

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICEPH 0685003
FOR NPS USE ONLY

SEP 25 1978

RECEIVED

DATE ENTERED

NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY -- NOMINATION FORMSEE INSTRUCTIONS IN HOW TO COMPLETE NATIONAL REGISTER FORMS
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

NAME

HISTORIC

Echo Bridge

ALTERNATE OR COMMON

same

LOCATION

ADDRESS & NUMBER

~~Crossing Charles River and Ellis Street (Newton) from Needham~~
~~to Newton Upper Falls~~ *at* *Also in Norfolk County*

CITY, TOWN

Town of Needham

VICINITY OF

CONGRESSIONAL DISTRICT
9th (Needham)

STATE

City of Newton

CODE 02192 (Needham)
02164 (Newton)COUNTY
Norfolk
MiddlesexCODE 021
017

CLASSIFICATION

CATEGORY

OWNERSHIP

STATUS

PRESENT USE

DISTRICT

☒ PUBLIC☐ OCCUPIED☐ AGRICULTURE☐ MUSEUM

BUILDING(S)

☐ PRIVATE☒ UNOCCUPIED☐ COMMERCIAL☒ PARK

STRUCTURE

☐ BOTH☒ WORK IN PROGRESS☐ EDUCATIONAL☐ PRIVATE RESIDENCE

SITE

PUBLIC ACQUISITION

ACCESSIBLE

☐ ENTERTAINMENT☐ RELIGIOUS

OBJECT

☐ IN PROCESS☒ YES: RESTRICTED☐ GOVERNMENT☐ SCIENTIFIC☐ BEING CONSIDERED☐ YES: UNRESTRICTED☐ INDUSTRIAL☐ TRANSPORTATION☐ NO☐ MILITARY☒ OTHER: Scenic
Access

OWNER OF PROPERTY

NAME

Commonwealth of Massachusetts Metropolitan District Commission ✓

ADDRESS & NUMBER

20 Somerset Street

CITY, TOWN

Boston

VICINITY OF

STATE
Massachusetts, 02108

LOCATION OF LEGAL DESCRIPTION

COURTHOUSE,

Norfolk County Registry of Deeds

REGISTRY OF DEEDS, ETC. Middlesex County Registry of Deeds

ADDRESS & NUMBER

858 Washington Street

40 Thorndike Street

CITY, TOWN

Dedham

STATE
Massachusetts, 02026
02120

Cambridge

REPRESENTATION IN EXISTING SURVEYS

TITLE

Inventory of the Historic Assets of the Commonwealth

TYPE

☐ FEDERAL ☒ STATE ☐ COUNTY ☐ LOCALDEPOSITORY FOR
SURVEY RECORDS

Massachusetts Historical Commission

CITY, TOWN

Boston

STATE
Massachusetts, 02108

7 DESCRIPTION

CONDITION

☐ EXCELLENT
☒ GOOD
☐ FAIR

☐ DETERIORATED
☐ RUINS
☐ UNEXPOSED

CHECK ONE

☒ UNALTERED
☐ ALTERED

CHECK ONE

☒ ORIGINAL SITE
☐ MOVED DATE _____

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

Echo Bridge crosses the Charles River and Ellis Street (in Newton) from the town of Needham to the Upper Falls section of the city of Newton. It was constructed in 1876-1877 to carry a section of conduit of the Sudbury Aqueduct across the Charles River en route to the Chestnut Hill Pumping Station (potential National Register) Boston. Set in picturesque Hemlock Gorge, it now serves as a pedestrian walkway connecting two Metropolitan District Commission park areas on either side of the Charles River. This use is in addition to its original function as a conduit carrier.

The west side of the river rises to a steep hillside, heavily wooded with hemlocks while the east side is primarily open land. There are water falls both above and below the bridge. Old silk mills with an associated village stand on the Newton side of the river above the bridge. These have been proposed as a potential historic district by the city of Newton. Below the bridge, on the west side of the river, there is an old stone mill now vacant and boarded up.

There is at least one known prehistoric site in Hemlock Gorge -- a rock-shelter, first excavated in 1914, and later tested by Dena Dincauze in 1968 -- she has seen Archaic, woodland and early historic materials from the shelter. This site is just over into the Wellesley line, about 500' from the bridge. Other sites are probably in the area.

The bridge is 500 feet in length and is supported by a series of seven granite arches. Five of these have a span of thirty-seven feet, the one over Ellis Street has a span of twenty-eight feet and the largest arch which stretches over the river itself has a span of one hundred and thirty feet. This large arch which is segmental in form (the others are semi-circular) has a radius of sixty-nine feet and a crown fifty-one feet above normal water level. The top of the bridge itself is seventy feet above water level. The keystone of this arch is five feet in depth, while the voussoirs increase to a depth of six feet at the base. This heavy arch exerts a pressure of about 2,000 tons or 16½ tons per square foot on the foundation. The entire bridge is constructed mainly of solid granite masonry with the exception of the interior of the upper portion under the conduit which is brick and concrete with facilities for draining away any leakage from the conduit. The foundations of the bridge are in solid rock.

The bridge which is eighteen feet wide at its crown now supports a foot-bridge which is guarded on each side by a low iron railing. There is a path and stairway which lead down to a porch beneath the large arch which spans the river. While structurally sound, the bridge is currently disfigured by graffiti.

SIGNIFICANCE

HOD		AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW			
HISTORIC	☐ ARCHEOLOGY-PREHISTORIC	☐ COMMUNITY PLANNING	☐ LANDSCAPE ARCHITECTURE	☐ RELIGION	
1499	☐ ARCHEOLOGY-HISTORIC	☒ CONSERVATION	☐ LAW	☐ SCIENCE	
1599	☐ AGRICULTURE	☐ ECONOMICS	☐ LITERATURE	☐ SCULPTURE	
1699	☒ ARCHITECTURE	☐ EDUCATION	☐ MILITARY	☐ SOCIAL/HUMANITARIAN	
1799	☐ ART	☒ ENGINEERING	☐ MUSIC	☐ THEATER	
1899	☐ COMMERCE	☐ EXPLORATION/SETTLEMENT	☐ PHILOSOPHY	☐ TRANSPORTATION	
	☐ COMMUNICATIONS	☐ INDUSTRY	☐ POLITICS/GOVERNMENT	☒ OTHER (SPECIFY) Urban planning	
		☐ INVENTION			

IFIC DATES	1876-1877	BUILDER/ARCHITECT
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EMENT OF SIGNIFICANCE

cho Bridge was constructed in 1876-77 as a portion of the Sudbury River conduit to carry water from the Sudbury River to the growing City of Boston. The system was 18.8 miles long, running from Farm Pond in Framington to the Chestnut Hill Reservoir in Boston. It entered Newton at the Upper Falls, then passed through that village to the north of Newton Highlands, then through Newton Center to the Reservoir.

uring construction the arches rested on timber falsework. Approximately 10,000 feet of spruce, oak and hard pine were used in the construction of the major arch spanning the river alone. When the bridge was completed and the falsework removed the bridge settled only two inches.

ortly after completion the main arch of the bridge was described by H. Barrett, a Boston Water Works engineer, as the second largest on this continent and one of the largest stone arches in the world.

he bridge receives its name from the echo which can be heard when standing beneath it by the rivers edge.

