, Massachusetts Historical Record Building No. 27, Annex Building.....225

LIST OF FIGURES AND CREDITS

Historic maps, drawings, and photographs were reproduced from the Museum Collection at the Springfield Armory National Historic Site (SPAR Museum Collection), Springfield, Massachusetts and from the SPAR photographic collection available on the Rediscovery website (URL – http://www.rediscov.com) unless otherwise noted. All current photographs from 2010 are by the author, James Lee.

Figures

1. Springfield Armory National Historic Site regional map.
(*General Management Plan, Springfield Armory National Historic Site,* 1986) 9

2. Springfield Armory National Historic Site location map.
(*General Management Plan, Springfield Armory National Historic Site,* 1986) 10

3. Existing Conditions, Springfield Armory National Historic Site, July 1984. 11

4. "Plan of Land sold to the United States in Springfield
and the public Buildings standing thereon – 1801."
(SA B 1206, SPAR Museum Collection).....18

5. Detail of circa-1830–31 map, Springfield Armory.
(SPAR Museum Collection, see fig. 8) 20

6. National Armory at Springfield, Massachusetts, circa 1821.
(6570-SA 1, SPAR Museum Collection) 21

7. "No. 1, A Map of the Public Land about the Upper and Middle Water Shops, 1830,"
National Armory, Springfield, Massachusetts.
"Drawn by 2nd Lieutenant T. B. Linnard, 2nd U.S. Artillery, 1830–1831."
(Cabinet 2, Drawer A, Folder 3, SPAR Museum Collection) 22

8. "No. 2, Armory Hill" at the National Armory, Springfield, Massachusetts.
"Drawn by 2nd Lieutenant T.B. Linnard, 2nd U.S. Artillery, 1830–1831."
(Cabinet 2, Drawer A, Folder 3, SPAR Museum Collection) 23

9. Detail of U.S. Armory from Map of Springfield, Massachusetts, surveyed and drawn
by Marcus Smith and H.A. Jones, Published by M. Dripps, New York, 1851.
(The Norman B. Leventhal Map Center, Boston Public Library).....30

10. Springfield Armory Main Arsenal looking west, circa 1870.
(X1302-SA, SPAR Museum Collection) 30

11. "Topographical Plan of the Springfield Armory, Springfield, Massachusetts, April 1864." Shedd and Edson, Civil Engineers and Surveyors, 42 Court Street, Boston. (11086–SA, SPAR Museum Collection).....34

12. "View of Springfield, Massachusetts, 1875." Published by O.H. Bailey and Co. (G3764.S7A3 1875.B3, Library of Congress, Maps Collection, http://lcweb2.loc.gov/ammem/gmdhtml/gmdhome.html).....35

13. Detail from birds-eye view of Springfield, Massachusetts, 1875 (see fig. 12).....36

14. "Springfield Armory, Hill [and] Watershops," Secretary of War Report, 1875 (Serial Set No. 1677, Session Vol. No.2, 44th Congress, 1st Session, December 1875. Digital copy from URL http://infoweb.newsbank.com.ezproxy.bpl.org) 39

15. "Plan of New Shops on Federal Square, National Armory, Springfield, Mass., January 1888."(Serial Set Vol. No. 2720 Session Vol. No. 7, 51st Congress, 1st Session, 1889. Digital copy from URL http://infoweb.newsbank.com.ezproxy.bpl.org) 40

16. "Main Grounds of U.S. Springfield Armory, April 15, 1897." (SA 1257, SPAR Museum Collection).....41

17. Buildings and Grounds, Hill Shops, Springfield Armory, October 18, 1918. (Cabinet 2, Drawer B, Folder 2, SPAR Museum Collection).....45

18. Springfield Armory Hill Shops, Showing Buildings, Grounds, Roads, Sidewalks, Fences, May 2, 1904 with revisions through September 17, 1957. (Cabinet 2, Drawer B, Folder 2, SPAR Museum Collection).....46

19. Plan of Building 27 with color coding representing dates of construction, copied from 1942 drawing (fig. 58).....48

20. Elevations of "Annealing Shop," "Forging Shop," and "North Shop" from circa-1820 plan of U.S. Armory (x4165, SPAR Museum Collection) 51

21. "Conflagration of part of the U.S. Armory, Springfield, Mass., March 2nd, 1824." (x1297-SA, SPAR Museum Collection) 51

22. Detail from "Plan C" for construction of the North and South Shops, March 23, 1824. (D. S. Whittlesey Notebooks, Vol. IV, 125, SPAR Museum Collection) 52

23. Detail from "No. 2, Armory Hill," National Armory, Springfield, Massachusetts, 1830–31 (fig. 8).....52

24. Springfield Armory looking east, circa 1850 (4NHS91.1, SPAR Museum Collection).....56

25. Springfield Armory "General View," *Harper's New Monthly Magazine*, No. XXVI, Vol. V, July 1852 57

26. Detail from U.S. Armory and Grounds, drawn by E. S. Allen, Master Armorer, January 1859. (Cabinet D, Drawer 1, Folder 4, SPAR Museum Collection) 57

27. "Polishing Room, Sept. 6, 1862." (Cabinet C, Drawer 7, Folder 1, SPAR Museum Collection) 63

28. "Addition to Machine Shop." (Cabinet C, Drawer 7, Folder 1, SPAR Museum Collection) 64

29. "East elevation of Machine Shop, Aug. 24, 1863." (Cabinet C, Drawer 7, Folder 1, SPAR Museum Collection) 64

30. "Ground plan of the addition to Machine Shop, Aug. 24, 1863." (Cabinet C, Drawer 7, Folder 1, SPAR Museum Collection) 65

31. Detail from "Topographical Plan of the Springfield Armory, Springfield, Massachusetts, April 1864" (fig. 11). 66

32. West end of Building 27, July 1864, depicting fire damage to the Polishing Room and the Milling Shop from the July 2nd conflagration. (X1323-SA, SPAR Museum Collection) 66

33. Building 27, west and south elevations, circa 1865. (SPAR Museum Collection) 67

34. Building 27, the north end of the northeast block and the west ell, circa 1865. (SPAR Museum Collection) 67

35. Sketch of Building 27 for construction of water closets at Machine Shop and Polishing Shop, 1867. (Cabinet B, Drawer 1, Folder 5, SPAR Museum Collection).....68

36. Detail of Building 27 from bird's-eye view of Springfield, 1875 (fig. 12).....68

37. "Springfield Armory, Hill [and] Watershops [sic]," Secretary of War Report, 1875. (fig. 14) 69

38. "Stone steps for the Machine Shop, U.S. Armory, Oct. 12, 1878." (Cabinet C, Drawer 7, Folder 1a, SPAR Museum Collection).....70

39. "Elevation of Portico and Steps for machine and filing shop, March (3), 1879." (Cabinet C, Drawer 7, Folder 1a, SPAR Museum Collection).....70

40. Buildings and Grounds, Hill Shops, Springfield Armory, Ordnance Department March 11, 1918, with revisions through February 14, 1936. (Cabinet 2, Drawer B, Folder 2, SPAR Museum Collection).....75

41. Aerial photograph of U.S. Armory Hill Shops, September 3, 1932. (219NHS82-K1, SPAR Museum Collection) 77

42. Building No. 27, Annex Building, December 1932.
Springfield Armory, Historical Record. (760-SA, SPAR Museum Collection) 77

43. "BLDG. #27 - Showing chimney being torn down W. P. A. Project, Oct. 5, 1937."
(SA-1627, SPAR Museum Collection) 78

44. "BLDG. #27 - Annex Basement Showing progress of alterations W. P. A. Project,
Jan. 4, 1938." (SA-1680, SPAR Museum Collection) 78

45. Steel Framing Plan for Building No. 27, "C" Floor, Hill Shops,
Springfield Armory, U.S.A., March 8, 1939.
(Cabinet D, Drawer 9, Folder 3, SPAR Museum Collection) 85

46. Steel Framing Plan for Building No. 27, "B" Floor, Hill Shops,
Springfield Armory, U.S.A., March 8, 1939.
(Cabinet D, Drawer 9, Folder 3, SPAR Museum Collection) 86

47. Steel Framing Plan for East Wing of Building 27, "B" Floor, Hill Shops,
Springfield Armory, U.S.A., September 6, 1940.
(Cabinet D, Drawer 9, Folder 3, SPAR Museum Collection) 86

48. Alterations to Spaces B-167–B-168 for Paint Shop and Paint Storage, Building 27,
Hill Shops, Springfield Armory U.S.A., February 5, 1940.
(Cabinet B, Drawer 4, Folder 2, SPAR Museum Collection).....87

49. 24 Ga. Kalamein Doors for East Wall of Proposed Boiler Room,
Building 27, Space B-133, Hill Shops,
Springfield Armory, U.S.A., August 23, 1941. (Ibid.) 87

50. Dust-Collecting System Carpenter Shop Spaces 27-A-7 and B-51,
Hill Shops, Springfield Armory U.S.A., July 9, 1940.
(Cabinet B, Drawer 4, Folder 2, SPAR Museum Collection).....88

51. Building for Exhaust Fan, West of Building No. 27, Hill Shops,
Springfield Armory U.S.A., April 10, 1942. (Ibid.) 88

52a. New Stair Tower, Northwest Corner of East Wing, Building #27,
Hill Shops, Springfield Armory U.S.A., March 18, 1942.
(Cabinet B, Drawer 4, Folder 2, SPAR Museum Collection).....89

52b. New Stair Tower, Northwest Corner of East Wing, Building #27,
Hill Shops, Springfield Armory U.S.A., March 18, 1942. (Ibid.) 89

53. Building No. 27, Floor "A," Basement Floor Plan, March 1, 1941.
(Cabinet B, Drawer 4, Folder 1, SPAR Museum Collection).....90

54. Building No. 27, Floor "B," Second Floor Plan, March 1, 1941.
(Cabinet B, Drawer 4, Folder 1, SPAR Museum Collection).....91

55. Building No. 27, Floor "C," Third Floor Plan, March 1, 1941.
(Cabinet B, Drawer 4, Folder 1, SPAR Museum Collection).....92

56. New Toilets, Building No. 27, Space C-13, Hill Shops,
Springfield Armory U.S.A., September 24, 1942.
(Cabinet B, Drawer 4, Folder 2, SPAR Museum Collection).....93

57. Women's Toilets, Building No. 27, Space C-13, Hill Shops,
Springfield Armory U.S.A., September 24, 1942.
(Cabinet B, Drawer 4, Folder 1, SPAR Museum Collection).....93

58. Personnel Division, C (second) Floor, Building No. 27, Hill Shops
Springfield Armory U.S.A., September 24, 1942.
(Cabinet B, Drawer 4, Folder 1, SPAR Museum Collection).....94

59. Alterations to Spaces C-101 and C-115 for Physical Examinations,
Building No. 27, Hill Shops, Springfield Armory U.S.A., July 10, 1942.
(Cabinet B, Drawer 4, Folder 1, SPAR Museum Collection).....95

60. Building 27, Apprentice School, west wing, June 14, 1945.
(4027-SA, SPAR Museum Collection) 95

61. Building 27, Museum Room, rifle racks, June 1, 1948.
(6533-SA, SPAR Museum Collection) 96

62. Building 27, Museum Room, exhibit of old pistols, June 1, 1948.
(6531-SA, SPAR Museum Collection) 96

63. Building 27, main block and west wing, south and west elevations,
November 12, 1944. (4897-SA, SPAR Museum Collection) 97

64. Building 27, northeast block, east and north elevations,
June 4, 1945. (5400-SA, SPAR Museum Collection).....97

65. Building 27, northeast block and west ell, west elevations,
November 12, 1944. (4899-SA, SPAR Museum Collection) 98

66. Building 27, main block and north wings, north elevations,
November 12, 1944. (4898-SA, SPAR Museum Collection) 98

67. Building 27, Print Shop attached to west elevation of northwest wing.
(5386-SA, SPAR Museum Collection) 99

68. Building 27, interior of Print Shop, December 18, 1942.
(3520-SA, SPAR Museum Collection) 99

69. Installation of Machine Door at north end of Building No. 27
"C" floor, Hill Shops, Springfield Armory U.S.A., June 15, 1951.
(Cabinet B, Drawer 4, Folder 2, SPAR Museum Collection).....102

70. Benton Small Arms Display, Building 27, Springfield Armory, June 23, 1960 (706-60-A, SPAR Museum Collection) 102

71. Building 27, east elevation of northeast block, museum entrance and new gate, 1956. (12474-SA, SPAR Museum Collection) 103

72. Building 27, east elevation of northeast block, museum entrance concrete bridge and steps, 1956. (12475-SA, SPAR Museum Collection) 103

73. Weapons Development Branch, Light-weight Rifle Division, Building 27, 1958. (941-58, SPAR Museum Collection) 104

74. Weapons Development Branch Conference, Building 27, 1959. (595-59, SPAR Museum Collection) 104

75. Aerial photograph of Springfield Armory, Armory Square looking west, 1958. (913-58, SPAR Museum Collection) 105

76. Aerial photograph of Springfield Armory Hill Shops looking east, 1968. (68-65, SPAR Museum Collection) 105

77. Plan of Building 27 with color coding representing sections of the building, Copied from 1941 drawing. (fig. 54) 107

78. Building 27, south elevation of main block, 2010. 120

79. Building 27, looking south, 2010. 120

80. Building 27, south elevation of main block, 2010. 121

81. Building 27, south elevation of main block, cornice, 2010. 121

82. Building 27, west elevation of main block, 2010. 122

83. Building 27, south elevation of main block, entrance doorway (D101), 2010. 122

84. Building 27, south elevation of main block, typical window, 2010. 123

85. Building 27, south elevation of main block, window with angled lintel, 2010. 123

86. Building 27, south elevation of main block, basement window at west end of building, 2010. 124

87. Building 27, south elevation of main block, portico for D101, 2010. 124

88. Building 27, east elevation of northeast block, 2010. 125

89. Building 27, west elevation of west ell, 2010. 125

90. Building 27, scroll-cut brownstone detail, east end of building, 2010. 126

91. Building 27, scroll-cut brownstone detail, north wing, 2010. 126

92. Building 27, east elevation of the northeast block, cornice, 2010. 126

93. Building 27, east elevation of the northeast block, D102, 2010. 127

94. Building 27, north elevation of stair tower on the northeast block, D104, 2010. 127

95. Building 27, west elevation of the northeast block, former Exhaust Fan Room, 2010. 128

96. Building 27, southwest corner of the northeast block, former Exhaust Fan Room, 2010. 128

97. Building 27, west elevation of northwest wing, 2010. 129

98. Building 27, east elevation of northwest wing, 2010. 129

99. Building 27, north elevation of northwest wing, 2010. 130

100. Building 27, north elevation of northwest wing, D108, 2010. 130

101. Building 27, north and west elevation of north wing, 2010. 131

102. Building 27, east elevation of north wing, 2010 131

103. Building 27, west elevation of north wing, showing changes in foundation, 2010. 132

104. Building 27, west elevation of north wing, D105, 2010. 132

105. Building 27, basement floor plan with room numbers assigned for current project, copied from 1941 drawing (fig. 53). 134

106. Building 27, first floor plan with room numbers assigned for current project, copied from 1941 drawing (fig. 54). 135

107. Building 27, second floor plan with room numbers assigned for current project, copied from 1941 drawing (fig. 55). 136

108. Building 27 basement, Room 001, tunnel to Building 26, 2010. 163

109. Building 27 basement, Room 015, tunnel to Building 101, 2010. 163

110. Building 27 basement, Room 001, brownstone chimney base, 2010. 164

111. Building 27 basement, Room 004a, arched opening between 004a and 006, 2010. 164

112. Building 27 basement, Room 009, metal-clad paneled wall enclosing stairwell, 2010. 165

113. Building 27 basement, Room 012, looking east, 2010. 165

114. Building 27 basement, Room 005, doorway to Room 004, 2010. 166

115. Building 27 basement, Room 013, double doorway and concrete steps at entry to transformer vault, 2010. 166

116. Building 27 basement, Room 007, historic casement window, 2010.....167

117. Building 27 basement, Room 012, south-wall casement window with replacement sashes, 2010. 167

118. Building 27 basement, Room 012, south-wall double-hung window with replacement sashes, 2010. 168

119. Building 27 basement, main-block stairs, 2010. 168

120. Building 27 basement, Room 016, looking south, 2010.....169

121. Building 27 basement, Room 017, north wall with tongue-and-groove boards, 2010. 169

122. Building 27 basement, Room 019, partition walls with tongue-and-groove boards, 2010. 170

123. Building 27 basement, Room 017, south-wall doorway, 2010.....170

124. Building 27 basement, Room 016, east-wall double-hung window with replacement sash and security bars, 2010. 171

125. Building 27 basement, Room 017, east-wall double-hung window with replacement sash and security bars, 2010. 171

126. Building 27 basement, main-block stairs, 2010. 172

127. Building 27 first story, Room 112, historic radiator, 2010.....172

128. Building 27 first story, Room 112, south wall with entrance doorway and access to stairwell, 2010.....173

129. Building 27 first story, Room 118, south wall showing the window and partial brick wall (former end wall), 2010. 173

130. Building 27 first story, Room 112, north-wall doorway to Room 113 with historic brownstone trim and iron hardware, 2010. 174

131. Building 27 first story, Room 112, south wall showing stepped wall and window, 2010.....174

132. Building 27 first story, Room 112, north wall showing double-hung window with replacement sashes, 2010. 175

133. Building 27 first story, main-block stairs accessed from Room 112, 2010. 175

134. Building 27 first story, library, Room 120, looking southeast, 2010.....176

135. Building 27 first story, library staff office, Room 122, looking southwest, 2010. 176

136. Building 27 first story, Room 122, east wall window, 2010. 177

137. Building 27 first story, Room 122, northwest corner showing raised ceiling and windows, 2010. 177

138. Building 27 first story, northeast block, stairs accessed from Room 120, 2010.....177

139. Building 27 first story, Room 108, east wall (former outside wall) dividing northwest wing, 2010. 178

140. Building 27 first story, Room 108, east wall showing bricked-in window, 2010. 178

141. Building 27 first story, Room 110, northeast corner showing wainscoting and parged masonry walls, 2010.....179

142. Building 27 first story, Room 110, southwest corner showing wainscoting and parged masonry wall, as well as more recent masonry wall to the east (left), 2010. 179

143. Building 27 first story, Room 105, west wall, interior elements of D110, 2010. 180

144. Building 27 first story, Room 110, east-wall window with wooden sill and trim at the corners of the jambs, 2010. 180

145. Building 27 first story, Room 116, west-wall window and trim in earlier section (south) of north wing, 2010. 181

146. Building 27 first story, Room 116, west-wall window and trim in later section (north) of north wing, 2010. 181

147. Building 27 second story, Room 222, south wall showing lath and plaster, as well as timber repair, 2010.....182

148. Building 27 second story, Room 206. doorway to Room 216 showing larger arched opening with brick infill, 2010. 182

149. Building 27 second story, Room 223, partition wall with diagonal random-width board and gypsum board above, 2010. 183

150. Building 27 second story stairwell enclosure, with metal-clad paneled walls and wire-glass windows, 2010. 183

151. Building 27 second story, Room 204, south-wall window and masonry elements, 2010. 184

152. Building 27 second story, stairwell, south-wall window and wooden trim elements, 2010. 184

153. Building 27 second story, Room 222, exposed framing at ceiling, typical of east end of main block, 2010....184

154. Building 27 second story, library, Room 240, looking south, 2010. 185

155. Building 27 second story, library, Room 241, tongue-and-groove partition walls for restrooms (Rooms 242 and 243), 2010....185

156. Building 27 second story, library, Room 240, west wall showing exit doorway (D202) and typical windows, 2010....186

157. Building 27 second story, library, Room 241, west wall, interior of doorway (D201), 2010. 186

158. Building 27 second story, library, Room 241, ceiling showing hoist, framing, and attic hatch, 2010. 187

159. Building 27 second story, Room 215, east wall, interior of window and wooden trim, 2010....187

160. Building 27 second story, Room 215, ceiling, framing, and tie-rods, 2010. 188

161. Building 27 second story, Room 215, framing trim, and bracket, 2010....188

162. Building 27 second story, Room 232, east wall, interior of exit doorway (D203), 2010. ..189

163. Building 27 second story, Room 232, east wall, interior of window and related trim, 2010. 189

164. Building 27 attic, wheel near center of main block possibly related to earlier hoist or machinery, 2010....190

165. Building 27 attic, interior brick partition wall and doorway at west end of building, 2010. 190

166. Building 27 attic, main block, interior brick partition for elevator shaft and metal doorway, 2010. 190

167. Building 27 basement, Room 004, steel framing installed in 1939–40, 2010....191

168. Building 27 first story, Room 120, steel framing installed in 1939–40 with I-beams pocketed between windows, 2010. 191

169. Building 27 main-block, attic framing showing historic queen-post trusses, 2010. 192

170. Building 27, attic framing showing joinery of queen-post trusses, 2010. 192

171. Building 27 attic, showing heavy rafter and purlin framing at east end of building, 2010. 193

172. Building 27 attic, showing heavy rafter and purlin framing at east end of building, 2010. 193

ACKNOWLEDGMENTS

The preparation of the *Building 27, Historic Structure Report* (HSR) would not have been possible without the assistance of the staff members of Springfield Armory National Historic Site (SPAR) and Springfield Technical Community College (STTC). Michael Quijano-West, SPAR Superintendent, provided direction and coordinated the efforts of his staff and the initial meeting with STTC Vice President Eric R. Ness. Mr. Ness coordinated the site visits and building access, and also performed an initial walk through the building to identify issues and concerns. James Roberts, SPAR Museum Curator Supervisor, directed his staff to allow access to the SPAR Museum Collection. Alex Mac Kenzie, SPAR Park Ranger, provided assistance with research in the SPAR Museum Collection including access to historic photographs, plans, and documents. Mr. MacKenzie also provided digital scans and/or copies of the historic documents upon request. Richard Colton, SPAR Park Ranger/Interpreter, provided valuable feedback on the draft report and additional information regarding the history of the site and buildings.

Nathaniel Wiltzen, Archivist, National Archives and Records Administration, Northeast Region, Waltham, Massachusetts, provided assistance with the primary source research for the HSR. The current report drew from previous work performed by Derwent S. Whittlesey, and John Albright whose previous reports and research contributed greatly to the context of the site and provided some useful information about the building.

James J. Lee III

INTRODUCTION

EXECUTIVE SUMMARY

Purpose and Scope

Building 27 is one of several extant buildings that were constructed as part of the Springfield Armory in Springfield, Massachusetts. The purpose of this report was to identify significant historic features of the building and provide guidance for treatment. The project included archival research at the local and regional level, and building investigation and research, all of which was performed by James Lee, Architectural Conservator, Historic Architecture Program (HAP). The project was phased over two fiscal years (FY 2010 and FY 2011) and culminated in the Historic Structure Report (HSR). In accordance with National Park Service (NPS) standards and as outlined in *Director's Order – 28*, the HSR contains Part 1 "Developmental History," which includes sections on "Historical Background and Context," "Chronology of Development and Use," and "Current Physical Description." The HSR also includes an additional subsection to Part 1 in the form of "Character-Defining Features (CDFs) and General Recommendations" for Building 27. Identification of the CDFs will assist in guiding appropriate repairs and improvements to the building. The report does not include a "Part 2. Treatment and Use" or "Part 3. Record of Treatment."

Brief Description

The Springfield Armory was initially established as an arsenal during the American Revolution. The first structures were erected near the militia training field on the hill northeast of the Connecticut River and Springfield town center. This area would later become the Hill Shops for the Springfield Armory and included the Green, Armory Square, and Federal Square. As the Armory developed, the buildings erected on the hill were constructed with masonry materials that conveyed a sense of permanence. Among the earliest workshops constructed around the Green was the brick Forging Shop, which research suggests was constructed in circa 1808 and was documented in several sources in the 1820s. Its construction was indicative of the growth of the Springfield Armory and the significance of the Armory in the history of the town of Springfield (see subsequent section "Historical Background and Context").

The Forging Shop was a one-story masonry structure that would become the core of Building 27 as it was expanded during the nineteenth century. Documentary and physical evidence indicated that the additions to the building during the 1840s included a two-story east extension and two wings added to the north side of the building. The building was often referred to as the Machine Shop during this period, but the Forging Shop remained active. Further additions during the Civil War created an expansive manufacturing building and included the addition of a second story to the former Forging Shop. Like the original structure, all additions were constructed with brick and brownstone, with some of the later additions including additional brownstone details. The masonry elements of the building were consistent with other buildings around Armory Square. During the mid-nineteenth century the building was still referred to as the Machine Shop, but it soon became known as Building No. 27 and alternately the Annex Building (see subsequent section "Chronology of Development and Use").

Documentation from 1864 indicated that by that time Building 27 had grown to its current appearance. The demolition of the west end of the building in 1973 removed most of the historic Forging Shop, which had been previously altered. The extant structure remains an expansive building that is representative of Building 27 during the most active years of the Springfield Armory.

Building 27 has been owned by the Commonwealth of Massachusetts and operated by Springfield Technical Community College (STCC) since 1968 when the Armory was closed. The removal of the west end of the building was the most significant alteration during the STCC management. Otherwise the college has maintained the building in good condition with minor exterior alterations.

The extant architectural elements of Building 27 include intact historic elements as well as alterations made to the building while the Springfield Armory was active. Historic elements and some alterations are significant and character defining, and should be preserved (see subsequent sections "Current Physical Description," and "Character-Defining Features and General Recommendations").

Research Conducted

This Historic Structure Report documents the evolution of Building 27 relying on physical investigation of extant materials and documentary research using both primary and secondary sources. Primary source research was conducted at the National Archives and Records Administration, Northeast Region, and in the Museum Collection of the Springfield Armory National Historic Site. That collection included important historic maps, plans, drawings, and photographs. The Museum Collection also houses an eight-volume set of notes compiled by Derwent S. Whittlesey for his 1920 dissertation "The Springfield Armory." In addition to these sources, previous research performed by Carole L. Perrault and Judith Quinn (now Sullivan) for the "Springfield Armory National Historic Site, Springfield, Massachusetts, Building 19, Historic Structure Report, Volumes I and II," DRAFT, was reviewed for this report. The information from these sources was augmented by secondary source materials from various repositories and world-wide websites. A portion of the Springfield Armory NHS photographic collection was available on the Rediscovery website. Repositories consulted and utilized for this project include the following:

Connecticut Valley Historical Museum, Springfield, MA;
National Archives and Records Administration (NARA), Northeast Region, Waltham, MA;
NPS, Historic Architecture Program Library, Lowell, MA;
NPS, Northeast Museum Services Center, Boston, MA;
NPS, Technical Information Center, Denver Service Center, Denver, CO;
Rediscovery website, URL http://www.rediscov.com;
Springfield National Historic Site, Museum Collection, Springfield, MA;
Springfield Public Library, Springfield, MA.

Research Findings

Research of primary and secondary sources provided valuable information on the history and development of the Springfield Armory and Building 27. The Springfield Armory Museum Collection included several historic maps and photographs of the Armory and the Hill Shops, which were used to portray the background history of the site. In addition, previous reports, especially those by Derwent S. Whittlesey and John Albright, contributed greatly to the context of the site and provided some useful information about the building.

Primary documentation from the National Archives included correspondence and contracts, which helped establish a better understanding of the construction and subsequent alterations to Building 27. Historic plans, historic photographs, more recent architectural plans, and contracts are primarily housed in the Springfield Armory Museum Collection, and some are available at the National Archives and the Connecticut Valley Historical Museum. Those documents also provided information about the building's historic appearance and later alterations. That information, coupled with the current building investigation, helped determine the extent and significance of the alterations to the building.

The research determined that Building 27 was enlarged to include much of its current exterior appearance and overall layout by the mid-nineteenth century, and consequently retains a high degree of historic integrity.

Additional Research

A significant amount of research materials have been deposited with the Springfield Armory Museum Collection. Future research of Building 27 should search for original building plans and additional documents related to the construction of the brick Forging Shop. Whittlesey cited correspondence between James Beyers, Paymaster, and the Secretary of War in 1808 that referred to the construction of new shops.[1] Correspondence from James Ripley to Chief of Ordnance George Talcott indicated that plans were sent to Talcott for his approval in 1845.[2] In addition, Superintendent George Dwight submitted drawings of the Hill Shops to Lt. Col. James W. Ripley, Chief of Ordnance, in 1861.[3] Though previous research did not find some of these historic plans, further research at the National Archives and Records Administration, Washington, D.C. might find these documents. Further study at the National Archives should include ferreting out any primary source material pertaining to later twentieth-century alterations to the building by the U.S. Army.

---

[1] James Beyers, Paymaster, Springfield Armory, to Secretary of War, September 22 and November 24, 1808; as cited by D. S. Whittlesey, "Whittlesey Notebooks," Vol. II, 9; SPAR Museum Collection.

[2] Major James W. Ripley to Lt. Col. George Talcott, July 7, 1845; Letters Sent to Chief of Ordnance 1836–1895, Vol. 1 of 20, Entry 1354, Record Group (RG) 156; NARA Northeast Region (Waltham, MA).

[3] George Dwight to Lt. Col. Ripley, July 17, 1861; Letters Received 1812–1894, Box 184, Entry 21, RG 156; NARA.

Recommended Treatment and Use

Building 27 has been adaptively used by STCC under the Memorandum of Understanding (MOU) Between the United States of America and the Commonwealth of Massachusetts,[4] which has been extended through July 16, 2012.[5] The building is listed in the National Register of Historic Places Nomination Form and is an "historic structure" as defined by the MOU.

According to the MOU the 34.61 acres of land owned by the Commonwealth of Massachusetts constitutes a "Preservation Control Area" and the Board of Higher Education, in cooperation with the NPS, is charged with preserving the exterior appearance of the historic structures and the Green.

The MOU further defines three levels of building preservation. Building 27 is included in "Level 1" which states that "Every effort will be made to stabilize and maintain the historic exterior appearance of these buildings within this category; NPS will provide advice and consultation on suitable materials and methods of repair and maintenance. Changes necessary for the adaptive use of these buildings will not affect the exterior appearance. . . ."[6]

Therefore the exterior appearance of the building should not be significantly impacted by the adaptive use. The current use of Building 27 as a student services center, staff offices, and college library has preserved the exterior of the building while allowing the college to effectively use the interior.

It is recommended that Building 27 continue to be preserved through adaptive use and rehabilitation. Rehabilitation of the building should conform to *The Secretary of the Interior's Standards for the Treatment of Historic Properties,* which includes the *Standards for Rehabilitation* and *Guidelines for Rehabilitating Historic Buildings.* The goal of the rehabilitation should be the continued adaptive use of Building 27 by STCC as a student center, office space, conference/class rooms, and the college library. It is important that the rehabilitation strive to preserve the character-defining features (CDFs) of the building, and any changes to the building should be undertaken with attention to the CDFs (see subsequent section "Character-Defining Features and General Recommendations").

The rehabilitation of the building should be done in a manner that does not diminish the historic integrity of the structure. The current adaptive use of the building required the installation of accessible Americans with Disabilities Act (ADA)-compliant entrances and facilities in the building. Any future upgrades or changes to the ADA-compliant features should be made with minimal impact to the CDFs of the building. It is further recommended that any alterations be planned with awareness to the historic elements of the building. The feasibility of any alterations to the exterior or interior should be studied and alterations should be planned with minimal impact to the CDFs.

---

[4] "Memorandum of Understanding Between the United States of America and the Commonwealth of Massachusetts," MU-1600-8-9001, August 21, 1998; copy in HAP List of Classified Structure files, Lowell, MA.

[5] Michael Quijano-West, Superintendent SPAR, to Ira Rubenzahl, President STCC, July 16, 2010; A44 (SPAR-NER); copy in HAP List of Classified Structure files, Lowell, MA.

[6] Memorandum of Understanding, 2.

ADMINISTRATIVE DATA

Location of Site

Springfield Armory National Historic Site (SPAR) is located in Springfield, Massachusetts, which is situated in the western part of the state along the Connecticut River (figs. 1 and 2). Of the 54.92-acre historic site, the SPAR comprises approximately 20 acres of the former Armory and includes the Main Arsenal (Building 13), Commanding Officer's Quarters (Building 1) and Garage (Building 18), Gatehouse (Building 33), cast-iron fence, and the cultural landscape associated with that portion of the Armory. The remaining 34.61 acres on the hill is owned by the Commonwealth of Massachusetts for use as part of the Springfield Technical Community College campus. The college has the use of the Green and Buildings 7, 8, 9, 10, 11, 16, 19, and Building 27, among others (fig. 3).

National Historic Landmark

The Springfield Armory in Springfield, Massachusetts, was designated a National Historic Landmark (NHL) on December 19, 1960. The NHL includes the entire 54.92 acres of the former Hill Shops and Armory Square. The NHL Statement of Significance notes that the Springfield Armory "was the U.S. Army's main research and development center and pilot manufactory for small arms. It was formally established as a Federal arsenal in 1794."[7]

[7] National Historic Landmarks Program website; http://tps.cr.nps.gov/nhl.

National Register of Historic Places

The Springfield Armory National Historic Site was established by Congress on October 26, 1974,[8] and the nomination of Armory Square to the National Register of Historic Places was accepted by the Keeper on December 12, 1975. The historic site includes 54.92 acres of land and several historic structures that were part of the Hill Shops of the Springfield Armory. The Statement of Significance in the National Register Inventory – Nomination Form (NR 66000898) included the following:

> Of the extant properties associated with the Springfield Armory the oldest and most significant are concentrated in Armory Square the fifty-four acre area bounded by State, Federal, Pearl, and Byers Streets. Here are located the administrative building, quarters for the commanding officer and the remaining officer complement, and a number of other buildings ranging in date from 1807 through World War II. Despite some recent construction, Armory Square retains its essential character as the administrative center of a major military installation which saw its greatest growth during the first half of the nineteenth century.[9]

[8] General Management Plan/Development Concept Plan, Springfield Armory National Historic Site, Massachusetts (Springfield, MA: National Park Service, July 1986), Appendix A: Legislation, 31.

[9] Polly M. Rettig. "National Register of Historic Places Inventory – Nomination Form" (Washington, DC: National Park Service, December 1974).

The National Register Nomination recognized the period of significance of the site from 1778, when an arsenal was established in that location, through 1968, when the Armory was deactivated, as well as 1794 when the site was designated a Federal Armory. The remaining portion of Building 27 is considered a contributing resource to the National Register Nomination for the Springfield Armory.

Proposed Treatment and Use

The Memorandum of Understanding (MOU) and the 1986 *General Management Plan* (GMP) for Springfield Armory NHS note that the National Park Service, the Commonwealth of Massachusetts, and Springfield Technical Community College would work collaboratively to manage the 54.92-acre Springfield Armory site and extant buildings associated with the Armory, including Building 27.

As previously described, Building 27 is currently used as a student services center, conference/class rooms, staff offices, and the college library. The college proposes to continue the adaptive use of the building for the same purposes.

The continued adaptive use of Building 27 will require rehabilitation of exterior and interior elements of the building. Rehabilitation of the building should preserve the exterior of the building as recommended by the MOU, and should strive to preserve exterior and interior character-defining features (see subsequent section "Character-Defining Features and General Recommendations").

Related Studies

Publications identified in the Cultural Resources Management Bibliography were consulted in the preparation of this report. For a broader discussion of the history of the Springfield Armory and its cultural resources, consult the publications listed below.

Albright, John. *Historic Structure Report, Historical Data and Historical Base Map, Springfield Armory National Historic Site, Massachusetts*. Denver, CO: DOI, NPS, May 1978.

Kinsley, Amy. "Cultural Landscapes Inventory, Springfield Armory, Springfield Armory National Historic Site," DRAFT. DOI, NPS, Olmsted Center for Landscape Preservation, 2004.

Raber, Michael S., Patrick M. Malone, Robert B. Gordon, and Carolyn C. Cooper. "Conservative Innovators and Military Small Arms: An Industrial History of the Springfield Armory, 1794–1968." South Glastonbury, CT: Raber Associates, August 1989.

U.S. Department of the Interior, National Park Service. *General Management Plan /Development Concept Plan, Springfield Armory National Historic Site*. DOI, NPS, August 1986.

Whittlesey, Derwent S. "The Springfield Armory." (Ph.D. Dissertation, University of Chicago.) 1920. Transcription by John McCabe and Richard Colton, Springfield Armory NHS, 2006.

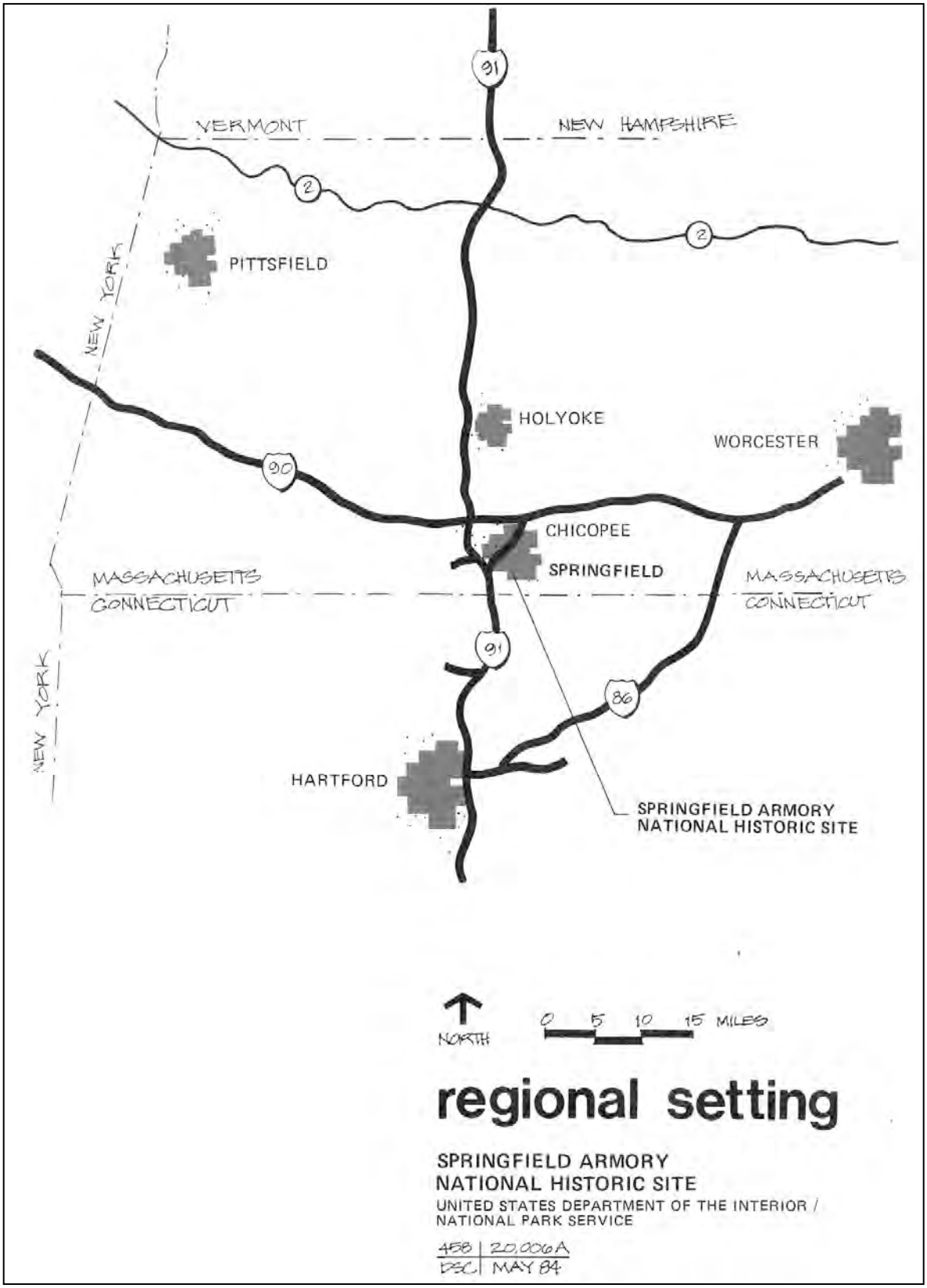


Figure 1. Springfield Armory National Historic Site regional map.

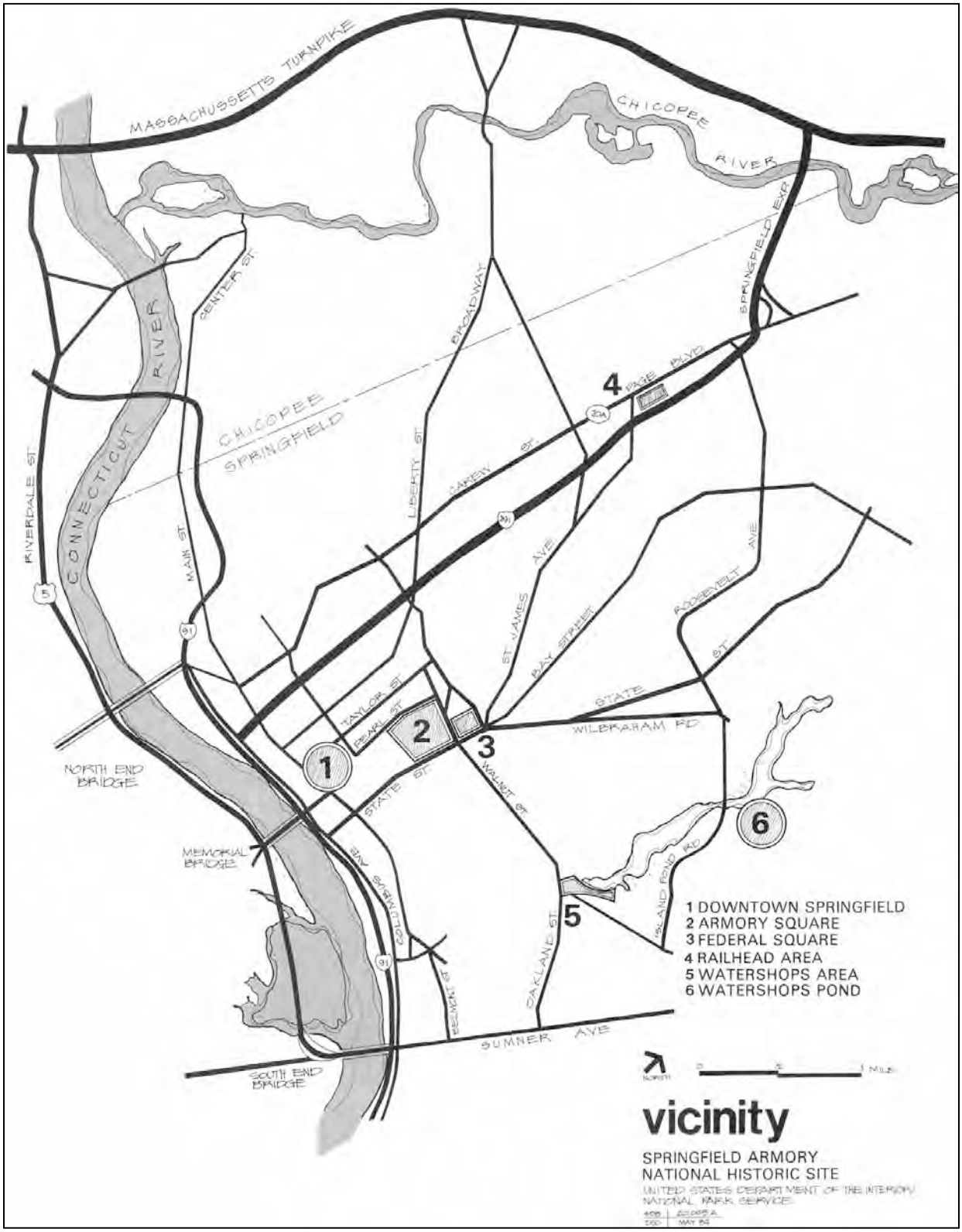


Figure 2. Springfield Armory National Historic Site location map.

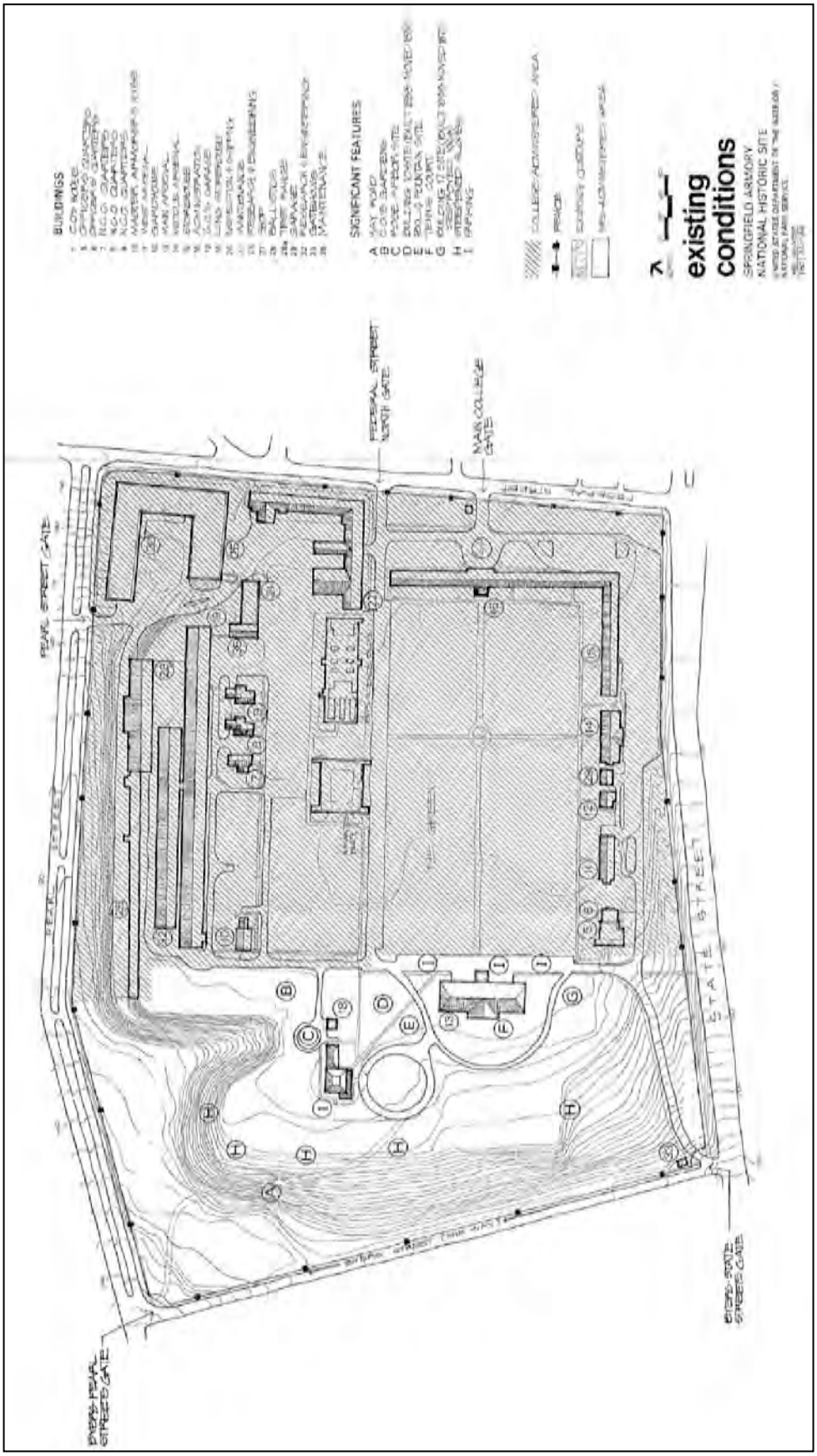


Figure 3. Existing Conditions, Springfield Armory National Historic Site, July 1984. The plan includes recently constructed buildings on the north side of the Green including the Putnam Building west of Building 27.

DEVELOPMENTAL HISTORY

HISTORICAL BACKGROUND AND CONTEXT

Introduction

The following discussion of historical context of the site is intended to provide some background for Building 27 in the larger context of the Armory.[10] The following review is based on the previous research supplemented by primary and secondary sources from the Springfield Armory NHS and the National Archives. The history of the Springfield Armory has been the subject of several publications, including: Derwent S. Whittlesey's Ph.D. Dissertation, "The Springfield Armory: A Study in Institutional Development"; Constance M. Green, *History of the Springfield Armory*; John Albright, *Historic Structure Report, Historical Data and Historical Base Map, Springfield Armory National Historic Site, Massachusetts*; and Michael S. Raber, et al., "Innovators and Military Small Arms: An Industrial History of the Springfield Armory, 1794–1968." These publications, among others, provide accounts of the arsenal, arms manufacturing, and social history of the Springfield Armory, as well as the development of the site and buildings. They provided an understanding of the significance of the site and the context for the Building 27. For a more in-depth history of the Springfield Armory, the reader should refer to the publications previously listed.

To support the efforts of the Colonies during the American Revolution, an arsenal and workshop were established in Springfield, Massachusetts, in 1777.[11] The National Armory at Springfield was established by the federal government in 1794 with Springfield native David Ames named as the first superintendent. In the nineteenth century two men were very influential in the physical development of the Armory: Colonel Roswell Lee, Superintendent, and Major James W. Ripley, the Armory's first U.S. Military Commanding Officer. During these formative years and into the twentieth century, the Armory grew to encompass three separate areas known as the Hill Shops, Water Shops, and Railhead Area. The Hill Shops were located on a bluff northeast of the central business district of Springfield and were comprised of two units, Armory Square and Federal Square, divided by Federal Street. The Water Shops were located a mile southwest of the Hill Shops at the intersection of Walnut Street and the Mill River, and the Railhead Area was northeast of the Hill Shops on Page Boulevard (fig. 2).[12]

The hill location of the Springfield Armory and its importance to the city of Springfield were aptly described by historian John Albright:

[10] Portions of the following section were taken from: James J. Lee III and Marilou Ehrler, *Commanding Officer's Quarters, Historic Structure Report* (Lowell, MA: DOI, NPS, NER, Historic Architecture Program, 2010).

[11] Derwent S. Whittlesey, "The Springfield Armory: A Study In Institutional Development." Ph. D. Dissertation (Chicago, IL: University of Chicago, 1920). Citations in this report are from the 2006 transcription by John McCabe and Richard Colton, Springfield Armory NHS.

[12] Carole L. Perrault and Judith A. Quinn. "Springfield Armory National Historic Site, Springfield, Massachusetts, Building 19, Historic Structure Report, Volume I., Text and Bibliography (Draft)" (Boston, MA: U.S. DOI, NPS, NAR, CRC, BCB, November 1991).

> Unwanted by farmers, more easily defensible than any surrounding areas, and located with the growing cluster of firearms manufactories near the Connecticut River, the site on which the Armory began its development, could hardly have been more appropriate. The hill site has been occupied constantly since 1777 by some sort of armory or arsenal activity. It has been a constant factor in the life of the city as well as the sole occupant of the site. Its presence on the commanding slope overwatching Springfield and its stylistic impact on the city's public buildings are seen at the first glance of the modern city and the Armory, and is formally recognized in the seal of the city of Springfield, which shows the Armory's Main Arsenal.[13]

The Armory currently consists of a 54.92-acre parcel that is bounded by Byers, Pearl, Federal, and State Streets and includes Armory Square. Thus, the contextual history will be focused on the development of the Hill Shops and Armory Square, also historically referred to as the Green, Tower Hill (and/or Tower Square), and Union Square.[14]

[13] John Albright, *Historic Structure Report, Historical Data and Historical Base Map, Springfield Armory National Historic Site, Massachusetts*. (Denver, CO: U.S. Department of the Interior, National Park Service, May 1978) 1.

[14] Albright, 57. Historic maps refer to the square as the Green (1824), Tower Hill (1851), and Armory Square (1899). James Ripley referred to it as "Liberty Square" in 1843, and it was known as Union Square by 1865 and also in the 1884 description of the Armory in *King's Handbook of Springfield* by Albert Kirkham. By the end of the nineteenth century and since then it has been known as Armory Square.

Establishment of the Springfield Arsenal

During the Revolutionary War, Springfield, Massachusetts, was recommended as a practical site for arms and ammunition storage by Colonel Henry Knox. Springfield's proximity to the Connecticut River and the regional concentration of gunsmiths were among the reasons for choosing that location. Knox's assurance so convinced General George Washington that he championed the cause to the Continental Congress, which agreed to establish an arsenal and arms workshop in Springfield in 1777.[15]

The first structures for the arsenal were erected near the militia training field on a hill northeast of the town center in 1778. The buildings included a storage "magazine, barracks, and accommodations for the operation of the laboratory."[16] Thus the arsenal at Springfield was established in the area that would become the Hill Shops and Armory Square. The barracks and laboratory were constructed on the hill location near Boston Road (presently State Street), while the magazine was apparently built on the low ground north of the hill.[17]

After the Revolutionary War, Springfield was maintained for the storage of military arms and ammunition. During this time the U.S. Congress recognized the importance of preserving and storing the supplies of powder in proper magazines. To that end a new magazine was constructed in Springfield at the east end of the hill training field in 1782, and served as storage for the arsenal, and later the armory, for sixty years. The magazine was a brick structure

[15] Whittlesey, 13–18.

[16] Ibid., 23.

[17] Ibid.

and one of the earliest permanent structures built on the hill.[18]

During the 1780s the operations at Springfield continued at a reduced rate. During Shays' Rebellion the arsenal became the site of conflict that turned the tide of that rebellion in 1787.[19] Otherwise the hill site in Springfield was quiet until after the establishment of the National Armory.

Early Years of the Springfield Armory (1794–1815)

President George Washington authorized an act of Congress for the creation of two National Armories in 1794, choosing Harpers Ferry, Virginia (now West Virginia), as the southern site and Springfield, Massachusetts, as the northern site. "On April 2, the President approved 'An Act to Provide for the Erecting and Repairing of Arsenals and Magazines, and for other purposes,' which authorized the establishment of two arsenals and magazines."[20] The Springfield Armory would be established on the hill where the arsenal was already a presence, and along the Mill River to the southeast.

Springfield native and manufacturer, David Ames was the first civilian superintendent of the Springfield Armory and was tasked with establishing the arms manufactory. Though some of the buildings on the hill were owned by the government, the land was still owned by the town of Springfield. The government first purchased a 1.5-acre lot with rights to build a dam on the Mill River in 1795.[21] Utilizing the waterpower of the river, the government would build a portion of the arms manufactory on that site. That was where the Lower Water Shops would be established and expanded in the future with the purchase of additional land and water rights, ultimately growing to include the Upper and Middle Water Shops.

On the hill the government first purchased 30.5 acres from the citizens of Springfield, Massachusetts, on August 24, 1801.[22] A historic map of the site depicted a small arms manufactory that included a forging shop , filing shops, an inspection shop, stores, barracks, and the Superintendent's house, among others (fig. 4). That plot of land would become the Hill Shops and Armory Square, upon which the Armory would expand, starting with the replacement of buildings consumed by fire in 1801, and continuing under Superintendent Ames (1794–1802) and his successors, Joseph Morgan (1802–1805) and Benjamin Prescott (1805–1813 and 1815).

Superintendent Prescott continued the expansion of the Hill Shops with the addition of the "New Brick Store" in 1807. Later known as the "West Arsenal" and "the Barracks," the two-story building had an addition of a third story during the Civil War and is the oldest extant building today. During Prescott's superintendency, new construction included a two-story stocking and filing shop, annealing shops, a two-story administration building, and a one-and-a-half-story forge shop, which later became the core of the workshops (Building 27).[23] These were among the buildings forming the Springfield Armory as it was inherited by Superintendents Henry Lechler (1813–15) and Roswell Lee (1815–1833).

[18] Frank B. Sarles and Denys P. Meyers, et al. *Springfield Armory, Massachusetts* (Boston, MA: U.S. DOI, NPS, Office of Archeology and Historic Preservation, August 17, 1967), 9; Whittlesey, 34–35.

[19] Sarles and Meyers, 9; Whittlesey, 36–37.

[20] Sarles and Meyers, 9.

[21] Whittlesey, 48.

[22] Sarles and Meyers, 10; Whittlesey, 50.

[23] Whittlesey, 52–53. Alterations to Building 27 in 1973 demolished most of this historic core.

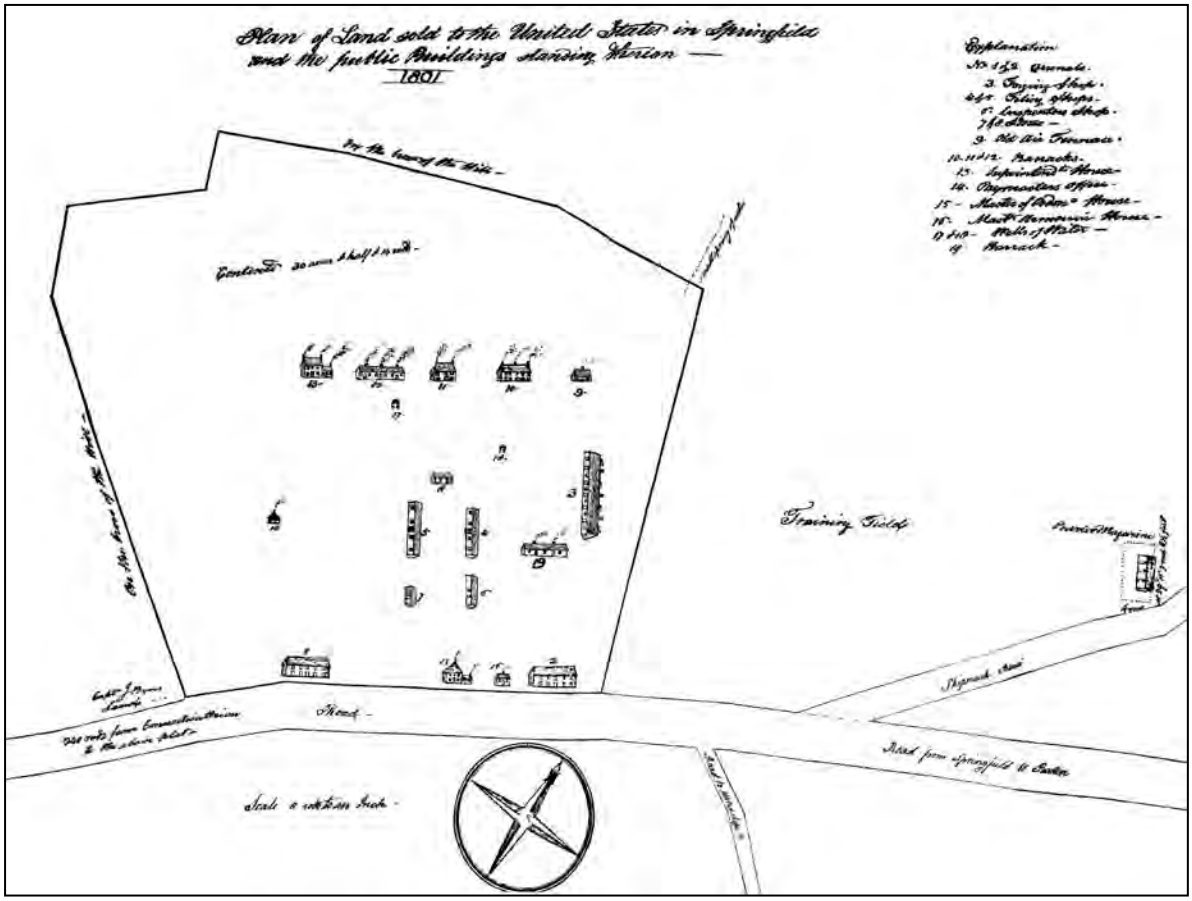


Figure 4. "Plan of Land sold to the United States in Springfield and the public Buildings standing thereon – 1801."

Colonel Roswell Lee, Superintendent (1815–1833)

When Colonel Roswell Lee took command of the Springfield Armory in 1815, he resigned his military commission and became a civilian superintendent. Lee took over an arms and ammunition manufactory that had witnessed increased activity during the War of 1812 and was considered a large industrial site for that time.[24]

Soon after his appointment to Springfield, Superintendent Lee was planning to add several buildings to the complex in efforts to transform it into a "Grand National Armory." At the time Armory Square was surrounded by brick workshops, wooden and brick dwellings, and had a prominent flagpole planted in the center of the Green. It was within this setting that Roswell Lee envisioned his ambitious design. By the end of the summer in 1815 he had plans for new buildings, including a brick administration building, and a formal landscape that would help fulfill his vision.[25]

Superintendent Lee's plans came to fruition over the next several years. A map of the Armory circa 1821 depicts an industrial complex consisting of at least ten buildings

[24] Albright, 5.

[25] Albright, 5; Perrault and Quinn, 16; Whittlesey, 79.

related to arms manufactory and storage, and fourteen residences (fig. 6).[26] The development of the Hill Shops during this period was focused on the central Green that contained a flagpole historically known as the "Liberty Pole."[27] At the time the map was made, Roswell Lee had only just begun his campaign to transform the Armory.

An inspection of the Springfield Armory in 1823 by the Ordnance Office in the War Department made the following observations, which described the beginnings of Lee's grand plan that grew up around the Green:

> The aforesaid buildings are arranged northerly of the great State road leading to Boston, bordering on a large flat square piece of ground, fenced and set out with trees, around which is a road about 60 feet wide, leading to several dwelling houses occupied by the officers and workmen; the whole assuming a handsome and regular appearance.[28]

Roswell Lee apparently took every opportunity to improve the buildings at the Armory. When the main shop on the hill burned in 1824, he chose to replace it with a brick structure. Lee got approval for two shops, called the North and South Shops, which were completed by 1825 along with other brick buildings.[29] Two maps of the Armory dated 1830–31 illustrate the improvements made by Superintendent Lee, and depict the formality he introduced to the hill landscape (figs. 7 and 8). Though the Green appears to be planted with formal rows of trees, there were no formal walkways but several footpaths (fig. 8). Perhaps not so coincidentally, many of the footpaths funnel to the gate opposite the Paymaster's Office.

The historic map identifies the Armory structures around the square; on the southern edge were the "Brick Storehouses for muskets"; on the east side were two "Brick finishing Shops" (the North and South Shops) that flanked the "offices"; and north of those was the "Brick forging Shop" (once the core of Building 27). Additionally "Old frame stores," sheds, and the "Old Magazine" were located on the east side of Federal Street, in the present Federal Square. "Frame dwelling houses" lined the north side of the green, and the "Old barracks" were situated north of those buildings (fig. 8).

During his tenure Roswell Lee also built a new Superintendent's Quarters on the west side of the green. The building was depicted on both the circa-1821 and 1830–31 maps of the Armory (figs. 6–8). A review of the Springfield Armory in 1852 noted that in 1820 the Superintendent had been quartered in a wood-frame dwelling and that Secretary of War John C. Calhoun had suggested that Lee construct better accommodations for himself. The Superintendent got approval for a new building and began construction in the fall of 1820 (fig. 5). The brick quarters was completed by 1821 and was described as two stories high with the main part "45 feet front and 40 feet rear" and the back part "35 feet by 18 feet."[30] The Superintendent's Quarters, which was constructed in part by local builder and real estate developer Charles Stearns,[31] was later razed by Major

[26] Perrault and Quinn, Vol. I, 16.

