III. RECOMMENDATIONS OF REPAIRS TO TOWN OWNED BRIDGES

The following is a list, by bridge, of repairs that SELLS recommends to be immediate priorities. These repairs are all associated with extending the long term structural capacity and/or upgrading significantly substandard safety features.

Bridge No. A-02-007 (Lawsbrook Road over Fort Pond Brook)

SELLS recommends that the current steel W-beam guardrail/bridge rail be replaced in its entirety with a Modified Thrie Beam Bridge Rail and repairs be done to the concrete safety curbs. Based on the recommended repairs, the preliminary construction cost estimate to accomplish this work is approximately **$44,000**.

Bridge No. A-02-008 (River Street over Fort Pond Brook at Carriage Drive)

SELLS recommends that the corrugated steel deck arch and lower connection plates be cleaned and coated with a new protective coating, particularly at the lower ends where the steel plate meets the concrete abutments. Based on the recommended repairs, the preliminary construction cost estimate to accomplish this work is approximately **$41,000**.

Bridge No. A-02-009 (Brook Street over Nashoba Brook)

SELLS recommends that the steel corrugated pipe arch culverts be cleaned and coated with a new protective coating. Also, voids between the headwalls and pipe arches shall be filled to prevent the infiltration of water behind the pipe arches. Lastly, the stone masonry bridge rail and headwalls shall be repointed to fill the large gaps in the mortar. Based on the recommended repairs, the preliminary construction cost estimate to accomplish this work is approximately **$92,000**.

Bridge No. A-02-010 (Parker Street over Fort Pond Brook)

SELLS recommends that the current steel W-beam guardrail/bridge rail be replaced in its entirety with a Modified Thrie Beam Bridge Rail and the steel corrugated deck arch and lower connection plates be cleaned and coated with a new protective coating, particularly at the lower ends where the steel plate meets the concrete abutments. Based on the recommended repairs, the preliminary construction cost estimate to accomplish this work is approximately **$87,000**.

Bridge No. A-02-011 (Wetherbee Street over Nashoba Brook)

SELLS recommends that no work be done to this bridge at this time. The repairs that are recommended to be done to this structure would provide minimal benefits at this time. The Town should continue to monitor MassHighway Bridge Inspection Reports for changes to the bridge's condition.

Bridge No. A-02-018 (Concord Road over Nashoba Brook)

SELLS recommends that no work be done to this bridge at this time. The repairs that are recommended to be done to this structure would provide minimal benefits at this time. The Town should continue to monitor MassHighway Bridge Inspection Reports for changes to the bridge's condition.

Repairs are needed to the channel walls downstream from the bridge. As previously mentioned, these walls may be beyond the Town's Right of Way (owned by others.) Therefore, there may be a question as to whether the Town is responsible for maintenance of these walls.

Bridge No. A-02-020 (River Street over Fort Pond Brook at Merriam Lane)

SELLS recommends that the steel corrugated pipe culverts be cleaned and coated with a new protective coating. Also, voids between the headwalls and pipe arches shall be filled to prevent the infiltration of water behind the pipe arches. Riprap shall also be placed at the culvert ends to prevent undermining. Based on the recommended repairs, the preliminary construction cost estimate to accomplish this work is approximately **$100,000**.

Bridge No. A-02-021 (River Street over Fort Pond Brook at Vanderbilt Road)

SELLS recommends that the steel corrugated pipe arch culverts be cleaned and coated with a new protective coating. Also, voids between the headwalls and pipe arches shall be filled to prevent the infiltration of water behind the pipe arches. Riprap shall also be placed at the culvert ends to prevent undermining and the failed section of the Southwest wingwall should be rebuilt. Based on the recommended repairs, the preliminary construction cost estimate to accomplish this work is approximately **$74,000**.

Bridge No. A-02-022 (Stow Street over Fort Pond Brook)

SELLS recommends that the remaining concrete be removed from the bottom portion of the concrete encased steel beams and repairs be done to the faces of both abutments and both faces of the pierwall. Based on the recommended repairs, the preliminary construction cost estimate to accomplish this work is approximately **$26,000**.

Bridge No. A-02-023 (Martin Street over Fort Pond Brook)

SELLS recommends that the steel corrugated pipe arch culverts be cleaned and coated with a new protective coating, weld/fasten steel corrugated plates over the areas where there is 100% section loss (holes) and severe rusting and steel delamination, place a reinforced concrete paved invert in both pipe arches, fill the voids between the headwalls and the pipe arches to prevent the infiltration of water behind the pipe arches and place riprap at both ends to prevent undermining. Based on the recommended repairs, the preliminary construction cost estimate to accomplish this work is approximately **$88,000**.

IV. PRIORITY OF REPAIRS TO TOWN OWNED BRIDGES

The information provided above for the recommended repairs to the ten (10) Town Owned Bridges shows that repairs will be needed to a majority of the bridge structures to extend their service life. It shall be noted that the cost of water control for the repairs to be performed "in-the-dry" as well as for protection of the waterway is a significant cost for each of the bridge structures. In fact, the cost of water control is the basis for limiting our recommendations on several of the bridges. It shall also be noted that the water control measures, repointing of the stone masonry walls and other bridge repairs may require temporary easements and/or rights of entry from adjacent property owners at each of the bridge locations. The following is a priority list, by bridge, that indicates what SELLS believes should be the Town's approach to repairs on these structures. There may of course be savings by grouping similar work by repair/bridge type. For example, SELLS recommends that the Town's top priority should be the corrugated steel pipe culvert structures and in particular repairing and replacing the coating of these pipes as this is the primary structural member for these bridges.

1. Bridge No. A-02-023 (Martin Street over Fort Pond Brook) – Repairing the holes in the pipes, replacing the protective coating and placing a concrete invert should be the Town's top priority. These repairs are essential in order to ensure the current load carrying capacity of the structure.
2. Bridge No. A-02-009 (Brook Street over Nashoba Brook) – Replacing the protective coating and sealing the voids around the pipe ends is a high priority for this structure and should be addressed immediately.
3. Bridge No. A-02-021 (River Street over Fort Pond Brook at Vanderbilt Road) – Replacing the protective coating and sealing the voids around the pipe ends is a high priority for this structure and should be addressed immediately.
4. Bridge No. A-02-020 (River Street over Fort Pond Brook at Merriam Lane) – Replacing the protective coating and sealing the voids around the pipe ends is a high priority for this structure and should be addressed immediately.
5. Bridge No. A-02-008 (River Street over Fort Pond Brook at Carriage Drive) – Replacing the protective coating, primarily at the arch ends, is a moderate priority for this structure and should be addressed. However, it is not as critical as the corrugated pipes since the arch ends are not constantly exposed to water and do not exhibit the same level of deterioration even though this structure is significantly older than the corrugated pipe bridges.
6. Bridge No. A-02-022 (Stow Street over Fort Pond Brook) – This structure requires moderate repairs to the abutments and pierwall that can be accomplished for a relatively low cost of construction. However, there is already a full set of bridge replacement drawings for this bridge. SELLS recommends that these drawings, through the Town and MassHighway, be revisited to pursue future replacement of the bridge through MassHighway's Footprint Bridge Program.
7. Bridge No. A-02-010 (Parker Street over Fort Pond Brook) – This structure requires minor repairs to the deck arch and abutments without much benefit. It is

recommended that the substandard bridge rail be replaced to address safety concerns and the Town seek the aid of MassHighway for possible future replacement.

8. Bridge No. A-02-007 (Lawsbrook Road over Fort Pond Brook) – This structure requires minor repairs to the deck and concrete "T" beams. The cost of water control would be expensive and difficult to accomplish and therefore the repairs needed on the underside of the bridge are not recommended considering the limited benefit they would provide. It is recommended that the existing substandard bridge rail be replaced to address a safety concern and the Town seek the aid of MassHighway for possible future replacement considering the age and condition of this structure.
9. Bridge No. A-02-011 (Wetherbee Street over Nashoba Brook) – This structure requires minor repairs that will provide minimal benefits to the long term life of the structure and are therefore not recommended at this time because of the high cost associated with water control.
10. Bridge No. A-02-018 (Concord Road over Nashoba Brook) – This structure requires minor repairs that will provide minimal benefits to the long term life of the structure and are therefore not recommended at this time because of the high cost associated with water control.

V. WETLAND PERMITTING DISCUSSION

Work will be required in the waterway at six (6) of the eight (8) recommended bridge locations to accomplish the necessary repairs. The water control measures shown in the Plans represent current methods used by MassHighway in diverting water so that work can be accomplished "in-the-dry" and so that sediments can be contained. There will be temporary impacts to Land Under Water as a result of installing cofferdams to accomplish repairs "in-the-dry." In addition, there will be permanent impacts at those bridges where new riprap is proposed. These permanent impacts are limited to approximately 150 SF to 250 SF at each of the three (3) bridges where riprap is recommended.

