

CRBIR # 405218

**NORTH BRIDGE**  
**HISTORIC STRUCTURE REPORT**  
**Developmental History**

**North Bridge Unit**  
**Minute Man National Historical Park**



*1888 Commemorative Bridge, postcard view ca. 1900*

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## CONTENTS

<b>LIST OF FIGURES AND CREDITS.....</b>	<b>iv.</b>
<b>ACKNOWLEDGEMENTS .....</b>	<b>xi</b>
<b>I.    <u>INTRODUCTION</u>.....</b>	<b>1</b>
<b>ADMINSTRATIVE DATA.....</b>	<b>2</b>
Basic Data .....	2
Cultural Resource Data .....	2
Proposed Use and Treatment .....	3
Related Studies.....	4
<b>EXECUTIVE SUMMARY .....</b>	<b>5</b>
Project Background and Scope.....	5
Historical Context.....	6
Summary of Research Findings.....	6
Short Chronology of Bridge Development .....	6
<b>II.   <u>DEVELOPMENTAL HISTORY</u> .....</b>	<b>10</b>
<b>EARLY BRIDGES, 1650-1760 .....</b>	<b>11</b>
Images/Maps etc.....	28
<b>THE REVOLUTIONARY WAR BRIDGE, 1760-1787 .....</b>	<b>34</b>
Images/Maps etc.....	47
<b>THE 1788 BRIDGE .....</b>	<b>51</b>
Images/Maps etc.....	61
<b>QUIET TIMES AT THE BRIDGE, 1793-1874.....</b>	<b>63</b>
Images/Maps etc.....	67
<b>THE COMMEMORATIVE CENTENNIAL BRIDGE, 1874-1887.....</b>	<b>74</b>
The Architect.....	76
The Bridge .....	79
Images .....	87
<b>THE 1888 COMMEMORATIVE BRIDGE, 1888-1908 .....</b>	<b>100</b>
Images .....	104
<b>THE 1909 COMMEMORATIVE BRIDGE, 1909-1955 .....</b>	<b>112</b>
The Engineer .....	112

	<b>The Bridge</b> .....	113
	<b>Images</b> .....	116
	<b>THE 1956 COMMEMORATIVE BRIDGE, 1956-Present</b> .....	122
	<b>The Engineers</b> .....	123
	<b>The Bridge</b> .....	124
	<b>Images</b> .....	134
<b>III.</b>	<b>CHARACTER DEFINING FEATURES AND RECOMMENDATIONS</b> .....	164
<b>IV.</b>	<b>RECOMMENDED TREATMENT</b> .....	169
<b>V.</b>	<b>BIBLIOGRAPHY</b> .....	173
<b>VI.</b>	<b>APPENDICES</b> .....	178
	<b>APPENDIX A.</b> Bridges at the North Bridge Site, 1656-1793, Concord Town Records .....	179
	<b>APPENDIX B.</b> 1748 – Petition of William Hunt and Others for a Bridge at John Flints. ....	195
	<b>APPENDIX C.</b> 1876 – Proceedings at the Centennial Celebration of Concord Fight, April 19, 1875 (selected excerpts).....	198
	<b>APPENDIX D.</b> William Ralph Emerson, Architect. Biographical information and representative examples of his work.....	222
	<b>APPENDIX E.</b> J. R. Worcester, Bridge Engineer, Biographical Information.....	239
	<b>APPENDIX F.</b> Whitman and Howard, Engineers. Biographical Pamphlet of firm. ....	243
	<b>APPENDIX G.</b> Report of Damages to Concrete Bridge by Engineers, Whitman and Howard, Spring 1956. ....	261
	<b>APPENDIX H.</b> North Bridge Construction Specifications, Whitman and Howard, Engineers, March 1956. ....	268
	<b>APPENDIX I.</b> North Bridge, Construction Drawings, Whitman and Howard, Engineers, March 1956. ....	278
	<b>APPENDIX J.</b> North Bridge, Condition Assessment, Childs Engineering Corporation, August 2002.....	284

## LIST OF FIGURES AND CREDITS

1. Map of “North Part of Concord, or District of Carlisle,” surveyed by Benjamin Brown, 1754. (Map reprinted in <i>Archeological Collections Management, Minute Man NHP Volume 4, ACMP Series</i> , 1986, .....	28
2. Map of the North Bridge unit of Minute Man NHP showing overlay of original configuration of roads including old Groton Road and the Causeway. (Map number District VI, <i>Historic Grounds Report, Minute Man NHP, CRM Study no. 15</i> , by Joyce Malcolm, 1985.).....	29
3. View of the Concord River and North Bridge site looking southeast from the Buttrick Estate. Photo by Jack Boucher, HABS, May 1962. Collections of Minute Man NHP Archives. ....	30
4. View from the 1956 North Bridge looking northwest towards the Buttrick Estate. Photo by Jack Boucher, HABS, May 1962. Collections of Minute Man NHP Archives. ....	31
5. Old North Bridge during flood season. Photo by Jack Boucher, HABS, March 1968. Collections of Minute Man NHP Archives.....	32
6. Spring flood waters of the Concord River in the vicinity of the North Bridge. Photo by Jack Boucher, HABS, March 1968. Collections of Minute Man NHP Archives.....	33
7. “The Engagement at the North Bridge in Concord.” Engraving by Amos Doolittle and Ralph Earle, April 1775. Collections of the Connecticut Historical Society, Hartford, CT.	47
8. “The Engagement at the North Bridge in Concord.” Engraving by Amos Doolittle and Ralph Earle, April 1775. Detail of North Bridge. Collections of the Connecticut Historical Society, Hartford, CT.....	48
9. Modern bridge diagram identifying bridge elements. Downloaded from website.....	49
10. The Causeway at the North Bridge. Archeological evidence of the 18 <sup>th</sup> century cobbled roadbed. Photo by Leland Abel, NPS, August 1964. Collections of Minute Man NHP Archives, #MIMA 75-251. ....	50
11. Tracing of “Map of roads in vicinity of the Great North Bridge, probably drawn in 1792.” Recorded by Leland Abel, NPS, <i>Archeological Collection Management Report, Minute Man NHP, Volume 4</i> , 1987, p. 119.....	61
12. Tracing of map of Groton Road in the vicinity of the North bridge, probably drawn in 1792 with proposed changes to roads and bridge locations added. Map traced and amended by Leland Abel, NPS, <i>Archeological Collection Management Report, Minute Man NHP, Volume 4</i> , 1987, p. 118.....	62

13. Drawing prepared by the Olmsted Center for Landscape Preservation, April 1993 and amended by Deborah Dietrich-Smith 2003. Drawing highlighting original 1835 parcel deeded to the town of Concord from Ezra Ripley and the 1836 extension of boundaries. Olmsted Center for Landscape Preservation.....	67
14. "View of the Battle Ground at Concord, Massachusetts," Thayer's Lithography, Boston, ca. 1850. Concord Free Public Library, Special Collections.....	68
15. Detail. "View of the Battle Ground at Concord, Massachusetts," Thayer's Lithography, Boston, ca. 1850. Concord Free Public Library, Special Collections.....	69
16. View of the battleground looking southeast towards North Bridge. Photo by Jack Boucher, HABS, July 1961. Collections of Minute Man NHP Archives.....	70
17. Stereoptican view of bridge site and 1836 Battle Monument, ca. 1858. Society for the Preservation of New England Antiquities, Stereoptican File. ....	71
18. "Map of the Scene of the Concord Fight, in 1775." Lithographed by Tappan and Bradfords, Boston, 1850. Concord Free Public Library, Special Collections. ....	72
19. Map showing roads and bridges in the North Bridge area before and after 1793. Joyce Malcolm, NPS, 1985, amended by Deborah Dietrich-Smith, 2003, Olmsted Center for the Preservation of Historic Landscapes.....	73
20. Photograph. View of the Centennial Bridge looking northwest, April 1875. Society for the Preservation of New England Antiquities, Stereoptican Collection, Concord, Massachusetts File. ....	87
21. Photograph. View of the Centennial Bridge looking northwest, April 1875. Society for the Preservation of New England Antiquities, Stereoptican Collection, Concord, Massachusetts File. ....	88
22. Photograph. Centennial Bridge looking west over bridge to the Minute Man Statue, 1875. Society for the Preservation of New England Antiquities, Stereoptican Collection, Concord, Massachusetts File. ....	89
23. Photograph. The Centennial Bridge looking north, 1875. Society for the Preservation of New England Antiquities, Stereoptican Collection, Concord, Massachusetts File. ....	90
24. Photograph. Approach to bridge from the east bank of the Concord River, ca. 1875. Minute Man NHP, Archive Collections, Lothrop Collection. ....	91
25. Photograph. Centennial Bridge looking southeast, ca. 1880. Collections of Minute Man NHP Archive , item #34167.....	92

26. Centennial Bridge looking east towards Minute Man Statue. Collections of Minute Man NHP Archives, item #36640.....	93
27. Photograph. Concord River looking south towards the Centennial Bridge, ca. 1880. Collections of Minute Man NHP Archives, Neg. No. 72-183.....	94
28. Photograph. Spring floods at the North Bridge site, ca. 1885. Collections of Minute Man NHP Archive, Neg. No. 72-174.....	95
29. Drawing of typical trestle bent bridge from “Typical Bridge Building Practices on the Rio Grande Southern Railroad”, Volume I, September 1997. ....	96
30. William Ralph Emerson. Photograph on left, ca. 1855. Photo reprinted in Roger Reed’s book – <i>A Delight to All Who Know It, The Maine Summer Architecture of William R. Emerson</i> , courtesy of Sylvia Watson. Photo on right, ca. 1900 from a brochure compiled by Roger Reed for a tour of Emerson houses in Milton, Massachusetts, 1990. ....	97
31. Photograph, HAER No. VT-13. Northfield Parker Truss Bridge, Northfield, Washington County, Vermont.....	98
32. Photograph, HAER MASS No. 14-WEB. North Village Bridge, Webster, Worcester County, Massachusetts.....	99
33. Schematic map of the North Bridge area as it appeared ca. 1875-1910. Created by Deborah Dietrich-Smith, Olmsted Center for Landscape Preservation, 2003.....	104
34. Postcard. Old North Bridge, ca. 1890. Collections of Minute Man NHP Archives, Postcard Collection. ....	105
35. Photograph. View of 1888 bridge looking east. Photo by Halliday, ca. 1895. Society for the Preservation of New England Antiquities Collection, Concord, Massachusetts File. ....	106
36. Photograph. View of the 1888 bridge looking north. Photo by Halliday, ca. 1895. Society for the Preservation of New England Antiquities Collection, Concord, Massachusetts File .....	107
37. Photograph. View of the 1888 bridge looking west, ca. 1890. Society for the Preservation of New England Antiquities Collection, Concord, Massachusetts File.....	108
38. Photograph. View of the 1888 bridge looking west during spring floods, ca. 1889-1908. Collections of Minute Man NHP Archive, item #34170. ....	109
39. Photograph. View of the 1888 bridge looking east, ca. 1900. Collections of Minute Man NHP Archives, Box 12, item #34208. ....	110

40. Photograph. View of the 1888 bridge. Collections of Minute Man NHP Archives, Box 12, item #36585. ....	111
41. Postcard. View of the 1888 bridge looking northeast, ca. 1900. Minute Man NHP Archives, Postcard Collection.....	116
42. Postcard. View of the 1909 concrete bridge looking west, ca. 1910. Minute Man NHP Archives, Postcard Collection.....	117
43. Photograph. View of the 1909 concrete bridge looking west, April 1913. Society for the Preservation of New England Antiquities, Concord, Massachusetts File. ....	118
44. Photograph. View of the 1909 concrete bridge looking north. Photo by James H. Tolman, ca. 1920. Collections of Minute Man NHP Archives, MIMA Box 12, item #34289.....	119
45. Postcard. View of the 1909 concrete bridge looking west, aging concrete evident, ca. 1949. Society for the Preservation of New England Antiquities Collection, Concord, Massachusetts File. ....	120
46. Photograph. View of the 1909 concrete bridge looking northwest, ca. 1910. Society for the Preservation of New England Antiquities, #BT1244-5, gift of William S. Appleton, 1933.....	121
47. Plan and topographical profile of bridge site, construction drawings, Whitman and Howard, 1956. "Proposed 1955 Flood Bridge, North Bridge over Concord River, March 1956," Concord Public Works Department no. U138.001. ....	134
48. Section through bridge, construction drawings, Whitman and Howard, 1956. "Proposed 1955 Flood Bridge, North Bridge over Concord River, March 1956," Concord Public Works Department no. U138.001. ....	135
49. Plan and south elevation, construction drawings, Whitman and Howard, 1956. "Proposed 1955 Flood Bridge, North Bridge over Concord River, March 1956," Concord Public Works Department no. U138.001. ....	136
50. Section, plan and elevation of bridge pile anchor assemblies, construction drawings, Whitman and Howard, 1956. "Proposed 1955 Flood Bridge, North Bridge over Concord River, March 1956," Concord Public Works Department no. U138.001. ....	137
51. Plan and elevation of east abutment, construction drawings, Whitman and Howard, 1956. "Proposed 1955 Flood Bridge, North Bridge over Concord River, March 1956," Concord Public Works Department no. U138.001. ....	138

52. Plan and elevation of the west abutment, construction drawings, Whitman and Howard, 1956. "Proposed 1955 Flood Bridge, North Bridge over Concord River, March 1956," Concord Public Works Department no. U138.001.....	139
53. Sections through the west abutment, construction drawings, Whitman and Howard, 1956. "Proposed 1955 Flood Bridge, North Bridge over Concord River, March 1956," Concord Public Works Department no. U138.001.....	140
54. Elevation of the bridge fence with sections of typical rail connections, construction drawings, Whitman and Howard, 1956. "Proposed 1955 Flood Bridge, North Bridge over Concord River, March 1956," Concord Public Works Department no. U138.001.....	141
55. Sections of stringer at pile bent and at the top of each abutment, construction drawings, Whitman and Howard, 1956. "Proposed 1955 Flood Bridge, North Bridge over Concord River, March 1956," Concord Public Works Department no. U138.001.....	142
56. Photograph. 1909 bridge just prior to removal in 1956. Photo no. 1 of a series taken during the construction of the 1956 bridge. Collections of Minute Man NHP Archives, MIMA neg. #337 16/4.1.....	143
57. Photograph. Removing the 1909 concrete bridge in preparation for new construction, 1956. Collections of Minute Man NHP Archives, MIMA neg. #337 16/15/4.3.....	144
58. Photograph. Excavating western abutment during construction of the 1956 bridge. Whitman and Howard, engineers. Collections of Minute Man NHP Archives, MIMA neg. #337 16/5.1.....	145
59. Photograph. Construction of rock-faced concrete abutment, 1956. Annual Report of the Officers of the Town of Concord, 1956. Concord Free Public Library, Special Collections.....	146
60. Photograph. Construction of rock-face concrete abutments, view looking west. Whitman and Howard, engineers. Collections of Minute Man NHP Archives, MIMA neg. #337 16/4.3.....	147
61. Photograph. Framing the 1956 bridge super structure. Whitman and Howard, Engineers. Collections of Minute Man NHP Archives, MIMA neg. #337 16/w/6.5.....	148
62. Photograph. Constructing the bridge railings, 1956 bridge. Collections of Minute Man NHP Archives, MIMA neg. #337 16/5.1.....	149
63. Photograph. Construction of the 1956 bridge. Carpenters finishing an outrigger brace by hand with an adz. Annual Report of the Town of Concord, 1956. Concord Free Public Library, Special Collections.....	150

64. Photograph. The 1956 bridge completed. Collections of Minute Man NHP Archives, MIMA neg. #337 16/5-1. ....	151
65. Photograph. North Bridge at low water, ca. 1960. Contact sheet by M. Woodbridge Williams of Modernage, Custom Darkrooms, Inc. Collections of Minute Man NHP Archives, N. Bridge Folder #1 .....	152
66. Photograph. North Bridge, view looking south, ca. 1970. Photo by Fay Foto Service, Boston. Collections of Minute Man NHP Archives, N. Bridge Folder #1.....	153
67. Photograph. View of the 1956 bridge, May 1962. Photo by Jack Boucher, HABS. Collections of Minute Man NHP Archives, HABS neb. # 62107. ....	154
68. View of the 1956 bridge from the east embankment. Photo by Cecil W. Stoughton, NPS, August 1968. Minute Man NHP Archive Collections, neg. #68-MIMA-1044-s-frame 11..	155
69. View of the 1956 bridge looking northwest, ca. 1971. Photo by Richard Frear, NPS. Collections of Minute Man NHP Archives, neg. #70-490-1-33.....	156
70. Photograph. Damage done to decking and pile cap of bridge in dynamite blast, 1969. Minute Man NHP, damage report in Superintendent's files for Old North Bridge.....	157
71. Diagrams of damaged areas of bridge, 1969. Minute Man NHP, Superintendent's Files, Memorandum, January, 1970. ....	158
72. Photograph of damaged areas of bridge, 1969. Minute Man NHP, Superintendent's Files, Memorandum, June 20, 1969.....	159
73. Photograph of damaged areas of bridge, 1969. Minute Man NHP, Superintendent's Files, Memorandum, June 20, 1969.....	160
74. Photograph. North Bridge site during spring flood season, view looking southeast, bicentennial demonstrations, 1975. Collections of Minute Man NHP Archives, Bicentennial Scrapbook. ....	161
75. Photograph. North Bridge, bicentennial promotional photo, spring flood season, 1975. Collections of Minute Man NHP Archive, N. Bridge Folder #1.....	162
76. Photograph. North Bridge at low water, view looking west, ca. 1970. Collections of Minute Man NHP Archives, N. Bridge Folder #1 .....	163

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## **I. INTRODUCTION**

## ADMINISTRATIVE DATA

### Basic Data

<u>Structure Name</u>	<u>Structure Number</u>	<u>List of Classified Structures (LCS) ID Number</u>
North Bridge	MIMA 5-112-A	LCS 000945

The North Bridge is owned by the Town of Concord and maintained by the National Park Service according to a Cooperative Agreement dated 6/6/63. The Cooperative Agreement has no expiration date.

### Location

The North Bridge is located on the west side of Monument Street approximately ½ mile north of Concord Center in the North Bridge Unit of the Minute Man National Historical Park in Concord, Massachusetts.

### Cultural Resource Data

#### National Register Information

Minute Man National Historical Park was administratively listed as a National Historic District on the National Register of Historic Places in 1966. No list of contributing and non-contributing resources was included at that time. On November 29, 2002, the documentation of that nomination was accepted by the Keeper of the National Register. The National Register documentation for Minute Man National Historical Park specifically lists the North Bridge as a contributing resource by saying; "The 1956 bridge is a contributing structure which illustrates the continuing commemorative importance of the place."<sup>1</sup>

#### Contexts of Significance

The North Bridge possesses national significance in the areas of Military History and Commemoration. The site of the North Bridge derives much of its significance as having played an integral part in the Battle of Lexington and Concord. The battle, which marked the beginning of the American Revolutionary War, ranks among the most significant events in American history. The bridge spans the Concord River, connecting the battleground of the British to the battleground of the Patriots. Although the current bridge was not extant at the time of the battle, the location of the bridge overtime has remained largely unchanged and the importance of the bridge site and its surrounds was already recognized in the early years of the republic.

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<sup>1</sup> National Register of Historic Places Nomination Documentation, Minute Man National Historical Park, NRIS Reference Number – 02001445. (Accepted November 29, 2002), p. 8.

The National Register documentation states that;

*All resources within the district that were extant on April 19, 1775 possess significance under National Register criterion A for their association with the events surrounding the Battle of Lexington and Concord. Together with natural physical features, the historic and archeological resources within the district make up the Battle of Lexington and Concord Battlefield.*

The documentation further explains;

*Although the current North Bridge Landscape is largely a product of subsequent efforts made to commemorate and interpret the event, its significant role as the place where the Revolutionary War began places it among the most important historic sites in the nation.<sup>2</sup>*

The North Bridge site is equally significant for its rich history of commemorative activity. The National Register documentation identifies that;

*The Minute Man NHP possesses significance as one of the earliest places in the nation to achieve the status of hallowed ground. . . . Celebrations commemorating the events and participants of the battle of Concord and Lexington began soon after the end of the Revolutionary War. Annual events included speeches, civic parades, and lectures about the battle at the North Bridge.<sup>3</sup>*

The placement of monuments and plaques to formally commemorate the event began with the dedication of the Battle Monument just east of the bridge site in 1836 and continued in ever more elaborate celebrations over the ensuing century. Commemorative bridges were built at the original location beginning with the Centennial Bridge constructed in 1874. The commemoration of the Lexington and Concord Battlefields is an extremely important theme in the history of the park.

### Period of Significance

The period of significance for this structure extends from 1775-1959 to cover the construction of the current North Bridge (1956) and the establishment of the Minute Man National Historical Park by act of Congress in 1959.

### Proposed treatment/source

The List of Classified Structures (LCS) places the North Bridge in the *Must be Preserved and Maintained* Management Category. The Ultimate Structure Treatment assigned by the Minute Man National Historical Park General Management Plan (GMP, 1990) and listed in the LCS is likewise *Preservation*. However, recent discussions informed by engineering reports and

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<sup>2</sup> National Register Documentation, p. 12.

<sup>3</sup> Ibid., p. 16.

analysis by park staff suggest that the preferred treatment of the bridge will be a combination of restoration and rehabilitation with an attempt to retain as much original (1956) material as possible with the replacement in kind of historic fabric where necessary. The recommended treatment for the North Bridge according to the Secretary of the Interior's Standards for the Treatment of Historic Properties is therefore – Restoration. (See pp. 167-171 for a full analysis of treatment selection.) Park planning documents should be amended to reflect the current proposed treatment recommendations.

The North Bridge will continue to be used as a commemorative artifact and interpretive tool in the park's primary mission – “to approximate the cultural environment that existed in 1775 and preserve and interpret individual resources that contribute to the understanding of the events of the Battle of Lexington and Concord.”<sup>4</sup>

The North Bridge will continue to function as a pedestrian footbridge spanning the Concord River and joining the battleground of the minutemen on the west to the battleground of the British on the east. Likewise, the graveled path from Monument Street over the bridge to the Buttrick Mansion will maintain the route of the historic Groton Road.

#### Related studies

*North Bridge Neighbors, History of Area B*, Minute Man National Historical Park (Ruth R. Wheeler, 1964).

*Archeological Explorations for Traces of the Historic Roads West of the Great North Bridge in Concord*, (Leland Abel, National Park Service, 1965).

*Historic Structure Report, Historical Data Section, Wall West of the Great North Bridge*, (John Luzader, National Park Service, 1968.)

*Historic Structure Report, The Great North Bridge and Historic Wall West*, (David L. Leonard, National Park Service, 1973).

*The Scene of the Battle, 1775, Historic Grounds Report, Cultural Resources Management Study No. 15*, (Joyce Malcolm, National Park Service, 1983).

*Archeological Collections Management at Minute Man National Historical Park, Volume 4*, (Darcie A. MacMahon & Linda Towle, editors, National Park Service, 1986.)

*Archeological Investigations of Minute Man National Historical Park, Volume I, Farmers and Artisans of the Historic Period*, (Allan Synenki, National Park Service, North Atlantic Regional Office, Division of Cultural Resources Management, 1990).

*Plowland, Pastureland, Woodland and Meadow: Husbandry in Concord, Massachusetts, 1635-1771*, (Brian Donahue, Phd. Dissertation, Brandeis University, 1994).

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<sup>4</sup> National Register Documentation., p. 1.

## **EXECUTIVE SUMMARY**

### **Project Background and Scope**

The North Bridge, a key site of the Colonists' first skirmish with the British and the beginning of the American Revolution, is deteriorating at a rapid pace. Bracing is missing, piles are damaged, railing and decking need to be replaced, and the abutments and retaining walls need to be repaired. A Line-Item Construction project, "Save Historic Resources and Provide Safe Access to the North Bridge," PMIS 29906, has been approved to repair/replace sections of the bridge, as well as repair/replace/rehabilitate other commemorative resources that surround the bridge.

The GMP notes that "extant structures and landscape features have undergone many changes since 1775, and the site has assumed a commemorative character of significance in itself. The area retains little of its 1775 appearance; rather, it possesses a number of monuments and other features that create an atmosphere of commemoration, including (1) The 1836 Battle Monument, (2) The North Bridge, (3) The Minute Man statue, (4) The British Soldiers' Grave, and (5) several memorial plantings. The plan [GMP] seeks to preserve the commemorative character of the unit."

This project focused only on the North Bridge itself, and not on the evolution of the commemorative site as a whole, or other pieces that compose the commemorative site. The end product of this project is a developmental history of the North Bridge. The goal of the research carried out during this project therefore was to specifically document the physical appearances and locations of each "North Bridge" since 1775 and to establish a brief understanding of the physical and historical evolution of early bridges on the site. Reference will be made when necessary to the cultural landscape report currently in draft form by Debbie Dietrich-Smith of the Olmsted Center for Landscape Preservation. The Cultural Landscape Report documents the evolution of the North Bridge Unit landscape from the 1600s to the present including detailed information about the development of the commemorative landscape.

The research, analysis and compilation of documentation for this project was conducted by Architectural Conservator Judith Q. Sullivan (Northeast Region, Historic Architecture Program) with support from Historical Landscape Architect Deborah Dietrich-Smith of the Olmsted Center for Landscape Preservation, Curator Terrie Wallace of Minute Man National Historic Park and Historical Architect Richard Crisson of Northeast Region, Historic Architecture Program).

This Developmental History is intended to inform preservation professionals and caretakers as they determine recommended treatments for work on the North Bridge. Treatments will be determined by a team of engineering consultants, historians, planners, architects,

conservators and interpretation specialists from the National Park Service, the Town of Concord and private sector firms.

### **Historical Context**

Minute Man National Historical Park was created by an act of Congress on September 21, 1959 for the purpose of preserving the revolutionary battlefields of Lexington, Concord and parts of Lincoln and their contributing resources. (*Public Law 86-321*) Since that time the primary mission of the park has been to approximate the cultural environment that existed in 1775 and preserve and interpret individual resources that contribute to the understanding of the events of the Battle of Lexington and Concord.

The Battle of Lexington and Concord marked the beginning of the American Revolutionary War, and ranks as one of the most important events in the history of the United States. The North Bridge is located in the North Bridge Unit of Minute Man National Historical Park. The North Bridge Unit is especially significant as one of the places where the first engagements of the Revolutionary War were fought. The site of the bridge played an essential part in the unfolding drama of April 19, 1775. It was at the North Bridge that British Troops stationed to hold the bridge encountered resistance from the minutemen. The ensuing skirmish led the British to retreat back to the center of Concord and eventually back to Boston.

Although the appearance and use of the landscape of the North Bridge Unit has changed over time it continues to possess great significance from the Revolutionary events that took place there and from the extensive commemorative activities that have been held at the site beginning in the early 19<sup>th</sup> century. The current bridge dates to 1956 and was designed to resemble the bridge in place on April 19, 1775.

### **Summary of Research Findings**

Research has revealed that a bridge was in the current location as early as 1654. Due to wear and weather, a new bridge was necessary approximately every 20-30 years. Historic town records definitively identify new bridges in 1731, 1760, 1788, 1874, 1889, 1909, and 1956. Although the records for each of the bridges vary in detail, the research has provided quite a comprehensive understanding of the bridge over time. The bridge that was present in April 1775 was a pile bent bridge constructed in 1760. An accounting of that construction provides many interesting details including materials, man power, and possible construction techniques.

A short chronology of the North Bridge follows:

- |             |   |
|-------------|---|
| Pre-History | Native Americans used the North Bridge area as a temporary seasonal campsite for some 5,000 years. A sand bar may have been used to cross in dry seasons. |
| 1635        | First Division of lands. (Probably was some sort of a crossing aid/structure shortly thereafter.)   |

**1654** Second Division of lands. First documented bridge built at site ca. 1654 to connect farms in the north quarter to the town center. (By 1659 town petitioning General Court for maintenance aid.)

The North Bridge was in constant need of repairs. Spring floods were an annual problem and it appears that the bridge needed to be completely replaced approximately every 20-30 years.

1717 North Bridge recently repaired. Town meeting reports bridge: “now in tolerable repair and ye Causway shall be made better with all speed”

**1731** New bridge at site completed.

1741 Bridge replanked.

1742 Bridge repaired, 200 feet of oak plank.

1748 Petition to move location of bridge as bridge “much gone to decay”. Petition denied.

1749 Bridge repaired by Joseph Hayward for L16 pounds, 19 shillings and 0 pence (L16-19-0). March 1748, January 1749 and February 1749.

1750 Causeway along west bank widened and improved.

**1760** Petition to General Court to raise money to “rebuild ye north bridge over ye Great Rivers in sd Concord...”

North Bridge replaced. Simple wooden structure covered with loose planks. New wall at the west end of the causeway constructed.

This bridge is the bridge in place on April 17, 1775 and is the bridge that was recorded by Amos Doolittle several days after the battle in 1775.

1770 David Brown hired to construct a railing along the west wall adjacent to the causeway to help pedestrian crossing. Single handrail attached to posts set at intervals along the wall.

1780 Stone abutment constructed at the east end of the bridge.

1784 By 1784 an abutment is located at the west end of the bridge as well.

**1788** New bridge built, summer. Landowners in the North Bridge area were paid for constructing the bridge (Captain David Brown, Lieut. Elisha Jones, and Col. John Buttrick).

- 1791 Neighboring landowners repeat request to remove bridge and construct new one near the home of John Flint.
- 1792 New bridge south of North Bridge site constructed – Hunt’s Bridge.
- 1793 North Bridge dismantled. Bridge location moved north to current Flint Bridge location and new bridge built using materials from the 1788 North Bridge.
- 1793-1874** NO BRIDGE AT SITE. North Bridge and the part of Groton Road passing over the bridge were abandoned. Causeway on west abandoned, reverts to private ownership. New roadways line up with new bridges – Hunt’s Bridge on the south and Flint’s Bridge on the north.
- 1874-1875** Centennial Commemorative Bridge built.  
 Architect – William Ralph Emerson (photos only survive, no drawings found to date).
- 1888 Bridge destroyed by floods (“carried away by the freshet”).
- 1888** New bridge constructed.  
 Architect – William Ralph Emerson (photos only survive, no drawings found to date).  
 Engineers – McInnis & Parker of Boston  
 Design – much simpler and sturdier than Centennial Bridge. “a pile bridge one hundred and eight feet long and twelve feet wide; the piles to be of white oak fifteen inches in diameter, the braces of the same material, and all other timber and planks of kyanized spruce.” \$1095.00.
- 1908 Bridge destroyed by flood.
- 1909** New concrete bridge constructed.  
 Architect/Engineer – Joseph R. Worcester (formerly of the Boston Bridge Works)  
 Design – used the Doolittle print as a model, very similar in appearance despite materials.  
 Concrete pile bridge. 120’ x 13’, 7 spans, rock face concrete abutments.  
 \$3,136.00 Letter from J. R. Worcester inserted. Town Records Annual Report 1910.
- 1955, August Damaged beyond repair by Hurricane Diane.

- 1956      New bridge constructed (old bridge demolished and removed).  
Architect/Engineer – Whitman and Howard  
Design – Based on Doolittle drawing. Used pressure treated wood. Incorporated hand hewn timbers.  
Drawings, Specifications and photographs survive.
- 1969      Dynamite blast damages bridge.
- 1972      Erosion control work on abutments.
- 1996      Structure Inspection Report, Old North Bridge over Concord River, U. S. Department of Transportation.
- 2002      Conditions Assessment, Childs Engineering Corporation.

**II. DEVELOPMENTAL HISTORY**

## EARLY BRIDGES (1635-1759)

Prior to European settlement Native Americans used the North Bridge area as a seasonal campsite for some 5,000 years. The Native Americans knew the river as the Musketaquid. Many of the roads that the European settlers developed were originally trails and foot paths first used by the Native Americans specifically the Algonquins.<sup>1</sup> Although there is no evidence that the Native Americans constructed bridges over the Musketaquid, it is likely that in dry weather they were able to cross the river by sand bar at a location south of the current bridge site where the Mill Creek flows into the river.

The Old North Bridge has been referred to as the "Great North Bridge", the "Great River Bridge", the "Great Bridge" and the "North Bridge" in primary documents. It was one of several bridges that were constructed early in the history of the Concord settlement in order to facilitate the growing network of roads laid out to connect inland and sea coast towns. It is believed that a bridge was located at, or near, the site shortly after 1635 when the first distribution of the interior land into "plantations" was begun. In 1635 the General Council ordered the establishment of the first inland settlement. The Council decreed:

It is ordered that there shall be a plantation at Musketaquid, and that there shall be six miles of land square belonging to it and that the inhabitants thereof shall have three years immunities from all public charges except trainings. Further, when any that shall plant there shall have occasion of carrying their goods thither, they shall repair to two of the next magistrates where the teams are, who shall have power for a year to press draughts at reasonable rates to be paid by the owners of the goods, to transport their goods thither at seasonable times. And the name of the place is changed and henceforth to be called Concord.<sup>2</sup>

The Town of Concord was divided at this time into three quarters; the east, south and north quarters. This is known as Concord's First Division. The Great Bridge was located in the North Quarter. Each family received a houselot and portions of commonly held wet meadows and agricultural fields.<sup>3</sup> After the establishment of farms along the west banks of the Concord River (soon after the 1635 decree), a bridge or some type of crossing structure was necessary to connect the farms of the North Quarter on the west side of the river to the town center and meeting house on the east. This route over the Great Bridge became one of the principal routes for inhabitants to travel not only to the North Quarter farms but to Acton, Groton, Carlisle and other points north and west

The establishment of the first "plantation" and the construction of the first bridge pre-date extant town records.<sup>4</sup> Therefore, written documentation of the first bridge at this site is not available and the supposition as to its existence is drawn from the understanding that a solid means of access across the river would have been necessary. However, documentation of the bridge in the Town Records is found in the very first available entries. Historian Charles Walcott writes that by the 1650s;

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<sup>1</sup> Michael Ryan, "Simple Purpose-Historic Span: The Old North Bridge." *The Concord Magazine*, November 1988.

<sup>2</sup> David L. Leonard, *Historic Structures Report, The Great North Bridge and Historic Wall West* (Denver, CO: Department of the Interior, National Park Service, Denver Service Center, 1973), p. 3

<sup>3</sup> Deborah Dietrich-Smith, *Cultural Landscape Report: North Bridge Unit, Minute Man National Historical Park, Site History*. Draft. (Brookline, MA: Olmsted Center for Landscape Preservation, September 2003), p. 12.

<sup>4</sup> George Tolman, pamphlet, CFPL, discussion of what happened to town records prior to 1654.

the expenses of highways and bridges were increasing at an alarming pace, by reason of the general development of the country and the need of better means of communication between settlements, and between widely separated portions of the same township.”<sup>5</sup>

In 1654 the Town of Concord was divided for a second time. The families of each Quarter met and brought a list of their first division lands upon which they claimed a second division of particular parcels that they desired to own at a rate of three new acres for every one already possessed. Most requests were granted and allotments made.<sup>6</sup> By this time, it is clear that attention to the network of roads and bridges and related municipal responsibilities was concretely established and codified. On September 1, 1654 the following matters relating to highway and bridges were defined by Town Meeting.

The north quarter are to keepe and maintaine all there highwayes and bridges over the great Rivre in there quarter and in Respecte of there gretness of Charg there about, and in Regard of the ease of the East quarter, above the Rest in there highwayes, they are to alow the north quarter three pound;...

Item: we doe chose overseers in ech quarter for the faithfull performance of there duty in that case in all particalers so far as may conduce for the profit and good of there said quarters, as to make Rates to pay workemen and to see that all persons come in seasonable time and keep them to there business faithfully and keep accounts and so see the worke suffisintly don; and they are impowered to call fitt men & Cattle in there quarter to the worke & pay them there wages; and if any shall refoevse to attend, these nesery workes; there names shall be Returned to the Selectmen of the Towne, who shall Impose findes acording to law upon all such ofendares in that case;<sup>7</sup>

For the purposes of studying the North Bridge we learn specifically that by September 1, 1654 a bridge existed in the north quarter crossing the river at or near the current bridge site.<sup>8</sup> We can infer from the records that the North Bridge was the most used bridge in Concord and as such was allotted an additional 3 pounds because of the “gretness of Charg there about”. A resident of the North Quarter was appointed each year to oversee that the North Bridge (and the highways of the quarter) were maintained by the residents of the quarter. Every resident was obligated to contribute to this maintenance either by labor or monetary contribution. Every overseer was obligated to keep record of all work and monies and report to the Town Selectmen. Documentation of work on the highways and bridges was kept in records of each quarter.<sup>9</sup> Issues that arose that required funding or legal decision were brought before the general

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<sup>5</sup> Charles Walcott, *Concord in the Colonial Period, Being a History of the Town of Concord, 1635-1689* (Boston, MA: Estes and Lauriat, 1884), p. 76.

<sup>6</sup> Walcott, p. 74.

<sup>7</sup> Concord Town Records (CTR) – 1630-1794. Transcribed by the WPA work project, 1936. Ancient Records of Concord, Volumes I-VI. Concord Free Public Library, Special Collections. - CTR, WPA, Vol. I. p. 164b.

<sup>8</sup> The first location of North Bridge is assumed to be the same as all the following bridges including the present because after carefully examining available Town Records through the 17<sup>th</sup> and 18<sup>th</sup> centuries no entries for relocating the bridge were found. Discussions about moving/relocating the North and other bridges were found. However, when Town Meeting decided to actually act upon such proposals, their decision is always documented. No decision to move the North Bridge is documented in the Concord Town records until 1793. All previous bridges are therefore assumed to have been built at or very near the current site.

<sup>9</sup> The record book for the North Quarter, and specific North Quarter records are not part of any

town meeting. (This manner of maintaining the bridges and roads was retained until the mid-nineteenth century when a municipal office for Highways and Bridges was created under the direction of a Road Commissioner.)

The bridges in the town were subjected to extensive use. As early as 1659 a petition to the General Court from the inhabitants of Concord was filed asking for assistance in maintaining the town's three bridges and asking to exempt them from paying public rates to support other bridges of the County. The October 18, 1659 petition reads:

... [We] humbly Intreat that our Condition in this respect may be seriously weighed, and that wee may have such release as this present Court shall in their wisdom judge just & Equall for us to receive. And that the honord Court may the better discern what the charge hath beene & is like to be about the County bridges in our Towne, bee pleased hereby to understand that the length of the Arch-worke of these bridges over the Rivers which at present is & hereafter must be is about sixty rods, besides all the other charge about them, & severall other smaller bridges which frequently need repaires: For ease in the charge whereof we humbly crave yor helpe.<sup>10</sup>

The following spring, the Court decided to increase the amount of a former allowance to Concord from 20 to 30 pounds and to exempt them from charges to any bridges but their own, but they did not grant any specific County contributions for Concord bridges. On February 17, 1660 the Court determined that,

Upon further information, Inquisition, dissussion and consideration, have cleerly conceived and concluded, that the Towne of Concord have no just ground of Complaint or allowance from the Countie in Respect of there bridges: for the Resones hereafter expressed: The three brids they foot, and plead upon; are for there owne proper specal and perticuler concernment, for there saw mill; Iron workes & other occationes and not, necessary for the County or Country and may at there pleasur be diserted.<sup>11</sup>

At the time of this decision the town of Concord maintained three major bridges (South River Bridge, North Bridge, and the Derby Bridge) as well as several smaller bridges. References throughout town and county records to the North Bridge document the constant need of repair and rebuilding. Weather, spring floods, and decay of untreated materials all contributed to continuous maintenance needs. From known dates of reconstruction and in following the litanies of repairs, it can be stated with some surety that the life of each bridge was generally about 20-30 years.<sup>12</sup>

What did these early bridges look like? Although no detailed description of bridge construction was found, an examination of the period documents reveals small invaluable nuggets of information that may be pieced together to provide a general understanding of the type of bridge built over the Concord River during the 17<sup>th</sup> century. The bridge was a timber frame arch/bent bridge consisting of seven or eight framed bents. Each bent had three posts/piles capped by north/south running plates. Stringers

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historical collection to date. Therefore, current scholarship on the North Bridge must depend on documentation included in the General Town Records and in records from the County Court Proceedings. Perhaps someday, the North Quarter Records will come to light.

<sup>10</sup> Walcott, pp. 77-78.

<sup>11</sup> CTR, WPA, Vol. I. p. 257a

<sup>12</sup> In the Brief Chronolgy on pp. 6-9 known dates bridge construction are 1654, 1730, 1760, 1788, 1874, 1888, 1909, 1956.

running east/west were framed into the plates with mortise and tenon joining. Planks were then laid on top of the stringers spanning the width of the bridge. Planks may have been spiked to secure.<sup>13</sup> A hefty toe plate sat atop the stringer (and possibly atop the decking planks) running in the same east/west direction as the bridge stringers. The toe plate was framed into the stringer. Sturdy posts were then framed into this toe plate. Two rails, top and bottom, ran between posts on each side of the bridge. The width of the bridge was approximately 1 rod (16 feet) wide and approximately 100 feet long.<sup>14</sup>

Wood used for the bridge was either white oak or swamp oak for the beams. Stringers were of pine measuring at least one foot deep by 16 to 18 feet long. Caps or plates were of oak measuring 18 inches wide by 16 feet long. The toe plate was a 6 x 6 inch oak timber. Posts were generally 6 x 8 inches perhaps with smaller dimensions at either end of the bridge. Rails were of 4 x 6 inch white oak pieces. Decking planks were of 1 ½ to 2 inch thick oak. Framing members on the underside of the bridge were treated with some type of "lining" probably a pitch or tar intended to protect the wood at times of high water.

The following details from the repairs to the South Bridge in November of 1672 and December of 1683 contributed to the above description. At a South Quarter meeting on November 27, 1672 it was agreed to make the following extensive repairs to the South Bridge.

...yt ye great bridge should bee covered with pine stringe peaces: the string peaces to bee one foot depe eighteen foot longe also yt ye bridg bee railed with white oak raills and a peece at ye bottom six inches squar too raills in a place at each sid ye raills to bee 4 inches and six inches and ye poost 6 inches and 8 inches and poost of 5 inches the raills 4 inches at the least end.<sup>15</sup>

Just eleven years later nearly the same repairs were necessary once again at the South Bridge. Companies of the quarter met on December 16, 1683 and voted for the following items.

...providing to mend their Great bridg: doe mutually agree & conclud yt ye caps<sup>16</sup> of the arches of ye Great bridg be made new with good sufficient white oake or swamp oake to ye number of five caps ye caps to be eighteen inches in widness fifteen or sixteen feet in length; also nr ye sd quarter doe mutuually agree with Thomas Gooble & Nathanel Billings to put on ye above sd five new caps on ye sd five arches in ye midst of ye bridge leaveing ye two outsid arches uncapt; . . .sd Thomas & Nathanel to secuer

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<sup>13</sup> Several secondary sources referred to the planks on the bridge being "loose" and removable. This would have been highly impractical considering the amount of use the bridge saw and the serious flooding it experienced in times of high water. Valuable planks would be too easily lost to weather and floods if they were not in some way affixed to the timber frame.

<sup>14</sup>The first measurement length that is available for the bridge is not until construction of the 1888 bridge at which time it was 108 feet long. As the bridge is believed to have spanned the river at the same location, it is safe to assume that the length of the seventeenth- and eighteenth-century bridges was approximately the same.

<sup>15</sup> CTR, WPA, Vol. I, p. 88. November 27, 1672.

<sup>16</sup> The Old English Dictionary includes a definition of cap dating to 1677 as follows: "a horizontal beam joining the heads of a row of piles in a timber bridge, or the tops of a row of posts in a frame, a plate;" p. 332.

ye bridge till ye worke bee finished; also to lyne ye caps where necessity doth require. . .<sup>17</sup>

Jobs were described in at least four categories; providing/delivering materials, framing the arch (bent frame), raising the bridge, and covering the bridge (stringers and planking). Each family in the associated quarter was required to contribute to the undertaking. It appears that one or two men would be chosen to oversee the project and assign responsibilities to the citizens. The work of building then appears to have been divided into teams for each arch of the bridge. South quarter records for March 9, 1700 document that "it was agreed to cover it [the south bridge] with hewn timber & ye work devided by companies to each arch."<sup>18</sup> Likewise in 1702 work was similarly organized: "The covering of the great bridg was performed by the masters of each arch with their company as foloweth . . ."<sup>19</sup> The organization of labor into major task categories is reflected also in brief descriptions such as these South Quarter records from March 1666 that record - "work raying ye bridge," "framing ye arch" and "logeing and sanding the bridge."<sup>20</sup> Work was carried out between March 14 and March 30.

Although the above are excerpts from details of repair and construction on the South Bridge, the bridge terminology, work required, and labor organization for the North Bridge would have been the same. Unfortunately, North Quarter books have not survived (at least over the years they have not been found) and therefore specific detailed records for the first bridges at the North Bridge site are not available.<sup>21</sup> Using entries from bridge and highway maintenance in Concord's south quarter are the best way to understand the work occurring in the north quarter.

In October of 1666 a description of William Buttrick's property included "foure acres more or less of medow and upland at the west end of the great bridge. . ."<sup>22</sup> In 1699 the farm road that crossed the North Bridge was upgraded to a "highway" and its boundaries and path set by a committee assigned by the County Court for "laying out a convenient highway from Concord to Groton."<sup>23</sup> The highway was described as follows and was largely a relocation and straightening of the old paths.

Beginning at Concord meeting house & from thence as ye way now Lyeth by ye house of Samll Jones, & so over ye great River bridge & from thence as ye way is now used, up ye hill Betwixt Thomas Brown Senr. & Samll Buttericks. Leaving ye houseing & lands of Samll Butterick on ye Right hand untill it coms on ye upper end of Thomas Brown Junr his home lott, & then tuming westerly as ye fence now standeth, & along upon ye same point untill it comes to a small Brooke keeping ye way yt now is, & tuming over the sd brooke partly norwesterly & so on . . . till it comes to the Grotton meeting house.<sup>24</sup>

Thus, by 1700, transportation networks were well established in the Concord vicinity and the North Bridge was a vital part of that network. It is likely that at least two bridges had been built already upon the North Bridge site - the first in ca. 1635 (this being the bridge extant and requiring maintenance in

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<sup>17</sup> CTR, WPA, Vol. I. p. 257a.

<sup>18</sup> CTR, WPA, Vol. I. p. 113.

<sup>19</sup> CTR, WPA, Vol. I, p. 113b.

<sup>20</sup> CTR, WPA, Vol. I, p. 32a,b. CTR, WPA, Vol. I p. 81a.

<sup>21</sup> Conversation with librarian Leslie Wilson, Concord Free Public Library, 12/05/02.

<sup>22</sup> CTR, WPA, vol. I, p. 175a-b).

<sup>23</sup> CTR, WPA, Vol. 3, p. 406-407.

<sup>24</sup> CTR, WPA, Vol. 3, pp. 406-407.

1654) and possibly a replacement bridge in 1660.<sup>25</sup> If the North Bridge followed a similar pattern of wear and replacement as the South Bridge (for which records exist at this time) a new bridge may have been built in ca. 1683 and again in ca. 1710. We know that the North Bridge was rebuilt in 1730.<sup>26</sup> Extrapolating backwards and incorporating the few available details specific to the North Bridge the following time line is likely for early bridges at the site: Initial construction ca. 1635, followed by replacement bridges (or substantial repairs) in 1660, ca. 1680, ca. 1710, and 1730.

In 1707 the bridge was evidently in disrepair once again. On June 17, 1707 a representative for the Selectmen of Concord appeared in court to, "Answer their presentment for ye Defects of the North Bridge and a highway presented for Defect. Informing the Court that the bridge and highway is repaired to all."<sup>27</sup> The nature of the defects, and the repairs that were carried out, are unknown. It is likely that an assessment was made in 1699 when the Old Groton road was formally laid out and that repairs to the bridge were requested by the court.

To ensure the longevity of the bridge, the repairs may have been as extensive as those made to the South Bridge in 1710 when citizens of the quarter basically rebuilt all but the piles of the bridge structure.<sup>28</sup> The South Quarter voted unanimously to:

New cap the bridg with good white oak timber the caps to bee sixteen foot in length & not under 16 inches in bredth & 10 inches in depth & if it can be with conveniency 18 & 12 also to cover sd bridg with string peeces of pine timber 12 inches deep which work they doe conclude to begin as soon as possible after this date so as the same may bee consumated by the last of June . . further did agree that sd work should be devidid by the surveiors into so many companies as there are arches proportioning the same as equally as may bee.<sup>29</sup>

Materials and method of construction seem to be little changed from the rebuilding of this bridge in 1683. As with the framing of buildings, the construction of bridges probably changed little during the seventeenth and early eighteenth centuries depending on rather massively dimensioned timber and mortise and tenon joinery. Certainly Concord records indicate that between ca. 1660 and 1750 the bridge formula of choice was a timber framed bridge covered with sturdy planks constructed and raised bent-by-bent by a cooperative effort by all citizens residing in the locale of the bridge. (This construction methodology and tradition continues in Concord into the early nineteenth century.)

In addition, due to the low marshy area around the North Bridge, a raised roadway leading to the bridge on the west bank would have been necessary, particularly during periods of heavy flooding. Raised roadways near bridges were common and were called causeways. The causeway at the South Bridge is documented as early as 1694 when a Simon Daken petitioned the court for a bit of land "lying on the south side of the end of the [South] bridg caussway..."<sup>30</sup> In May of 1701 town records for the

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<sup>25</sup> Ruth R. Wheeler, *North Bridge Neighbors, History of Area B* (National Park Service, Minute Man National Historical Park, 1964). p. 30, Leonard, p. 4, and Dietrich-Smith, p. 17 all identify that the North and South Bridges were rebuilt in 1660 although no primary documents are cited.

<sup>26</sup> CTR, Microfilm Box 2, Roll 4, December 1, 1730. (Concord Free Public Library)

<sup>27</sup> Court of General Sessions, Middlesex County, June 17, 1707 from Deborah Dietrich-Smith's *Cultural Landscape Report*.

<sup>28</sup> Early records rarely mention the piles of the bridge frame or any pieces below the water line (i.e. mudsills, bracing) suggesting that they often outlasted the plates (caps), stringers and planking.

<sup>29</sup> CTR, WPA, Vol. I, p. 115. April 6, 1710. South Quarter Records.

<sup>30</sup> CTR, WPA, Vol. I, p. 25b.

south quarter report - "Carting gravil & laying timber into the great big causeway by severall persons."<sup>31</sup> This appears to be a substantial maintenance repair probably following a spring of damaging floods. Although it is likely that the North Bridge causeway was also in place soon after the first bridge was constructed, the first known record of the North Bridge causeway is not until 1717 when the causeway was already in disrepair. A representative from Concord appeared before the Court of General Sessions to answer to the paying of fees as follows:

The Selectmen of Concord by Mr. Whittemores Informing the Court that the Bridge & Casway they were presented for its being out of repair, Is now in Tolerable Repair and if ye Casway shall be made better with all Speed, [*the Court shall*] Dismiss paying fees. . .<sup>32</sup>

Therefore, an aging causeway was clearly in place at the North Bridge in 1717. It is possible that it resembled the causeway at the South Bridge consisting of timber and gravel. However, archeology carried out by the National Park Service in 1965 in the area of the causeway found evidence of an early cobbled roadbed followed by a raised sand and gravel roadbed. No evidence of a roadbed consisting of inset timber and gravel was detected – (although it may exist below the cobbles). Primary documents suggest that the raised sand and gravel roadbed date to improvements carried out in 1750 when the road was significantly widened and moved several yards up from the bank of the river.

The cobbled roadbed measured 16 feet wide (matching the 1666 and 1683 dimensions of early bridge caps that determined the width of the South bridge). The cobbled road was constructed of "granite cobbles and of sharp angular granite spalls varying in size from 2 or 3 inches to 10 inches in diameter" and exhibited evidence of once being covered by coarse yellow gravel not indigenous to the swamp.<sup>33</sup> Abel identified this road as "sections of the pre-1750 or first causeway". The road clearly dates to before 1750, however, it is probably not the original causeway surface.<sup>34</sup> As far as can be ascertained, Abel did not excavate BELOW the cobbled road because he assumed that the cobble road was the first causeway surface. There may be an even earlier causeway surface (i.e. timbers covered with gravel) below.

The gravel roadbed discovered by Abel in 1965 measured 48 feet wide and consisted of a raised earthen grade built with the black sandy clay soil from the nearby swamp. Coarse yellow gravel not indigenous to the swamp was used to create a 20 to 22 foot wide crown.<sup>35</sup> As Abel wrote;

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<sup>31</sup> CTR, WPA, Vol. I, p. 113a. May 26, 1701.

<sup>32</sup> Court of General Sessions, Middlesex County, March 11, 1717, from Deborah Dietrich-Smith's Cultural Landscape Report, 2002.

<sup>33</sup> Linda A. Towle and Darcie A. MacMahon, eds. *Archeological Collections Management at Minute Man National Historical Park, Massachusetts, Volume 4, ACMP Series No. 4*, (National Park Service, Division of Cultural Resources, North Atlantic Regional Office, 1986), p. 122.

<sup>34</sup> *Archeological Collections Management, Vol. 4, ACMP*, p. 106. [Previous reports have assumed that the cobble road discovered by Abel was the original causeway dating to the earliest bridge ca. 1635 or 1660 because no documentation of the causeway pre-dating the widening of the causeway in 1750 was available. The description of the South Bridge Causeway in 1701 and the record of the disrepair of the North Bridge Causeway in 1717 leads this historian to believe that the cobbled roadbed found by Abel actually represents improvements made in 1717/18 and that an earlier surface perhaps of timber and gravel may be underlying the cobbles.]

<sup>35</sup> *Archeological Collections Management, Vol. 4, ACMP*, Appendix 18.5, p. 98. [Memorandum from Superintendent Zerbey to Regional Director, NE Region, NPS, August 25, 1965.]

...there was clear evidence of a causeway running parallel to the west bank of the Concord River, which extended from the foot of the North Bridge to Buttrick Hill. Archeological evidence indicated that the causeway was approximately 600 feet long. From the west end of the bridge, 430 feet. It then curved northward until it ended . . .<sup>36</sup>

Town records clearly document that this widening of the causeway occurred in 1750. A warrant for the November 12, 1750 meeting sets out Item 3.

To See Whether the Town will purchase or otherwise agree with Capt. Jonathan Buttrick for a part of his Land near the Great North Bridge in order to make the way wider over the Causey.<sup>37</sup>

One month later inhabitants voted to make the improvements. November 20, 1750:

At a General Meeting of the Votable Inhabitants...After a Considerable Debate on the Third Article and a Comtee being Sent to view the Proposed alterations of the way near the North Bridge the Inhabitants of the Town Came in to the following vote vizt. – Whereas the way over the Causey at the westerly End of the Great North Bridge is not thought to be Convenient as might be and Capt. Jonathan Buttrick appearing and offering to give a slip of Land in order to make the way wider and more convenient upon condition the Town will be at the Cost of making a good and Sufficient wall on the Line. Therefore voted that the said wall be made at the Charge of the Town as Soon as Conveniently may be where it has been projected and marked out.<sup>38</sup>

The work was carried out and is reflected in Town Records. Being paid the following year were:

Simon Hunt for “Digging and Drawing Rocks for the wall near the North Bridge in December and February Last.”<sup>39</sup>

Abishai Brown “for work done at the stone wall by the North Bridge...”<sup>40</sup>

Hon. James Minot Esqr., Thomas Jones, Jonathan Harris, Humphrey Barrett – “for work done at the wall near the North Bridge in the year 1750.”<sup>41</sup>

The cobblestone roadbed dating to 1717 or earlier was most likely abandoned and at least partially destroyed when the improved causeway was built along its north side. It is over this improved raised earthen and gravel road that the minutemen trod as they marched towards the North Bridge to meet the British Regulars. Like the bridge, the causeway at the North Bridge needed constant maintenance and upkeep.

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<sup>36</sup> Leland J. Abel. “Archeological Explorations for Traces of the Historic Roads west of the Great North Bridge in Concord” (NPS, 1965) in *Archeological Collections Management, Vol. 4, ACMP*, p.125.

<sup>37</sup> CTR, Roll 014, from Deborah Dietrich-Smith’s *Cultural Landscape Report*, 2002.

<sup>38</sup> CTR, WPA, Vol. 4, p. 32a.

<sup>39</sup> CTR, WPA, vol. 4, pt. 1. November 25, 1751.

<sup>40</sup> CTR, WPA, vol. 4, pt. 1, October 7, 1751.

<sup>41</sup> CTR, WPA, vol. 4, p. 50b. February 7, 1752.

The North Bridge was “out of repair” in March of 1717 and put in to “Tolerable Repair” shortly after. However, in the summer of 1719 one of the Selectmen of Concord was back in front of the General Court appearing “to answer ye presentment for neglect of repairing or new making ye North Bridge” and assuring the Court that “said Bridge is in good Repair and Described ye Surveyors Report of the same...”<sup>42</sup> No details are available for these repairs. Indeed, the town records are quiet about the North Bridge until 1730. Either the repairs made in ca. 1719 were extraordinarily successful or records for the intervening period have been lost.

The North Bridge was rebuilt in 1731. At a December 1, 1730 meeting of the Selectmen of Concord one of the main items for consideration was;

Item 1. To See in what way the Town will build the bridge (over the great river) known by the name of the North Bridge.<sup>43</sup>

By December 22, some decisions had been made about the bridge. It was voted that:

The present Surveyors take care to provide plank and other matterials for the building the Bridge (over the great river) known by the name of the North Bridge.

That there be twenty pounds of the three hundred pounds already granted to defrey the charge of highways added to the next Town Rate to pay for plank and other matterials for the north Bridge.<sup>44</sup>

No list of materials or accounting for the bridge construction of 1731 has been found. However, several notations the following fall document that a new bridge was indeed built in the Spring of 1731. The following entries provide limited, but definite documentation of that construction.

September 21, 1731. Then payed to Mr. Joseph Fletcher by an order to Mr. Samuel Meriam Town Treasurer<sup>45</sup> for four hundred feet of plank used for covering the great bridge the sume of three pounds and four shillings in full...

October 7, 1731. Then payed to Mr. James Russell & Mr. Timoth Heald by an order to Mr. Samuel Meriam Town Treasurer for four Hundred feet of plank used for covering for the great bridge the sum of three pounds and four shillings in full...<sup>46</sup>

Then payed to Mr. Samuel Jones by an order to Mr. Samuel Meriam Town Treasurer for timber used about building the Great bridge and for a rope worn out and a hook lost in raising said bridge and carting said timber the sum of one pound and two shillings and six pence in full...<sup>47</sup>

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<sup>42</sup> Court of General Sessions, Middlesex County, August 25, 1719, from Deborah Dietrich-Smith, *Cultural Landscape Report*, 2002.

<sup>43</sup> CTR, Box 2, Roll 4, December 1, 1730. (from Dietrich-Smith, CLR.)

<sup>44</sup> CTR, Box 2, Roll 4, December 22, 1730. (Dietrich-Smith, CLR.)

<sup>45</sup> CTR, Box 2, Roll 4, September 21, 1731. (Dietrich-Smith, CLR.)

<sup>46</sup> CTR, Box 2, Roll 4, October 7, 1731. (Dietrich-Smith, CLR.)

<sup>47</sup> CTR, Box 2, Roll 4, October 19, 1731. (Dietrich-Smith, CLR.)

Despite the paucity of details, the 1731 North Bridge appears to be a replacement in kind – a planked, timber framed bridge raised bent by bent with hooks and rope by local inhabitants. The 800 feet of plank represented in the payments above accounts for just half of the plank that would have been necessary to complete the bridge (calculating that the approximately 100 foot long, 16 foot wide bridge required 1600 feet of plank).

The litany of repairs to the bridge continues through the 1730s and 40s beginning just four years after the new bridge was constructed at the North Bridge site. The most common repair to the bridge seems to have been replacing the planking. The least common repair to the bridge seems to have been replacement of the piles or superstructure below the waterline. No mention of abutments or the structural use of rock is apparent in records of the early bridges although it seems that rocks were sometimes used on a temporary basis to shore up the bridge in times of flood.<sup>48</sup> Although brief, the simple entries in town records reflect the pattern of chronic maintenance experienced at the North Bridge. These repairs took place from 1736 – 1741. Frequently, the bills were paid a full year after the work was completed.

**1736** - It. 7. To see if the Town will allow money out of their Treasury to purchase plank for ye Repair of ye covering of their two Great Bridges.  
(Voted YES)<sup>49</sup>

**December 12, 1737** - Payd to Mr. Josiah Heywood for Labour by him done at Highways & bridges since May Last past and for timber by him (for the north bridge) found to repair sd bridge the sum of thirty & five shillings in full...<sup>50</sup>

**December 23, 1737** -Payd to Mr. Ebenezer Darby for Labour by him done at the North Bridge<sup>51</sup>

**February 29, 1738** -Payd to Daniel Ross for timber used at the north bridge.<sup>52</sup>

**March 9, 1738** -Then payd, by an order to Mr. Joseph Barrett TownTreasurer to Mr. Joseph Wright for labor by him done at Highways since May last past & for carting plank to the great Bridge . . . 01-10-6<sup>53</sup>

**May 11, 1738** - Payd to Coll. John Flint for 269 feet of plank (by him sold to Repair the Great Bridge in the month of May currant) the sum of forty & three shillings in full<sup>54</sup>

**June 2, 1738** - Then payd to Mr. Jonathan Buttrick (for carting plank to ye great bridge to repair the same, & one days labor done at sd Bridge,

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<sup>48</sup> May 31, 1737 Captain William Wilson of the Old Manse was paid for “drawing his Rocks from the Great Bridge layd thereon in the spring of the year last to secure it from going Down Stream and making up his stone wall again...” CTR, WPA, Vol. 3, p. 84a-b.

<sup>49</sup> CTR, WPA, vol. 3 p. 66a

<sup>50</sup> CTR, WPA, Vol. 3, p. 96a

<sup>51</sup> CTR, WPA, Vol. 3, p 101a

<sup>52</sup> CTR, WPA, vol. 3, p. 108b

<sup>53</sup> CTR, WPA, vol. 3, part 2, p. 152a

<sup>54</sup> CTR, WPA, Vol., 3 p. 121a

performed on the second day of May Last past) the sum of twelve shilings in full . . .<sup>55</sup>

**June 6, 1738** - Payd to Mr. Jonathan Blood for one Hundred feet of oak plank by him procured to cover the Bridge by Coll. Flint & for Labour by him done at Highways since May 1737 the sum of eighteen shillings in full .  
.<sup>56</sup>

**June 29, 1738** - Payd to Mr. Samuel Jones of Acton for five hundred feet of oak plank purchased of him by Mr . Jonathan Ball surveyor, in May Last past to Repair the Great Bridge the sum of four pounds in full.<sup>57</sup>

**May 3, 1739** - Payd to Decon Samuel Miles for Labour by him done and timber by him provided to Repair the North Bridge in the year 1737 the sum of thirty eight shillings and six pence in full.<sup>58</sup>

**July 16, 1739** - Payd to William Wheeler jun. For Labour by him done at Highways and for four sticks of Timber by him provided to Repair the North Bridge since May 1737...01-16-0<sup>59</sup>

**March, 1740** - Payd to Thomas Jones for his own and others Labour at Highways since May Last past and for timber to repair the great Bridge...03-01-7<sup>60</sup>

**March 28, 1740**-Paid to John Hunt "for Labour by him done at the Highways in the year last past and for Timber to Repair the great Bridge..."  
03-02-9<sup>61</sup>

**November 14, 1740** -Paid to Ephriam Brown for sawing plank for the great Bridge and for Labour by him done at Highways...in 1739.<sup>62</sup>

**March 16, 1741** -Payd to Ephraim Browne for two hundred of oak plank by him sold to Thomas Barrett surveyor to Repair the Great Bridge in the summer last past ... 50 shillings.<sup>63</sup>

**March 17, 1741** -Payd to Mr. John Hunt for Labour by him done at the great Bridge since May last past...5 shillings<sup>64</sup>

**Feb. 28, 1742** - Payd to John Brown for Labour at Highways since may last past & for spikes for the great Bridge<sup>65</sup>

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<sup>55</sup> CTR, WPA, Vol. 3, p. 128a

<sup>56</sup> CTR, WPA, Vol. 3 p. 128a

<sup>57</sup> CTR, WPA, Vol. 3, p. 129a

<sup>58</sup> CTR, WPA, Vol. 3 p. 159b

<sup>59</sup> CTR, WPA, Vol. 3, pt. 2, p. 167 a-b

<sup>60</sup> CTR, WPA, vol. 3, pt. 2, p. 216a

<sup>61</sup> CTR, WPA, Vol 3, pt. 2, p. 198b

<sup>62</sup> CTR, WPA, vol. 3, pt. 2, p. 204a

<sup>63</sup> CTR, WPA, vol. 3, pt. 2, p. 253a

<sup>64</sup> CTR, WPA, vol. 3, pt. 2 p. 253

In February of 1744 there is an entry that an Ephraim Jones was paid for “Entering cautions? & for Rum for Raising the north Bridge.” The reference to raising the bridge suggests that all or part of the bridge had fallen into the river. It is doubtful that any lengthy construction project would have been embarked upon in the middle of winter. All other bridge construction approved by the selectmen occurred in the spring and summer months – bridges were not intentionally built during the winter months. It is possible however, that ice dams or ice floes traveling down river compromised the bridge structure and required emergency measures. However, it is more likely that the work was carried out during the past spring or summer and Mr. Jones was just being paid. As mentioned above, entries of payments frequently were made over a year after work was complete. No other details of this project appear in the records. No bill for timber or plank or teams of oxen and no accounting of labor have been found although surely additional materials and manpower were used. The details of this significant task remain a mystery.

The responsibilities of each quarter towards their roads and bridges were once again laid out in town records in May of 1745. The requirements highlight the continued cooperative organization applied to highway management as codified by town government.

...the surveyors of Highways be ordered to notifie all such persons Living near the part of Highway or Bridge, which he mends, as he shall think able to work at the same (viz) that the wages for labour to be done at Highways or Bridges from this time to the middle of September next, according to old Tenor, shall be six shillings p day for a man – and six shillings p day for a team of three or four cattle & a cart – and from the middle of September to the middle of October four shillings p day for a man – and for a team of three or four cattle & a cart four shillings p Day – and from the middle of October to the middle of November if necessity call for Labour to be done at highways or Bridges two shillings and six pence p Day for a man – and for a team of three or four cattle & a cart three shillings p Day – and from the first of April to the first of May for a man four shillings p day – and for a team as above described four shillings p day, to be payd out of the Town Treasury.<sup>66</sup>

It appears that each resident of a quarter was polled by a surveyor as to when he could commit to carrying out his portion of work on the highways – a master sign-up list so to speak. It is known from additional records that if the resident could not carry out the work himself, he made a set payment instead. Rates for labor were set according to the agricultural calendar and reflected the seasonal cycles that informed every aspect of eighteenth-century life in Concord. For example, the rates for highway work during the busiest agricultural season (May – September) were the highest (6 shillings per day) because time away from the fields was at a premium. The rates during the winter months when farming activities were at a lull and both farmers and livestock had time to spare were the lowest (2 shillings per day).

In the year 1748 a controversy over the bridge was initiated by a group of thirty four residents in the North Quarter who felt that the configuration of roads and bridge was not as convenient and expedient as could (or should) be. The controversy would rage for over 40 years and the end result would be the

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<sup>65</sup> CTR, WPA, vol. 3 pt 2 p. 274a. This is the first mention of any hardware being used in repairing or constructing the early bridges. Although timber frame joinery remained the principal construction method, this entry suggests that by the 1740s some type of hardware was in use – perhaps nails for planking or pins for joining.

<sup>66</sup> May 16, 1745. CTR, WPA, Vol. 3, p. 336b.

removal of the North Bridge from its original location and the abandonment of the Old Groton Road. These residents put together a petition to the Town that described the current condition of the North Bridge and the causeway as deplorable and dangerous. Their feeling was that the bridge needed to be rebuilt and the causeway was a mess so what better time to change the location of the bridge to a place on the river less subject to floods and more direct in its path to Concord center and points north. The petitioners likewise argued that only four or five families would be disserved by changing the bridge location while forty families would benefit. However, in light of any disservice to those residents, each petitioner was willing to pay a certain amount towards the construction of the bridge above their regular highway tax. The chosen location for this new bridge was on John Flint's farm about ¼ mile north of the original site just beyond the elbow bend in the river.

In their own words the "great Bridge in the northerly part of sd Concord is much gone to Decay" and the causeway being "very long and low and narrow Renders it Very Uncomfortable – and in the winter season mortally Impassable Passing over with teams at some times by Reason of the Drifts of snow in sd narrow Road: which crowdeth People on to the River. . ."<sup>67</sup> The full text of the Petition and list of petitioners is included in Appendix B. The following is a condensed version as it appears in Town Records.

Whereas the Great North Bridge (so called) on the Northerly Part of Concord is very much Decayed and in Danger of being useless which will Render it Necessary Either to Rebuild it or Build a New Bridge in Some other Place near the same. And we the Subscribers being fully Sensible that a bridge over against Mr. John Flints house or Thereabout would much better Accommodate a very Considerable Part of the Inhabitants of the North part of the Town as well as Several in the other parts who are owners of land on that side and be no Disadvantage to more than four or five families in the Town nor any manner of Inconvenience to those of other Towns Travelling that Road it being Practicable Building a Bridge at that Place so as it may be comfortable passing over in the highest Flood. We therefore whose names are under Written apprehending we may be something More Benefited by Such a Bridge Near said John Flints than many other Inhabitants of the Town Do Hereby Promise and oblige our Selves Provided a Bridge is agreed upon by the Town to be Built at said Place to pay Toward the Same Either in Money, Labour or proper Materials for such a Building over and above our Proportion of the Tax. The Several Sums in old Tenour which is Set against Each of our Names to be performed or paid within one month after Said Bridge Shall be finished as Witness our hand this Seventh day of February Anna Dom: 1748.<sup>68</sup>

A new road would be necessary to facilitate the new bridge location and petitioners included a request for a new portion of highway as well. The new portion of road would essentially continue the county road from Concord Center straight past the sharp west turn of the original road (Old Groton Road) over the new bridge, past John Flint's farm, up the hill past the Buttrick farm to join with the county road again as it traveled north to Acton and Groton. Monument Street follows this path today. (See figure 2.) They asked the Selectmen to;

order that a Highway may be laid out from the Country Road by Capt. Jonathan Buttricks Barn and where the Road now is or where it may be

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<sup>67</sup> CTR-Roll 014. February 7, 1748. (Dietrich-Smith, CLR, 2002.)

<sup>68</sup> CTR-Roll 014. February 7, 1748. (Dietrich-Smith, CLR, 2002.)

thought most comodius to serve the Public by sd John Flints and so on till it comes to the corner by Mrs. Sarah Wilsons land [the Old Manse] into sd Country Road again and a Bridge built over the River there about...<sup>69</sup>

Petitioners argued that the new road and bridge location proposed would save fourteen rods (approx. 224 feet) travel and was an issue of:

public safety- "...that People may pass with the utmost safety in all seasons of High floods: whereas at the Place where it now is: it is often Impassable so that strangers as well as those who know the ground Dare not assume the passin over...;

religion – "...and those People on the north side of the River are obliged to have Preaching with them there in time of high floods...,"<sup>70</sup> and

commerce – "...and near fourty families will be greatly served thereby not onely by being freed from the Difficulties they have long laboured under but by saving near fourteen schoore Rods Travel Every time they Come to Meeting or to Town with timber or metal for firing..."<sup>71</sup>

They also included an indirect threat by stating "We therefore pray that the Town would take this our Request into their wise and Prudent considerations and no longer Subject the [*families?*] to the above Difficulties **nor Expose us to seek Relief Elsewhere** . . ."<sup>72</sup> Thus the petitioners presented their case for consideration at Town Meeting. A committee was chosen to evaluate the situation and the item was indeed put on the agenda in March 1748. Articles for consideration at the meeting actually included two items calling for the rebuilding of the North Bridge:

It. 2 To see whether the Town will Lay out a way and build a bridge over the River near Mr. John Flints or thereabouts where it will be found most convenient, agreeable to the Request of Mr. David Whitaker & others.

It. 3. To see whether the Town will agree to Rebuild the great north Bridge and also to see whether the Town will agree to have an open way of three Rods wide where there is now only a bridle way, from Mr. John Hunts gate to Abishai Brown.<sup>73</sup>

The North Bridge was surely in greatly deteriorated condition. Built in 1730 it was nearly 20 years old – a critical age for the bridge according to the timeline of repairs and replacements we have tracked through historic documents. Despite what must have been a bridge in serious need of repair, the Town did not approve either of the articles concerning the bridge and furthermore, the Petition to relocate the bridge was dismissed.

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<sup>69</sup> Petition, February 7, 1748. CTR, Roll 014, (Dietrich-Smith, CLR, 2002.)

<sup>70</sup> In other words, because of the bad location and conditions of the bridge, residents on the north side of the river can not get to the Meeting House for church.

<sup>71</sup> Petition, February 7, 1748. CTR Roll 014. (Dietrich Smith, CLR, 2002.)

<sup>72</sup> Ibid.

<sup>73</sup> March , 1748 CTR, WPA, Vol. 4, p.10 [This bridleway is thought to have been located on the west bank of the Concord River somewhat south of the bridge.]