[27] Albright, 6.

[28] U.S. Congress, House, Committee on Military Affairs, *Armory at Springfield*, 17th Congress, 2nd Session, no. 246, March 3, 1823, 538–539; as cited by Albright, 7.

[29] Whittlesey, 100–101.

[30] The National Armories, A Review of the System of Superintendency, Civil and Military, Particularly with Reference to Economy, and General Management at the Springfield Armory (Springfield, MA: G.W. Wilson's Steam Power Presses, 1852), 44; Carole Perrault and Judith Quinn, research files for Building 19, HSR, Draft, HAP, Lowell, MA.

[31] *Springfield Gazette, Vol. XV – No. 16, April 22, 1846*. Military Court of Inquiry; testimony by Charles Stearns (see Whittlesey, 129).

James W. Ripley and is now the site of the Main Arsenal Building (Building 13). Superintendent Roswell Lee's tenure ended when he died in 1833. In his final year at the Springfield Armory he commissioned construction of the Master Armorer's House and the Paymaster's House, which flanked the Superintendent's Quarters at the west end of Armory Square.[32] Lee's legacy was a substantial industrial complex on the hill and along the Mill River, which was the beginning of the "Grand National Armory."

Roswell Lee's successor John Robb was a political appointee of President Andrew Jackson, and also served as a civilian superintendent. Superintendent Robb was primarily concerned with the continued manufacture of arms, rather than furthering Lee's plans for the physical plant. During Robb's seven years as Superintendent, the buildings at the Armory were maintained and the exteriors of the brick buildings were painted "ordnance colour [sic]."[33] However, the condition of the buildings as reported by Major James Ripley when he took command in 1841 suggested that only small sums were spent on building maintenance.[34]

Superintendent John Robb's tenure did continue the "tradition of excellence in arms manufacturing" that had been established by Colonel Lee. When Robb left the position in 1840, the Springfield Armory consisted of eighty-five buildings, including forty-six shops, eight storehouses, and twenty-one quarters, with a combined property value of $209,161.[35]

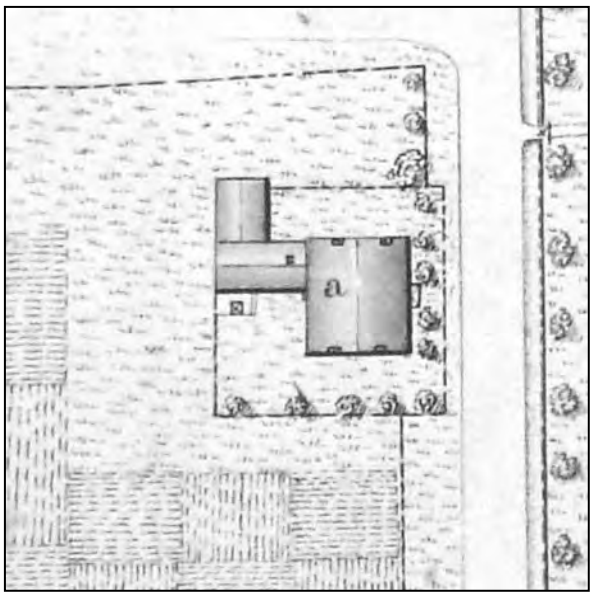


Figure 5. Springfield Armory, 1830–31, detail showing the Superintendent's Quarters (fig. 8).

[32] Albright, 16–17.
[33] Superintendent John Robb to Chief of Ordnance, Col. George Bomford, November 27, 1838; Letters Sent to Chief of Ordnance 1836–1895, Vol. 1 of 20, Entry 1354, RG 156. NARA Northeast Region (Waltham, MA).
[34] Albright, 17.
[35] Whittlesey, 120.

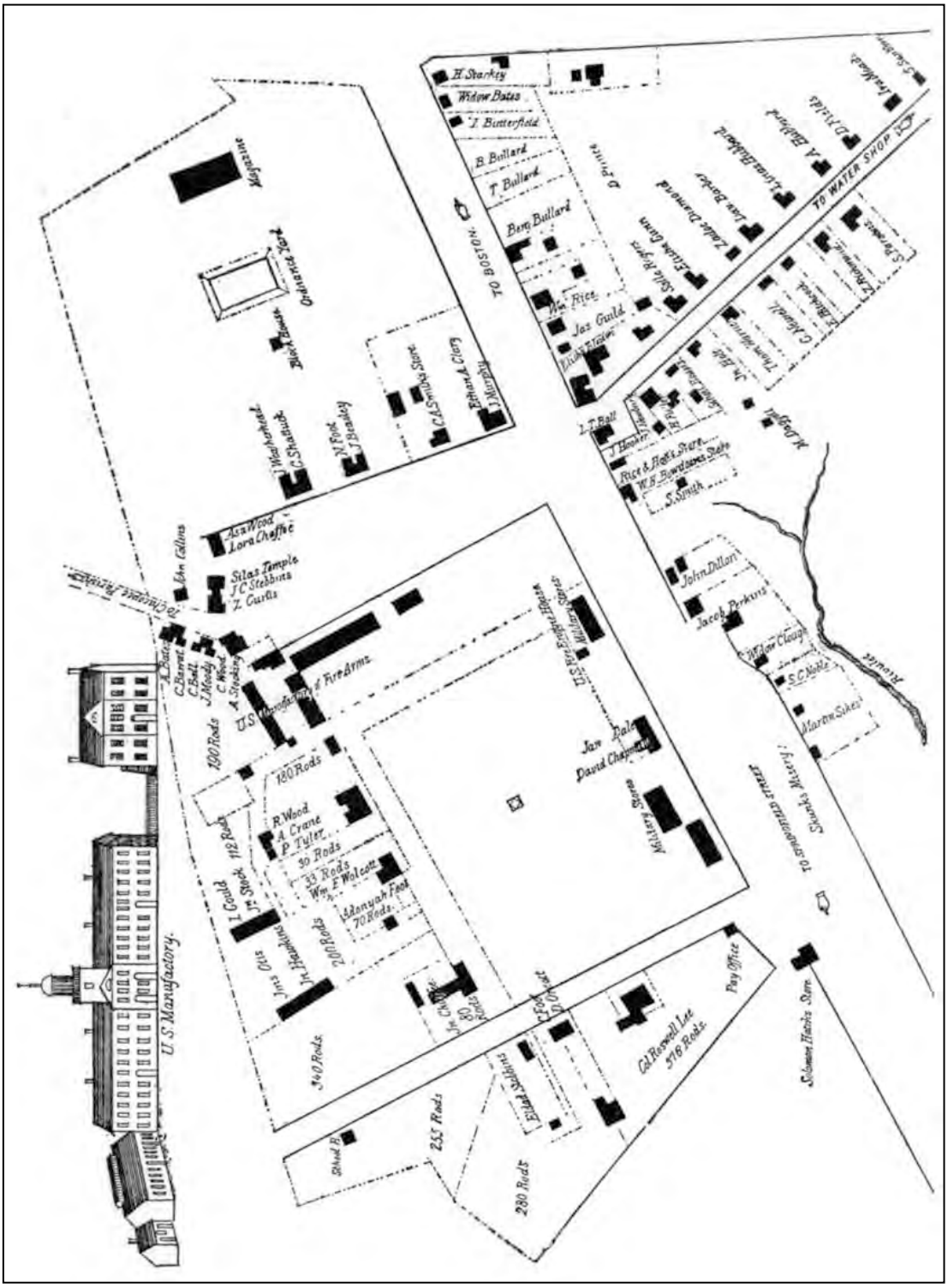


Figure 6. National Armory at Springfield, Massachusetts, circa 1821. The sketch of the "U.S. Manufactory" depicts the historic forge as a one-story building to the left of the main workshops.

Figure 7. "No. 1, A Map of the Public Land about the Upper and Middle Water Shops, 1830," National Armory, Springfield, Massachusetts. "Drawn by 2nd Lieutenant T. B. Linnard, 2nd U.S. Artillery, 1830–1831."

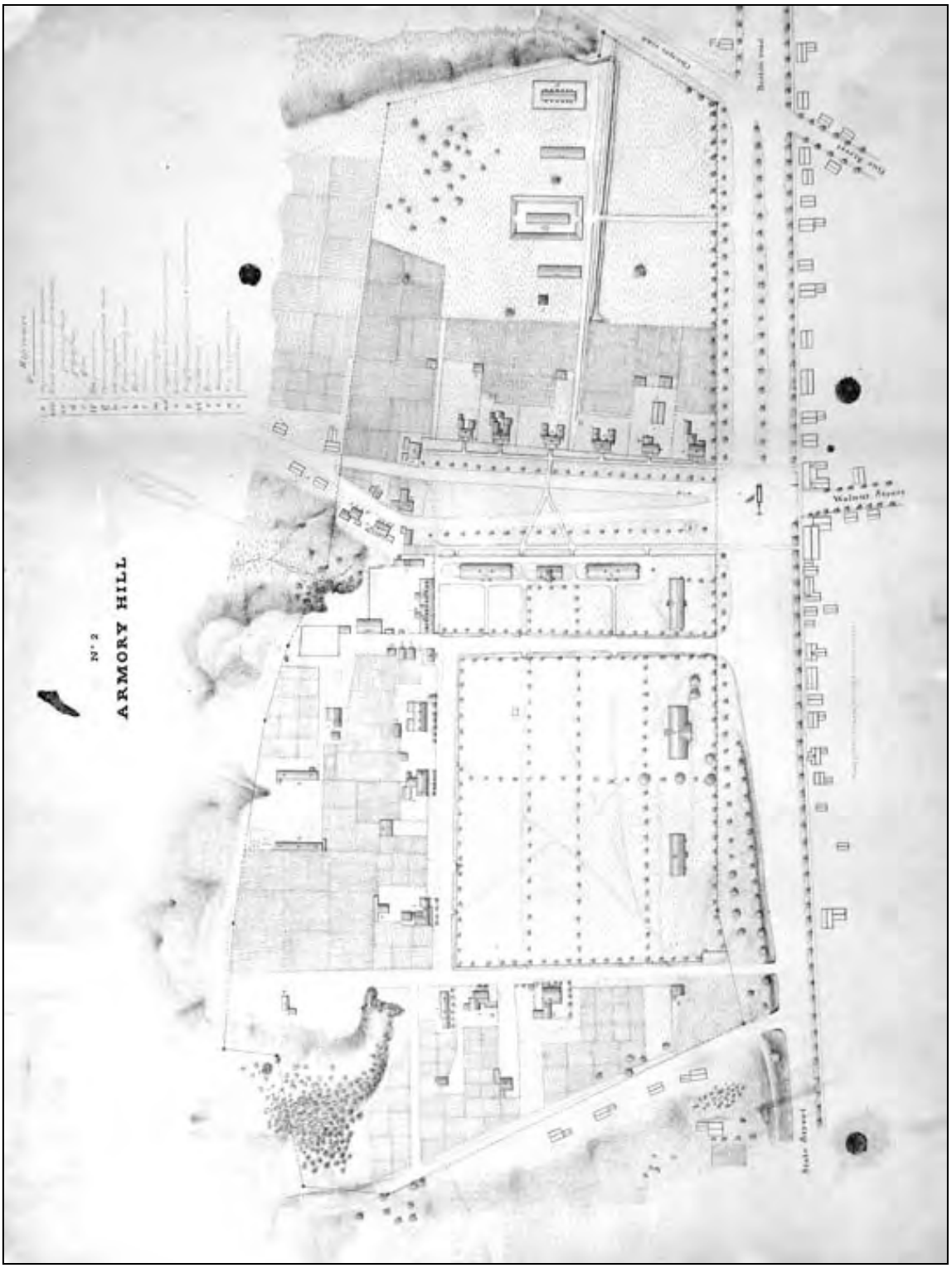


Figure 8. "No. 2, Armory Hill," National Armory, Springfield, Massachusetts. "Drawn by 2nd Lieutenant T. B. Linnard, 2nd U.S. Artillery, 1830–1831."

Major James W. Ripley, Commanding Officer (1841–1854)

James W. Ripley was a Major in the Ordnance Department when he was appointed the command of the U.S. National Armory at Springfield in 1841. Major Ripley was a graduate of the U.S. Military Academy, West Point, New York, and had spent the previous eight years in command of the Kennebec Arsenal, Maine. His background, qualifications, and personality were aptly summarized by Derwent Whittlesey in the following passage:

> Connecticut born, West Point bred, a veteran of 1814 and of the Seminole Wars, afterward Chief of Ordnance during the Civil War, Ripley expressed in his personality the quintessence of military precision and discipline; vigorous, assertive, stubborn, he undertook vast measures, carried them through, and stood by them when they afterward needed defense.[36]

Derwent Whittlesey's description of James W. Ripley provides some insight into the character of the man whose tenure at the Springfield Armory was marked by great accomplishments, but was also fraught with controversy.

Though James W. Ripley was technically a civil superintendent when first appointed to the Springfield Armory, he retained his rank of Major in the Ordnance Department. In 1842 Congress signed into law that all National Armories would be commanded by military officers.[37] The dispute over civilian versus military superintendence at the National Armories was a national issue that had local consequences for Springfield. The decision to install military commanders was based on the European model with the reasoning that greater efficiency in the manufacture of arms could be achieved by placing the armories in charge of ordnance officers who were practiced in the use and manufacture of the weapons.[38] Thus Major James W. Ripley became the first military Commander of the National Armory at Springfield in October 1842, which marked just one of the controversies during his command at the Armory.

In the year prior to his official appointment as Commander, Major Ripley had already begun to impose his vision for the National Armory and his military discipline upon Springfield Armory. Major Ripley's plan for the Armory was essentially an extension of Roswell Lee's "Grand National Armory," but on an extremely ambitious scale. His goals of improving the appearance of the site and the productivity of the arms manufactory would include the acquisition of additional land at the hill site and the construction of new buildings to support the growth of the Armory. Among the more prominent structures erected during Ripley's tenure were the Commanding Officer's Quarters and the New Arsenal, both situated at the west end of Armory Square. Major Ripley's expansion of the physical plant at the Armory resulted in the ordered aesthetic appearance of the hill site in the nineteenth century, which endured through the current century. In addition, his efforts to improve the manufacturing at the Armory accomplished his goal of increased productivity during his thirteen years as Commanding Officer.

Major Ripley's initial projects on the site included painting the exteriors of the more prominent buildings on the hill, followed by more substantial undertakings. His first

[36] Ibid., 120–21.

[37] Whittlesey, 124. Regulation of the War Department, October 1, 1842, signed by I. C. Spencer, House Document #207, 2nd Session, 27th Congress (SPAR Museum Collection).

[38] Whittlesey, 124.

estimate for funds for the Armory submitted on October 29, 1841 totaled over $30,000 and included a new trunk and flume for the Water Shop, new machinery, repairs to the Superintendent's Quarters, and improvements to and fencing of the grounds.[39] Ripley apparently received some of the necessary funding, but later determined that the disrepair of the Superintendent's Quarters required that it be entirely rebuilt.[40] Though this specific request was denied, Ripley was given the authority to proceed with repairs to the shops and machinery, and to temporarily suspend operations to achieve those repairs. Some workers were soon discharged as a result of the work, and the entire plant was shut down in August 1842 for more extensive repairs. Manufacturing at Springfield resumed on November 1, 1842 and Major Ripley reinstated some, but not all of the workers.[41]

Ripley's actions in November 1842 were contentious on two levels: first, he released from employment workers who had previously enjoyed the less strict regulations of the civilian superintendence; secondly, he hired many Irish Catholic workers who had followed him from the Kennebec Arsenal. His actions raised the ire of the portion of the Springfield population that opposed military command, and also created animosity toward the Irish Catholics in a predominantly Protestant town.[42] In his defense Major Ripley argued that he had dismissed workers who had abused their former positions and whose employment was not in the public interest, nor that of the armory. Among his grievances Ripley noted:

> irregular work hours, leaving the shops at pleasure to attend to private concerns, reading newspapers during hours of labor, and smoking in the shops. The most serious abuse of all was the established idea that the men were entitled to their places beyond the term of time for which they were hired, and could not rightfully be discharged without rendering to them satisfactory reason. In truth, the pretentions of the men were such as, if yielded to, placed the establishment under their control.[43]

Ripley's actions not only fueled the opposition to his command by the general populace, but also ignited a feud between Ripley and Charles Stearns.

Charles Stearns was a local builder and real estate developer who had been involved in the growth of Springfield and was apparently well connected to the local political scene. Stearns's opposition to military superintendence and his interest in real estate around the Armory hill site would lead to a protracted conflict between himself and Major Ripley. This was due in part to the fact that Stearns's real estate interests in the vicinity of the Armory were affected by Ripley's discharge of workers in 1842. Displaced workers had to move elsewhere for work, which created a surplus of houses near the hill and depressed the market in which Stearns had a large stake. The ensuing conflict between Ripley and Stearns was well documented in correspondence and court records. The feud was exacerbated in 1843 when Ripley demolished the Superintendent's Quarters, which Stearns had helped build. Derwent

[39] Major James W. Ripley to Chief of Ordnance, Col. George Bomford, October 29, 1841; Letters Sent to Chief of Ordnance 1836–1895, Vol. 1 of 20, Entry 1354, RG 156. NARA Northeast Region (Waltham, MA).

[40] Ripley to Lt. Col. George Talcott, now Chief of Ordnance, April 25, 1842; Letters Sent to Chief of Ordnance 1836–1895, Vol. 1 of 20, Entry 1354, RG 156. NARA Northeast Region (Waltham, MA).

[41] Whittlesey, 123–24.

[42] Whittlesey, 124–25.

[43] Defense of Major James W. Ripley, read before the Court of Inquiry at Springfield, March 16, 1846, 4. Senate Document, #344, 29th Congress, 1st Session. Washington, Ritchie, and Heiss, 1846; as cited by Whittlesey, 124.

Whittlesey and John Albright documented the rift that lasted throughout Ripley's tenure.[44]

The opposition to Major Ripley's command and the reforms that it embodied did not deter his progress and actually appeared to strengthen his resolve. Major Ripley's ambitious plan for the Armory was evident in his estimated budget for fiscal year 1843, which included vast improvements to the hill site.

> In brief, these plans comprised the purchase of additional land on the north and west of the government holdings on the hill, grading and planting the tract, laying out roads around the margins of it, fencing the remaining ground, and the construction of new buildings on a comprehensive scale.[45]

A rash of fires at the Armory in the winter of 1842–43, including two that were attributed to arson, strengthened Ripley's request for fencing of the Armory grounds.[46] Among Major Ripley's initial building projects on the hill was the new Superintendent's Quarters. Though his first budget had included funds to repair the existing quarters, a subsequent investigation and report found that the building should be abandoned and demolished.[47] Ripley's request to remove the Superintendent's Quarters was approved in April 1843.[48] However, budget constraints and public scrutiny of the operations at the Springfield Armory delayed the replacement of the quarters until 1845.

The construction of the Commanding Officer's Quarters on a new site in 1845 marked the beginning of Major Ripley's building campaign that would continue through 1854, and included the New Arsenal (1847–50). During this same period additional land on the west slope of the hillside was purchased to extend the boundaries of the Springfield Armory. Between the western boundary of the 1801 property and Byers Street several lots were added to the grounds of the Armory between 1841 and 1852, as well as two more lots in 1856 after Ripley's command.[49] This expanded the Armory hill site and created a buffer west of the Commanding Officer's Quarters and the New Arsenal.

The Mexican War fueled an increase in production at the Springfield Armory. "From July 1846 until July 1847, Springfield produced '14,300 muskets complete, spare parts equal to 1,000 muskets, tools, and other items.'"[50] During this period and throughout his tenure at the Springfield Armory, James W. Ripley pursued excellence and expediency in the manufacture of arms and strived to create an impressive facility.

---

[44] Whittlesey, 125–44. Albright, 22–46.

[45] Whittlesey, 129.

[46] Ripley to Talcott, Jan. 3, 1843; Letters Sent to Chief of Ordnance 1836–1895, Vol. 1 of 20, Entry 1354, RG 156. NARA Northeast Region (Waltham, MA).

[47] Ripley to Talcott, April 25, 1842; Letters Sent to Chief of Ordnance 1836–1895, Vol. 1 of 20, Entry 1354, RG 156. NARA Northeast Region (Waltham, MA).

[48] Talcott to Ripley, April 20, 1843; Registers of Letters Received from Chief of Ordnance, Entry 1364, RG 156. NARA Northeast Region (Waltham, MA).

[49] "Map of Main Ground of Springfield Armory, Approximate Boundaries of Land Plots Conveyed to U.S. Gov't, Springfield Armory U.S.A." September 7, 1912, U.S. Ordnance Department. Map Case 2, Drawer A, Folder 3; SPAR Museum Collection.

[50] Albright, 26.

Major Ripley was brevetted Lieutenant Colonel (Bvt. Lt. Col.) for "meritorious conduct, particularly in the performance of his duty in the prosecution of the War with Mexico" on May 30, 1848.[51] The increased production during his tenure was accompanied by an expansion of the facilities.

The new Commanding Officer's Quarters was well underway in 1846 when Major Ripley started planning for two additional buildings on the hill. Plans for the Long Storehouse (Building 19) and the New Arsenal (Building 13) were submitted to the Chief of Ordnance in that year and construction of the buildings would soon follow. The Long Storehouse, which was constructed for storing "'musket stocks, box boards, and other lumber,'" was begun on September 4, 1846 and was nearing completion by June 30, 1847.[52] In October 1846 Major Ripley forwarded plans of the new Main Arsenal to Lieutenant Colonel (Lt. Col.) George Talcott, Chief of Ordnance, for his approval.[53] As the construction of Ripley's new quarters was nearing completion in the spring of 1847, the excavation of the foundation for the new Arsenal had begun.[54] The Main Arsenal was constructed on the site of the former Superintendent's Quarters and was completed in 1850.[55] The Main Arsenal was flanked by the Greek Revival–style Paymaster's House and Master Armorer's House, erected by Roswell Lee in 1833, as well as the Commanding Officer's Quarters to the north (figs. 9 and 10). The row of buildings defined the west end of Armory Square and helped achieve Major Ripley's vision for the Springfield Armory.

In addition to these significant structures, additions were made to the Machine Shop (Annex/Building 27) at the northeast corner of the hill site. Historic documents indicated that the building was extended 61 feet, and that a 50-foot-long wing was added to the north side of the building.[56] Both of these additions were two stories high, and physical evidence suggests that they are part of the building today.

Major Ripley's improvements to the hill site also included numerous projects on the grounds. Annual appropriations were expended on grading newly acquired property, adding turf, planting shade trees, installing stone flagging for the sidewalks around the square, and constructing fences around the perimeter of the Armory.[57] Of these projects, the fencing was probably the most conspicuous addition to the landscape. Though the fence was initially constructed with pickets and high boards, Ripley disliked the appearance and began planning for an ornamental iron fence set in a foundation of native sandstone. The foundation materials were taken from a Longmeadow, Massachusetts, quarry starting in October 1847, but the patterns for the pickets and gates were not approved until May 1852 by Bvt. Lt. Col. James W. Ripley. Ripley did witness the installation of

[51] George W. Cullum. *Biographical Register of the Officers and Graduates of the U.S. Military Academy* (Cambridge, MA: The Riverside Press, 1891, 3rd Edition. Volume I) Perrault and Quinn, research files for Building 19, HSR, Draft, HAP, Lowell, MA.

[52] Perrault and Quinn, Vol. I, 36. The *Building 19, Historic Structure Report* documented that the first two sections of the Long Storehouse were built between 1846 and 1849. The building was also added to in 1861 and 1862, and achieved its full length by 1864 (Perrault and Quinn, Vol. I, 36–39).

[53] Ripley to Talcott, October 27, 1846; Letters Received 1812–1894, Entry 21, RG 156. Perrault and Quinn, research files for Building 19, HSR, Draft, HAP, Lowell, MA; originals at NARA.

[54] Robert L. Carper and Richard G. Turk, *Historic Structure Report, Architectural Data Section, Springfield Armory National Historic Site, Massachusetts* (Denver, CO: U.S. Department of the Interior, National Park Service, September 1984), 11.

[55] Carper and Turk, 11.

[56] Whittlesey, 134.

[57] Whittlesey, 135; Albright, 27.

the iron fence and Main Gate along State Street, but would not see the entire fence completed during his command.[58] The decorative iron fence had not yet been completed at Armory Hill in 1851, as it was not depicted in the Map of Springfield from that year (fig. 8), nor was it described by journalist James Abbott for *Harper's New Monthly Magazine* in 1852:

> On reaching the summit of the ascent, the visitor finds himself upon an extended plain, with streets of beautiful rural residences on every hand, and in the center a vast public square occupied and surrounded by the buildings of the Armory. These buildings are spacious and elegant in their construction, and are arranged in a very picturesque and symmetrical manner with in the square, and along the streets that surround it. The grounds are shaded with trees; the dwellings are adorned with gardens and shrubbery. Broad and neatly kept walks, some graveled, other paved, extend across the green or along the line of the buildings, opening charming vistas in every direction.[59]

Though his focus for the Springfield Armory was on the hill, Ripley did make some modifications to the Upper Water Shops during his command as part of the improvements to the manufacturing systems.[60]

James W. Ripley's thirteen years as Commander may have been marked by controversy, but he had made great strides toward the creation of his vision of the Springfield Armory. During his tenure production was streamlined and increased, and the buildings and grounds were vastly improved. One of his last projects was the painting of the exteriors of most of the buildings around the square with a uniform color from 1852 through 1853.[61] The final inspection report during Bvt. Lt. Col. Ripley's command found the buildings on the hill in good condition and praised Ripley's improvements to the Springfield Armory:

> As an important manufactory, this Armory, its character, its facilities for fabricating arms, and its products, are not less honorable to the country than useful, and in every view connected with public pride, and utility, it demands the liberal support of the government.
>
> In its plan, construction, and arrangement, it should be such, as to convey the impression of the power of the country to supply an important means for the effective defence [sic], independent of foreign, or private, aid, and like other of our governmental constructures [sic], it should possess both qualities of permanency and architectural perfection.
>
> Plans, looking to the future greatness, and consequently increased wants of the country should be adopted for this armory, and executed with skill, and liberal economy.[62]

During what would be James W. Ripley's last year as Commander of the Springfield Armory, a special committee was appointed to review the issue of civil versus military superintendence in 1853. The review of the commission and Bvt. Lt. Col. Ripley's defense of his command and military superintendence was documented by Derwent Whittlesey. The outcome of this commission was the passage of an act repealing the appointment of military

[58] Whittlesey, 136. Albright, 29.

[59] Jacob Abbott, "The Armory at Springfield," *Harper's New Monthly Magazine*, No. XXVI, Vol. V, July 1852.

[60] Whittlesey, 135.

[61] Ripley to Col. H. K. Craig, Chief of Ordnance, May 31, 1854; Letters Sent to Chief of Ordnance, 1836–1895, Vol. 2 of 20, Entry 1354, RG 156. NARA Northeast Region (Waltham, MA).

[62] Lt. Col. R. S. Baker, Springfield Armory Inspection Report, October 3, 1853; Box 63, Entry 1003, RG 156. Perrault and Quinn, research files; originals at NARA.

officers as superintendents to the National Armories by President Franklin Pierce in August 1854.[63] The War Department instructed Ripley to turn over the Armory to his Master Armorer, which he did with expediency, leaving his command at the Springfield Armory on August 16, 1854.[64]

John Albright has aptly summed up James W. Ripley's contributions and accomplishments to the Springfield Armory, as well as his legacy evident in the extant facilities and grounds of the Armory.

> Lieutenant Colonel James Ripley had taken over an establishment whose basic plan had been conceived by the energetic and competent Major Roswell Lee. Ripley had expanded on Lee's concept of buildings surrounding the open square, and not only reinforced that appreciation of the relationship of space, landscape vistas, and buildings, but had improved the technical and manufacturing process at the site as well.[65]

Albright concluded:

> The Armory contained all the major buildings that the National Park Service would gain responsibility for over 120 years later. No major construction took place after Ripley's administration in that portion of the Armory which is now a national historic site. The subsequent history of the site is the narration of major changes which include the removal of the two buildings flanking the Main Arsenal, and the modernization and erection of outbuildings. But the major configuration of the 1854 complex and of the 1977 complex are identical.[66]

[63] Whittlesey, 139–44.
[64] Albright, 46.
[65] Albright, 45–46.
[66] Albright, 46.

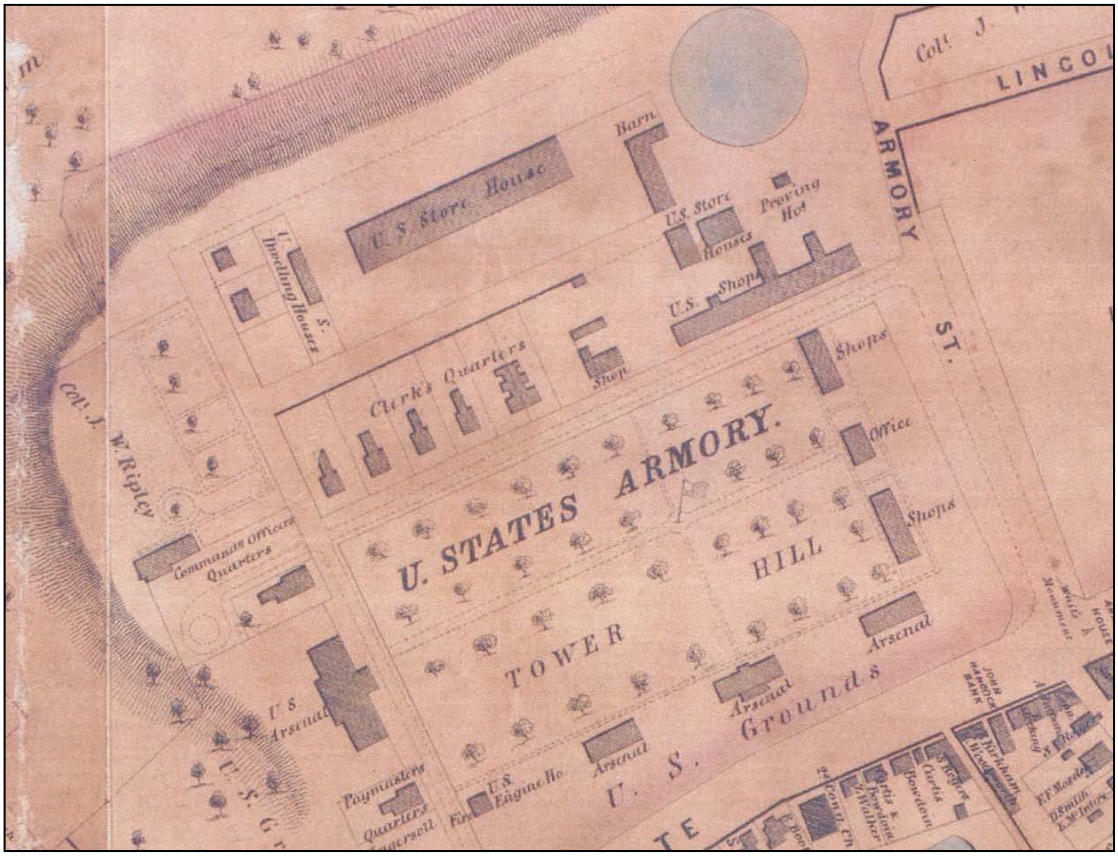


Figure 9. Detail of U.S. Armory from Map of Springfield, Massachusetts, surveyed and drawn by Marcus Smith and H. A. Jones; Published by M. Dripps, New York, 1851.

Figure 10. Springfield Armory Main Arsenal looking west. Paymaster's House to the south (left), Master Armorer's House to the north (right), and Commanding Officer's Quarters far to the north, circa 1870.

The Springfield Armory, Later Years (1854–1968)

Pre–Civil War Development

General James S. Whitney, a political appointee, assumed the duties of the Superintendent on October 19, 1854.[67] As previously described, Whitney inherited a well-run armory that, with the exception of the Water Shops, was in overall good condition with an efficient manufactory. Superintendent Whitney came to rely on the procedures and personnel of his predecessor to run the Springfield Armory.[68]

During his command James W. Ripley had focused on developing the manufacturing on the hill and allowed the Water Shops deteriorate, which was noted by Lt. Col. R. S. Baker during his inspection in June 1854.[69] Consequently, Superintendent Whitney found the Water Shops in dilapidated condition, and requested funds to rebuild the Upper and Lower Water Shops and raise the Dam.[70] Whitney's improvements included the sale of the Lower Water Shops, consolidation of the Middle and Upper Water Shops that included the demolition of some existing buildings, and construction of new buildings and dams. Construction of the new Water Shops was started during the summer of 1856, and by 1860 all the new buildings were in place.[71] In June 1860 Lt. Col. Ripley, now Inspector of Armories and Arsenals, reported that there were several improvements near the new Water Shops, including a new magazine for storing powder and the removal of nearly all the old buildings at the former Middle Water Shop.[72]

The work at the Water Shops demanded a large percentage of Whitney's time and effort, but he also managed to continue Ripley's project of enclosing the hill with iron fencing. In June 1855 he ordered the casting of additional sections of fence,[73] and by the end of fiscal year 1856 the Federal Street side of the fence was completed.[74] Erection of fencing along Byers and Pearl Streets would have to wait until those roads were completed and all the abutting property attained by the Government.[75] In August 1859 Superintendent Whitney authorized the delivery of the stone gateposts for the corner of Byers Street;[76] the fence was installed on that street by mid-1860.[77] Continuation of the fence along Pearl Street would not be completed until 1862, after Whitney's term as Superintendent.[78]

---

[67] James S. Whitney, Esq. to Lt. Col. Craig, Chief of Ordnance, October 19, 1854; Letters Sent 1835–1860, Entry 1351, RG 156. Perrault and Quinn, research files; microfilm roll 159 SPAR Museum Collection; originals at NARA.

[68] Whittlesey, 145–46.

[69] Baker, Springfield Armory Inspection Report, June 16, 1854; Entry 1003, RG 156. Perrault and Quinn, research files; originals at NARA.

[70] Whitney to Craig, November 17, 1854; Letters Received 1812–1894, Box 144, Entry 21, RG 156. Perrault and Quinn, research files; originals at NARA.

[71] Whittlesey, 148–49.

[72] Ripley, Springfield Armory Inspection Report, June 20, 1860; Entry 1003, RG 156. Perrault and Quinn, research files; originals at NARA.

[73] Whitney to Ames Manufacturing Co., Chicopee, MA, June 20, 1855; Letters Sent 1835–1860, Entry 1351, RG 156; microfilm roll 159 SPAR Museum Collection; Perrault and Quinn, research files; originals at NARA.

[74] Whittlesey, 146.

[75] Ibid.

[76] Whitney to A. S. Dwelly, Esq., August 26, 1859; Letters Sent January 1858–August 1860, Entry 1351, RG 156; microfilm roll 159 SPAR Museum Collection; Perrault and Quinn, research files; originals at NARA.

[77] Whittlesey, 146.

[78] Albright, 48–50.

Civil War Growth and Production

During the Civil War, activity at the Springfield Armory increased in response to the destruction of the U.S. Armory at Harpers Ferry in April 1861 and the needs of the Union Army. In May of that year Superintendent George Dwight wrote Lt. Col. Ripley, now Chief of Ordnance, that "The production at this Armory will be by the 10th of June at the rate of one hundred muskets per day."[79] Plans and estimates "for new Work Shops and their Machinery designed when completed, in connection with the other machinery, to produce the required standard of one hundred thousand stands of arms annually" were forwarded to Ripley on June 17, 1861.[80]

Captain Alexander B. Dyer, Ordnance Department, took over superintendence of the Springfield Armory in August 1861 and would oversee the increased production and expansion of the Armory through most of the Civil War. In June 1863, now Major A. B. Dyer reported that the building projects for the year included an addition to the Storehouse, a Drying House, a Forging Shop, a Tempering and Case Hardening Shop, and an Engine Room and Boiler House, as well as the addition of a second story to the Polishing and Annealing Shops.[81] Documentary and physical evidence suggest that this construction included additions to Building 27 (see subsequent section "Chronology of Development and Use").

Major Dyer's report also documented that 217,782 rifle muskets had been fabricated during the previous year.[82] The increase in production during this period was represented in the following passage from *King's Handbook of Springfield,* "United States Armory" published in 1884:

> When Fort Sumter was fired upon, about 1,000 guns per month was the production; three months after, the number was increased to 3,000 per month; and gradually the number was increased till, as before noticed, in 1864 the product for a day's work was 1,000; and many days the same number were boxed and shipped to the quartermasters of the army in different parts of the country. . . .[83]

Not only did production increase during this period, but the advent of the Civil War gave Chief of Ordnance Ripley the opportunity to enact legislation that would require the appointment of Ordnance Officers as superintendents for the U.S. Armories.[84] The irony of Ripley's actions seven years after his removal from military command of the Springfield Armory is not lost on historians.

The development of the Springfield Armory, and specifically the Hill Shops, during this period is documented by a topographical map surveyed and drawn by Engineers Shedd and Edson in 1864 (fig. 11). The map reflects some of the changes to the site since the 1850s and depicts the concentration of manufacturing on the hill, including an expansive workshop (Building

[79] George Dwight to Lt. Col. Ripley, May 20, 1861; Letters Received 1812–1894, Box 184, Entry 21, RG 156. Perrault and Quinn, research files; originals at NARA.

[80] Dwight to Ripley, July 17, 1861; Letters Received 1812–1894, Box185, Entry 21, RG 156. Perrault and Quinn, research files; originals at NARA.

[81] Major A. B. Dyer to Chief of Ordnance Ripley, June 30, 1863, Letters Sent to Chief of Ordnance 1836–1895, Entry 1354, RG156; microfilm roll 195, SPAR Museum Collection.

[82] Ibid.

[83] Albert Kirkham, "United States Armory," *King's Handbook of Springfield,* 1884, 252–53 (reproduced by Albright, Appendix B, 118).

[84] Whittlesey, 146. Note: James W. Ripley served as the Chief of Ordnance from April 23, 1861 through September 14, 1863. He was brevetted Brigadier General on July 2, 1861 and received his full commission as Brig. Gen. on August 3, 1861 (Cullum, 119).

27) northeast of the square, which had grown to comprise most of its present form. Though a large section of the workshops was damaged by fire on July 2, 1864, most of the building was salvageable and was soon repaired (see subsequent section "Chronology of Development and Use").[85]

The Armory grounds appear to be graded and completely enclosed by the iron fence on the 1864 map (fig. 9). There were entrance gates on State Street and Federal Street, with another located at the corner of Byers and Pearl Streets that had an access road to the circle in front of the Commanding Officers Quarter's. The map depicts the layout of the roads and walkways at the Armory, many of which survive today. The Armory grounds and square, then known as Union Square, were landscaped with trees, hedges, and gardens. The trees around the perimeter and along some of the roads and walks were orderly, while the trees on the Green and west hillside had a more natural arrangement.

Near the close of the Civil War, the rural landscape with farms and light development in the neighborhood of the Springfield Armory was beginning to change, as noted by John Albright:

> At roughly the same time, the land between downtown Springfield and the Armory, marked today by churches, two cathedrals, museums, and the public library, began to take on the character that the area shows now. The developments bounded the Armory and reflected the careful mix of architectural and landscaping considerations evident in one form or another at Springfield Armory.[86]

Albright also points out that the development of Springfield and the hill around the Armory was atypical for a New England mill town. The architecture, landscaping, and overall layout of the properties on the hill were aesthetically appealing and not part of the squalor so often associated with mill towns. Indeed, the pleasant appearance of the developing neighborhood was apparently influenced by the Armory, and they became part of the same fabric.[87] The transformation of the neighborhood around the Springfield Armory served to connect the facility with the greater Springfield community, which was illustrated in a bird's-eye view of Springfield drawn in 1875 (figs. 12 and 13).

[85] Dyer to Brig. Gen. George D. Ramsey, Chief of Ordnance, July 3–6, 1863, Letters Sent to Chief of Ordnance, 1836–1895, Entry 1354, RG156; microfilm roll 195, SPAR Museum Collection.

[86] Albright, 57.

[87] Albright, 60.

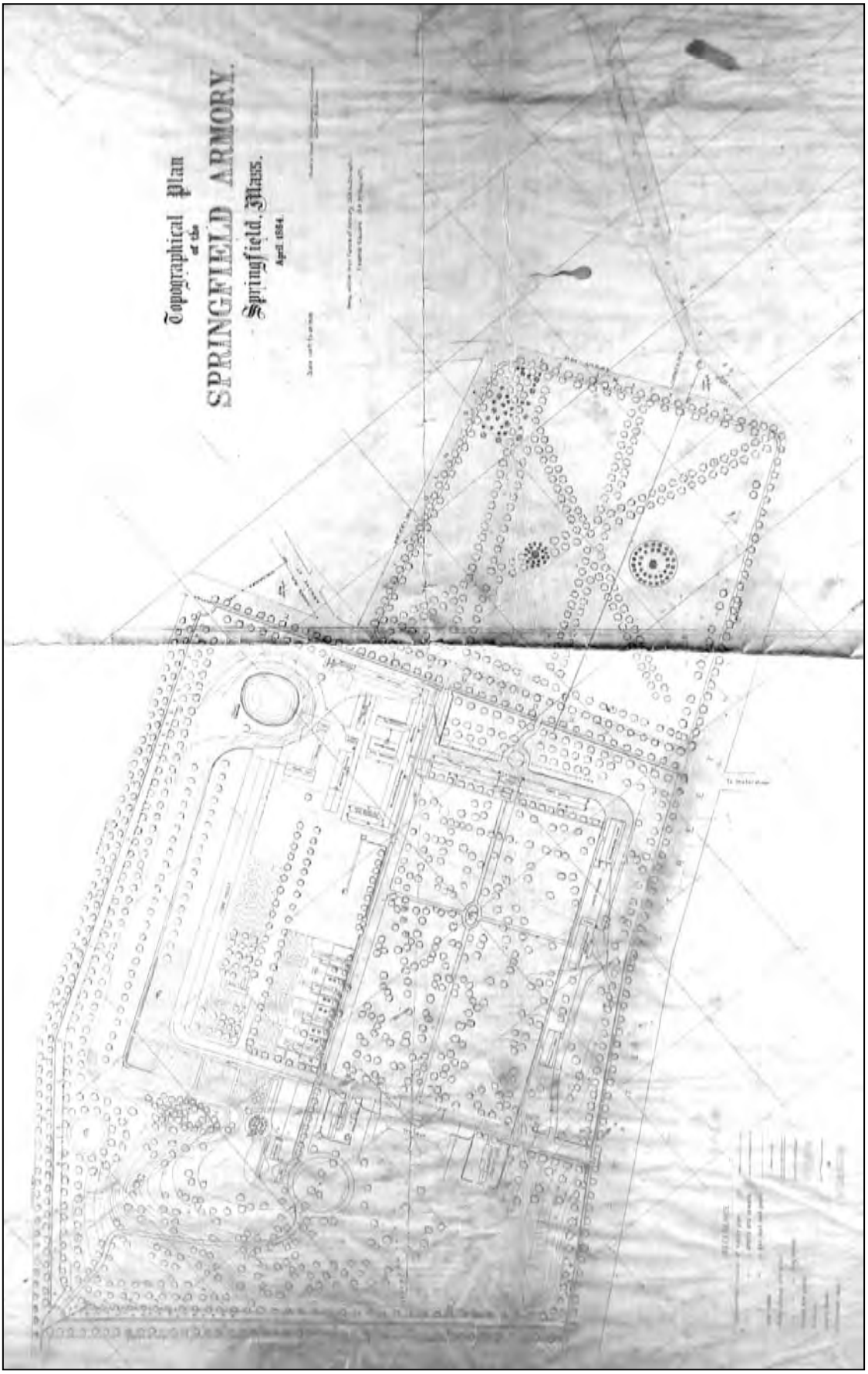


Figure 11. "Topographical Plan of the Springfield Armory, Springfield, Massachusetts, April 1864." Shedd and Edson, Civil Engineers and Surveyors, 42 Court Street, Boston.

Figure 12. "View of Springfield, Massachusetts, 1875." The hill site of Springfield Armory was listed as "Public Buildings, No. 7 - U.S. Armory" and the Water Shops were listed as "No. 8 - U.S. Water Shops."

Figure 13. Detail from bird's-eye view of Springfield, Massachusetts, 1875. The illustration depicts the Armory and the development of the neighborhood and town as described by historian John Albright.

Post–Civil War Progress

There were few changes to the Springfield Armory during the 1870s. The quarters at the southeastern corner of the square was replaced with a double Officer's Quarters (Building No. 5 and 6) in 1870. The new duplex quarters was constructed with brick and brownstone with a slate roof in keeping with other buildings on the hill. However, it was designed in the Second Empire style of the Victorian era, which was a departure from the more classical architecture of the earlier buildings.[88]

A map from the Annual Report of the Secretary of War in 1875 documents the relocation of the main entrance gate from State Street to the corner of State and Byers Streets, as well as the addition of the access road for the new entrance that ran southeast of the Paymaster's Quarters (fig. 14). During this period the Armory Hill Shops that were involved in arms manufacturing included present-day Building 16 (marked as 14–16 on the map) and Building 27 (marked as 17–21 on the map). On the 1875 map Building 27 has the same layout as in 1864, most of which survives today. Also evident on this map is the addition of an unidentified building, No. 29, to the Federal Square parcel, which was northeast of the main Armory. A bird's-eye view of Springfield in 1875 shows the hill site of the Armory and the Water Shops in the larger context of the city (fig. 12). The view depicts the new Byers Street entrance and an adjacent gatehouse at the Armory. It also illustrates the development of the neighborhood around the Armory, and between the Armory and downtown Springfield, which was previously discussed (fig. 13).

A Small Arms Museum was established at the Armory after the 1876 Centennial Exhibition in Philadelphia.[89] The museum included models of small arms, as well as rifles, swords, and antique weaponry based on a collection started by Col. J. G. Benton. The museum was first housed in Building 16 and was later moved to Building 27.

The arrangement of the buildings at the west end of the square changed in 1879 when the Master Armorer's Quarters was moved to a new site near the west end of the Long Storehouse. The contract for preparing a new foundation and moving the building was signed by Col. J. G. Benton, Superintendent, on October 27, 1879.[90] The contract specified that the work should be done over a two-month period, and on January 3, 1880 the relocated quarters was inspected and approved by the Ordnance Department Assistant Inspector.[91]

A map of the Springfield Armory that includes updates through 1882 shows only slight changes to the site, including the relocation of the Master Armorer's Quarters. Construction at the Armory began to increase near the end of that decade under the direction of Superintendent A. R. Buffington, Lieutenant Colonel, Ordnance Department. The development was focused on Federal Square and began in 1887 when Lt. Col. Buffington contracted for the construction of a fire-proof Milling Shop.[92] A map of Federal

[88] Sarles, Myers, et al., 21.

[89] Whittlesey, 164.

[90] Contract by Col. J. G. Benton with H. C. Trask, October. 27, 1879; Contracts for Ordnance Supplies and Construction 1806–1918, Series I, Entry 1382, RG 156. Microfilm roll 141 SPAR Museum Collection; Perrault and Quinn, research files; originals at NARA.

[91] Ibid.; contract file includes a memo by Assistant Inspector (signed name illegible) dated January 3, 1880.

[92] Contract by Lt. Col. A. R. Buffington with Darling Brothers, August 1, 1887; Contracts for Ordnance Supplies and Construction 1806–1918, Series I, Entry 1382, RG 156. Microfilm roll 141 SPAR Museum Collection; Perrault and Quinn, research files; originals at NARA.

Square dated January 1888 shows the new Milling Shop and two additional building complexes that were proposed for the site (fig. 15). These included a "Carpenter and Stocking Shop" in one structure, and a "Machine Shop and Assembling, Filing and Polishing, Machine Shop Office and Drafting Room, Hardening and Tempering, Engine, Boiler, and Blacksmith" in another building that was 430-feet long with a central cross section and wings on both ends. The contract for building a fire-proof Stocking and Carpenter Shop was signed in 1888,[93] and by the 1890s the facilities at Federal Square had noticeably changed. Though the structures around Armory Square were not extensively altered during this period, the addition of a covered piazza on the Commanding Officer's Quarters created a noticeable difference in the appearance of that building.

An inspection report for the Springfield Armory in 1892 noted that the post was still lighted by gas.[94] In 1894 General Electric Company was contracted to provide two dynamos that would deliver 200 amps at 125 volts.[95] Though the contract did not specify the location of the electrical components, they were probably located in the area of new construction at Federal Square (an electric light plant for the Water Shops was constructed in 1899).[96]

The improvements to the site in the 1890s are reflected in the 1897 plan of the "Main Grounds of the U.S. Springfield Armory" (fig. 16). The plan depicts the Hill Shops in both Armory and Federal Square, and clearly shows the development of Federal Square. At the west end of Armory Square the Pay Master's Quarters had been moved in 1895, which left the Main Arsenal to form the terminus for that end of the square.[97] As John Albright pointed out, the site plans of the Hill Shops provide consistent documentation of the changes since 1864 and help chronicle the development of the Springfield Armory through the twentieth century.

[93] Buffington with Darling Brothers, June 27, 1888; Contracts for Ordnance Supplies and Construction 1806–1918, Series I, Entry 1382, RG 156; microfilm roll 141 SPAR Museum Collection; Perrault and Quinn, research files; originals at NARA.

[94] Inspection of U.S. National Armory, June 16, 1892; Box 63, Entry 1003, RG 156. Perrault and Quinn, research files; originals at NARA.

[95] Contract with General Electric Company, November 11, 1894, Contracts for Ordnance, Supplies and Construction, 1806–1918, Entry 1382, RG 156. NARA Northeast Region (Waltham, MA).

[96] Contract with General Electric Company, June 6, 1899, Contracts for Ordnance, Supplies and Construction, 1806–1918, Entry 1382, RG 156. NARA Northeast Region (Waltham, MA).

[97] Albright, 74–75.

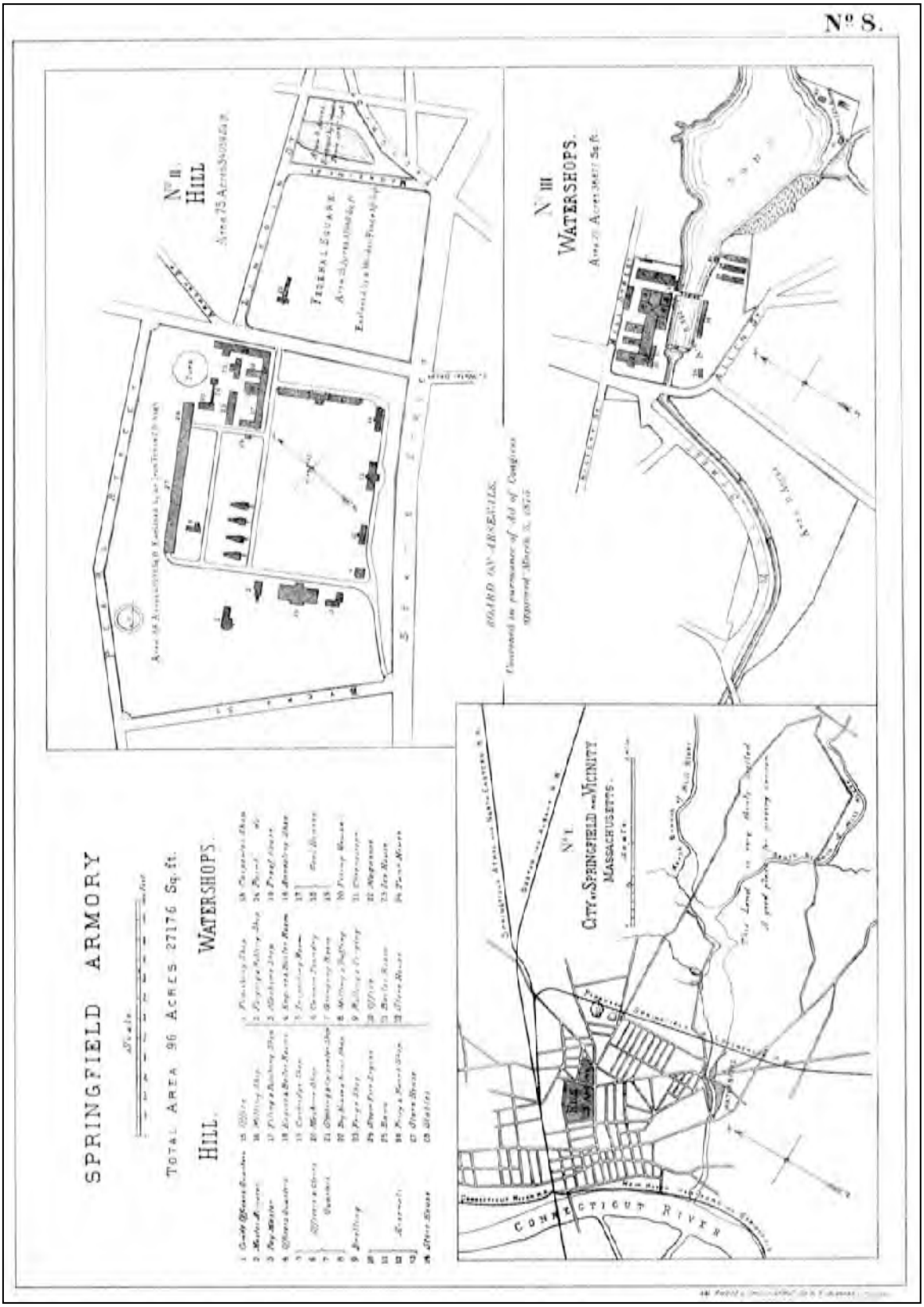


Figure 14. "Springfield Armory, Hill [and] Watershops," Secretary of War Report, 1875.

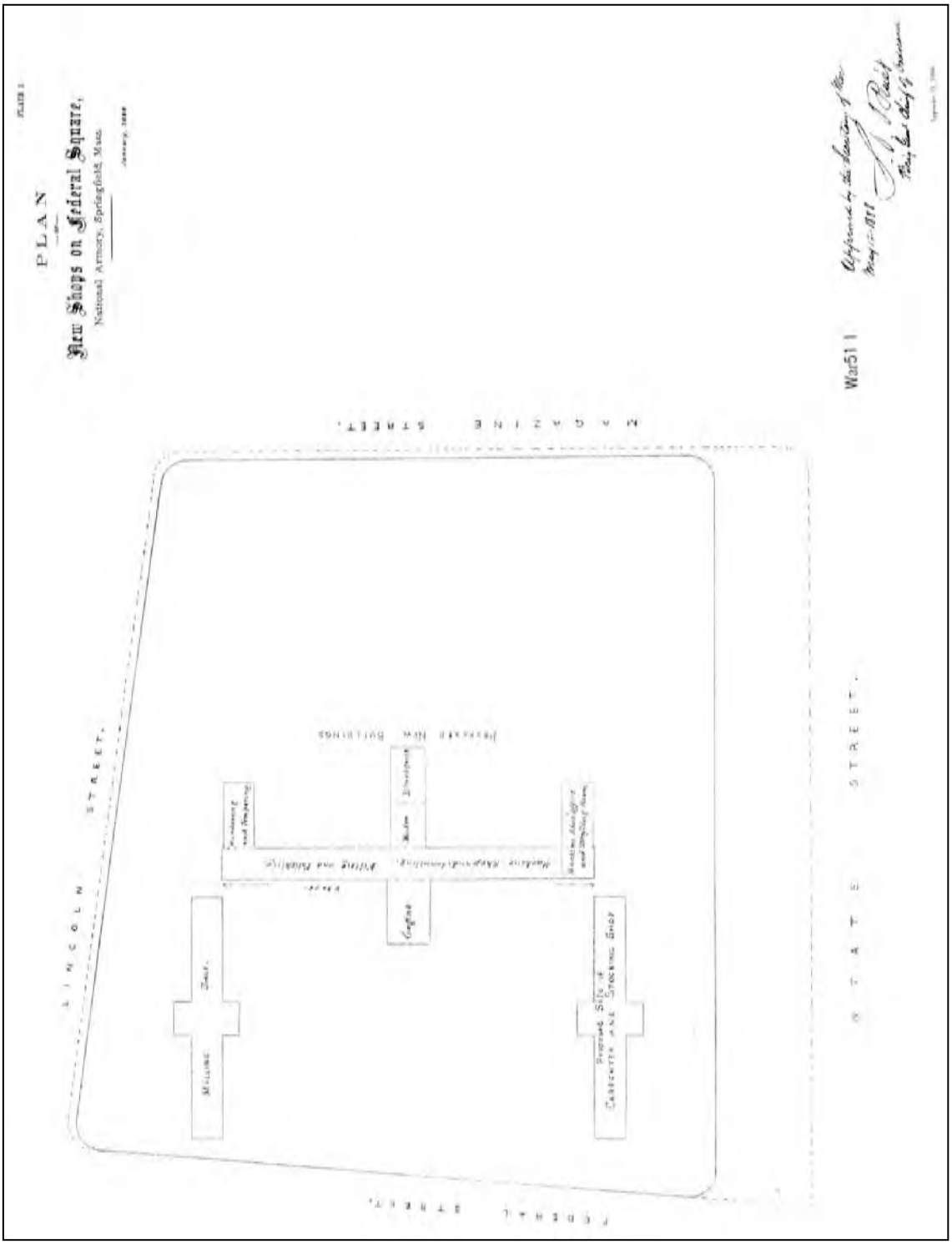


Figure 15. "Plan of New Shops on Federal Square, National Armory, Springfield, Mass., January 1888," depicting recently built "Milling Shop," "Proposed Site of Carpenter and Stocking Shop," and "Proposed New Buildings."

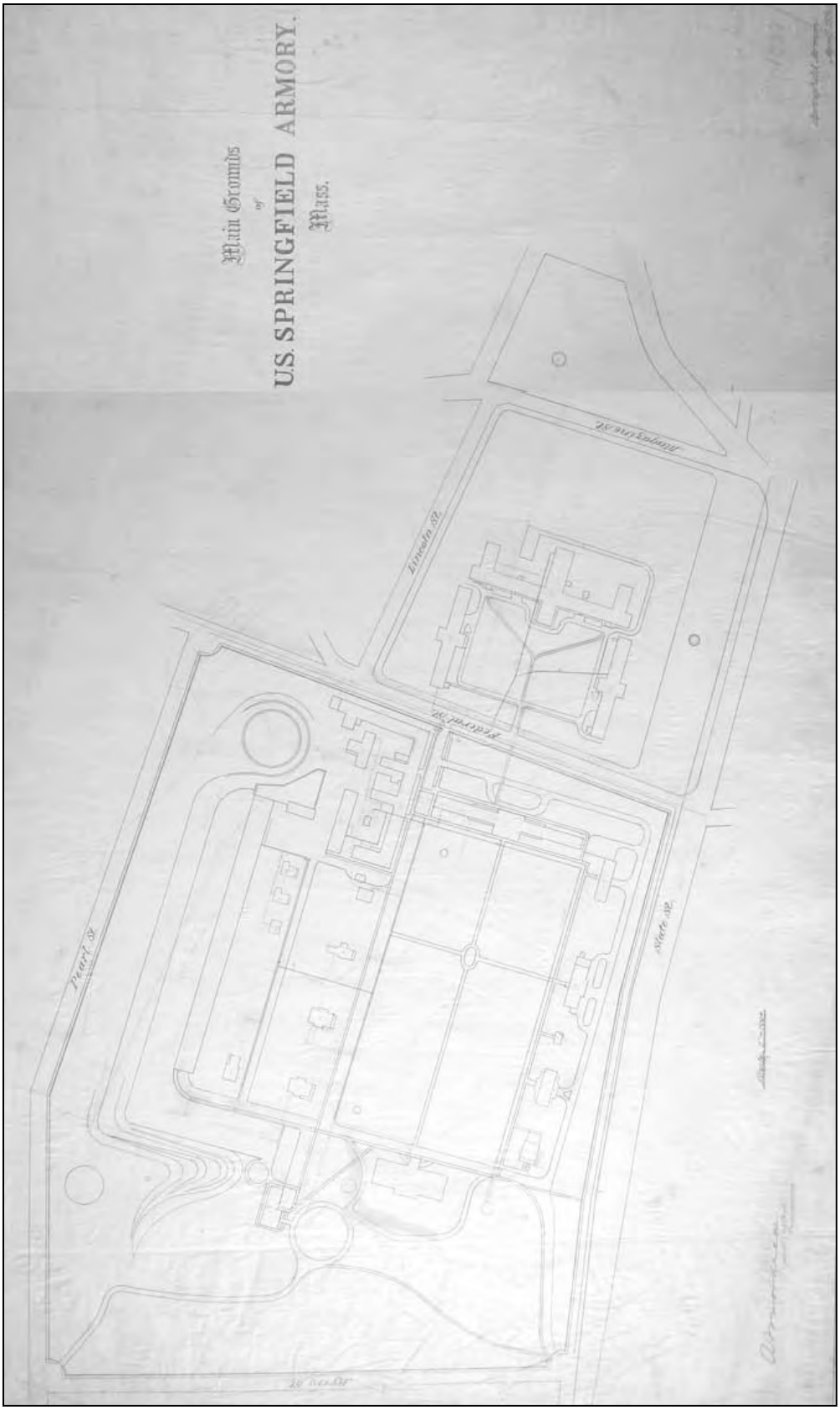


Figure 16. "Main Grounds of U.S. Springfield Armory, April 15, 1897."

Early-Twentieth Century through the World Wars

Early-twentieth-century changes to the Springfield Armory Hill Shops included updating and modernizing much of the infrastructure. Correspondence documents improvements to the gas, electric, water, and sewer systems, including switching the Commanding Officer's Quarters from spring water to city water. The installation of fire hydrants during this period was apparently part of the improvements that brought city water to the Armory. Development of the electric service for the site included the construction of the Electric Light Plant and the erection of electric light poles along the Pearl Street side of the Armory.[98]

Building construction at Armory Square during this period was not extensive and appears to have been limited to just a few structures. Among those was a new gatehouse at the Byers Street entrance gate, and the construction of two greenhouses, one of which was located northeast of the Commanding Officer's Quarters.[99] Otherwise, building improvements in the early twentieth century were focused on systems improvements and maintenance.