VI. PRELIMINARY CONSTRUCTION COST ESTIMATE

The total construction cost, for all ten (10) Town Owned Bridges, at the Phase I - Preliminary Report design level is estimated to be approximately **$875,000**, which cost does not include the cost for any utility work or right-of-way acquisitions. However, based on the recommendations for repairs from SELLS, the total construction cost estimate for the repairs that will be beneficial to the long term life of the bridge is approximately **$552,000**. (See Appendix A for item summary sheets for each bridge structure)

MASSACHUSETTS HIGHWAY DEPARTMENT
STRUCTURES INSPECTION FIELD REPORT
ROUTINE ARCH INSPECTION

2-DIST	B.I.N.	BR. DEPT. NO.
03	255	A-02-008

CITY/TOWN	8.-STRUCTURE NO.	11-Kilo. POINT	41-STATUS	90-ROUTINE INSP. DATE
ACTON	A02008-255-MUN-NBI	001.288	A:OPEN	DEC 5, 2005

07-FACILITY CARRIED	MEMORIAL NAME/LOCAL NAME	27-YR BUILT	106-YR REBUILT	YR REHAB'D (NON 106)
HWY RIVER ST		1937	0000	0000

06-FEATURES INTERSECTED	26-FUNCTIONAL CLASS	DIST. BRIDGE INSPECTION ENGINEER
WATER FORT POND BROOK	Urban Local	L. A. Gauthier

43-STRUCTURE TYPE	22-OWNER	21-MAINTAINER	TEAM LEADER J. Read	PROJ MGR Transystems
Steel Arch - Deck	Town Agency	Town Agency		

107-DECK TYPE	WEATHER	TEMP. (air)	TEAM MEMBERS
Not applicable	Cloudy	-5°C	T. TAYLOR

ITEM 58 — DECK: N

		DEF
1. Wearing surface	7	-
2. Deck Condition	N	-
3. Spandrel Fill	7	-
4. Curbs	6	M-P
5. Median	N	-
6. Sidewalks	N	-
7. Parapets	7	-
8. Railing	7	-
9. Anti Missile Fence	N	-
10. Drainage System	N	-
11. Lighting Standards	N	-
12. Utilities	N	-
13. Deck Joints	N	-
14.	N	-
15.	N	-
16.	N	-

CURB REVEAL (in millimeters)	N	S
	0	25

APPROACHES

		DEF
a. Appr. pavement condition	7	-
b. Appr. Roadway Settlement	8	-
c. Appr. Sidewalk Settlement	N	-
d. Approach Utilities	H	-

OVERHEAD SIGNS (Attached to bridge) (Y/N): N

		DEF
a. Condition of Welds	N	-
b. Condition of Bolts	N	-
c. Condition of Signs	N	-

ITEM 59 — SUPERSTRUCTURE: 7

		DEF
1. Arch/Arch Ring	7	-
2. Keystone Area	N	-
3. Stringers	N	-
4. Floorbeams	N	-
5. Spandrel Walls	7	-
6. Spring Lines	6	M-P
7. Diaphragms/Cross Frames	N	-
8. Conn Pl's, Gussets & Angles	N	-
9. Pin & Hangers	N	-
10. Masonry Joints	7	-
11. Rivets & Bolts	6	M-P
12. Welds	N	-
13. Deformation/Flattening	7	-
14. Member Alignment	7	-
15. Paint/Coating	7	-
16.	N	-

Year Painted	1990

COLLISION DAMAGE: *Please explain*
None (X) Minor ( ) Moderate ( ) Severe ( )

LOAD DEFLECTION: *Please explain*
None (X) Minor ( ) Moderate ( ) Severe ( )

LOAD VIBRATION: *Please explain*
None (X) Minor ( ) Moderate ( ) Severe ( )

Any Fracture Critical Member: (Y/N): N

Any Cracks: (Y/N): N

ITEM 60 — SUBSTRUCTURE: 7

	Dive	Cur		DEF
1. Abutments			7	
a. Pedestals	N	N		-
b. Bridge Seats	N	N		-
c. Backwalls	N	N		-
d. Breastwalls	N	7		-
e. Wingwalls	N	6		M-P
f. Slope Paving/Rip-Rap	N	N		-
g. Pointing	N	6		M-P
h. Footings	N	7		-
i. Piles	N	N		-
j. Scour	N	7		-
k. Settlement	N	8		-
l.	N	N		-
m.	N	N		-
2. Piers or Bents			N	
a. Pedestals	N	N		-
b. Caps	N	N		-
c. Columns	N	N		-
d. Stems/Webs/Pierwalls	N	N		-
e. Pointing	N	N		-
f. Footing	N	N		-
g. Piles	N	N		-
h. Scour	N	N		-
i. Settlement	N	N		-
j.	N	N		-
k.	N	N		-
3. Pile Bents			N	
a. Pile Caps	N	N		-
b. Piles	N	N		-
c. Diagonal Bracing	N	N		-
d. Horizontal Bracing	N	N		-
e. Fasteners	N	N		-

UNDERMINING (Y/N) If YES please explain: N

COLLISION DAMAGE:
None (X) Minor ( ) Moderate ( ) Severe ( )

I-90 (Dive Report): N I-90 (This Report): 7

93B-UW (DIVE) Insp: 00/00/00

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

RTN(I)7-98

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
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ITEM 61 **7**

CHANNEL & CHANNEL PROTECTION

	Dive	Cur	DEF
1. Channel Scour	N	7	-
2. Embankment Erosion	N	7	-
3. Debris	N	7	-
4. Vegetation	N	7	-
5. Utilities	N	N	-
6. Rip-Rap/Slope Protection	N	7	-
7. Aggradation	N	7	-
8. Fender System	N	N	-

STREAM FLOW VELOCITY:

Tidal ( ) High ( ) Moderate (X) Low ( ) None ( )

ITEM 61 (Dive Report): N *ITEM 61 (This Report)* 7

93b-U/W INSP. DATE: 00/00/00

ITEM 36 ***TRAFFIC SAFETY***

	3S	COND	DEF
A. Bridge Railing	0	7	-
B. Transitions	0	0	-
C. Approach Guardrail	1	7	-
D. Approach Guardrail Ends	1	7	-

WEIGHT POSTING *Not Applicable* X

	H	3	3S2	Single
Actual Posting	N	N	N	N
Recommended Posting	N	N	N	N

Waived Date: 00/00/00 EJDMT Date: 00/00/00

Signs in Place (Y=Yes,N=No, NR=NotRequired) Legibility/ Visibility	At bridge E	At bridge W	Other Advance E	Other Advance W

CLEARANCE POSTING *Not Applicable* X

	N ft	N in	S ft	S in	meter
Actual Field Measurement		0		0	
Posted Clearance		0		0	

Signs in Place (Y=Yes,N=No, NR=NotRequired) Legibility/ Visibility	At bridge N	At bridge S	Advance N	Advance S

ACCESSIBILITY (Y/N/P)

	Needed	Used
Lift Bucket	N	N
Ladder	N	N
Boat	N	N
Waders	Y	Y
Inspector 50	N	N
Rigging	N	N
Staging	N	N
Traffic Control	N	N
RR Flagger	N	N
Police	N	N
Other:		
	N	N

TOTAL HOURS 4

PLANS (Y/N): Y

(V.C.R.) (Y/N): N

TAPE#: _____

List of field tests performed:

RATING

Rating Report (Y/N) Y

Date: 12/01/1991

(To be filled out by DBIE)

Request for Rating or Rerating (Y/N) N

If YES please give priority:

HIGH ( ) MEDIUM ( ) LOW ( )

REASON: _____

CONDITION RATING GUIDE

(For items 58, 59, 60 and 61)

	CODE	CONDITION	DEFECTS
	N	NOT APPLICABLE	
G	9	EXCELLENT	Excellent condition.
G	8	VERY GOOD	No problem noted.
G	7	GOOD	Some minor problems.
F	6	SATISFACTORY	Structural elements show some minor deterioration.
F	5	FAIR	All primary structural elements are sound but may have minor section loss, cracking, spalling or scour.
P	4	POOR	Advance section loss, deterioration, spalling or scour.
P	3	SERIOUS	Loss of section, deterioration, spalling or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present.
C	2	CRITICAL	Advance deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
C	1	"IMMINENT" FAILURE	Major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic but corrective action may put it back in light service.
	0	FAILED	Out of service - beyond corrective action.

DEFICIENCY REPORTING GUIDE

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].

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REMARKS

BRIDGE ORIENTATION
River Street travels east and west over the Fort Pond Brook which flows from south to north.

GENERAL REMARKS
The length of bridge rail and wingwalls does not agree with the 1936 plans. The structure has been rehabilitated but the date of rehabilitation is unknown. The corrugated plate arch is galvanized and the length of bridge rails and parapets is more than 25 ft. longer than the length shown on the plans.

ITEM 58 - DECK

Item 58.4 - Curbs
The curbs consist of beveled mortar which is on top of the spandrel wall cap stone. There are a few spot locations where this mortar has broken off exposing the spandrel wall cap stone primarily on the south side. (See Photo 1.) During the day of inspection the edge of roadway on both sides had a covering of show that hid the curb area. Where the snow cover was removed and the curb was exposed the condition was observed to be similar to that reported in 2003. Therefore the curb reveals reported in 2003 have been carried forward.

The 1936 record plans for this structure indicate the distance from the bottom of the cap stone (on the masonry bridge rail) to the top of the spandrel wall (base of beveled morter curb) is 2 ft. - 2 in. This distance could be checked and verified during a future inspection, and then used to monitor the addition of dead load due to future pavement overlays.

Item 58.8 - Railing
The bridge rails consist of stone masonry blocks set in mortar. There are spot locations of mortar popouts primarily in the south bridge rail. (See Photo 2.)

APPROACHES

Approaches a - Appr. pavement condition
The west approach pavement has two diagonal transverse cracks in the center of the roadway which are parallel to the arch barrel. There are markings on the pavement which indicate that there may be a utility under the pavement in this area. The east approach pavement has a longitudinal crack in the eastbound travel lane which is parallel to and 5 to 6 ft. north of the south edge of pavement.