In answer to the Second article wherein is contained the Petitions of David Whitaker William Hunt and others, that the Town would Lay out a way & Build a Bridge over the River, near John Flints, The Town by accepting of the Report of the Comittee who were chosen and sent out by the Town to view and consider of the same, **dismissed said Petition.**<sup>74</sup>

The committee that was chosen to “view the land and consider the same” obviously did not give a favorable recommendation to the Selectmen. The members of that committee are unknown and their report has not surfaced in the records. Clearly, however, a political tug-of-war was going on over the issue. This is made certain by evidence in the Town Records that reflect the anger and disappointment of some of the petitioners. When chosen as town officers for the year, petitioners John Flint, Samuel Buttrick and John Barrett all refused to serve and chose to pay a fine in the amount of 10 pounds old tenor instead. This historian interprets the refusal as angry protest over the dismissal of their petition.<sup>75</sup>

So, what of the North Bridge that in the opinion of the petitioners was “very much Decayed and in Danger of being useless”? No vote was taken to rebuild the bridge. Instead, repair and replacement work was carried out that spring. Accounting records from March 1749 detail payment for several jobs completed in May of 1748 including the following.

The Town of Concord to Joseph Hayward Jr.	<u>L-s-p</u> <sup>76</sup>
March 8: 1748 – 160 feet of Plank for the Great Bridge	6-8-0
Janr. 6: 1749 – 75 feet of plank for the Bridge above	3-0-0
Febr 20: 1749 – 190 feet of planks -----	7-11-0
Total	16-19-0 Old Tenor <sup>77</sup>

Paid to Mr. Simon Hunt for Timber and work done at the North Bridge and at Davis’s Bridge old Tenour Two pounds Seventeen shillings in full...<sup>78</sup>

Payd to Capt. Ephraim Brown for five Hundred feet of Oak plank by him delivered at the Great Bridge in the north part of Concord in May Last, in order to cover said Bridge the sum of fifteen pounds old Tenour in full.<sup>79</sup>

Labour at Highways & Bridges in sd Concord.  
 Samuel Heald  
 David Parlin  
 Joseph Parlin<sup>80</sup>

<sup>74</sup> March 1748. CTR, WPA, Vol. 4, p. 10.

<sup>75</sup> Flint was selected to be a Constable, Buttrick the Deer Officer, and Barrett a Surveyor for the year 1748. CTR, WPA, Vol. 4, p. 10a-d.

<sup>76</sup> L-s-p, English monetary denominations for pound, shilling and pence. Abbreviations used throughout period accountings.

<sup>77</sup> March 6, 1749. CTR, Roll 014, (Dietrich-Smith, CLR, 2002.)

<sup>78</sup> March 9, 1749. CTR, WPA, Vol. 4, p. 19c.

<sup>79</sup> July 3, 1749. CTR, WPA, Vol. 4, p. 18.

<sup>80</sup> December 5, 1749. CTR, WPA, Vol. 4, p. 22a.

The following year (1750) approximately 50% of the bridge planks were replaced once again. Samuel Jones of Acton was paid 1 pound, 17 shilling and 0 pence (*L 1:17:0*) for 750 feet of plank for the bridge. The bridge, being approximately 100 feet long and 16 feet wide, required a total of approximately 1600 feet of plank.<sup>81</sup> Samuel Jones' 750 feet of plank represents just about half that amount. It is interesting to note that on occasion abutting communities that benefited from the North Bridge (in this case Acton) contributed to materials and labor in maintaining it. This will be even more evident in the accountings for the rebuilding of the bridge in 1760 and 1788.

The major project at the bridge site in 1750 however, was the improvement of the causeway. The condition of the causeway had also been sharply criticized by the 1748 petition where it was described as "long and low and narrow" and "in the winter season mortally Impassable . . . by Reason of the Drifts of snow in sd narrow Road." The original causeway lying close by the river was apparently submerged by high water quite frequently. In October of 1750 the Warrant for Town Meeting presented the suggestion that land be sought from Jonathan Buttrick to move the causeway away from the immediate bank of the river presumably to higher ground where a wider highway could be built to better accommodate carts and foot traffic.<sup>82</sup> The suggestion met with success as is reflected in notes from the meeting.

At a General Meeting of the Votable Inhabitants... After a Considerable Debate on the Third Article and a Comitee being Sent to view the Proposed alterations of the way near the North Bridge the Inhabitants of the Town Came into the following vote vizt. – Whereas the way over the Causey at the westerly End of the Great North Bridge is not thought to be Convenient as might be and Capt. Jonathan Buttrick appearing and offering to give a slip of Land in order to make the way wider and more convenient upon condition the Town will be at the Cost of making a good and Sufficient wall on the Line.

Therefore voted that the said wall be made at the Charge of the Town as Soon as Conveniently may be where it has been projected and marked out.<sup>83</sup>

Archeologist Leland Abel found evidence of this new causeway in his 1965 investigations. Test trenches along the west bank of the Concord River revealed both the early narrow (1 rod wide) cobble road lying in the swamp very near the bank of the river and a 48-50 foot wide raised grade of dirt and gravel to the north of this cobbled causeway. This new road featured a 20 to 22 foot wide crown of yellow sand and gravel.<sup>84</sup> Archeological evidence indicated that the new road was approximately 600 feet long from the west end of the bridge. It ran southwesterly in a straight line and then curved northward until it met with the historic Acton and Groton roads.<sup>85</sup> No evidence of a stone wall on the north side of the new causeway was found by the archeologists. However, Town Records are clear that a stone wall, as requested by Jonathan Buttrick, was built by Abishai Brown and others shortly after the vote was taken to improve the causeway.

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<sup>81</sup> Measurements are available for the 1888 bridge (108 feet long), 1909 bridge (120 feet long), and the 1956 bridge (109 feet 8 inches long). Assuming that the bridge is in the same location and that the early bridges had little in the way of abutments or extended construction on either end, their length would have been similar to the 108 feet of the 1888 bridge.

<sup>82</sup> CTR Roll 014, November 20, 1750. (Dietrich-Smith, CLR, 2002.)

<sup>83</sup> Nov. 20, 1750. CTR, WPA, vol. 4, p. 32a.

<sup>84</sup> Towle and MacMahon, Archeological Collections Management, ACMP, Vol. 4, p. 122.

<sup>85</sup> Towle and MacMahon, p. 125.

**Oct. 7, 1751** Paid to Abishai Brown – for work done at the stone wall by the North Bridge and to Ennable him to pay them that he Employed in that Service...L4-14-06.<sup>86</sup>

**November 25, 1751** Paid to Mr. Simon Hunt ...for Digging and Drawing Rocks for the wall near the North Bridge in December and February Last. L1-0-2 ½<sup>87</sup>

**February 7, 1752** Paid to the Several persons hereafter named by an order to Mr. Ebenezer Hubbard Town Treasurer the Several Sums Let against each of their names for work done at the wall near the North Bridge in the year 1750 ... honble. James Minot Esqr., Thomas Jones, Jonathan Harris, Humphrey Barrett.<sup>88</sup>

Clearly, concern over the condition of the causeway must have been extreme. The project was affirmatively voted in November and work began immediately. One gets the sense that there was a concerted effort to squeeze the necessary work in before ice and snow began in earnest in an attempt to ensure safer passage during the winter season.

Available documentation suggests that no other significant changes were made to the bridge or site until 1760. Although the bridge must have been in increasingly poor condition, Town Records show only a handful of repairs – all for new planks.<sup>89</sup> Had North Quarter reports survived, a more comprehensive picture of the maintenance of the bridge may have been possible for this time period. We must assume therefore that the bridge built in 1730 is the bridge in place until 1760. Although it was in deplorable condition by 1748 when some of the inhabitants of the North Quarter attempted to rebuild the bridge at a new location, it stood in place with apparently minor alterations for another twelve years.

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<sup>86</sup> CTR, WPA, vol. 4, pt. 1. P. 50a

<sup>87</sup> CTR, WPA, vol 4, pt 1, p. 50a.

<sup>88</sup> CTR, WPA, vol. 4, p. 50b.

<sup>89</sup> Just three entries were discovered for the North Bridge work during the 1750s:

**January 20, 1752** - Paid to Mr. Joseph Hayward...for Plank for the North Bridge..22 shillings & 8 pence. (CTR, WPA, vol. 4, pt. p.34 )

**January 1, 1753** - Paid to Josiah Hayward...for two hundred feet of plank for the Bridges. (CTR, WPA, vol. 4, pt.1, p. 34)

**Feb. 25, 1756** Paid to Simon Hunt for ... plank for North Bridge. (CTR, WPA, vol. 4, pt.1 p. 34)

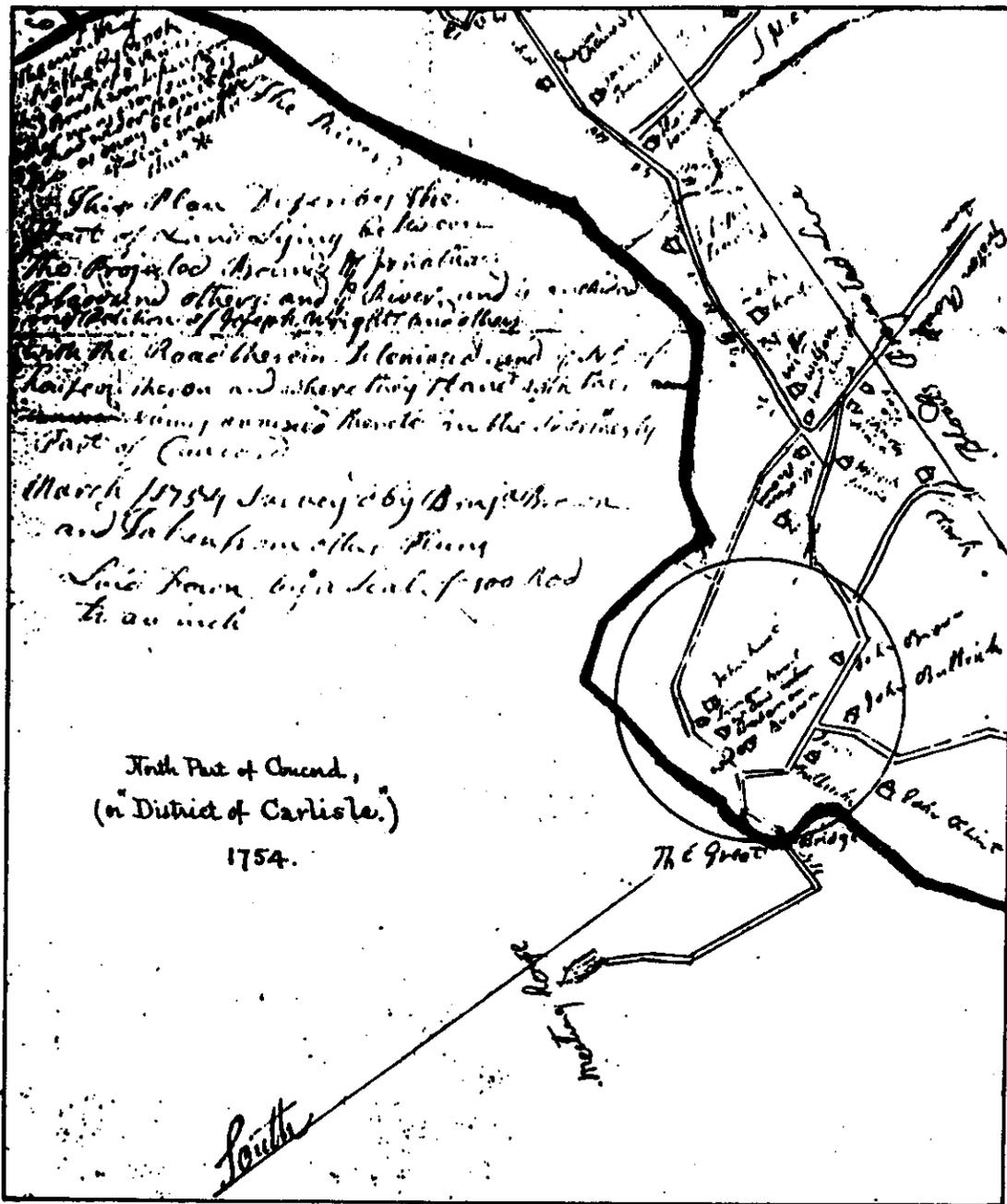
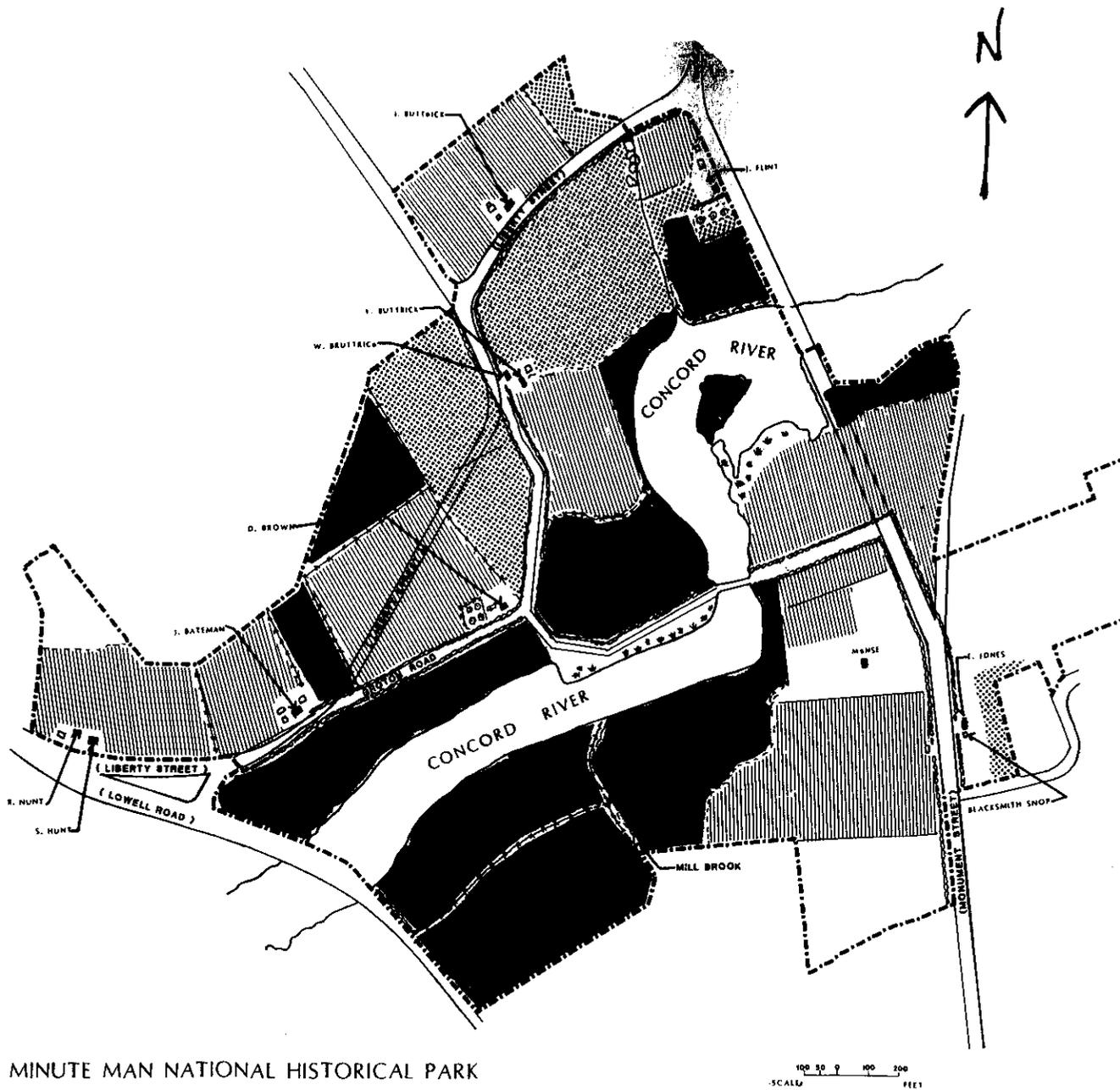


Figure 1. Map of "North Part of Concord, or District of Carlisle," surveyed by Benjamin Brown, 1754. Dark line is the Concord River. Circled area is the North Bridge area with the bridge identified as "The Great Bridge." (Map reprinted in *Archeological Collections Management, Minuteman NHP Volume 4, ACMP Series*, p. 117. Original located at the Massachusetts State Archives.)



MINUTE MAN NATIONAL HISTORICAL PARK

100 200 300  
-SCALE- FEET

LEGEND

- |                             |                    |
|-----------------------------|--------------------|
| ■ House                     | ▨ Pasture          |
| □ Barn Or Other Outbuilding | ■ Meadow           |
| — Stone Wall                | ⊞ Swamp            |
| — Fence                     | ⊞ Woodland         |
| ⊞ Bridge                    | ⊞ Modern Road Name |
| ⊞ Orchard                   | ⊞ Old road Name    |
| ▨ Tilled Field              |                    |
| ⊞ Rocky Field               |                    |

Figure 2. Map of the North Bridge unit of Minute Man NHP showing overlay of original configuration of roads including old Groton Road and the Causeway. (Map number District VI, *Historic Grounds Report, Minute Man NHP, CRM Study no. 15*, by Joyce Malcolm, 1985.)

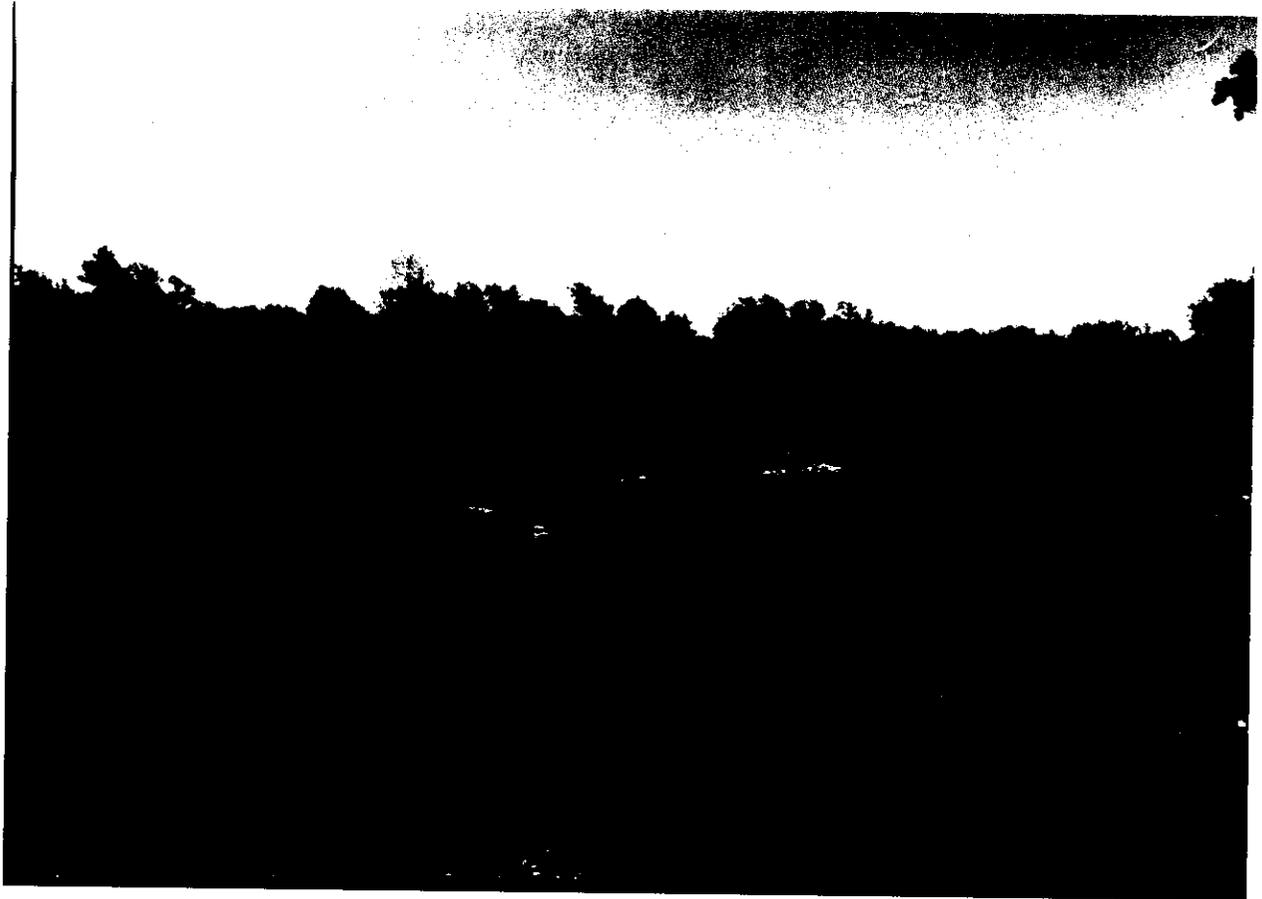


Figure 3. View of the Concord River and North Bridge site (1956 Bridge in place) looking southeast from the Buttrick Estate. (Photo by Jack Boucher, HABS, May 1962. Collection of Minute Man NHP Archives.)



Figure 4. View from the 1956 North Bridge looking northwest towards the Buttrick Estate. (Photo by Jack Boucher, HABS, May 1962. Collection of Minute Man NHP Archives.)



Figure 5. Old North Bridge during flood season. Note water level, ice floes and debris buffeting the bridge piles. This view illustrates river conditions that have affected every bridge built at the site. (Photo by Jack Boucher, HABS, March 1968. Collection of Minute Man NHP Archives.)



Figure 6. Photograph illustrating spring flood waters of the Concord River in the vicinity of the North Bridge. View looking southwest from west bank of the river. (Photo by Jack Boucher, HABS, March 1968. Collection of Minute Man NHP Archives.)

## THE REVOLUTIONARY WAR BRIDGE, 1759-1788

Serious discussions about replacing the North Bridge resumed in 1759. In November of 1759 the topic was put in front of Town Meeting for consideration. Because of the high cost of the necessary improvements, a lottery approved and facilitated by the General Court was proposed to pay for not only rebuilding the Great North Bridge, but for repairing the causeways and bridges over the North and South Rivers as well. There seems to have been some disagreement over whether to petition the General Court for such a lottery to cover the costs. The lottery was proposed in Town Meeting on November 13 and turned down. It came back on the agenda in the call for Town Meeting November 21 and was turned down again on December 5. On December 15 it was brought up once more and passed finally in the affirmative on December 24. The struggle seems only to have been over the funding mechanism and not over the necessity of rebuilding the bridge. The December 5, 1759 vote makes that quite clear.

...the Question was Put wheather the Town will choose a Comtee to Petition the great and general Court for a Lottery to Rebuild the great north Bridge and Repaireing the four Causways and Bridges over the South and North Rivers and it Passed in the Negative/ then the Question was put wheather the Town will Rebuild the great North Bridge and it pased in the Afarmative/ and the Town choose Capt. Stephen Hosmer Lt. Simon Hunt & Joseph Buttrick as a Comtee to Build Said Bridge.<sup>90</sup>

Although it is impossible to know what disagreements and struggles went on behind the scenes over this issue, it is fair to assume that some sort of dialogue was occurring that caused the Selectmen to meet at least five times between November 13 and December 24 in order to settle the matter. The final affirmative vote on December 24 was recorded in Town Records as follows:

General Town Meeting. Voted that the Town will Petition the Great and General Court for a lottery for the Rebuilding the great North Bridge and Repaireing the Causway at Said Bridge Likewise Repaireing the Bridge by Darbys also the Causway at the South Bridge So/called with a Deduction of one Thoushands Dollars and that the Town of Lincoln be consulted to Joyn in that affaire/ and Col. Charles Prescott Capt James Barrett & Mr. Isaiah Barrett be a Comtee for Concord in that affaire.<sup>91</sup>

During the months following the December vote, the committee chosen to petition the court lobbied neighboring Lincoln to join them in their efforts to secure funding for the rebuilding of the bridge. Town Records from Lincoln on January 7, 1760 include the following article for consideration.

To consider and act upon ye following articles vizt. 1<sup>st</sup> To know ye mind of ye inhabitants of the Town whether they will joyn with ye Town of Concord in petitioning ye General Court for liberty to make a Lottery to build ye north Bridge over ye Great River in sd Concord and to repair ye Causey thereof and ye causey at ye South Bridge over ye rivers in sd Concord.<sup>92</sup>

Two months later, and probably after significant pressure from Concord, the town of Lincoln voted to join in efforts to petition the General Court for a lottery to raise funds for bridge work. On March 18, 1760 the vote was recorded.

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<sup>90</sup> CTR, WPA, Vol. 4, p. 170a. December 5, 1759.

<sup>91</sup> CTR, WPA, vol. 4, p. 173a. December 24, 1759.

<sup>92</sup> January 7, 1760, Lincoln Town Records 1754-1806. (Dietrich-Smith, CLR, 2002.)

Voted. The town of Lincoln will joyn with ye Comtee of Concord to petn. Ye Genll. Court for liberty to make a Lottery to raise money to rebuild ye north bridge over sd river in sd Concord and to repair ye South bridge over sd river in sd Concord<sup>93</sup>.

Ruth Wheeler, author of *North Bridge Neighbors*, documents that despite all of these efforts to petition the General Court for help in financing the construction of a new bridge at the North Bridge site and maintenance work elsewhere, the petition was apparently denied and no lottery ever took place.<sup>94</sup> However, a new bridge was built at the site between April and November of 1760. Accounting records filed on November 7, 1760 in Concord definitively establish that a new bridge was complete by that date. This bridge would be the bridge fording the Concord River on April 19, 1775. The historic exchange between the British and the Minutemen occurred on this bridge built during the spring and summer of 1760.

We are fortunate that an image of this 1760 bridge was made and survives. It is an engraving drawn and recorded by Amos Doolittle and Ralph Earle of Connecticut in the days following the bridge skirmish and the “shot heard round the world. The engraving has gone through several printings with slight variations.<sup>95</sup> Only seven complete sets of the original engravings are known to exist. Included here is a copy of one of the original engravings held in the collections of the Connecticut Historical Society. (See figures 7 and 8.)

Entitled “Plate III. The Engagement of the North Bridge in Concord” the image shows a simple arched pile bent bridge with post and rail guards along each side. Although perspective and details are hard to analyze and some leeway must obviously be allowed for artistic interpretation, it seems that Earle and Doolittle’s intentions were to present a realistic documentary record of the events at the bridge. The bridge frame appears to be comprised of regularly spaced bents. Each bent consists of three piles (visible) and presumably a cap to carry the stringer and deck framing (not visible). Bracing is evident on the outside piles of one of the middle bents as well as the bent at the far west end of the bridge.<sup>96</sup> There may have been bracing at the east end bent as well but the east end is obscured by the embankment, trees, and the line of British soldiers. Each side of railing on the bridge has fence posts corresponding to the locations of each pile bent. Railings show both upper and lower rails between posts (resembling typical post and rail fencing). A string piece or a toe plate are visible running along each side of the bridge between pile and posts. There is limited evidence of bridge abutments. The east end is completely obscured. The west end exhibits a small area of a stone pattern matching the artist’s treatment of the stone wall along the road leading up to the bridge on the east bank of the river. This small stone element at the west end of the bridge may be interpreted as some kind of stone abutment or embankment. It may also represent the stone wall along the causeway or a portion of the causeway itself.

How does this visual image available to us compare to primary source documentation of the 1760 bridge? An accounting of the construction project dating to November 7, 1760 has survived. This accounting of the rebuilding of the North Bridge provides a wealth of details concerning cost, materials

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<sup>93</sup> March 18, 1760, Lincoln Town Records. (Dietrich-Smith, CLR, 2002.)

<sup>94</sup> Wheeler, *North Bridge Neighbors*, footnote #16, p. 32.

<sup>95</sup> Booklet discussing the history of the engravings. “In Freedom’s Cause: Reproductions of Amos Doolittle’s famous engravings of the battle of Lexington and Concord, 19 April 1775.” Published by the Chicago Historical Society, n.d. Copy found at the Concord Free Public Library and at Minute Man National Historic Park.

<sup>96</sup> Current terminology would identify the bracing as “batter piles.”

used, jobs required, and a record of the people participating in the project. The account is included in full below followed by an analysis and description extracted from these bare bones.

**November 7, 1760 -North Bridge Rebuilt – List of Workmen and Materials<sup>97</sup>**

An account of us the Subscribers a Committee Chosen to Rebuild North Bridge in Concord in Labour and Procuring Timber . . . In the year 1760.

Simon Hunt for Nineteen Days and half work at 2s- 8d per Day	2-12-0-0
To a Teem four Days and half	0-10-9-3
To Sundry Timbers by him found and oxen To Draw in Timber	1-5-6-0
For three Ten and half and two feet of Timber	1-17-10-7

Total 6-6-2 -0

To Joseph Buttrick for Seventeen Days and half work at 2s-8d per Day	2-6-8-0
Also for Timber for Said Bridge 4 [??] and 27 feet	2-7-4-0

Total 4-16-7-0

Stephen Hosmer Nineteen Days after Timber hewing Timber	
Drawing Railing etc., at 2d per Day	1-18-0-0
To oxen to draw Timber	0-3-0-0
For Three Days of a water man??	0-12-0-0
To Twenty Two Days- ½ of of My Self at 2s 6d per Day	3-0-0-0
To Six Days at	0-14-4-3

Total 6-7-4-3

Francis Wheeler Junr for Framing the Bridge	3-5-4-3
Also for Thirteen Days and half work at 2s-8d	1-16-0-0

Total 5-1-4-0

Capt Jones [????] Six Days work at 2 piflerens per Day	0-14-4-3
Joseph Wheeler Junr. Seven Days one of it in the water	0-18-4-3
Josiah Merriam five Days	0-12-0-0
Jonas Bateman four Days 2 of it in the water	0-12-9-2
John Brown four Days his Teem Two Days	0-14-0-9
Also for a Rope used in Raising the Bridge	0-4-?-1

Total 0-18-8-0

Jacob Brown Three Days	0-7-2-2
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Samuel Buttrick for Two Days	0-2-9-3
Also for Timber	0-9-9-2

Total 0-12-8-1

<sup>97</sup>The accounts are entered as four digit values. The four digits should be read as follows – pound, shilling, pence, and farthing or half pence This is the typical way that colonial accounts list monetary values. No symbols are included with this accounting because none were included on the original document. Question marks (??) indicate an unreadable notation on original document.

John Buttrick four Days and half 2 of it in the water one of it at shore	0-14-7-1
Nehemiah Flint four Days	0-9-7-1
Also 3 tens and 21 feet of Timber	1-?-?-?
Nathan Barrett Three Days	0-7-2-2
Josiah Flint Two Days	0-4-9-3
Benjamin Clark five Days team one	0-14-4-3
Charles Miles for Eight Mudsills Standing	0-12-0-0
Rails and other Timber Standing	0-9-0-0
Eleven Days and half work at 1s 8d per Day	0-19-2-0
For a Team to Draw Timber	0-7-6-0
For Six Large plank	1-12-0-0
For Six Days in finishing the Bridge	0-14-4-3
	Total 4-14-0-3
Ezekiel Miles for 550 feet of Plank at 9 shilling per hundred	2-9-6-0
For three Days in Culling Timber	0-5-0-0
For Two Large plank	0-10-0-0
	Total 3-5-2-0
Ephraim Whitaker one Day	0-2-?-0
William Wilson Junr. Two Days	0-4-4-2
Due to Mr. Gilly Merick for one Pound and half of powder	0-3-0-0
Due to Samuel Buttrick for 78 feet of Timber	1-0-9-2
To Phineas Blood for 89 feet of Timber	1-3-8-3
John Barrett for 36 feet of Timber	0-9-7-2
Ephraim Minott for 74 feet of Timber	1-5-0-3
Samuel Farrar for Eight Days and half at 2s-5d per day	1-2-6-0
Timothy Billing for Ten Days and half two of it by his Man His own at 2s-5d per Day his Man at Two piflerenes Per Day	1-7-5-2
Joseph Billing for Three Days	0-1-2-2
Nathaniel Billing by his Man four Days one of it in the water	0-11-2-2
Jacob Baker Two Days	0-4-9-2
Amos Brooks one Day	0-2-4-3
John Brooks one Day	0-2-4-3

The Totall of the above acct.

64-15-2-3

Concord Novr. 7:1760

Stephen Hosmer  
Simon Hunt  
Joseph Buttrick  
Timothy Billing  
Samuel Farrar

Committee for Concord & Lincoln

Lincoln Paid in Labour etc. L4-8-11-098

From this document we discern the following. The work force consisted of 28 men including the slaves of Timothy Billing and Nathaniel Billing. The job assignments to any one man ranged from one to 22 ½ days. Generally, participants worked from one to five days. Several men, generally abutters to the bridge site, worked ten or more days on the project. Five teams of oxen were used to draw timber to the site and to raise the bridge. The rate per day ranged from one shilling-four pence (1s-4d) to three shillings-five pence (3s-5d). The highest rates were paid for time spent working in the water.

Tasks involved in the construction included hewing timber, drawing timber to the site, culling timber, framing the bridge, raising the bridge (with ropes and oxen teams), finishing the bridge, and dynamiting rocks. Materials used included 325 feet of timber (plus several non-specific amounts of “sundry timber”), 8 mudsills, rails and other timber standing, 8 large planks, 550 feet of plank and 1 ½ pounds of powder (dynamite). No mention is made of rocks possibly used in building abutments or in stabilizing piles in the river.

Unlike earlier descriptions of the bridge, there is little specific labeling of framing pieces (i.e. rails, caps, stringers, posts) or clues as to the timber dimensions. Perhaps the most important information that can be gleaned from the list is the mention of “8 mudsills”. A mudsill is the lowest sill of a structure usually embedded in the soil. In bridges, the mudsill is the sill that is laid at the bottom of a river, lake, etc.<sup>98</sup> The specific reference to **eight** mudsills and eight large planks suggests that the appearance of the bridge in the 1775 engraving is missing one of its bents (or sets of piles). The provision for eight mudsills strongly suggests that there were eight bents in the bridge framing.<sup>100</sup> The engraving shows only six bents with the probability of one bent obscured on the far east end – or a total of seven possible bents in the artist’s configuration. Therefore, one must acknowledge that although the engraving is an invaluable tool for understanding the general appearance of the bridge in 1775, some of the details may not accurately reflect the exact configuration of framing members. The engraving should be used as a general guide to the type of bridge in place, but the account in the Concord Town Records specifying the use of eight mudsills (and therefore eight bents) is a better guide to the bridge’s actual configuration.

“Rails and other Timber Standing” may be a reference to the bridge piles and other vertical framing members. It may also simply be a colloquialism for cut and dressed timber. Adding up the number of feet of timber itemized gives us the overall footage of timber used in construction (325 feet) but it reveals nothing of how the timbers were finished or put together. We assume that the bridge

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<sup>98</sup> Concord Town Records, November 7, 1760 as included in David Leonard’s *Historic Structure Report, The Great North Bridge and Historic West Wall*, 1973.

<sup>99</sup> The Old English Dictionary, Definitions from the years 1828 and 1870.

<sup>100</sup> Primary documents refer to the bents as “arches” and work was organized by “arch”.

continued to be one rod (16 feet) wide and approximately 100 feet long.<sup>101</sup> We assume that the bridge was largely of mortise and tenon construction as no reference to hardware (nails, spikes, bands etc.) was included in the record.

The bridge deck was made of planks. Assuming that the planks were approximately one foot wide and sixteen feet long one can surmise that the planks provided in the bridge account would not have covered the span of the bridge. Using simple math one may figure that 550 feet of plank cut to 16 foot lengths (width of the bridge) provided almost 32 planks.<sup>102</sup> If the planks were approximately one foot wide (a typical width for floor boards) they would have covered just 32 feet of the 100 foot span of the bridge. If the planks were wider, even if they were two feet wide (which would be almost impossible), they would still only cover 64 feet of the span. Clearly, planks from the earlier bridge were reused in 1760.<sup>103</sup>

There is no specific mention of abutments at the bridge until 1779. The 1775 engraving shows what may be a stone feature on the west end of the bridge although it is most likely that this is a part of the wall along the causeway. The reference to "1 ½ pounds" of powder" suggests that rocks were being blown during the construction project. Whether they were dynamiting in the river to sink/accommodate foundations for the mudsills and bent piles or on the shore to make rubble for use as abutments is unknown. Surely some sort of abutment (perhaps an earthen embankment) would have been necessary on either end from the time of the very first bridge. Perhaps these earthen abutments were rebuilt and augmented over the years becoming more and more stable with the addition of new materials.

Because the details of the 1775 engraving are unclear and the ends of the bridge largely obscured by advancing militia, and because the 1760 accounting of the bridge construction does not reveal information specific to the connection of the bridge to the river bank, the existence and/or appearance of abutments for the 1760 bridge remain speculative. Stones were used periodically to shore up the bridge in the river during times of flood but were then removed back to the location from which they were borrowed.<sup>104</sup> The eight mudsills referenced in the 1760 bridge account suggest that a mudsill was placed at each end of the bridge close to the earthen embankments/abutments with six mudsills laid in the river for the middle bents/arches of the bridge.

The first definite documentation of a stone abutment at the North Bridge found in the Town Records during the research for this report dates to March 1, 1779 when the Selectmen voted to-

Raise one hundred pounds for the Purpose of Building a Stone Buttment at the Great North Bridge.<sup>105</sup>

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<sup>101</sup> The bridge was rebuilt in the same location as previous bridges and thus the length would not vary significantly. Likewise, no documentation of increasing the width of the bridge has been found and the engraving dating to 1775 shows a bridge able to accommodate a line of five or six men standing shoulder-to-shoulder—or about 16 feet across.

<sup>102</sup> The 550 feet of plank does not include the "6 large planks" and "2 large planks" itemized separately in the account. It is assumed that these were either very long or very wide and had a more specific purpose in the framing probably related to the 8 mudsills.

<sup>103</sup> Some of the plank was relatively new having been installed in 1752, 1753, and 1756. See references in the Early Bridges section of this report.

<sup>104</sup> May 31, 1737. Captain William Wilson was being paid for retrieving his "Rocks from the Great Bridge (Layd theron in the spring of the year last to secure it from going Down stream) and making up his stone wall again . . ." (CTR, WPA, Vol. 3, p. 84a-b)

<sup>105</sup> CTR, WPA, vol. 4, p. 113a. March 1, 1779.

The vote was to build, not rebuild, the abutment, suggesting that no stone abutment existed prior to this time. Therefore, there may not have been any stone used in the construction of the 1760 bridge and thus no stone abutments on the fateful April morning in 1775. Later records identify that this abutment was built in 1780 at the east end of the bridge. References to an abutment at the west end of the bridge do not appear until 1784 when in the course of a discussion about repairs there is a mention of the “westerly Butment” at the Great North Bridge. Is this a stone abutment? We do not know. Judging by entries from the 1780s, work on the abutments was listed as a specific task. Surely if building stone abutments had been a part of the 1760 construction project, the detailed accounting that survives would have reflected some assignation of materials or labor to that purpose. More likely, stone abutments were introduced as the bridge aged in an attempt to delay the necessity of a comprehensive rebuilding campaign. (Records from the 1780s reflected this struggle.)

Generally, the design and method of construction of the North Bridge did not change significantly from earlier bridges. The 1775 engraving reflects a bridge that fits the description first recorded in 1672, 1683 and 1710. Basically, the North Bridge was replaced in kind over the years. It was a pile bent bridge with planked deck and post and rail guards or railings on either side. The primary frame, the bents, of the bridge consisted of a timber mudsill laid on a built-up foundation on the riverbed.<sup>106</sup> Resting on the mudsills were three piles framed into a cap or plate spanning the width of the bridge. Piles were augmented with batter piles or bracing timbers at certain locations (probably at the middle of the bridge and at each end). Stringers running the length of the bridge were framed into the caps of each bent. Planks spanned the width of the bridge resting atop the stringers.<sup>107</sup> A toe plate running the length of the bridge on each side sat atop the stringers and planks. The toe plate both held the planks in place and carried the posts of the railings. Railings were comprised of an upper and lower rail joined into posts. If a post was located at every bent, the 1760 bridge featured eight posts on each side of the bridge forming seven sections of railing each approximately fourteen feet long.

The total cost of the bridge was L 64 pounds, 15 shillings and two pence three farthings. The town of Lincoln contributed labor in building the bridge valued at L 4 pounds, 8 shillings, 11 pence. In addition, the Selectmen of Lincoln and Concord determined in December 1760, after the bridge was complete, that Lincoln should also pay the sum of fourteen pounds “towards the Rebuilding the great North Bridge over the Concord River . . . and also for the Repair of the Bridges in Time past in full.”<sup>108</sup>

In the same year, 1760, work was conducted on the wall along the Causeway. Articles for Town Meeting included the following request. “To see if Town will agree to build a stone wall upon the North Bridge causey adjoining the wall Formerly Built by the Town. . .”<sup>109</sup> The request apparently passed in the affirmative for in March the Selectmen -

Voted that a good Sufficent wall be made at the charge of the Town at the North westerly End of the Causey at the Great North Bridge as Soon as may

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<sup>106</sup> A record dating to 1784 inadvertently provides a nice detail of the mudsills while discussing a proposed repair. “There was a vote on. . .having the Second arch from westerly Butment taken up, and a new mudsill put to the Same, and the **foundation on which it stood** Leveled and set up again.” (CTR, WPA, vol. 5, p. 252b, May 12, 1784.)

<sup>107</sup> Planks were very thick. Bridge planks specified for the South Bridge in 1732 called for “good oak plank two inches and an half thick. . .” (CTR, WPA, Vol. 2, p. 412b, 1732)

<sup>108</sup> CTR, WPA, Vol. 4, pt. 2, p.185. December 1, 1760.

<sup>109</sup> CTR, WPA, Vol. 4, pt. 2, p.179d. Feb. 26, 1760.

be beginning at the End of the wall the Town has already Built and so on to the end of sd causey (said wall to be set where the old wall now stands).<sup>110</sup>

Therefore, the year 1760 saw not only a new bridge constructed on the site, but a new wall built along the length of the Causeway adjoining the wall first constructed in 1750. (The full length of the causeway according to archeological evidence was some 800 feet. The first wall must have been built along only a portion of the road.)

Evidence of work at the bridge from 1760 until 1775 is scant and is comprised of the typical maintenance concerns that pepper Town Records from the earliest incarnation of the bridge. The following entries were found.

Feb. 2, 1767 - Paid to Lieut. Andrew Conant for a stick of Timber for the North Bridge.<sup>111</sup>

Feb. 23, 1767 - Paid to Mr. Egekiel Miles...for a String Piece for the North Bridge 0-6-0.<sup>112</sup>

Feb. 19, 1770 - Paid to Mr. Thomas Jones Jr. ... for the Loss of an ax at the North Bridge. 0-4-0.<sup>113</sup>

The causeway likewise continued to need improvements and appears to have received considerable attention at this time. The walls adjoining the causeway were once again repaired and improved including a new (or a replacement) railing

Feb. , 1770 - To See if the Town will make out the wall upon the north Bridge Causey that is not Done and Right up the other and Likewise put up posts and one Rail against Said wall to help foot People to Travel over

To See if the Town will pay Mr. Ephraim Buttrick for the Land that the Surveyor Left out to the Road against Said Buttricks Pasture to accommodate the way. .<sup>114</sup>

April, 1770 - Voted that the Serveyer that has the Care of the way at the North Bridge Causey make up the wall upon Said Causey that is not made up and Rite up the Rest of the wall and Set up posts & one Rail agreeable as it is in the warrant but sd Surveyer to be under the Instructions of the Selectmen.

Voted that the Consideration of the paying Mr. Ephraim Buttrick for his Land that is Left out to the Highway be Left so that Mr. Benjemin Brown May Servey Said Land.<sup>115</sup>

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<sup>110</sup> CTR, WPA, vol. 4 p. 179d. March 1760.

<sup>111</sup> CTR, WPA, vol.4, p. 297c. Feb. 2, 1767.

<sup>112</sup> CTR, WPA, vol. 4, p. 280a. Feb. 23, 1767.

<sup>113</sup> CTR, WPA, vol. 4, p.313b. Feb. 19, 1770.

<sup>114</sup> CTR, WPA, vol., p. 317b. Feb. 1770.

<sup>115</sup> CTR, WPA, vol, p. 319a. April 1770.

May 27, 1772 - Town Meeting warrant. Item 6. To See if the Town Prepared the wall on the north Bridge Causway, and for the future keep Said wall in Repare agreeable to the Request of Mr. Ephraim Buttrick.<sup>116</sup>

June 1772 - Voted on the Six articule to Repair the wall on the North Bridge Causway this year and for the future keep said wall in good Repair for the Conveniency of Peoples Passing over when the water is over Said Causway.

These few entries give us only the briefest idea of activity at the North Bridge from construction in 1760 to the historic day in 1775. By that April morning the bridge was 15 years old. It was midway through the span of its life and had certainly been subjected to many more repairs and replacements than surviving records indicate. The bridge would have been a mix of new and old framing members in varying conditions with surfaces ranging in appearance from raw new wood to very weathered surfaces. The planking of the bridge especially would have been a patchwork of various maintenance campaigns.

On April 19, 1775 the British entered Concord intent on finding and destroying any caches of weapons and gunpowder. The Minutemen had been notified of the British advance early in the morning and had assembled to discuss strategy. They began to gather one mile north of town above the Concord River. The British took the center of town with little resistance and moved to secure the South and North Bridges. A total of seven companies of British Regulars were sent to secure the North Bridge. Two companies held the bridge while four companies advanced over the bridge to search the farm of Colonel Barrett where a large stash of munitions had been reported. The Minutemen, whose ranks were steadily increasing as men from neighboring towns arrived, moved down off Punkatasset Hill to take up positions on the hill west of the North Bridge.

Smoke from the center of town was sighted and interpreted as a sign that the British were burning the town. A force of about 450 Minutemen and militia advanced toward the bridge which was guarded on the west and east sides by approximately 96 British troops. The advance was unorganized but surprised the British Regulars who were ordered to retire back toward Concord center. As the British retreated from the bridge they attempted to disable the bridge by removing some of the bridge planks.<sup>117</sup>

A shot of unknown origin was fired (it is believed that it came from the British ranks) followed by a brief return volley. Two militiamen were killed. The Minutemen continued to advance and once within range (about 50 yards) fired upon the British resulting in nine British casualties. The British began a quick retreat back to the center of town to join the rest of the regiments. The Minutemen split into two groups, one returning to the hill on the west side of the bridge (the Muster Field), and one advancing over the bridge and stationing themselves behind a stone wall on a hill overlooking the road to Concord. The British Commander marched out of Concord center to reinforce the fleeing regiments only to find the strong position of the Minutemen. A standoff ensued. No further fire was exchanged and the four British companies searching the Barrett farm were allowed to pass back over the bridge unmolested. After the exchange at the North Bridge the British began their famous retreat back to Boston.<sup>118</sup>

It is unknown whether the bridge sustained serious damage during the exchange between the British and the Minutemen on April 19, 1775. Surely it received some hard wear on that day but the bulk

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<sup>116</sup> CTR, WPA, vol. 4 p. 356a. May 27, 1772.

<sup>117</sup> For the military accounts of the skirmish I am indebted to Ranger ??? of Minute Man National Historical Park's interpretive staff. Telephone interview, Spring 2003.

<sup>118</sup> *National Register of Historic Places, National Register Documentation*, Minute Man National Historical Park. November 29, 2002. Prepared by PAL, Pawtucket, RI, Section 8, pp. 6-7.

of the action seems to have occurred on the banks of the river and on the historic roads and not on the bridge itself. However, records do not include documentation of immediate emergency repairs and the engraving of the site drawn shortly after the event does not reflect any major disrepair.

The only specific reference to damage is found in the accounts of several British officers who describe how they tried to remove the planks to make the bridge impassable.<sup>119</sup> Ensign Jeremy Lister who had been stationed at the bridge recalled,

I proposed destroying the bridge but before I got one plank off they got nearer so as to begin their fire.<sup>120</sup>

Ensign DeBernier, a regular deployed to search Colonel Barret's house and thus one of the British crossing back over the bridge after the exchange wrote in a pamphlet published in Boston in 1777, "They had taken up some of the planks of the bridge."<sup>121</sup> Finally, Lieutenant William Sutherland, also stationed at the bridge, wrote shortly after the event that before the Americans reached the bridge - "the British had raised a few planks."<sup>122</sup>

Following the battle, references to the North Bridge in Town Records are scant. Finally, documentation of repairs at the bridge appear in 1778. In March of 1778 Ebenezer Hubbard was paid for 240 feet of "bridge plank."<sup>123</sup> In March 1779 he supplies another 220 feet of bridge plank "Delivered at the Bridge" in addition to 189 feet of plank from James Barrett and an unspecified amount of "timber" from Mr. Jones.<sup>124</sup> Combining the plank footage, at least 649 feet of plank was replaced. (This amount of plank accounts for about 40 feet of the 100 foot bridge.) One suspects that the bridge, (at 18 years of age), was in rapidly failing health. Indeed, in that same month it was voted to;

Raise one hundred pounds for the Purpose of Building a Stone Buttment at the Great North Bridge...<sup>125</sup>

A series of major repairs was carried out including the construction of a stone abutment. Work was done largely in the year 1780 and 1781. The abutment was completed by November of 1780. The work crew included the following men from the north quarter: Elisha Jones, Thomas Jones, Capt. David Brown, Reuben Hunt, James Barrett, Ephraim Buttrick, and Edward Flint. The work force also included a number of men that boarded at the homes James Barrett Esq., Reuben Hunt and Ephraim Buttrick for

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<sup>119</sup> These accounts are valuable because they establish that the planks were somewhat difficult to take up and were therefore not simply loose planks as some descriptions of the bridge have claimed but probably affixed quite securely either by nails or framing. If they had been loose planks, the British would have had ample time to toss most of the planks off the bridge. Lister's account in particular says that although an attempt was made, they couldn't even remove a single plank before the Minutemen came into range.

<sup>120</sup> Journal of Army Historical Research, Volume XLI, no. 166, pp. 63-67. And in Lister's Narrative, Harvard University Press, 1931.

<sup>121</sup> Published first by J Guild, Boston, 1777. Also in the Massachusetts Historical Collections, Volume 4, pp. 215-219.

<sup>122</sup> General Gage Papers and the Henry Clinton papers. William L. Clemens Collection, University of Michigan, Ann Arbor, MI.

<sup>123</sup> CTR, WPA, Vol. 5, p. 80b. March 2, 1778.

<sup>124</sup> CTR, WPA, Vol. 4, P. 133c, March 1, 1779. Paid to Mr. Redit Jones . . . for timber he provided for the Great Bridge - 30 shillings. CTR, WPA, Vol. 5 p. 109c. March 2, 1779. Paid Ebenezer Hubbard - 220 feet bridge plank Delivered at the Bridge. CTR, WPA, Vol. 5, p. 110a. March 5, 1779. Paid James Barrett Esq. 189 feet Bridge plank

<sup>125</sup> CTR, WPA, Vol. 4, p. 113a. March 1, 1779.

the duration of their labors at the bridge (apparently 7-10 days). The men boarding were Daniel Ball, Josiah Meriam, Samuel Dudley, and John Prescott representing the South and East Quarters.

The description of the repair work carried out is sketchy. Included below are all of the references found concerning work related to the abutment and bridge in 1780-1782.

Nov. 20, 1780

Paid Mr. Sam'll Dudley by an order to Mr. Bond ... for his labour at the great North Bridge on the new Stone Butment - L82-10-0.<sup>126</sup>

Paid Humphrey Barrett . . .for two sticks of Timber at the great North Bridge 1780 to Lay the Buttment upon - 12 shillings.<sup>127</sup>

Jan. 10, 1781

Paid Mr. Elisha Jones...for work at Stones etc. he found at the North Bridge in Repairing the same - L 151-15-0.<sup>128</sup>

Paid Thomas Jones...for work and materials he found in Repairing the Great North Bridge. L146s.

Jan. 19, 1781

Then paid Capt. David Brown...for work and Timber and for Boarding Danl. Ball and others while at work at the great North Bridge three Hundred Seventy four pound 2/<sup>129</sup>

Jan. 28, 1782

Paid Mr. Reuben Hunt Surveyor of the year 1781 ...for work at the Great North Bridge in said year and for Timber he found to Pail the Bridge aforesaid in full and boarding Josiah Meriam when he workt at said Bridge - Six pound 5/6

Paid Mr. Josiah Meriam...for his Labour at the Great Bridge nine Days at 5/ pr. Day, forty five shillings.

Paid James Barrett Esq. ...for his work at the highway more than crossing his highway rate and Boarding Samuel Dudley while he Laboured at the Bridge twenty seven shilling and three pound 16 shill....<sup>130</sup>

Feb. 18, 1782

Paid Ephraim Buttrick by the Discharge of his own rates and Edward Flints L 386-18/ equal to L5-18-5 in Silver towards his Boarding Jno. Prescot.<sup>131</sup>

Feb. 20, 1782

Paid Ebenezer Hubbard for 180 feet of Plank & [??] feet of slit work for the North Bridge in 1781.<sup>132</sup>

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<sup>126</sup> CTR, WPA, vol 5, p. 157c, November 20, 1780.

<sup>127</sup> CTR, WPA, Vol. 5, p. 189b, November 20, 1780.

<sup>128</sup> CTR, WPA, vol. 5 p. 160a, January 10, 1781.

<sup>129</sup> CTR, WPA, Vol. 5, p. 160b, January 19, 1781.

<sup>130</sup> CTR, WPA Vol. 5, 187a, January 28, 1782.

<sup>131</sup> CTR, WPA Vol. 5, pt. 2, p. 189c, February 18, 1782.

March 4, 1782

5<sup>th</sup> article – Committee appointed to settle outstanding debts with Carlisle from “Expence of the Great North Bridge has been in Reparing the same for two years back [1780]”<sup>133</sup>

June 21, 1782

...and whereas the Town of Concord **did in the year 1780 build a Stone Butment** on the easterly end of the great north Bridge in this agreement the Town of Concord is to bear the whole of the Expence thereof...<sup>134</sup>

Labor, timber, stone work, paling the bridge and providing board were the main components of the project. In short, the work carried out in ca. 1780 represented a major overhaul. In addition to the construction of a stone abutment on the east end, significant planking was replaced. References to “paling the bridge” and “slit work” suggest that the post and rails were also replaced at this time.<sup>135</sup>

It is not clear how well made the abutment was as in May of 1782 – two years after construction – the Selectmen were investigating whether a committee should be formed to determine whether the new abutment would need to be rebuilt that year.<sup>136</sup> It appears that the Selectmen settled for a repair. An entry in town records from September of 1782 documents that Samuel Dudley (who worked on the original construction of the abutment in 1780) was paid for 7 ¼ days of “work at the Butement at the North Bridge, 1782.”<sup>137</sup> Work took place between May and September of that year.

Despite the age of the bridge, the Town of Concord continued to be of the opinion that making repeated repairs was preferable to rebuilding the whole bridge. Although under seemingly constant consideration for major rehabilitation, Selectmen and Committees were reluctant to approve wholesale reconstruction. Rather, they approved what appear to be extensive and complicated repairs such as the work approved in May of 1784.

Town Meeting. ...on the Sixth article Voted to hear the Report of the committee to View the Bridges and causeway in the Town – which is as follows – that it is the oppinion of said committee the Several Bridges will answer the Purpose for which they were built for sum time yet to come, the North Bridge Excepted that we are of oppinion **ought to be Repaired by having the Second arch from westerly Butment taken up, and a new mudsill put to the Same, and the foundation on which it stood Leveled – and set up again** – and that the Several Causeways be Raised as high as they any way can with the Money Raised by the Town for the Repairs of highway consistant with keeping the other way in good Repair – which Report being Read was accepted and a Comtee viz. Col. Buttrick Capt. D. Brown to assist the Surveyor in Performing the above Repairs of North Bridge.<sup>138</sup>

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<sup>132</sup> CTR, WPA Vol. 5, pt. 2, p. 189c, February 18, 1782.

<sup>133</sup> CTR, WPA, Vol. 5, p. 194c, March 4, 1782.

<sup>134</sup> CTR, WPA, Vol. 5, p. 267a, June 21, 1782. [emphasis added]

<sup>135</sup> Slit work refers to finishing posts with slits to receive ends of rails when creating a fence panel.

<sup>136</sup> CTR, WPA, Vol. 5, p. 267a, May 3, 1782. considering a “Committee for the Buttment of the Great North Bridge and Report whether it will be of necessity to build it new this year.”

<sup>137</sup> CTR, WPA, Vol 5. Pt. 2, p. 208c, September 30, 1782.

<sup>138</sup> CTR, WPA, vol. 5, p. 252b, May 12, 1784. [emphasis added]

Replacing an entire pile bent and excavating a new footing within an existing bridge structure must have been difficult and costly.

Rebuilding the bridge was suggested again in 1785 when a committee was chosen to “View the Great North Bridge and if said committee shall Judge it of necessity to Rebuild the year ensuing...”<sup>139</sup> The District of Carlisle was brought in as a participant in the decision. As road networks expanded and populations grew, maintenance projects, particularly at critical junctures in the highway system, became even more an issue of communities sharing expenses. The collaborative efforts necessary to fairly share the expense and work load between adjoining towns was a significant municipal challenge. Disputes arose, costs were challenged and decisions were generally only reached after much debate.

In the fall of 1785, Town Meeting accepted the verbal report of the committee –

on the affair of the North Bridge which report was that [with] some Repairs  
in the same it was Likely to stand too or three years longer<sup>140</sup>

Once again, repairs versus rebuilding won the day. In 1787 the pattern repeated. A committee was chosen “for the Purpose of Viewing the Bridges” and reported that the Great South Bridge ought to be rebuilt during the summer, but “...the Great North Bridge might, with repairs, be made safe for Travelers for some time to come.”<sup>141</sup>

Not until 1788 does the Town finally acknowledge that the North Bridge, now 28 years old, is beyond repairing and needs to be replaced. Records show no long debate or build-up to the decision (although intervening entries may have been lost or unrecorded). On March 3, 1788 Concord Town Meeting simply voted to -“Rebuild the Great North Bridge the summer coming where the old one now stands. . .”<sup>142</sup>

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<sup>139</sup> CTR, WPA, Vol. 5, p. 264b, February 24, 1785.

<sup>140</sup> CTR, WPA, Vol. 5, p. 277 a-b, September 5, 1785.

<sup>141</sup> CTR, WPA, Vol. 5, p. 327b, January 11, 1787.

<sup>142</sup> CTR, WPA, Vol. 5, p. 370b, March 3, 1788.

*Plate III. The Engagement at the North Bridge in Concord*



*1. The Engagement at the North Bridge in Concord on the 19th of April 1775. 2. The British Retreat from Concord to the North Bridge.*

Figure 7. "The Engagement at the North Bridge in Concord" engraving by Amos Doolittle and Ralph Earle, April 1775. (Original engraving, collections of the Connecticut Historical Society, Hartford, CT.)



Figure 8. Detail of Amos Doolittle engraving highlighting the bridge and labeling bridge elements as listed in period accounts. (Collections of the Connecticut Historical Society, Hartford, CT.)

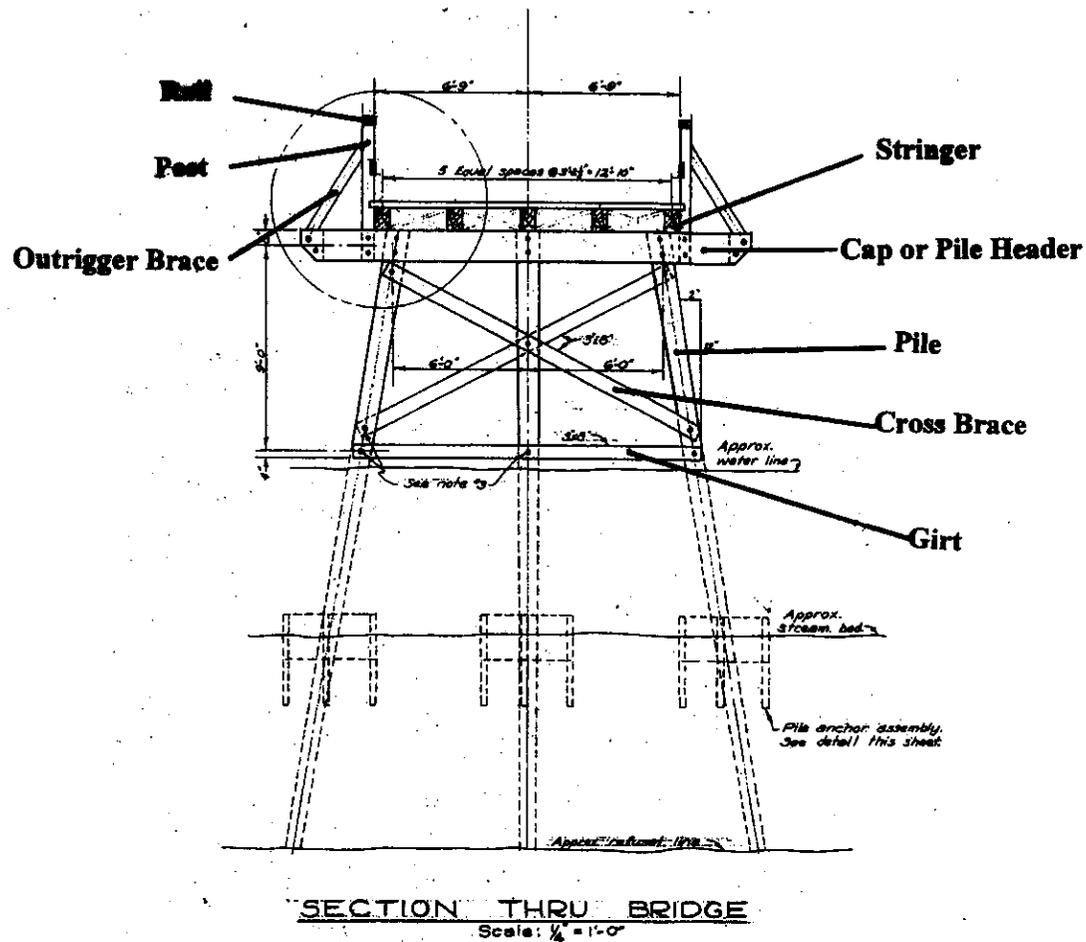


Figure 9. Modern bridge diagram identifying bridge elements. Helpful guide in general understanding of bridge construction.



Figure 10. The Causeway at the North Bridge. Archeological evidence of the 18<sup>th</sup> century cobbled roadbed of the causeway located along the swampy west bank of the river and joining the bridge to the Old Groton Road. (Photo by Leland Abel, August 1964. View toward southwest. Collections of Minute Man NHP Archives, # MIMA 75-251.)

## THE 1788 BRIDGE, (1788 – 1792)

The full entry documenting the decision to rebuild the North Bridge reads as follows:

**Seventh Article. Voted to Rebuild the Great North Bridge the summer coming where the old one now stands** – and that a Committee of five Persons be chosen to Procure materials for the building the same; that said committee give notice to the Inhabitants of the Town of Concord, and that the Town Clerk notify the District of Carlisle that the Inhabitants of this Town and said District have the privilege of Providing a part of the Timber and the Materials as they see fit – and that said committee have power to call on any of the Surveyors in this Town to Procure a Number of hands to work out a part or all their highway rates at said Bridge, and that the Said District be not Deprived of Laboring at said Bridge if they see fit so to do – the Persons chosen for a committee for the Purpose aforesaid are Capt. David Brown, Lt. Elisha Jones, Lt. Asa Brooks, Duncan Ingraham esqr. And Col. Nathan Barrett – <sup>143</sup>

Construction of the bridge commenced and was completed by September 13, 1788. On September 13, 1788 the committee assigned to survey and organize the project submitted their account of expenses to Town Meeting. The accounting lists every man involved in the project as well as a general indication of materials, tasks, and duration of labor. It also clearly documents the significant contribution of labor and materials from a group of Carlisle residents. From the bare bones of the bridge account we may once again extrapolate some of the details of what must have been a hard, noisy job requiring a meshing of talents, tasks, materials and team work.

An analysis of the record indicates that a total of 65 men worked on the bridge. Each quarter in Concord was represented.<sup>144</sup> Division of labor and materials was equitably distributed between the north, south and east quarters with consideration given to the reality that the north quarter benefited most obviously. Individuals labored on the project anywhere from just one half of a day to as many as 35 ½ days.<sup>145</sup> The project from start to finish lasted at least 50 days or nearly two months. Tasks during construction included providing timber, sawing timber, carting timber, carpenter work, blowing rocks, and painting, as well as boarding and feeding laborers. The total cost of the bridge was L 159-12-10. The Town of Carlisle was responsible for L 26-12-2 of this cost. Men who labored on the bridge in lieu of their annual highway tax accounted for L36-4-5 of the cost. Old materials from the 1760 bridge worth saving were sold at a public auction for L1-11-2<sup>146</sup> leaving L 95-5-1 for the town to pay for the construction of the bridge.

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<sup>143</sup> CTR, WPA, Vol. 5, p. 370b, March 3, 1788.

<sup>144</sup> In a brief investigation of the list of men one finds obvious north quarter residents such as David Brown, Ebenezer Hubbard, Elisha Jones and Nathan Barrett. In addition the east quarter was represented by Asa Brooks, Samuel Brooks, Josiah Meriam Jr. and Ebenezer Hardy. The south quarter was represented by Jonathan Prescott, Jacob Potter and Ephraim Potter. From the center of town were Duncan Ingraham, Jonas Heywood, and Captain Timothy Wheeler. (A special thanks to Leslie Wilson, Concord Free Public Library for confirming the residences of these men in 1790 as they appear on a map compiled by Ruth Wheeler.)

<sup>145</sup> Men chosen for the committee to oversee and survey the project contributed the most time to the project. Capt. David Brown (27 days), Col. Nathan Barrett (20 ½ days), and Lieut. Elisha Jones (35 ½ days) of the north quarter. Likewise, Ephraim Brooks (32 days), Josiah Meriam Jr. (24 days), and Jonathan Prescott (20 days) must have played a similar leadership role for the east quarter.

<sup>146</sup> The account lists – “And the old Stuff sold at a vendue – L1-11-2” This indicates that old timber, hardware, etc. worth saving was removed from the site and sold. Given the age of the bridge in 1788 (despite repairs) there must have been little thought to be worthy of reuse in the new construction.

The total amount of timber used in construction as far as can be calculated included:

- 6 mudsills (one provided by Carlisle)
- 6 poles
- 1,483 ½ feet of timber
- 1,803 feet of planks
- 21 feet of timber for a plate
- 28 rails
- two loads of stone
- two barrells of Tarr
- tools to blow rocks.

Clearly, the bridge was similar to all of its predecessors – a timber framed, pile bent bridge with post and rail fence and wide plank decking. The six mudsills indicate that the bridge had six bents or sets of piles in the river – two less than the previous bridge. The 1760 bridge had eight mudsills. However, six mudsills (1788) versus eight mudsills (1760) makes structural sense when one remembers that stone abutments were introduced at each end of the bridge in 1780-84 eliminating the necessity of a mudsill and pile bent flush against each embankment. The six poles listed corresponded somehow to the six mudsills. The description of the pieces as “poles” indicate that they were long and round (perhaps roughly finished logs). Perhaps they were the tool used to raise each bent into place once framed.<sup>147</sup>

Structurally, it is likely that the bridge was built with three piles per bent as was the previous bridge (shown in the 1775 engraving by Amos Doolittle). It is impossible to calculate how the 1,483 ½ feet of timber might have been allocated in the framing of the bridge. However, one can assume that it did not constitute the mudsills, planks, or rails as these items are designated separately. It must have included stringers, caps, plates, braces, posts and perhaps piles.

One can roughly calculate the footage of planking accounted for. Assuming that the bridge remained the same width (approximately 1 Rod – 16 feet) and length (approximately 100 feet long), and assuming that planks were approximately 1 foot wide, the bridge would have required 1,600 feet of plank for the deck. The account records 1,803 feet of plank used in the actual construction. The estimates and the actual documented amount match up well for a bridge 100 feet long and 16 feet wide. We know that the bridge was built in the same location as town meeting voted in 1788 to build “where the old one now stands.”<sup>148</sup> Calculations from the tally of plank used, and the knowledge that six mudsills were laid in the river to support the structure, strongly suggest that the 1788 bridge was also similar in size to the earlier bridge.

Mention of “28 rails” refers to the post and rail fence along each side of the bridge. Twenty eight rails calculates to 14 rails per side or, seven panels of fence with two rails per panel (top and bottom) This configuration placed two posts per bent (on opposite sides of the bridge) as well as two posts flanking the east and west ends of the bridge where the roadway and the bridge met. This configuration matches that of the earlier bridge. The 1760 bridge also consisted of seven panels of fence with posts

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<sup>147</sup> Identification of these “poles” as bridge piles is unlikely. Although descriptively they appear to fit the type of timber needed for a pile, the cost of the “poles” in the account is very low. All six poles were charged a total of just 3 shillings (or just ½ a shilling a piece) while each mudsill was evaluated at 12 shillings a piece. Only three items in the entire accounting are valued at less than 3 shillings – 21 feet of timber for a plate (2 shillings) and ½ barrell of tar (2 shillings), and molasses (2 shillings). It is hard to imagine that the most important structural members of the bridge would be worth so little.

<sup>148</sup>CTR, WPA, Vol. 5, p. 370b.

regularly spaced at each of its eight bents. In addition, the Doolittle engraving clearly illustrates that the 1760 bridge panels also consisted of two rails (top and bottom).

A reference at the end of the 1788 accounting mentions that the bridge is complete “Saving only the Plank under the fence on Said Bridge.” The plank referred to is probably a kick plate or toe plate intended to provide a barrier at the bottom of the railing along each side of the bridge to prevent goods and travelers from slipping into the river. A similar “plank” or toe plate is visible in the 1775 engraving of the bridge.

Structurally, the bridge was constructed with mortise and tenon joinery. No hardware is included in the accounting. Although nails may have been used to affix planks, wooden pegs were used for all major structural joints. There is no mention of raising the bridge or framing the bridge arch by arch (as described in the 1684, 1730 and 1760 bridges). However, building techniques remained largely constant throughout the eighteenth century and it is unlikely that the bridge construction would have diverged from typical housewright practices of the time. We may assume that the bridge was raised bent by bent by oxen and manpower as it was in previous building campaigns.

At least two barrels of tar were used presumably as a water-proofing agent. Therefore, mudsills, piles and other framing members submerged or in contact with the river water were treated with tar to extend their life.

The 1788 bridge reused (or rebuilt) the stone abutments constructed in 1782. Although there is no specific mention of abutments in the completion account from 1788, specific reference to abutments is found in town record entries several years later in 1792 when permission was sought to move the (1788) bridge to a new location. The opinion of an investigating committee read as follows:

[Petitioners]...have leave to take down the same bridge and the butments thereof and remove and rebuild the Same over the river, where they proposed it in said petition, that they have every other privilege prayed for in Said Petition . . . Provided the Said Bridge be removed and rebuilt with the Buttments thereof...<sup>149</sup>

The 1788 list of materials does include “two loads of stone.” The size of each load of rock is unknown. No powder was included in the list of materials for use with the two loads of stones, rather the accounting refers to “tools to blow rocks.” This indicates that the two loads of rocks were broken into smaller pieces by rock crushing tools (i.e. sledge hammers) for use during construction. It is likely that rock was used for improving the embankments/abutments, as well as footing the mudsills, and anchoring bridge piles or braces. In any case, documentation is clear that abutments were present in the 1788 configuration of the bridge.

The task of boarding and feeding those who labored on the bridge was no small job either. Five families living in the immediate vicinity of the bridge (David Brown, Elisha Jones, Thomas Jones, Simon Hunt and Reuben Hunt) boarded men from Carlisle providing room and board for up to 50 days. At least 60 dinners, over 15 ½ pounds of sugar and more than 30 gallons of rum were consumed as the bridge was built.

From all of the available documentation it appears that the location, size and appearance of the North Bridge constructed in 1788 greatly resembled previous bridges on the site. The large amount of timber and plank used indicates that the entire bridge was replaced. Little of the 1760 bridge was retained

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<sup>149</sup> CTR, WPA, Vol. 6, p. 24a. March 26, 1792.

or reused.<sup>150</sup> The above analysis and interpretation of events is based upon the completion report by the bridge committee submitted to Town Meeting on September 13, 1788. The report is included in full below.

\* \* \* \* \*

Concord September 13, 1788. The Committee that Built the Grate North Bridge met to Settle their accounts and proceeded as Follows.