A similar pattern of development apparently persisted during World War I (WWI), leading to the conclusion that efforts at the Armory were focused on weapons development for the Ordnance Department.[100] Though annual reports from 1913 and 1916 reported decreases in the manufacturing, experimentation and development of arms continued. Production at the facility increased in 1917, coinciding with the entry of the United States into WWI. The Annual Report of the Chief of Ordnance for 1918 reported:

> On November 1, 1917, an output of 1,000 rifles per day had been attained. At the close of the fiscal year components are being manufactured at the rate of 1,200 completed rifles. . . .To accomplish this the force has been on two shifts throughout the year, and the plant has been in operation 110 hours per week. The number of employees has been more than doubled, and every effort is being made to train and mold the 5,129 employees now on the roll into a well balanced and efficient organization. Women are at work in the shops and their employment will be continued and extended wherever practicable.[101]

The Chief of Ordnance also reported that new machinery and equipment were purchased and that technology was expanding. Additions to the Hill Shops continued to be focused on the Federal Square section of the Armory and included a new Power Plant, a Metallurgical Laboratory, and a Chemical Laboratory.[102] Meanwhile the buildings around Armory Square apparently remained static, having only minor alterations and maintenance during this period. Though the shops at Armory Square remained active, there was an apparent shift in arms manufacturing from the Armory Square shops to the Federal Square shops by the early-twentieth century (fig. 17).

Though production of arms slowed after WWI, weapons development and experimentation continued through the 1930s and the M1 rifle was ready for production by 1936.[103] At the same time, improvements and repairs to the physical plant and the buildings were carried out by the Works Progress Administration (WPA,

[98] Albright, 76–78.
[99] Ibid.
[100] Perrault and Quinn, 24.

[101] U.S. Ordnance Department, "Report of the Chief of Ordnance, 1918" (Washington, DC: Government Printing Office, 1918) 1,059–1,060. As cited by Perrault and Quinn, 24.
[102] Perrault and Quinn, 25.
[103] Ibid.

renamed the Work Projects Administration in 1939). Work at the Springfield Armory was reported in the local paper on February 21, 1937:

> . . .there was 350,000 square feet of painting being done; 25,000 square yards of concrete flooring in shops; 20,000 square feet of wooden flooring in shops and houses; construction of three gatehouses where various signals and alarms and watchmen are housed; remodeling an old building into a seven car garage; additions to and renovations of 15 of the housing and storage buildings and the reroofing of two old buildings with slate and copper roofs in addition to the rearranging and cleaning of approximately 1000 tons of stand-by machinery and the replacing of 7000 feet of steam, electric and gas underground mains.[104]

However, all of the improvements by the WPA did not significantly add to the buildings at Armory Square. The garage for the Commanding Officer's Quarters (Building 18) was probably added during this period, as well as the aforementioned gatehouses, but the buildings around the square were retained and not significantly altered or enlarged.[105]

Once again with the advent of World War II (WWII), the Springfield Armory witnessed increased production and was seen as vital to the war effort. The automation of the manufacturing process led to increased production of the M1 rifle, which was the weapon of choice during WWII with nearly 90 percent of those rifles produced at the Springfield Armory.[106] Plans of the Armory from that period indicate that additional buildings were erected at Federal Square to accommodate the increased production (fig. 18).

Post–World War II through Deactivation

After WWII and through the 1950s and early 1960s, weapons manufacturing focused more on technology and scientific research. At Springfield Armory buildings were adapted or enlarged in order to accommodate uses for communication technology, metals testing, radiographics, etc. Still, the layout of the buildings around Armory Square remained relatively unchanged. The landscape was slightly altered to accommodate vehicular traffic, but was otherwise unchanged.[107]

The Springfield Armory was declared a National Historic Landmark on March 22, 1963, and was scheduled to be phased out as a military installation by April 1968. Upon the official deactivation of the Armory in April 1968, Armory Square was granted to the Commonwealth of Massachusetts for use as the campus for the Springfield Technical Institute. The Institute subsequently occupied the buildings within the northeastern quadrant of the square. The Institute was renamed Springfield Technical Community College in 1968 and retained ownership of 34.61 acres of the 54.92-acre hill site formerly occupied by the Springfield Armory. The site contained former Armory grounds and facilities, including the Parade Green/Armory Square, Officer's Quarters (Buildings 5 and 6), Master Armorer's Quarters (Building 10), Building 11, Building 16, Long Storehouse (Building 19), Annex (Building 27) and Test Range (Building 28a), as well as the iron fence within that portion of the site.[108]

---

[104] "Many Improvements Are Effected by WPA at Springfield Armory," *Springfield Sunday Union and Republican*, February 21, 1937. SPAR Museum Collection. As cited by Perrault and Quinn, 26.

[105] Albright, 83.

[106] Perrault and Quinn, 26.

[107] Ibid.

[108] Perrault and Quinn, 27.

The Springfield Armory Museum, Inc. was established as a non-profit museum in 1968 after the Armory was deactivated. The museum incorporated the former Small Arms Museum, which now included collections from two world wars and more recent developments in small arms manufacture. The organization leased property from the State of Massachusetts and displayed a collection of arms in the Main Arsenal (Building 13).[109]

Establishment of the Springfield Armory National Historic Site

An act passed on October 26, 1974 established a National Historic Site at the former Springfield Armory.[110] The legislation stipulated that the arms collection owned by the Department of the Army, which included the collection of Superintendent Col. J.G. Benton started in the 1870s,[111] should continue to have a presence at Springfield Armory.[112] Springfield Armory National Historic Site was officially opened by the Secretary of the Interior in 1978 under the administration of the National Park Service. The National Park Service is responsible for approximately 20 acres of land, the Main Arsenal (Building 13), Commanding Officer's Quarters (Building 1) and Garage (Building 18), Gatehouse (Building 33), and the iron fence associated with its portion of the Armory.

Since the deactivation of Springfield Armory, the Armory Square site has retained many of its historic features. Historic structures and landscapes that traditionally defined the space, including the Green, the Main Arsenal at the west end of the Green, and the Administration Building (Building 16) at the east end, as well as the historic structures along the south side of the square, have been preserved by the National Park Service and Springfield Technical Community College. Construction of modern buildings on the north side of the square and the addition of new roads, walkways, and parking lots has impacted the site, including the demolition of the west end of Building 27 when Putnam Hall was constructed in 1974 (fig. 3). However, the overall nineteenth-century configuration of the Springfield Armory has been preserved at Armory and Federal Squares, and many of the historic buildings are standing today.

[109] Senate Committee Report No. 93-590, 93 Congress, 1st Session, December 3, 1973. Reproduced by Carper and Turk, Appendix E, 479.

[110] Public Law 93-486, 93 Congress H.R. 13157, October 26, 1974. Reproduced by Carper and Turk, Appendix D, 475.

[111] Sarles, Myers, et al., 17.

[112] Senate Committee Report No. 93-590, 93 Congress, 1st Session, December 3, 1973. Reproduced by Carper and Turk, Appendix E, 479.

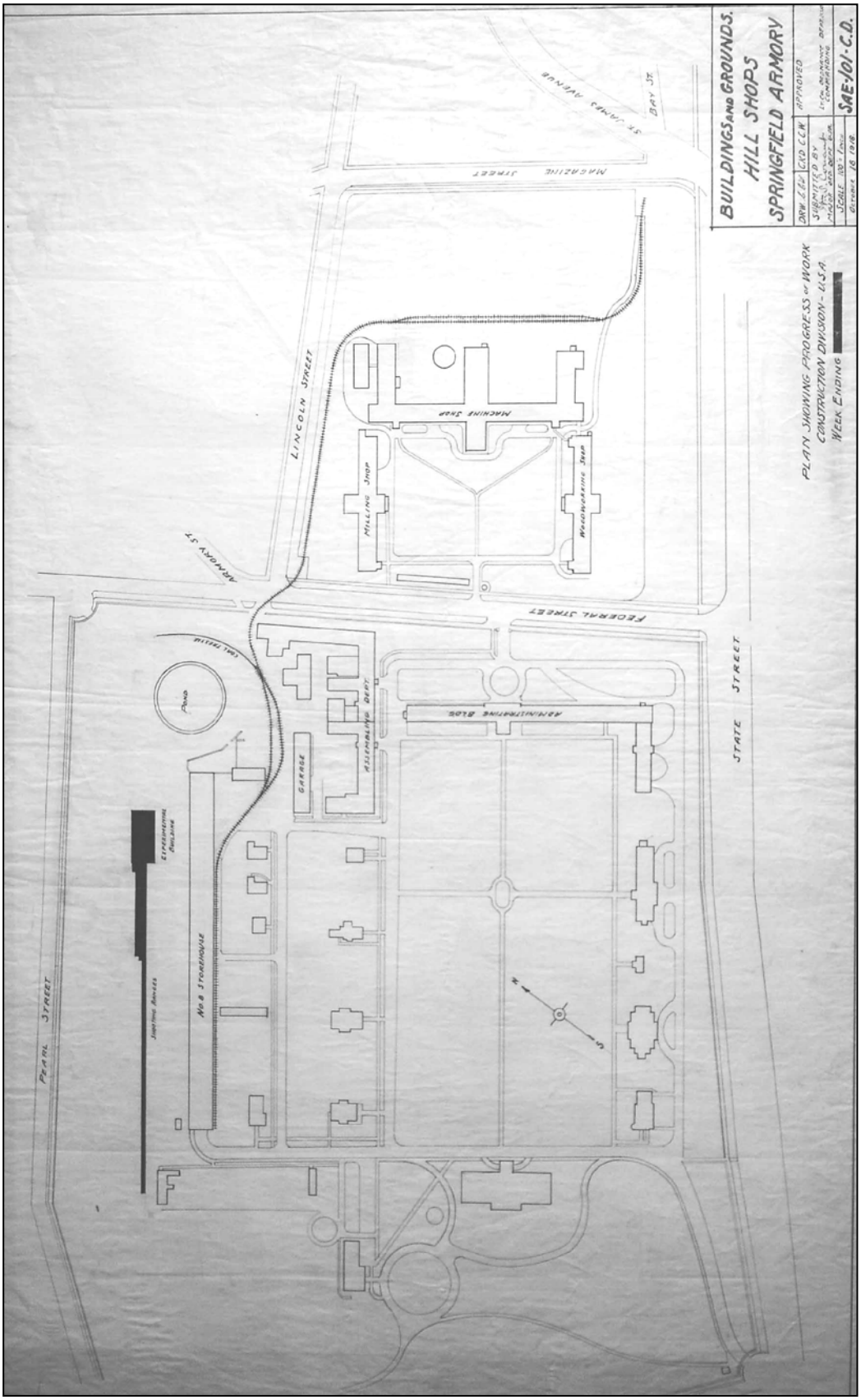


Figure 17. Buildings and Grounds, Hill Shops, Springfield Armory, October 18, 1918. In Armory Square Building 16 and Building 27, formerly workshops, are labeled the Administration Building and the Assembling Department, respectively. The buildings in Federal Square are labeled as the Milling Shop, Machine Shop, and Woodworking Shop.

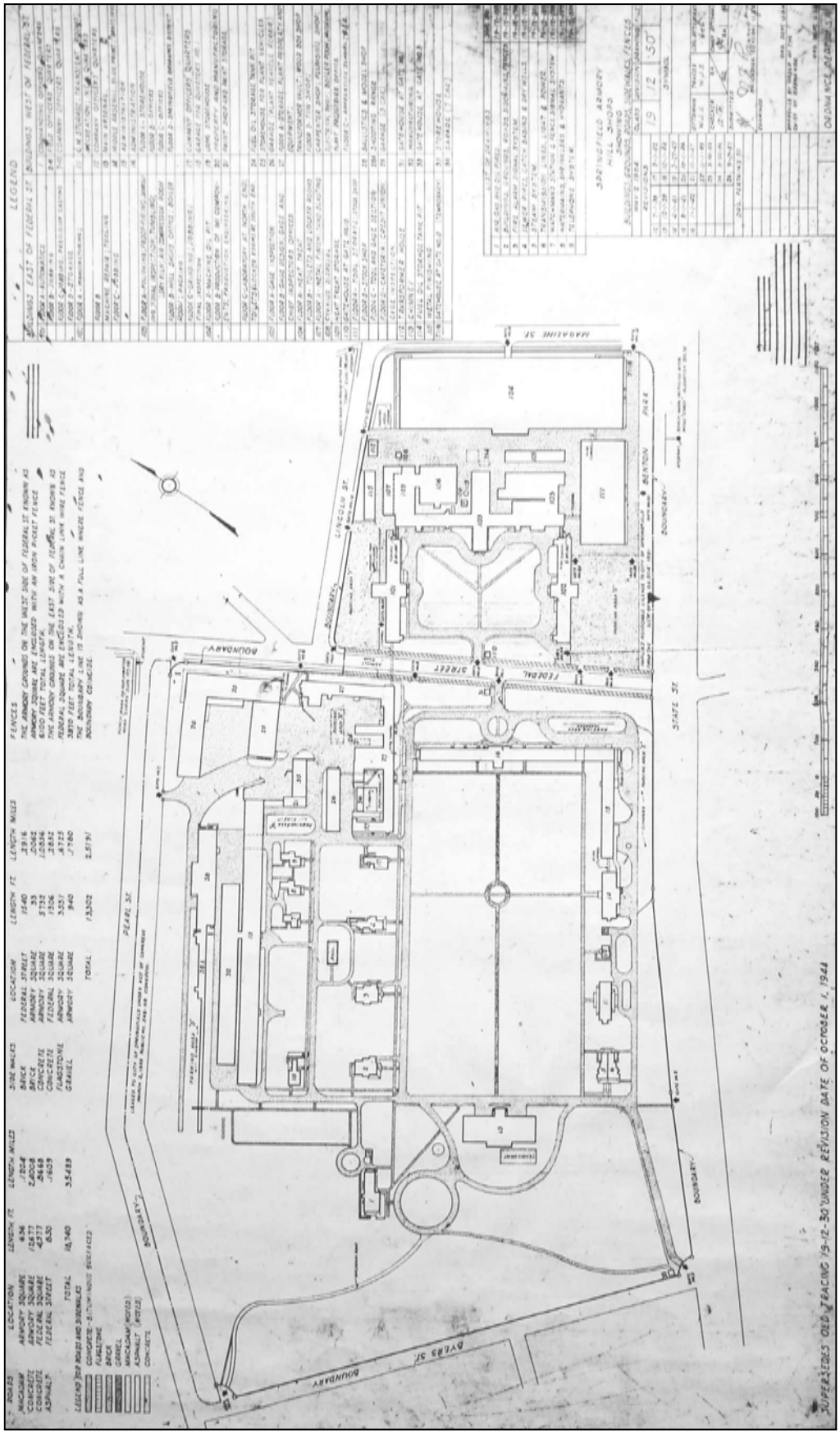


Figure 18. Springfield Armory Hill Shops, Showing Buildings, Grounds, Roads, Sidewalks, Fences, May 2, 1904 with revisions through September 17, 1957. The legend appears to list the most recent uses as of September 1957. In Federal Square Building 104 was used for production of M1 rifle components.

CHRONOLOGY OF DEVELOPMENT AND USE

Introduction

Building 27 is located in the northeast corner of Armory Square and has traditionally defined that corner of the Green and Armory Square. Building 27 was historically associated with the manufacture of arms. Documentary evidence indicates that an "Old Air Furnace" was located at the northeast corner of the Armory buildings in 1801, and that by 1823 a forging shop had been constructed east of the furnace. In the mid-nineteenth century, Building 27 was alternately referred to as the Machine Shop, U.S. Shops, Workshops, or simply Shops, which still included a forging shop. As the building expanded to a larger complex, it continued to be known as the Shops, with some specific functions of the shops indicated in historic plans and documents. Twentieth-century documents labeled the complex as the Assembling Department, Annex Building, and Building No. 27. Regardless of its designation, Building 27 was always integral to the manufacture of arms at the Springfield Armory.

As the functions of Building 27 expanded, so did the building, growing from a one-story Forging Shop to an expansive two-story workshop during the active years of the Springfield Armory. Fitting with the character of the permanent buildings at Armory Square, Building 27, beginning with the Forging Shop and through the expansion to the Machine Shop and Annex Building, was constructed with brick and brownstone.

The following sections will describe the evolution of Building 27 based on documentary and physical evidence. A color-coded plan illustrating the expansion of the building is included in this section and provides a graphic representation to accompany the written descriptions of the building evolution (fig. 19). The periods of significant construction and alterations to Building 27 include: initial construction of the Forging Shop, circa 1808–09; first additions to the Forging Shop, circa 1840; two-story additions east and north, and the Forging Shop extended west, 1845; the addition of a northwest wing, second story added to some existing buildings, and engine and boiler house added, 1863; northeast block and west ell added, 1863–64. The 1864 complex of shops was largely representative of the existing Building 27, with the exception of a few smaller additions, and the demolition of west end of the building in 1973.

The subsequent "Current Physical Description" includes room references and plans that will be used in the following sections to help illustrate the development of the building in the context of the existing structure (figs. 105, 106, and 107). The designations of certain sections of Building 27 are based on the current structure and include the main block, northeast block and west ell, northwest wing, and the north wing. The current layout is illustrated in the "Current Physical Description" and should be consulted for clarification of the building sections (fig. 77).

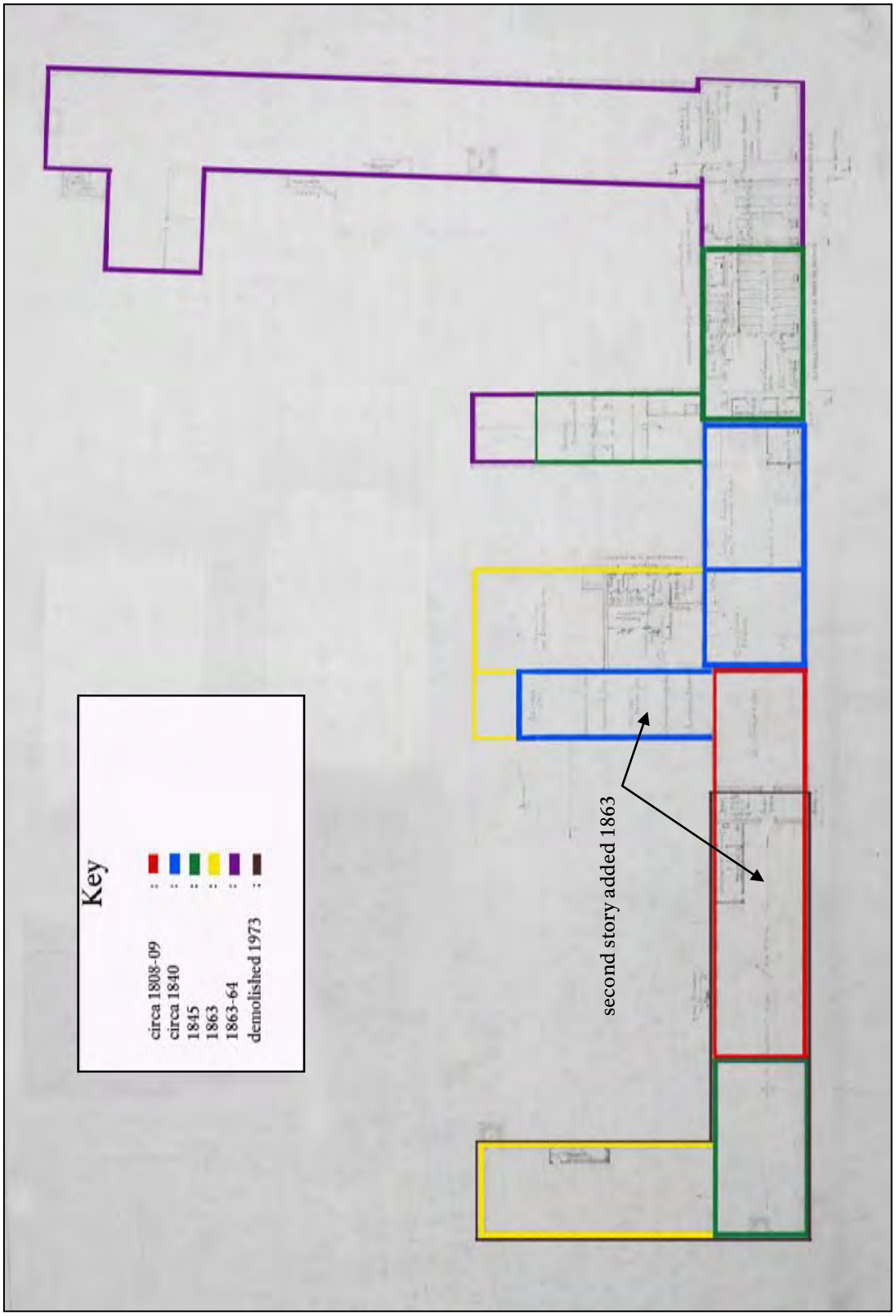


Figure 19. Plan of Building 27 with color coding representing dates of construction, copied from 1942 drawing (fig. 58); not to scale.

Historic Appearance and Use

The Brick Forging Shop

The 1801 map of the hill (fig. 4) depicts filing shops, an inspection shop, and stores clustered near the center of the Green, with the Forging Shop along the east boundary (about where Building 16 now stands), and the "Old Air Furnace" north of that. Some of the shops were destroyed by fire in 1801, but were soon rebuilt coinciding with the purchase of the 30.5-acre hill plot by the U.S. Government.[113]

The shops on the hill were substantially added to between 1808 and 1809. The construction during that period included appropriations for new shops of $39,000, all of which had been expended when additional funding was requested.[114] It seems likely that the construction during that period included the Forging Shop at the northeast corner of the Green, which would later become part of the larger shop complex that formed Building 27.

The Forging Shop was depicted and described in several documents in the early 1820s. The footprint of the building and a perspective sketch of the U.S. Manufactory, with the Forging Shop on the left, were included in a circa-1821 plan of the Armory (fig. 6). In that map, and a similar map dated 1824, the Forging Shop and the Furnace west of that were labeled. Another set of plans from the same time period included a map of the Armory on the hill, and elevations of buildings on the hill and at the Water Shops. At that time the manufactory on the hill was primarily contained in the "North Shop," "Forging Shop," and "Annealing Shop (formerly the Old Air Furnace)" (fig. 20). A description of the Forging Shop in an 1823 report matches the building depicted in the plans.

> At Springfield, in the county of Hampden, and Commonwealth of Massachusetts, the United States have an extensive establishment for the manufacture of arms. . . .At the armory on the hill "there is one brick building, 204 by 32 feet, two stories high, divided into eight rooms, occupied by lock filers, stockers, and finishers. One brick forging shop, 130 by 32 feet, of one story, containing eleven double forges, used for forging the limbs of locks," breech pins, screw pins, ramrods, "and repairing tools. . . ."[115]

The one-story brick Forging Shop described in the 1823 report formed the core of Building 27 as the building expanded to a larger work shop.

A fire destroyed the North Shop in March 1824. The sketches of the fire show the North Shop engulfed in flames with the Forging Shop and Old Air Furnace to the left (fig. 21). A letter written after the fire by Adonijah Foot, Master Armorer, said that the fire was caused by a spark from the Forging Shop chimneys, but that the Forging Shop was only slightly damaged by the conflagration.[116] Soon after the fire Superintendent Roswell Lee began planning the construction of new shops to replace those destroyed by the fire. Lee proposed the construction of two shops south of the existing Forging Shop, with the

[113] Whittlesey, 50.

[114] James Beyers, Paymaster, Springfield Armory, to Secretary of War, 9/22 and 11/24/1808; as cited by D. Whittlesey, "Whittlesey Notebooks," Vol. II, 9; SPAR Museum Collection.

[115] U.S. Congress, House, Committee on Military Affairs, *Armory at Springfield*, 17th Congress, 2nd Session, no. 246, March 3, 1823, 538.

[116] Adonijah Foot, Master Armorer to Superintendent Roswell Lee, March 3, 1824; D. S. Whittlesey Notebooks, Vol. IV, 131.

Administration Building, which also survived the fire, between the new shops. Plans to rebuild the shops included an outline of the Forging Shop, which again matches the 1820s descriptions and maps (fig. 22).[117]

There were apparently some repairs or alterations to the Forging Shop, possibly related to the fire, because in November of that same year Mr. Foot wrote that the forge would be in operation in four or five days.[118] However, the basic layout of the building does not appear to have changed by 1830.

The 1830 map of "Armory Hill" demonstrated the improvements to the Armory including the new North and South Shops (figs. 8 and 23). As in the previous plans, that map designates the building in the northeast corner of the Green as the "Brick Forging Shop" and the "Old Air Furnace," known as the "Annealing Shop" west of that. The Forging Shop appears to have a similar plan as in the 1820s and does not appear to have been altered since then. Though the 1830 map does not show the elevation, later documentation suggests that the Forging Shop remained a one-story building during that period.

[117] Roswell Lee to Col. George Bomford, Chief of Ordnance, March 23, 1824; D. S. Whittlesey Notebooks, Vol. IV, 125.

[118] A. Foot to R. Lee, November 25, 1824; D. S. Whittlesey Notebooks, Vol. IV, 106.

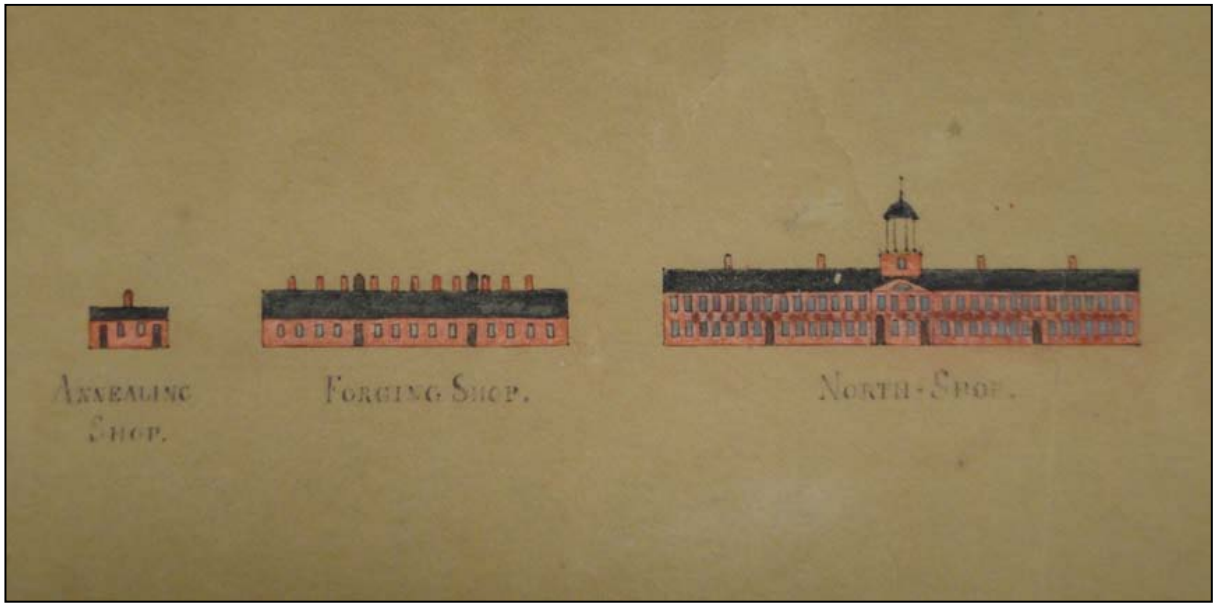


Figure 20. Elevations of "Annealing Shop," "Forging Shop," and "North Shop" from circa-1820 plan of U.S. Armory.

Figure 21. "Conflagration of part of the U.S. Armory, Springfield, Mass., March 2nd, 1824." Brick Forging Shop pictured on the left, and the Old Air Furnace in the left foreground.

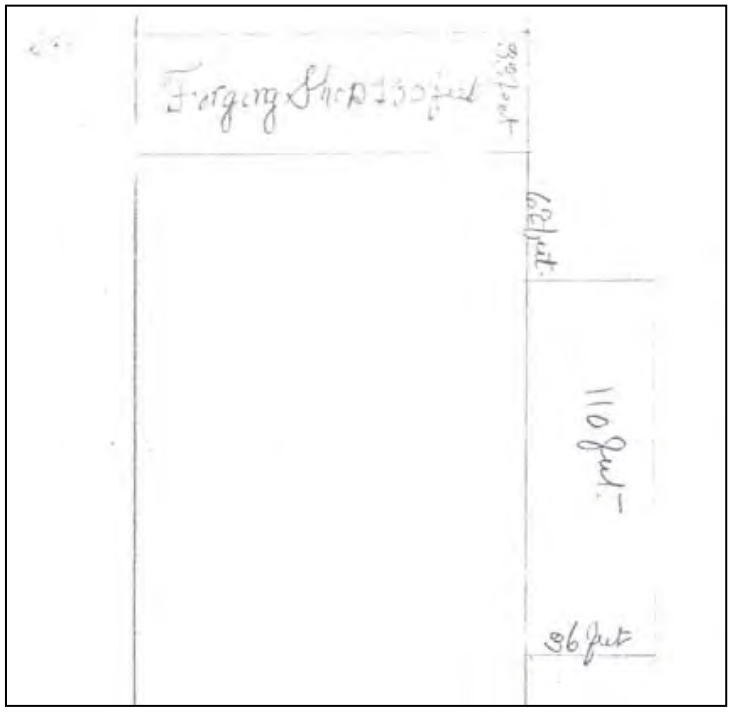


Figure 22. Detail from "Plan C" for construction of the North and South Shops, March 23, 1824. Plan shows existing Forging Shop, 130 feet by 33 feet, and the new North Shop.

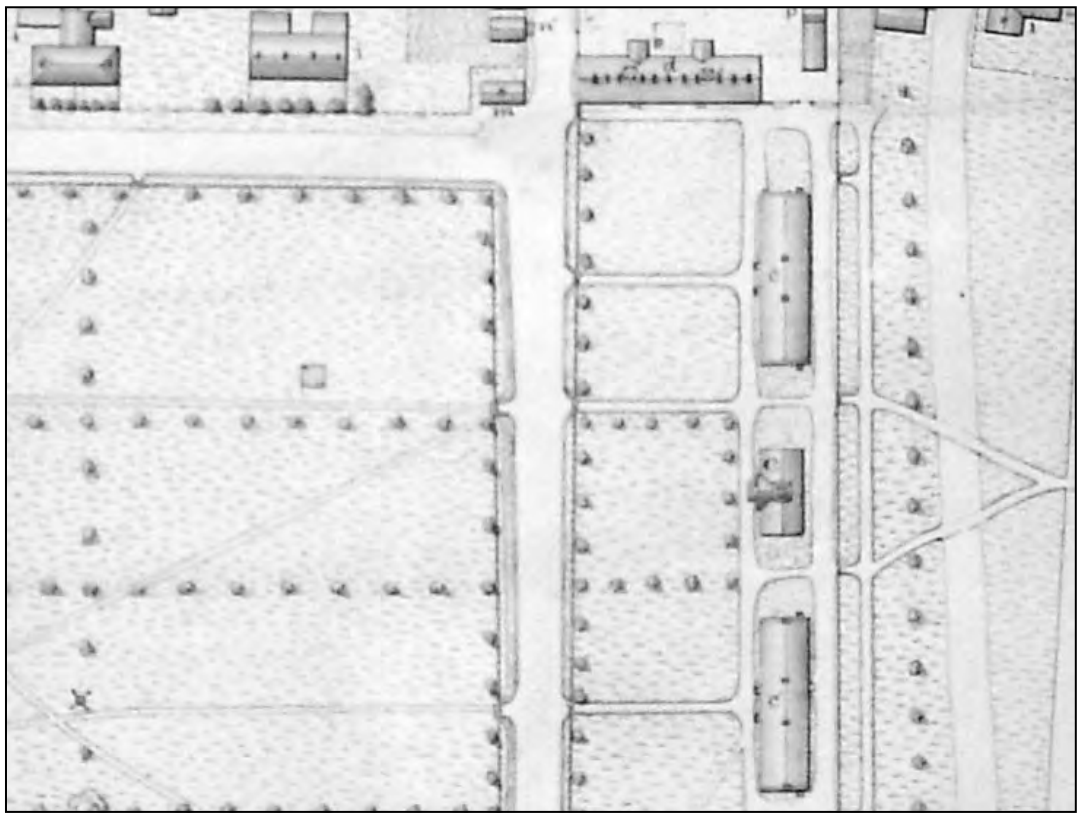


Figure 23. Detail from "No. 2, Armory Hill," National Armory, Springfield, Massachusetts, 1830 (fig. 8). The reference key indicates that building "d" is the "Brick Forging Shop."

Alterations

Additions to the Forging Shop

The documentary evidence suggests that the Forging Shop remained unaltered during the first years of John Robb's superintendency (1833–1841). However, the physical evidence suggests that additions were made to the building during the latter part of Robb's tenure. In addition Superintendent Robb had all the brick buildings on the hill painted "ordnance colour [sic],"[119] which probably included the Forging Shop.

The west end of Building 27 appears to be the only surviving portion of the original Forging Shop, which in itself was extensively altered. Based on physical and documentary evidence, it is conjectured that the section of the building east of that was added in the late 1830s or early 1840s. That section of the building (delineated by Rooms 004–008 in the current basement plan, fig. 105) was most likely a two-story addition and contained workshops. The physical evidence is most apparent in the existing basement masonry walls that suggest Room 004 and Rooms 005–008 were built as separate sections (see subsequent section "Current Physical Description"). It was determined that the west section of the building was part of the original Forging Shop, and that other sections farther to the east were added later in the nineteenth century (see subsequent sections "Extension of the Machine Shop" and "Additions to the Machine Shop/Work Shops"), leading to the conclusion that the middle section of the building was added in the early nineteenth century. Nineteenth-century maps and sketches illustrate Building 27 with the one-story Forging Shop and two-story additions to the east and north (see subsequent section "Extension of the Machine Shop"). Thus the earliest additions to the Forging Shop early in the nineteenth century were the beginning of the building's transformation into the complex of workshops that would become Building 27.

Extension of the Machine Shop

During his superintendency, Major James W. Ripley was responsible for continuing the expansion of the Springfield Armory, which included additions to Building 27. In April 1845 he wrote the Chief of Ordnance that the "Machine shop on the Hill" would be enlarged to correspond in height and finish with the present building (Appendix A).[120] This was the first known reference to the building as the Machine Shop, and though Ripley could have been referring to other shops on the hill, historic plans and sketches indicate that Building 27 was the structure that was added to in 1845 (figs. 24, 24a, and 25). The other shops on the hill were the North and South Shops, and documentary evidence indicated that they were not added to during this period.

The letter also supports the conjecture that the Forging Shop had been added to prior to 1845. This is evident from Ripley's statement that the new section would match the height and finish of the existing shop. Indeed, it appears that a two-story addition east of the Forging Shop, and possibly a one-story addition to the north of the Forging Shop, were added prior to the 1845 enlargement.

[119] Robb to Bomford, November 27, 1838; Letters Sent to Chief of Ordnance 1836–1895, Vol. 1 of 20, Entry 1354, Record Group (RG) 156. NARA Northeast Region (Waltham, MA).

[120] Ripley to Talcott, Chief of Ordnance, July 7, 1845; Letters Sent to Chief of Ordnance 1836–1895, Vol. 1 of 20, Entry 1354, RG 156. NARA Northeast Region (Waltham, MA).

Further correspondence from Major Ripley to the Ordnance Department indicated that the additions to the Machine Shop were constructed in 1845 and completed by June 1846. The "Statement of Operations" at the Springfield Armory through June 30, 1845 noted that "shafting and shop fixtures for the 1st and 2nd stories of the New Machine Shop, and also additional shafting and pullies in the Filing Shop for operating new machinery and the machinery moved from the Upper and Lower Water Shops, have been put up."[121] The following year Ripley's report included more details about the additions and the type of work being performed in the new Machine Shop.

> The Machine Shop (was) extended 61 feet and a wing 50 feet, brick walls, two stories above the basement. The upper story is designed for machinery for stocking muskets. The shafting for that purpose is in progress. The first story contains a line of shafting, pullies, and shop fixtures, arranged for operations early in the year. The basement is occupied for the making of arm chests, and machinery for planing and matching boards.... The forging shop has been so modified as to give an addition of four fires.[122]

Based on this description, and documentary and physical evidence, it appears that the building was extended 61 feet to the east and had a 50-foot-long wing added to the north; both additions were two stories high. The earliest known illustration of the expanded Machine Shop is the 1851 survey of Springfield, Massachusetts (fig. 9). On that map the plan of the "U.S. Shops" shows that it was extended to the east and has two wings to the north. Subsequent maps and sketches depict a similar arrangement. A circa-1850 sketch and an 1852 sketch from *Harper's New Monthly Magazine* appear to confirm that Building 27 included a one-story Forging Shop with a one-story north wing and a two story extension to the east with a two story north wing. The magazine article included the following description of the building:

> On the left of the picture is a building with the end toward the observer [the building is on the right], two stories high in one part and one story in the other part. The higher portion – which in the view is the portion nearest the observer – forms the Stocking Shop, as it is called; that is the shop where the stocks are made for the muskets, and fitted to the locks and barrels. The lower portion is the Blacksmith's Shop. The Blacksmith's Shop is filled with small forges, at which the parts of the locks are forged.[123]

The physical evidence indicates that the 61-foot extension is currently represented by basement Room 009 and the west section of Room 012 up to the partial walls that were at the time end walls (see subsequent section "Current Physical Description, Interior"). That section of the basement measures approximately 61 feet and, together with the corresponding upper stories, fits the historic descriptions. The 50-foot wing would have included Room 010 and the upper stories. That section of the basement is approximately 50 feet long, and the north end of that wing (Room 011) was a later addition. The physical evidence supports the documentary evidence, and also lends further credibility to the conjecture of the

[121] Ripley to Ordnance Department, November 11, 1845, "Statement of Operations at this Armory during the Year Ending June 30, 1845;" Letters Sent to Chief of Ordnance 1836–1895, Vol. 1 of 20, Entry 1354, RG 156. NARA Northeast Region (Waltham, MA).

[122] Ripley to Ordnance Department, September 30, 1846, "A General Statement of Operations at the U.S. Armory Springfield, during the Year Ending June 30, 1846;" Letters Sent to Chief of Ordnance 1836–1895, Vol. 1 of 20, Entry 1354, RG 156. NARA Northeast Region (Waltham, MA).

[123] Jacob Abbott, "The Armory at Springfield," *Harper's New Monthly Magazine*, July 1852, No. XXVI, Vol. V, 146.

earlier additions (Rooms 004–008) previously described.

The modifications to the Forging Shop during that time may have included an addition to the west. That conjecture is primarily based on illustrations of the building between 1851 and 1859 (figs. 9 and 24–26) in comparison to the 1830 map, as well as a later document that indicates the Forging Shop had been extended from 130 feet long to 190 feet (see subsequent section "Additions to the Machine Shop/Work Shops"). Thus it appears that the Forging Shop was extended 60 feet to the west between 1830 and 1851. The maps also indicate that the Forging Shop expanded to include the former Old Air Furnace. That building no longer appears on the maps, and its footprint would have been within the expanded forge. It seems likely that the addition to the Forging Shop coincided with the 1845–46 expansion of the Machine Shop and could be the modification Ripley was referring to in his annual report. The addition was apparently a one-story structure that could accommodate the four new fires, which was also consistent with the operation at the Old Air Furnace.

Both Major Ripley and Mr. Abbott described the primary functions of the shops during this period. The two-story structure housed the Stocking Shop with a Carpentry Shop in the basement, and the Forging Shop continued to be used for making locks and small parts for muskets.

Major Ripley's development of the Springfield Armory was concentrated on the Hill Shops and likely included further improvements to the Machine Shop. The 1847 annual report of the Chief of Ordnance noted that the "Machine shop (was) improved, and an additional chimney of 80 feet height constructed for the boiler fires."[124] This project added one of the several large chimneys that were documented in period illustrations and later historic photographs.

The annual reports of operations at the Springfield Armory list improvements to the various shops on the hill that most likely include the Machine Shop. However, since the functions of the various shops during that time period are not always evident, it is more difficult to determine which buildings were improved. In 1854 Ripley reported that the shops had been repainted (probably similar to the "ordnance colour" used by Robb) and furnished with lightning rods, and that the tin roofs of the Machine Shop and Forging Shop had been repaired.[125]

It is evident from the circa-1850 sketch, 1852 sketch, and 1859 map that the Forging Shop and Machine Shop had been expanded to form the complex that would become Building 27. The 1859 map labeled the building as "work shops" and the layout of the building was representative of the 1845–46 additions, as well as earlier alterations (fig. 26).

[124] Ripley to Ordnance Department, August 28, 1847, "Statement of Operations at the Springfield Armory during the Year Ending June 30, 1847"; Letters Sent to Chief of Ordnance 1836–1895, Vol. 2 of 20, Entry 1354, RG 156. NARA Northeast Region (Waltham, MA).

[125] Ripley to Ordnance Department, August 15, 1854, "Principal Operations at this Armory during the Year Ended June 30, 1854"; Letters Sent to Chief of Ordnance 1836–1895, Vol. 2 of 20, Entry 1354, RG 156. NARA Northeast Region (Waltham, MA).

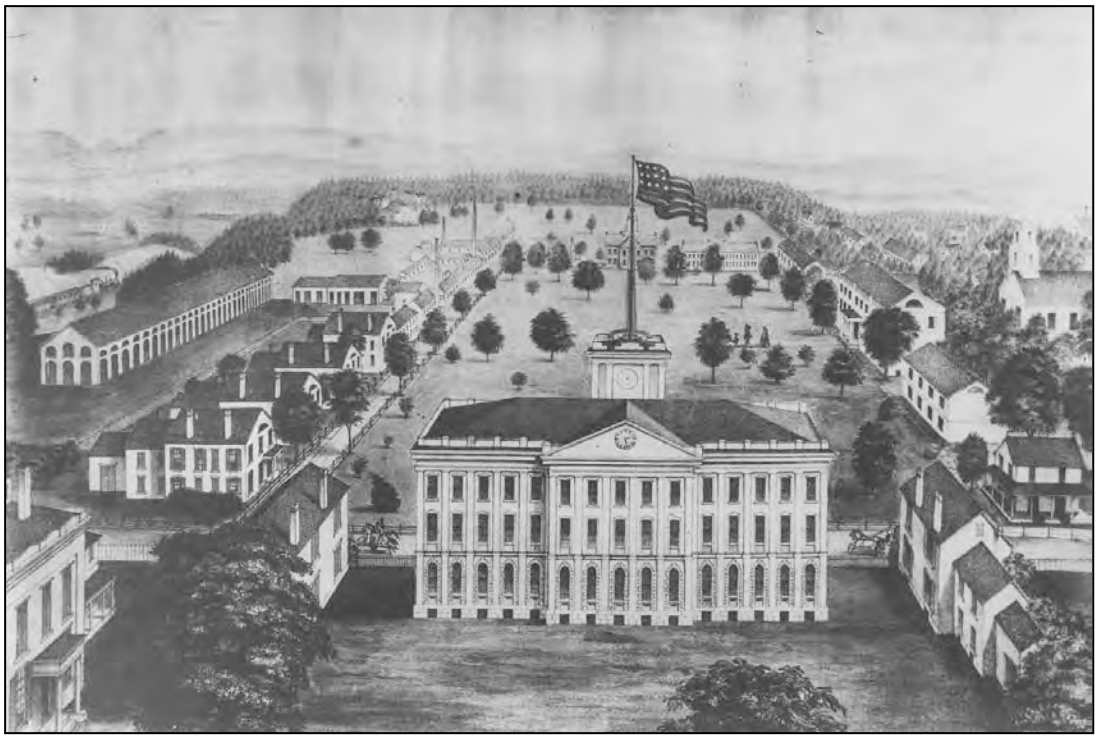


Figure 24. Springfield Armory looking east, circa 1850. Main Arsenal in foreground, Building 27 in background on left side.

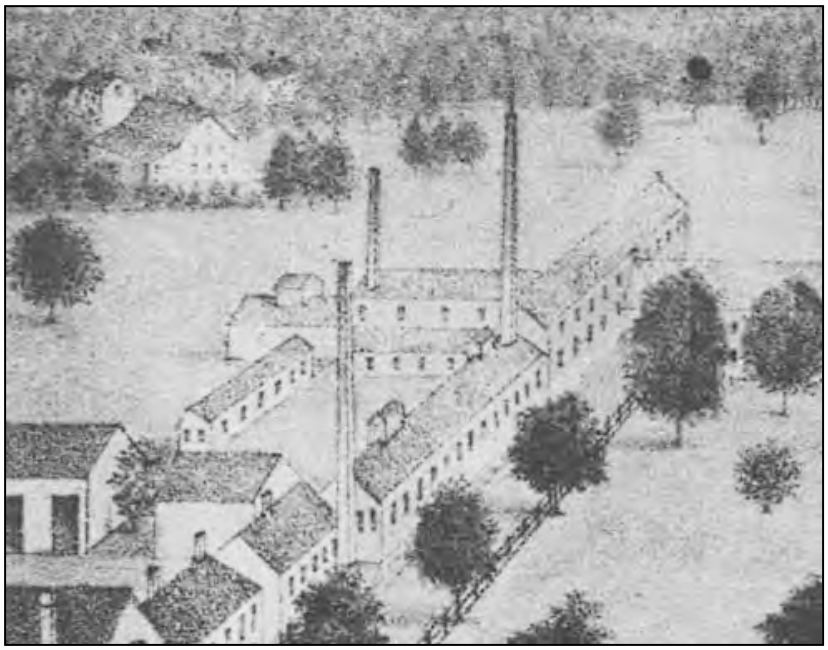


Figure 24a. Detail of Building 27 from circa-1850 view of Springfield Armory (fig. 24).

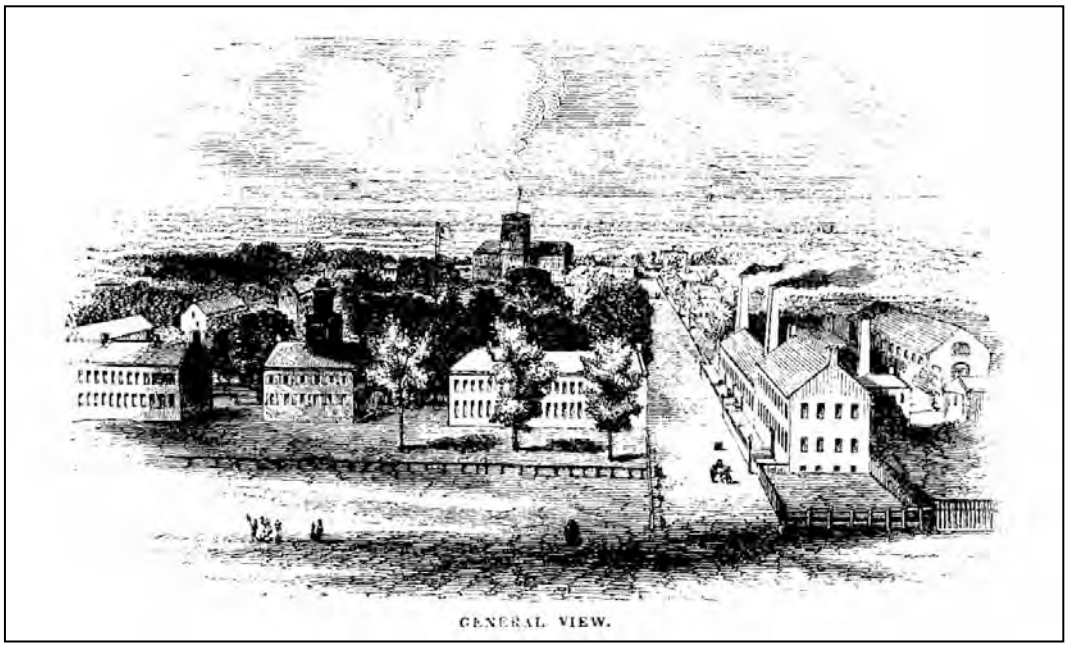


Figure 25. Springfield Armory "General View," Harper's New Monthly Magazine, July 1852, depicting the historic appearance of Building 27 on the right, looking west; the two-story Machine Shop in the foreground with north wing, and the one-story Forging Shop beyond that.

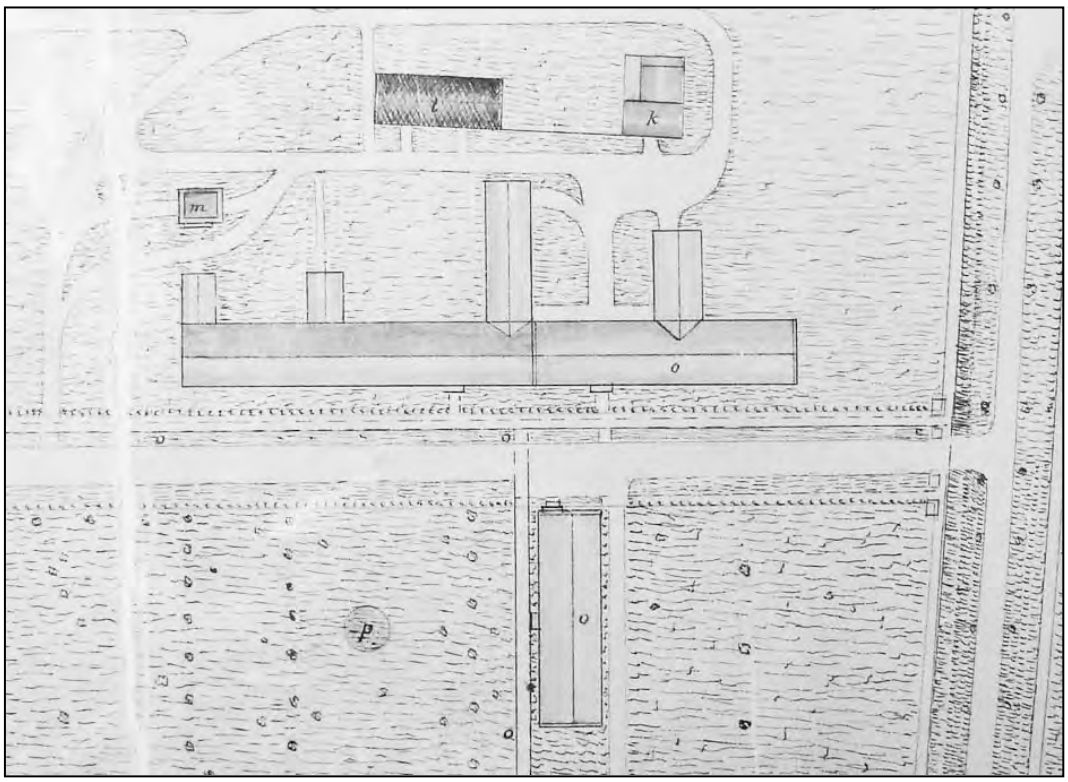


Figure 26. Detail from U.S. Armory and Grounds, drawn by E. S. Allen, Master Armorer, January 1859. Building 27 designated as "work shops" included the expanded Machine Shop, two north wings, and an extended Forging Shop.

Additions to the Machine Shop/Workshops

Superintendent Dwight's efforts to increase production at the Springfield Armory during the Civil War included plans for "new Work Shops and their Machinery" in 1861.[126] His successor Captain Alexander B. Dyer would implement those plans, which apparently included some expansion of the shops at Armory Square.

Superintendent Dyer's estimates of funds required for the second and fourth quarters of 1862 totaled $75,000 for purchasing machinery and $20,000 for bricks, lumber, etc., indicating that some construction was proceeding.[127] Plans for improvements to the west end of the main block, and the addition of a west ell were dated September 6, 1862 (the first quarter of the 1863 fiscal year). Correspondence between Dyer and Chief of Ordnance Ripley in November 1862 noted that the Armory was cramped for space and that the basement of the filing shop would be utilized as work space.[128] All of which suggested, that Superintendent Dyer was planning on expanding the Armory in 1863.

The 1863 annual report of operations at the Springfield Armory documented that production at the Armory had increased and that a number of buildings were constructed and/or added to (Appendix B). Of the construction projects the following additions appeared to be related to Building 27:

> One Tempering and Case hardening shop two stories, brick. Covered with slate 80 ft x 33 ft.
> Roofs of Polishing and Annealing shops raised and a second story of brick built on each, 190 ft x 33 ft and 65 ft x 28 ft.
> Annealing shop lengthened fifteen ft. brick, two stories.
> One Engine and Boiler House brick one story covered with tin 80 ft x (illegible).
> Two engines one sixty and one thirty horse power set up and put into operation.[129]

The evidence that these projects were additions to Building 27 includes the 1862 plan of the Polishing Shop (fig. 27) and the 1864 map of the Armory, which labels the various functions of the workshops (fig. 31). The measurements of the additions also match sections of the building as documented in historic plans, and as it exists today.

The 1862 plan of the "Polishing Shop" depicted the west end of the main block that apparently was raised to a two story structure and the two story west ell. The west ell appears to have been the "Tempering and Case hardening shop" referred to in the report, which was since demolished. That wing is labeled the Tempering and Polishing Shop on the 1864 plan, and other plans of the building show that wing measured 80 feet long by 33 feet wide. The documentary evidence, including the 1862 plan, suggests that the Polishing Shop that received a second story was the former Forging Shop, which corresponds to

[126] Dwight to Ripley, July 17, 1861; Letters Received 1812–1894, Box 184, Entry 21, RG 156. Perrault and Quinn, research files; originals at NARA.

[127] Capt. A. B. Dyer to Ordnance Dept., "Estimates of Funds Required at Springfield Armory for the 2nd Quarter ending June 30, 1862," and "Estimates of Funds Required at Springfield Armory for the 4th Quarter ending December 31, 1862," Letters Sent to Chief of Ordnance 1836–1895, Vol. 4 of 20, Entry 1354, RG 156. NARA Northeast Region (Waltham, MA).

[128] A. B. Dyer to Ripley, November 11, 1862, Letters Sent to Chief of Ordnance 1836–1895, Vol. 5 of 20, Entry 1354, RG 156. NARA Northeast Region (Waltham, MA).

[129] Major A. B. Dyer to Chief of Ordnance, June 30, 1863, Letters Sent to Chief of Ordnance1836–1895, Vol. 5 of 20, Entry 1354, RG 156. NARA Northeast Region (Waltham, MA).

the measurements including the additional 60 feet in length as previously described. The 1864 plan labeled that section of the building the Milling and Polishing Shop. The Annealing Shop appears to have been the one-story north wing off the Forging Shop. A second story was added to that wing, and the wing was extended 15 feet. Again, the 1864 map labeled that section as the Annealing Shop, and the measurements of that wing are similar to those given in the report. That wing was initially 65 feet long, and the 15-foot extension made it 80 feet long, which is similar to the extant northwest wing (see subsequent section "Current Physical Description"). The report's description of the Engine and Boiler House appears to match the section of Building 27 attached to the Annealing Shop/northwest wing. As with the other additions, the labels on the 1864 map correspond to the description, and the extant section of the building is a similar size.

Despite the additions to Building 27, in August 1863 Dyer wrote that the store houses were being used as workshops, and in order to return them to their intended purpose he proposed the following:

> I have the honor to recommend an extension of the Machine shop of (illegible) feet x 32ft. A plan of the shops and also of the proposed extension is herewith transmitted. The building to be similar in character to the Machine Shop. And to contain an engine of not less than forty horse power. This addition will give to the Armory sufficient shop room for the manufacture of twenty-five thousand muskets a month.[130]

The timing of Superintendent Dyer's recommendation, after the June report of the numerous additions to Building 27, suggests that the extension he was referring to included the current northeast block and west ell, as well as the north end of the north wing. Drawings dated August 1863 appear to be part of the set submitted for these additions (figs. 28, 29, and 30).

Two drawings dated August 26, 1863 included the east elevation of the northeast block and the plan of the northeast block and west ell (figs. 29, and 30). Physical evidence suggests that that section of the building included an extension of the main block, and the addition of the northeast block and the west ell (see subsequent section "Current Physical Description"). The northeast block and west ell were constructed with brick walls, brownstone foundations, and brownstone window sills and lintels.

The drawing of the "Addition to the Machine Shop" includes a plan showing the addition would measure 27 feet 8 inches long by 25 feet wide, which corresponds to the north wing addition (currently represented at the basement level by Room 011). The details depicted in the elevation drawing are similar to those of the north wing, with the exception of the basement doorway. The north wing addition was two stories high and is evident in the existing structure (see subsequent section "Current Physical Description"). Though this plan was not dated, it appeared to be consistent with the other primary documentation, and historic plans indicated that the addition was made before 1864.

Certain architectural details shown in the 1863 drawings that were not evident in earlier plans included the stepped parapet wall at the end elevations, the scroll-cut brownstone detail at the cornice line of the end walls, and the brownstone trim. The earlier views of the building show gable end walls without parapets or brownstone trim. Physical evidence indicates that the brick building was historically constructed with

[130] A. B. Dyer to Ripley, August 12, 1863, Letters Sent to Chief of Ordnance 1836–1895, Vol. 5 of 20, Entry 1354, RG 156. NARA Northeast Region (Waltham, MA).

brownstone trim. Since Superintendent Dyer noted that the additions would be similar in character to the existing Machine Shop, the additional trim details and parapet walls may have been part of the earlier 1863 additions, but they were first recorded in these drawings.

The earliest known documentation of the entire building after these additions is the 1864 map of the Armory (fig. 31). That map documents that the northeast block was used as the Machine Shop, and Carpenter and Pattern Shop with an Engine and Boiler Room at the north end. There was no further correspondence found concerning the additions proposed in 1863, but they were apparently constructed between August 1863 and April 1864 when the map was produced. The only portion that is not extant is the one-story Engine and Boiler Room.

Also depicted in this plan were tunnels from Building 27 to Buildings 16 and 26 (since removed). This was the first known documentation of the tunnels. Since they historically carried utility pipes to the adjacent buildings, it seems likely that they were constructed when the Engine and Boiler Room was added to Building 27 and were used to convey steam pipes to the nearby structures (see subsequent section "Current Physical Description").

The complex of workshops that is shown on the 1864 plan is representative of Building 27 today. The building included an expansive main block, a long northeast block with a west ell, and three wings extending north of the main block (see subsequent section "Current Physical Description"). Though the west end of Building 27 was demolished, the existing structure does reflect the 1864 historic plan (fig. 30).

During the height of production at the Armory on July 2, 1864 a large section of Building 27 caught fire causing extensive damage to the building and machinery. Superintendent Dyer reported on July 3rd that the fire had started in the Polishing Room and had destroyed that room and the machinery there. The Milling Shop on the floor below that had also been damaged along with some components for the muskets. Dyer estimated that 280 feet of the building had been destroyed. He thought the damage was so great that he proposed construction of a temporary polishing shop on Federal Square and the erection of a new fireproof building on the site of the burned building. However, on July 4th Dyer wrote, "I find after a careful inspection of the walls of the polishing shop which was burnt on Saturday night, that they have sustained very little injury, and that the building can be repaired in the course of a few weeks, at comparatively little expense." He also noted that the building once repaired would "approach more nearly to a fire proof building than any of the workshops of the Armory." Additional correspondence concerning the fire and repairs included photographs of the fire damage (fig. 32). Dyer also determined that some of the machinery could be repaired and some of the musket components were not damaged.[131]

Superintendent Dyer estimated that the construction of a new roof and repairs to the fire-damaged sections of the building would take less than six weeks. Since the damage was not as extensive as first thought, the building was apparently repaired and the shops put back in operation. The estimate of funds for the quarter ending on September 30, 1864 included $15,000 for rebuilding the Polishing Shop.[132]

---

[131] A. B. Dyer to Brig. Gen. George D. Ramsay, Chief of Ordnance, July 3, 4, 5, and 6, 1864, Letters Sent to Chief of Ordnance 1836–1895, Vol. 5 of 20, Entry 1354, RG 156. NARA Northeast Region (Waltham, MA).

[132] A. B. Dyer to Ordnance Dept., "Estimate of Funds for Quarter ending September 30, 1864," Letters Sent to Chief of Ordnance 1836–1895,

Additional historic photographs appear to date from the mid- to late nineteenth century, and may have been part of the collection of photographs submitted by Superintendent T. T. S. Laidley in 1865 (figs. 33 and 34).[133] The photographs depict Building 27 as the expansive complex of shops that is represented in the 1864 plan and other period surveys of the Springfield Armory.

The photographs provide some of the earliest documentation of the historic exterior appearance of Building 27. They show the west and south elevations, and the north end of the northeast block and the west ell. The photographs depict a masonry building with elements that are similar to the existing structure. Indeed, many of the exterior elements have not been significantly altered since that period, and therefore retain a high degree of historic integrity.

Previous descriptions of Building 27 indicated that it was a masonry structure beginning with the brick Forging Shop through the 1863–64 additions that were described as brick. The historic photographs appear to confirm this, depicting a brick building with masonry trim. Based on the documentary evidence and existing physical evidence, it is apparent that the exterior walls were brick with a brownstone water table and foundation. The window and doorway lintels were brownstone, as were the windowsills. The windows had double-hung, six-over-six sashes. The building had gable roofs, which were historically covered with tin, but were probably changed to slate after the 1864 fire. At the attic level the gable end walls had stepped parapet walls with brownstone coping and scroll-cut brownstone trim. The view of the north end of the northeast block and the west ell depicts similar elements, as well as a one-story Engine and Boiler Room (fig. 34). That end of the building has two smaller chimneys on either end of the parapet walls that are not evident in the photograph of the west and south elevations. The photographs also show the tall brick chimneys for the shop furnaces.

In the historic photographs the building appears to be painted a light color, possibly tan, with darker trim, either painted or left natural. These were most likely similar to the "ordnance colour" that had been put on the buildings historically. An exterior paint analysis of the Commanding Officer's Quarters (constructed 1845–47) determined that the exterior walls were originally painted a medium orange-brown and the brownstone trim elements were unpainted.[134] Later treatments included a light brown-orange followed by yellow-brown with brown trim. Since it was well documented that all buildings on the hill were painted with a uniform paint scheme, it seems likely that the exterior paint on Building 27 would have matched the Commanding Officer's Quarters. The latter paint scheme of yellow-brown with brown trim appears to be similar to the color scheme depicted in the earliest historic photographs of Building 27.

Primary source documents record some alterations to Building 27 in the late 1860s, but no significant changes to the complex of shops. The recommended appropriations for the Armory in 1866 included funds for repainting the buildings,[135] which appears to

Vol. 5 of 20, Entry 1354, RG 156. NARA Northeast Region (Waltham, MA).

[133] Major T. T. S. Laidley to Brig. Gen. Dyer, January 3 and June 26, 1865, Letters Sent to Chief of Ordnance, 1836–1895, Book 7 of 20, Entry 1354, RG 156. NARA Northeast Region (Waltham, MA).

[134] Stull Associates, Inc. and Building Conservation Technology, Inc. "Paint and Mortar Analysis, Springfield Armory NHS" (Boston, MA: Stull Associates, Inc., March 6, 1979), 26 and 27.

[135] Bvt. Col. J. G. Benton to Gen. A. B. Dyer, Chief of Ordnance, September 27, 1866, Box 92,

have been done at regular intervals during the nineteenth century. In October of the following year, Colonel Benton sent an estimate for water closets at the Machine Shop and the Polishing Shop.[136] The sketch accompanying the proposal showed that the water closets would be added to the exterior in the corners on the north side of the building (fig. 35). Later plans do show a small structure in the corner of the west wing and main block, and one at the south corner of the northeast block and west ell (not where proposed). These could have been the water closets for the building until inside toilets were installed. However, there is no physical evidence of the exterior water closets today.