Approaches d - Approach Utilities
On the west approach pavement, utility paint markings were observed on the approach, west of the stone masonry bridge rail ends. The paint markings indicated that the utility alignment diagonally tranversed the roadway from south to north when moving east. No determination could be made as to whether the utility crossed the bridge longitudinally in the spandrel fill above the arch.

ITEM 59 - SUPERSTRUCTURE

Item 59.6 - Spring Lines
On the west side in the center of the barrel there is a bow of 1 to 2 in. above the spring line. The steel seat plate for the corrugated plate arch is rusted at the southeast, southwest and northwest quadrants. (See Photo 3.)

Item 59.11 - Rivets & Bolts
There are approximately 5 spot locations of bolt and nut rusting throughout the barrel. In one location there is full section loss of the nut. The rest of the bolts are in good condition.

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REMARKS

ITEM 60 - SUBSTRUCTURE

Item 60.1.e - Wingwalls
There is an 8 ft. wide and 4 ft. tall area with missing mortar in the northeast wingwall. The voids in the mortar were found to be approximately 1 ft. deep. (See Photo 4.)

Item 60.1.g - Pointing
There is an area in the northeast wingwall where the pointing is missing. See Item 60.1.e - Wingwalls.

TRAFFIC SAFETY

Item 36b - Transitions
There are no transitions between the approach guardrail and the stone masonry bridge rail.

Photo Log
Photo 1 : South curb center span.
Photo 2 : South bridge rail, southeast quadrant.
Photo 3 : Southwest end of barrel.
Photo 4 : Northeast wingwall.
Photo 5 : River Street facing east.
Photo 6 : North elevation.

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PHOTOS

Photo 1: South curb center span.

Photo 2: South bridge rail, southeast quadrant.

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PHOTOS

Photo 3: **Southwest end of barrel.**

Photo 4: **Northeast wingwall.**

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PHOTOS

Photo 5: **River Street facing east.**

Photo 6: **North elevation.**

Report Date: October 23, 2007

State Information

BDEPT#= A02008 Agency Br.No.

Town= Acton

B.I.N= 266 AASHTO= 069.7

FHWA Select List= Y

Identification

(5) Structure Number	A02008255MUNNBI
(5) Inventory Route	151000000
(2) State Highway Department District	03
(3) County Code 017 (4) Place code	00380
(6) Features Intersected	WATER FORT POND BROOK
(7) Facility Carried	HWY RIVER ST
(9) Location	0.9 MI. S.E. OF ST-27
(11) Kilometerpoint	0001.288
(12) Base Highway Network	N
(13) LRS Inventory Route & Subroute	000000000000
(16) Latitude	42 DEG 27 MIN 24.73 SEC
(17) Longitude	71 DEG 26 MIN 14.01 SEC
(98) Border Bridge State Code	Share %
(99) Border Bridge Structure No. #	

Structure Type and Material

(43) Structure Type Main: Steel Code 311

Arch - Deck Jointless bridge type: Not applicable

(44) Structure Type Appr:

Other Code 000

(45) Number of spans in main unit	001
(46) Number of approach spans	0000

(107) Deck Structure Type - Not applicable Code N

(108) Wearing Surface / Protective System:

A) Type of wearing surface - Not applicable=no deck Code N

B) Type of membrane - Not applicable=no deck Code N

C) Type of deck protection - Not applicable=no deck Code N

Age and Service

(27) Year Built	1937
(106) Year Reconstructed	0000

(42) Type of Service: On - Highway

Under - Waterway Code 15

(28) Lanes: On Structure 02	Under structure 00
(29) Average Daily Traffic	002000
(30) Year of ADT 2005 (109) Truck ADT	02 %
(19) Bypass, detour length	003 KM

Geometric Data

(48) Length of maximum span	0007.0 M
(49) Structure Length	00015.8 M
(50) Curb or sidewalk: Left 00.0 M	Right 00.0 M
(51) Bridge Roadway Width Curb to Curb	006.2 M
(52) Deck Width Out to Out	007.6 M
(32) Approach Roadway Width (w/shoulders)	005.8 M

(33) Bridge Median - No median Code 0

(34) Skew 30 DEG (35) Structure Flared	N
(10) Inventory Route MIN Vert Clear	99.99 M
(47) Inventory Route Total Horiz Clear	06.2 M
(53) Min Vert Clear Over Bridge Rdwy	99.99 M
(54) Min Vert Underclear ref N	00.00 M
(55) Min Lat Underclear RT ref N	00.0 M
(56) Min Lat Underclear LT	00.0 M

Navigation Data

(38) Navigation Control - No navigation control on waterway Code 0

(111) Pier Protection Code

(39) Navigation Vertical Clearance	000.0 M
(116) Vert-lift Bridge Nav Min Vert Clear	M
(40) Navigation Horizontal Clearance	0000.0 M

Classification

	Code
(112) NBIS Bridge Length	Y
(104) Highway System	N
(26) Functional Class - Urban Local	19
(100) Defense Highway	0
(101) Parallel Structure	N
(102) Direction of Traffic - 2-way traffic	2
(103) Temporary Structure	N
(105) Federal Lands Highways	0
(110) Designated National Network	N
(20) Toll - On free road	3
(21) Maintain - Town Agency	03
(22) Owner - Town Agency	03
(37) Historical Significance not eligible	N

Condition

	Code
(58) Deck	N
(59) Superstructure	7
(60) Substructure	7
(61) Channel & Channel Protection	7
(62) Culverts	N

Load Rating and Posting

	Code
(31) Design Load - Other/Unknown	0
(63) Operating Rating Method - Allowable Stress (AS)	2
(64) Operating Rating	31.8
(65) Inventory Rating Method - Allowable Stress (AS)	2
(66) Inventory Rating	22.7
(70) Bridge Posting	4
(41) Structure - Open	A

Appraisal

	Code
(67) Structural Evaluation	6
(68) Deck Geometry	2
(69) Underclearances, vert. and horiz.	N
(71) Waterway adequacy	7
(72) Approach Roadway Alignment	7
(36) Traffic Safety Features	0 0 1 1
(113) Scour Critical Bridges	8

Inspections

(90) Inspection Date 12/05/05 (91) Frequency 24 MO

(92) Critical Feature Inspection:				(93) CFI DATE
(A) Fracture Critical Detail	N	00	MO A)	00/00/00
(B) Underwater Inspection	N	00	MO B)	07/01/85
(C) Other Special Inspection	N	00	MO C)	00/00/00
(*) Other Inspection ()	N	00	MO *)	00/00/00
(*) Closed Bridge	N	00	MO *)	00/00/00
(*) UW Special Inspection	N	00	MO *)	00/00/00
(*) Damage Inspection			MO *)	00/00/00

Rating Loads

Report Date 12/01/91	H20	Type 3	Type 3S2	Type HS
Operating	26.0	32.0	50.0	0.0
Inventory	20.0	23.0	36.0	0.0

Field Posting

Status LEGAL Posting Date 11/03/82

	2 Axle	3 Axle	5 Axle
Actual			
Recommended			

Missing Signs N

Misc.

Bridge Name

N Anti-missile fence N Acrow Panel N Jointless Bridge

Freeze/Thaw N : Not Applicable

Accessibility (Needed/Used)

N / N	Liftbucket	N / N	Rigging	Inspection
N / N	Ladder	N / N	Staging	Hours: 004
N / N	Boat	N / N	Traffic Control	
Y / Y	Wader	N / N	RR Flagperson	
N / N	Inspector 50	N / N	Police	

MASSACHUSETTS HIGHWAY DEPARTMENT

STRUCTURES INSPECTION FIELD REPORT

CULVERT INSPECTION

2-DIST	B.I.N.	BR. DEPT. NO.
03	23Y	A-02-009

CITY/TOWN	8.-STRUCTURE NO.	11-Kilo. POINT	41-STATUS	90-ROUTINE INSP. DATE
ACTON	A02009-23Y-MUN-NBI	000.354	A:OPEN	DEC 5, 2005

07-FACILITY CARRIED	MEMORIAL NAME/LOCAL NAME	27-YR BUILT	106-YR REBUILT	YR REHAB'D (NON 106)
HWY BROOK ST		1938	0000	0000

06-FEATURES INTERSECTED	26-FUNCTIONAL CLASS	DIST. BRIDGE INSPECTION ENGINEER
WATER NASHOBA BROOK	Urban Collector	L. A. Gauthier

43-STRUCTURE TYPE	22-OWNER	21-MAINTAINER	TEAM LEADER	PROJ MGR
Steel Arch - Deck	Town Agency	Town Agency	J. Read	Transystems

107-DECK TYPE	WEATHER	TEMP. (air)	TEAM MEMBERS
Not applicable	Cloudy	-5°C	T. TAYLOR

TYPE OF CULVERT:

SHAPE:	BARREL
MATERIAL:	CORRUGATED STEEL
COATING:	ASPHALTIC

BARRELS: (In Meters)

SIZE:	NUMBER:
3.30mx2.20m	2

DEPTH OF COVER (To the nearest tenth of a meter) — N: 0.6, S: 0.6

CURB REVEAL (In millimeters) — 75, 75

ITEM 62 CULVERT & RETAINING WALLS

6 | I62 (Dive Report): 6 | I62 (This Report): 7

	Dive Rpt.	This Rpt.	DEF		Dive Rpt.	This Rpt.	DEF		Dive Rpt.	This Rpt.	DEF
1. Roof	N	7	-	7. Protective Coating	7	7	-	13. Member Alignment	N	7	-
2. Floor	7	7	-	8. Embankment	7	7	-	14. Deformation	8	7	-
3. Walls	N	7	-	9. Wearing Surface	N	7	-	15. Scour	7	7	-
4. Headwall	6	6	M-P	10. Railing	N	6	M-P	16. Settlement	7	7	-
5. Wingwall	N	7	-	11. Sidewalks	N	6	M-P	17.			
6. Pipe	7	7	-	12. Utilities	N	N	-	18.			

