

OPERATION AND MAINTENANCE MANUAL
TOWN BROOK LOCAL PROTECTION PROJECT
QUINCY AND BRAINTREE, MASSACHUSETTS
VOLUME I

SECTION I. INTRODUCTION

1-01 AUTHORIZATION

The flood protection project on Town Brook in the city of Quincy and town of Braintree, Massachusetts, was authorized by the Water Resources Development Act of 1986, Public Law 99-662. The federally authorized portion of the Town Brook Local Protection Project consists of: construction of Town Brook Tunnel and Appurtenant Structures, improvements to the Town River channel below the tunnel outlet, modifications to Old Quincy Dam for flood control, and construction of the Centre Street, Burgin Parkway, and Braintree Culverts (Section 104 of P.L. 99-662). Other features not included in the federally authorized project, but vital to overall project function are described below.

1-02 PROTECTION PROVIDED

The Town Brook LPP provides flood protection to residential, commercial, and industrial areas in the urban areas of the flood plain in Quincy and Braintree.

1-03 ORGANIZATION OF MANUAL

Volume I of this manual covers features constructed by the U. S. Army Corps of Engineers and located in Quincy. These include the Town Brook Tunnel and Appurtenant Structures, and Town River Improvements.

Volume II of the manual covers the Corps reconstruction of the Old Quincy Reservoir Dam located in Braintree.

Volume III covers features constructed by the MDC and MA DPW. These include the Braintree culverts, the Route 3 culvert, the Centre Street culvert and junction structure, and the Burgin Parkway culvert.

1-04 PROJECT LOCATION AND GENERAL DESCRIPTION

Refer to Appendix E, Plate E-1 for location map showing relative location of all major flood protection features.

The overall project is located in the town of Braintree and the city of Quincy. It begins at its upstream end in Braintree at Old Quincy Reservoir dam which was reconstructed by the Corps.

The majority of the flow continues through the Howie Road diversion, also constructed by the Corps, until it rejoins Town Brook at the Worthington Circle conduit (Braintree culvert) built by the MDC. Some flow is also maintained in the portion of the brook parallel to the Howie Road diversion and that portion flows through two small culverts built by the MDC. Combined flow continues through the culvert under Route 3 which was built by MA DPW; then it crosses into Quincy and enters the Centre Street culvert built by the MDC. From the Centre Street junction structure, flow continues in Town Brook with overflows directed to the Burgin Parkway culvert built by the MDC. The brook and culvert flows rejoin at the intake to the Town Brook tunnel built by the Corps and located on the north side of School street just east of Fort Square. Brook flows continue through a short culvert under Burgin Parkway, while flows from the Burgin Parkway culvert and overflow from the brook enter the tunnel. The tunnel outlet is located between Washington Street and the Southern Artery where it rejoins Town Brook and flows into Town River Bay. Improvements to the portion of Town River between the tunnel outlet and the bay were made by the Corps.

The MDC has planned two future improvements; the Bigelow Street relief conduit and the Brook Road diversion. The Bigelow Street relief conduit consists of a culvert running along Revere Road and McGrath Highway and rejoining the brook at Elm Street. Also included are channel improvements to the brook between Washington Street and the tunnel outlet. The Brook Road diversion consists of a conduit which will run from the intersection of Roberts and Water Streets and re-enter the brook near the Fort Square area.

1-05 DATES OF CONSTRUCTION (TOWN BROOK TUNNEL AND TOWN RIVER IMPROVEMENTS)

The portion of the flood control project consisting of improvements to the Town River was constructed by P. Caliacco Corp. of Rockland, Massachusetts. Notice to proceed was issued on 4 November 1992, and construction was essentially completed by June, 1994. The portion of the flood control project consisting of Town Brook tunnel and appurtenant structures was constructed by Kajima-Marra-Majestic, A Joint Venture, of Pasadena, California. Notice to proceed was issued on 28 October 1993, and construction was functionally complete by September 1997.

