

DEC 05 1989

MASSACHUSETTS HISTORICAL COMMISSION
80 BOYLSTON STREET, BOSTON, MA 02116

Area Letter	Form numbers in this Area
C	8-1, 8-2, 8-3, 8-4, 8-5, 8-6, 8-7, 8-8, 8-9, 8-10, 8-11,
	8-12, 8-13, 8-14, 8-15 Clinton, Berlin, Northborough, Marlborough, Southborough

Town _____

Name of Area (if any) _____

Wachusett Aqueduct Linear District

Present Use not in service

General Date or Period 1896-98

period of significance 1896-1926

General Condition fair-good

Acreage c. 180 acres

Recorded by Martha Bowers

Organization Louis Berger & Ass., Inc.

Date 1984; revised 1989 (C. Jenkins)

Photos (3"x3" or 3"x5" black & white) - Indicate on back of each photo street addresses for buildings shown. Staple to left side of form.

Sketch Map. Draw a general map of the area indicating properties within it. Number each property for which individual inventory forms have been completed. Label streets including route numbers, if any. Indicate north. (Attach a separate sheet if space here is not sufficient).

see attached maps

TM REFERENCE	<u>A-C Clinton Quad</u>
	<u>D Shrewsbury Quad</u>
SGS QUADRANGLE	<u>E-Marlborough Quad</u>
SCALE	<u>1:25,000</u>

- A 19278890/4697770 west end
- B 19280540/4696000 Shaft #4
- C 19 281630/4695060 Metering Chamber
- D 19283230/4689420 Assebet River Bridge
- E 19286480/4687980 Terminal Chamber
- F 19287160/ 4687530 Crane Meadow Road Arch
- G 19287850/4687420 Upper Dam
- H 19288500/4687480 Northboro Road Arch #2
- I 19289040/4687040 Northboro Road Arch #1
- J 19289080/4686750 Lynbrook Road Arch
- K 19289500/4686680 Chestnut Hill Road Arch
- L 19290420/4686530 Lower Dam
- M 19290420/4686530 Flagg Road Arch

NATIONAL REGISTER CRITERIA STATEMENT (if applicable)

The Wachusett Aqueduct Linear District consists of twelve miles of aqueduct punctuated by bridges and chambers along its length. It is significant as the first aqueduct built under the auspices of the Metropolitan Water Board to increase the supply of fresh water for the metropolitan area. It also possesses distinctive features of design and construction typical of the water system as it evolved between 1845-1926. The district possesses integrity of location, design, setting, materials, workmanship, feeling and associations, and meets criteria A and C of the NRHP. The boundaries are drawn in red on the attached three maps entitled "Plan and Profile, Wachusett Aqueduct Land" drawn at a scale of 600' to 1". The boundaries encompass the aqueduct structure and its associated chambers and bridges, as it travels from Wachusett Reservoir on the west to Sudbury Reservoir on the east.

ARCHITECTURAL SIGNIFICANCE Describe important architectural features and evaluate in terms of other areas within the community.

The Wachusett Aqueduct Linear District extends from the Wachusett Dam (Area G) in Clinton south-easterly to Sudbury Reservoir in Southborough. This linear district consists of an aqueduct that is composed of two miles of tunnel, seven miles of masonry conduit, and three miles of open channel. Along this length, are sited four chambers, one aqueduct bridge, six vehicular bridges, and three small dams. The covered portions of the aqueduct (8-1) average about eleven feet wide and ten feet high. For about half its length, the tunnel section is unlined, the remainder being lined with concrete facing, with three to six rings of brick. The masonry portion of the aqueduct consists of concrete and brick, with a horseshoe-shaped section or profile. The bottom and side walls of the conduit are of natural cement concrete, lined with one or more rings of brick. The arch itself is of Portland cement concrete.

Other elements include Shaft 4 Chamber (8-2) in Berlin, built over one of four shafts sunk during the original excavation. The chamber is circular in plan and about ten feet in diameter, with an Roman brick exterior walls set on a single course of granite. The conical roof is covered with asphalt shingles and has wood eaves and scrolled projecting rafter ends. The single opening contains a steel door, welded shut.

(CONT)

HISTORICAL SIGNIFICANCE Explain historical importance of area and how the area relates to the development of other areas of the community.