UNDERMINING (Y/N) If YES please explain: N

COLLISION DAMAGE: *Please explain*
None (X) Minor ( ) Moderate ( ) Severe ( )

LOAD VIBRATION: *Please explain*
None (X) Minor ( ) Moderate ( ) Severe ( )

ITEM 61 CHANNEL & CHANNEL PROTECTION

7

	Dive Rpt.	This Rpt.	DEF		Dive Rpt.	This Rpt.	DEF
1. Channel Scour	7	7	-	5. Utilities	N	N	-
2. Embankment Erosion	7	7	-	6. Rip-Rap/Slope Protection	7	N	-
3. Debris	7	7	-	7. Aggradation	8	7	-
4. Vegetation	7	7	-				

STREAM FLOW VELOCITY: Tidal ( ) High ( ) Moderate ( ) Low (X)

ITEM 61 (Dive Report): 7

ITEM 61 (This Report): 7

93b-U/W INSP DATE: 06/11/2004

APPROACH CONDITION

		DEF
a. Appr. pavement condition	7	-
b. Appr. Roadway Settlement	7	-
c. Appr. Sidewalk Settlement	N	-
d.		

WEIGHT POSTING

Not Applicable: X

	H	3	3S2	Single
Actual Posting	N	N	N	N
Recommended Posting	N	N	N	N

Waived Date: 00/00/00 EJDMT Date: 12/17/1987

Signs in Place (Y=Yes, N=No, NR=NotRequired) Legibility/Visibility

At bridge E	At bridge W	Advance E	Advance W

ITEM 36 TRAFFIC SAFETY

	36	COND	DEF
A. Bridge Railing	0	6	M-P
B. Transitions	0	0	-
C. Approach Guardrail	1	7	-
D. Approach Guardrail Ends	1	7	-

ACCESSIBILITY (Y/N/P):

	Needed	Used		Needed	Used
Ladder	N	N	Other:		
Boat	N	N		N	N
Waders	Y	Y			

TOTAL HOURS: 4

PLANS (Y/N): N

(V.C.R.) (Y/N): N

TAPE#:

RATING

Rating Report (Y/N): Y

Date: 12/01/1987

Request for Rating or Rerating (Y/N): N

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

REASON:

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

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
ACTON	23Y	A-02-009	A02009-23Y-MUN-NBI	DEC 5, 2005

REMARKS, PHOTOS & SKETCHES

BRIDGE ORIENTATION

Brook Street travels east and west over the Nashoba Brook which flows from north to south. The culvert barrels are numbered from west to east.

GENERAL REMARKS

There was a 1 in. snowfall on the night before the inspection which obscured the condition of the top of capstone and the sidewalk. Spot areas were cleaned off and inspected and based on these small areas the condition ratings from the previous report were continued to this report.

ITEM 62 - CULVERT

Item 62.4 - Headwall

The north headwall has two areas where the mortar between the masonry blocks is missing. The first area is located at 10:00 o'clock facing south on culvert 1 and measures 26 in. wide and 26 in. tall. The second is at 2:00 o'clock facing south on culvert 2 and measures 24 in. wide and 40 in. tall. The voids in these two areas were up to 1 ft. deep. (See Photo 3.) There is a hairline to narrow crack in the mortar joints between the stones located in the center between the culverts extending vertically from the cap stone to the first area mentioned above. There is an area with efflorescence staining extending from the west headwall end to above the center of culvert 1 from the street level down.

The south headwall has an area of masonry blocks with missing mortar located at 2:30 o'clock facing north on culvert 1. The voids in this area were measured to be up to 9 in. deep. There is another area of missing mortar between the masonry blocks located at 2:30 o'clock facing south on culvert 2. The voids in this area

CONDITION RATING GUIDE

	CODE	CONDITION	DEFECTS
	N	NOT APPLICABLE	Use if structure is not a culvert.
G	9	EXCELLENT	No deficiencies.
G	8	VERY GOOD	No noticeable or noteworthy differences which affect the condition of the culvert. Insignificant scrape marks caused by drift.
G	7	GOOD	Shrinkage cracks, light scaling, and insignificant spalling, which does not expose reinforcing steel. Insignificant damage caused by drift with not misalignment and not requiring corrective action. Some minor scouring has occurred near curtain walls, wingwalls, or pipes. Metal culverts have a smooth symmetrical curvature with superficial corrosion and no pitting.
F	6	SATISFACTORY	Deterioration or initial disintegration, minor chloride contamination, cracking with some leaching, or spalls on concrete or masonry walls and slabs. Local minor scouring at curtain walls, wingwalls, or pipes. Metal culverts have a smooth curvature, non-symmetrical shape, significant corrosion or moderate pitting.
F	5	FAIR	Moderate to major deterioration, or disintegration, extensive cracking and leaching, or spalls on concrete or masonry walls and slabs. Minor settlement or misalignment. Noticeable scouring or erosion at curtain walls, wingwalls, or pipes. Metal culverts have significant distortion and deflection in one section, significant corrosion or deep pitting.
P	4	POOR	Large spalls, heavy scaling, wide cracks, considerable efflorescence, or opened construction joints permitting loss of backfill. Considerable settlement or misalignment. Considerable scouring or erosion at curtain walls, wingwalls, or pipes. Metal culverts have significant distortion and deflection throughout, extensive corrosion or deep pitting.
P	3	SERIOUS	Any condition described in Code 4 but which is excessive in scope. Severe movement or differential settlement of the segments, or loss of fill. Holes may exist in walls or slabs. Integral wingwalls, nearly severed from culvert. Severe scour or erosion at curtain walls, wingwalls, or pipes. Metal culverts have extreme distortion and deflection in one section, extensive corrosion, or deep pitting with scattered perforations.
C	2	CRITICAL	Advance deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
C	1	"IMMINENT" FAILURE	Bridge closed. Corrective action may put back in light service.
	0	FAILED	Bridge closed. Replacement necessary.

DEFICIENCY REPORTING GUIDE

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

CATEGORIES OF DEFICIENCIES:

M= Minor Deficiency - (Examples include but are not limited to: Spalled concrete, minor to moderate corrosion to steel culverts, minor settlement or misalignment, minor scouring, minor damage to guardrail, etc.)

S= Severe/Major Deficiency- (Examples include but are not limited to: Large spalls, wide cracks, moderate to major deterioration in concrete, considerable settlement, considerable scouring or undermining, extensive corrosion and deflection in steel culverts, etc.)

C-S= Critical Deficiency - A deficiency in a structural component or element of a bridge that poses an extreme hazard or unsafe condition to the public. (Follow-up Critical Deficiency Report must be submitted separately)

URGENCY OF REPAIR:

I = Immediate- [Inspector(s) stay at the bridge until the District Maintenance crew or the responsible Agency crew(if not a State bridge) show up and corrective action is taken.]

A = ASAP- [Action will be taken by the District Maintenance Engineer or the Responsible Agency (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].

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
ACTON	23Y	A-02-009	A02009-23Y-MUN-NBI	DEC 5, 2005

REMARKS

Item 62.4 - Headwall (Cont'd)
were measured to be up to 30 in. deep. There area areas of hairline surface efflorescence in the mortar joints below the street surface in the south headwall primarily on the east side of culvert 2. There is a wide crack in the mortar joints located above culvert 1 and extending vertically from the cap stone to the keystone area. (See Photo 4.)

Item 62.6 - Pipe
The asphalt coating is cracked and the steel is rusting in a few spot locations above the waterline and there is rusting at the water level. There are spot locations of delaminating rust in both culverts at the ends just above the waterline.

Item 62.7 - Protective Coating
See Item 62.6 Pipe.

Item 62.9 - Wearing Surface
The wearing surface has moderate transverse and longitudinal wide cracking primarily in the eastbound travel lane.

Item 62.10 - Railing
The north and south bridge rails are made up of random laid up stone mortar with a stone cap. The mortar condition is good. Both have vertical and horizontal cracks in the mortar joints. The cracks are typically 1/8 to 1/4 in. in width. (See Photo 1.) The south bridge rail has a 1 in. wide crack located 16 ft. east of the west end. (See Photo 2.) No through cracks in stones were observed adjacent to or part of the vertical or horizontal cracks. The cap stone in each quadrant is losing mortar at the ends of the headwalls. Some of the cap stone joints are open.

TRAFFIC SAFETY

Item 36b - Transitions
There are no transitions.

