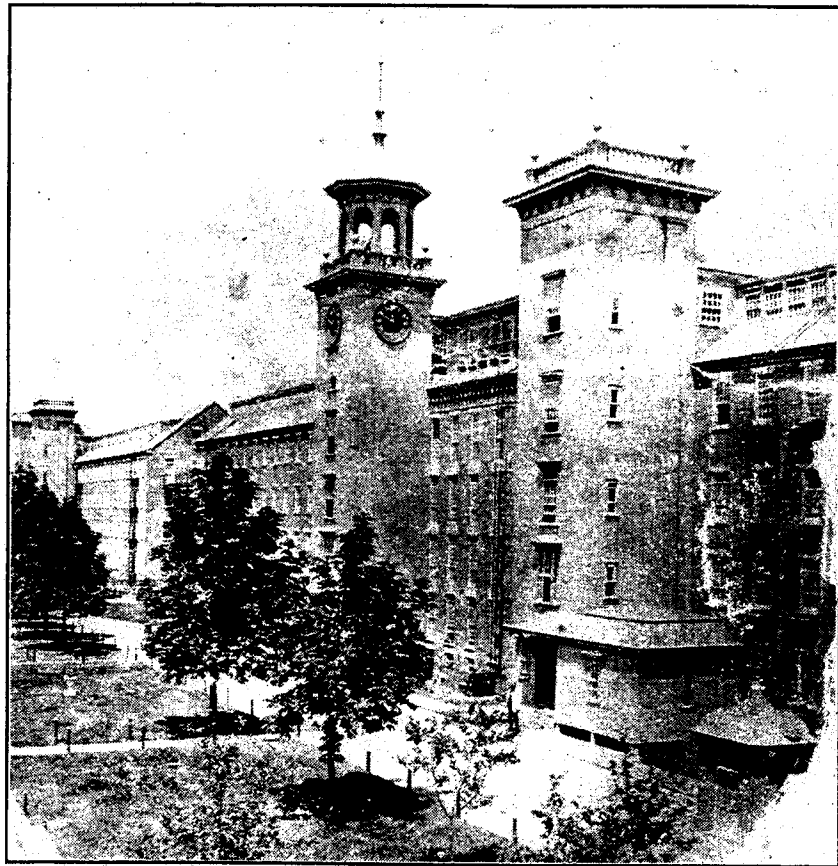

HISTORIC LANDSCAPE ASSESSMENT
FOR
EASTERN MILL YARD,
BOOTT COTTON MILL No. 6

LOWELL NATIONAL HISTORICAL PARK
LOWELL, MASSACHUSETTS



Prepared by the
Olmsted Center for
Landscape
Preservation



March, 1995

CONTENTS

List of Figures	iv
I. Introduction	1
II. Historical Overview	
Introduction	4
1835-1870	4
1870-1900	10
1900-1930	21
1930-1956	25
III. Existing Conditions	35
IV. Preservation Issues	
National Register Status	43
Archeological Resources	43
Treatment Issues	45
V. Recommendations for treatment of Mill Yard, Boott Cotton Mill	
A. Introduction	46
B. Alternatives and Phases	48
C. Evaluation of Alternatives	57
D. Recommendations for additional work	59
Bibliography	60
Appendix	
A. Chronology of the Boott Cotton Mill	61
B. The Secretary of the Interior's Standards for Rehabilitation	63

LIST OF FIGURES

1.	Diagram of the Boott Cotton Mills with construction dates	3
2.	Diagram of chronology of Boott Cotton Mills	6
3.	Detail from Sidney and Neff Map of Lowell, 1850	7
4.	<i>View of the Boott Cotton Mills at Lowell</i> , from Gleason's Pictorial, 1852	8
5.	Undated engraving of the Boott Cotton Mills, circa 1865-1881	9
6.	Stereoptic view of Boott Cotton Mill Yard by J. Moulton	12
7.	Stereoptic view of Boott Cotton Mill Yard by J. Moulton	13
8.	Plan of the Mill Yard of the Boott Cotton Mills, 1878	14
9.	View of Boott Cotton Mill Yard with workers, 1878	15
10.	Bird's Eye View of Boott Cotton Mills, circa 1880	16
11.	Bird's Eye View of Boott Cotton Mills, 1890	17
12.	Photograph of Boott Mill Yard, 1897	18
13.	Undated photograph of eastern portion of Mill Yard (after 1900)	19
14.	1870-1904 Period Diagram of Boott Mill Yard	20
15.	Detail from Associated Factory Mutual Life Insurance Plan, 1932	22
16.	1927 Locks and Canals Photograph of Stair Towers, 1927	23
17.	1904-1930 Period Diagram	24
18.	"Looking east from hole #22," Locks and Canals photograph, 1933	27
19.	View of Clock Tower, by John Coolidge, circa 1930s	28
20.	View of Boott Cotton Mill No. 6 by John Coolidge, circa 1930s	29
21.	View of Boott Cotton Mills looking west by John Coolidge, circa 1930s	30
22.	View of entrance to Boott Cotton Mills by John Coolidge, circa 1930s	31
23.	Locks and Canals plans of Boott Mill, 1955	32
24.	Photograph of clock tower at Boott Mills, 1957	33
25.	1930-1956 Period diagram	34
26-36.	Existing Conditions Photographs	36-41
37.	Existing Conditions Plan	42
39.	Alternative 1: Restoration	50
40.	Alternative 2: Rehabilitation	53
41.	Alternative 3: Rehabilitation	56

INTRODUCTION

The Boott Cotton Mill is one of the most historically and architecturally significant complex of industrial buildings in Lowell. Today, this complex consists of nine mill buildings, the Counting House (the former mill office) and the Boardinghouse. Together the structures and the Mill Yard represent the evolution of the Boott Cotton Mill over its one hundred and eighteen years of operation from 1836-1954. Four of the nine extant mill buildings were part of the original mill complex and date to 1836 and 1838; the remaining buildings were constructed between the 1830s and 1900. These buildings are configured in such a way that they form an enclosed outdoor space. The Boott Mill Yard was integral to mill operations in various ways through its history, and is the subject of this report (see Figure 1).

The National Park Service (NPS) owns Boott Mill No. 6, the Counting House and the Boardinghouse; the remainder of the complex, including most of the land, is privately owned. Together, Mill No. 6 and the Counting House are the National Park Service's principal interpretive facility at Lowell National Historical Park (Lowell NHP). Since acquiring these buildings, the NPS has rehabilitated their interiors as a museum and education center. The owners of Mills No. 3, 4, & 8, at the western end of the complex, have rehabilitated these buildings, and this portion of the Mill Yard. Mills No. 1, 2 & 5 and the eastern portion of the Mill Yard, all owned by Historic Boott, Inc., are unaltered.

The General Management Plan (GMP) for Lowell National Historic Park (1981) recommended the restoration of the eastern portion of the Mill Yard.¹ However, finances and property rights have limited this work to routine maintenance. Changes that have occurred were part of the NPS rehabilitation of Mill No. 6 and the Counting House. These include altering the entrance bridge from two separate ramps to one level ramp and the installation of an entrance, ramp and stairs in the 'L' of Mill No. 6.

With the rehabilitation of the Counting House and Boott Mill No. 6 complete, concerns about safe visitor access, the interpretative potential and the aesthetic appearance of the Mill Yard have brought the eastern portion of the Mill Yard to the forefront of Lowell NHP priorities. The park has addressed these problems in two ways: first, the park is acquiring an easement for the development of the remainder of the eastern portion of the Mill Yard, and secondly, the park has requested assistance with preservation planning from the Olmsted Center for Landscape Preservation. This Historic Landscape Assessment, prepared by the Olmsted Center, presents an historical overview and three conceptual alternatives for the eastern portion of the Mill Yard. The alternatives may be implemented in phases, and were developed based on a short term strategy of immediately solving the urgent visitor safety issues, and a long term strategy that may be both determined and implemented when the status of the remaining portion of the Mill Yard is resolved.² Because the current status of the Mill Yard is in flux, the long term strategies, especially Alternative C, represent the combined concerns of the NPS and the current proposals for light manufacturing and retail in Mills No. 1 and 2. The report will also assist the park with section 106 compliance for the first and subsequent phases of work on the Mill Yard. Once the preferred alternative is selected, the park will be responsible for developing the design further and preparing the working

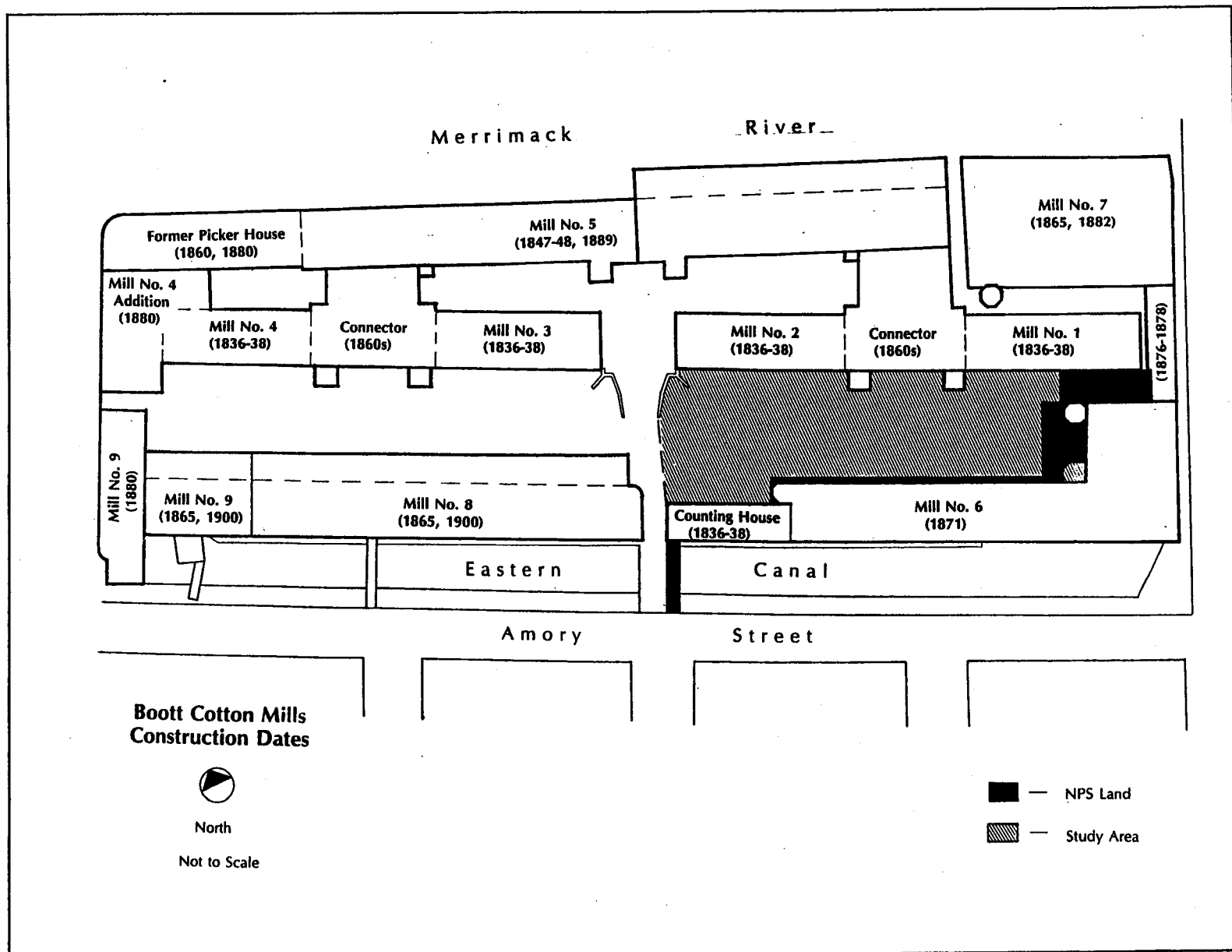
¹ U. S. Department of the Interior, National Park Service, *General Management Plan, Lowell National Historical Park*, (1981), 35.

² On January 20, 1995, the owners of Historic Boott, Inc., accepted the National Park Service's offer to acquire an easement for the development of the mill yard. This transaction is currently being finalized.

drawings and construction specifications.

The history of the Boott Cotton Mills is well documented, especially Boott Mill No. 6, through historic and contemporary written accounts, as well as plans and photographs. Several planning studies were conducted prior to the rehabilitation Boott Mill No. 6 including the General Management Plan, a Historic Structures Report, and a Cultural Resources Inventory. These reports were examined in concert with primary source material at the archives of Lowell NHP, the University of Massachusetts, the Museum of American Textile History, the Lowell Historical Society to prepare the historical overview of the eastern portion of the Boott Mill Yard for this report. In light of the thoroughness of the planning reports, and the fact that the Historic Structures Report and the Cultural Resources Inventory include specific sections on the Mill Yard, the historical overview presented here provides all available information and a sufficient basis on which to make informed treatment decisions.

Figure 1. Diagram of the Boott Cotton Mills with construction dates.



HISTORICAL OVERVIEW

Introduction

The city of Lowell, known as East Chelmsford until the 1820s, is located along a one mile stretch of the Merrimack River which drops over thirty feet in elevation and is known as the Pawtucket Falls. The river has played an important role in the history of Lowell: first for local tribes who fished the waters, later for seventeenth and eighteenth century white settlers who transported their agricultural products along the river to the coast, and finally and most significantly, as a source of power for nineteenth and twentieth century textile mills.

Reliance on water to support commerce began when the Proprietors of Locks and Canals, one of the nations earliest corporations, constructed the Pawtucket and Middlesex Canals, in 1796 and 1803 respectively. Both canals circumvented the Pawtucket Falls and facilitated transportation of agricultural products to the coastal cities of Newburyport and Boston. The Pawtucket Canal fell into disrepair shortly after the construction of the Middlesex Canal, but by the 1820s the canal was revived as an important source of power for the early textile mills.

The history of the Lowell mills actually began on the Charles River in Waltham, where Francis Cabot Lowell and his associates, formed the Boston Manufacturing Company, established a mill operation in 1815. This mill was based on the power loom, developed by Paul Moody, which transformed raw cotton into finished cloth in a single factory. The Waltham experiment proved successful, and by the early 1820s the Boston Manufacturing Company sought a site with a greater source of power.

Shortly after visiting East Chelmsford in 1821, the Boston Manufacturing Company purchased controlling stock in the Proprietors of Locks and Canals, thereby acquiring four hundred acres between the Pawtucket Canal and the Merrimack River. In 1822 the Merrimack Manufacturing Company was chartered, and was followed by the rapid construction of several power canals and textile mills. The small agricultural community of East Chelmsford was rapidly transformed into an industrial city; when the city of Lowell was incorporated in 1836, it boasted a population of seventeen thousand and eight major textile mills.

The Boott Cotton Mills: 1835-1870

Development of the Boott Cotton Mills began in 1835 when the Merrimack Manufacturing Company purchased mill privileges and land from the Proprietors of Locks and Canals. This property was bounded by Bridge Street to the east, French Street to the south, Kirk Street and the Merrimack Wasteway to the west, and the Merrimack River to the north. The Eastern Canal bisected this land, separating the company's four proposed mill buildings from eight rows of boarding houses on the south side of the canal, but more importantly, provided a source of power for the mill.

The Boott Cotton Mills and Yard evolved on the northern portion of this land, between the Merrimack River and the Eastern Canal. In 1836-38, four brick mill buildings, each measuring approximately 150' x 45' were laid out in a row parallel to the Merrimack River (see Figure 2). Across from these, closer to the Eastern Canal, were three buildings, one was the existing Counting House, one was a machine

shop, and the identity of the third is not known. This early Mill Yard was open at its east and west ends, and the main entrance to the mill yard was a bridge over the Eastern Canal. A weaving mill, now the central portion of Mill No. 5, was constructed in 1847-1848, north of the earlier mills, on the banks of the Merrimack River.

Drawings and engravings indicate that the Boott Mill Yard boasted an almost park like setting during these early years. The Sidney and Neff **Plan of the City of Lowell** (1850) shows three rectangular areas of grass surrounded by a double path or a roadway. One octagonal structure, similar to the hose houses which were built later, is evident in front of Mill No. 2, and a railroad bed is depicted at the west end of the Mill Yard (see Figure 3).

An engraving of the Boott Cotton Mills featured in an 1852 issue of **Gleason's Pictorial** shows the center of the Mill Yard and the center portions of two oval areas of lawn, planted with trees and surrounded by bollards and chain (see Figure 4). It also shows brick picker houses in front of the mill buildings, the same hose house as depicted in Figure 3, stair tower entrances to the Mills defined by bollards and chain, and ramps wrapping around Mills No. 2 and 3. A third engraving, probably somewhat later, shows two large ovals of lawn surrounded by bollards and chain, but the picker houses and trees have disappeared and each mill building has two hose houses in front of it. The increase in the number of hose house may well reflect an increasing concern with fire (see Figure 5).

After a change in management in 1862, the Boott Mills began a major period of expansion. In the early 1860s "connectors" were built between Mills No. 1 and 2 and Mills No. 3 and 4, creating an almost continuous wall along the north edge of the Mill Yard. In 1865, Mills No. 7, 8 and 9 were constructed. Mill No. 7 was built just east of Mill No. 5, and Mill No. 8 on the southern edge of the yard, just west of the entrance bridge. Mill No. 9 was constructed as a cotton house in the southwest corner of the Mill Yard (see Figure 2).