The Wachusett Aqueduct Linear District, along with the related Wachusett Dam Historic District (Area G), represents the third stage in the evolution of the metropolitan Boston water supply system (1895-1926; please refer to Overview, Section 8, pp. 2 and 7-9 for additional information). This phase expanded the system northwestward from the Sudbury Reservoir to the Nashua River in Clinton. It was the first project of the Metropolitan Water Board, created by the state legislature in 1895. The Board's first major task was completion of the Sudbury Reservoir, originally begun by the City of Boston in 1893, and construction of the Wachusett Aqueduct (1896-98) to bring pure water from the Nashua River to supplement the supply from the various reservoirs of the Sudbury watershed. With completion of the Wachusett Reservoir (see Area G) in 1906-07, the Wachusett Aqueduct conveyed water southeast from a supply that was the Boston area's principal source until completion of Quabbin Reservoir in the 1940s. Wachusett Aqueduct was removed from service when it was bypassed by the Wachusett-Marlboro Tunnel in the mid-1960s. The Hultman Aqueduct Headhouse and Circular Dam which cross the Wachusett Aqueduct in the town's of Southboro and Marlboro, were part of this post-1940 effort to put all water carrying elements of the system underground to prevent pollution in the heavily developed eastern portion of the state (see Sec8-pp 11-12).

Designs for the Wachusett Aqueduct were generated in the office of the Metropolitan Water Board's Chief Engineer, Frederic Pl Stearns, with contributions from Ruben Shirreffs of the Board's Dam and Aqueduct section, particularly for the Assebet River Bridge. The project was built under a number of different contractors: Moulton & O'Malley of Boston for the open channel and associated bridges and dams; Jones, Pollard & Co. of Baltimore for the Assebet River Bridge, and the closed

(CONT)

BIBLIOGRAPHY and/or REFERENCES

Metropolitan Water Board, Annual Reports 1896, 1897, 1898
 Report of the Massachusetts State Board of Health upon a Metropolitan Water Supply.
 Boston, Wright & Potter. 1895.

MASSACHUSETTS HISTORICAL COMMISSION
Office of the Secretary, Boston

Community: Clinton, Berlin Northborough, Southborough Marlborough	Form No: C
Property Name: Wachusett Aqueduct Historic District	

Indicate each item on inventory form which is being continued below.

ARCHITECTURAL SIGNIFICANCE

Also in Berlin is the Wachusett Metering Chamber (C8-3). It covers a manhole providing access for measuring the flow of water through the aqueduct. The 12' x 12' structure has gray granite exterior walls, granite cornice with full entablature, and slab lintels. The hipped roof is clad with asphalt shingles. Decorative metal grilles protect single 4-light fixed sash or casement windows on each side wall and at the rear. The heavy steel door has been welded shut.

In the village of Woodside, Northborough, the aqueduct is carried over the Assabet River on the 359-foot-long Assabet River Bridge (C8-9). The span's seven round arches, each about 29 feet wide, are of mass concrete faced with granite. Above the arches is a corbel table of blind segmental arches with keystones. As it crosses the bridge, the aqueduct has 8 inches of brick lining backed by sheet lead. The bridge was removed from service in the 1930's, after construction of a siphon beneath the river.

The 7-mile closed segment of the aqueduct terminates in Marlborough. Marking the transition from closed conduit to open channel is a terminal chamber (C8-4) that contains wooden stop planks. The chamber is basically square in plan, with gray granite exterior and a slate-shingled hipped roof. The downstream face features three round arches, positioned low in the wall, through which water entered the open channel. A simple granite cornice and metal grilles over transom lights and the smaller windows provide the only decorative elements. An I-beam has been inserted above the windows on the downstream side, to stabilize the wall.

The three-mile open channel below the terminal chamber follows the original course of Stony Brook, winding through farmland and forest to Sudbury Reservoir. To build the channel, the stream bed was stripped of organic material, dug out to a width of about 20', and lined with sand and gravel on the slopes. A short distance downstream from the terminal chamber is the Crane Meadow Road Arch (C8-6), a single arch span of poured concrete faced with granite. Tied into the abutments of the bridge are the abutments of a concrete, granite-clad circular diversion dam constructed in 1939-40 to divert water into Shaft 1 of the Hultman Aqueduct (C8-15). The headhouse for the Hultman Shaft 1 (C8-5) is adjacent to the dam on the north bank of the open channel. It consists of a square, hipped-roofed chamber of concrete with granite facing. Since 1965, the Hultman has been supplied by the Wachusett-Marlborough Tunnel, the terminal chamber for which is situated just northwest of Hultman Shaft 1. These Hultman related elements do not contribute to the presently nominated district.