Photo Log
Photo 1 : Northeast bridge rail.
Photo 2 : South bridge rail center span.
Photo 3 : North headwall.
Photo 4 : South end of culvert 1.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
ACTON	23Y	A-02-009	A02009-23Y-MUN-NBI	DEC 5, 2005

PHOTOS

Photo 1: **Northeast bridge rail.**

Photo 2: **South bridge rail center span.**

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
ACTON	23Y	A-02-009	A02009-23Y-MUN-NBI	DEC 5, 2005

PHOTOS

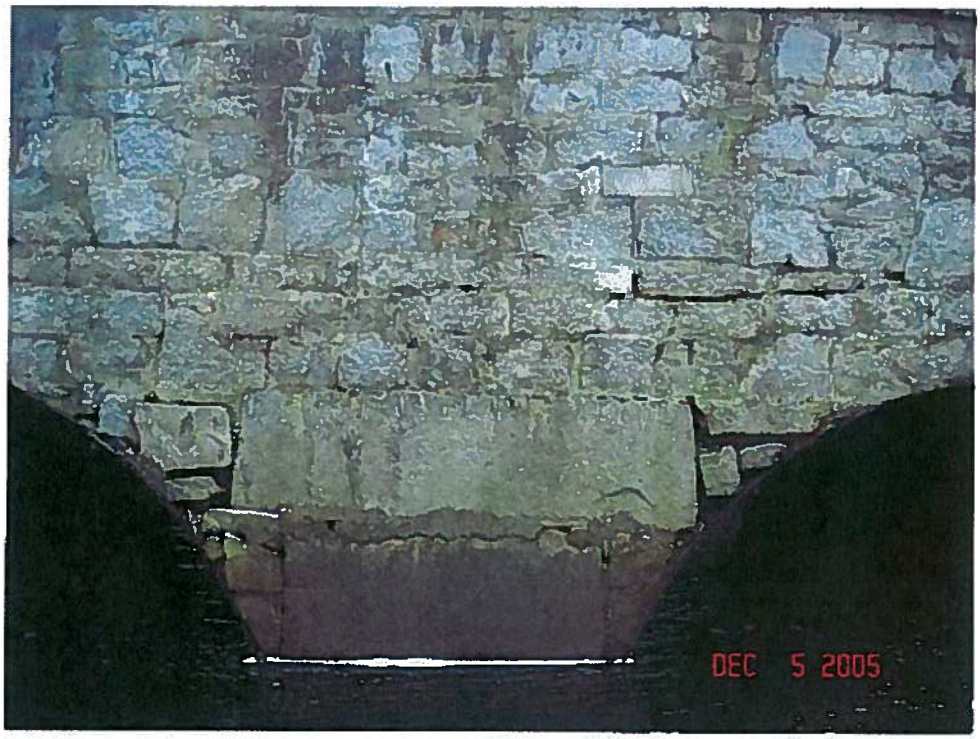


Photo 3: **North headwall.**

Photo 4: **South end of culvert 1.**

MASSACHUSETTS HIGHWAY DEPARTMENT
UNDERWATER OPERATIONS TEAM
ROUTINE UNDERWATER INSPECTION REPORT

2-DIST	B.I.N.	BR. DEPT. NO.
03	23Y	A-02-009

CITY/TOWN	8-STRUCTURE NO.	LEVEL OF INSPECTION	93B-DATE INSPECTED
ACTON	A02009-23Y-MUN-NBI	II	APR 25, 2007

07-FACILITY CARRIED	ACCESS TO BRIDGE	UNDERWATER OPERATIONS ENGINEER
HWY BROOK ST	EMBANKMENT	JOHN B. DESMOND

06-FEATURES INTERSECTED	DEPTH	VISIBILITY	TEAM LEADER (DIVE MASTER)	*Report submitted by:*
WATER NASHOBA BROOK	1.3 m	1 m	SHARON A. BEGLEY	

BOTTOM CONDITION	CURRENT	TEAM MEMBERS
GRAVEL	MODERATE	E. P. TERNOSKY

ITEM 60 SUBSTRUCTURE — N

		DEF
1. Abutments	N	
a. Pedestals	N	-
b. Bridge Seats	N	-
c. Backwalls	N	-
d. Breastwalls	N	-
e. Wingwalls	N	-
f. Slope Paving/Rip-Rap	N	-
g. Pointing	N	-
h. Footings	N	-
i. Piles	N	-
j. Scour	N	-
k. Settlement	N	-
l.	N	-
2. Piers or Bents	N	
a. Pedestals	N	-
b. Caps	N	-
c. Columns	N	-
d. Stems/Webs/Pierwalls	N	-
e. Pointing	N	-
f. Footing	N	-
g. Piles	N	-
h. Scour	N	-
i. Settlement	N	-
j.	N	-
k.	N	-
3. Pile Bents	N	
a. Pile Caps	N	-
b. Piles	N	-
c. Diagonal Bracing	N	-
d. Horizontal Bracing	N	-
e. Fasteners	N	-
UNDERMINING (Y/N)		N

ITEM 61 CHANNEL & CHANNEL PROTECTION — 7

		DEF
1. Channel Scour	7	-
2. Embankment Erosion	7	-
3. Debris	7	-
4. Vegetation	7	-
5. Utilities	N	-
6. Rip-Rap/Slope Protection	H	-
7. Aggradation	8	-
8. Fender System	N	-
a. Piles	N	-
b. Diagonal Bracing	N	-
c. Horizontal Bracing	N	-
d. Wales	N	-
e. Fasteners	N	-
f. Ladders	N	-
9.	N	-

ITEM 59 SUPERSTRUCTURE

		DEF
	N	-
	N	-
	N	-

ITEM 62 CULVERTS — 6

		DEF
1. Roof	N	-
2. Floor	7	-
3. Walls	N	-
4. Headwall	6	-
5. Wingwall	N	-
6. Pipe	7	-
7. Protective Coating	7	-
8. Embankment	7	-
9. Wearing Surface	N	-
10. Railing	N	-
11. Sidewalks	N	-
12. Utilities	N	-
13. Member Alignment	N	-
14. Deformation	8	-
15. Scour	7	-
16. Settlement	7	-
17.	N	-
18.	N	-
UNDERMINING (Y/N)		N

DEFICIENCY REPORTING GUIDE

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 scouring, 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 corroding rebars, Deteriorated timber piles, Considerable settlement, Considerable scouring or undermining, 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: Any part of piles or fender system which are projecting outward and may become a safety hazard for the navigational traffic, 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

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
ACTON	23Y	A-02-009	A02009-23Y-MUN-NBI	APR 25, 2007

REMARKS

GENERAL REMARKS

1) Orientation - Abutments are labeled left and right when facing downstream.
2) Sta 10+00 is at the upstream end.
3) This structure is a double barrel ACCM culvert.

ITEM 61 - CHANNEL AND CHANNEL PROTECTION

Item 61.6 - Rip-Rap/Slope Protection

There is a small retaining wall located at upstream right with several voids from missing stones.

ITEM 62 - CULVERT

Item 62.2 - Floor

Floors consist of two layers, one each of concrete and bituminous and were mostly visible with small amounts of gravel covering.

Item 62.4 - Headwall

Headwall is dry laid below waterline with random missing chinking stones and small voids. See sketch.

Item 62.6 - Pipe

Twin ACCM pipes are in generally good condition with several small areas of minor corrosion where coating has deteriorated away .

Item 62.7 - Protective Coating

There are several small areas where coating has deteriorated away exposing metal pipes.

Item 62.15 - Scour

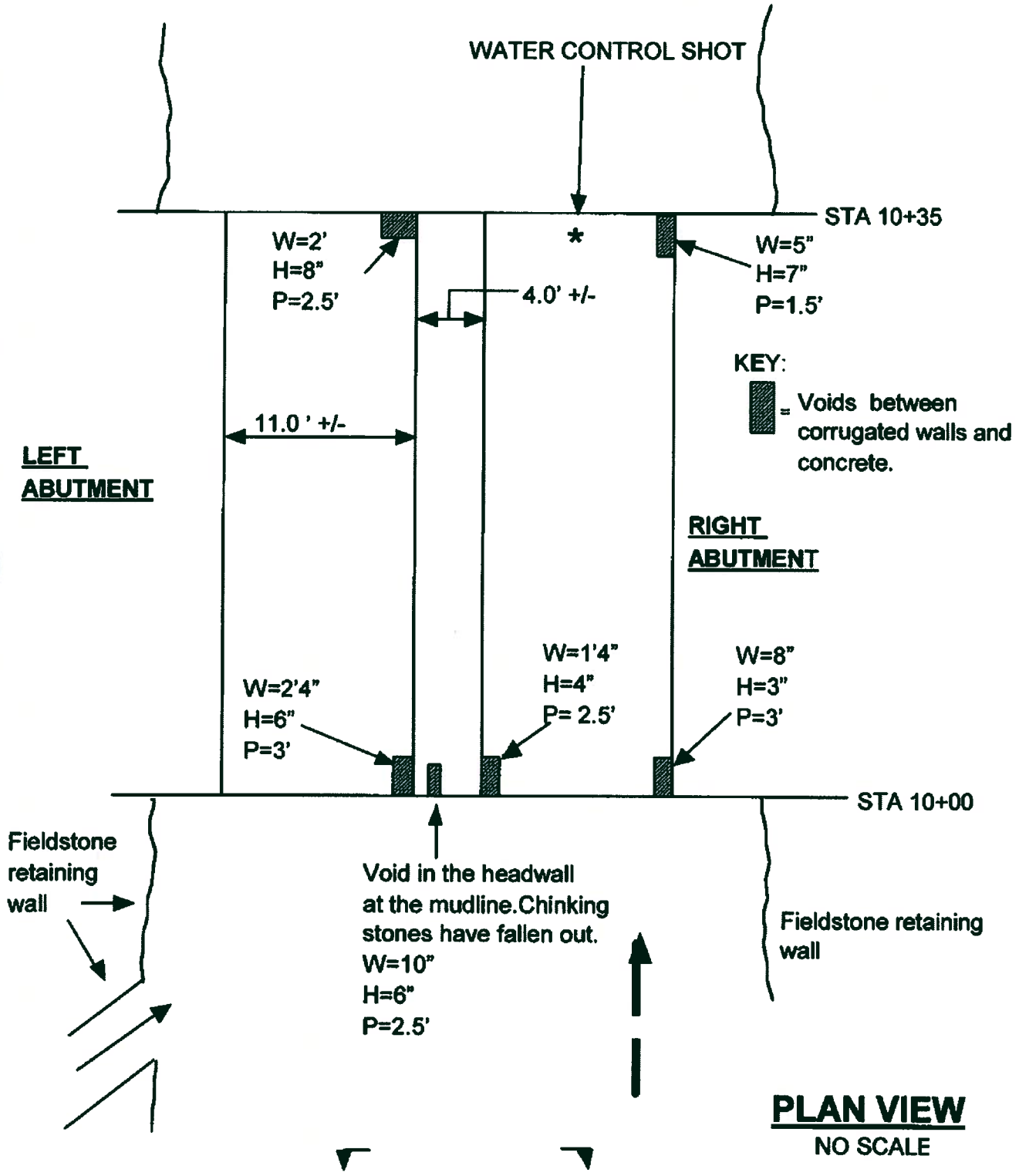
The river bed covers the invert of the pipe ends resulting in no exposure. There are several voids between pipes and walls at each end. See sketch for locations and dimensions.