<u>Mens Name</u>	<u>No. of Days</u>	<u>Highway</u>	<u>Town Charges</u>
Capt. David Brown	27	1-3-3	2-7-9
Dunkin Ingraham, esq.	7 ½	1-2-6	
Col. Nathan Barrett	20 ½	1-1-6	2-3-0
Lieut. Elisha Jones	35 ½	3-3-8	2-2-10
Lieut. Asa Brooks	7 ½	1-2-6	
Samuel Brooks	12	0-6-11	1-9-1
Ephraim Brooks	32	0-8-5	4-7-7
Josiah Meriam jr.	24	0-8-11	3-3-1
Jonathan Prescott	20	0-3-0	2-7-0
Ephraim Brown	6	0-4-0	0-14-0
Abner Wheeler	7	0-7-7	0-13-5
Thomas Hunt	6	0-6-9	0-11-3
John Wayman	6	0-4-6	0-13-6
John Flint	1	0-3-0	
Abijah Flint	2	0-3-0	0-3-0
Col. John Buttrick	12	1-16-0	-
Widdow Ellis Jones	7	1-1-0	-
Edward Flint jun.	2	0-3-0	0-3-0
Ammi White	8	1-4-0	-
Willard Buttrick	6	0-3-0	0-15-0
Lieut. Reuben Hunt	10	1-5-4	0-4-8
Dean Simon Hunt	3	0-9-0	-
Jonas Bateman	7	0-15-10	0-5-2
Thos. Jones	15	0-9-11	1-5-1
Humphry Barratt	10	1-10-5	-
Abel Barratt	4 1/3	0-14-3	-
Isaac Meriam	2	0-6-0	-
Jacob Walker	½	0-1-6	-
Lieut. Emerson Cogswell	6	0-18-0	-

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<sup>150</sup> A rough calculation of timber necessary for a 16 foot wide, 100 foot long bridge:

<b>piles</b>	360 feet	(18 piles x 20 feet long - 10 feet in water, 10 feet above water)
<b>caps</b>	108 feet	(6 caps - 6 mudsills - x 18 feet long - bridge approximately 16 feet wide plus extra foot on each end)
<b>stringers</b>	200 feet	(2 x 100 feet long)
<b>joists</b>	784 feet	(56 x 14 feet - 8 joists per section of bridge - 7 sections each 14 feet long between piles)
<b>posts</b>	48 feet	16 x 3 feet long/tall
	<b>1,500 feet</b>	

Calculates very closely to the 1,483 feet of timber in 1788 accounting. Dimensions and types of timber may have been very similar to this estimate and configuration.

Lieut Reuben Brown	2	0-6-0	-
Widdow Rebecca Heywood and Asa Heywood	9	1-7-0	-
Peter Wheeler	12	0-14-7	-
Capt. Tim. Wheeler	4	0-12-0	-
Ebenezer Hubbard	6 ½	0-19-6	-
Jonas Heywood Jun.	8 ½	1-5-6	-
Nehemiah Flint	3	0-9-0	-
Jonathan White	8 ½	0-11-3	-
Benjamin Clark jun.	2 ½	0-7-9	-
Benjamin Ball	1	0-3-0	-
Charles Brown	2	0-4-5	-
Benjamin Barns and his Father	2	0-6-0	-
Dean John White-	-	1-12-6	-
Thomas Whiting-		0-7-11	-
Capt. John Stone	2	0-6-0	-
John Laughton	4	0-4-6	-
Ephraim Whittaker	2	0-6-0	-
Lieut. Thomas Hunt	2	0-6-0	-
Timothy Hoar jun.	3	0-9-0	-
Capt. Stephen Jones	2	0-6-0	-
William Mercer	2	0-6-0	-
Isaac Hoar	3	0-9-0	-
Jonathan Hildrith	1	0-3-0	-
William Farrar	1	0-3-0	-
John Lawrence	1	0-3-0	-
Sammuel Buttrick Jr.	1	0-3-0	-
Joseph Buttrick	2	0-6-0	-
Willard Blood	1	0-3-0	-
Amos Melven	1	0-3-0	-
Edmon Boman	½	0-1-6	-
Deacn. George Minott	½	0-1-6	-
Capt. Sammuel Hones	6	0-18-0	-
Lemmuel Phillips	3 ½	0-6-9	-
Doctr. Joseph Lee	2	0-6-0	-
Brister Freeman	7	0-3-0	0-18-0
Cesar Robbins	1 ½	0-4-6	-
Samson negro	1	0-3-0	-
Reuben negro	1	0-3-0	-

### The Account of the Timber

<u>Mens Name</u>	<u>Feet</u>	<u>L S D</u>
Capt. David Brown	50 ½ @ 26 p. Ton	1-19-4
Col. John Buttrick	44	1-8-7
Lieut. Reuben Flint	61 ½	2-0-0
Jonas bateman	42 ½	1-7-7
Ephraim Brown	58	1-7-9

Abel Davis	13 ½	0-8-8
Joseph Chandler	19	0-12-4
Col. Nathan Barrett	102	3-6-3
Lieut. Silas Mann	37	1-4-1
Sammuel Buttrick	18	0-11-9
Nathan Buttrick	29	0-18-10
John Blood	18	0-11-9
John Barrett jun.	21	0-13-7
Ensn. John Barratt	24 ½	0-16-0
Jonathan White	40 ½	1-6-4
Lieut. Elisha Jones	98 ½	2-19-6
Tim Hoar Jun.	84	2-14-6
Peter Wheeler	49 ½	1-12-2
Ensn. Ephraim Farrar	26	0-16-11
Jacob Farrar	17	0-11-1
Olliver Miles	44 ½ at 26/foot	1-8-9
Isaac Lee	40	1-6-0
Abel Conant	40	1-6-0
Cole Amosweed	62	2-0-3
Dctr. Joseph Lee	19	0-12-4
Lieut. Asa Brooks	41 ½	1-7-0
Deacn. George Minott	37	1-4-2
Ebenezer Hardy	95	3-1-9
Sammuel Brooks	34 ½	1-2-0
Jonas Heywood Esq.	To a mudsill	0-12-0
Capt. Eben. Hubard	to a Ditto	0-12-0
Ephraim Potter	to Ditto	0-12-0
Humphry Barratt	to Ditto	0-12-0
Jacob Potter	to Ditto	0-12-0
Jonas Lee for	21 feet of Timber for a plate	0-2-0
Ebenezer Hubbard for	28 Railes	2-6-6
Samuel Buttrick for	sawing & carting	0-16-0
Capt Elnathan Jones	503 feet of plank	3-5-4
Abijah Bond	300 feet of planks	1-19-0
Col. Amos Wood	300 Ditto	1-19-0
Ensn. Ephraim Farrar	200 Ditto	1-6-0
Jacob Farrar	200 Ditto	1-6-0
Lieut. Elisha Jones for	6 poles 3/ for the use to	
Tools To Blow Rocks 10/	0-13-0	

**Accounts For Boarding &c**

	<u>Days</u>	<u>L S D</u>
Capt. David Brown	50 Days	2-10-0
To TwentyDiners @ 6/Each		0-10-0
Lieut Elisha Jones	28 Days	1-8-8
To Eight Diners /6 Each		0-4-0
Thos. Jones	25 Days	1-5-0
Deacon Simon Hunt	14 Days	0-14-0

To Twelve Diners /6 Each		0-6-0
Lieut. Reuben Hunt	29 Days	1-9-0
To Two Diners & Two Loads of Stone		0-4-0
Deacon John White to Painting		0-14-3
Jonathan Hildreth to a	Barrell of Tarr 12/	0-17-9
To	shuger 3/9	
To	molasses 2/	
Dunk Ingraham Esq.	Barrell of Tarr	
To	15 ½ lb. Of Shuger	
& 16 gallons of new Rum		4-2-9

**Account of Carlisle Timber plank & Rum**

**L S D**

Timber 216 @ 26/ pr. Ton	7-0-6
One mud sill 12/	0-12-0/
Plank 400 feet @ 13/ pr. Hund.	2-12-0
To 14 ¾ of new Rum	1-13-6
To 19 ½ Days of Carpenter work finding themselves	3-18-0
To 44 Days Labour & find them selves	6-12-0

Carlisle to the Town of Concord for bording to	
22 Days @ 5/ per Day	1-2-0
To 45 Diners a /6 Each	1-0-6
To half a Barrel 2/	0-2-0

*The committee for Building of the Great North Bridge beg Leave to make Report that they have attended the Service for which they were appointed and completed the Bridge (Saving only the Plank under the fence on Said Bridge) and find the Expence of the Same in the whole to amount ot the Sum of 159-12-10.*

Reducting the work done by highway work being ...	L36-4-5
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Carlisle Proportion is the Same which amounts to ...	L26-12-2
And the old Stuff sold at a vendue.	L1-11-2

Leaves ninty five Pounds Five Shillings and one pence which the committee remitts to the Town for payment.

David Brown

\*\*\*\*\*

Just three years after construction of the bridge was completed, the selectmen were considering a petition put forward by a group or residents in the north quarter of Concord to alter the course of the highway (now Monument Street) and move the bridge to a new location further down river. The petitioners wanted to straighten the existing highway (Groton Road) beginning at the gate of the Reverend Ripley, where the road bent at 90 degrees towards the bridge crossing the river along this direct line and continuing straight past Mr. John Flint's house till it met up with Groton branch of the highway once again. (See figure 12.) This petition was first introduced in 1748 by many of the same families (Flints, Barretts, Buttricks, Jones). At that time, it was soundly turned down and discussions ensuing from the debate led to the construction of the 1760 bridge. In November of 1791 (almost 40 years later) the

petition is reintroduced for consideration, championed this time by the highly regarded minister Ezra Ripley.

[Articles for Town Meeting.]

Fourthly to hear the Petition of the Rev. Ezra Ripley and others in the northeasterly part of the Town respecting the removal of the Great north Bridge from where it now Stands, down the river, near to the house of Mr. John Flint, and Grant the prayer thereof or otherwise act as the Town in their wisdom Shall think fit.<sup>151</sup>

Why the petitioners brought the discussion back to the table in 1791 is unknown. Town Records are thus far silent on bridge issues from 1788 until 1791. Perhaps they sensed that the political climate had changed in some way towards a favorable disposition on the issue - despite the brand new bridge in place at the original site. The debate raged on however, and it took two years of back-and-forth discussions to finally win the day.

On December 5, 1791 after “some Conversation thereon” two committees were chosen to investigate the matter. One committee was charged with consulting the town of Carlisle and gaining their consent to the change in location. Carlisle had just participated generously to the construction of a brand new bridge at the present location. It was only natural that their consent to removing that bridge be confirmed. A second committee of five residents were given the responsibility -

...to repair to the place where the way is prayed for to Go over the Bridge by Mr. Flints if removed, and report to the Town their Judgement upon the Subject, as to the convenency and propriety of it going where Stake out or if they think best to make alteration in the course of Said way to point it out and report at the adjournment James Barrett, esq., Dr. George Minot, Jonas Lee, Jonas Heywood and Cap. Sam. Jones, be said committee.<sup>152</sup>

Both committees submitted their reports at a meeting on January 2, 1792. The first committee reported that they had given the Selectmen of Carlisle notice of the requested petition and inquired as to their sentiments on the matter. Carlisle assured the committee that they would call a district meeting if necessary and forward information about “what Should be Done on the affair” to the Concord committee before the next Town Meeting. As of January, no word was forthcoming from Carlisle.<sup>153</sup>

The second committee’s opinion after visiting the site, etc. was that the petitioners should be allowed to move the bridge but that the location should be shifted slightly – moving it 5 ½ rods lower on the river – or approximately 80 feet east of the location petitioned for. The new road would thus begin at the Great Meadow gate (located at the bend in the old Groton Road near Ezra Ripley’s gate) verge gently northeast along a foot/cow path (now Great Meadow Road) until it reached the river and crossed the river at this juncture. . (See figure 12.). Today Great Meadow Road verges northeast from Monument Street until it meets the river and then curves around in a large looping circle to dead-end near Bartlett Hill Road. The reason for this recommendation is not clear. The committee justified the shift as follows:

...considering the Saving it makes to the applicants which is at Least twenty two pounds at one penny a mile every year, find that their petition ought so parte be Granted as that they be allowed to remove Said Bridge either where they have Staked it out or below the end of the wall at the uper end of Mr.

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<sup>151</sup> CTR, WPA, Vol. 6, p. 14b. November 1791.

<sup>152</sup> CTR, WPA, Vol. 6, p. 15a. December 5, 1791.

<sup>153</sup> CTR, WPA, Vol. 6, p. 16a. January 2, 1792.

Flints meadow over the river across Mr. Ripleys Land, So as to come out at or near the Great Meadow Gate; this Variation from the place proposed in the petition is offered to the Town from a consideration of the Damage, or Injury of removing the Bridge may be to capt. David Brown and Mr. Reuben Hunt and others living in the north part of the Town on account of their private improvements on this Side of the river...<sup>154</sup>

The nature of these “private improvements” and why moving the proposed location of the bridge slightly to the east would equalize damages to certain residents is unknown. In any case the committee’s opinion generated quite a bit of debate among those present. “Many things were Said for and against the above report of the committee” read the Town Meeting records. It was finally moved and seconded that the question be put to the Town to decide as a whole. The question was,

To See whether the Town will Grant Liberty to the Petitioners for the removal of the Great North Bridge in Concord, to remove the Same to the Lower place described by the committee of the Town above Said.<sup>155</sup>

On February 22, 1792 the debate raged on. Petitioners had gathered more supporters. In protest of the committee’s findings that the proposed location be changed, they requested that yet another committee be formed to reconsider their initial petition. They cite that residents are dissatisfied with the findings and represented that the contents of their petition had not been “fully investigated to the Town.” In other words, they had not had a fair hearing and the results did not represent the majority opinion of the residents of the quarter. A new committee of 21 persons was appointed to,

take the whole affair of removing the Great north Bridge into their consideration from the Petition of the Rev. Ezra Ripley and others for the removal thereof and all that hath been done about it by the Town or their order, and by the Petitioner aforesaid, to this day, and to hear all parties concerned fully about the premises, and report April Meeting where and to what place over the river Said bridge ought to be removed to (if removed at all) and of the course of the road that Shall Lead to and from Said Bridge when removed – and the Length of way that will go thro each individuals land to roads now Trod – and also the agreement they may make with the petitioners respecting their Subscription for the removal of Said Bridge<sup>156</sup>–

The end result of this new committee’s findings was, not surprisingly, to uphold the original request of the petitioners. On March 26 committee members read their report. They concluded that the town should grant the petitioners the power to “take down the same bridge and the butments thereof and remove and rebuild the Same over the river, **where they proposed it in said petition.**” In case there was any question about the location, the report further detailed that,

...the Road [be]opened and made as aforesaid Strait from the road at the end of the land, Northerly of Mr. Abishai Flints Barn, over the river and through Lands of Thomas Jones and the Rev. Ezra Ripley to the Gate at the road before his door free of cost to the Town as a Corporate Body.<sup>157</sup>

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<sup>154</sup> CTR, WPA, Vol. 6, p. 16a. January 2, 1792.

<sup>155</sup> CTR, WPA, Vol. 6, p. 16a.

<sup>156</sup> CTR, WPA, Vol. 6, p. 18a. February 22, 1792.

<sup>157</sup> CTR, WPA, Vol. 6 p. 24a. March 26, 1792.

Upon reading the report, discord again erupted. Even recorded in the dry prose of the town secretary one senses the heated debate. The reaction was written into the record as follows.

...which report being read and much altercation had thereupon – it being not Satisfactory to many as their was a great division in Sentment in the committee – therefore it was moved and Seconded to have the whole affair recommitted to the Same committee again for a further view and consideration thereon – and to report at May meeting . . .<sup>158</sup>.

Reconvening in May (1792) the committee once again maintained support for the original desires of the petitioners. They did not change their minds even after another month of “further view and consideration thereon.” The committee made a strong statement on the record concerning what had become a contentious issue.

It is our oppinion that it will be expedient for this Town to Grant the prayer of Said Petition on the conditions therein proposed Provided Said road be opened on a Line nearly Strait from the Lane near Mr. Abisha Flint Barn to the Gate that is in front of Rev. Ezra Ripley’s house –

...being read, the Town Voted to accept Said report of the Committee to whom was committed the consideration of the petition of the Rev. Ezra Ripley and others praying for the removal of the Great north Bridge etc. and have the Same rebuilt etc. provided the Town Shall be at no Expence for the Said removal and rebuilding Said Bridge, Buttments, making causways or any part of the new road proposed unless the Town may hereafter Consent.<sup>159</sup>

Therein lies the end of the debate over moving the location of the North Bridge – a debate first begun by residents in 1748. And thus ends the developmental history of the first bridges at the site. Between May of 1792 and May of 1793 the necessary road improvements and changes must have been carried out. Sometime in the spring and summer of 1793, the bridge was moved to the present-day location on Monument Street (Flint’s Bridge).

On the Eight article. Voted to authorize Elisha Jones and others to remove the great North Bridge and place it over the river So as to answer for the new road laid out near Abishai Flints – and appointed Ephraim Wood an agent to apply to the court of Genl. Sessions of the peace for the county of Middlesex for the discontinuance of the road as mentioned in the article.<sup>160</sup>

As far as can be determined, the entire bridge structure (but not all of the abutments as remnants of these are noted surviving in place in 1850) was moved. The section of the Old Groton Road that crossed the bridge and extended up the hill and along the river west of the bridge was abandoned. The realignment caused changes to the road network including the construction of Hunt’s Bridge and the creation of present day Liberty Street running between Lowell Road at the south end by the river and Monument Street at the north end. This development is documented in Town Records as well as in Deborah Dietrich Smith’s Cultural Landscape Report (2003). The following maps eloquently reflect the road changes that occurred in the immediate vicinity of the bridge. (See figures 11-12.)

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<sup>158</sup> CTR, WPA, Vol. 6 p. 24a. March 26, 1792.

<sup>159</sup> CTR, WPA, Vol 6, p. 25b. May 7, 1792.

<sup>160</sup> CTR, WPA, Vol. 6, p. 45b. May, 1793.

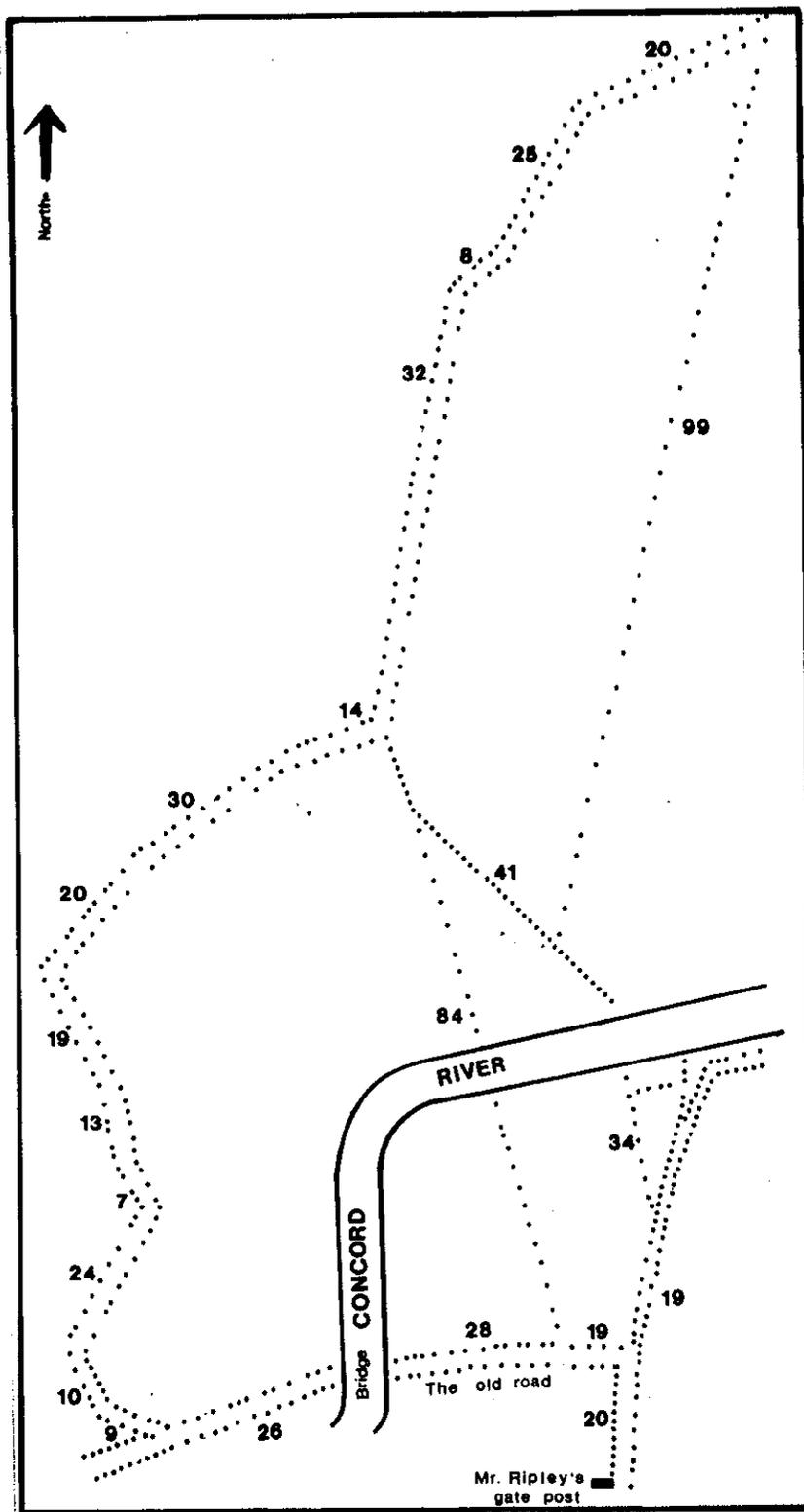


Figure 11. Tracing of "Map of roads in vicinity of the Great North Bridge, probably drawn in 1792" recorded by Leland Abel with numbers indicating the distance in rods between various points. Map created in the process of petitioning to move the North Bridge. (*Archeological Collection Management Report, Minute Man NHP, Volume 4, p. 119.*)

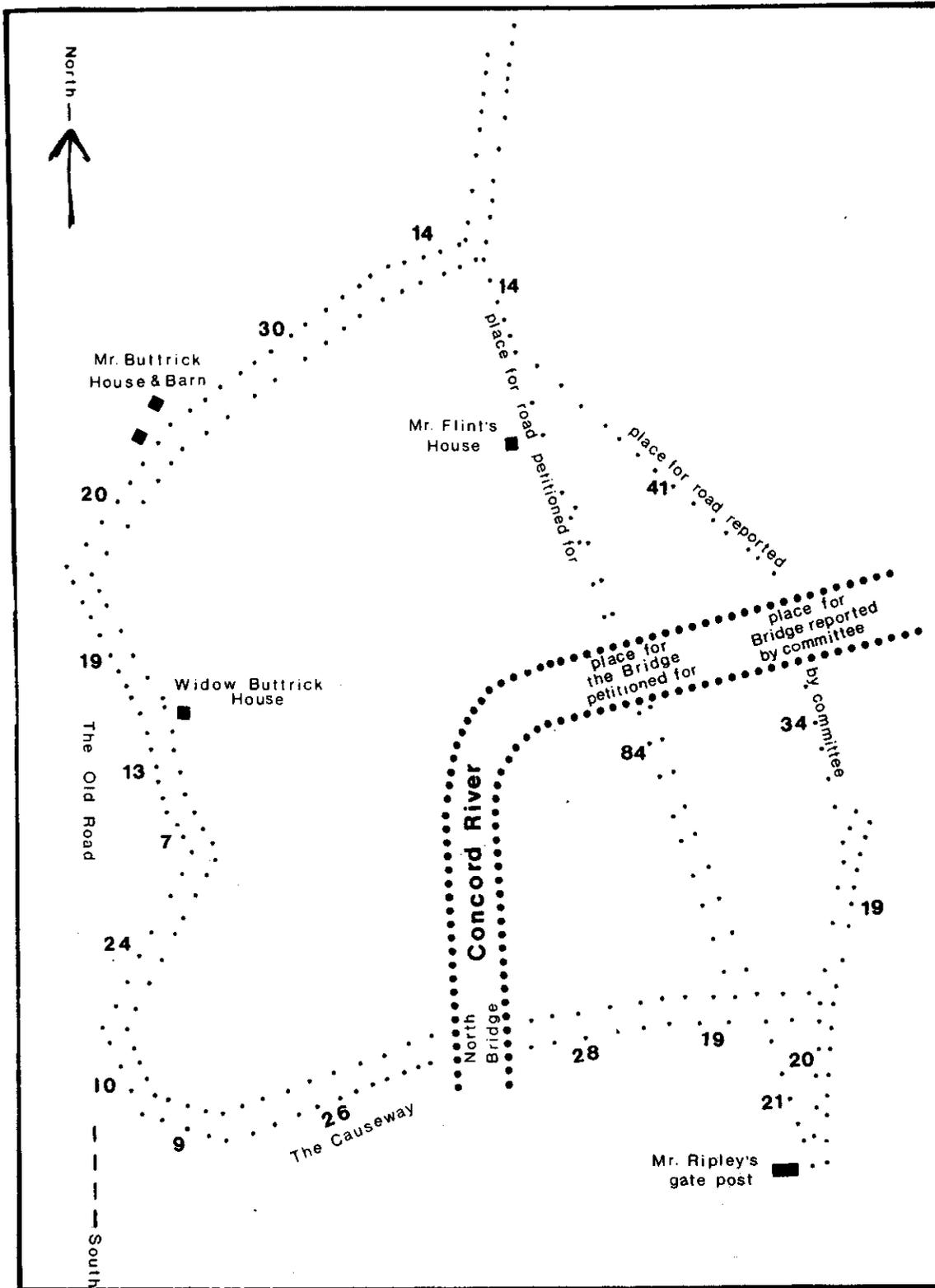


Figure 12. Tracing of map of Groton Road in the vicinity of the North Bridge, probably drawn in 1792 with proposed changes to roads and bridge locations added. Map created in the process of petitioning to move the North Bridge. Amended by Leland Abel with numbers indicating the distance in rods between various points. (*Archeological Collection Management Report, Minute Man NHP, Volume 4, p. 118.*)

## 1793 – 1874 QUIET TIMES AT THE BRIDGE

From the removal of the bridge in 1793 until the construction of the Centennial Bridge in 1874 no bridge stood on the site and for thirty years following the removal the bridge site lay quiet. However, commemorative activities began to percolate as early as 1824 – probably in anticipation of the 50<sup>th</sup> Anniversary of the battle. In her Cultural Landscape Report, historical landscape architect Deborah Dietrich-Smith chronicles this early commemorative period at the bridge quite thoroughly.<sup>161</sup> This report, will therefore, simply outline the activity and discuss issues specific to the bridge itself.

April 19, 1824: Dinner, parade to bridge site, and speeches to honor 13 surviving veterans.

April 19, 1825 (50<sup>th</sup> Anniversary):

Bunker Hill Monument Association agreed to give Concord \$600.00 for a monument (so that no monument in Concord would compete for funds with the Bunker Hill Monument). Plan was to lay the cornerstone of the monument on the 50<sup>th</sup> anniversary. Arguments over site for monument arose. Cornerstone laid in the center of town – not at the site of the North Bridge –not a popular decision.

By 1827: Foundation and cornerstone vandalized and damaged beyond repair.

April 6, 1835: Reverend Ezra Ripley (Old Manse) donated a parcel of land from Monument Street to the river to erect a monument at the North Bridge site.

Dec. 20, 1836: Reverend Ezra Ripley (Old Manse) donated an additional slice of land along the south side of the first parcel to the town. This widened the road to the river and incorporated the grave of the British soldiers.

1836: The Town of Concord erected an obelisk (the 1836 Battle Monument) honoring the Battle at the North Bridge on the land donated by Ezra Ripley. Architect Solomon Willard designed the obelisk. Artisan James Wilkins constructed the monument. Money from the Bunker Hill Monument Association (from 1825) paid for the monument.

July 4, 1837: Dedication ceremony of the 1836 Battle Monument.

April 19, 1838: Tree allee of over 200 trees planted along the northern and southern bounds of the road leading to the monument.

1850: 75<sup>th</sup> Anniversary. Included a parade out to the North Bridge site and back to town, dinner and orations.

Perhaps the most significant events in the above list are the gifts of land from Ezra Ripley to the town in 1835 and 1836.

Ezra Ripley's donation of land to the town of Concord is a critical event in the creation of the commemorative landscape that we know today and requires additional discussion. (See figure 13.) The deed to Ripley's first donated parcel of land clearly states his intention that Concord may only use the land to commemorate the Battle of the North Bridge. The deed specifies that his gift is:

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<sup>161</sup> Dietrich-Smith, *Cultural Landscape Report for the North Bridge Unit*. Chapter #? "A Century of Change (1824-1924), pp. ??-??. Olmstead Center for Landscape Preservation – 2003.

For the purpose of aiding the Inhabitants of the said town of Concord in the speedy erection of a suitable and appropriate monument upon or near the spot where the first forcible resistance was made to the British troops in the commencement of the war of the Revolution...<sup>162</sup>

The parcel that was first donated consisted of a long 30 foot wide path from Monument Street to a spot approximately 100 feet from the river.<sup>163</sup> At this point the parcel jogged out sharply at a 90 degree angle and ran south in a direct line approximately 50 feet to the grave of the British Soldiers, turning again at 90 degrees to incorporate the graves and continuing west in a straight line to the edge of the river. The parcel therefore was shaped like an axe with a long narrow shaft beginning at Monument Street and a rectangular blade/head at the edge of the river. The northern edge of this parcel consisted of a stone wall from street to river and is considered by historical landscape architect Dietrich-Smith to represent a property boundary extant in 1775. This wall would have been the northern boundary of the Old Groton Road that crossed the bridge and proceeded on to Groton and points west. The wall continued to be a property boundary between the Jones holdings on the north and the holdings of the Old Manse (Emerson and Ripley) on the south after the road was discontinued. As such it is likely that this wall on the north was maintained. A stone wall likewise formed a boundary on the southern edge of the road, but in 1793 when the Old Groton Road was abandoned the road was incorporated back into pasture for owners of the Old Manse property and the wall probably fell into disrepair.

This irregularly shaped parcel was amended in December of 1836 with the additional gift from Ezra Ripley of a slice of land along the southern side of the parcel. Why the parcel was amended is undocumented. However, the Battle Monument was in place by this time, and certainly the final wedge-shaped parcel is a more elegant solution to a commemorative landscape that incorporates the bridge site and the grave of the British soldiers while allowing for a visual sightline from the entrance (Monument Street) to the obelisk and the river beyond. The final parcel measured 40 feet wide beginning at Monument Street gently widening to 84 feet at the river. The northern boundary remained the same – the stone wall abutting the Jones property from street to river. The southern boundary, designated by a new stone wall, now ran in a straight gently angling line to the river just skimming the south (back) side of the graves of the British soldiers. The awkward right-angled jog to include the grave in the initial gift was eliminated creating an uninterrupted sweep of land widening towards the river.

The close examination of the Ripley deeds (1835, 1836) and subsequent investigations by historical landscape architect Dietrich-Smith revealed some interesting information concerning the location of the early bridges at the site. The overlay map of the site reconstructed by Dietrich-Smith using specific measurements from the two Ripley deeds provides the first possible evidence that the early bridges at the site may not have been constructed in the exact current location. The first bridges may have been constructed approximately 40 feet north of the present location. Dietrich-Smith explains that,

The deed noted a portion of the tract ran “thirty feet within the walls” indicating two walls lined the old roadbed in 1835.<sup>164</sup>

The location of the roadbed was determined to have a northern boundary along a stone wall that is still extant (although rebuilt and repaired many times) running from Monument Street to the bank of the river. Running a southern boundary line at 30 feet wide parallel to the northern wall approximates the location

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<sup>162</sup> Middlesex County Probate. Deed. Book 390, pp. 427-428. April 6, 1835. (As found and copied by Dietrich-Smith, CLR).

<sup>163</sup> This 30 foot wide portion of the tract is believed to be a section of the old Groton Road that originally led from the center of Concord over the North Bridge to points west and north of the town.

<sup>164</sup> Dietrich-Smith, CLR, 2002, p. ?

of the original road. **Assuming that the road ran in a straight line**, the terminus of the road at the river is approximately 40 feet north of the present location. The overlay by Dietrich-Smith opens the door to the possibility that the bridge location has changed slightly over time. This possibility was considered in depth in the course of compiling this report. Although the hypothesis should remain open for discussion, especially in the event that archeology is ever carried out in the vicinity, it is the finding of this report that the location of the bridges remained consistently at the present location. This finding is based on the following evidence.

Unfortunately, specific references to the exact course of the Old Groton Road (straight or curved) have not been found in early deeds and town records and therefore many variables are at play when considering the bridge location. The biggest question is how the present topography reflects the historical topography of the site. Currently, it appears that the 1836 Battle Monument and the bridge are located on the highest ground available in the vicinity and that the possible location of the earlier bridges (at the terminus of a straight road) would have been built on a gradual incline and at an uneven angle. The current location appears to be a natural projection of land; the logical best choice for a bridge. But, how much of this topography is man made over the years to accommodate the later bridges? How much of the current topography is the result of centuries of erosion and flooding? The 1874 bridge was definitely located here; but was the spot chosen because there was evidence left from the 1788 bridge or because it was directly in line with the Battle Monument (erected 1836).

The Battle Monument is not centered in the original Ripley parcel (1835) or in the final configuration of the Ripley parcel (1836). One might assume that the location for the monument was chosen simply because it consisted of a natural rise in the topography. However, a reference in a newspaper account of the 1850 anniversary celebration mentions that a flag was flown “near the westerly abutment of the North Bridge where Davis and Hosmer fell.”<sup>165</sup> We have no visual documentation of the west end of the bridge before 1874. The 1850 engraving of the landscape around the bridge site (figure 14) shows a gentle rise where an abutment may have existed but the actual bank of the river is obscured. The “westerly abutment” referred to must have dated to the 1788 bridge. If the abutment was obvious in 1850 it was certainly extant in 1835-36 when the monument was erected. Was the site of the 1836 Battle Monument chosen because it lined up with the remains of this western abutment? The author of this report believes that the monument was erected on the highest topographical spot on the east bank of the river and that that spot lined up with extant evidence of the old (1788) bridge.

The western abutment (or portions thereof) survived another 20 years and are referred to in the 1870 deed of gift from Stedman Buttrick to the town of Concord as the “abutment of the old North Bridge.”<sup>166</sup> It is likely that the Centennial Bridge used the same location for the new construction and thus the location of the Centennial Bridge was the same as the 1788 location and quite possibly the same as the 1760 bridge location. If today’s bridge location is original, and if the calculations of D. Smith reflect the actual eighteenth-century location of the road, then the course of the Old Groton Road must have taken a gentle turn south for approximately 40 feet before crossing the bridge.<sup>167</sup>

Archeology has not been conducted to any great extent at either end of the bridge and is highly recommended in order to make the best effort to determine the path of the roads up to the bridge and the

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<sup>165</sup> Concord Free Public Library, Scrapbook Collection. “Celebration at Concord, April 19<sup>th</sup>, 1850,” c. April 1850. (Clipping found by Dietrich-Smith in the course of her research.)

<sup>166</sup> Middlesex County, DEED BOOK 9092:590 as quoted by David Little.

<sup>167</sup> In consideration of a curve in the road at the bridge approach, it is instructive to look critically at the 1775 Doolittle engraving of the site. Doolittle included a distinct curve to the road approaching the bridge on the east bank of the river. This curve has always been interpreted as a topographical rise in the terrain, but in examining the foreshortened treatment of marching troops and changes in the presentation of the stone wall’s appearance this curve may represent a directional curve in the road.

placement of the bridge itself.<sup>168</sup> Archeology conducted in 1965 by Leland Abel located portions of the causeway and the Old Groton Road on the west side of the river but not immediately adjacent to the bridge because the Minute Man Statue now stands on what would have been the approach. A preliminary archeological investigation was conducted on the gravel roads from Monument Street to the bridge in October 1993 (east side of river). The investigation did not find the original road location and no testing seems to have been done along the riverbank on either side of the approach to the bridge.

It is the belief of this researcher that the topography present at the crossing has dictated the best location for a bridge from the first bridge in ca. 1635 to the current bridge – and that this best location has remained consistently where the present bridge now stands. Initial examination of the bridge chronology appeared to show a eighty-year gap (1792-1874) during which no bridge was in place (when presumably evidence of the early bridges was lost). However, recent documentary research has found references to the survival of a bridge abutment on the west bank.<sup>169</sup> These passing references to the western abutment in contemporary accounts is the thread of continuum for the bridge location. The site of the 1836 Battle Monument was undoubtedly influenced by this surviving abutment. The Battle Monument stood sentinel at the site for over thirty years as the commemorative landscape took shape around it and the approach to the bridge took on the appearance we know today. As the landscape evolved, the original course of the Old Groton Road was melded into the new grand and sweeping approach made possible by Ezra Ripley's grant of land. The approach changed but the bridge location, remembered by the surviving western abutment and the placement of the Battle Monument directly in line with that abutment, remained the same.

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<sup>168</sup>Chris Davis, Cultural Resources Specialist at Minute Man NHP reports that remote-sensing/radar/electromagnetic work has been done in the areas of the old potential road but unfortunately, as of July 2003, the park does not yet have the results of the report.

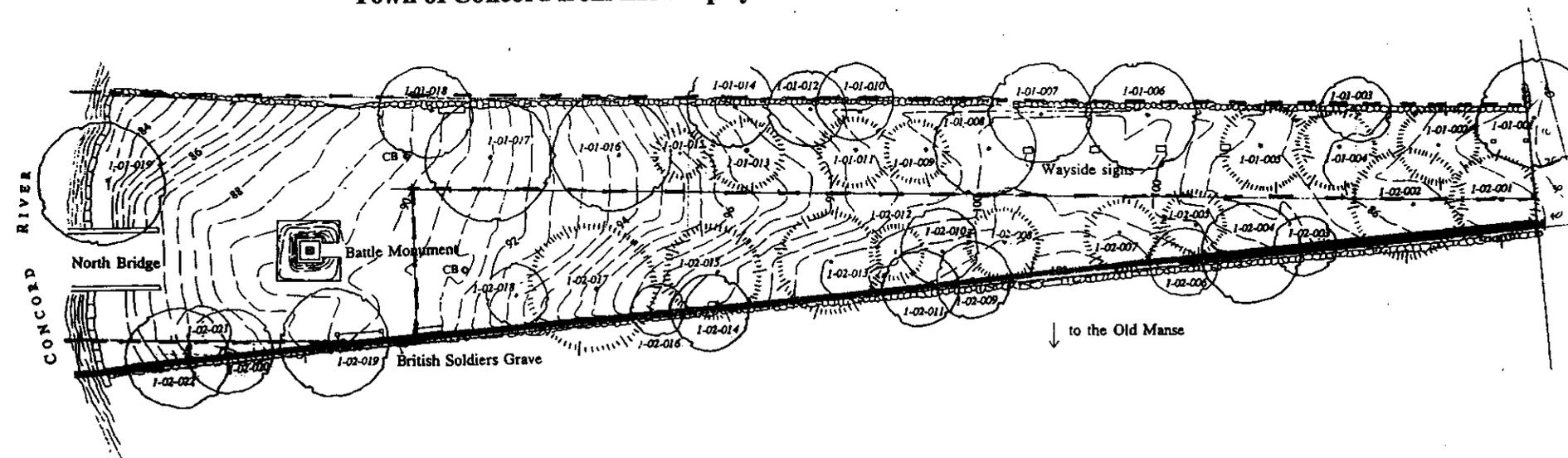
<sup>169</sup>Deborah Dietrich-Smith found a newspaper account of the 1850 anniversary events at the 1836 monument that mentions the abutment. The newspaper account is in the collection of the Concord Free Public Library.

1835 -----

Original parcel deeded to Town of Concord  
from Ezra Ripley.

1836 \_\_\_\_\_

Boundary (southern) extension deeded to  
Town of Concord from Ezra Ripley



prepared by:  
 Olmsted Center for Landscape Preservation  
 Olmsted National Historic Site  
 North Atlantic Region  
 National Park Service  
 April 1993

TRAIL TO NORTH BRIDGE  
 MINUTE MAN NATIONAL HISTORICAL PARK  
 EROSION CONTROL AND SHADE TREE MANAGEMENT STUDY

SITE PLAN AND TREE INVENTORY  
 TRAIL TO NORTH BRIDGE  
 MINUTE MAN NATIONAL HISTORICAL PARK

Annotations by J. Sullivan, NPS NERO HAP, 2003.

Figure 13. Drawing prepared by Olmsted Center for Landscape Preservation, April 1993. Annotated by J. Sullivan, NPS, with information from the *Cultural Landscape Report*. Highlights original 1835 parcel deeded to the town of Concord from Ezra Ripley and the 1836 extension of boundaries deeded to Concord by Ezra Ripley.



Figure 14. "View of the Battle Ground at Concord, Massachusetts," Thayer's Lithography, Boston, ca. 1850. Engraved view southeast across the Buttrick pasture towards the Concord River and the 1836 Battle Monument. Note embankments on the east and west sides of the river at former location of bridge. (Concord Free Public Library, Special Collections.)



Figure 15. Detail of 1850 engraving of bridge site looking southeast. (Concord Free Public Library, Special Collections.)



Figure 16. View of the battleground taken in July 1961. View identical to the 1850 engraving. (Photo by Jack Boucher, HABS, 1961. Collections of Minute Man NHP Archives.)



Figure 17. Stereoptican view of bridge site (bridge removed) and 1836 Battle Monument. Ca. 1858. (Stereoptican File-Concord, Massachusetts at the collections of Society for the Preservation of New England Antiquities.)

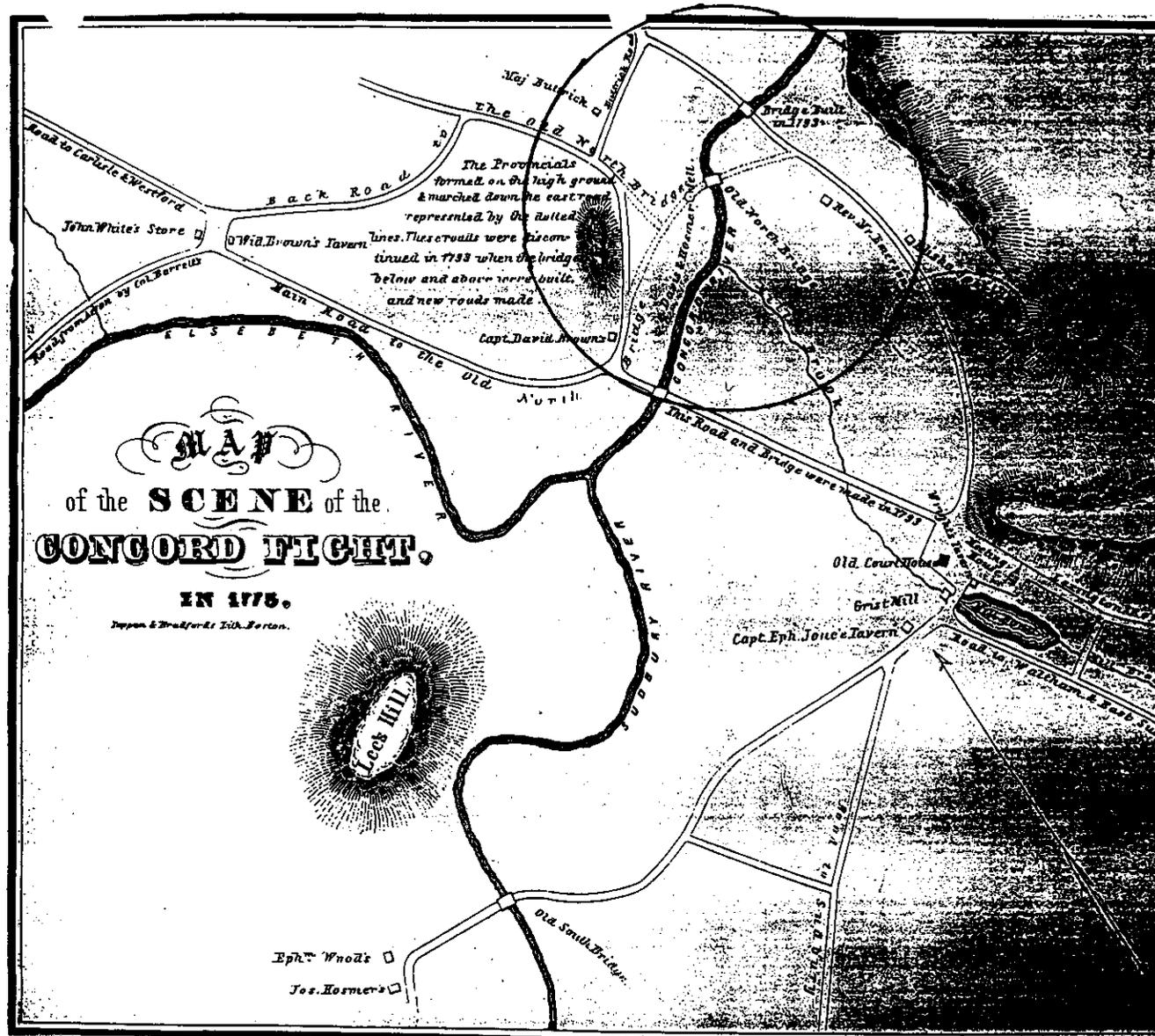


Figure 18. "Map of the Scene of the Concord Fight, in 1775." Lithographed by Tappan and Bradfords, Boston, 1850. Shows contemporary road configuration with original course of the highway indicated by a dotted line. (Collections of the Concord Free Public Library.)

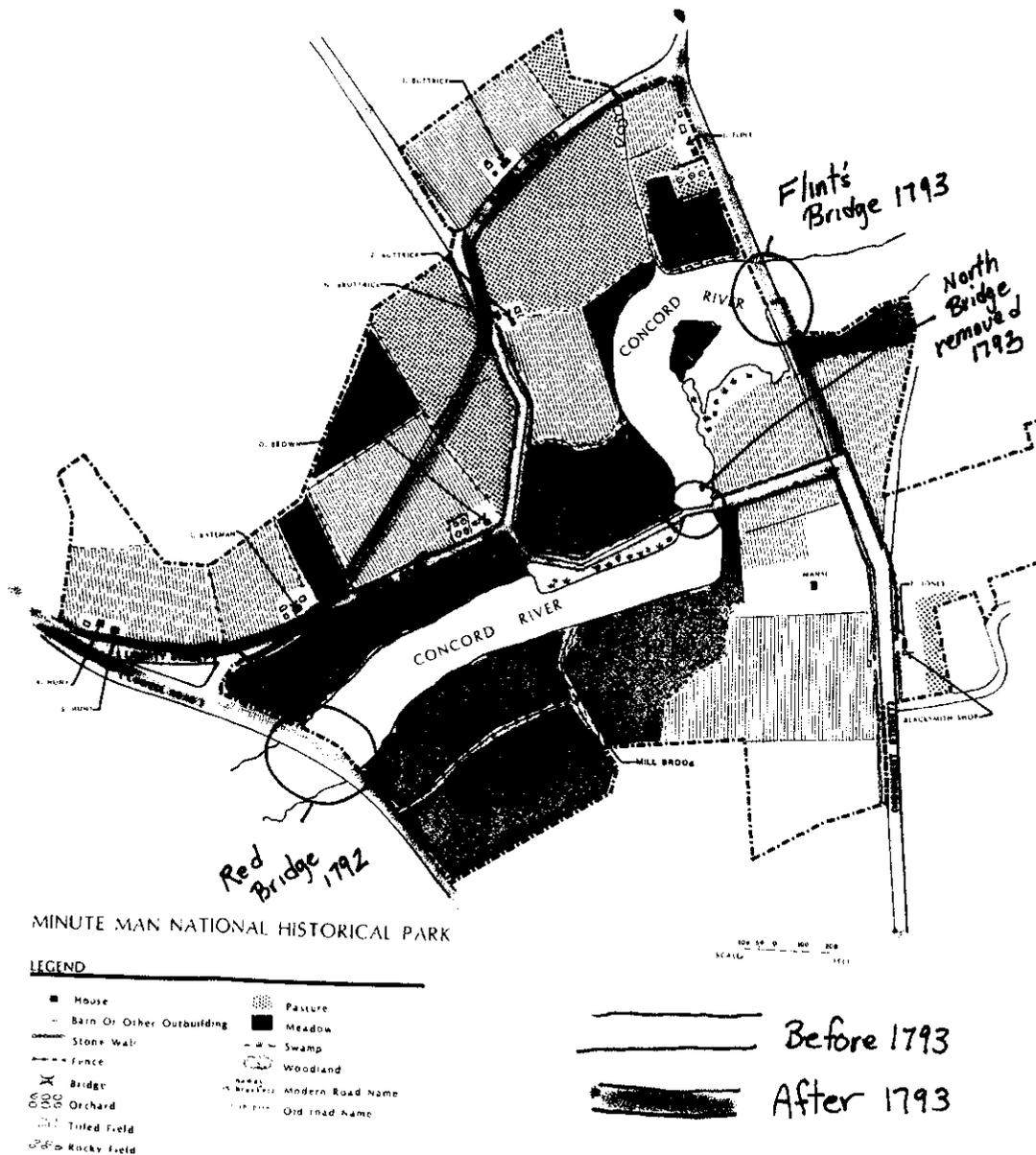


Figure 19. Map showing roads and bridges in the North Bridge area before and after 1793. (Map created by Joyce Malcolm, 1985. Annotations added by J. Sullivan, NPS, HAP.)

## THE COMMEMORATIVE CENTENNIAL BRIDGE, 1874-1887

The bridge site remained quiet with occasional anniversary celebrations until the centennial year approached. At this time (ca. 1874) no bridge was in place. The 1836 Battle Monument stood on a mounded rise on the east bank of the river surrounded by an iron fence. An allee of trees was established and stretched from the river east to Monument Street. Two stone walls flanked the grassy path to the monument on the north and south. On the west bank of the river, some form of a bridge abutment survived. This picture was about to change.

Sometime in the mid-1800s Ebenezer Hubbard gave the Town of Concord \$600.00 towards the cost of a new bridge at the Old North Bridge site. Hubbard was not happy that there was a monument on the east side of the river where British soldiers fell, but not on the west side of the river where Americans fell. He hoped that the construction of a bridge would encourage the town to erect a monument on the west side of the river commemorating the colonial position. Although the town accepted the donation, no action was immediately forthcoming. At his death in 1870, Hubbard left the town an additional \$1,000 with the express intention that it be used to raise a suitable monument on the west side of the river.

In response to the gift, Stedman Buttrick donated  $\frac{1}{4}$  acre of land from his property on the west side of the river for the monument proposed by Hubbard. Conditions specified that the land was,

for the purpose of erecting a Monument thereon, and for no other purpose, and on condition that the grantee shall make and forever maintain a fence around the same, and that a bridge shall be constructed across the river from the easterly side to pass to the above premises, and without any right of way over my land.<sup>170</sup>

A committee of five persons was appointed at Town Meeting in 1872. The committee made a report the following year that recommended the acceptance of the Hubbard and Buttrick gifts. The committee also recommended that the town should;

1) procure a statue of a Continental Minute-man, cut in granite, and erect it on a proper foundation, on the American side of the river"; and 2) "that a suitable bridge be constructed to give access to the spot."

The bridge and statue were to be "completed and dedicated on the one hundredth anniversary of the day, with such other exercises as may be hereafter determined." Members of the committee were: John S. Keyes, George Heywood, George M. Brooks, John B. Moore, and Addison G. Fay.<sup>171</sup>

After consultation with Louisa May Alcott's artistic sister May Alcott, the committee chose a young untried local sculptor. The sculptor was twenty year old Daniel Chester French- the Minute Man Statue was his first commission. French supplied the committee with a small plaster model of a minute man in November 1873. The town voted to accept the design, and appropriated the sum of five hundred dollars towards the expense of procuring a full-sized model to be made by him.<sup>172</sup> The committee was expanded to include Ralph Waldo Emerson, Frederic Hudson, George A. King, Andrew J. Harlow, and William W. Wilde. This newly enlarged committee was identified as the Monument Committee. The

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<sup>170</sup> Middlesex County Courthouse, Deed Book 9092:590. As quoted in David Little, "Twas the Nineteenth of April in (18)75 – and the Centennial was coming unstuck." Concord Free Public Library, Special Collections.

<sup>171</sup> CTR, March 31, 1873, Green Box, Roll 6. Included in, *Proceedings at the Centennial Celebration of Concord Fight, April 19, 1875*. (Concord, MA: Published by the Town, 1876), pp. 11-12.

<sup>172</sup> *Proceeding*, p. 13.

Monument Committee was authorized to “decide on the material for the statue, to procure a suitable base and carry on the work.”<sup>173</sup>

In March of 1874 the General Court of Massachusetts passed an act that enabled the Town of Concord to raise money for the monument and dedication. The act read:

Section I. – The Town of Concord is authorized to raise by taxation, such sums of money as may be needed for a suitable monument at the “Old North Bridge,” to commemorate the events of the nineteenth day of April, seventeen hundred and seventy-five, and for an appropriate celebration at its dedication.<sup>174</sup>

At home in Concord, the March Town Meeting voted to appropriate fifteen hundred dollars for procuring a base for the statue and completing the work. At the same meeting a committee of 30 citizens was chosen to make “arrangements for a fitting Centennial Celebration of the Concord Fight.”<sup>175</sup> Thus by 1874 two committees had been created. The Monument Committee and the Committee on Arrangements oversaw and carried out all of the preparations and planning for the Centennial Celebration. (For a full list of committee participants see Appendix C).

Daniel C. French set up his studio on Bromfield Street in Boston and began work on the full size model of the statue. In April 1874, Congress authorized that ten pieces of condemned brass cannon be used for the statue and with the presidential approval of Ulysses S. Grant they were sent to the Ames Manufacturing Company in Chicopee, Massachusetts. The full-sized plaster model arrived for casting at the Ames Manufacturing Company in the fall of 1874.<sup>176</sup> Buttrick’s quarter acre of land was filled “so as to raise it to the level of the old abutment, and above the spring floods of the river”. A “broad gravel drive” was made around the site of the monument. The white granite pedestal was made ready and moved to the site during the winter of 1874. The statue was completed and set in place on the pedestal in early April, 1875.<sup>177</sup>

What about the new bridge? In order to carry out all of the work for the Minute Man Statue on the west bank of the river as described above, a bridge was surely in place. By the winter of 1874 when the seven-foot block of granite was moved to the site the bridge must have been completed. Curiously, the proceedings published of the centennial events spend pages in describing the procurement, preparation, siting and appearance of the Minute Man Statue but very little on the construction and design of the new bridge. It appears that decisions concerning the bridge fell under the purview of the Monument Committee. A total of just two paragraphs in the published account of the Centennial Proceedings were dedicated to the construction of the bridge. Some of the first paragraph is included below.

The committee decided to reproduce, in its essential features, the old battle bridge, though on a lighter scale, and was fortunately enabled to do this by the rude old wood engraving of Concord Fight, made with the faithfulness of detail which characterizes most untutored art, by Earl and Doolittle, ... This picture showed a plain wooden bridge spanning the river, with a slight arch, supported by a few rows of piles.<sup>178</sup>

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<sup>173</sup> *Proceedings*, p. 13.

<sup>174</sup> *Proceedings*, p. 13.

<sup>175</sup> *Proceedings*, p. 13.

<sup>176</sup> *Proceedings*, pp. 15-16.

<sup>177</sup> *Proceedings*, p. 16.

<sup>178</sup> *Proceedings*, p. 14.

This paragraph informs us that the Monument Committee; 1) discussed the design of the bridge; and 2) were familiar with the Doolittle engraving of the 1775 bridge. The committee must have examined the engraving closely during their deliberations and at some point decided that the new bridge should resemble the Revolutionary War era bridge depicted in the engraving. The committee qualified that decision by specifying that it wanted to reproduce “its essential features...though on a lighter scale.” In comparing the simple pile bridge depicted by Doolittle with the resultant rustic whimsy of the Centennial Bridge one wonders how the committee could interpret the design of the new bridge in any way as a reproduction of the colonial bridge. Victorian aesthetics were overlaid on the “plain wooden bridge” with a heavy hand creating a beautiful, yet thoroughly contemporary, version of the Old North Bridge.

How the transformation occurred is somewhat explained in the second (and final) paragraph concerning the bridge in the Centennial Proceedings as follows.

Mr. Reuben N. Rice generously undertook to add some decoration to the rigid simplicity of the old model, and obtained a plan from Mr. William R. Emerson of Boston, in which the place of the rough railing of “followers” of the old bridge was supplied by a paling of graceful pattern, made of cedars with the bark on; and two rustic half-arbors were placed on the middle of the bridge, projecting over the water, with seats where pilgrims might sit and watch the quiet river brimming its meadows. The bridge was built during the summer and autumn according to this plan.<sup>179</sup>

Reuben N. Rice was a member of the Monument Committee. He apparently engaged the services of an architect of growing reputation to design a bridge fitting to the site and to contemporary tastes and sensibilities. The architect was William Ralph Emerson. His involvement in the design was certainly at the suggestion of another member of the Monument Committee, his cousin Ralph Waldo Emerson.<sup>180</sup> Unfortunately, no drawings, correspondence or documentation for the bridge design have been found although quite a bit is known about the architect and his work in New England.

## The Architect

William Ralph Emerson (1833-1917) was a noted architect of the late nineteenth century. He is generally credited with being one of the originators of the Shingle Style. Much of his work consisted of designing large rambling shingle style summer homes for the leisure class in Bar Harbor, Maine and other seaside resorts. Residences designed by Emerson have also been found in Boston, Cambridge, Milton (where he lived from 1886-1917) and several other Boston suburbs. No office records have survived although over 160 Emerson projects have been identified. (See also Appendix D.)

Two architectural historians have done considerable research on Emerson and his work. Cynthia Zaitzevsky is the author of the Fogg Art Museum’s 1969 catalog “The Architecture of William Ralph Emerson, 1833-1917.” Roger G. Reed is the author of “A Delight to All Who Know It, The Maine Summer Architecture of William R. Emerson” published by the Maine Citizens for Historic Preservation in 1995. Zaitzevsky and Reed are the undisputed experts on William Ralph Emerson and the biographical information of the man, and the stylistic commentary on his work, is garnered from their publications.

Zaitzevsky provides the basic biographical background of the architect in her exhibit catalog of 1969. She writes:

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<sup>179</sup> *Proceedings*, p. 14.

<sup>180</sup> Ralph Waldo Emerson was a third cousin once removed of William Ralph Emerson. For a full explanation of the geneology please see Appendix D.

He was born in Alton, Illinois in 1833, the son of Dr. William S. Emerson and Olive Bourne Emerson, both originally from Kennebunk, Maine. He was a distant cousin of Ralph Waldo Emerson. Emerson's father, like his grandfather, was a medical doctor, but about 1830 he appears to have abandoned his practice in Kennebunk in order to go to Illinois to speculate in western land. In 1837, when Emerson was four years old, his father died, and, shortly thereafter, his mother went back to Kennebunk with her two young sons.<sup>181</sup>

Emerson seems to have split his boyhood between Maine living with his mother, grandfather and step-father and Boston where he lived with his uncle, George B. Emerson, a prominent educator. He was educated in the Boston public schools and although the Emerson family had a long tradition of education at Harvard, William Ralph did not go to college at all. He went directly to work for Boston builder Jonathan Preston. He partnered with Preston from 1857 to 1861 (*Emerson and Preston*). He practiced briefly on his own from 1862-1863. From 1864-1873 he formed a partnership with Boston architect Carl Fehmer (*Emerson and Fehmer*). He was a charter member of the Boston Society of Architects in 1867. In 1874 (the year that the bridge was designed and built) Emerson was again working on his own. He continued to work without a partner through 1909 – the last year that his firm is listed in the Boston City Directories. Emerson died in Milton, Massachusetts in 1917.

Both Reed and Zaitzevsky agree that Emerson's best known and most important work dates from 1878 through the 1880s. This suggests that at the time that he designed the bridge, his career and stylistic development were poised for a dramatic surge in popularity and maturing self-expression. In 1874 Emerson was on the brink of creating designs that would cement his place in the time-line of architectural milestones and make him one of the premier architects of the era.

The architect was keenly interested in the American Colonial architecture of New England. He was involved in the restoration of the Old Ship Meeting House in Hingham, Massachusetts in 1869. About the same time, he gave a talk on the importance of colonial architecture in New England to the Boston Society of Architects. Thus began a life-long interest in New England's vernacular architecture that informed his artistic choices in a lasting manner. His interest in colonial architecture may have been a deciding factor for him to take on the design of the Old North Bridge – that emblem of American Colonial bravery, steadfastness and democracy.

Much of Emerson's early designs were in the prevailing stylistic fashion of the time – Second Empire, Italianate, High Victorian Gothic, and Stick Style. However, both Reed and Zaitzevsky agree that by 1880 Emerson's work had taken on an identity of its own, something new in massing, plan and exterior details. This is an important interpretation of his work especially in light of the fact the he designed a bridge at the site in 1888 as well as the Centennial Bridge in 1874. A comparison of the two bridge designs clearly illustrates the changes in Emerson's style. As Zaitzevsky writes;

Emerson's most productive period, both in quality and quantity, was the early and mid-1880's. Emerson was in the vanguard of those architects who designed in what has become known as the shingle style. In fact, many of his contemporaries considered him to be the inventor of this style. . . .  
Although Emerson continued to design houses almost until his death, the

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<sup>181</sup> Cynthia Zaitzevsky. *The Architecture of William Ralph Emerson, 1833-1917*, Fogg Art Museum, Harvard University, 1969, p.2.

later buildings are largely in the archaeological Colonial Revival style which became almost universal in New England in the late eighties and nineties.<sup>182</sup>

The shingle style developed from the stylistic tendencies of the Queen Anne. It was a blending, expansion and reinterpretation of the Queen Anne, the Stick Style, and the burgeoning Colonial Revival. Vincent Scully, who was pivotal in defining and exploring the origins of the shingle style describes the style extensively in his ground-breaking book *The Shingle and Stick Style: Architectural Theory and Design from Richardson to the Origins of Wright*. Scully is one of the first scholars to identify the importance of William Ralph Emerson's architectural designs to the development of the shingle style.<sup>183</sup>

Roger Reed cautions us to appreciate Emerson's development from a vantage of his entire body of known work and not from a single architectural design.

One of the elements most often noted about Redwood [a summer cottage in Bar Harbor, 1879] is the fact that the exterior is fully shingled from roof to just above grade level. For this reason, the architect is credited with "inventing" the Shingle Style. Rather than assigning Emerson such credit on the basis of a single published design, it is perhaps more useful to consider the astonishing variety of Shingle Style designs emanating from his hand throughout the 1880s. Within a few years he literally explored every variety of decorative effort possible with shingles....the earliest examples exhibited ornamental influences derived from the English Queen Anne style of British architect Richard Norman Shaw. As early as 1880, however, Emerson began to dress his shingled designs with ornament derived from the American Colonial Revival.<sup>184</sup>

A tribute from his peers at the Boston Society of Architects following his death describes the architect in the following fond manner.

Mr. Emerson was a native product of New England, delighting in ingenious contrivances and original inventions, filled with enthusiasms for whatever was spontaneous and natural, and abhorring conventions of every sort. He was the creator of the shingle country house of the New England coast, and taught his generation how to use local materials without apology, but rather with pride in their rough and homespun character. He was keenly alive to the picturesque in nature and in art, and sketched unceasingly in the most charming way, often with strange tools and methods of his own devising. To his friends and pupils he was a source of inspiration, a unique personality, not shaped in the schools, a lover of artistic freedom. Though of late years Mr. Emerson has seldom been present at meetings of this Society, he has not been absent from the memories of those who knew him in the earlier days of his activity. Only they can justly estimate the great value of

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<sup>182</sup> Zaitzevsky., p. 1.

<sup>183</sup> Vincent J. Scully, Jr., *The Shingle and Stick Style: Architectural Theory and Design from Richardson to the Origins of Wright* (Yale University Press, 1983).

<sup>184</sup> Roger Reed, *A Delight to All Who Know It, The Maine Summer Architecture of William R. Emerson* (Portland, ME: Maine Citizens for Historic Preservation, 1995), p. 19.

this influence in liberating architectural design from artificiality and in making simple and natural means artistically effective.<sup>185</sup>

For our purposes the previous background is a helpful introduction to the first commemorative bridge at the site. Although the Centennial Bridge has been observed as just a piece of the Centennial Celebration (and not a very significant one if the published Centennial Proceedings are any gauge), knowing some biographical information about the architect helps to give the bridge its own story within the context of the Concord celebration.

## The Bridge

The bridge was built during the summer and autumn of 1874. Town records and primary documents are scant on details. The understanding of the bridge's appearance is largely dependent on the period photographs that abound in various collections. Photographs, however, do little to reveal the method of construction and the underlying structural system. As best as can be determined, the bridge was a timber pile bridge arching slightly from end to end. Structural members and ornamental details appear to be nailed and spiked rather than framed by mortise and tenon. The underlying structure is remarkably similar to the previous bridges at the site. It appears upon close examination to be a relatively basic structure overlaid with significant rustic ornamentation.

The bridge was approximately 110 feet long and 12 feet wide (based on the dimensions recorded for the 1888 replacement bridge that inhabited the same site and reused the same abutments). The bridge structure consisted of five bents. Each bent was made up of three piles resting perhaps on a mudsill sunk into the riverbed and capped by a plate that projected approximately two feet beyond the end piles on each side. Plates were large timbers appearing to measure 8 x 10 inches or as much as 10 x 12 inches. Plates ran across the top of the piles (north/south). Massive stringers ran east/west resting directly on the plates of each bent. It is assumed that there were at least four stringers, one at each side and two in the middle. Planks of the floor decking were laid directly on the four massive stringers. (No joists were incorporated into the framing.) Twenty posts (unfinished slender pine logs) carried a squared handrail. Posts appear to be affixed to the outside surface of the bridge stringers – spiked in two places, at the top and bottom of the stringer. Posts located above each pile bent were further strengthened by an outrigger brace that rested on the extended foot of the plate. Treatment of the two end posts (at east and west ends) was distinctly different. End posts resemble stockade posts. They stood approximately one foot taller than the other bridge posts. The post caps were conical points and the post shafts were encircled by a decorative casing made of closely bound vertical twigs or saplings – just like a stockade fence.<sup>186</sup> (See Figure 22.)

Piles were cross-braced with wide planks (approximately 3 by 12 inch planks). Each downstream pile was further stabilized by a single log buttress spiked to the pile and framed into a mudsill or foundation crib on the riverbed. Building upon extant remains of previous bridge campaigns, rubble stone abutments were extensively built up and reconfigured as massive retaining walls for the east and west embankments. Earthen embankments were raised and augmented with new fill to form blunt projections jutting into the river as staging for the ends of the bridge. Rubble stone walls were dry laid

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<sup>185</sup> Reed, p. 15. Reprinted from the January Meeting, Boston Society of Architects, January 8, 1918 as forwarded to the American Institute of Architects and published by them in their *Journal*, and further reproduced by Vincent Scully in his *Shingle Style*, p. 111, n. 62.

<sup>186</sup> The total number of posts on each side of the bridge was 24 – 20 plain log post, 2 stockade end posts, and 2 tall posts at the arbor structures.

around the new contours for additional strength and to hinder erosion. The earth work and rubble stone walls represent the new abutments constructed for the Centennial Bridge.

In the center of the bridge, the architect included two pavilions overlooking the water on either side. The pavilions were triangular in shape and jutted out over the water approximately three feet. The Monument Committee referred to them in 1875 as “half arbors.” They were supported from beneath by a single log brace pinned into the pile below. They contained benches for visitors to rest and were intended to be a place “where pilgrims might sit and watch the quiet river brimming its meadows.”<sup>187</sup> The arbors have a polynesian flare with wall panels of closely laid twig designs resembling woven bamboo and deeply overhanging roofs of closely laid twigs/saplings resembling straw thatch. At the time of the centennial, a huge flagstaff rose from the corner of each arbor overhanging the river.

The bridge railing is likewise treated to an exuberant expression of ornamentation. Although the railing was basically a simple post and rail fence design, the architect overlaid the basic frame with several additional elements. The railing consisted of 22 panels (interrupted by the stick arbors at the mid-point) running along each side. Each panel features a diagonal and counter diagonal (X shape) of raw unfinished pine logs between posts. The repeating pattern of crossed diagonals along the length of the bridge creates a strong visual element. In addition, each bridge panel featured a decorative split log trim piece nailed along the bottom of the section to the outside face of the stringer. This created a continuous visual line of decoration running the length of the bridge along the bottom chord. Further decorative overlay is found in the addition of bent sapling arches to the outside of the posts. Each sapling arch rose from the bottom edge of the stringer to the underside of the railing and back to the stringer again. Each arch spanned four panels of railing. (Except on either side of the arbors where the arch spanned three panels.) Arches are spaced so that they begin and end above each of the tall anchoring piles of the structural bents. These arches give the illusion that the bridge is made of six arching segments with a central focal point at the roofed pavilions. The architect is clearly enjoying creating visual patterns while adhering to an underlying simplicity.

The approach to the bridge on either side was enhanced by extending the bridge railing from the bridge portals (openings) along the roadway leading to the bridge. Three sections of fence/rail matching the bridge panels were set at a gentle, widening angle flanking the road as it approached the bridge from the east and the west.

The style of the bridge was intentionally “rustique” in keeping with the taste of the times. Wood pieces were kept in a “natural” state with bark, knots and imperfections untouched. Much of the wood is cedar – very flexible and roughly textured. This rustic style can be easily understood in the context of the period. One finds very similar aesthetic sensibilities in park architecture, garden features, and furniture of the era.<sup>188</sup> The growing prosperity in the north following the Civil War led to an increase in recreational activities and the creation of resort centers showcasing the natural beauty of ocean, lake and forest. An increased interest in the western wilderness through literature, art, photography and popular media fueled a desire to connect with untouched nature. Growing networks for stagecoach, steamboat and railway provided increasing accessibility to previously wild areas. Outdoor hobbies such as fishing, boating, and exploring became more available to the general population through commercial tourism. All of these

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<sup>187</sup>*Proceedings*, p. 16.

<sup>188</sup>The following sources provide historical background for adirondack/rustique aesthetics.

Gilborn, Craig. *Adirondack Furniture and the Rustic Tradition*, New York: Henry N. Abrams, 1987.

Hotaling, Mary B. “Architects and Buildings in the Adirondacks,” *Newsletter, Adirondack Architectural Heritage*, 1 (Spring 1992), 5-8.

O’Leary, Ann Stillman. *Adirondack Style*, New York: Clarkson Potter, 1998.

factors led to the popularity of the rustic style in the everyday objects of American life as well as in domestic architecture and in the creation of public spaces.

The Centennial Bridge design was also informed by contemporary bridge technology and reflects a certain similarity to other bridges of the time. The burgeoning of the railroads led to the necessity for extensive developments in bridge technology. Construction methods, design processes and materials changed rapidly in the years between 1850 and 1880. Examples of these new “modern” bridges abounded in New England. Although it is impossible to gauge how much, or how little, contemporary bridge design influenced the architect, a comparison of the Centennial North Bridge with two regional iron truss bridges reveals a striking resemblance. Although the North Bridge is rustic, whimsical and largely ornamental, its basic features are echoed in both the Northfield Parker Truss Bridge of 1870 (Washington County, VT) and the North Village Bridge of 1871 (Worcester County, MA).<sup>189</sup> (See 36-37.) All the bridges employ prominent top chords, vertical members, diagonals and cross diagonals, bottom chords, and dominant stringers. A much more thorough investigation of nineteenth century bridge design would need to be done to draw conclusive parallels. However, the comparisons are well worth mentioning as they place the Centennial Bridge within the larger context of architectural and engineering developments that were rapidly changing the field. The 1874 bridge appears quaint and romantic to our 21<sup>st</sup> century eyes but at the time, it was a reflection of popular victorian aesthetics combined with the victorian love of technology and invention.

As mentioned above, documentation for the Centennial Bridge is scarce. The only accounting of the construction is found in a report of the Monument Committee presented to the Town Selectmen in March 1876. The entire account is reproduced here in order to exhibit how little of the bridge’s history is actually included in the public record.

THE RECEIPTS OF MONEY HAVE BEEN:

Appropriation for the model of the statue,	\$500.00
“ “ pedestal and grounds,	1,500.00
Bequest of E. Hubbard toward the monument,	1,000.00
Gift of E. Hubbard for the bridge,	<u>600.00</u>
Total	\$3,600.00

THE PAYMENTS WERE TO:

D. C. French, expense of model,	\$600.02
Conveyance of same to Chicopee,	51.30
Transportation of cannon at New York,	10.00
John Cole, for pedestal to statue,	975.00
“ “ for tablet over grave of British	<u>25.00</u>
Amount carried forward,	\$1,661.32
Amount brought forward,	\$1,661.32
D. W. Phipps, for teams and labor, grading,	650.00

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<sup>189</sup> Historic American Engineering Record (HAER). Northfield Parker Truss Bridge, Northfield, VT. HAER No. VT-13. Constructed by the Boston Bridge Works, ca. 1870. (Data compiled by Donald C. Jackson and Jean P. Yearby, 1985.) North Village Bridge, Webster, MA. HAER No. MA-99. Constructed by the Boston Bridge Works, 1871. (Data compiled by John Healey, August 1990.)

Quimby & Co., for piles for <b>bridge</b> ,	190.00
R. N. Rice, for completing the <b>bridge</b> ,	600.00
D. L. Veazie, for stone and abutments of <b>bridge</b> ,	85.00
“ “ foundation of pedestal,	37.37
F. H. Blaisdell, for grading and teaming sods,	164.25
“ “ setting statue on base ,	29.00
Fitchburg Railroad, for freight on statue,	31.76
Blackmer & Co., bronzing inscriptions,	7.20
S. Buttrick, teams and labor <b>hauling stone</b> ,	17.50
Lewis Flint, stone for walls to bridge,	7.00
E. Fahey and D. Shehan, for labor sodding,	33.25
J. Garty, work on corner buffers,	14.00
J. B. Wood, lumber for railing for hedge,	8.69
S. Hartwell, for posts “ “	3.00
E. S. Barrett, for painting fence and railing	7.68
J. S. Keyes, for brass padlock, postage, &c.,	3.98
Expenses of Sub-Committees to Chicopee	<u>48.50</u>
	\$3,600.00
There is due for labor resetting iron fence,	\$134.27
And for granite posts and freight for same,	<u>53.95</u>
	\$188.22

for which no appropriation was made last spring.<sup>190</sup>

Items that are directly related to the bridge are highlighted. Conspicuously absent are mentions of the architect, engineer, lumber used, pile foundations and construction labor. Research has not revealed any further details than those provided in the above account. The lack of attention to the bridge is curious when compared to the intense focus on the Minute Man Statue standing at the other end of the bridge. This seemingly weighted emphasis on certain elements of the commemorative landscape remains a mystery. Although picturesque and contemporarily in vogue, perhaps the bridge was seen as a functional part of the landscape and had not yet achieved the iconic stature that it surely holds today.