Further east, in Southborough, is the first of two control dams (C8-7) which maintain a depth of 5-6 feet in the open channel. This upper control dam has a maximum height of about 11 feet and is constructed of concrete and granite. The indented, or offset, spillway allows more water to flow over the dam than would be the case with a straight-crested structure. The approximate channel width of the dam is 87 feet, but the indented spillway provides a total spillway length of about 144 feet.

East of Interstate 495 in Northborough, the Wachusett open channel is spanned by four small deck arch bridges, each of granite-faced concrete with an approximately 16-foot span, 10 feet high to the keystone. Two of these bridges carry portions of Northborough Road (Northborough Road Arches #1 and #2 (C8-10, C8-11)). One provides a crossing for Lynbrook Road (C8-13), and the fourth performs the same function for Chestnut Hill Road (C8-14). At Flagg Road, Southborough, the open channel is spanned by another small granite-faced, single-arch concrete bridge (C8-12). Directly above the Flagg Road Arch is the channel lower control dam (C8-8). This granite-faced concrete structure is 9 feet high, with a total length of 109 feet created by an indented spillway. The Lower Control Dam and Flagg Road Bridge are the easternmost elements in the nominated district.

Staple to Inventory form at bottom

INVENTORY FORM CONTINUATION SHEET 2.0F2

MASSACHUSETTS HISTORICAL COMMISSION
Office of the Secretary, Boston

MDC-TRA, MASS.

Community: Clinton, Berlin, Northboro, Southboro, Marlboro	Form No: C
Property Name: Wachusett Aqueduct Linear District	

Indicate each item on inventory form which is being continued below.

HISTORICAL SIGNIFICANCE (Cont)

portions of the conduit by E. D1 Smith & Co., Philadelphia.

The structures that make up the district, and described in the Architecture section, combine to perform the basic function of carrying water from its source to distribution points. The open and closed sections of the aqueduct define and channel the course of water; the chambers provide for access/monitoring, ventilation or diversion; and the bridges carry the aqueduct over impediments like rivers or roads. Refer to Overview section 7: Aqueducts, Chambers for additional information.

Staple to Inventory form at bottom

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

Section number _____ Page _____

Water Supply System of Metropolitan Boston MPS

MASSACHUSETTS

DATE LISTED

Ret 20. Quinepoxet River Bridge

Substantive Review

21. Wachusett Aqueduct Linear District

Substantive Review

22. Wachusett Dam Historic District

Beth L. Sarge 04-06-90
Beth L. Sarge 01-18-92
Melanie Byers 1-18-90

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

REQUESTED ACTION: NOMINATION

PROPERTY NAME: Wachusett Aqueduct Linear District

MULTIPLE NAME: Water Supply System of Metropolitan Boston MPS

STATE & COUNTY: MASSACHUSETTS, Worcester

DATE RECEIVED: 12/05/89 DATE OF PENDING LIST: 12/19/89
DATE OF 16TH DAY: 1/04/90 DATE OF 45TH DAY: 1/19/90
DATE OF WEEKLY LIST:

REFERENCE NUMBER: 89002276

NOMINATOR: STATE

REASONS FOR REVIEW:

APPEAL: N DATA PROBLEM: N LANDSCAPE: N LESS THAN 50 YEARS: N
OTHER: N PDIL: N PERIOD: N PROGRAM UNAPPROVED: N
REQUEST: N SAMPLE: Y SLR DRAFT: N NATIONAL: N

COMMENT WAIVER: N

☒ ACCEPT ☐ RETURN ☐ REJECT 1/18/90 DATE

ABSTRACT/SUMMARY COMMENTS:

Locally significant aqueduct, the first built under the auspices of the Metropolitan Water Board. This district is separated from the Wachusett Dam Historic District by large scale, intrusive new development. The district includes the aqueduct, 4 chambers, an aqueduct bridge, 6 vehicular bridges and 3 dams. The system carries water from the Wachusett Dam to the Sudbury Reservoir.

RECOM./CRITERIA Accept A+C
REVIEWER Swagg
DISCIPLINE Architectural History
DATE 01-18-90

DOCUMENTATION see attached comments Y/N see attached SLR Y/N

CLASSIFICATION

___count ___resource type

STATE/FEDERAL AGENCY CERTIFICATION

FUNCTION

___historic ___current

DESCRIPTION

___architectural classification
___materials
___descriptive text

SIGNIFICANCE

Period Areas of Significance--Check and justify below

Specific dates Builder/Architect
Statement of Significance (in one paragraph)

___summary paragraph
___completeness
___clarity
___applicable criteria
___justification of areas checked
___relating significance to the resource
___context
___relationship of integrity to significance
___justification of exception
___other

BIBLIOGRAPHY

GEOGRAPHICAL DATA

___acreage ___verbal boundary description
___UTMs ___boundary justification

ACCOMPANYING DOCUMENTATION/PRESENTATION

___sketch maps ___USGS maps ___photographs ___presentation

OTHER COMMENTS

Questions concerning this nomination may be directed to

Signed _____ Phone _____

Date _____



MDC - TRA, MASS.