1-06 DESCRIPTION OF PROJECT (TOWN BROOK TUNNEL AND TOWN RIVER IMPROVEMENTS)

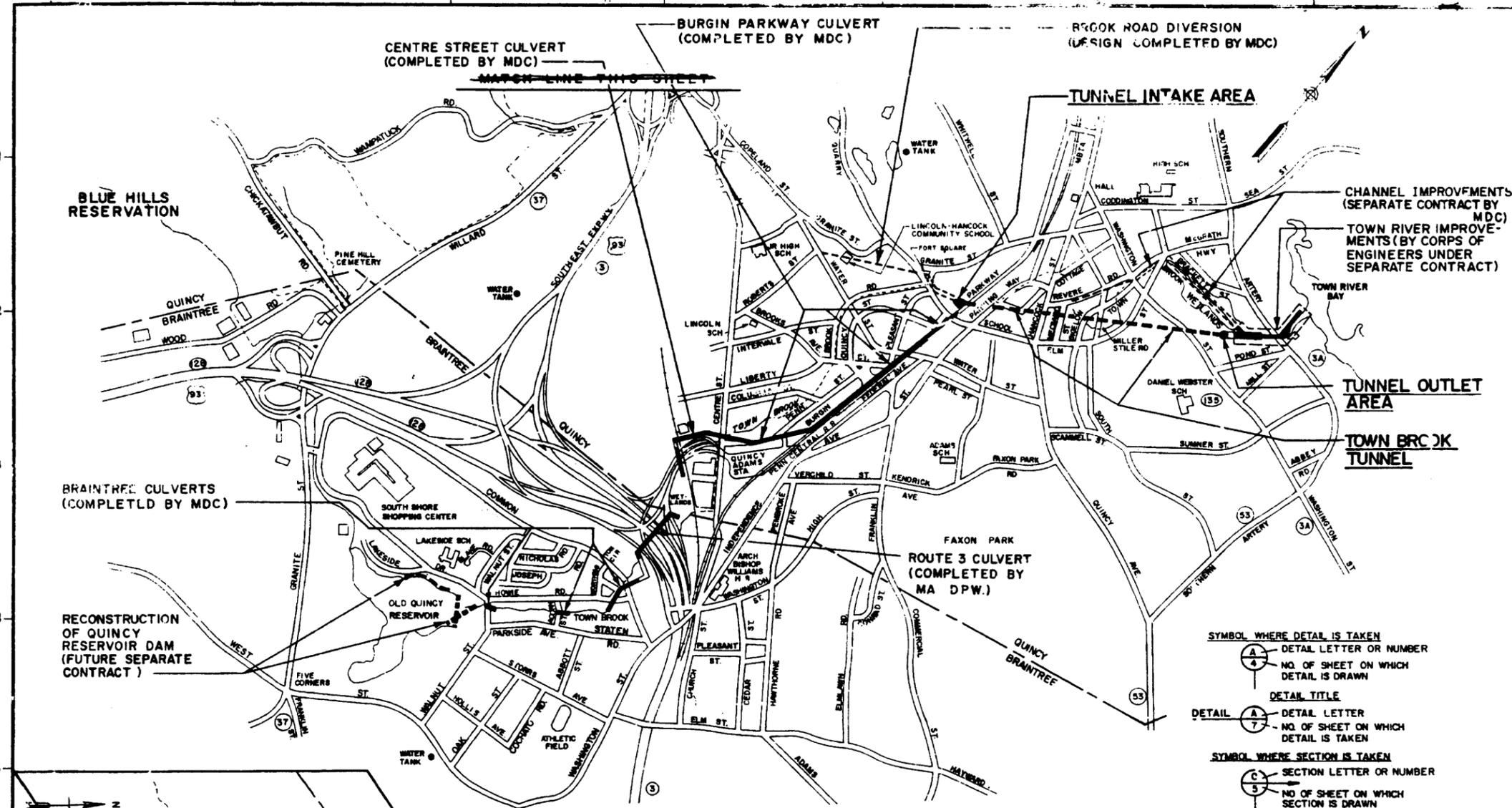
a. General. The portion of the completed flood protection project covered in Volume I of this manual consists of a 4060 foot long relief tunnel approximately 190 feet below the city of Quincy with intake shaft and structures located near School

Street and outlet shaft and structures located near the Southern Artery; and channel improvements to the Town River from a point near the outlet structure to Town River Bay.