Town records describing work on other bridges in Concord for the year 1874-75 may provide insight into general bridge construction practices of the time that would have been applied to the Old North Bridge construction as well. For example, in 1873-74 the Derby Street Bridge was repaired using “kyanized” spruce planks. As the record reports, “This process has been tested by the Locks and Canals Co., at Lowell, and found to increase the durability of the wood nearly double. The cost is small, about \$3.00 per thousand, and we propose to give it a fair trial.” The planks used in the Old North Bridge may have been treated in a similar fashion.<sup>191</sup>

The process of kyanizing wood was developed to prevent the decay of wood used in wet or damp environments. The process consisted of immersing the wood in a dilute solution of corrosive sublimate or injecting the solution by pressure in a closed vessel. Kyanizing, or “Kyan’s Process”, was patented in England in 1832 and in the United States shortly thereafter. A similar process, “Burnettizing”, preventing the decay of timber by the use of chloride of zinc was patented in England in 1838. The first introduction

<sup>190</sup> *Annual Reports of the Selectmen and Other Officers of the Town of Concord from March 1, 1875 to March 1, 1876*, (Concord Free Public Library, Special Collections), p. 55.

<sup>191</sup> *Annual Reports of the Selectmen and Other Officers of the Town of Concord from March 1, 1873 to March 1, 1874*, (Concord Free Public Library, Special Collections), p. 37.

of these processes to the United States occurred in Lowell in early 1850 when the Proprietors of Locks and Canals erected the necessary apparatus for carrying on the process. A Kyanizing and Burnetting House was built on the Pawtucket Canal and remained active throughout the nineteenth century.<sup>192</sup>

Also in 1874-75, the "Three-Arch Bridge" was built. Although constructed of stone arches on a pile foundation, it is informative that the records mention engineer's tools, diving apparatus and derricks. The construction of the abutments and bridge piers may also be relevant to construction at the North Bridge site. They were described as follows:

The foundations for the piers and abutments were to be of piles driven a suitable depth, and sawed off level two feet below low water and planked over with two thicknesses of 3 inch spruce plank laid crosswise, and the spaces between and around the piles filled with cobble stones.<sup>193</sup>

A later record for repairs to Flint's Bridge (1877) describes the underwater framing used for the piers and again describes the use of divers and diving apparatus. At the Flint Bridge a system of "old timber cribs" had been used and needed to be replaced.

These cribs were poorly constructed of timbers laid one above another lengthwise of the piers, tied together at the ends, and across the middle twice, and the spaces filled with gravel and cobble stones.<sup>194</sup>

The construction methods described above may have been used in building the footings of the 1874 Centennial Bridge. However, at this time we can only be sure of the appearance of the bridge structure above the water line as exhibited in period photographs.

The Centennial Bridge was crossed by over 20,000 people on the day of the centennial celebration. This would be a precursor to the heavy foot traffic it, and the subsequent commemorative bridges, would experience. As landscape architect Dietrich-Smith notes, "...crowds of tourists continued to visit the Concord battleground. Drawn by the two impressive monuments and the picturesque bridge, visitors increasingly arrived by train from the Greater Boston area and beyond."<sup>195</sup> Carriages were likewise allowed to cross over the bridge and circle the Minute Man Statue. Within five years of completion the town came to the realization that the bridge would require significant on-going maintenance. Maintenance of the bridge was put under the Public Grounds Department - H.L. Shattuck, Superintendent. In 1879 the superintendent reported that:

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<sup>192</sup> 1.) Anne Booth, *Historic Structure Report, The Pawtucket Canal*, National Park Service, 1987, p.66-68.

2) "Kyanizing and Burnettizing, 1839-1892," Baker Library, Harvard University. Proprietors of Locks and Canals, Vol. A-21, File No. 111.

3) Burnettizing: or the Process for Preventing the Rapid Decay of Timber by the Use of Chloride of Zinc .. Lowell: Printed for the Proprietors of the Locks and Canals on the Merrimac River, by S. N. Merrill, 1859. (Baker Library, Harvard University, Proprietors of Locks and Canals, Vol. A-85, File No. 475.)

4) Francis, James B. *Specimens of kyanized wood, exhibited at the National Exposition of Railway Appliances*, Chicago, 1883, by the proprietors of the locks and canals on the Merrimack River. (From Francis and Descendents Collection, Bound Volumes of Publications, Acc. 721 Lowell National Historical Park.)

<sup>193</sup> *Annual Reports of the Selectmen and Other Officers of the Town of Concord from March 1, 1874 to March 1, 1875*, (Concord Free Public Library, Special Collections), p. 55.

<sup>194</sup> *Annual Reports of the Selectmen and Other Officers of the Town of Concord from March 1, 1877 to March 1, 1878*, (Concord Free Public Library, Special Collections), p. 47.

<sup>195</sup> Dietrich-Smith. *Cultural Landscape Report for the North Bridge Unit*, p. ??

The Old North Bridge will be an additional expense to this department, as it has already come to repair. The Superintendent would recommend an appropriation of one hundred and fifty dollars for the use of this department the coming year.<sup>196</sup>

Noted in the records was: 1) \$2.00 to Joseph P. George, repairing Old North Bridge; 2) \$1.00 to Heywood & Co., repairing fence around British Soldiers' graves; and 3) \$2.19 to James B. Wood, lumber for Old North Bridge.<sup>197</sup>

The following year (1880), \$2.00 is paid to Palmer, Parker & Co. for "sawing lumber of North Bridge." An entry by the superintendent again notes:

Particular attention is called to the Old North Bridge, which needs new planking and some new timbers. At the request of your Superintendent the bridge was examined by Mr. Joseph P. George, who reports that, as far as he is able to judge, it will cost about one hundred dollars to make the necessary repairs.<sup>198</sup>

Presumably this work was carried out followed by several re-grading and re-sodding projects around the Minute Man Statue and the 1836 Monument in 1881 and 1882.

Between 1883 and 1884 the "big elm" was trimmed and the bridge worked on at a cost of \$28.95. The work included replacing "Cedar poles" and "Iron work." The complete list of expenditures for the Public Grounds Department for this year is included below reflecting the general improvements in the vicinity of the bridge.

#### EXPENDITURES<sup>199</sup>

Pratt, for trees for Monument street,	\$15.40
J. B. Wood, for lumber,	29.81
M. L. Hatch, water at Minute Man,	34.97
Trimming big elm, and work on North Bridge,	28.95
Cedar poles for North Bridge,	5.00
Iron work for North Bridge,	5.32
H. Pratt, for trees,	28.30
B. W. Brown, top dressing,	5.00
J. Breck & Co., hardware,	2.73
O'Mara & Dempsey, painting,	9.80
Labor,	83.86
Balance on hand,	<u>12.03</u>
	\$261.17

<sup>196</sup> *Annual Reports of the Selectmen and Other Officers of the Town of Concord from March 1, 1878-1879*, (Concord Free Public Library, Special Collections), p. 47.

<sup>197</sup> *Annual Reports 1878-1879*, p. 47.

<sup>198</sup> *Annual Reports of the Selectmen and Other Officers of the Town of Concord from March 1, 1879-1880*, (Concord Free Public Library, Special Collections), p. 47.

<sup>199</sup> *Annual Reports of the Selectmen and Other Officers of the Town of Concord from March 1, 1883-1884*, (Concord Free Public Library, Special Collections), p. 44.

Much of the work thus far on the Centennial Bridge was general wear and tear maintenance. However, the following year it is clear that the ten year old bridge is not holding up to the challenges of touring visitors and weather realities. The Superintendent reports the following for the year 1884-1885.

Particular attention is called to the Old North Bridge, which needs repairing. We found, on removing the planks, that all the stringers were very much decayed and were really unsafe; also some of the planks; and the rest being so badly worn that by another year they would have to be replaced, it was thought best to replace the stringers with hard pine in place of spruce, and to replank with chestnut, which was accordingly done. The piles and cross timbers were found in good condition. One half of the stringers were replaced, when the cold weather and snow put a stop to work. It is necessary that it should be done as soon as the weather will permit. I ask for an appropriation of three hundred dollars . . .

Hard pine lumber for stringers	\$65.40
3,000 chestnut plank	75.00
Bolts, spikes, and coal tar	25.00
Estimate, labor of two men	<u>130.00</u>
	\$295.40 <sup>200</sup>

Three hundred dollars was appropriated for repairs to the bridge. Repairs were carried out between March 1885 and March 1886 at a cost of \$312.89. No further details are available for the work but from the description of materials and conditions it appears that at least the deck structure – stringers and floor planks – were replaced.<sup>201</sup> The poor condition of the planking may have been exacerbated by the excessive spiking of the planks as discovered on several other Concord bridges.

The town report from 1888-89 explains,

Another cause of the rapid decay of these bridges [*wooden bridges*] is the pernicious custom of spiking down the floor planks. On removing the old planks from the red bridge in 1887, and from the South bridge in 1888, we found that, although the best of yellow pine planks were used, they did not last longer than seven years. Nor were we surprised at this when we found from actual count that more than five hundred seven-inch spikes were driven in each of these bridges. It is easy to see that when the planks begin to shrink there is formed around each spike a duct or channel through which the water percolates, not only through the planks but into the stringers also. . . . If no spikes are used the cost of labor in replanking the largest of our bridges would not exceed ten dollars. Of the eight bridges replanked the past two years, not one of them has been spiked.<sup>202</sup>

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<sup>200</sup> *Annual Reports of the Selectmen and Other Officers of the Town of Concord from March 1, 1884-1885*, (Concord Free Public Library, Special Collections), p. 47.

<sup>201</sup> *Annual Reports of the Selectmen and Other Officers of the Town of Concord from March 1, 1885-1886*, (Concord Public Library, Special Collections), p. 51.

<sup>202</sup> *Annual Reports of the Selectmen and Other Officers of the Town of Concord from March 1, 1888-1889*, (Concord Free Public Library, Special Collections), p. 72.

Repairs made to the Centennial Bridge lasted only until the spring of 1887 when a particularly destructive flood season washed the bridge away. As contemporary accounts describe it, the “rustic bridge” was simply “carried away by the freshet.”<sup>203</sup> A photograph of the Centennial Bridge during the flood season clearly illustrates how the bridge structure must have been weakened after repeated seasons of rising and descending waters as well as melting ice floes and debris buffeting the piles. (See figure 28.)

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<sup>203</sup> *Annual Report, 1888-1889*, p. 72..

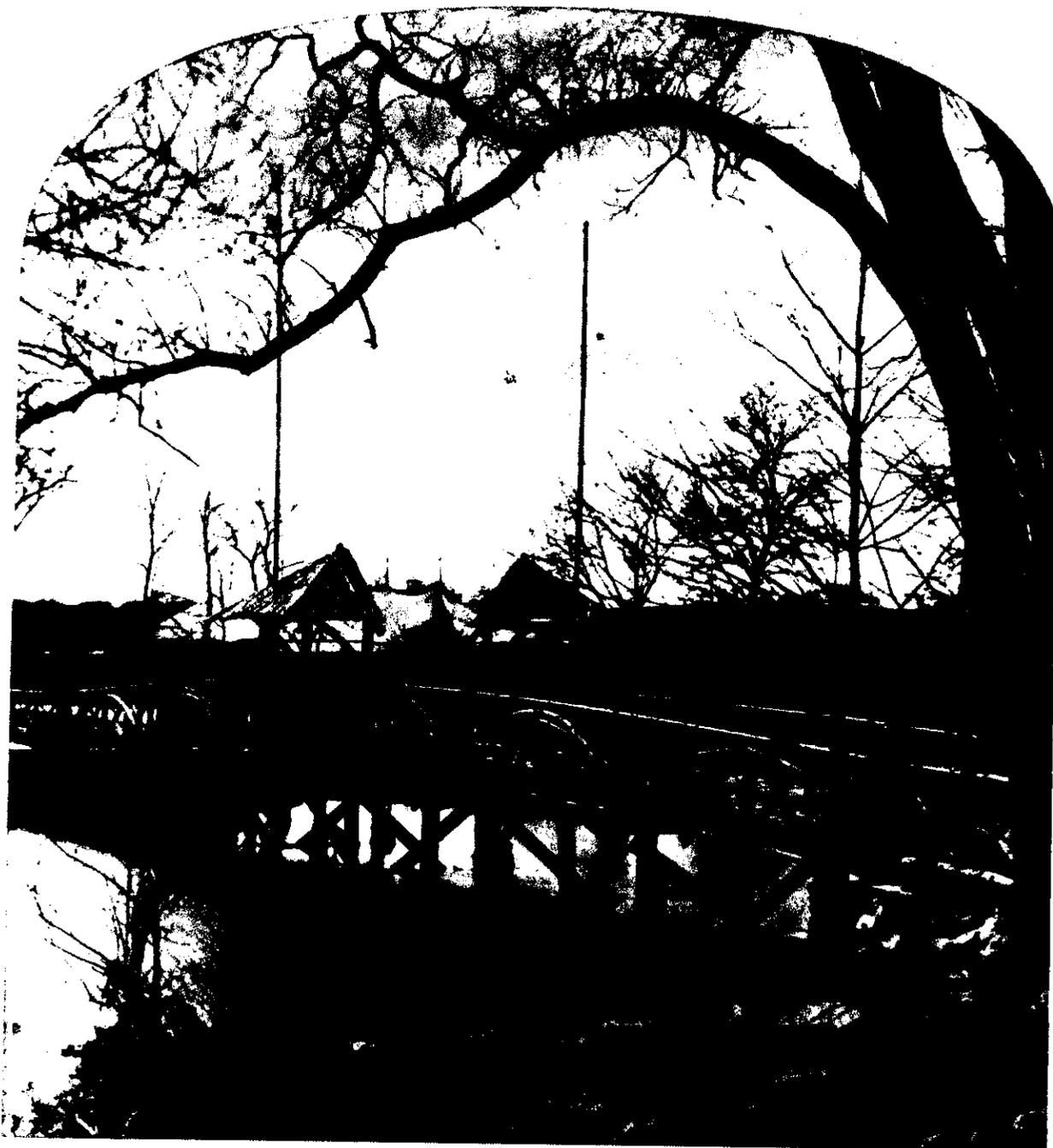


Figure 20. View of the Centennial Bridge looking northwest, April 1875. Note flagpoles on bridge arbors and tents for dinner and oration events in the background. Bridge designed by architect, William R. Emerson. (Society for the Preservation of New England Antiquities, Stereoptican Collection, Concord, Massachusetts File.)



Figure 21. View of the Centennial Bridge, April 1875 looking northwest. Note rubble abutments. (Society for the Preservation of New England Antiquities, Stereoptican Collection, Concord, Massachusetts File.)



Figure 22. Centennial Bridge looking west over bridge to Minute Man Statue. Note flagpoles, scenic overlook arbors, and stockade-style posts at entry to bridge. 1875. (Society for the Preservation of New England Antiquities, Stereoptican Collection, Concord, Massachusetts File.)



Figure 23. The 1874 Centennial Bridge looking north. Note flagpoles from Centennial Celebration mounted on pavilions. Ca. 1874. (Society for the Preservation of New England Antiquities, Stereoptican Collection, Concord, Massachusetts File.)



Figure 24. Approach to bridge from the east bank of the Concord River. View of the 1836 Battle Monument with 1874 Centennial Bridge and Minute Man Statue in background. Ca. 1875.(Minute Man NHP, Archive Collections, Lothrop Collection.)



Figure 25. Centennial Bridge looking southeast, ca. 1880. Note configuration of rubble stone abutments and bridge pile bents as well as bent sapling decoration. Note-flagpoles removed from arbors. (Minute Man NHP, Archive Collection, item #34167.)



Figure 26. Centennial Bridge looking east towards Minute Man Statue. Note stockade portal posts, cross-diagonal railing design, placement of plank decking, and rough bark texture of wood. (Minute Man NHP Archive Collection, Item # 36640.)



Figure 27. Concord River looking south towards the Centennial Bridge. Minute Man Statue visible on the right, ca. 1880. (Minute Man NHP, Archive Collection, Neg. No. 72-183.)



Figure 28. Spring floods at the North Bridge site. 1836 Battle Monument in foreground, Centennial Bridge in background, ca. 1885. (Minute Man NHP, Archive Collection, neg. no. 72-174. Original located in the Monroe Photo Collection , Concord Free Public Library.)

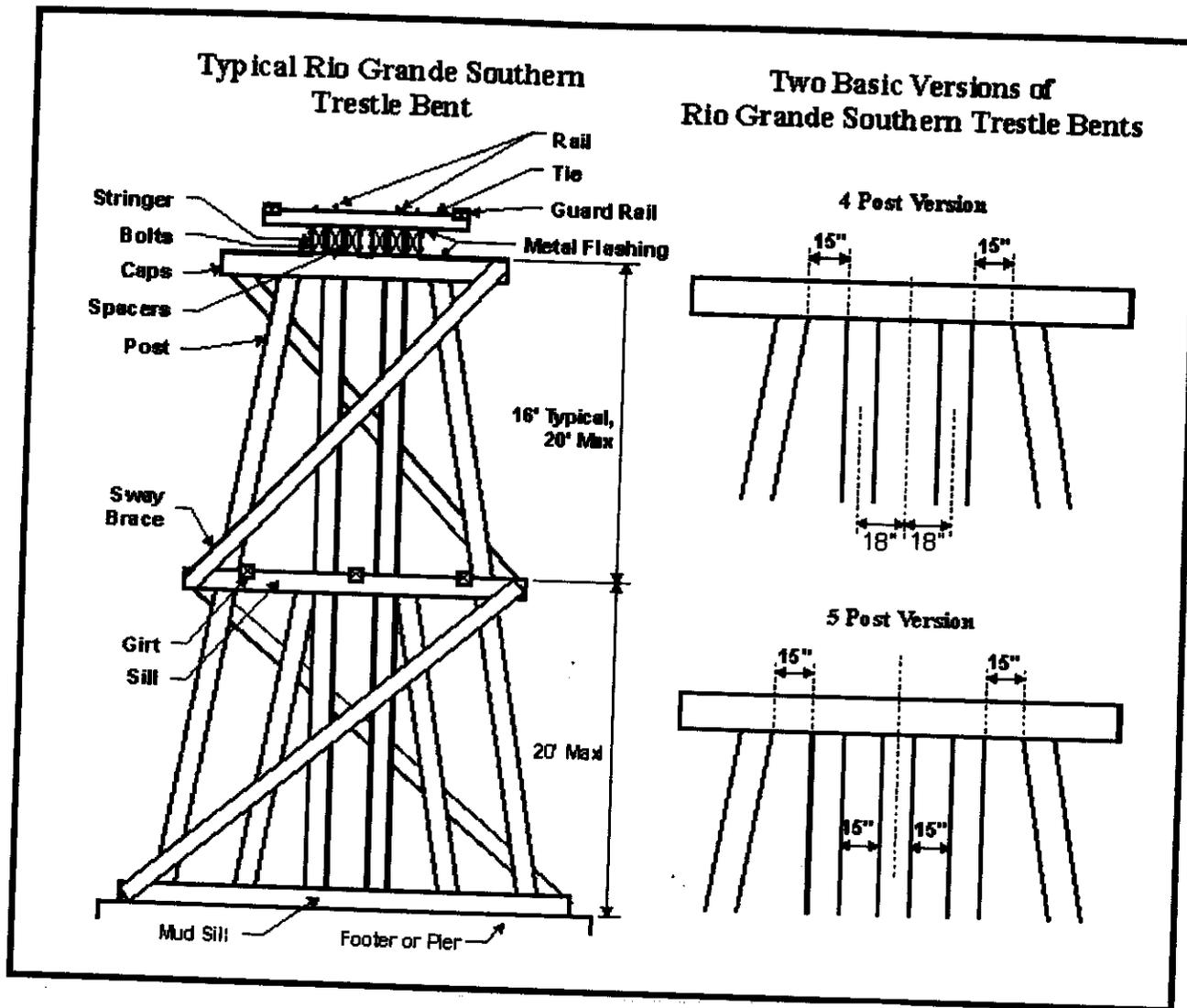


Figure 29. Drawing of typical trestle bent bridge with structural elements labeled. 1874 and 1888 bridge structures resemble these examples. (Illustration from "Typical Bridge Building Practices on the Rio Grande Southern Railroad," Volume I, September 1997.)



William Ralph Emerson, circa 1855 (Courtesy of Sylvia Watson).



**William Ralph Emerson**

**1833-1917**

**photo courtesy of Mr. & Mrs. Stephen Weld**

Figure 30. William Ralph Emerson, architect of the Centennial Bridge. Photo on left, ca. 1855. (Photo reprinted in Roger Reed's book "A Delight to All Who Know It," courtesy of Sylvia Watson.) Photo on right, ca. 1900. (Image from brochure compiled by Roger Reed for a tour of Emerson houses in Milton, Massachusetts, 1990?.)

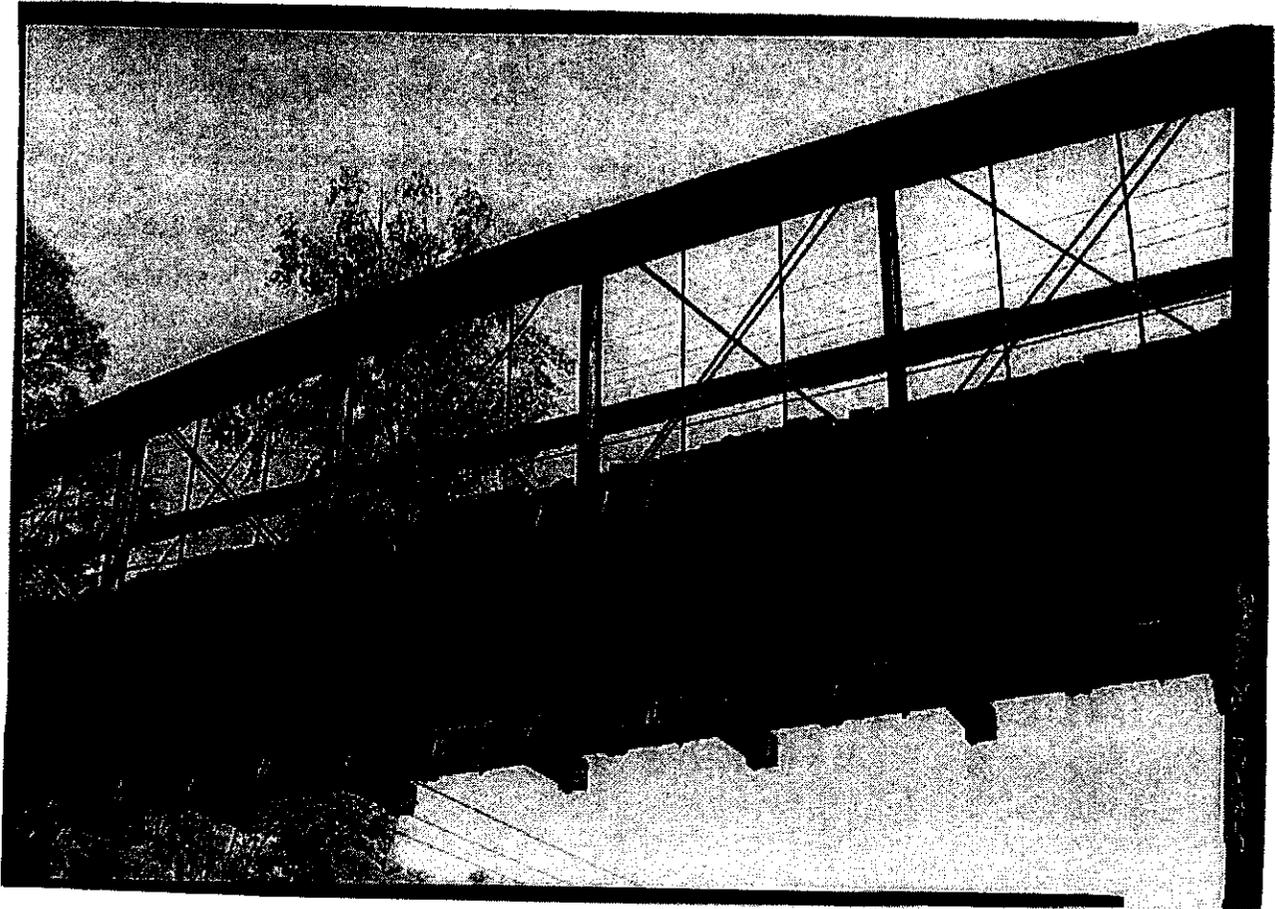


Figure 31. Northfield Parker Truss Bridge, HAER No. VT-13. Bridge fabricated by Boston Bridge Works, ca. 1870. Northfield, Washington County, Vermont. (From LC-HABS/HAER website.)

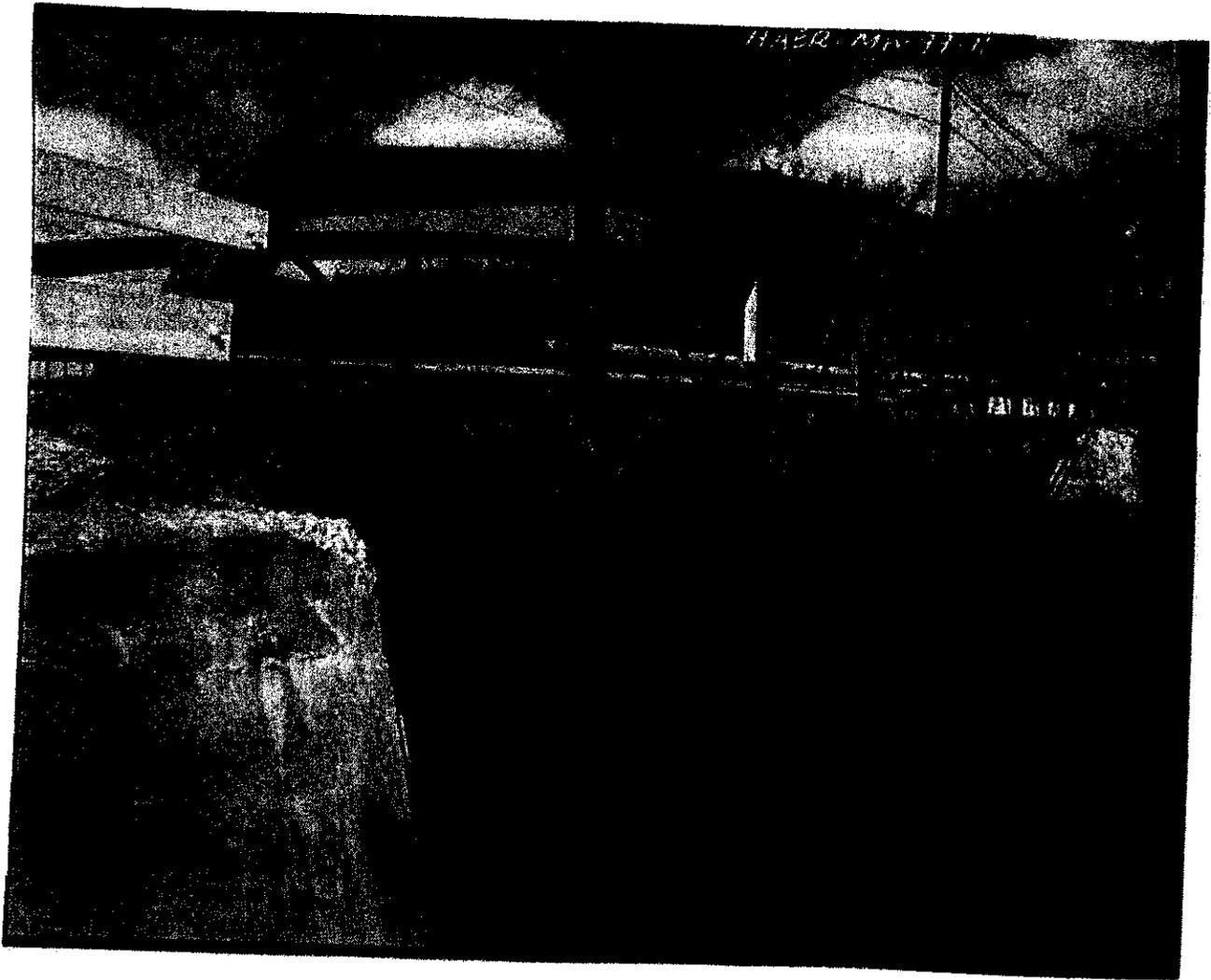


Figure 32. North Village Bridge, HAER Mass., 14-WEB. Fabricated by the National Bridge and Iron Works, Boston, 1871. Webster, Worcester County, Massachusetts. (From LC-HABS/HAER website.)

## THE 1888 COMMEMORATIVE BRIDGE (1888-1908)

With the destruction of the Centennial Bridge in 1887-88 the town was charged once again with rebuilding the North Bridge. They reacted quickly and the annual town meeting records for the year ending on March 1, 1889 include a report on the swift reconstruction efforts for the bridge. At the March 1, 1889 annual meeting it was recorded that;

At the last annual town meeting [*i.e. March 1, 1888*] the town instructed the Road Commissioners to build, near the Minuteman, a new bridge to replace the rustic bridge recently carried away by the freshet, and appropriated therefor the sum of one thousand five hundred dollars. A contract was made with McGuinness & Parker, of Boston, they being the lowest bidders. The contractors agreed that, for the sum of ten hundred and ninety-five dollars, they would build in a thorough and workmanlike manner, and according to plans and specifications drawn by William R. Emerson, of Boston, architect, a pile bridge one hundred and eight feet long and twelve feet wide; the piles to be of white oak fifteen inches in diameter, the braces of the same material, and all other timber and planks of kyanized spruce. The work was done under the supervision of the Road Commissioners and to their entire satisfaction, and we congratulate the town that no claims were made or allowed for extra labor or material.<sup>204</sup>

The same annual report (ending March 1, 1889) includes an accounting for "Rebuilding the North Bridge."

### REBUILDING THE NORTH BRIDGE<sup>205</sup>

Boston Herald, advertising for proposals	\$8.25
Journal Newspaper Co., advertising for Proposals	8.88
Globe Newspaper Co., advertising for Proposals	8.25
Charles H. Walcott, drawing contract	7.00
William R. Emerson, plans	100.00
McInnis & Parker, contract	1,095.00
Road Commissioners, graveling roadway	35.27
Fitchburg Railroad Co., freight	2.88
P. J. Sheehan, stone work	5.00
A. B. Black, sawing and teaming	10.15
Craig & Clahane, painting	10.00
James B. Wood, lumber and cement	<u>98.52</u>
	\$1,389.20

Therefore, the bridge was built during the previous year [1888] and was complete by the annual town meeting on March 1, 1889. (See figures 33-40.) Although drawings and specifications for the bridge have not survived (or been located), the brief description of construction as included in the Town Report above give us a brief outline of the bridge construction. Like the Centennial Bridge, the 1888 bridge was designed by architect William R. Emerson. The bridge was constructed according to Emerson's plans by Boston contractor - McGuinness and Parker. The bridge was a timber framed pile

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<sup>204</sup> *Annual Reports, 1888-1889*, p. 72.

<sup>205</sup> *Ibid.*, p. 30.

bridge 108 feet long and 12 feet wide. Wood used in construction was white oak and kyanized spruce. Fifteen inch piles were put in place with a pile driver. The cost of the bridge was \$1,095.00.

Without construction drawings, discussions of the bridge rely on the extensive historic photographs available in local research facilities. The appearance of the bridge design is quite distinct from the picturesque Centennial Bridge. The fourteen years separating the designs clearly reflect major changes in the architect's stylistic development. Interestingly, the 1875 Centennial Bridge represents an early example of Emerson's work while the 1888 bridge was designed towards the end of his most intense popularity. Both bridges fall outside of the period that Zaitevsky (and to a lesser extent Reed) consider Emerson's most creative and important period. Zaitzevsky writes,

Emerson's most productive period was from 1879 until approximately 1886. The characteristic house-type of the eighties and the one at which Emerson particularly excelled was the shingle-style country house. . . In the late eighties and the decade of the nineties, the dominant trend in domestic architecture was an increasingly stereotyped and archaeological interpretation of the eighteenth-century American Colonial. Emerson participated to only a limited degree in this antiquarian revival, but during these years his houses lost much of their characteristic freedom and inventiveness.<sup>206</sup>

Architectural historian Roger Reed sees Emerson's development in a slightly different light. Reed considers that the architect's best work spans a much longer period – from 1879 until the end of the century. He does acknowledge however, that:

An abrupt change in Emerson's prominence as the architect for affluent cottage builders occurred in the 1890s following a growing demand among the wealthiest clients for larger, more formal mansions built in traditional European styles.<sup>207</sup>

Reed goes on to defend and interpret the architect's work of the late eighties and nineties as follows.

Generally, the smaller, more conventionally styled buildings Emerson designed in the 1890s are less admired by architectural historians than his larger, more exuberant work of the 1880s. These judgements are perhaps unfair in light of his evolving philosophy which the architect expounded in an 1899 article titled, "The Elimination of the Superfluous". . . . The simplicity of treatment in Emerson's late work should be understood as a deliberate and consistent evolution of his philosophy rather than a decline in his own abilities.<sup>208</sup>

The overall impression of Emerson's 1888 bridge is of a very sturdy solid and simple design. This bridge does not exhibit any of the whimsical details found on the rustic bridge of 1874. No attempt is made to dress the simple geometric shapes and massing of construction timbers with spindly ornamentation as in the Centennial Bridge. Gone are the arbor pavilions from the center of the bridge as well as the bent sapling arches and cross diagonal panels that decorated the railing. Aesthetically, lines

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<sup>206</sup> Zaitzevsky, p. 25.

<sup>207</sup> Reed, p. 19.

<sup>208</sup> Ibid., p. 20. In the article Emerson wrote; "*The tendency of the age is towards useless, senseless, meaningless elaboration. . . . It is fortunate that the old New England builders never had a French training, but were brought up on the old 'Builder's Guides' . . .*" (Quote from Reed's book.)

have been straightened and the bridge frame has been shorn of extraneous ornamental details. The dimensions of the pile bents are likewise more substantial including larger piles and heavier cross braces as well as massive batter piles on both up- and down-stream sides of each bent. (The Centennial Bridge had batter piles on just the up-stream side of the bridge.)

The 1888 bridge structure consists of four pile bents (compared to the five bents of the 1874 and 1788 bridges, and the six bents of the 1760 bridge). Each bent has three piles, two batter piles, diagonal cross braces and two horizontal braces sandwiching each bent at approximately the low water mark (i.e. nine timbers frame each bent). All framing on the bents is connected with large spikes. Each bent is capped by a plate of finished dimensioned lumber. Plates appear to be made up of two large pieces (approximately 4 x 10 inches) spiked together. Plates extend several feet beyond outside piles to receive bracing from above. Notched over the plate above each pile is a simple oblong capital or spacer piece upon which the bridge stringers rest. These stylized capitals are both structural and aesthetic. They are structural because they raised the bridge approximately 12 inches and distributed the weight of the deck structure over a larger surface than one small pressure point at the top of each pile. They are aesthetic in providing a softening rounded counterpoint to the overall angularity created by the bridge verticals and horizontals.

Three stringers run the length of the bridge east to west – one on each side and one in the middle. Bridge decking is made of very thick twelve-foot planks (width of bridge) running north/south and resting directly on the stringers. Planks are held in place by the bottom rail of the bridge fencing that rests directly on top of the planks.

Bridge fencing is of post and rail design with a top, middle and bottom rail. Six main square posts are found on each side, one above each pile bent and one at each end of the bridge. Each main post has an outrigger brace extending from the top rail of the fence down to the end of the bent plate as it extends out over the bridge framing.

There are five panels of fencing per side. Each panel consists of a post at each end and two diagonal braces rising from the stringer and meeting at the top rail to form a broad triangle. Rails are nailed to the inside of the posts and braces. The visual pattern created by the fence panels each with its triangular brace is of a measured zig-zag from one end of the bridge to the other. The middle of the bridge is subtly emphasized by both size and detail. The middle bay of the bridge has a wider span than the two flanking bays (exact dimensions unknown but size differentials clear in photographs). In addition, the middle panel of railing has two short posts flanking each main post as well as a post bisecting the panel's triangle at the exact center of the bridge. This small, added post marks the middle of the bridge. The small post bisects the central fence panel and creates an arrow shape marking this midpoint on the bridge.

The stone rubble abutments at each end of the bridge were not rebuilt for the 1888 bridge. Comparisons of the coursing in photographs from ca. 1875 and ca. 1888 show almost no change in the placement of stones particularly on the east abutment. Some repairs and replacement stones must have been necessary at the immediate junction of the new bridge and the top of the abutment, however, the coursing and configuration of the 1888 bridge abutments are remarkably similar to those of the 1874 Centennial Bridge. The approach to the bridge from the east and west featured two panels of post and rail fence joined to the bridge end posts. The fence marked the edge of the roadway as it gently widened towards the Minute Man Statue (west) and the 1836 Soldier's Monument (east). The fence adjoining the bridge along the road featured just a top and bottom rail distinguishing itself, therefore, from the railing of the bridge .

The overall appearance of the bridge is simple and stylized - pared down to essential geometric shapes. As such, the design can be seen as a clear reflection of Emerson's changing sense of style as his work evolved from the busy ornamentation of the stick style, to the massing of shapes and textures in the shingle style, to the simplicity of the unadorned colonial vernacular. Structurally, the 1888 bridge was a much more substantial configuration. The demise of the 1874 bridge to spring floods must have informed the architect's decisions in designing the 1888 bridge in which he employed extra supports in each bent, used larger heavier timbers and eliminated excessive decorative piece work.

The sturdy construction of the 1888 bridge appears to have paid off as it stood at the site for 21 years before succumbing to the pressures of the river (1888-1909). The records of the Public Grounds department regarding the 1888 bridge are an even better testament to the durability of this bridge. Between completion of the bridge (1888) until the rebuilding of the replacement bridge (1909) there are no entries in the town records for any significant maintenance of the Old North Bridge. Most entries for the bridge refer to work done to the grounds around the bridge site such as planting, thinning and trimming trees, mowing lawns, graveling the avenue, putting up fence and taking down fence. Repairs to the bridge do not appear.

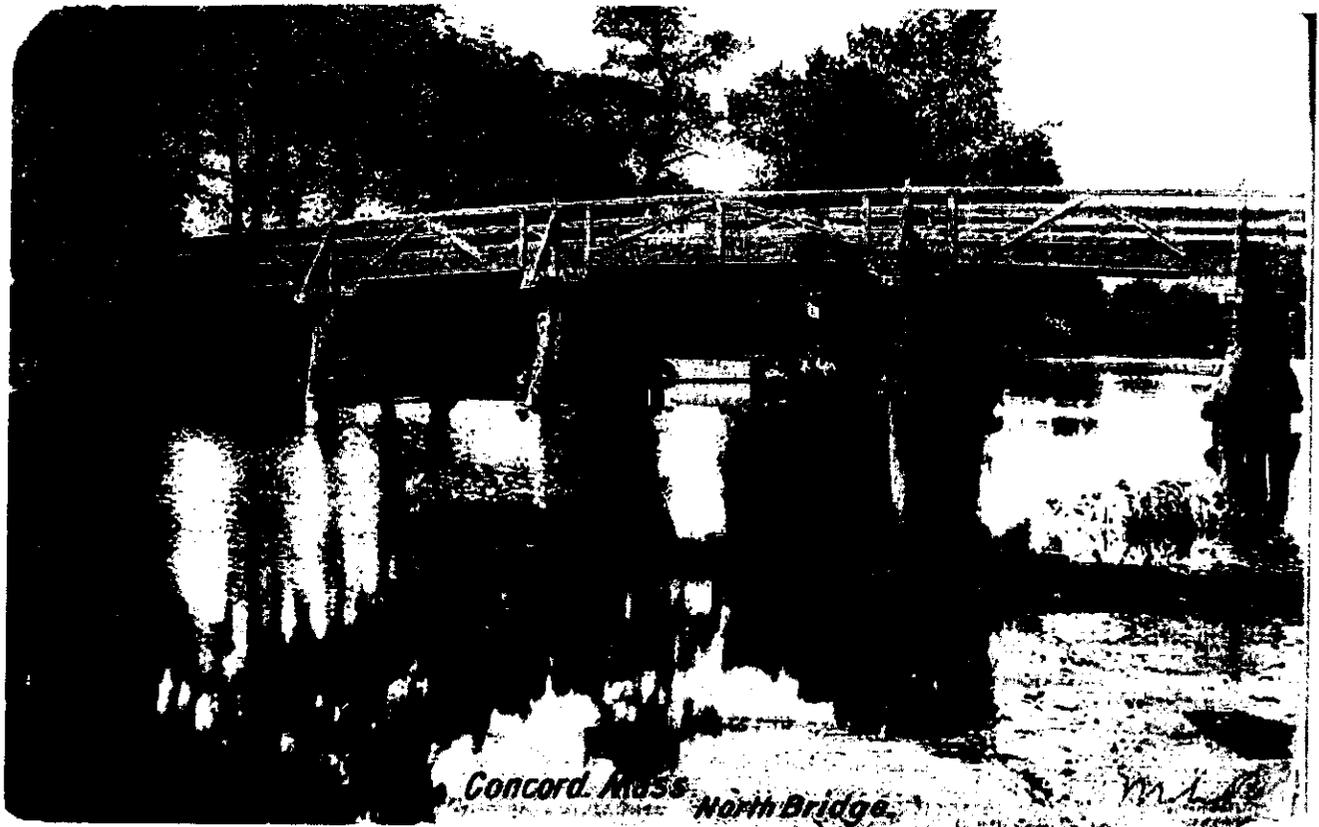


Figure 33. North Bridge, ca. 1890. View of the 1888 bridge looking north. Designed by William R. Emerson. Color postcard. (Minute Man NHP Archives, Postcard Collection.)



Figure 34. View of 1888 bridge looking east towards Soldiers Monument. Photo by Halliday, ca. 1895. (Society for the Preservation of New England Antiquities Collection, Concord, Massachusetts Photo File.)



Figure 35. View of the 1888 bridge looking north. Designed by William R. Emerson. Photo by Halliday, ca. 1895. (Society for the Preservation of New England Antiquities Collection, Concord, Massachusetts Photo File.)



Figure 36. View from the bridge looking west towards the Minute Man Statue. 1888 bridge designed by William R. Emerson. Note treatment of deck planking and railing. (Society for the Preservation of New England Antiquities, Concord, Massachusetts Photo File.)



Figure 37. View of the 1888 bridge looking west during spring floods. Photo ca. 1889-1908. Note debris caught up in the pilings and extent of flood into field beyond bridge along west bank. (Minute Man NHP Archive Collections, #34170.)



Figure 38. Approaching the Old North Bridge from the west, ca. 1900. 1888 bridge designed by William R. Emerson. (Minute Man NHP Archives Collections, Box 12, #34208.)



Figure 39. Approaching the Old North Bridge from the east. Ca. 1900. 1888 Bridge designed by William R. Emerson. (Minute Man NHP, Archive Collections, Box 12, #36585.)

CONCORD BRIDGE,  
CONCORD, MASS.



Figure 40. View of the 1888 bridge looking northeast. Postcard, ca. 1900. (Minute Man NHP, Archives Collections, Postcard Collection.)

## THE 1909 COMMEMORATIVE BRIDGE, 1909-1955

Town records for the year 1908 eloquently express the sentiments of the selectmen in Concord over the constant maintenance realities of a burgeoning municipality. They recorded;

The Town of Concord is blessed with beautiful rivers but it is also cursed with thirteen bridges. . . Everyone of these bridges have to be replanked at least once in three years with the rate of travel as it is today. . . Figuring on the basis that a wooden pile bridge will last thirty years, in that time it would have to be replanked twelve times. New stringers would have to be put in at least twice.”<sup>209</sup>

These entries are an echo of the same concerns found reflected in records beginning in the seventeenth century with the first bridges. Increasing industries and population took a particular toll on the public roads and bridges. In the year 1908, several of the town’s bridges were apparently in serious disrepair.

A special town meeting was held on July 13, 1909 to hear and act upon the report of the Road Commissioners and to determine whether the Town would rebuild any of its bridges. The sites under consideration at this time were the Pail Factory Bridge, Heath’s Bridge, Red Bridge, Old North Bridge, and Old South Bridge.<sup>210</sup>

Town Meeting unanimously voted to rebuild all five bridges. In an attempt to ensure the longevity of the next bridge on the site, and as a reflection of the selectmen’s faith in modern technology and developments in the field of engineering, the town hired an engineering firm that was one of the first firms to design structures of reinforced concrete. The firm was that of Joseph R. Worcester, a graduate of Harvard and (former) chief engineer of the preeminent engineering firm – the Boston Bridge Works.

### The Engineer

Research carried out by historians with HAER (Historic American Engineering Record) and an obituary from 1943 provide a rather thorough biographical sketch of the engineer.<sup>211</sup> Joseph Ruggles Worcester was born in Waltham, Massachusetts in 1860 to Benjamin and Mary Clapp Worcester. He graduated from Harvard University in 1882 and became a draftsman at the Boston Bridge Works. Worcester was the firm’s chief engineer from 1884 to 1894 and a consulting civil engineer from 1894-1907. In 1907, he organized the firm of J. R. Worcester & Co. where he was joined by his son Thomas. He was an active member of many building and engineering associations and was appointed to a committee in 1921 to formulate national building codes and material standards.<sup>212</sup>

Worcester is considered one of the country’s foremost engineers in the design of steel structures and an important contributor to the emerging technology of reinforced concrete structures and

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<sup>209</sup> *Concord Town Records, Annual Report, January 31, 1908-January 31, 1909*, (Concord Free Public Library, Special Collections), p. 88.

<sup>210</sup> *Concord Town Records, Annual Report, January 31, 1909 to January 31, 1910*, (Concord Free Public Library, Special Collections), p. 33.

<sup>211</sup> HABS/HAER No. NY-13, Walpole, NH-Westminster, VT Bridge, p. 8. Obituary. *New York Times*, May 10, 1943. (Copy of obituary in the history files of the Mass. Highway Department. Steve Roper, bridge specialist.)

<sup>212</sup> Member of: American Society of Civil Engineers, Fellow of the American Academy of Arts and Sciences, Boston Society of Civil Engineers, American Railway Engineer’s Association, the American Society for Testing Materials, and the American Concrete Institute. (HABS/HAER No. NY-13, Walpole, NH-Westminster, VT Bridge, p. 8.)

foundations during the early 20<sup>th</sup> century. He was consulting engineer to the Boston Transit Commission and designed most of the elevated structures and steel work of the Boston subway as well as at least 20 bridges in Massachusetts. He designed the steel reinforcement to support the dome of the Bullfinch-designed State House in Boston as well as several large office building including 60 State Street (no longer extant). Examples of his work in reinforced concrete include Harvard Stadium and the Hampden County Bridge at Springfield, Massachusetts.<sup>213</sup>

### The Bridge

The new bridge at the North Bridge site was built between July 13, 1909 and January 31, 1910. J. R. Worcester & Company were the engineers responsible for the design and supervision. The Eastern Concrete Construction Co. won the bid for provision of the concrete and construction labor.<sup>214</sup> The bridge was a concrete arch pile bridge with rock face concrete abutments. The bridge was 120 feet long consisting of seven spans (each 15 feet long). It was 13 ½ feet wide. The floor of the bridge above low water was 11 feet, and above high water 7 feet. The total cost of the bridge was \$3,136.00. J. R. Worcester received \$1,380.00 for the design and supervision. Eastern Concrete Construction Co. received \$2,345.00 for materials and construction labor.<sup>215</sup>

According to the report submitted by J. R. Worcester & Co. work on the North Bridge was done during the summer of 1909. The report describes the bridge as follows.

The Old North Bridge was designed to reproduce, so far as possible, the lines of the historic structure. Many people are surprised, even after seeing it, to learn that it is now of concrete, even to the open fence railing. The bridge has seven spans of about 15 feet. The roadway is 13 1/2 feet wide between rails. It is an unusual construction and has a novel feature in not having any filling over the concrete floor, but this was deemed entirely safe on account of the light travel which goes over it. The expense was made greater than at first planned by facing up the abutments with concrete.<sup>216</sup>

Visually, the bridge design closely resembled the north bridge as depicted by Amos Doolittle in his famous 1775 engraving. Spare and simple, the smooth surface of the concrete and crisp vertical and horizontal lines created by the molded concrete bridge members allowed the designers to imitate the stylized precision of Doolittle's line drawing. However, the bright white of the concrete also made this bridge stand out in stark contrast to the natural surroundings in a way that all previous bridges had not. Therefore, while the lines of the concrete bridge imitate the historic bridge of 1775 quite well, the visual qualities of the material assure that this bridge did not age as all previous bridges had. The patina of wear so natural to a wooden bridge did not occur with the 1909 bridge. The concrete surfaces did indeed age, showing discolorations and cracks, but the bridge never gracefully blended into the natural setting as all the previous historic bridges had. It did last a very long time however (1909-1955), and that was one of the town's priorities when reconstructing the bridge in 1909.

No drawings or specifications have been found to date from the 1909 bridge. However, many photographs are available. In examining the photographs it is evident that the structure of the bridge was based on traditional framing members – just molded out of concrete. Concrete “bents” of the bridge

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<sup>213</sup> (HABS/HAER No. NY-13, Walpole, NH-Westminster, VT Bridge, p. 8.)

<sup>214</sup> *Ibid.*, p. 65.

<sup>215</sup> Massachusetts Highway Department, file C 19-12. Conversation with bridge specialist, Steve Roper, Boston, MA. (J. R. Worcester also designed the South Bridge, Red Bridge, Pail Factory and Heath Bridges in Concord in 1909-1910.)

<sup>216</sup> *Annual Report, January 1909 to January 31, 1910*, p.34.

consisted of two piles carrying a plate that supported the long east west stringers that in turn carried the concrete slab deck. The whole structure was shouldered at each end by concrete-faced stone abutments. Small triangular concrete braces at the top of each pile engage with the underside of the concrete "plates" distributing the weight of the concrete stringers and deck. No other additional supports or mechanisms are visible, however, the concrete (of the piles, deck and railings) used was identified in town records as "reinforced" probably with steel cords or bars embedded in each of the members. (The best illustration of the 1909 bridge structure is found in photographs of the bridge being dismantled in 1956 and included at the end of the 1956 Bridge section.)

Initially, the concrete bridge was not without problems. Even during construction in 1909 a crack was discovered in the west abutment due to the settlement of the piers in the river. The crack was repaired (filled with mortar) and was deemed to have no structural significance.<sup>217</sup> Furthermore, the Board of Road Commissioners requested that the consulting engineer (J. R Worcester) return to inspect the "Minute Man Bridge" in October of 1910 for possible defects on the piles. Worcester did so and made the following report.

...we noticed the rough appearance of the concrete at the bottom of the piers where they reach the water level. While it seems to me now, as it did then, that this is not a serious defect, and that it does not indicate any particular weakness, I have been thinking about how it would be possible to remedy the trouble so that the entire structure would be as perfect as possible. It has seemed to me that the best way to fix it would be to surround the posts with a sort of a base, as shown in the accompanying sketch, and to arrange this so that the bases would come to the same grade with regard to the water on all the piers. I believe that this could be constructed by making a water-tight box in pieces which could be lowered down onto the square footing, pumped out, and filled with concrete. I have taken it up with the Concrete Engineering Company, who are the successors of the Eastern Concrete Construction Company, and they have written me that they estimate that the cost of furnishing materials and labor necessary to do this work would be \$120 or \$10 for each base. This price is lower than I anticipated, and I would recommend the Town doing it, provided you have any available funds for the purpose. If it would be more convenient to put it off for another season, I do not think there would be any risk in so doing, but on account of the low water, it is an exceptionally favorable time to do it now.<sup>218</sup>

It appears that the town took the advice of the engineer and that the Concrete Engineering Company was hired to carry out the work of facing the piles with additional concrete below the water line.

On November 17, 1910. J.R. Worcester submitted a letter to the Board of Road Commissioners documenting the work. He wrote,

Dear Sir: We enclose herewith bill for facing columns at the Minute Man Bridge which we have just received from the Concrete Engineering Company.

They tell us that the expense was somewhat in excess of their estimate, but they are standing by their figures. They have not yet removed the forms from the facing, for the reason that before they were sufficiently set up to do

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<sup>217</sup> *Annual Report, January 31, 1909 to January 31, 1910*, p.F in engineer's report.

<sup>218</sup> *Annual Report, January 31, 1909 to January 31, 1910*, p. 149.

this work the water rose, so that the forms were inaccessible. Under the circumstances it seems to us that it would be best to pay the bill, as it is entirely uncertain when the water will be as low as it was this summer, and it may be years before we can get at the forms to remove them. In the meantime, they can do no possible harm.<sup>219</sup>

Although the work was completed, a dispute arose over the bill and a claim was made by the Eastern Concrete Construction Company against the Town of Concord. The Eastern Concrete Construction Company submitted a bill of extras for work they claimed was necessary because "the foundation of the Minute Man Bridge, as shown by the borings, was not the same as found by them when the work was done."<sup>220</sup> Consulting engineer, J. R. Worcester, finds no justification in the initial contract to back up the claim and registers his opinion as follows.

As I understand the claim of Mr. Bullard, it is based upon a greater alleged cost of the foundations than they provided for in making their estimate, and he argues that the reason for this increased cost was that the ground encountered did not correspond with the borings shown by the survey plan. . . I am morally certain that the very best expert evidence which can be obtained would confirm my view that the actual cost of the foundations was not much greater, if any, than should have been anticipated from the data furnished, and that the Eastern people's figure of \$25 per pier was far too low. It seems to me that there will be no difficulty whatever in proving also that by the invariable custom, and by common sense, borings shown on a survey plan can only be taken to be correct so far as each one individually is concerned. They cannot be assumed to cover all subterranean obstacles, or any of them, unless they happen to be encountered in the borings themselves.<sup>221</sup>

The opinion of J. R. Worcester must have prevailed for there is no mention of the claim in the 1912 Annual Report. Surprisingly, there is no mention in the town reports of any further maintenance or repairs to the North Bridge until 1921.

A 1920 bridge survey of bridges in Concord assessed the condition of the structures. The Old North Bridge abutments were rated in fair condition, the piers in fair condition, and the surface of the decking in good condition.<sup>222</sup> A year later two of the piers were in poor condition. One of the piers was replaced at this time. The work was noted in the town report for 1921.

The Old North Bridge has been repaired by putting in a new pier. The work done was quite expensive, it being at the peak of high prices. It did not seem advisable to replace a second pier, as it was not badly damaged. It is, as a bridge, in as good condition now as when it was first built. The cost of the repairs was \$1,097.76.<sup>223</sup>

The repair was made by Charles R. Gow Co., at a cost of \$843.60. No further details regarding the maintenance and condition of the 1909 bridge have been discovered in the course of this research although numerous photographs were located and are included at the end of this section.

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<sup>219</sup> *Annual Report, January 31, 1909 to January 31, 1910*, p. 150.

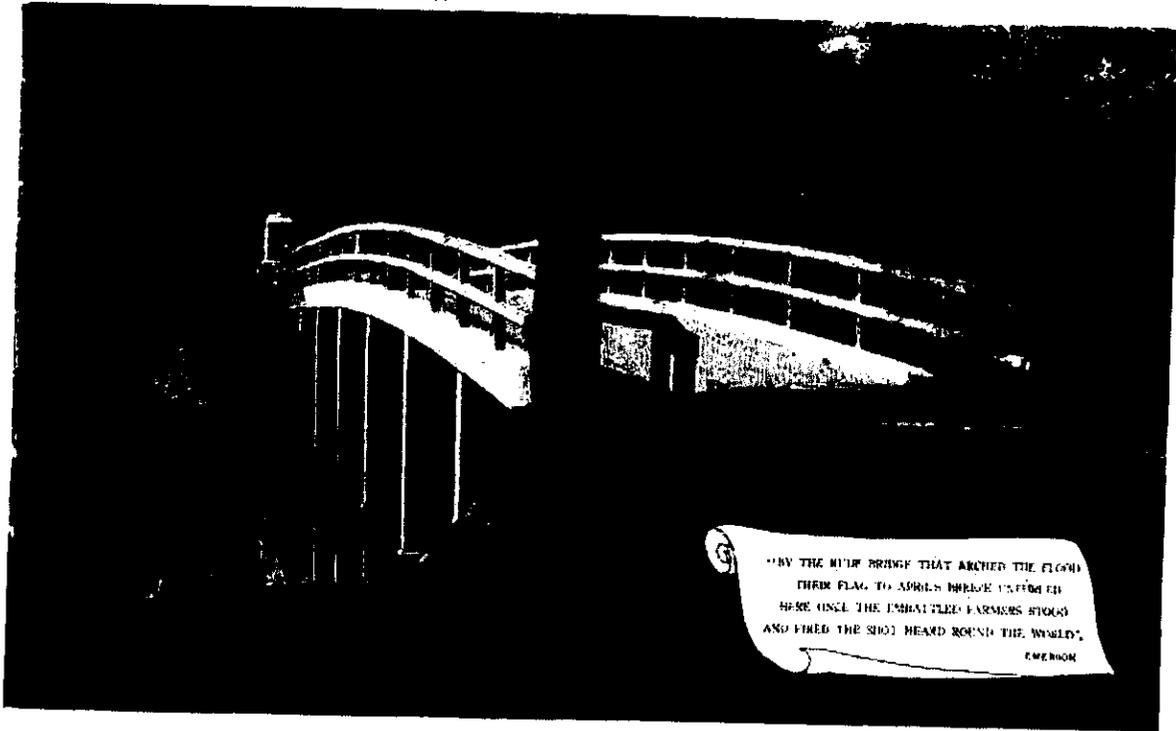
<sup>220</sup> *Annual Report, 1909-1910*, p. 151.

<sup>221</sup> *Annual Report, 1909-1910*, p. 153.

<sup>222</sup> *Concord Town Records, Annual Report, January 1, 1921 to December 31, 1921*. (Concord Free Public Library, Special Collections).

<sup>223</sup> *Annual Report, 1909-1910*, p. 80.

OLD NORTH BRIDGE, CONCORD, MASS.



"BY THE WIFE BRIDGE THAT ARCHED THE FLOOD  
THEIR FLAG TO SPAIN'S BREEZE UNFURLED  
HERE ONCE THE UNBATTLED FARMERS STOOD  
AND FIRED THE SHOT HEARD ROUND THE WORLD."  
EMERSON

Figure 41. 1909 Concrete Bridge designed by J. R. Worcester & Co. and constructed by the Eastern Concrete Construction Company. Postcard, ca. 1910. (Minute Man National NHP Archives, Postcard Collection.)



Figure 42. North Bridge, concrete bridge, view looking west, April 1913. (Collections of the Society for the Preservation of New England Antiquities, Concord, Mass. Gift of William S. Appleton.)



Figure 43. 1909 Concrete Bridge, view looking north and providing larger view of surrounding landscape. Photo by James H. Tolman, ca. 1920. (Minute Man NHP, Archive Collections, MIMA Box 12, #34289.)



Figure 44. 1909 Concrete Bridge, view looking towards western abutment. Aging of concrete evident. Triangular braces visible at the top of each pier. Ca. 1949. (Collections of the Society for the Preservation of New England Antiquities, Postcard File, Concord, Mass.)



Figure 45. 1909 Concrete Bridge, view looking northwest, ca. 1910. (Collection of Society for the Preservation of New England Antiquities, #BT1244-5, gift of William S. Appleton, 28 Feb. 1933.)



Figure 46. The concrete bridge, built 1909 by J R. Worcester and Co. Shown here at high water during spring flood season. Note aging of bridge with visible cracks in piles and stringers, ca. 1950. (Minute Man NHP, Archive Collections, MIMA #75-21.)

## THE 1956 COMMEMORATIVE BRIDGE (1956-Present)

On August 18, 1955 hurricane "Diane" arrived in Concord, Massachusetts dropping eight inches of rain in just 24 hours. The hurricane caused massive flooding of the Concord River. Roads were flooded and bridges washed out. The Old North Bridge (now a venerable 46 years old) took a mighty beating.

When the State Department of Public Works made a survey of bridges after the high water, it was found that one pile at the North Bridge was badly damaged and the rest of the structure weakened to such an extent that the engineers considered it unsafe.<sup>224</sup>

The town report continues matter-of-factly that,

Consequently, money was made available from the State Flood Damage Funds for a new bridge, and the State Department of Public Works after consultation with us, have decided to build the new bridge of treated lumber and to reproduce, as far as anyone knows, the bridge of April 19, 1775. This bridge will be built without any cost to the town and it is hoped that it will be completed early in 1956.

In reality, the situation was anything but plain and simple. Local historian Renee Garrelick tells quite a different accounting of the events leading to the construction of the current bridge. Her interpretation is well worth including here. According to Garrelick, although Congress declared Concord and its surrounds a disaster area following the flood and appropriated funds to replace damaged property, the Old North Bridge (as a commemorative pedestrian bridge) did not qualify in the category of a regular bridge and was thus not legally entitled to use the funds.<sup>225</sup> Herein enters the political ambitions of several players in state government at the time.

The Commissioner of Public Works for the state at that time was John Volpe. Volpe was very keen to rebuild the bridge. Residents of Concord were naturally quite keen to rebuild the bridge as well and it was clear that public sentiment favored a return to a replica of the wooden 1775 bridge. Concord did not want another concrete bridge at the historic site. Volpe launched a huge national publicity campaign for a wooden bridge. Newspapers and magazines across the country featured articles about the bridge, its demise by flood and the imperative to rebuild this national icon in a manner similar to the bridge present in 1775. Garrelick asks the question - why did Volpe initiate this national crusade to rebuild the bridge? Her conclusion is simple - political ambition. Apparently, then President Eisenhower had recently suffered a serious heart attack and it was not known if he would be running for a second term. John Volpe wanted to be governor of Massachusetts and Christian Herter (then governor) was willing to run for president if Eisenhower did not run. The plan was to have Governor Herter's presidential campaign touched off by a dedication ceremony at the new North Bridge (rebuilt with federal funds through the influence of Governor Herter).<sup>226</sup>

Congress did approve the funds and the Massachusetts Department of Public Works, Bridge Division was put in charge of the project with John Volpe in the role of General Supervisor. Political ambitions were not realized, (President Eisenhower recovered and ran for a second term), but the Old North Bridge was rebuilt in wood as the public had hoped.

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<sup>224</sup> *Annual Report of Concord, 1955*, (Concord Free Public Library. Special Collections), 78.

<sup>225</sup> Renee Garrelick, *Concord in the Days of Strawberries and Streetcars* (Concord, MA: Concord Historical Commission, 1985), p. 209.

<sup>226</sup> Garrelick, p. 209.

Following the August flood in 1955 the engineering firm of Whitman and Howard was hired by the state to conduct a flood damage investigation report on bridges in the towns of Concord, Newton and Framingham. One of the bridges examined was the Old North Bridge (Bridge No. C-19-12). The findings in the report detail numerous serious defects including broken structural members, cracking, spalling, and settlement distortions. Excerpts from the report are included below. They present a clear picture of the concrete bridge just prior to demolition.

One concrete pile on the south side is broken completely off and is hanging from the bridge – completely useless for support. All piles on the upstream side (south) are cracked badly at the bottom of the concrete corner brackets, pile to header. This probably was a construction joint. The piles are spalled so badly in some places that several inches of reinforcement is completely exposed. The piles also appear to have bent at this joint against the direction of flow.

There is a severe crack running completely through the slab and curbs at the west end directly over the junction with the abutment. The main portion of the bridge has lifted up slightly relative to the anchored portion along the line of this crack. . . . There is definite indication of settlement of the bent adjacent to the west abutment especially the northerly pile. This settlement is reflected in the bridge deck and railing.

There is also cracking in the deck and curbs at the east abutment but not as pronounced. The piling on the downstream side (north) also shows spalling at the joint. The concrete railing has been cracked and deformed by apparent settlement of the rock fill approaches on the east end.<sup>227</sup>

Given the extent of the damage to the bridge, the engineers felt that it could not survive another flood of similar magnitude and recommended that a new bridge be built to replace the damaged 1909 structure. Whitman and Howard were selected to prepare plans and specifications for a new bridge following the historical design and using pressure treated wood.

A complete set of design drawings and specifications by Whitman and Howard for the 1956 bridge have survived and present a comprehensive understanding of the materials, dimensions, framing, and craft details used in constructing the present bridge. A full set of the drawings and specifications is included in Appendix I. Selected details of the drawings are excerpted and included at the end of this section with photographs dating from 1956 to the present.

## **The Engineers**

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<sup>227</sup> “Flood Damage Investigation report, Bridges in Towns of Concord, Newton & Framingham, Job No. 686.” Whitman and Howard, Engineers, 1955. (Report attached to bridge specifications, copy from Mass Highway Department, Bridge Specialist, Steve Roper.)

The firm of Whitman and Howard was established in Boston in 1869.<sup>228</sup> At that time the firm was called Whitman and Breck after founders Herbert T. Whitman and Charles T. Breck. The partnership was a mix of civil engineering and surveying. Among the early projects of the firm was the engineering and track layout for the new subways and street railways that were spreading across Boston including the first overhead electric trolley track at Revere Beach. They also designed the Great Ocean Pier, a 750-foot ocean boardwalk along Revere Beach, did much of the surveying of Revere during the 1870s, and were involved in the filling of the Back Bay in Boston. Landscape design was added to the resume of the firm with the addition of landscape architect Joseph H. Curtis. Projects such as site plans and landscape designs for the new Chestnut Hill neighborhood and the new campus for McLean Hospital in Belmont were carried out by the firm in the 1880s. In 1895, Herbert Whitman bought out Charles Breck's half of the business and in 1896 engineer/surveyor Channing Howard paid \$1,500.00 to Whitman and became an equal partner. Whitman and Howard was born.

Diverse commissions continued to be awarded to the firm. In the early 1900's Whitman and Howard laid out Sagamore Beach village, built the Wellfleet Dike and designed an artificial harbor for Falmouth. During World War I Whitman and Howard carried out surveys and planning for military bases. In post-war boom times Whitman and Howard designed many rail systems around Boston and worked for land companies to survey and provide street and utility layouts in towns such as Belmont, Watertown, Quincy and West Roxbury.

Channing Howard's son Paul F. Howard joined the firm in 1923 with a degree in civil engineering from Tufts University and became a pioneering engineer in the design of water treatment and distribution systems. During the depression the firm became a dominant force in municipal water projects through FDR's New Deal programs including designing water and sewer systems for Harwich, Cotuit, Osterville, Bourne, Buzzard's Bay, Provincetown, and Newburyport. With World War II came a need for more shipyards, ammunition depots, air fields, emergency oil storage facilities and hospitals - all carried out by Whitman and Howard.

Post-war prosperity meant more municipal projects in water treatment and supply. The building of the interstate highway system expanded the work of the firm into road and bridge construction. By its 125<sup>th</sup> anniversary, Whitman and Howard was providing technical and management services in the areas of water treatment, groundwater supply and protection, transportation, civil engineering, site and landscape design, wastewater treatment, pollution control, operation and maintenance. In 1996 the firm was acquired by the huge engineering conglomerate Tyco/Earth Tech - a \$1 billion company and global provider of engineering technology, environmental and transportation services.

The above chronology of Whitman and Howard reflects a steady rise to dominance in the field of technology and engineering and clearly shows that by 1955 when the firm was chosen to rebuild the North Bridge, their reputation and prominence as one of the foremost engineering firms in New England was firmly established. Engineer Howard R. Perkins of the firm was in charge of the plans for the bridge.

### **The 1956 Bridge**

The design for the bridge was completed by March of 1956. The scope of work as identified in specifications was described as follows.

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<sup>228</sup> All information about Whitman and Howard was drawn from a 125<sup>th</sup> Anniversary brochure published by the company in 1994, "A History in Progress, Whitman and Howard." The publication was made available by Peter DeAmicis, Proposal Manager, Earth Tech (formerly of Whitman and Howard) and Tony Lionetta, New England Transportation Manager, Earth Tech (formerly of Whitman and Howard). The Brochure is reproduced as Appendix F. in this report.

The work to be done under this contract consists of furnishing such materials, labor and equipment as will be necessary to construct a treated pile bent foot bridge on the site of the present "Old North Bridge" over the Concord River in Concord. The work includes the removal of the existing bridge, excavation, the removal and rebuilding of stone masonry walls, grading and other incidental items of work.<sup>229</sup>

Howard Perkins of Whitman and Howard was in charge of the plans and turned to both the Doolittle engraving of 1775 and an 1875 model of the bridge for inspiration. Perkins interpreted the engraving as exhibiting an arched pile bent bridge consisting of six bents of three piles each. Examination of the engraving and contemporary accounts of the 1760 bridge construction for this report have revealed that there were actually at least seven, and perhaps even eight bents, in the historic bridge. Likewise, the batter piles visible in the engraving were not incorporated into the final 1956 design while cross diagonal braces stabilizing each bent and outrigger braces for each of the rail posts, not present in the engraving, were added. Therefore, Perkins was using the historic image but interpreting it a bit as well.

Plans for the bridge were complete by March 10, 1956. Construction of the bridge began on June 26, 1956. The project was under the general supervision of John A. Volpe, state public works commissioner, and John Rundlett, department bridge engineer. Resident engineer for the bridge was Michael S. Lespasio a senior civil engineer with the Highway Department. Lespasio oversaw the day to day progress of the construction. The general contractor was Arthur J. Williams, Jr. of Lexington, Massachusetts. Piles were driven by the Roy B. Rendle Company of Boston.<sup>230</sup>

The pile bent bridge consists of six bents of three piles each and measures 109 feet 8 inches long between abutments. Piles average 30 feet in length and pile bents are spaced 15 feet, 8 inches apart. Abutments are eight (west) and seven (east) feet tall of stone faced concrete. All wood used is pressure treated southern long leaf pine. The total cost of the bridge was \$37,868. Elements of the bridge construction are set out below with details provided from the specifications and drawings by Whitman and Howard as well as from a period newspaper article written during construction.

Removal of concrete bridge. The specifications required "the complete removal of the superstructure, abutments, piers and piles to prevent interference with the construction of the new pile bents." Removal of the concrete bridge allowed for the extensive excavation undertaken for the new bridge. According to the proposal, 5 cubic yards of Class A rock excavation, 310 cubic yards of bridge excavation, 20 cubic yards of channel excavation, and 10 cubic yards of Class B rock excavation occurred before construction could begin. It is interesting that the majority of the excavation was not in the river, but on the banks of the river – i.e. "bridge excavation" vs. "channel excavation." Photographs of the work reflect the intensive disruption of the embankments in preparation for the new bridge. (The extent of the excavation should be considered in the event that future archeology is carried out in the vicinity of the bridge.)

Embankments were reconstructed with finished grades and profiles very similar to those that abutted the earlier bridges. (See elevations and sections of abutments.) The existing ground adjoining the 1909 concrete bridge was approximately two feet lower than the finished grade after the 1956 construction. Therefore, the 1956 work raised the overall grade of the ground slightly. More importantly, the work leveled the east and west embankments to nearly matching heights and smoothed the grade at

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<sup>229</sup> Project Special Provisions, Concord, "Old North Bridge", SP56-97F, Whitman and Howard. (Massachusetts Department of Highways, Concord File, Bridge C-19, Boston, MA.)

<sup>230</sup> Wood Preserving News, "Concord Bridge of Revolutionary War restored with pressure treated wood," Summer, 1956. (Concord Free Public Library, Special Collections, Pamphlet 72, Item 8.)

the east and west portals of the bridge so that the ends of the new bridge sat on level ground. Erosion and settling had caused unevenness from end to end and from side to side of the bridge. Sensitivity was given to existing landscape features such as trees and existing stone walls where ever possible. Exceptions included the removal of a mature tree at the southeast corner of the bridge and of two large trees at the southwest corner.

Abutments. New abutments consisted of a primary bridge support on each end flanked by wing walls. The primary bridge support is of reinforced concrete faced with rubble stone and finished with granite capstones. Concrete was also used in retaining the wing walls although wing walls have no capstones.

Due to the topography of the site, the eastern abutment projects out from the plane of the river bank. In effect, the projecting earthen embankment is sheathed with the new concrete and rubble face walls. The slope of the approach is much more gradual at this east end of the bridge requiring a much longer abutment to appropriately support the end of the bridge at the same height as the west end. The abutment measures 18'-8" across the river-facing elevation and is 27'-0" long. The wing walls of this abutment are thus set back set back against the river bank – some 27 feet from where the abutment engages the bridge structure. In contrast, the western abutment is set flush with the plane of the embankment because the land mass that the western end of the bridge rests on has a more abrupt drop into the river. The western abutment measures 18'-8" across the face but is just 9'-0" long and its wing walls are flush with the wall plane of the primary bridge support. The wing walls hug the gently rounded contours of the steep embankment. The treatment adopted for the abutments again suggests the sensitivity of the designers to the existing landscape. In order to maintain the topography, the bridge design had to be adapted to the extant grades.

