

STRUCTURES INSPECTION FIELD REPORT

2-DIST 04 B.I.N. 7YW

BR. DEPT. NO. W-04-016

OTHER INSPECTION

CITY/TOWN <b>WALTHAM</b>	8-STRUCTURE NO. <b>W04016-7YW-MUN-BRI</b>	11-Kilo. POINT <b>000.000</b>	90-ROUTINE INSP. DATE <b>Sep 3, 2014</b>	INSPECTION DATE <b>Oct 7, 2014</b>
07-FACILITY CARRIED <b>HWY BEAVER ST</b>	MEMORIAL NAME/LOCAL NAME	27-YR BUILT <b>1850</b>	106-YR REBUILT <b>1900</b>	*YR REHAB'D (NON 106) <b>0000</b>
06-FEATURES INTERSECTED <b>WATER BEAVER BROOK</b>	26-FUNCTIONAL CLASS <b>Urban Minor Arterial</b>	DIST. BRIDGE INSPECTION ENGINEER T. G. Weil		
43-STRUCTURE TYPE <b>219 : Concrete continuous Culvert</b>	22-OWNER City/ Municipal <b>Highway A</b>	21-MAINTAINER City/ Municipal <b>Highway A</b>	TEAM LEADER <i>L. Hayes</i>	
107-DECK TYPE <b>1 : Concrete Cast-in-Place</b>	WEATHER <b>cloudy</b>	TEMP. (air) <b>21°C</b>	TEAM MEMBERS <b>A. MARLIN</b>	

**WEIGHT POSTING** *Not Applicable*  X

Actual Posting:  N  N  N  N  
 Recommended Posting:  N  N  N  N  
 Waived Date: 00/00/00 E3DMT Date: 00/00/00

Signs In Place (Y=Yes, N=No, NR=Not Required):  
 Legibility/Visibility

At bridge		Advance	
E	W	E	W
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PLANS (Y/N):  N  
 (V.C.R.) (Y/N):  N  
 TAPE#: \_\_\_\_\_

**RATING**

Rating Report (Y/N):  N Date: \_\_\_\_\_ Request for Rating or Rerating (Y/N):  N

If YES please give priority: HIGH ( ) MEDIUM ( ) LOW ( )

Inspection data at time of existing rating  
 I 58: - I 59: - I 60: - I 62: - Date: 00/00/00

REASON: \_\_\_\_\_

**MEMBER(S):**

MEMBER	CRACK (Y/N)	WELD'S CONDITION (0-9)	LOCATION OF CORROSION, SECTION LOSS (%), CRACKS, COLLISION DAMAGE, STRESS CONCENTRATION, ETC.	CONDITION		INV. RATING OF MEMBER FROM RATING ANALYSIS			Deficiencies
				PREVIOUS	PRESENT	H-20	3	3S2	
				(0-9)	(0-9)				
A	N	N	See remarks in comments section.	5	5	0	0	0	M-P
B									
C									
D									
E									

List of field tests performed:

	I-58	I-59	I-60	I-61	I-62
(Overall Previous Condition)	-	-	-	2	2
(Overall Current Condition)	-	-	-	2	2

**DEFICIENCY:** A defect in a structure that requires corrective action.

**CATEGORIES OF DEFICIENCIES:**

**M= Minor Deficiency** - Deficiencies which are minor in nature, generally do not impact the structural integrity of the bridge and could easily be repaired. Examples include but are not limited to: Spalled concrete, Minor pot holes, Minor corrosion of steel, Minor scouring, Clogged drainage, etc.

**S= Severe/Major Deficiency** - Deficiencies which are more extensive in nature and need more planning and effort to repair. Examples include but are not limited to: Moderate to major deterioration in concrete, Exposed and corroded rebars, Considerable settlement, Considerable scouring or undermining, Moderate to extensive corrosion to structural steel with measurable loss of section, etc.

**C-S= Critical Structural Deficiency** - A deficiency in a structural element of a bridge that poses an extreme unsafe condition due to the failure or imminent failure of the element which will affect the structural integrity of the bridge.

**C-H= Critical Hazard Deficiency** - A deficiency in a component or element of a bridge that poses an extreme hazard or unsafe condition to the public, but does not impair the structural integrity of the bridge. Examples include but are not limited to: Loose concrete hanging down over traffic or pedestrians, A hole in a sidewalk that may cause injuries to pedestrians, Missing section of bridge railing, etc.

**URGENCY OF REPAIR:**

**I= Immediate** - [Inspector(s) immediately contact District Bridge Inspection Engineer (DBIE) to report the Deficiency and to receive further instruction from him/her].

**A= ASAP** - [Action/Repair should be initiated by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) upon receipt of the Inspection Report].

**P= Prioritize** - [Shall be prioritized by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) and repairs made when funds and/or manpower is available].

