Massachusetts Cultural Resource Information System

Scanned Record Cover Page

Inventory No:	SBR.931
Historic Name:	Weston Aqueduct
Common Name:	
Address:	Weston Aqueduct
City/Town:	Southborough
Village/Neighborhood:	
Local No:	12-1
Year Constructed:	
Architect(s):	
Architectural Style(s):	
Use(s):	Other Engineering; Utilities Other
Significance:	Engineering
Area(s):	SBR.H: Weston Aqueduct Linear District sbr.i: Water Supply System of Metropolitan Boston
Designation(s):	Nat'l Register District (1/18/1990); Nat'l Register TRA (1/18/1990)
Building Materials(s):	

Digital Photo Not Yet Available

Commonwealth of Massachusetts
Massachusetts Historical Commission
220 Morrissey Boulevard, Boston, Massachusetts 02125
www.sec.state.ma.us/mhc

FORM A - AREA

NRDIS/TRA 11/8/90 MDC

MASSACHUSETTS HISTORICAL COMMISSION
294 Washington Street, Boston, MA. 02108

Form numbers in this area	Area letter
H, I	~~12-1~~ 931

NRDIS/TRA 11/8/90

Pl-to CRS-MHC

Photo (3x3" or 3x5")
Staple to left side of form

Photo number_____

Town Southborough, Framingham, Wayland, Weston

Name of area (if any)

Weston Aqueduct

General date or period 1901-1903

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) and indicate north. (Attach a separate sheet if space here is not sufficient)

See USGS Map

Recorded by M.H.Bowers

Organization Louis Berger & Assoc.

Date March 1984

(Staple additional sheets here)

SBR.931

ARCHITECTURAL SIGNIFICANCE of area. (Describe physical setting, general character, and architecturally significant structures).

Between 1901 and 1903 the Metropolitan Water and Sewerage Board constructed an aqueduct to carry water from Sudbury Reservoir to a point on the east side of Weston, from which is supplied distribution mains and also Spot Pond in Stoneham. The aqueduct is 13.5 miles long, with a horseshoe shaped section similar to that of the Wachusett Aqueduct. It is approximately 13 feet wide and 12 feet high, and has a capacity of 300 mgd. The aqueduct begins at Sudbury Dam, from which pipes were laid to a gray granite head chamber from which water from this reservoir enters the closed conduit.

The nature of the topography along the Weston required that the aqueduct have variety of components. There are five tunnel sections, totaling 2.30 miles, and 9.14 miles of masonry aqueduct (cut and cover, or on embankments). Most of these sections were built with natural concrete bases and side walls lined with a single ring of brick, and unlined, Portland cement concrete arches; however, certain tunnel portions are fully lined with three rings of brickwork. In addition to the tunnel and masonry sections, there are two lengths of inverted siphon, in which the water is conveyed in 7½' steel pipes across valleys. The longest siphon, across Sudbury River Valley, and is 3605.5' long. At each end is a concrete siphon chamber containing special steel castings and gauges that control the flow of water from the masonry to pipe sections of the conduit. The chambers are enclosed in square granite superstructures that shelter floorstands and the openings leading to the aqueduct. Over the Sudbury River, the siphon is "reinverted" in the form of a pipe arch of 80' span, with granite abutments. The second, shorter inverted siphon crosses Happy Hollow (Route 126 in Wayland) and like the Sudbury River siphon, features concrete and granite chambers at each end. Both siphons were assigned to carry three parallel lengths of pipe, but were built with only one. In the late 1930's, a second length of pipe was added to the Happy Hollow siphon. At the same time, an inverted siphon was built under the Sudbury River near the pipe bridge. At two places on the aqueduct are small metering chambers, with concrete substructures and granite superstructures. Each measures the flow of water at a different gradient. The fall of the aqueduct is 4' in 5000' at the first chamber, and 1' in 5000' at the second.

In Weston, just east of Wellesley Street, a tunnel section terminates at a 1500' open channel leading to a holding and equalizing reservoir. At the end of the tunnel is a channel chamber equipped with stop planks. Below this chamber, the open channel extends in a straight line to the reservoir. The channel, approximately 20' wide, is lined with stone riprap and ornamented with rows of arborvitae and conifers. At Ash Street, over the end of the open channel, is a single arch concrete bridge faced with granite. Below the bridge, the channel empties into Weston Reservoir, which covers approximately 66 acres and has a maximum depth of 28 feet. The approximately 150 acres surrounding the reservoir were developed to maintain a naturalistic setting of rocky promontories and tree-lined shores by the Olmsted Brothers of Brookline. The naturalistic planning was carried through at the dam on the east end of the reservoir, which is a 900' curved earthen embankment with concrete core wall largely undistinguishable from other slopes around the reservoir. On the dam is a screen chamber, which contains wood and metal screens to catch debris in water entering the final tunnel segment of the Weston Aqueduct. This segment ends at a large terminal chamber, which in effect is a large concrete well from which pipes lead, two to Chestnut Hill, the others to the northern distribution works at Spot Pond.