9 MAJOR BIBLIOGRAPHICAL REFERENCES

History of Newton, Samuel F. Smith, 1880
King's Handbook of Newton, M.F. Sweetser, 1889

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY less than one acre

UTM REFERENCES

A 19 316420 4686900
ZONE EASTING NORTHING
C

B
ZONE EASTING NORTHING
D

VERBAL BOUNDARY DESCRIPTION

Please refer to the attached plat map which is plan #145 filed with the Assessors' Department, Town of Needham, and section 51, block 1-2 filed with the Assessors' Department, Town of Newton.

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
		Norfolk	21

STATE	CODE	COUNTY	CODE
		Middlesex	17

11 FORM PREPARED BY

NAME/TITLE : Candace Jenkins , National Register Editor

ORGANIZATION
Massachusetts Historical Commission

STREET & NUMBER
294 Washington Street

CITY OR TOWN
Boston

DATE
September 11, 1978
TELEPHONE
617-727-8470
STATE
Massachusetts, 02108

12 STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS:

NATIONAL

STATE X

LOCAL

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

STATE HISTORIC PRESERVATION OFFICER SIGNATURE

Patricia A. Weseloh

TITLE
Executive Director, Mass. Historical Commission

DATE
9/19/78

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DATE

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION
ATTEST:

DATE

KEEPER OF THE NATIONAL REGISTER

NAME OF PROPERTY Echo Bridge STATE Mass.

The attached National Register Inventory-Nomination form is being returned to your office for clarification of the information indicated below. PLEASE RETURN THIS FORM WHEN THE NOMINATION IS RESUBMITTED.

7 Description: _____

8 Statement of Significance: Please provide a justification for
significance in conservation & urban planning. Although
bridge was the 2nd largest bridge on this continent at
the time, how does it compare to bridges built later.
Why is the bridge architecturally significant?

9 Bibliography: _____

10 Geographical Data -- Acreage: _____

UTM Reference(s): _____

Verbal Boundary Description: _____

12 Certification: _____

Photographic Coverage: _____

Map Coverage: _____

Other: _____

Questions concerning this nomination may be directed to Bruce MacDougal
on the National Register staff, telephone 202-343-6401

Thank you for your attention to the above items.

William Lebovich for _____ Date: 12/19/78
Chief, Branch of Registration

Property

Echo Bridge

State

Mass.

Working Number

9.25.78.4159

TECHNICAL

Photos

Maps

5
1, 2 Sketches

CONTROL

OK 9.27.78

HISTORIAN

Return
Lightner
12-18-78

Although bridge appears to be eligible, statement of significance is not adequate for conservation or urban planning. Although it is significant as the 2nd largest bridge at the time, ~~we~~ we need additional information about these other areas.

ARCHITECTURAL HISTORIAN

ARCHEOLOGIST

OTHER

#8 is extremely weak - The bridge (or more properly, aqueduct) is a substantial structure and possesses obvious engineering significance (In 1911 H.G. Tyrell described it as "notable.") Though documentation does not justify the designated areas of significance the structure warrants listing. Conference

HAER

Inventory

Review

12/14/78

Don Jackson

REVIEW UNIT CHIEF

STATEMENT OF SIGNIFICANCE DOES NOT ADEQUATELY ADDRESS
THE AREAS CIRCLED

Return
Mike Doughty
12/19/78

BRANCH CHIEF

KEEPER

National Register Write-up

Send-back 12.19.78

Entered

Federal Register Entry

Re-submit 2.15.80

INT:2106-74

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

PH0685003

FOR NPS USE ONLY
SEP 25 1978
RECEIVED
APR 9 1980
DATE ENTERED

NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY -- NOMINATION FORM

ref no 80000638

SEE INSTRUCTIONS IN HOW TO COMPLETE NATIONAL REGISTER FORMS
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC Echo Bridge
AND/OR COMMON same

2 LOCATION

STREET & NUMBER Crossing Charles River and Ellis Street (Newton) from Needham
to Newton Upper Falls (Also in Norfolk County)
CITY, TOWN Town of Needham
City of Newton
STATE Massachusetts
VICINITY OF 9th (Needham)
4th (Newton)
COUNTY Norfolk Middlesex
CODE 02192 (Needham) 02164 (Newton) 021 017

3 CLASSIFICATION

CATEGORY	OWNERSHIP	STATUS	PRESENT USE
☐ DISTRICT	☒ PUBLIC	☐ OCCUPIED	☐ AGRICULTURE ☐ MUSEUM
☐ BUILDING(S)	☐ PRIVATE	☒ UNOCCUPIED	☐ COMMERCIAL ☒ PARK
☒ STRUCTURE	☐ BOTH	☒ WORK IN PROGRESS	☐ EDUCATIONAL ☐ PRIVATE RESIDENCE
☐ SITE	PUBLIC ACQUISITION	ACCESSIBLE	☐ ENTERTAINMENT ☐ RELIGIOUS
☐ OBJECT	☐ IN PROCESS	☒ YES: RESTRICTED	☐ GOVERNMENT ☐ SCIENTIFIC
	☐ BEING CONSIDERED	☐ YES: UNRESTRICTED	☐ INDUSTRIAL ☐ TRANSPORTATION
		☐ NO	☐ MILITARY ☒ OTHER: Scenic Access

4 OWNER OF PROPERTY

NAME Commonwealth of Massachusetts Metropolitan District Commission
STREET & NUMBER 20 Somerset Street
CITY, TOWN Boston
STATE Massachusetts, 02108
VICINITY OF

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, Registry of Deeds
REGISTRY OF DEEDS, ETC. Middlesex County Registry of Deeds
STREET & NUMBER 858 Washington Street
40 Thorndike Street
CITY, TOWN Dedham
Cambridge
STATE Massachusetts, 02026
02120

6 REPRESENTATION IN EXISTING SURVEYS

TITLE Inventory of the Historic Assets of the Commonwealth
DATE
FEDERAL ☒ STATE ☐ COUNTY ☐ LOCAL
DEPOSITORY FOR SURVEY RECORDS Massachusetts Historical Commission
CITY, TOWN Boston
STATE Massachusetts, 02108

7 DESCRIPTION

CONDITION

___EXCELLENT
☒GOOD
___FAIR

___DETERIORATED
___RUINS
___UNEXPOSED

CHECK ONE

☒UNALTERED
___ALTERED

CHECK ONE

☒ORIGINAL SITE
___MOVED DATE _____

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

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The west side of the river rises to a steep hillside, heavily wooded with hemlocks while the east side is primarily open land. There are water falls both above and below the bridge. Old silk mills with an associated village stand on the Newton side of the river above the bridge. These have been proposed as a potential historic district by the city of Newton. Below the bridge, on the west side of the river, there is an old stone mill now vacant and boarded up.

There is at least one known prehistoric site in Hemlock Gorge -- a rock-shelter, first excavated in 1914, and later tested by Dena Dincauze in 1968 -- she has seen Archaic, woodland and early historic materials from the shelter. This site is just over into the Wellesley line, about 500' from the bridge. Other sites are probably in the area.