HULTMAN SHAFT 1 DIVERSION DAM AND HEADHOUSE,
MARLBOROUGH, MA

Jane Carolan / Martha Bowers 1984' 8-15

Louis Burger & Ass.

AREA C: WACHUSEN Aqueduct Historic District

Water Supply System of Metropolitan Boston MPS



Commonwealth of Massachusetts
METROPOLITAN DISTRICT COMMISSION
WATER DIVISION
WACHUSETT AQUEDUCT
CAUTION ON THE WAY TO THE WATER TREATMENT PLANT

MDC - TRA, MASS.

WACHUSETT AQUEDUCT, BERLIN, MA 8-1

Jane Carolan / Martha Bowers 1984

Louis Berger & Ass.

AREA C: WACHUSETT AQUEDUCT HISTORIC DISTRICT

Water Supply System of Metropolitan Boston, MASS.



MDC - TRA, MASS.

ASSABET RIVER BRIDGE, NORFOLK BOROUGH, MA
Jane Carolan / Martha Bowers 1984 B-9
Louis Berger & ASS.

AREA C: WACHUSETT AQUEDUCT HISTORIC
DISTRICT

Water Supply System of Metropolitan Boston MPS



MDC - TRA, MASS.

WACHUSETT METERING CHAMBER, BERLIN, MA

8-3

Jane Carolan / Martha Bowers 1984

Louis Berger & Ass.

AREA C: WACHUSETT AQUEDUCT HISTORIC DISTRICT

Water Supply System of Metropolitan Boston MPS



MDC - TRA, MASS.

FLAGG ROAD ARCH, SOUTHBOROUGH, MA 0-12

Jane Arolan / Martha Bowers 1984

Louis Berger + Ass.

AREA C: WACHUSETT AQUEDUCT HISTORIC DISTRICT

Water Supply System of Metropolitan Boston MPS



MDC - TRA, MASS.