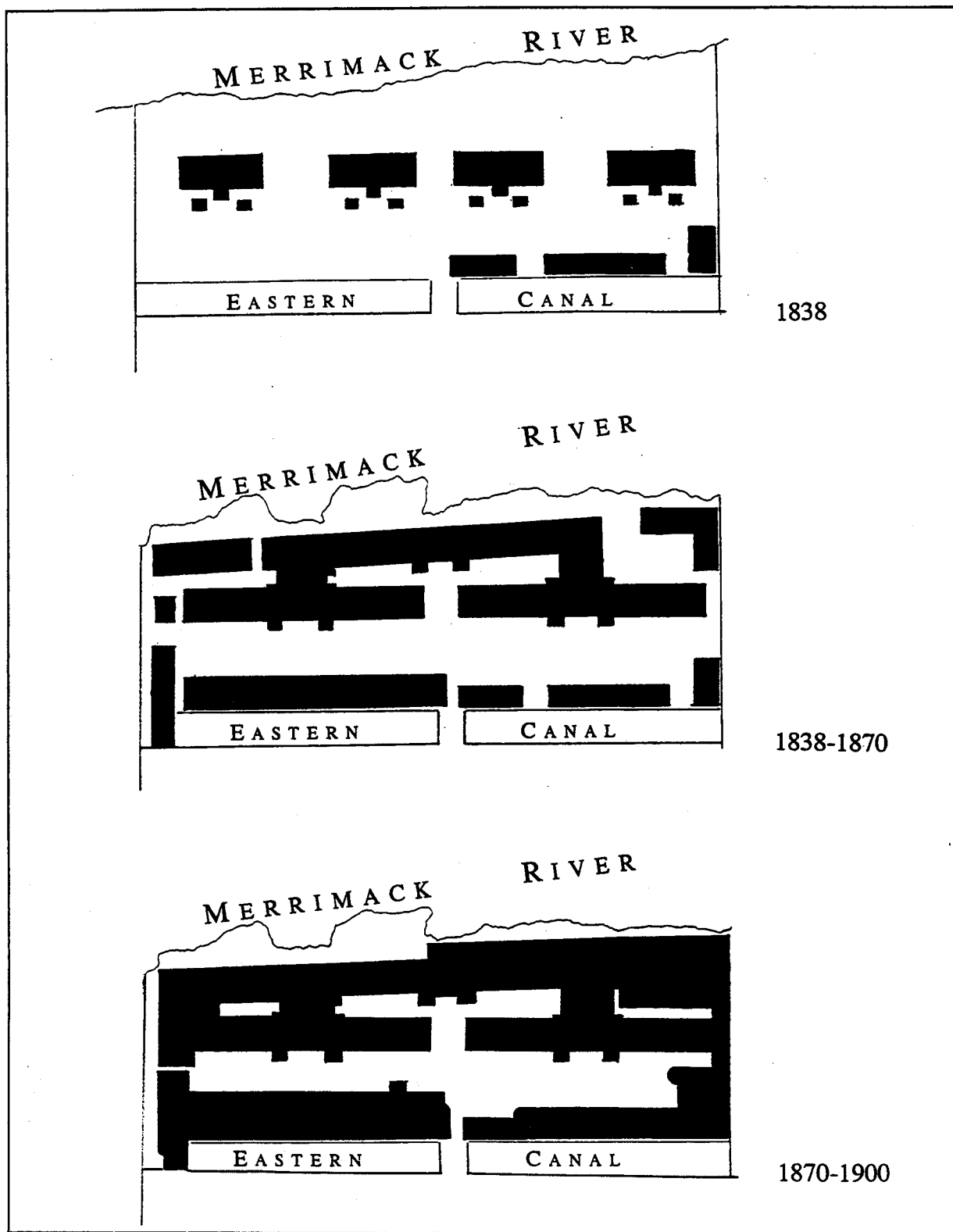


Figure 2. Diagram of chronology of the Boott Cotton Mills.

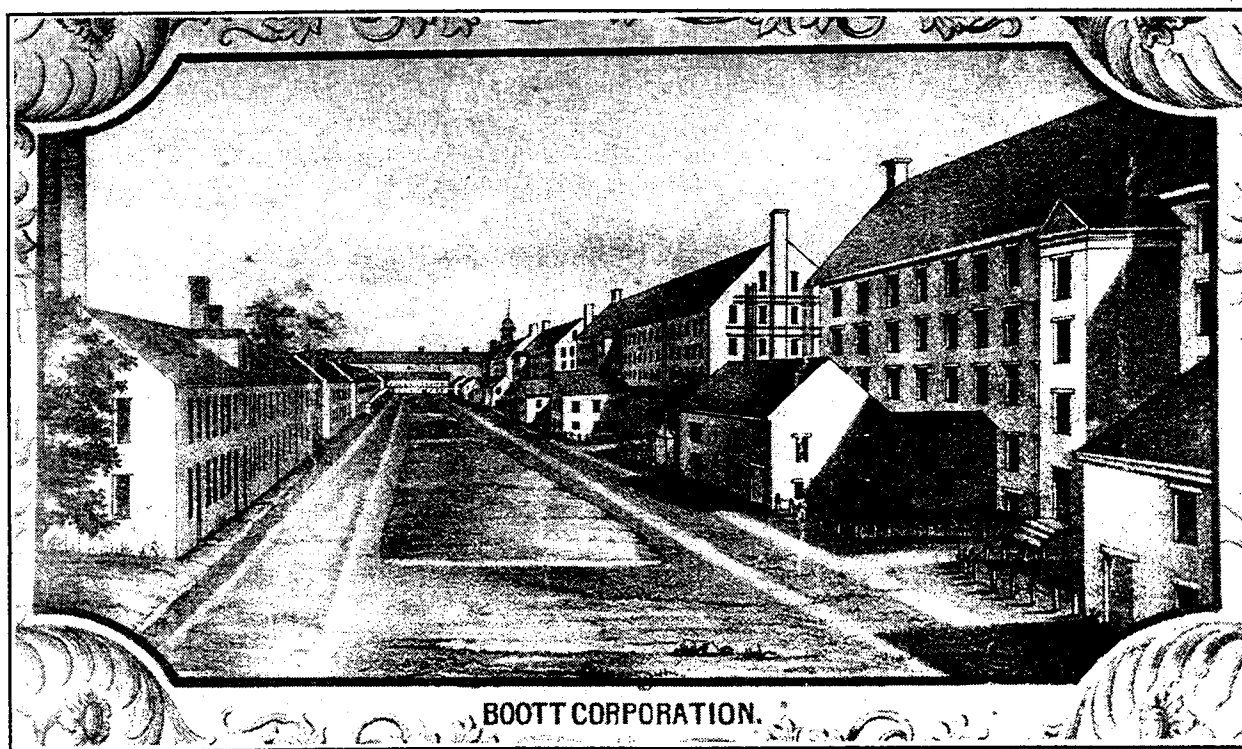


Figure 3. *Boott Corporation*, from Sidney and Neff's "Map of the City of Lowell, Mass.," 1850. Source: Lowell NHP. This is the earliest known depiction of the Boott Cotton Mills. Note the singular hose house in front of Mill No. 2, the attached picker houses, the bollards defining the entrances to the central stair towers, the grass panels and the trolley in the left background.

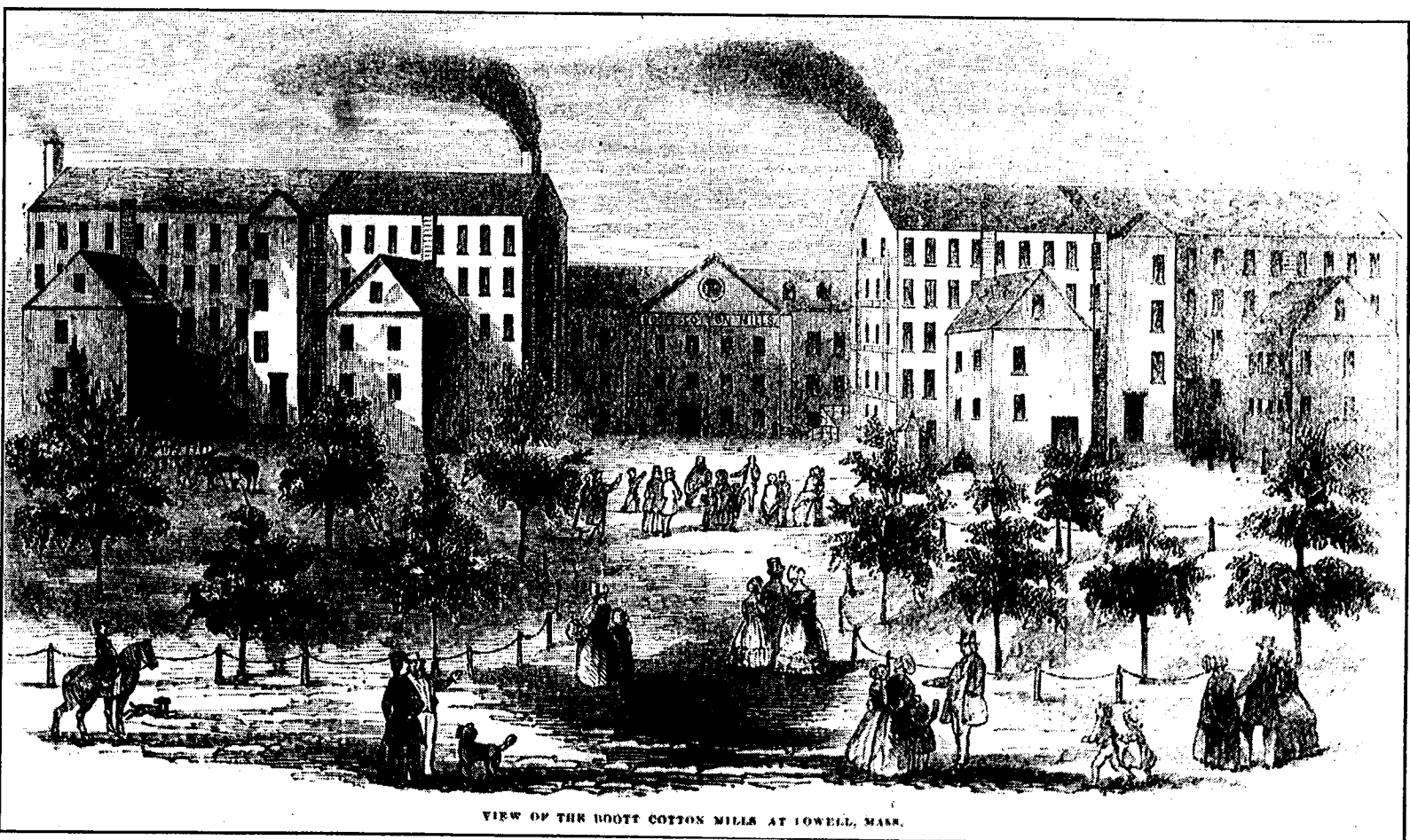


Figure 4. *View of the Boott Cotton Mills at Lowell, Ma., from Gleason's Pictorial, 1852.* Source: Center for Lowell History.

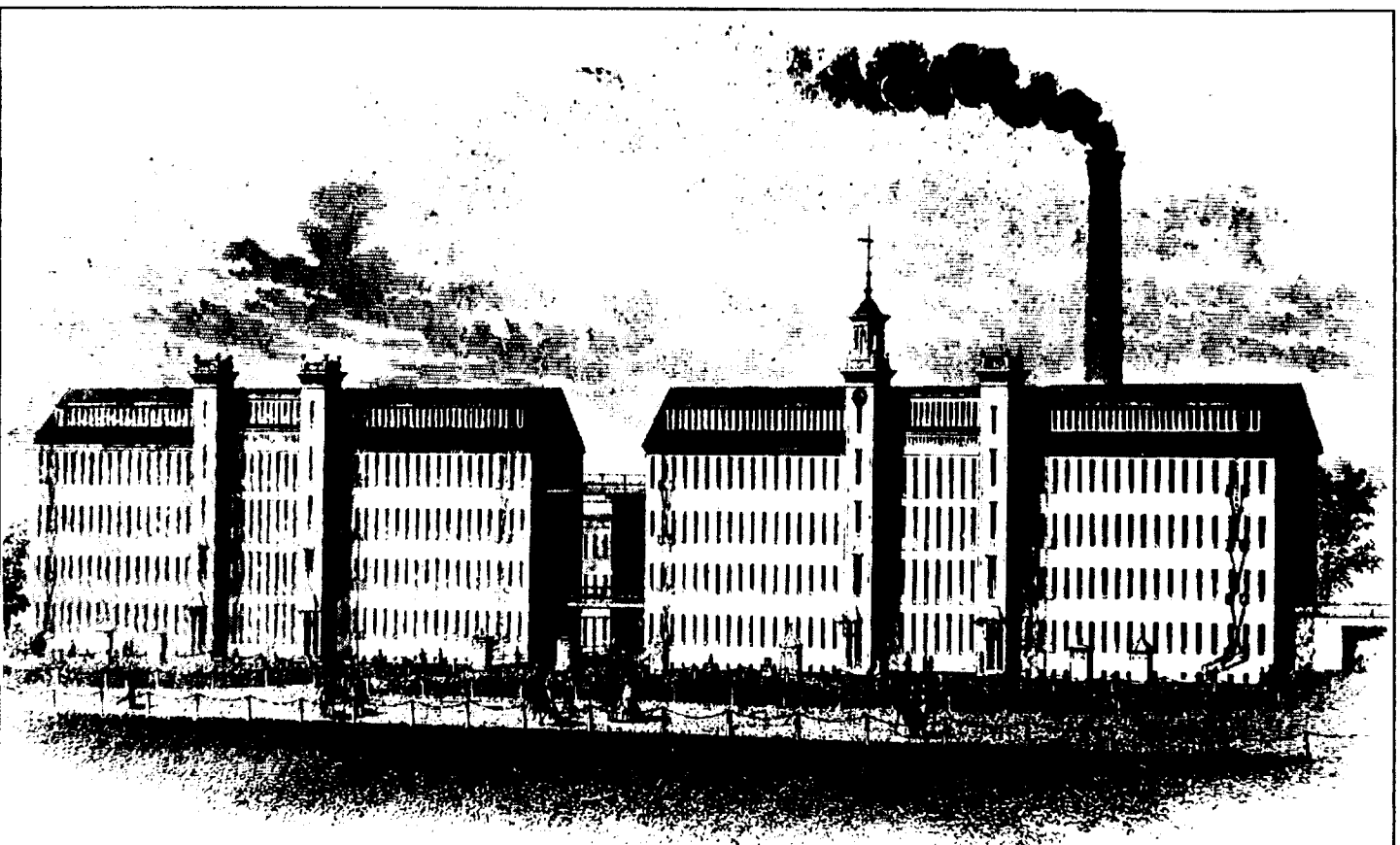


Figure 5. Unlabelled view of the Boot Cotton Mills, between 1865 and 1881. Source: Lowell Historical Society. Note the number and variety of hose houses, the central stair towers at the connectors, the park-like quality of the Mill Yard, and the octagonal smokestack.

The Boott Cotton Mills: 1870-1900

Documentation of the Mill Yard between 1870-1900 includes two stereoptic views by John S. Moulton (circa 1865-1878), an 1878 plan entitled "Plan of the Mill Yard of the Boott Cotton Mills Showing Water Pipes for Extinguishing Fire," an 1878 photograph which shows workers gathered in the east end of the yard, an 1884 engraving from **Lowell Illustrated**, an 1893 engraving from **Lowell and Vicinity of Today**, and two photographs circa 1895 which appeared in **Lowell Illustrated** and **The Illustrated History of Lowell and Vicinity (1897)**.

The Moulton images predate 1878, and possibly 1871 since they do not show two important structures from this time -- Mills No. 6 and 7 (see Figures 6 and 7). These photographs do show eight hose houses, as well as rectangular panels of lawn with bollards, trees, paths, and planting urns. They also show a raised walk or trolley track in front of Mills No. 1-4, rectangular additions to the stair towers at Mill No 4, and a trench in front of Mills No. 2 and 3 that allowed light into the lower floor of the Mill.

In 1871-73, Mill No. 6 was constructed in the southeast corner of the Mill Yard, adjacent to the Counting House, replacing two earlier, smaller structures. Five stories high, Mill No. 6 is an 'L' shaped building with an octagonal stair tower at each end. By 1878, a connector between Mills No. 6 and 7 was complete (see Figures 1 and 2).

The "Plan of the Mill Yard of the Boott Cotton Mills Showing Water Pipes for Extinguishing Fire," which dates to 1878 shows the location of the ten hose houses (although hexagon in plan rather than octagonal as they appear in the photographs), as well as the new buildings (see Figure 8). The title of the plan and the hose houses reflect a continued concern with fire. The 1878 photograph indicates additional changes to the Mill Yard; trees had either been removed or died by this time, but the lawn, the urns, bollards and paths remained intact (see Figure 9).

Several additions and alterations were made to the Boott Cotton Mills in the 1880s (see Figures 1 and 2). The engravings from the 1880s are thought to show proposals for structural alterations to the mill complex since they are not consistent with missing or existing structures (see Figures 10 and 11). However, these engravings are consistent with the earlier photographs of Mill Yard in that they both show four oval panels of lawn with bollards and the hose houses. In 1880 the remaining spaces on the edges of the Mill Yard were filled in when a three story Cotton and Waste House, now the No. 9 Picker House, was built on a site straddling the Eastern Canal and abutting the Merrimack Wasteway. A five-story addition to Mill No. 4 replaced a wheel house and the railroad track which wrapped around the west end of Mill No. 4. Also in 1880, the former Picker House was connected to Mill 5. The final major architectural additions to the Boott Mills were made in 1900. A 20' deep, three story addition was built along the entire north wall of Mills 8 and 9. At the same time, the railroad spur was removed and a connector was built between Mill 9 and the Mill 9 Picker House (see Figures 1 and 2).

The primary effect of these additions was the complete enclosure of the Boott Cotton Mill Yard, but the Mill Yard changed in other ways as well. In fact, documentation indicates that by the turn of the century the Mill Yard became less park-like and more industrial: trees and the hose houses disappeared, and the grass panels diminished. In their place, smaller and more utilitarian features punctuated the yard. For instance, the 1890s photographs indicate that by this time, the hose houses were replaced with cast iron boxes and a hexagonal hydrant house was constructed just north of the Counting House (see Figures 12, 13 and 14). These photographs also indicate a raised walk along Mills No. 6 and 8, trolley tracks along

the front of Mills 1-4, and that the planting urns and the raised railroad bed were removed before 1890. In addition, although not visible in these images, it should be noted that the extension of Mills No. 8 and 9 into the Mill Yard would have compromised the avenue or path, and possibly some (or all) of the lawn in front of these buildings.