The bridge is 500 feet in length and is supported by a series of seven granite arches. Five of these have a span of thirty-seven feet, the one over Ellis Street has a span of twenty-eight feet and the largest arch, which stretches over the river itself, has a span of one hundred and thirty feet. This large arch which is segmental in form (the others are semi-circular) has a radius of sixty-nine feet and a crown fifty-one feet above normal water level. The top of the bridge itself is seventy feet above water level. The keystone of this arch is five feet in depth, while the voussoirs increase to a depth of six feet at the base. This heavy arch exerts a pressure of about 2,000 tons or $16\frac{1}{2}$ tons per square foot on the foundation. The entire bridge is constructed mainly of solid granite masonry with the exception of the interior of the upper portion under the conduit which is brick and concrete with facilities for draining away any leakage from the conduit. The foundations of the bridge are in solid rock.

The bridge which is eighteen feet wide at its crown now supports a foot-bridge which is guarded on each side by a low iron railing. There is a path and stairway which lead down to a porch beneath the large arch which spans the river. While structurally sound, the bridge is currently disfigured by graffiti.

8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW			
☐ PREHISTORIC	☐ ARCHEOLOGY-PREHISTORIC	☐ COMMUNITY PLANNING	☐ LANDSCAPE ARCHITECTURE	☐ RELIGION
☐ 1400-1499	☐ ARCHEOLOGY-HISTORIC	☒ CONSERVATION	☐ LAW	☐ SCIENCE
☐ 1500-1599	☐ AGRICULTURE	☐ ECONOMICS	☐ LITERATURE	☐ SCULPTURE
☐ 1600-1699	☒ ARCHITECTURE	☐ EDUCATION	☐ MILITARY	☐ SOCIAL/HUMANITARIAN
☐ 1700-1799	☐ ART	☒ ENGINEERING	☐ MUSIC	☐ THEATER
☒ 1800-1899	☐ COMMERCE	☐ EXPLORATION/SETTLEMENT	☐ PHILOSOPHY	☐ TRANSPORTATION
☐ 1900-	☐ COMMUNICATIONS	☐ INDUSTRY	☐ POLITICS/GOVERNMENT	☒ OTHER (SPECIFY) Urban planning
		☐ INVENTION		

SPECIFIC DATES

1876-1877

BUILDER/ARCHITECT

STATEMENT OF SIGNIFICANCE

Echo Bridge was constructed in 1876-77 as a portion of the Sudbury River Conduit to carry water from the Sudbury River to the growing City of Boston. The system was 18.8 miles long, running from Farm Pond in Farmington to the Chestnut Hill Reservoir in Boston. It entered Newton at the Upper Falls, then passed through that village to the north of Newton Highlands, then through Newton Center to the Reservoir.

During construction the arches rested on timber falsework. Approximately 110,000 feet of spruce, oak and hard pine were used in the construction of the major arch spanning the river alone. When the bridge was completed and the falsework removed the bridge settled only two inches.

Shortly after completion the main arch of the bridge was described by F.H. Barrett, a Boston Water Works engineer, as the second largest on this continent and one of the largest stone arches in the world.

The bridge receives its name from the echo which can be heard when standing beneath it by the rivers edge.

9 MAJOR BIBLIOGRAPHICAL REFERENCES

History of Newton, Samuel F. Smith, 1880
King's Handbook of Newton, M.F. Sweetser, 1889

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY less than one acre

UTM REFERENCES

A

1	9
---	---

3	1	6	4	2	0
---	---	---	---	---	---

4	6	8	6	9	0	0
---	---	---	---	---	---	---

ZONE EASTING NORTHING
C

--	--

--	--	--	--	--	--

--	--	--	--	--	--	--

ACREAGE NOT VERIFIED

UTM NOT VERIFIED

B

--	--

--	--	--	--	--	--

--	--	--	--	--	--	--

ZONE EASTING NORTHING
D

--	--

--	--	--	--	--	--

--	--	--	--	--	--	--

VERBAL BOUNDARY DESCRIPTION

Please refer to the attached plat map which is plan #145 filed with the Assessors' Department, Town of Needham, and section 51, block 1-2 filed with the Assessors' Department, Town of Newton.

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
		Norfolk	21
STATE	CODE	COUNTY	CODE
		Middlesex	17

11 FORM PREPARED BY

NAME / TITLE : Candace Jenkins, National Register Editor

ORGANIZATION

Massachusetts Historical Commission

DATE

September 11, 1978

STREET & NUMBER

294 Washington Street

TELEPHONE

617-727-8470

CITY OR TOWN

Boston

STATE

Massachusetts, 02108

12 STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS:

NATIONAL ☐

STATE ☒

LOCAL ☐

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

STATE HISTORIC PRESERVATION OFFICER SIGNATURE

Patricia J. Wesloski

TITLE

Executive Director, Mass. Historical Commission

DATE

9/19/78

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION

ATTEST:

Bruce Van Deydel

DATE

4/9/80

KEEPER OF THE NATIONAL REGISTER

DATE

4/8/80

**NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY -- NOMINATION FORM**

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DATE ENTERED

CONTINUATION SHEET #1

ITEM NUMBER #8

PAGE #1

Echo Bridge possesses integrity of location, design, setting, materials and workmanship and important associations with the development of a major water system to serve Boston's growing population in the late nineteenth century. Its total length of 475' is composed of seven arches of varying spans; the longest of these is almost 130' in length, making it for many years the second longest masonry arch in the United States. Located in Hemlock Gorge, one of the first areas acquired by the Metropolitan District Commission for recreation purposes, it was also a part of the conservation movement which helped to shape metropolitan Boston.

Echo Bridge was among the earliest of long masonry bridges built in the United States in 1880. Long stone or brick bridges were, in fact, uncommon anywhere in the world. H.G. Tyrell claimed that, at that time, there were fewer than 60 such bridges with single spans of more than 120' in the world. Echo Bridge's largest arch, which spans the Charles River, is nearly 130' in length, and at the time of construction and for many years following was the second longest masonry arch in this country (the longest was Cabin John Bridge in Washington D.C. with a single span of 220'). The total length of Echo Bridge with its 7 arches of varying spans is 475'. Because the place selected for the abutment for the largest arch on the river's eastern bank appeared to have a disintegrating rock formation, the base of the bridge was widened. Consequently, the arch, only 18' wide at the top under the conduit, was gradually widened by a curved line to 22' as it reached the ground. In addition to solving an engineering problem, this adds to the graceful appearance of the bridge. The design of the arch is acoustically such that fine echoes can be made under it, and it is from this that the bridge took its name. Because of the flaring form of the principle arch and the varying depths of the voisoirs, the ring stones were difficult to cut as no two were alike. So carefully constructed, Echo Bridge settled only 2" upon the removal of the supporting framework.

Echo Bridge is a graceful and handsomely constructed bridge of granite and brick which adds to the rugged beauty of Hemlock Gorge. Its purpose was only to carry an aqueduct across the river, but its design was carefully conceived to contribute to its magnificent site rather than to detract from it. Echo Bridge is unusual for its time for its assymetry in arch arrangement, necessitated by the lay of the land.