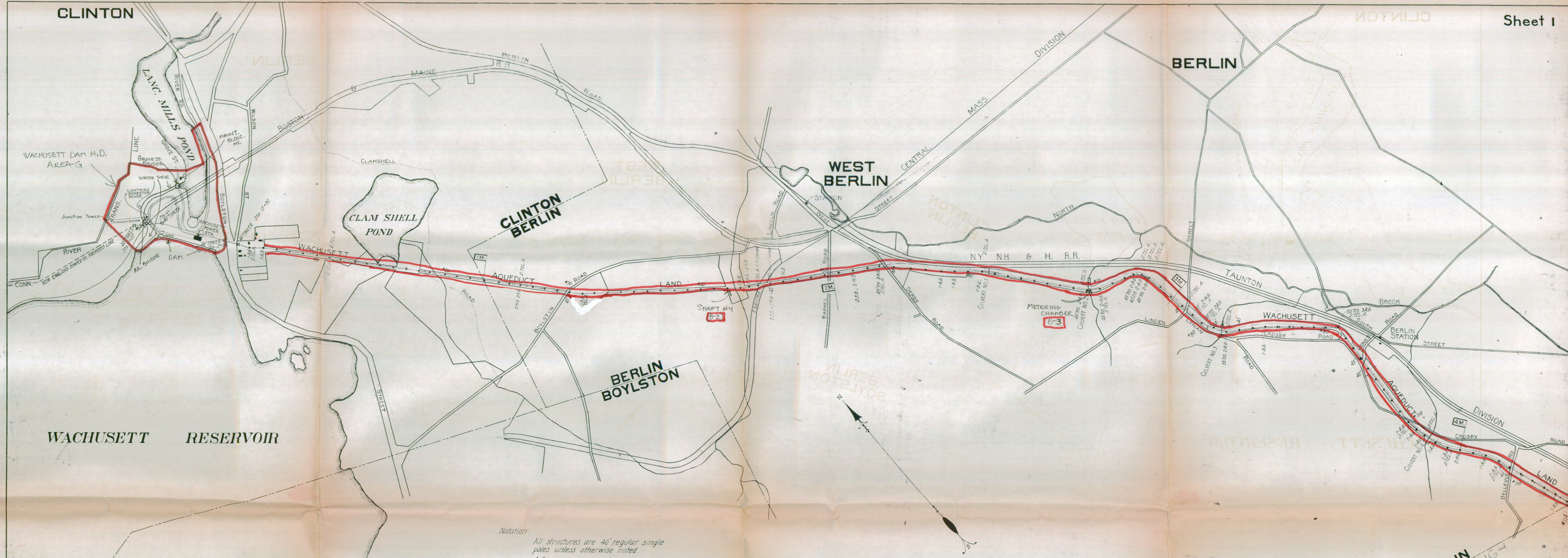
UPPER DAM, WACHUSETT AQUEDUCT OPEN CHANNEL,
SOUNDBOROUGH, MA

8-7

Jane Carolan / Martha Bowers 1984

Louis Beyer & Ass.

AREA C: WACHUSETT AQUEDUCT HISTORIC DISTRICT
Water Supply System of Metropolitan Boston MPS



Notation

All structures are 40' regular single poles unless otherwise noted.

A.G. Angle guy

H.G. Head guy

S.L. Stiff-leg guy

P.O. Pull-off pole

D.P.S.T.R. Double pole structure

S.D.P.S.T.R. Special double pole structure

D.T.E.L.A. Double telephone arm

C.O. Clamps Cross over clamps

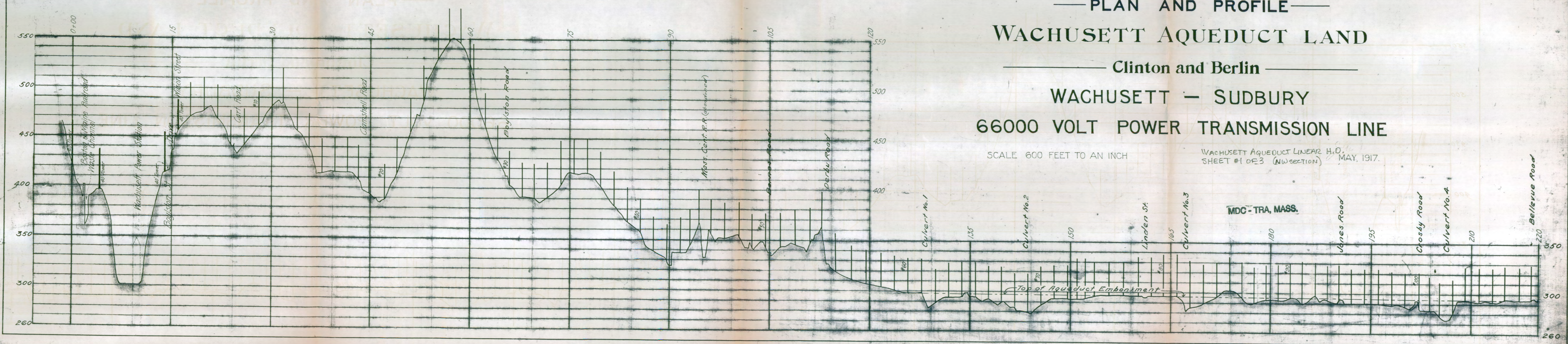
S.G. Side guy.

Chief Engineer of Water Works.

THE COMMONWEALTH OF MASSACHUSETTS
METROPOLITAN WATER WORKS
— PLAN AND PROFILE —
WACHUSETT AQUEDUCT LAND
— Clinton and Berlin —
WACHUSETT — SUDBURY
66000 VOLT POWER TRANSMISSION LINE

SCALE 600 FEET TO AN INCH

WACHUSETT AQUEDUCT LINEAR H.O.
SHEET #1 OF 3 (NW SECTION) MAY, 1917.





WACHUSETT AQUEDUCT LAND
CLINTON AND HILL
WACHUSETT
6000 YD. POWER TRANSMISSION LINE



Wachusett ③



Notation:
All structures are 40' regular single poles unless otherwise noted
A.G. Angle guy
H.G. Head guy
S.L. Stiff-leg guy
P.O. Pull-off pole
D.P.S.T.R. Double pole structure
S.D.P.S.T.R. Special double pole structure
D.T.E.L.A. Double telephone arm
C.O. Clamps. Cross over clamps.
S.G. Side guy.