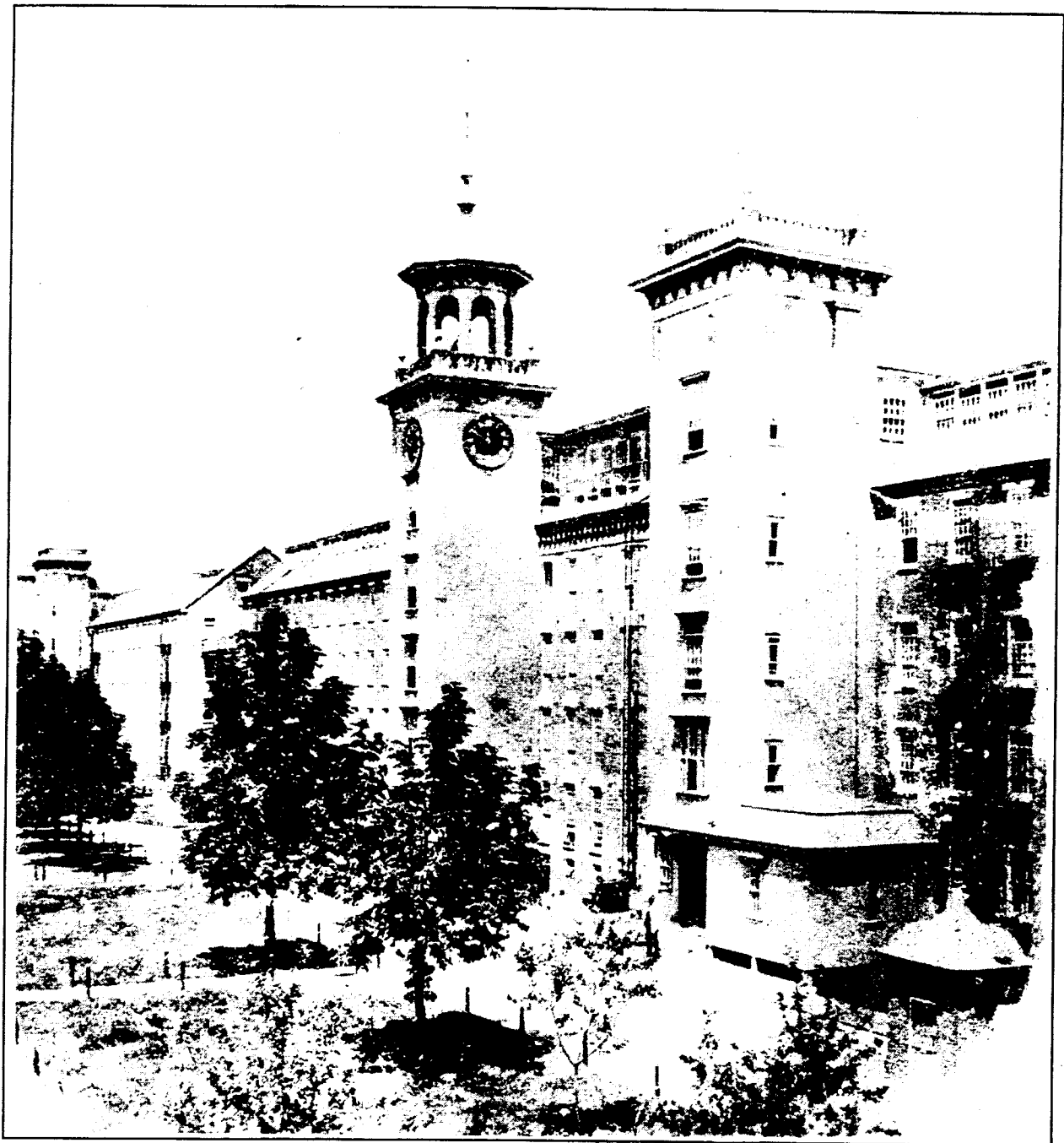


Figure 6. Stereoptic view of the Boott Cotton Mills, looking northwest, by John S. Moulton. Circa 1865-1870. Source: Society for the Preservation of New England Antiquities. The park-like qualities of Mill Yard suggested in the earlier engravings are confirmed by the Moulton views. Note the presence of trees, the bollards and chain around the grass panels, the plant urns on the lawn, the walkway across the Mill Yard, the raised walk in front of Mill No. 1 and the brick hose house with an onion shaped dome.



Figure 7. Stereoptic view of the Boott Cotton Mills, looking east. By John S. Moulton, circa 1865-1870. Source: Lowell Museum. This view shows the light trenches with unmowed grass in front of the mills, seven hose houses in two distinct styles, the grass panels with trees and rounded corners, the raised walk, and the ramps leading around the inside edges of Mills No. 2 and 3.

Figure 8. Plan of the Mill Yard of the Boot Cotton Mills. Showing the water pipes laid for extinguishing fire. Lowell, Mass. 1878. Source: Center for Lowell History. This plan shows the mill buildings with some changes made in 1880, ten hose houses in the upper Mill Yard and three in the lower Mill Yard, the trolley line in front of Mills No. 1-4, and the raised trolley along Mill No. 9.

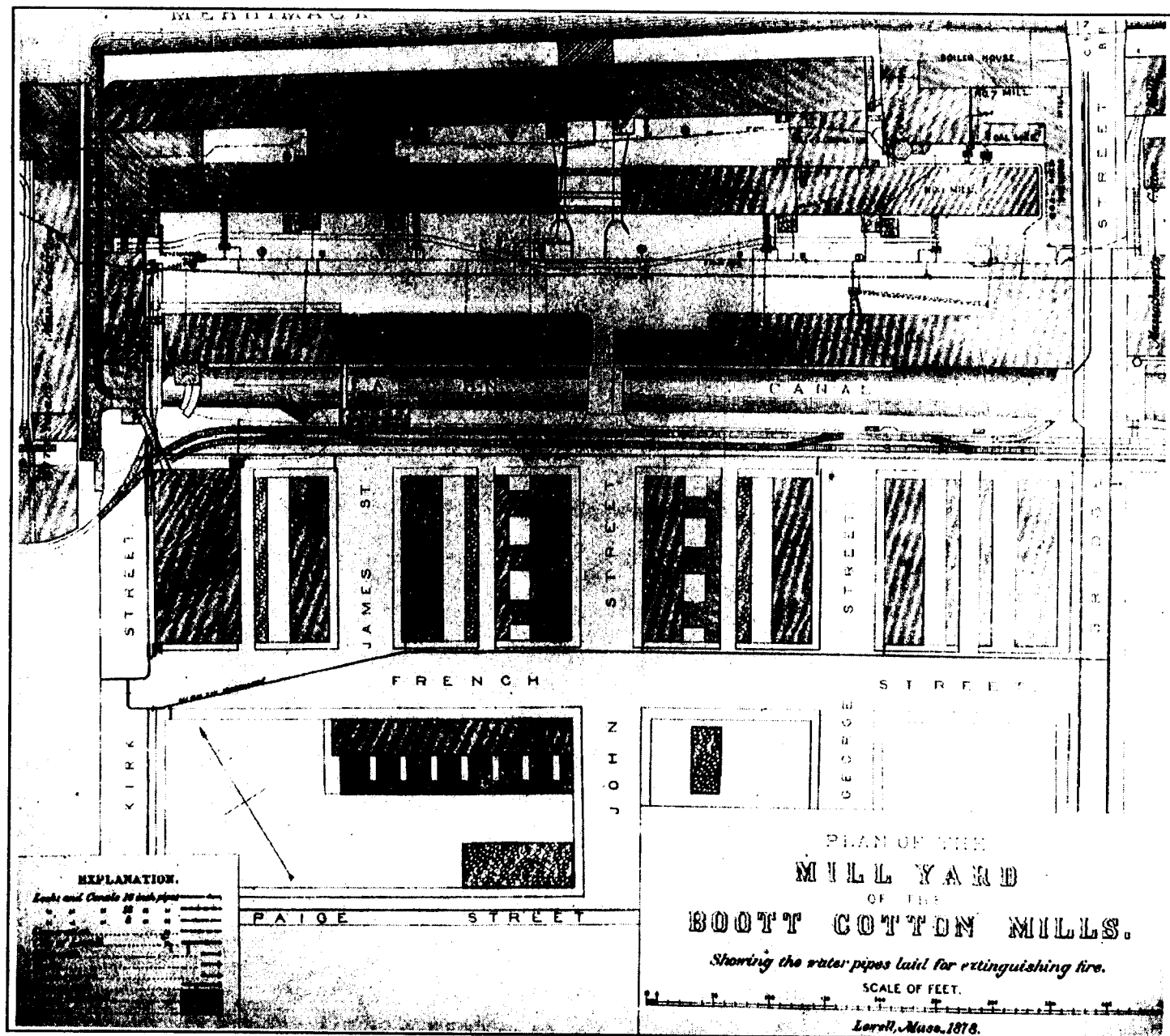




Figure 9. View of Boott Cotton Mill Yard with workers, 1878. Source: Lowell Museum. Nine of the ten hose houses located in the upper Mill Yard (see Figure 8) are evident in this photograph. In addition, note the trolleys on both the elevated track on the right and on the track in front of Mill No. 3, horses pulling a wagon in the main entrance. Although the plant urns remain on the lawn, the trees have either died or been removed by this time.

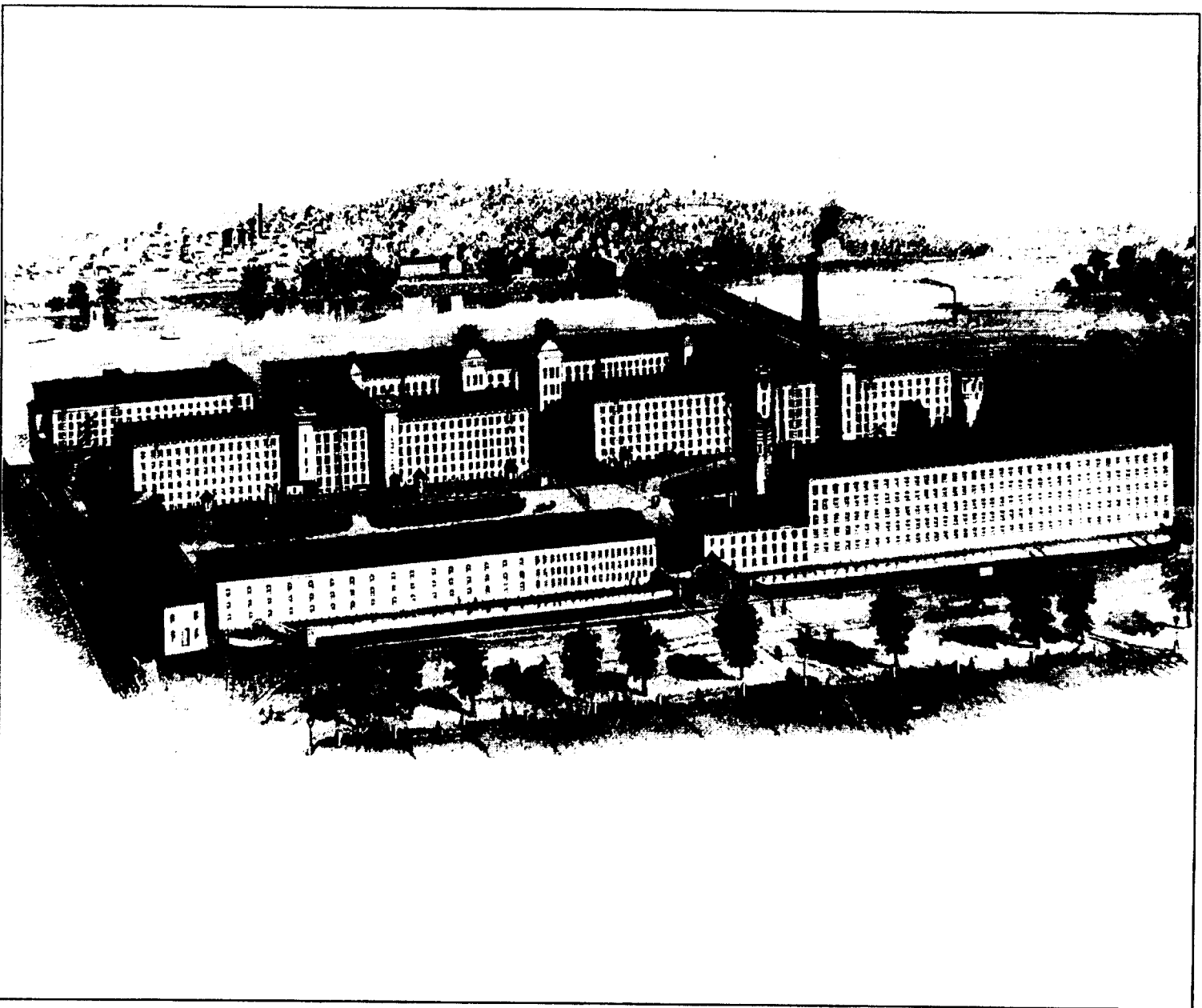


Figure 10. Bird's Eye View of Boot Cotton Mills, Lowell, Mass. Circa 1880. Source: Lowell Historical Society. This image depicts a park like Mill Yard. However, note that the features differ slightly from earlier images. The grass panels for example, are more oval than rectangular in this image.

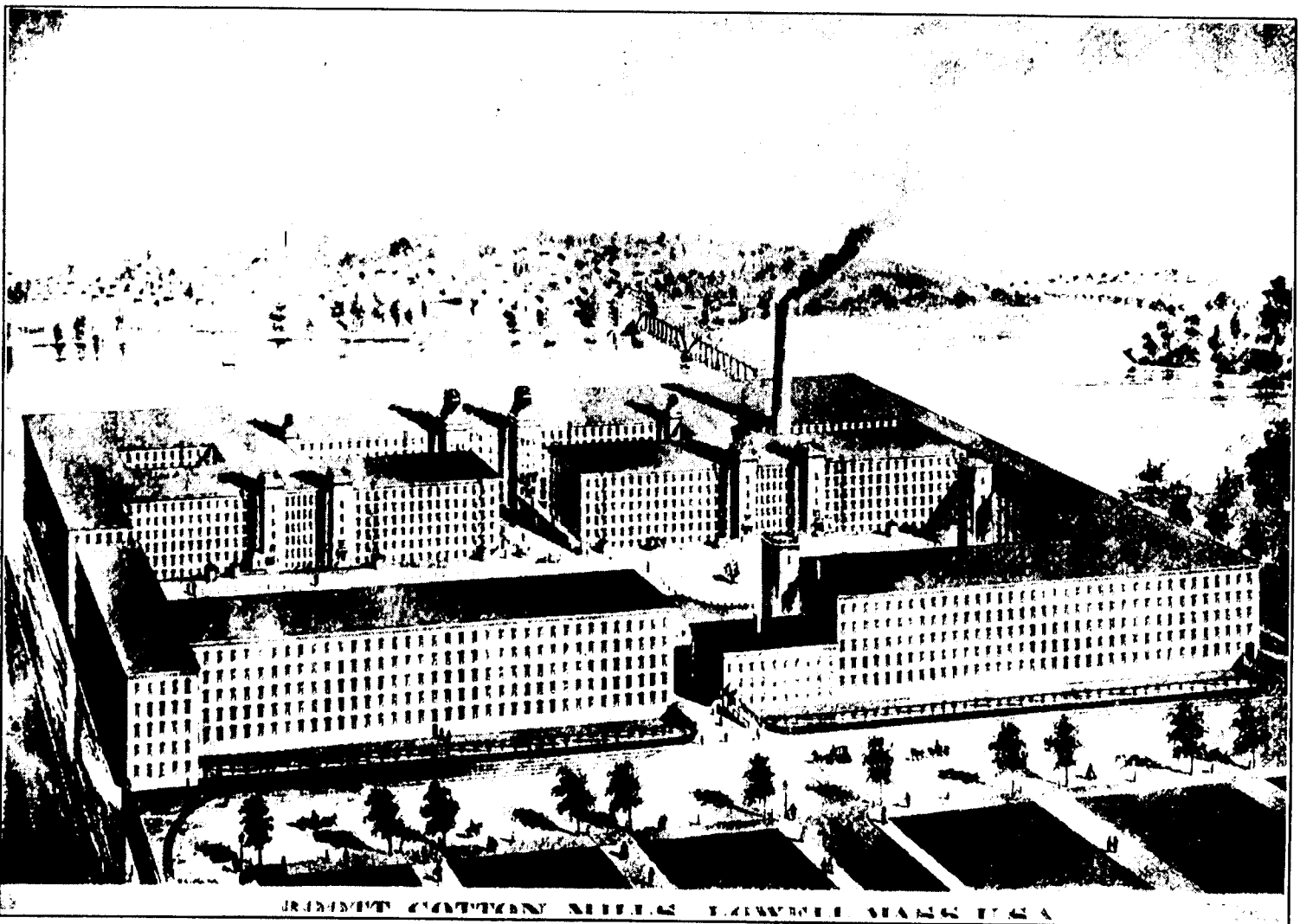


Figure 11. Bird's Eye view of the Boott Cotton Mills, 1890. Source: University of Massachusetts, Lowell. The Mill Yard is tightly enclosed in this image, but also note the hose houses, a singular tree, and the ramps leading to Mill No. 5.

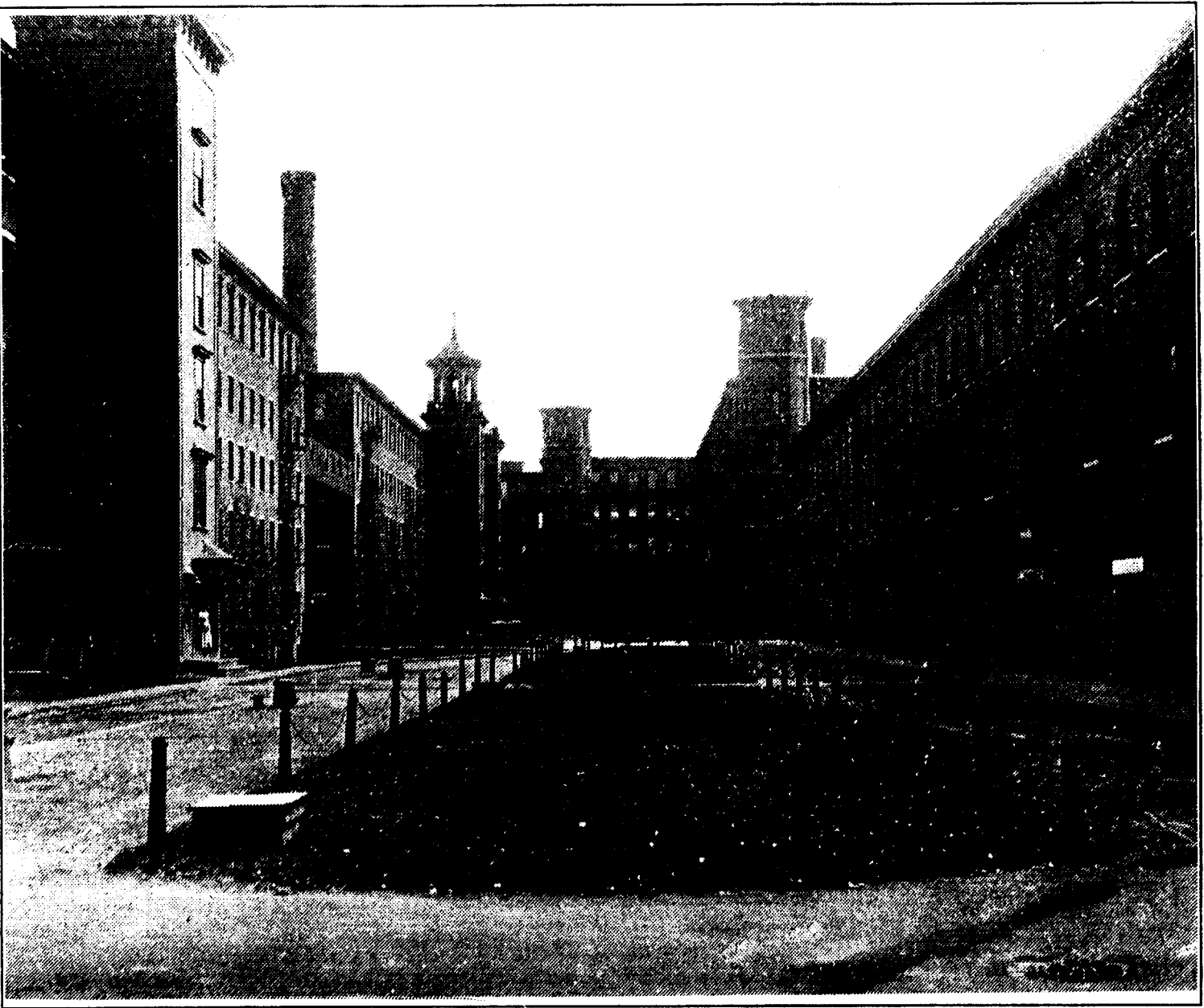


Figure 12. The Boot Cotton Mills and Yard, looking east, 1897. Source: Center for Lowell History. Plant urns and grass panels remain, but hydrant boxes have replaced the hose houses and a raised walk has replaced the elevated rail. The style of drain cover in foreground is extant in the yard today.