X=UNKNOWN      N=NOT APPLICABLE      H=HIDDEN/INACCESSIBLE      R=REMOVED

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## REMARKS

### BRIDGE ORIENTATION

For this report the approaches are South and North and the elevations are West and East. Beaver Brook flows from East to West.

### GENERAL REMARKS

This report is being generated to document any additional movement of the deficiencies located on the North and South culvert walls. For a complete description of all of the observed deficiencies on this structure, see the Initial Culvert & Special Member Inspection report dated September 3, 2014.

### ITEM 62 - CULVERT

#### Item 62.3 - Walls

The South wall has a full height crack located 14'-10" from the West edge of the culvert that has split the South wall into two sections. The base of both sections of the South wall are leaning in towards the channel. There is visible movement of the Western end of the South wall at the location of the crack; there is a 1" displacement at the waterline. The Eastern section of the wall consistently measures 9/16" over 24" out of plumb and the Western section measures 1-1/4" over 24" out of plumb. There is settlement of the Western section of wall at the location of the crack; the crack between the top of wall and roof is 3/4" thick for a length of 25" and transitions to a 1/8" wide crack for another 49" going towards the Southwest corner.

There is a full height crack in the North wall that is located 14'-4" from the West edge of the culvert. There is a spall in the face of the wall at the waterline measuring 26" wide x 3" deep that continues down to the footing. The footing is undermined and spalled below this location.

Several locations were marked on both of the North and South Walls during the inspection on 9-30-14 in order to have an exact location to document the measurements of the cracks and displacement of the walls at the chosen locations. Crack gauges were installed at both walls on 9-30-14 across these noted cracks to monitor movement. These locations will be observed weekly and measurements recorded in order to maintain a weekly record of the above noted deficiencies (see Photos # 1, #2 & #3).

#### Item 62.9 - Wearing Surface

The roadway has been reduced to a single lane over the center of the culvert to move traffic away from the edges of the culvert roof. Traffic is travelling Northbound only and is not being allowed to drive over the steel plates located on the East side of the culvert (see Photos #4, #5 & #6). Beaver Street has been closed to Southbound traffic from Waverley Oaks Road and a City of Waltham Police Detail has been present at the North side of the culvert.

#### Item 62.13 - Member Alignment

See Chart #1 outlining the measurements observed during today's inspection.

#### Chart / Photo Log

Chart 1 :

- Photo 1 : South wall, locations of measurements being taken at settlement cracks
- Photo 2 : South wall showing the crack gauge that was installed on 9-30-14
- Photo 3 : North wall, locations of measurements being taken at settlement crack
- Photo 4 : Traffic has been restricted to a single lane travelling Northbound over the center of the culvert
- Photo 5 : Traffic has been restricted from driving over the steel plates located on the East side of the culvert

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**REMARKS**Chart / Photo Log (Cont'd)

Photo 6 : Cracks in pavement indicate the approximate limits of the steel plates present under the wearing surface

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## CHARTS

### Bridge No. W-04-016, BIN 7YW

#### Weekly Monitoring Measurements

Location	Date & Measurement				
	9/30/14	10/8/14			
A	5/16"	3/8"			
B	2-1/4"	2-1/4"			
C	3-7/8"	3-7/8"			
D	1-0"	1-0"			
E	0-3/4"	0-3/4"			
F	0-1/2"	0-1/2"			
G	0-9/16"	0-9/16"			
H	1-3/16"	1-3/16"			
I	2-5/8"	2-5/8"			
J	4-1/16"	4-1/16"			