The 1875 bird's-eye view of Springfield and the Armory shows the scale of the building, which is similar to the period plans and the earliest photographic views (fig 36). The annual report of the Secretary of War in 1875 included a map that indicates that the layout and functions of Building 27 were similar to the 1864 plan (figs. 37–37b). In 1875 Building 27 housed multiple workshops including "Filing and Polishing Shop," "Engine and Boiler Rooms," "Cartridge Shop," "Machine Shop," and "Stocking and Carpenter Shop."

Historic plans of the Hill Shops from the late nineteenth century into the early twentieth century suggest that Building 27 had some minor additions during that period. The same complex of shops with functions similar to the 1875 documents was depicted in the 1877 topographical plan of the Springfield Armory. That plan included the addition of a fourth wing on the north side of the main block. That wing was labeled "firing house"[137] and was used for proofing arms.

Plans from 1878 and 1879 document the alteration of the steps to the Filing Shop and the Machine Shop (fig. 38). The earlier steps were best depicted in the 1864 photograph and also evident in the 1864 plan (figs. 31 and 32). They extended straight out from the building and had a small landing and three or four steps. The redesigned steps depicted in the October 1878 plan had steps on both sides of the landing in front of the entrance doorway. The steps were constructed with a brownstone foundation and granite steps and landing. In March 1879 plans for porticos over the new steps were submitted. Each portico had two fluted columns supporting a shallow-pitched roof with an overhanging cornice and wide frieze (fig. 39). The roof had a low parapet wall around the perimeter. The steps and portico were apparently constructed within a year of each other and possibly at the same time. These elements were evident in twentieth-century photographs, and some of the elements remain intact today.

Near the turn of the century, the 1897 plan of the Armory indicates that Building 27 was not significantly altered since the 1870s (fig. 16). A small addition to the Boiler Room and a narrow wing east of the north wing appeared to be the only exterior additions. Later documents indicated that these were a coal storage room and an arms proofing room, respectively.

Though some sections have been removed, the exterior of the building at that time was very similar to the existing structure. By that time the large expanse of shops had been completed in Federal Square and the functions of Building 27 had apparently started to change.

Entry 1014, RG 156. Perrault and Quinn, research files; originals at NARA.

[136] H. Fitts to Benton, October 11, 1867, Reports to Commanding Officers, Entry 1385, RG 156; microfilm reel 114, SPAR Museum Collection; Perrault and Quinn, research files.

[137] Topographical Plan of the U.S. Armory, Springfield, Massachusetts, February 1877, Shedd and Edson, Boston, Massachusetts; Cabinet B, Drawer 1, SPAR Museum Collection.

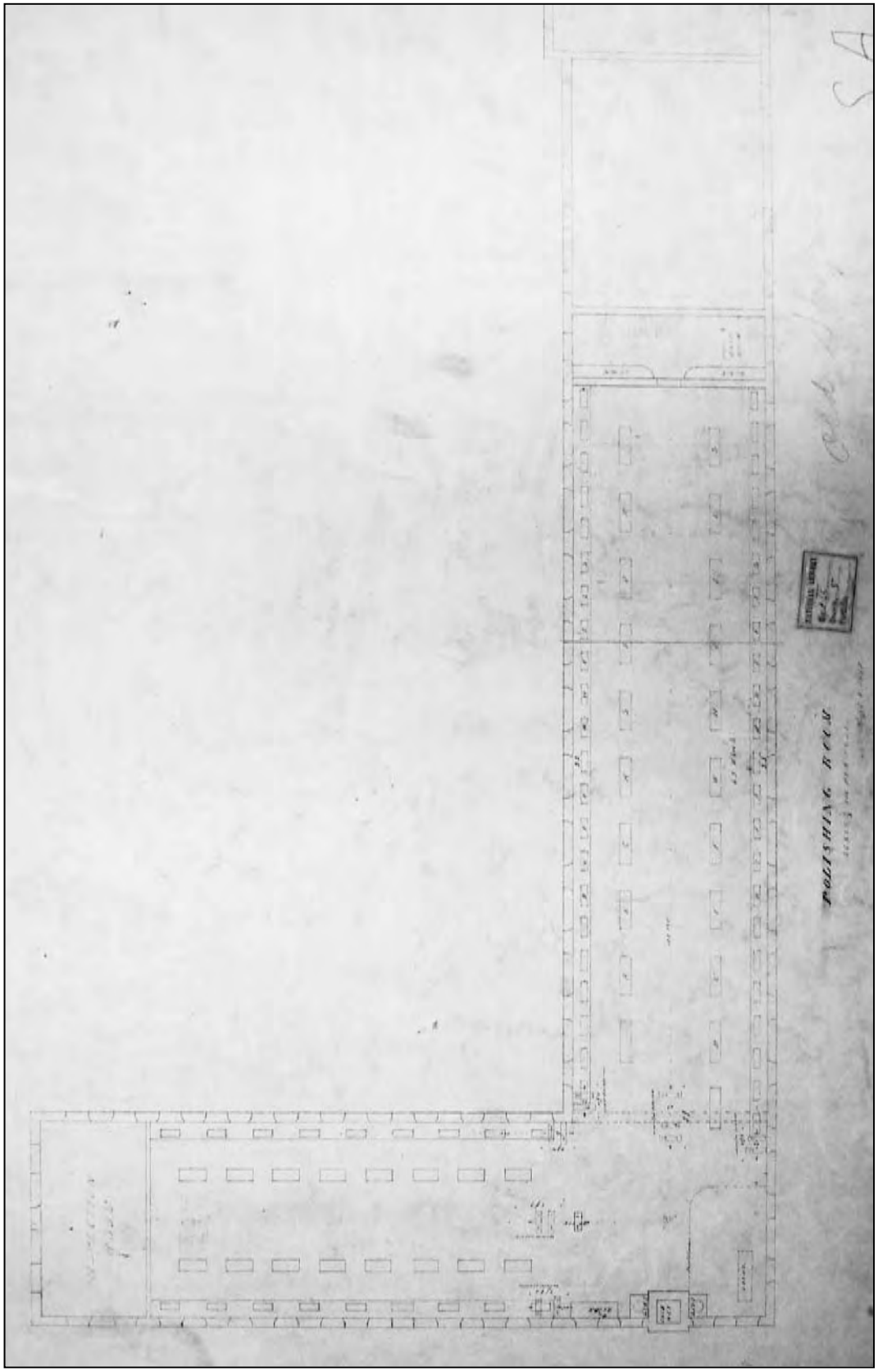


Figure 27. "Polishing Room, Sept. 6, 1862." The drawing depicts the first floor plan of the west end of the main block and west wing of Building 27, all of which was later removed; not to scale.

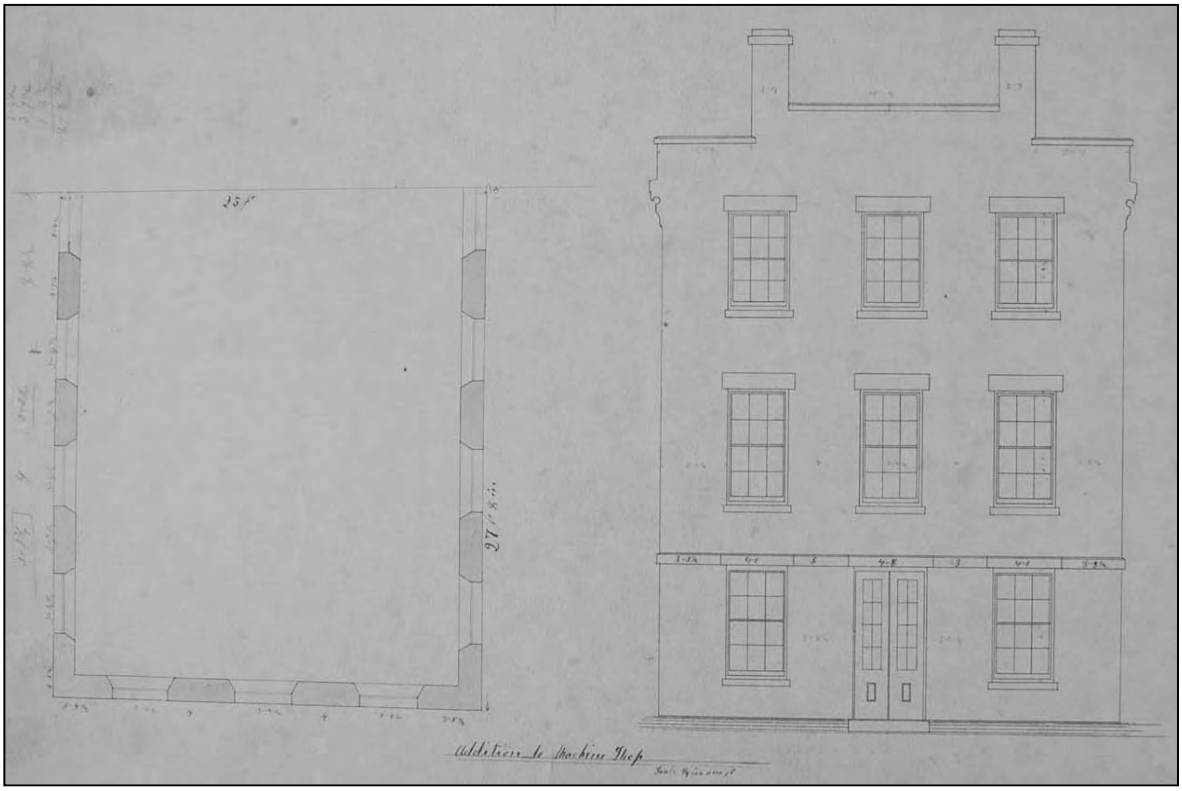


Figure 28. "Addition to Machine Shop." The drawing depicts the north end added to the north wing of Building 27; not to scale.

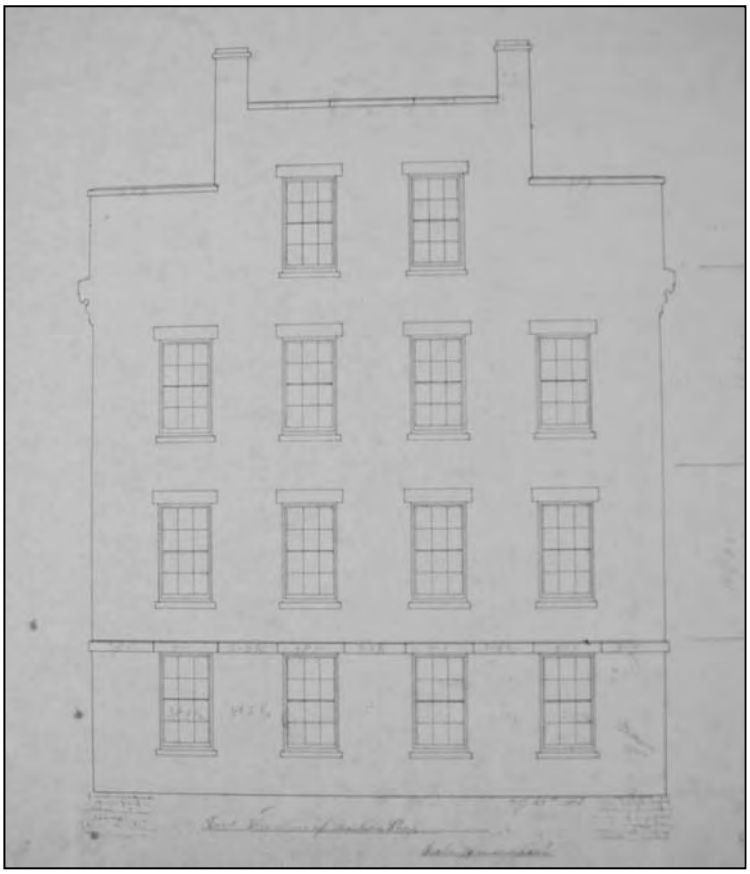


Figure 29. "East elevation of Machine Shop, Aug 24th 1863." The drawing depicts east end of Building 27, which was part of the northeast block addition; not to scale.

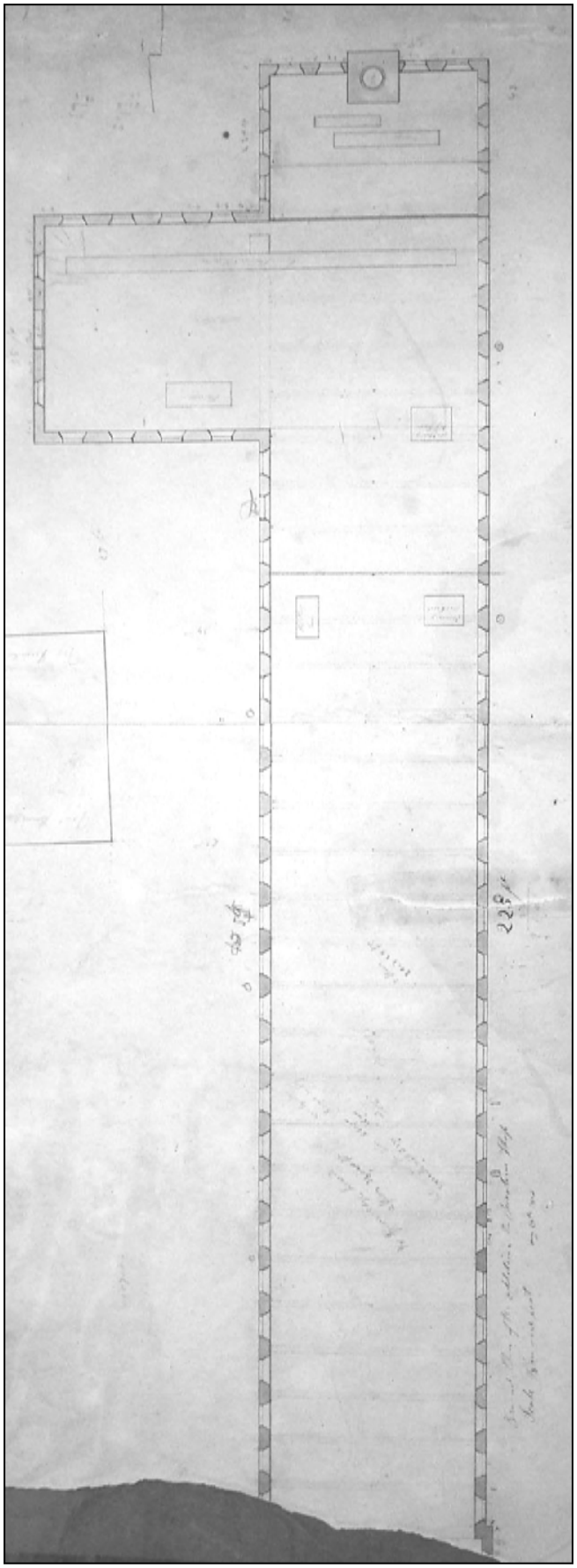


Figure 30. "Ground plan of the addition to Machine Shop, Aug 24th 1863." The drawing depicts the basement plan of the northeast block and west ell of Building 27; not to scale.

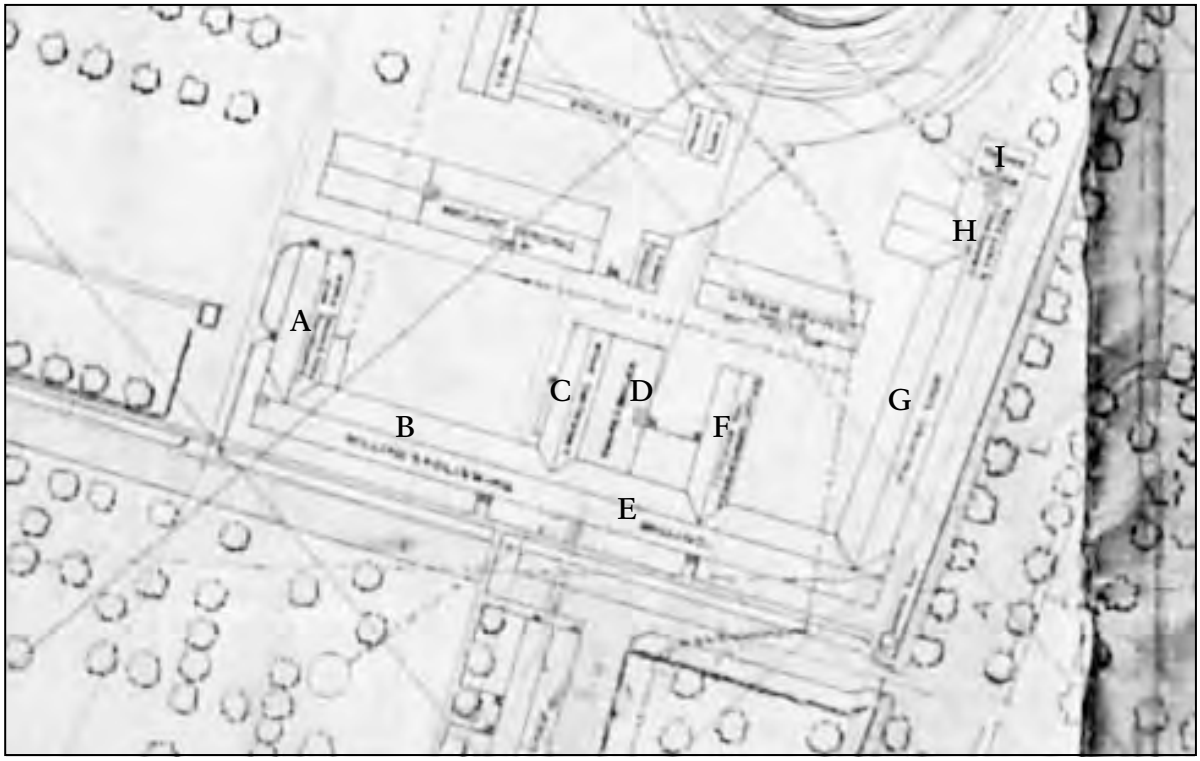


Figure 31. Detail from "Topographical Plan of the Springfield Armory, Springfield, Massachusetts, April 1864 (fig. 11)." The sections of Building 27 are labeled as follows: A: Tempering and Polishing Shop; B: Milling and Polishing Shop; C: Annealing Shop; D: Engine and Boiler (Rooms); E: Milling; F: Foreman and Draughtsman Offices; G: Machine Shop; H: Carpenter and Pattern Shop; I: Engine and Boiler (Room).

Figure 32. West end of Building 27, July 1864, depicting fire damage to the Polishing Room and Milling Shop from the July 2nd conflagration.

Figure 33. Building 27 west and south elevations, circa 1865.

Figure 34. Building 27, north end of northeast block and west ell on left, with the Engine and Boiler Room in the foreground of the northeast block, circa 1865.

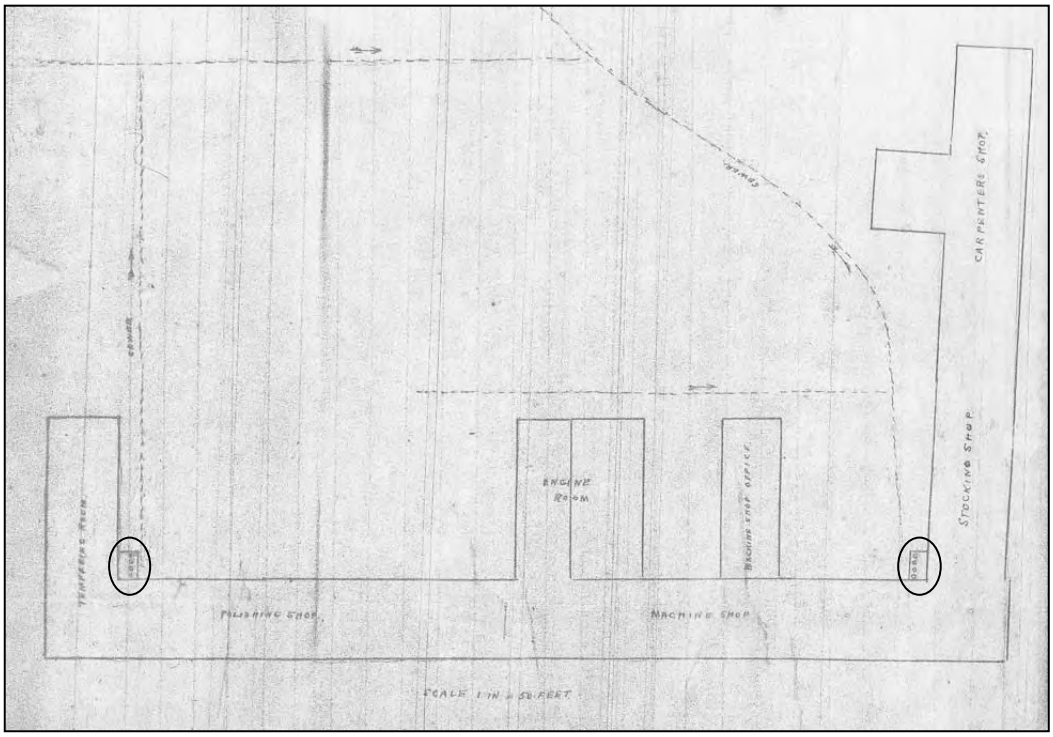


Figure 35. Sketch of Building 27 for construction of water closets (circled) at Machine Shop and Polishing Shop, 1867.

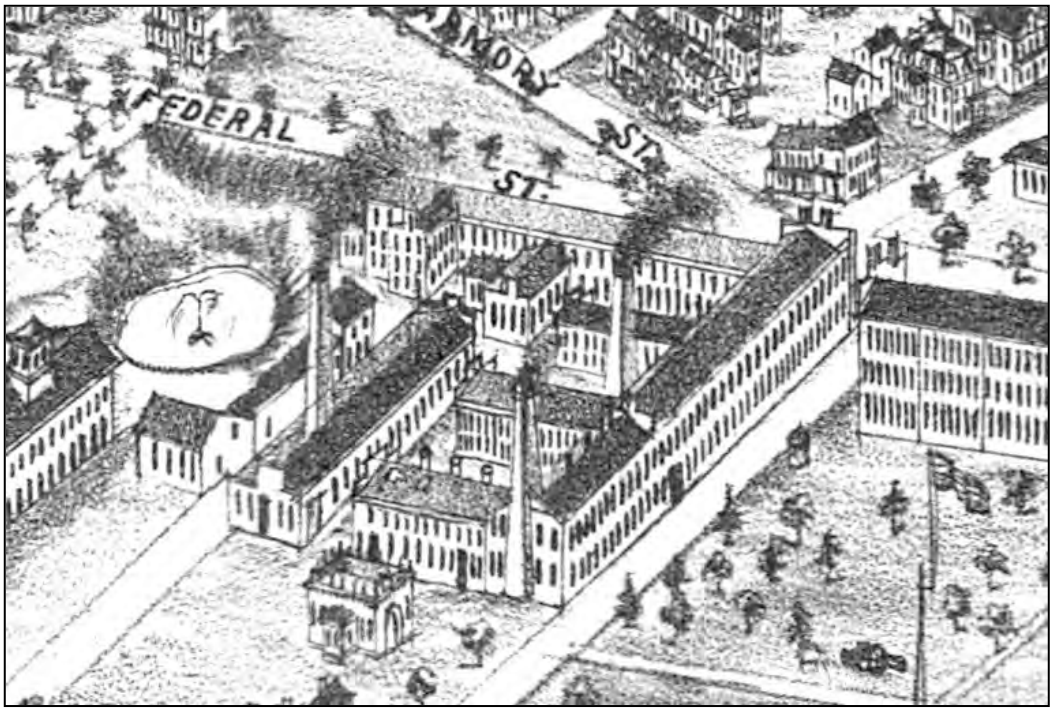


Figure 36. Detail of Building 27 from bird's-eye view of Springfield, Massachusetts, 1875 (fig. 12).

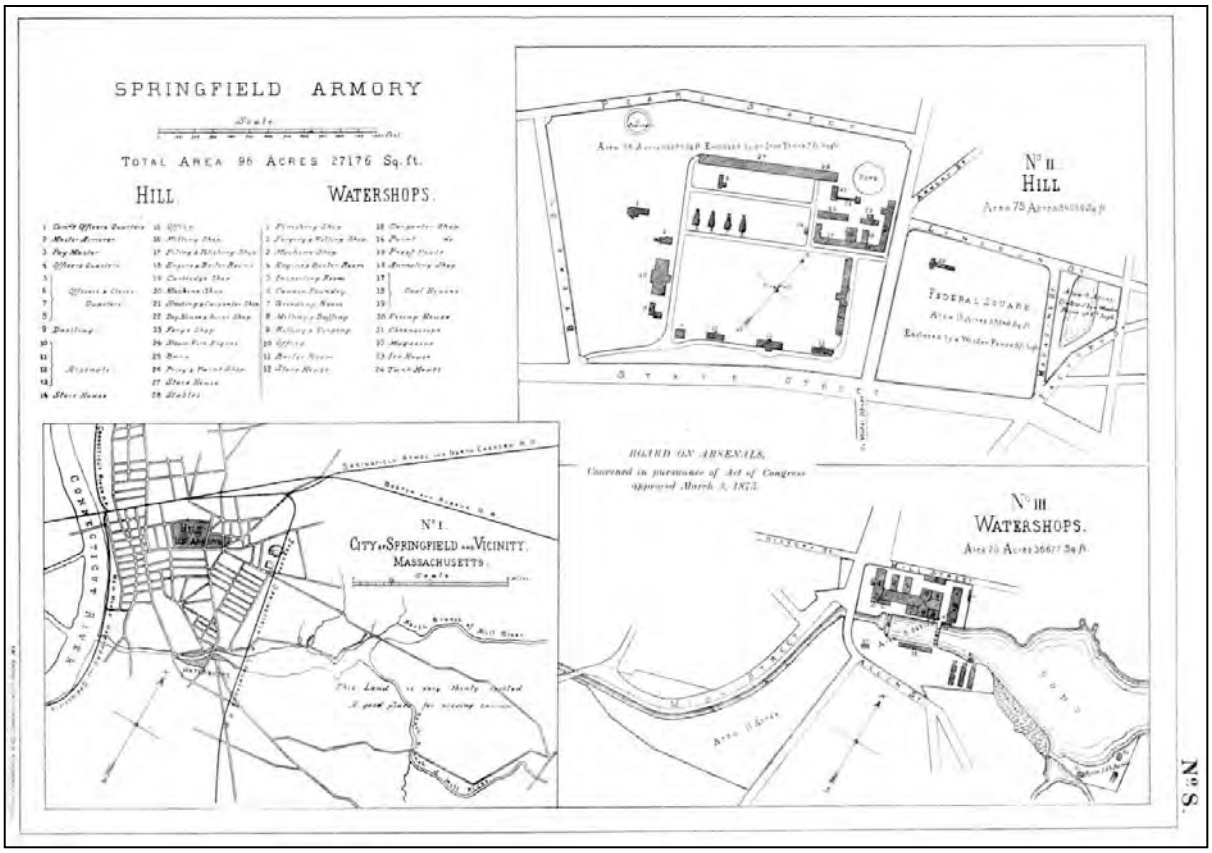


Figure 37. "Springfield Armory, Hill [and] Watershops [sic]," Secretary of War Report, 1875.

Figures 37a. Description of shops 17–21 in Building 27 complex, from figure 36.

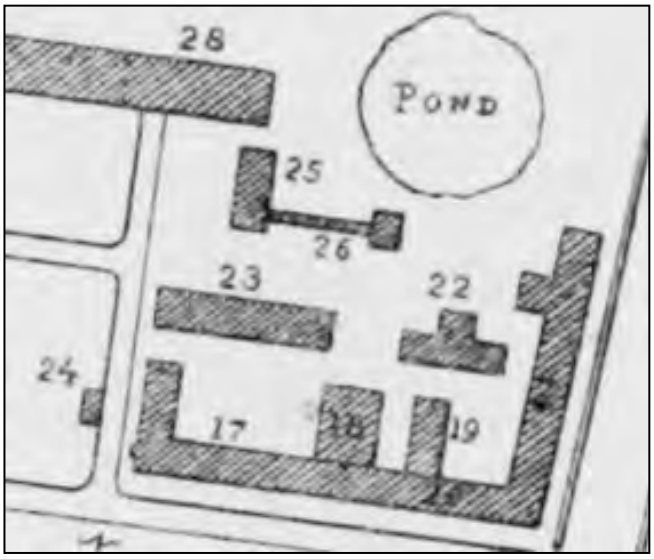


Figure 37b. Detail of Building 27 (shops 17–21), from figure 36.

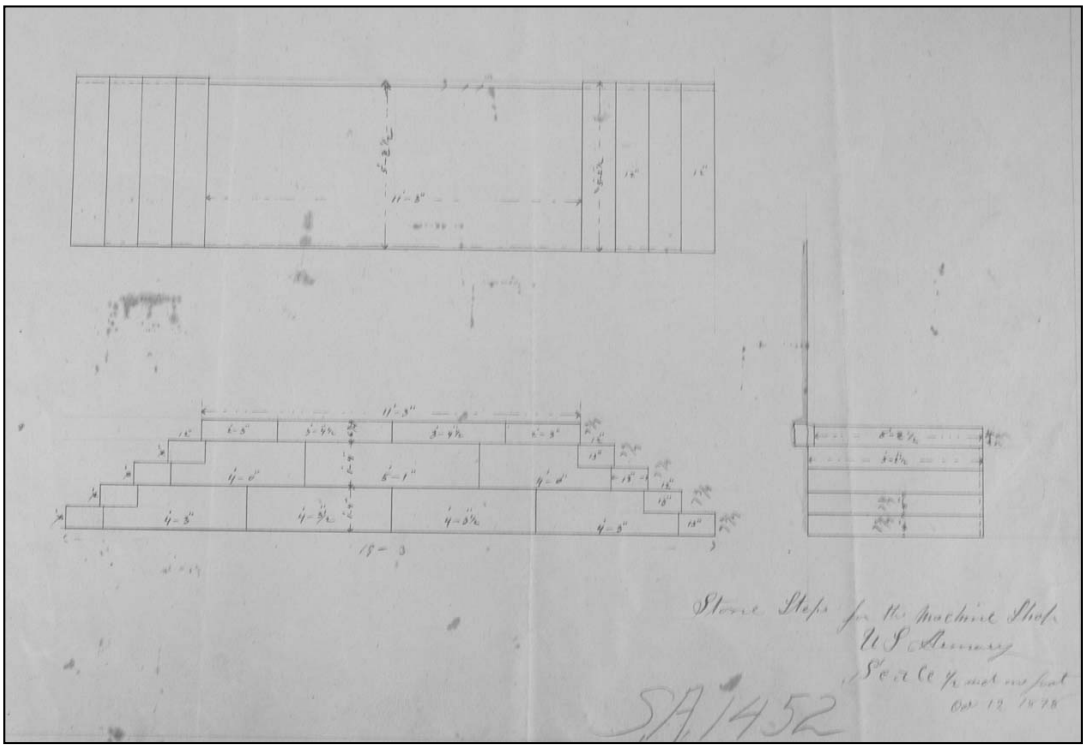


Figure 38. "Stone steps for the Machine Shop, U.S. Armory, Oct. 12, 1878." Steps designed for the south elevation entrances of Building 27.

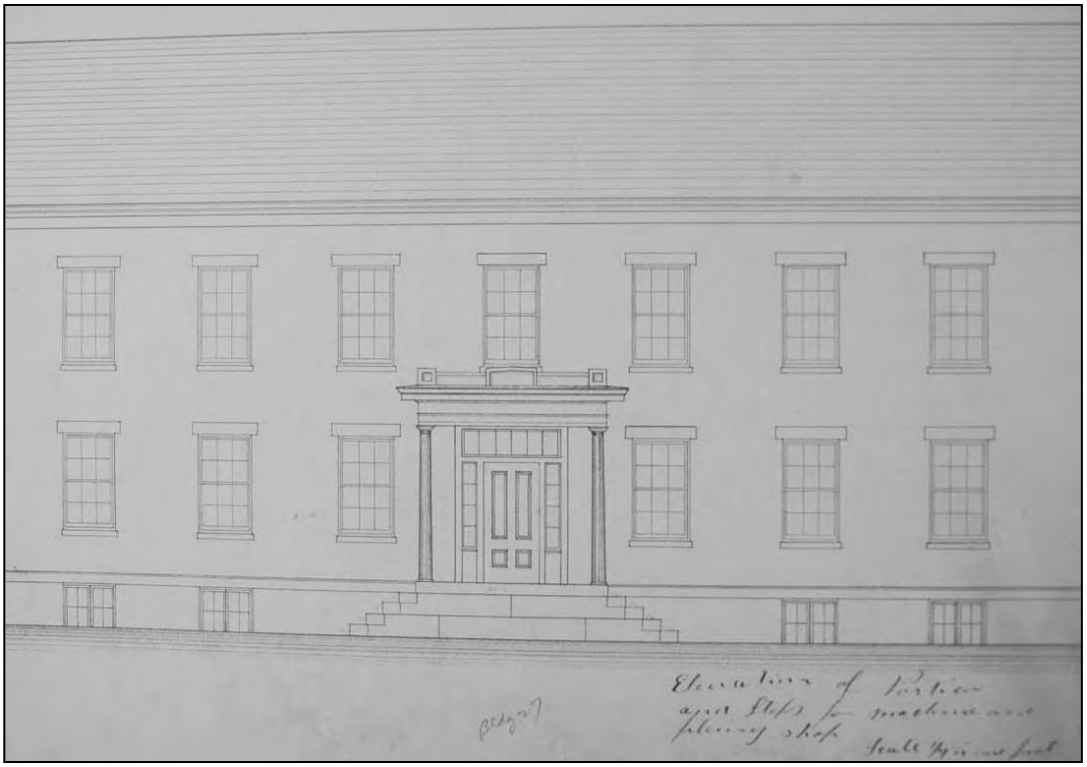


Figure 39. "Elevation of Portico and Steps for machine and filing shop, March (3), 1879." Portico and steps designed for the south elevation entrances of Building 27.

Alterations to Building 27

Early-Twentieth-Century Alterations to Building No. 27/Annex Building

The Springfield Armory remained active at the beginning of the twentieth century, and activity increased with the advent of World War I (WWI). Records indicate that the changes to Building 27 during that period were primarily interior improvements related to the functions of the shops, but also included some exterior additions. Documents from this period were the first to reference the building as the Annex Building.

The reference to the building as the Annex Building appears to have been related to the change in use of the building. Starting with the construction of the shops in Federal Square and their expansion through the early twentieth century, the work performed in Building 27 apparently changed to the assembly and final preparation of the arms. This was best demonstrated in two 1918 plans of the building (figs. 17 and 40). On the more general plan Building 27 was labeled as the "ASSEMBLING DEP'T." That plan also indicates that the buildings in Federal Square had assumed the role of the manufacturing shops. The other plan lists the functions of the sections of Building 27 (figs. 40–40a).

The more detailed plan documents that sections of Building 27 were used as the Final Inspection Department, Packing Department, Assembling Department, Boiler House, Proving Rooms, Component Room and Guard Department (figs. 40a and 40b). That plan includes revisions through February 1936, but the only changes to Building 27 from the 1918 plan were the additions of the Sand Blast Room and Parkerizing Department.[138] A plan for the Armory drawn in 1919 provides a similar list of functions in Building 27. The designation of the various departments and the presence of the proving rooms was further evidence of the buildings use in the final assembly, proving, and shipping of the arms.

At the beginning of the twentieth century, the Boiler Room roof framing of Building 27 was reinforced with steel I-beams and tie-rods. The 1900 plan of the roof shows that 20-inch I-beams were installed 7 feet on center with the end beams 8 feet from the outside walls. These beams were sloped from west to east to match the existing shed roof line of the boiler room. The larger beams were spanned by 6-inch I-beams and iron tie-rods.[139]

The elevators in the building apparently went through several upgrades over the years and the documentation suggests that they were first installed in September 1917. The contract for the project indicated that the contractor would "furnish and install one elevator in the Annex Building, Hill Shops, Springfield Armory."[140] The Annex Building was among several that had changes made to the elevators in February 1918, but the records did not provide any specific information.[141] Historic plans

---

[138] Buildings and Grounds, Hill Shops, Springfield Armory, March 11, 1918 with revisions through February 14, 1936; Cabinet B, Drawer 4, Folder 1, SPAR Museum Collection.

[139] Steel Beams and Tie Rods for the Old Boiler Room Roof, Springfield Armory, June 15, 1900; Cabinet B, Drawer 4, Folder 1, SPAR Museum Collection.

[140] Marcil and Arnold, September 10, 1917; Contracts for Ordnance Supplies and Construction 1806–1918, Series I, box 5 of 15, Entry 1382, RG 156. NARA Northeast Region (Waltham, MA).

[141] Bay State Elevator Co., February 7, 1918; Contracts for Ordnance Supplies and Construction 1806–1918, Series I, box 7 of 15, Entry 1382, RG 156. NARA Northeast Region (Waltham, MA).

indicated that by January 1919 elevators were installed in the main block along the north wall, and on the west exterior wall of the northeast block. In June 1919 a freight elevator was installed in the west wing.[142] July of that same year a contract for work in Building 27 included "a new hoistway, lay a new upper floor, covering ceiling, and painting walls, exposed works west of present brick wall on second floor; building benches and putting in heating systems in Annex Building at the Hill Shops."[143]

There were several contracts for work at the Annex Building from 1917 through 1919 that document alterations to the building. The Adams and Ruxton Construction Company was contracted to make changes to the Browning Room at the Hill Shops in July 1917.[144] Browning is a process used to retard the corrosion of the gun barrels. Historic plans indicated that this was done in Building 27. In May 1918 the Parker Rust-Proof Company of America was contracted to "furnish and install apparatus for parker rust-proofing process in the Hill Shops."[145] That process was also known as Parkerizing, and the 1918–1936 plan of the Armory indicated that this process was performed in Building 27. The following year plans were submitted for installing a second/South Browning Room in the basement of the Annex. The plans indicate that the room would be setup in the basement of the main block (currently Rooms 005–08) and would include tanks, bake ovens, and work benches.[146] Based on these documents and historic plans, both the Browning and Parkerizing processes were being performed at Building 27 during this period.

Upgrades to the building during this period included the installation of a heating system for the Assembling Room in September 1918.[147]

Other interior additions during that period included the installation of restrooms in Building 27. Two contracts, one in 1917 and one in 1919, included restrooms or washrooms for the Hill Shops, but did not specify the building. A plan of the second floor dated January 14, 1919 depicted a "toilet" in the main block along the north wall, with a "sink" installed nearby.[148] Thus it appears that the restrooms were installed in 1917, and perhaps additional facilities were installed in 1919.

In 1920 the floor framing for the second story of the northeast block was reinforced with steel I-beams and posts.[149] Drawings for that project depicted the addition of 9-inch I-beams extending north–south under the existing 8-inch-by-14-inch wooden

[142] Hubbell and Warsaw Elevator Co., June 19, 1919; Contracts for Ordnance Supplies and Construction 1806–1918, Series I, box 8 of 15, Entry 1382, RG 156. NARA Northeast Region (Waltham, MA).

[143] Hubbell and Ernest Carlson Co., July 12, 1919; Contracts for Ordnance Supplies and Construction 1806–1918, Series I, box 9 of 15, Entry 1382, RG 156. NARA Northeast Region (Waltham, MA).

[144] Adams and Ruxton Construction Company, July 11, 1917; Contracts for Ordnance Supplies and Construction 1806–1918, Series I, box 5 of 15, Entry 1382, RG 156. NARA Northeast Region (Waltham, MA).

[145] Parker Rust-Proof Company of America, May 29, 1918, Contracts for Ordnance Supplies and Construction 1806–1918, Series I, box 6 of 15, Entry 1382, RG 156. NARA Northeast Region (Waltham, MA).

[146] Proposed Layout for South Browning Room, Basement of Annex, Springfield Armory, August 15, 1919; Cabinet B, Drawer 4, Folder 3; SPAR Museum Collection.

[147] J. J. Cotter Co., September 26, 1918; Contracts for Ordnance Supplies and Construction 1806–1918, Series I, box 7 of 15, Entry 1382, RG 156. NARA Northeast Region (Waltham, MA).

[148] Floor Plan, Second Floor, Annex, Springfield Armory, January 14, 1919; Cabinet B, Drawer 4, Folder 1, SPAR Museum Collection.

[149] Layout of Reinforcement of 2nd Floor, North End, East Wing, Annex Building, Springfield Armory; SPAR Museum Collection.

beams; 6-inch I-beams were installed between the existing wooden framing running east–west, and 4-inch steel-pipe posts and 3-inch solid-steel posts supported the new framing. The drawings included plan and elevation views as well as load-bearing calculations.

The same 1920 plans illustrated an interior wall in the basement of the northeast block. The wall extended most of the block, and was about 8 feet from the east wall. The drawings noted that it was the "old shooting range wall." The date of construction of the wall is not known, but the reference states that it was old, suggesting it may have dated from the nineteenth century. It was possibly in use prior to the construction of the proofing room near the end of that century. Later plans noted that the shooting-range wall was brick, and showed that it was still in place in 1926, but was removed in 1939 (see subsequent section "Alterations During World War II").

As previously noted, many of the improvements during this period were apparently geared toward the improved functionality of the building. However, historic documents do indicate that there were exterior alterations, as well as regular building maintenance during that time.

Maintenance on the building included the installation of a new slate roof over the west end of the building in December 1919.[150]

Both the 1918 and 1919 plans indicate that the Proving Room was enlarged with an addition to the north since 1897 (fig. 40a). The schedule on the 1919 plan listed the north end of the proving room as the "machine gun proofing room."[151]

Another small addition depicted in the 1918-1936 plan was on the north side of the building at the corner of the main block and northeast block. A separate plan dated February 3, 1920 documented that this structure was used for the oven and for unpacking rifles.[152] The structure was built between the proving room and the northeast block, but was later removed.

Plans for heating an addition to the west elevation of the northwest wing were drawn in November 1919.[153] The addition was brick with brownstone trim, and was set on masonry piers. It was one story high, and measured approximately 32 feet square. The historic plans indicated that this was the Sand Blast Room. Though the addition was not evident in a September 1919 plan, it was listed as the "Sand Blast" room in the 1923 revision to the 1918–1936 plan (figs. 40a and 40b). The documentary evidence suggests it was constructed by 1920. A later photograph of the exterior illustrates that of the structure was in keeping with the rest of the building, with brick walls, masonry windowsills and lintels, but taller double-hung, six-over-six sashes (fig. 68). The Sand Blast Room was later used as the Print Shop and was subsequently removed (see subsequent section "Alterations During World War II").

The 1918 and 1919 plans listed the buildings around Armory Square with a variety of

[150] John McCleary and Sons, December 24, 1919; Contracts for Ordnance Supplies and Construction 1806–1918, Series I, box 10 of 15, Entry 1382, RG 156. NARA Northeast Region (Waltham, MA).

[151] Electric Signal Equipment, Springfield Armory, Hill Plant, September 19, 1919; Cabinet B, Drawer 4, Folder 1, SPAR Museum Collection.

[152] Building for Oven and Unpacking Rifles, Off Annex Building, Springfield Armory, February 3, 1920; Cabinet B, Drawer 4, Folder 1, SPAR Museum Collection.

[153] Heating and Lighting, Sand Blast Room, Springfield Armory, Hill Shops, November 17, 1919; Cabinet B, Drawer 4, Folder 1, SPAR Museum Collection.

numbers, which is evident on the plans from those years. However, by the 1930s there must have been an effort to consistently number the buildings of the Armory Hill Shops. The designation of Building 27 as Building No. 27 first appears on records from the 1930s. In the Springfield Armory, Massachusetts, Historical Record dated June 30, 1932 the building is listed as "Building No. 27" and the caption below the photograph reads "Annex Building." However, reference to the Annex Building appears to have been dropped in the 1940s, and the building is simply referred to as Building No. 27. This was sometimes simplified to Building 27, which appears to become the common designation in the 1950s and 1960s.

An aerial view of the Armory from 1932 indicates that the layout of Building 27 had not significantly changed since 1919 (fig. 41). The photograph shows the sprawling complex of shops, which included the main block, northeast block and west ell, north wing, northwest wing, and west wing. It also appears to include the Sand Blast Room, Coal Storage Room off the Boiler Room, the Proofing Room, and the Rifle-unpacking Room next to that (though the latter two are harder to discern).

The 1932 Historical Record includes a description, the size, and construction costs of Building 27 (Appendix C). That record indicates that $1,695 was spent on additions to the building from 1931 to 1933, and that repair costs included $683.09 in fiscal year 1932 and $145.43 in fiscal year 1933.[154] Historic plans document that the additions during that time period included two roof dormers for the elevators: one on the north roof of the main block, and one on the west roof of the northeast block.[155] The dormers had brick walls, copper roofs, and steel windows. The project probably included upgrades to the elevator in the main block and the addition of an elevator in the northeast block. There do not appear to be other significant changes to the exterior of the building during that period, and the other repairs were probably minor improvements to the interior.

The 1932 Historical Record included a photograph of Building 27 looking northeast, taken in December 1932 (fig. 42). The building's appearance is very similar to the nineteenth-century photograph of the same view (fig. 33). The 1932 photograph does show the doorway porticos added in 1879 that were not in the earlier photograph. The porticos were previously described and appear to match the 1879 plans. The photograph also records that the steps for each portico approach from the sides, as documented by the 1878–79 plans. The 1932 photograph shows a truck backed up to the eastern portico, which demonstrates that the steps to the side made delivery to the doorways easier.

The projects completed by the WPA in 1937 and 1938 included some work at Building 27. Historic photographs document the removal of a chimney at the west end of the main block and some work in the basement (figs. 43 and 44). The 1937 article in the *Springfield Sunday Union and Republican* noted that work in the shops included laying concrete floors and wooden floors, which may have included Building 27. The WPA also worked on replacing utility pipes for the Armory, which may have included some work in the basement of Building 27, and was perhaps some of the work depicted in the historic photograph.

[154] Springfield Armory, Massachusetts, Historical Record, Building No. 27, Annex Building, June 30, 1932 through June 30, 1933; SPAR Museum Collection.

[155] Building No. 27, Roof Extensions for Elevators, June 5, 1930; Cabinet B, Drawer 4, Folder 1, SPAR Museum Collection.

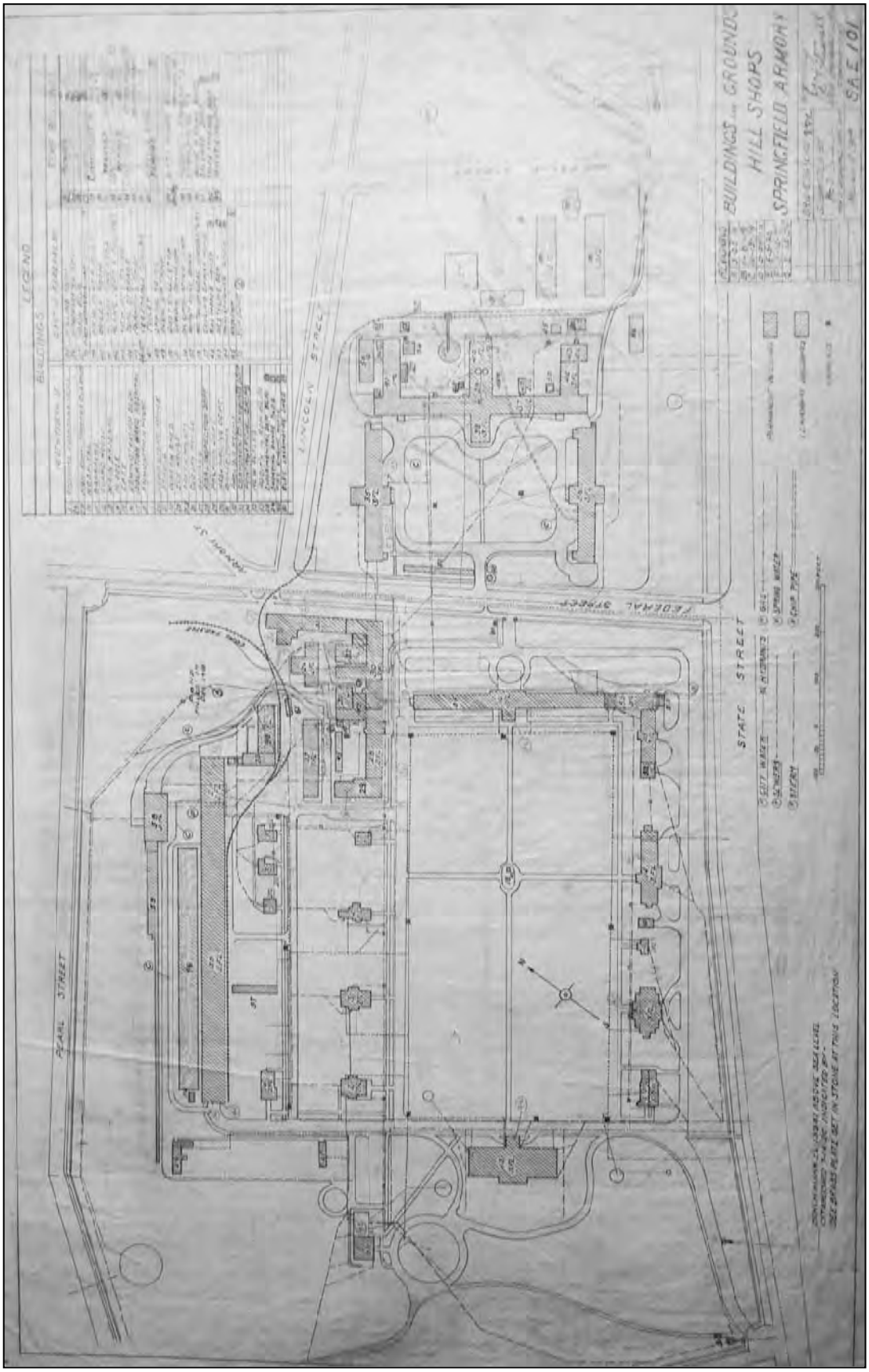


Figure 40. Buildings and Grounds, Hill Shops, Springfield Armory, Ordnance Department, March 11, 1918 with revisions through February 14, 1936; not to scale.

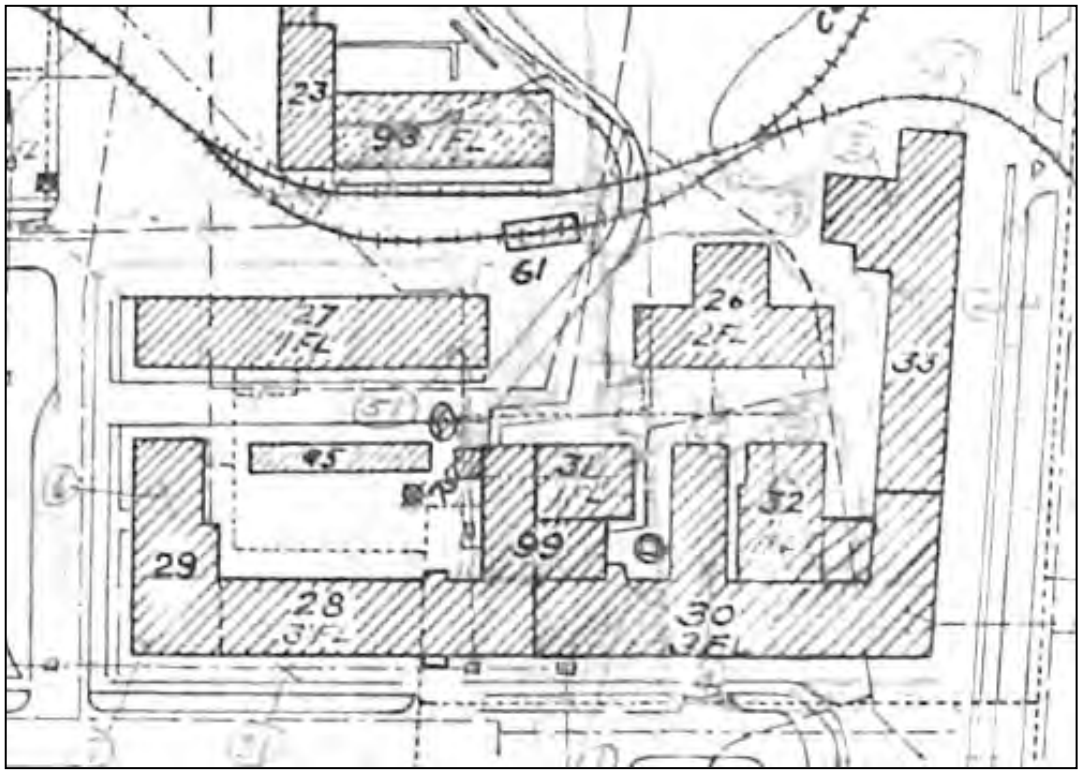
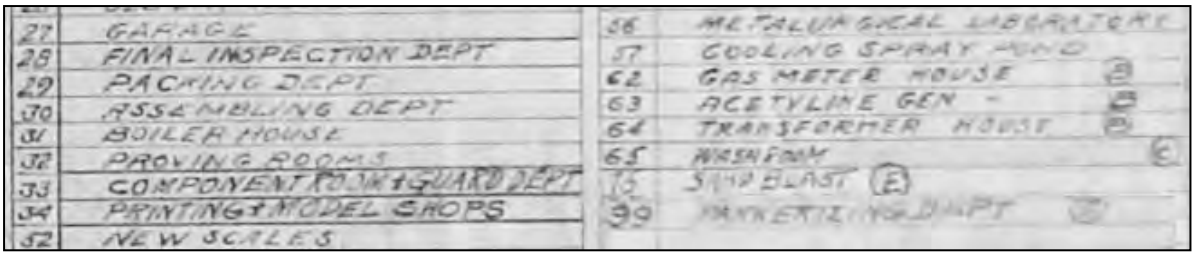


Figure 40a. Detail of Building 27 from Buildings and Grounds, Hill Shops, Springfield Armory, March 11, 1918 (fig. 39).



27	GARAGE	56	METALURGICAL LABORATORY
28	FINAL INSPECTION DEPT	57	COOLING SPRAY POND
29	PACKING DEPT	62	GAS METER HOUSE (B)
30	ASSEMBLING DEPT	63	ACETYLINE GEN - (B)
31	BOILER HOUSE	64	TRANSFORMER HOUSE (B)
32	PROVING ROOMS	65	WASH ROOM (C)
33	COMPONENT ROOM & GUARD DEPT	75	SAND BLAST (E)
34	PRINTING & MODEL SHOPS	99	PARKERIZING DEPT (E)
52	NEW SCALES		

Figure 40b. Part of legend from Buildings and Grounds, Hill Shops, Springfield Armory, March 11, 1918. Sections of Building 27 in 1918 are listed as follows:

28 – Final Inspection Department;
29 – Packing Department;
30 – Assembling Department;
31 – Boiler House;
32 – Proving Rooms;
33 – Component Room and Guard Department.

May 5, 1923 revisions (E) included:

75 – Sand Blast (room);
99 – Parkerizing Department.

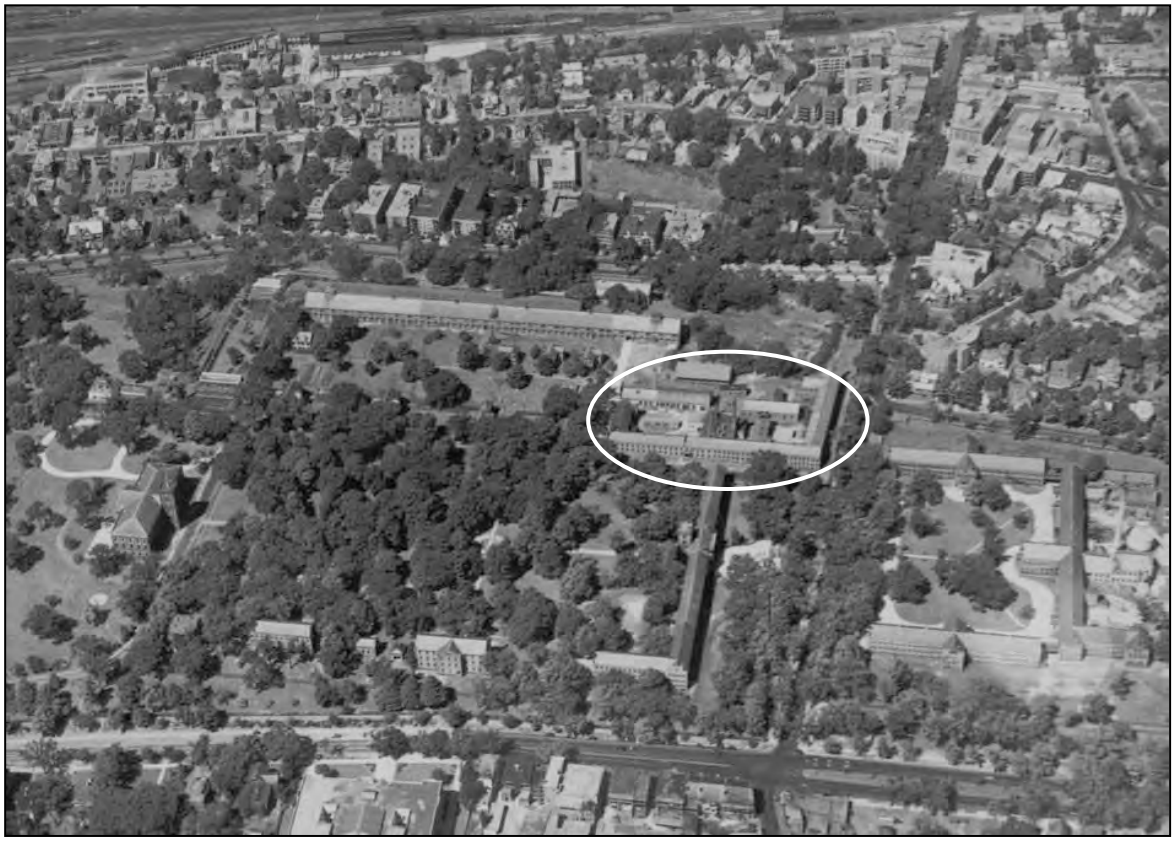


Figure 41. Aerial photograph of U.S. Armory Hill Shops, September 3, 1932. Building 27 and adjacent buildings are circled.

Figure 42. Building No. 27, Annex Building, December 1932. Springfield Armory, Massachusetts, Historical Record.

Figure 43. "BLDG. #27 - Showing chimney being torn down.
W. P. A. Project, Oct. 5, 1937 - Neg. SA-1627."

Figure 44. "BLDG. #27 - Annex Basement Showing progress of alterations.
W. P. A. Project. Jan. 4, 1938 Neg. SA-1680."

Additions during World War II

A second record for Building 27 in the Springfield Armory Historical Record includes information from June 30, 1938 through June 30, 1942 and clearly indicates an increase in activity during World War II (WWII) at the Armory and Building 27 (Appendix C). The record documents additions and repairs to the building during that period. Most notably, the amount expended on repairs included: 1939 – $12,698.30; 1940 – $29,861.04; 1941 – $69,114.38; and 1942 – $42,422.07.[156] Many of the projects were documented in historic plans and photographs of the building.

Drawings of Building 27 dated March 8, 1939 show plans for the installation of steel framing in the basement and first story of the building. The plans illustrate the layout of the steel beams and columns, and also provide measurements of the building (figs. 45 and 46). The basement plan noted that the shooting range wall in the northeast block would be removed. A section plan of the northeast block provides greater detail of the framing (fig. 47). That plan was dated September 6, 1940, suggesting that the project extended from 1939 to 1940.

Based on the plan details, the project included new concrete footings in the basement floor under the steel columns, suggesting that new concrete floors were also installed at the time. The plan also noted that the first and second story would have "new maple finish" floors. The project apparently included the demolition of the original wooden framing in the basement and first story. Some wooden joists are evident in the WPA photograph of the basement (fig. 44), but none exist today. The steel framing is extant throughout the basement and first story of Building 27.

[156] Springfield Armory, Massachusetts, Historical Record, Building No. 27, Annex Building, June 30, 1938 through June 30, 1942; SPAR Museum Collection.

The Historical Record documents that repair expenses increased in 1940 and 1941. Historic drawings from that period documented some of the alterations. Projects included the installation of new doors and windows in the north and east elevations of the northwest wing. The plans indicated the former Boiler Room was then used as the Paint Shop.

The 1940 drawings of the alterations to the Paint Shop show three steel windows on the first story, a sliding door with a paneled pass-through door, and a paneled door (fig. 48). The steel windows had concrete sills, and steel lintels with soldier bricks above that. Two of the new steel windows had twenty-five-light steel sashes with a six-light pivoting sash near the center of the larger sash. The westernmost steel window had fifteen lights and a six-light pivot sash installed above the first row of three lights.

Both doors were installed in the north elevation of the northwest wing: one to the Paint Shop (former Boiler Room) and one west of that in the main section of the wing for the Paint Storage Room. The paneled door had four lights above two vertical panels and a three-light transom. The sliding door was installed in the north elevation of the Paint Shop (former Boiler Room). It was a large door with a hinged "pass door" on the west side of the door. Both the slider and pass-through door had nine lights above two vertical panels and a row of four panels at the top of the door.

Historic photographs indicate that the windows and doors were installed as planned. One of the steel windows and the sliding door with the pass-through door are extant.

The following year two sets of double doors were installed in the east elevation of the Paint Shop/Boiler Room (fig. 49). By that time the small addition to the east side of the Boiler Room plans had been removed, and

in 1940 steel windows had been installed on the first story of that elevation. The 1941 plan noted that steel windows would be removed in order to install the double doors. The plans illustrate that both doorways were constructed with concrete thresholds and steel I-beam lintels. Due to a slight change in grade, the north doorway also had a concrete step. Both sets of double doors were constructed in a similar manner. Each door had a wooden core and was clad with 24-gauge "kalamein," which was a metal cladding for fireproofing doors and walls.[157] Each door had twelve wire-glass lights above three vertical panels, and a metal astragal was applied where the doors met at the center of each doorway. Each doorway had a transom with nine wire-glass lights. The transoms were hinged at the bottom and opened into the room. The plans also indicated that this room, which was used as the Paint Shop in 1940, would again be used as the Boiler Room. The double doors in the east elevation of the Boiler Room were shown in historic photographs and are extant.

Additional projects during 1940 included the installation of a new dust-collection system for the Carpentry Shop. The plans record the details of the new system, which included a small brick building at the corner of the main block and northeast block and a steel tower with a dust collector and storage tank (fig. 50). The building served as the "Exhaust Fan Room" and was constructed with a concrete slab floor, brick walls, and a shallow-pitched copper roof. It had two steel windows on the north side with pivoting sash, concrete sills, and lintels constructed with soldier bricks. The doorway was on the west side and had a wooden door with four lights over a single panel with vertical tongue-and-groove boards.[158] The "Exhaust Fan Room" was constructed in the location of the earlier room for unpacking rifles, which was apparently removed at that time.