Approximately seven feet of each abutment is visible above the water line. The footings of the abutments are excavated several feet below the surface of the river bed. Because the profile of the embankment at the western abutment is abrupt, this abutment/pier is taller to ensure stability (20 feet tall versus the east's 14 feet tall). The abutments taper from approximately 6'-10" at the foot to 1'-7" at the top. Rubble stone facing of the concrete abutments begins at the surface of the river bed and continues to the underside of the capstones.

Stone facing is affixed to concrete masonry with a two inch mortar backing set with horizontal and vertical anchors and dowels supporting metal "s" hooks. Stones are supported by the "S" hooks – 1 hook per stone under eighteen inches long, 2 hooks per stone over eighteen inches long. Specifications for the work read as follows:

Individual stones when set in the wall shall have no face dimension less than 8 inches or greater than 24 inches. They shall have a maximum thickness of 10 inches and a minimum thickness of 6 inches, measured perpendicular to the face of the wall.

Where the stone facing is built separately from the concrete body of the structure, the space between the granite facing and the concrete shall be completely and compactly filled with stiff 1:2 cement mortar, rodded and tamped as the work proceeds.

The facing shall be built up not more than 2 courses, or the equivalent for irregular stone, ahead of the backing. The backing may be placed only when

the mortar joints in the facing have set sufficiently to prevent seepage of moisture from the backing.<sup>231</sup>

The stones themselves were to have a certain aged appearance to better imitate the antique quality of the bridge. Specifications for the stone were as follows.

Stones for the facing shall consist of sound, durable fieldstone . . . They shall be free from seams, cracks or other structural defects and of a rough, irregular appearance having an approximately flat face. They shall have a gray weathered appearance.<sup>232</sup>

Similar attention was given to the selection of the granite capstones on the abutments. Specifications required the following of the material selected for the capstones.

The stone shall have a medium to dark gray color to simulate a weathered appearance and shall match the color of the existing fieldstone masonry facing in so far as practicable.

It shall be of rough irregular finish similar to Quarry Faced Granite conforming only approximately to the dimensions shown on the plans.

Used stone which has weathered sufficiently to obtain the desired color and which is sound and durable in the opinion of the Engineer, may be used if it is satisfactory as to finish.<sup>233</sup>

The abutments of the new bridge therefore combined a new structural underpinning of durable modern materials with the use of historically accurate surface materials and careful attention to maintaining the contours of the present topography. This combination of new technology and materials with historic appearance and surface treatments is found in all elements of the bridge construction.

Piles. The 1956 Bridge structure is supported by eighteen piles – three piles to each bent of the bridge. Piles are of southern long leaf pine and measure at least 12 inches in diameter. They were to be “peeled but not made smooth.” They were treated with a 5 percent solution of Pentachlorophenol in compliance with the Federal and American Wood Preservers’ Association Specifications. After application of the preservative, piles were thoroughly cleaned and dried to be “receptive to painting.” Paint was applied once the piles were in place and extended from the butts to the water line. The paint used on the piles was Cabot’s Creosote Gray Shingle Stain #345 or equal.<sup>234</sup>

In preparation for sinking the piles, boring data was collected from the river bed in 1955 by John J. Boyle of Dorchester, Massachusetts. Boyle took the measurements from eleven test boring sites for the purpose of design and to show conditions at boring points. He encountered a combination of sand, gravel, peat and clay before reaching the refusal line for each test location. Piles are from 20 to 30 feet long and were driven at least 10 feet into the river bed. Construction drawings describe the requirements.

Treated piles to be driven to a capacity of 15 tons, but shall have a penetration to at least the refusal line as shown on the borings. Jetting or

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<sup>231</sup> Whitman and Howard, engineers. Specifications “Old North Bridge,” p. 2. (Massachusetts Highway Department and Concord Department of Public Works.)

<sup>232</sup> Specifications, 1956, p. 2.

<sup>233</sup> Specifications, 1956, p.2.

<sup>234</sup> Specifications, 1956, p. 1.

pre-boring will be required if necessary in the opinion of the Engineer to obtain adequate penetration.<sup>235</sup>

To ensure stability of the piles, the engineers devised a system of pile anchors. Specifications and drawings referred to this device as a Pile Anchor Assembly. Every pile of the bridge would be reinforced with a Pile Anchor Assembly. Wood Preserving News reported the use of the anchors as follows.

A unique scheme has been adopted to prevent scouring of the channel bed around piles. Pile anchor assemblies are slid into place around each driven pile and tamped securely until they are seated firmly in the channel bottom. These anchor assemblies are constructed in the form of a shallow box made of steel plates with angle irons at each corner projecting down as legs to penetrate the mud. The anchor assembly box is then filled with concrete by tremie or other pouring arrangements, and the concrete is allowed to set before any superstructure is mounted.<sup>236</sup>

The anchor assemblies appear to be boxes made of 3/8" steel plates on four sides and bottom. Boxes measured four by six feet with a 16 inch diameter hole in the center for the pile to thread through. Prior to filling with concrete, specifications note that bridge headers should be bolted in place at the top of the piles and any adjustment or necessary movement of the piles be made. Once the piles and headers were in the correct position, the anchor assembly box was filled with concrete. It was also noted that adequate time should be taken for the concrete to set before any superstructure is mounted on the bents.

From photographs taken during construction, one can see that the bridge was built bent by bent beginning on the west abutment and moving east. One photograph shows three bents of the bridge completed, a fourth nearly complete, the fifth having the piles set into the river, and the sixth not even begun. Stringers were added in a similar fashion beginning at the west end of the bridge and moving east as the bents were completed.

Additional support was added to the bent structure with the addition of a cross brace stretching from pile header to the water line on each bent as well as a horizontal sash girt at the water line below the cross brace. The cross braces and girts are of 3 x 8 inch rough sawn lumber and are bolted with one inch bolts with single curve spike grids. This additional bracing at each pile provide the necessary rigidity to the framing pieces of the bridge that receive the most stress from seasonal river conditions. At the same time, the cross braces and girts are not so rigid as to prevent the bridge some flexibility under those same conditions. Engineers specified the use of just five bolts per cross brace, one in each corner and one in the middle. Horizontal girts had a single bolt per pile. (No such bracing appears to have been present on the historic bridge. Batter piles on several bents were used to augment the piles at least in the 1760 bridge.)

Bridge superstructure. Framing members of the bridge superstructure included; pile headers and fillers, horizontal sash girts and diagonal bracing, stringers, deck planking, rails, rail posts, and bracing. (See figure 48 for labeled drawing.) All lumber for the bridge was to be southern long leaf pine. All lumber was pressure treated with a paintable type, 5 per cent solution of Pentachlorophenol.<sup>237</sup> Wood

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<sup>235</sup> Construction Drawings, *Proposed 1955 Flood Bridge, Concord, North Bridge Over Concord River*, March 1956. J. C. Rundlett, Bridge Engineer. Cover Sheet. (Drawings in the collection of the Massachusetts Highway Department and the Department of Public Works, Concord, Massachusetts.)

<sup>236</sup> "Concord Bridge of Revolutionary War restored with pressure treated wood," *Wood Preserving News*, Vol. 7, 1956, p. 20. (Minute Man NHP Archives.)

<sup>237</sup> *Specifications*, 1955, p. 3

used was treated and supplied free of charge by a firm in Nashua, NH, called Koppers Coke.<sup>238</sup> Bridge specifications also detailed the following requirements for construction.

All lumber and timber shall be accurately cut and framed to a close fit in such a manner that the joints will have even bearing over the entire contact surface. No shimming will be permitted in making joints.

Deck planks, stringers, pile headers and pile bracing shall be rough sawn. Fence posts, rails and bracing shall be hand hewn to the approximate dimensions shown on the plans.

The deck planks shall be milled to a uniform thickness on the heart side and shall be laid milled side down, with ¼-inch openings between, so that no two adjacent planks shall vary in thickness by more than 1/16 inch.<sup>239</sup>

The broad outlines of the bridge structure are similar to historic descriptions with the piles of each bent carrying a hefty cap or header which in turn carry the stringers that span the length of the bridge. The posts of the railing are also carried by the header standing flush against the outside stringers. The stringers carry the planked decking. The fencing on the bridge is a post and rail design. All of these elements are similar to descriptions that have been found in period documents. The differences are found in the manner in which the bridge is held together and the many stabilizing features that were added to the design.

Caps, or pile headers are not one solid timber but are formed of a pair of 4 x 16 x 20 inch timbers flanking the notched butt ends of the piles. Pile headers are bolted firmly to the notched butt end as well as to the stringers above. Headers extend beyond the width of the bridge approximately 2'-3" on each side in order to carry outrigger braces to the railing posts above. (No such braces were present on the historic bridge.)

There are five lines of 8 x 12-inch stringers. Like the pile headers, stringers are not made up of one long piece of timber. Instead, each of the five bridge stringers consists of seven pieces, each approximately 13 feet long running continuously from east to west with breaks occurring above each pile bent. Steel connector plates are used to join each 13 foot section of stringer. In addition, each stringer piece is bolted into the pile header below with 24 inch drift bolts. A cross brace of small dimensioned lumber was added between the stringers. Resting on top of the pile header, this cross bracing provides additional support to the deck framing. Stringers and braces are rough sawn. The ends of each stringer (east and west) are bolted through the stringers to the concrete of the abutment with 24 inch anchor bolts.

The deck of the bridge is formed of three inch deck planks measuring 8 to 10 inches wide. Specifications for the deck planks were as follows.

The deck planks shall be milled to a uniform thickness on the heart side and shall be laid milled side down, with ¼-inch openings between, so that no two adjacent planks shall vary in thickness by more than 1/16 inch.<sup>240</sup>

Deck planks are cut to fit around railing posts and are nailed to each stringer with two double grip spikes. The decking is 9 feet above the water line.

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<sup>238</sup> Garrelick, p. 209.

<sup>239</sup> Specifications, 1955, p. 3.

<sup>240</sup> Specifications, 1955, p. 3.

The fencing of the bridge is a post and rail fence with a total of nineteen panels of fence running the length of the new construction. Four panels are found at the western approach, fourteen panels span the river, and one last panel is located at the western approach. (Similarly, the 1760 and 1788 bridges had fourteen panels of railing per side of bridge.) Panels are made up of two posts, a top rail and a lower rail. Posts are affixed to the exterior face of the exterior stringers with two ¾" square head bolts. Six of the posts spanning the river rest upon the pile header extensions. These posts each have a diagonal brace reaching from the end of the pile header to the top of the post. Flatheaded wood screws affix the brace to the post while the foot of the brace is bolted to the pile header. Dimensions of the posts resting on the pile headers and posts on the abutments are 6" x 6". All other posts and the diagonal braces measure 4" x 6".

The top rails (i.e. hand rail) of the fencing measure 4" x 7" with a bevel on the top inside edge. This top rail appears to rest squarely atop the bridge posts and is affixed with two spikes at each post. The bottom rails measure 3" x 8" with a bevel tooled along the top inner facing edge. Pockets are cut into the posts approximately two feet down from the top of the hand rail. Bottom rails are inset into pockets and affixed with four inch flat head wood screws. All timber used in the upper structure of the bridge (posts, rails and braces) are tooled with traditional tools to effect a hand hewn appearance. Likewise, all screw and bolt holes in the upper structure are plugged with two inch wood plugs to simulate the pegs found in mortise and tenon joinery. All wood with the exception of the underside of the deck planking was to receive two coats of Cabot's Creosote Gray Shingle Stain #345.

Construction of the bridge was finished in September 1956. The completed bridge had the appearance of age with the benefits of modern technology and materials. The use of many structural enhancements such as; pile anchor assemblies, concrete abutments, use of structural steel elements and fasteners, the use of chemically treated wood, cross bracing of pile bents, horizontal girts at each pile bent, outrigger braces for rail posts, and cross bracing between stringers have considerably extended the life of the bridge.

Despite the many structural enhancements, there was great care taken to ensure that the historic, antique nature of the bridge was not compromised. The sensitivity to maintaining the grades and profiles of the surrounding landscape, the use of painted stains on all timber to ensure an "aged" appearance, the specification of stone that was not too smooth and had a darker aged appearance, tooling the surface of the rails, braces, and posts with historic carpentry tools to approximate a hand hewn appearance, and camouflaging visible bolt holes by inserting wood plugs in imitation of the wooden pins found in mortise and tenon framing all contributed to an appearance of venerable age. The designers of the 1956 bridge were charged with constructing a wooden bridge that resembled the historic bridge present in 1775 while ensuring that the bridge was extremely durable. They chose not to build an exact replica of the 1775 bridge but understood that creating a patina of age was important to the aesthetic success of the design. As a result, structural enhancements function extremely well but are carefully blended into the overall design.

The bridge was dedicated on September 29, 1956 by Governor Christian A. Herter and was placed under the jurisdiction of Concord's newly created Committee on Parks and Historic Monuments. The same year the federal government passed Public Law 75, creating the Boston National Historic Sites Commissions whose task it was to investigate the possibility of working with local towns and societies to establish a program for the preservation and interpretation of the most important Colonial and Revolutionary sites in Boston and vicinity.<sup>241</sup> In 1958 recommendations were made by the commission to

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<sup>241</sup> Dietrich-Smith, CLR, 2002, p. 79. (Citing Public Law 75-84<sup>th</sup> Congress – Chapter 144 – 1<sup>st</sup> Session – S.J. Res.6.)

establish a park to be known as Minute Man consisting of four miles of the battle road and 155 acres surrounding the Old North Bridge.<sup>242</sup>

On September 21, 1959, Public Law 86-321 created the Minute Man National Historical Park. The park opened to the public in 1960.<sup>243</sup> The park entered into a cooperative agreement with the Town of Concord for the joint management of the bridge, monuments and markers in the North Bridge unit of the park. In the agreement it was set out that the Town of Concord would retain ownership of the “historic structures, objects, and grounds in the Battle Ground area” but would allow the National Park Service to occupy the grounds for the “purpose of preserving, exhibiting, and interpreting them to the American people and otherwise utilizing them for national historical park purposes.” The National Park Service in turn agreed to

operate and maintain the structures, objects, and grounds and make all repairs thereto; remedy all defects in the structures and objects which may arise from any cause whatsoever, including ordinary wear and tear; and undertake such work of restoration or major alteration as may be mutually agreed upon...<sup>244</sup>

The agreement further explained the relationship as follows.

It is the purpose of both parties to this agreement to develop a unified, long-range program of preservation, development, protection, and interpretation for the area for the inspiration and benefit of the people of the United States, and, to secure this result, a high degree of cooperation is necessary with each other, and the parties hereto pledge themselves to consult on all matters of importance to the program.<sup>245</sup>

Thus began a long series of land use and planning studies for the area – some implemented and some not implemented. Management of the landscape is well documented in the Cultural Landscape Report for the North Bridge Unit of Deborah Dietrich-Smith (Olmsted, 2003) and will not be examined in this report. Photographs taken in 1962 by Historic American Building Survey (HABS) photographer Jack Boucher show the bridge in excellent condition. All of the bridge elements - abutments, piles, railings, planking and bracing appear to be in great condition.

Park files do reveal that some damage to the bridge occurred in June of 1969. Apparently, several sticks of dynamite were used to vandalize the bridge. Damage to the bridge was on the north side approximately half way across the bridge. The end of one stringer was damaged and half of a post was broken and splintered. The upper rail of the panel was split at the ends and four deck planks were splintered or blown off at the ends. (See figures 70-73.) Repairs to the bridge were made by preservation carpenter, Mike Fortin of the park’s maintenance staff. Repairs to the bridge were complicated because of the simulated adze marks on the timbers to give the appearance of hand hewn lumber. The “delicate job of perfectly matching the work” was accomplished in an “outstanding” fashion by Fortin.

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<sup>242</sup> Dietrich-Smith, CLR, p. 79. (Citing Boston National Historic Sites Commission, “Interim Report,” pp. 18-22.)

<sup>243</sup> Dietrich-Smith, CLR, p. 79. (Citing Minute Man National Historical Park, “Record of Decision, July 6, 1989,” p. 2.)

<sup>244</sup> “Cooperative Agreement Between the Town of Concord, Massachusetts, and the National Park Service Relating to the Town Property Known as the Battle Ground Area.” Effective July 1, 1963, p. 3. (Minute Man National Historical Park Archives.)

<sup>245</sup> *Ibid.*, p. 4.

After hours of practice with historic woodworking tools, he [Fortin] was able to create the effect of hand hewn lumber to perfectly match the undamaged portions of the bridge. All the lumber used was first cut to size, notched where needed, simulated adze marks produced, and then pressure-treated with pentachlorophenol. After the pieces were placed into the bridge, a wood bleach was applied so that the new lumber would have the same weathered appearance as the remaining portions of the bridge.<sup>246</sup>

The next significant work on the bridge that is documented appears to be work on the abutments to prevent erosion. A set of undated drawings from the Concord Public Works Department identify this project as construction drawings for "Erosion Prevention Work for the Abutments of the North Bridge." The drawings specify that the work was "completed by the National Park Service." David Leonard's 1973 Historic Structure Report references proposed abutment work including heightening the rip-rap walls. Leonard was not in favor of the work mainly because it called for the removal of existing mature trees.<sup>247</sup> Despite his misgivings the work was carried out probably in anticipation of the bicentennial of 1975. Therefore, the drawings of the Erosion Prevention Work date to ca. 1973-1975.

The Bicentennial Anniversary of the Battle in 1975 was a huge event at the bridge drawing crowds in excess of 15,000 and featuring a speech by President Gerald Ford. Photographs of the event show the banks of the river flooded and the water level below the bridge up to the horizontal girts on each pile bent. No grievous damage from this event or flood was reported.

Judging from the historical record, general maintenance on the bridge must have been an ongoing concern. However, detailed records of the bridge during park service stewardship are scant. Just one repair is documented in the existing maintenance file. In October of 1991 seventeen planks were replaced in kind and fifty-six planks were turned over. At the time, the bridge had a total of 163 planks with 10 spikes per plank. Details of the job include the following:

All planks are pressure treated southern Yellow Pine. Size of original planks 2 ¾ x 7 ¾ x 14. Size of replaced planks 2 ¾ x 7 3/8 x 14.

Purchased 4 x 8 x 14 stock and surfaced lumber to 3 ½ x 7 3/8 x 14 dimensions. Planed to 2 ¾ thick in 1/8/ increments.

All the 7 inch spiral galvanized spikes pulled were reused except for 20 which were replaced with regular galvanized spikes.

All support beams and trestle were in excellent shape.<sup>248</sup>

A structure inspection report dating to June of 1996 finally documents serious deterioration of the North Bridge. The bridge was inspected by the U. S. Department of Transportation, Federal Highway Administration. The findings of the resultant report gave the bridge a "C" rating.

Bridge is deficient, functionally obsolete, presents a moderate safety hazard, or needs a high degree of maintenance.<sup>249</sup>

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<sup>246</sup> United States Department of the Interior, National Park Service, Boston National Park Service Group. Benjamin Zerbey, Superintendent, Memorandum. "Completion of Repairs to Old North Bridge," December 19, 1969. (Minute Man NHP, Superintendent's Files.)

<sup>247</sup> Leonard, *Historic Structure Report*, p. 17

<sup>248</sup> Minute Man NHP, Maintenance File, provided by curator Terrie Wallace, July 2003.

<sup>249</sup> "Structure Inspection Report, Supplemental Report, Old North Bridge Over Concord River," (U.S.

The report recommended "Rehabilitation and/or Reconstruction." Deterioration was documented throughout the bridge. The deck, railing, piles and bracing were rated in "poor condition." The primary abutment support was rated in "good condition." Abutment wing walls were rated in "fair condition." Pile headers/caps were rated in "satisfactory condition." No part of the bridge received an "excellent" rating although the drainage, bearing seats, channel, approach surfacing and the embankments were rated in "very good condition." Some of the specific problems that the inspection identified are listed below.<sup>250</sup>

- Moderate to severe checking and decay of timber decking and railings.
- Moderate to severe checking and decay of exterior stringers; minor checking and decay of interior stringers.
- Minor checking and decay of timber caps; moderate at cantilevered areas.
- Upstream faces of pile bents #2 and #3 have areas of abrasion and moderate section loss due to debris and ice flow. Several bracing members are severely deteriorated with minimal connection to piles remaining.
- One loose and one missing stone at Southwest wingwall. Minor deterioration of mortar joints throughout stone masonry wingwalls.
- Minor deterioration of stone masonry mortar joints.

Despite the significant deterioration identified on the bridge elements, the rehabilitation project did not commence. A second inspection of the North Bridge was carried out by the Childs Engineering Corporation in August of 2002 and found conditions very similar to those found in 1996 by the Department of Transportation.

The 2002 team found that the deck and rail system was heavily weathered and "generally in poor condition." Over half of the bridge deck planks had severe to moderate dry rot. The railing system showed 10-25% section loss and heavy checking. Interior stringers were in good condition and the exterior stringers were in fair condition with heavily weathered faces. Pile caps were in good condition with few areas of damage. The upstream piles were in fair condition due to debris impact and ice damage. The interior piles were in good condition. The pile bracing was in poor condition. Several of the pile anchoring systems were undermined. Split tops of the piles were in poor condition due to dry rot. The abutments and retaining walls were in good condition.<sup>251</sup>

The 2002 engineering report reflects the current conditions at the Old North Bridge. The report was conducted as a part of the restoration efforts scheduled to begin at the bridge in 2004. The restoration efforts include the participation of engineers, architects, historians, interpreters, architectural conservators, and park maintenance. This Historic Structure Report is one of the planning documents to be used by the interdisciplinary team assembled for the project. The report will be used to help determine the treatment of the Old North Bridge. The following section of this report is intended to help the decision making process by identifying the Character Defining Features of, and the Recommended Treatment for, the North Bridge.

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Department of Transportation, Federal Highway Administration, June 15, 1996), p. 2.

<sup>250</sup> Ibid., pp. 3-4.

<sup>251</sup> Childs Engineering Corporation, Topside and Underwater Inspection of North Bridge, August 21, 2002. (Minute Man National Historical Park, Superintendent's Files.)



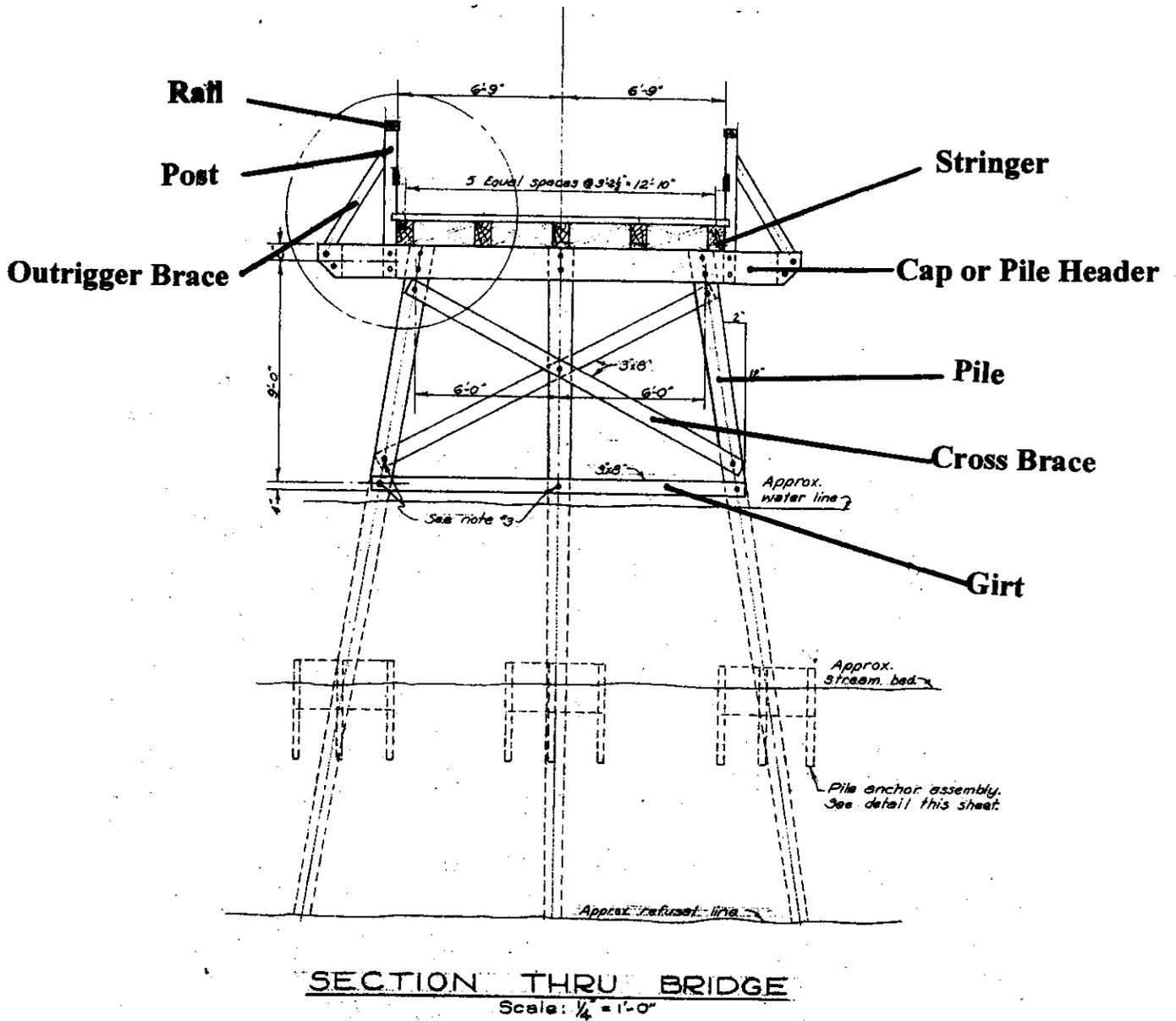


Figure 48. Section through bridge, construction drawings by Whitman and Howard, 1956. Labels added by J. Sullivan, 2003. ("Proposed 1955 Flood Bridge, North Bridge over Concord River, March 1956," Concord Public Works Department no. U138.001.)

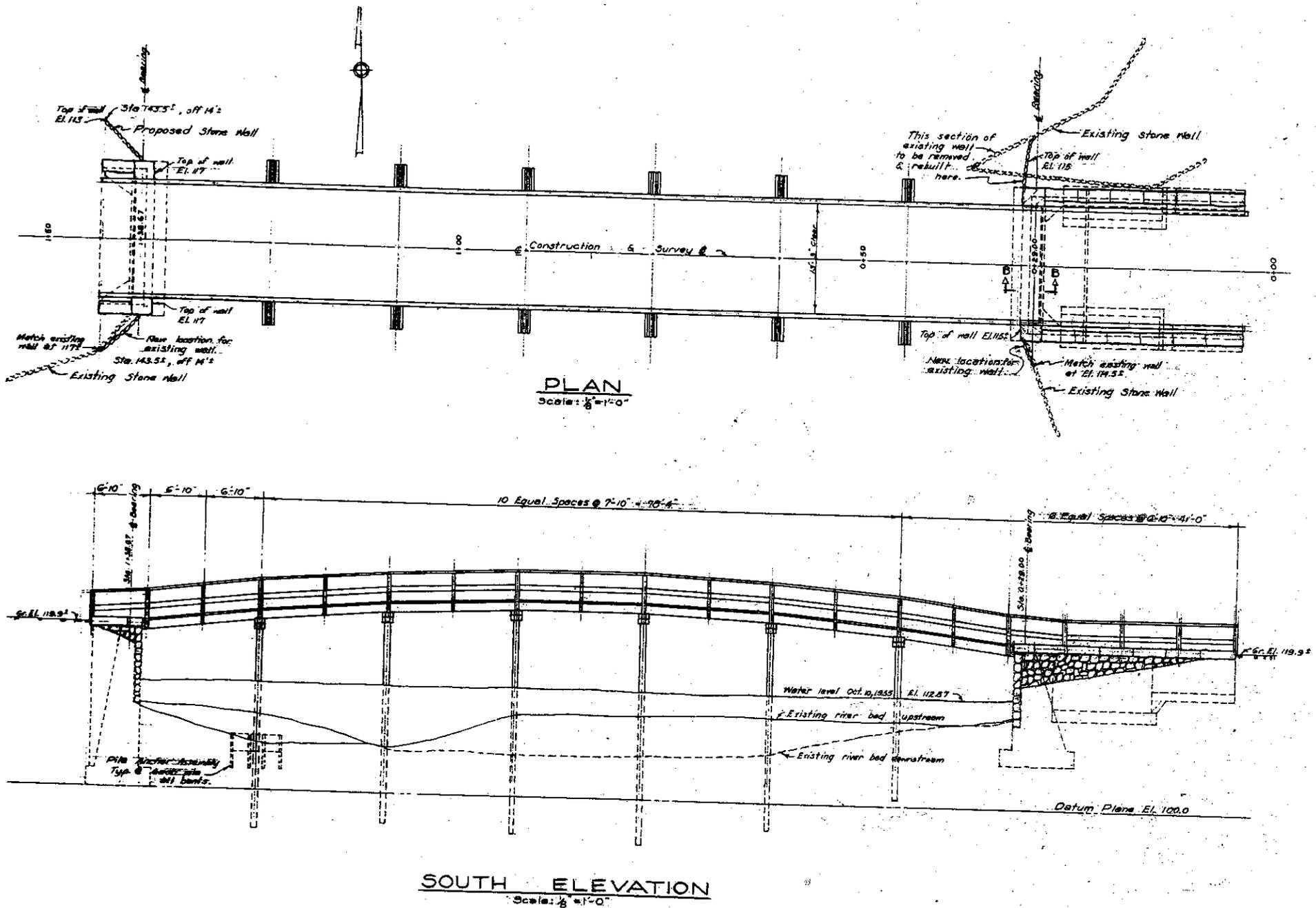
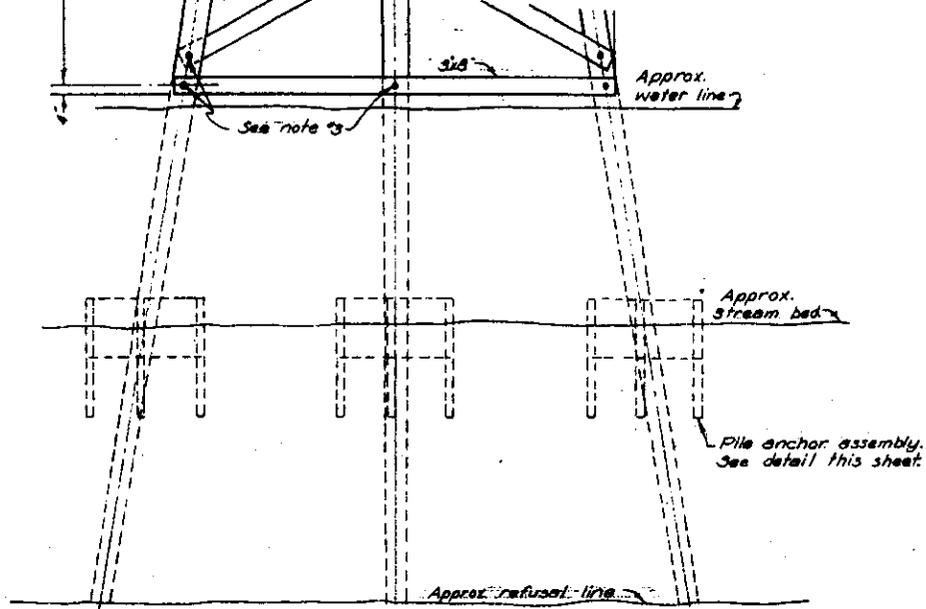


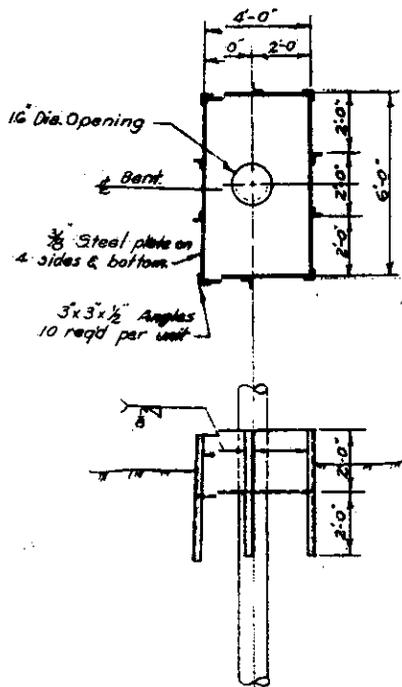
Figure 49. Plan and south elevation of North Bridge, construction drawings by Whitman and Howard, 1956. ("Proposed 1955 Flood Bridge, North Bridge over Concord River, March 1956," Concord Public Works Department no. U138.001.)



**SECTION THRU BRIDGE**

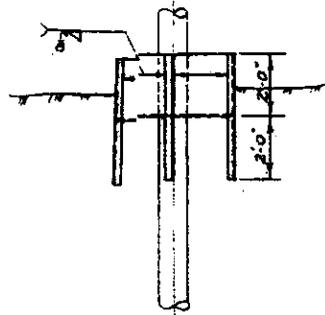
Scale:  $\frac{1}{4}'' = 1'-0''$

**PILE ANCHOR ASSEMBLIES**



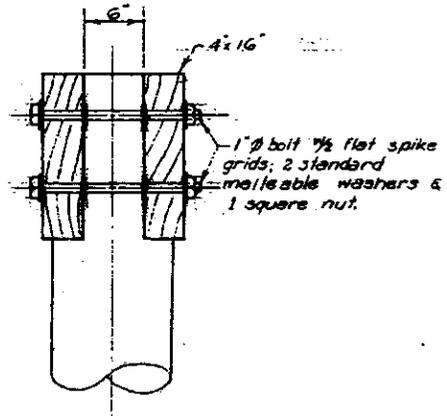
Note:

Pile anchor assemblies are to be slid into place around the driven pile and tamped securely until in the opinion of the Engineer it is firmly and evenly seated in the stream bottom with the legs having full penetration. After each pile in the bent has an anchor assembly in place the header should be bolted in place. Any adjustment or necessary movement of the piles should be made at this time. The anchor assembly box is then filled with concrete by tremie or other approved methods and allowed adequate time to set before any superstructure is mounted. Piles will be driven in accordance with note 1, below.



**PILE ANCHOR ASSEMBLY**

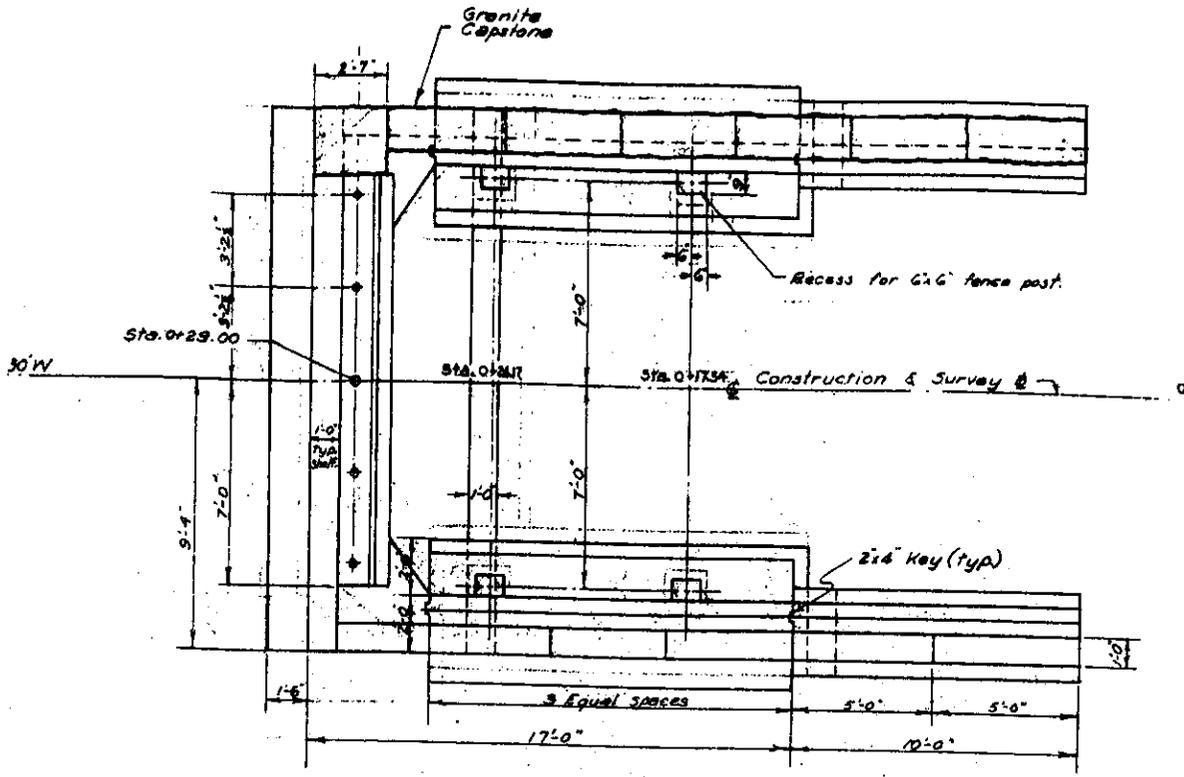
Scale:  $\frac{1}{4}'' = 1'-0''$   
(16 Required)



**SECTION C-C**

Scale:  $1'' = 1'-0''$

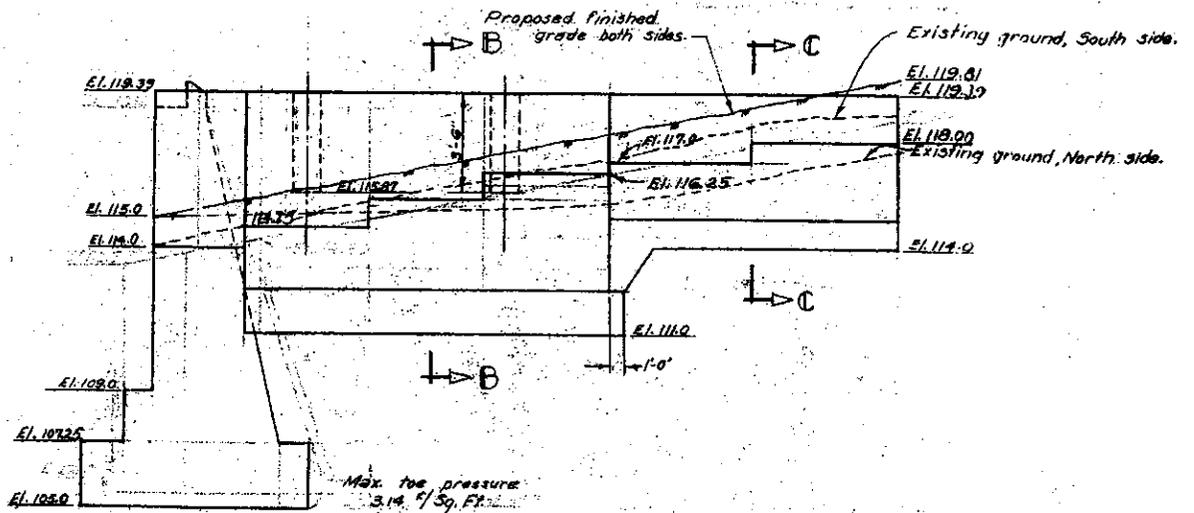
Figure 50. Section, plan and elevation of bridge pile anchor assemblies, construction drawings by Whitman and Howard, 1956. ("Proposed 1955 Flood Bridge, North Bridge over Concord River, March 1956," Concord Public Works Department no. U138.001.)



**PLAN-EAST ABUTMENT**

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

Note: Capstone not shown on South Side.

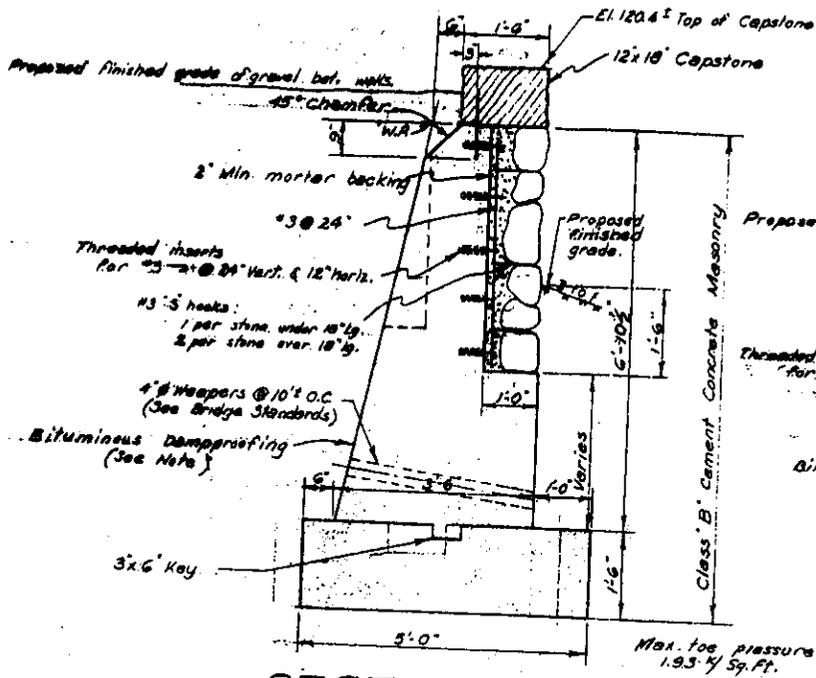


**ELEVATION-EAST ABUTMENT**

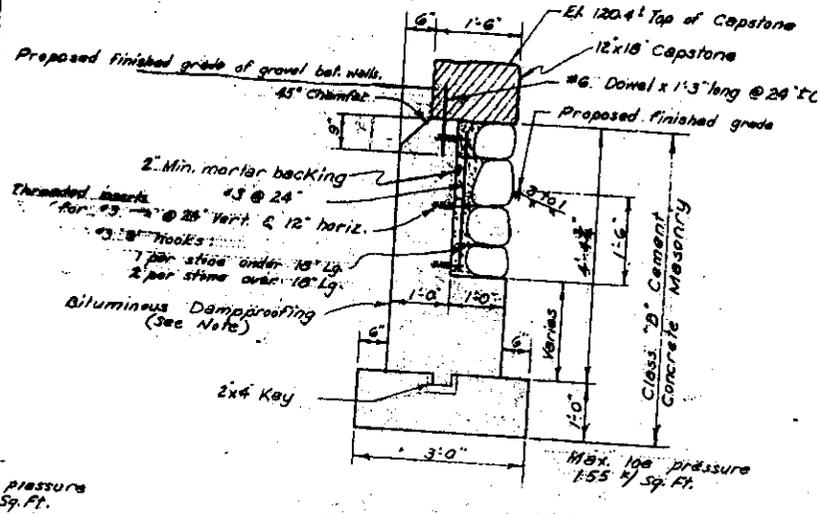
Scale: 1/4" = 1'-0"

Figure 51. Plan and elevation of the east abutment of the North Bridge, construction drawings by Whitman and Howard, 1956. ("Proposed 1955 Flood Bridge, North Bridge over Concord River, March 1956," Concord Public Works Department no. U138.001.)

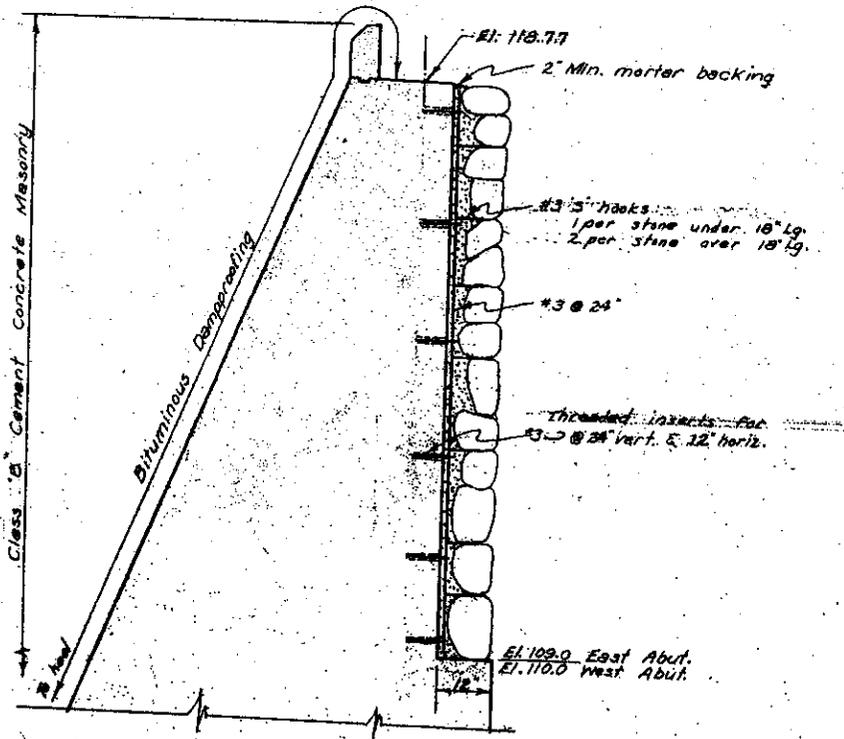




**SECTION B-B**  
Scale:  $\frac{1}{2} = 1-0$



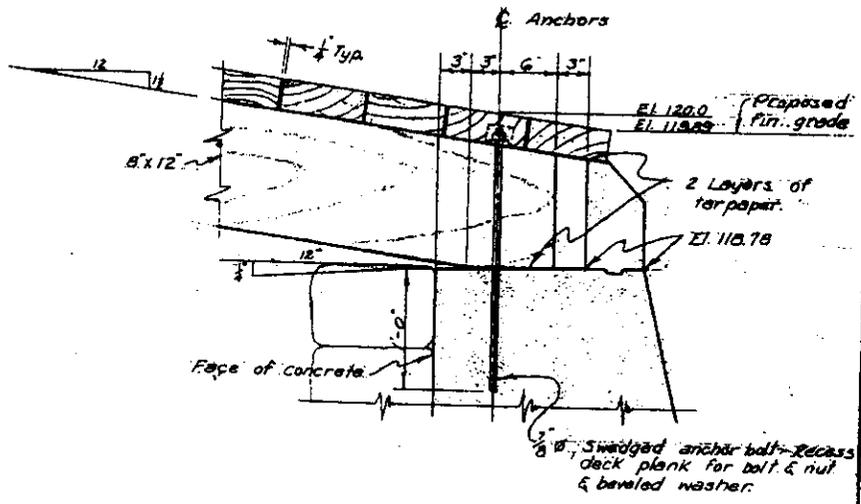
**SECTION C-C**  
Scale:  $\frac{1}{2} = 1-0$



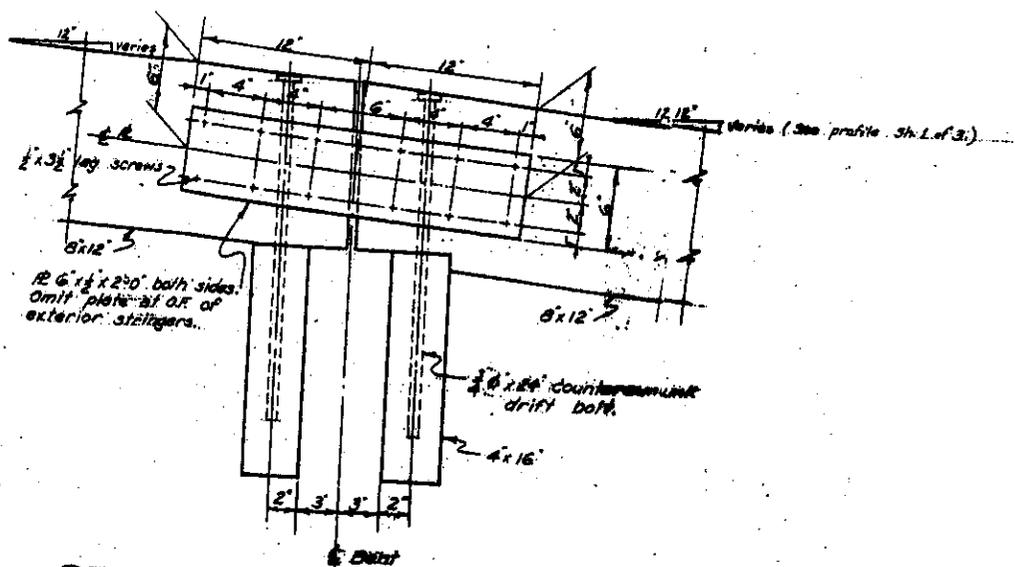
**SECTION THRU WEST ABUTMENT**

Figure 53. Sections through the west abutment of the North Bridge, construction drawings by Whitman and Howard, 1956. ("Proposed 1955 Flood Bridge, North Bridge over Concord River, March 1956," Concord Public Works Department no. U138.001.)





**SECTION B-B**  
Scale: 1"=1'-0"



**STRINGER CONNECTION**  
**(TYPICAL)**

Figure 55. Sections of stringer at pile bent and at the top of each abutment, construction drawings by Whitman and Howard, 1956. ("Proposed 1955 Flood Bridge, North Bridge over Concord River, March 1956," Concord Public Works Department no. U138.001.)



Figure 56. 1909 Concrete Bridge just prior to removal in 1955. Photo no. 1 of a series taken during the construction of the 1956 bridge. (Minute Man NHP Archive Collections, MIMA neg. #337 16/4.1)

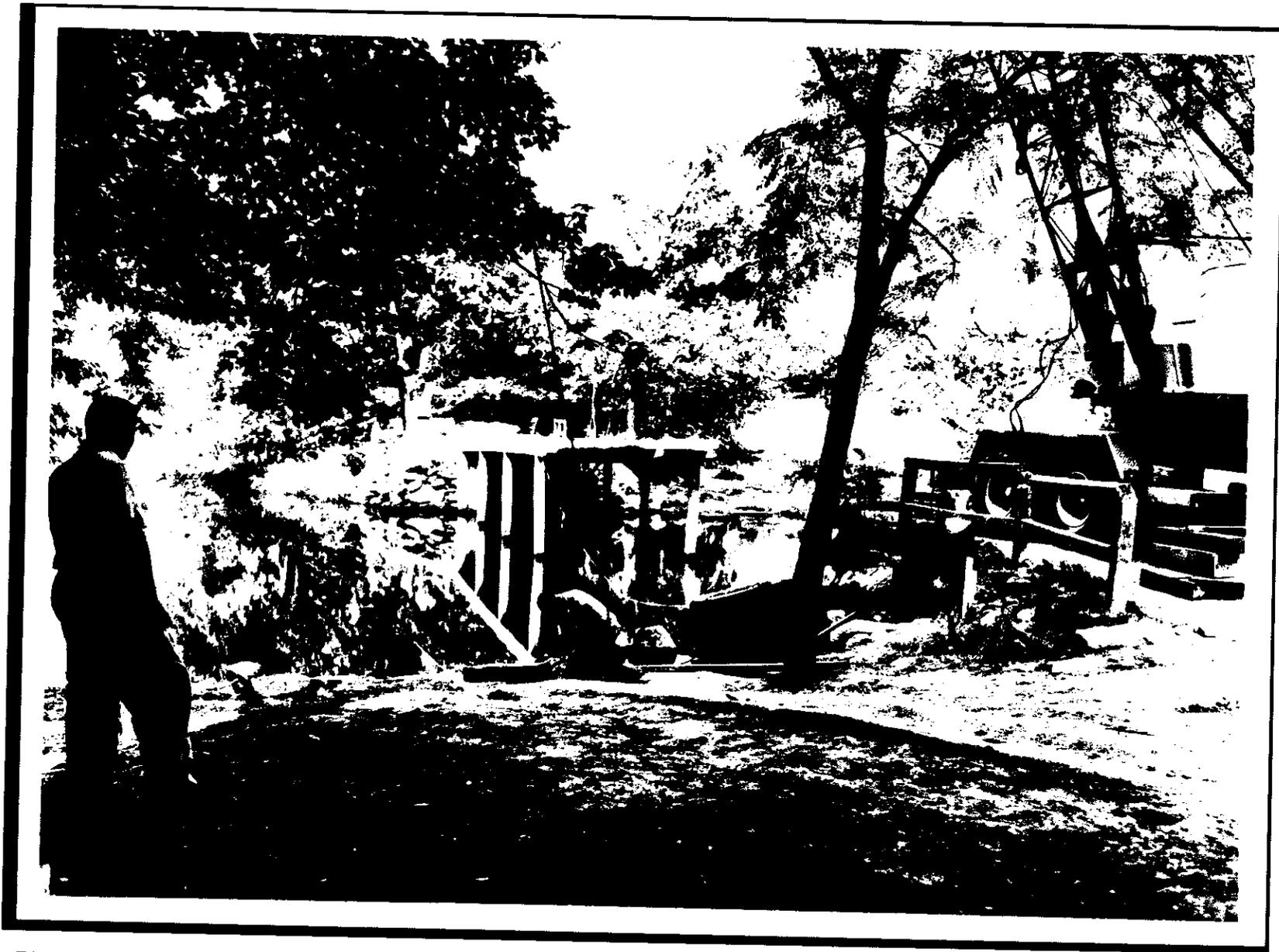


Figure 57. Old North Bridge, removing the 1909 concrete bridge in preparation for new construction, 1956. (Minute Man NHP Archive Collections, MIMA neg. # 337 16/15/4.3)

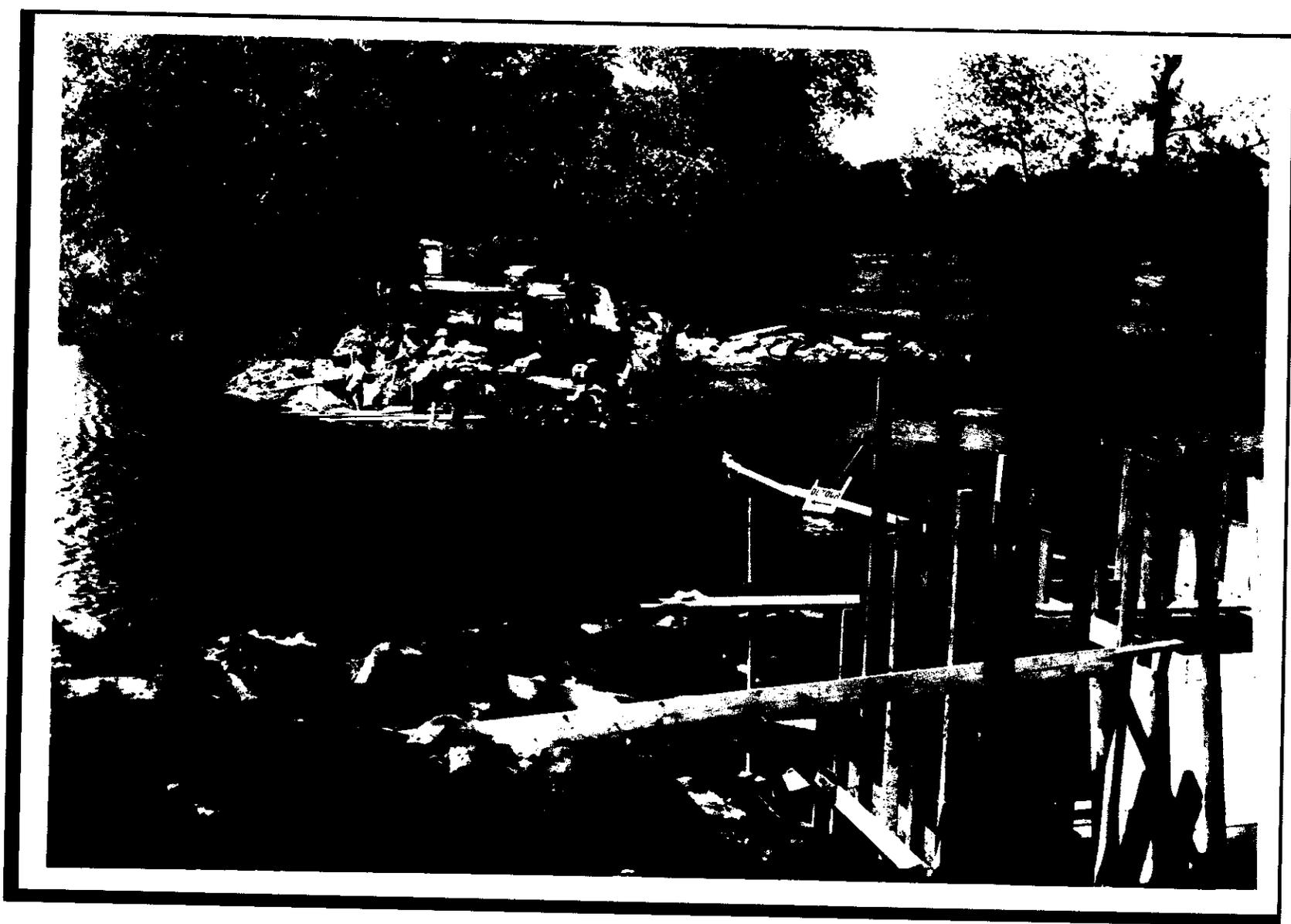


Figure 58. Excavating western abutment during the construction of the 1956 bridge. Whitman and Howard, engineers. (Minute Man NHP, Archive Collections, MIMA neg. # 337 16/5.1)



Figure 59. Construction of rock-faced concrete abutment, 1956. (Annual Report of the Officers of the Town of Concord, 1956. Concord Free Public Library.)



Figure 60. 1956 Bridge, construction of rock-face concrete abutments. View looking west. Whitman and Howard, Engineers.  
(Minute Man NHP, Archive Collections, MIMA neg. # 337 16/4.3)



Figure 61. 1956 Bridge, framing the bridge super structure. Whitman and Howard Engineers. Note tenons cut on ends of piles for framing into mortises in the caps/plates (Minute Man NHP Archive Collections, MIMA neg. #337 16/w/6.5.)

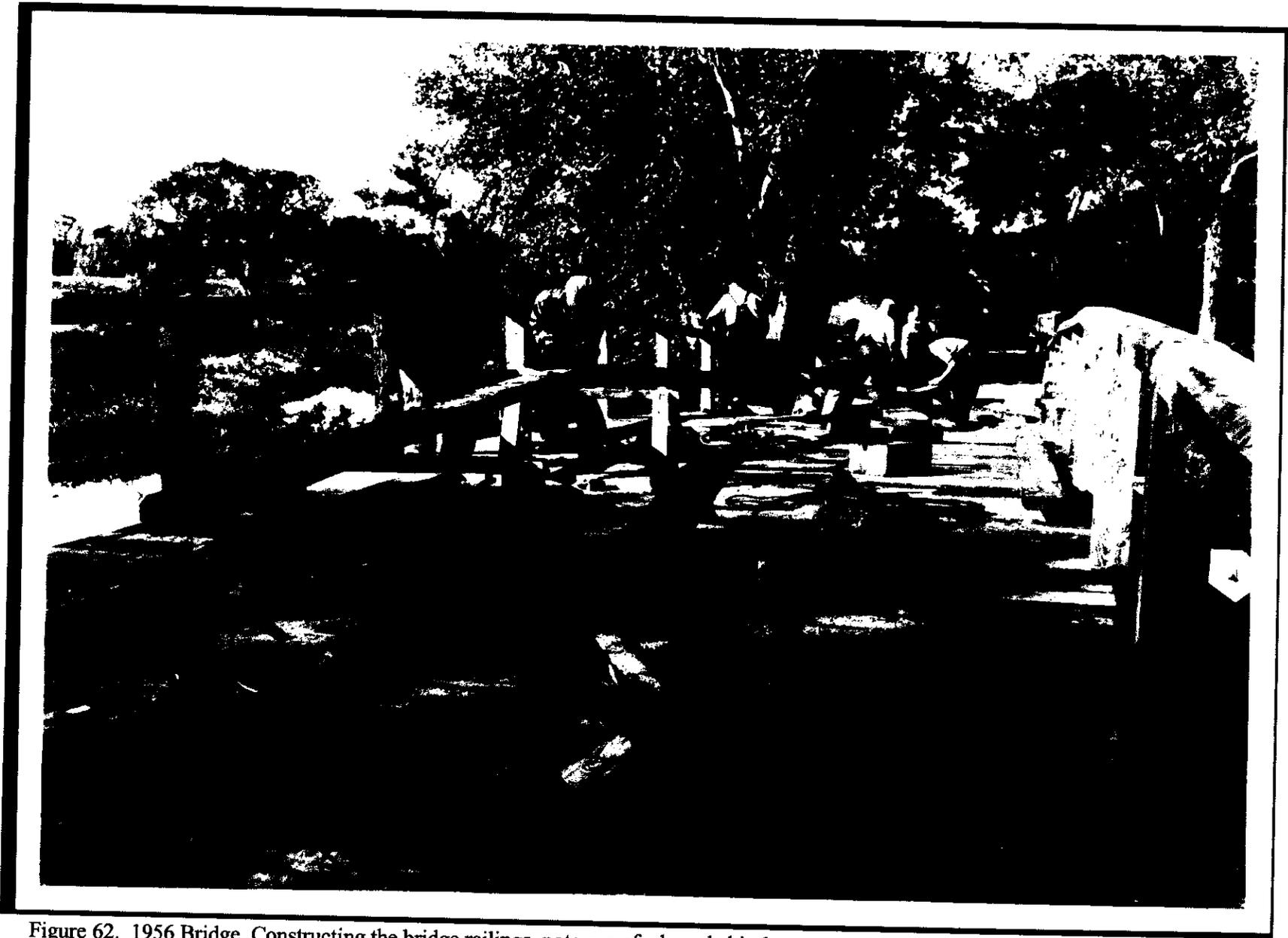


Figure 62. 1956 Bridge, Constructing the bridge railings, note use of adz and chisels to approximate hand-hewn surfaces of posts and rails. (Minute Man NHP, Archive Collections, MIMA neg. #337 16/5.1.)



Figure 63. Construction of the 1956 bridge. Carpenters finishing an outrigger brace by hand with an adz. (Annual Report of the Town of Concord, 1956, Concord Free Public Library.)



Figure 64. The 1956 Bridge completed. View looking west towards the Minute Man Statue. (Minute Man NHP Archive Collections, MIMA neg. # 33716/5-1.)



Figure 65. Old North Bridge at low water (Autumn), ca. 1960. Contact sheet, by M. Woodbridge Williams of Modernage, Custom Darkrooms, Inc. (Minute Man NHP Archive Collections, N. Bridge, Folder #1.)



Figure 66. Old North Bridge, view looking south, ca. 1970. Photo by Fay Foto Service, Boston. (Minute Man NHP Archive Collections, N. Bridge, Folder #1.)



Figure 67. 1956 Bridge by Whitman and Howard, view from the northeast. Photograph by Jack Bouchers, HABS, May 1962. (Minute Man NHP Archive Collections, HABS neg. # 62107.)



Figure 68. 1956 Bridge, view from the east embankment. Photo by Cecil W. Stoughton, NPS, August 1968. (Minute Man NHP Archive Collections, neg. # 68-MIMA-1044-s-frame 11.)

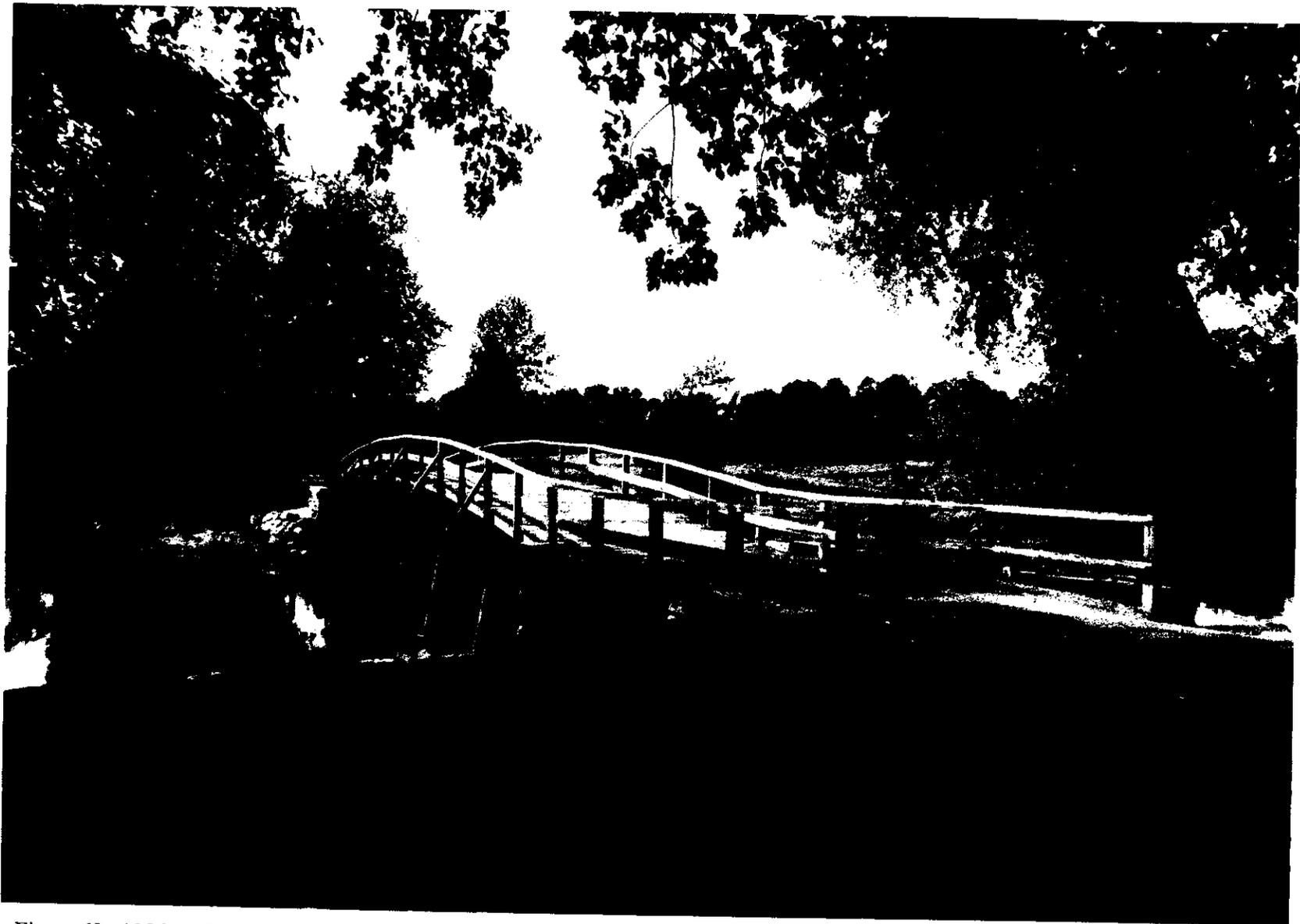


Figure 69. 1956 Bridge, view looking northwest, note gutter in foreground. Photo by Richard Frear, NPS, ca. 1971. (Minute Man NHP Archive Collections, neg. # 70-490-1-33.)

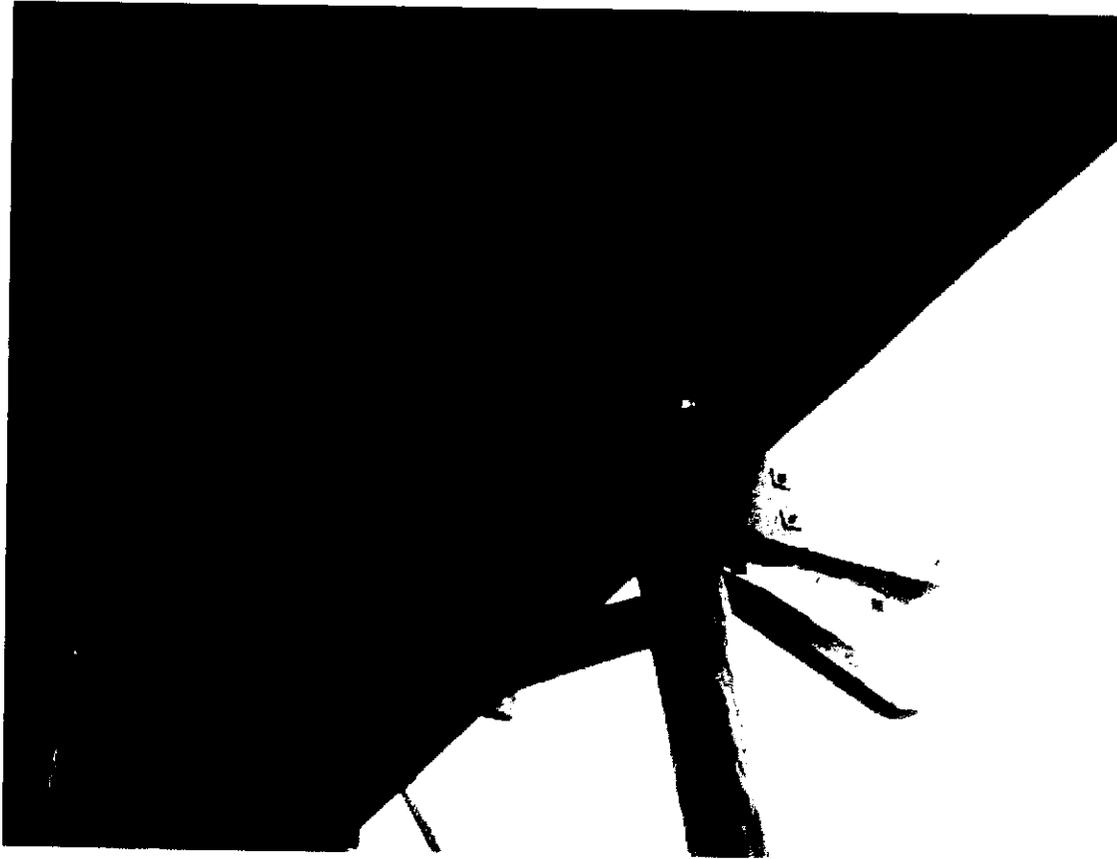


Figure 70. 1956 Bridge showing damage done to decking and pile cap in dynamite blast, 1969. (Minute Man NHP, Damage report in Superintendent's Files for Old North Bridge.)

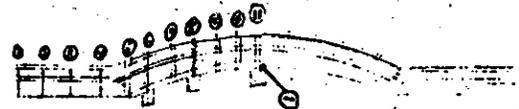
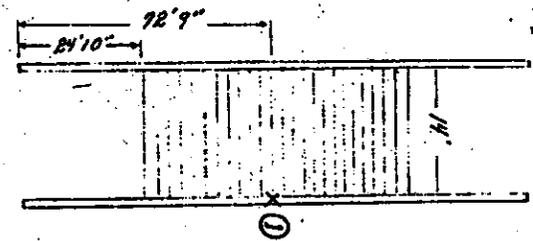
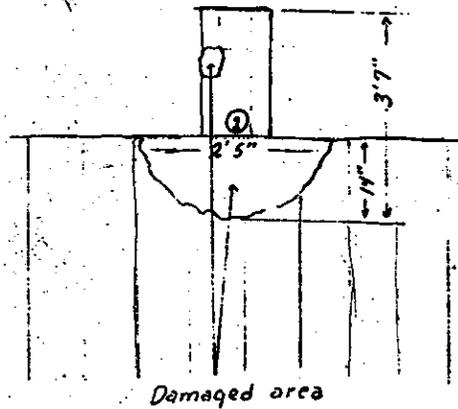
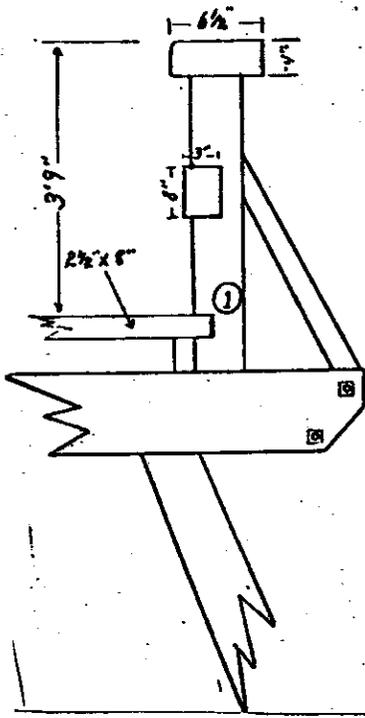


Figure 71. Diagrams of damaged areas of bridge, 1969. (Minute Man NHP, Superintendent's Files, Memorandum, from Benjamin Zerbey, General Superintendent, Boston Group to Regional Director, Northeast Region, January, 1970.)



Figure 72. Photograph of damaged areas of bridge, 1969. (Minute Man NHP, Superintendent's Files, Memorandum, from Benjamin Zerbey, General Superintendent, Boston Group to Regional Director, Northeast Region, June, 20, 1969.)