Sketch / Chart Log

Sketch 1 : PLAN VIEW
Chart 1 : SCOUR MONITORING

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
ACTON	23Y	A-02-009	A02009-23Y-MUN-NBI	APR 25, 2007

SKETCHES



Sketch 1: PLAN VIEW

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
ACTON	23Y	A-02-009	A02009-23Y-MUN-NBI	APR 25, 2007

CHARTS

SCOUR MONITORING CHART

OFFSETS	6/22/95	7/28/98	7/5/01	6/11/04	4/25/07	
UPSTREAM LEFT CENTER OF SPAN	2.0	2.0	2.0	2.1	2.1	
UPSTREAM RIGHT CENTER OF SPAN	1.8	2.0	2.0	1.9	1.9	
DOWNSTREAM RIGHT CENTER OF SPAN	2.0	1.8				
DOWNSTREAM LEFT CENTER OF SPAN	1.2	1.5				
Y	4.5	4.4	2.3	3.4	2.8	
CORRECTION	-	-0.1	-2.2	-1.1	-1.7	

Notes

1. All soundings and measurements in english.
2. Water control shot (Y) = Waterline to apex of downstream right pipe.
3. For comparison all soundings are adjusted to 1995 water level.
4. Station 1+00 is located at the upstream end.

Chart 1: SCOUR MONITORING

Report Date: October 23, 2007

State Information

BDEPT#= A02009 Agency Br.No.

Town= Acton

B.I.N= 23Y AASHTO= 079.2

FHWA Select List= Y

Identification

(8) Structure Number A0200923YMUNNBI

(5) Inventory Route 151000000

(2) State Highway Department District 03

(3) County Code 017 (4) Place code 00360

(6) Features Intersected WATER NASHOBA BROOK

(7) Facility Carried HWY BROOK ST

(9) Location .25 MI. W OF RTE. 2A

(11) Kilometerpoint 0000.354

(12) Base Highway Network N

(13) LRS Inventory Route & Subroute 000000000000

(16) Latitude 42 DEG 29 MIN 36.34 SEC

(17) Longitude 71 DEG 25 MIN 15.25 SEC

(98) Border Bridge State Code Share %

(99) Border Bridge Structure No. #

Structure Type and Material

(43) Structure Type Main: Steel Code 319

Culvert Jointless bridge type: Not applicable

(44) Structure Type Appr:

Other Code 000

(45) Number of spans in main unit 002

(46) Number of approach spans 0000

(107) Deck Structure Type - Not applicable Code N

(108) Wearing Surface / Protective System:

A) Type of wearing surface - Not applicable=no deck Code N

B) Type of membrane - Not applicable=no deck Code N

C) Type of deck protection - Not applicable=no deck Code N

Age and Service

(27) Year Built 1936

(106) Year Reconstructed 0000

(42) Type of Service: On - Highway-Ped

Under - Waterway Code 55

(28) Lanes: On Structure 02 Under structure 00

(29) Average Daily Traffic 006500

(30) Year of ADT 2005 (109) Truck ADT 08 %

(19) Bypass, detour length 002 KM

Geometric Data

(48) Length of maximum span 0003.4 M

(49) Structure Length 00007.9 M

(50) Curb or sidewalk: Left 00.7 M Right 00.9 M

(51) Bridge Roadway Width Curb to Curb 009.2 M

(52) Deck Width Out to Out 010.9 M

(32) Approach Roadway Width (w/shoulders) 007.9 M

(33) Bridge Median - No median Code 0

(34) Skew 00 DEG (35) Structure Flared N

(10) Inventory Route MIN Vert Clear 99.99 M

(47) Inventory Route Total Horiz Clear 08.2 M

(53) Min Vert Clear Over Bridge Rdwy 99.99 M

(54) Min Vert Underclear ref N 00.00 M

(55) Min Lat Underclear RT ref N 00.0 M

(56) Min Lat Underclear LT 00.0 M

Navigation Data

(38) Navigation Control - No navigation control on waterway Code 0

(111) Pier Protection Code

(39) Navigation Vertical Clearance 000.0 M

(116) Vert-lift Bridge Nav Min Vert Clear M

(40) Navigation Horizontal Clearance 0000.0 M

Classification

	Code
(112) NBIS Bridge Length	Y
(104) Highway System	N
(26) Functional Class - Urban Collector	17
(100) Defense Highway	0
(101) Parallel Structure	N
(102) Direction of Traffic - 2-way traffic	2
(103) Temporary Structure	N
(105) Federal Lands Highways	0
(110) Designated National Network	N
(20) Toll - On free road	3
(21) Maintain - Town Agency	03
(22) Owner - Town Agency	03
(37) Historical Significance undetermined	

Condition

	Code
(58) Deck	N
(59) Superstructure	N
(60) Substructure	N
(61) Channel & Channel Protection	7
(62) Culverts	6

Load Rating and Posting

	Code
(31) Design Load - Other/Unknown	0
(63) Operating Rating Method - Allowable Stress (AS)	2
(64) Operating Rating	44.1
(65) Inventory Rating Method - Allowable Stress (AS)	2
(66) Inventory Rating	32.4
(70) Bridge Posting	5
(41) Structure - Open	A

Appraisal

	Code
(67) Structural Evaluation	6
(68) Deck Geometry	2
(69) Underclearances, vert. and horiz.	N
(71) Waterway adequacy	7
(72) Approach Roadway Alignment	7
(36) Traffic Safety Features	0 0 1 1
(113) Scour Critical Bridges	6

Inspections

(90) Inspection Date 12/05/05 (91) Frequency 24 MO

(92) Critical Feature Inspection: (93) CFI DATE

(A) Fracture Critical Detail	N	00	MO A)	00/00/00
(B) Underwater Inspection	Y	36	MO B)	04/25/07
(C) Other Special Inspection	N	00	MO C)	00/00/00
(*) Other Inspection ()	N	00	MO *)	00/00/00
(*) Closed Bridge	N	00	MO *)	00/00/00
(*) UW Special Inspection	N	00	MO *)	00/00/00
(*) Damage Inspection			MO *)	00/00/00

Rating Loads

Report Date 12/01/87	H20	Type 3	Type 3S2	Type HS
Operating	27.0	34.0	49.0	49.0
Inventory	20.0	25.0	36.0	36.0

Field Posting

Status EJDMNT Posting Date 12/17/87

	2 Axle	3 Axle	5 Axle
Actual			
Recommended			

Missing Signs N

Misc.

Bridge Name

N Anti-missile fence N Acrow Panel N Jointless Bridge

Freeze/Thaw N : Not Applicable

Accessibility (Needed/Used)

N / N	Liftbucket	N / N	Rigging
N / N	Ladder	N / N	Staging
N / N	Boat	N / N	Traffic Control
Y / Y	Wader	N / N	RR Flagperson
N / N	Inspector 50	N / N	Police

Inspection Hours: 004

MASSACHUSETTS HIGHWAY DEPARTMENT
STRUCTURES INSPECTION FIELD REPORT
CULVERT INSPECTION

2-DIST	B.I.N.	BR. DEPT. NO.
03	258	A-02-020

CITY/TOWN	8.-STRUCTURE NO.	11-Kilo. POINT	41-STATUS	90-ROUTINE INSP. DATE
ACTON	A02020-258-MUN-NBI	001.046	A:OPEN	JAN 6, 2006

07-FACILITY CARRIED	MEMORIAL NAME/LOCAL NAME	27-YR BUILT	106-YR REBUILT	YR REHABD (NON 106)
HWY RIVER ST		1981	0000	0000

06-FEATURES INTERSECTED	26-FUNCTIONAL CLASS	DIST. BRIDGE INSPECTION ENGINEER
WATER FORT POND BROOK	Urban Local	L. A. Gauthier

43-STRUCTURE TYPE	22-OWNER	21-MAINTAINER	TEAM LEADER
Steel Culvert	Town Agency	Town Agency	R. C. Angell

107-DECK TYPE	WEATHER	TEMP. (air)	TEAM MEMBERS
Not applicable	Cloudy	1°C	L. A. GAUTHIER

TYPE OF CULVERT:

SHAPE:	ROUND
MATERIAL:	CORRUGATED STEEL
COATING:	ASPHALTIC

BARRELS: (In Meters)

SIZE:	NUMBER:
3.00mx3.05m	2

DEPTH OF COVER (To the nearest tenth of a meter) — N: 0.6, S: 0.6

CURB REVEAL (In millimeters) — N: N, S: N

ITEM 62 CULVERT & RETAINING WALLS — 7

I62 (Dive Report): N — I62 (This Report): 7

	Dive Rpt.	This Rpt.	DEF
1. Roof	N	N	-
2. Floor	N	N	-
3. Walls	N	N	-
4. Headwall	N	7	-
5. Wingwall	N	7	-
6. Pipe	N	7	M-P
7. Protective Coating	N	6	M-P
8. Embankment	N	7	-
9. Wearing Surface	N	8	-
10. Railing	N	8	-
11. Sidewalks	N	N	-
12. Utilities	N	N	-
13. Member Alignment	N	8	-
14. Deformation	N	8	-
15. Scour	N	6	S-P
16. Settlement	N	7	-
17.			
18.			