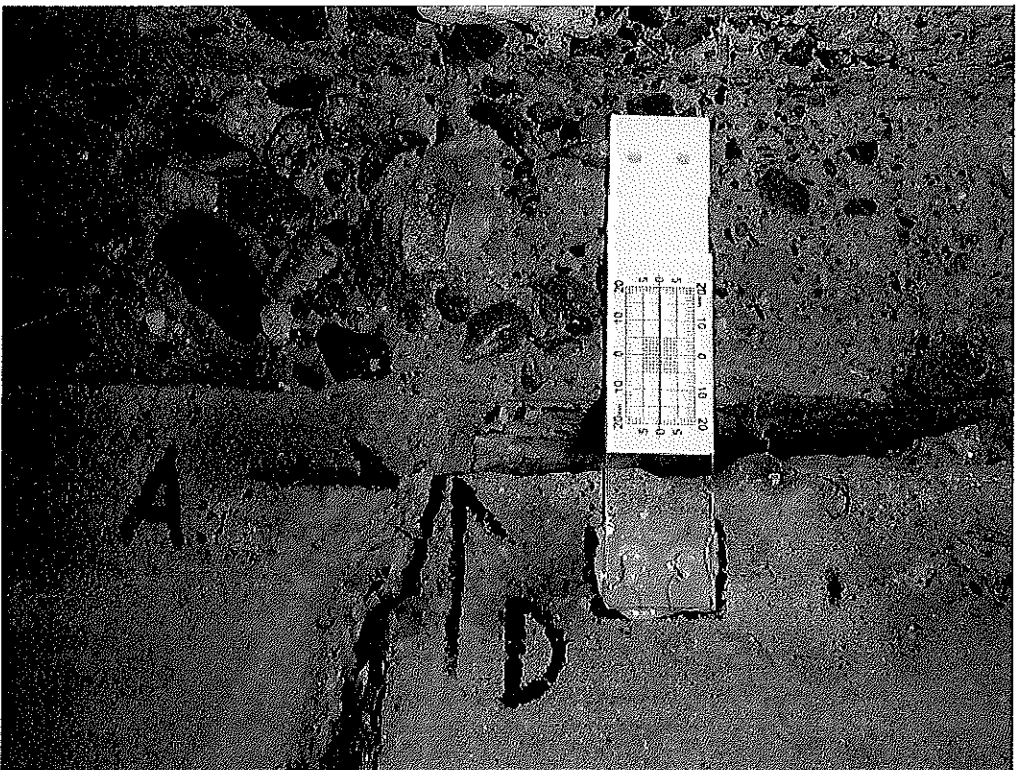
Chart 1:

CITY/TOWN <b>WALTHAM</b>	B.I.N. <b>7YW</b>	BR. DEPT. NO. <b>W-04-016</b>	8-STRUCTURE NO. <b>W04016-7YW-MUN-BRI</b>	INSPECTION DATE <b>OCT 7, 2014</b>
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**PHOTOS**

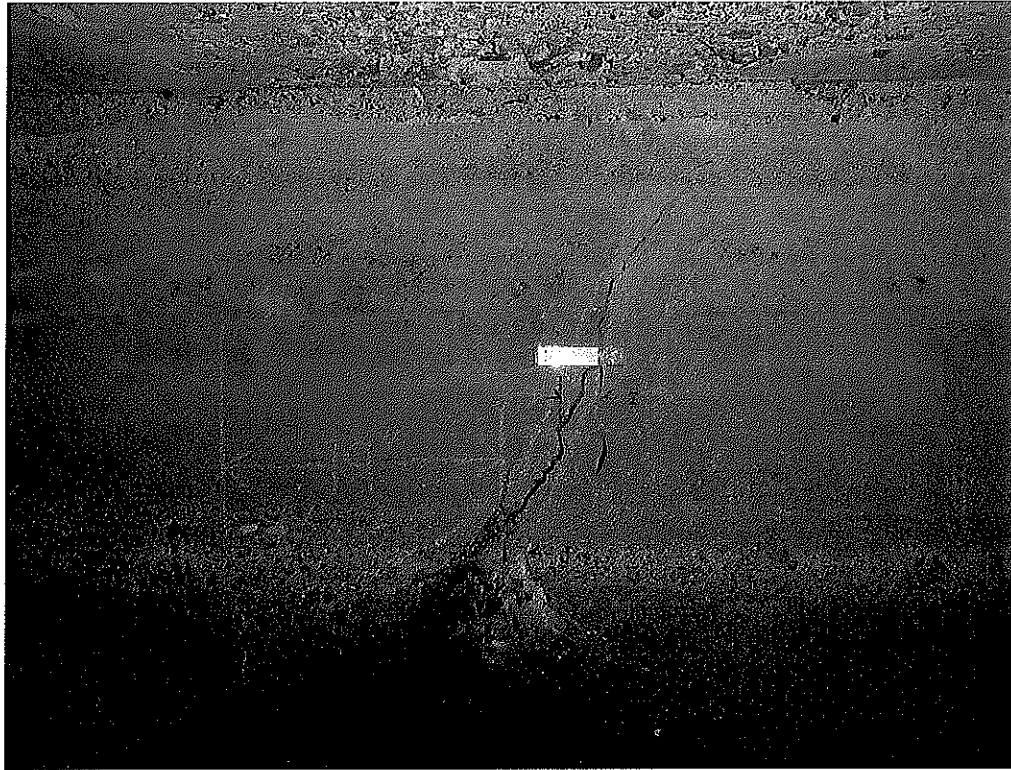


**Photo 1: South wall, locations of measurements being taken at settlement cracks**



**Photo 2: South wall showing the crack gauge that was installed on 9-30-14**

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**PHOTOS**

**Photo 3:** North wall, locations of measurements being taken at settlement crack



**Photo 4:** Traffic has been restricted to a single lane travelling Northbound over the center of the culvert

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**PHOTOS**

**Photo 5:** Traffic has been restricted from driving over the steel plates located on the East side of the culvert



**Photo 6:** Cracks in pavement indicate the approximate limits of the steel plates present under the wearing surface