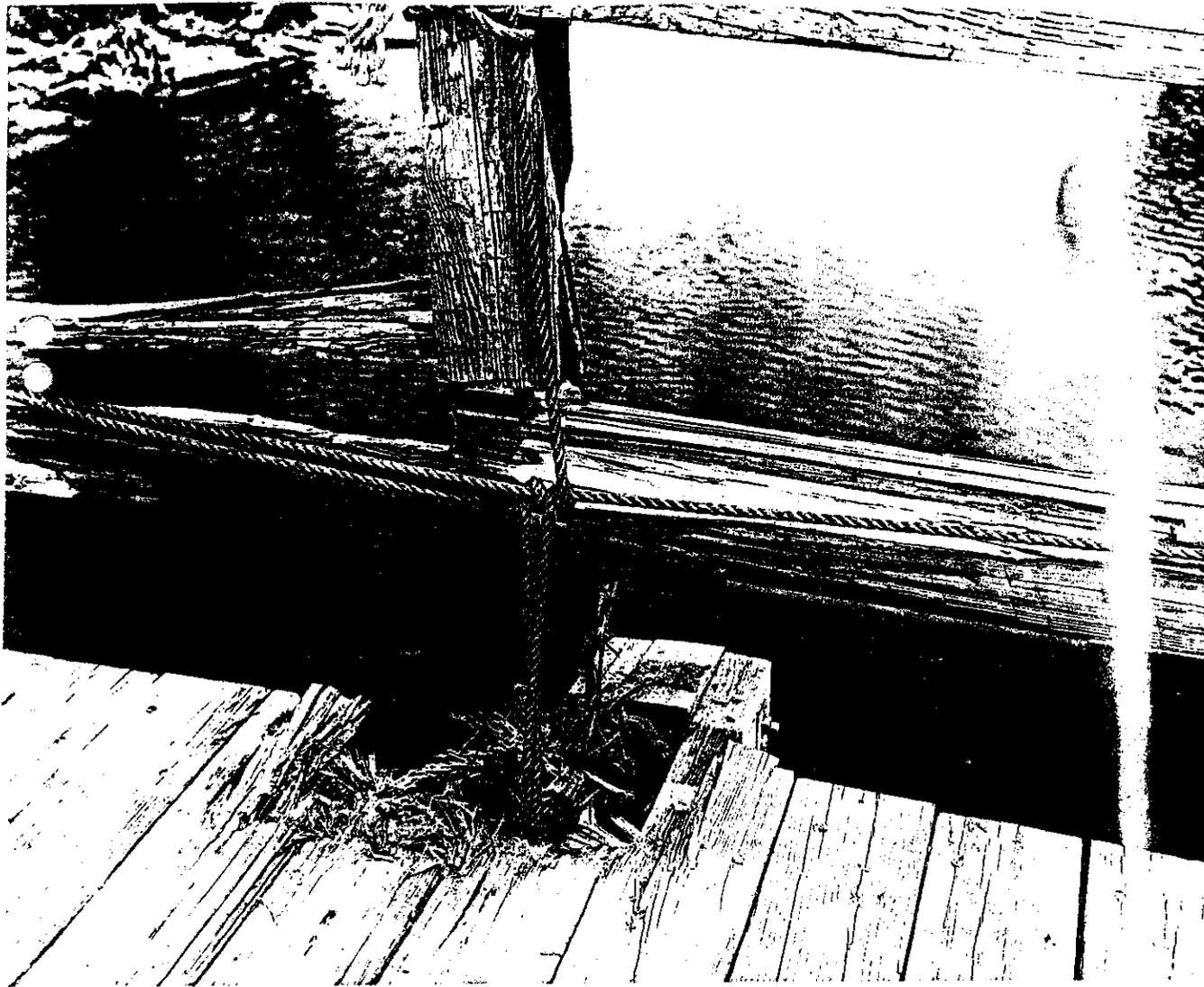


Figure 73. Photograph of damaged areas of bridge, 1969. (Minute Man NHP, Superintendent's Files, Memorandum, from Benjamin Zerbey, General Superintendent, Boston Group to Regional Director, Northeast Region, June, 20, 1969.)



Figure 74. Old North Bridge site during spring flood season, view looking southeast, bicentennial demonstrations, 1975.  
(Minute Man NHP Archive Collections, Bicentennial Scrapbook.)

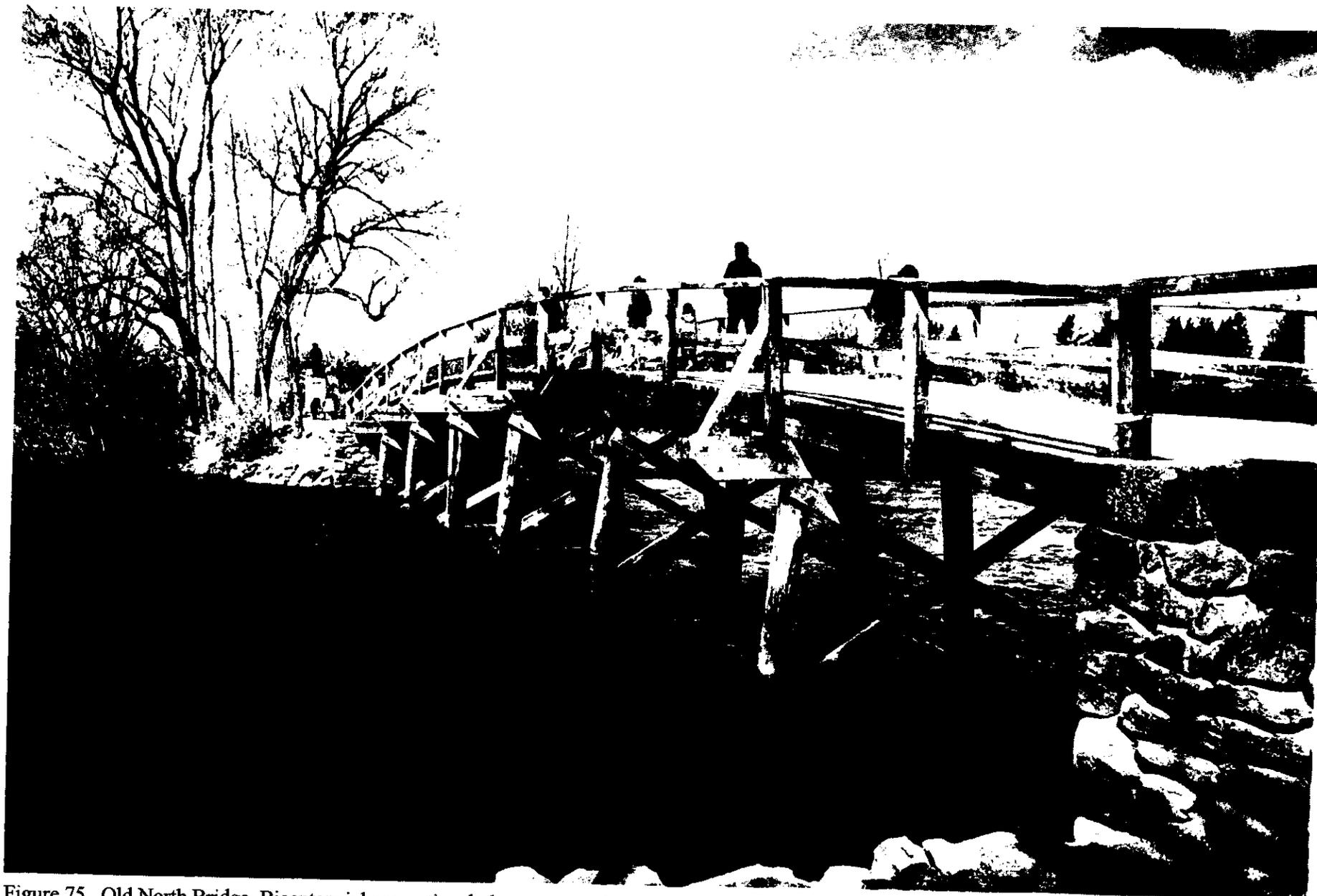


Figure 75. Old North Bridge, Bicentennial promotional photo, spring flood season, 1975. (Minute Man NHP Archive Collections, N. Bridge Folder #1.)



Figure 76. Old North Bridge at low water, view looking west, ca. 1970. (Minute Man NHP Archive Collections, N. Bridge Folder # 1.)

**III. CHARACTER DEFINING FEATURES**  
**AND**  
**RECOMMENDATIONS**

## **Character Defining Features**

The Secretary of the Interior's Standards for the Treatment of Historic Properties focus on two major goals; 1) to preserve historic materials, and 2) to preserve a structure's distinctive character. Identifying the character defining features (the CDFs) of a historic structure is the first step in realizing these goals. Determining CDFs is a critical element in the planning process for the continued use and preservation of historic properties.<sup>1</sup>

A character defining feature of a historic structure may be described as that element or treatment that imparts a certain quality of distinction to the structure and without which the architectural or historical integrity of that structure would be diminished or lost. According to Preservation Briefs 17, a CDF may relate to the overall shape of the structure, its materials, craftsmanship, decorative details, interior spaces and features, as well as the various aspects of its site and environment.<sup>2</sup> A CDF may be solely of an architectural nature or have historical association with a particular event, person, or context. Therefore, a CDF may date to the initial construction of a particular structure or to a later alteration.<sup>3</sup>

To identify those materials, features and spaces that contribute to the visual character of a structure one must first examine the structure from afar to understand its overall setting and architectural context then move up very close to appreciate its materials and the craftsmanship and surface finishes evident in these materials. (In examining buildings, one would also go into and through the building to examine interior spaces and details as well. However, interior observations are not applicable to the North Bridge.) The purpose of this examination is to identify those elements that should be preserved to the maximum extent possible. As Preservation Briefs 17 concisely explains: "If the various materials, features and spaces that give a building its visual character are not recognized and preserved, then essential aspects of its character may be damaged in the process of change."<sup>4</sup>

The North Bridge is listed on the National Register of Historic Places and is recognized as having significance in the areas of Military History and Commemoration.<sup>5</sup> The period of significance for Minute Man National Historical Park - and the North Bridge as a unit in that park - is 1655-1959. The North Bridge qualifies for National

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<sup>1</sup> The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings. Washington, D.C.: Preservation Assistance Division, National Park Service, U.S. Department of the Interior, 1995.

<sup>2</sup> Lee H. Nelson. Preservation Briefs 17 -- Architectural Character: Identifying the Visual Aspects of Historic Buildings as an Aid to Preserving Their Character. (Washington, D.C., Preservation Assistance Division, National Park Service, U.S. Department of the Interior, 1988.)

<sup>3</sup> Carole L. Perrault and Judith A. Quinn. Springfield Armory National Historic Site, Building 19 Historic Structure Report, Volume I. (National Park Service, Building Conservation Branch, Cultural Resources Center, November 1991), pp. 215-216.

<sup>4</sup> Nelson, p. 2.

<sup>5</sup> National Register of Historic Places Nomination Documentation, Minuteman National Historical Park, NRIS Reference Number -02001445. (Accepted November 29, 2002), p. 8.

Register listing under criteria: A) is associated with events that have made a significant contribution to the broad patterns of our history; B) is associated with the lives of persons significant in our past; and C) embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master.<sup>6</sup> The most significant date for the current North Bridge is 1956 – the original date of construction of the present structure. The restoration date for the bridge is therefore, 1956.

An analysis of the architectural and historical data collected on the North Bridge in combination with an extensive visual examination of the bridge led the author of this study to formulate four categories of CDFs for this structure. The categories are: setting, shape, structural system and materials. Each category includes a background discussion, an identification of the CDFs., and a presentation of recommendations to fulfill the preservation of the CDFs.

### **Setting**

The setting of the North Bridge has changed over time from the location of a busy river crossing on a major transportation network to a quiet reflective commemorative landscape with the bridge acting as one of several symbolic icons within the landscape. The current bridge site reflects a concerted effort to maintain a continuum of elements from the development of the site over time with an emphasis on the Revolutionary War period as well as the late-nineteenth century movement leading towards patriotic commemoration.

### **CDFs:**

- Rural landscape of fields, stone walls, natural vegetation
- Natural earthen embankments
- Natural topography
- Tree lined approaches
- Partial recreation of historic highways
- Sightlines over bridge connecting two commemorative monuments
- Interpretive plaques, memorials, and waysides at bridge site to make the bridge an integral element of the commemorative landscape

**Recommendations:** Maintain overall current topography, plantings and landscape features unless changes are determined to be critical for interpretation or for protecting the resources. All changes should be based on extensive research and physical evidence (i.e. period documents and archeology). All changes should be thoroughly documented from the decision making process through any and all construction phases. Documentation should include surveys, photographs measured drawings and written logs.

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<sup>6</sup> National Register of Historic Places Nomination Documentation, Minute Man National Historical Park, NRIS Reference Number -02001445. (Accepted November 29, 2002),

## Shape

The shape of the bridge is an essential element of the structure's overall character. The shape formed by the gentle arch anchored at either end with solid rectangular abutments is perhaps the most dominant feature of the bridge. Although the style and exact dimensions of the bridge have changed over time, the arched silhouette of a structure over the Concord River at this site has been continuous since the seventeenth century. The current 1956 bridge has a distinctive simplicity to its shape. It is linear, geometrical and symmetrical.

### CDFs:

- Gentle arch of bridge superstructure
- Stone abutments anchoring each end of arch - flat wall planes, solid squared volumes.
- Linear/geometrical emphasis of simple functional design
- Symmetry of overall design

Recommendations: Preserve shape of bridge, especially existing extension and profile of arch. Any repairs or restoration should not alter the dimensions, arc, or plan of the 1956 bridge or its abutments.

## Structural system

The North Bridge is currently a pile bent frame bridge comprised of six bents. With the exception of the 1911 concrete bridge, every bridge at this site is believed to have been of similar construction. Unlike buildings, bridges by their nature have an exposed structural system. The appearance of the bridge is largely described therefore by the appearance and readability of its framing system. The exposed structure combines design and function and visually defines the character of the bridge.

### CDFs:

- Exposed structure, simple and functional
- Repeating pattern of verticals, diagonals and horizontals formed by framing
- Bracing (of piles and railing)
- Pile bent units (dominant building block of structure)
- Pile poles (cylindrical, natural shape, natural rough surface)
- Pile caps, sistered timbers projecting out from bridge deck.
- Railing, repeating panels of two-rail fence (individual units)
- Railing, undulating line of railing forms arched profile of bridge (railing as a whole)
- Planked decking laid north to south across width of bridge

- Combined use of modern hardware with overlay of historic building practices (for strength main framing uses bolts, plates, tie-bars etc. but for aesthetics wood plugs and surface treatments imitate eighteenth century carpentry)

**Recommendations:** Retain existing structure of the bridge. When repair or restoration is necessary, replace framing members in kind – dimensions, location, and appearance should match existing pieces. Modifications to the bridge structure should be designed so as to have no negative impact on the CDFs identified above.

### **Materials**

The materials used in the 1956 bridge are extremely important elements of the bridge character. The designers of the 1956 bridge were attempting to replicate the historic bridge of 1775. For general inspiration they turned to the period engraving by Amos Doolittle, but to create an appearance of age they employed craft details and treatments that gave the materials used in construction of the bridge a naturalistic weathered look.

### **CDFs:**

- hand tooled surfaces on rails, posts, and braces to approximate hand hewn appearance craft details)
- Coursing of fieldstone on rock face abutments imitates dry wall construction (craft details)
- Wood plugs inserted over metal hardware to approximate 18<sup>th</sup> century joinery (craft details)
- Rough sawn treatment of deck planks, stringers, pile caps and pile bracing
- Weathered/aged appearance of wood (color and texture)
- Weathered/aged appearance of fieldstone of abutments (color and texture)
- Weathered/aged appearance of granite capstones of abutments (color and texture)

**Recommendations:** All replacement wood used in repairs and restoration should be “aged” in a manner similar to the original materials (i.e. grey stain applied). All replacement wood surfaces should be tooled to match original material where necessary. Any modifications to abutments or bridge materials should maintain a similar weathered appearance. (All lumber except underside of deck planking was originally stained with Cabot’s Creosote Gray Shingle Stain #345.)

**IV. RECOMMENDED TREATMENT FOR NORTH BRIDGE**

## **Recommended Treatment**

The recommended treatment for the North Bridge is RESTORATION. The definition of restoration according to the Secretary of the Interior's Standards for the Treatment of Historic Properties is:

...the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period.<sup>7</sup>

Restoration treatment begins with recommendations to identify the form, materials and features that are important in defining the structure's historic character and are significant to the restoration period. This process is generally referred to as the determining the CDFs of the structure.

Once the CDFs of the property are identified, the Secretary of the Interior's Standards for maintaining and protecting those features are incorporated into the planning stage of the project and used as a guide in the decision making process. The Standards for Restoration that will best inform the restoration treatment of the North Bridge are listed below. The standards identified for a specific treatment of a historic property should constitute the baseline parameters in determining how to proceed with (in this case) the restoration work on the North Bridge.<sup>8</sup>

Restoration is recommended as a treatment rather than Preservation because the standards for Restoration allow for the replacement of deteriorated elements where it is determined necessary. (In contrast, Preservation standards emphasize limited replacement of architectural elements.) The following selected standards are particularly applicable to the ultimate treatment of the bridge as a restoration treatment.

### **Standards for Restoration**<sup>9</sup>.

1. A property will be used as it was historically or be given a new use which reflects the property's restoration period.
3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate and conserve materials and features from the restoration period will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.

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<sup>7</sup> Kay D. Weeks and Anne E. Grimmer, *The Secretary of the Interior's Standards for the Treatment of Historic Properties, with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings* (Washington, D.C.: U.S. Department of the Interior, National Park Service, Cultural Resource Stewardship and Partnerships, Historic Preservation Services, 1995), p. 117.

<sup>8</sup> *Ibid.*, p. 119.

<sup>9</sup> *Ibid.*, p. 118.

4. Materials, features, spaces, and finishes that characterize other historical periods will be documented prior to their alteration or removal.
6. Deteriorated features from the restoration period 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.
7. Replacement of missing features from the restoration period will be substantiated by documentary and physical evidence. A false sense of history will not be created by adding conjectural features, features from other properties, or by combining features that never existed together historically.
8. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
9. Archeological resources affected by a project will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken
10. Designs that were never executed historically will not be constructed. .<sup>10</sup>

The North Bridge is listed on the National Register of Historic Places and is recognized as having significance in the areas of Military History and Commemoration The National Register documentation specifies that;

Although the current North Bridge Landscape is largely a product of subsequent efforts made to commemorate and interpret the event, its significant role as the place where the Revolutionary War began places it among the most important historic sites in the nation.<sup>11</sup>

The documentation specifically considers that, “The 1956 bridge is a contributing structure which illustrates the continuing commemorative importance of the place.”<sup>12</sup>

The period of significance for Minute Man National Historical Park - and the North Bridge as a unit in that park - is 1655-1959. The most significant date within the period of significance for the current bridge is 1956 – the date that the present bridge was constructed. Restoration of the North Bridge will therefore emphasize the protection and maintenance of the design of the bridge from the restoration period (1956). The

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<sup>10</sup> *The Secretary of the Interior's Standards*, p. 118.

<sup>11</sup> National Register of Historic Places Nomination Documentation, Minuteman National Historical Park, NRIS Reference Number -02001445. (Accepted November 29, 2002, Section 8, p. 12. Ibid., Section 7, p. 8.<sup>12</sup>

structure's existing form, features and detailing will be retained where possible and replaced in kind where necessary.

The guidelines for restoring historic structures further explain that the "expressed goal of the Standards for Restoration and Guidelines for Restoring Historic Buildings is to make the building (or structure) appear as it did at a particular time in its history."<sup>13</sup> Furthermore, restoration is qualified by options recommended for the treatment.

As opposed to other treatments, the scope of work in Restoration can include removal of features from other periods; missing features from the restoration period may be replaced, based on documentary and physical evidence, using traditional materials...<sup>14</sup>

The guidelines specifically set out parameters for replacing historic fabric.

In Restoration, replacing an entire feature from the restoration period that is too deteriorated to repair may be appropriate. Together with documentary evidence, the form and detailing of the historic feature should be used as a model for the replacement. Using the same kind of material is preferred; . . . All new work should be unobtrusively dated to guide future research and treatment.<sup>15</sup>

Much of the work undertaken in a restoration treatment (as in preservation treatments) also involves the protection and maintenance of the defining features of a structure. Protection and maintenance generally involve the least degree of intervention and are preparatory to other work (i.e. rust removal, caulking, cyclic cleaning of gutters, limited paint removal). When the physical condition of the CDFs of a structure require additional work, recommended repair actions (for the treatment Restoration) are stabilizing, consolidating, and conserving.

The treatment Restoration is recommended for the North Bridge after careful consideration of the bridge's historical development, significance in history, and physical condition. Because the distinctive materials, features, and setting of the 1956 bridge are extremely well documented and because extensive physical evidence survives for the work - restoration is believed to be the most appropriate treatment.<sup>16</sup> It should be understood that the Secretary of the Interior Standards are not intended to be technical or prescriptive but rather are intended to provide a consistent philosophy that promotes responsible preservation practices and helps to protect irreplaceable cultural resources.<sup>17</sup>

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<sup>13</sup> Ibid., p. 119.

<sup>14</sup> Ibid., p. 119.

<sup>15</sup> *The Secretary of the Interior's Standards*, p. 120.

<sup>16</sup> The General Management Plan and the List of Classified Structures for Minute Man NHP currently identify the ultimate treatment of the North Bridge as "Preservation." The ultimate treatment for the North Bridge should be changed/amended in all planning resources to "Restoration" to reflect the most current research and analysis of the bridge.

<sup>17</sup> *The Secretary of the Interior's Standards*, p. 1.

V. **BIBLIOGRAPHY**

## Secondary Sources:

- Abel, Leland. "Archeological Explorations for Traces of the Historic Roads west of the Great North Bridge in Concord." U.S. Department of the Interior, National Park Service, 1965.
- Dietrich-Smith, Deborah. *Cultural Landscape Report: North Bridge Unit, Minute Man National Historical Park, Site History*. Draft. Olmsted Center for Landscape Preservation, February 2003.
- Evans, Catherine. "Erosion Control and Shade Tree Maintenance for the Trail to North Bridge, Minute Man National Historical Park." Olmsted Center for Landscape Preservation, December 1993.
- Garrelick, Renee. *Concord in the Days of Strawberries and Streetcars*. Concord, MA: Concord Historical Commission, 1985.
- Hoeffler, Michelle. "The Moment of William Ralph Emerson's Art Club Boston Art Culture." Cambridge: MIT School of Architecture - History, Theory and Criticism of Architecture and Art Program, 2000.
- Leonard, David L. *Historic Structures Report, The Great North Bridge and Historic Wall West*. Denver, CO: Department of the Interior, National Park Service, Denver Service Center, 1973.
- Malcolm, Joyce. *The Scene of the Battle. Historic Grounds Report*, Minute Man National Historical Park. Department of the Interior, National Park Service, 1987.
- National Register of Historic Places Nomination Documentation*, Minute Man National Historical Park, NRIS Reference Number 02001445. (Accepted November 29, 2002).
- "The New North Bridge". No author. No date. Minute Man National Historical Park.
- Reed, Roger. *A Delight to All Who Know It, The Maine Summer Architecture of William R. Emerson*. Portland, ME: Maine Citizens for Historic Architecture, 1995.
- Ryan, Michael. "Simple Purpose – Historic Span: The Old North Bridge," The Concord Magazine, November 1998.
- Synecki, Alan, ed. *Archeological Investigations of Minute Man National Historical Park. Volume I, Farmers and Artisans of the Historical Period*, Department of the Interior, National Park Service, 1990.
- Towle, Linda and MacMahon, Darcie, eds. *Archeological Collections Management at*

*Minute Man National Historical Park, Volume 4.* Boston, MA: National Park Service, North Atlantic Regional Office, 1986.

Weitzman, David. *Traces of the Past – A Field Guide to Industrial Archeology*, New York: Scribner and Sons, 1980.

Wheeler, Ruth R. *Concord: Climate for Freedom*. Concord, MA: The Concord Antiquarian Society, 1967.

Wheeler, Ruth R. *North Bridge Neighbors, History of Area B*. Minute Man National Historical Park, 1964.

Zaitzevsky, Cynthia. *The Architecture of William Ralph Emerson, 1833-1917*. Cambridge, MA: Harvard University, Fogg Art Museum in collaboration with the Carpenter Center for the Visual Arts, 1969.

### **Historic Sources and Primary Sources:**

Concord Committee of Arrangements for the Celebration in Concord of the Centennial Anniversary of the Battle of Concord Records, 1873-1876. Concord Free Public Library, Special Collections. Vault A15 Unit C.

Concord Town Records – 1630-1794. Transcribed under WPA work project, 1936. Ancient Records of Concord, Volumes I – VI.. Concord Free Public Library, Special Collections.

Annual Reports of the Selectmen and Other Officers of the Town of Concord, 1874-1956. Bound volumes, Concord Free Public Library, Special Collections.

Harvard University Class of 1882. 25<sup>th</sup> Anniversary Report. Cambridge, MA: Harvard University, 1907), p. 199.

Hudson, Frederick. "The Concord Fight," Harper's New Monthly Magazine, No. CCC., May, 1875, vol. L.

Massachusetts Court of General Sessions.

June 17, 1707 (MIMA Lib micro Roll 17, Harvard 64-214C)

March 1717 (MIMA Lib. Micro Roll 17)

August 25, 1719 (MIMA Lib micro roll 17, Harvard 64-214C)

Pamphlet Collection. 62, 71, 72. Concord Free Public Library, Special Collections.

Photographic Collections. Concord Free Public Library, Special Collections.

Photographic Collections. Minute Man National Historical Park.

Photographic Collections. Society for the Preservation of New England Antiquities.

*Proceedings at the Centennial Celebration of Concord Fight, April 19, 1875.* Concord, MA: Published by the Town, 1876.

Walcott, Charles. *Concord in the Colonial Period, Being a History of the Town of Concord, 1635-1689.* Boston, MA: Estes and Lauriat, 1884.

Whitman and Howard, engineers. "Project Special Provisions, Concord, Old North Bridge, SP56-97F." 1956. [construction specifications]

### **Newspaper Articles:**

"Concord Bridge of Revolutionary War restored with pressure treated wood," Wood Preserving News, 1956.

J.B. Miller. "The Old North Bridge, Only the name has remained the same," The Sunday Independent. Date? (Concord Free Public Library, Special Collections, Pamphlet 72, item 9.)

Wilson, Susan. "Bridge: Span of History," The Boston Globe, April 15, 1993. (Concord Free Public Library, Special Collections, Pamphlet 72, item 9.)

### **Bridges**

American Concrete Institute.

American Railway Engineer's Association.

American Society of Civil Engineers.

Boston Society of Civil Engineers.

American Society for Testing Materials.

Condit, Carl W. *American Building Art, The Twentieth Century.* New York: Oxford University Press, 1961.

Darnell, Victor C. Directory of American Bridge-Building Companies 1840-1900. Washington, D.C.: Society for Industrial Archeology, 1984.

Galer, Gregory Jay. *The Boston Bridge Works and The Evolution of Truss Building Technology.* B.A. Thesis, American Civilization Department, Brown University, 1989.

- HABS/HAER<sup>1</sup>. Boston & Albany Railroad: Kingsbury Street Bridge. HAER No. MA-117. Built 1889. Engineer unknown. Builder, R. F. Hawkins Iron Works, Springfield, Mass. (Compiled by John Healey, HAER Historian, August 1990.)
- HABS/HAER. Duck Bridge, Lawrence, Massachusetts. HAER No. MA-104. Built 1888 by Boston Bridge Works. (Compiled by John Healy, HAER Historian, August 1990.)
- HABS/HAER. North Village Bridge, Webster, Massachusetts. HAER No. MA-99. Built 1871, Engineer unknown, Builder National Bridge and Iron Works, Boston. (Compiled by John Healey, HAER Historian, August 1990.)
- HABS/HAER. Northfield Parker Truss Bridge. HAER No. VT-13. Built ca. 1870 by Boston Bridge Works. (Compiled by Donald C. Jackson and Jean P. Yearby, HAER Historians, 1985.)
- HABS/HAER. Notre Dame Bridge. HAER No. NH-14. Built 1936-37 by J. R. Worcester Company. (Compiled by Donald C. Jackson and Jean P. Yearby, 1985.)
- HABS/HAER. Walpole, New Hampshire-Westminster, Vermont Bridge. HAER No. NH-13. Built 1910-1911 by J. R. Worcester and Company. 1986.
- Mock, Elizabeth. *The Architecture of Bridges*. New York: Museum of Modern Art, 1949.

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<sup>1</sup> Historic American Building Survey, Historic American Engineering Record.

## **VI. APPENDICES**

**APPENDIX A**

**Bridges at the North Bridge Site  
Concord Town Records  
1656-1792**

Abbreviations used in the following listing.

CTR - Concord Town Record  
WPA - Works Projects Administration transcription  
DDS - Debbie Dietrich-Smith, Landscape Architect, Olmsted Center for Landscape  
Preservation, records from her research

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**September 1, 1654** (CTR, WPA, Vol I. P. 164b)

It.: the devitions of the highwaies are as foloweth; The north quarter are to keepe and maintaine all there highwayes and bridges over the great Rivre in there quarter and in Respecte of there gretness of Charg there about, and in Regard of the ease of the East quarter, above the Rest in there highwayes, they are to alow the north quarter three pound; . . .

The limits of ech quarter as foloweth, It.: The north quarter by there familiey are from the north part of the training place to the great Rivre and all to the north sid thereof. . . .

It.: the heighwayes are as folow: the north quarter are to make and maintaine all the heighwayes from the training place to the great Rivre with the bridg, and all that is to be done the north sid thereof:

It.: we doe chose overseers in ech quarter for the faithfull performance of there duty in that case in all particalers so far as may conduce for the profit and good of there said quarters, as to make Rates to pay workemen and to see that all persons come in sesonabl time and keep them to there business faithfully and keep accounts and so see the worke suffisintly don:

**February 17, 1660** (CTR, WPA, Vol I. P. 257a)

The agreement of the Comitties of the County of Middlesex: In Reference to the bridges in Concord and all others in that County as foloweth: Wee of the Committee for bridges in the countie of Middlsex of on second meeting by order of the County Court, upon the 17 day of the second month. 1660. Whose names are underwritten: upon further information, Inquisition, disussion and consideration, have cleerly conceived and concluded, that the Towne of Concord have no just ground of Complaint or allowance from the Countie in Respect of there bridges: for the Resones hereafter expressed: the three bridges they foot and plead upon: are for there owne proper specal and perticuler conscernment, for there sawmill; ironworkes & other occationes and not, necessary for the County or Country and may at there pleasur be deserted;

. . .for avoiding all further truble to Courts & Countie we think mete & conclud that the Twentie pounds formerly granted to Concord be made up thirtie pounds, Teen pounds more in Respect of there charges of that natur, beyond som other Townes in the Countie, which Ten pounds shall be Raised in porportion on Charleston, Watertown, Wooburne, Ridding, Medford and Malden:

Wee conceive and conclude that the Townes of Concord, Sudbury, Lancaster, Billerica, Chalmersford & Groton shall be free from charges to all bridges extant save their own bridges; and as before specified, as also from such bridges as shall be made in whip suffridge as aforesaid.

**1666** (CTR, WPA vol. I., p. 76-79)

Bridge in the SOUTH QUARTER built – 1654 records say “the south Rivre bridge being to be set where the aforesaid Comisioners appointed it as there agreement declares:”

**March 14, 1666** (CTR, WPA, Vol. I p. 32a b)

SOUTH QUARTER. Accounts about the bridge getting timber. General terminology and work required would have been the same on the North Bridge at the time.

“work raying ye bridge”, “framing ye arch”

Work done between March 14 and March 30, 1666 (plus one day in May)

**October 26, 1666** (CTR, WPA, vol. I, p. 175a-b)

Description of property of William Buttrick includes. “foure acres more or less of meadow and upland at the west end of the great bridge...”

**November 4, 1668** (CTR, WPA, Vol. I p. 81a)

SOUTH QUARTER. “worke don in sixty eight logeing and sanding the brige”

**December 16, 1683** (CTR, WPA, Vol. I, p. 105a) *good description of bridge type*

SOUTHWEST QUARTER. A metting of ye south west quarter about providing to mend their Great bridge: doe mutually agree & conclud yt ye **caps of ye arches of ye Great bridg be made new with good sufficient white oake or swamp oake to ye number of five caps ye caps to be eighteen inches in widness fifteen or sixteen feet in length**; also nr ye sd quarter doe mutually agree with Thomas Gooble & Nathanel Billings to **put on ye above sd fives new caps on ye sd five arches in ye midst of ye bridge leaveing ye two outsid arches uncapte**; ye sd quarter engages to ye said Thomas Gooble & Nathanel Billings to give & alow to them ye sd Thomas & Nathanel the sum of Ten pounds in Common Countery pay all common prize Corne or worke; ye sd Thomas Gooble & Nathanel Billing engaging to performe ye above sd worke by ye first of April next ensueing ye date here of ye worke paid to be by the persons whome ye sd Thomas & Nathanel shall desire worke of & no other & ye worke to be viewed by the survayors to the sufficiency of it.

. . .sd Thomas & Nathanel to secuer ye bridge till ye worke bee finished; **also to lyne ye caps where necessity doth require** the sd quarter engages to give to ye above sd Natinal Billings & Thomas Gooble ye sume of one pound ten shillings for ye sd lyning of ye caps in such pay . . .

**September 12, 1699** (CTR, WPA, Vol. 3, p. 406-407) NORTH QUARTER

Whereas at a court of quarter Sessions held at Cambridge for ye county of Middx Septmeber 12, 1699 A warrant was granted to ye Sherriff of sd Coutny to summon a Jury for ye **laying out a convenient highway from Concord to Groton**, & we subscribers being ye persons summoned & swom according to Law for ye performance of sd service have accourdingly done to our best judgment as here after followeth.

Imprimis. Beginning at Concord meeting house & from thence as ye way now Lyeth by ye house of Samll Jones, & so **over ye great River bridge & from thence as ye way is now used, up ye hill Betwixt Thomas Brown Senr. & Samll Buttericks**. Leaving ye houseing & lands of Samll Butterick on ye Right hand untill it coms on ye upper end of Thomas Brown Junr his home lott, & then turning westerly as ye fence now standeth, & along upon ye same point unitll it comes to a small Brooke keeping ye way yt now is, & turning over the sd brooke partly norwesterly & so on up ye hill by Lt. Davises barn running streight forward as ye way now is (unitll it comes unto ye way commonly called fifty acre way & so along sd way saving Green’s land on ye left hand) untill it comes near ye norwesterly end of Mr. Winthrop’s Lands & entring upon ye lands of Thomas Brown Senr., leaving bigest Road on ye left hand & taking a blinde old way on ye Right hand and passing a little brooke called pond Gutter. . . till it comes to the Grotton meeting house . . .

March 9, 1700 (CTR, WPA, Vol. I. P. 113)

SOUTHWEST QUARTER. General description.

. . . inhabitants of ye southwest part of Concord being legaly warned to consider about covering ye great bridg by Ensn Thomas Wheeler & Joseph Daken surveyors at ye house of John Heywood – **it was agreed to cover it with hewn timber & ye work devided by companies to each arch.**

May 26, 1701 (CTR, WPA, Vol. I, p. 113a) SOUTHWEST QUARTER

“Carting gravil & laying timber into the great big causeway by severall persons”

1702 (CTR, WPA, Vol. I, p. 113b) SOUTHWEST QUARTER

“The covering of the great bridg was performed 1702 by the masters of each arch with their company as foloweth . . .”

June 17, 1707 (Court of General Sessions)

The Selectmen of Concord appearing in court by their Town Clerk (Thomas?) Brown to Answer theire presentment for ye Defects of the North Bridge and a highway presented for Defect. Informing the Court that the bridge and highway is repaired to all. The Court accept of their Report & Dismis them \_?\_ paying fees.

April 6, 1710. (CTR, WPA, Vol. I. P. 115) SOUTH QUARTER

At a meeting of the inhabitants of the southwest part of the Town of Concord at the house of John Miles on the 6<sup>th</sup> of April 1710 legaly notified by the surveiors Nicolas Sheraley & George Farrer relating to the great bridg did then unanimosly agree & vote that they would **new cap the bridg with good white oak timber the caps to bee sixteen foot in length & not under 16 inches in bredth & 10 inches in depth & if it can be with conveniency 18 & 12 also to cover sd bridg with string peeces of pine timber 12 inches deep** which work they doe conclude to begin as soon as posible after this date so as the same may bee consumated by the last of June . . . further did agree that sd work should be devided by the surveiors into so many companies as there are arches proportioning the same as equaly as may bee.

March 11, 1717/18 (Court of General Sessions)

The Selectmen of Concord by Mr. Whittemore s Informing the Court that the Bridge & Casway they were [presented?] for its being out of repair, Is now in Tolerable Repair and if ye Casway shall be made better with all Speed, are Dismis paying fees

August 25, 1719 (Court of General Session)

Mr. Benjamin Whittemore one of ye Selectment of Concord, \_\_\_\_ appointed there unto, appearing in Court to answer ye presentment for neglect of repairing or new [making?] ye North Bridge, Informing ye Court that said Bridge is in good Repair and Described ye Surveyors Report of the same accepts the said Court & they Dismisst paying fees.

December 1, 1730 (CTR-Box 2, Roll 4, DDS)

The Selectmen of Concord met and appointed a Town Meeting to be on Tuesday the 22d day of December Currant at the Town house in Concord at one of the clock in the afternoon, about the affairs hereafter mentioned. 1. To See in what way the Town will build the bridge (over the great river) known by the name of the North Bridge.

December 22, 1730 (CTR-Box 2, Roll 4, DDS)

At a General Town meeting of the notable Inhabitants of Concord...

Voted that the present Surveyors take care to provide plank and other materials for the building the Bridge (over the great river) known by the name of the North Bridge.

Voted that there be twenty pounds of the three hundred pounds already granted to defray the charge of highways added to the next Town Rate to pay for plank and other materials for the north Bridge.

**-September 21, 1731** (CTR-Box 2, Roll 4, DDS)

Then payed to Mr. Joseph Fletcher by an order to Mr. Samuel Meriam Town Treasurer for four hundred feet of plank used for covering the great bridge the sum of three pounds and four shillings in full...

**-October 7, 1731** (CTR-Box 2, Roll 4, DDS)

Then paid to Mr. James Russell & Mr. Timothy Heald by an order to Mr. Samuel Meriam Town Treasurer for four Hundred feet of plank used for covering for the great bridge the sum of three pounds and four shillings in full...

**-October 19, 1731** (CTR- Box 2, Roll 4, DDS)

Then payed to Mr. Samuel Jones by an order to Mr. Samuel Meriam Town Treasurer for timber used about building the Great bridge and for a rope worn out and a hook lost in raising said bridge and carting said timber the sum of one pound and two shillings and six pence in full...

**1732** (CTR, WPA, Vol 2, p. 412b) SOUTH BRIDGE

voted that the Town will cover the south bridg in Concord (so called) with good oak plank two inches and an half thick . .

**1736** (CTR, WPA, vol. 3 p. 66a)

It. 7. To see if the Town will allow money out of their Treasury to purchase plank for ye Repair of ye covering of their two Great Bridges. (Voted YES)

**May 31, 1737** (CTR, WPA, Vol. 3, p. 84a-b) SOUTH BRIDGE ?

Then payd by an order to Mr. Joseph Barrett Town Treasurer, to Capt. William Wilson for drawing his Rocks from the Great Bridge (Layd thereon in the spring of the year last to secure it from going Down stream) and making up his stone wall again the sum of thirty and one shillings in full . .

**December 12, 1737** (CTR, WPA, Vol. 3, p. 96a)

Payd to Mr. Josiah Heywood for Labour by him done at Highways & bridges since May Last past and for timber by him (for the north bridge) found to repair sd bridge the sum of thirty & five shillings in full...

**December 23, 1737** (CTR, WPA, Vol. 3, p 101a)

Payd to Mr. Ebenezer Darby for Labour by him done at the North Bridge

**1737/38** (CTR, WPA, Vol. 3, p. 113b)

Articles for consideration. To see if the Town will allow John Laughling of Stow anything for the Loss of his horse that was drowned with his Brother at the North Bridge last spring.

**February 29, 1738** (CTR, WPA, vol. 3, p. 108b)

Payd to Daniel Ross for timber used at the north bridge.

**March 9, 1738** (CTR, WPA, vol. 3, part 2, p. 152a)

Then paid, by an order to Mr. Joseph Barrett TownTreasurer to Mr. Joseph Wright for labor by him done at Highways since May last past & for carting plank to the great Bridge . . . 01-10-6

**May 11, 1738** (CTR, WPA, Vol., 3 p. 121a)

Payd to Coll. John Flint for 269 feet of plank (by him sold to Repair the Great Bridge in the month of May curreant) the sum of forty & three shillings in full . . .

**June 2, 1738** (CTR, WPA, Vol. 3, p. 128a)

Then paid to Mr. Jonathan Buttrick (for carting plank to ye great bridge to repair the same, & one days labor done at sd Bridge, performed on the second day of May Last past) the sum of twelve shillings in full . .

**June 6, 1738** (CTR, WPA, Vol. 3 p. 128a)

Payd to Mr. Jonathan Blood for one Hundred feet of oak plank by him procured to cover the Bridge by Coll. Flint & for Labour by him done at Highways since May 1737 the sum of eighteen shillings in full . .

**June 29, 1738** (CTR, WPA, Vol. 3, p. 129a)

Payd to Mr. Samuel Jones of Acton for five hundred feet of oak plank purchased of him by Mr . Jonathan Ball surveyor, in May Last past to Repair the Great Bridge the sum of four pounds in full.

**May 3, 1739** (CTR, WPA, Vol. 3 p. 159b)

Payd to Decon Samuel Miles for Labour by him done and timber by him provided to Repair the North Bridge in the year 1737 the sum of thirty eight shillings and six pence in full.

**July 16, 1739** (CTR, WPA, Vol. 3, pt. 2, p. 167 a-b)

Payd to William Wheeler jun. For Labour by him done at Highways and for four sticks of Timber by him provided to Repair the North Bridge since May 1737...01-16-0

**March, 1740** (CTR, WPA, vol. 3, pt. 2, p. 216a)

Payd to Thomas Jones for his own and others Labour at Highways since May Last past and for timber to repair the great Bridge...03-01-7

**March 28, 1740** (CTR, WPA, Vol 3, pt. 2, p. 198b)

Paid to John Hunt "for Labour by him done at the Highways in the year last past and for Timber to Repair the great Bridge..." 03-02-9

**November 14, 1740** (CTR, WPA, vol. 3, pt. 2, p. 204a)

Paid to Ephraim Brown for sawing plank for the great Bridge and for Labour by him done at Highways...in 1739.

**March 16, 1741** (CTR, WPA, vol. 3, pt. 2, p. 253a)

Payd to Ephraim Browne for two hundred of oak plank by him sold to Thomas Barrett surveyor to Repair the Great Bridge in the summer last past ... 50 shillings.

**March 17, 1741** (CTR, WPA, vol. 3, pt. 2 p. 253)

Payd to Mr. John Hunt for Labour by him done at the great Bridge since May last past...5 shillings

**Feb. 28, 1742** (CTR, WPA, vol. 3 pt 2 p. 274a)

Payd to John Brown for Labour at Highways since may last past & for **spikes for the great Bridge**

Feb. 23, 1744 (CTR, WPA, Vol. 3, p. 324a)

Payd to Ephraim Jones for money by him payed to Mr. Mason for Entering cautions & for Rum for Raising the north Bridge...

May 16, 1745 (CTR, WPA, Vol. 3, p. 336b)

Cooperative Maintenance of Bridges and Highways. - ...the surveyors of Highways be ordered to notifie all such persons Living near the part of Highway or Bridge, which he mends, as he shall think able to work at the same (viz) that the wages for labour to be done at Highways or Bridges from this time to the middle of September next, according to old Tenor, shall be six shillings p day for a man – and six shillings p day for a team of three or four cattle & a cart – and from the middle of September to the middle of October four shillings p day for a man – and for a team of three or four cattle & a cart four shillings p Day – and from the middle of October to the middle of November if necessity call for Labour to be done at highways or Bridges two shillings and six pence p Day for a man – and for a team of three or four cattle & a cart three shillings p Day – and from the first of April to the first of May for a man four shillings p day – and for a team as above described four shillings p day, to be payd out of the Town Treasury.

1747 (CTR, WPA, Vol. 4, p. 5c)

Voted that there be the sum of ten pounds old Tenour allowed out of the Town Treasury, to John Ball to enable him to **make a stone wall on one side of the way Lately Layd out** through the Lands of John Barrett & Jonathan Buttrick junr in the northardy part of Concord.

March , 1748 (CTR, WPA, Vol. 4, p.10)

Articles for consideration. It. 2 To see whether the Town will Lay out a way and build a bridge over the River near Mr. John Flints or thereabouts where it will be found most convenient, agreeable to the Request of Mr. David Whitaker & others.

It. 3. To see whether the Town will agree to Rebuild the great north Bridge and also to see whether the Town will agree to have an open way of three Rods wide where there is now only a bridle way, from Mr. John Hunts gate to Abishai Brown.

In answer to the Second article wherein is contained the Petitions of David Whitaker William Hunt and others, that the Town would **Lay out a way & Build a Bridge over the River, near John Flints**, The Town by accepting of the Report of the Comttee who were chosen and sent out by the Town to view and consider of the same, **dismissed said Petition.**

In answer to the third article the Town **do allow and approve of an open way** of three Rods wide being layd out from sd Hunts Gate to said Abishai Browns in case the Petitioners cleare the Town of any cost in Purchasing siad way.

*[John Flint refused to serve as constable shortly after the petition was denied and paid a fine of 10 pounds old tenor. Samuel Butterick and John Barrett also refused and paid fines. March 1748. Was this their response to petition being dismissed?]*

February 7, 1748 (CTR-Roll D14, DDS)

The Petition of William Hunt & Others for a Bridge at John Flints

February 8, 1748 (CTR, Roll 014, DDS)

Gentlemen

These are to Desire you to Insert some Proper Article in your next warrant for a Town Meeting to See Whether the Town will agree to Rebuild the Great North Bridge (which is very much Gone to Decay) and also to See whether the Town will Agree to have an open way of Three Rods wide when there is now

only a Bridle way from Mr. Hunts Gate to Abishai Browns and hear the Requests of those who are apprehensive they shall be benefitted by such an open way.

**March 20, 1748** (CTR, Roll 014)

We the Subscribers agreeable to a Vote of said Town, and at the Request of Mr. John Hunt and others Inhabitants thereof Layd out an open way where there is now only a bridle way viz: from said Hunts Gate that stands a cross the Way Some Distance from and Eastward of this Dwelling house, the bound marks of said way as staked by us are all on the southwardly and southwestardly side of the same, and from those boundaries to extend northwardly and northeastwardly so as to make said way full Three Rods in width from the one End thereof to the other ... [signed by Selectmen of Concord]

**December 12, 1748** (CTR, Roll 014)

We whose names are hereunto Subscribed do hereby Promise and oblige our Selves to pay to Messors John Hunt and Abijhai Brown the Respective Sums set against Each of our names within one month after the said John Hunt and Abishai Browne shall open a Three Rod way to the acceptance of the town from said Abishai Browns to the Gate between said John Hunt & John Batemans & oblige themselves their heirs and assigns to keep open the same forever & never shut it up again ....

\_\_\_\_\_, 1749 (CTR, Roll 014, DDS)

Warrant for Feb. 20, 1749 meeting:

3. To see Whether the Town will accept of an open Highway Layd out by the Selectmen in March Last from Mr. John Hunts Gate to Mr. Abishai Browns. *[meeting minutes not found]*

**March 6, 1749** (CTR, Roll 014, DDS)

The Town of Concord to Joseph Hayward Jr.

March 8: 1748 – 160 feet of Plank for the Great Bridge	6-8-0
Janr. 6: 1749 – 75 feet of plank for the Bridge above	3-0-0
Febr 20: 1749 – 190 feet of planks -----	7-11-0
Total	16-19-0 Old Tenor

**March 9, 1749** (CTR, WPA, Vol. 4, p. 19c)

Paid to Mr. Simon Hunt for Timber and work done at the North Bridge and at Davis's Bridge old Tenour Two pounds Seventeen shillings in full...

**July 3, 1749** (CTR, WPA, Vol. 4, p. 18)

Payd to Dapt. Ephraim Brown for five Hundred feet of Oak plank by him delivered at the Great Bridge in the north part of Concord in May Last, in order to cover said Bridge the sum of fifteen pounds old Tenour in full.

**Dec. 5, 1749** (CTR, WPA, Vol. 4, p. 22a)

Labour at Highways & Bridges in sd Concord.  
Samuel Heald  
David Parlin  
Joseph Parlin

**Dec 17. 1750** (CTR, WPA, vol. 4, p. 33c)

Payed to Samuel Jones of Acton for 750 feet of plank for the Bridge, L1:17:0

**October, 1750** (CTR, Roll 014, DDS)

Warrant for November 12, 1750 meeting.

3. To See Whether the Town will purchase or otherwise agree with Capt. Jonathan Buttrick for a part of his Land near the Great North Bridge in order to make the way wider over the Causey.  
*[meeting minutes not found]*

**Nov. 20, 1750** (CTR, WPA, vol. 4, p. 32a)

At a General Meeting of the Votable Inhabitants... After a Considerable Debate on the Third Article and a Comtee being Sent to view the Proposed alterations of the way near the North Bridge the Inhabitants of the Town Came into the following vote vizt. – Whereas the way over the Causey at the westerly End of the Great North Bridge is not thought to be Convenient as might be and Catp. Jonathan Buttrick appearing and offering to give a slip of Land in order to make the way wider and more convenient upon condition the Town will be at the Cost of making a good and Sufficient wall on the Line.

Therefore voted that the said wall be made at the Charge of the Town as Soon as Conveniently may be where it has been projected and marked out.

**Oct. 7, 1751** (CTR, WPA, vol. 4, pt. 1. P.?)

Payd to Abishai Brown – for work done at the stone wall by the North Bridge and to Ennable him to pay them that he Employed in that Service...L4-14-06.

**November 25, 1751** (CTR, WPA, vol 4, pt 1, p.)

Payd to Mr. Simon Hunt ...for Digging and Drawing Rocks for the wall near the North Bridge in December and February Last. LI-0-2 ½

**January 20, 1752** (CTR, WPA, vol. 4, pt. 1p. )

Payd to Mr. Joseph Hayward...for Plank for the North Bridge..22 shillings & 8 pence

**February 7, 1752** (CTR, WPA, vol. 4 p. 50b)

Paid to the Several persons hereafter named by an order to Mr. Ebenezer Hubbard Town Treasurer the Several Sums Let against each of their names for work done at the wall near the North Bridge in the year 1750 ... honble. James Minot Esqr., Thomas Jones, Jonathan Harris, Humphrey Barrett.

**January 1, 1753** (CTR, WPA, vol. 4, pt.1, p. ?)

Paid to Josiah Hayward...for two hundred feet of plank for the Bridges.

**Feb. 25, 1756** (CTR, WPA, vol. 4, pt.I p.?)

Paid to Simon Hunt for ... plank for North Bridge.

**Nov. 21, 1759** (CTR, WPA, vol. 4, p 169)

Town meeting. To consider and conclude on the following articals vizt.

1. To See if the Town will choose a Comtee to Pitition the Great and General Court for Liberty to Sett up a Lottery for the Rebuilding the Great North Bridge and for the Repairing the four Causways and the Bridges over the South and North Rivers/Said Comtee to be Managers of Said Lottery agreeable to the Request of Lt. Joseph Wheeler & others to See in what way and manner theTown will Rebuild the North Bridge.

**Dec. 5, 1759** (CTR, WPA, vol 4, p. 170a)

General Town Meeting. . . the Question was Put wheather the Town will choose a Comtee to Petition the great and general Court for a Lottery to Rebuild the great north Bridge and Repaireing the four Causways and Bridges over the South and North Rivers and it Passed in the Negative/ then the Question was put wheather the Town will Rebuild the great North Bridge and it pased in

the Afarmative/ and the Town choose Capt. Stephen Hosmer Lt. Simon Hunt & Joseph Buttrick as a Comtee to Build Said Bridge.

**Dec. 15, 1759** (CTR, WPA, vol. 4, p. 172a)

Call for a Town Meeting to Consider and Conclude on the Following articles.

1. To See if the Town will choose a Comtee to Petition the great and General Court to grant to the Town a Lottery for Rebuilding the Great North Bridge and for Raising the Causway at Said Bridge/ as also for Repaireing the Bridge Commonly Known by the name of Darbys Bridge and Raising the Causway at the South Bridge So Called...

**Dec. 24, 1759** (CTR, WPA, vol. 4, p. 173a)

General Town Meeting. Voted that the Town will Petition the Great and General Court for a Lottery for the Rebuilding the great North Bridge and Repaireing the Causway at Said Bridge Likewise Repaireing the Bridge by Darbys also the Causway at the South Bridge So/called with a Deduction of one Thouthands Dollars and that the Town of Lincoln be consulted to Joyn in that affaire/ and Col. Charles Prescott Capt James Barrett & Mr. Isaiah Barrett be a Comtee for Concord in that affaire.

**1760** (CTR, WPA, vol. 4 p. 179a)

Voted that a good Sufficient wall be made at the charge of the Town at the North westerly End of the Causey at the Great North Bridge as Soon as may be beginning at the End of the wall the Town has already Built and so on to the end of sd causey (said wall to be set where the old wall now stands).

**January 7, 1760** (Lincoln Town Records 1754-1806, DDS)

Lincoln. "To consider and act upon ye following articles vizt.

1<sup>st</sup> To know ye mind of ye inhabitants of the Town whether they will john with ye Town of Concord in petitioning ye General Court for liberty to make a Lottery to build ye north Bridge over ye Great River in sd Concord and to repair ye Causey thereof and ye causey at ye South Bridge over ye rivers in sd Concord.

2dly. If determined at sd meeting to joyn with Concord in ye affair to choose a meet person or persons to carry on sd affairs to effect.

**Feb. 26, 1760** (CTR, WPA, vol. 4, pt. 2 p.179d)

Articles for Town Mtg.

It.4. To see if Town will agree to build a stone wall upon the North Bridge causey adjoining the wall Formerly Built by the Town...

**March 18, 1760** (Lincoln Town Records, DDS)

Voted The town of Lincoln will joyn with ye Comtee of Concord to petn. Ye Genll. Court for liberty to make a Lottery to raise money to rebuild ye north bridge over sd river in sd Concord and to repair ye South bridge over sd river in sd Concord. *[apparently the lottery didn't happen – NBN p. 32, note #16]*

**December 1, 1760** (CTR, WPA, Vol. 4, pt. 2, p.?)

Selectmen of Concord and Selectmen of Lincoln met and agreed that the Town of Lincoln should pay the Sum of Fourteen Pounds towards the Rebuilding the great North Bridge over the Concord River ... and also for the Repair of the Bridges in Time Past in full.

*[Those paid the most – 6 pounds, Simon Hunt, Stephen Hosmer-5 pounds, Francis Wheeler Jun.-4 pounds, Joseph Buttrick, Charles Miles – 3 pounds, Ezekiel Miles – 2 pounds, Nehemiah Hunt, Capt. Thomas Jones, Capt. Jonathan Buttrick – 1 pound, Nathaniel Hosmer, En. John Hartwell, Samuel Buttrick, Phinehas Blood, Ephraim Minott – 44 others paid less than 1 pound.]*

- Dec. 29, 1760** (CTR, WPA, Vol. 4, p. 186a)  
 Paid the Several Person's hereafter named by a general order ...for work done at the Great North Bridge and for Timber for Rebuilding Said Bridge in the Present year ammounting in the whole to Sixty Pounds Eight Shilling and Three Pence Three Farthings.
- 1764** (CTR, WPA, vol 4, pt. 2, p. 241a)  
 Lincoln & Concord at odds over bridges – need to “settle the affair of the Bridges”  
 through sd Flints land. Committee formed to examine the “Damage of the ways going through Mr. John Flint’s Land” Town accepted report of committee.
- Feb. 25, 1765** (CTR, WPA, vol. 4, p. 250a)  
 Paid to Mr. John Brown . . .for Making of one Hundred and Twenty five Rods of Stone wall on the new Road in the north part of the Town & the Interest and for Keeping School at the School House by his House. . .
- Feb. 2, 1767** (CTR, WPA, vol.4, p. 297c)  
 Paid to Lieut. Andrew Conant ...for a stick of Timber for the North Bridge.
- Feb. 23, 1767** (CTR, WPA, vol. 4, p. 280a)  
 Paid to Mr. Equeial Miles...for a String Piece for the North Bridge 0-6-0.
- Feb. 19, 1770** (CTR, WPA, vol. 4, p.313b)  
 Paid to Mr. Thomas Jones Jr. ... for the Loss of an ax at the North Bridge. 0-4-0.
- Feb. , 1770** (CTR, WPA, vol., p. 317b)  
 To See if the Town will make out the wall upon the north Bridge Causey that is not Done and Right up the other and Likewise put up posts and one Rail against Said wall to help foot People to Travel over.  
 To See if the Town will pay Mr. Ephraim Buttrick for the Land that the Surveyor Left out to the Road against Said Buttricks Pasture to accommodate the way.
- April, 1770** (CTR, WPA, vol, p. 319a)  
 Voted that the Serveyer that has the Care of the way at the North Bridge Causey make up the wall upon Said Causey that is not made up and Rite up the Rest of the wall and Set up posts & one Rail agreeable as it is in the warrant but sd Surveyer to be under the Instructions of the Selectmen.  
 Voted that the Consideration of the paying Mr. Ephraim Buttrick for his Land that is Left out to the Highway be Left so that Mr. Benjemin Brown May Servey Said Land.
- May 27, 1772** (CTR, WPA, vo. 4 p. 356a)  
 Town Meeting warrant. Item 6. To See if the Town Prepared the wall on the north Bridge Causway, and for the future keep Siad wall in Repare agreeable to the Request of Mr. Ephraim Buttrick.
- June 1772** (CTR, WPA, vol. P. 357a)  
 Voted on the Six articule to Reapir the wall on the North Bridge Causway this year and for the future keep said wall in good Repair for the Conveniency of Peoples Passing over when the water is over Said Causway.
- March 2, 1778** (CTR, WPA, vol. 5, p. 80b)  
 Paid Ebenezer Hubbard – 240 feet bridge plank

- March 1, 1779** (CTR, WPA, vol. 4 p. 113a)  
 5<sup>th</sup> article ...and voted to Raise one hundred pounds for the Purpose of Building a Stone Buttment at the Great North Bridge . .
- p. 133c Paid to Mr. Redit Jones . . . for timber he provided for the Great Bridge – 30 shillings.
- March 2, 1779** (CTR, WPA, vol. 5 p. 109c)  
 Paid Ebenezer Hubbard – 220 feet bridge plank Delivered at the Bridge.
- March 5, 1779** (CTR, WPA, vol. 5, p. 110a)  
 Paid James Barrett Esq. 189 feet Bridge plank
- Nov. 20, 1780** (CTR, WPA, vol 5, p. 157c)  
 Paid Mr. Sam'll Dudley by an order to Mr. Bond ... for his labour at the great North Bridge on the new Stone Butment – L82-10-0.
- p. 189b Paid Humphrey Barrett . . .for two sticks of Timber at the great North Bridge 1780 to Lay the Buttment upon – 12 shillings.
- Jan. 10, 1781** (CTR, WPA, vol. 5 p. 160a)  
 Paid Mr. Elisha Jones...for work at Stones etc. he found at the North Bridge in Repairing the same – L 151-15-0.
- Paid Thomas Jones...for work and materials he found in Repairing the Great North Bridge. L146s.
- Jan. 19, 1781** (CTR, WPA, vol. 5, p. 160b)  
 Then paid Capt. David Brown...for work and Timber and for Boarding Danl. Ball and others while at work at the great North Bridge three Hundred Seventy four pound 2/
- Jan. 28, 1782** (CTR, WPA vol. 5, 187a)  
 Paid Mr. Reuben Hunt Surveyor of the year 1781 ...for work at the Great North Bridge in said year and for Timber he found to Pail the Bridge aforesaid in full and boarding Josiah Meriam when he workt at said Bridge – Six pound 5/6
- Paid Mr. Josiah Meriam...for his Labour at the Great Bridge nine Days at 5/ pr. Day, forty five shillings.
- Paid James Barrett Esq. ...for his work at the highway more than crossing his highway rate and Boarding Samuel Dudley while he Laboured at the Bridge twenty seven shilling and three pound 16 shill....
- Feb. 18, 1782** (CTR, WPA vol. 5, pt. 2, p. 189c)  
 Paid Ephraim Buttrick by the Discharge of his own rates and Edward Flints L 386-18/ equal to L5-18-5 in Silver towards his Boarding Jno. Prescott.
- Feb. 20, 1782** (Ibid.)  
 Paid Ebenezer Hubbard for 180 feet of Pland & ?? feet of slit work for the North Bridge in 1781.
- March 4, 1782** (CTR, WPA, vol. 5, p. 194c)  
 5<sup>th</sup> article – Committee appointed to settle outstanding debts with Carlisle from “Expence of the Great North Bridge has been in Repareing the same for two years back [1780]”
- May 3, 1782** (CTR, WPA, vol. 5, p. 200b)  
 “Tenthly to see if the Town will chuse a Committee for the Buttment of the Great North Bridge and Report whether it will be of necessity to build it new this year.”

**June 21, 1782** (CTR, WPA, vol. 5, p. 267a)

...and whereas the Town of Concord did in the year 1780 build a Stone Butment on the easterly end of the great north Bridge in this agreement the Town of Concord is to bear the whole of the Expenche thereof...

**Sept. 30, 1782** (CTR, WPA, vol 5. Pt. 2, p. 208c)

Paid Sam. Dudley for his work at the Butement at the North Bridge, 1782, 7 day ½ at 4/6 per Day.

**Feb. 10, 1783** (CTR, WPA, vol. 5, pt. 2, p. 214b)

Paid Mr. Elisha Jones for timbers for the North Bridge.

**May 12, 1784** (CTR, WPA, vol. 5, p. 252b)

Town Meeting. ...on the Sixth article Voted to hear the Report of the committee to View the Bridges and causeway in the Town – which is as follows – that it is the oppinion of said committee the Several Bridges will answer the Purpose for which they were built for sum time yet to come, the North Bridge Excepted that we are of oppinion ought to be Repaired by having the Second arch from westerly Butment taken up, and a new mudsill put to the Same, and the foundation on which it stood Leveled – and set up again – and that the Several Causeways be Raised as high as they any way can with the Money Raised by the Town for the Repairs of highway consistant with keeping the other way in good Repair – which Report being Read was accepted and a Comtee viz. Col. Buttrick Capt. D. Brown to assist the Surveyor in Performing the above Repairs of North Bridge.

**Feb. 24, 1785** (CTR, WPA, vol. 5, p0. 264b)

Fifthly: To see if the Town will chuse a committee to join with a Committee that may be chosen by the District of Carlisle to View the Great North Bridge and if said committee shall Judge it of necessity to Rebuild the year ensuing, to empower them to Do it or otherwise act as the Town shall think fit...

**Sept. 5, 1785** (CTR, WPA, vol. 5, p. 277 a-b)

The Sixth article voted to accept the Verbal report of the committee on the affair of the North Bridge which report was that some Repairs to the same it was Likely to stand too or three years longer.

**Jan. 11, 1787** (CTR, WPA, vol. 5, p. 327b)

Town Meeting. ...The committee chosen as above for the Purpose of Viewing the Bridges Reported Verbally that it was their oppinion that the **Great South Bridge** ought to be built over the Summer coming, and that a Pier of stone be raised in the Middle of the River, the Dimentions 18 by 8 feet, with two wooden arches, one each side, was unanimously the oppinion of sd. Comtee. The best method of buildng the Same – the committee reported as their **oppinion also that the Great North Bridge might, with repairs, be made safe for Travelers for some time to come** – a considerable altercation ensued on the above report of the comtee on account of the expediency of Building with Stone this Summer coming as stones were not Provided for that purpose – it was thereupon moved that the building of the Great South Bridge should be postponed...

**March 3, 1788** (CTR, WPA, vol. 5, p. 370b)

Seventh Article. **Voted to Rebuild the Great North Bridge the summer coming where the old one now stands** – and that a Committee of five Persons be chosen to Procure materials for the building the same, that said Committee of five Persons be chosen to Procure materials for the building the same, that said committee give notice to the Inhabitants of the Town of Concord, and that the Town Clerk notifie the District of Carlisle that the Inhabitants of this Town and said District have the privilege of Providing a part of the Timber and the Materials as they see fit – and that said committee have power to call on any of the Surveyors in this Town to Procure a Number of hands to work out a part or all their highway rates at said Bridge, and that the Said District be

not Deprived of Laboring at said Bridge if they see fit so to do – the Persons chosen for a committee for the Purpose aforesaid are Capt. David Brown, Lt. Elisha Jones, Lt. Asa Brooks, Cuncan Ingraham esqr. And Col. Nathan Barrett –

**Nov. 3, 1788** (CTR, WPA, vol.5, p. 388a)

...to grant a sum of money to be raised to defrey the expence the Town hath been at for building the great North Bridge – and the Bridge over the river near Mr. Joseph Darbys the summer past –

**Nov. , 1791** (CTR, WPA, vol., 6 p. 14b)

Articles for Town Meeting.

Fourthly to hear the Petition of the Rev. Ezra Ripley and others in the northeasterly part of the Town respecting the removal of the Great north Bridge from where it now Stands, down the river, near to the house of Mr. John Flint, and Grant the prayer thereof or otherwise act as the Town in their wisdom Shall think fit.

**Dec. 5, 1791** (CTR, WPA, vol. 6, p. 15a)

On the fourth article after hearing the Petition mentioned in the article and some Conversation thereon it was moved and Seconded to chuse a committee of three persons to consult the Selectmen of Carlisle respecting the removal of the Great North Bridge, to See whether they are consenting therto, and to have the Voice of Said Carlisle in the removal of the Same – one of the Selectmen of Concord the Rev. Ezra Ripley and Mr. Elisha Jones was chosen Said committee –

also it was moved and Seconded to chuse a Committee of five Persons to repair to the place where the way is prayed for to Go over the Bridge by Mr. Flints if removed, and report to the Town their Judgement upon the Subject, as to the convenency and propriety of it going where Stake out or if they think best to make alteration in the course of Said way to point it out and report at the adjournment James Barrett, esq., Dr. George Minot, Jonas Lee, Jonas Heywood and Cap. Sam. Jones, be said committee.

**Jan. 2, 1792** (CTR, WPA, vol. 6, p. 16a)

The committee appointed above to confer with the Selectmen of Carlisle respecting the removal of the Great north Bridge reported Verbally that they have wated upon Said Selectmen and gave them notice that a request was made by Some of the Inhabitents of Concord to Said Town for the removal of Said Bridge down the river and Set up again near Mr. John Flints and asked their Sentiments on the Subject, they declined Saying anything Great about it but Said they would call a Meeting of the District if request was made for it and would Send information to the committee aforesaid before the Town of Concord Should meet, what Should be Done on the affair – but had no work from them Since their Meeting –

The other Committee chosen to View and report their oppinion of the expedency of Granting the Prayers of the Petition of the Rev. Ezra Ripley and others for the Removing of the Great North Bridge to the place they point out in their petition, or to Some other place mentioned by others in the Town – reported as follows. Viz. That having taken a View of the Ground where the petitioners propose to remove Said Bridge and also considering the Saving it makes to the applicants which is at Least twenty two pounds at one penny a mile every year, find that their petition ought so parte be Granted as that they be allowed to remove Said Bridge either where they have Staked it out or below the end of the wall at the uper end of Mr. Flints meadow over the river across Mr. Ripleys Land, So as to come out at or near the Great Meadow Gate; this Variation from the place proposed in the petition is offered to the Town from a consideration of the Damage, or Injury of removing the Bridge may be to Capt. David Brown and Mr. Reuben Hunt and others living in the north part of the Town on account of their private improvements on this Side of the river, Should it be removed to the place where it was proposed in the petition, as they are willing to consent to have it removed to the Lower place, we find the Difference in the distance between these places and the one proposed in the petition to be only five rod and a half, this being 5 ½ rods further then the other; this difference in the distance being so inconsiderable, we think it cannot be

a Sufficient objection against it, removal to the lower place – which is humbly Submitted by order of the committee.

Many things was Said for and against the above report of the committee, and finally it was moved and Seconded that, the following Question Should be put to the Town viz. To See whether the Town will Grant Liberty to the Petitioners for the removal of the Great North Bridge in Concord, to remove the Same to the Lower place described by the committee of the Town above Said, Provided the Same Bridge be removed, Built and made free of cost To the Town, and appropriation there for be obtained from the Court of General Sessions of the peace for the county of Middlesex – and it passed in the affirmative.

**Feb. 22, 1792** (CTR, WPA, vol. 6, p. 18a)

Articles for Town Meeting.

6thly. As whereas the inhabitants of the Northeasterly part of Concord and others concerned, are not Satisfied with the report of the committee of Said Town respecting the removal of the Great north Bridge So Calld and with the doings of the Town thereon the 2 of January last: Therefore pray that the Town would again Candidly Consider the prayer of their petition as at first exhibited to the Town and what may be further Said upon the Subject and grant the prayer thereof if they shall See, meet or otherwise act as they shall think proper...

...much was said and the contents of Said article not fully investigated to the Town, it was therefore moved and Seconded, and Voted, that a committee of twenty one persons should be appointed to take the whole affair of removing the Great north Bridge into their consideration from the Petition of the Rev. Ezra Ripley and others for the removal thereof and all that hath been done about it by the Town or their order, and by the Petitioner aforesaid, to this day, and to hear all parties concerned fully about the premises, and report April Meeting where and to what place over the river Said bridge ought to be removed to (if removed at all) and of the course of the road that Shall Lead to and from Said Bridge when removed – and the Length of way that will go thro each individuals land to roads now Trod – and also the agreement they may make with the petitioners respecting their Subscription for the removal of Said Bridge – the Persons chosen a committee aforesaid are as follows viz.: Lt. Reuben Brown, Lt. Amos Hosmer, Dn. William Parkman, Ephraim Wood, Dn. Joseph Chandler, Dr. John White, Lt. Asa Brooks, Col. Amos Wood, Dr. Joseph Lee, Jon Fay, Esq., Peter Barret, Major James Colburn, Ephraim Potter, Cap. David Wheeler, Lt. Elisha Willington, Lt. Samuel Brown, Lt. Stephen Barrett, Col. Roger Brown, Samuel Bartlett, Lt. Emerson Cogswill and Elijah Hosmer –

**March 20, 1792** (CTR, WPA, vol. 6, p. 22c)

Thirdly – to hear the report of the committee chosen, in March last to take into consideration the emoval of the Great north Bridge in this Town agreeable to the request of the Rev. Era Ripley and others and all that hath been done, by the Town and the petitioners on that Subject, and for the Town when met to act on the Same report in every respect as they shall think proper...

**March 26, 1792** (CTR, WPA, vol. 6 p. 24a)

The committee mentioned in the third article reported as follows viz:

That Seventeen of Said committee met on the 26 day of March 1792 agreeable to the order of the Town, and having examined the places to which the great north Bridge hath been in agitation to be removed to, and Duly considering all circumstances relating to Said affair, and hearing the parties concerned, do report it as our oppinion, that the petitioners named in the petition prefer'd to the Town at their meeting on the 5<sup>th</sup> of December last **have leave to take down the same bridge and the butments thereof and remove and rebuild the Same over the river, where they proposed it in said petition**, that they have every other privilege prayed for in Said Petition that the Town hath in their power to Grant towards the taking down and rebuilding Said Bridge again, and the opening and making the way passable to and from Said Bridge when it shall be anew erected, Provided the Said Bridge be removed and rebuilt with the Buttments thereof, and the Road opened and made as aforesaid Strait from the road at the end of the land,

Northerly of Mr. Abishai Flints Barn, over the river and through Lands of Thomas Jones and the Rev. Ezra Ripley to the Gate at the road before his door free of cost to the Town as a Corporate Body.

...which report being read and much altercation had thereupon – it being not Satisfactory to many as their was a great division in Sentment in the committee – therefore it was moved and Seconded to have the whole affair recommitted to the Same committee again for a further view and consideration thereon – and to report at May meeting which passed in the affirmative . . .

**May 7, 1792** (CTR, WPA, vol 6 p. 25b)

Seventhly to hear a report that may be made by a committee who had the removal of the Great North Bridge under their consideration, which was recommitted to them at April Meeting and act on the Same as may be though best –

p. 27a-b

On the Seventh article the committee therein mentioned reported that the committee to whom was recommitted the petition of the Rev. M. Ezra Ripley and others for Liberty of removing the Great North Bridge, with the proceedings of a former committee thereon attended that business on the 28 ultims?, fourteen of Said Committee were present, thirteen of whom agreed to the following report viz:

It is our oppinion that it will be expedient for this Town to Grant the prayer of Said Petition on the conditions therein proposed Provided Said road be opened on a Line nearly Strait from the Lane near Mr. Abisha Flint Barn to the Gate that is in front of Rev. Ezra Ripley's house --... being read, thje Town Voted to accept Said report of the Committee to whom was committed the consideration of the petition of the Rev. Ezra Ripley and others praying for the removal of the Great north Bridge etc. and have the Same rebuilt etc. provided the Town Shall be at no Expençe for the Said removal and rebuilding Said Bridge, Buttments, making causways or any part of the new road proposed unless the Town may hereafter Consent – the consideration of the three Last articles referred to Some future Meeting and the meeting was Dismissed by the Moderator.  
*[accepted report but did not vote on article]*

**1793** (CTR, WPA, vol. 6, p. 45b)

On the Eight article. Voted to authorize Elisha Jones and others to remove the great North Bridge and place it over the river So as to answer for he new road laid out near Abishai Flints – and appointed Ephraim Wood an agent to apply to the court of Genl. Sessions of the peace for the county of Middlesex for the discontinuance of the road as mentioned in the article.