A second small addition related to the dust-collection system was built two years later in 1942. Drawings of the structure indicated that it was also an "Exhaust Fan Room" with venting from the building to the dust-collection system (fig. 51). That structure was added to the west elevation of the northeast block. It was a one-story brick building on a concrete slab. There were steel windows on the north and south walls, and a doorway on the west side. The addition had a shallow-pitched shed roof constructed with a concrete slab and covered with asphalt. Historic photographs show vent piping leading to the structure and from it to the dust-collection tower (fig. 65).

Both brick structures related to the exhaust and dust-collection systems installed in the early 1940s were labeled as "Exhaust Fan Room(s)" in the overall plans of Building 27. These additions are extant and appear to retain some of the historic elements (see subsequent section "Current Physical Description"). The steel tower with the dust collector has been removed, but was documented in historic plans and photographs (figs. 53 and 65).

Improvements to Building 27 during this period included the addition of fire escapes. Plans dating from 1940–43 documented the construction of the fire escapes on certain sections of the building.[159] The fire escapes were typically constructed with steel stairs and handrails, and were supported by steel brackets bolted to the exterior walls. The historic plans showed that fire escapes were installed on the west elevation of the

[157] Harris, 559.

[158] Dust Collecting System Carpenter Shop Spaces 27-A-7 and B-51, Hill Shops, Springfield Armory U.S.A., July 9, 1940; Cabinet B, Drawer 4, Folder 1, SPAR Museum Collection.

[159] Plans for fire escapes, Building No. 27, 1940–43; Cabinet B, Drawer 4, Folder 1, SPAR Museum Collection.

northeast block, the east and west elevation of the north wing, and the north elevation of the northwest wing. The fire-escape doorways were installed in existing window openings and held paneled doors. All of these fire escapes remain in place today. In addition to the fire escapes, an enclosed stair tower was added to the northwest corner of the northeast block in 1942. The stair tower was located at the corner of the northeast block and west ell and provided an additional egress for that end of the building. The stair tower was two stories high and measured 9 feet wide by 15 feet 6 inches long (figs. 52a and 52b). It had a concrete foundation, brick walls, and a shallow-pitched shed roof with a low parapet wall on the north side. There were two windows on the west elevation with brownstone sills and lintels, and six-over-six, double-hung sashes, matching the rest of the building. Stair tower doorway was on the north elevation and was accessed by a concrete bridge with pipe railing on either side. The doorway had a concrete threshold and a brownstone lintel. It held a door with nine lights over a single panel, and there was a four-light transom above the door. The interior of the stair tower had a doorway on the first and second stories, but did not have access to the basement. The stairs were constructed with steel treads and risers, 4-inch-by-4-inch newel posts with drop finials, and pipe railings.[160] During the addition of the stair tower, some windows were in the northeast block and the west ell were infilled with brick. The interior doorways were installed in two of the former window openings. The stair tower and many of the historic elements remain today (see subsequent section "Current Physical Description").

New loading docks were constructed on the west side of the northeast block and the north side of the main block during this period. The loading docks were constructed with steel-reinforced concrete platforms on concrete piers and steel framing supporting corrugated metal roofs.[161] The loading dock on the main block also had a hoisting mechanism. Both loading docks were depicted in historic photographs (figs. 65 and 66). The one on the west side of the northeast block remains today and the roof structure of the other loading dock is standing, but the platform was removed.

The interior of Building 27 was also altered during WWII. One change that was evident when comparing historic plans was the relocation of the interior stairwells. The 1939 plans shows the stairwells located near the middle of the main block and at the south end of the northeast block (fig. 45). The 1941 plans indicate that the stairwells in the main block and the northeast block were moved to the outside walls. This evidence documented in the historic plans suggests that the stairwells were relocated between 1939 and 1941 (fig. 54). They may have been moved to accommodate the installation of the steel framing during that period, but no other documentation of this change was found. Both stairwells appear to be enclosed by interior partitions in the 1941 plans.

Two sets of interior plans documented changes in the use of the west end of Building 27. Plans dated March 13, 1939 showed the layout of machinery and equipment for the Apprentice Division, which was located on the first story of the west end of the main block and the west wing.[162] The Apprentice School was also

[160] New Stair Tower, Northwest Corner of East Wing, Building #27, Hill Shops, Springfield Armory U.S.A., March 18, 1942; Cabinet B, Drawer 4, Folder 2, SPAR Museum Collection.

[161] Loading Platform, Building #27, Hill Shops, Springfield Armory U.S.A., March 18, 1942; Cabinet B, Drawer 4, Folder 2, SPAR Museum Collection.

[162] Mach. & Equip. Layout Apprentice Divivion, Dept. No. 44, Building 27, Space B-211-233-237, Hill Shops, Springfield Armory,

recorded in a photograph from that period (fig. 60). The photograph depicts the outside brick walls, arched windows, exposed wooden framing in the ceiling, interior partitions with vertical tongue-and-groove boards, and rows of lathes operated by the apprentices. The plans and photograph documented the location and arrangement of the Apprentice Division at the west end of Building 27 during the WWII time period.

Historic plans dated September 15, 1939 documented another change in use at the west end of the building. That plan depicted alterations to the first and second stories for the Armory museum. A Small Arms Museum based on the collection started by Col. J. G. Benton had been established at the Armory after the 1876 Centennial Exhibition in Philadelphia, and was apparently housed in Building 16 during the early twentieth century.[163] The museum was evidently moved to the second story of Building 27 in 1939, and was later moved to the northeast block of the building (see subsequent section "Alterations Post–World War II through Deactivation"). The plans indicated that an entrance for the new museum was created on the first story, and the exhibit area was on the second story at the west end of Building 27. Historic photographs appear to show the museum when it was in the west end of the building (figs. 61 and 62). Aside from the gun displays, the photographs depict wooden floors, brick walls, arched windows, and a paneled ceiling.

As previously described, restrooms had been added to the interior of the building by 1919, but they probably were altered in the 1940s. A plan of the west ell shows the addition of the "Men's Toilets" to the second story of that section in 1941 (fig. 56).[164] The plan documents that the restroom was situated in the southwest corner of the west ell and had stud-framed, sheathed walls. The walls were probably vertical tongue-and-groove boards that were evident in other period alterations and are extant. A year later plans were drawn for the construction of a "Women's Toilet" next to the Men's (fig. 57).[165] The walls appeared to be of similar design, but the physical evidence suggests they were constructed with framed panels with tongue-and-groove boards that are extant (see subsequent section "Current Physical Description"). The doorway into the Women's Room had a 7-foot-tall privacy screen in front of it.

The second story of Building 27 was converted to the Personnel Division in 1942, with the exception of the northeast block that had no designation in the historic plans. This alteration represented a significant change in the use of Building 27. The functions of the building were no longer related to only arms manufacture, but now included recruiting and training of Armory employees.

The overall plan of the Personnel Division shows the layout of the rooms and includes sections of some interior partitions (fig. 58). The layout included what appears to be a general processing and waiting area in the main block near the top of the stairs. Restrooms along the north wall of that area were improved, and interviewing booths were built just west of the stairwell. West of that was the "Hiring Unit," and at the west end of the main block was the "Apprentice School." However, the 1939 plans documented that the Apprentice Division

U.S.A., March 13, 1939; SPAR Museum Collection.

[163] Whittlesey, 164.

[164] New Toilets, Building No. 27, Space C-13, Hill Shops, Springfield Armory U.S.A., September 24, 1942; Cabinet B, Drawer 4, Folder 2, SPAR Museum Collection.

[165] Women's Toilets, Building No. 27, Space C-13, Hill Shops, Springfield Armory U.S.A., September 24, 1942; Cabinet B, Drawer 4, Folder 1, SPAR Museum Collection.

was on the first story, and the museum was on the second story. Another set of plans with handwritten notations supported the 1939 documentation.[166] While those plans do show the "Personnel" on the second story of the main block, they indicated that the Apprentice School was on the first story of the west end of the building, and the museum was on the second story. The historic photographs appear to confirm this arrangement and use of the building.

The plans of the Personnel Division illustrate that the office partitions were constructed with vertical tongue-and-groove-board dados with windows above that and transoms at the top of the wall. The restrooms on the north wall had vertical tongue-and-groove boards from floor to ceiling. The restroom doorways had paneled doors with three horizontal panels below four lights, with a transom above.[167] While the interior partitions were removed, some of the restroom partition elements appear to be extant.

The new Personnel Division included an "Examination Room" in the north wing. Separate plans detailed the layout of the area and the design of the interior partitions (fig. 59). The layout included a waiting room at the south end of the wing, and men's and women's dressing rooms and examination rooms at the north end of the wing, as well as additional restrooms. The interior partitions extended from floor to ceiling and had a row of windows above the door height.[168]

During this same period the stairwell in the main block of Building 27 was enclosed with "kalamein" walls and doors. The 1942 plans of the enclosure show paneled walls and doors in the basement and first story of Building 27.[169] The enclosure on the second story had metal-clad paneled walls with wire-glass windows above a dado. The enclosure doors in the basement, first story, and second story had a single wire-glass light above a panel. The stairwell enclosure remains in place today (see subsequent section "Current Physical Description").

The overall plans of Building 27 dated 1941 with revisions through 1955 depict some interior partitions that appear to date from this period (figs. 53–55). The overall plan was in some cases the only documentation of these interior rooms and partitions, but some of the historic elements are extant and retain their historic integrity (see subsequent section "Current Physical Description").

In the 1941 plan, basement Rooms 001 and 004 have closets, of which the closet in Room 004 is extant (Room 004a). The closet was constructed with brick walls and a metal-clad door. Partitions were erected in the next section of the basement creating a corridor and small rooms along the south wall (Rooms 005–008). The extant partitions are wood framed with wire attached and appear to date from this period. In the southeast corner of the basement, the transformer vault was also added during this period. Plans for the transformer vault were submitted in March 1941, and it was probably constructed soon after.[170] That room had a sunken floor,

[166] Building No. 27, Floors "A"–"D," annotated floor plans, circa 1942; Cabinet B, Drawer 1, SPAR Museum Collection.

[167] Personnel Division, C (second) Floor, Building No. 27, Hill Shops, Springfield Armory U.S.A., September 24, 1942; Cabinet B, Drawer 4, Folder 2, SPAR Museum Collection.

[168] Alterations to Spaces C-101 and C-115 for Physical Examinations, Building No. 27, Hill Shops, Springfield Armory U.S.A., July 10, 1942; Cabinet B, Drawer 4, Folder 2, SPAR Museum Collection.

[169] Kalamein Enclosures for Stairwell Building No. 27, Hill Shops, Springfield Armory U.S.A., November 13, 1942; Cabinet B, Drawer 4, Folder 1, SPAR Museum Collection.

[170] Transformer Vault Bldg. 27 A-73, Armory Square Hill Shops, Springfield Armory, U.S.A., March 14, 1941; SPAR Museum Collection.

brick walls, and fireproof ceiling panels, as well as metal-clad "kalamein" double doors. At the north end of the northeast block were two partitioned rooms. One partition is extant, and there is evidence of the other partition as well as interior elements from this period. A restroom shown in the southwest corner of the west ell is extant, and has tongue-and-groove board walls that are similar to those of other restrooms installed in the 1940s.

The upper stories had some smaller partitioned rooms, as well as some larger open rooms. There were rooms related to the Personnel Division, new restrooms, and offices, as well as dividing walls in the main block and northeast block.

Historic photographs from the WWII period depict some of the changes previously described and document the exterior and interior elements at the time. The photographs of the exterior depict Building 27 in similar condition to the current building (figs. 63–67). The view of the west end of the building is similar to the earlier images, and the only significant change was the removal of the chimney. The photograph of the west elevation of the northeast block depicts the roof dormer for the elevator, the Exhaust Fan Room, and the steel tower for the dust collection system, as well as the new loading dock (fig. 65). Similarly the other photographs of the rear of the building show the additions from that period.

The historic photograph of the rear of the building looking southwest includes the one-story "Sand Blast Room" addition to the west side of the northwest wing (fig. 66). Later the room became the Print Shop, but when it assumed that function was not evident. A 1919 plan lists the west ell on the northeast block as the Printing Room, but by the 1940s the printing operation had moved to the former Sand Blast Room. An interior photograph shows the printing presses and the masonry walls, tall windows, and wooden floors (fig. 67). A later photograph of the exterior illustrates that of the structure was in keeping with the rest of the building (fig. 68).

Among the items documented by the 1938–1942 Historical Record was the demolition of part of the building. The record indicates that "2.75% [was] demolished" between 1931 and 1938, which was captured as a slight decrease in the value of the building. Review of the historic plans and photographs suggests that the proofing rooms off the north elevation of the main block and the addition to the east side of the Boiler Room were removed during that time. Those additions do not appear on the 1939–1942 plans of the building and are not in the 1944 historic photographs. Probably by that time most of the proofing of arms was performed in the Experimental Building and the adjacent range.

The additions to Building 27 during WWII included some important alterations to the exterior and interior of the building, as well as changes in use. However, historic plan and photographs document that the overall layout of the building and the exterior appearance were not significantly changed since the nineteenth century. The building at the end of WWII was very similar to the existing structure, with the exception of some minor alterations and the demolition of the west end.

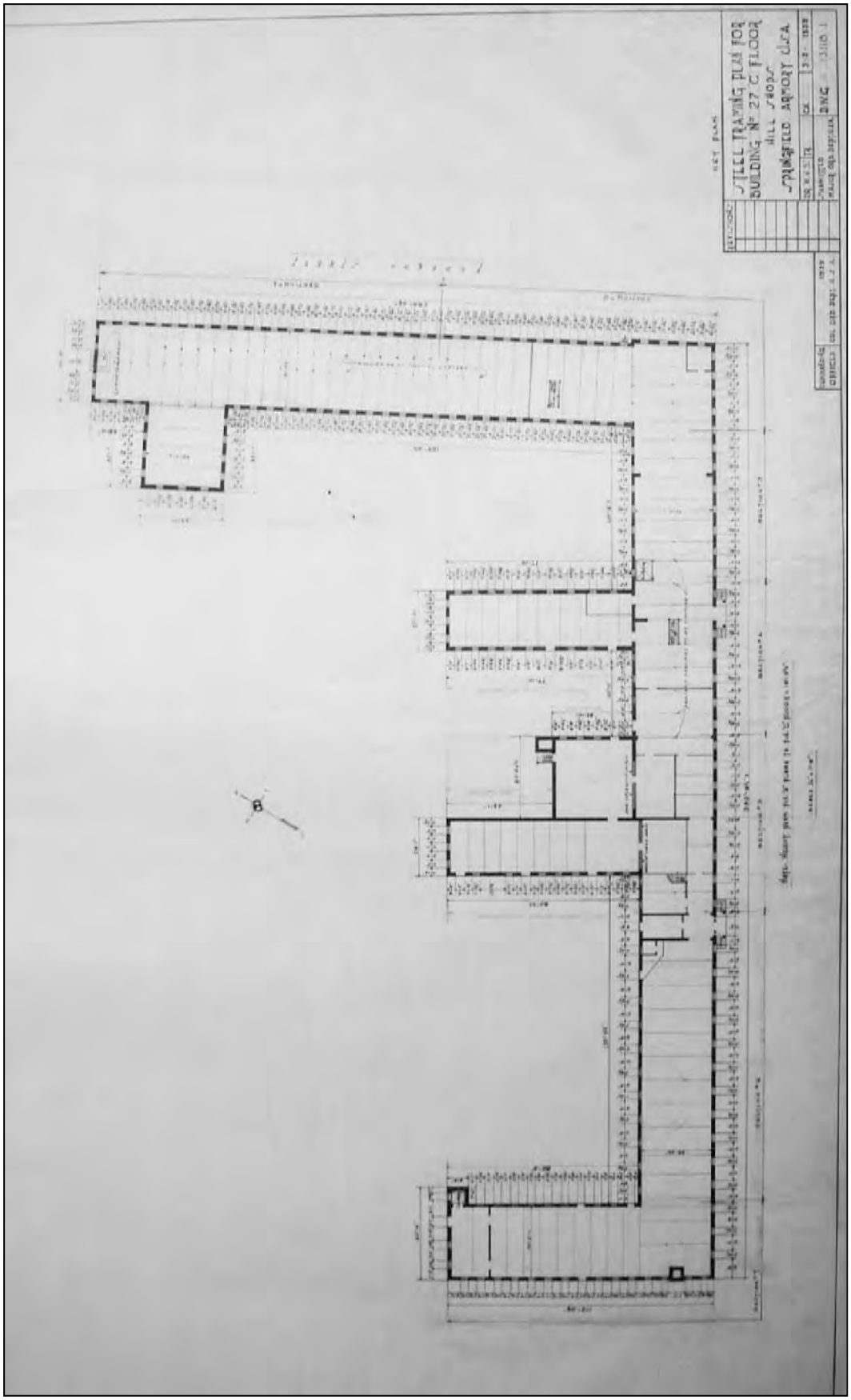


Figure 45. Steel Framing Plan for Building No. 27, "C" Floor, Hill Shops, Springfield Armory, U.S.A., March 8, 1939; not to scale. The framing shown was installed at the ceiling level of the first story to support the second story ("C" floor).

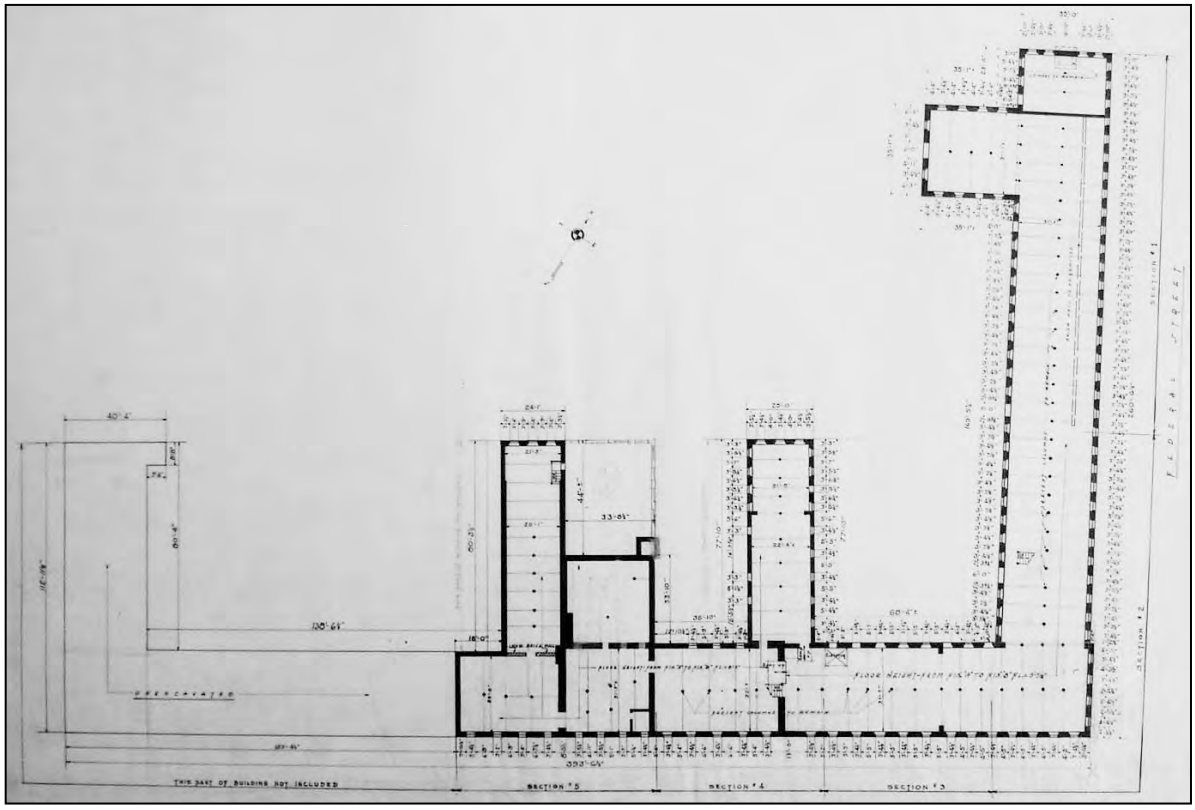


Figure 46. Steel Framing Plan for Building No. 27, "B" Floor, Hill Shops, Springfield Armory, U.S.A., March 8, 1939; not to scale. Framing at the ceiling level of the basement.

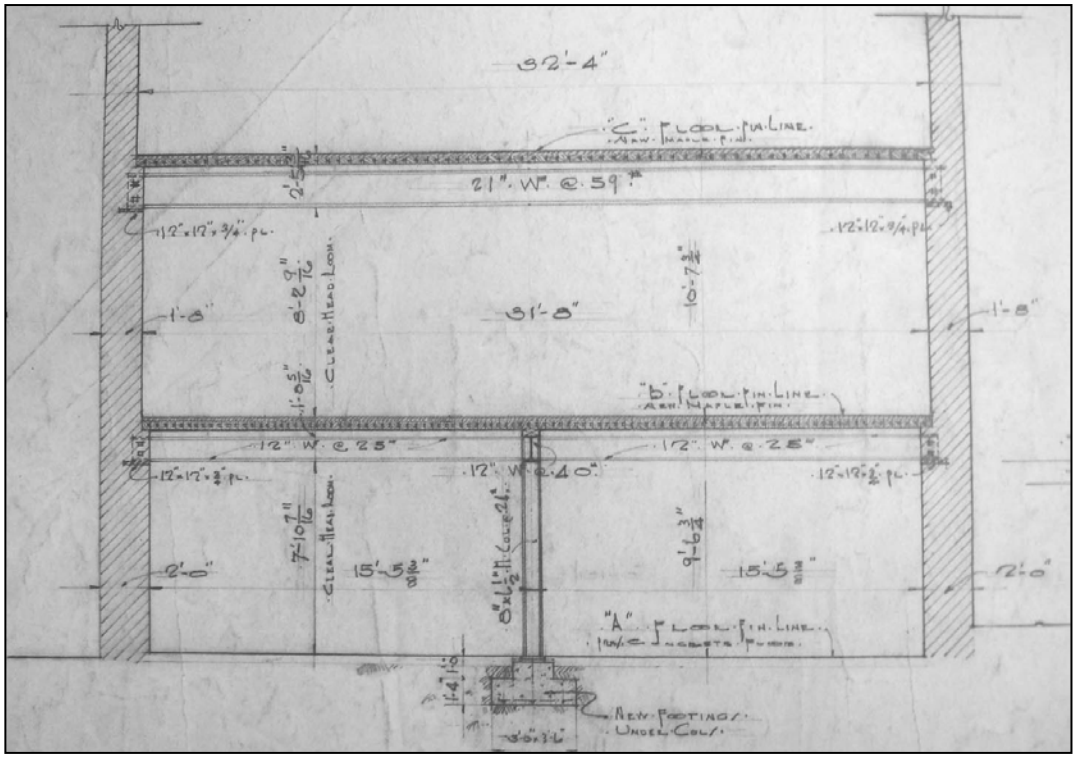


Figure 47. Steel Framing Plan for East Wing of Building 27, "B" Floor, Hill Shops, Springfield Armory, U.S.A., September 6, 1940; plan detail, not to scale.

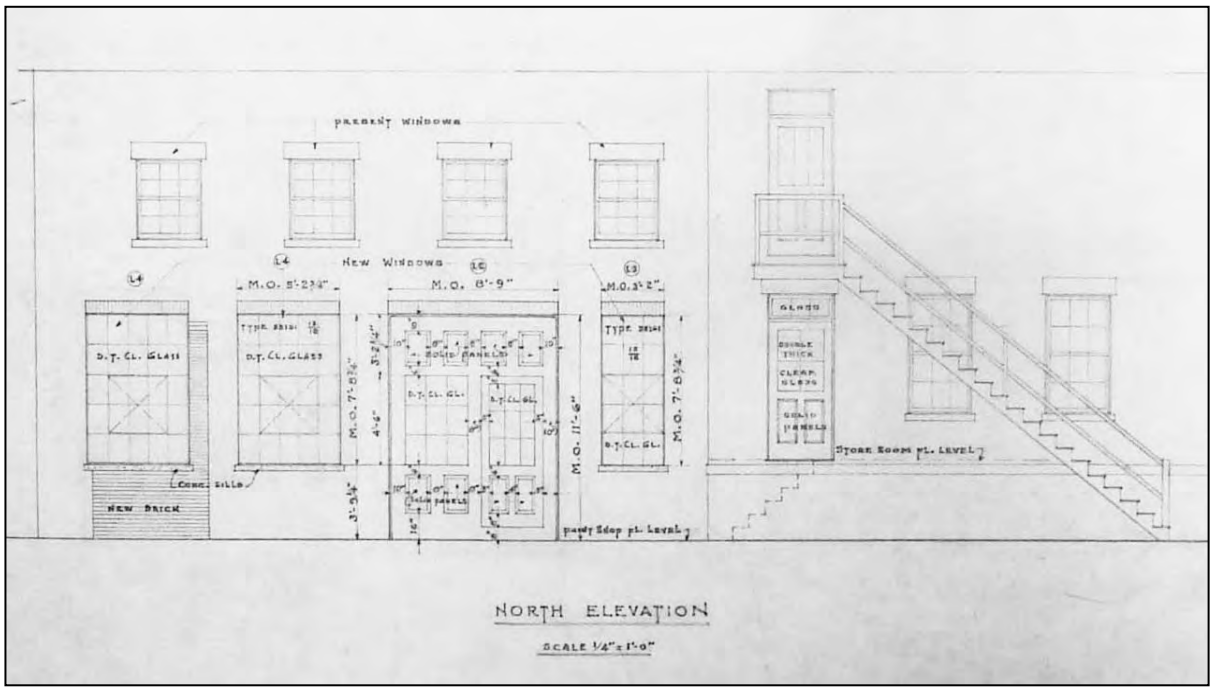


Figure 48. Alterations to Spaces B-167–B-168 for Paint Shop and Paint Storage, Building 27, Hill Shops, Springfield Armory U.S.A., February 5, 1940; not to scale.

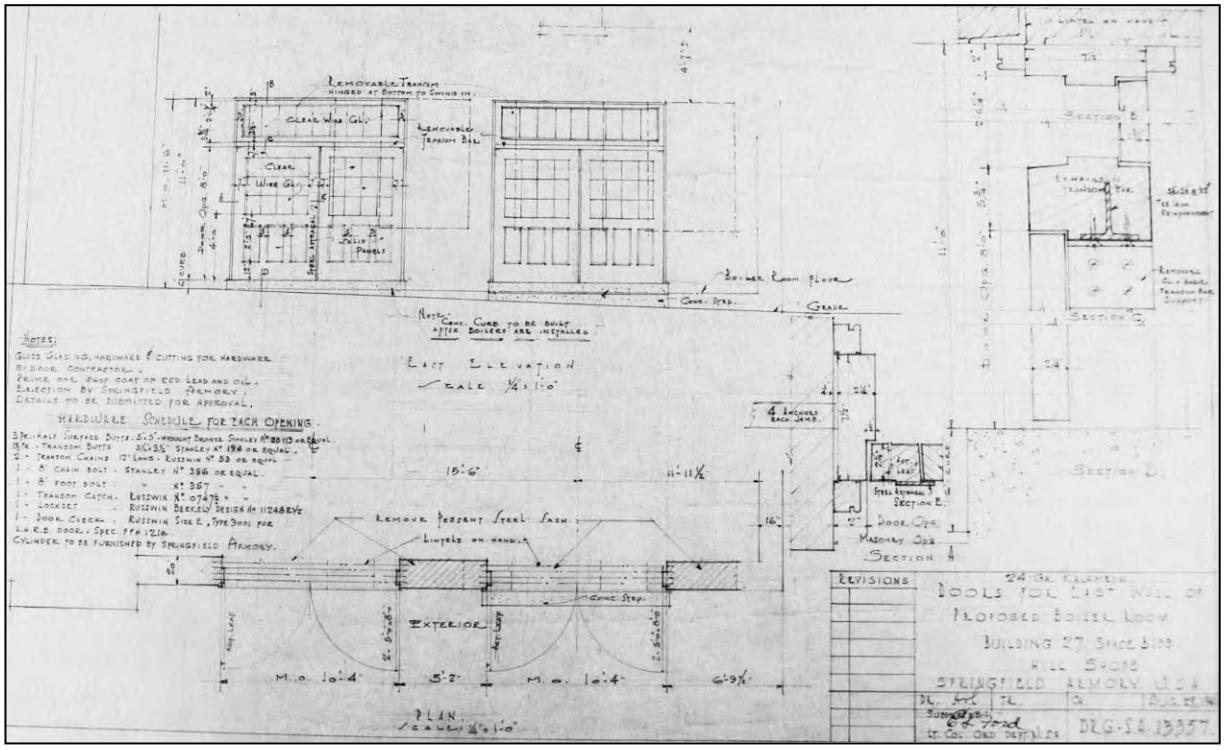


Figure 49. 24 Ga. Kalamein Doors for East Wall of Proposed Boiler Room, Building 27, Space B-133, Hill Shops, Springfield Armory, U.S.A., August 23, 1941; not to scale.

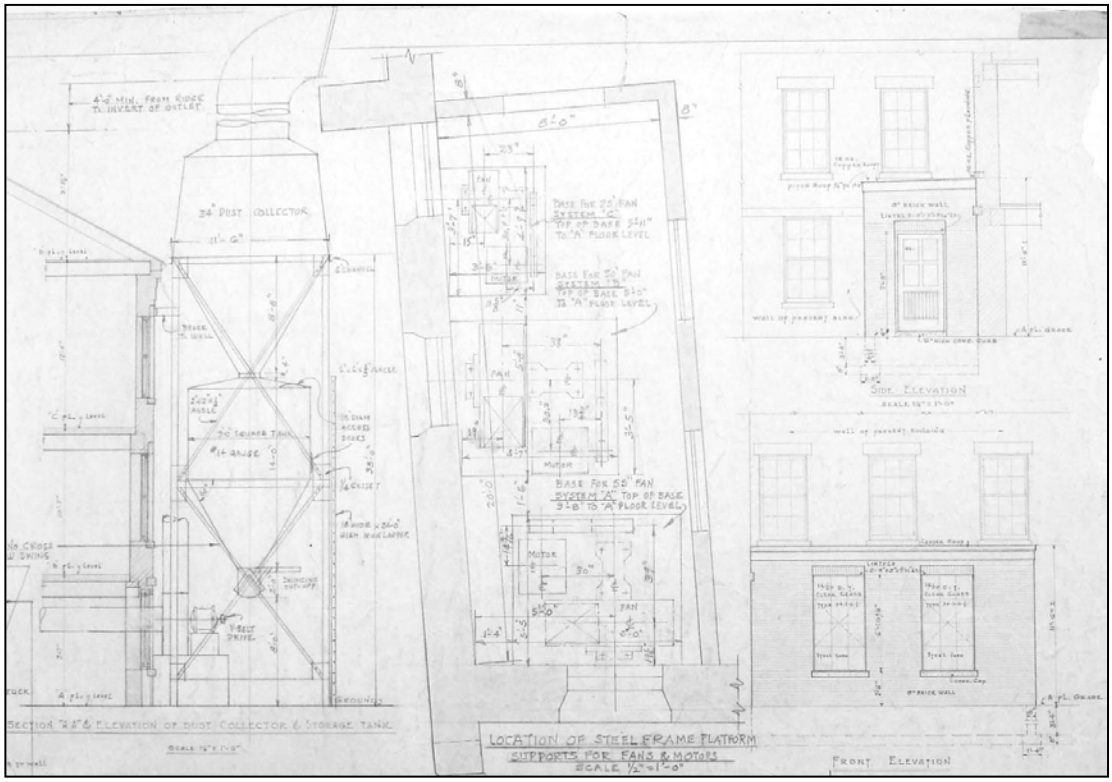


Figure 50. Dust Collecting System Carpenter Shop Spaces 27-A-7 and B-51, Hill Shops, Springfield Armory U.S.A., July 9, 1940; plan detail, not to scale.

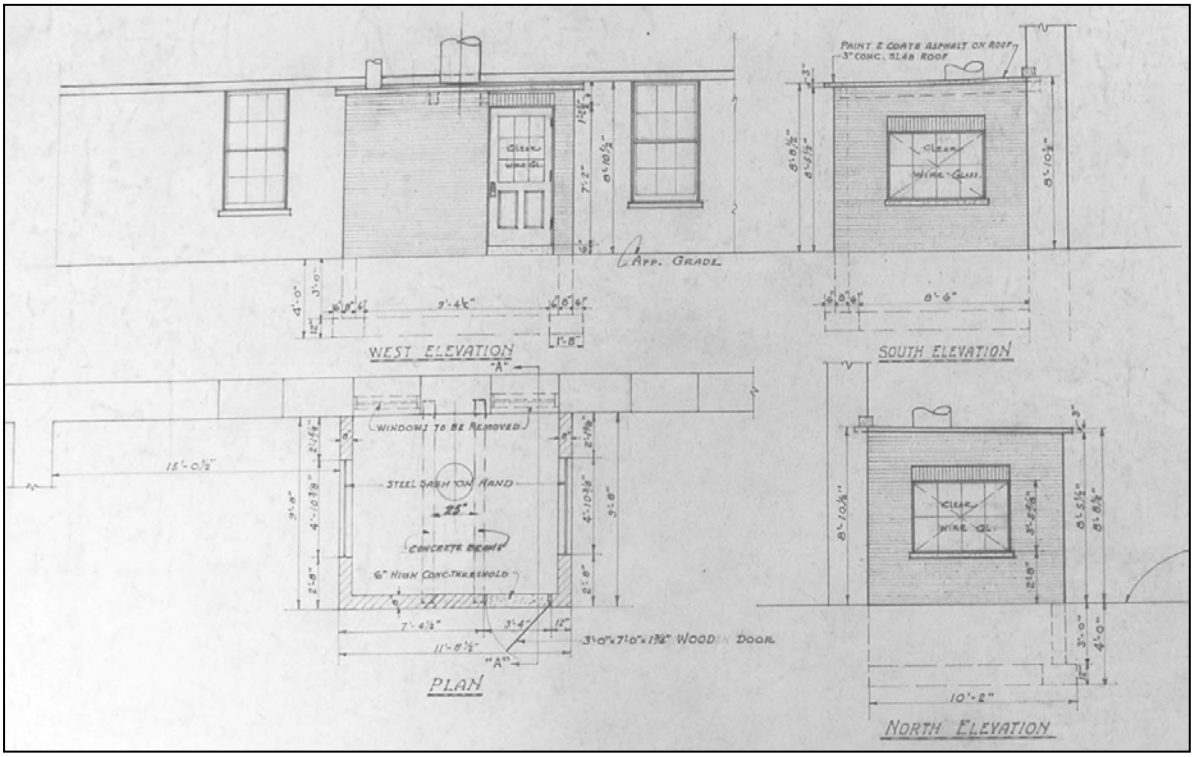


Figure 51. Building for Exhaust Fan, West of Building No. 27, Hill Shops, Springfield Armory U.S.A., April 10, 1942; plan detail, not to scale.

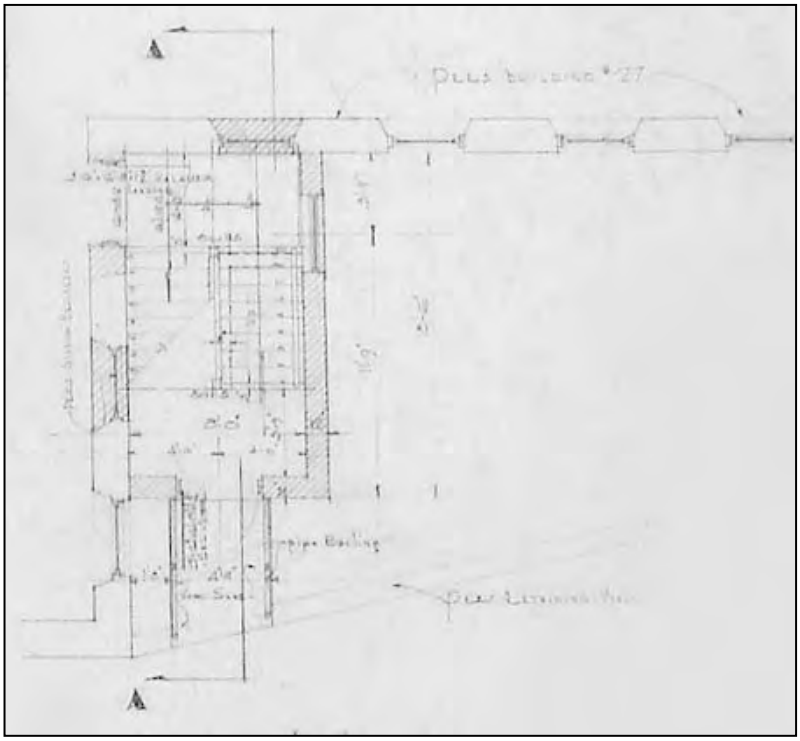


Figure 52a. New Stair Tower, Northwest Corner of East Wing, Building #27, Hill Shops, Springfield Armory U.S.A., March 18, 1942; plan detail, not to scale.

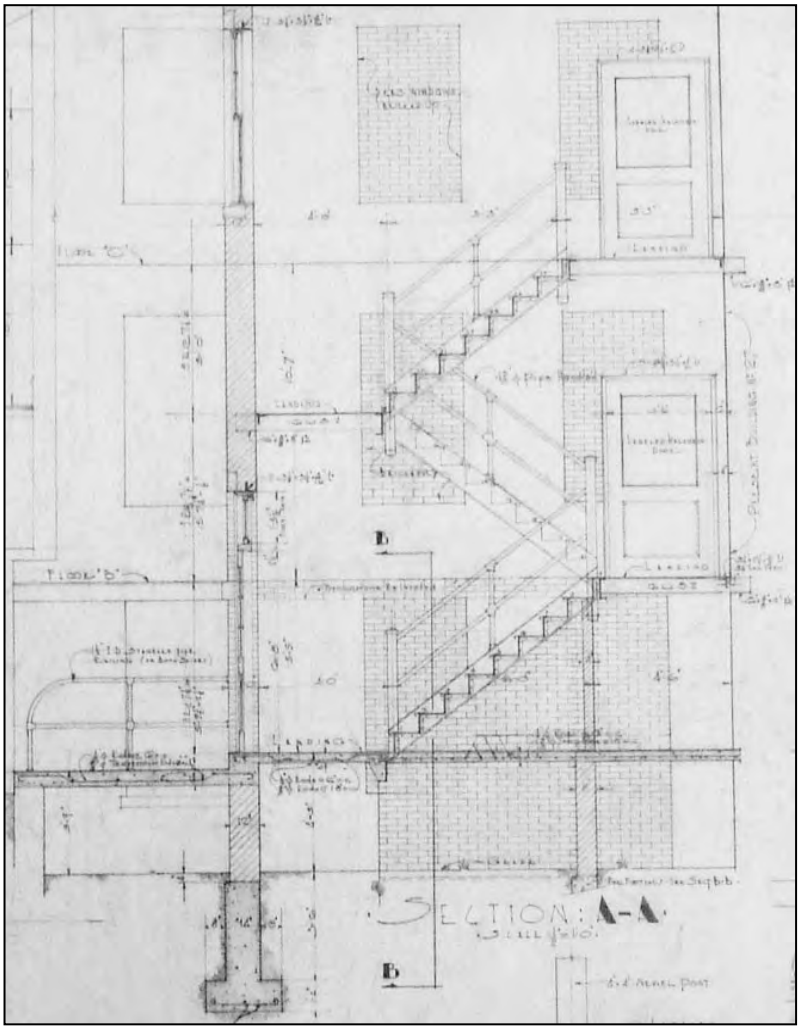


Figure 52b. New Stair Tower, Northwest Corner of East Wing, Building #27, Hill Shops, Springfield Armory U.S.A., March 18, 1942; section detail, not to scale.

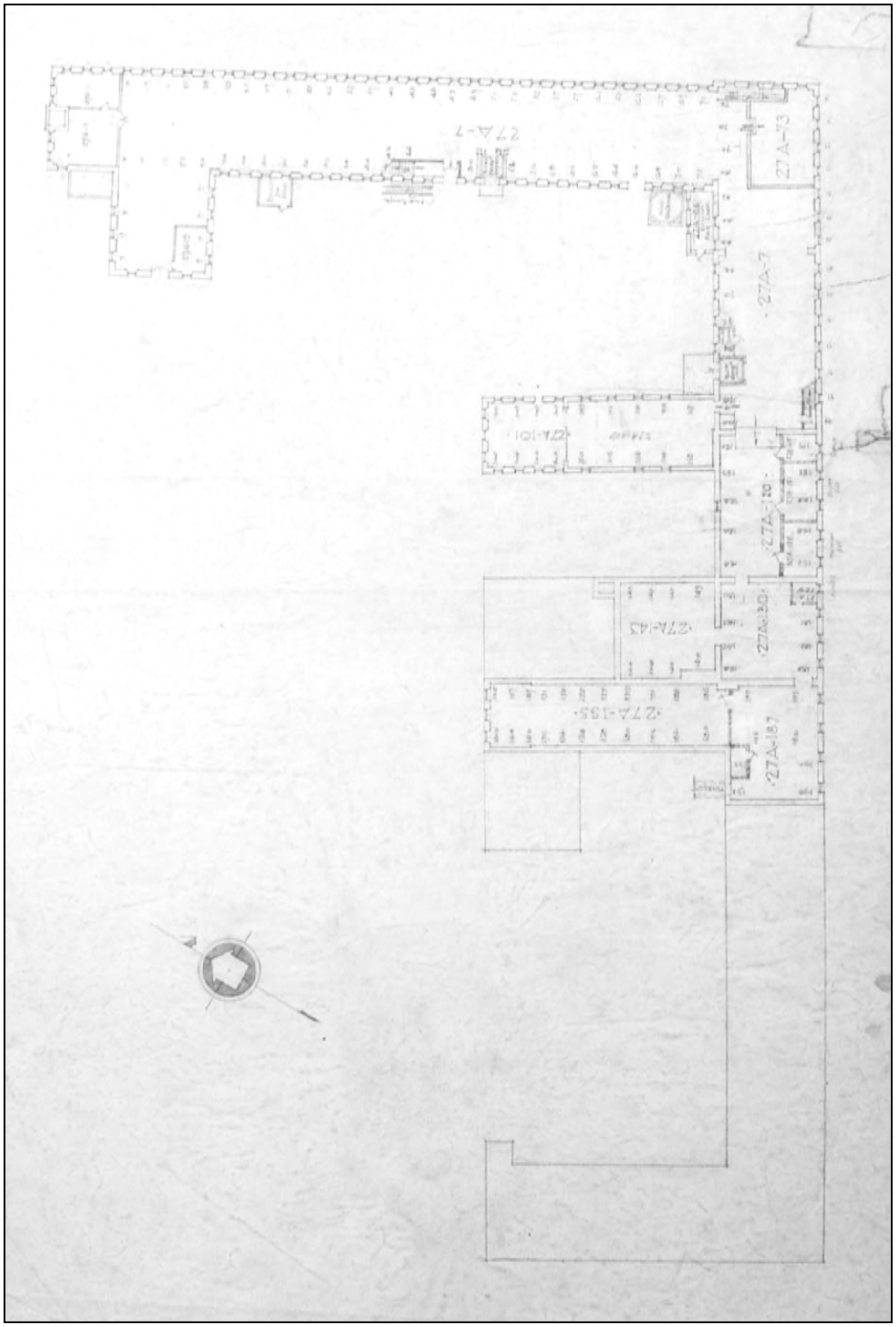


Figure 53. Building No. 27, Floor "A," Basement Floor Plan, March 1, 1941 with revisions through 1955; not to scale.

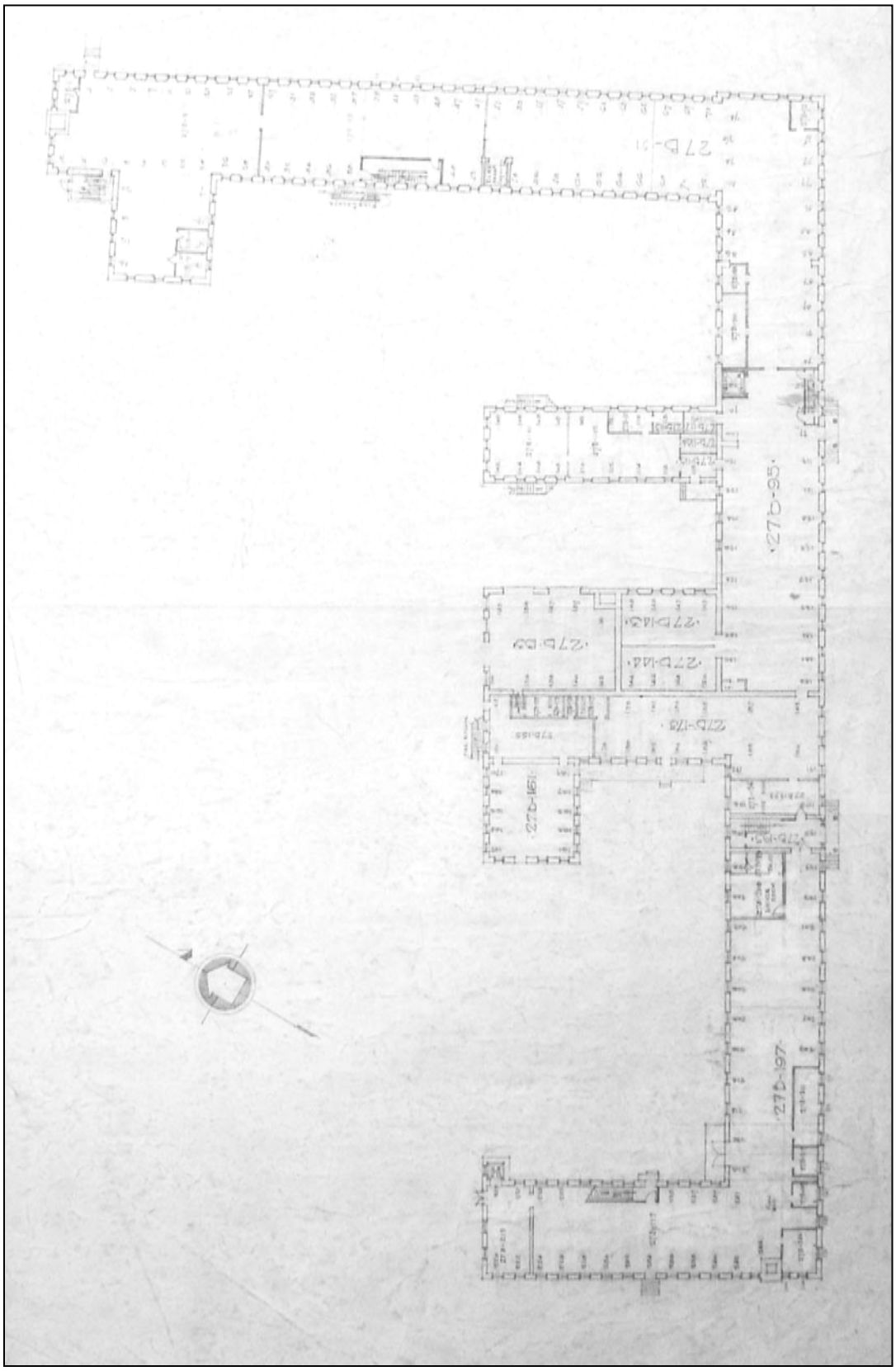


Figure 54. Building No. 27, Floor "B," Second Floor Plan, March 1, 1941 with revisions through 1955; not to scale. Note that Floor "B" was the first story above the basement (Floor "A") and is currently referred to as the first story.

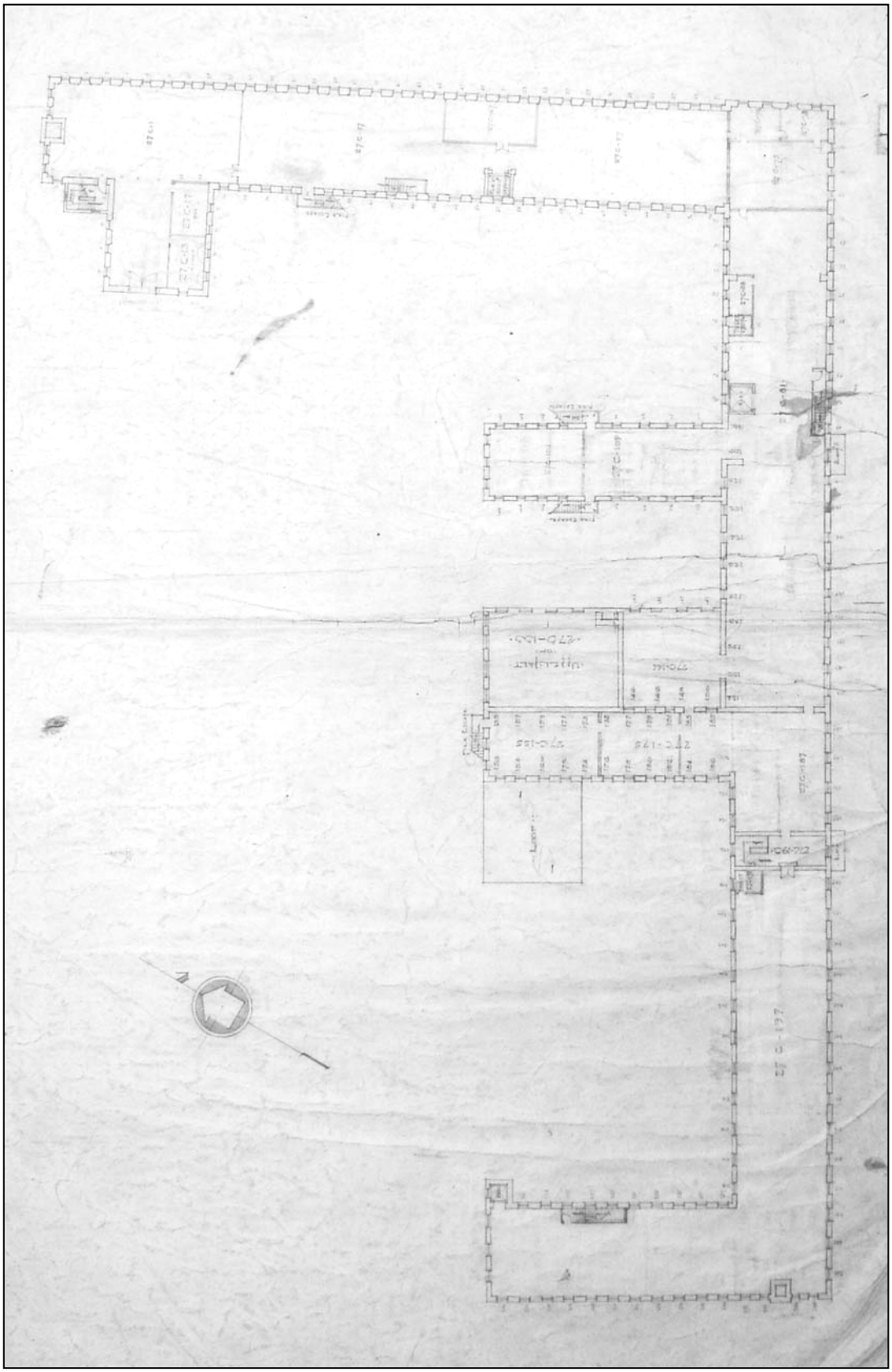


Figure 55. Building No. 27, Floor "C," Third Floor Plan, March 1, 1941 with revisions through 1955; not to scale. Note that Floor "C" was the second story above the basement (Floor "A") and is currently referred to as the second story.

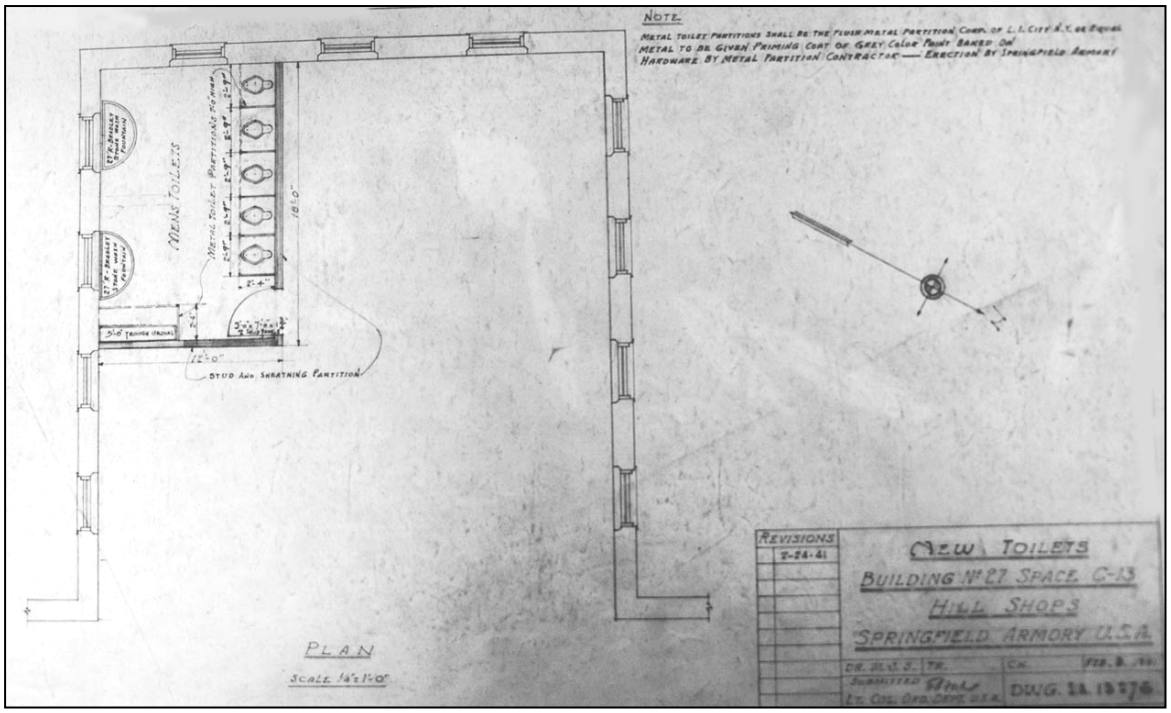


Figure 56. New Toilets, Building No. 27, Space C-13, Hill Shops, Springfield Armory U.S.A., September 24, 1942. Restrooms added to the second story of the west ell.

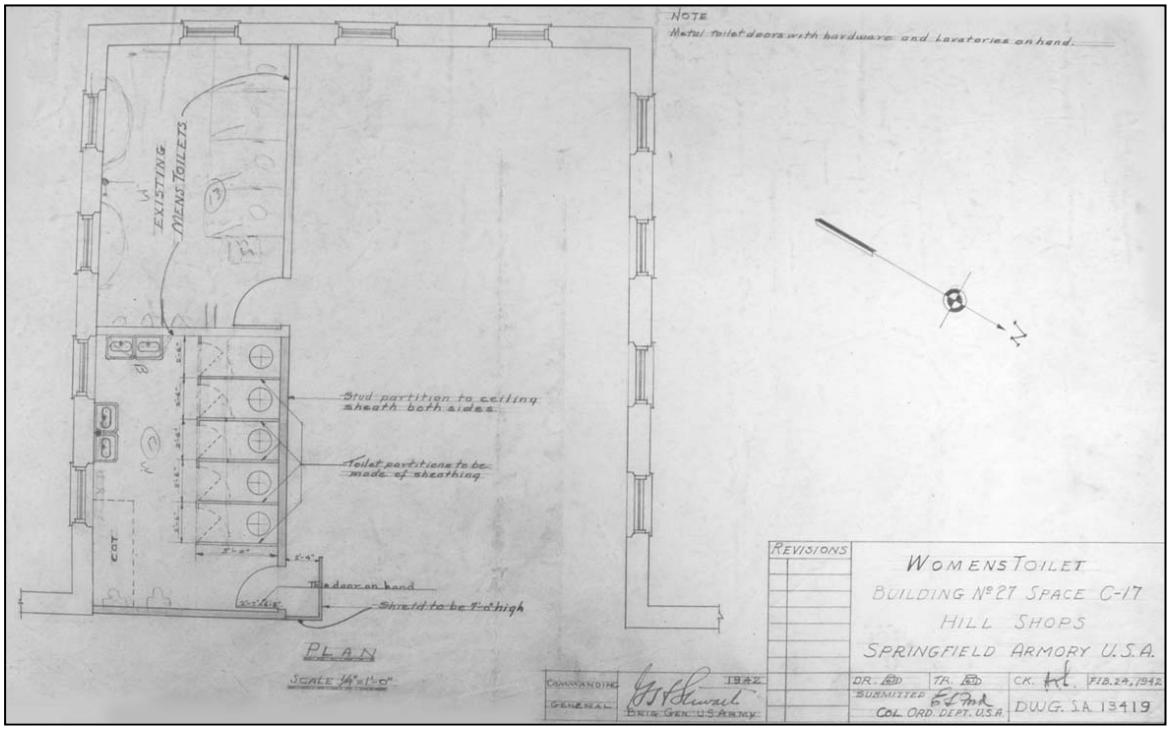


Figure 57. Women's Toilets, Building No. 27, Space C-13, Hill Shops, Springfield Armory U.S.A., September 24, 1942.

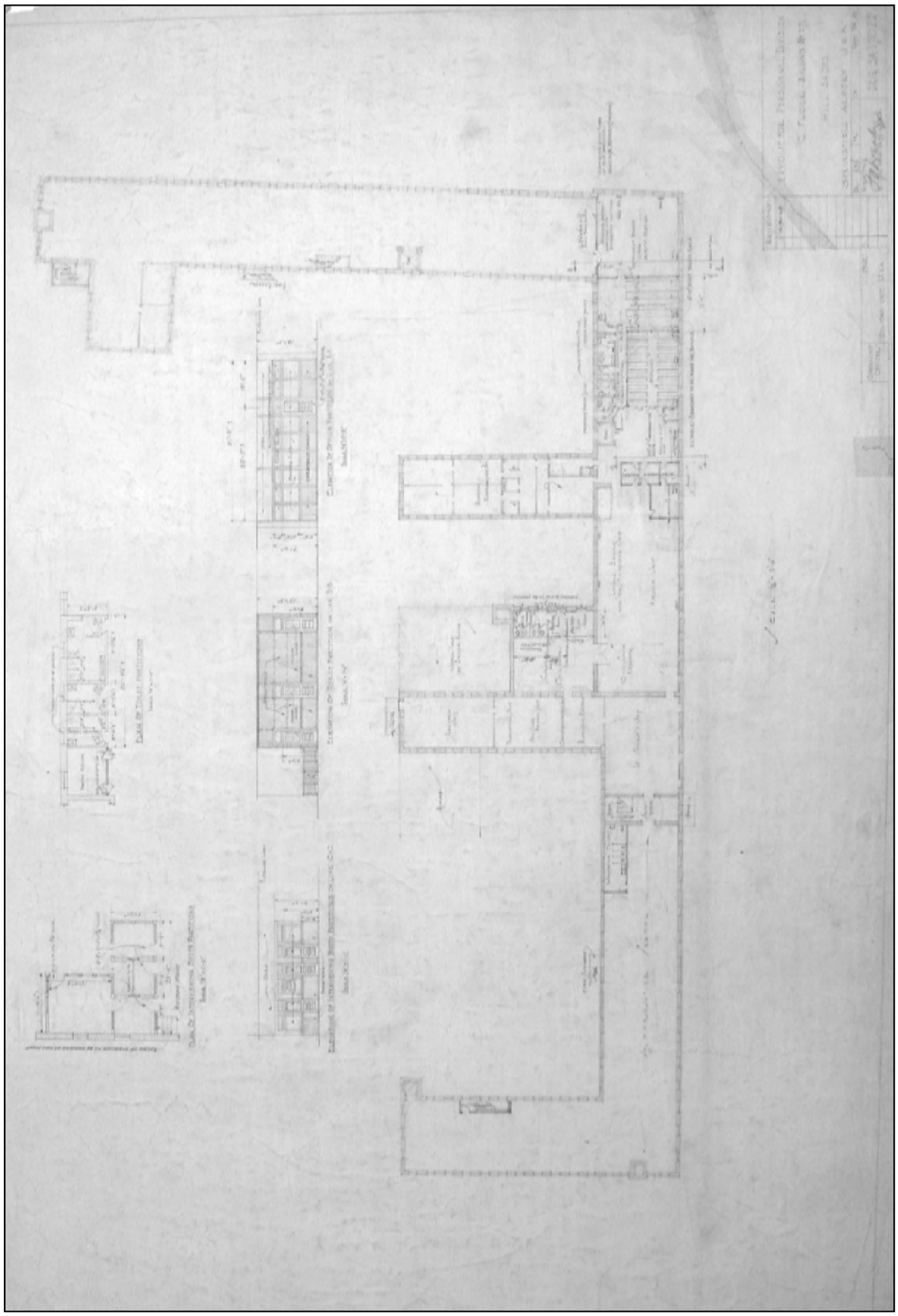


Figure 58. Personnel Division, C (second) Floor, Building No. 27, Hill Shops, Springfield Armory U.S.A., September 24, 1942; not to scale.

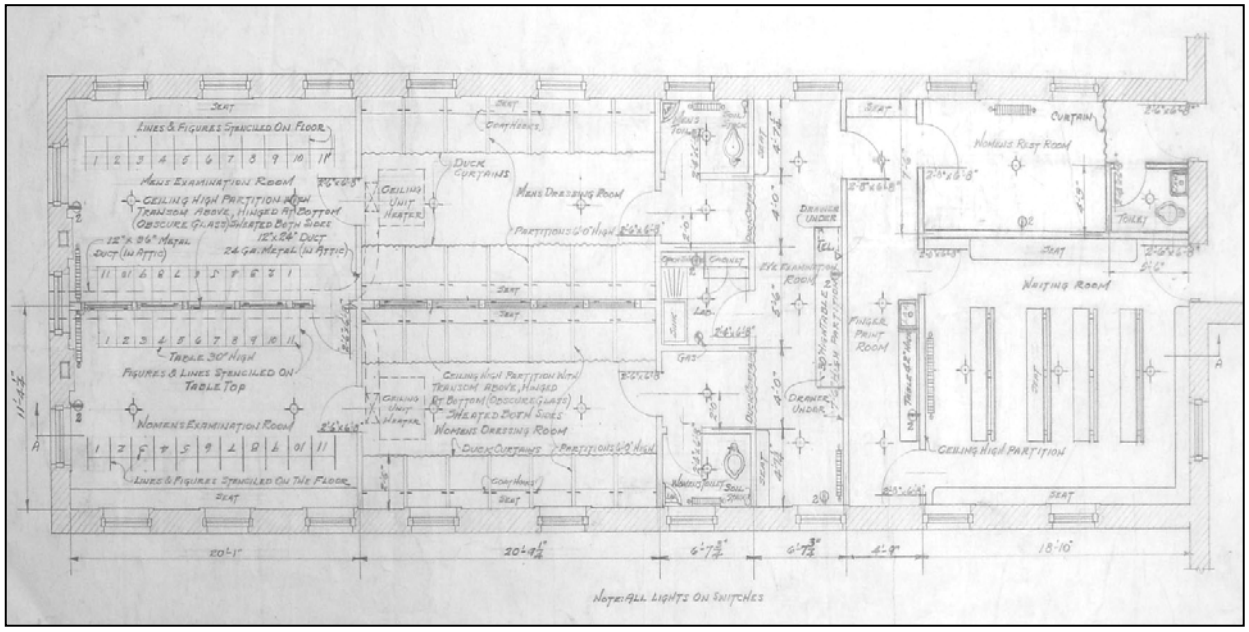


Figure 59. Alterations to Spaces C-101 and C-115 for Physical Examinations, Building No. 27, Hill Shops, Springfield Armory U.S.A., July 10, 1942; plan detail, not to scale.