THE COMMONWEALTH OF MASSACHUSETTS
METROPOLITAN WATER WORKS
— PLAN AND PROFILE —
WACHUSETT AQUEDUCT LAND
Northboro

WACHUSETT AQUEDUCT LINEAR H.D.
SHEET #2 OF 3 (CENTRAL SECTION)

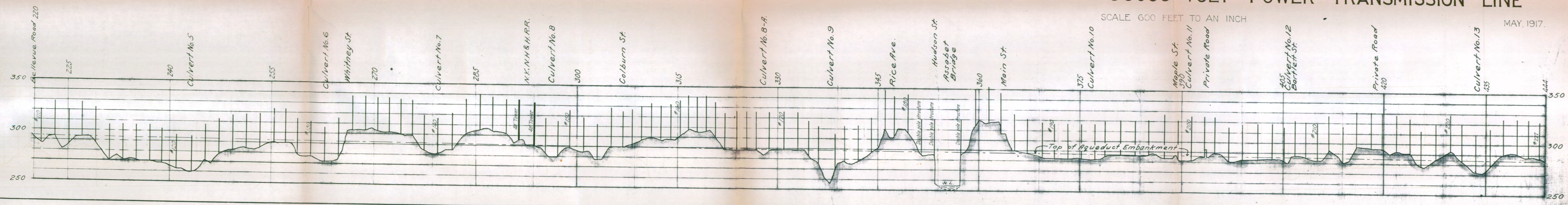
MDC - TRA, MASS.

Chief Engineer of Water Works.

WACHUSETT — SUDBURY
66000 VOLT POWER TRANSMISSION LINE

SCALE 600 FEET TO AN INCH

MAY, 1917.



Wachusett

NORTHBORO

METROPOLITAN WATER WORKS
PLANT

CITY OF NORTHBORO

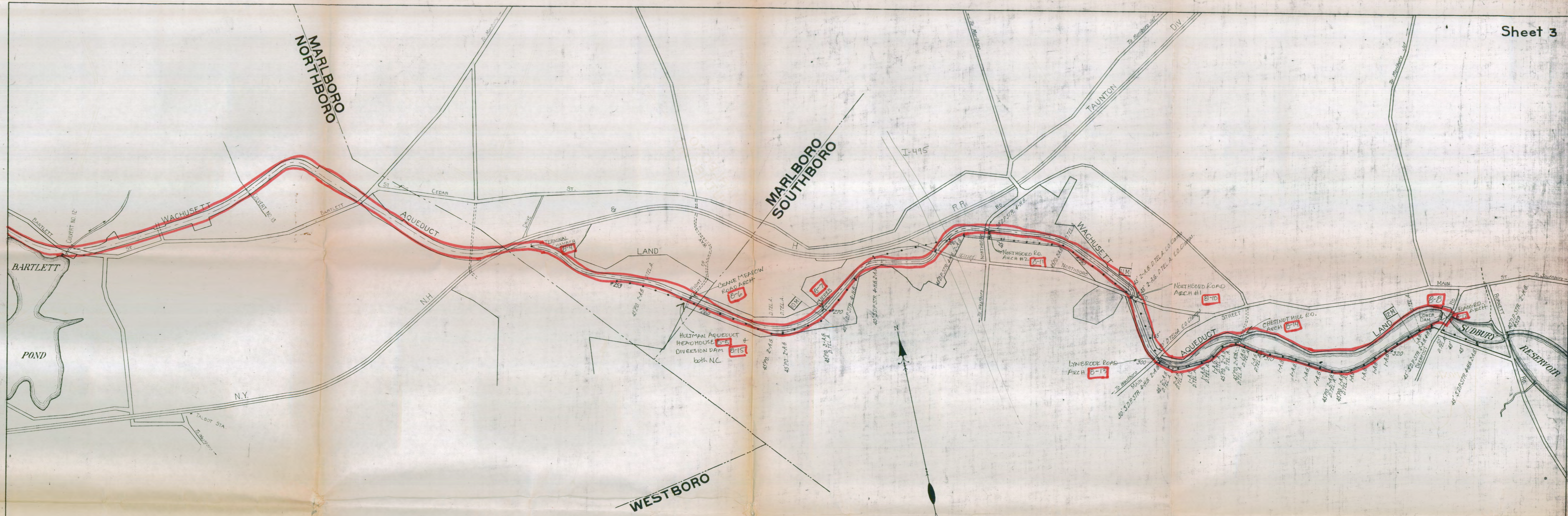
Northboro

110,000 VOLT POWER TRANSMISSION LINE

NORTHBORO

Station 100+00
Station 100+50
Station 101+00

Station 101+50
Station 102+00
Station 102+50
Station 103+00



Notation:
All structures are 40' regular single poles unless otherwise noted.
A.G. Angle guy
H.G. Head guy
S.L. Stiff-leg guy
P.O. Pull-off pole
D.P.S.T.R. Double pole structure
S.D.P.S.T.R. Special double pole structure
D.T.E.L.A. Double telephone arms
C.O. Clamps Cross over clamps
S.G. Side guy.