**Nov. 23, 1793** (CTR, WPA, vol. 6, p. 51b) *[adjusting the roads in n. quarter – Carlisle Road created]*

Fourth article: the Selectmen met in the northerly part of Said Town, and after being Shewn an alteration to be made in the road by Cap. David Brown, Lt. Reuben Hunts, Lt. John Richardson and Jonas Buttrick at whose request the Selectmen met and who are perticularly concerned in Said alteration, and after Viewing Said alteration in the road and what was proposed by the persons aforenamed, we judged it necessary to layout the Same alteration, and begun at a heap of Stones by the Stone wall on the westerly Side of the road opposet to the Dwelling house of Jonas Buttrick and running Southerly with a curve line about ten feet to a stake and Stones from thence running Southwesterly a Strate line through Cap. David Browns land between his house and Barn, and through Lt. John Richardsons land and before the front of his house to a Stake and Stones three feet South of an apple tree in the front of said house, and from thence Strate to the road now trod; .

**APPENDIX B.**

**1748 Petition of William Hunt and Others  
for a Bridge at John Flints**

February 7, 1748

(Concord Town Records, Microfilm Roll D14, Concord Free Public Library, research of Deborah Dietrich-Smith, Olmsted Center for Landscape Preservation)

The Petition of William Hunt & Others for a Bridge at John Flints

To the Town of Concord Gentlemen,

The Petition of us ye subscribers Inhabitants of sd Town Humbly showeth that whereas the Great Bridge in the northerly part of sd Concord is much gone to Decay: and nessisty Requireth the Building a Bridge either at the place where it now is or some other place near the same and we are therefore of opinion that a Bridge being Built over the River some where near the House of Mr. John Flint would serve to accommodate the Public much more and Better than where it now stands – for the Reasens hereafter mentioned – viz. Travillers out of Town with other people who use the Road would be greatly served by the now proposed way: for Providence has so formed the ground: that it will be easy Building a Bridge there: that People may pass with the utmost safety in all seasons of High floods: whereas at the Place where it now is: it is often Impassable so that strangers as well as those who know the ground Dare not assume the passin over – and those People on the north side of the River are obliged to have Preaching with them there in time of high floods: and Foot [?] People have great occation of Passing and Repassing over sd River at all seasons of the year: which they might generally do at the Place we now Propose – and Cannot where the Bridge now is at some seasons: for several weeks together: and the Causway being very long and low and narrow Renders it Very Uncomfortable – and in the winter season [morrally?] Impassable Passing over with teams at some times by Reason of the Drifts of snow in sd narrow Road: which crowdeth People on to the River: many have Rec[cieved] Damages thereby: and we are of Opinion that the Difficulties above mentioned with many others that might have been Enumorated: would be avoided and the Subjects relieved by the Bridge being built at the Place by sd John Flints. And as we Concieve but Four famelies in any measure Disserved: it being as near or nearer from the Country Road over the River where we here Propose it till it Comes into sd Road again there in the more Improved way – and near Fourty families will be greatly served thereby not onely by being freed from the Difficulties they have long laboured under (abouve Listed?) but by saving near fourteen [schoore?] Rods Travel Every time they Come to Meeting or to Town with timber or f \_?\_ for firing: we therefore pray that the Town would take this our Request into their wise and Prudent consideration and no longer Subject the \_?\_ to the above Difficulties nor Expose us to seek Relief Elsewhere but order that a Highway may be laid out from the Country Road by Capt. Jonathan Butricks Barn and where the Road now is or where it may be thought most comodius to serve the Public by sd John Flints and so on till it comes to the corner by Mrs. Sarah Wilsons land into sd Country Road again and a Bridge built over the River there aboute. ...[last line did not copy]

Benjamin Hodgman  
Simon Blood  
Jonathan Buttrick  
Joshua Brooks Junior  
William Hunt  
Jonathan Blood

Robert Blood  
Joseph Hodgman  
Phineas Blood  
Josiah Hodgman  
Oliver Blood  
Gershon Heald

Joseph Barrett  
David Whitaker  
Samuel Johnes  
Thomas Flint  
John Green  
Eleazer Melven  
Samuel Buttrick Jun  
Thomas Jones  
Samuel Minott  
Elisha Chite [?]  
Ephr[aim] Flint

Thomas Hodgman  
Oliver Barow  
Elenezer Ball  
Samuel Buttrick ye 3d  
John Barrett  
David Whitaker  
Nehemiah Hunt  
Benjamin Barrow [?]  
Samuel Easterbrooks  
Benjamin Ball  
William Hunt Jr.

**February 7, 1748**

(Concord Town Records, Microfilm Roll 014, Concord Free Public Library, research of  
Deborah Dietrich-Smith)

Whereas the Great North Bridge (so called) on the Northerly Part of Concord is very much Decayed and in Danger of being useless which will Render it Necessary Either to Rebuild it or Build a New Bridge in Some other Place near the same. And we the Subscribers being fully Sensible that a bridge over against Mr. John Flints house or Thereabout would much better Accommodate a very Considerable Part of the Inhabitants of the North part of the Town as well as Several in the other parts who are owners of land on that side and be no Disadvantage to more than four or five families in the Town nor any manner of Inconvenience to those of other Towns Travelling that Road it being Practicable Building a Bridge at that Place so as it may be comfortable passing over in the highest Flood. We therefore whose names are under Written apprehending we may be something More Benefited by Such a Bridge Near said John Flints than many other Inhabitants of the Town Do Hereby Promise and oblige our Selves Provided a Bridge is agreed upon by the Town to be Built at said Place to pay Toward the Same Either in Money, Labour or proper Materials for such a Building over and above our Proportion of the Tax. The Several Sums in old Tenour which is Set against Each of our Names to be performed or paid within one month after Said Bridge Shall be finished as Witness our hand this Seventh day of February Anna Dom: 1748.

**APPENDIX C.**

**1876 Proceedings at the Centennial Celebration  
of Concord Fight  
April 19, 1875**

**(Selected excerpts)**

**p. 13 - Transcription of page due to unreadable copy**

At the November meeting, 1873, a small plaster model of a minute-man, executed by Mr. Daniel C. French of Concord, was submitted by the committee, and the town voted to accept the design, and appropriated the sum of five hundred dollars towards the expense of procuring a full-sized model to be made by him, the artist generously leaving all question of compensation for his design, other than the mere expense of construction, to the free will of the town.

Five persons, Messrs. R. W. Emerson, Frederic Hudson, George A. King, Andrew J. Harlow, and William W. Wilde, were added to the committee, which thus enlarged, was authorized to decide on the material for the statue, to procure a suitable base and carry on the work.

Early in the year 1874, the General Court passed the following act entitled, "An Act authorizing the Town of Concord to raise Money for a Monument and for its Dedication."<sup>1</sup>

*Be it enacted, &c.*

Section 1. – The Town of Concord is authorized to raise by taxation, such sums of money as may be needed for a suitable monument at the "Old North Bridge," to commemorate the events of the nineteenth day of April, seventeen hundred and seventy-five, and for an appropriate celebration at its dedication.

Section 2. – This Act shall take effect upon its passage.

In the March meeting, 1874, the town appropriated the sum of fifteen hundred dollars, to be used in procuring a suitable base to the statue and completing the work. A committee of thirty citizens was chosen at the same meeting to make arrangements for a fitting Centennial Celebration of Concord Fight.

The original plan for a granite statue was abandoned by the Monument Committee, and bronze was selected as the material best adapted to Mr. French's design, and most enduring in our climate.

Through the influence and energetic action of the Hon. E. R. Hoar, our Representative in the Forty-third Congress, the following act<sup>2</sup> passed the House of Representatives on April 18, and the Senate, April 20 (the 19<sup>th</sup> being Sunday), and was approved by the President, April 22.

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<sup>1</sup> Statute 1874, c. 49.

<sup>2</sup> A beautifully illuminated copy of this act, attested by the Secretary of State, was presented by him to Judge Hoar, and given to the Free Public Library by the latter gentleman.

PROCEEDINGS  
AT THE  
CENTENNIAL CELEBRATION  
OF  
CONCORD FIGHT

*April 19, 1875.*



CONCORD, MASS.  
PUBLISHED BY THE TOWN.  
1876.

## PREFACE.

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THE committee chosen by the town of Concord at the March meeting, 1874, and clothed with full powers to prepare for and carry out a centennial celebration of Concord Fight, deeming the occasion worthy of a more complete and permanent record than could be obtained in the columns of the newspapers, and wishing to furnish to those who were attracted to Concord by the national importance of the first Centennial of the American Revolution, and by the patriotic memories it awakened, an opportunity of preserving in a permanent form an official history of our ceremonies, and feeling it to be their duty also to render to the town an account of the manner in which they executed their trust, delegated to the undersigned the task of preparing and publishing such an account, which is herewith respectfully submitted as the Report of the Committee of Arrangements. Their financial statement appears in the Town Report for 1875-6.

The Nineteenth of April, 1775, has always been regarded by the people of New England as the national birthday; and its fiftieth and seventy-fifth anniversaries were celebrated at Concord by the towns of Middlesex, Essex, and Norfolk, whose men shared with the men of our town the dangers and glories of that day.

But the people of Concord believed that the hundredth anniversary of the opening of the Revolutionary War would be recognized universally as of national interest, and that their preparations for the celebration of it should be on a scale commensurate with the importance of the occasion.

We have thought it best, in writing this report, to adhere to the chronological order of events; and therefore — as the preparation for the Centennial began with the project of a monument to be placed

where Davis and Hosmer fell, and Buttrick gave the first order to fire on the king's troops—we have begun with a brief account of the Minute-man and its origin.

The religious services on the morning of Sunday, April 18, were held in the Old Meeting House, where the first Provincial Congress assembled. As these services were memorial in their character, and were attended by the President and his Cabinet, and by many other honored guests of the town, it may properly be said that the commemoration began on that day.

Although the ball was not a part of the celebration for which the Committee considered themselves authorized to expend the money of the town, yet any account of our proceedings would be sadly incomplete, that should omit all mention of that brilliant and beautiful scene. We have, therefore, concluded our report with a short account of the ball.

Appended hereto is a carefully prepared abstract of the literature of the Nineteenth of April, kindly furnished at our request by our townsman, James L. Whitney, the assistant superintendent of the Boston Public Library; including a heliotype facsimile of the famous Diary of Rev. William Emerson.

We have used our best endeavors to make this chronicle of a day so dear to us a complete and true one. Yet we are conscious that there was much in our celebration—the proud and tender memories, the sympathy, the spirit, the thanksgiving that moved the hearts of our people—of too fine and evanescent a quality for any record, however vivid or faithful, adequately to convey.

SAMUEL HOAR,  
EDWARD W. EMERSON,  
CHARLES H. WALCOTT, } *for the Committee.*

## TABLE OF CONTENTS.

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	PAGES.
<i>I. THE MINUTE-MAN AND THE BRIDGE</i> . . . . .	11-17
<i>II. THE PREPARATIONS</i> . . . . .	21-44
<i>III. SUNDAY SERVICES</i> . . . . .	47-60
<i>IV. THE PROCESSION</i> . . . . .	63-74
<i>V. EXERCISES IN THE ORATION TENT</i> . . . . .	77-119
<i>VI. EXERCISES IN THE DINNER TENT</i> . . . . .	123-156
<i>VII. THE BALL</i> . . . . .	159
<hr/>	
<i>THE NINETEENTH OF APRIL IN LITERATURE</i> . . . . .	165
<i>APPENDIX</i> . . . . .	175

## THE MINUTE-MAN AND THE BRIDGE.

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### *To the People of Concord:*

It is fit that a public record of Concord's Centennial Celebration of the Fight at the North Bridge should recognize how that celebration was inspired and moulded by the thought of one man, an old citizen, who himself passed away without the sight of that fulfilment of his desire in which his townsmen take such pride to-day.

A picture still fresh in the memory of almost every inhabitant of Concord is the bowed form and wrinkled face of EBENEZER HUBBARD.

Living in the house where he boasted that his grandfather entertained Hancock and the patriots of the Continental Congress which met in the old meeting-house, tilling the old flat fields, or walking in the stately woods, which he kept almost sacred from the axe,—he remembered with pride the Middlesex farmers, who took the dread responsibility of attacking the troops of Great Britain.

The old North Bridge, whose planks had been trodden by those men, was taken down when he was ten years old; and it grieved him that it should be only a tradition to the younger generations of Concord, and that no stone should mark the spot where Buttrick gave the word to fire.

At the state muster, in 1869, Mr. Hubbard walked to the camp, and made his way to headquarters, to try to interest Gen. Butler in his favorite scheme; for his hope was to rouse, in some way, the attention of Congress to the importance of the renewal of the bridge, and to mark the spot where the first patriot volley was fired. He failed entirely in this interview, but went home, probably the more resolved to do his part. The following year, one October morning, his neighbors found him sitting in his chair, dead.

He made by his will a bequest to the town in these words:—

I order my executor to pay the sum of one thousand dollars towards building a monument in said town of Concord, on the spot where the American flag first flew, on the opposite side of the river from the present monument, in honor of the 19th of April, 1775, providing my said executor shall ascertain that said monument first named has been built, or sufficient funds have been

obtained therefor, within five years after my decease ; but in case my executor shall have ascertained that said first-named monument is not built, nor sufficient funds obtained for that purpose, within five years after my decease, then I order my executor to pay over to Hancock, N.H., said sum of one thousand dollars."

Mr. Hubbard further placed in the hands of the town treasurer the sum of six hundred dollars, towards the expense of building a bridge over the river, on the site of the old one.

Stedman Buttrick, grandson of Major John Buttrick who commanded the American force at the bridge, gave a deed to the town of about one-quarter of an acre of land, in his meadow on the west bank of the river, "at the butment of the old North Bridge," "for the purpose of erecting a Monument there, and for no other purpose, and on condition that the grantee shall make and forever maintain a fence around the same, and that a bridge shall be constructed across the river, from the easterly side, to pass to the above premises, and without any right of way over my land."

Mr. Buttrick also died (November, 1874) without seeing the completion of the work that his patriotic gift had aided.

At the March meeting, 1872, a committee was chosen, to consider what action should be taken by the town in relation to the bequest of Ebenezer Hubbard. It consisted of the following gentlemen: John S. Keyes, Chairman; George Heywood, George M. Brooks, John B. Moore, and Addison G. Fay.

At the meeting in March, 1873, this committee reported the terms of the bequest of Mr. Hubbard, and the gift of Mr. Buttrick, and recommended that the town should gratefully accept the patriotic bequest and gift of its citizens, and that it should "procure a statue of a Continental Minute-man, cut in granite, and erect it on a proper foundation, on the American side of the river," with the opening stanza of the poem by Ralph Waldo Emerson, sung at the dedication of the Battle Monument in 1837, "enduringly engraven for an inscription on the base;" also "that a suitable bridge be constructed to give access to the spot;" and, finally, "that the work be completed and dedicated on the one hundredth anniversary of the day, with such other exercises as may be hereafter determined."

A vote of the town was passed at the same meeting, authorizing the same committee to procure designs and estimates for a statue. Mr. Fay having died, Mr. Henry F. Smith was appointed on the committee in his place.

...of a minute-  
...submitted by  
...and appro-  
...expense of pro-  
...generously  
...other than the  
...of the town.

...Hudson, George  
...W. Wilde, were added to  
...authorized to decide on the  
...suitable base and carry on the

...Court passed the following act,  
...Town of Concord to raise Money  
..."

...Concord is authorized to raise by taxation,  
...may be needed for a suitable monument at the "Old  
...the events of the nineteenth day of April,  
...and for an appropriate celebration at its

...shall take effect upon its passage.

...1874, the town appropriated the sum of  
...to be used in procuring a suitable base to the  
...the work. A committee of thirty citizens  
...the same meeting to make arrangements for a fitting  
...of Concord Fight.

...plan for a granite statue was abandoned by the Monu-  
...and bronze was selected as the material best adapted  
...design, and most enduring in our climate.

...influence and energetic action of the Hon. E. R.  
...the following  
...the House of Representatives on April 18, and the  
...April 20 (the 19th being Sunday), and was approved by the  
...April 22.

...1874, c. 49.  
...illuminated copy of this act, attested by the Secretary of State, was  
...by him to Judge Hoar, and given to the Free Public Library by the latter

*Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled,*

That the Secretary of War be, and is hereby, authorized to deliver to the municipal authorities of Concord, Massachusetts, ten pieces of condemned brass cannon, to be used in the erection of a monument at the Old North Bridge, to commemorate the first repulse of the troops of Great Britain in the war of the Revolution, on the nineteenth day of April, seventeen hundred and seventy-five.

J. G. BLAINE,  
*Speaker of the House of Representatives.*

M. H. CARPENTER,  
*President of Senate pro tempore.*

*Approved April 22, 1874.*

U. S. GRANT.

The cannon were sent soon after to the Ames Manufacturing Company at Chicopee, Mass., and the model early in the autumn.

The committee decided to reproduce, in its essential features, the old battle bridge, though on a lighter scale, and was fortunately enabled to do this by the rude old wood engraving of Concord Fight, made with that faithfulness of detail which characterizes most untutored art, by Earl and Doolittle, two members of Benedict Arnold's Horse Guards, who rode up from the camp at Cambridge one July day in 1775 and made the sketch on the spot, supplying the attacking farmers and retreating red-coats to the picture from the stories told them by the sharers in the fight. This picture showed a plain wooden bridge spanning the river, with a slight arch, supported by a few rows of piles.

Mr. Reuben N. Rice generously undertook to add some decoration to the rigid simplicity of the old model, and obtained a plan from Mr. William R. Emerson of Boston, in which the place of the rough railing of "followers" of the old bridge was supplied by a paling of graceful pattern, made of cedars with the bark on; and two rustic half-arbors were placed on the middle of the bridge, projecting over the water, with seats where pilgrims might sit and watch the quiet river brimming its meadows. The bridge was built during the summer and autumn according to this plan.

But how to place the Minute-man to best advantage when he came? Many forms of pedestal were suggested, simple and elaborate. The plan which pleased the committee more than any other, was to haul to the spot one of the great boulders that are found in Concord fields, and thus set the bronze farmer on a pedestal of

Bridge

old glacier's carving, merely smoothing a place on the front to receive the inscription. The practical difficulties of this scheme were insurmountable.

In the oak woods on the edge of the neighboring town of Westford, on the battle morning, came that Lieutenant-Colonel John Robinson, who marched, at Major Buttrick's request, by his side (down the hill to the attack), lay a rock of fine white granite, out of which, thirty-nine years ago, came the old battle monument. From this a great block was split by Mr. John Cole of that town, so nearly rectangular and perfect that it almost tempted the Monument Committee to place it under the statue without further work upon it. This was brought to Concord when the snow fell. Finally a plan, kindly furnished the Committee by Mr. J. Elliot Cabot of Brookline, by which they could use this stone, was adopted, and the work executed by Mr. Cole during the winter.

The body of the pedestal is one block seven feet high, with equal faces four feet broad, the front face rough pointed, but having a sunk panel, fine hammered, across the middle of which, in incised and bronzed letters, are these lines of Emerson:—

BY THE RUDE BRIDGE THAT ARCHED THE FLOOD  
THEIR FLAG TO APRIL'S BREEZE UNFURLED,  
HERE ONCE THE EMBATTLED FARMERS STOOD  
AND FIRED THE SHOT HEARD ROUND THE WORLD.

The rear face is similar to the front, and on the panel in high relief the inscription:—

1775  
NINETEENTH  
OF  
APRIL  
—  
1875

The lateral faces of the pedestal are rough hewn, with a smooth hammered margin six inches and a half wide. This main block is supported by a base projecting six inches and a half, and nine inches high, resting on a turfed mound three feet high.

The whole lot given by Mr. Buttrick has been filled, so as to raise it to the level of the old abutment, and above the spring floods of the river, and its edges turfed, while a sufficiently broad gravel drive passes round the monument. A willow hedge has been planted round the grounds, to further protect the abutment from the floods. Where the statue stands, a deep pit was dug and filled with rubble for a firmer foundation.

The site itself is in the line of the middle of the bridge, and one hundred and ten feet from its western end, in front of the old sprouting apple-stump, that tradition says was the spot where Captain Isaac Davis received his death-wound, — "the burning bush where God spake for His people."

In March the pedestal was set in place, and under it a hermetically sealed copper box containing —

- The History of the Monument, by the Chairman of the Monument Committee.
- A copy of Shattuck's History of Concord.
- The account of the Fight, from the Diary of Rev. William Emerson.
- A Pamphlet, giving an account of the Celebration in 1850.
- A Pamphlet, giving an account of the Dedication of the Soldier's Monument in the Square, April 19, 1867.
- The Town Report for 1874.
- Photographs of the Artist and of the Statue.
- Map of the Village in 1775.
- Map of Concord, 1855.
- Map of the Centre of the Town in 1874.
- Coins, Stamps, Newspapers of the Day, Invitations to the Celebration, &c.

During the first days of April, the statue, which had been most successfully cast from the gun-metal, arrived from Chicopee, and was set upon the pedestal, and after a few days was veiled to await the formal uncovering on the anniversary of the battle.

It represents a young farmer, one of the minute-men of that day, leaving his plough in the furrow on the alarm of the approach of the regulars, and answering, musket in hand, the call to arms; one of those,

"Whose faith and truth  
On war's red touchstone rang true metal;  
Who ventured life and love and youth  
For the great prize of death in battle."

There is nothing hot or theatrical in the movement, which is considered, and the face serious, as of one who sees all the doubt and danger from the first and yet goes quietly on.

The figure is of heroic proportions, being seven feet high, yet has

lightness of a man skilled in wood-craft as well as farm labor. Anatomy and poise are conscientiously studied from nature; even the long waistcoat, hanging heavy with the bullets in its pockets, the worn gaiters and rude accoutrements show faithful work and historical accuracy. It has been noticed that the statue wins praise alike from the scholar and the laborer, the cultivated and the untrained taste.

Mr. French is only twenty-five years old, and this is his first work of importance. The town cannot fail to be long grateful to him for the good work he has done, and the charm he has added to its meadows.

## THE PREPARATIONS.

---

After the appointment of the Monument Committee and the acceptance of the model presented with their first report at the March meeting in 1873, the next step taken by the town, in its municipal capacity, was to appoint a Committee of Arrangements, whose duty it was to prepare a suitable celebration at the dedication of the statue, on the 10th of April, 1875.

The necessary authority to raise money for the purpose by taxation had been conferred by the Legislature; and at the annual town meeting held March 30, 1874, it was voted,

"That a committee of thirty be chosen as a Committee of Arrangements for the celebration of the Centennial Anniversary of Concord Fight, and that the Committee be authorized to expend a sum not exceeding five thousand dollars for the purpose."

Such a committee was then chosen, consisting of the following persons; viz., —

GEORGE KEYES, SAMUEL HOAR, FREDERIC HUDSON,  
EDWARD C. DAMON, REUBEN N. RICE,  
ALFRED B. C. DAKIN,

JOSEPH D. BROWN, RICHARD F. BARRETT, ELIJAH WOOD,  
SAMUEL W. BROWN, HUMPHREY H. BUTTRICK,  
JAMES C. MELVIN,

LEVI MILES, WILLIAM BUTTRICK, WILLIAM F. HURD,  
SIDNEY J. BARRETT, EDWIN WHEELER,  
HENRY L. SHATTUCK,

JAMES D. WRIGHT, LEWIS FLINT, JOSEPH DERBY, JUN.,  
WILLIAM H. HUNT, EDWARD W. EMERSON,  
HENRY J. WALCOTT,

CHARLES THOMPSON, ALBERT E. WOOD, ANDREW J. HARLOW,  
CHARLES D. TUTTLE, MARCELLUS HOUGHTON,  
SYLVESTER LOVEJOY.

Messrs. Hudson, Rice, Miles, and Hurd having declined to serve, the vacancies thus occasioned were filled by the committee, subject to the ratification of the town, by the election of

RICHARD BARRETT, GEORGE P. HOW, CHARLES H. WALCOTT,  
JAMES B. WOOD.

This action was approved and ratified by the town at the following March meeting.<sup>1</sup>

The Committee of Arrangements held its first meeting at the Town Hall on Thursday, June 25, and organized with the choice of the following officers: George Keyes, *Chairman*; Samuel Hoar, *Secretary*; and Henry J. Walcott, *Treasurer*. Subsequently, the following sub-committees were chosen by the committee of thirty, viz., —

*On General Invitations.*

E. R. HOAR, R. W. EMERSON, GEORGE HEYWOOD.

*On the Oration.*

CHARLES H. WALCOTT, EDWARD C. DAMON, SAMUEL HOAR.

*On the Dinner.*

JOSEPH D. BROWN, CHARLES THOMPSON, EDWARD W. EMERSON,  
JAMES C. MELVIN, CHARLES H. WALCOTT.

*To invite Participating Towns.*

GEORGE KEYES, WILLIAM H. HUNT, JOSEPH D. BROWN,  
E. C. DAMON, H. J. WALCOTT, CHARLES THOMPSON,  
HENRY L. SHATTUCK.

*On Music.*

SAMUEL W. BROWN, A. J. HARLOW, R. F. BARRETT.

<sup>1</sup> At the annual town meeting, held March 29, 1875, the following votes were passed:  
"Voted, That the action of the Committee of Arrangements for the Centennial Celebration of Concord Fight, in filling vacancies in their number, be approved and ratified."  
"Voted, That the Committee of Arrangements be authorized to expend a sum exceeding five thousand dollars, in addition to the sums already authorized."  
"Voted, That the sum of five thousand dollars be raised by taxation to defray the expenses of the Centennial Celebration, and that the treasurer be authorized to borrow a further sum, not exceeding fifty-five hundred dollars, as may be needed for that purpose."

*On the Press.*

WALCOTT, F. B. SANBORN, FREDERIC HUDSON,  
GEORGE TOLMAN.

*On Military.*

RICHARD BARRETT, GEORGE P. HOW, A. B. C. DAKIN,  
EDWIN WHEELER, JOSEPH DERBY, JUN.

*On Decorations.*

JAMES MELVIN, H. L. SHATTUCK, E. W. EMERSON, A. E. WOOD,  
STEDMAN BUTTRICK, LEWIS FLINT, CHARLES THOMPSON,  
SYLVESTER LOVEJOY.

*On the Ball.*

WALCOTT, H. H. BUTTRICK, R. F. BARRETT, S. J. BARRETT,  
HOUGHTON, S. W. BROWN, SAMUEL HOAR, C. D. TUTTLE,  
J. D. BROWN, GEORGE P. HOW, JAMES B. WOOD.

*On Transportation.*

JOHN S. KEYES, A. J. HARLOW, ELIJAH WOOD, J. D. BROWN,  
E. C. DAMON, M. HOUGHTON.

*On Reception of Guests.*

JOHN S. KEYES, M. BROOKS, R. W. EMERSON, GEORGE HEYWOOD,  
FREDERIC HUDSON, H. F. SMITH, JOHN S. KEYES,  
STEDMAN BUTTRICK, JOHN B. MOORE,  
W. W. WILDE, GEORGE A. KING.

*Executive Committee.*

JOHN S. KEYES, RICHARD BARRETT, SAMUEL HOAR,  
CHARLES H. WALCOTT, JAMES C. MELVIN.

The committees first chosen were called "joint committees to  
organize similar committees from Lexington;" but at a meeting of  
the Executive Committee of Arrangements, October 17, 1874, a joint celebration  
was deemed to be impracticable, their character was changed to  
local committees empowered to act in the Concord celebration for  
which they were chosen."

In addition to the invitations which were intended to include all citizens of the towns named, a card was also sent to the town clerk of each of those towns, inviting a delegation, consisting of the town officers and settled clergymen, to attend as the guests of the town of Concord. In the cities, this latter invitation was to the mayor, aldermen or to the mayor and a committee of the city government.

The form of invitation to the guests of the town was engraved on steel, was adorned by a heliotype of the "Minute-man,"<sup>1</sup> and read as follows:—

1775.

## CONCORD FIGHT.

1875.

*April 19th, 1775.*

To

*Sir, — The Inhabitants of the town of Concord, Massachusetts, cordially invite*

*to be present as their guest at Concord, on the Nineteenth of April, 1875, and to join with them in celebrating the centennial anniversary of the opening of the Revolutionary War.*

*E. R. HOAR,  
R. W. EMERSON,  
GEORGE HEYWOOD, } Committee of Invitations*

Knowledge of our approaching festival was still more widely spread by a notice, which was prepared and signed by the whole Committee of Arrangements, and was as follows:—

1775.

## CONCORD FIGHT.

1875.

DEAR SIR:

The town of Concord, Massachusetts, purposes to celebrate the Centennial Anniversary of Concord Fight on the Nineteenth of April, 1875, in a manner appropriate to the importance of that day which "made conciliation impossible and independence certain." The exercises will consist of an oration by George William Curtis, Esq., of New York; a grand military and civic procession to the site of the "Old North Bridge;" the unveiling and dedication of a bronze statue of a Minute-Man on the spot where Davis

<sup>1</sup> This heliotype, taken from the clay model before casting, precedes this part of the report.

and where was "fired the shot heard round the world;" a public dinner, toasts and speeches, and a grand ball in the evening.

The President of the United States and his Cabinet; the Governor, Lieutenant-Governor, and Judiciary of Massachusetts; the Governors of each of the New England States, and many other distinguished men are expected to be the guests of the town.

Representatives of Acton, Bedford, Beverly, Billerica, Brookline, Cambridge, Chelsea, Chelmsford, Danvers, Dedham, Framingham, Lexington, Lynn, Malden, Needham, Newton, Roxbury, Salem, Stow, Sudbury, Watertown, and Woburn, have been invited to participate in the celebration, as their fathers were in the struggle for liberty.

The town of Concord hopes that all those who are connected with her by ties of affection will join with her in this interesting commemoration.

Very truly yours,

Concord, Mass., January, 1875.

This notice was printed in most of the New York and New England papers, and was sent by mail in all directions. The object of this notice was to inform the descendants of Concord people, scattered all over the country, of the preparations that were being made, and of the desire of our citizens that all who loved the old town should be present on this memorable occasion. This notice was widely circulated, and, so far as your committee are able to judge, produced the desired effect.

From the beginning your Committee felt that it was the earnest desire of every citizen of Concord that the town of Acton, with its glorious memories of the day we were about to celebrate, should be invited as a guest entitled to peculiar honor. Accordingly, in addition to the invitations already described, which were sent to other towns, as well, a special invitation was extended to the people of Acton to send a full company of minute-men. The Executive Committee also enclosed the following letter, which was read at a special town meeting in Acton:

CONCORD, Jan. 9, 1875.

SELECTMEN OF ACTON.

Sir, — The Committee of Arrangements for the Centennial Celebration of the Concord Fight, chosen by the town of Concord, desire the cooperation of the town of Acton in the approaching celebration, April 19,

and special invitations have been sent to all the towns whose men participated in the first armed struggle for liberty, to join with Concord in the proper commemoration of the day, and you have undoubtedly received yours; but it

The Agricultural Hall, the tents for the oration and dinner, the public buildings, the liberty-pole, and the principal streets, were decorated under the direction of the sub-committee chosen for the purpose. They employed Messrs. Lamprell and Marble, of Boston, to see that the work was properly done; and the results attained by the decorators were perfectly satisfactory to the Committee, and, it is believed, to the people of the town.

Many private buildings were appropriately decorated; but, as they did not come properly within the province of the committee, it is not attempted, in this place, to give a description of the beautiful masses and combinations of color that made the whole town resplendent on this gala day.

At the request of the Committee of Arrangements the Marine Band of Washington was ordered to Concord to take part in our procession, on the sole condition that the town should entertain its members while they remained in Concord, without expense to the department. It was considered very fitting that the highest officials of the nation should be accompanied in the procession by this celebrated band of musicians, regularly enlisted into the service of the United States, with our own Concord Artillery as military escort. The band also rendered valuable assistance at the promenade concert in the evening.

At a meeting held November 7, 1874, the Executive Committee was instructed to report at the next meeting "a programme for the whole celebration of the hundredth anniversary of Concord Fight."

After mature deliberation, it was finally settled that the day should begin with the formation of the procession, in the immediate neighborhood of the Fitchburg Railroad station; that the procession should march through Main, Walden, and Lexington Streets, to the Square, and, after leaving the Square, up Monument Street, pass the two monuments and the bridge, and enter upon the field of Mr. George Keyes, the use of which was tendered for the occasion by the owner.

Here, on the spot where the Provincial troops made their final formation and deliberately resolved to dislodge the regulars from the bridge, a tent was to be erected for the oration and the exercises in dedication of the monument, and as near to it as the height of the river and the conformation of the ground would permit, another and larger tent for the dinner.

The success of the day depended upon the weather more than

any one was willing to acknowledge ; and this fact caused most of the difficulty in arranging the route of the procession. The spring was very late, and the weather cold. Ten days before the celebration, the knoll on which the "Minute-man" stands was entirely surrounded by water, and was accessible only by the new bridge.

If we had been met by so unfavorable a combination of circumstances on the 19th, the procession would have been unable to pass the new monument, or, indeed, to approach it nearer than within two hundred feet ; and the line of march would have been, of necessity, different in many respects.

Thus the Committee and the Chief Marshal were obliged to contemplate the possibility of material alterations in the programme, alterations which it might be necessary to make when there was no opportunity for deliberation, and when prompt action would be called for.

On the 13th, three inches of snow fell ; and, as the dinner tent was to be pitched the following day, it became necessary to clear the ground. By the accommodation of the road commissioners, the men and teams employed by the town to work on the roads were set to work removing the snow from the ground that was to be occupied by the tents ; and the sun came out bright and warm to assist by drying up the ground after the removal of the snow.

It was well that the spot selected for the tents was sheltered from the north winds by the hill ; for, without that friendly protection, it would have been impossible for such enormous masses of canvas to withstand the blasts with which they were visited. As it was, both tents were partially lowered several times after they were first erected, in order to keep them from being blown down.

It was determined beforehand that the march around the old mill-pond should be omitted, if the weather or unavoidable delays should render it necessary to do so, in order to arrive at the tents at the appointed time. The actual route of the procession was thus shortened on account of unavoidable delays in formation and the embarrassment occasioned by the great crowds that blocked the streets along the line of march.

In addition to the other preparations, at the various points of historical interest, and upon the buildings now standing that were witnesses of the stirring events of the 19th of April, were placed descriptive signs. These were the work of Messrs. Edward G. Reynolds and Charles S. Richardson, acting under the direction of the

Committee on Decorations. The signs were painted on narrow strips of board in large, legible, black letters, in order that those who ran might read.

We give, for the benefit of future centennial and millennial committees, a list of the inscriptions, with a brief description of the places so designated.

#### HOUSE OF ADJUTANT JOS. HOSMER, 1775.

House beyond the Old South Bridge and Fitchburg Railroad crossing, now occupied by Mrs. Lydia P. Hosmer and Cyrus Hosmer.

#### OLD SOUTH BRIDGE.

BRITISH COMPANY STATIONED HERE 19TH OF APRIL, 1775.

Wooden bridge near Fitchburg Railroad, and house of Elijah Wood.

#### OLD BLOCK HOUSE, BUILT 1654.

House just west of National Bank building, occupied by Dr. H. A. Barrett.

#### SITE OF THE OLD JAIL.

BRITISH SOLDIERS CONFINED HERE.

This was at a point close to the north-west side of the old burying-ground on Main Street, on land of Reuben N. Rice.

#### SITE OF CAPT. WHEELER'S GRIST-MILL.

On the north side of the Milldam, next to the Bank, on the spot now occupied by the shop of Asa C. Collier. The old mill-stones form a substantial part of the foundation of the present building.

#### SITE OF CAPT. WHEELER'S STOREHOUSE.

PROVINCIAL FLOUR STORED HERE.

On the west side of Walden Street, south of the Trinitarian Church, on land of Nathan B. Stow.

#### MERRIAM'S CORNER.

HERE THE MINUTE-MEN FROM OLD NORTH BRIDGE, WITH READING AND BILLERICA COMPANIES, ATTACKED THE BRITISH ON THEIR RETREAT.

This was about a mile and a quarter from the centre of the town, on the Boston road, at the junction of that thoroughfare with the old road to Bedford.

## RESIDENCE OF DR. SAMUEL PRESCOTT,

WHO BROUGHT THE NEWS OF THE MARCH OF THE BRITISH FROM BOSTON.

House now occupied by John B. Moore on Lexington Street, in the easterly part of the town.

"THE CONCORD ROAD TO BOSTON  
I FOR DNE  
MOST GIN'LLY OLLUS CALL IT  
JOHN BULL'S RUN."

Extract from the "Biglow Papers," posted at foot of the hill on Lexington Street, north of the house of George Heywood.

## SHOP OF REUBEN BROWN,

WHERE SADDLES, CARTRIDGE-BOXES, &C., WERE MADE FOR THE PROVINCIAL ARMY.

House on Lexington Street, east side, second house north of George Heywood's, and now occupied by Mrs. Julia Clark.

## OLD MEETING-HOUSE.

BUILT, 1712. ENLARGED, 1792 REMODELLED, AND TURNED HALF-WAY ROUND, 1841.  
FIRST PROVINCIAL CONGRESS MET HERE OCT. 11, 1774. SECOND CONGRESS  
MET HERE MARCH 22, 1775, AND ADJOURNED FOUR DAYS BEFORE THE  
BATTLE AT OLD NORTH BRIDGE.

It is unnecessary to describe the location of the Church of the First Parish.

## WRIGHT'S TAVERN.

PITCAIRN, STIRRING HIS BRANDY WITH BLOODY FINGER, SAID, "I HOPE TO STIR  
THE DAMNED YANKEE BLOOD SO BEFORE NIGHT."

House commonly known as the Jarvis House, facing the Common, a few rods north of the old meeting-house.

## SITE OF OLD COURT-HOUSE, 1775.

West side of Monument Square, south of old engine-house, on land now owned by Bishop Williams.

## PROVINCIAL STOREHOUSE, 1775.

House now occupied by Louis A. Surette, facing Monument Square, on the north side.

## HOUSE OF ELISHA JONES, 1775.

On Monument Street, east side, now occupied by John S. Keyes. In the shed attached to the house is a bullet-hole "pierced by a British musket-ball" on the 19th of April, 1775.

An old willow tree on the same premises, planted on the 20th of April, 1775, bore the following inscription, from Holmes's "One-Horse Shay:"—

"LITTLE OF ALL WE VALUE HERE  
WAKES ON THE MORN OF ITS HUNDRETH YEAR  
WITHOUT BOTH FEELING AND LOOKING QUEER."

On the opposite side of the road was the following:—

## OLD MANSE,

OCCUPIED BY REV. WILLIAM EMERSON, APRIL 19, 1775.

Further description is unnecessary.

## HOUSE OF MAJOR JOHN BUTTRICK, 1775.

House situated on the hill west of Flint's Bridge, and lately occupied by Capt. Francis Jarvis.

## HOUSE OF NATHAN BARRETT, 1775.

Situated on Punkatasset Hill, and now occupied by John B. Tileston.

## HOUSE OF COL. JAMES BARRETT, 1775.

Situated about two miles from the village, in a north-westerly direction, near Angier's Mills. It is now owned by the heirs of Prescott Barrett.

In the field on the west side of the river, near the battle-ground, were posted the following memorable utterances, so closely connected with the history of the battle:—

"FIRE, FELLOW-SOLDIERS! FOR GOD'S SAKE, FIRE!"

MAJOR BUTTRICK.

"I HAVE N'T A MAN THAT'S AFRAID TO GO!"

CAPT. ISAAC DAVIS.

"WILL YOU LET THEM BURN THE TOWN DOWN?"

ADJUTANT HOSMER.

**APPENDIX D.**

**Architect  
William Ralph Emerson**

**Biographical information and assorted examples of his work.**

Genealogical excerpt copied from:

Cynthia Zaitzevsky's

*The Architecture of William Ralph Emerson, 1833-1917*, (Cambridge, MA: Harvard University, Fogg Art Museum), 1969, pp. 88-89.

#### GENEALOGICAL NOTE\*

Since the history of New England life and letters abounds in eminent Emersons, it has been thought useful to include this note in order to clarify the relationships between William Ralph Emerson, Ralph Waldo Emerson and others of the family.

William Ralph Emerson and Ralph Waldo Emerson were both seventh-generation descendants (although Ralph Waldo was the elder by thirty years) of a Thomas Emerson, who settled in Ipswich, Massachusetts in the middle of the seventeenth century and whose house there is now owned by the Society for the Preservation of New England Antiquities. They were both descended from Thomas Emerson's third child, Joseph, a minister in Milton, Massachusetts, making them fourth cousins on the direct descent. However, in 1744, William Ralph's great-grandfather, Daniel Emerson, married Hannah Emerson, the sister of Ralph Waldo's grandfather, William Emerson thus making the philosopher and the architect third cousins once removed. (The difference in age between members of the same generation is accounted for by the large families of the day. Hannah Emerson, born 1722, was the first child in the family, and William Emerson, born 1743, was the twelfth child.)

As was stated on page 2 of the introduction, William Ralph Emerson was born in Alton, Illinois, March 11, 1833, the son of Dr. William S. Emerson and Olive Bourne Emerson, both originally from Kennebunk, Maine. Dr. Emerson, a medical doctor like his father, Dr. Samuel B. Emerson, went to Illinois about 1830 in order to speculate in western land. (Dr. William Emerson was also an amateur musician and, for a time, taught a singing school.) He died in 1837, leaving a widow and two small sons, Lincoln Fletcher and William Ralph. His widow eventually married a Captain Ivory Lord, of Kennebunk, Maine. As a boy and young man, William Ralph Emerson seems to have divided his time between Kennebunk and Boston,

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\*For published and archival sources, see Bibliographical note, page 90. I am grateful to Miss Anne Harding of the New England Historic Genealogical Society for help in disentangling the Ralph Waldo/William Ralph Emerson relationship.

where he lived with his uncle, George B. Emerson, a noted educator. (It is not known what contact, if any, there was between Ralph Waldo and William Ralph Emerson, but Ralph Waldo and George B. Emerson visited and corresponded.)

William Ralph Emerson married twice. In 1863 he married Katherine M. Mears, who was the mother of his son, Ralph Lincoln, born in 1868. It is not known just when Katherine Mears Emerson died, but, on September 14, 1873, Emerson married Sylvia Hathaway Watson of Milton, daughter of Robert S. Watson and Mary Hathaway Watson. (Mary Hathaway Watson's twin sister, Sarah Swain Hathaway, was the wife of John Murray Forbes of Boston and Milton.) The only child of this marriage was a daughter, born in 1874, who lived one year.

Emerson's son, Ralph Lincoln, graduated from Harvard in 1891 and worked as a draughtsman in his father's office from 1896 until 1899. He designed a few buildings on his own, including St. Michael's Episcopal Church in Milton, Massachusetts. On the day before his death, April 15, 1899, Ralph Lincoln married Miss Lillias Stephenson of St. Paul, Minnesota. Mrs. Lillias Emerson died in 1954.

The architect William Emerson (1874-1957), who was Dean of the Massachusetts Institute of Technology School of Design from 1919-1939 and with whom William Ralph Emerson is often confused, was a grand-nephew of Ralph Waldo Emerson. His father was Dr. John Haven Emerson and his grand-father was Ralph Waldo Emerson's brother, William.

William Ralph Emerson died November 23, 1917. His funeral was held at his home at 201 Randolph Avenue, Milton, Massachusetts, and the officiating minister was the Reverend Howard N. Brown of King's Chapel, Boston. He is buried at Forest Hills Cemetery, Boston, Massachusetts

**William Ralph Emerson  
Architect**

Biographical:

Born: 1833

Married Catherine Mears: 1863

Married Sylvia Hathaway Watson: 1873

Son Lincoln Ralph Emerson dies: 1898

Emerson died: 1917

Practices:

1854 – worked for Jonathan Preston  
1857-1861 – Emerson & Preston  
1862-1864 – practiced on own  
1864-1873 – formed a partnership with Carl Fehmer  
Emerson & Fehmer  
1874-1909 practiced on own

Professional:

1867 - Charter member of Boston Society of Architects  
1869 - Work on "modernizing" Old Ship Meeting House, Hingham  
1869 - Lecture to BSA. On destruction of the "true American architecture"  
1880s - Many buildings published in *American Architect and Building News*  
1880s-1890s - allowed publication of his work to advertise building products for  
Dexter Brothers and Samuel Cabot stains.  
1889 - Series of four articles for *Technology Architectural Review*.

Draughtsmen at work in his office:

William E. Barry (1860s)

Charles A. Rich (1876-1881) – later formed NY firm Lamb & Rich.

Albert Winslow Cobb (1880s) – later practiced with John Calvin Stevens.

Jarvis Hunt (1889-1891) – nephew of architect Richard Morris Hunt.

**Resolutions on the death of William Ralph Emerson**  
**Boston Society of Architects**  
**1918**

Through the death of William Ralph Emerson, the Boston Society of Architects loses one of its earliest and best loved members. Mr. Emerson was a native product of New England, delighting in ingenious contrivances and original inventions, filled with enthusiasms for whatever was spontaneous and natural, and abhorring conventions of every sort. He was the creator of the shingle country house of the New England coast, and taught his generation how to use local materials without apology, but rather with pride in their rough and homespun character. He was keenly alive to the picturesque in nature and in art, and pupils he was a source of inspiration, a unique personality, not shaped in the schools, a lover of artistic freedom. Though of late years Mr. Emerson has seldom been present at meetings of this Society, he has not been absent from the memories of those who knew him in the earlier days of his activity. Only they can justly estimate the great value of this influence in liberating architectural design from artificiality and in making simple and natural means artistically effective.<sup>1</sup>

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<sup>1</sup> Roger Reed. *A Delight to All Who Know It, The Maine Summer Architecture of William R. Emerson*. (Portland, NE: Maine Citizens for Historic Preservation: 1995), p. 15.

## EXAMPLES of WILLIAM RALPH EMERSON'S RESIDENTIAL WORK

### 1870s –

“Three Pines” The Misses Forbes House, Milton, MA (1876)  
Nathaniel Davenport III House, Milton, MA (1877)  
William Ellery Channing Eustis House, Milton, MA (1878)  
T. R. Glover House, Milton, MA (1879)

These residences illustrate that Emerson was working in the fashionable Stick Style with Queen Anne and Romanesque Revival elements. In comparing the Centennial Bridge at Concord to the residential work that Emerson was producing at the same time, the influences of the Stick Style on the bridge design is clear. Likewise, given Emerson's growing interest in American Colonial architecture (as evidenced by his work on the Old Ship Meeting House in Dedham and his 1869 lecture about the vernacular architecture of New England) he must have welcomed the opportunity to be involved in the celebration of a memorial to Revolutionary heroes and events.

### 1880s –

Mossley Hall, Bar Harbor, ME (1882-83)  
William Ralph Emerson House, Milton, MA (1886)  
Mt. Desert Reading Room, Bar Harbor, ME (1886-87)  
St. Jude's Episcopal Church, Seal Harbor, ME (1887-89)  
Albert Stickney Cottage, Kittery, ME (1887-88)

The design of the 1888 bridge reflects the same changes that we see in his residential designs. A simplification of massing and removal of extraneous decorative elements. Japanese influence in motifs, roof lines, simple geometric railings and porch construction. The bridge design is truly a precursor of the geometric simplicity of the Arts and Crafts Movement

Two publications provide extensive examples of Emerson's work through both modern and historic photographs and original drawings. They are:

Cynthia Zaitzevsky. *The Architecture of William Ralph Emerson, 1833-1917*. (Cambridge, MA: Fogg Art Museum, Harvard University, 1969.)

Roger G. Reed. *A Delight to All Who Know It, The Maine Summer Architecture of William R. Emerson*. (Portland, ME: Maine Citizens for Historic Preservation, 1995.)

the architecture of  
**William Ralph Emerson**  
1833-1917

catalogue by Cynthia Zaitzevsky  
photography by Myron Miller

*Cynthia Zaitzevsky*

an exhibition presented by the Fogg Art Museum in  
collaboration with the Carpenter Center for the Visual  
Arts, Harvard University

may 30 through june 20, 1969



*A Delight to All Who Know It*

THE MAINE SUMMER ARCHITECTURE OF WILLIAM R. EMERSON

BY ROGER G. REED



**William Ralph Emerson  
1833-1917**

photo courtesy of Mr. & Mrs. Stephen Weld

A noted architect of the late nineteenth century, William Ralph Emerson lived in Milton, Massachusetts from 1886 until his death in 1917.

Married in 1873 to Sylvia Hathaway Watson, a niece of John Murray Forbes Emerson entered his most creative and influential period in the design of nearly twenty projects in Milton. The twelve completed projects which remain standing today in Milton reflect the amazing stylistic development of Emerson's most innovative period, the decade from 1876 to 1886. Existing projects range from the Stick Style house done for the sisters of John Murray Forbes, to the monumental stone W. E. C. Eustis mansion, to the culmination of his Shingle Style design in the house he designed for himself and his wife in 1886.

### Seminar Speakers:

**Cynthia Zaitzevsky, Ph.D.**, Harvard University. Dr. Zaitzevsky is an architectural preservationist and consultant practicing in Brookline, MA. She is the author of The Architecture of William Ralph Emerson 1833-1917, Fogg Museum, Cambridge, 1969, and Frederick Law Omsted and the Boston Park System, Belknap Press of Harvard University Press, Cambridge, MA 1982.

**Roger Reed** is an architectural historian and preservation planner working for the Brookline Preservation Commission. He is past president of the Society of Architectural Historians and author of A Delight to All Who Know it, The Maine Summer Architecture of William R. Emerson, Maine Citizens for Historic Preservation, Portland, Maine 1995.

### Special Thanks To:

Richard Armstrong  
Mr. & Mrs. Frederic Eustis  
Mr. & Mrs. John Hayes  
Mr. & Mrs. Paul Schuepp  
Mr. & Mrs. Stephen Weld  
Cynthia Zaitzevsky  
Myron Miller  
Roger Reed  
Linda Weld

BSA Historic Resources Committee  
The Society of Architectural Historians

### Project Sponsors:

Jack Conway Realtors  
Milton Cultural Council, a local agency supported by the Massachusetts Cultural Council, a state agency.

## STICK STONE & SHINGLE STYLE



The Misses Forbes House, Milton, MA, 1876  
(Architectural Sketchbook, 1876)

## THE ARCHITECTURE OF WILLIAM RALPH EMERSON in Milton, Massachusetts

A Seminar Presented by

**Captain Forbes House Museum**  
215 Adams Street  
Milton, MA 02186

**Saturday, June 3, 2000**  
1:00 - 5:00 p.m.

An exhibition featuring Myron Miller's photographs of Emerson's architecture will be on display at the Museum through August 2000.

## Tour Notes...

### The William Ralph Emerson House, 1886 (exterior only)

The house Emerson designed for himself achieves what Dr. Zaitzevsky calls the "culmination" of Emerson's Shingle Style design. Here Emerson used only square cut shingles, originally dark brown, to create an exterior wall which almost merges with the roof. The result is a simplicity of massing which unifies the projecting dormers, bays, porches, chimneys, and towers. These seemingly random facade elements reflect a less formal more linear floor plan than Emerson customarily used. The principal rooms are oriented to the South which was originally the main entry and to gain sunlight continuously during the day.

### The William Jones Ladd House, 1881-1882 (first floor only)

The Ladd house is a typically asymmetrical Queen Anne facade with clapboarding on the first floor and fancy cut shingles above. The plan is organized around an entry hall with open stair. The first floor rooms - two parlors and dining room - have windows and bays capturing light and views to the South and to what once was a formal garden. Remaining in the same family since it was built, the Ladd house has been contains many of its original furnishings.

### "Three Pines,"

### The Misses Forbes House,

1873 (drive by only)

Built for Margaret and Frances, sisters of J. M. Forbes and aunts of Emerson's wife Sylvia, this modest stick style house is one of Emerson's earliest commissions in Milton which still stands. Its facade remains largely unchanged and intact. The interior, however, has been converted to rental units and the site has been encroached upon by nearby development.

### The Augustus Hemenway House, 1882-1883 (first floor only)

Picturesquely sited on Green Street just over the Milton line, the original Hemenway estate was comprised of over 1,000 acres and included numerous out buildings. The house itself originally had a large service wing which burned in the 1958. The facade is, for Emerson, a restrained use of shingles originally stained dark red. The two gables which define the roof line of the house are surfaced with stones set in mortar which giving a textural interest to one of Emerson's quieter designs. Inside there is a large notable stair hall. Incorporating a nook with built in benches and a round sun burst window.

### The Col. Robert H. Stevenson Stable, 1883

The stables remain almost entirely as they were when built. Modifications have been made to the adjacent living quarters and the ornamental balcony rail over the main stable door is missing, but the facade remains a delightful composition of fancily cut shingles in a variety of patterns. The roof gables and towers enliven what is a relatively simple building mass. Inside, the loft floor is suspended to create a large open space for turning carriages on the ground floor.

### W. E. C. Eustis House,

1878 (first and second floors only)

The exterior of this monumental stone house is a compositional tour de force. Emerson combined elements of Queen Anne and Romesque Revival design and used a variety of materials and colors to create an eclectic but usually coherent design. His use of stone and masonry in the Eustis house is unusual for his work in Milton. He was, however, adept at using stone and combining with shingles or clapboard as he did for Eustis' mother-in-law, Mrs. Mary Hemenway, at Manchester-by-the-Sea.

The stair hall in the Eustis House is a marvel of spatial complexity and visual delight. It is the unifying element in a house with a large floor area and many rooms.



**Augustus Hemenway House**  
67 Green St., Canton, MA  
1883

photo from the Sutermeister Collection,  
courtesy of the Milton Historical Society



**Col. Robert H. Stevenson  
House & Stables**  
(house destroyed by fire 1958)  
33 Green St., Milton, MA  
c. 1883

"American Architect and Building News",  
November 15, 1884



**Edward C. Perkins House**  
273 Adams St., Milton, MA  
1884

drawing by Linda Weld AIA



**James M. Barnard House**  
279 Adams St., Milton, MA  
1885-1886

drawing by Linda Weld AIA



**William Ralph Emerson House**  
201 Randolph Ave., Milton, MA  
1886

drawing by Linda Weld AIA



**William H. Forbes House**  
172 Adams St., Milton, MA  
1892

drawing by Linda Weld AIA



"Three Pines"  
The Misses Forbes House  
7 Fairfax St., Milton, MA  
1876

drawn by Charles A. Rich, "Architectural  
Sketchbook," Boston, April 1876



Nathaniel Davenport III House  
1514 Canton Ave., Milton, MA  
remodeled by W. R. Emerson  
1877

"American Architect and Building News,"  
December 22, 1877



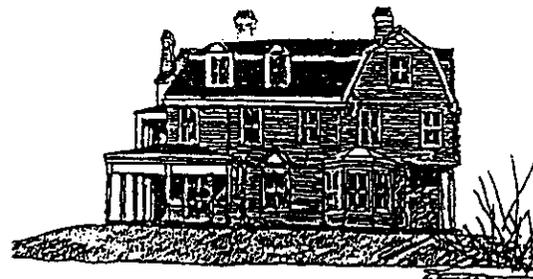
William Ellery  
Channing Eustis House  
1426 Canton Ave., Milton, MA  
1878

photograph by Myron Miller AIA



T. R. Glover House  
320 Adams St., Milton, MA  
1879

"American Architect," 1879



William Jones Ladd House  
267 Adams St., Milton, MA  
1881-1882

drawing by Gregory Downes AIA



Robert C. Watson House  
271 Adams St., Milton, MA  
1882

drawing by Gregory Downes AIA



Redwood, land side, circa 1885 (Maine Historic Preservation Commission).

**Redwood, Built 1879.**

Copied from: Roger Reed's - *A Delight to All Who Know It, The Maine Summer Architecture of William R. Emerson.* (Portland, ME: Maine Citizens for Historic Preservation, 1995), p. 24.



Mossley Hall, east elevation, circa 1885 (Maine Historic Preservation Commission).

### **Mossley Hall, Built 1882-83**

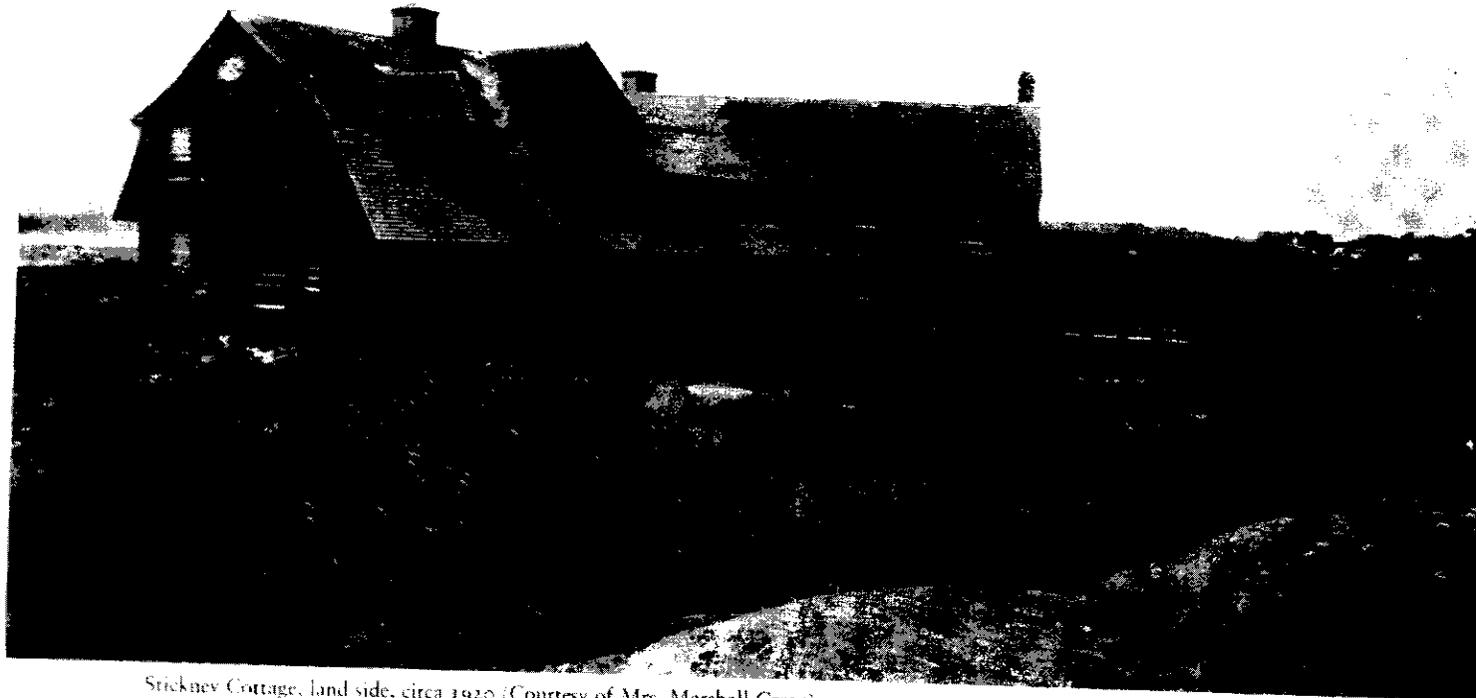
Copied from: Roger Reed's - *A Delight to All Who Know It, The Maine Summer Architecture of William R. Emerson.* (Portland, ME: Maine Citizens for Historic Preservation, 1995), p. 54.



Mt. Desert Reading Room, east elevation, circa 1910 (Maine Historic Preservation Commission).

**Mt. Desert Reading Room, Built 1886-87**

Copied from: Roger Reed's - *A Delight to All Who Know It, The Maine Summer Architecture of William R. Emerson.* (Portland, ME: Maine Citizens for Historic Preservation, 1995), p. 71.



Stickney Cottage, land side, circa 1920 (Courtesy of Mrs. Marshall Green).

**Stickney Cottage, Built 1887-88**

Copied from: Roger Reed's - *A Delight to All Who Know It, The Maine Summer Architecture of William R. Emerson.* (Portland, ME: Maine Citizens for Historic Preservation, 1995), p. 86.



St. Jude's Episcopal Church, interior (Richard Cheek).

**St. Jude's Episcopal Church, Built 1887-89**

Copied from: Roger Reed's - *A Delight to All Who Know It, The Maine Summer Architecture of William R. Emerson.* (Portland, ME: Maine Citizens for Historic Preservation, 1995), p. 84..

**APPENDIX E.**

**J. R. Worcester, Bridge Engineer  
Biographical Information**

## Joseph Ruggles Worcester – Civil Engineer

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### Directory of Former Students of Harvard Living in 1919

Harvard University– Class of 1882  
Civil Engineering, Waltham

### 1890 Boston City Directory

Joseph R. Worcester, Chief Engineer  
Boston Bridge Works

Location #1: 70 Kilby – Room 83  
Location #2: Waltham

### 1904 Boston City Directory (p. 422)

Joseph R. Worcester, Civil Engineer  
53 State Street, Room 1107

### Greg Galer – Thesis Paper

The Boston Bridge Works and The Evolution of Truss Building Technology,  
(Brown University, June, 1989.)

Currently teaching at Stonehill College

### Conversation with Steve Roper/Mass. Highway Department, Bridge Specialist

20 bridges known by J.R. Worcester in Boston (list in file)

Began as a draughtsman with Boston Bridge Works 1884-1894  
1907 – Began own company – J. R. Worcester and Company

Obituary: New York Times, May 10, 1943

### J. R. Worcester & Co.

Excerpted from: *HABS/HAER- Walpole, NH – Westminster, VT Bridge, no. NY-13, p. 8)*

The engineering firm was founded in 1907 by Joseph R. Worcester (1860-1943) of Waltham, Mass., one of the country's foremost engineers in the design of steel and reinforced structures and foundations. Worcester, a graduate of Harvard

College, Class of 1882, was first employed as a draftsman for the Boston Bridge Works. He became the firm's engineer and remained there until 1894, when he established his own business (located at 53 State Street) as a consulting civil engineer. Worcester retired in 1924 but continued as a consultant until his death. His son, Thomas, joined J. R. Worcester & Co. also as a civil engineer.

Joseph R. Worcester enjoyed a distinguished career in the design of steel structures for over 60 years. He also made a significant contribution to the emerging technology of reinforced concrete structures during the early 20th century. Early in his career he designed the steel reinforcement to support the dome of the Bullfinch-designed State House in Boston, as well as several large office buildings, including 60 State Street and the Devonshire Building. Worcester also designed the train shed of the South Union Terminal in Boston. For many years he was the consulting engineer for the Boston Transit Commission. He designed most of the elevated structures of the Boston Elevated Railway, the steelwork of the subway, and the viaduct across the Charles River Dam. Other examples of his work in reinforced concrete include Harvard Stadium and the Hampden County Bridge at Springfield, Mass.

Between 1904 and 1917 Worcester served as a member of a special committee on reinforced concrete of the American Society of Civil Engineers. In 1921 he was appointed by Secretary of Commerce Herbert Hoover to a committee to formulate building codes and material standards, a position he held nearly until his death.

Worcester was a member of the American Society of Civil Engineers, a Fellow of the American Academy of Arts and Sciences and president of the Boston Society of Civil Engineers (1908). He was an active member of the American Railway Engineer's Association, the American Society for Testing Materials, and the American Concrete Institute."

-----  
OBITUARY – May 10, 1943 – *The New York Times*

J. R. Worcester, 83, Engineer, is Dead, Noted as Designer of Steel and Reinforced Structures and Foundations – Long was a consultant – Planned Most of the Boston Elevated Railway and Steel Work of the Subway.

Joseph R. Worcester of Waltham, Mass, one of this country's foremost engineers in the design of steel and reinforced structures and foundations, died today in the Waltham Hospital, after a short illness. His age was 83.

For many years consulting engineer of the Boston Transit Commission, Mr. Worcester had designed most of the elevated structures of the Boston Elevated Railway, the steel work of the Boston subway and the viaduct across the Charles River dam. Early

in his career he designed the steel work necessary to support the dome of the State House here. He had also designed the steel work for several large office building, the train shed, since removed, of the South Union Station of the Boston Terminal Company, and one of the first steel-arch bridges over the Connecticut River, that at Bellows Falls, Vt., and he was on the commission that built the Hampden County bridge at Springfield.

Born in Waltham, the son of Benjamin and Mary Clapp Ruggles Worcester, Mr. Worcester was graduated from Harvard College in 1882.

His first position was as a draftsman at the Boston Bridge Works. From 1884 to 1894 he was the firm's engineer, and then he became a consulting civil engineer. In 1907 he organized the firm of J.R. Worcester & Co. He retired in 1924 but continued as consultant until his death.

President Hoover, when Secretary of Commerce in 1921, appointed him to serve on a committee to formulate building codes and material standards. He retained the appointment until recently.

He married in 1889 Alice Jeanette Wheeler of Lincoln, Mass. Mrs. Worcester died in 1931. Surviving are three daughters, Mrs. Alice M. Howe, wife of Clarence D. Howe of Ottawa, Ont., Canadian Manager of Munitions and Supplies and Mrs. Charles T. Porter and Miss Ruth H. Worcester of Waltham, a son Thomas Worcester of Waltham associated with the family firm, and eight grandchildren.

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1909. North Bridge. Built by J. R. Worcester & Co. Concrete pile bridge. 120' x 13', 7 spans, rock face concrete abutments. \$3,136.00 Letter from J. R. Worcester inserted. Town Records Annual Report 1910. (ref. Mass. High. Dept. – file C 19-12)

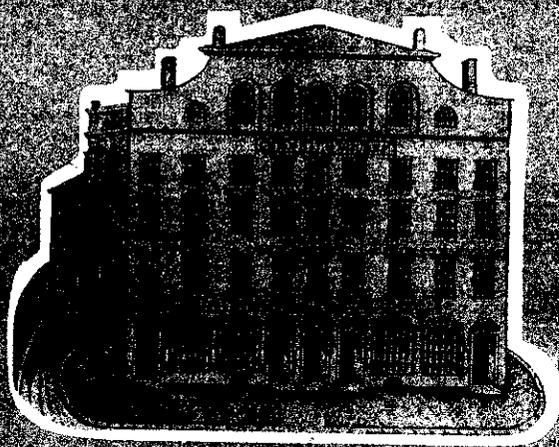
1921. Repairs to North Bridge. 1921 Annual Report Town Records – fold out sheet for all bridges in Concord. (ref. Mass. High. Dept. – file C 19-12)

1955. Hurricane Diane damaged the concrete bridge beyond repair.

**APPENDIX F.**

**Whitman and Howard, Engineers**

**Biographical Pamphlet of Firm**





BOSTON IN 1869 WAS A BUSTLING HOME TO THOSE BUILDING A GREAT NATION THROUGH COMMERCE, shipbuilding and manufacturing. A visitor crossing the cobblestone sidewalks and climbing a narrow wooden staircase of 209 Washington Street would find a new company and its tiny office. On the door, the names were Whitman & Breck. Inside, the visitor would meet two well dressed and well educated Bostonians with a talent for engineering and survey.

125 years later, the business is as vigorous as ever. Much has changed since then. But the tradition of client service established by the founders is just as important today.

The firm's first home at 209 Washington Street in Boston.

THE HORSES WERE SADDLED, THE MAPS CONSULTED, AND THE HEAVY SURVEY equipment loaded. Herbert T. Whitman and Charles E. C. Breck set out from Boston on horseback in 1869 to survey the hills and pastures of Revere. It was the first assignment for Whitman & Breck; their survey fee was \$1500.

It was an age of expansion in America. The transcontinental rail road was completed that year with the driving of the golden spike in Promontory, Utah. Reconstruction in the South sparked economic progress throughout the young nation.

Back in Boston, post civil war growth meant new towns, new houses, new roads and new bridges. At 209 Washington Street, a partnership of civil engineers and surveyors was formed that would become Whitman & Howard.

Among the early projects of the firm was the engineering and track layout for the new subways and street railways that were spreading across Boston. In 1887, W&H designed track for the first overhead electric trolley in Massachusetts at Revere Beach.

They also designed the Great Ocean Pier, a 750-foot ocean boardwalk along Revere Beach.

In the late 1800's, Herbert Whitman bought out Breck's half of the business. A young man by the name of Channing Howard paid \$1500 to Whitman in 1896 to become an equal partner. The name became on the door became Whitman & Howard.

## The Early Years



## New Tech

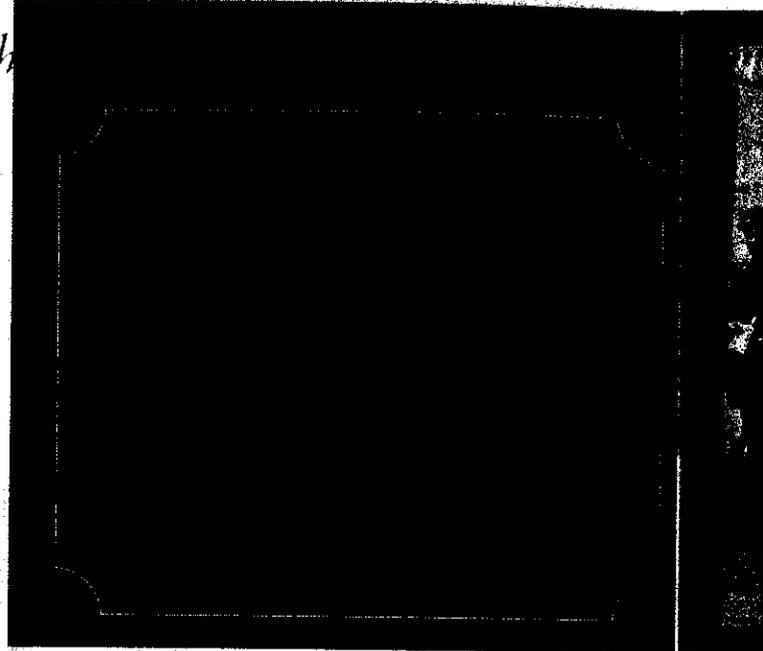
IN MASSACHUSETTS, ENGINEERS  
DESIGNED NEW WATER SYSTEMS  
and roads. With few standards and  
precedents to follow, W&H engi-  
neers invented methods and devel-  
oped technologies in the field. They  
used the first hydraulic pump in  
Boston, experimented with granite  
and other materials for hard sur-  
face road paving, and found new  
methods for using concrete and  
mortar for walls and foundations.

The earliest municipal water sys-  
tems were designed and built for  
the towns of Sagamore, Lincoln,  
Northon and Haver. A large water  
tower was built in Wintthrop  
requiring the thickest steel plates  
and fasteners ever used. The water  
tower is still standing today.