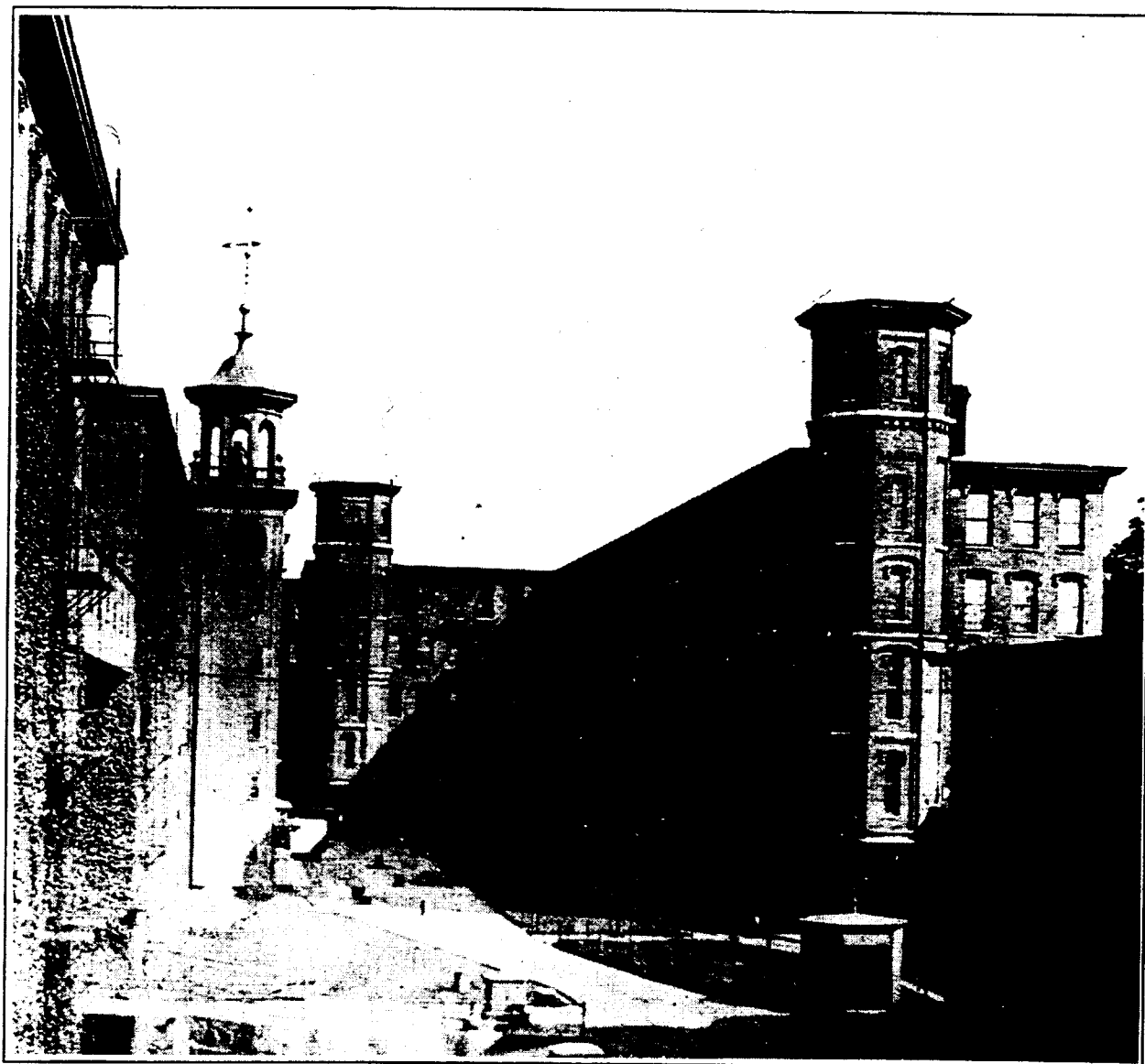
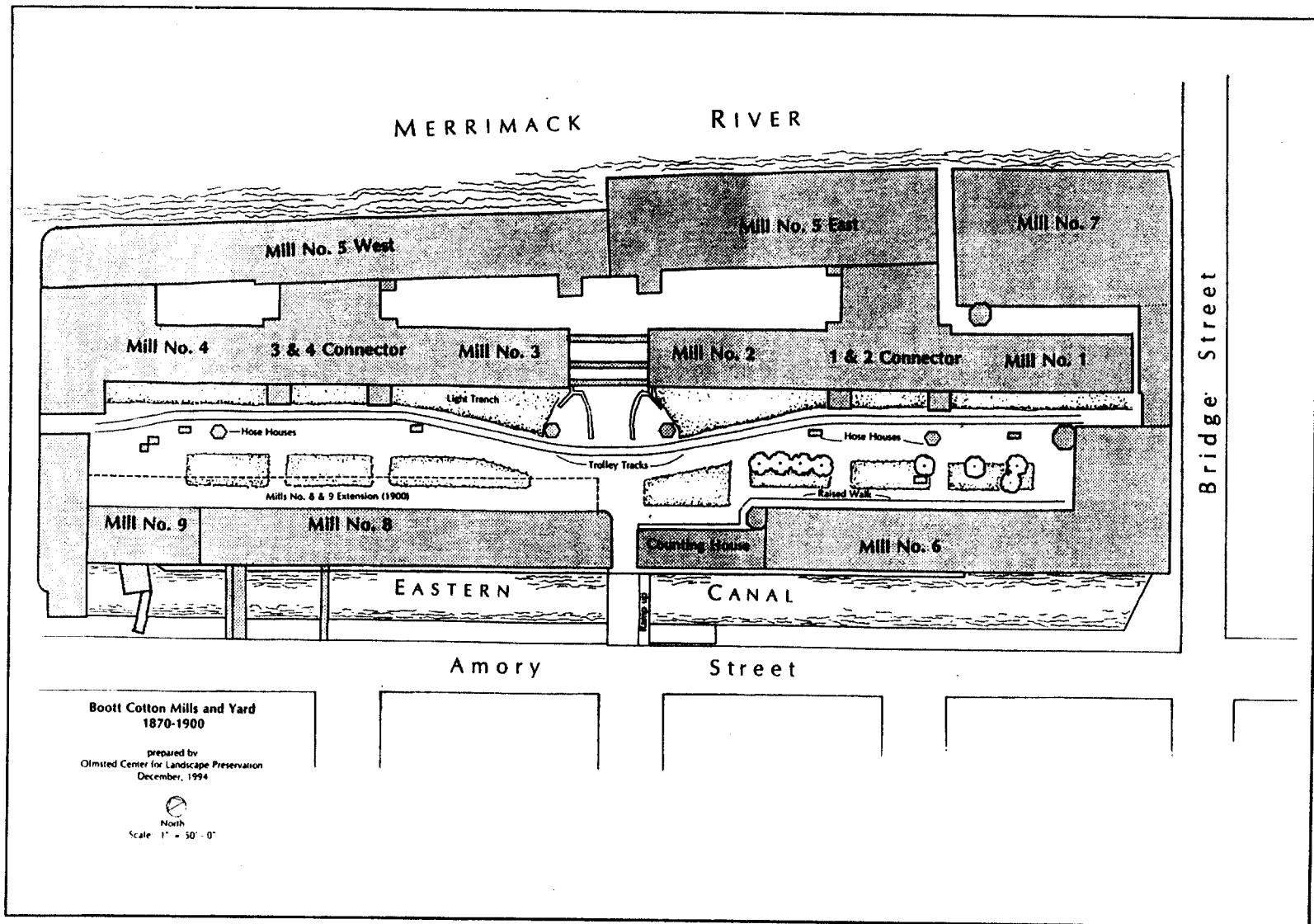


Figure 13. View of the eastern portion of the Boott Cotton Mills and Yard, nd. Source: Lowell Museum. This photograph was taken after Mill No. 8 was extended in to the Mill Yard in 1900. Note the hexagonal hose house in front of the Counting House, the raised walk along Mill No. 6, and the trolley on the tracks in front of Mill No. 1, and the vines growing on Mills No. 3 and 2.

Figure 14. Period Diagram 1870 - 1900



The Boott Mill Yard: 1900-1930

The changes made around 1900 established the existing configuration of the Boott Cotton Mills and its yard. However, the details of the both the buildings and the Mill Yard continued to change in response to technology, production demands, and changing attitudes towards mill workers. Smaller buildings and features continue to appear in the yard, including a smoking shed, an ice house, a gas pump, and a tool house. A shipping shed was added to Mill No. 6 in 1928 at the base of the elevator tower, constructed in 1917.

Unfortunately, documentation for this period is limited. Several insurance plans exist one of which clearly documents the location of the hose house, smoking shed and ice house, but provide little other detailed information about the yard (see Figure 15). A Locks and Canals photograph from 1927, on the other hand, provides substantial information about the Mill Yard during these years: it shows the trolley tracks shifted north to connect with Mill No. 8, the raised walk in front of Mill No. 6 and the Counting House, the hexagonal hydrant house in front of the Counting House, and ivy growing on several of the buildings (see Figure 16). Several earlier features are altered or missing: the grass panels are no longer edged with bollards, the grass plots appear smaller and altered in shape, and the ramps leading around Mills No. 2 and 3 are gone. (However there are ramps leading from the bottom of the fire escapes over the light trench.) It also shows a hydrant box shed, and an open sided structure, which was presumably the smoking shed. The Mutual Insurance plan of the Mill Yard suggests that the raised walk along the north edge of Mill No. 6 existed through 1932 (see Figure 17).

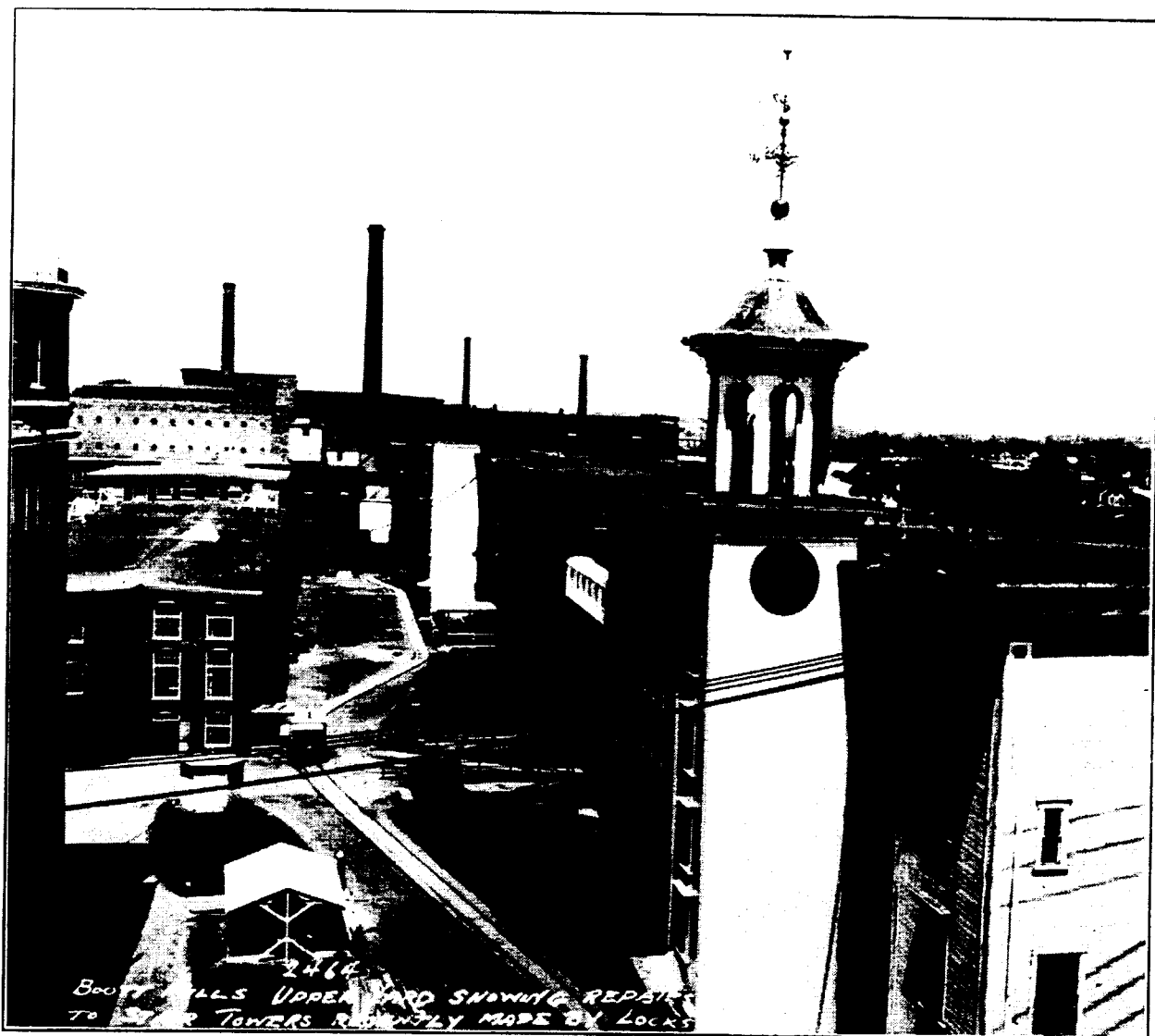
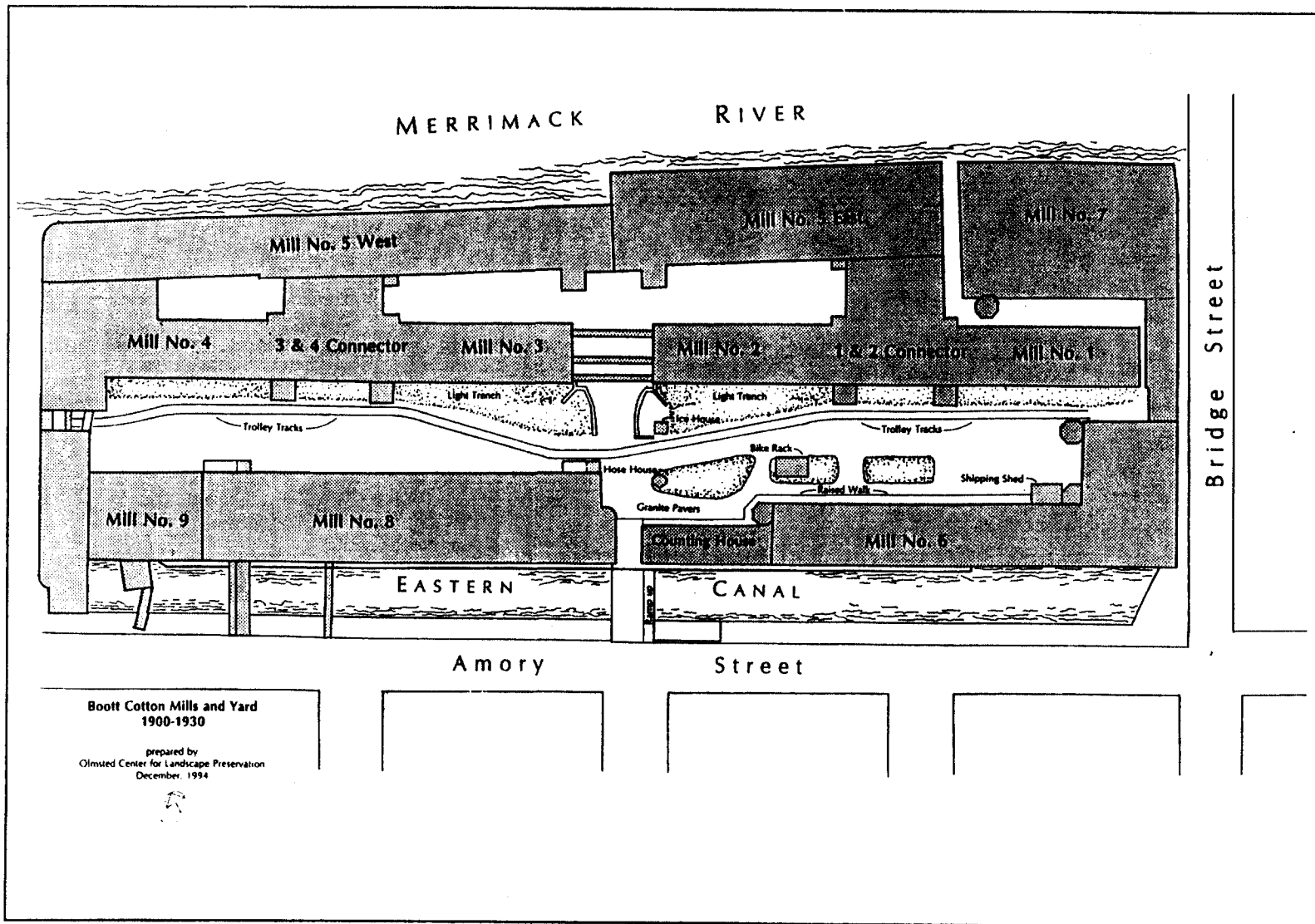


Figure 16. "Boott Mills Yard Showing Repairs to Stair Towers recently Made by Locks and Canals." June, 1927. Source: Lowell NHP. This photograph shows the trolley tracks, the hose house, the bicycle rack, the gas pump, two distinct grass plots with a path between them, a sidewalk along Mill No. 6, and a paved surface connecting Mill No. 8 and the Counting House. Note that the western portion of the Mill Yard has no grass plots, and is defined by the trolley tracks.

