

# Massachusetts Cultural Resource Information System

## Scanned Record Cover Page

<b>Inventory No:</b>	BOU.901
<b>Historic Name:</b>	Buzzard's Bay Vertical Lift Railroad Bridge
<b>Common Name:</b>	
<b>Address:</b>	Cape Cod Canal
<b>City/Town:</b>	Bourne
<b>Village/Neighborhood:</b>	Buzzard's Bay
<b>Local No:</b>	10, 76
<b>Year Constructed:</b>	1935
<b>Architect(s):</b>	General Electric Company; Parsons, Klapp, Brinckerhoff; Waddell, John Alexander Low
<b>Architectural Style(s):</b>	Movable Vertical Lift
<b>Use(s):</b>	Other Rail Related; Other Transportation
<b>Significance:</b>	Engineering; Transportation
<b>Area(s):</b>	BOU.AF: Cape Cod Canal
<b>Designation(s):</b>	
<b>Building Materials(s):</b>	



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Commonwealth of Massachusetts  
Massachusetts Historical Commission  
220 Morrissey Boulevard, Boston, Massachusetts 02125  
[www.sec.state.ma.us/mhc](http://www.sec.state.ma.us/mhc)

This file was accessed on: Wednesday, May 6, 2020 at 3:11: AM

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1.



2. Town Bourne

Street address Main St. & Cape Cod Canal

Name Buzzards Bay Railroad Bridge

Use: original & present to span Canal

Present owner State Corps of Engineers

Open to public only to trains + suicides

Date 12/27/35 Style vertical lift railroad

Source of date Dept. of Army N.E. Division

Architect \_\_\_\_\_

Development of town/city \_\_\_\_\_

Architectural reason for inventorying: \_\_\_\_\_

only source of entrance & exit of railroads on Cape Cod OR part of Area # \_\_\_\_\_

3. CONDITION Excellent Good Fair Deteriorated Moved Altered Added \_\_\_\_\_

4. DESCRIPTION

FOUNDATION/BASEMENT: High Regular Low Material concrete

WALL COVER: Wood \_\_\_\_\_ Brick Stone Other steel

ROOF: Ridge Gambrel Flat Hip Mansard \_\_\_\_\_

Tower Cupola Dormer windows Balustrade Grillwork \_\_\_\_\_

CHIMNEYS: 1 2 3 4 \_\_\_\_\_ Center End Interior Irregular Cluster Elaborate

STORIES: 1 2 3 4 \_\_\_\_\_ ATTACHMENTS: Wings Ell Shed \_\_\_\_\_

PORCHES: 1 2 3 4 \_\_\_\_\_ PORTICO \_\_\_\_\_ Balcony

FACADE: Gable end: Front/side Ornament \_\_\_\_\_

Entrance: Side Front: Center/Side Details: \_\_\_\_\_

Windows: Spacing: Regular/Irregular Identical/Varied \_\_\_\_\_

Corners: Plain Pilasters Quoins Cornerboards \_\_\_\_\_

5. Indicate location of building in relation to nearest cross streets and other buildings \_\_\_\_\_

6. Footage of structure from street 500

Property has \_\_\_\_\_ feet frontage on street

Recorder Robert C. Kozlowski

For Town of Bourne  
70.792-796

Photo # \_\_\_\_\_ Date \_\_\_\_\_

REVERSE S \_\_\_\_\_ DEC 18 REC'D 1972

RELATION OF SURROUNDING STRUCTURE

- 1. Outbuildings \_\_\_\_\_
- 2. Landscape Features: Agriculture Open Wooded Garden: Formal/Informal  
 Predominant features \_\_\_\_\_  
 Landscape architect \_\_\_\_\_
- 3. Neighboring Structures  
 Style: Colonial Federal Greek Revival Gothic Revival Italian Villa Lombard Rom.  
 Venetian Gothic Mansard Richardsonian Modern  
 Use: Residential Commercial Religious Conditions: Excellent Good Fair Deteriorated

GIVE A BRIEF DESCRIPTION OF HISTORIC IMPORTANCE OF SITE (Refer and elaborate on theme circled on front of form)

The Buzzards Bay Vertical Lift Railroad Bridge spans the Cape Cod Canal at Buzzards Bay, Massachusetts.  
 The single track vertical span, 544 feet in length and weighing 2050 tons was erected in 1935 at a cost of \$1,560,000. For many years it was the longest such span in the world and is exceeded today by one other vertical lift bridge at Staten Island, New York. There are only three bridges of this type in the world.