THE COMMONWEALTH OF MASSACHUSETTS
METROPOLITAN WATER WORKS
— PLAN AND PROFILE —
WACHUSETT AQUEDUCT LAND
— Northboro - Marlboro - Southboro —
WACHUSETT — SUDBURY,
66000 VOLT POWER TRANSMISSION LINE

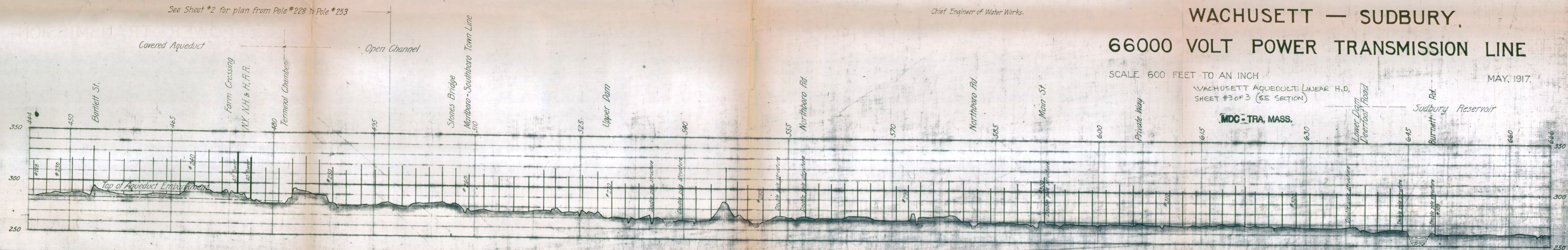
Chief Engineer of Water Works.

SCALE 600 FEET TO AN INCH

WACHUSETT AQUEDUCT LINEAR H.D.
SHEET #3 OF 3 (SEE SECTION)

M.D.C. - T.R.A. MASS.

MAY, 1917.