Figure 17: Period Diagram: 1900-1930



The Boott Mill Yard: 1930-1956

Changes in packaging and the transportation of goods after 1930 led to changes in the Mill Yard which are still evident today. The most significant change was that trucks rather than trains transported goods and materials to and from the Boott Cotton Mills. Photographic documentation for this era includes Lock and Canals drawings (Shelf 153, drawings nos. 98 and 170, 1955), one Locks and Canals photograph (1933), insurance plans, and a 1957 photograph.

The Locks and Canals photograph indicates that by 1933, a gas pump was installed in the middle of the yard, entry doors on the north side of Mill No. 6 were converted to windows, and that the trolley tracks were buried below the surface (see Figure 18). It is difficult to discern whether or not a walkway exists in front of either Mill No. 6 or Mill No. 2; however, the absence of doors on Mill No. 6 and the shipping shed suggests that there was no need for a walkway.

The most informative documentation for this period is a series of circa 1930s photographs by John Coolidge for his book *Mill and Mansion*. (see Figures 19-22). These photos show the yard barren but for the hose house located just north of the Counting House, hydrants, valve boxes, and a gas pump. A concrete walk is visible on the edges of the yard, and a nonfunctioning trolley track runs across the yard from Mill No. 1 to the area of the shipping shed of Mill No. 6. Also visible are the hose house and ice house. The surface of the yard appears to be packed dirt or sand, with some traces of grass. Granite slabs and blocks run perpendicular from the Counting House to the west side of the hose house.

The Mill Yard was paved as early as 1944 (and possibly earlier) to provide a more durable surface for the trucks. At the same time, hydrants were removed, and a dozen metal park benches installed, though their exact locations are not known. Company records indicate that six trees and two grass plots were installed at this time, and while there is photographic evidence of the grass plots, there is none for the trees.²

Between 1945-1950, loading docks and doors were added to the facade of Mill No. 2. In 1949, the "light trenches" were filled, by "cementing the lower floor windows thus improving the room inside and the yard outside..."³ It is possible that at the same time the retaining walls flanking the ramp leading down to Mill No. 5, which were formerly independent of the buildings, were altered to connect with the mill buildings.

By the 1950s the raised walk and trolley tracks were either removed or incorporated into the rest of the yard surface. In 1950 a new Recreation and Employees Room was built just north of the Counting House. Although this structure is described in company records as the Recreation Room, it was still noted on the Locks and Canals drawings as "the smoking shed" (see Figure 23). The drawings also show a grass panel that was apparently added during the forties.⁴

² U. S. Department of the Interior, National Park Service, *Historic Structures Report: Boott Mill Complex, Building 6; Counting House; Adjacent Courtyard and Facades of Buildings 1 and 2*, by Laurence Gross and Russell Wright for Denver Service Center, (1985), 410.

³ Ibid, 411.

⁴ Ibid, 350.

The 1957 photograph shows the new Recreation Shed, and trucks in the yard (see Figure 24). An Ailanthus tree, infamous for its tolerance of urban conditions and widely self sown in vacant lots, appears to be growing in front of Mill No. 3. Vines, possibly an ivy, are still evident on building facades.

The Mill Yard was paved again in 1955, hydrants were moved, the ice house was destroyed, the tool house was moved, and a transformer base was built between the north end of Mill No 6 and the east end of Mill 1. Also in 1955, another loading dock was added to the east of tower of Mill No. 1 (see Figure 25).⁵

⁵ Ibid, 425.



Figure 18. "Looking east from hole #22, Boott Mills, Dec. 5, 1933. Locks and Canals Photograph. Source: Center for Lowell History. The bicycle rack evident in the 1927 photograph is gone, as are the doors on the north facade of Mill No. 6. The trolley tracks appear buried in this image, and it is difficult to discern surfacing materials, including the grass plots and the raised walk.



Figure 19. View of clock tower, Boott Cotton Mills by John Coolidge. Circa 1930s. Source: Museum of American Textile History. Note the two types of granite pavers in front of the hose house, and that the grass plot around the hose house is much less distinct. Also vines are still evident on the buildings (see Figure 14) and the vehicular surface appears to be packed dirt.

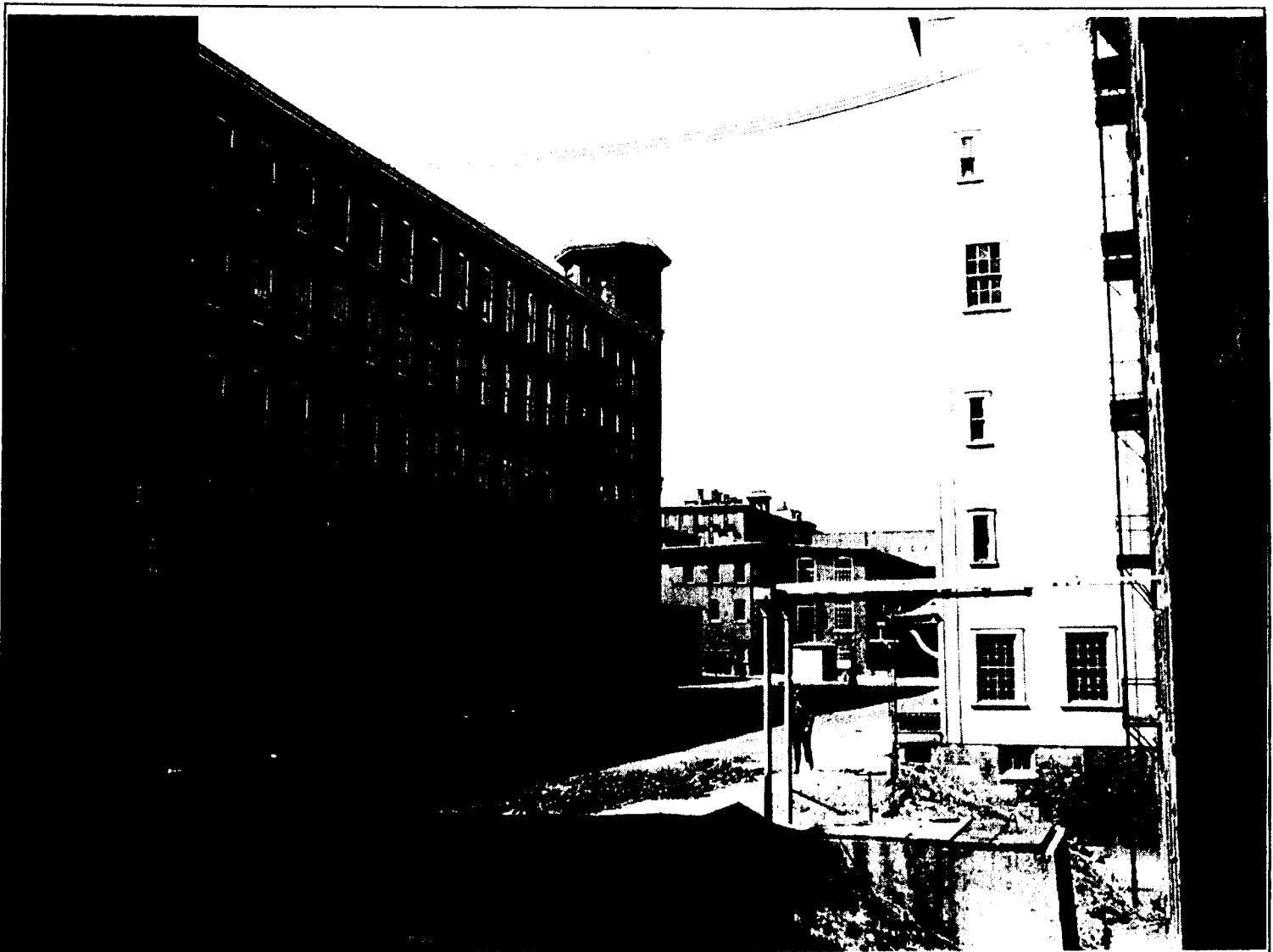


Figure 20. View of Boot Cotton Mill No. 6 from the northeast, by John Coolidge. Circa 1930s. Source: Museum of American Textile History. A concrete sidewalk is evident in front of Mill No. 1, as is a sidewalk with curb along Mill No. 6. The center of the yard is void of grass.



Figure 21. View of Boot Cotton Mills looking west, by John Coolidge. Circa 1930s.
Source: Museum of American Textile History. Note the sidewalk along Mills No. 1 and 2 and traces of the paths across the Mill Yard.

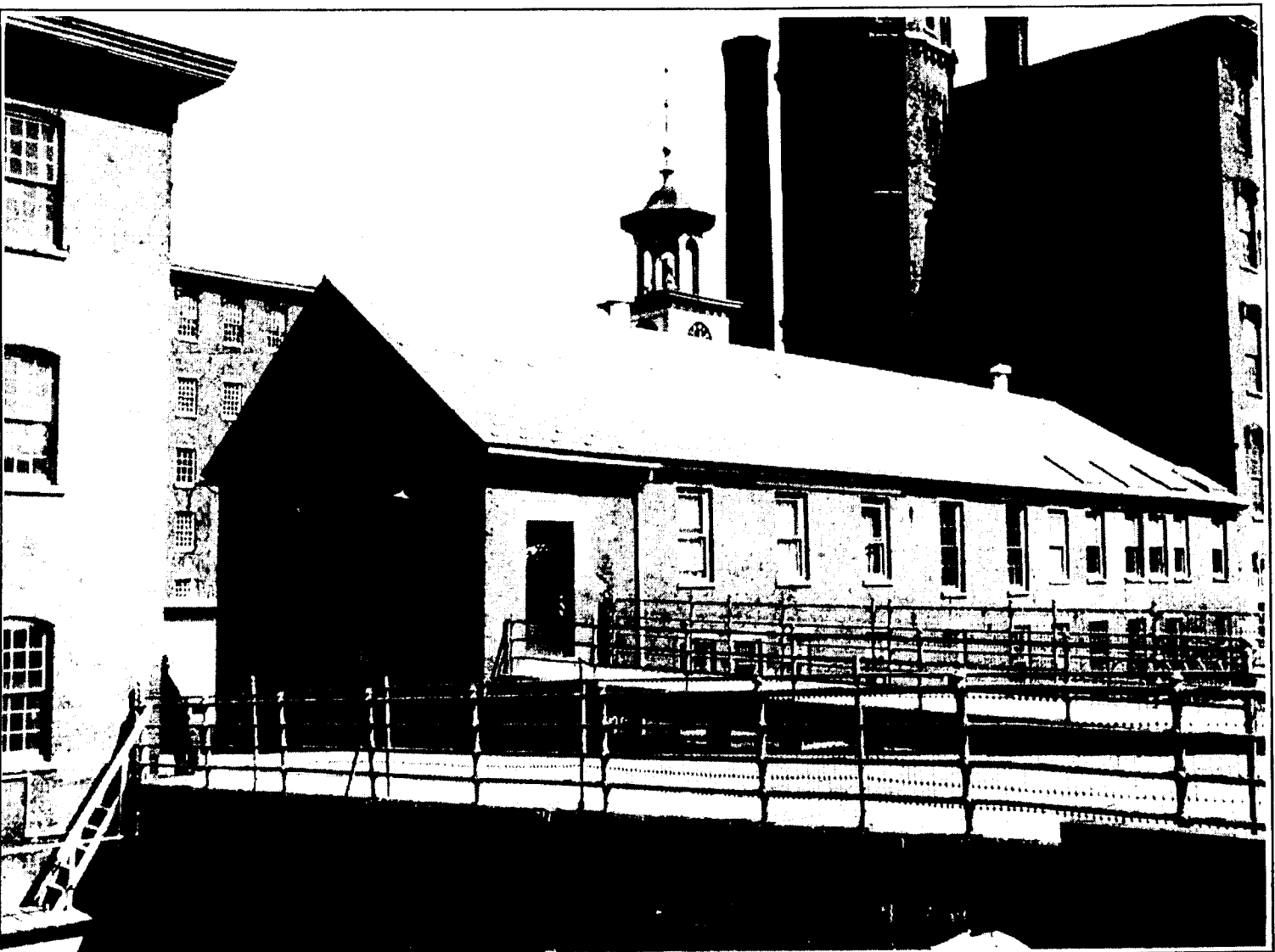


Figure 22. View of entrance bridge to Boot Cotton Mills by John Coolidge. Circa 1930s.
Source: Museum of American Textile History. Before the ramp was altered in the 1980s, a narrow ramp led up to the Counting House, and the wider ramp led down to the Mill Yard.

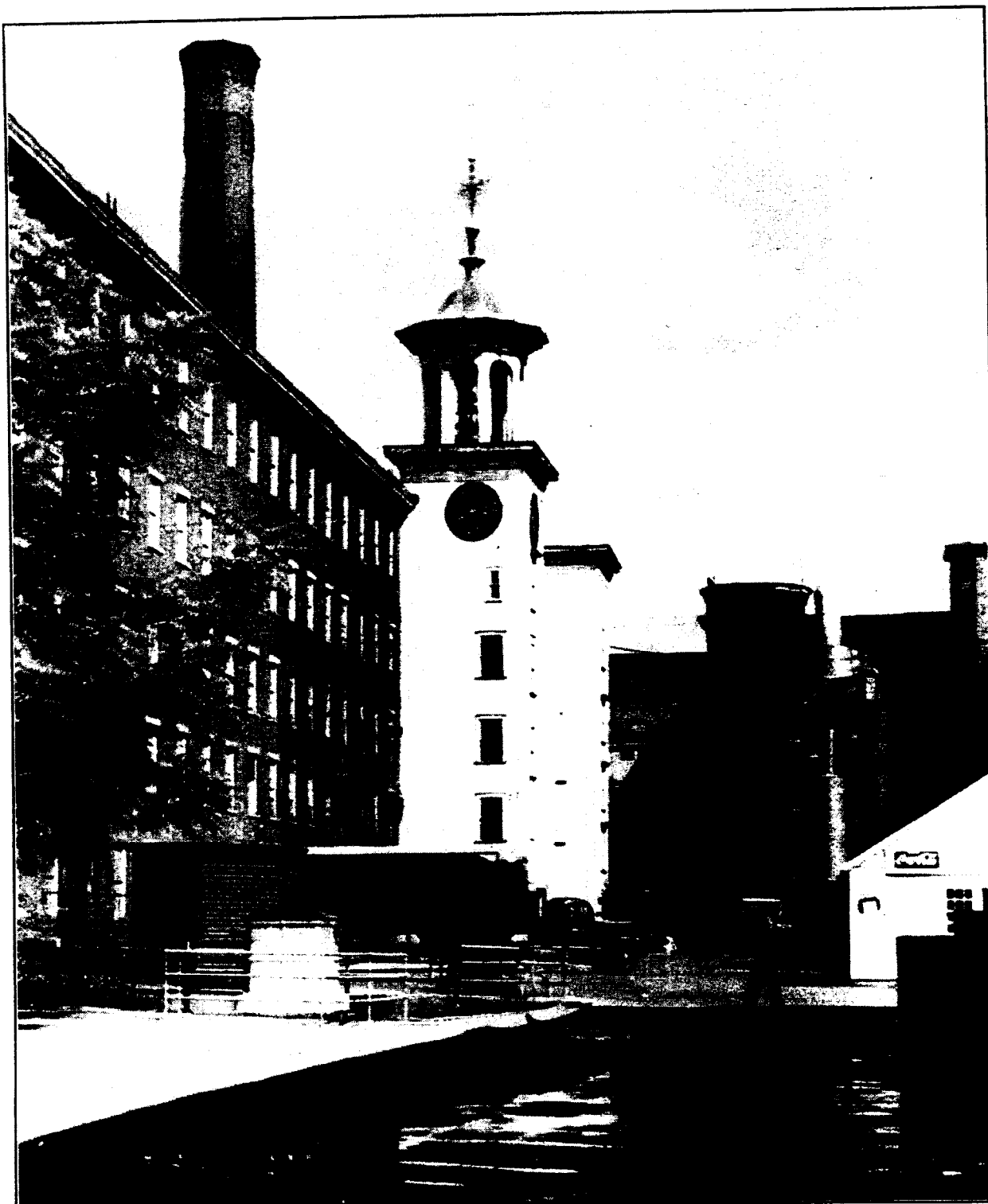
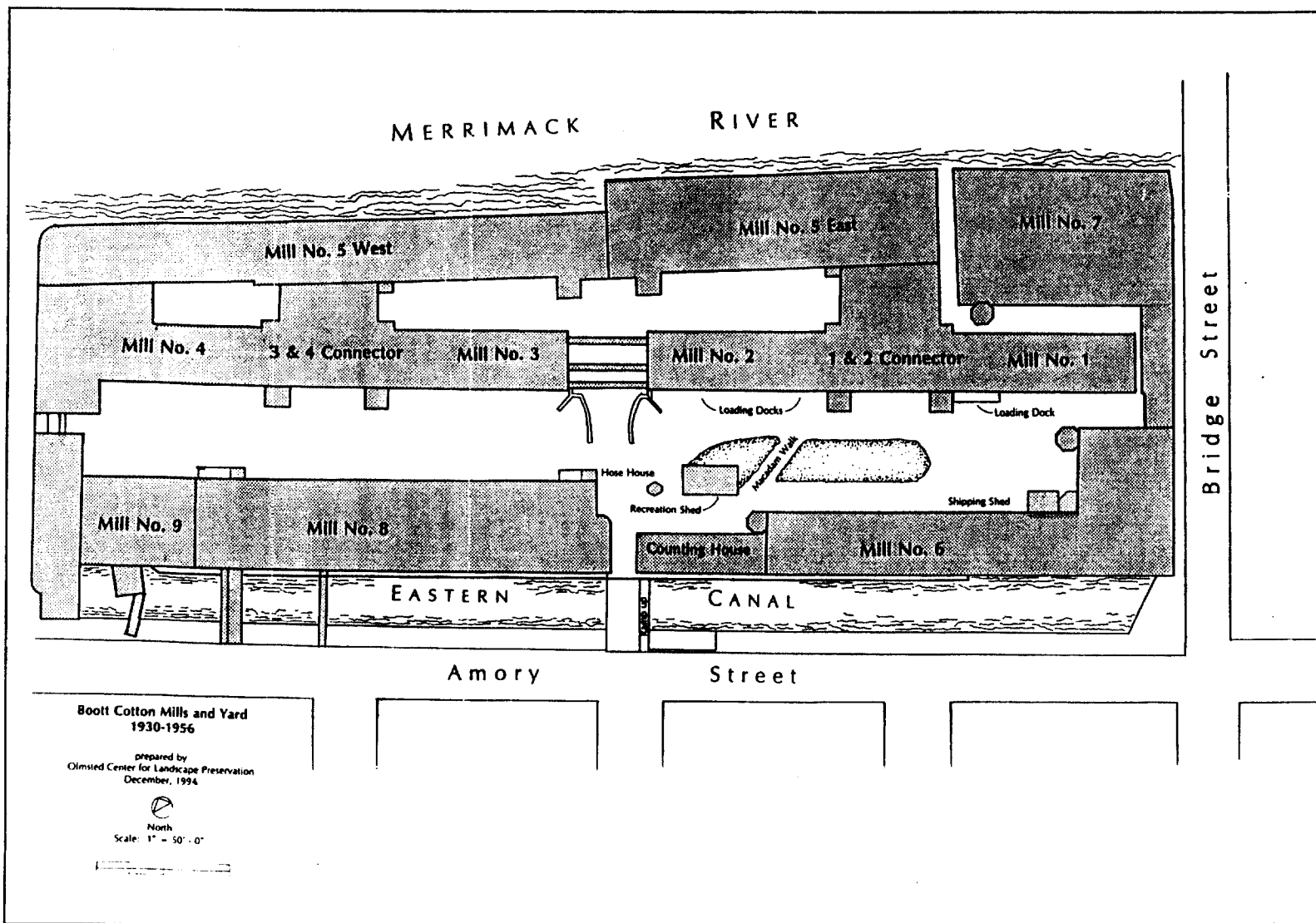


Figure 24. The clock tower, Boott Cotton Mills. July 16, 1957. Lowell Historical Society. This shows the relocated and repainted hose house, the recreation shed, trucks parked in the yard, and volunteer vegetation such as the Ailanthus in left foreground. Also note the vines on the building and the puddles.