The City of Boston had grown so tremendously by the close of the Civil War that its needs for water had outgrown its supply greatly augmented only 20 years before. Engineer Joseph P. Davis was retained by the Cochituate Water Board on November 22, 1871, to examine the possible sources of water for Boston within a 50 mile radius. In February of 1872, Davis made his first report recommending the Charles and the Sudbury Rivers

UNITED STATES DEPARTMENT OF THE INTERIOR
HERITAGE CONSERVATION AND RECREATION SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

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CONTINUATION SHEET

ITEM NUMBER #8 PAGE 2

as the best sources of supply. In the beginning of April of that year, the Sudbury River Act was signed by the Governor of the Commonwealth and J.P. Davis was elected as Boston City Engineer the following December. Soon after election, Davis presented a long and detailed report proposing a new system for the storage and conveyance of water from the Sudbury River to Boston. Its construction began on April 12, 1873, with A. Fteley(sic.) appointed as Resident Engineer in charge of the works.

One of the many problems to be solved in the construction of the aqueduct was finding the best means of carrying the conduit over the Charles River. Davis recommended that this be done at Hemlock Gorge, Newton Upper Falls, by a high level bridge, so that neither a change of grade nor long siphon lines would be necessary. This plan was adopted by the Water Board on July 3, 1873. Quoting from the project completion report from 1882: "The location of the bridge required some care. The line had to be established so as to interfere as little as possible with the homes at Newton Upper Falls. It was also desirable to avoid a curve, and to select the narrowest point of the Charles River where a good foundation could be found. The present location of the bridge unites these advantages. Two houses only had to be removed a short distance..." 2 Newton Upper Falls was a busy and crowded industrial village and concern was clearly taken to disturb the village minimally.

Plans stated that "The bridge is to be built in a most substantial manner of granite and brick work. The piers, arches and abutments up to the level of the conduit will be of granite, and above this there will be a handsome face-brick parapet, formed by pilasters into panels, and capped with a heavy granite coping, the whole surmounted by an ornamental railing."3 The plans were well carried out.

George W. Phelps of Springfield, Mass., was selected as the contractor, coming forth with the winning bid of \$198,722.50. Ground was broken on December 7, 1875.

As a part of the widespread conservation movement which took place in the United States during the 1880's and '90's, serious efforts were made to upgrade the Charles River and its banks in recognition of its value as open space for the burgeoning metropolitan Boston area. The Metropolitan Park Commission was established in 1893, and this commission quickly selected the reknowned architectural landscaping firm of Olmstead, Olmstead and Eliot to make a thorough study of the potentials of the Charles River. In the firm's report to the commission submitted in 1895, it was proposed that the Charles River be made a water parkway, governed by a park commission, and on the basis that "the life of a river, like that of a human being, consists in the union of soul and body - the water and the banks", that land all along the banks of the river be acquired

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HERITAGE CONSERVATION AND RECREATION SERVICE

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CONTINUATION SHEET

ITEM NUMBER #8, #9 PAGE 3

by the commission from private owners through gift, purchase of condemnation.

Among the first areas acquired by the MDC was the land bordering Hemlock Gorge, "containing the beautiful bridge of the Boston Water Works, widely known as Echo Bridge". Walking trails, canoe carries, little rustic bridges and picnic areas were developed. Currently under the management of the Metropolitan District Commission, the area on the eastern bank lies within the Newton Upper Falls H.D.

#9. BIBLIOGRAPHY

1. Tyrell, H.G., The History of Bridge Engineering, 1891.
2. Additional Supply from Sudbury River: Description of the Work with Plates, Boston Water Works, Boston, 1882.
3. Report of the Joint Board upon the Improvement of Charles River, 1896, Metropolitan Park Commission & State Board of Health, Boston, 1896.
4. History of the Boston Water Works from 1868 to 1876, under direction of Desmond FitzGerald, Supt., Western Division, Boston, 1876.
5. Report of the Metropolitan Park Commission, 1893 and 1897.

CHARTER

SUDBURY 2

17000
W. D.

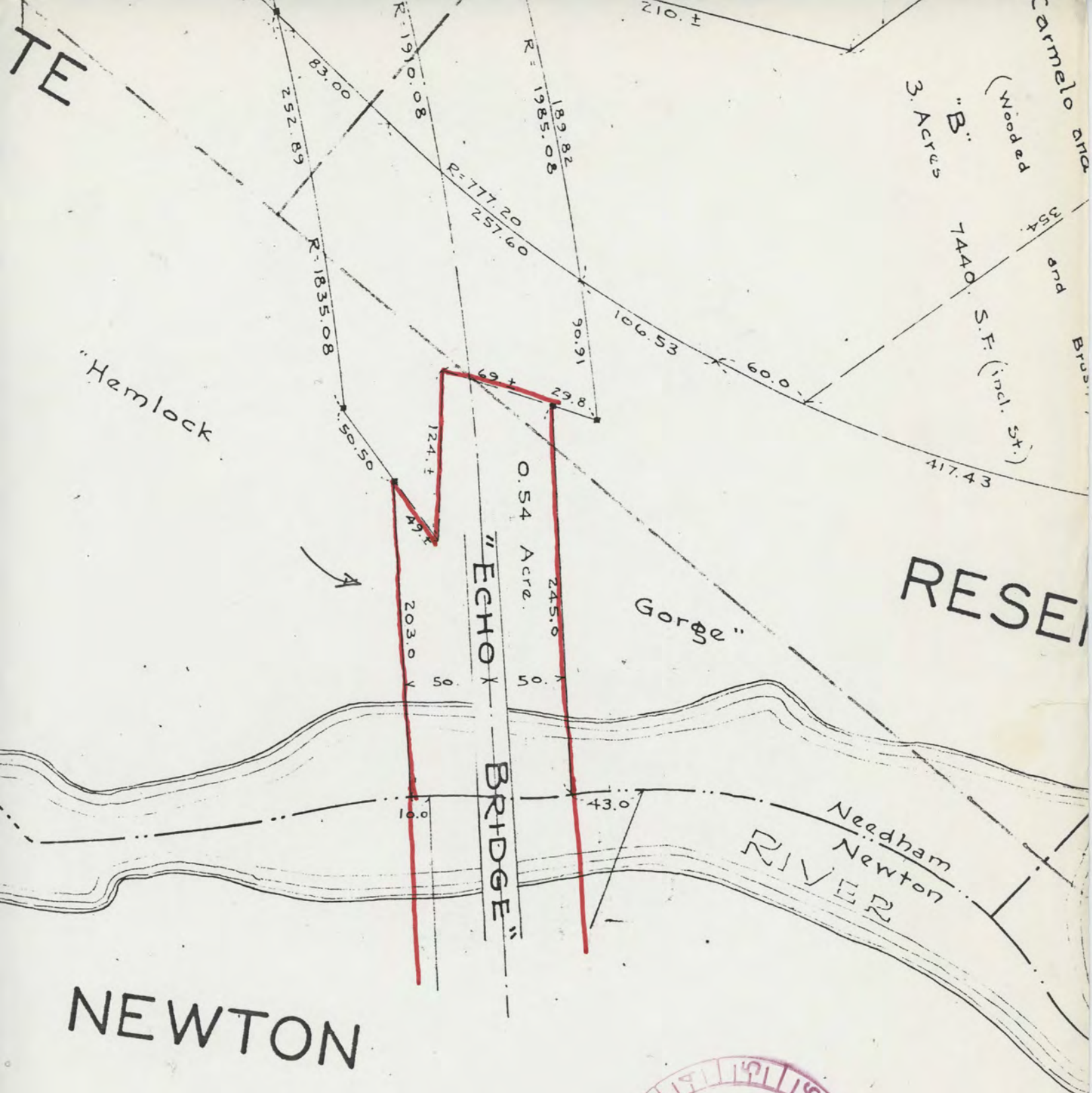


ECHO BRIDGE

1



APR 9 1980



APR 9 1980

Property

Echo Bridge

Incl Control

State

MA - Middlesex

Working Number

9.25. 78. 41 59

TECHNICAL

CONTROL

Photos

5

Maps

42

this nomination was returned for more info. justifying the areas of signif. of urban planning and conservation. The newly submitted material justify these areas.
Built in 1826 of solid masonry this graceful arched structure served as an aqueduct across the Charles River - it was the 2d longest masonry arch in the U.S. for years. Echo Bridge was built to meet the growing water needs of Boston's expanding population and was part of the early conservation movement designed to protect Boston's recreational resources