Figure 60. Building 27, Apprentice School, west wing, June 14, 1945.

Figure 61. Building 27, museum room, rifle racks, June 1, 1948.

Figure 62. Building 27, museum room, exhibit of old pistols, June 1, 1948.

Figure 63. Building 27, main block and west wing, south and west elevations, looking northeast, November 12, 1944.

Figure 64. Building 27, northeast block, east and north elevations, looking southwest, June 4, 1945.

Figure 65. Building 27, northeast block and west ell, west elevations, looking southeast, November 12, 1944.

Figure 66. Building 27, main block and north wings, north elevations, looking southwest, November 12, 1944; note Print Shop attached to northwest wing.

Figure 67. Building 27, Print Shop attached to west elevation of northwest wing.

Figure 68. Building 27, interior of Print Shop, December 18, 1942.

Alterations Post–World War II through Deactivation

After WWII as the work at the Springfield Armory shifted to technology and scientific research, Building 27 was maintained to support the activities at the Armory. Documentation suggests that the use of the building changed to plant facilities support, research and design, and that the building retained the Small Arms Museum. Historic photographs and plans documented maintenance of the building, and some of the exterior and interior alterations. However, the overall exterior appearance of the building was relatively unchanged during this period.

A set of double doors was installed in the west elevation of the west ell in 1951. A drawing of the new doorway indicated that two existing windows would be removed and the doorway would be installed in that area. The doorway had a steel sill and lintel and two hinged doors (fig. 69). Each door had eight wire-glass lights over a single panel with diagonal tongue-and-groove boards. The doors were held with large strap hinges mounted on the interior of the doorway and secured with spring bolts. There were two metal pipe rails across the doorway for safety.

The Small Arms Museum that had been on the second story at the west end of the building was moved to the first story of the northeast block (fig. 70). In 1956 a new entrance and doorway were constructed at the north end of the building for the museum. The entrance included a concrete bridge and steps with pipe railings (figs. 71 and 72). The doorway was in a former window opening and had a paneled door with nine lights above two horizontal panels with a three-light transom above. A hood supported by two brackets was built over the doorway, and a sign for the museum hung over the doorway. At this same time a new pedestrian gate was added to the iron fence near the museum entrance.

A plan of the Armory that included revisions from 1904 to 1957 documented the use of Building 27 in the 1950s (fig. 18). The plan legend appears to list the functions of the building as of September 17, 1957. At the time the use of Building 27 was listed as follows:

> Floor A (basement) – Storage; Plant Property and Equipment; Transformer Vault; Wood Box Shop.
> Floor B (first story) – Tin Shop; Carpenter Shop; Plumbing Shop; Electrical Shop; Boiler Room; Museum; Plant Facilities Office.
> Floor C (second story) – Apprentice School; R & D.[171]

The list indicates that Building 27 was used to support the operation of the Armory plant. Certainly the description of the shops on basement and first story suggests that much of Building 27 was used for plant maintenance.

As previously discussed, the 1940s documentation suggested that the Apprentice School was located on the first story at that time, but the plan legend suggests that it was moved to the second story in the 1950s. This may have coincided with moving the Small Arms Museum to the first story of the northeast block. A photograph of the museum in that location depicts the interior of the northeast block with the organ gun rack in the northwest corner of the room (fig. 70).

The Research and Design (R&D) Department was probably established in the building in the 1950s. Two historic photographs depict the "Weapons Development Branch, Light-weight Rifle Section," which was apparently part of the R&D Department in the 1950s (figs. 73 and

[171] Springfield Armory Hill Shops, Showing Buildings, Grounds, Roads, Sidewalks, Fences, May 2, 1904 with revisions through September 17, 1957; Cabinet B, Drawer 4, Folder 2, SPAR Museum Collection.

74). The photographs record that this section of the R&D Department was on the second floor of the main block near the stairwell, in an area that had been part of the Personnel Division in the 1940s. The historic photographs depict an open floor plan, the stairwell enclosure, and the ceiling with exposed framing near the stairwell (fig. 73) and wooden plank ceiling west of that (fig. 74).

An aerial photograph of the Hill Shops taken in 1958 indicated that the exterior of the building had few changes since the 1940s (fig. 75).

Plans of Building 27 drawn in 1962 for a new heating and ventilation system illustrate that basement partitions were unchanged since the 1940s. On the first story there appear to be some additional partitions in the main block, while the second story retained a mostly open plan. The new heating system was probably installed in 1962. Other than that, the plans suggest that there were minimal changes to the interior since the 1940s.

When the Springfield Armory was deactivated in 1968 an aerial view looking east shows that the exterior of Building 27 had not been altered from the historic appearance (fig. 76). At that time the building retained the west end and the Print Shop, which were later removed. Otherwise the view of Building 27 when the Armory was deactivated was very similar to the existing structure.

Alterations by Springfield Technical Community College

Upon the deactivation of the Springfield Armory Building 27 was among the buildings and grounds that were transferred to the Commonwealth of Massachusetts and operated by Springfield Technical Community College (STCC). The most significant alteration to the building since the Armory closed was the demolition of the west end and the Print Shop, as well as the adjacent buildings. These sections of the building were removed in 1973 to provide room for the construction of the Physical Science Building known as the Putnam Building. Though this did impact the historic structure, the remaining building was still an expansive structure reminiscent of the Hill Shops.

The college has maintained the building in good condition with minor exterior alterations, all of which are described in the subsequent section "Current Physical Description." Some of the exterior doors have been replaced, the windows have been replaced, and some of the roofs have been repaired and/or replaced. In addition, ADA-compliant concrete ramps were added to the south and north entrances of the building, and a roof structure was constructed over the north ramp. The more recent alterations have been done with sensitivity to the historic building materials and with appropriate review by state and NPS staff.

The interior of the building has been altered by STCC for numerous uses. The basement houses the electrician's shop, carpentry shop, mail room, and storage. The college currently uses the upper stories for student services, staff offices, and the college library.

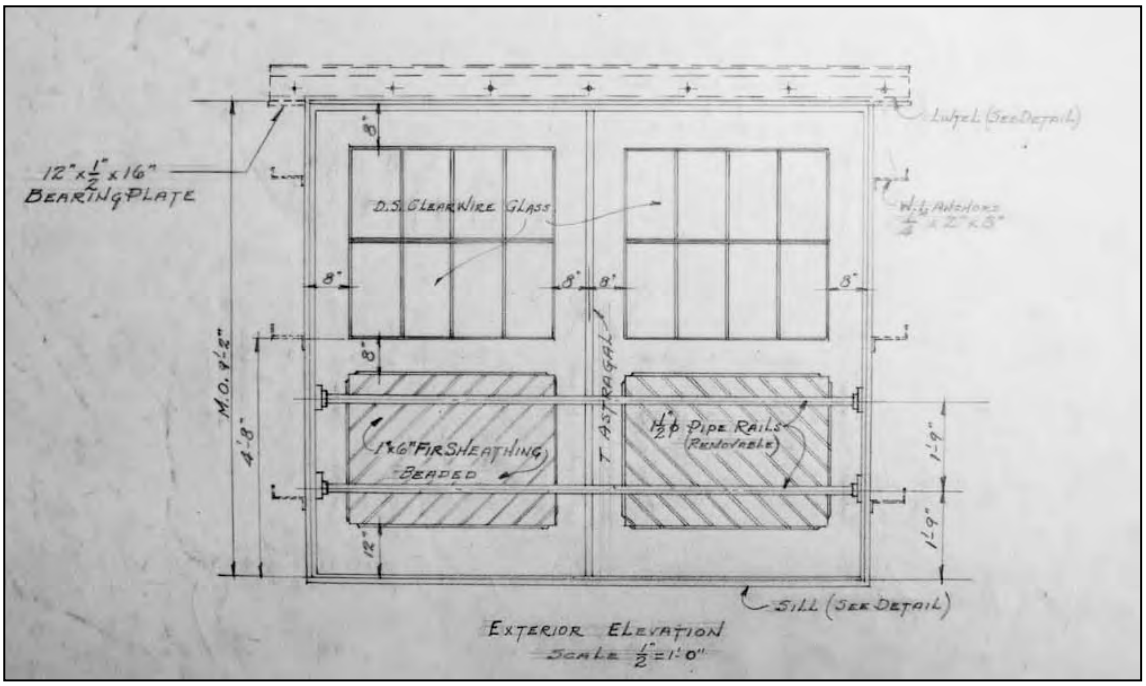


Figure 69. Installation of Machine Door at north end of Building No. 27 "C" floor, Hill Shops, Springfield Armory U.S.A., June 15, 1951.

Figure 70. Benton Small Arms Display, Building 27, Springfield Armory, June 23, 1960.

Figure 71. Building 27, east elevation of northeast block, museum entrance and new gate, 1956.

Figure 72. Building 27, east elevation of northeast block, museum entrance concrete bridge and steps, 1956.

Figure 73. Weapons Development Branch, Light-weight Rifle Division, Building 27, 1958. Second story looking east near stairwell (on right).

Figure 74. Weapons Development Branch Conference, Building 27, 1959. Second story main block looking east with stairwell in background (on right).

Figure 75. Aerial photograph of Springfield Armory Hill Shops looking west, 1958.

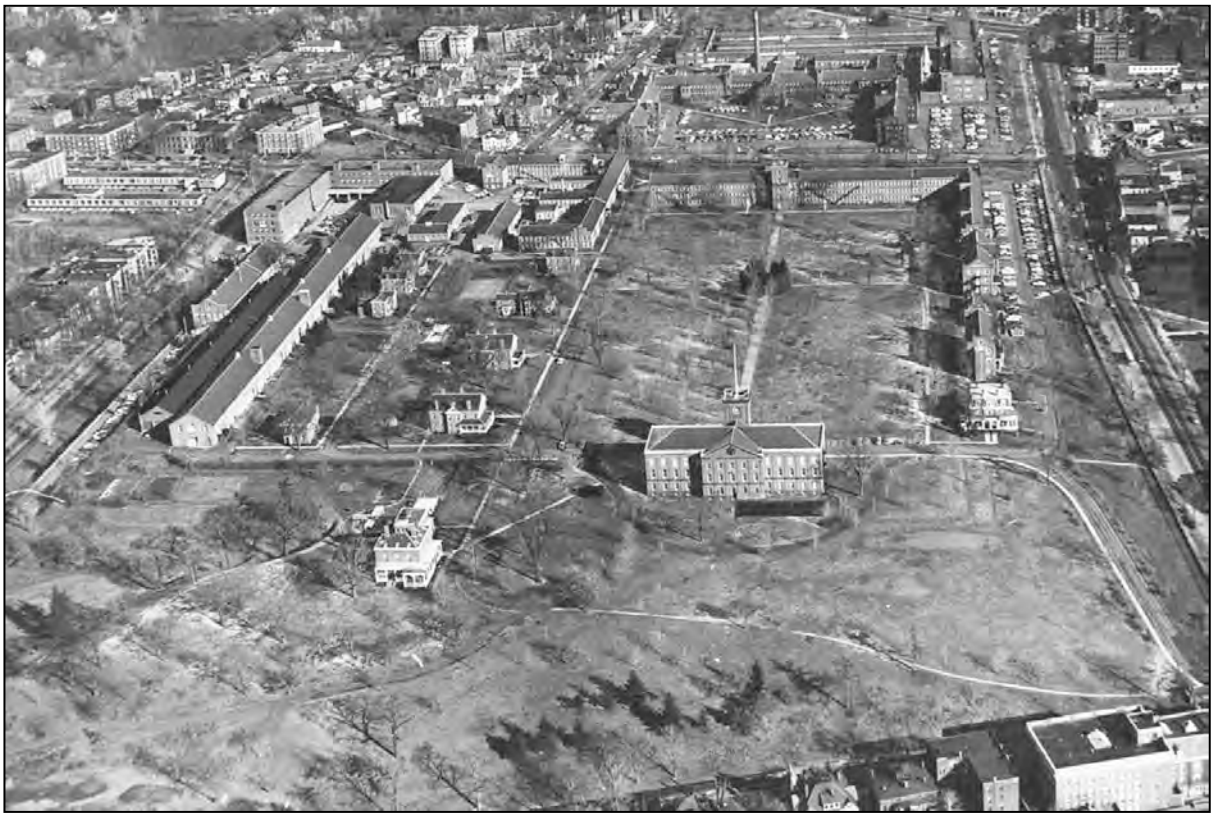


Figure 76. Aerial photograph of Springfield Armory Hill Shops looking east, 1968.

CURRENT PHYSICAL DESCRIPTION

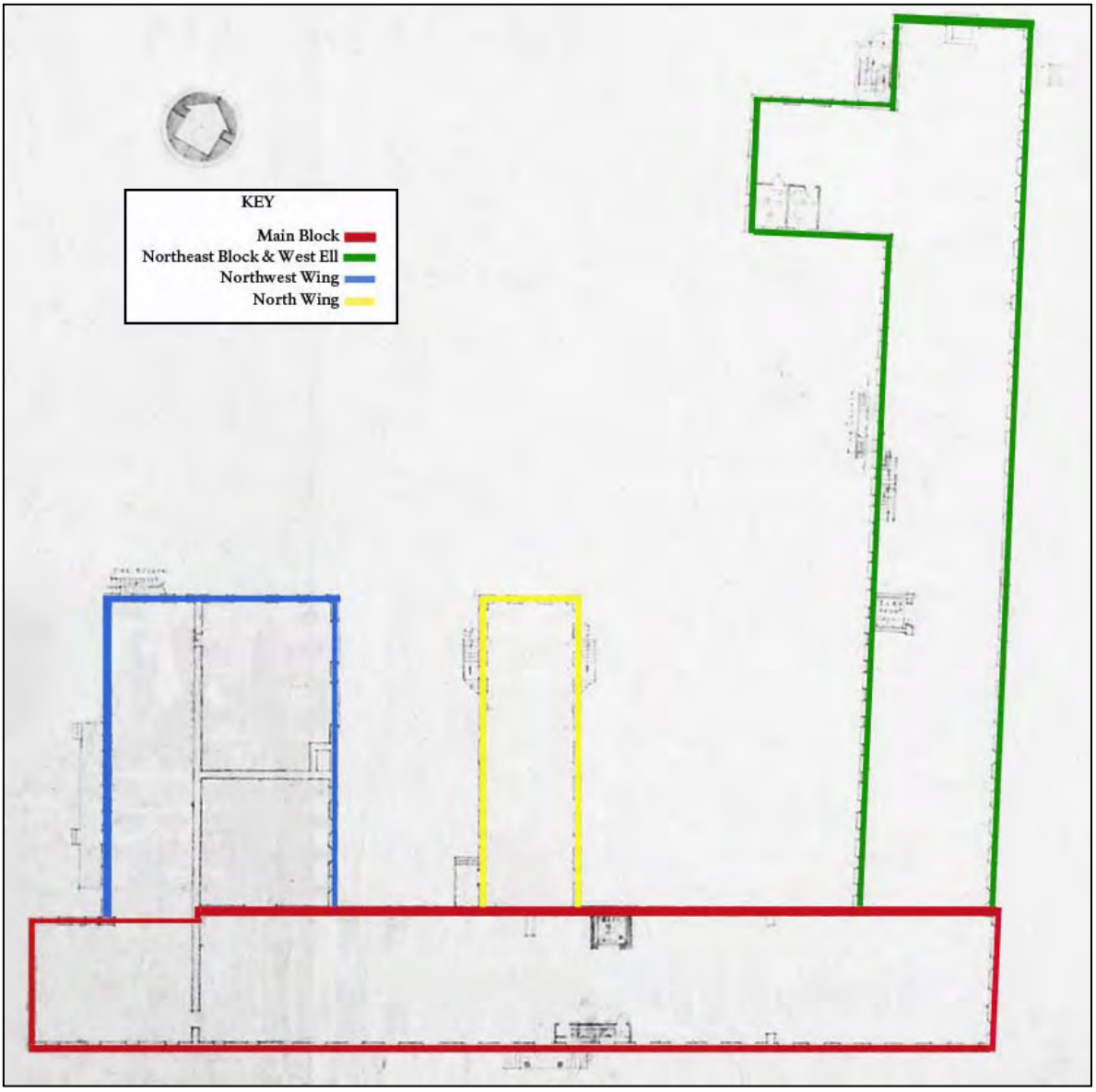


Figure 77. Plan of Building 27 with color coding representing sections of the building.

Introduction

The exterior and interior of Building 27 retain historic elements that help convey its historic appearance and preserve the historic integrity of the structure. The current physical description will describe the existing structure and the extant historic elements.

The following description of the building's current physical elements and appearance uses certain designations for sections of the Building 27 that were developed for this report and are illustrated in figure 77.

The main block running east–west is characterized by an expansive south elevation and additions to the north (figs. 78 and 79). There are two wings on the north side of the main block, the northwest wing and the north wing, constructed as the building expanded. At the east end of the main block, the northeast block extends north at a slight angle. There is also an ell on the west side of the northeast block. In addition there are two single-story brick structures on the west side of the northeast block.

Floor plans of the building with numbers assigned for the exterior doorways and interior rooms were created for this report (figs. 105, 106, and 107). These numbers will be used throughout this section to identify elements of the building.

The following descriptions also include some architectural terms, some of which are defined and illustrated in the glossary.

Exterior Elements

Main Block

Design

The main block of Building 27 extends east–west, measuring approximately 240 feet long by 35 feet wide, except at the west end, which is about 33 feet wide. The extensive south façade of the main block consists of sections that were constructed at different times (fig. 78). The masonry exterior is brick with brownstone trim and a slate roof. Similar materials and construction techniques were used in an effort to create a cohesive elevation. Some differences among the various sections are discernible on the exterior and are also apparent in the interior. The west end of the main block was truncated when portions of Building 27 were demolished in 1973 for the construction of Putnam Hall for STCC.

Foundation

The exposed foundation on the main block is primarily dressed-ashlar brownstone. At the grade change near the east end of the south elevation, a section of the foundation has exposed brick buttresses below the brownstone (fig. 80). East of that section the foundation is all brownstone blocks that are lighter in color than the other sections. A section of the north elevation foundation is above grade with brick walls. On the west elevation where the building was altered the foundation is brick with no water table. A brownstone water table extends the length of the south elevation and the exposed sections of the north elevation. A similar water table wraps around most of Building 27 and is typically dressed brownstone that is seven-inches wide with a slight bevel.

Walls

The exterior walls of Building 27 are generally brick with brownstone trim. The main block has brick walls with a common bond of seven-stretcher courses to one header course, which is typical of the building. At the top of the wall is a stepped brick frieze, and above that the cornice has bricks set at a 45-degree angle, forming a zigzag pattern (fig. 81). The exterior masonry wall elements are in good condition and retain a high degree of historic integrity.

The west elevation of the main block had been an interior wall prior to alterations (fig. 82). The corners of the elevation are patched with newer brick, and the former doorways in the wall were filled with brick. The gable end is covered with textured-plywood paneling (T-111) and trimmed with plain boards along the rake. A mural is painted on this wall.

The north wall at the west end of the main block has a similar common bond and a brownstone water table. There is a plain cornice on this short section of wall that does not have the zigzag-pattern brickwork.

The east end of the main block and the northeast block were constructed at the same time. The east elevation of the building jogs at the southeast corner where it transitions to the northeast block.

Doorways

The south-elevation doorway, D101, has double doors with an automated opener on the right side for ADA accessibility. The doors have nine lights over two vertical molded panels (fig. 83). They have brushed stainless-steel handles and hang on three five-knuckle hinges. The doorway has a wooden door frame and a concrete lintel. There is a brownstone lintel about 1 foot above the current lintel with brick between the two. The brownstone lintel appears to be from an earlier configuration of the doorway. This doorway has a columned portico and is accessible via a concrete ramp and granite steps. Though the door was replaced, the doorway location and surrounding masonry are historic and have a high degree of historic integrity.

D111 is on the north elevation at the west end of the main block and was altered from a window, presumably when the west end of Building 27 was demolished. The doorway currently services as an emergency egress and is covered by a small porch. It has a metal door frame and door with a glass panel in the upper section. The door hangs on butt hinges, and has a brushed stainless-steel handle. This doorway has a minimal degree of historic integrity.

Windows

The upper-story windows on the south elevation of the main block are symmetrically arranged and are all similar. The exterior window openings typically measure 3 feet 4 inches wide by 6 feet 1 inch high. The windows have brownstone lintels and sills, and double-hung sashes with simulated six-over-six lights (fig. 84). The current sashes are metal clad with double-pane insulated glass with muntins between the panes of glass to simulate the light divisions. Similar windows are on the north elevation of the main block, and with few exceptions, are typical of Building 27. The windows in this section and the rest of the building retain their historic proportions and are generally in good condition. Though most of the historic sashes have been replaced, the windows throughout the building do retain a high degree of historic integrity.

At the west end of the south elevation, four of the first-story windows have lintels with beveled ends, where as all other lintels are square (figs. 84 and 85). As noted in the foundation materials, the brownstone for the windows at the east end of the main block is a lighter color, and subtle differences in color were observed near the middle of the south elevation. Other differences in the windows were noted on the interior, but were not as evident on the exterior of the building.

On the south elevation of the main block, the basement windows range from small openings to full-height windows (figs. 80 and 86). All the openings have brownstone sills, and the water table forms the lintels. Some of the basement windows were covered when the ramp to the front doorway was installed. At the west end of the main block the basement windows are at grade with three-light fixed wooden sashes and one replacement. Two of the basement windows at that end of the building have louvered vents for fans. East of that, near

the center of the building one window has a window well and casement sashes. The casement sashes were replaced with metal-clad sashes, but two historic wooden casement sashes are extant in windows that were covered for the entrance ramp (see subsequent description "Interior Elements"). East of the doorway the grade drops and the windows extend down to the grade (fig. 80). These windows are 3 feet 3 inches wide by 3 feet 10 inches high. Each window has casement sashes with six-beside-six simulated-lights. At the east end of the main block the windows change to full height, 3 feet 5 inches wide by 6 feet 3 inch high, double-hung sashes with six-over-six simulated-lights. These windows have window wells, but are otherwise similar to the upper-story windows. The differences in the basement windows reflect the evolution of the building, and the windows retain a high degree of historic integrity.

On the north elevation of the main block near the northeast block the basement windows are full height with double-hung sashes. The grade is lower at this end of Building 27, and the basement floor is near ground level. Near the northeast corner two windows are covered by the dust-collection structure. The two adjacent windows are typical, but the third window is smaller and, based on changes in the brick work, appears to be in an altered doorway. The next window to the west has a single-fixed pane of glass beside a metal louver that vents the elevator machinery. Further along the north elevation, between the north and northwest wings, two windows are bricked up, but there is one window with a three-light sash and a window well.

Roof

The roof of the main block is covered with gray slates and has a copper ridge cap. These elements are typical of Building 27 and are in good condition. The slate roofs on all sections of the building retain a high degree of historic integrity.

Lightning rods are installed along the ridge at about 12-foot intervals, and there are two vent stacks in the main block. There is a section of snow railing on the south slope of the roof over the ramp to the front entrance. There is also a section of snow railing on the north slope of the roof near the north wing. Copper gutters with aluminum downspouts are installed along the edge of the roof.

There is a dormer on the north slope of the roof for the elevator. The dormer has brick walls and a shed roof. There is a window on the north side of the dormer with a nine-light steel sash. The roof of the dormer has a slight pitch and is covered with copper roofing with a copper drip edge.

Porches/Porticos and Loading Docks

The south-elevation doorway is protected by a columned portico with granite steps and a concrete ADA-accessible ramp (fig. 87). The portico has a brownstone foundation with four slabs of granite on top and granite steps on the east side. The concrete ramp is installed on the west side of the portico and covers another set of granite steps. Steel pipe railing is installed along the ramp, the steps, and the front of the portico. The roof of the portico is supported by two cast-iron fluted columns and two wooden pilasters on the wall of the building. The entablature of the portico has a flat frieze with a molded band and molding below a soffit. The cornice has a cyma-recta molding. The ceiling of the portico has plain boards with quarter-round molding around the edges. The portico has a shallow-pitched hipped roof covered with rubber membrane roofing. Aluminum gutters extend around the edge of the roof with a downspout on the east side. The columns exhibit some rust, but otherwise appear stable. The wooden elements have deteriorated paint, but are otherwise in good condition. The portico elements are

historic and retain a high degree of historic integrity.

A small porch was added at the northwest end of the main block when the doorway was installed in that location. Two concrete steps lead to the landing of the porch and the north doorway. The landing has a wooden frame and wooden floor boards carried by two 4-inch-by-4-inch posts that extend to support the roof. The roof is constructed with 2-inch-by-6-inch rafters and extends to the corner of the main block and the northwest wing, with the support of a third 4-inch-by-4-inch post. The roof is covered with composite roofing materials and has an aluminum drip edge.

On the north elevation at the east corner of the main block and north wing are the remains of a former loading dock. The loading dock was removed, leaving a narrow concrete ledge. The roof structure that covered the loading dock remains intact. The roof is supported by a steel beam set on a concrete pier. The roof structure is constructed with steel I-beams supporting a shallow-pitched shed roof. An I-beam that probably served as a hoist extends from the structure.

Northeast Block and West Ell

Design

The northeast block extends north from the main block at a slight open angle and has a jog at the south end of the east wall that is four bays (approximately 35 feet) wide and essentially forms the end of the main block (figs. 79 and 88). The northeast block is a long rectangular structure measuring 35 feet wide by 260 feet 6½ inches long with an ell on the west side that is 35 feet 1 inch square (fig. 89). A stair tower that measures 9 feet wide by 15 feet 6 inches long is located at the northwest corner where the northeast block and ell meet. With the exception of the stair tower that was added in 1942, the expansive northeast block and west ell appear to have been constructed at the same time. Typical of Building 27, the northeast block and west ell are brick with brownstone trim and are generally in good condition. The design of these sections is characteristic of the building as a whole and retains a high degree of historic integrity.

Foundation

The exposed basement-level foundation walls on the northeast wing are brick. The grading on the east and west elevations of the northeast block create a ground level that is more easily accessed and has more natural light. At the south end of the east elevation the grade is higher and then drops down to expose the basement-level windows (fig. 85). The grade rises again at the north elevation, and on the west elevation the basement floor is at grade. Except for the north wall, the northeast block has brownstone water tables on all elevations, similar to the rest of the building.

Walls

The brick walls are typical of Building 27 and retain a high degree of historic integrity. They are constructed with a bond of seven stretcher courses to one header course. The bond on the stair tower is slightly different in that the header course has alternating headers and stretchers. The east wall has a jogged section at the south end, and the wall north of that is uniform with regular fenestration, as is the west wall.

The jogged south end of the east elevation is stepped at the top of the wall, forming a parapet wall with two brick chimneys. The parapet wall is capped with brownstone coping. This end also has a trim detail near the cornice line that is a scroll-cut piece of decorative brownstone (figs. 90 and 91). The stepped parapet wall and brownstone trim is repeated on all of the end walls of

Building 27 except the west end of the main block where the building was altered. These elements, documented in the 1860s, are an important part of the historic building fabric and retain a high degree of historic integrity.

The north wall has four bays with a large chimney at the center. In addition to the stepped parapet capped with brownstone and the brownstone trim, the center section of the wall is jogged at the chimney mass that was constructed as part of the wall. The top of the chimney has been removed, but the lower portions are intact.

The walls of the ell have symmetrical fenestration on all floor levels, except on the west wall where two second-story windows were removed for a double doorway (see subsequent section "Doorways"). The west wall of the ell is three bays wide with a stepped parapet wall with brownstone coping and scroll-cut brownstone trim.

The east and west walls have a brick entablature with a stepped frieze and a zigzag brick cornice (fig. 92). The entablature on the northeast block is wider than that of the main block, but the two are otherwise alike. A similar detail is on the south and north walls of the west ell, but was not added to the stair tower walls.

Doorways

At the north end of the east elevation a window was altered to a doorway (D102) in the 1950s (fig. 93). This doorway historically served as the entrance to the small arms museum and is currently an emergency exit. D102 has a brownstone lintel and a wooden door frame with a three-light transom and a paneled door. The door has nine lights over two horizontal panels. It hangs on three butt hinges, has a brass knob and lock with a brass escutcheon, as well as a dead bolt lock above that. The door has a closer mounted on the inside.

The doorway is covered by a bracketed hood. The hood has scroll-cut brackets that are bolted to the masonry wall and a shallow hip roof. The ceiling of the hood has tongue-and-groove beaded boards with quarter-round molding along the sides. The roof is covered with copper pans and has a plain cornice with copper gutters leading to a copper downspout. A concrete bridge leading to the doorway was constructed when the doorway was installed. The bridge has five concrete steps and is protected by pipe railings on both sides. The doorway and hood are in fair condition. Both were added during the historic period and retain a high degree of historic integrity.

D103 is in the north wall of the northeast block and was also installed in a former window opening. The doorway has a brownstone lintel and a wooden door frame and door. The door has nine lights over one horizontal panel and two vertical panels. The door has three butt hinges and a brass knob-and-lock set on a brass escutcheon. The door is currently inoperable. There is space between the door and the lintel that is filled with a wooden panel. The door opens onto a concrete loading dock.

The stair tower has a doorway on the north elevation (D104) with a concrete threshold and a brownstone lintel (fig. 94). D104 has a metal-clad wooden frame within the masonry opening and a four-light transom above the door. The wooden door has six lights above two vertical panels, hangs on butt hinges with ball finials, and has a brushed-steel handle and lock set. The door is in fair condition with deteriorated paint and some repairs.

A concrete bridge with pipe railing on either side leads from the walkway to the stair tower doorway. The doorway and concrete bridge were added during the historic period and retain an average degree of historic integrity.

The west elevation of the west ell has double doorways on the basement level and the second story (fig. 90). The basement doorway (D001) has two wooden doors in a wooden door frame. The doors have nine lights over two vertical panels. Three butt hinges are mounted on the inside of each door, and each door has a closer. The north door has brushed-steel handles with a dead bolt lock above, and the south door has interior bolts at the top and bottom of the center door stile. This double doorway was recorded in historic documents and retains an average degree of historic integrity.

The second-story doorway (D201) in the west elevation of the ell was added in 1951. The doorway has a brick lintel that is backed by a steel beam on the interior (fig. 91). It has two wooden doors with eight lights over a single panel with diagonal beaded tongue-and-groove boards. The doors are hinged and secured on the inside of the doorway. The doorway has two pipe rails and wire mesh across the bottom of the opening. The doorway appears to retain its historic materials in good condition and retains an average degree of historic integrity.

The basement level of the west elevation of the northeast block has two doorways and an elevator doorway. All of these doorways were documented in historic plans and retain a high degree of historic integrity.

The north doorway, D003, has a brownstone threshold, and the lintel is formed by the water table. The doorway has a wooden frame within the masonry opening and has two wooden doors. Each door has six lights over one panel and is hung on three butt hinges. The north door has a brushed-steel handle with a dead-bolt lock above. On the north side of the doorway is a wooden piling that probably served as a bumper. There is evidence that a similar piling was removed from the south side of the doorway.

The other basement doorway in the northeast block, D004, has wooden double doors set in a wooden door frame. The masonry opening has a concrete threshold and brick lintel. The doors have nine lights over two vertical panels with cyma-reversa molding around the panels. Each of the doors is hung with three butt hinges, and the south door has a brass knob-and-lock set with a brass escutcheon plate.

The exterior elevator doorway, D003, is a masonry opening with a steel frame and steel sliding elevator doors. The elevator doorway is above ground level and opens onto a concrete loading dock.

The west elevation also has a second-story fire-escape doorway (D202). Physical evidence on the exterior and interior walls indicates that the doorway was constructed in former window opening. The doorway has a concrete threshold, a brownstone lintel, and a wooden door frame. The wooden door has six lights over two vertical panels and hangs on three butt hinges. The exterior door handle is missing, and the interior has a push bar and a closer.

Windows

With few exceptions, the windows in the northeast block and ell are typical of the building and retain a high degree of historic integrity. Since both sections of the building were constructed during the same period, with few exceptions the windows are consistent in appearance. The windows generally have double-hung replacement sashes with six-over-six simulated lights. The windows on all elevations, including the stair tower, have brownstone sills and the upper-story windows have brownstone lintels. The lintels of the basement windows are formed by the brownstone water table.

At the south end of east elevation, two of the basement windows have brick-lined window wells, and there is a smaller six-light sash above the tunnel. The rest of the

basement windows on the east elevation are full-height double-hung windows due to the drop in grade.

There are two windows in the attic at the south end of the east elevation. They are designed with the same elements as the rest of the northeast block. Similarly, there is an attic window in the west elevation of the west ell that is typical for the building.

The two openings that flank the basement elevator doorway were altered from full-height windows to smaller openings. The north one has metal louvers for venting the elevator equipment room, and the other has a small awning sash with six simulated lights and an interior screen.

Roof

The northeast block and ell have gable roofs that are covered with gray slate. Where the northeast block and main block intersect, the valleys are flashed with copper. Similar flashing is used on the roof valleys at the junction of the northeast block and west ell. The ridge of the slate roof is covered with copper and has lightning rods placed about every 12 feet. The roof of the west ell has vent stacks for the restrooms. Copper gutters are attached to the edge of the gable roofs and lead to aluminum downspouts.

On the west slope of the northeast block roof there are two sections of snow railing that protect the basement doorways below. The west slope also has a brick dormer for the elevator. Like the main block, the dormer has brick walls and a shallow shed roof. There is a window on the west wall of the dormer with a nine-light steel sash. The stair tower has a shallow-pitched shed roof that is covered with composite roofing materials. The north wall of the stair tower forms a low parapet wall with brownstone coping. There is an aluminum gutter and downspout attached to this roof.

Porches/Porticos/Loading Docks and Fire Escapes

There is a covered loading dock on the north side of the northeast block on the first story. The loading dock is 6 feet 6½ inches wide by 13 feet 3 inches long by 13 feet 9½ inches high (to the ceiling). It is concrete with brick walls on the north and west sides and a metal roof. The concrete base extends from the ground level to the first story, forming the east wall of the loading dock. The north wall forms a knee wall along the loading dock and is open above that. There is a brick column in the northeast corner supporting the roof. The west wall is solid brick and supports that end of the roof. The ceiling is plywood, and the roof structure is constructed with wooden framing, sheathed with plywood, and covered with standing-seam metal roofing. The masonry materials appear to be in good condition, but the framing for the roof is deteriorated and the lower edges of the metal roofing are pulled away from the framing, allowing water infiltration. The loading dock and associated doorway are not historically significant and have minimal historic integrity.

On the west side of the block is a concrete loading dock that was added to the building in the 1940s and retains a high degree of historic integrity. The loading dock is 10 feet wide and 16 feet 2 inches long and is supported by concrete piers. The loading dock has a corrugated-metal shed roof with a steel beam frame supported by steel I-beam posts.

There is a second-story fire escape on the west elevation of the northeast block. It has steel stairs with steel handrails and is supported by steel brackets bolted to the wall. All of the fire escapes on Building 27 were added in the 1940s and documented in 1944 exterior photographs and historic drawings. They are in fair condition and retain average historic integrity.

Related Structures

Two brick structures that served as part of the building's ventilation/exhaust system were added to the west elevation of the northeast block in the 1940s. One addition is situated near the west ell, and the other is at the corner of the northeast block and the main block.

The one-story structure near the west ell was added in 1942 (fig. 95). It measures 9 feet 8½ inches wide by 11 feet 10 inches long. It was built on a concrete slab, and the brick walls have seven stretcher courses to one header course. The structure has a doorway on the west elevation (D002) with a row of soldier bricks above a steel-plate lintel. The door is wooden with nine lights above a single panel with metal louvers and a steel plate below that, all of which is painted white. It hangs from three butt hinges and has a knob-and-lock set, also painted white. There is a window on the north elevation that has a concrete sill and soldier bricks at the lintel. It has an eight-light steel pivoting sash with louvers in one of the lights. A similar-size window on the south elevation has been partially bricked up, and has a vent hole on the east side of the opening, which is currently covered with plywood. The roof of the addition is a concrete slab covered with copper and tar-and-gravel roofing with a copper drip edge. This structure is in fair condition and will require repairs. However, it was added during the historic period and does have average historic integrity.

The Exhaust Fan Room at the corner of the northeast block is a one-story brick structure that was historically connected to a dust-collection tower that was removed (fig. 96). It is 8 feet 8½ inches wide by 21 feet long and 11 feet 3 inches at the front corner. The walls are brick with an atypical bond consisting of seven stretcher courses to one bond course with alternating headers and stretchers. A wooden fascia board is installed at the top of the wall and is covered by a copper drip edge at the roofline. There is a doorway on the west elevation (D006) with a concrete threshold and a row of soldier bricks above steel-plate lintel. The doorway has a wooden door with four lights over a single panel with tongue-and-groove boards. The door is hung with three butt hinges and has a knob-and-lock set, all of which are painted white. The structure has two windows on the north elevation, both with concrete sills, soldier bricks above a steel-plate lintel, and steel sashes. The steel sashes in each window have twelve lights arranged in four rows of three. The top and bottom rows of lights are fixed, and the two center rows (six lights) form a pivoting sash. The structure has a shallow-pitched shed roof that is covered with copper and has two copper vents stacks that are covered. The structure is in good condition and retains a high degree of historic integrity.

Northwest Wing

Design

The northwest wing is a rectangular section composed of three sections with a center brick wall separating the east and west sections, and a masonry wall further dividing the two sections on the east half (figs. 97, 98, and 99). The west portion is 24 feet 1 inch wide by 80 feet 3½ inches long and was evidently constructed before the east section of the wing. The east section is 33 feet 8½ inches wide and 77 feet 10 inches long, which was constructed with an interior brick partition separating the historic Boiler Room and Engine Room. The masonry exterior of the west half of the northwest wing has a similar design as the other sections of the building. The east half has similar exterior masonry, but has a lower second story and a shed roof.

Foundation

The west wall has a rubble brownstone foundation with brick above grade except for the north, which has approximately 18 feet of brownstone foundation. The wing has brownstone water tables on all elevations, except for the boiler room, which is on a concrete slab and has no water table.

Walls

The brick walls are constructed with a bond of seven stretcher courses and one header course typical of Building 27. However, the bond on the boiler room section is six stretcher courses and one course of alternating headers and stretchers. The walls around the two doorways on the east elevation of the boiler room appear to have been altered, and the bond is seven stretchers to one header course. This alteration occurred when an addition to this elevation was removed and the two doorways (D106 and D107) were installed in the 1940s.

At the north end of the west wall is evidence of an earlier extension that has been removed. Earlier plans indicated that this was the location of the Print Shop. Portions of the west wall are covered with murals.

The north wall of the wing is stepped at the attic level and extends above the gable roofline, creating a parapet wall. The scroll-cut brownstone trim typical of the end walls is repeated here. There is also a parapet wall on the north elevation of the boiler room that conceals the shed roof.

Doorways

The west portion of the wing has two doorways on the north elevation and one doorway on the west elevation. The doorways on the north side are for the first (D109) and second story (D205) emergency exits. Both doorways are set in the brick openings with brownstone lintels and have metal frames. The doors are metal with fixed transoms above. The transom above the first-story door is boarded up. The second-story doorway has a single light in the upper half of the door. The doorways were installed during the historic period, but have replacement doors and frames. These doorways have average historic integrity.

The Boiler Room has two wide east-elevation doorways and one wide doorway on the north side. The east-side doorways (D106 and D107) are similar and have double metal-clad doors set in metal-clad frames within brick openings (fig. 98). Each door has three vertical panels below twelve lights, and nine-light transoms span each doorway. The doors are deteriorated and will need to be repaired or replaced in kind. Both doorways have concrete thresholds, and the lintels have a steel plate with a course of soldier bricks above. Both of the doorways are currently blocked off from the interior by cinder-block walls. The two doorways were added during the historic period and do retain average historic integrity.

D108 is a wide doorway on the north elevation of the boiler room and has a sliding door with a hinged door set into the right side (fig. 100). Historic documentation indicates that the hinged “pass door” was part of the design when the door was installed in the 1940s. The left side of sliding door has two raised panels below a nine-light window with two raised panels above. The right side of the door is similarly arranged, but the lower panels and window are part of the hinged door within the sliding door. The sliding door has a recessed pull on the right side, and the hinged door has three five-knuckle hinges with ball finials. D108 has a wooden frame, a sloped concrete threshold, and a steel lintel with a course of soldier bricks above. The door is in fair condition and will

require rehabilitation. The elements of D108 are historic and retain an average degree of historic integrity.

The west-elevation doorway (D110) has a wooden door frame and door. The doorway has a brownstone lintel and threshold. The door has nine lights over three vertical panels and hangs on three five-knuckle hinges. The door has a brass knob-and-lock with a brass escutcheon. D110 is covered by a shed-roof portico supported by 2-inch-by-4-inch brackets that are bolted to the wall. The ceiling of the overhang has tongue-and-groove boards and a cove with quarter-round molding around the edges. The roof of the portico is covered with copper and the cornice has a cyma-recta-and-fillet cove molding. Historic photographs depict a similar hood over the doorway of the adjacent Print Shop that was since removed. The doorway and hood retain average historic integrity.

Windows

With few exceptions, the windows on the northwest wing are typical of the building and retain a high degree of historic integrity. Though some differences were noted in the interior construction and treatment of the window openings, the exterior appearance is fairly uniform. Most windows have double-hung replacement sashes with six-over-six simulated lights. The windows on all elevations have brownstone lintels and sills, except for the first-story boiler room windows that have concrete sills and steel lintels with soldier bricks above.

On the east elevation, two of the basement windows are filled in with brick and the third has a fan inserted in the opening. The southernmost window on the first story of the east elevation had been altered from a doorway.

The windows in the north elevation of the boiler room are not typical of the building. The first-story windows are larger and two have metal louvered vents inserted in the openings. One window retains a twenty-five-light steel sash with a six-light pivoting sash near the center of the larger sash that was installed in 1940. The second-story windows on that elevation are smaller than the typical windows, but were constructed with brownstone trim. One second-story window has a metal vent hood; the others have fixed replacement sashes with six simulated lights. The windows with the steel sash have a high degree of historic integrity, while the altered windows have average historic integrity.

In the north elevation of the wing, the basement windows have awning sashes with six simulated lights and a fan inserted is inserted in one of the windows. The windows in the upper stories are typical of the building.

Of the west-elevation windows, one of the first-story windows has been altered from a doorway. Also on this side, four second-story windows at the north end of the elevation were partially filled with brick when the Print Shop was added and remain that way today.

Roofs

The northwest wing has a gable roof that slopes down to a shed roof that covers the east half of the wing. The gable roof is covered with slate, and the shed roof is covered with a rubber-membrane material with an aluminum drip edge. The cornice on the east elevation is boxed with plain boards, and has aluminum gutters and downspouts. The west elevation has no cornice details and has a copper gutter and aluminum downspouts.

Porches/Porticos/Loading Docks and Fire Escapes

On the west side of the wing is a concrete loading dock that has two sets of concrete steps. The loading dock is 6 feet wide and 42 feet long and was probably added to the building early in the twentieth century.

There are two fire escapes on the north elevation of the wing; one from the first story and one from the second story. Both have steel stairs with steel handrails and are supported by steel brackets bolted to the wall. The second-story fire escape was documented in exterior photographs in 1945, and the first-story fire escape was added more recently.

North Wing

Design

The north wing extends out from about the middle of the north side of the main block (figs. 101, and 102). It is rectangular in plan and measures 25 feet wide by 77 feet 10 inches long. The north wing is constructed with brick and brownstone in keeping with the style and design of Building 27. The masonry design and details of the north elevation were documented in 1863 and retain a high degree of historic integrity.

The east elevation of the wing has a basement that is at grade. As documented, approximately 28 feet of the north end of the wing was constructed separately from the south end. Differences were noted in both exterior and interior materials and were especially evident at the foundation level.

Foundation

The grade is higher on the west elevation, sloping down toward the north, and the north and east elevations are essentially full height at the basement level. Thus the foundation materials vary on these elevations. The south end of the west elevation has an ashlar brownstone foundation that ends at the terminus of the earlier section of the wing; north of that the foundation changes to brick (fig. 103). The foundation on the north and east elevations is also brick. The foundation at the north end of the wing is 3 inches thicker than the south section. All elevations have a brownstone water table separating the basement and first story.

Walls

The exterior walls of the north wing are brick with brownstone trim. The bond is typical of the building with seven stretcher rows to one header row. A slight difference in the brick color at the north end of the wing was discernible, and the brownstone trim at that end of the building was lighter in color. Like the northwest wing, the north end wall has a stepped parapet wall with scroll-cut pieces of brownstone at the cornice line of the gable roof.

Doorways

The east elevation has a basement doorway and a second-story doorway. The basement doorway (D007) has a metal door set in a metal frame. The door hangs on three five-knuckle hinges, has a polished steel handle, and a narrow light on the south side. The second-story (D203) doorway is an egress for the fire escape. The doorway has a brownstone lintel and wooden door frame with a wooden door that has nine lights over two vertical panels. The door hangs on three five-knuckle hinges with ball finials and has a painted metal knob-and-lock set with a rectangular metal escutcheon. Both east-elevation doorways are historic and retain average historic integrity.

The west elevation has a first story doorway and a second-story fire-escape doorway.

On the first-story D105 is 4 feet 6 inches wide by 8 feet 5 inches high with a brownstone lintel (fig. 104). D105 was historically a loading-dock doorway and currently has a steel door with glass panels, sidelights, and a transom, all set in a steel frame. The door has a brushed-steel handle, hangs on two five-knuckle hinges, and has a closure mounted on the inside. Though the door was replaced, the doorway location and surrounding masonry are historic and retain a high degree of historic integrity.

The second-story fire-escape egress (D204) is similar to the east-elevation doorway. The door has nine lights over two vertical panels and is set in a wooden door frame with a brownstone lintel. The door hangs on three five-knuckle hinges with ball finials and has a painted metal knob-and-lock set with a metal escutcheon.

Windows

The windows in the first and second stories of north wing are typical for Building 27 and retain a high degree of historic integrity. The window sill and lintel are brownstone, and the jambs are brick. The masonry openings hold double-hung replacement sashes with simulated six-over-six lights. The second-story windows are slightly smaller than the first-story windows.

Since the north-wing basement is at ground level on the east and north elevations, the basement windows on those elevations are full height. The windows have brownstone sills, and the lintels are formed by the water table. The basement windows have replacement sashes with simulated six-over-six lights similar to the upper stories. At the south end of the east elevation a basement window was bricked up when the loading dock was constructed. The basement windows on the west elevation have small awning sashes with three simulated lights. Two of the windows are filled in with brick, and one has metal louvers for ventilation.

Roofs

The north wing has a shallow gable roof running north–south that is covered with gray slates. The gable is flashed at the north parapet wall. A vent stack is located on the east slope of the roof. There is a plain board cornice on the east and west elevations, and aluminum gutters with aluminum downspouts are hung on those sides.

Porches/Porticos/Loading Docks and Fire Escapes

There is a concrete loading dock on the west elevation of the north wing that has been altered to accommodate an ADA-accessible ramp to the west doorway. The loading dock has three concrete steps, and the ramp has three switch backs. Both the steps and the ramp have metal pipe railings that are painted black. The entire ramp and entranceway are covered by a metal roof with I-beam rafters supported by steel posts. The underside of the entrance roof is covered with plain boards.

The fire escapes on the east and west elevations are steel with open steel treads and steel railings. They are supported by steel brackets that are secured to the building with bolts.

Figure 78. Building 27, south elevation of main block, 2010.

Figure 79. Building 27, looking south; from left to right: west ell and northeast block; north elevation of the main block, north wing, and northwest wing, 2010.

Figure 80. Building 27, south elevation of main block, east end of building showing change in foundation materials and windows, 2010.

Figure 81. Building 27, south elevation of main block, cornice, 2010.

Figure 82. Building 27, west elevation of main block, 2010.

Figure 83. Building 27, south elevation of main block, entrance doorway (D101), 2010.

Figure 84. Building 27, south elevation of main block, typical window, 2010.

Figure 85. Building 27, south elevation of main block, window with beveled lintel, 2010.

Figure 86. Building 27, south elevation of main block, basement window at west end of building, 2010.

Figure 87. Building 27, south elevation of main block, portico for D101, 2010.

Figure 88. Building 27, east elevation of northeast block, 2010.

Figure 89. Building 27, west elevation of west ell, 2010.

Figure 90. Building 27, scroll-cut brownstone detail, east end of building, 2010.

Figure 91. Building 27, scroll-cut brownstone detail, north wing, 2010.

Figure 92. Building 27, east elevation of the northeast block, cornice, 2010.

Figure 93. Building 27, east elevation of the northeast block, D102, 2010.

Figure 94. Building 27, north elevation of stair tower on the northeast block, D104, 2010.

Figure 95. Building 27, west elevation of the northeast block, former Exhaust Fan Room, 2010.

Figure 96. Building 27, southwest corner of the northeast block, former Exhaust Fan Room, 2010.

Figure 97. Building 27, west elevation of northwest wing, 2010.

Figure 98. Building 27, east elevation of northwest wing, 2010.

Figure 99. Building 27, north elevation of northwest wing, 2010.

Figure 100. Building 27, north elevation of northwest wing, D108, 2010.

Figure 101. Building 27, north and west elevation of north wing, 2010.

Figure 102. Building 27, east elevation of north wing, 2010.

Figure 103. Building 27, west elevation of north wing, showing changes in foundation, 2010.

Figure 104. Building 27, west elevation of north wing, D105, 2010.

Interior Elements

Introduction

Since its construction, Building 27 has had different uses. Historically used as a forge and workshops, Building 27 was one of the primary Hill Shops throughout the history of the Springfield Armory. In addition to manufactory, sections of the building have served as a personnel department, research and development, the proofing of arms, and a small arms museum (see previous section "Chronology of Development and Use"). Since 1968 the building has been owned by the State of Massachusetts and used by STCC.

The exterior brick walls that define the building envelope also dictate the arrangement of the interior spaces. The outside walls and some brick interior walls define large sections of the interior, which are further divided for the current building use.

This HSR includes a plan showing the sections of Building 27 as designated for this report (fig. 77). The report also includes plans of each story with the interior spaces and exterior doorways indicated by numbers assigned for this report (figs. 105, 106, and 107). The plans give an overall sense of the interior spaces, but do not necessarily illustrate all of the current partitions accurately. Due to the size of the building and number of windows, the windows are not labeled on the plans included with this report.

General Description

Building 27 has three stories including a basement, first story, and second story. Many of the interior spaces are open, preserving the sense of the open manufactory. The basement is minimally finished and has partitioned areas that are used as maintenance shops, storage, and the college mailroom. Some of the outside walls have doorways and windows that open at the ground level, as previously described (see previous section "Exterior Elements"). The first and second stories have brick outside walls, and some brick interior walls, as well as wallboard partitions, and the doorways and windows are typically finished with trim. The first story is arranged with STCC student service centers, staff offices, and conference/class rooms at the west end of the building, and the college library at the east end and in the northeast block. The library continues on the second story of the northeast block and extends into the main block. The remainder of the second story is used for STCC offices. The attic of Building 27 is an unfinished space open to the roof framing, and is accessed from the second story of the library via a ladder on the east wall.

The interior of Building 27 has been altered to accommodate the adaptive use of the college. Some interior elements retain their historic integrity, but overall the interior retains minimal historic integrity.

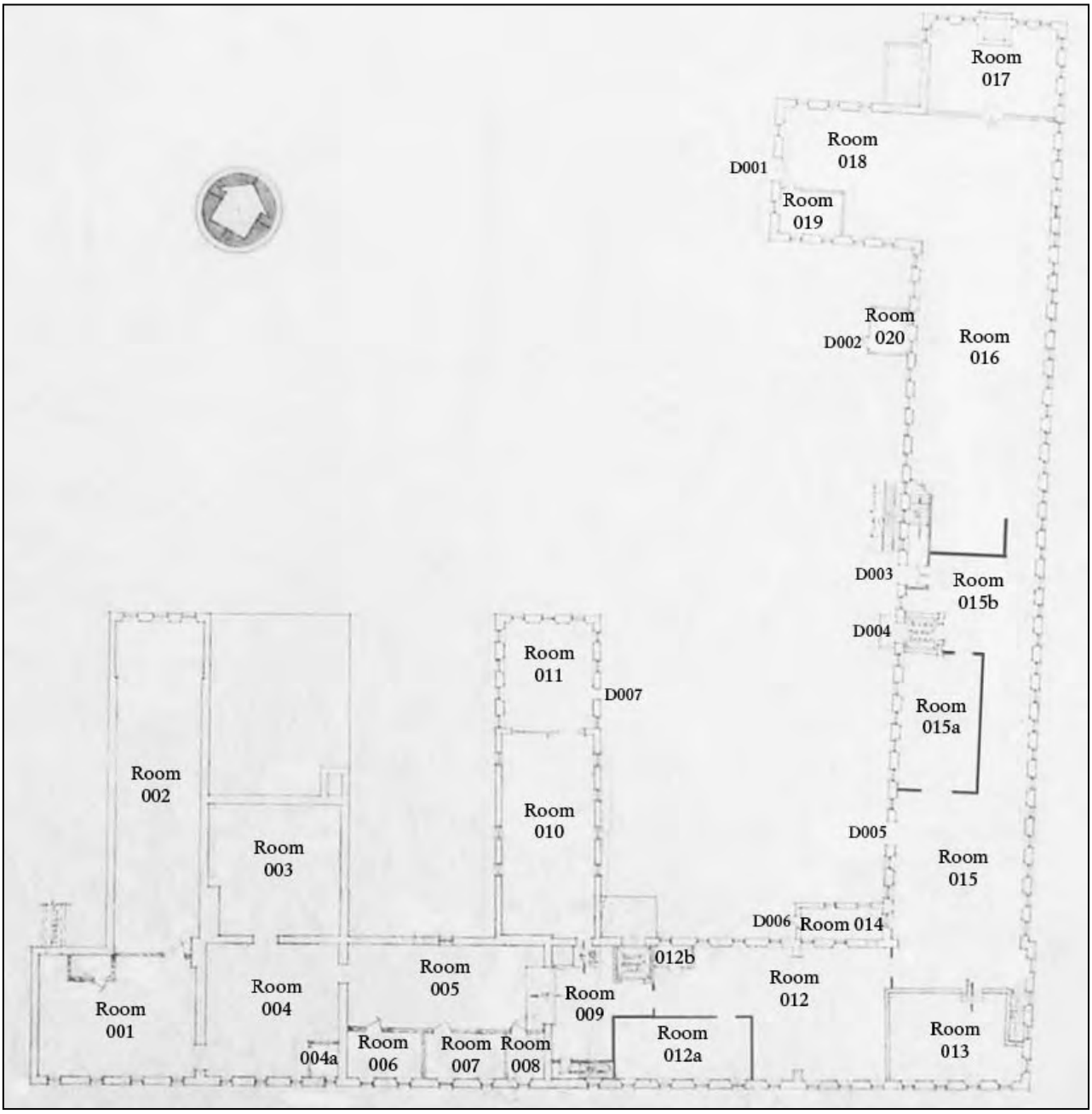


Figure 105. Building 27 basement floor plan, with room numbers assigned for current project. Plan copied from 1941 drawing (fig. 53) with more recent partitions added; not to scale.

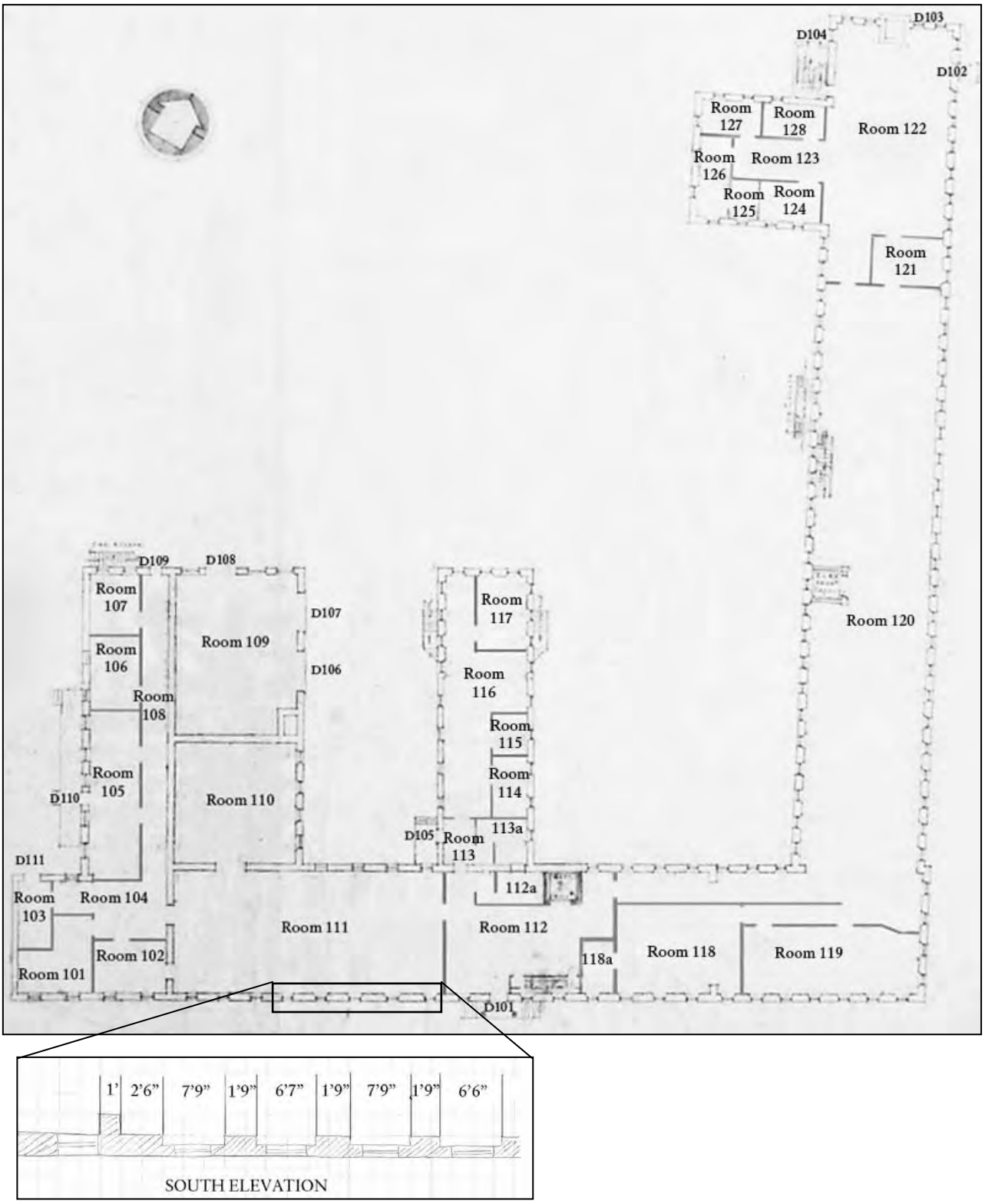


Figure 106. Building 27 first floor plan, with room numbers assigned for current project. Plan copied from 1941 drawing (fig. 54) with more recent partitions added; not to scale. Inset: Detail of south wall in Room 111 showing stepped wall and window niches.

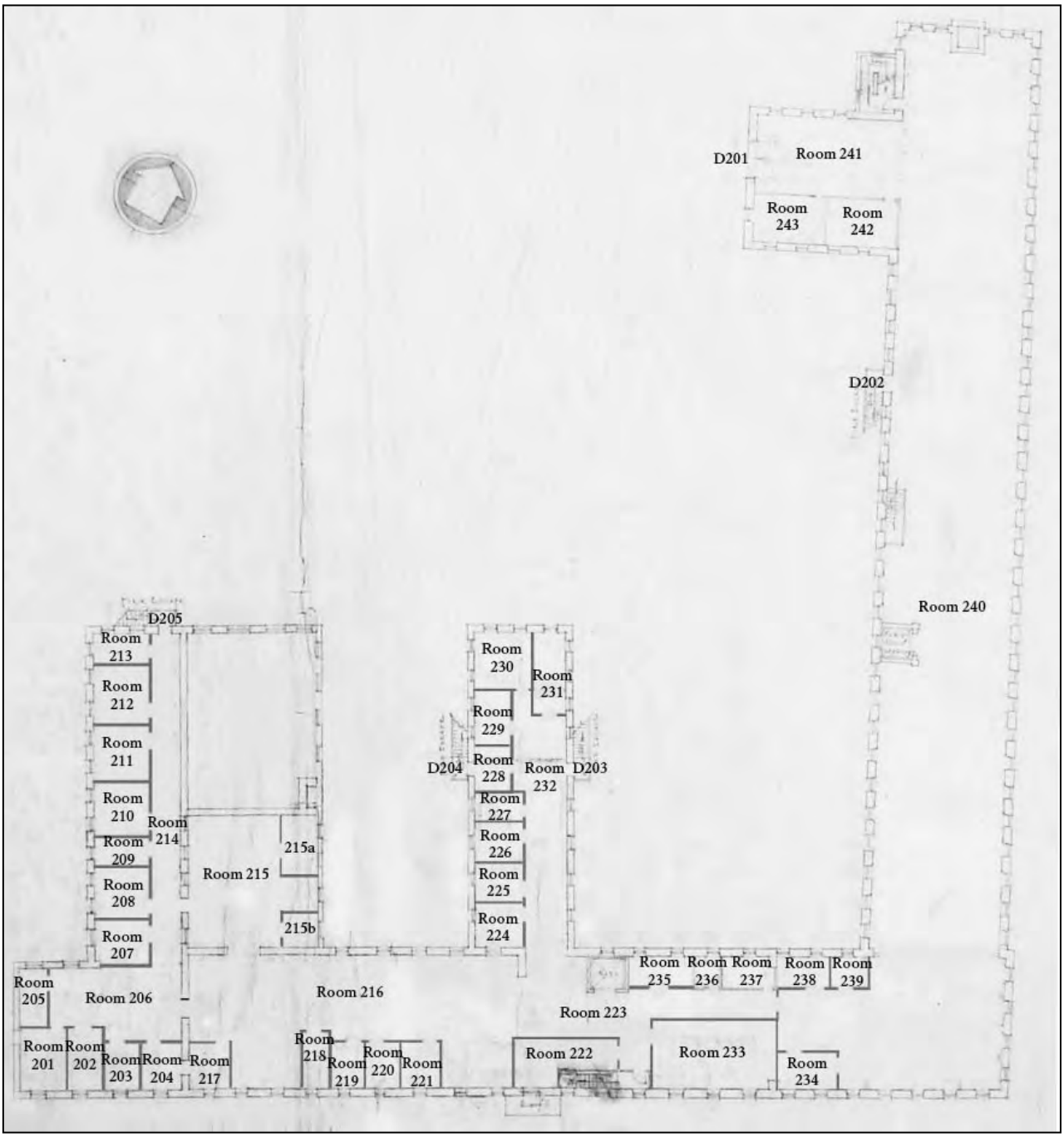


Figure 107. Building 27 second floor plan, with room numbers assigned for current project. Plan copied from 1941 drawing (fig. 55) with more recent partitions added; not to scale.