Figure 25. Period Diagram: 1930-1956.



III. BOOTT MILL YARD: EXISTING CONDITIONS

The Boott Mill Yard consists of two distinct spaces: the unimproved east end and the improved west end (see Figures 26-37). Both are enclosed by the brick mill buildings, but the western end has a crushed stone and packed dirt surface, and a line of oak trees and street lamps along its southern edge. A small group of shrubs surrounds the gate hoist at the entrance to this end of the yard. The eastern end, on the other hand, is a large, enclosed (311' x 90') space, paved with asphalt and void of vegetation, except for some flowers around the base of an information sign at the entrance to the yard.

At present, the NPS owns two buildings, Mill No. 6 and the Counting House, at the eastern end of the Mill Yard. The NPS also owns a very small (3' - 6') strip in front of Mill No. 6, but no other land associated with the Boott Mills. The remainder of the Mill Yard is privately owned, and easements allow for fire protection and passage. Mills No. 1 and 2 are privately owned but not occupied at present.

Mill No. 6 houses the NPS Boott Cotton Mill Museum, the Tsongas Center for Industrial History, the New England Folklife Center, the Lowell Historical Society, the NPS Cultural Resource Center, an art gallery, and the Lowell NHP offices, library and archives.

A bridge crosses the Eastern Canal from the foot of St. John Street, and provides pedestrian and restricted vehicular access to all the Boott Mill buildings. A guard booth just above the Canal enforces the restrictions on this traffic; it is limited to NPS maintenance staff, deliveries, rubbish and snow removal, and emergency vehicles, and a small amount of traffic for Mills No. 3, 4, 8. Bollards separate pedestrian and vehicular traffic on the bridge, and once through the "tunnel" in the Counting House, a column of signs in a circular granite curbstone directs visitors. A yellow path painted on the asphalt steers visitors around the severely deteriorated areas of the yard toward the entrance for the Tsongas Center for History at the northeast stair tower of Mill No. 6. Visitors enter the museum and the museum store through the southern stair tower and the Counting House, respectively. These entrances are marked with signs above the doors. The business entrance is located at junction of the "L" of the Mill building in a former elevator tower. A new ramp next to this tower provides disabled access to the business entrance. The Museum Store entrance is at ground level.

Other structures, in addition to the Mill buildings and the Counting House include the single story, hexagonal, wooden hose house which was moved to its present location in 1957. The hose house boasts a sprinkler on its roof, which reportedly is in working condition and rests on a concrete slab. There are also four sluice gate hoists in the eastern portion of the Mill Yard, and these are occasionally used. One of these is in front of the hose house and is housed in metal. The other three, located in front of the Mills. No 1 and 2 connector, are exposed. There are also six catch basins, ten valve boxes and four manhole covers located throughout the Mill Yard. A transformer and a picnic bench are located in a fence off area between Mill No. 6 and Mill No 1.

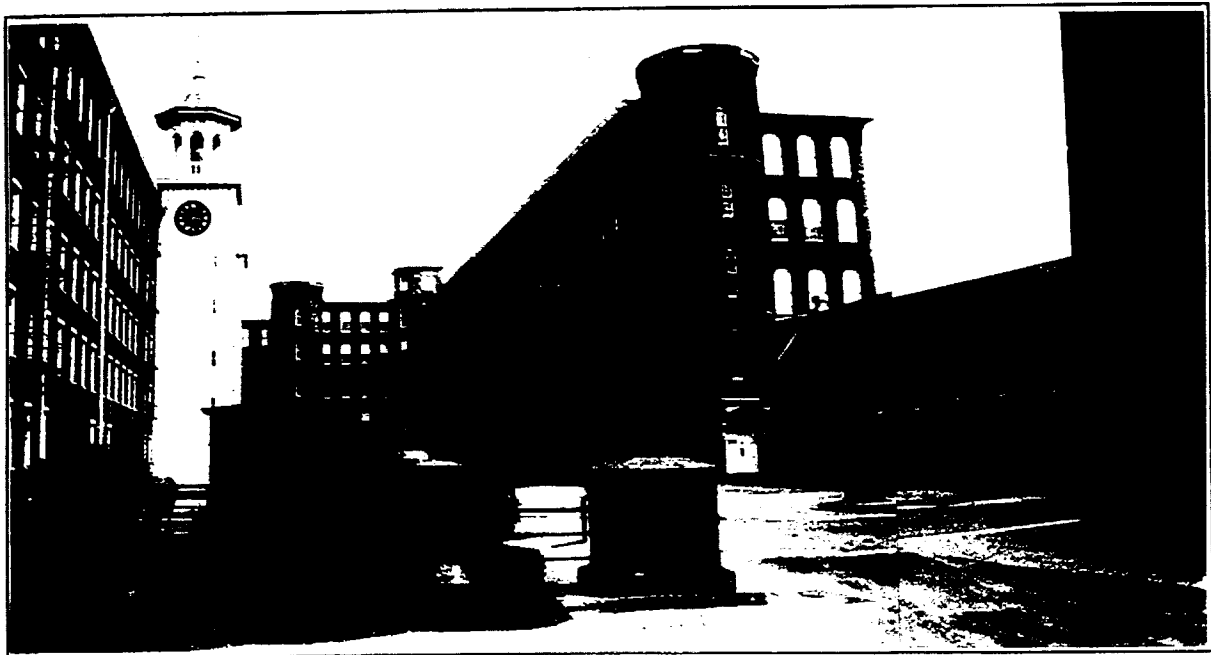
The asphalt paving in the Mill Yard is uneven and patched. In some areas, the surface has subsided enough to create large puddles, particularly just north of Mill No. 6. In other areas, the pavement forms mounds around valve boxes, such as the large mound at the eastern end of the Mill Yard. In spots where the pavement has eroded or deteriorated, earlier paving materials are revealed, including the granite curbstone parallel to and 6'-6'' north of Mill No. 6, and granite blocks at the entrance to the Mill Yard. Other layers of asphalt and rubble are also discernable through the pavement.



Figures 26, above and 27, below. The Mill Yard looking southwest above, and looking east at Mill No. 6 below. Note the vehicles parked flush to the buildings, the dumpster and the lack of traffic delineation.



Figures 28, left and 29, below show the relandscaped western portion of the Mill Yard. The surface is packed crushed stone. Oak trees, lamp fixtures, and bollards screen Mill No. 8. The shrub planting, around the sluice gate hoist includes burning bush and helps screen the view of the eastern portion of the Mill Yard. The lower photo shows the Counting House on the right with Mill No. 6 behind it. Except for the NPS orientation sign in front of the Counting House, there is little definition to the eastern portion of the Mill Yard.



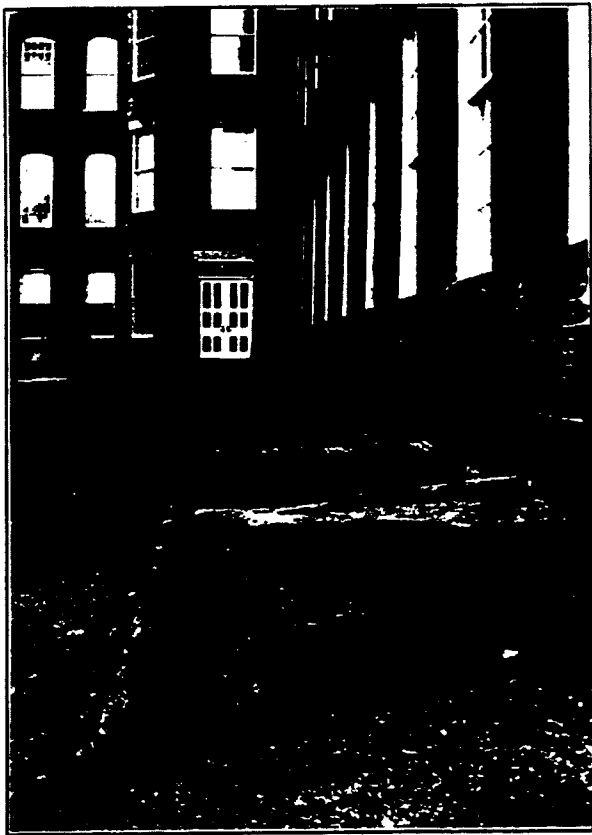
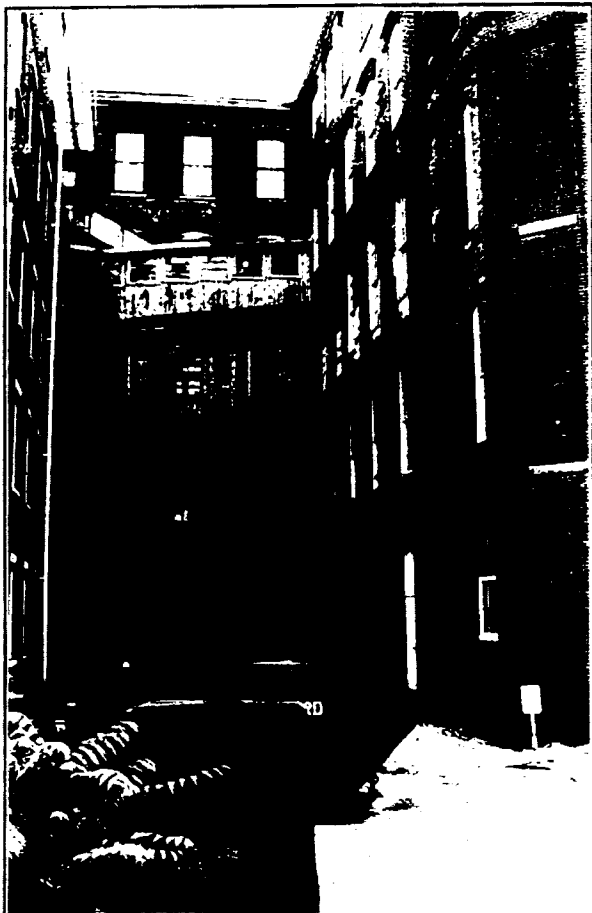


Figure 30, left, looking east toward the business entrance of Mill No. 6 shows a detail of the remnant of the historic granite curb along Mill No. 6. This detail also shows the southern edge of a large area of deteriorated paving which drains poorly.

Figure 31, below, shows the eastern end of the Mill Yard. Note the visitors circumventing the cars parked flush with the building, and the trailer parked in front of Mill No. 1.





Figures 32 and 33 show details of the eastern end of the Mill Yard. Figure 32, above shows the new business entrance and ramp to Mill No. 6. The historic entrance to the stair tower on the left is used for group tours. Note the striped path painted on the surface; this path, which is yellow, was added to help guide pedestrians around the more deteriorated and uneven portions of the Mill Yard to the stair tower.

Figure 33, left, shows the Mill No. 6 and 7 connector. The fence in the right corner screens a transformer and a picnic table. Note the dumpsters and the Ailanthus in the foreground.



Figure 34, above, looking toward Mill No. 5, shows the hose house in its nonhistoric location at right. Bollards protect both the hose house and the sluice gate (which is functional) from vehicular traffic. Also note the collapsed railing on the retaining wall to the left of the hose house.

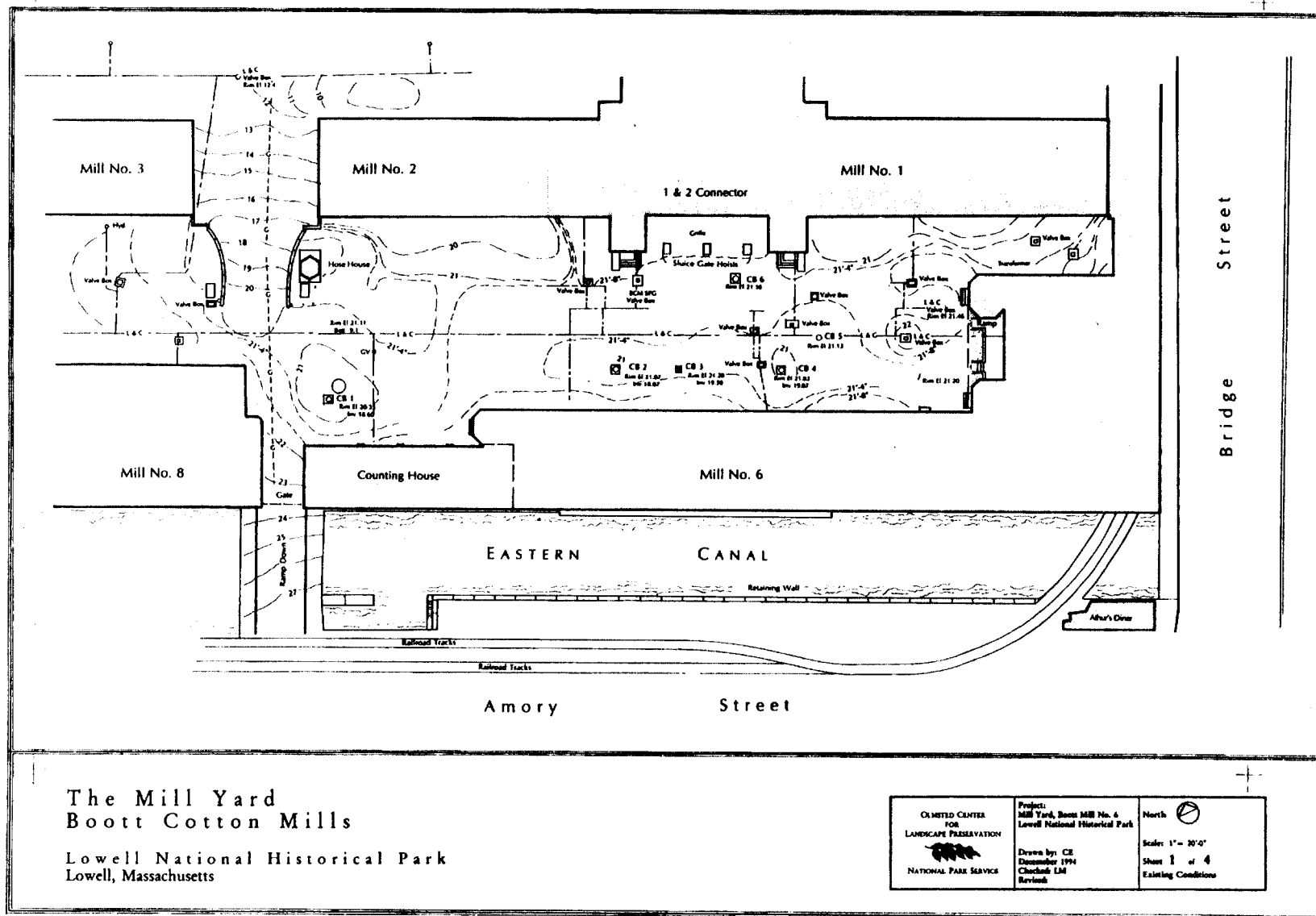


Figure 35, left, shows the remnant of the light trench in front of Mill No. 2, which is now used for drainage. The wooden steps and railing lead to a loading dock added in the 1950s. The single pane windows on the left are the remnants of the full length ground floor windows which were sealed when the light trenches were filled in the 1950s.



Figure 36. Looking out of the Mill Yard across the entrance bridge with the Counting House on the left. Note the granite slab pavers in front of the tunnel, and the granite block pavers showing through the deteriorated asphalt at right. Pedestrian access to and from the Mill Yard is defined by tunnels and bollards on both edges of the bridges, however, pedestrians often opt to walk through the wider and lighter central portion of the entrance.

Figure 37. Existing Conditions Plan



IV. PRESERVATION ISSUES

A. Current National Register Status

In 1976, the Boott Cotton Mill was nominated to the National Register of Historic Places as part of the Locks and Canals Historic District. This district is bounded by the Pawtucket and Hamilton Canals, and the Concord and Merrimack Rivers. The areas of significance are engineering and industry, for the period from the 1820s through the 1950s. The district includes approximately 125 acres, ten canals and their feeders, seven extant mill yards, the ruins of an eighth, a Locks & Canals yard, the Lowell Machine Shop, and mill company boarding houses. The waterways and related structures have National Landmark status, but the mill yards, which are included on the National Register, are not historic landmarks.⁶

B. Archeological Resources

Archeological investigations undertaken to monitor the rehabilitation of Boott Mill No. 6 were conducted both within the building and in the Mill Yard between 1983 and 1988. The investigations focused on industrial activity, history of machinery and technology, architecture, and land use, as well as prehistoric activity. The results of this work are described in a draft version of Archeological Data Section, Historic Structures Report, Boott Cotton Mills, Lowell National Historical Park (January, 1991).