INVENTORY FORM CONTINUATION SHEET

MASSACHUSETTS HISTORICAL COMMISSION
Office of the Secretary, Boston

Community: SBR.931	Form No:
Property Name:	

The Weston is the oldest of the metropolitan Water System's aqueducts still in service. Since 1940 it has been supplied directly from the Hultman Aqueduct at Shaft 4 of the latter, which is located just below the Weston head chamber at Sudbury Dam.

HISTORICAL SIGNIFICANCE of area. (Explain development of area, what caused it, and how it affected community; be specific).

Weston Aqueduct was built to carry water from Sudbury Reservoir, completed in 1898, to the distribution reservoir at Spot Pond, and from there, and also through supply mains from the terminal chamber, to the northern high-service areas of metropolitan Boston. To achieve this goal, Metropolitan Water Board engineers designed a variety of conduits to meet requirements of the topography along the aqueduct route. The Weston as a result illustrates the widest variety of conduit types of all the metropolitan aqueducts, featuring tunnels, cut and cover segments, embankment segments, two inverted siphons, a siphon bridge, and an open channel, plus an equalizing reservoir near the end of its 13-mile length.

Landscaping played an important role in the development of the Weston as well. The Metropolitan Water Board purchased some 200 acres in the town of Weston, approximately 66 acres of which was used for the reservoir, the remainder as a buffer zone to ensure the quality of water in the reservoir. Beginning with naturally low-lying topography, the Metropolitan Water Board stripped organic matter from a larger area, but retained many natural landforms. The Olmsted Brothers firm utilized these, and planned the creation of others, to produce an informal, naturalistic setting for the reservoir and its appurtenant structures. The area was planted in conifers and it arborvitae, to inhibit soil erosion and to enhance the parklike character of the reservoir. Selection of conifers over deciduous trees was based on the fact that conifers drop their needles onto the ground, whereas deciduous leaves tend to blow into the reservoir and raise the amount of organic matter in the water to undesirable levels.

The open channel at the northwest end of the reservoir constitutes an interesting design element in itself. In contrast to the informality of the reservoir proper, the open channel is a strongly linear feature, extending in a straight line approximately 1500 beyond Ash Street bridge, which marks the transition between the channel and the reservoir. The linearity is reinforced by rows of conifers on each side, which direct an observer's gaze to the channel chamber, symmetrically placed at the channel's northwest end. This almost classical arrangement of channel, trees and chamber is the most formal treatment of structures in landscape to be found in the entire metropolitan water system.

The architecture of the Weston system is also noteworthy. The architectural firm of Shepley, Rutan and Coolidge designed ten superstructures, nine of which shared a common vocabulary of design and materials. Major features of this vocabulary include rectangular plans, hipped roofs with slightly flared eaves, symmetrical facades, and rectangular openings. Each structure utilizes a warm orange-tan granite, laid in a random ashlar pattern, for exterior walls, and a pink granite for quoins, foundation facings, and the surrounds of windows and doors.

These structures exist to shelter the utilitarian apparatus of screens, gates, stop planks and floor stands that are installed in the chambers below, although their forms reveal little about the function within. However, each function type

is given, within the common vocabulary, its own particular superstructure design, so that an observer can determine the number of different functions employed on the aqueduct, but not exactly what those functions are. Thus, the screen, channel and terminal chambers are distinguishable from one another in terms of exterior detailing; and each pair of siphon chambers has its own design, as do the two metering chambers.

The subtle variations within a common design theme suggest the appropriateness of considering the Weston aqueduct and its structures in a collective fashion, in which both function and form contribute to a distinguishable entity. The conduit itself presents an excellent illustration of various ways in which water is conveyed from one place to another across different kinds of topographic features. The chambers, with their simple, neo-Renaissance Revival forms display a classical formality that catches the eye wherever found, although their impact has in many cses been diminished by growth of brush and trees.

The only structure on the Weston to depart from the common vocabulary is the head chamber. Functionally, it is an integral component of the Weston Aqueduct, the point at which water was introduced into the conduit from Sudbury Reservoir. Its design, however, is not related to its functional relationship to the Weston, but to its spatial and visual relationship to the Sudbury Dam and gatehouse. In this respect, the Weston head chamber might most appropritely be considered part of the complex of structures at the lower end of the Sudbury Reservoir.

BIBLIOGRAPHY and/or REFERENCES

Massachusetts Board of Health, Report...Upon A Metropolitan Water Supply. Boston: Wright & Potter, 1895.
Metropolitan Water & Sewerage Board, 1st Annual Report (1902), 2nd Annual Report (1903), 3rd Annual Report (1904).
See also References for Individual Structures and Areas.