UNDERMINING (Y/N) If YES please explain: N

COLLISION DAMAGE: Please explain — None (X) Minor ( ) Moderate ( ) Severe ( )

LOAD VIBRATION: Please explain — None (X) Minor ( ) Moderate ( ) Severe ( )

ITEM 61 CHANNEL & CHANNEL PROTECTION — 7

	Dive Rpt.	This Rpt.	DEF
1. Channel Scour	N	6	S-P
2. Embankment Erosion	N	7	-
3. Debris	N	5	M-P
4. Vegetation	N	7	-
5. Utilities	N	N	-
6. Rip-Rap/Slope Protection	N	7	-
7. Aggradation	N	7	M-P

STREAM FLOW VELOCITY: Tidal ( ) High ( ) Moderate (X) Low ( )

ITEM 61 (Dive Report): N

ITEM 61 (This Report): 7

93b-UW INSP DATE: 00/00/00

APPROACH CONDITION

		DEF
a. Appr. pavement condition	7	-
b. Appr. Roadway Settlement	8	-
c. Appr. Sidewalk Settlement	N	-
d.		

WEIGHT POSTING

Not Applicable: X

	H	3	3S2	Single
Actual Posting	N	N	N	N
Recommended Posting	N	N	N	N

Waived Date: 00/00/00 EJDMT Date: 00/00/00

Signs in Place (Y=Yes, N=No, NR=NotRequired) Legibility/Visibility

At bridge E	At bridge W	Advance E	Advance W

ITEM 36 TRAFFIC SAFETY

	36	COND	DEF
A. Bridge Railing	1	7	-
B. Transitions	1	7	-
C. Approach Guardrail	1	7	-
D. Approach Guardrail Ends	0	7	S-P

ACCESSIBILITY (Y/N/P):

	Needed	Used		Needed	Used
Ladder	N	N	Other:		
Boat	N	N		N	N
Waders	Y	Y			

TOTAL HOURS: 8

PLANS (Y/N): Y

(V.C.R.) (Y/N): N

TAPE#: _____

RATING

Rating Report (Y/N): N

Request for Rating or Rerating (Y/N): Y

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

REASON: Based on design.

Date: 00/00/00

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

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
ACTON	258	A-02-020	A02020-258-MUN-NBI	JAN 6, 2006

REMARKS, PHOTOS & SKETCHES

BRIDGE ORIENTATION

The approaches are W to E and the elevations are S to N. This is a two span pipe culvert with the barrels numbered from W to E. The brook flows from N to S.

ITEM 62 - CULVERT

Item 62.6 - Pipe

There are three small holes in the top of the W barrel near the S end, and two small holes in the top of the E barrel near the S end. These holes area a result of the vertical guardrail posts driven into the ground, and through the barrels. All of the holes are approx. 1-1/2 in. in diamter and are blocked with earth and show minor weeping. See photo #1. There are some nuts and bolts missing on the seams throughout both barrels, that were never installed.

Item 62.7 - Protective Coating

Asphaltic coating is wearing off on the bottom of both barrels and exposing the steel shell and resulting in some minor surface rusting.

Item 62.15 - Scour

Re: Item 61.1.

CONDITION RATING GUIDE

	CODE	CONDITION	DEFECTS
	N	NOT APPLICABLE	Use if structure is not a culvert.
G	9	EXCELLENT	No deficiencies.
G	8	VERY GOOD	No noticeable or noteworthy differences which affect the condition of the culvert. Insignificant scrape marks caused by drift.
G	7	GOOD	Shrinkage cracks, light scaling, and insignificant spalling, which does not expose reinforcing steel. Insignificant damage caused by drift with not misalignment and not requiring corrective action. Some minor scouring has occurred near curtain walls, wingwalls, or pipes. Metal culverts have a smooth symmetrical curvature with superficial corrosion and no pitting.
F	6	SATISFACTORY	Deterioration or initial disintegration, minor chloride contamination, cracking with some leaching, or spalls on concrete or masonry walls and slabs. Local minor scouring at curtain walls, wingwalls, or pipes. Metal culverts have a smooth curvature, non-symmetrical shape, significant corrosion or moderate pitting.
F	5	FAIR	Moderate to major deterioration, or disintegration, extensive cracking and leaching, or spalls on concrete or masonry walls and slabs. Minor settlement or misalignment. Noticeable scouring or erosion at curtain walls, wingwalls, or pipes. Metal culverts have significant distortion and deflection in one section, significant corrosion or deep pitting.
P	4	POOR	Large spalls, heavy scaling, wide cracks, considerable efflorescence, or opened construction joints permitting loss of backfill. Considerable settlement or misalignment. Considerable scouring or erosion at curtain walls, wingwalls, or pipes. Metal culverts have significant distortion and deflection throughout, extensive corrosion or deep pitting.
P	3	SERIOUS	Any condition described in Code 4 but which is excessive in scope. Severe movement or differential settlement of the segments, or loss of fill. Holes may exist in walls or slabs. Integral wingwalls, nearly severed from culvert. Severe scour or erosion at curtain walls, wingwalls, or pipes. Metal culverts have extreme distortion and deflection in one section, extensive corrosion, or deep pitting with scattered perforations.
C	2	CRITICAL	Advance deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
C	1	"IMMINENT" FAILURE	Bridge closed. Corrective action may put back in light service.
	0	FAILED	Bridge closed. Replacement necessary.

DEFICIENCY REPORTING GUIDE

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

CATEGORIES OF DEFICIENCIES:

M= Minor Deficiency - (Examples include but are not limited to: Spalled concrete, minor to moderate corrosion to steel culverts, minor settlement or misalignment, minor scouring, minor damage to guardrail, etc.)

S= Severe/Major Deficiency- (Examples include but are not limited to: Large spalls, wide cracks, moderate to major deterioration in concrete, considerable settlement, considerable scouring or undermining, extensive corrosion and deflection in steel culverts, etc.)

C-S= Critical Deficiency - A deficiency in a structural component or element of a bridge that poses an extreme hazard or unsafe condition to the public. (Follow-up Critical Deficiency Report must be submitted separately)

URGENCY OF REPAIR:

I = Immediate- [Inspector(s) stay at the bridge until the District Maintenance crew or the responsible Agency crew(if not a State bridge) show up and corrective action is taken.]

A = ASAP- [Action will be taken by the District Maintenance Engineer or the Responsible Agency (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].

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
ACTON	258	A-02-020	A02020-258-MUN-NBI	JAN 6, 2006

REMARKS

ITEM 61 - CHANNEL AND CHANNEL PROTECTION

Item 61.1 - Channel Scour
The minor piping behind both barrels of the culvert at the N end, noted on the previous inspection, could not be detected due ot the high water level.

Item 61.3 - Debris
There is a moderate build up of debris (tree limbs, branches, & leaves) to upstream side of W barrel. See photo #2. There is a minor build up of debris (tree limbs & branches) to downstream side of W barrel. This debris is causing little effect on stream flow.

Item 61.7 - Aggradation
There is a minor build up of alluvial material(sand, gravel, & small stones) throughout both barrels. This debris is not restricting the flow.

TRAFFIC SAFETY

Item 36d - Approach Guardrail Ends
The SW, NW, & NE terminal ends are boxing glove ends that are not sufficiently turned from traffic.

Photo Log
Photo 1 : Two small holes to S barrel, typical of three small holes in N barrel.
Photo 2 : Debris at upstream side of W culvert barrel.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
ACTON	258	A-02-020	A02020-258-MUN-NBI	JAN 6, 2006

PHOTOS

Photo 1: **Two small holes to S barrel, typical of three small holes in N barrel.**

Photo 2: **Debris at upstream side of W culvert barrel.**

Report Date: October 23, 2007

State Information

BDEPT#= A02020 Agency Br.No.
Town= Acton
B.I.N= 258 AASHTO= 098.9
FHWA Select List= N

Identification

(5) Inventory Route 151000000
(2) State Highway Department District 03
(3) County Code 017 (4) Place code 00380
(6) Features Intersected WATER FORT POND BROOK
(7) Facility Carried HWY RIVER ST
(9) Location .6 MI. E OF ST. 27
(11) Kilometerpoint 0001.048
(12) Base Highway Network N
(13) LRS Inventory Route & Subroute 000000000000
(16) Latitude 42 DEG 27 MIN 30.12 SEC
(17) Longitude 71 DEG 28 MIN 27.00 SEC
(98) Border Bridge State Code Share %
(99) Border Bridge Structure No. #

Structure Type and Material

(43) Structure Type Main: Steel Code 319
Culvert Jointless bridge type: Not applicable
(44) Structure Type Appr:
Other Code 000
(45) Number of spans in main unit 002
(46) Number of approach spans 0000
(107) Deck Structure Type - Not applicable Code N
(108) Wearing Surface / Protective System:
A) Type of wearing surface - Not applicable=no deck Code N
B) Type of membrane - Not applicable=no deck Code N
C) Type of deck protection - Not applicable=no deck Code N