BIBLIOGRAPHY AND/OR REFERENCE

Department of the Army,  
 New England Division  
 Corps of Engineers

RESTRICTIONS Railroad use  
 Original Owner: Massachusetts  
 Deed Information: Book Number \_\_\_\_\_ Page \_\_\_\_\_, State owned \_\_\_\_\_ Registry of Deeds



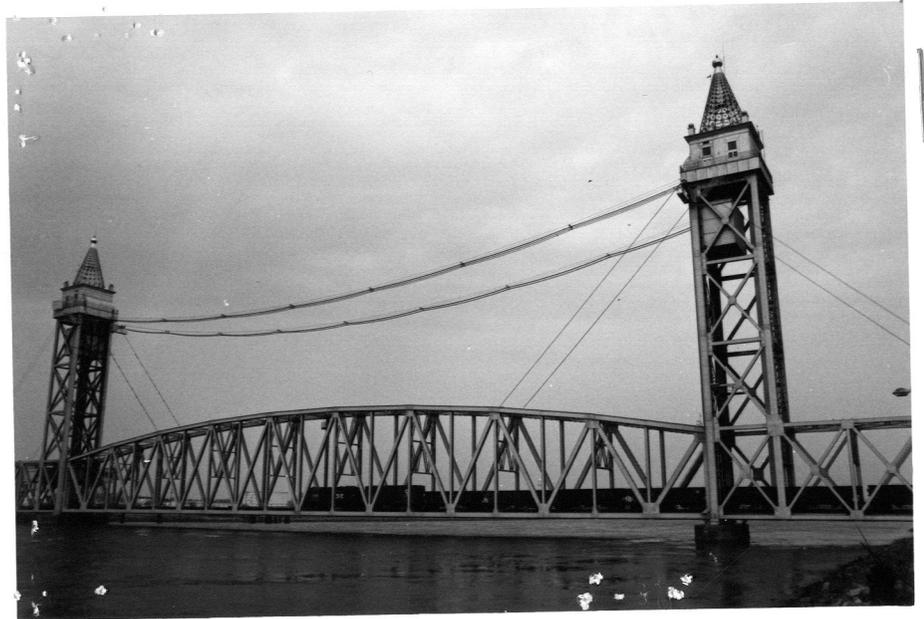
1



2



3



4



5

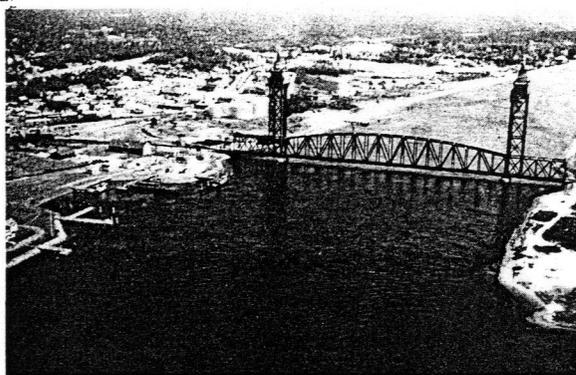
## BUZZARDS BAY RAILROAD BRIDGE

and assembled with the assistance of a lighter. The Canal was closed to traffic until the full span was completed and put in a raised position.

The span is actuated by four, 150 h. p., 440 volt, 3 phase, 60 cycle electric motors. Two of the motors are used for the operational leveling of the bridge span through Selsyn electric ties. Auxiliary electric power is provided for bridge operations in case of commercial power failure by a 500,000 watt Diesel generating plant located on the north side of the Canal, east of the bridge.

The railway lift span is normally kept in a raised (open) position except for the passage of trains or for maintenance purposes, serves the New York, New Haven and Hartford Railroad Company, and is operated by personnel of the Railroad on a 100% reimbursable basis by the Government. The vertical clearance of the lift span in a raised (open) position is 136.7 feet at mean high water. The span in a lowered (down) position has a vertical clearance of 7 feet at mean high water. The time interval for raising or lowering the span is approximately 2-1/2 minutes.

The main counterweights are 1,000 tons each and the auxiliary counterweights are 50 tons each. In actual operation the lift span is approximately 50 tons heavier than the main counterweights to facilitate seating and locking of the span. Adjustment of the weight of the main counterweights is made by adding or taking off 135-pound concrete balance blocks. The auxiliary counterweights compensate for the weight transfer of the 80 main counterweight cables when the span is in the open position. The main counterweights are suspended by 40, 2-1/4 inch diameter wire ropes, 10 cables to each of the four main sheaves located in the tower machinery rooms. Each sheave weighs 29 tons and is 16 feet 10 inches in diameter. The sheaves cycle 2-1/2 revolutions for a full opening or closing of the bridge span.