Investigations pertaining to the history of the Mill Yard included the excavation of two test pits adjacent to the exterior foundation wall to inspect the condition of the raceway and the foundation; an excavation to investigate the foundation in the Coal Pocket; and the monitoring the construction of a new sewer line, running diagonally between Mills No. 2 & 6.

In addition to recording information about known structures, the Mill Yard archeological investigations also revealed the following new information about the history of the yard:

- A brick foundation, located north of the east ell predates Mill No. 6, and is possibly an early picker house foundation.
- In the process of investigating the foundation and raceway of Mill No. 6, granite curbstones were found (6' east) of the building, (1-2" below) the existing macadam, and parallel to the building. This curbstone is a remnant of the raised walk evident in historic photographs.
- Subterranean pipes and cisterns were also found in these test pits.

Unfortunately, evidence of Mill Yard features such as paving and the smaller structures which were erected between the 1860s and 1950 was not uncovered. This was due in part to the nature of the

⁶ U. S. Department of the Interior, National Park Service and Lowell Historic Preservation Commission, *Final Environmental Impact Statement on General Management Plan, Lowell National Historical Park*, (August 1981), 10. This boundary, with its exclusion of the Mill Yards, should be confirmed.

investigation which followed the linear design of the new sewer system, and in part to the many subsurface alterations made in the mill yard, especially the near constant improvement, replacement and addition of utilities such as water, sewer, fire systems.⁷

Additional information about historic surface materials located under the existing asphalt has also been revealed by park maintenance staff. Two different paving materials were discovered. The paving in front of the Counting House consisted of an inner and outer granite curbstone, which was infilled with brick in a herringbone pattern. The overall width of this sidewalk was approximately 5.5'. Information on the sidewalk in front of Mill No. 6 is less conclusive. Concrete sidewalk remnants are exposed in portions of the walk, and in other portions, where there is no concrete, a rubble like blend of asphalt and stone lies beneath the existing surface.

⁷ U.S. Department of the Interior, National Park Service, *Boott Cotton Mills, Lowell National Historical Park, Historic Structures Report: Archeological Data Section*, Draft Report by Flansburgh and Associates, Inc. for Denver Service Center, (1991), 92.

C. Treatment Issues

The General Management Plan for Lowell National Historical Park (1981) states that the interpretative purpose of the park as a whole is, "to relate to visitors the significance of the industrial revolution in America as reflected in Lowell."⁸ The GMP identified five themes for interpretation: power, capital, labor, machines and the industrial city. The original GMP proposals for the Boott Cotton Mills focused on Mills No. 1 & 2, and although the National Park Service acquired Mill No. 6, the same interpretative themes apply. In particular, the Boott Cotton Mill interpretative center was to focus on the application of technology to textile production, and the living and working patterns of the mill workers.

The rehabilitation of Mill No. 6 as a museum and educational center was executed to preserve the evolutionary character of the mill's features. In the Mill Yard, which possesses few traces of its evolution, the GMP recommended a restoration, although it did not mention a specific date. It also specified that the western portion of the Mill Yard be relandscaped in compatible materials.

The interpretive period of the Boott Cotton Mill No. 6 covers its evolution through the end of its operation (1836 - 1955). In the weave room, a ground floor exhibit with a view of the Mill Yard, interpretation focuses on the operation of the mill in the 1920s. Rehabilitation of the Mill Yard will enhance the interpretation of the overall mill operations by complementing the interior exhibits with the following additional themes: the concern for fire prevention, the effect of changes in technology on mill construction and production, changes in social activities of workers, and the changing means of transporting goods in and out of the mill.

Rehabilitation of the Mill Yard will also allow the park to remedy safety and maintenance problems such as the lack of delineation between vehicular and pedestrian traffic, the need for a defined outdoor orientation area for group tours, deteriorated paving and associated problems of puddling and safety. The immediate priority in this area for Lowell NHP is to provide safe, clearly delineated visitor access to the Museum, the Museum Store, and the business entrance at the southeast corner of Mill No. 6. The first phase of each of the three alternatives described in the following section respond to this by focusing on the restoration or rehabilitation of the historic sidewalks that ran along both the Counting House and Mill No. 6. In addition, the alternatives recommend limiting vehicular traffic to light deliveries and emergency vehicles. Large trailer trucks will be prohibited from entering the Mill Yard. Park staff vehicles will be restricted when absolute necessary.

At the present time, the owners of the adjacent mills are supportive of the rehabilitation of the Mill Yard not only for the same reasons as Lowell NHP, but also because improvements in the Mill Yard will help attract additional visitors to their proposed retail complex.

⁸ U.S. Department of the Interior, National Park Service, *General Management Plan, Lowell National Historical Park*, (1981), 11.

RECOMMENDATIONS FOR TREATMENT OF MILL YARD, BOOTT COTTON MILL

Introduction

The primary objective of this project is the treatment of the eastern portion of the Mill Yard to reflect its historic appearance (circa 1920), accommodate its new uses, and improve visitor safety and access. The Mill Yard is currently used primarily by National Park Service staff, and visitors to the Boott Mill Museum, and the Tsongas Center for Industrial History. In addition, based on preliminary discussions to date, the owners of Mills No. 1 & 2 anticipate light manufacturing on the upper floors, and retail use for the first floors of these buildings. To support these plans, the alternatives outlined here all address the land immediately in front of Mills No. 1 & 2, as well as the areas adjacent to Mill No. 6 and the Counting House.

Since the Mill Yard is a historic resource and is listed on the National Register of Historic Places, the work must meet the Secretary of the Interior's Standards for the Treatment of Historic Properties (revised 1992, see Appendix A). Two treatments, rehabilitation and restoration, are appropriate for this landscape:

- Rehabilitation is the process of returning a property to a state of utility, through repair or alteration, which makes possible an efficient contemporary use while preserving those portions and features of the property which are significant to its historic, architectural and cultural values. Rehabilitation of the Mill Yard would be consistent with the treatment of Boott Mill No. 6.
- Restoration is the process of accurately recovering the form, features, and details of a historic property as it appeared at a particular period in time by means of the removal of later work or by the replacement of missing earlier work. Restoration of the Mill Yard would be consistent with the recommendations of the GMP.

Preservation as a treatment was not considered since the existing landscape does not convey the historic features that enhance our understanding of the use and appearance of the Mill Yard. Similarly reconstruction as a treatment does not apply since the structure of the historic Mill Yard remains intact.

Three alternative proposals for the Boott Mill Yard are presented here; they range, from A to C, from a restoration which re-establishes the historic appearance to the greatest extent possible to a rehabilitation with a greater introduction of new features. The alternatives are described in phases which reflect the priorities of the work needed in the Mill Yard. The first priority is to improve visitor safety and clarify the museum entrances; the second priority is to re-establish the historic character of the Mill Yard within the proposed new boundaries of National Park Service property and the areas immediately adjacent to Mills No. 1 and 2. The specific objectives of this project include:

- Delineate and/or separate vehicular and pedestrian traffic.
- Clarify entrances to museum and provide outdoor space for group orientations.
- Enhance interpretation of the Mill Yard, with a focus on role of fire management in the mills.
- Mitigate drainage problems.
- Maintain access to valve boxes.

In order to meet these objectives, all three alternatives also share several important aspects in common, and these include:

- Concentrating pedestrian activity in front of the Counting House and along the front of Mill No. 6.
- Re-establishing grass panels in the center of the Mill Yard and grass in front of Mills No. 1 and 2.
- Defining a vehicular traffic pattern that allows access for light deliveries and emergency vehicles.
- Relocating the dumpster and screening it with a fence.
- Restoring and relocating the hose house for use as a interpretive facility.

Lowell NHP has identified several tasks which will be completed prior to the implementation of any of the alternatives described here. The successful implementation of any of these alternatives, described below, depends on the completion of the following tasks:

- The National Park Service acquires the passage and maintenance easement in the eastern portion of Mill Yard.
- The work will be phased for budget purposes and to allow for immediate improvements while leasing and acquisition negotiations are underway.
- Vehicular parking is eliminated in the Mill Yard, and traffic is limited to delivery, drop-off, emergency and disabled access.
- Loading docks on Mills No. 1 and 2 will be relocated to the north side of building.
- Rim elevations of valve boxes will be adjusted.
- The General Management Plan will be amended, if necessary, to reflect the proposed work.
- Lowell National Historical Park will develop the final design, construction specifications and working drawings.

The alternatives presented in this report are based on historic documentation, site constraints, and preliminary site investigations. The implementation of all phases of these alternatives will require Section 106 compliance.

In order to meet these objectives, all three alternatives also share several important aspects in common, and these include:

- Concentrating pedestrian activity in front of the Counting House and along the front of Mill No. 6.
- Re-establishing grass panels in the center of the Mill Yard and grass in front of Mills No. 1 and 2.
- Defining a vehicular traffic pattern that allows access for light deliveries and emergency vehicles.
- Relocating the dumpster and screening it with a fence.
- Restoring and relocating the hose house for use as a interpretive facility.

Lowell NHP has identified several tasks which will be completed prior to the implementation of any of the alternatives described here. The successful implementation of any of these alternatives, described below, depends on the completion of the following tasks:

- The National Park Service acquires the passage and maintenance easement in the eastern portion of Mill Yard.
- The work will be phased for budget purposes and to allow for immediate improvements while leasing and acquisition negotiations are underway.
- Vehicular parking is eliminated in the Mill Yard, and traffic is limited to delivery, drop-off, emergency and disabled access.
- Loading docks on Mills No. 1 and 2 will be relocated to the north side of building.
- Rim elevations of valve boxes will be adjusted.
- The General Management Plan will be amended, if necessary, to reflect the proposed work.
- Lowell National Historical Park will develop the final design, construction specifications and working drawings.

The alternatives presented in this report are based on historic documentation, site constraints, and preliminary site investigations. The implementation of all phases of these alternatives will require Section 106 compliance.

Alternative A: Restoration to c. 1920

This alternative is a restoration to circa 1920, a date within the period of significance for the Boott Mill No. 6. It also complements the time period represented in the Weave Room, the primary interpretive exhibit on the first floor of the Boott Mill No. 6 (see Figure 39). The proposed work includes the recovery of the grass panels to reflect the appearance of the Mill Yard circa 1870-1900, before alterations to the lawn occurred; the repair and relocation of the existing hose house, and the replacement of the sidewalks along the Mill building and in front of the Counting House. Two exceptions to this restoration are light fixtures to ensure visitor safety and improve security in the general area. The addition of bollards between the west end of the Counting House establishes a gathering and orientation area for visitors in front of the Counting House. The bollards will also provide safe access to the relocated hose house, especially important if it is used as an interpretive facility. The grass panel of the far eastern end of the Mill Yard is shortened to allow for emergency vehicle access. Ephemeral structures, such as the ice house are not replaced. The missing historic light trenches, although not ephemeral, are not re-established because, at this time, the cost and difficulty of such an effort outweighs its potential benefit. The existing ramp into the business entrance, a nonhistoric feature, is retained to maintain compliance with the Americans with Disabilities Act.

Phase 1:

- Reset curbstones in historic locations (6'-6" from Mill and approximately 4' from Counting House);
- Provide curb cuts for disabled access.
- Install sidewalk in front of Mill and brick (herringbone pattern) in front of Counting House (see list of suggested materials below).

Phase 2:

- Install 4 grass panels in historic configuration (circa 1870-1904, since we have little information about circa 1920 lawn configuration).
- Expose existing granite blocks and slabs at entrance to Mill Yard.
- Install replicas of historic bollards between the end of the Counting House and the existing NPS sign.
- Repair and relocate hose house.
- Install new orientation signage and lighting.
- Resurface Mill Yard (all or partial) with historic material.
- Reset valve boxes and granite around historic catch basins.
- Move dumpster and install fence between Mills 1 & 6 to screen dumpster

Phase 3:

- Replace the missing historic lawn and sidewalk in front of Mills 1 & 2.
- Replace historic steps to stair towers.
- Consider replacing the missing trolley tracks.
- Complete resurfacing of Mill Yard.
- Develop exhibits in hose house.

Alternative A: Restoration to c. 1920

Suggested Materials:

Sidewalk:

Restore the sidewalk in front of the Counting House by reusing the historic brick and granite. Restore the sidewalk in front of Mill No. 6 by reusing the existing granite curb and match missing segments. Since no information is readily apparent regarding the surface of this sidewalk, consider some options such as, granite pavers, concrete with aggregate and tinted to reduce "whiteness," a crushed aggregate such as "Crusher Run," or select a material that matches the yard surface.

Yard surface:

Replicate the historic material to the greatest extent possible by using a fine packed stone dust. To reduce maintenance problems associated with stone dust, use a stable base course and consider adding a binder, such as "Stabilizer," to the stone dust.

Bollards:

Steel or cast iron pipe with a pointed finial.

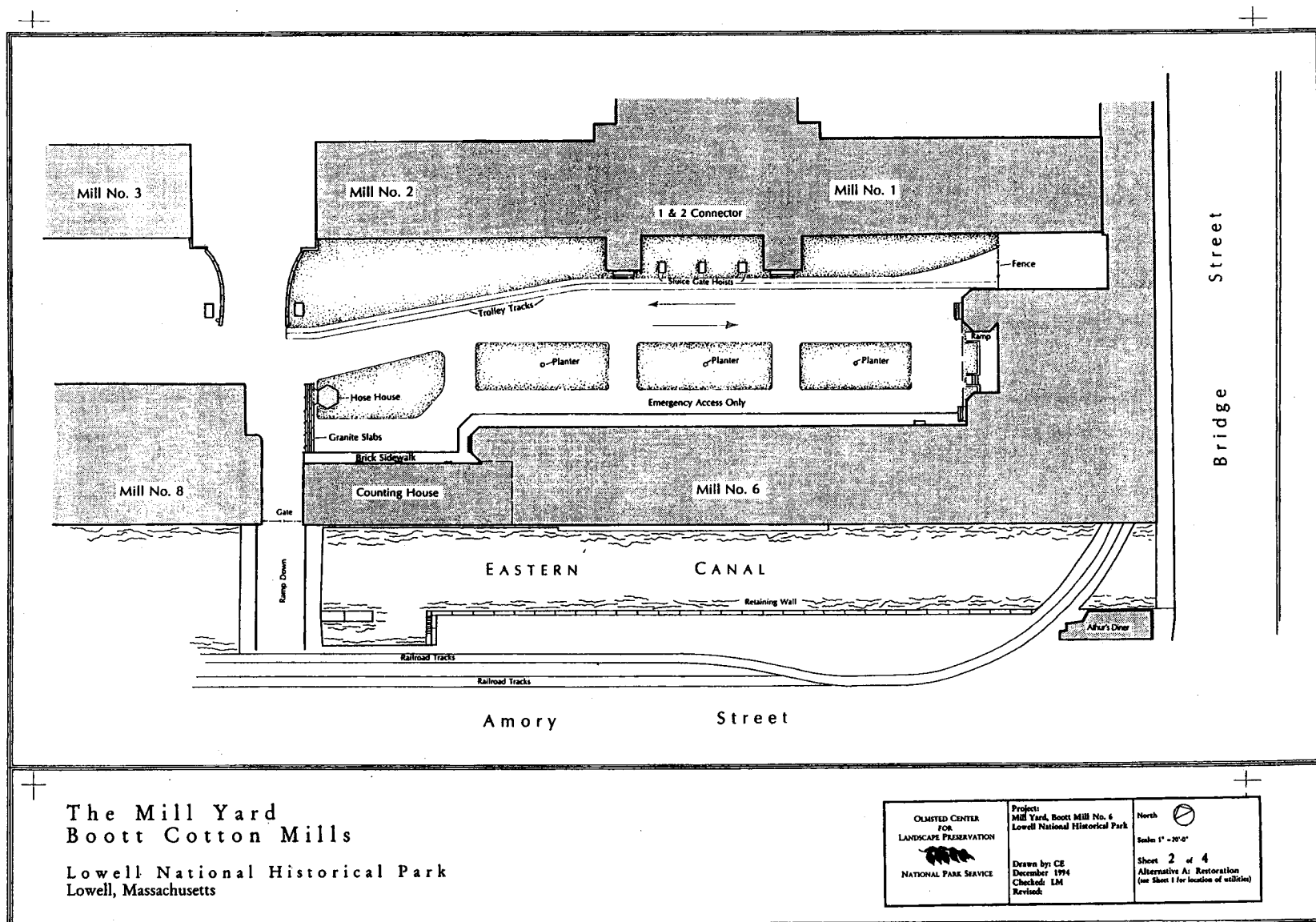
Light Fixtures:

Select a new design that is as unobtrusive as possible. Consider hiding the lights in the bollards or mounting them on the buildings. The lights should not become a new landscape feature.

Fence:

An plain board fence stained dark grey would be an unobtrusive addition to this section of the Mill Yard.

Figure 39. Alternative A Restoration



Alternative B: Rehabilitation

This alternative replaces fewer historic features than Alternative A and modifies others to accommodate contemporary use of the Mill Yard (see Figure 40). In particular, this alternative contains modified configurations of the sidewalk in order to accommodate the concentrated pedestrian use that this area of the Mill Yard now receives. An area of granite block pavers between the Counting House and the relocated hose house distinguishes this area from the remainder of the Mill Yard, and establishes a pedestrian plaza. The grass panels in this alternative are a modified version of the historic configuration in order to accommodate contemporary needs for emergency vehicular access to the Counting House.

Phase 1:

- Reset granite curbstone and brick sidewalk in historic location in front of Counting House.
- Provide curb cuts for disabled access.
- Reset historic granite curbstones along Mill No. 6 in new location, 10' from building, and add new curbstone, to match, as necessary.
- Install exposed aggregate concrete sidewalk approximately 9.5' wide along Mill No 6.
- Install lighting along Mill No. 6 and in front of Counting House.
- Install bollards in front of the Counting House (see Alternative A).
- Relocate existing signage temporarily, until completion of Phase 2.

Phase 2:

- Install 4 panels of grass in modified historic configuration with Ryerson steel edging and bollards.
- Add granite block pavers in front of Counting House to create a gathering area.
- Repair and move hose house to historic location.
- Install new orientation signage.
- Resurface Mill Yard (all or partial) to match the surface of western end of Mill Yard.
- Expose granite blocks and slabs at entrance to Mill Yard.
- Reset valve boxes and granite around historic catch basins.
- Install new benches in front of Counting House.
- Install fence between Mills 1 & 6 to screen dumpster (see Alternative A).