HISTORIAN

accept

Patrick Andrus

4/8/80

ARCHITECTURAL HISTORIAN

ARCHEOLOGIST

OTHER

HAER

Inventory _____

Review _____

REVIEW UNIT CHIEF

BRANCH CHIEF

KEEPER

National Register Write-up

Send-back _____

Entered

APR 9 1980

Federal Register Entry

2.3.81

Re-submit _____



Echo Bridge

Needham and Newton Upper Falls, Massachusetts
1976

Kenneth Newcomb

24 Ohio Avenue,

Newton Upper Falls, Massachusetts

#1 *085*

Looking south toward Bridge

APR 9 1980

SEP 25 1978

CHARLES RIVER

- NEEDHAM

TAKEN BY

KENNETH NEWCOMB

MARCH 1976

24 OHIO AVE

NEWTON UPPER FALLS, MASS

HAS ALL NEGATIVES



Norfolk and Middlesex co

Echo Bridge
Needham and Newton Upper Falls, Mass.
Kathlyn Hatch 1978
Newton Historical Commission
Newton, Mass.

Charles R. at

SEP 25 1978

#2 *2/5*

looking north toward bridge

APR 9 1980

photo - Kathlyn Hatch



Echo Bridge
Needham and Newton Upper Falls, Mass.
Kathlyn Hatch 1978
Newton Historical Commission
Newton, Mass.

#3 *of 5*

south face of bridge SEP 25 1978 -
Norfolk and Middlesex Co.

APR 9 1980

photo - Kathlyn Hatch 1978



Echo Bridge

Needham and Newton Upper Falls, Mass.

Kathlyn Hatch 1978

Newton Historical Commission

Newton, Mass.

APR 9 1980

#4 *off*

north face of bridge from beneath main arch

Norfolk and Middlesex CO

SEP 25 1978

photo - Kathlyn Hatch 1978



Echo Bridge

Needham and Newton Upper Falls, Mass.

Kathlyn Hatch 1978

Newton Historical Commission

Newton, Mass.

#5 of 5

footpath across bridge

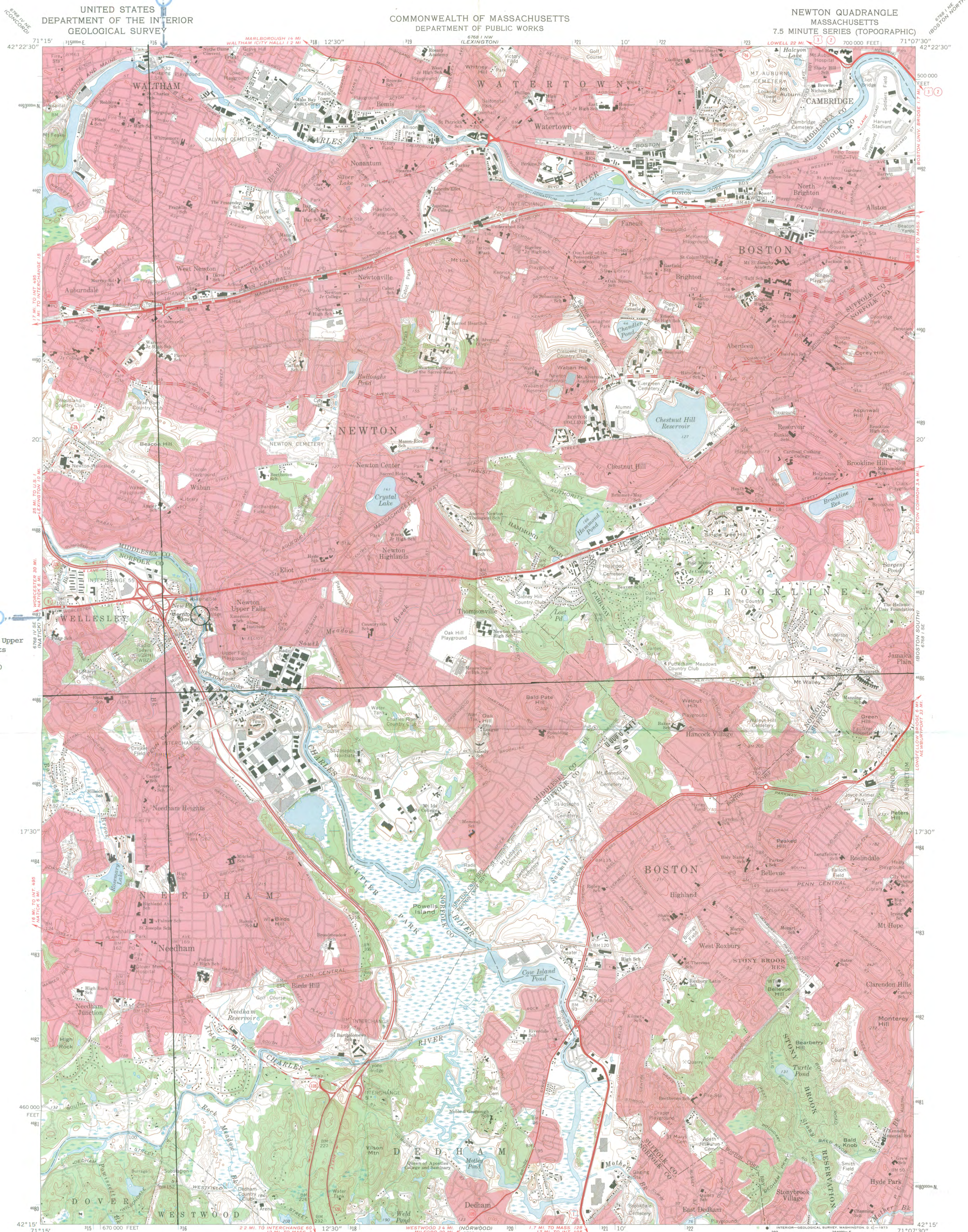
Norfolk and Middlesex Co.