Railroad Bridge in closed (down) position



"Let us Strive"

### To Visitors The Corps of Engineers welcomes you

PRESENT-DAY activities and achievements of the U. S. Army Corps of Engineers greatly surpass in scope any of its accomplishments in a long and glorious history dating back to its origin during the early days of the Revolution.

The Corps is constantly engaged in planning or building dams, in deepening and widening channels in our navigable rivers and harbors; in the improvement of port facilities for shipping; in reclaiming and restoring beaches; building hospitals for the Veterans Administration; voluminous projects for the Army and Air Force including airbase improvements, coastal and inland missile sites, housing for military personnel and their dependents, communications facilities for the Nation's warning systems; maintaining and improving the greatest stockpile of construction equipment in the world, and carrying on a continuing program of research and development.

The Corps motto "Essayons" means "LET US STRIVE." These words fittingly exemplify the ideal of service to the country and its people. For nearly 200 years the Corps has been striving in its Civil Works program to aid all regions where assistance or improvements are needed.

The New England Division, among its many responsibilities, lists the Cape Cod Canal as one of its most worthwhile projects.

The Buzzards Bay Vertical Lift Railroad Bridge which spans the Cape Cod Canal at Buzzards Bay, Massachusetts, was constructed for and under the supervision of the Corps of Engineers, U. S. Army. Construction was commenced on 12 December 1933 and the lift span put into operation on 27 December 1935.

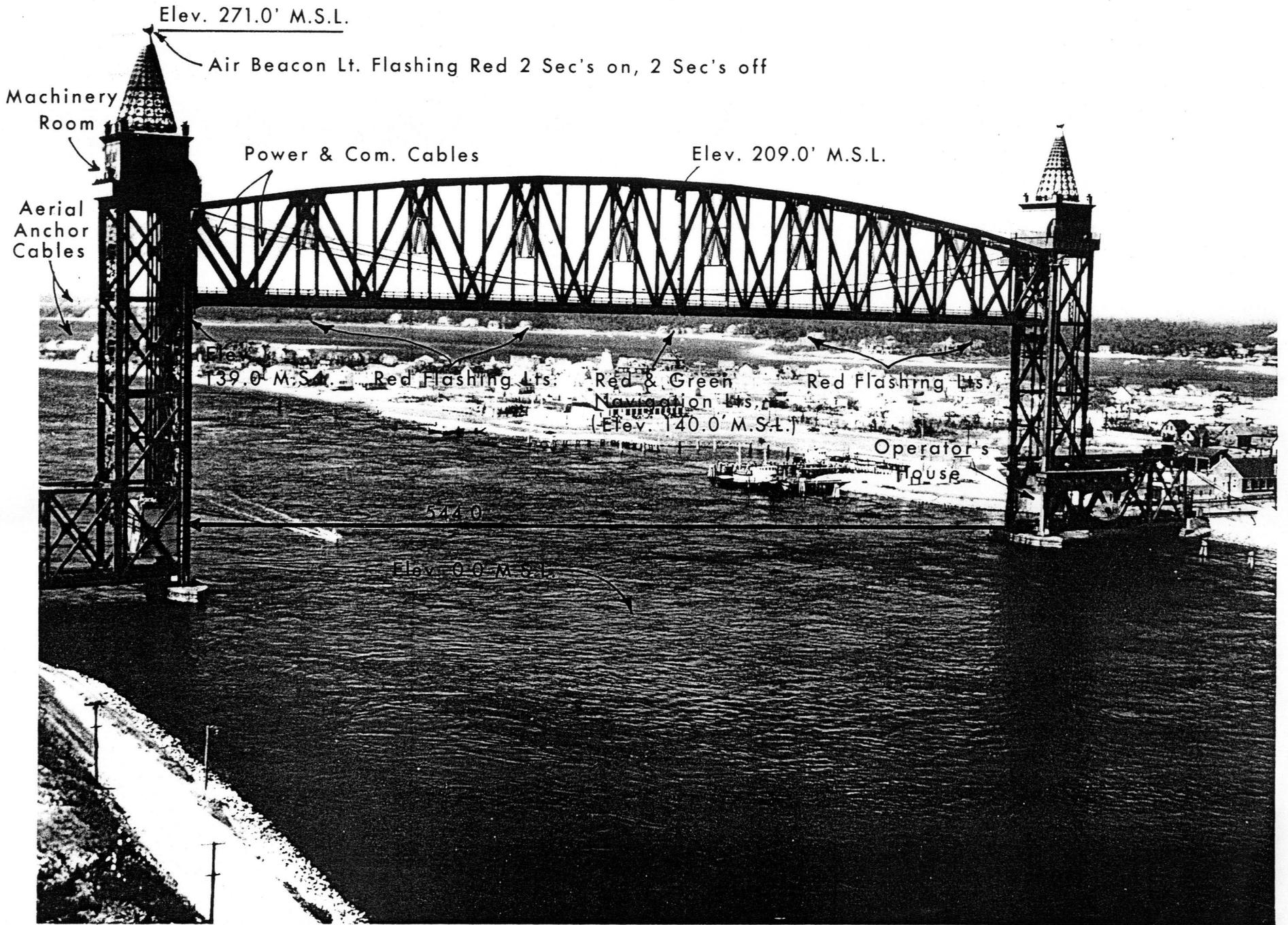
The single track vertical span, 544 feet in length and weighing 2050 tons was erected in 1935 at a cost of \$1,560,000. For many years it was the longest such span in the world and is exceeded today by one other vertical lift bridge at Staten Island, New York.