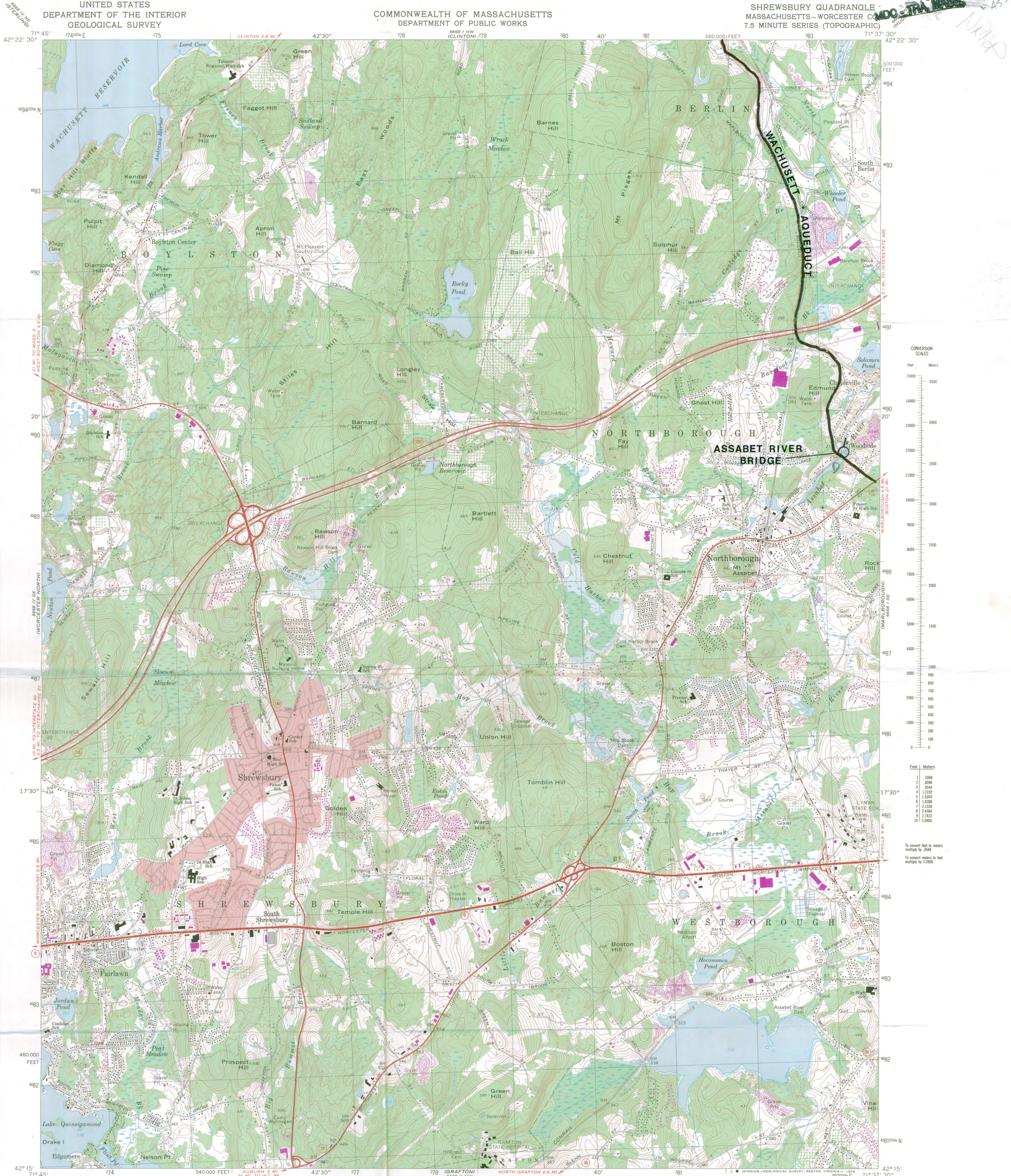
① 4/27/17

WACHUSETT AQUEDUCT
CLINTON, BERLIN, NORTHBOROUGH, MARLBOROUGH,
SOUTHBOROUGH, MASSACHUSETTS
"Plan and Profile, Wachusett Aqueduct
Land," May 1917
Scale 600' = 1"

MDC-TRA, MASS.

Wachusett Aqueduct
Clinton, Berlin, Northborough, Marlborough,
Southborough, Massachusetts
"Plan and Profile, Wachusett Aqueduct
Land," May 1917
Scale 600' = 1"

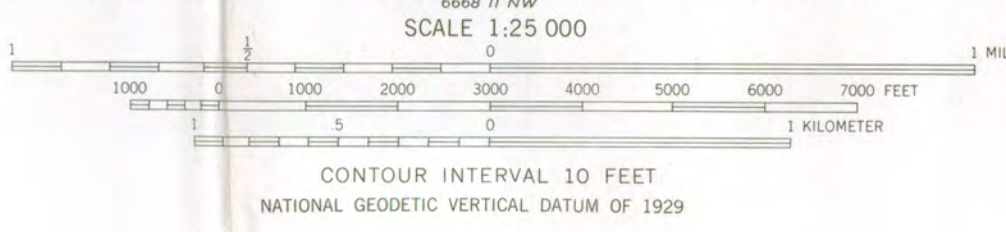
MDC-TRA, MASS.



Feet	Meters
1	3048
2	6096
3	9144
4	12192
5	15240
6	18288
7	21336
8	24384
9	27432
10	30480

To convert feet to meters
multiply by .3048
To convert meters to feet
multiply by 3.2808

Mapped, edited, and published by the Geological Survey
Control by USGS, USC&GS, and Massachusetts Geodetic Survey
Topography by planetable surveys 1941. Revised from aerial photographs
taken 1966. Field checked 1969
Polyconic projection. 1927 North American datum
10,000-foot grid based on Massachusetts coordinate system,
mainland zone
1000-meter Universal Transverse Mercator grid,
zone 19
Fine red dashed lines indicate selected fence and field lines where
generally visible on aerial photographs. This information is unchecked
Red tint indicates area in which only landmark buildings are shown
Areas covered by dashed light-blue pattern are subject
to controlled inundation



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



SHREWSBURY, MASS.
N4215—W7137.5/7.5
1969
PHOTO-REVISÉ 1979
AMS 6668 I SW—SERIES V814

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, WASHINGTON, D. C. 20242
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

Revisions shown in purple compiled in cooperation with the State of
Massachusetts agencies from aerial photographs taken 1975 and other
source data. This information not field checked. Map edited 1979

Please refer to the map in the
Multiple Property Cover Sheet
for this property

Multiple Property Cover Sheet Reference Number: 64500254