Basement

General Description

The basement is divided into sections that generally correspond with the sequence of construction. Exterior and interior masonry walls generally separate each section, with some additional partitions further dividing the space in some sections. The doorways and windows vary in each section of the basement, and as previously described, the basement finish is minimal. Masonry tunnels in the basement were historically used for conducting utilities to adjacent buildings, and some continue that use. The steel posts and beams supporting the structure are evident throughout the basement, and utility pipes and wiring hang from the ceilings.

The basement is the least altered space since the adaptive use by the college and retains an average degree of historic integrity.

Tunnels

There are five tunnels in the basement of Building 27, which typically have arched openings and floors that are below the level of the basement floor. A tunnel in the northwest corner of Room 001 extended to the former Blacksmith's Shop (Building 26), since removed (fig. 108). A larger tunnel in Room 002 extended to the former Print Shop and possibly adjacent structures, all of which have been removed. Both were arched tunnels constructed with brick. They conveyed steam pipes and electrical conduit to the Blacksmith's Shop and Print Shop during their operation. An arched tunnel in the south wall of Room 004 still carries steam pipes to Building 16. It is also a brick tunnel with an arched ceiling and curved floor, and cementitious parging on the walls. Historic plans suggest that these tunnels were constructed in the 1860s, with the exception of the Print Shop tunnel that was later. They are an important part of the historic fabric and retain a high degree of historic integrity.

The tunnel in the southeast corner of the main block basement, east of Room 013, is accessed by a set of five steps. The steps lead down to an arched tunnel with brick walls and a concrete floor. The tunnel extends eastward under Federal Street to Building 101 (fig. 109). Though the tunnel carries some pipes, unlike the other tunnels, it appears to have also been used as a passage for workers. This tunnel was probably added in the 1880s when the Federal Square Buildings were constructed. It also retains a high degree of historic integrity.

There is also a tunnel in the northwest corner of Room 017 that is accessed through a trap door in the floor. This tunnel historically led to Building 20, which has been replaced by another building. This tunnel is also historically important. However, there was not access to that tunnel during the building investigation and no way to evaluate its condition or integrity.

Main Block

Plan

The basement in the main block has five distinct sections, each defined by interior brick walls (fig. 105). Sections including Rooms 001, 004, 005–008, 009/012, and 013 appear to represent different stages in the construction of Building 27. The two sections that include Rooms 005–008 and 009/012 are further divided by interior partitions of varying materials. The current layout preserves part of the historic plan and therefore retains an average degree of historic integrity.

Room 001 is a square open room at the west end of the main block with a tunnel in the northwest corner. Room 004 is also an open square room with a small room in the southeast corner. The basement section

east of Room 004 is a rectangular area partitioned into four rooms. Room 005 forms a corridor on the north side of the basement, and three rooms (006, 007, and 008) are on the south side of the basement. Room 009/012 is a rectangular section that has been partitioned into several spaces (Rooms 009, 012, 012a, and 012b). Room 009 has a partitioned staircase on the south wall and an elevator on the north wall. A wood-framed wall on the east side of Room 009 partitions off the carpentry shop (Room 012), which is further divided by a partition along the south wall (Room 012a) and an elevator-engine room on the north wall (Room 012b). Partial brick walls near the east end of Room 012 indicate where the main block was extended when the northeast block was added. From these partial walls to the west wall of Room 009 appears to have been one section of the building. Room 013 is a square room in the southeast corner of the main block and has masonry walls separating it from the other basement rooms.

Floors

The floors in the main block of the basement are all concrete. In the floor of Room 004 near the south wall is a large pit with concrete walls and floor that is accessed via a steel ladder and is covered by steel grates. The floor level at the west end of the main block is about 6 inches higher than the east end. At the doorway between Rooms 005 and 009, a concrete ramp in the floor slopes down to Room 009. Likewise there is a concrete ramp from Room 009 sloping up to Room 010 in the north wing.

The floor level in Room 013 is 2 feet 10 inches below the level of the adjacent basement rooms. There are two concrete steps at the doorway to Room 013. East of Room 013, at the southeast corner of Room 015, five concrete steps lead down to a tunnel that extends to the east, connecting with Building 101 in Federal Square.

Walls

The outside masonry walls form the foundation of the building. In the main block of the basement the outside walls are generally brownstone rubble walls set in mortar below grade, and the above grade walls are brick. Masonry interior walls separate the larger sections of the main block, with wood-framed partition walls dividing those sections.

In Room 001 all the walls are brick, including the east wall between Rooms 001 and 004. In the northeast corner of the room large pieces of brownstone jut into both Room 001 and 002 (fig. 110). This appears to be the base for a large chimney that has been removed. The partition wall separating Rooms 001 and 002 is wood framed with chicken wire attached to 2-inch-by-4-inch framing. The walls in Room 001 are painted two tones with a blue-green color along the bottom and light green above that.

The walls in Room 004 are brownstone rubble with brick along the top. On the south wall there is a brick niche below the west window that is 5 feet wide by 3 feet 5 inches high. The function of the niche is not known. The interior walls of Room 004a are brick, while the outside wall is brownstone and brick. In the southeast corner of 004a there are finished brownstone blocks above grade. The blocks form the corner of the adjacent section of the main block, suggesting that it was an end wall. In the east wall near this corner is an arched brick opening with a brownstone sill, which may have been used to run steam pipes between the sections of the building (fig. 111). The wall between Rooms 004 and 003 is brownstone and brick. In addition to the doorway to Room 003, it has two former openings in the north wall that were infilled with brick. The walls in Room 004 are painted with a similar two-tone green as in Room 001.

The outside walls of Rooms 005, 006, 007, and 008 are brownstone rubble with brick along the top. The interior walls separating this section from the adjacent sections (Rooms 004 and 009) are brick and brownstone and the interior partitions are wood framed with wire mesh attached to the framing. The east masonry wall between this section (005/008) and Room 009 appears to have been an exterior wall at one time. There is an arched opening in the east wall of Room 008 that has been filled in with brick. The opening is similar to the opening in Room 004a and was probably used for running pipes. The outside walls in this section are painted two-tone green, and the partitions are painted blue-green.

The north, south, and west walls in Room 009 are masonry with brownstone and brick, and the walls enclosing the elevator shaft are brick. The walls between Rooms 009 and 012 are wood framed with plywood panels. The wall enclosing the stairwell is a metal-clad paneled wall with cyma-recta molding around flat panels that are set in frames (fig. 112). The north side of the stairwell wall is painted two-tone green, and the south side is painted white. The masonry walls in Room 009 are painted two-tone green, except the south wall in the stairwell that is painted dark red.

The south outside wall of Rooms 012 and 012a is rubble brownstone below grade with brick above grade. Similar construction was used on the north wall, but the exterior grade is lower and only the lower foot of wall is brownstone. The walls partitioning Room 012a are wood framed with particle-board panels attached to the framing (fig. 113). A long wooden workbench lines the south wall of Room 012a, and there is a similar bench along the east wall of Room 012. It has cabinets with board-and-batten doors constructed with bead-board. The benches appear to date from the Armory period and were depicted in historic plans of the building.

The partition walls of the elevator-engine room (Room 012b) are wood framed with gypsum board painted white. Partial masonry walls near the east end of Room 012 designate the end of the building prior to the northeast block addition (fig. 113). The east wall of Room 012 is brick with a small wood-framed section at the north end of the wall for the doorway to Room 015. Some of the walls in Room 012 are painted two-tone green and the rest are painted white.

Room 013 has brick interior and exterior walls. Where the walls drop down below the floor level of the adjacent basement, the walls are concrete. The walls in Room 013 are painted gray-green and silver.

In Room 015 the walls at the east end of the main block are brick. This section, along with the east end of Rooms 012 and 013, was built as part of the northeast block, but is technically part of the main block. Near the east wall, the stairs to the tunnel are partitioned with wood-framed walls covered with wire mesh. The walls in this area are painted two-tone green.

Doorways

There are no exterior doorways in the main block of the basement. The interior doorways between the sections of the basement and the partitioned rooms vary in size and materials. Some of the doorways retain historic elements, while others were added and/or altered more recently. The doorways with historic elements do contribute to the historic integrity of the structure. The basement doorways are generally utilitarian with minimal trim elements.

In Room 001 the doorways to the adjacent rooms are wide openings. The doorway and door between Rooms 001 and 002 are framed with 2-inch-by-4-inch boards within the framed partition between the rooms. The door has wooden panels attached to the

framing, a hasp lock, and hangs from three butt hinges.

The doorway from Room 001 to Room 004 is an opening in the masonry wall with no trim.

The doorway between Rooms 004 and 003 is a masonry opening with no trim. On the Room 003 side of the doorway is a sliding door constructed with 1-inch-by-6-inch boards sandwiching wire mesh, making the door 2 inches thick. The door hangs from a metal track at the head of the doorway and has a metal hasp.

The doorway to Room 004a has a metal-clad door frame and door that are painted blue-green. The door hangs from three butt hinges with ball finials and has a metal knob-and-lock set with a rectangular escutcheon.

The doorway from Room 004 to Room 005 is a masonry opening with the door frame and door on the Room 005 side of the doorway.

The Room 005 side of the doorway to Room 004 has a wooden door frame and a wooden sliding door and dates from the historic period (fig. 114). The sliding door has 1-inch-by-4-inch stiles and rails that are fastened together to make a 2-inch-thick frame. The door has two panels constructed with vertical tongue-and-groove boards and is painted blue-green. The door has two hangers fastened to the top rail that hang from a metal rail above the doorway. There is a stainless-steel hasp on the north stile of the door.

The doorways in the partition wall between Room 005 and Rooms 006–008 are all framed with dimensional boards and have no trim. The door stiles and rails are constructed with dimensional boards with wire mesh sandwiched in the frame. Each door is painted blue-green and hangs on two butt hinges with ball finials and has a steel hasp. The partitions and doorways date from the historic period.

The doorway from Room 005 to Room 009 is a masonry opening with no trim or door. A metal door frame and door have been installed between Rooms 009 and 010. The doorway to the stairs has a two-panel metal-clad door with a single wire-glass pane in the top. The door has three butt hinges with ball finials and a handle on the south side. The doorway is framed as part of the stairwell partition. The doorway to Room 012 is more recent and has a wooden door frame with no trim and a hollow-core door. The door has three butt hinges and a locking handle.

The doorway to Room 012a is framed with plain boards and the door is constructed with dimensional boards with particle board and wire mesh attached to the door. The doorway of the elevator-engine closet has a metal door frame and door. The doorway in the east wall of Room 012 is a wide doorway with double doors. It is wood framed with plain trim and has two hollow-core doors. Each of the doors is hung with butt hinges and the south door has a locking handle.

The doorway into Room 013 is a wide masonry opening with a metal-clad door frame (fig. 115). The doorway has a set of double metal-clad doors, each with two panels. Each door hangs on three five-knuckle butt hinges with ball finials, and the west door has brass knob-and-lock set with a rectangular escutcheon plate.

Windows

Most of the windows in the main block of the basement have replacement sashes, as previously described. The sashes are typically set in a wooden window frame, and the windows have no interior trim. The west end of the main block of the building has small windows with fixed sash, and the east end has larger windows with double-hung sashes. As previously described, the

window locations and styles are an important part of the historic building elements. In addition, some of the interior masonry and wooden trim is historic and contributes to the building's historic integrity.

The south elevation of Rooms 001 and 004 has small windows at grade with three-light fixed replacement sashes. The masonry openings in Room 001 have canted interior windowsills. The sashes have a wooden frame within the masonry opening and no interior trim.

The north wall of Room 005 has a single window with straight jambs and a canted sill. The window has a three-light replacement sash and an exterior window well. There is evidence of two other basement windows on this wall, which have been bricked up.

The window openings in Rooms 006–008 are the same size and are set in square-cut masonry openings; however, all but the west window in Room 006 are blocked off for the front entrance ramp. The west window in Room 006 has a replacement casement sash with an exterior window well. Two of the blocked openings retain the historic wooden windows, which have six-beside-six casement sashes with two butt hinges on each sash, and a latch and dead bolt on the center stiles (fig. 116). The historic sashes are painted blue-green.

In the stairwell a window was altered from a larger opening to a small window with a three-light fixed replacement sash. The window may have had casement sashes similar to those in the adjacent room.

The windows in north and south walls of Room 012 are representative of different periods of construction (figs. 117 and 118). In the south wall of Room 012a the windows have replacement casement sashes, and there is one casement east of that room (fig. 117). Like the other casement windows, these windows have straight jambs and heads. At the east end of the south wall, beyond the partial wall, the windows change to double-hung sashes (fig. 118). The masonry openings for these windows have splayed jambs and segmental arched heads. Two similar windows are on the north wall opposite these that open into the Exhaust Fan Room (014). These windows currently have a one-piece fixed sash with twelve lights set in a wooden frame. The other windows on the north wall have double-hung replacement sashes.

Historically there were four windows in the south wall of Room 013 and one in the east wall. All of the windows were set in masonry openings with splayed jambs and arched heads. Two of the windows in the south wall were removed, and the exterior openings were filled with brownstone. Of the two remaining, one has a vent in the top half and a fixed replacement sash below that and the other has double-hung replacement sashes. The east window also has double hung replacement sashes.

The windows in the east wall of the main block, which is contiguous with the northeast block, have splayed masonry jambs and arched heads. One window is over the tunnel to Building 101 and is therefore a shorter opening with a six-light awning sash. The two windows north of that have double-hung replacement sashes. These are similar to the windows at the east end of Room 012 and in Room 013.

Ceilings

The ceilings in the main block of the basement have 7-inch-wide planks painted white running north–south. In two separate areas it was observed that the ceiling planks were 4 inches thick, which appears to be typical for the entire building. The structure of the building is reinforced with steel beams that are installed below the ceiling in the basement. A variety of pipes, conduit, wiring, and light fixtures are

attached to the basement ceiling. These utilities date from various periods and upgrades to the buildings systems. The current lighting is a variety of hanging fixtures with fluorescent bulbs.

The ceiling in Room 013 has what appear to be fireproof panels (possibly asbestos) that are fastened to strapping below the wood-plank ceiling. The ceiling panels are painted metallic green.

Stairs

As previously described, the stairwell is enclosed by paneled walls on the north side and the outside masonry wall on the south. The north wall is painted white and the south wall is red. The staircase ascends fourteen steps from west to east and has wooden treads and risers (fig. 119). There is a wooden banister with a molded handrail on the north side of the stairs. The banister has 1¼-inch square balusters and a 4¾-inch square newel posts with a molded caps at the top and bottom of the stairs. Documentary evidence indicated that the stairs were constructed by 1941, and though they were moved from their earlier location, the stairs do retain a high degree of historic integrity.

Northeast Block and West Ell

Plan

The northeast block is an expansive space running north–south (fig. 105). Though partitions separate sections of this space, it retains some large open rooms. The outside masonry walls define the overall footprint of the northeast block, and framed interior partitions divide the rooms. The physical and documentary evidence suggests that the east end of the main block, the northeast block, and west ell were constructed at the same time.

At the south end of the northeast block Room 015 has one partitioned room (Room 015a), but is otherwise an open rectangular area. North of Room 015a is a hallway (Room 015b) with access to the elevator, elevator-engine room, and Room 016. Room 016 is a large rectangular room that extends into Room 018 in the west ell and currently serves as the college mailroom. The west ell is open to the adjacent area and has a rectangular restroom (Room 019). The rectangular room at the north end of the block (Room 017) has a large chimney base on the north wall and is currently used for storage. There is no access from the basement to the stair tower in the northwest corner of the building.

Floors

The floors throughout most of the northeast block and west ell are concrete. Historic plans indicated that the floors are reinforced with concrete footings under the steel posts. There is a concrete ramp leading to the west doorway in Room 015 and also the west doorway in Room 018. The floor in Room 017 is unique to the basement. It has 3-inch-wide wooden planks fastened to a wooden subfloor with cut nails. In the northwest corner of the room there is a trap-door opening for the tunnel to Building 20 that was not accessible. Based on the physical evidence, the wooden floor is historic and may date from the construction of the northeast block. Thus it retains a high degree of historic integrity.

Walls

The outside masonry walls in the northeast block of the basement are brick with windows at regular intervals on the east and west elevations. Wood-framed partition walls divide some of the interior spaces. Some of the partitions are evident on historic plans and some are more recent.

The outside masonry walls in Room 015 are painted two-tone green. The room has a partitioned storage room on the west side of the building (Room 015a) that has wood-framed walls covered with gypsum board. At the north end of Room 015 a security fence with a hinged door separates Room 015 from Room 015b. In Room 015b the elevator is enclosed by brick walls and the elevator engine room is enclosed by framed walls with gypsum board painted off-white/cream.

The foyer for the west doorway (D003) has gypsum-board walls except for the wall separating the stairwell, which is tongue-and-groove board.

The north wall in Room 015b separating the mail room (Room 016) has a bank of mailboxes and is finished with painted gypsum board. The wall height reaches the pipes and steel framing that hang below the ceiling.

Room 016 is a large open area that extends into Room 018 (fig. 120). The walls that enclose the stairwell along the west wall are finished with gypsum board. At the north end of Room 016, Room 017 is partitioned by a brick wall. All the walls in Room 016 and 018 are painted off-white/cream.

The south wall and outside walls of Room 017 are brick including the chimney wall. A section of the north wall, east of the chimney, has floor-to-ceiling tongue-and-groove boards covering the brick wall and part of the chimney (fig. 121). Most of the boards are painted mauve. Portions of the walls are painted off-white/cream, and other portions are metallic green. Historic plans show that in addition to the brick partition wall, Room 017 had a center, north–south, partition. The bead-board wall and other materials in this room are representative of some of the historic materials of the building and also appear to retain some of the historic paint colors. The historic materials in this room retain an average degree of historic integrity.

Room 018 is divided by a security fence with sliding doors. In the southwest corner of Room 18, Room 019 has floor-to-ceiling, tongue-and-groove bead-board on both sides of the framed walls (fig. 122). Room 019 was partitioned during the historic period, and the walls appear to date from that time. The bead-board walls are painted off-white on the Room 018 side and white inside Room 019. The outside walls of Room 019 are brick, which are painted white.

Doorways

The previous descriptions of the exterior doorways included information about some interior elements. As in the main block, the interior doorways in the northeast block range from historic to more recent.

The doorway from Room 015 to Room 015a has double doors. Each door has two horizontal panels below nine lights and is hung with butt hinges and a locking knob. The west door has a brass knob-and-lock set with a rectangular escutcheon, and a stainless-steel hasp secures the doors. The doorway has plain trim and appears to be more recent. At the north end of Room 015a, the doorway to Room 015b has plain casings and a two-panel wooden door. The door has three butt hinges with ball finials, and a brass knob-and-lock set.

In Room 015b the doorways to the elevator machine room and the foyer both have metal doors in metal frames.

In the foyer of Room 015b the interior of D003 has splayed masonry jambs and a brownstone head and a wooden door and door frame. The doorway to the stairwell has a wooden door frame, door, and trim. The door has two vertical panels below four lights. The lights in this door were altered from nine in a three-by-three arrangement

to three lights over one larger light (with the muntins removed).

The doorway to Room 016 has a metal door frame and door with a single wire-glass light. This doorway opens into the south end of Room 016, which has a counter with a swinging half-door into the mailroom.

The doorway to Room 017 has a wooden door frame with double doors (fig. 123). The doors are wooden with metal cladding and hang from three butt hinges. Each door has four lights over one panel, but the lights have been covered. The east door has a brass knob-and-lock set with a brass escutcheon plate, as well as a steel hasp and lock. Though some of the hardware has been updated, the doors appear to date from the historic period.

In Room 018 the interior of the west doorway (D001) is trimmed with plain boards. The double doors have closers mounted on the top rail, the north door has a brushed steel handle, and the south door has locking-bolts at the top and bottom of the center stile.

The door from Room 018 to Room 019 has a panel door in a wooden door frame with plain wooden trim. The wooden door has two vertical panels with four lights above. It is hung with two butt hinges and has a brass locking knob. The doorway is trimmed with plain boards and is painted white to match the walls.

Windows

The windows in the basement of the northeast block are of uniform size and materials, with few alterations. The typical window has a masonry sill, splayed masonry jambs, a segmental arched head, and wooden window frame with double-hung replacement sashes (fig. 124). The window sills are generally brick, and some have a thin cementitious parging above that. Some of the windows in Room 015 have wooden sills on blocks above the masonry sills, which appears to be a historic treatment. The windows on the east wall of Room 016 also have security bars mounted on the inside of the window frame. The windows in Room 017 are trimmed with beaded boards in the splayed jambs, a single board on the sill, and a single board on the head, as well as a 3½-inch plain-board casing around the opening (fig. 125). This appears to be the historic treatment for this room and is therefore an important part of the building's historic materials. Two windows on the west wall and one on the north wall were bricked up.

Certain windows in the northeast block were blocked by additions, including one that opens into Room 014, and two that open into Room 020. In Room 017 one window on the east wall, under D102, is filled in with brick, and two windows on the west wall were bricked up where the stair tower was added. As previously described, the windows on either side of the elevator were altered.

Ceilings

The ceiling in the northeast block of the basement is similar to the main block, with exposed steel and wooden framing, fluorescent light fixtures, electrical conduit, and utility pipes, including a sprinkler system. The ceiling is covered with 7-inch-wide planks that run north–south in the northeast block and east–west in the west ell. The ceiling planks and framing are painted white in slight contrast to the off-white/cream walls. The ceiling boards in Room 017 are painted metallic green, but there was evidence of an earlier resinous finish, probably a varnish.

Stairs

The stairs from the basement to the first story have restricted access at both levels. They are accessed through a doorway in the foyer to Room 015b, which was previously

described. The stairs are enclosed by an outside brick wall on the west side, and a framed wall on the east side covered with plywood at the basement level and gypsum board at the first story. The wooden staircase has fourteen treads and a wooden banister on the east side and a railing on the west side (fig. 126). The banister has 1⅜-inch square balusters, 6-inch square newel posts at the top and bottom, and a molded wooden railing. The west wall has a molded wooden railing held by brackets anchored to the masonry wall. The staircase ascends north to the first-story landing with a doorway leading to the library (Room 120).

Northwest Wing

Plan

The basement of the northwest wing is composed of two rooms (Rooms 002 and 003) that extend north from the main block (fig. 105). The two rooms represent different periods of construction of the building. Historic plans indicate that Room 002 was constructed prior to Room 003. Room 002 has a long rectangular plan with masonry walls and part of a chimney base in the southeast corner. A framed partition separates Room 002 from Room 001, and there is a common wall between Room 002 and Room 003. Room 003 is a square room with masonry walls and a chimney base in the southwest corner of the room. North of Room 003 is the slab-on-grade foundation of the boiler room, which has no basement.

Floors

The floors in both Rooms 002 and 003 are concrete at the same level as the adjacent rooms in the west end of the main-block basement.

Walls

The outside walls in Room 002 are masonry with rubble brownstone below brick at the north end of the room and brick in the rest of the room. In the west wall near the north end of the room is an arched opening and tunnel for pipes that extended into the former Print Shop and probably to adjacent buildings. Though the Print Shop and other buildings were removed, the opening and some of the pipes are extant. South of that, along the west wall there is an arched opening that is bricked up, as well as other former openings that are now filled in with brick. The chimney base in the southeast corner is constructed with large blocks of brownstone. The wall at the south end of the room has chicken wire attached to the dimensional framing. The walls in Room 002 have a deteriorated finish of two-tone green paint.

All of the walls in Room 003, including the interior partition, are brick, with the exception of the brownstone chimney base in the southwest corner. The walls in this room are painted two-tone green like the adjacent rooms in the main block basement.

Doorways

The doorways from the main-block basement into Rooms 002 and 003 were previously described. There are no other doorways in either room.

Windows

The north wall of Room 002 has three windows that open at grade. The windows have wooden frames set in masonry openings. Two of the windows have replacement awning sashes with six simulated divided lights and interior screens. The east window has a louvered exterior cover with a fan in the basement.

Room 003 has one window in the east wall. This is an arched brick opening and currently has a fan mounted inside and a cover on the exterior of the window. In addition, the east wall has two bricked-up windows.

Ceilings

The ceilings in Rooms 002 and 003 are covered with 7-inch-wide planks running north–south that are painted white. The steel framing and wooden sleepers are installed below the plank ceiling and are also painted white. Utility pipes, electrical conduit, wires, and fluorescent lighting hang below the framing.

North Wing

Plan

The north wing extends north from about the center of the main block and is a long rectangular structure (fig. 105). The basement consists of two rooms (Rooms 010 and 011) that are enclosed by masonry walls and separated by a framed wall. Both rooms are rectangular, but Room 011 at the north end of the wing is smaller. The documentary and physical evidence indicated that the two sections of the wing were constructed at different times. The differences in the two sections of the north wing are evident on both the interior and exterior of the building.

Floors

The floors in north wing basement are concrete, which is consistent with the rest of the basement. The floor level is above that of the main block, and there is a concrete ramp at the doorway from Room 009 to Room 010.

Walls

In Room 010 the east and south walls are brick, and the west wall is rubble brownstone with brick above grade. At the partition between the two rooms are short brick walls that were part of the earlier end wall that was truncated when the north section of the wing (Room 011) was added. The partition wall is framed with 2-inch-by-4-inch boards and currently has open shelving. The outside walls in Room 011 are brick.

Doorways

The doorway from Room 010 to the main block (Room 009) is an arched brick opening with a modern metal door frame and door. There is an opening between Rooms 010 and 011 that serves as a doorway. However, it is technically not a doorway, but just the terminus of the framed partition wall and the short brick wall. The exterior doorway in Room 011 has splayed brick jambs and an arched head. The doorway has a modern metal door frame and door with a single wire-glass light in the top half of the door.

Windows

The windows on the east and north walls have splayed brick jambs and segmental arched heads. The arched heads of the windows in Room 010 are shallower than those in Room 011. These windows have wooden frames with double-hung replacement sashes. A window at the south end of the east wall was in-filled with brick when the loading dock was constructed. The north-wall windows in Room 011 have steel channel beams installed at the heads. The windows on the west wall have smaller masonry openings with wooden window frames and fixed replacement sashes. In Room 011 the smaller windows also have splayed jambs and arched heads. In Room 010 the small west-wall windows have straight jambs and canted sills.

Ceilings

The ceilings in the north wing a have 7-inch-wide wooden planks painted white, which is consistent with the other basement rooms. Steel I-beams and channel beams at the ceiling level reinforce the structure. Utility pipes, wires, electrical conduit, and

fluorescent light fixtures hang from the ceiling.

First Story

General Description

The first story of Building 27 has some large rooms with masonry walls that retain the open plan of the manufactory, as well as some smaller rooms with interior partitions and outside masonry walls (fig. 106). The floors in the offices are typically carpeted, and wooden floors are extant in the library. The interior doorways are generally constructed with modern materials. The windows in the first story are generally uniform with some minor variations in the size of the masonry openings and interior elements. All of the windows have double-hung replacement sashes with simulated divided lights. As in the basement, steel posts and beams supporting the structure are evident throughout the first story. Fluorescent light fixtures are suspended from the ceilings, as well as some utility pipes and electrical conduit (though less than in the basement).

The first story of the building is heated by both radiant and hot-air systems. The radiant heat is provided by modern fin-tube radiators with metal covers and by historic cast-iron radiators (fig. 127). The cast-iron radiators found throughout the building appear to date from the historic period.

Main Block

Plan

The interior plan of Building 27 has been adapted for the needs of the college (fig. 106). This is evident in the main block where sections of the building have varying uses including offices, student services, and at the east end the library. The west end of the main block is separated by a brick wall and has offices and an emergency exit. Room 111 is a large rectangular room that retains an open plan with carrels dividing the space and a glass wall separating it from the entry lobby (Room 112). The rectangular lobby is the primary entrance to the building and has access to the library, the elevator, the stairs, and the adjacent offices. The east end of the main block is divided into the entrance hallway for the library and two conference/class rooms (Rooms 118 and 119).

Floors

Documentation indicated that the floors in the main block were historically wooden. Currently the floors in the offices and student service rooms, including Rooms 101, 102, 104, and 111, are wall-to-wall carpet over wooden floors. The exit hallway at the west end of the main block (Room 103) has a vinyl tile floor. The floor of the entry lobby (Room 112) is also covered with vinyl tiles. The restroom (Room 112a) has ceramic tile floors.

The floors in the library appear to retain the historic materials. These rooms have 3¼-inch-wide wood-strip flooring with carpet runners in high traffic areas. There is wall-to-wall carpet over the wooden floor in Room 118. In Room 119 the wooden floors are exposed and the boards run north–south, while in the rest of the library the floor boards run east–west.

Walls

The outside walls in all of the first-story rooms in the main block are brick. The walls separating the rooms at the west end of the main block are modern framed walls with painted gypsum board. The brick walls are generally unpainted and the gypsum board walls are typically painted white. An interior brick wall between the west end and Room 111 suggests that the sections were built at different times.

In Room 111 the north, south, and west walls are brick. On both the north and south walls of Room 111 there are partial brick walls that appear to be remnants of an earlier end wall. These partial walls correspond with the masonry wall between Rooms 004 and 005/006 in the basement, further suggesting that this was the terminus of the building at some time. The south wall east of the partial wall is stepped with wide recessed sections at each window and 1-foot-9-inch-wide piers that are one-brick-width deep. The window jambs in this section of the wall are one-brick-width deep versus two-brick-widths at the west end of Room 111. This essentially forms a niche around each window bay (fig. 106 inset). The north wall has a similarly stepped section. At the east end of Room 111 is a glass-and-metal partition between Rooms 111 and 112. Some of the lower panels in this wall are filled with random-width vertical boards, as are narrow panels at the top of the wall.

The south wall of Room 112 is a metal-clad paneled wall that encloses the stairwell (fig. 128). The lower section of the wall is covered with random-width vertical wooden planks. Similar wooden planking covers the east wall of Room 112 that separates the lobby from the library. This wall has a 3½-inch-high wooden baseboard and a 2-inch-high wooden crown molding. The elevator is enclosed with brick walls. The outside walls Room 112a have painted gypsum boards, while the inside wall of the restroom have a ceramic tile dado. In Room 112 the paneled stairwell walls and gypsum-board walls are painted white, and the board walls have a light gray appearance.

At the east end of the main block framed walls divide the hallway to the library and the two rooms (Rooms 118 and 119) at the south end of the library. The south wall in the hallway is covered with random-width vertical boards with a baseboard and crown molding. The interior walls in Rooms 118, 118a, and 119 are finished with painted gypsum board. Along the top of the north wall in Room 118a, behind the gypsum board, is a section of tongue-and-groove boards, which was the historic material of the partition. In the north wall of the library hallway and south wall of Room 118 are partial brick walls that were part of the former end walls of the building (fig. 129). There are corresponding walls in the basement and on the second story. A section of the north wall in Room 119 has a glass-and-metal wall that includes a doorway to the room.

Doorways

The doorways in the modern partitions are generally wooden doors with metal door frames, and brushed-steel hardware. At the west end of the main block, the emergency exit doorway to the stairwell (Room 103) and the exterior doorway in that room (D111) each have doors with push bars and automatic closers. The doorway from Room 102 to Room 111 was altered from a larger doorway and currently has a standard-size wooden door and metal frame with brick infilling the area of the historic doorway. The doorway between Room 104 and Room 111 was cut through a brick partition and has wooden casings with no door.

Between Rooms 111 and 110 is a wide opening with a glass-and-metal doorway that has double glass doors, sidelights, and a transom. The doorway from Room 111 to Room 112 is also a glass door set in a glass-and-metal partition.

Room 112 provides access to several areas of the building and has a number of doorways. The entry doorway (D101) has double doors with push bars and automatic closers (fig. 128). The interior of D101 has 4½-inch-wide wooden casings. The doorway to the stairwell is framed in the paneled wall enclosing the stairwell and has a metal-clad paneled door with wire-glass in the top panel. The door has three butt hinges, and a

handle and closer on the west side. The doorway to the library has a metal frame and a wooden door with one light in the top half of the door. The restroom (Room 112a) door is metal in a metal frame. The elevator doorway is a standard sliding metal door in a metal frame. The doorway between Room 112 and Room 113 appears to retain some of its historic elements including the original brownstone jambs and lintel. The Room 112 side of the doorway retains two cast-iron pintles on the east side and an iron latch rest and lock keeper on the west side (fig. 130). The materials suggest that this is an historic doorway, which may date from the construction period and retains a high degree of historic integrity.

At the east end of the main block there are two doorways to Room 118. The doorway in the south wall of the hallway has wooden casings and a wooden door with one light in the top half. The other doorway to Room 118 has wooden casings and a wooden door, as does the doorway at the west end of Room 119. The other doorway in Room 119 has a glass-and-metal door surrounded by a glass-and-metal partition.

Windows

The exterior appearance of the windows is fairly uniform, with similar trim and replacement sashes. In the interior of the building, each double-hung sash unit has a metal frame that is installed in a wooden window frame within a brick opening. In some cases the wooden window frames are wider in order to fill the width of the opening, which does differ. The wooden frames are painted red, presumably to blend with the brick. The interior elements of the windows do vary in sections of the building and are another indicator of the stages of construction of the building.

The windows in Room 102 and 104 at the west end of the main block have splayed jambs and segmental arched heads made with bricks set in rowlock. With slight variation, these windows measure about 3 feet 9 inches wide by 6 feet 4 inches high to the top of the arch. The windowsills are brick and are set as a row of headers.

In Room 111 there are some variations in the windows relative to the different periods of construction. At the west end of the room four windows in the south wall measure 3 feet 9 inches wide by 5 feet 10¾ inches high. These windows have straight jambs and heads, and wooden headers. The windows also have 9½-inch-deep wooden windowsills with bullnose edges and 2½-inch wooden aprons below the sills, all of which are painted red. The windows in the stepped portion of the south wall, east of the former partition, are larger with shallow masonry openings due to the construction of the stepped wall. Thus these windows have shallow brick jambs and sills, and wooden headers. The windows on the north wall of Room 111 are similar, except for the west window, which is in a former doorway. That window opening holds a standard sash, but is 4 feet 7 inches wide by 6 feet 6 inches wide with a wooden header over the width of the opening (the exterior has a long brownstone lintel that remains from the doorway).

In Room 112 the window west of the entry doorway is similar to the adjacent windows in Room 111 (fig. 131). The two windows in the stairwell have straight jambs and shallow-segmental arched heads. These windows have wooden windowsills with bullnose edges and aprons below the sills, which are painted red. In the north wall the window east of the elevator is similar to the windows in the stairwell (fig. 132). This same style of window is continued in the north wall of the library hallway and the south wall of Room 118, up to the partial brick walls where the east addition to the main block begins. The windows in the east end of the main block, which includes one window in Room 118 and the windows in Room 119, have splayed brick jambs and rowlock-segmental arched heads. These

windows are typically 3 feet 5 inches wide by 6 feet 3 inches high, and have wooden windowsills with bullnose edges and aprons below the sills.

Ceilings

The ceilings throughout the first story of the main block have 6½ – 7-inch planks that generally run north–south. The ceiling planks are painted white, except in Room 118 where they are painted brown. The structural steel framing is installed below the ceiling and is generally painted to match the ceiling. Utility pipes and fluorescent light fixtures hang from the ceiling and steel framing.

Stairs

As previously described, the stairwell is enclosed with metal-clad paneled walls with molded trim. The staircase has sixteen steps, and the wooden treads and risers currently have rubber stair covers (fig. 133). There is a wooden banister with a molded hand rail on the north side of the stairs and an iron pipe railing on the south side. The banister has 1¼-inch square balusters and 4¾-inch square newel posts with molded caps at the top and bottom of the stairs. The pipe railing has a pipe post at the bottom of the stairs and brackets anchored to the wall midway up the stairs and at the second-story landing. Documentary evidence indicated that the stairs were constructed by 1941, and they retain a high degree of historic integrity.

Northeast Block and West Ell

Plan

The northeast block extends north from the main block at a slight angle (fig. 106). As in the basement, the physical evidence supports the documentary evidence suggesting that the east end of the main block, and the northeast block and west ell were constructed at the same time.

Most of the northeast block is an expansive open space defined by the outside masonry walls and currently used as the college library (Room 120, fig. 134) and offices (Rooms 121–128, fig. 135). There is a staircase along the west wall with access to the basement and second story. At the north end of the block and in the west ell there are staff offices with framed interior partitions. The stair tower is located in the northwest corner and is accessible through a doorway in Room 122.

Floors

The floors in the northeast block are 3¼-inch-wide wooden floor boards running east–west. The west ell has similar wood-strip floors that run north–south. The wooden floors are covered with carpet runners in high-traffic areas of the library. Historic plans of the building note that the floorboards are maple and were installed in 1940 when the steel framing was installed.

Walls

The outside walls are brick and the interior partitions are framed walls. The elevator shaft has brick walls. The wall enclosing the stairwell has random-width vertical boards facing the library and gypsum board covered with textured paper in the stairwell. The partition at the north end of Room 120 is covered with random-width vertical boards, and the partitions in the offices (Rooms 121–128) are covered with wooden paneling. There is one section of quarter-round base molding along the west wall of the library. This may have been used throughout the northeast block, but no other examples are evident today.

Doorways

The interior doorways at the north end of the northeast block have wooden door

frames and doors. The exterior door on the east wall of Room 122 (D102) was previously described. That doorway has no interior trim. In the same room the doorway to the loading dock (D103) has a wooden frame and door. The door has nine lights over one horizontal and two vertical panels and hangs on three butt hinges. The doorway to the stair tower has a two-panel metal-clad door in a metal-clad stepped frame with a quarter-round edge. That door was installed in a former window opening when the stair tower was added to the building.

Windows

The windows in the northeast block and west ell are typical, with most interior openings measuring 3 feet 5 inches wide by 6 feet 2 inches high. The windows have splayed jambs and segmental arched heads, and have replacement sashes in wooden frames. The windows in this section of the building typically have wooden windowsills and aprons below the sills. At the north end of building, steel channel-beam lintels have been installed above arched heads (fig. 136). When the stair tower was constructed, one window in the west wall of Room 122 was bricked up and one was converted to a doorway. A window in the north wall of the west ell was also infilled with brick when the stair tower was added.

Ceilings

The ceilings in the northeast block are 10 feet 7¾ inches high and similar to the other first-story rooms with wooden planks running north–south. There is steel framing installed below the ceiling with lighting, utility pipes, and the sprinkler system hanging from steel (fig. 134).

The offices in the west ell of the northeast block have drop ceilings.

In the northwest corner of Room 122 the ceiling is raised for the organ gun rack, which was installed there when this section of the building was a museum (figs. 70 and 137). The ceiling above that space has is paneled with battens along the seams. The windowsills and aprons of the second-story windows are visible where the ceiling was raised.

Stairs

The stairwell on the west wall of Room 120 has access to the basement stairs and the second-story stairs. The basement staircase was previously described and can only be accessed from the first story through a secured, alarmed doorway. The staircase to the second story is partitioned by a framed wall and is open to the room at the south end of the staircase (fig. 138). The staircase has sixteen wooden steps with rubber tread and riser covers. The wooden banister on the east side has 1⅜-inch square balusters and 6-inch-by-6-inch wooden newel posts with molded caps at the top and bottom of the stairs. A wooden railing on west wall is supported by brackets mounted in the brick wall. There is a landing at the second story with a doorway to that section of the library.

Northwest Wing

Plan

The northwest wing is composed of three sections that together from a large rectangular wing (fig. 106). Historical documents and physical evidence indicated that the west side of the wing was constructed prior to the east side, and may have been constructed in two phases. A brick wall, separating the east and west sides of the wing, had been an outside wall. The west side of the wing is currently divided by modern partitions for offices and a conference/class room. The east side of the wing is composed of two rooms: one is the former Boiler Room (Room 109): and the other the former Engine Room (Room 110) that adjoins the main block. These rooms are separated by a masonry partition.

Floors

The floors in the northwest wing are mostly covered with wall-to-wall carpeting that is presumably installed over wooden flooring. In Room 103 the floor is covered with vinyl tiles. Room 109 has a concrete floor with a ramp at the north end sloping down to the grade at D108.

Walls

The northwest wing has outside brick walls and a center north–south wall with former windows infilled with brick (figs. 139 and 140). There is also a brick wall between Rooms 109 and 110. A jog in the west wall of Room 105 and the east wall of Room 108 suggests that the north end of that section was an addition. The walls of the north end of that section are also thicker. A portion of wall between Rooms 110 and 111 is masonry and the rest is glass-and-metal partition with a double doorway. Walls in Room 110 have 3½-inch wide bead-board wainscoting 2 feet 6 inches high with a beveled baseboard and chamfered chair rail all painted red; the bottom of the baseboard is covered with a strip of carpet matching the wall-to-wall carpeting on the floor (fig. 141). The masonry walls above the wainscoting are parged with a cementitious material and painted white, except for a section of the south wall that is brick (fig. 142). The brick section of the south wall surrounding the glass doorway appears to be a later alteration. The woodwork and parged masonry walls appear to be historic treatments and retain a high degree of historic integrity.

Doorways

The exterior doorway (D110) in Room 105 was evidently installed in a former window opening. The interior of D110 has splayed brick jambs and an arched head with brick infill above the doorway (fig. 143).

The interior doorways of the wing have wooden doors with metal frames with the exception of Room 110 to 111, which is glass and metal as described. Room 106 has two former doorways one has been converted to a window, and one is bricked up (probably a former entrance to the Print Shop). There is also a former doorway in Room 107. At the north end of Room 108 is an emergency exit (D109) that has metal door with a push bar and an alarm. It has splayed brick jambs and an arched head. Near the north end of Room 108 an opening in the east wall (possibly a former passage, but too small for a doorway) into Room 109 has been bricked up. In the east wall of Room 109, interior access to D106 and D107 has been closed off with cinder-block walls. D108 in the north wall of Room 109 has a sliding door with a track mounted above the doorway and a wooden stop west of the door. There is no interior trim in this doorway.

Windows

The windows in the northwest wing have replacement sashes and a similar appearance from the exterior. However, there are some differences in the interior appearance.

In Room 105 two windows south of the doorway have straight jambs and arched heads, while the windows north of doorway have splayed jambs and arched heads, further indicating that the north end was a later addition. All the windows in Room 105 have wooden windowsills with bullnose edges and a 3½-inch apron below. Room 106 has a single window in a former doorway that has splayed jambs from floor to the arched head. Room 107 has two windows on the north wall with splayed jambs and arched heads. On the east wall of Room 108, all windows have been bricked up.

The windows in Room 109 were previously described, and the interior elements are

similar to exterior with straight brick jambs and steel lintels.

In Room 110 the east-wall windows have splayed jambs and arched heads. The wooden sills extend to become part of the chair rail, and the window openings have turned trim at edge of jamb (fig. 144). The south window is set in a former doorway, which was also evident on the exterior from alterations to the brick and a longer lintel.

Ceilings

Like other sections of the building, the ceiling in the northwest wing has wooden planks painted white. There is steel framing supporting structure, with some utility pipes and light fixtures hanging from the framing and ceiling. The ceiling in Room 109 is open to the second story, and at that level is open to the ceiling framing above. There is evidence of a former plaster ceiling on the exposed ceiling framing, and above that the roof framing was visible.

North Wing

Plan

The north wing has a rectangular plan with outside masonry walls and interior modern partitions (fig. 106). The partitions divide the space into an entry foyer, a restroom, a few offices, and a conference room. The changes in building materials noted on the exterior are also evident on the interior. In Room 116 there is a jog in the west and east walls where the north end of the building was added, and there are differences in the window elements between the south and north ends of the wing. The physical evidence further supports the documentary evidence indicating that the north end of the building was added to the initial wing.

Floors

The floors in the north wing are all modern materials, which in most cases are installed over historic wooden flooring and/or wooden subflooring. The foyer (Room 113) floor is covered with rubber tiles, and the restroom (Room 113a) has ceramic tiles. All of the offices (Rooms 114–117) have wall-to-wall carpeting.

Walls

A masonry wall separates the north wing from the main block. The outside walls of the wing are brick, and the interior walls are framed and covered with gypsum board. There is a jog in the west and east walls where the north end of the wing was added. The walls at the north end of the wing are one brick-width thicker. The interiors of the brick walls and the gypsum board partitions are painted white. The lower sections of the restroom walls have light-blue ceramic "subway" tiles.

Doorways

In the west wall of Room 113 the exterior doorway (D105) has a metal door frame and door with sidelights north of the door. The interior of the doorway is trimmed with 7⅜-inch-wide plain-board casings. The doorway from Room 113 to Room 116 has a metal frame and a metal-and-glass door. The doorways to the offices have metal door frames and wooden doors.

Windows

Though the replacement sashes in all the windows are similar, the interior elements of the windows are different in the south end versus the north end of the north wing (figs. 145 and 146). At the south end of the wing, the windows are 3 feet 2 inches wide by 5 feet 8 inches tall (fig. 145). These windows are trimmed with 5½-inch-wide plain wooden casing and pedimented heads,

as well as 5-inch sills with 4-inch-wide aprons below the sills. The windows at the north end of the wing are 3 feet 5 inches wide by 6 feet tall (fig. 146). The masonry jambs are splayed, and there is no wooden casing. The windowsills are 7 inches deep and are raised above the masonry sill on a 4-inch stool. The differences in the windows are indicative of the alterations to the building.

Ceilings

The ceiling in the north wing is similar to the other section of the building with 7-inch-wide planks running east–west. There is steel framing below the ceiling, and the ceiling and framing are painted white. Utility pipes, electrical conduit, and fluorescent light fixtures hang below the ceiling.

Second Story

General Description

The second story of Building 27 has been partitioned for office space, but does retain some open areas, especially the library on the second story of the northeast block (fig. 107). The floors on the second story are typically carpeted, presumably covering wooden floors. The interior doorways are generally constructed with modern materials. There are some variations in the interior window elements, but most of the replacement sashes are similar, creating a uniform exterior appearance. The ceilings are high and typically wooden planks with fluorescent light fixtures, some utility pipes, and electrical conduit suspended from the ceiling. Unlike the basement and first story, there are no additional steel posts and beams on the second story.

The second story of the building is primarily heated by radiant heat systems. The radiant heat is provided by modern fin-tube radiators with metal covers and by historic cast-iron radiators.

Main Block

Plan

The second-story plan of the main block is similar to the first story (fig. 107). However, there are more partitioned offices near the center of the building, as well as office carrels. The east end of the main block has rooms related to the library and some open stacks for the library.

Floors

The floors throughout the main block are carpeted, with the exception of the floors at the top of both staircases. The floor in the south stairwell is covered with rubber tiles presumably laid over wooden flooring. The stairwell at the west end (Room 205) has 3¼-inch-wide wooden floor boards, which appear to be representative of the historic flooring. The floors in the restrooms (Rooms 236 and 237) are covered with vinyl tiles.

Walls

The outside walls in the main block are brick, which in some areas is covered with plaster and lath. The plaster-and-lath finish was evident in the kitchen (Room 222, fig. 147) and the south stairwell. Sections of the walls have 10-inch-high stepped wooden baseboards with beveled top edges. The plaster and baseboards appear to be the historic finishes and retain a high degree of historic integrity.

At the west end of the main block the interior brick wall extends through the second story and in to the attic. This wall separates Rooms 204 and 206 from Rooms 216 and 217 (fig. 148). In Room 216 and the adjacent offices, the outside walls are covered with gypsum board (perhaps

covering or replacing the historic plaster finish) and trimmed with 3¼-inch-high wooden baseboards.

The interior partitions are framed and most are covered with painted gypsum board with 3¼-inch wooden baseboards. Sections of the walls partitioning Rooms 222 and 233 are covered with random-width boards set on diagonals (fig. 149). Enclosing the stairwell are the historic metal-clad paneled walls with wire-glass windows (fig. 150). The elevator shaft has brick walls. The partition walls of Room 235 have metal frames with panels and probably predate the use of the building by STCC. The walls of the restrooms (Rooms 236 and 237) have vertical tongue-and-groove beaded boards, which appear to be historic and were evident in the 1941 drawings of the building.

The rooms at the east end of the main block are accessed from the library. The outside walls at this end of the building are painted brick. Room 234 has gypsum-board partitions, and Rooms 238 and 239 are partitioned with modular-panel walls.

Doorways

The doorways in the modern partitions have metal door frames and doors that hang on three butt hinges and have brushed-steel locking handles. The doorway between Rooms 204 and 217 was altered from a larger opening with a segmental arch to the current standard doorway with a single-panel metal-clad door in a metal door frame. The doorway between Rooms 206 and 216 was also altered from a wider opening with a full arch to a standard opening that is trimmed with wooden casings and has no door (fig. 148).

At the top of the south staircase, the doorway is framed in the paneled wall and has a metal door frame and door. The door has one wire-glass light over one panel and hangs from three five-knuckle hinges. The door has a pull handle and a closer.

In Room 223 the doorway to Room 232 has a wooden paneled door with wooden casing, as does the doorway to the kitchen (Room 222) and the library. The doorways to the restrooms have wooden door frames and doors with four lights above three horizontal panels. The doors hang from three butt hinges with ball finials and have metal knob-and-lock sets with rectangular escutcheon plates. Both doorways have single pane transom windows that tilt into the restroom. These doorways probably date from the construction of the restrooms and retain a high degree of historic integrity.

Windows

The interior window elements in the main block vary from section to section, but all have similar double-hung replacement sashes with six-over-six simulated lights.

At the west end of the main block, the windows have masonry openings with splayed jambs and segmental-arch heads, similar to the first story (fig. 151). In Room 216 and the adjacent offices (Rooms 217–221) the windows on the north and south walls have 5¼-inch-wide wooden casings and 3½-inch-wide wooden trim below the windowsills. Similarly, the windows in Room 222 and the south stairwell have wooden casing, except those 5-inch-wide casings with plain blocks at each corner (fig. 152). Wooden casings with corner blocks were also found in Rooms 235–237. These particular window casings appear to be historic and retain a high degree of historic integrity.

The windows in the library at the east end of the main block have splayed brick jambs and segmental arch heads, similar to those in the first-story library.

Ceilings

The ceilings in the main block are high and typically constructed with boards, but do vary from section to section. At the west

end of the main block, the ceiling has random-width boards with battens, painted white. In this area some of the chamfered timber framing is exposed at the ceiling. At the west end of Room 216, the ceiling has boards running east–west. The boards vary from beaded to plain and range in width from 6 to 10 inches. In Room 223, the kitchen (Room 222), and the stairwell, the framing is again exposed with random-width boards above that: all of which is painted white (fig. 153). Here the framing consists of larger timbers running north–south with smaller timbers spanning the larger ones; all of the timbers are chamfered.

Stairs

The staircase at the west end of the main block serves as an emergency egress. The stairwell (Room 205) has gypsum-board walls and ceiling, and a wide single-return staircase. The staircase has wooden treads and risers with plywood flooring at the landing. There are rounded hand rails held with brackets on both sides of the staircase. This staircase appears to be a more recent alteration.

The south staircase was previously described. At the second story the railing and balusters continue around the opening of the staircase, forming a balustrade with newel posts at each corner (fig. 150).

Northeast Block and West Ell

Plan

The second story of the northeast block maintains the same layout as the basement and first story, extending north from the main block at a slight angle with the west ell at the northwest end and the stair tower adjacent to that (fig. 107). Again, the physical evidence suggests that the east end of the main block, and the northeast block and west ell were constructed at the same time.

All of the second story of the northeast block is an expansive open space defined by the outside masonry walls, and is currently used as the college library (Room 240 and 241, figs. 154 and 155) with restrooms (Rooms 242 and 243) along the south wall of the west ell. There is a staircase along the west wall with access to the first story. The stair tower in the northwest corner is accessed through a doorway at the north end of Room 240.

Floors

The floors throughout the library are covered with wall-to-wall carpeting, presumably over wooden flooring. Both restrooms have vinyl tiles covering the floors.

Walls

The outside walls are brick and are currently painted white. The wall enclosing the stairwell is gypsum board with random-width board wainscoting. The restrooms in the west ell have floor-to-ceiling tongue-and-groove-board walls with 4-inch-high beveled baseboards, all painted white (fig. 155). The walls of Room 242 are constructed with 2½-inch-by-4½-inch boards framing panels made up of 3½-inch-wide tongue-and-groove boards. There is no exposed framing on the tongue-and-groove walls of Room 243. Historic documents recorded that the restrooms were built one year apart, which explains the different appearance of the walls. In the restrooms, sections of the walls are tiled with ceramic “subway” tiles. The restrooms were depicted in the 1941–42 plans of the building, and the wall materials of the restrooms appear to be historic.

A modern partition was added north of the restrooms to create more privacy. This wall

is 8 feet high and is constructed with random-width boards on diagonals.

Doorways

There are few interior doorways in the northeast block and west ell. The interior of D202 has splayed brick jambs and a segmental arch head (fig. 156). The inside of the door has a push bar and a closer. The physical evidence suggests that this doorway was altered from a former window opening.

In the west ell D201 has straight brick jambs and a steel beam lintel (fig. 157). The wooden doors are hinged on the inside, each with three 2-foot-long strap hinges. Both doors have interior pull handles and spring-bolt locks on the top and bottom of the center stiles.

Both doorways to the restrooms have wooden casings and doors. The door to Room 242 has four lights over two horizontal panels. The door to Room 243 has five horizontal panels. Each of the doors hangs from three butt hinges with ball finials and has a brass knob-and-lock set. These doorways and doors are painted white, including the lights in the door to Room 242.

There is a doorway to the stair tower in the west wall at the north end of the library. This doorway has a two-panel metal-clad door in a metal-clad stepped frame with a quarter-round edge. That door was installed in a former window opening when the stair tower was added to the building.

Windows

The windows in the northeast block and west ell all have similar interior elements (fig. 156). The window openings are typically 3 feet 4½ inches wide by 6 feet high. The windows have splayed brick jambs and segmental arched heads with replacement sashes in wooden frames. Two windows were bricked up when the stair tower was added, but otherwise the windows were minimally altered.

Ceilings

The ceilings in the northeast block are high and have random width boards running north–south and exposed framing timbers, all painted gray. The large timbers span east–west and are a distinctive characteristic of the ceiling in this section of the building. Toward the south end of Room 240, near the west wall, is a large opening covered with boards. Review of historic plans suggests that this was an opening for a stairwell prior to 1941. As in other sections of the building, fluorescent light fixtures, electrical conduit, utility pipes, and the sprinkler system are hung from the ceiling and framing.

The ceilings in the west ell are similar to the northeast block, with exposed framing and random-width boards, which in this case run east–west, also painted gray. There is a framed opening in this ceiling that is now boarded up, which probably provided access to the attic at one time. In addition, there are two hatchways in the ceiling at the west wall for access to the attic. Utility pipes, electrical conduit, sprinkler pipes, and fluorescent light fixtures hang from the ceiling. There is also a steel I-beam fastened to the ceiling that appears to have been part of a hoist mechanism for loading items through the double doors in the west wall (fig. 158).

The ceiling boards and exposed framing are part of the building's historic fabric and retain a high degree of historic integrity.

Northwest Wing

Plan

The second story of the northwest wing has a plan similar to the first story, except there is no second story above the boiler room

(fig. 107). The outside brick walls form a large rectangle, and there is a brick wall separating the east and west sides of the wing. The west side of the wing is currently divided by modern partitions for offices and above the former Engine Room there is a large office (Room 215) with two smaller rooms (Rooms 215a and 215b).

Floors

The floors in the northwest wing are currently covered with wall-to-wall carpeting that is installed over wooden floorboards.

Walls

The outside walls in the west section of the northwest wing (Rooms 207–214) are brick painted white, as is the center wall of the wing. At the north end of the center wall is a shallow wooden shelf with 4¼-inch-wide beaded boards below it. The purpose of the shelf is not known, but it appears to be part of the historic building material. The interior partitions for Rooms 207–214 are gypsum board, painted white, and have wooden baseboards that are painted red.

The walls in Room 215, including the outside masonry walls and partitions, are covered with gypsum board. All of the walls are trimmed with wooden baseboards painted red.

Doorways

The interior of D205 has splayed brick jambs and a segmental arched head. The brickwork at the bottom half of the jambs suggests that a former window was altered to create the doorway. The inside of the door has a push bar and a closer at the top.

The interior doorways in the northwest wing have metal door frames and metal doors that hang from three butt hinges and have brushed-steel handles. The doorway from Room 214 to Room 215 is set in an altered window opening and has a wooden door.

Windows

The windows in the west section of the northwest wing have splayed brick jambs and arched heads with no interior trim. The windows are typically 3 feet 4½ inches wide by 6 feet 4½ inches high with replacement sashes. The four windows at the north end of the west wall in Rooms 211–213 were altered when the Print Shop was added to the wing; they currently have six-light replacement awning sashes. With the exception of the former window that is now a doorway from Room 214 to Room 215, the windows in the center wall were bricked up when the Boiler Room and Room 215 were added to the east side of the wing.

The windows in the east wall of Room 215 have wooden elements within the masonry opening and double-hung replacement sashes. The windows are 3 feet wide by 5 feet 5½ inches high; they have splayed wooden jambs and arched heads with 5½-inch-wide casings, and 2½-inch-wide aprons below ¾-inch-thick windowsills (fig. 159). These window trim elements appear to be historic and retain a high degree of historic integrity.

Ceilings

The west section of the northwest wing has high ceilings with beaded boards running east–west. The boards are about 5 inches wide and are painted white. As with most other rooms, utility pipes, electrical conduit, and fluorescent light fixtures hang below the ceiling.

The ceiling in Room 215 slopes from the center wall down to the east wall, and has exposed framing and boards with tie-rods, pipes, conduit, and lighting fastened to the ceiling elements. Most of the ceiling has beaded boards running north–south, and there is a small section of matchboards that

possibly provided access above the ceiling. Timber framing that spans both east–west and north–south divides the ceiling into panels, and the edges of the panels are trimmed with cyma-recta moldings (figs. 160 and 161). Steel tie-rods span the room from east to west, and are attached with brackets to the underside of the framing. All of these elements are painted white. These elements appear to be part of the historic fabric and retain a high degree of historic integrity.

North Wing

Plan

The second story of the north wing has a rectangular plan with outside masonry walls and interior modern partitions (fig. 107). The wing is partitioned into eight offices with a common hallway on the east side of the wing.

Floors

The floors are covered with wall-to-wall carpeting that is presumably installed over wooden flooring.

Walls

The outside walls are covered with plaster and have 10-inch-high stepped wooden baseboards with beveled top edges, all painted white. These materials appear to be historic and retain a high degree of historic integrity.

The interior partitions have random-width vertical boards to a height of about 8 feet with gypsum board above that. The interior walls have wooden baseboards and cornice trim.

Doorways

The fire-escape doorways have 5¾-inch-wide wooden casings with pedimented heads, all of which is painted red (fig. 162). Both doorways have metal-clad paneled doors with nine lights. The doorway trim appears to date from the addition of the fire escapes and is part of the historic building material, which retains a high degree of historic integrity.

Between the north wing and the main block is a wide doorway with plain wooden casings and no doors. The rest of the opening is infilled with vertical boards, and all the materials are painted white.

The interior doorways are part of the modern partitions. They are trimmed with wooden casings and have wooden hollow-core doors. The doors hang from three butt hinges and have brushed-steel locking handles.

Windows

The windows in the north wing have stepped wooden jambs and are trimmed with wooden casings that are similar to the fire-escape doorway casings (fig. 163). The casings are 5 inches wide with pedimented heads and 3¾-inch wooden trim at the windowsill, all painted red. The windows on the east wall do not have extended windowsills, but the windows on the west wall do have sills. In Room 224 the south-wall window has the typical trim with a windowsill and double-hung, six-over-six wooden sashes. The wooden window elements appear to be historic and retain a high degree of historic integrity.

As throughout the rest of the building, the windows in the north wing have double-hung replacement sashes with simulated lights.

Ceilings

The high ceilings in the north wing have beaded boards that are about 5 inches wide running east–west. There are three areas where the boards are different, which

appear to be access hatches for the attic. All of the ceiling boards are painted white. Fluorescent light fixtures, utility pipes, and electrical conduit hang from the ceiling.

Attic

General Description

The main section of the attic of Building 27 is accessed by a ladder on the east wall of the library and a ceiling hatch. Most of the attic spaces can be accessed from this entry point. There is access to the west-ell attic from a ladder and hatch on the west wall of Room 241, and the north wing is accessed through a ceiling hatch. During the current building investigation the main block, northeast block, and northwest wing attic spaces were accessed.

The attic is an unfinished space that is generally open except for the brick partition at the west end. The space is under the gable roof and is open to the roof-framing elements. Part of the attic may have been used when Building 27 was an active manufactory, but the slope of the roof and the framing would have limited the utility of the space. The attic is currently used for storage.

The main block and the northeast block have partitioned elevator shafts that extend above the roofline to form the exterior dormers.

There is an iron wheel near the center of the main block that may have been part of an earlier hoist or belt drive (fig. 164).

Plan

The attic follows the same layout as the second story with the exception of the northwest wing, which has no attic over the east half of the wing.

Floors

The attic floors are unfinished wooden planks in most sections. Some of the attic spaces under the lower part of the roof are open to the framing and have no flooring. The attic floors in the northeast block are presently covered with batt-fiberglass insulation.

Walls

The gable end walls in the attic are brick except for the west wall, which is plywood. At the west end of the building, the interior brick partition extends to the roofline. The elevator shafts are partitioned with brick walls with access doorways.

Doorways

The doorway in the interior brick partition has a metal frame and metal door within a masonry opening (fig. 165). The door hangs on steel hinges and has a steel latch. A weighted chain attached to the west side of the door, doorway header, and north jamb served as a door closer.

The elevator shaft in the main block has a doorway with a metal frame and door (fig. 166). The door hangs on two strap hinges and has a metal latch.

Windows

The attic windows in the east end wall, the west wall of the west ell, and the north wall of the northwest wing have replacement sashes. The windows have masonry jambs and headers with no additional interior trim elements.

The two dormers have steel sashes in masonry openings with no interior trim elements.

Ceilings

The attic ceiling is open to the board sheathing and framing of the gable roofs.

Structural Elements

Historic wooden framing elements are extant in the second story and attic of Building 27. However, there is little evidence of the historic structural system in the basement and first story of the building. Some historic photographs depict wooden framing elements, but no extensive framing plans were found during the current research.