The 88 x 44 foot channel pier bases of the bridge were constructed within cofferdams, with 75-foot-long sheet piling. Excavation of the cofferdams was done in the dry by clamshell buckets and dewatering done with the use of well points. Due to the large number of boulders met, it was not possible to excavate to the required grade of 62 feet below mean sea level (Mean sea level = elevation 100). A redesign of the channel piers called for excavation to the grade of 45 feet below mean sea level. To obtain adequate foundation bearing for the channel piers, the reduction in the depth of excavation was compensated by the addition of a pile mat of 324 oak piles, 38 to 40 feet long, driven to refusal and cut off four feet above the revised excavation grade of 45 feet mean sea level. The cofferdams were then back-filled to the grade of 25 feet below mean sea level with reinforced concrete, placed in the dry. Upon completion of the channel pier construction, all sheet piling of the cofferdams was cut off at the top of the pier bases.

The north and south bridge abutments were also constructed by the use of sheet pile cofferdams. One hundred twelve oak piles, 35 to 40 feet long, were put under their bases when a soils test disclosed a deficiency of bearing power of the foundation material.

Initial construction of the superstructure of the railroad bridge comprised the erection of the approach spans and the towers. Temporary erection towers placed on top of the approach truss spans of the bridge were used in the construction of the north and south towers and for installing the heavy mechanical and electrical equipment in the machinery rooms of the towers.

The 18-panel vertical lift span was erected in place in a lowered position. Six panels at the north and south ends of the span were constructed on pile bent false work and the remaining six center panels cantilevered out from the ends of the panels in place



Elev. 271.0' M.S.L.

Air Beacon Lt. Flashing Red 2 Sec's on, 2 Sec's off

Machinery Room

Power & Com. Cables

Elev. 209.0' M.S.L.

Aerial Anchor Cables

Elev. 139.0' M.S.L.

Red Flashing Lts.

Red & Green Navigation Lts.

(Elev. 140.0' M.S.L.)

Red Flashing Lts.

Operator's House

544.0

Elev. 0.0' M.S.L.

**NATIONAL REGISTER ELIGIBILITY OPINION**

TO: **Betsy Friedberg**  
DATE: **4/26/96**  
FROM: **W. Smith**

RETURN TO REVIEWER \_\_\_\_\_

DATE

TOWN: **Bourne**

PROPERTY : **(Bridge spans the Cape Cod Canal at Buzzard Bay ) Main Street and Cape Cod Canal**  
(MHD NO. AND ADDRESS)

COMMON/HISTORIC NAME: **Buzzard Bay Railroad Bridge**

1. Does this property meet the criteria for National Register eligibility?

<u>Individually</u>	YES <input checked="" type="checkbox"/>	As a <u>contributing</u> element in a National Register District?	YES <input checked="" type="checkbox"/>
	NO		NO
		Located within, or adjacent to a historic district or potentially eligible historic district?	YES <input checked="" type="checkbox"/>
			NO
A. <u>Criteria</u>		More information needed	YES
A. Events			NO
B. Lives			
C. Characteristics			
D. Information			

B. Level

Local

State

National

2. Statement of Significance or why not eligible?

**1935 Vertical Lift Railroad bridge. When constructed, the single track, 18 panels, vertical span, 544 feet in length and weighing 2050 tons , was the longest span for this type structure in the world. The vertical span is supported by 271 foot high towers. The approach spans has 4 panels each. The vertical span is activated by four 150 horse power electric motors and auxiliary electric power is available from a 500,000 watt diesel generating plant located on the north side of the canal.**

**The New York firms of Parson, Klapp, and Douglas and the firm of Mead and White prepared the plans and specifications. The Nationally significant structure frames the west end of the canal is operated and maintained by the US Army Corps of Engineers.**

Determination of Eligibility Letter Written

Filed in ER File (Date)