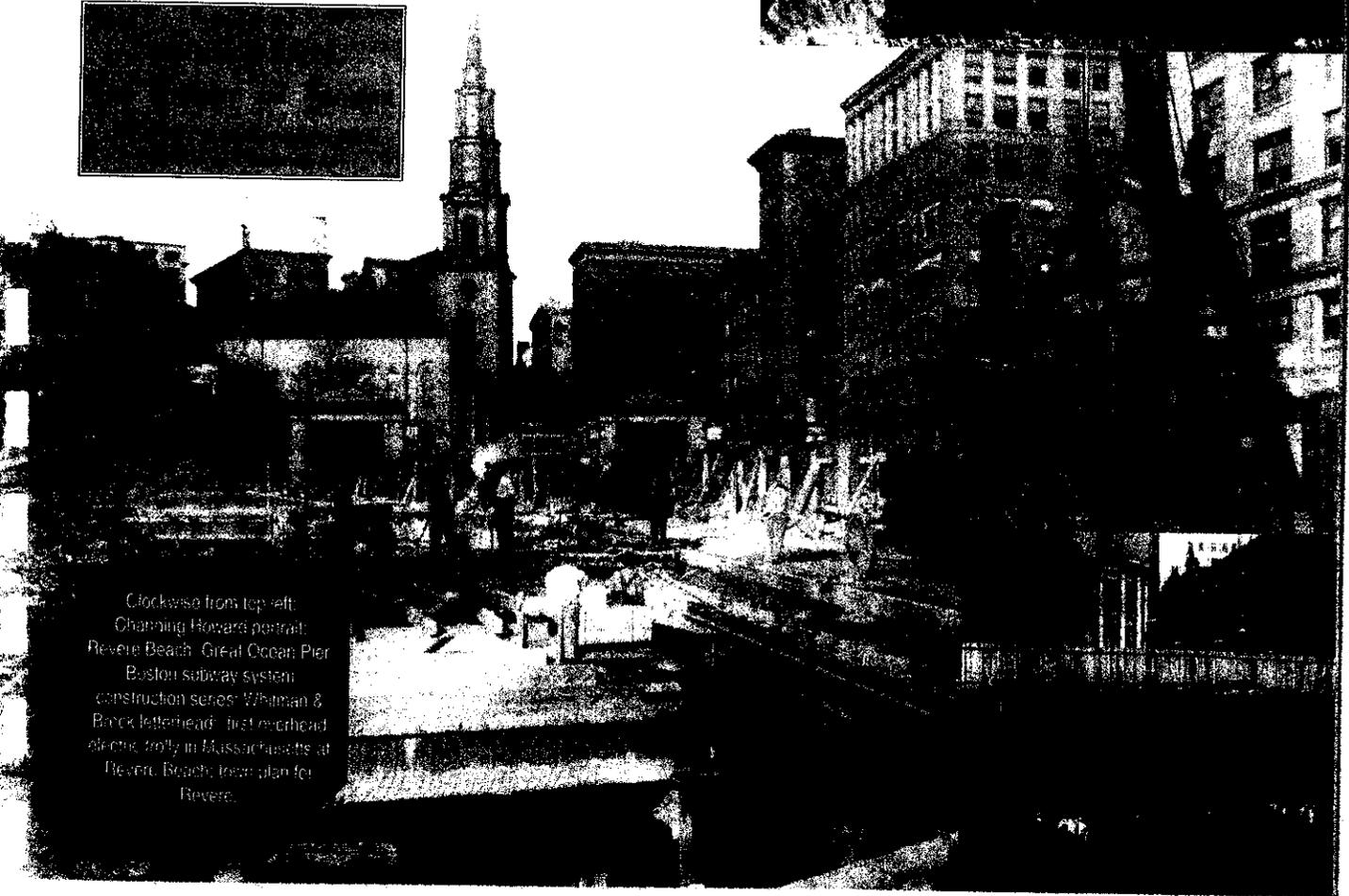
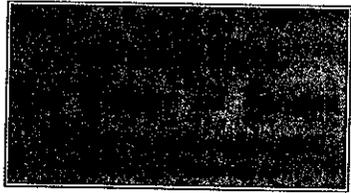
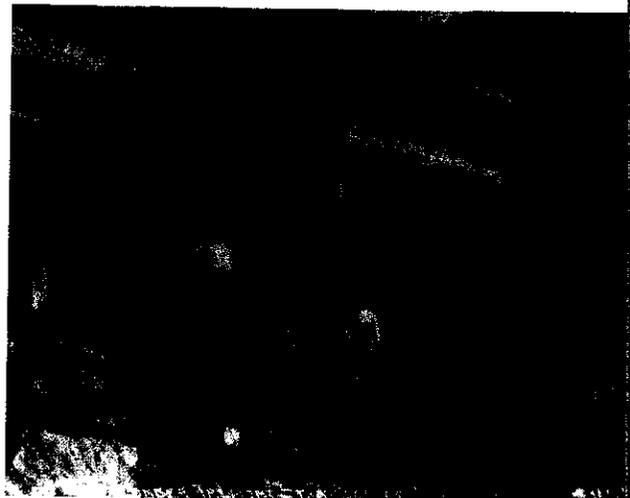
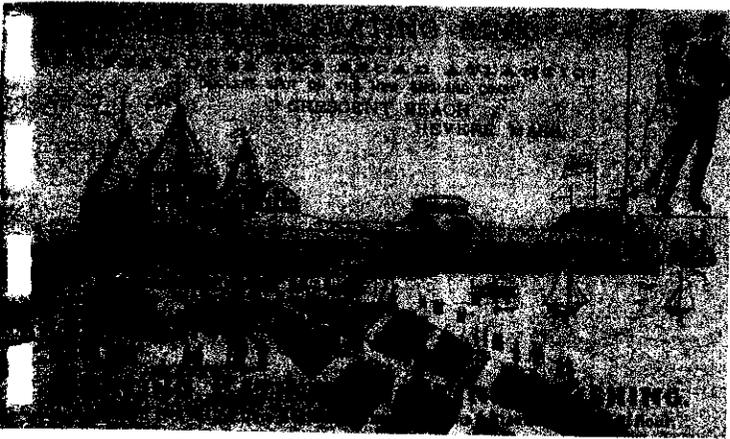
W&H also worked on the filling of  
the Back Bay along Commonwealth  
Avenue in Boston.

Site planning and land-  
scape design commissions  
were received for plan-  
ning the new Chestnut Hill  
community and the new  
campus for McLean  
Hospital in Belmont.

McLean Hospital  
Belmont, Massachusetts  
1938-1940  
W&H designed and supervised  
the construction of the  
hospital building and  
grounds. The hospital  
building is a landmark  
structure and the  
grounds are a beautiful  
park.



**McLEAN HOSPITAL GROUNDS**



Clockwise from top left:  
Channing Howard portrait;  
Revere Beach; Great Ocean Pier;  
Boston subway system;  
construction series; Whitman &  
Black letterhead; first overhead  
electric trolley in Massachusetts at  
Revere Beach; town plan for  
Revere.

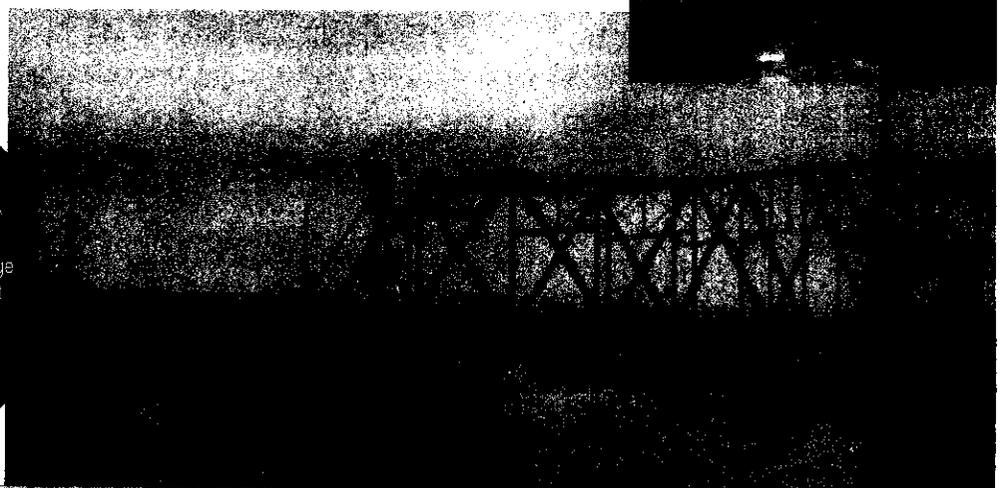
IN THE EARLY 1900'S THE FIRM LAID OUT SAGAMORE BEACH village, built the Wellfleet Dike, designed an artificial harbor for Falmouth, and provided survey work for towns and fishing vil- lages on Cape Cod. This work established W&H on the Cape, a presence that continues with service to over a dozen Cape Cod clients.

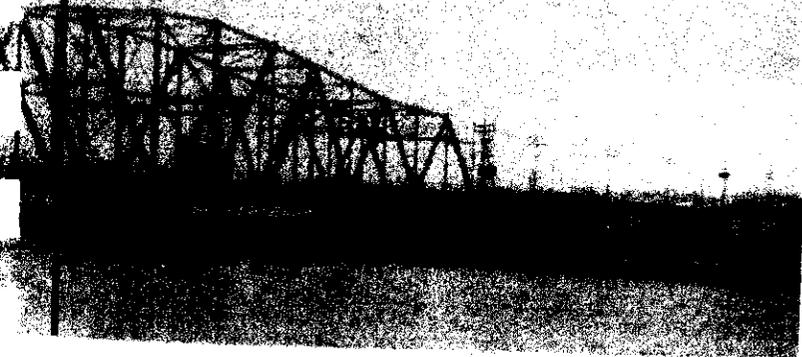
With the outbreak of World War I in 1914, W&H was called on to complete survey and plan- ning for military bases includ- ing the South Boston Army Base and the Squantum Naval Shipyard. The 1920's brought a real estate boom to Greater Boston and to W&H. The firm worked for land companies to survey and provide street and utility layout in towns such as Belmont, Watertown, Quincy and West Roxbury.

Railroads, local railways and streetcars moved freight and passengers. W&H designed many rail systems around Boston including the famous Narrow Gauge Railroad that connected East Boston, Revere, Winthrop and Lynn with downtown Boston.

Clockwise from top:  
 Track layout, Winthrop, MA  
 (Channing Howard third from  
 right); candidate Channing  
 Howard, age 39; Narrow Gauge  
 Railway - Lynn-Revere-East  
 Boston, Fore River Bridge,  
 Quincy, MA; road, water and  
 sewer construction  
 Belmont, MA

## New Century Brings New Services





**CHANNING HOWARD**  
Member Iowa's Council of Advisors  
Candidate for Representative.

 (OVER)

## *The Great Depression & The New Deal*

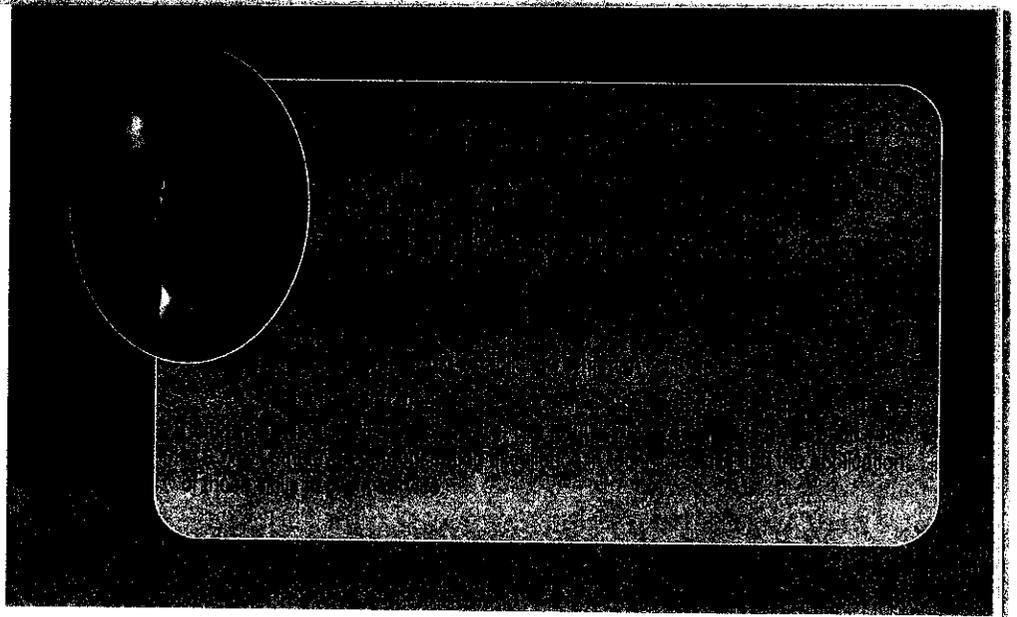
WHEN THE STOCK MARKET  
CRASHED IN 1929,

business suffered considerably. FDR's New Deal programs and the federal work that followed brought business to W&H, and changed the way infrastructure projects were funded in America. For the first time, the federal government took a lead role in funding water, wastewater, transportation and other large public works projects.

At W&H in the late 1930's, water and sewer systems were designed and built for Harwich, Cotuit, Centerville-Osterville, Townsend, Bourne, Buzzard's Bay, Provincetown, Hamilton, Canton and Newburyport. Ship channels, docks, oil tank farms and even race tracks such as Revere's Suffolk Downs were projects also completed by the growing firm. A pioneering hydroelectric project was designed in Lewiston, Maine.



Clockwise from top right:  
Paul F. Howard  
Suffolk Downs construction,  
Revere, MA, Whelan & Howard  
advertisement from 1932.  
Depression era water projects  
in Cape Cod, MA



WORLD WAR II YEARS AT W&H WERE A BUSY PERIOD OF

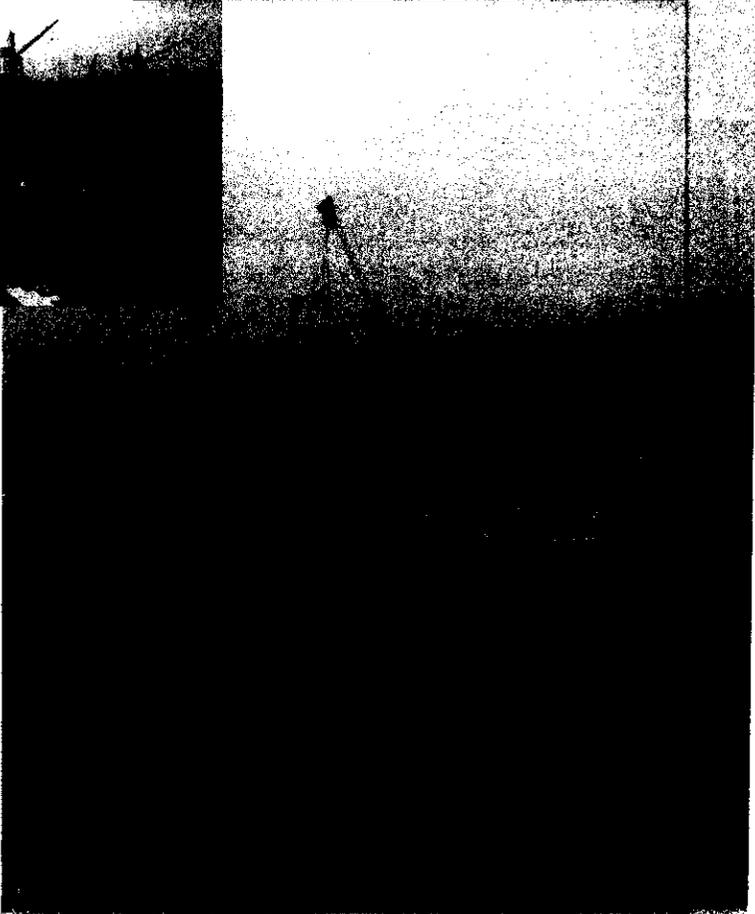
commitment to the federal government and the war effort. The U.S. Navy raced to build ships, and W&H raced to help build the shipyards. Housing for shipbuilders and their families was designed in Portsmouth, NH, Bath, ME and South Weymouth, MA. An ammunition depot with its own railroad tracks and water system was built in Hingham for the US Navy. Hospitals, air fields, a naval air station and emergency oil storage facilities were all completed to support the war effort in the 1940's.

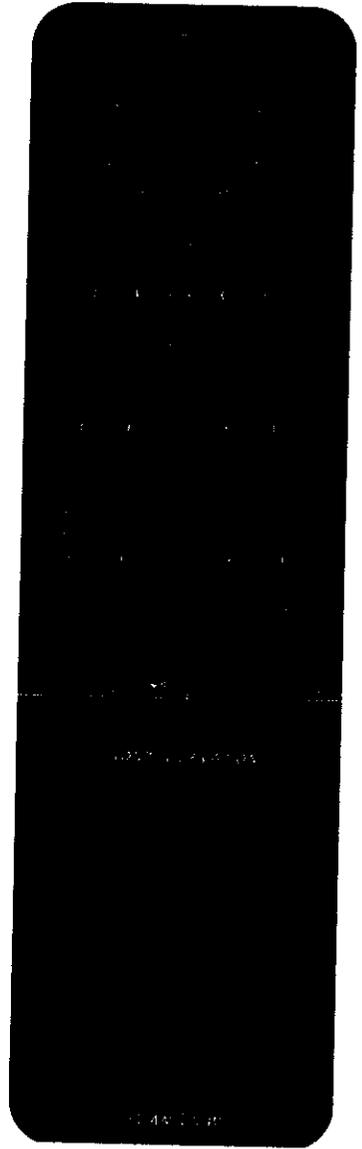
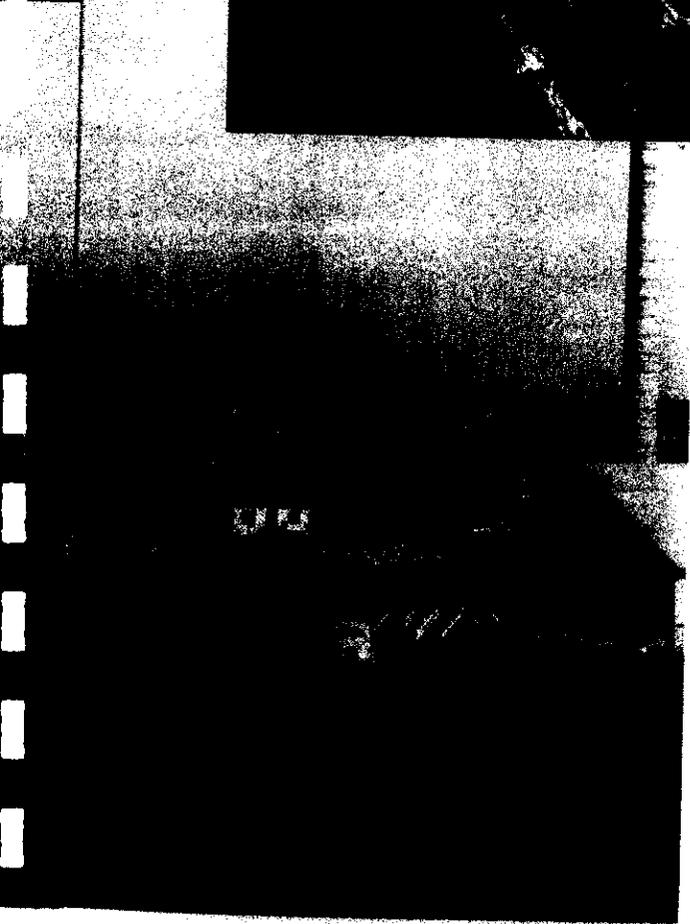
After the War, the workload of the firm expanded again, with new work in water, transportation, wastewater and civil engineering. A series of oil tank farms and pier projects were completed for the Union Oil Company in Revere and East Boston.

Complete water supply and distribution systems were designed for Yarmouth, Attleboro, Mansfield, the Sandwich Water District, and the Dennis Water District. Wastewater and sewer construction projects were completed in Burlington, VT, Canton, MA and Middleborough, MA.

Clockwise from top right:  
Tank farm and oil tanker docking facilities, East Boston, MA;  
mailing detail of water tower, Belchertown, MA; construction plans, Whisman & Howard offices, Hingham Ship yard series, Hingham, MA.

## *The War Years and Beyond*



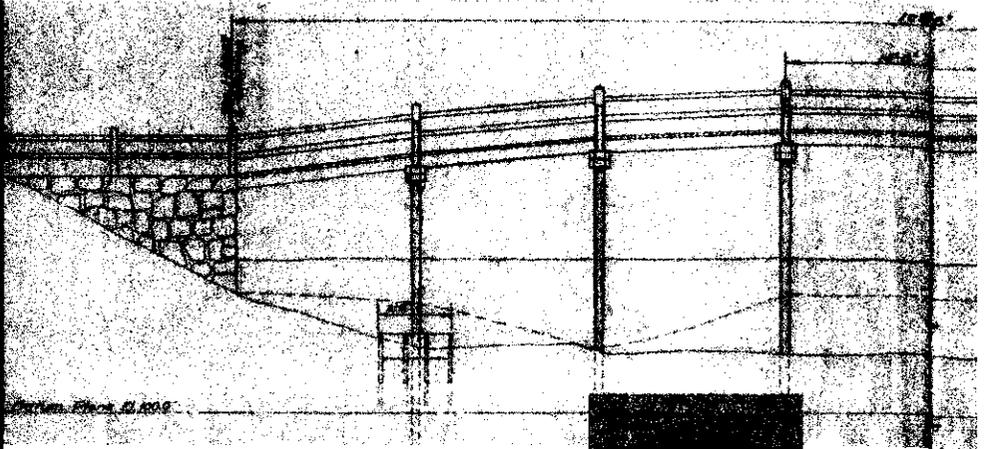


THE BUILDING OF THE INTERSTATE  
HIGHWAY SYSTEM MEANT

opportunities for transportation work for W&H I 91 in Springfield and Holyoke and the Fall River Western Expressway were among the highway design projects. Commercial and institutional work expanded, with new clients such as the University of Massachusetts, Tufts University, Bentley College and the U.S. Coast Guard Academy.

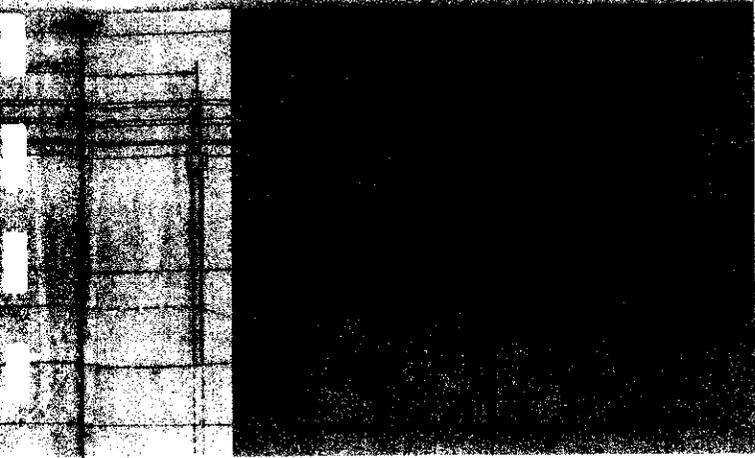
Paul Howard of Whitman & Howard introduced new water treatment technology with the design of the Kittery Maine water treatment plant in 1961. This plant was the first municipal facility in New England to employ an innovative sand filter system for water purification, a design widely adopted thereafter. Other pioneering firsts soon followed, including water treatment technology firsts in Manchester, NH and Somerset, MA.

Whitman & Howard's most historic assignment was the redesign of the famous Old North Bridge in Concord, Massachusetts. In 1955, a hurricane destroyed the structure. W&H redesigned the bridge to match the original Revolutionary War design.

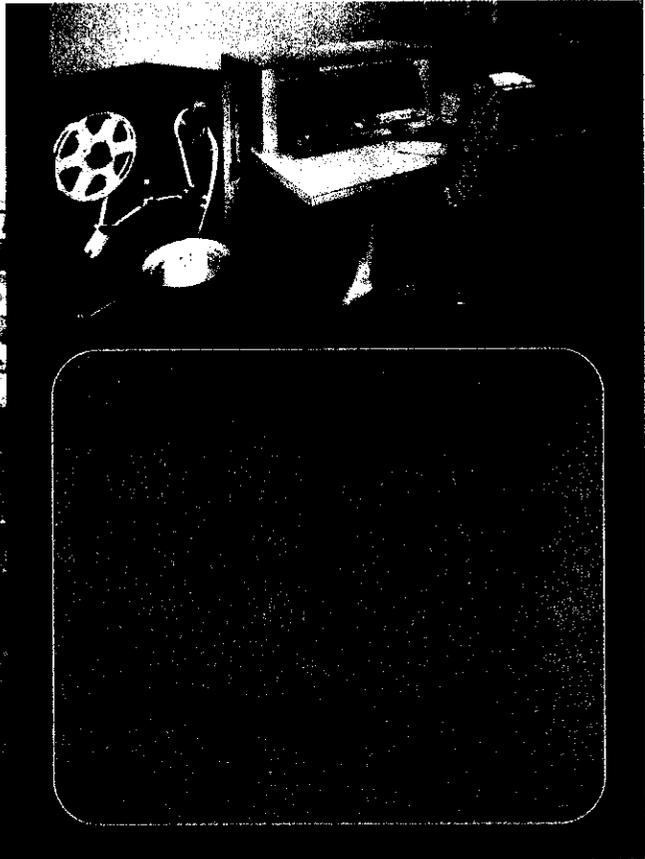


*Peace and Growth*





PHOTOGRAPH BY  
DAN WOODS, THE NEW YORK  
TIMES, 1964. THE PHOTO  
WAS TAKEN IN THE  
MIDDLE OF THE  
MARCH 1964

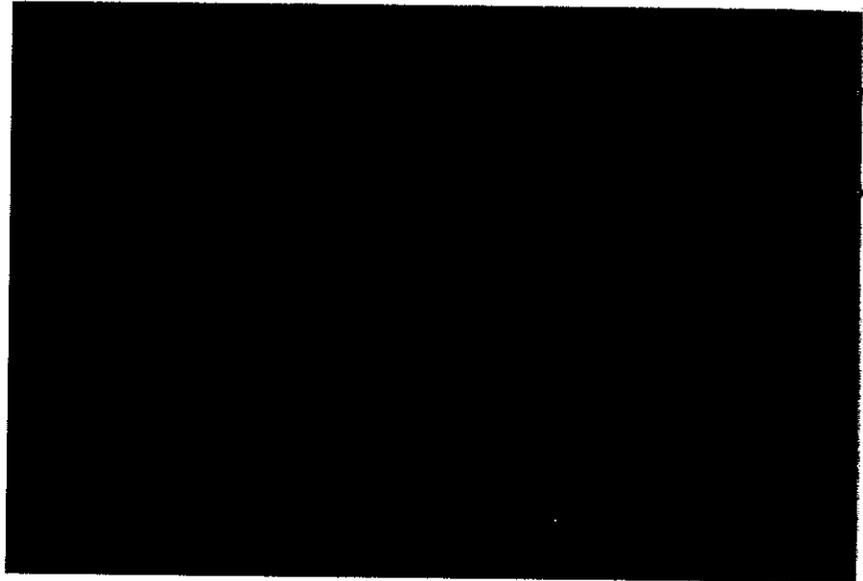


ODAY, W&H STAFF PROVIDES  
TECHNICAL AND MANAGEMENT  
services in the areas of water  
treatment, groundwater supply  
and protection, transportation,  
civil engineering, site and land  
scape design, wastewater treat-  
ment, pollution control and oper-  
ation and maintenance (O&M).

From designing high tech sys-  
tems allowing new treatment  
facilities to be operated via  
remote computer to planning  
sensible urban transportation  
systems, W&H has stayed on the  
leading edge of technology and  
service.

The O&M Services Group of  
W&H manages wastewater and  
water treatment facilities in four  
states. Computer services with  
applications that were unthink-  
able a few years ago are now a  
routine part of solving problems  
for our clients. Speed, ease of  
operation, long term efficiency  
and project aesthetics are what  
clients demand -and get- from  
Whitman & Howard.

## *Technology and Innovation Define New Clients*



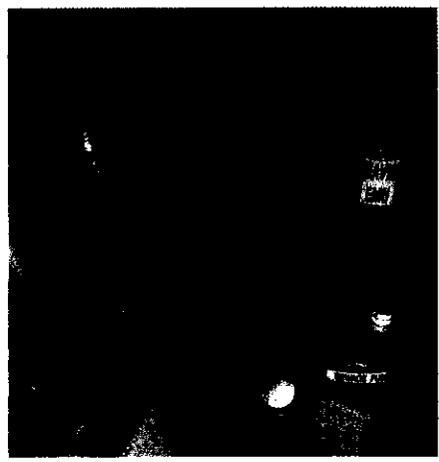
*Nantucket Island's wastewater facilities use state-of-the-art odor control systems to protect the surrounding environment.*

*The St.  
blend in*



*W&H architects designed a total makeover of an old warehouse building into a new office and operations center for the Reading, MA Municipal Light Department.*

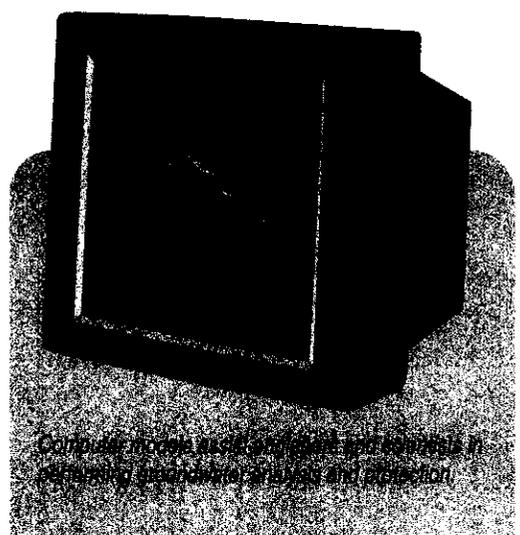
# New Client Services



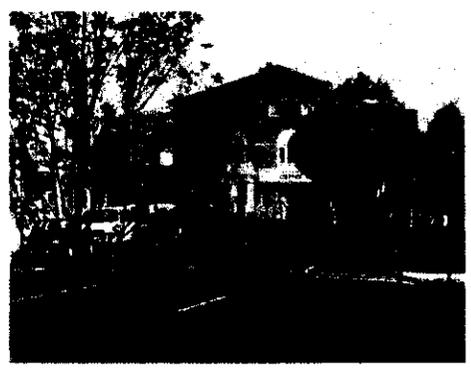
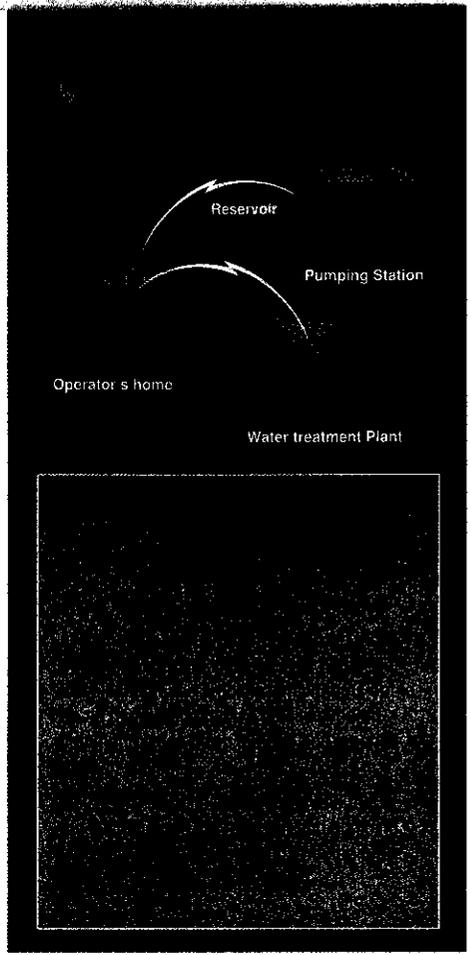
*Underground pumps keep the Portsmouth, NH wastewater collection and treatment system running smoothly through floods and storms.*



*The St. Albans, Vermont water treatment facility was designed to blend in with barns and open fields of the Vermont landscape.*



*Computer models assist in the design and construction of new roads and streetscapes.*



*Transportation projects include new roadway and streetscape design in historic downtown Plymouth, MA.*

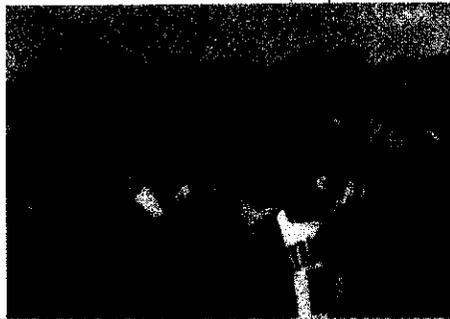
URING RECENT DECADES, W&H HAS BECOME ONE OF THE MOST successful and active engineering firms in the Northeast. W&H engineers and environmental scientists have become leaders in the areas of water treatment projects, water resources protection, transportation, permitting wastewater treatment projects and operation and maintenance services.

Today, as Whitman & Howard celebrates the 125th Anniversary of the firm, technological change is truly revolutionizing the consulting business. Staying ahead of the changes and bringing innovation and creative solutions to our clients is one of the distinguishing marks of Whitman & Howard. The methods have changed since the days of Herbert Whitman, Charles Breck and Channing Howard, but the importance of client service is what keeps Whitman & Howard focused on the future.

In celebration of this legacy, W&H funded educational grant programs in 1994 to the school systems of ten client communities. Called Awareness '94 this program promotes environmental awareness and education for children.

Sometimes the best thing about history is looking to the future.

## Looking to the Future



Middlesex Middle School  
October 3, 1994

Hello,  
I would just like to thank you for providing money for myself and other friends to travel on the science trip. I really enjoyed it! My favorite part was the boat ride. I learned how to tell a male horseshoe crab from a female horseshoe crab. I liked when I got to sleep on the boat ride, it was really fun! When we finished on the boat, we traveled to The Natural History Museum. The museum was very fun. We were able to inspect and observe plants and animals like real scientists. I learned about the rare and many endangered species. The trip was very exciting, it was very informative. The trip taught me about protecting the environment. Thanks again!!

Sincerely,  
Elizabeth

**APPENDIX G.**

**Report of Damages to Concrete Bridge**

**By Engineers  
Whitman and Howard  
Spring, 1956**

FLOOD DAMAGE  
INVESTIGATION REPORT  
BRIDGES IN TOWNS OF  
CONCORD, NEWTON & FRAMINGHAM  
Job No 686

**COPY**

...the ... curbs at the east  
... ..

**CONCORD: Bridge No. G-19-12 - Old North Bridge over  
the Concord River ( see Plate 1 )**

**DESCRIPTION:**

Reinforced concrete arch slab on two-pile, concrete bents with reinforced concrete rail and curbs - Pedestrian bridge.

**REPORT:**

One concrete pile on the south side is broken completely off and is hanging from the bridge - completely useless for support (see plate 2). All piles on the upstream side (south) are cracked badly at the bottom of the concrete corner brackets, pile to header (see plates 2 and 3). This probably was a construction joint. The piles are spalled so badly in some places that several inches of reinforcement is completely exposed. The piles also appear to have bent at this joint against the direction of flow.

There is a severe crack running completely through the slab and curbs at the west end directly over the junction with the abutment (see plates 4 and 5). The main portion of the bridge has lifted up slightly relative to the anchored portion along the line of this crack. This crack is 1/2-inch to 3/4-inch wide in places. There is definite indication of settlement of the bent adjacent to the west abutment especially the northerly pile. This settlement is reflected in the bridge deck and railing ( see plate 1).

COPY  
COPY

There is also cracking in the deck and curbs at the east abutment but not as pronounced (see plate 6). The piling on the downstream side (north) also shows spalling at the joint. (see plate 7). The concrete railing has been cracked and deformed by apparent settlement of the rock fill approaches on the east end.

RECOMMENDATION:

This structure in its present condition is probably safe for pedestrian use and any light trucks that might be used in clean-up work. The structure is unsightly and would remain so even if patched up. We do not believe this bridge would survive another flood of this nature and therefore it constitutes a hazard. Neither do we feel it can be repaired since the deck is completely cracked through at the west abutment and all the piles on the upstream side are cracked badly and possibly deformed. We therefore recommend a new bridge be built to replace the present one.



Plate 1

View looking  
West



Plate 2

Upstream side  
looking West



Plate 3

Upstream side  
looking East



Plate 4

Crack at W. Abut. in Curb



Plate 5

Crack in deck at W. Abut.

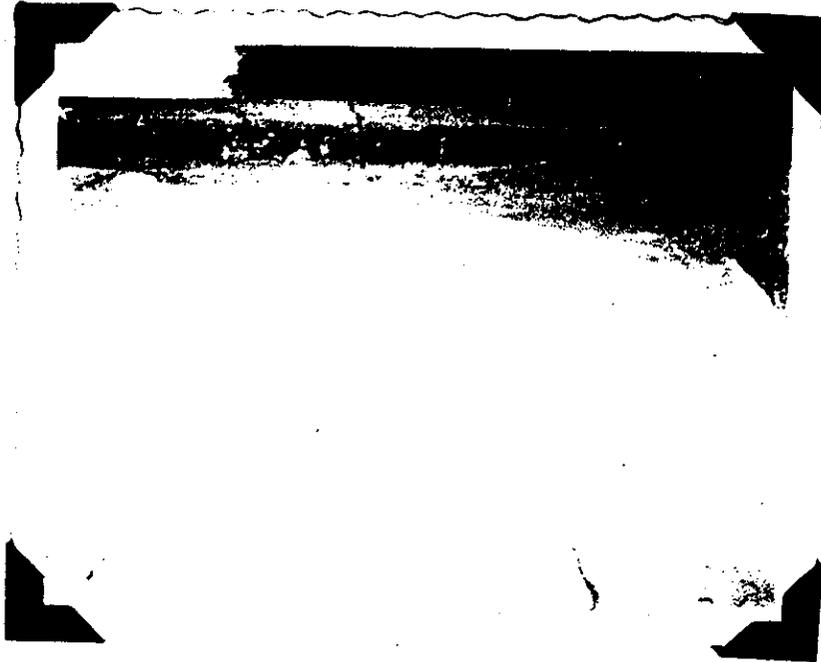


Plate 6

Crack in deck at E. Abut.



Plate 7

Downstream side, looking W.

**APPENDIX H.**

**North Bridge  
Construction Specifications**

**Whitman and Howard, Engineers  
March, 1956**

Whitman + Howard

1958

Specs

-1-

SP56-97F

PROJECT SPECIAL PROVISIONS

C O N C O R D

"Old North Bridge"

Scope of Work

The work to be done under this contract consists of furnishing such materials, labor and equipment as will be necessary to construct a treated pile bent footbridge on the site of the present "Old North Bridge" over the Concord River in Concord. The work includes the removal of the existing bridge, excavation, the removal and rebuilding of stone masonry walls, grading and other incidental items of work.

Prosecution of Work and Provisions for Travel

This bridge is used for pedestrian travel only and it shall be closed to such travel throughout the period required for its construction.

The Contractor shall at all times so conduct his work that the two monuments at the site of the project will not be subject to damage or displacement and in a manner so as not to interfere with the access of the general public to the monument on the east side of the Concord River, via the present entrance from Monument Street.

The Contractor, upon completion of the project, will also perform any grading, sidewalk and wall repair and any other work necessary to insure that the appearance of the surrounding area and the approaches to the bridge is restored to a condition which, in the opinion of the Engineer, is equal to or better than that which existed prior to the start of the project.

Item C3-2 Treated Timber Piles

Lineal Feet

The work under this item shall conform to the requirements of Section C-3, supplemented by the following:

The piles shall be of southern long leaf pine. They shall be peeled but not made smooth with a butt diameter of 12 inches, and they shall have at least a 2-inch ring of sapwood at the butt end.

They shall be treated with a 5 per cent solution of Pentachlorophenol in compliance with Federal Specification TT-W-570 or American Wood Preservers' Association Specification P8-49, or latest revisions thereof. The treating company shall certify that final net retention is 12 pounds of 5 per cent Pentachlorophenol solution per cubic foot of wood. After the application of the preservative, the piles shall be treated so that they shall have clean, completely dry surfaces, which in the opinion of the Engineer, shall be receptive to painting.

Each pile shall be driven to a bearing capacity of not less than 15 tons with a penetration to at least the refusal line as indicated on the boring log.

Any necessary movement of the piles to align the bents, required after the pile anchor assemblies are in place, shall be made prior to the placing of the concrete in the assemblies.

Painting shall conform to the applicable provisions of Section C-7. Two coats of stain shall be applied to the piles in place, extending from the butts, to the water line. This stain shall be Cabot's Creosote Gray Shingle Stain #345 or equal. Stain shall be used as directed by the manufacturer without modification or change except as directed by the Engineer.

Item C19-2 Removal of Present Bridge

Lump Sum

The work under this item shall conform to the applicable provisions of Section C-19 and shall include the complete removal of the superstructure, abutments, piers and piles to prevent interference with the construction of the new pile bents.

Item C21-1 Stone Walls Removed and Rebuilt in Cement Mortar Cubic Yards

This item shall also include the removal of the existing stone masonry walls at the northeast and southwest corners of the bridge and their rebuilding on the new lines as indicated on the plans.

Item M1-1 Bridge StructureLump Sum

The item for Bridge Structure includes the concrete in the abutments, wingwalls and pile anchor assemblies, the stone facing and granite capstones, the treated lumber, structural steel, including that in the pile anchor assemblies and the bituminous damp-proofing.

Class B Cement Concrete Masonry

This work shall conform to Section C-5 and includes the furnishing and placing of the concrete in both abutments and in the pile anchor assemblies as indicated on the plans. The pipe sleeves for the fence posts on the easterly wingwalls and the grout for anchoring the posts in place shall also be included in this item. The grout shall consist of cement mortar mixed in the proportions of 1 part Portland cement to 2 parts sand and sufficient water to form a workable consistency. The ingredients shall conform to the requirements of Section C-4.

Fieldstone Masonry Facing

This item shall conform to the applicable provisions of Sections C-11 and C-13, supplemented by the following:

Stones for the facing shall consist of sound, durable fieldstone in conformity with Section C-13. They shall be free from seams, cracks or other structural defects and of a rough, irregular appearance having an approximately flat face. They shall have a gray weathered appearance.

Individual stones when set in the wall shall have no face dimension less than 8 inches or greater than 24 inches. They shall have a maximum thickness of 10 inches and a minimum thickness of 6 inches, measured perpendicular to the face of the wall.

Where the stone facing is built separately from the concrete body of the structure, the space between the granite facing and the concrete shall be completely and compactly filled with stiff 1:2 cement mortar, rodded and tamped as the work proceeds.

The facing shall be built up not more than 2 courses, or the equivalent for irregular stone, ahead of the backing. The backing may be placed only when the mortar joints in the facing have set sufficiently to prevent seepage of moisture from the backing.

Anchors and dowels shall be of the sizes and shapes shown on the plans. If no other material is indicated, the anchors and dowels shall be either new billet steel conforming to ASTM Designation A-15 or rail steel conforming to ASTM Designation A-16.

Granite Capstones

Granite capstones shall conform to the applicable provisions of Section C-11.

The stone shall have a medium to dark gray color to simulate a weathered appearance and shall match the color of the existing fieldstone masonry facing in so far as practicable.

It shall be of rough irregular finish similar to Quarry Faced Granite conforming only approximately to the dimensions shown on the plans.

Used stone which has weathered sufficiently to obtain the desired color and which is sound and durable in the opinion of the Engineer, may be used if it is satisfactory as to finish.

The anchors and dowels shall be of the size shown on the plans.

#### Treated Lumber

Treated lumber shall conform to the applicable provisions of Section C-16, supplemented by the following:

All lumber shall be southern long leaf pine graded for not less than 1600# f.

Pile headers and fillers, horizontal sash girts and diagonal bracing, stringers, deck planking, rails, rail posts, bracing, plugs and all other lumber shall be pressure treated with a paintable type, 5 per cent solution of Pentachlorophenol in compliance with Federal Specifications TT-W-570 or American Wood Preservers' Association Specification P8-49, or latest revisions thereof. Final net retention shall be certified by the treating company as 8 pounds of 5 per cent Pentachlorophenol solution per cubic foot of wood.

Deck planks, stringers, pile headers and pile bracing shall be rough sawn. Fence posts, rails and bracing shall be hand hewn to the approximate dimensions shown on the plans.

The deck planks shall be milled to a uniform thickness on the heart side and shall be laid milled side down, with 1/4-inch openings between, so that no two adjacent planks shall vary in thickness by more than 1/16 inch.

All lumber and timber shall be accurately cut and framed to a close fit in such a manner that the joints will have even bearing over the entire contact surface. No shimming will be permitted in making joints.

All spikes, screws, bolts, nuts, washers and other hardware, which are included in this item, shall be galvanized in accordance with the provisions of ASTM Designation A153. Machine bolts shall have square heads and nuts unless otherwise indicated. Bevelled cast iron washers shall be used for connections in which the axis of the bolt is inclined to the bearing face of the timber and malleable iron washers shall be used for square connections.

Holes for machine bolts shall be bored with a bit of the same diameter as the bolt. Holes for round drift bolts shall be bored with a bit 1/16 inch less in diameter than the bolt to be used. Holes for lag screws shall be bored with a bit not larger than the body of the screw at the base of the thread.

Spike grid timber connectors shall be installed in accordance with the manufacturer's recommendation and shall be manufactured according to ASTM Standard Specification A47-33, Grade 35018, for malleable iron castings. Spike grids shall conform to the dimensions of those manufactured by the Timber Engineering Company.

The plugs shall be placed by means of a driving fit, using a waterproof glue of an approved type.

Painting shall conform to the applicable provisions of Section C-7 and the following: All lumber, excepting the underside of the deck planking, shall receive two coats of stain. This stain shall be Cabot's Creosote Gray Shingle Stain #345, or equal, and shall be applied to the structure in place unless otherwise directed by the Engineer. Surfaces to be painted shall be clean and completely dry before the stain is applied. Stain shall be used as directed by the manufacturer without being extended or modified, except as directed or approved by the Engineer.

Structural Steel

This item shall also include the stringer connection plates, anchor bolts, the pile anchor assemblies encircling the driven piles and all metal work for the structure not otherwise provided for under any other item. It includes placing the assemblies on an even seat on the river bottom, with the legs having full penetration, as indicated on the plans. It shall include the application to all exposed surfaces of the assemblies of one shop coat of structural red lead paint, and in addition to all surfaces not in direct contact with the concrete, two coats of asphalt paint similar to Koppers No. 50 or equal.

Basis for Partial Payment

The schedule shall list the following, with their respective quantities and unit prices:

	<u>Quantity</u>	<u>Unit</u>	<u>Price per Unit</u>	<u>Amount</u>
Class B Cement Concrete Masonry		cu.yds.		
Steel Reinforcement for Structures		pounds		
Structural Steel		pounds		
Bituminous Damp-proofing		sq.yds.		
Fieldstone Masonry Facing		sq.ft.		
Granite Capstones		lin.ft.		
Treated Lumber		MFBM		

Total of Lump Sum for Item MI-1

The above schedule applies only to the bridge structure. Similar materials and constructions at locations other than the bridge structure are not included under Item MI-1.

\*\*\*\*\*



## ADDITIONAL MINIMUM WAGES

If during the progress of the work hereunder the Contractor employs one or more mechanics, teamsters, chauffeurs or laborers upon a job or jobs not included in the schedule of rates of wages furnished by the Commissioner of the Massachusetts Department of Labor and Industries and made a part of this contract under the provisions of G. L. (Ter. Ed.) c. 149, ss 26, 27, as inserted by St. 1935, c. 461, then in such case the Contractor agrees to make a request to the Massachusetts Department of Public Works for an additional classification to cover such job or jobs and a corresponding minimum wage rate or rates to be furnished by the Commissioner of the Massachusetts Department of Labor and Industries. Upon the receipt of the same from the said Commissioner, the Massachusetts Department of Public Works shall inform the Contractor and send him a copy of such additional classification or classifications and corresponding minimum wage rate or rates, and the Contractor agrees that thereafter he will pay such minimum wage rate or rates for such job or jobs receiving such additional classification or classifications, and the Contractor shall have no claim for additional compensation because of such additional classification or classifications and minimum wage rate or rates, or for payments made thereunder.

# PROPOSAL

For Construction of the "Old North Bridge"  
In the Town of CONCORD,

COMMONWEALTH OF MASSACHUSETTS.

**LOCATION.**

The work referred to herein is in the Town of CONCORD,

County of Middlesex,

Commonwealth of Massachusetts,

and is shown by a set of plans on file in the office of the Department of Public Works and is located at -

Bridge No. C-19-12 (Pedestrian) over  
the Concord River.

*To the Party of the First Part:*

The undersigned, as bidder, declares that the only persons or parties interested in this proposal as principals are those named herein; that this proposal is made without collusion with any other person, firm or corporation; that he has carefully examined the location of the proposed work, the proposed form of contract, the standard specifications and plans therein referred to and the Special Provisions hereto annexed; and he proposes and agrees, if this proposal is accepted, that he will contract with the Party of the First Part, in the form of the contract referred to herein and to be annexed hereto, to provide all necessary machinery, tools, apparatus and other means of construction, and to do all the work and furnish all the materials specified in the contract, in the manner and time therein prescribed, and according to the requirements of the Engineer as therein set forth, and that he will take in full payment therefor the following unit prices, to wit:

ITEM NO.	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
A2-2	5	Cubic Yards of CLASS A ROCK EXCAVATION, at				
		per cubic yard				
A3-1	310	Cubic Yards of BRIDGE EXCAVATION, at				
		per cubic yard				
A3-4	20	Cubic Yards of CHANNEL EXCAVATION, at				
		per cubic yard				
A3-5	10	Cubic Yards of CLASS B ROCK EXCAVATION, at				
		per cubic yard				
CARRIED FORWARD						

ITEM NO.	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
		BROUGHT FORWARD				
A6-2	105	Cubic Yards of GRAVEL BORROW, complete in place, at				
		per cubic yard				
C3-2	500	Lineal Feet of TREATED TIMBER PILES, complete in place, at				
		per lineal foot				
C19-2	1	Lump Sum for REMOVAL of PRESENT BRIDGE, of				
C21-1	5	Cubic Yards of STONE WALLS REMOVED and REBUILT in CEMENT MORTAR, complete in place, at				
		per cubic yard				
MI-1	1	Lump Sum for BRIDGE STRUCTURE, complete in place, of				
T O T A L						

The above prices are to include and cover the furnishing of all the materials (except as herein otherwise specified), the performing of all the labor requisite or proper, and the providing of all necessary machinery, tools, apparatus and other means of construction; and the doing of all the above-mentioned work in the manner set forth, described and shown in the specifications and on the drawings for the work, and in the form of contract, and the completion thereof on or before June 29, 1956.

If this proposal shall be accepted and the undersigned shall fail to contract as aforesaid and to give a bond in the sum to be determined as aforesaid with surety satisfactory to the Party of the First Part, within six (6) days (not including Sunday) from the date of the mailing of a notice from the Party of the First Part to him, according to the address herewith given, that the contract is ready for signature, the Party of the First Part may, at its option, determine that the bidder has abandoned the contract, and thereupon this proposal, and the acceptance thereof shall be null and void, and the proposal guaranty submitted covering this proposal shall become the property of the Commonwealth of Massachusetts;

otherwise the said proposal guaranty shall be returned to the undersigned.

SIGNATURE OF BIDDER

Full name and address of individual or concern submitting this bid:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signed by \_\_\_\_\_

Title \_\_\_\_\_

NOTICE: Bid should be signed in ink by a person having proper legal authority, and the person's title should be given, such as "owner" in the case of an individual, "partner" in the case of a general partnership, "president", "treasurer" or other authorized officer in the case of a corporation.

If bidder is an individual or individuals doing business as a firm, give the full name and address of each individual:

<u>Name</u>	<u>Address</u>
_____	_____
_____	_____
_____	_____

If bidder is a corporation, give the State in which incorporated:

\_\_\_\_\_

If bid is submitted by joint venturers, this should be stated here: \_\_\_\_\_

\_\_\_\_\_ ; and if any of the joint venturers is a corporation, a copy of the vote of the corporation authorizing the joint venture should be attached hereto.

The proposed surety on the bond to be given is:

Name \_\_\_\_\_

Home Office Address \_\_\_\_\_

Massachusetts Address (if different) \_\_\_\_\_

**APPENDIX I.**

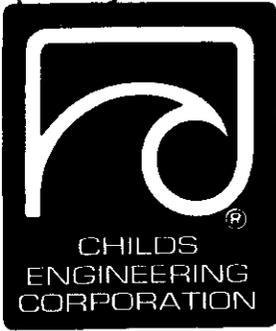
**North Bridge  
Construction Drawings**

**Whitman and Howard, Engineers  
March, 1956**

**APPENDIX J.**

**North Bridge  
Condition Assessment**

**Childs Engineering Corporation  
August 2002**



## CHILDS ENGINEERING CORPORATION

BOX 333 MEOFIELD, MASSACHUSETTS 02052 508/359-8945 FAX 508/359-2751

Kenneth M. Childs, Jr., P.E.  
Chairman Emeritus

David L. Porter, P.E.  
President

Craig D. Sams, P.E.  
Vice President

30 August 2002

Mr. Derek W. Watson  
Project Manager  
Bargman Hendrie and Archetype, Inc.  
316 Summer Street  
Boston, Massachusetts  
02210-1710

Dear Mr. Watson:

On August 21, 2002 a three person engineer/dive team from Childs Engineering Corporation conducted a topside and underwater inspection of the North Bridge.

### Procedure

Childs Engineering Corporation conducted a visual inspection of all structural members of the North Bridge, the bridge abutments, and the stone retaining walls. The team used a hand held awl to aid in the inspection of the bridge members. By striking the tip of the awl into the wood, the team was able to determine the relative "softness" of a particular member, which is an indicator of fungal attack and general deterioration. The softness was measured by how deep in inches the awl penetrated into the wood. The team took 5 core samples of timber members using a pneumatic coring drill to determine the condition of the wood beneath the surface. The team also conducted an underwater inspection of the submerged portion of the piles, the pile anchoring assembly, and the riverbed to detect scour.

The following numbering system was established and used in all note taking. Starting at the east abutment the bents are numbered one through six, and the spans are numbered one through seven. The stringers and piles are numbered one through five and one through three, respectively from north to south.

## General Description of the North Bridge

The North Bridge spans 139'-10" over the Concord River (photo 1). It is a seven span bridge with 3" x 8" deck planks supported by five 8" x 12" timber stringers. The stringers, which are spliced at the bents with 6" x 1/2" x 2' plates, rest on split pile caps composed of two 4" x 16" timber members. The bridge is supported by six bents and two concrete abutments. Each bent consists of three timber piles with 3" x 8" bracing notched at the top for the split pile cap. Each pile has a pile anchor assembly constructed of a steel box filled with concrete anchored into the riverbed. The bridge is used as a pedestrian walkway, with occasional horse and carriage traffic. The bridge was last renovated in 1956.

## Observed Conditions

Based on the visual inspection, awl probing, and core sampling the following observations are noted.

### Deck and Rail System

The deck of the bridge is heavily weathered and generally in poor condition. Childs Engineering Corporation's engineer/dive team counted 52 deck planks that have severe fungal attack (dry rot) (photo 2). More than half of the bridge deck planks have severe to moderate dry rot. The railing system also shows heavy weathering and checking. On the south side of the bridge the top and middle rail have a section loss of approximately 10%. On the north side between bents 2 and 4 the top hand rail has heavy checking and has lost approximately 15% of its section. Also on the north side between bents 4 and 6 the middle rail has approximately 25% section loss and heavy checking (photo 3). The railing posts and braces are weathered, however not as severely as the deck and rails.

### Stringers and Pile Caps

The interior stringers are in good condition with a typical softness of 1/8" and some localized areas with a 1/4" of softness. A core sample was taken on stringer 4-span 5 (photo 4). The core is hard and free of anomalies. The exterior stringers are in fair condition. The outside stringer face is heavily weathered and checked, while the inside stringer face is in better condition. Core samples were taken on stringer 1-span 5 above pile 1 (photo 5), stringer 5-span 7 (photo 6), and stringer 5-span 6 (photo 7). The cores from stringer 1-span 5 above pile 1 (photo 5) and stringer 5-span 7 (photo 6) were taken on the inside face of the stringers and are free of defects. The core from stringer 5-span 6 (photo 7) was taken from the outside face of the stringer. The core is disintegrated and the wood is in poor condition due to dry rot and severe weathering.

The following specific conditions were noted for the stringers:

- Bent 1 north face of beam 1 bolt missing in splice plate
- Stringer 4-span 3, east side of split cap  $\frac{1}{4}$ " softness
- Stringer 3-span 4, at the splice between bent 3 & 4,  $\frac{1}{4}$ " soft
- Stringer 2-span 4, 6" long x 3" deep piece taken out of corner beneath the splice plate
- Stringer 1-bent 3, between span 3 and 4, above pile 1,  $\frac{1}{4}$ " of softness where the stringer and pile cap abut
- Stringer 5-span 4, stringer 5 at the splice, 6" x 2" x  $\frac{1}{2}$ " piece of material missing
- Stringer 1-span 5,  $\frac{1}{4}$ " soft on bottom of stringer
- Stringer 2-span 6 first 2' from pile cap, south corner split 1" deep

Overall, the pile caps are in good condition with  $\frac{1}{16}$ " to  $\frac{1}{8}$ " of softness. A core was taken from in bent 4 (photo 8). The sample is hard and free of anomalies. The areas of damage are noted as follows:

- Bent 3 above pile 1, a small divot 6" long x 2" deep has been taken out of the material
- Bent 5 between stringers 2 & 3, there is a 2" deep x 6" long pocket of dry rot on the top of the pile cap

### Piles and Anchors

The upstream piles are in fair condition due to debris impact and ice damage. The interior more sheltered piles are in good condition. The pile bracing is in poor condition due to debris impact and ice damage. The Childs Engineering Corporation divers detected undermining on several of the anchoring systems as noted.

- Bent 2, pile 3, 6" gap on all sides
- Bent 3, pile 1, 4" gap on south and west faces
- Bent 3, pile 2, 3" gap on east face
- Bent 4, pile 2, 2" gap on all sides
- Bents 4, 5 sediment to top of casing

Many of the pile tops are in poor condition due the dry rot (photo 9). Pile and bracing conditions are noted.

- 10-15 % section loss on horizontal bracing bolts
- Bent 1, diagonal and horizontal at pile 3, 10" ice damage, bolts still intact
- Bent 1, diagonal at pile 3, heavy abrasion
- Bent 2, pile 3, abrasion with approximately 10% section loss

- Bent 2, horizontal stiffener & diagonal at pile 3, checked and split, bolts non-functional (photo 10)
- Bent 3, pile 3, approximately 10 % section loss (photo 11)
- Bent 3, pile 3, 8- 10" loss at end of the horizontal stiffener & diagonal, bolts non-functional
- Bent 3, top of pile 3, 6 sq. in. of dry rot 4" deep
- Bent 4, top of pile 2, 4" dry rot
- Bent 4, pile 3, 8- 10" loss at end of the horizontal bracing & diagonal
- Bent 4, pile 3, top of pile dry rot 4" deep
- Bent 5, mild abrasion above lower diagonal
- Bent 5, 2-3" loss at end of diagonal at pile 3
- Bent 5, horizontal bracing split from pile 3 to pile 1
- Bent 5, top of pile 3, dry rot 6" deep
- Bent 5, top of pile 1, 3" of dry rot on outside third of the pile
- Bent 5, top of pile 3, dry rot 5" deep
- Bent 6, diagonal at pile 3 cracked along its entire length
- Bent 6, 3' split of horizontal bracing at pile 1, bolt non-functional

#### Abutments and Retaining Walls

The upstream side of the river bends slightly as it approaches the bridge. The east side has more sand and cobbles, while the west side deposits consist more of silt and debris. There appears to be no erosion on either side of the well-vegetated banks. The abutments and side wall are in good condition, free of visible undermining (photo 12).



Photo 1: Overview of North Bridge looking southwest.

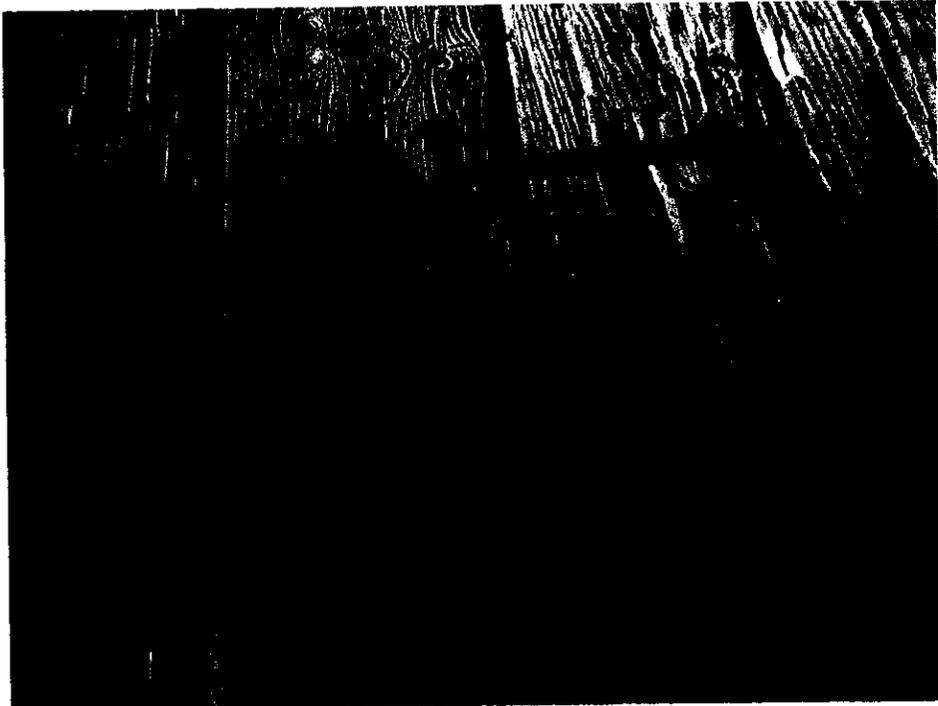


Photo 2: Typical deck.

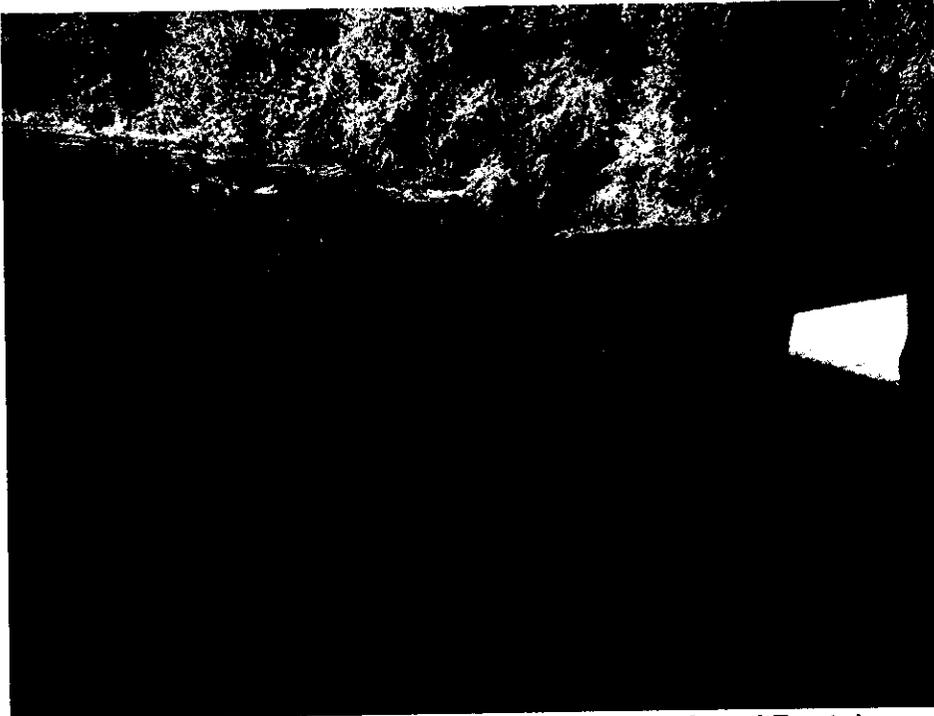


Photo 3: North side handrail between Bent 2 and Bent 4.

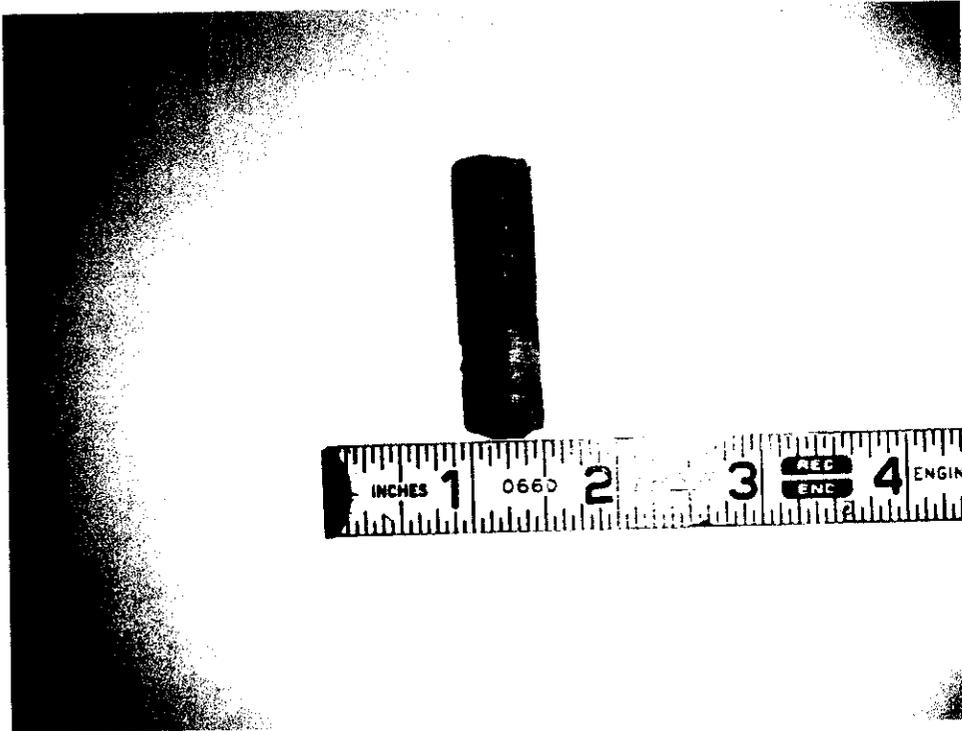


Photo 4: Wood core sample from Stringer 4 -Span 5.

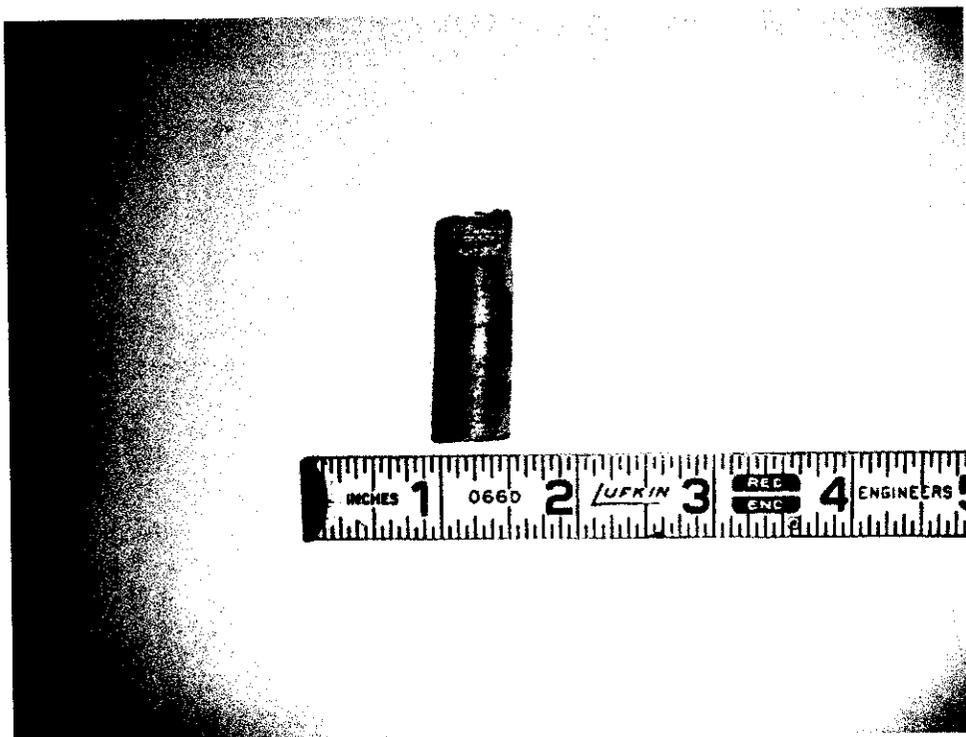


Photo 5: Wood core sample from Stringer-Span 5, interior face.

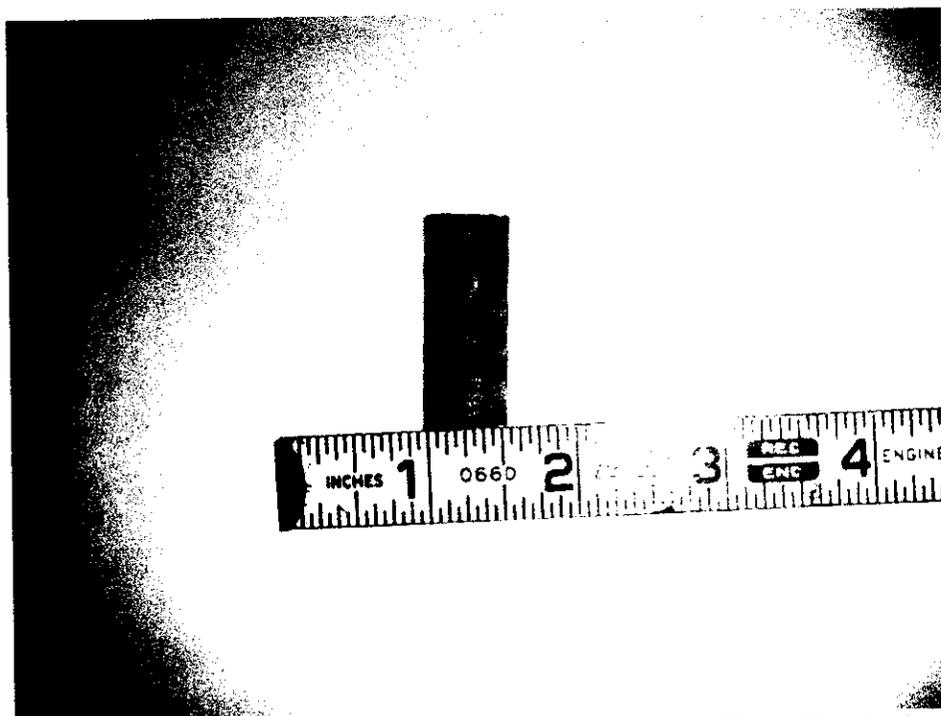


Photo 6: Wood core sample from Stringer 5 - Span 7, interior face.

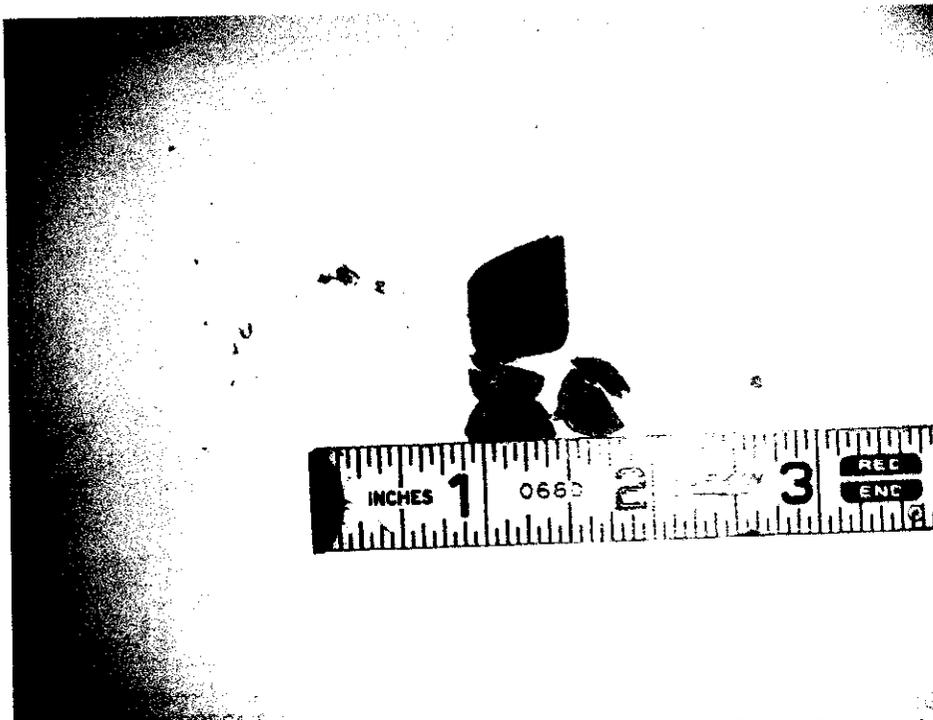


Photo 7: Wood core sample from Stringer 5 – Span 6, exterior face.



Photo 8: Wood core sample from Bent 4 pile cap.



Photo 9: Typical dry rot on top of pile.



Photo 10: Typical diagonal damage.



Photo 11: Typical south side pile abrasion.

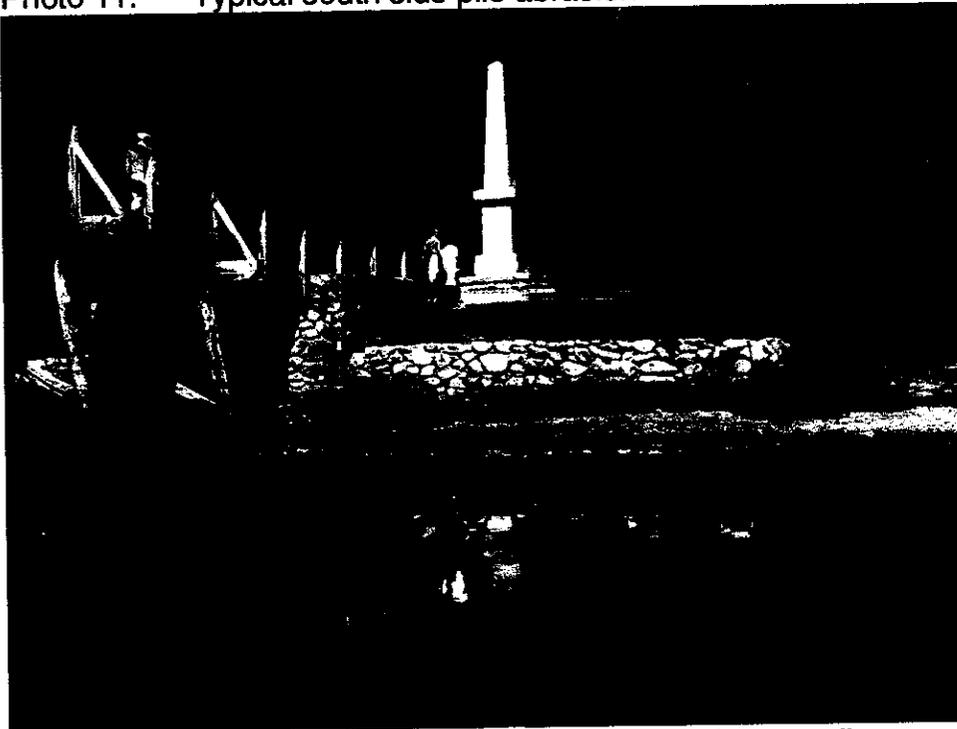


Photo 12: Overview of northwest abutment and side wall.