The 1920 plans of the northeast block did depict the heavy timbers framing that section of the building. The heavy timbers in the basement measured 8 inches by 20 inches and were supported by tapered columns. The second floor framing included 8-inch-by-14-inch wooden beams that spanned east–west. Those beams were set in pockets in the outside brick walls. As previously described, the wooden framing for the second floor was reinforced with steel I-beams in 1920. Later the wooden framing was apparently removed and additional steel framing was installed.

The structural system of Building 27 was reinforced with steel posts and beams in 1939–40. At that time steel post, I-beams, and channel beams were added to the structural system, as documented by the historic plans and evident in the extant elements. The evidence also suggests that the timber framing was removed when the steel was added. Wooden sleepers are installed between some of the steel framing and the ceiling. The project included the basement and the first story of the building.

In most sections of the main block and northeast block of the basement, 6½-inch-by-8-inch steel I-beam posts extend along the center of the building to carry the steel I-beams (figs. 120 and 167). The historic plans of the northeast block show that the posts are supported by concrete footings under the concrete floor. The plans also show that the I-beams are set into the exterior masonry walls. Since the width of the building was narrower in the northwest and north wings, the steel beam could span the width of those sections without the support of steel posts.

In the main block the steel framing runs both the length and width of the building. The steel posts typically support 6½-inch-by-12-inch steel I-beams spanning the width of the building and smaller (generally either 4½-inch-by-6-inch or 4-inch-by-8-inch) I-beams running the other direction (fig. 167). In some cases channel beams are installed along the outside walls and above the windows. In Room 002 7-inch-by-14-inch I-beams span the width of the room with no additional steel framing. In Room 009 the 7-inch-by-8-inch I-beams run east–west in this small section. The northeast block (Rooms 015–017) has 8-inch-by-12-inch I-beams running the length of that block and 6½-inch-by-12-inch steel I-beams spanning the width. Similar framing is evident in Rooms 018 and 019.

The steel framing on the first story is similar to the basement, with larger steel I-beams (in some cases 9-inch-by-21-inch beams) spanning the width of the building and smaller I-beams running the opposite direction (typically 4-inch-by-8-inch beams). However, there are steel posts only in Room 110; in the other rooms the loads are carried by the outside walls and the basement framing. In the northeast block (Rooms 120–122) and west ell (Rooms 123–128), the beams spanning the width of those sections are pocketed into the outside brick walls between each window bay, and there are no smaller beams in the other direction (fig. 168).

The timber framing of the attic and the roof of Building 27 is extant. As previously described, some of the timber framing is evident on the ceiling of the second story and the rest is accessible from the attic. The attic framing in the main block is typically large timbers spanning the width of the building and smaller, though still substantial, joists between the timbers. The joists are connected to the timbers with mortise-and-tenon joints. The exposed timbers and joists in Room 223 and adjacent rooms have chamfered edges (fig. 153). In the south wall of Room 222, one of the large timbers was repaired with a steel bracket (fig. 147).

The exposed framing in the northeast block is large timbers with chamfers spanning the width of the building with no additional joists. The timbers are pocketed into the outside walls and have tie-rods to the roof framing. The west ell is similarly framed.

In the northwest wing the west section has an attic, but the east half has a lower roofline with no attic. The attic framing in the west section of the wing has joists spanning the width of the structure with bridging between the joists. The north-wing framing was not observed, but is probably similar.

The roofs of Building 27 are primarily gable roofs that are sheathed with random-width boards and covered with slate. However, the roof framing varies in the different sections of the building. Most of the main block has queen-post trusses that carry heavy timber rafters and large purlins (figs. 169 and 170). There is a lighter frame above this with common rafters that extend up to a ridge board. The lighter framing may have been a later addition to the queen-post framing.

Near the west end of the main block the brick partition continues into the attic; west of this wall the roof is framed with principal rafters, purlins, and common rafters with a ridge board. The northwest wing is framed in a similar manner, with the exception of the east section of the wing, which has a shallow shed roof. Portions of the framing for that roof are exposed in Room 215 and include principle rafters and purlins with tie-rods and scrolled brackets supporting the framing at the walls (figs. 160 and 161).

At the east end of the main block the roof framing transitions from the queen-post framing to principal rafters, substantial purlins, and common rafters extending up to a ridge board (figs. 171 and 172). The same roof framing was observed in the northeast block, and is further evidence that these sections were constructed at the same time. It seems likely that the entire building was re-roofed either when the northeast block was added or after the 1864 fire, which may account for the lighter framing above the queen-post framing in the main block.

Though the wooden and steel framing present in Building 27 date from different periods, both are considered historic and are indicative of the building's evolution. The extant structural framing retains a high degree of historic integrity.

Figure 108. Building 27 basement, Room 001, tunnel to Building 26, 2010.

Figure 109. Building 27 basement, Room 015, tunnel to Building 101, 2010.

Figure 110. Building 27 basement, Room 001, brownstone chimney base, 2010.

Figure 111. Building 27 basement, Room 004a, arched opening between 004a and 006, 2010.

Figure 112. Building 27 basement, Room 009, metal-clad paneled wall enclosing stairwell, 2010.

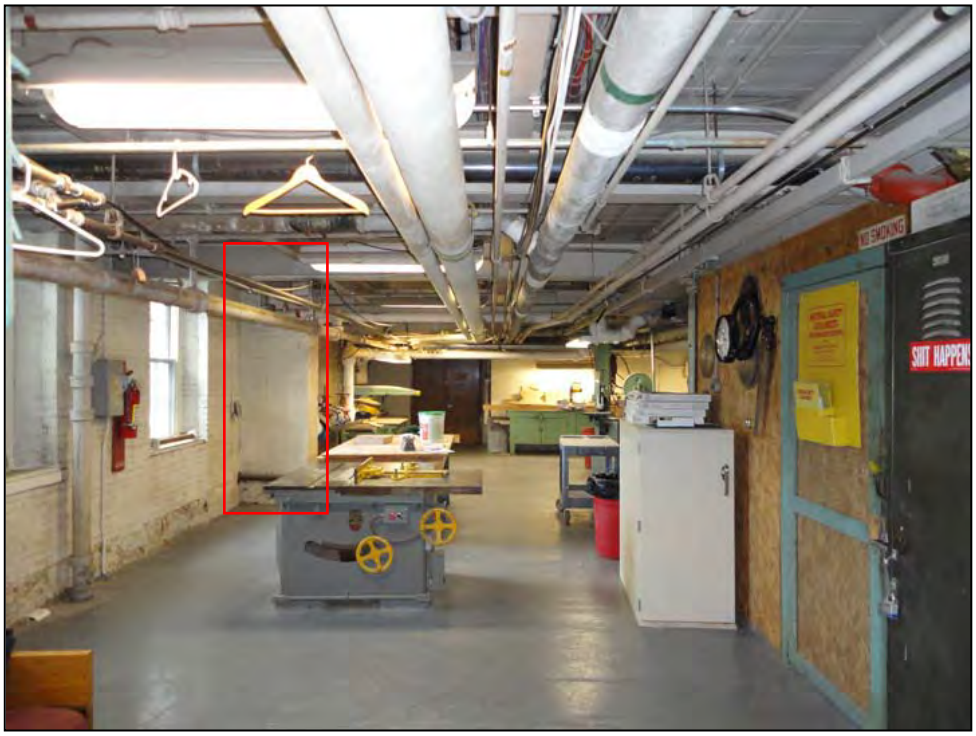


Figure 113. Building 27 basement, Room 012, looking east, partial brick wall (former end wall) on north side of room indicated by red outline, and doorway to Room 015 in background, 2010.

Figure 114. Building 27 basement, Room 005, doorway to Room 004, 2010.

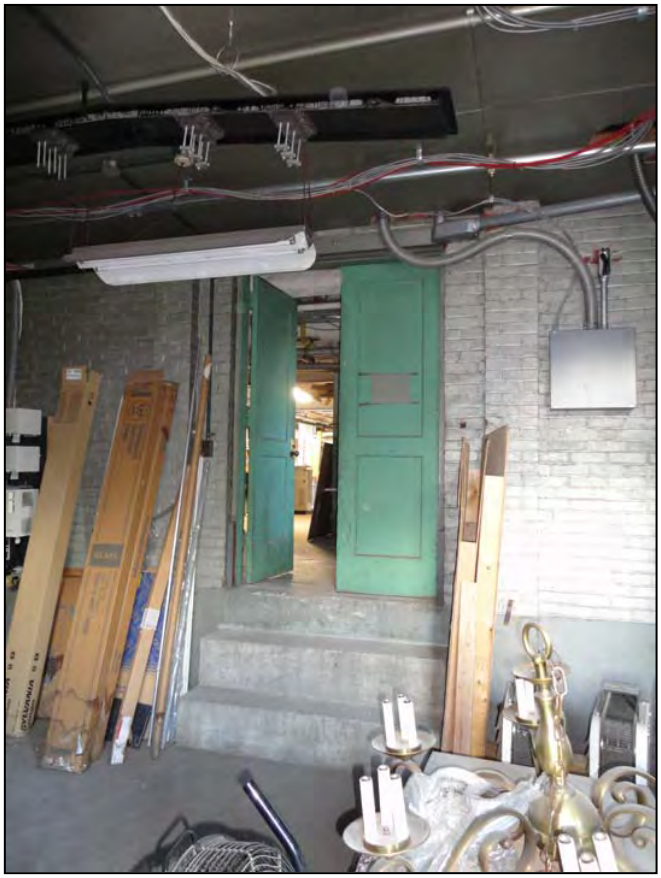


Figure 115. Building 27 basement, Room 013, double doorway and concrete steps at entry to transformer vault, 2010.

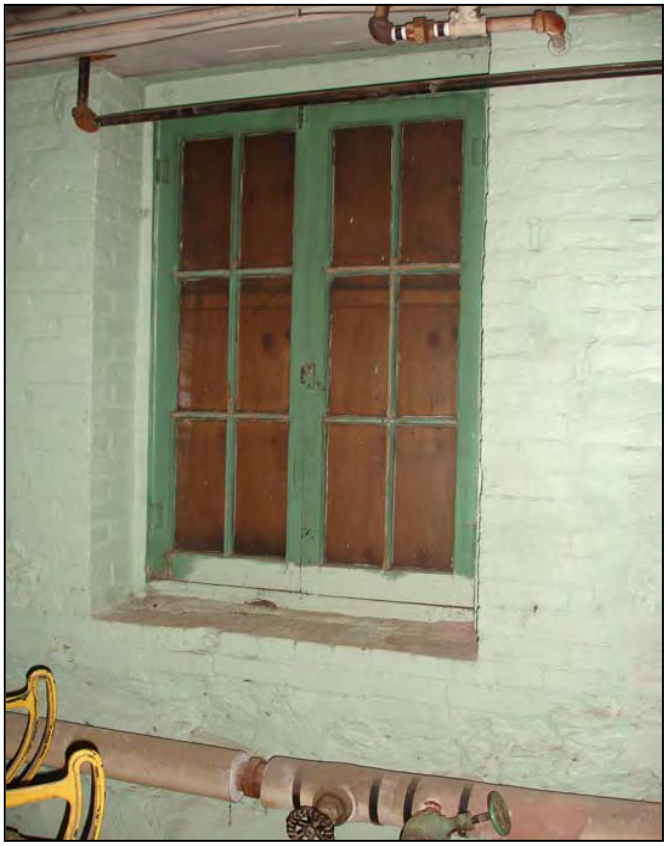


Figure 116. Building 27 basement, Room 007, historic casement window with exterior plywood cover, 2010.

Figure 117. Building 27 basement, Room 012, south-wall casement window with replacement sashes, 2010.

Figure 118. Building 27 basement, Room 012, south-wall double-hung window with replacement sashes, 2010.

Figure 119. Building 27 basement, main-block stairs, 2010.

Figure 120. Building 27 basement, Room 016, looking south, 2010.

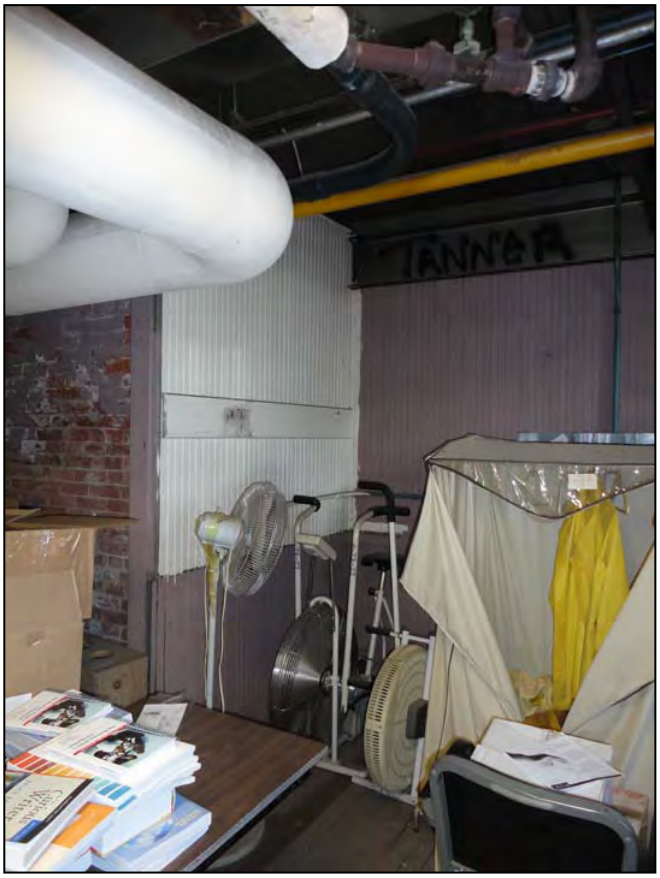


Figure 121. Building 27 basement, Room 017, north wall and chimney with tongue-and-groove boards, 2010.

Figure 122. Building 27 basement, Room 019, partition walls with tongue-and-groove boards, 2010.

Figure 123. Building 27 basement, Room 017, south-wall doorway, 2010.

Figure 124. Building 27 basement, Room 016, east-wall double-hung window with replacement sash and security bars, 2010.

Figure 125. Building 27 basement, Room 017, east-wall double-hung window with replacement sash and security bars, 2010.

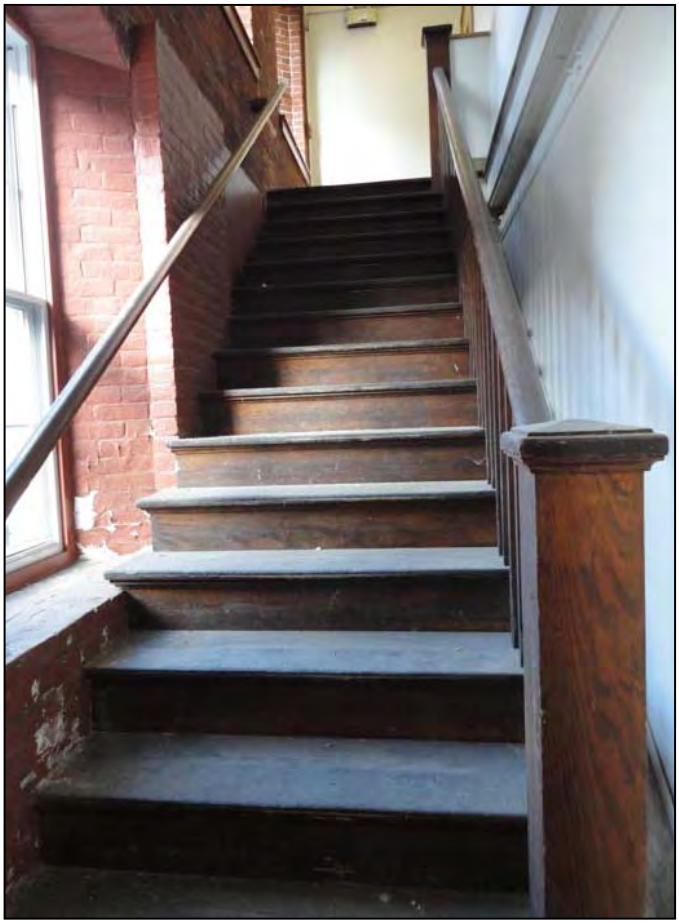


Figure 126. Building 27 basement, main-block stairs, 2010.

Figure 127. Building 27 first story, Room 112, historic radiator, 2010.

Figure 128. Building 27 first story, Room 112, south wall with entrance doorway and access to stairwell, 2010.

Figure 129. Building 27 first story, Room 118, south wall showing the window and partial brick wall (former end wall), 2010.

Figure 130. Building 27 first story, Room 112, north-wall doorway to Room 113 with historic brownstone trim and iron hardware, 2010.

Figure 131. Building 27 first story, Room 112, south wall showing stepped wall and window niche, 2010.

Figure 132. Building 27 first story, Room 112, north wall showing double-hung window with replacement sashes, 2010.

Figure 133. Building 27 first story, main-block stairs accessed from Room 112, 2010.

Figure 134. Building 27 first story, library, Room 120, looking southeast, 2010.

Figure 135. Building 27 first story, library staff office, Room 122, looking southwest, 2010.

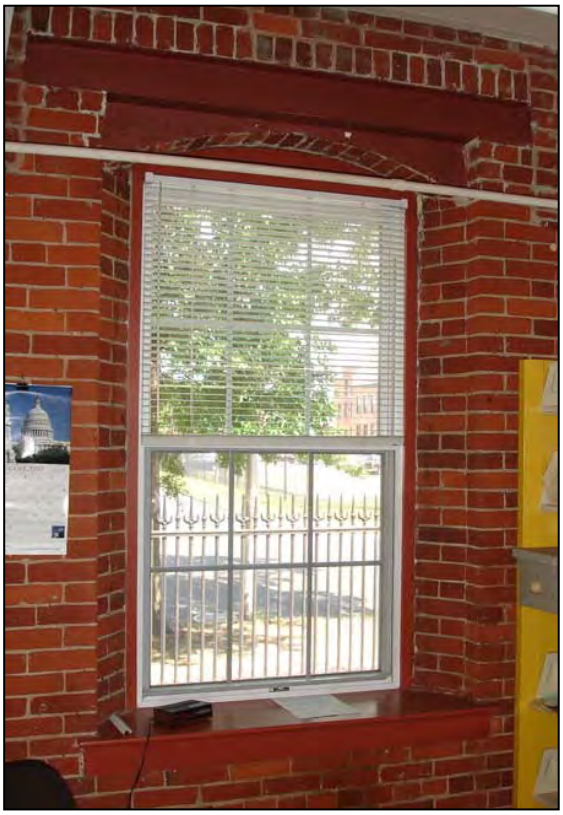


Figure 136. Building 27 first story, Room 122, east-wall window, 2010.

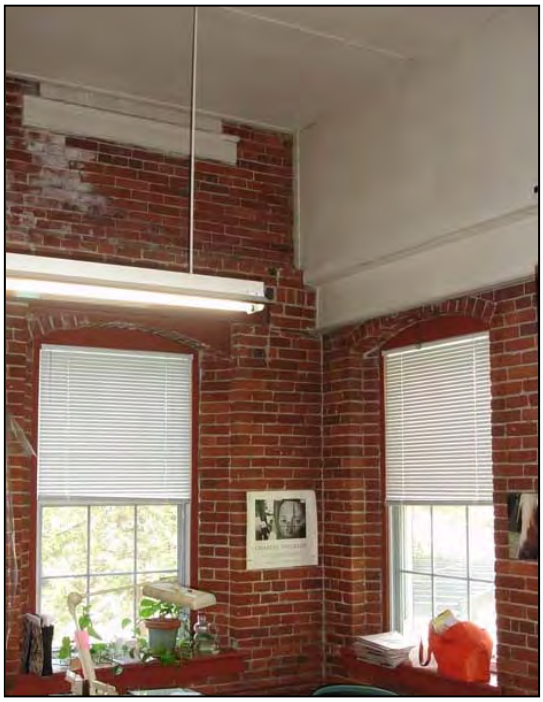


Figure 137. Building 27 first story, Room 122, northwest corner showing raised ceiling and windows, 2010.

Figure 138. Building 27 first story, northeast-block stairs accessed from Room 120, 2010.

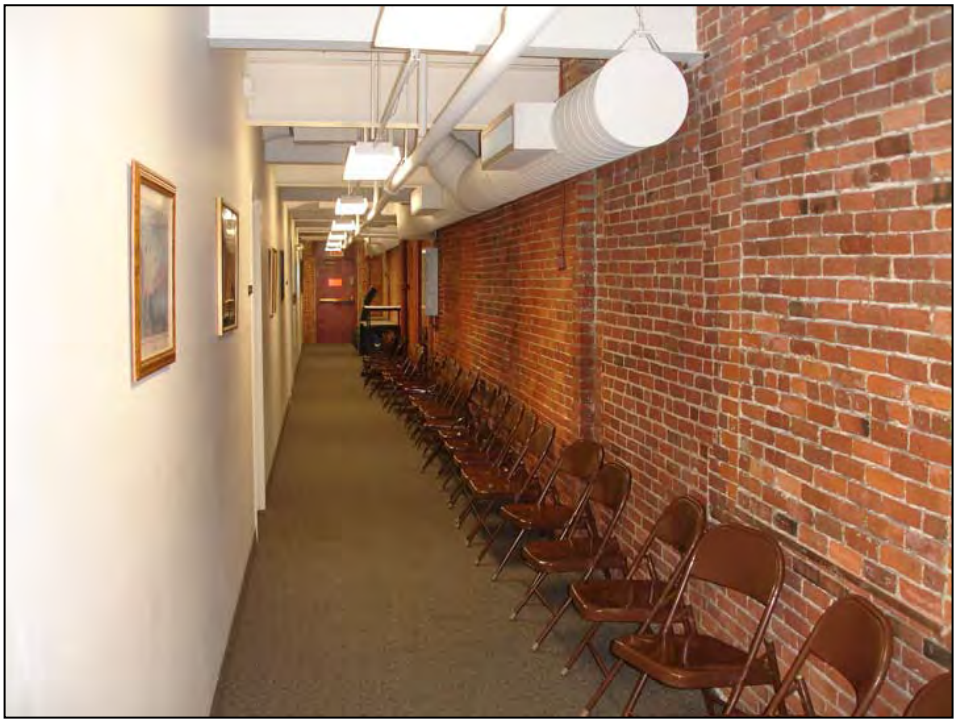


Figure 139. Building 27 first story, Room 108, east wall (former outside wall) dividing northwest wing, 2010.

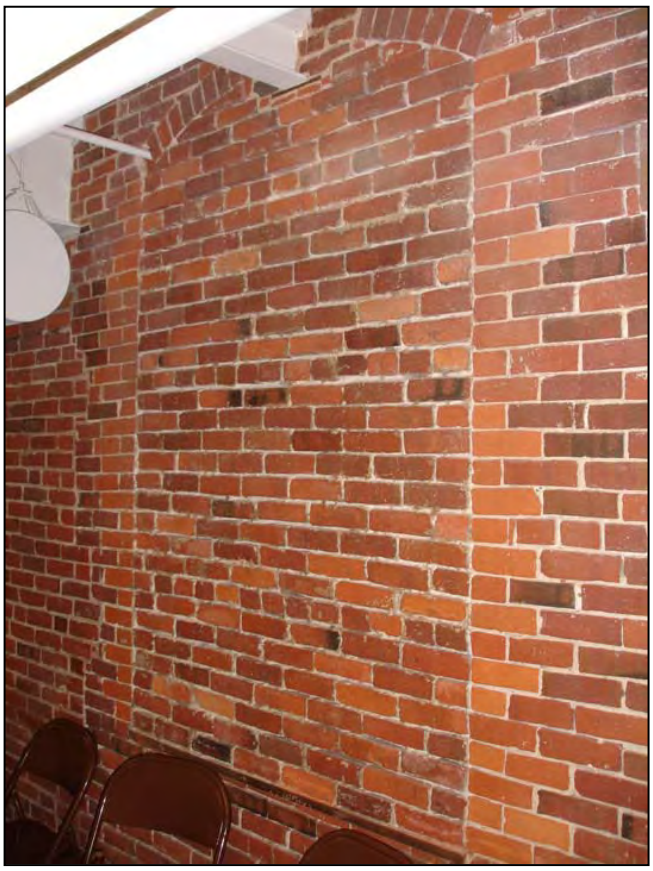


Figure 140. Building 27 first story, Room 108, east wall showing bricked-in window, 2010.

Figure 141. Building 27 first story, Room 110, northeast corner showing wainscoting and parged masonry walls, 2010.

Figure 142. Building 27 first story, Room 110, southwest corner showing wainscoting and parged masonry wall, as well as more recent masonry wall to the east (left), 2010.

Figure 143. Building 27 first story, Room 105, west wall, interior elements of D110, 2010.

Figure 144. Building 27 first story, Room 110, east-wall window with wooden sill and trim at the corners of the jambs, 2010.

Figure 145. Building 27 first story, Room 116, west-wall window and trim in earlier section (south) of north wing, 2010.

Figure 146. Building 27 first story, Room 116, west-wall window and trim in later section (north) of north wing, 2010.

Figure 147. Building 27 second story, Room 222, south-wall lath and plaster, as well as timber repair, 2010.

Figure 148. Building 27 second story, Room 206, doorway to Room 216 showing larger arched opening with brick infill, 2010.

Figure 149. Building 27 second story, Room 223, partition wall with diagonal random-width boards and gypsum board above; similar random-width boards are used throughout the building on recent partitions, 2010.

Figure 150. Building 27 second story, stairwell enclosure with metal-clad paneled walls and wire-glass windows, 2010.

Figure 151. Building 27 second story, Room 204, south-wall window and masonry elements, 2010.

Figure 152. Building 27 second story, stairwell south-wall window and wooden trim elements, 2010.

Figure 153. Building 27 second story, Room 222, exposed framing at ceiling, typical of east end of main block, 2010.

Figure 154. Building 27 second story, library, Room 240, looking south, 2010.

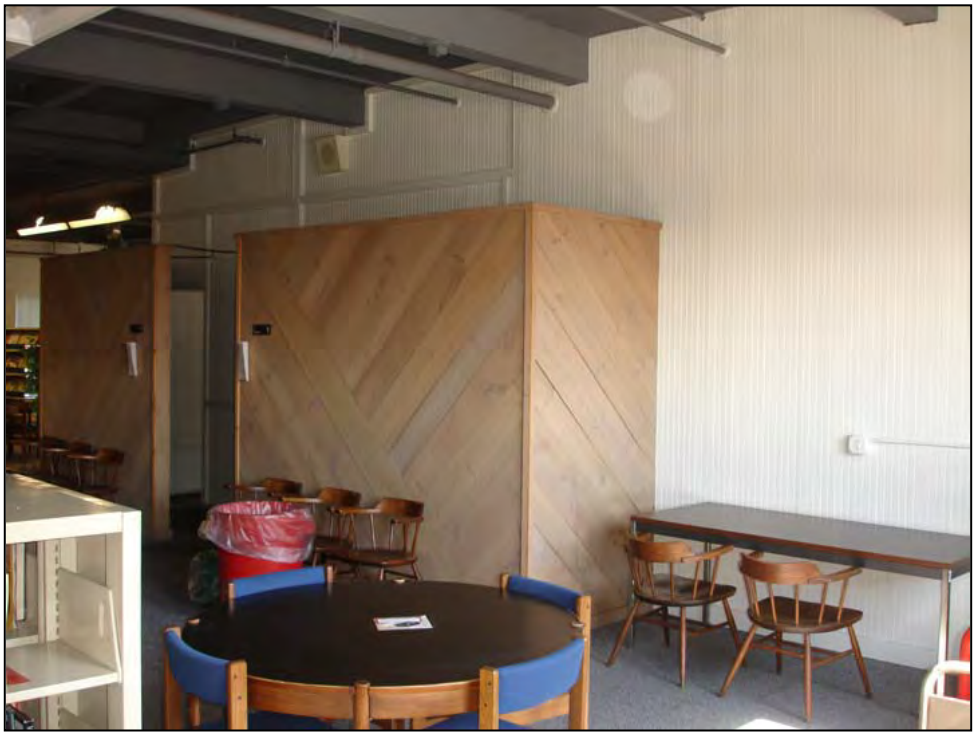


Figure 155. Building 27 second story, library, Room 241, tongue-and-groove partition walls for restrooms (Rooms 242 and 243), 2010.

Figure 156. Building 27 second story, library, Room 240, west wall showing exit doorway (D202) and typical windows, 2010.

Figure 157. Building 27 second story, library, Room 241, west wall, interior of doorway (D201), 2010.

Figure 158. Building 27 second story, library, Room 241, ceiling showing hoist, framing, and attic hatch, 2010.

Figure 159. Building 27 second story, Room 215, east wall, interior of window and wooden trim, 2010.

Figure 160. Building 27 second story, Room 215, ceiling, framing, and tie- rods, 2010.

Figure 161. Building 27 second story, Room 215, framing trim and bracket, 2010.

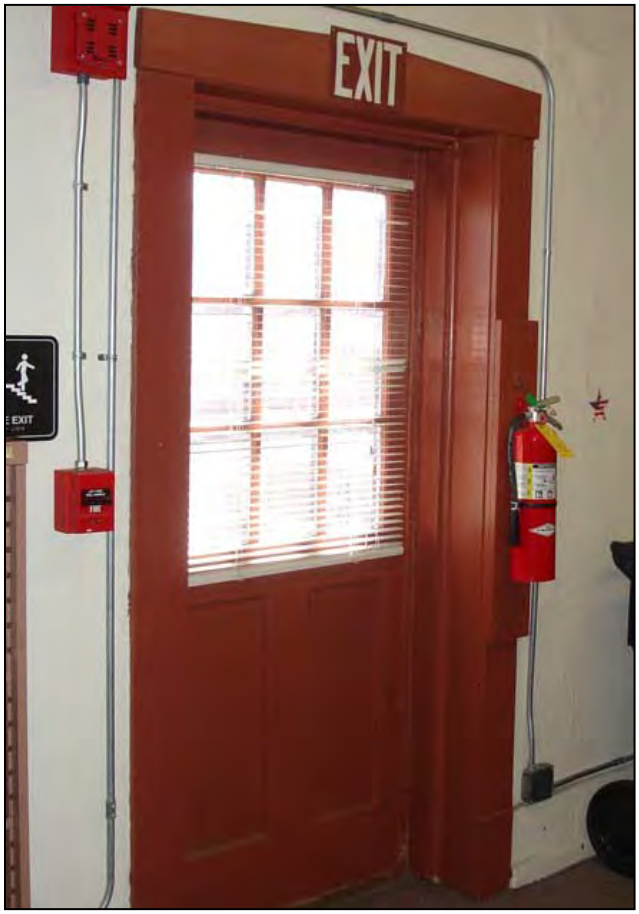


Figure 162. Building 27 second story, Room 232, east wall interior, of exit doorway (D203), 2010.

Figure 163. Building 27 second story, Room 232, east wall, interior of window and related trim, 2010.

Figure 164. Building 27 attic, wheel near center of main block possibly related to earlier hoist or machinery, 2010.

Figure 165. Building 27 attic, interior brick partition wall and doorway at west end of building, 2010.

Figure 166. Building 27 attic, main block, interior brick partition for elevator shaft and metal doorway, 2010.

Figure 167. Building 27 basement, Room 004, steel framing installed in 1939–40, 2010.

Figure 168. Building 27 first story, Room 120, steel framing installed in 1939–40 with I-beams pocketed between windows, 2010.

Figure 169. Building 27 main-block, attic framing showing historic queen-post trusses, 2010.

Figure 170. Building 27, attic framing showing joinery of queen-post trusses, 2010.

Figure 171. Building 27, attic framing showing transition from queen-post trusses to heavy rafter and purlin system at east end of building, 2010.

Figure 172. Building 27, attic showing heavy rafter and purlin framing at east end of building, 2010.

CHARACTER-DEFINING FEATURES AND GENERAL RECOMMENDATIONS

INTRODUCTION

An historic structure may be significant for its architectural features and/or its association with historic events, places, and persons. Building 27 was recognized by the National Register as a contributing historic structure to Armory Square and the Springfield Armory (see the previous section "Introduction, National Register of Historic Places"). The character-defining features (CDFs) of a structure are those visual features and elements that define the structure and contribute to its historic integrity. To retain the historic integrity of the structure, it is important to retain and preserve those CDFs.

The proposed treatment of Building 27 is adaptive use and rehabilitation by STCC as a student service center, conference/class rooms, staff offices, and the college library, which is consistent with the current use. The rehabilitation of a structure should strive to retain the CDFs. *The Secretary of the Interior's Standards for Rehabilitation* address this in the definition of "rehabilitation", which is "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."[172] The Secretary of the Interior further addresses rehabilitation in the following standards:

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

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

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

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

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

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

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

[172] NPS website URL – http://www.cr.nps.gov/hps/tps/stanguide/rehab/rehab_index.htm.

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

9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and 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.

10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.[173]

The following sections will identify the character-defining features and make general recommendations for the adaptive use and rehabilitation of Building 27. The general recommendations are meant to guide the rehabilitation of the building. The rehabilitation of Building 27 should be done in a manner that does not diminish the historic integrity of the structure and should be planned with minimal impact to the CDFs. The rehabilitation of the building should conform to the appropriate building codes including fire, safety, and accessibility codes for historic buildings. Any substantial rehabilitation of the exterior or interior of Building 27 should be reviewed for Section-106 (S-106) compliance. Likewise, any significant change in use of the building should be reviewed for S-106 compliance.

[173] NPS website URL – http://www.cr.nps.gov/hps/tps/stanguide/rehab/rehab_standards.htm

CHARACTER-DEFINING FEATURES

Exterior Elements

Design and Context

- Site and location of Building 27 in relation to the Green and other historic structures in Armory Square, which is indicative of the locations of the earliest manufactory related to the Hill Shops and how the Springfield Armory developed.
- The overall massing of the two-story masonry structure with an expansive main block, northeast block and west ell, and two north wings, which conveys a sense of permanence that was part of the design of the Armory as a whole.
- The historic style of Building 27, which is retained from the Civil War–era additions and is reflected in the masonry exterior and certain exterior elements (see subsequent sections).

Walls

- Exterior masonry walls that were constructed to harmonize with other masonry buildings at the Springfield Armory and to make Building 27 a sustainable permanent structure.
- The foundation walls and the water tables constructed with brownstone.
- The red brick exterior walls of all sections of Building 27, including the decorative cornice elements and gable-end parapet walls constructed with red brick.
- The scroll-cut brownstone details at the cornice line of the end walls of the building and the brownstone coping on the parapet walls. It should be noted that these elements are repeated on other buildings around the Green and retain a high degree of historic integrity.

Doorways and Related Elements

- The exterior doorway locations in relation to the overall design, and the function of the building and the interior spaces.
- All extant historic doorway materials in the building, including the doors, brownstone and brick lintels and transoms.
- The south-elevation doorway portico, including the granite steps and landing, fluted columns, cornice trim, and board ceiling.
- The hoods over the northeast-block east-elevation doorway and northwest-wing west-elevation doorway.

Windows

- The overall design, proportions, and locations of the exterior windows. This includes historic and altered windows that are extant at Building 27.
- The extant brownstone sills and lintels of the historic windows.

Roofs and Related Elements

- The slate gable roofs and copper valleys and ridges on Building 27.

Related Structures

- The two brick structures added as Exhaust Fan Rooms in the 1940s and the elements of those structures including windows, doorways, and roofs.

Interior Elements

Plan

- The overall footprint of Building 27 is representative of the historic layout of the building and the evolution of the building. This is especially true of the basement plan, which includes masonry walls that are representative of the additions to the building.

Floors

- Wooden floors throughout the first story, second story, and attic of Building 27.

Walls

- The exposed brick on the outside walls on the first and second stories of sections of the building.
- The tongue-and-groove wainscoting and parged masonry walls in Room 110.
- The historic plaster walls on the second story of the building.
- Brick partition walls in the basement, first story, second story, and attic of the building, including the partial walls in the main block.
- The "kalamein" stairwell enclosure in the main block.

Ceilings

- The high wooden-plank ceilings on the first and second stories of Building 27.
- The exposed wooden framing in sections of the second-story ceilings.

Doorways

- The interior doorways in the brick partition walls, especially the doorway from the main block (Room 112) to the north wing (Room 113) and the extant brownstone trim and historic hardware in that doorway.

Windows

- The arched masonry window openings throughout the first and second stories of Building 27.
- The extant historic interior window casings and windowsills on the first and second stories of Building 27.

Staircases

- The extant interior staircases and related elements in the basement, first story, and second story of Building 27.

GENERAL RECOMMENDATIONS

Exterior Elements

Design and Context

- The current location of Building 27 in the northeast corner of Armory Square reflects both the development of the Hill Shops and the relation of the historic structures to each other and the Green. The adaptive use and rehabilitation of the building should not alter the existing location and should preserve these CDFs.

- The overall massing of masonry structure is representative of the manufacturing buildings at the Springfield Armory. The massing of the building is an important CDF that should not be altered during rehabilitation.

- The exterior brick and brownstone is indicative of the historic style of Building 27, and includes additions from the Civil War period. In the nineteenth century the exterior masonry was considered permanent in nature and relatively fireproof. The masonry elements should be preserved during the rehabilitation of the building according to the general recommendations in the subsequent sections.

Walls

- Exterior masonry elements, including the brownstone foundation, brick walls, decorative brick elements, and scroll-cut brownstone details, should be preserved during the rehabilitation of Building 27. Any rehabilitation projects should retain the extant configuration of the masonry elements and not significantly alter the exterior appearance. The installation of fire-protection systems, exterior lighting, signage, and any upgrades to the ADA-compliant access should be done in a manner that has minimal impact on the exterior wall elements. Any substantial rehabilitation of the exterior ADA routes and alterations to the fire-escape routes, such as enclosing them or adding roofs, should be reviewed for S-106 compliance. If feasible, additional lighting and signage should be fastened to the building with a system that anchors into existing mortar joints. Efforts should be made to avoid making holes in the exterior brick and brownstone for anchoring additional items. Any deficiencies or deterioration of the exterior brick and/or mortars should be repaired with materials that replicate the color, strength, and overall appearance of the historic materials and are compatible with the extant materials.

Doorways and Related Elements

- The locations of the exterior doorways are considered character defining and should not be altered during the rehabilitation of Building 27. Though some doorway elements may be deteriorated or have been replaced, the historic doorway locations are considered important and do retain a high degree of historic integrity. The rehabilitation of the building should not close off existing doorways and if feasible, should not create additional doorways.

- Many of the exterior doorways retain historic materials that should be preserved. The rehabilitation should retain the historic masonry elements surrounding the doorways, and any trim should be repaired or replaced in kind. If

feasible, door repairs should be done with in-kind materials. Should any doors require replacement, the new doors should be designed to match the extant historic doors and be constructed with compatible materials. In some cases historic plans for the doors are available in the SPAR Museum Collection and should be consulted for design and specifications. Allowances should be made for the installation of ADA-required handles and closers on the historic doors, but the impact of these on the historic elements should be minimized.

- The south-elevation doorway portico and related elements should be retained and preserved. The rehabilitation of the portico should be performed with in-kind materials that match the historic appearance of the portico. To address the minor rust on the columns, the paint should be stripped, the columns treated with rust inhibitor, and repainted. Likewise the wooden elements of the portico should be prepared, primed, and painted in order to preserve them. The portico steps and landing are historic and should be retained. The concrete ramp and pipe railings can be upgraded as necessary, as long as that work has minimal impact on the historic elements.

- The hoods over the northeast-block east-elevation doorway and northwest-wing west-elevation doorway are historic and should be retained. The rehabilitation of these elements should be done with in-kind materials. Where the paint finishes are deteriorated, efforts should be made to preserve the woodwork and the painted surfaces should be prepared, primed, and painted.

Windows

- The exterior windows and related masonry trim elements of Building 27 should be preserved. Window openings should not be covered or blocked, and new window openings should not be added. The current replacement sashes are considered appropriate and should be maintained. Future sash replacement should follow the design and materials of the existing sashes.

- The basement windows especially on the south elevation provide visual clues of the building's evolution and should not be altered. If any of the sashes require replacement, the new sashes should match the existing design and should be constructed with the same materials as other replacement sashes in the building.

Roofs and Related Elements

- The slate roofs on Building 27 are historic and should be retained. Repairs and replacement of slates should be done with in-kind materials.

Related Structures

- The two Exhaust Fan Rooms and related elements were added during the historic period and should be preserved during the rehabilitation of Building 27.

    - If the structures are used to house condensers for the building's cooling system, it is recommended that any required louvered vents be installed in a portion of the existing window openings. If feasible, the steel sashes should be rehabilitated and louvered vents should be installed in the top or bottom portion of the window opening, thus preserving part of the historic window.

    - The doorways of both structures should be rehabilitated to match the

historic doorways. Any replacement doors should replicate the historic doors, which are shown in detail in the historic plans in the SPAR Museum Collection.

- The roofs of both structures should be rehabilitated with in-kind materials that match the historic specifications. The roofs could also provide a means of ventilating the buildings with low-profile roof vents.

Interior Elements

Plan

- The overall footprint of Building 27, which is established by the outside walls and certain interior brick walls, is representative of the historic layout, and the evolution of the building and should be preserved during the rehabilitation of the building. These walls should not be significantly altered or removed during the rehabilitation.

Floors

- The wooden floors throughout the first story, second story, and attic of Building 27 should be preserved during the rehabilitation of the building. The floors in most sections of the first and second story are covered with wall-to-wall carpet and/or tile. The carpet protects the wooden floors and should be maintained. If the carpet is replaced, efforts should be made to not damage the wooden floors beneath it. The exposed wooden floors in the first story of the library should be maintained and carpet runners in high-traffic areas retained.

Walls

- The brick walls in the basement, first story, and second story of the building should be preserved during the rehabilitation of Building 27 and should not be significantly altered or removed. This includes interior brick walls and partial walls that are indicative of the building's evolution and historic appearance. Most of the walls have exposed brick and some are painted. In both cases the current treatment should be maintained.

- The tongue-and-groove wainscoting and parged masonry walls in Room 110 date from the historic period and should be preserved. The repair and rehabilitation of these elements should be done with in-kind materials.

- Some of the historic plaster walls are preserved in the second story of the building. If feasible, the plaster should be retained and any repairs or replacement should be done with in-kind materials.

- The "kalamein" stairwell enclosure in the main block was installed during the historic period and should be retained. The walls are currently painted and should be maintained in the same manner. Any rehabilitation that affects these elements should be planned to have minimal impact on the historic elements.

Ceilings

- The wooden plank ceilings throughout Building 27, and the exposed wooden framing in the second story of the building should be retained and preserved. The height of the ceilings is also character defining and should be preserved. The rehabilitation of the building should not include the

installation of ceiling panels or drop ceilings, which would alter the appearance of the historic ceilings.

Doorways

- The interior doorways in the brick partition walls historically provided circulation between sections of the building and are currently used in that capacity. In addition, some doorways including the doorway from Room 112 to Room 113 retain historic trim and hardware and should be preserved. If feasible, these existing doorways should be unaltered during the rehabilitation. If required, it may be feasible to enlarge certain doorways during the rehabilitation to improve ADA access and circulation, which should be reviewed on a case-by-case basis. If it is necessary to open new doorways in the brick partitions, they should be located in existing interior window openings, as in the brick wall dividing the northwest wing. In addition, any new doorways should have casings that are consistent and compatible with the historic elements in the room.

Windows

- The windows in the outside walls throughout Building 27 should be preserved during the rehabilitation. This includes but is not limited to the arched masonry openings on the first and second stories and the extant historic interior window casings and windowsills on the first and second stories. Some of these elements have been preserved since the historic period and should continue to be retained and maintained. The rehabilitation should not alter these elements and should make efforts to preserve them. The repair and rehabilitation of the historic window elements should be done with in-kind materials.

Staircases

- The interior staircases retain historic elements including balusters, newel posts, and railings, which should be preserved during the rehabilitation of Building 27. The rehabilitation and repair of these elements should be done with in-kind materials.

BIBLIOGRAPHY

PRIMARY SOURCES

Primary source documentation related to the Springfield Armory was reviewed at the National Archives and Records Administration–Northeast Region (NARA Northeast Region), Waltham, Massachusetts. In addition, primary source materials from the Springfield Armory NHS Museum Collection (SPAR Museum Collection) were also used in the preparation of the HSR. Those materials included original records, Derwent S. Whittlesey's notebooks and manuscript, records that were copied from the National Archives and Records Administration (NARA), and microfilm records that included NARA documents and five volumes of Springfield Armory scrapbooks.

Primary source materials compiled by Carole L. Perrault and Judith Quinn Sullivan are stored in the Historic Architecture Program Library, Lowell, Massachusetts, and were used in researching portions of the Building 27 HSR.

Records of the Office of the Chief of Ordnance, General Records, Record Group 156:

Registers of Letters Received, 1827–1889, Vol. 16, Entry 20, RG156.

Letters Received 1812–1894, Entry 21, RG156.

Reports of Inspection of Arsenals and Depots, 1832–1860, 1892; Entry 1003, RG156.

Letters Sent 1835–1860, Springfield Armory, Entry 1351, RG156.

Name and Subject Indexes to Part of Letters and Endorsements Sent to the Chief of Ordnance Series, 1884–1887, 1889–1891, Entry 1353, RG156.

Letters Sent to Chief of Ordnance 1836–1895, Volumes 1, 2, 3, 9, and 14 of 20, Entry 1354, RG156.

Name and Subject Indexes to Part of Registers of Letters Received, Springfield Armory, 1886–1894, Entry 1360, RG156.

Letters Received ("Miscellaneous"), 1813–1842, 1860–1873, 1880–1897, Springfield Armory, Entry 1362, RG156.

Name and Subject Index to Registers of Letters Received from Chief of Ordnance and Other Officers of the War and Treasury Departments, 1833–1855, 1864–1873, 1894–1900, Entry 1363, RG156.

Registers of Letters Received from Chief of Ordnance, Springfield Armory, 1833–1855, 1864–1873, 1894–1900, Entry 1364, RG156.

General Correspondence, Springfield Armory, 1900–1915, Entry 1367, RG156.

General Correspondence, Springfield Armory, 1916–1925, Entry 1369, RG156.

Contracts for Ordnance, Supplies and Construction, Springfield Armory, 1806–1918, Entry 1382, RG156.

Miscellaneous Records, Springfield Armory, 1917–1927, Entry 1388, RG156.

Other primary source documents:

Report of the Chief of Ordnance, 1918, U.S. Ordnance Department. Washington, DC: Government Printing Office, 1918. Copy with Perrault and Sullivan research files HAP Library, Lowell, Massachusetts.

Public Law 93-486, 93 Congress H.R. 13157, October 26, 1974. Reproduced by Carper and Turk, Appendix D.

Senate Committee Report No. 93-590, 93 Congress, 1st Session, December 3, 1973. Reproduced by Carper and Turk, Appendix E.

In addition to the previously cited primary documents, primary source materials from the Springfield Armory NHS Museum Collection included historic maps, historic architectural drawings, and historic photographs.

SECONDARY SOURCES

Albright, John. *Historic Structure Report, Historical Data and Historical Base Map, Springfield Armory National Historic Site, Massachusetts*. Denver, CO: U.S. Department of the Interior, National Park Service, May 1978.

Carper, Robert L. and Richard G. Turk. *Historic Structure Report, Architectural Data Section, Springfield Armory National Historic Site, Massachusetts*. Denver, CO: U.S. Department of the Interior, Denver Service Center, NPS, September 1984.

Cullum, George W. *Biographical Register of the Officers and Graduates of the U.S. Military Academy,* Volume I. Cambridge, MA: The Riverside Press, 1891, 3rd Edition.

Harris, Cyril M. *American Architecture an Illustrated Encyclopedia*. New York: W.W. Norton and Company, Inc., 1998.

— — — —. *Dictionary of Architecture and Construction*. New York: McGraw-Hill Companies, Inc. 2006.

Kinsley, Amy. "Cultural Landscapes Inventory, Springfield Armory, Springfield Armory National Historic Site." DRAFT. Boston, MA:U.S. Department of the Interior, National Park Service, Olmsted Center for Landscape Preservation, 2004.

Kirkham, Albert. "United States Armory," *King's Handbook of Springfield,* 1884; reproduced by Albright, Appendix B.

McAlester, Virginia and Lee. *A Field Guide to American Houses.* New York: Alfred A. Knopf Publishing, 1984.

Perrault, Carole L., and Judith A. Quinn (Sullivan). "Springfield Armory National Historic Site, Springfield, Massachusetts, Building 19, Historic Structure Report, Volume I," DRAFT. Boston, MA: U.S. Department of the Interior, National Park Service, North Atlantic Region, Cultural Resources Center, Building Conservation Branch, November 1991.

— — — —. "Springfield Armory National Historic Site, Springfield, Massachusetts, Building 19, Historic Structure Report, Volume II," DRAFT. Boston, MA: U.S. Department of the Interior, National Park Service, North Atlantic Region, Cultural Resources Center, Building Conservation Branch, November 1991.

Raber, Michael S., Patrick M. Malone, Robert B. Gordon, and Carolyn C. Cooper. *Conservative Innovators and Military Small Arms: An Industrial History of the Springfield Armory, 1794–1968*. South Glastonbury, CT: Raber Associates, August 1989.

Rettig, Polly M. *National Register of Historic Places Inventory – Nomination Form*. U.S. Department of the Interior, National Park Service, December 1974.

Sarles, Frank B., and Denys P. Meyers, et al. *Springfield Armory, Massachusetts.* Boston, MA: U.S. DOI, NPS, Office of Archeology and Historic Preservation, August 17, 1967.

Springfield Armory, Evaluation Under Provision of Historic Preservation Act 1966. U.S. Department of the Interior, National Park Service, August 1967.

Springfield Gazette, Vol. XV – No. 16, April 22, 1846. Copy at SPAR Museum Collection, microfilm reel 151, scrapbook #1, 1846–1941.

Springfield Sunday Union and Republican, February 21, 1937 "Many Improvements Are Effected by WPA at Springfield Armory." Copy at SPAR Museum Collection, microfilm reel 151, scrapbook #1, 1846–1941.

Stull Associates, Inc. *Paint and Mortar Analysis, Springfield Armory National Historic Site, Main Arsenal, Commanding Officer's House, Garage, Gatehouse*. Boston, MA: Stull Associates, Inc., March 1979.

— — — —. *Report Update, Building Systems Analysis and Recommendations, Springfield Armory National Historic Site*. Boston, MA: Stull Associates, Inc., March 1980.

The National Armories: A Review of the System of Superintendency, Civil and Military, Particularly with Reference to Economy, and General Management at the Springfield Armory. Springfield, MA: G.W. Wilson's Steam Power Presses, 1852. Copy in research files of Carol Perrault and Judith Quinn Sullivan for *Building 19, HSR, Draft*, HAP, Lowell, MA; copy at the City Library Springfield, Massachusetts.

U.S. Department of the Interior, National Park Service. *General Management Plan/Development Concept Plan, Springfield Armory National Historic Site*. U.S. Department of the Interior, National Park Service, August 1986.

Warner, Charles F. *Picturesque Hampden*. Volumes I and II. Northampton, MA: Picturesque Publishing Company, 1891.

Whittlesey, Derwent S. "The Springfield Armory." PhD. Dissertation, University of Chicago, 1920. 200 pages. Transcription by John McCabe and Richard Colton, Springfield Armory NHS, 2006, Copy at SPAR Museum Collection.

GLOSSARY

Brick Bonds and Terminology:

Stretcher (running) bond: in masonry, a bond in which bricks or stones are laid lengthwise; all courses are laid as stretchers with the vertical joints of one course falling midway between those of the adjacent courses.[174]

Common bond: a pattern of brickwork in which every third, fifth, sixth, or seventh course consists of headers and the other courses consist of stretchers.[175]

Stacked bond: in brickwork, a pattern bond; the facing brick is laid with all the vertical joints continuously aligned. The brick is bonded to the backing by metal ties.[176]

Garden wall cross bond: in brickwork, a bond in which a course of headers alternates with a course consisting of a header followed by three stretchers.[177]

Flemish bond: A brick pattern in which each course consists of headers and stretchers that are laid alternately; each header is centered with respect to the stretchers above and below it.[178]

Soldier course: a row of bricks in which each brick is laid on its end, with the narrower face showing on the wall surface.[179]

Rowlock: a brick (or row of bricks) laid on its end so that its end is visible.[180]

[174] Harris, 953.
[175] Ibid, 235.
[176] Ibid, 930.
[177] Ibid, 453.
[178] Ibid, 416.
[179] Ibid, 909.
[180] Ibid, 835.

Diagram 1:[181]

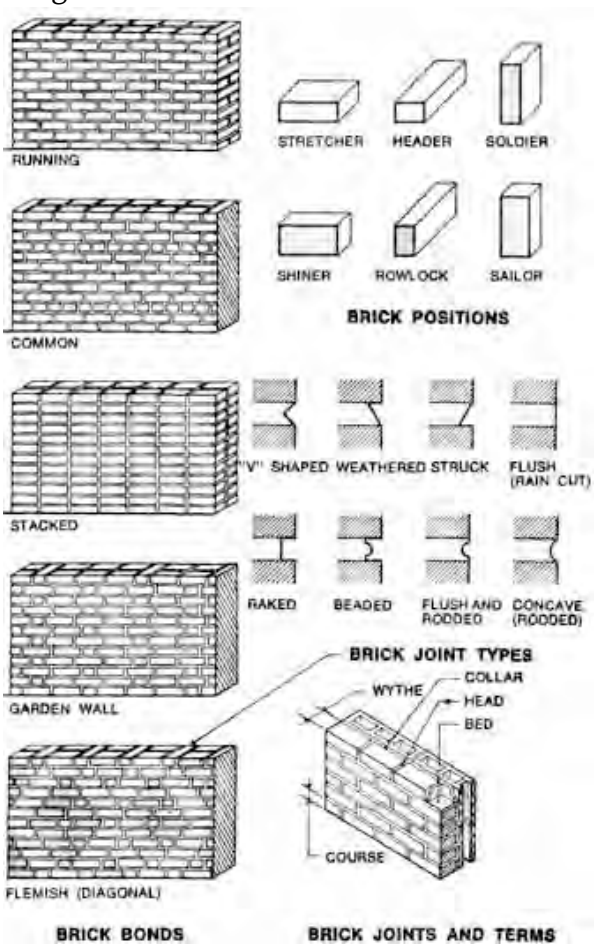
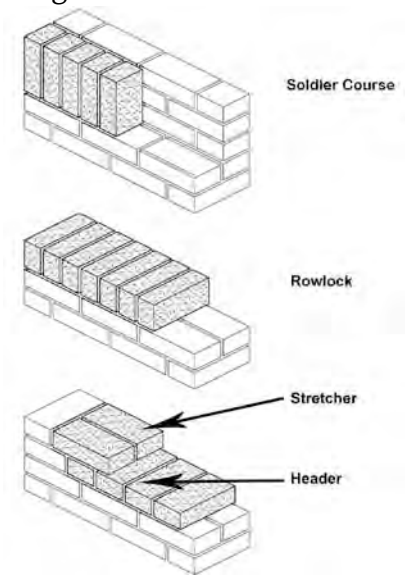


Diagram 2:[182]

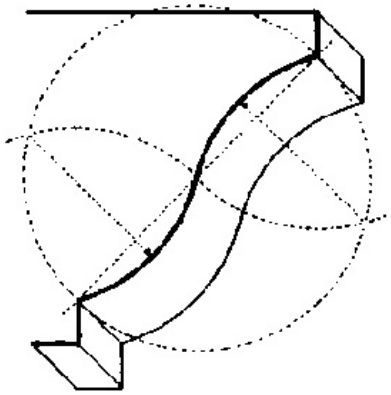


[181] http://www.crsupport.us/images/houses_5-6.jpg
[182] http://buildipedia.com/images/masterformat/div04/20/drawings/042113_brickmasonry/Brick_Coursing.jpg

Molding Terminology:

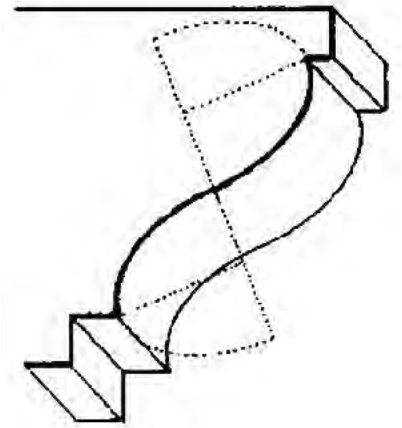
Cyma recta: a molding of double curvature, which is concave at the outer edge and convex at the inner edge.[183]

Diagram:[184]



Cyma reversa: a molding of double curvature, which is convex at the outer edge and concave at the inner edge.[185]

Diagram:[186]



[183] Harris, 293.
[184] http://www.traditionalbuilding.com
[185] Harris, 293.
[186] http://www.traditionalbuilding.com

APPENDICES

APPENDIX A

Correspondence from Major James W. Ripley to Colonel George Talcott, Chief of Ordnance.[187]

[187] Ripley to Talcott, Chief of Ordnance, July 7, 1845; Letters Sent to Chief of Ordnance 1836–1895, Vol. 1 of 20, Entry 1354, RG 156. NARA Northeast Region (Waltham, MA).

U S Armory
Springfield Apl 9th 1845

Sir

In compliance with the instructions given in your letter of the 29th ultimo, I have the honor to designate an enlargement of the Machine shop on the Hill as the first and one of the principal improvements to be effected under that portion of the recent appropriation for the Manufacture of arms which is applicable to repairs at this Armory. —

A plan for such an enlargement is herewith submitted for your approval. As it is to correspond in height and finish with the present building, of which full drawings are in the possession of the Dep^t, an elevation in connection with the plan is believed to be unnecessary.

Very Respectfully
Your Obt Servt
J W Ripley
Maj Ord
Comdg.

Lt Col G. Talcott
Ordnance Dept.

APPENDIX B

Transcribed "Report of the Principal Operations at Springfield Armory during the fiscal year ended June 30, 1863."[188]

[188] Major A. B. Dyer to Chief of Ordnance, June 30, 1863, Letters Sent to Chief of Ordnance, Entry 1354, RG156, Mircofilm Roll 195, SPAR Museum Collection.

Report of the Principal Operations at Springfield Armory
during the fiscal year ended June 30, 1863.

Fabricated	217782	Rifle Muskets	
	352702	Cones	
	10167	Arms Chests	
	1035	Packing Boxes	
	2	Machines for Screw Cutting	
	4	D. (ditto)	Drilling
	13	D.	Milling
	1	D.	Slitting
	1	D.	Sawing (and) Cutting
	20	D.	Grinding Mills

Buildings Erected

One addition to Store house two stories, brick covered with slate 235 ft x (55).

One Forging Shop on Hill, one story brick covered with slate 109 ft x 40.

One Dry House for seasoning gun stock, one story high brick with cellar, covered with slate, 105 ft x 32 ft.

One Tempering and Case hardening shop two stories, brick. Covered with slate 80 ft x 33 ft.

Roofs of Polishing and Annealing shops raised and a second story of brick built on each, 190 ft x 33 ft and 65 ft x 28 ft.

Annealing shop lengthened fifteen ft. brick, two stories.

One Engine and Boiler House brick one story covered with tin 80 ft x __.

Two engines one sixty and one thirty horse power set up and put into operation.

One Machine Shop at Water Shops one story brick covered with slate 90 ft x 40 ft.

One Addition to Engine House at Water Shops one story brick 40 x 40.

One Tempering room, one story wood covered with tin 46 ft x 16 ft.

One Room for straightening and Inspecting barrels one story covered with tine 68 x 20 ft.

One Fire Engine House at Water Shops, one story wood covered with tin 40 x 16 ft.

One Fire Engine House on the Hill, one story wood covered with tin 85 x 16 ft.

(signed)
A. B. Dyer
Major Ordnance
Commanding

APPENDIX C

Springfield Armory, Massachusetts
Historical Record
Building No. 27, Annex Building.[189]

[189] Springfield Armory, Massachusetts, Historical Record, Building No. 27, Annex Building, June 30, 1932 through June 30, 1933 and June 30, 1938 through June 30, 1942; SPAR Museum Collection.

Springfield Armory, Massachusetts

Historical Record

BUILDINGS 60

BUILDING NO. 27
SHEET NO. 1

As of June 30th, 1932

Place Armory Square

Description of Building

Walls	Brick
Foundation	Brick
Floors	Wood
Roof	Slate
Tunnel	To Bldg #26

Dimensions of Building

Main Bldg.	388' x 35'
Wing	227' x 35'
Wing	80' x 35'
Wing	

Roof Area, sq ft.

Main Bldg. 28,700

ANNEX BUILDING

Cubical Contents, Cu. ft.
Total 780,000

Drawing Reference

S. A. 6096-1 to 7
S. A.

How heated Steam
How lighted Electricity

Floors and Area, sq. ft.

Basement	20,000
1st floor	33,000
2nd floor	28,000
3rd floor	10,000
Total	91,000

Water connections	Yes
Sewer connections	Yes
Gas connections	Yes

Repairs Previously Expended

$

Year ending June 30,

1932	$ 683.09
1933	145.43
1934	
1935	
1936	
1937	
1938	

DATE OF COMPLETION AND COST

	Date		Cost
Original Bldg.	1869-1920		$145,211.00
Addition	1931-1933	$1695.00	146,906.00
Addition			

APPRAISED VALUE
(O.O.682/1188, 10-18-30)
$ 300,000.00

S. A. Form M8-44

S. A. 4-27-38 700

Springfield Armory, Massachusetts

Historical Record

BUILDINGS

As of June 30, 1938

BUILDING NO. 27
SHEET NO. 1

Place Armory Square

Description of Building

Walls	Brick
Foundation	Brick
Floors	Wood
Roof	Slate
Tunnel	To Bldg. #26

Dimensions of Building

Main Bldg.	388' x 35'
Wing	227' x 35'
Wing	88' x 35'
Wing	

Roof Area, sq. ft.

Main Bldg. 28,700

ANNEX BUILDING

Cubical Contents, Cu. ft.
Total 780,000

Drawing Reference

S. A.
S. A.

How heated Steam
How lighted Electricity

Floors and Area, sq. ft.

Basement	20,000
1st floor	33,000
2nd floor	28,000
3rd floor	10,000
Total	91,000

Water connections	Yes
Sewer connections	Yes
Gas connections	Yes

Repairs Previously Expended

$ 3,625.68

Year ending June 30,

1938	4.06
1939	12,698.30
1940	29,861.04
1941	69,114.38
1942	42,422.07
1943	
1944	

DATE OF COMPLETION AND COST

	Date		Cost
Original Bldg.	1869-1920		$145,211.00
Addition	1931-1938	-$2,305.00	142,906.00
Addition	1939	4,947.73	147,853.73
2.75% demolished I.&I. #40-96		4,065.98	143,787.75

135,912.18

APPRAISED VALUE
(S.A. 600/947, 1-4-39)
$ 150,000.00

National Park Service
U.S.Department of the Interior

Historic Architecture Program
Northeast Region
115 John Street, 4th Floor
Lowell, MA 01852

EXPERIENCE YOUR AMERICA ™
Building 27, circa 1920,
Springfield Armory NHS, Museum Collection, X1316 SA.