SEP 25 1978

APR

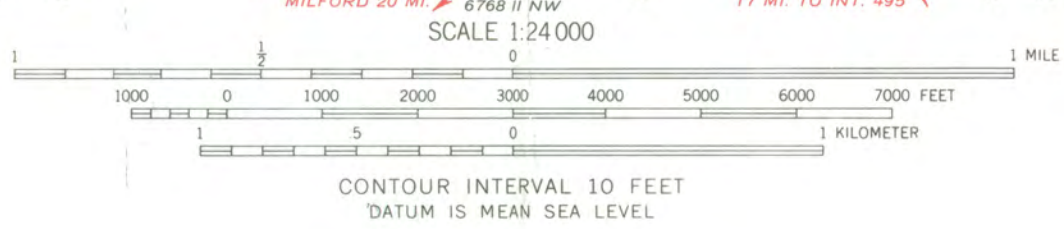
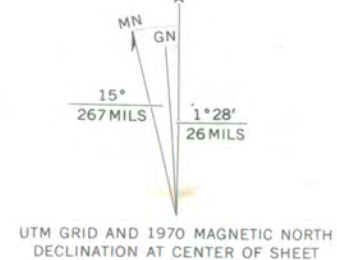
9 1980

photo - Kathlyn Hatch 1978



Echo Bridge
Needham and Newton Upper
Falls, Massachusetts
UTM Coordinates:
19/316 420/4686 900

Mapped, edited, and published by the Geological Survey
Control by USGS, USC&GS, and Massachusetts Geodetic Survey
Planimetry by photogrammetric methods from aerial photographs
taken 1939. Topography by planimetric surveys 1943.
Revised from aerial photographs taken 1969. Field checked 1970
Polyconic projection. 1927 North American datum
10,000-foot grid based on Massachusetts coordinate system,
mainland zone
100-meter Universal Transverse Mercator grid ticks,
zone 19, shown in blue
Red tint indicates areas in which only landmark buildings are shown



ROAD CLASSIFICATION	
Primary highway, hard surface	Light-duty road, hard or improved surface
Secondary highway, hard surface	Unimproved road
Interstate Route	U. S. Route
	State Route

NEWTON, MASS.
N4215-W7107.5/7.5

1970

AMS 6768 1 SW-SERIES V814



APR 9 1980



**MASSACHUSETTS
HISTORICAL
COMMISSION**

**COMMONWEALTH OF MASSACHUSETTS
Office of the Secretary of State**

294 Washington Street
Boston, Massachusetts
02108
617-727-8470

MICHAEL JOSEPH CONNOLLY
Secretary of State

January 28, 1980

Ms. Carol Schull, Acting Keeper
National Register of Historic Places
Heritage, Conservation & Recreation Service
440 G Street NW
Washington, D.C. 20243

Dear Ms. Schull;

Enclosed you will find the following nomination forms:

Attleboro- First Parsonage of the Second Church (local)	Medford- John McGill House (local)
* Bedford- David Lane House (local)	Middleborough- C. P. Washburn Grain- mill (local)
* Boston- Charles Street Jail (national)	Middlefield- Stone Arch Railroad Bridge District (state)
Dartmouth- Hill School (local)	Natick- Rev. Stephen Badger House (state)
* East Longmeadow- Swetland-Pease House (local)	Newton- St. Mary's Church & Cemetery (local)
Framingham- First Baptist Church (state)	New Bedford- Central New Bedford Historic District (local)
Lancaster- Founders Hall (state)	Newton- Echo Bridge (state- resubmission)
Marlborough- Peter Rice House (local)	Sharon- Stoneholm (local)
Medford- Edward Oakes House (local)	(These are enclosed under separate cover)
(All of the above are enclosed)	

These have been voted eligible by the State Review Board and have been signed by the State Historic Preservation Officer.

Sincerely,

Christine Boulding
Christine Boulding
Survey Director
Massachusetts Historical Commission

CB/cj

*These properties were notified under the new procedures.



**MASSACHUSETTS
HISTORICAL
COMMISSION**

**COMMONWEALTH OF MASSACHUSETTS
Office of the Secretary of State**

294 Washington Street
Boston, Massachusetts
02108
617-727-8470

MICHAEL JOSEPH CONNOLLY
Secretary of State

February 6, 1980

Ms. Carol Schull, Acting Keeper
National Register of Historic Places
Heritage Conservation and Recreation
Service
440 G Street NW
Washington, DC 20243

Dear Ms. Schull:

Enclosed is the National Register nomination form for Echo Bridge in Newton. It was returned to our office in December 1987 for additional information. Please note that the continuation sheets were submitted on January 28, 1980. A copy is enclosed.

Sincerely,

Christine Boulding
Survey Director

CB/mt
enc.

THE NATIONAL REGISTER OF HISTORIC PLACES

DATE REC'D FEB 15 1980

INDIVIDUAL RESPONSE (ATTACHED)

INFORMATIVE MATERIAL SENT

TELEPHONE CALL (ATTACHED)

DATE ACTION TAKEN _____

INITIALS _____

SPX COLTON FIBER
BLOOMER BOND

①

UNITED STATES DEPARTMENT OF THE INTERIOR
HERITAGE CONSERVATION AND RECREATION SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR HCRS USE ONLY

RECEIVED FEB 15 1980

DATE ENTERED

APR 9 1980

CONTINUATION SHEET #1

ITEM NUMBER #8

PAGE #1

Echo Bridge possesses integrity of location, design, setting, materials and workmanship and important associations with the development of a major water system to serve Boston's growing population in the late nineteenth century. Its total length of 475' is composed of seven arches of varying spans; the longest of these is almost 130' in length, making it for many years the second longest masonry arch in the United States. Located in Hemlock Gorge, one of the first areas acquired by the Metropolitan District Commission for recreation purposes, it was also a part of the conservation movement which helped to shape metropolitan Boston.

Echo Bridge was among the earliest of long masonry bridges built in the United States in 1880. Long stone or brick bridges were, in fact, uncommon anywhere in the world. H.G. Tyrell claimed that, at that time, there were fewer than 60 such bridges with single spans of more than 120' in the world. Echo Bridge's largest arch, which spans the Charles River, is nearly 130' in length, and at the time of construction and for many years following was the second longest masonry arch in this country (the longest was Cabin John Bridge in Washington D.C. with a single span of 220'). The total length of Echo Bridge with its 7 arches of varying spans is 475'. Because the place selected for the abutment for the largest arch on the river's eastern bank appeared to have a disintegrating rock formation, the base of the bridge was widened. Consequently, the arch, only 18' wide at the top under the conduit, was gradually widened by a curved line to 22' as it reached the ground. In addition to solving an engineering problem, this adds to the graceful appearance of the bridge. The design of the arch is acoustical such that fine echoes can be made under it, and it is from this that the bridge took its name. Because of the flaring form of the principle arch and the varying depths of the voissiors, the ring stones were difficult to cut as no two were alike. So carefully constructed, Echo Bridge settled only 2" upon the removal of the supporting framework.

Echo Bridge is a graceful and handsomely constructed bridge of granite and brick which adds to the rugged beauty of Hemlock Gorge. Its purpose was only to carry an aqueduct across the river, but its design was carefully conceived to contribute to its magnificent site rather than to detract from it. Echo Bridge is unusual for its time for its assymetry in arch arrangement, necessitated by the lay of the land.

The City of Boston had grown so tremendously by the close of the Civil War that its needs for water had outgrown its supply greatly augmented only 20 years before. Engineer Joseph P. Davis was retained by the Cochituate Water Board on November 22, 1871, to examine the possible sources of water for Boston within a 50 mile radius. In February of 1872, Davis made his first report recommending the Charles and the Sudbury Rivers

(11/78)

UNITED STATES DEPARTMENT OF THE INTERIOR
HERITAGE CONSERVATION AND RECREATION SERVICE**NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY -- NOMINATION FORM**FOR HCRS USE ONLY
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APR 9 1980

CONTINUATION SHEET

ITEM NUMBER #8 PAGE 2

as the best sources of supply. In the beginning of April of that year, the Sudbury River Act was signed by the Governor of the Commonwealth and J.P. Davis was elected as Boston City Engineer the following December. Soon after election, Davis presented a long and detailed report proposing a new system for the storage and conveyance of water from the Sudbury River to Boston. Its construction began on April 12, 1873, with A. Fteley(sic.) appointed as Resident Engineer in charge of the works.