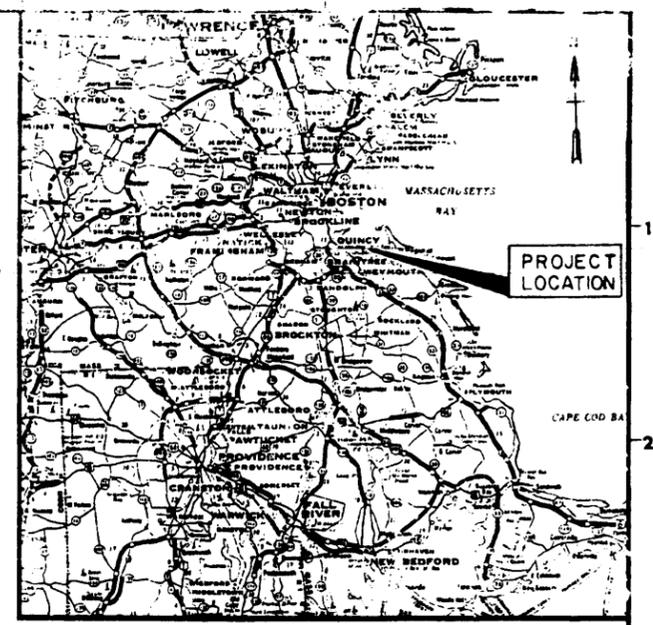
b. Channel Improvements. Channel improvements were made to widen channels and increase flow capacity. The portion of the Town River between a point approximately 300 feet upstream of the tunnel outlet structure and the Southern Artery was widened and lined on the bottom and sides with PVC coated gabion mattresses. Three 280 foot long reinforced concrete box conduits were installed to carry river and tunnel flows beneath the Southern Artery and adjacent parking lot. Downstream of the Southern Artery to the point where Town River enters Town River Bay, the channel was widened and provided with a layer of stone protection on the left bank.

c. Tunnel. A 12 foot diameter concrete lined tunnel was provided to convey excess flows beneath the city of Quincy during flood events. Water flows into the vertical intake shaft from Town Brook and from the Burgin Parkway culvert. Intake structures consist of a reinforced concrete overflow weir connecting the Town Brook channel to the tunnel intake shaft via a 30 foot long 8 x 10 foot box conduit. Water from the Burgin Parkway culvert flows to the tunnel intake shaft through a 48 x 50 foot reinforced concrete grit retention chamber. The vertical tunnel outlet shaft transitions to a horizontal concrete apron which widens into five 10 foot wide bays to convey tunnel discharge flows to the Town River.

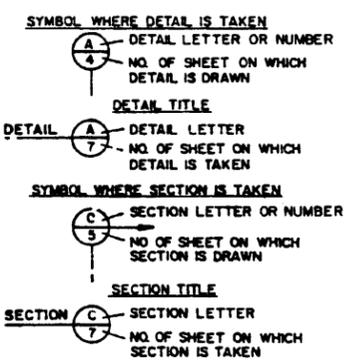
d. Tunnel Aeration Systems. An automatic aeration system consisting of a pumped water circulation system and a compressed air and diffuser system was provided to maintain the dissolved oxygen levels in the tunnel at 6.0 mg/L or above. The pumps, compressor and monitoring and control equipment are housed in two masonry structures; one located at the tunnel intake and one at the tunnel outlet.