Phase 3:

- Replace missing historic lawn and sidewalk in front of Mills 1 & 2. Connect sidewalk to western end of Mill Yard with a flush walk.
- Rehabilitate the stairs to Mills No. 1 and 2.
- Complete resurfacing of Mill Yard. Add granite block pavers to eastern end of Mill Yard to connect Mills No. 1 and 6.
- Develop interpretive exhibits in hose house.

Alternative B: Rehabilitation

Suggested Materials:

Sidewalk

Reuse the existing historic brick and granite in front of the Counting House. For the sidewalk in front of Mill No. 6 and Mills No. 1 and 2, consider a granite curbstone and either a granite or concrete sidewalk. Granite block pavers used in front of Counting House and at the eastern end the Mill Yard should match, as closely as possible, the historic pavers at the entrance to the mills.

Yard Surface

Same as Alternative A or other compatible materials such as Crusher Run.

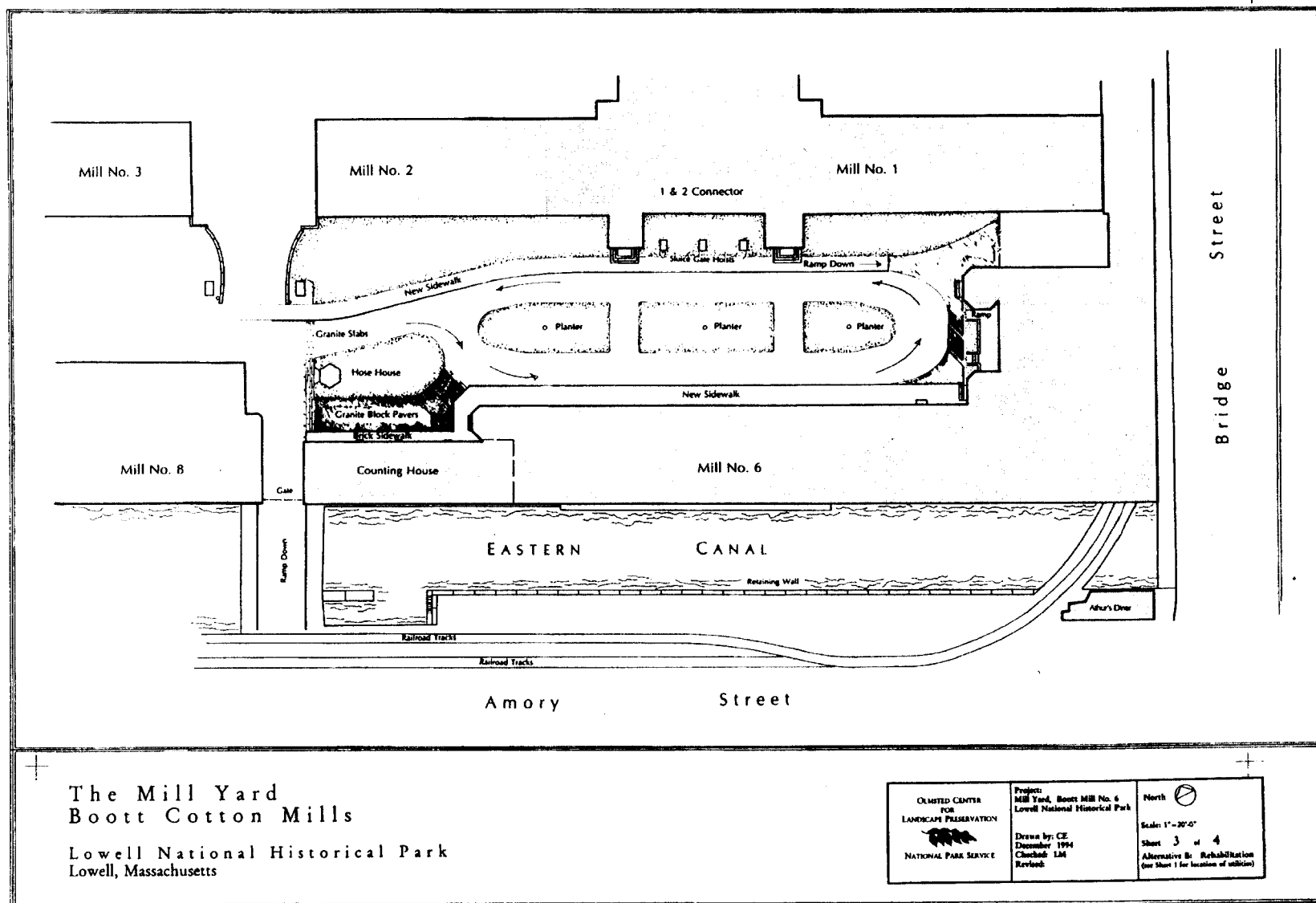
Lighting and Benches

Since these are new features, options include using a NPS/City of Lowell detail or matching the fixtures used at the west end of the Mill Yard.

Bollards:

Replace the missing historic bollards or select a compatible design. The bollards should be metal (such as steel or cast iron).

Figure 40. Alternative B Rehabilitation



Alternative C: Rehabilitation

This alternative modifies existing and missing existing features to support the anticipated retail use of the first floor of Mills No. 1 and 2 (see Figure 41). Examples of this include a new configuration of the grass panels to encourage pedestrian traffic across the Mill Yard, and the recovery of the missing hose houses with a compatible new design that serves as retail kiosks. Other aspects of this alternative are similar to Alternatives A and B; new features, such as the granite block paving, benches and lighting are introduced to improve visitor access and safety.

Phase 1:

- Reset granite curbstone and brick sidewalk in historic location in front of Counting House.
- Reset historic granite curbstones along Mill No. 6 in new location, 10' from building, and add new curbstone, to match, as necessary.
- Install concrete sidewalk approximately 9.5' wide along Mill No 6.
- Provide curb cuts for disabled access.
- Install granite block paving and bollards in front of Counting House;
- Expose existing granite slabs and continue across the entrance to the eastern portion of the Mill Yard.
- Install lighting along Mill No. 6 and in front of Counting House.

Phase 2:

- Install 3 panels of grass in a new configuration, with bollards and steel edging.
- Install new kiosks whose design should recall but not duplicate that of the historic hose houses.
- Install new orientation signage, banners, etc.
- Install wayside exhibit outside the Counting House.

Phase 3:

- Replace missing historic lawn and sidewalk in front of Mills 1 & 2.
- Replace missing trolley tracks and add a trolley, fixed in place.
- Reconfigure east retaining wall at down ramp to Mill No. 5 in order to restrict traffic.
- Complete resurfacing of Mill Yard.

Alternative C: Rehabilitation

Suggested Materials:

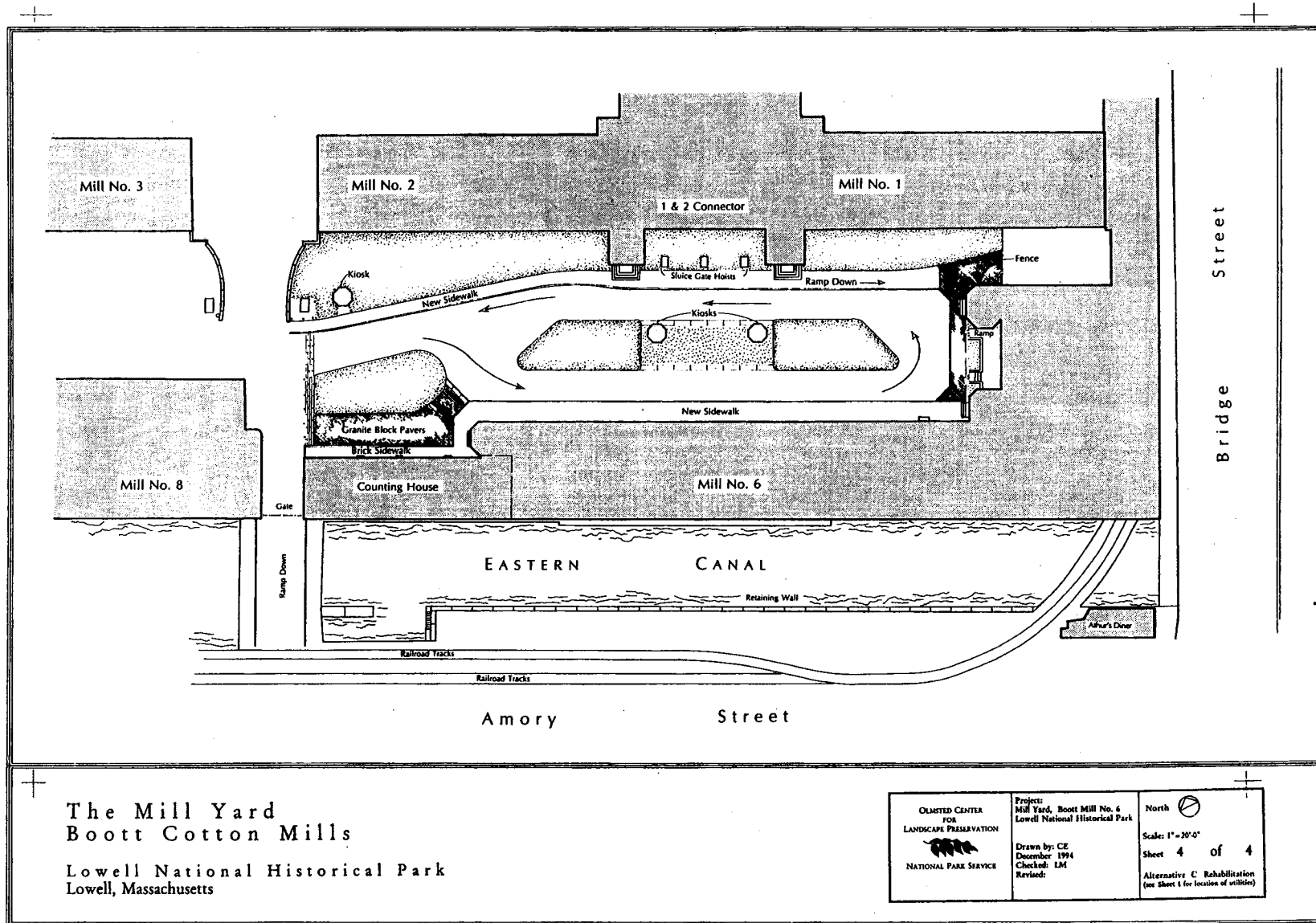
Sidewalk and Yard Surface:
Same as Alternative B.

Furnishings:
Same as Alternative B.

Kiosks:
The design of the retail kiosks should recall but not replicate that of the historic hose houses.

Wayside exhibits:
The wayside exhibits should be consistent with NPS standards. Distinguishing between historic and nonhistoric features should be a priority for their content.

Figure 41. Alternative C Rehabilitation



SUMMARY EVALUATION OF THE ALTERNATIVES

Any treatment of the eastern portion of the Mill Yard has advantages and disadvantages. One of the primary considerations is that the nonhistoric treatment of the western portion of the Mill Yard may conflict with and confuse the interpretation of the eastern portion. Ideally, the Mill Yard should be considered as a whole entity, but this was beyond the scope of this report. The table on the following page summarizes the advantages and disadvantages of each proposed alternatives. Based on this evaluation, Alternative B provides the best balance between the historic appearance of the Mill Yard and new features needed to accommodate contemporary use.

Alternative/Phase	Advantage	Disadvantage
Alternative A	Restoration is consistent with the GMP.	Adherence to historic appearance is problematic, mainly due to contemporary use and need for emergency access.
Phase 1	- provides immediate pedestrian access - restores historic configuration of sidewalk	- sidewalk along Mill #6 meets business entrance at awkward point - narrow sidewalk along Counting House does not provide gathering space
Phase 2	- configuration of grass panels is closest to historic - Hose House is moved to its historic location - Pavers and bollards delineate traffic - dumpster is screened	- vehicular circulation requires signage - trucks must back into dumpster or do 3-point turn at end of Mill Yard - bollards are not historic
Phase 3	close to historic treatment	- overall increase in maintenance - treatment of land not managed by NPS
Alternative B	Rehabilitation is consistent with current work at Lowell NHP. Provides balance between historic and new features.	May require memorandum explaining deviation from restoration of Mill Yard recommended in GMP
		sidewalk alters historic width
Phase 2	grass panels, new granite pavers and relocated Hose House define a plaza	same as Alternative A
Phase 3	same as Alternative A	same as Alternative A, but less expensive without trolley tracks
Alternative C	Rehabilitation is consistent with current work at Lowell NHP. Provides many amenities.	Most costly and most different from historic appearance. May require amendment to GMP.
Phase 1	- provides immediate pedestrian access - sidewalk and adjacent pavers provides most gathering space	- most expensive - alters historic sidewalk width
Phase 2	- Retail kiosks are visitor attraction - Reconfigured grass panels improve access across Mill Yard	- removes existing historic hose house - grass panel in new configuration - could be problematic with Standard 3
Phase 3	same as Alternative A	- reconfiguring retaining wall could be problematic with Standard 3 - requires high level of interpretation

Recommendations for further work:

This report is intended to provide Lowell NHP with a conceptual framework and the historical research to proceed with the design and development of a new sidewalk into the business office of Mill No. 6. In addition the following are recommended:

1. A modest amount of additional research will provide sufficient information for a Cultural Landscape Report for the Boott Cotton Mills:

a. Additional site archeology to determine the extent of the historic paving material which lies beneath the existing bituminous surface. Note that this work may be required in order to restore the historic sidewalk.

b. If more detailed information on specific features of the Mill Yard are required, the records of the Proprietors of the Locks and Canals is one source that could be reviewed. Also, if possible, former employees could be interviewed.

2. The park should continue to work collaboratively with the owners of the adjacent land to develop a concept plan for the entire Mill Yard.

3. Determine whether or not an amendment to the GMP will be required if the Mill Yard is rehabilitated rather than restored.

4. The Olmsted Center can assist Lowell NHP staff with design development and construction drawings for the selected alternative.

4. The Olmsted Center can assist the park with section 106 compliance if necessary.

BIBLIOGRAPHY

Shepley, Bulfinch, Richardson and Abbott. "Lowell National Historical Park and Preservation District Cultural Resources Inventory." Prepared for Division of Cultural Resources, North Atlantic Regional Office, National Park Service, Boston. 1979.

U.S. Department of the Interior, National Park Service. **Historic Structures Report: Boott Mill Complex; Building Six; Counting House; Adjacent Courtyard; and Facades of Buildings 1 and 2.** Laurence Gross and Russell Wright for the Denver Service Center. 1985.

U.S. Department of the Interior. National Park Service. "Historic Structures Report: Archeological Data Section" for Boott Cotton Mills, Lowell National Historical Park. Draft Report prepared by Flansburgh Associates, Inc. Denver Service Center. January, 1991.

U.S. Department of the Interior. National Park Service. **General Management Plan: Lowell National Historical Park.** 1981.

U.S. Department of the Interior. National Park Service and the Lowell Historic Preservation Commission. **Final Environmental Impact Statement for the Lowell National Historical Park General Management Plan.** 1981.

APPENDIX A:
BOOTT COTTON MILL YARD CHRONOLOGY PRE 1870-1957

1836-1838	Construction of Mills No. 1, 2, 3 & 4, picker houses, Counting House, Cotton Storehouse, Repair House.
1847-48 Circa 1850	Mill No. 5 built between earlier mills and the Merrimack River. First octagonal hose house built in front of Mill No. 2.
1850	Two railroad spurs extend into Mill Yard from Eastern Canal railroad, one at the south east corner, the other to the west.
1850-1853	First elevated railroad bed built for the Boot Cotton Mills.
1862-1865	Mills 8 & 9 constructed.
1871	Construction of Mill No. 6 begins.
1876-1878	Construction of Mill No. 7.
1880	The 3-story Cotton and Waste House was built on the Eastern Canal and the Merrimack Wasteway (Mill No. 9?). The 5-story "L" shaped brick addition was added to the west end of Mill No. 4. Trees are no longer evident in the Mill Yard. Elevated rail appears.
1881	The square smokestack was removed from the Boott Cotton Mills.
1882	Construction began on the octagonal plan smokestack.
1889	The Cotton and Waste House was demolished.
1897	Hose houses are replaced with cast iron hose boxes.
1900	Addition to Mill No. 8 completed.
1905	The Boott Cotton Mills reopen after being sold.
1916	Smoking shed (also referred to as the "Bicycle Shed") and ice house appear on insurance plan.
1917	Freight elevator installed in tower in corner of east and west portions of Mill No. 6.
1921	Insurance plan shows "caustic shed" east of the tower at Mill No. 1.
1924	Bridge rebuilt.

- 1928 A shipping shed was constructed against elevator tower of Mill No. 6.
- 1944 Mill Yard resurfaced with asphalt. Twelve benches, grass and six trees installed.
- 1949 Light trenches in front of Mills No. 1 and 2 filled.
- 1945-1950 Truck docks and loading doors constructed at Mills 1-4.
- 1950 Employees Recreation Room constructed in the Mill Yard.
Top stories of stairtowers of Boott Mill No. 6 removed.
- 1954 Boott Cotton Mills ceases operation as a textile mill.
- 1955 Loading dock east of Mill No. 1 tower built and the tower of Mill No. 2 was altered.
- Mill Yard paved, ice house destroyed, and tool house moved.
- Passage and Maintenance easement established for Mill Yard.
- 1958 Cotton manufacturing ceases in Lowell with closure of Merrimack Mills.
- 1987 NPS acquires Counting House; Mill No. 6; 10' passageway easement on east side of entrance bridge; access easement on entrance bridge.

APPENDIX B:

The Secretary of the Interior's Standards for Rehabilitation (1992)

REHABILITATION

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

STANDARDS FOR REHABILITATION

1. A property shall be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
2. The historic character of a property shall be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property shall be avoided.
3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, shall not be undertaken.
4. Changes to a property that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match

REHABILITATION AS A TREATMENT.

When repair and replacement of deteriorated features are necessary; when alterations or additions to the property are planned for a new or continued use; and when its depiction at a particular period of time is not appropriate, Rehabilitation may be considered as a treatment. Prior to undertaking work, a documentation plan for Rehabilitation should be developed.

the old in design, color, texture, and, where possible, materials. Replacement of missing features shall be substantiated by documentary and physical evidence.

7. Chemical or physical treatments, if appropriate, shall be undertaken using the gentlest means possible.

Treatments that cause damage to historic materials shall not be used.

8. Archeological resources shall be protected and preserved in place. If such resources must be disturbed, mitigation measures shall be undertaken.
9. New additions, exterior alterations, or related new construction shall not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and shall be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
10. New additions and adjacent or related new construction shall be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.