One of the many problems to be solved in the construction of the aqueduct was finding the best means of carrying the conduit over the Charles River. Davis recommended that this be done at Hemlock Gorge, Newton Upper Falls, by a high level bridge, so that neither a change of grade nor long siphon lines would be necessary. This plan was adopted by the Water Board on July 3, 1873. Quoting from the project completion report from 1882: "The location of the bridge required some care. The line had to be established so as to interfere as little as possible with the homes at Newton Upper Falls. It was also desirable to avoid a curve, and to select the narrowest point of the Charles River where a good foundation could be found. The present location of the bridge unites these advantages. Two houses only had to be removed a short distance..." 2 Newton Upper Falls was a busy and crowded industrial village and concern was clearly taken to disturb the village minimally.

Plans stated that "The bridge is to be built in a most substantial manner of granite and brick work. The piers, arches and abutments up to the level of the conduit will be of granite, and above this there will be a handsome face-brick parapet, formed by pilasters into panels, and capped with a heavy granite coping, the whole surmounted by an ornamental railing." 3 The plans were well carried out.

George W. Phelps of Springfield, Mass., was selected as the contractor, coming forth with the winning bid of \$198,722.50. Ground was broken on December 7, 1875.

As a part of the widespread conservation movement which took place in the United States during the 1880's and '90's, serious efforts were made to upgrade the Charles River and its banks in recognition of its value as open space for the burgeoning metropolitan Boston area. The Metropolitan Park Commission was established in 1893, and this commission quickly selected the reknowned architectural landscaping firm of Olmstead, Olmstead and Eliot to make a thorough study of the potentials of the Charles River. In the firm's report to the commission submitted in 1895, it was proposed that the Charles River be made a water parkway, governed by a park commission, and on the basis that "the life of a river, like that of a human being, consists in the union of soul and body - the water and the banks", that land all along the banks of the river be acquired

UNITED STATES DEPARTMENT OF THE INTERIOR
HERITAGE CONSERVATION AND RECREATION SERVICE

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APR 2 1980

CONTINUATION SHEET

ITEM NUMBER #8, #9 PAGE 3

by the commission from private owners through gift, purchase of condemnation.

Among the first areas acquired by the MDC was the land bordering Hemlock Gorge, "containing the beautiful bridge of the Boston Water Works, widely known as Echo Bridge". Walking trails, canoe carries, little rustic bridges and picnic areas were developed. Currently under the management of the Metropolitan District Commission, the area on the eastern bank lies within the Newton Upper Falls H.D.

#9. BIBLIOGRAPHY

1. Tyrell, H.G., The History of Bridge Engineering, 1891.
2. Additional Supply from Sudbury River: Description of the Work with Plates, Boston Water Works, Boston, 1882.
3. Report of the Joint Board upon the Improvement of Charles River, 1896, Metropolitan Park Commission & State Board of Health, Boston, 1896.
4. History of the Boston Water Works from 1868 to 1876, under direction of Desmond FitzGerald, Supt., Western Division, Boston, 1876.
5. Report of the Metropolitan Park Commission, 1893 and 1897.

SECTION 15.

Section 15 extends from Station 623 to Station 639. The west part of it is built in a moderately deep trench, half sand and half rock. The balance of the section includes Charles-River bridge, with its approaches. The location of the bridge required some care. The line had to be established so as to interfere as little as possible with the houses at Newton Upper Falls. It was also desirable to avoid a curve, and to select the narrowest point of Charles River where a good foundation could be found. The present location of the bridge unites these advantages. Two houses only had to be removed a short distance, and the out-buildings of two others were slightly interfered with.

The bridge is formed of 7 arches. The first, on the western bank, is a segmental arch, of 18 feet radius; the second arch, a segmental one, with a radius of 69 feet, spans the river with an opening of nearly 130 feet. The next 4 arches, 36 ft. 8 in. in span, on the eastern shore, are semi-circular. The seventh, a flat segmental arch of 26 ft. 6 in. radius, 28 ft. in span, is built over Ellis street. The bridge between its terminal-chambers is 475 ft. long. (Plates 59 and 60.) The whole structure is built on conglomerate rock. On the east bank, at the place intended for the abutment of the largest arch, the rock appeared seamy and disintegrated, and it was thought prudent to widen the base of the structure. For this purpose the largest arch, which at the top under the conduit is only 18 feet wide, was gradually widened by a curved line to 22 ft. at the level of the ground. (Section on DD, Plate 59.) That disposition has also the advantage of giving to the arch a more graceful appearance. The voussoirs of the smaller arches are uniformly 2 ft. 3 in. in depth, with the exception of the ring-stones of the street arch, which are considerably deeper. The voussoirs of the largest arch are 5 ft. deep at the top and 6 ft. at the level of the ground.

Owing to the flaring form of the arch, and to the variable depths of the voussoirs, the ring-stones were difficult to cut; they were all different for one side of the bridge, and none presented two arrises of the same length. The contractor executed the work with such precision that, although the stones were entirely finished at the quarry, none were found defective.

The size of the voussoirs of the largest arch is so proportioned that in no case, whether the conduit is supposed built on the arch or not, the curve of pressure leaves the middle third of the space between the intrados and extrados. With the conduit full of water the horizontal thrust at the crown is 15.7 tons per square foot, equivalent to 1,413 tons for the whole section of the crown. At the lowest voussoir, at the level of the ground, the load is 25 tons per square foot, equivalent to 3,360 tons for the whole section of the arch at that point. On the rock of the east bank, which was not so sound, the load was reduced by the means of 4 heavy stepping-courses of foundation-stones to $11\frac{1}{2}$ tons per square foot of surface.

The frame necessary to support the large arch during its construction was of some magnitude. It was supported by 5 rows of posts on the coarse gravel forming the bottom of the stream in the following manner: The water in the river having been lowered to within a foot or more from the bottom, large stones, of a roughly rectangular shape, 5

Additional Supply from Sudbury River: Description
of the Work with Plates, Boston Water Works,
Boston, 1862
p. 62-63

feet long and 2 feet thick, were laid side by side on the bottom transversely to the conduit and well bedded in the gravel for a length of 24 feet. Three of these lines of stones were laid corresponding to 3 of the rows of posts which were to support the frame. On each of these lines of stones a continuous shallow groove was cut wide enough to receive a sill of hard-pine timber 14 inches by 14 inches, and sufficiently smooth to form a joint with the timber. On this sill were erected 5 pairs of hard-pine posts, 12 inches by 14 inches. The other two rows of posts, near the shores, rested on a sill reposing on a base of concrete. (See Plate 61.)