GENERAL PLAN
SCALE: 1" = 800'

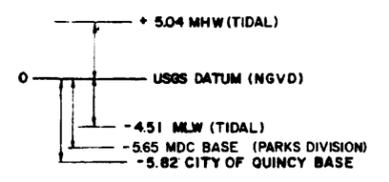


LOCATION MAP
SCALE: 1" = 10 MILES



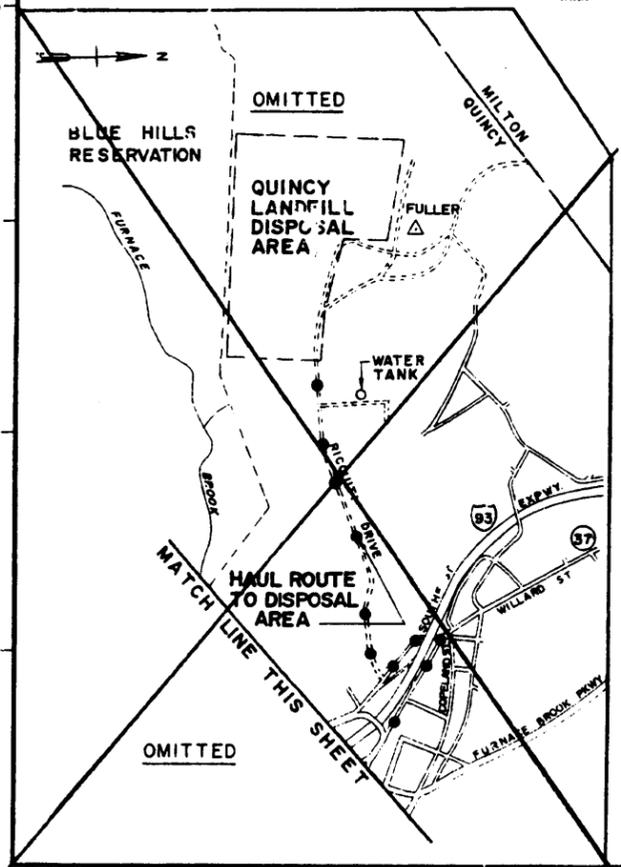
SECTION AND DETAIL SYMBOLS

DATUM RELATIONSHIP



GENERAL NOTES

- COORDINATES REFER TO MASSACHUSETTS COORDINATE SYSTEM.
- ELEVATIONS REFER TO MEAN SEA LEVEL AS ESTABLISHED BY THE U.S. COASTAL AND GEODETIC SURVEY (USGS) DATUM OF 1929, NOW REFERRED TO AS THE NATIONAL GEODETIC VERTICAL DATUM (N.G.V.).
- ELEVATIONS OF MEAN HIGH WATER (M.H.W.) AND MEAN LOW WATER (M.L.W.) ARE AS DETERMINED BY THE NATIONAL OCEANIC SURVEY AT THE TIDE GAGE LOCATED AT APPRAISERS' STORES BUILDING, BOSTON, MA., AND ARE REASONABLY REPRESENTATIVE OF CONDITIONS AT THE CONSTRUCTION SITE.

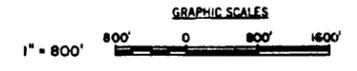


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Record Drawing
Contract no. DACW33-93-C-0064



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| REVISION DATE DESCRIPTION Final field corrections | |
| DEPARTMENT OF THE ARMY NEW ENGLAND DIVISION CORPS OF ENGINEERS WALTHAM, MASS. | |
| WATER RESOURCES DEVELOPMENT PROJECT QUINCY, MASSACHUSETTS TOWN BROOK LOCAL PROTECTION TUNNEL AND APPURTENANT STRUCTURES GENERAL PLAN AND INDEX | |
| DES. BY M.A.D. DR. BY R.F.E. CHECKED BY [Signature] REVIEWED BY [Signature] | APPROVED [Signature] DATE MAR. 1993 |
| SCALE AS SHOWN SPEC. NO. DACW33-93-C-0041 PLATE NO. E-1 DRAWING NUMBER TOW - 1 SHEET 1 | |