The frame was composed of 5 trusses, each of which was supported on 5 jack-screws, 4 inches in diameter, placed on the capping of the posts. There being 5 rows of posts and 5 trusses, the frame and its load were consequently supported by 25 screws which were found of great service for adjusting the structure, and afterwards for striking the centring. The struts, 8 inches by 10 inches, of spruce timber, 25 in number for each truss, and supporting the 4-inch lagging, were radial in direction. It being important to keep the settlement of the frame within narrow limits, all the joints of the timber were adjusted with care, and all the pieces were calculated to support a load of no more than 600 pounds per square inch.

During the construction of the arch a settlement was to be expected, due to the compression of the gravel in the bed of the river and of the several timber joints. To this was to be added the probable settlement of the arch after striking the centring. The frame was erected in the exact position that the intrados of the arch was intended to occupy, and, in order to compensate for the expected settlement, a furring of wood, 2 inches thick at the crown and gradually diminishing to nothing at the haunches, was spiked to the ribs, and on it the lagging was fastened.

By the time the arch was closed the frame had settled gradually down almost exactly to its theoretical position (see Diagram, fig. 1), and, after striking the centring, the arch settled down to a point a little lower than expected. After the whole structure had been completed, with the conduit built on the top, the arch stood at the crown $\frac{5}{8}$ inch lower than was contemplated. (See Diagram, fig. 2.) The arch was closed in November, 1876. The faces of the voussoirs were cut for $\frac{1}{4}$ -inch joints; but many joints exceed that limit.

The interior construction of Charles-River bridge is identical with that of Waban bridge, and the conduit is built on it in the same manner. The interior drainage galleries and other empty spaces are accessible through a vertical door in the east abutment of the road-arch and through two man-holes, one on the north side of the west abutment of the street arch, the other on the south side of the bridge, about 25 feet westerly from the foot of the arch on the Needham shore. (See Plate 60.) The chambers under these two man-holes are drained by pipes laid under ground.

At each end of the bridge the conduit is enlarged into a chamber. (Plates 59 and 60.) These chambers, used for examination and repairs, will also be found useful for gauging the flow of water in the conduit. The top of the conduit is 75 feet above the water-level of Charles River.

APR 9 1980

ENTRIES IN THE NATIONAL REGISTER

STATE MASSACHUSETTS

Date Entered APR 9 1980

<u>Name</u>	<u>Location</u>
Echo Bridge	Town of Needham, City of Newton Norfolk and Middlesex County
Swetland-Pease House	East Longmeadow vicinity Hampden County
Rice, Capt. Peter, House	Marlborough Middlesex County
First Baptist Church	Framingham Middlesex County
Oakes, Edward, House	Medford Middlesex County
McGill, John H., House	Medford Middlesex County
Dillaway School	Boston Suffolk County
Berger Factory	Boston Suffolk County

Also Notified

Honorable Paul Tsongas

Honorable Edward M. Kennedy
Honorable John J. Moakley
Honorable Robert F. Drinan
Honorable Edward P. Boland
Honorable Joseph D. Early
Honorable Edward J. Markey

State Historic Preservation Officer
Mrs. Patricia L. Weslowski
Executive Director, Massachusetts
Historical Commission
294 Washington Street
Boston, Massachusetts 02108

NR

Byers/bjr 4/17/80

For further information, please call the National Register at (202)343-6401.

NATIONAL REGISTER DATA SHEET

1 NAME as it appears on federal register: Echo Bridge		2 OTHER NAMES:		3 date of entry:		4 county code: 017	
5 LOCATION street & number Ellis St. at Charles River		city / town Newton		vicinity of		state MA	
				Middlesex		6 NPS REGION: N Atlantic	
7 OWNER ☐ PRIVATE ☐ STATE ☒ MUNICIPAL ☐ COUNTY ☐ MULTIPLE ☐ FEDERAL (agency name)		8 ADMINISTRATOR:					
9 EXISTING SURVEYS ☐ NAD ☐ NAD83 ☐ NAD83/2011 ☐ FUNDING? ☐ YES ☐ NO		10 CONGRESS DISTRICT 9 & 4		11 SOURCE of NOMINATION ☐ STATE ☐ FEDERAL		if state who prepared form?	
12 WITHIN NATIONAL REGISTER HISTORIC DISTRICT? ☐ YES, NAME		13 WITHIN NATIONAL HISTORIC LANDMARK? ☐ YES, NAME		14 AGREEMENT ☐ LOCAL ☐ PRIVATE ORGANIZATION			
15 CONDITION ☐ deteriorated ☐ altered ☐ original site ☐ excellent ☐ ruins ☐ unaltered ☐ moved ☐ good ☐ unexposed ☐ reconstructed ☐ unknown ☐ fair ☐ unexcavated ☐ excavated		16 features: INTERIOR ☐ SUBSTANTIALLY INTACT-1 ☐ SUBSTANTIALLY INTACT-2 ☐ SUBSTANTIALLY INTACT-3 ☐ NOT INTACT-0 ☐ NOT INTACT-0 ☐ UNKNOWN-4 ☐ UNKNOWN-5 ☐ NOT APPLICABLE-7 ☐ NOT APPLICABLE-8		ENVIRONMENT ☐ SUBSTANTIALLY INTACT-3 ☐ NOT INTACT-0 ☐ UNKNOWN-6 ☐ NOT APPLICABLE-9			
17 ACCESS ☐ YES-Restricted ☐ YES-Unrestricted ☐ No Access ☐ Unknown		18 ADAPTIVE USE ☐ YES ☐ NO		19 SAVED? ☐ YES		20 IS PROPERTY A HISTORIC DISTRICT? ☐ yes ☐ no	
21 AREAS OF SIGNIFICANCE: ☐ ARCHEOLOGY-prehistoric-2 ☐ COMMERCE-6 ☐ ARCHEOLOGY-historic-1 ☐ COMMUNICATIONS-7 ☐ AGRICULTURE-3 ☐ CONSERVATION-8 ☐ ARCHITECTURE-4 ☐ ECONOMICS-9 ☐ ART-5 ☐ EDUCATION-10		☐ ENGINEERING-11 ☐ LANDSCAPE ARCH.-15 ☐ ENTERTAINMENT-26 ☐ LAW-16 ☐ EXPLORATION-12 ☐ LITERATURE-17 ☐ HEALTH-27 ☐ MILITARY-18 ☐ INDUSTRY-13 ☐ MUSIC-19 ☐ INVENTION-14 ☐ PHILOSOPHY-20		☐ POLITICS / GOVT.-21 ☐ RECREATION-28 ☐ RELIGION-22 ☐ SETTLEMENT-29 ☐ SCIENCE-23 ☐ URBAN PLANNING-31 ☐ SOCIAL / HUMANITARIAN-24 ☐ OTHER (SPECIFY) ☐ SOCIAL / CULTURAL-30 ☐ TRANSPORTATION-25		22 CLAIMS: explain 'first' ☐ 'oldest' ☐ 'only' ☐	
23 functions WHEN HISTORICALLY SIGNIFICANT: CURRENTLY:		24 dates of initial construction: major alterations: historic events:		25 ETHNIC GROUP ASSOCIATION			
26 architectural style(s):		27 architect:		28 master builder:		29 engineer:	
30 landscape architect / garden designer:		31 interior decorator:		32 artist:		33 artisan:	
						34 builder/contractor:	
35 NAMES give role & date PERSONAL: EVENTS: INSTITUTIONAL:							
36 NATIONAL REGISTER WRITE-UP							