Age and Service

(27) Year Built 1981
(106) Year Reconstructed 0000
(42) Type of Service: On - Highway
Under - Waterway Code 15
(26) Lanes: On Structure 02 Under structure 00
(29) Average Daily Traffic 000500
(30) Year of ADT 2006 (109) Truck ADT 06 %
(19) Bypass, detour length 003 KM

Geometric Data

(48) Length of maximum span 0003.0 M
(49) Structure Length 00007.6 M
(50) Curb or sidewalk: Left 00.0 M Right 00.0 M
(51) Bridge Roadway Width Curb to Curb 006.6 M
(52) Deck Width Out to Out 015.2 M
(32) Approach Roadway Width (w/shoulders) 008.2 M
(33) Bridge Median - No median Code 0
(34) Skew 00 DEG (35) Structure Flared N
(10) Inventory Route MIN Vert Clear 99.99 M
(47) Inventory Route Total Horiz Clear 06.6 M
(53) Min Vert Clear Over Bridge Rdwy 99.99 M
(54) Min Vert Underclear ref N 00.00 M
(55) Min Lat Underclear RT ref N 00.0 M
(56) Min Lat Underclear LT 00.0 M

Navigation Data

(38) Navigation Control - No navigation control on waterway Code 0
(111) Pier Protection Code
(39) Navigation Vertical Clearance 000.0 M
(116) Vert-lift Bridge Nav Min Vert Clear M
(40) Navigation Horizontal Clearance 0000.0 M

Classification

	Code
(112) NBIS Bridge Length	Y
(104) Highway System	N
(26) Functional Class - Urban Local	19
(100) Defense Highway	0
(101) Parallel Structure	N
(102) Direction of Traffic - 2-way traffic	2
(103) Temporary Structure	N
(105) Federal Lands Highways	0
(110) Designated National Network	N
(20) Toll - On free road	3
(21) Maintain - Town Agency	03
(22) Owner - Town Agency	03
(37) Historical Significance undetermined	

Condition

	Code
(58) Deck	N
(59) Superstructure	N
(60) Substructure	N
(61) Channel & Channel Protection	7
(62) Culverts	7

Load Rating and Posting

	Code
(31) Design Load - H 20=M 18	4
(63) Operating Rating Method - No rating analysis performed	5
(64) Operating Rating	44.1
(65) Inventory Rating Method - No rating analysis performed	5
(66) Inventory Rating	32.4
(70) Bridge Posting	5
(41) Structure - Open	A

Appraisal

	Code
(67) Structural Evaluation	7
(68) Deck Geometry	5
(69) Underclearances, vert. and horiz.	N
(71) Waterway adequacy	6
(72) Approach Roadway Alignment	7
(36) Traffic Safety Features	1 1 1 0
(113) Scour Critical Bridges	6

Inspections

(90) Inspection Date 01/06/06 (91) Frequency 24 MO
(92) Critical Feature Inspection: (93) CFI DATE

(A) Fracture Critical Detail	N	00	MO A)	00/00/00
(B) Underwater Inspection	N	00	MO B)	07/01/65
(C) Other Special Inspection	N	00	MO C)	00/00/00
(*) Other Inspection ()	N	00	MO *)	00/00/00
(*) Closed Bridge	N	00	MO *)	00/00/00
(*) UW Special Inspection	N	00	MO *)	00/00/00
(*) Damage Inspection			MO *)	00/00/00

Rating Loads

Report Date 00/00/00	H20	Type 3	Type 3S2	Type HS
Operating	27.0	34.0	49.0	49.0
Inventory	20.0	25.0	36.0	36.0

Field Posting

Status DESIGN Posting Date 01/01/61

	2 Axle	3 Axle	5 Axle
Actual			
Recommended			

Missing Signs N

Misc.

Bridge Name
N Anti-missile fence N Acrow Panel N Jointless Bridge
Freeze/Thaw N : Not Applicable

Accessibility (Needed/Used)

N / N	Liftbucket	N / N	Rigging	Inspection
N / N	Ladder	N / N	Staging	Hours: 006
N / N	Boat	N / N	Traffic Control	
Y / Y	Wader	N / N	RR Flagperson	
N / N	Inspector 50	N / N	Police	

MASSACHUSETTS HIGHWAY DEPARTMENT
STRUCTURES INSPECTION FIELD REPORT
CULVERT INSPECTION

2-DIST	B.I.N.	BR. DEPT. NO.
03	259	A-02-021

CITY/TOWN	8.-STRUCTURE NO.	11-Kilo. POINT	41-STATUS	90-ROUTINE INSP. DATE
ACTON	A02021-259-MUN-NBI	000.805	A:OPEN	JAN 18, 2006

07-FACILITY CARRIED	MEMORIAL NAME/LOCAL NAME	27-YR BUILT	106-YR REBUILT	YR REHAB'D (NON 106)
HWY RIVER ST		1981	0000	0000

06-FEATURES INTERSECTED	26-FUNCTIONAL CLASS	DIST. BRIDGE INSPECTION ENGINEER
WATER FORT POND BROOK	Urban Local	L. A. Gauthier

43-STRUCTURE TYPE	22-OWNER	21-MAINTAINER	TEAM LEADER
Steel Culvert	Town Agency	Town Agency	S. A. Begley

107-DECK TYPE	WEATHER	TEMP. (air)	TEAM MEMBERS
Not applicable	Rain	6°C	M. DYGON

TYPE OF CULVERT:

SHAPE:	PIPE ARCH
MATERIAL:	CORRUGATED STEEL
COATING:	ASPHALTIC

BARRELS: (In Meters)

SIZE:	NUMBER:
2.70mx2.00m	2

DEPTH OF COVER (To the nearest tenth of a meter): N 0.6, S 0.6

CURB REVEAL (In millimeters): N, N

ITEM 62 CULVERT & RETAINING WALLS — 7

I62 (Dive Report): N — I62 (This Report): 7

	Dive Rpt.	This Rpt.	DEF		Dive Rpt.	This Rpt.	DEF		Dive Rpt.	This Rpt.	DEF
1. Roof	N	7	-	7. Protective Coating	N	5	M-P	13. Member Alignment	N	8	-
2. Floor	N	6	M-P	8. Embankment	N	7	-	14. Deformation	N	7	-
3. Walls	N	7	-	9. Wearing Surface	N	7	-	15. Scour	N	6	M-P
4. Headwall	N	6	M-P	10. Railing	N	7	-	16. Settlement	N	7	-
5. Wingwall	N	N	-	11. Sidewalks	N	N	-	17. Channel Wall	N	5	M-P
6. Pipe	N	N	-	12. Utilities	N	N	-	18.			

UNDERMINING (Y/N) If YES please explain: N

COLLISION DAMAGE: Please explain
None (X) Minor ( ) Moderate ( ) Severe ( )

LOAD VIBRATION: Please explain
None (X) Minor ( ) Moderate ( ) Severe ( )

ITEM 61 CHANNEL & CHANNEL PROTECTION — 7

	Dive Rpt.	This Rpt.	DEF		Dive Rpt.	This Rpt.	DEF
1. Channel Scour	N	6	M-P	5. Utilities	N	N	-
2. Embankment Erosion	N	7	-	6. Rip-Rap/Slope Protection	N	7	-
3. Debris	N	5	M-P	7. Aggradation	N	7	-
4. Vegetation	N	7	-				

STREAM FLOW VELOCITY: Tidal ( ) High (X) Moderate ( ) Low ( )

ITEM 61 (Dive Report): N

ITEM 61 (This Report): 7

93b-U/W INSP DATE: 00/00/00

APPROACH CONDITION

		DEF
a. Appr. pavement condition	7	-
b. Appr. Roadway Settlement	7	-
c. Appr. Sidewalk Settlement	N	-
d.		

WEIGHT POSTING

Not Applicable: X

	H	3	3S2	Single
Actual Posting	N	N	N	N
Recommended Posting	N	N	N	N

Waived Date: 00/00/00 EJDMT Date: 00/00/00

Signs in Place (Y=Yes, N=No, NR=NotRequired)

	At bridge E	At bridge W	Advance E	Advance W
Legibility				
Visibility				

ITEM 36 TRAFFIC SAFETY

	36	COND	DEF
A. Bridge Railing	1	7	-
B. Transitions	1	7	-
C. Approach Guardrail	1	7	-
D. Approach Guardrail Ends	1	5	M-P

ACCESSIBILITY (Y/N/P):

	Needed	Used		Needed	Used
Ladder	N	N	Other:		
Boat	N	N		N	N
Waders	Y	Y			

TOTAL HOURS: 8

PLANS (Y/N): Y

(V.C.R.) (Y/N): N

TAPE#:

RATING

Rating Report (Y/N): N

Date: 00/00/00

Request for Rating or Rerating (Y/N): Y

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

REASON: Based on Design

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

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
ACTON	259	A-02-021	A02021-259-MUN-NBI	JAN 18, 2006

REMARKS, PHOTOS & SKETCHES

BRIDGE ORIENTATION

The approaches are West and East and the elevations are South and North. This is a two barrel culvert with the barrels numbered from West to East. The brook flows from South to North.

ITEM 62 - CULVERT

Item 62.1 - Roof
There is a slight bow, approx. 2 in., in the West barrel. **See photo 1.**

Item 62.2 - Floor
The asphaltic coating is wearing away along both floors, up to the waterline causing surface rusting. **See photo 2.** 10% of the floor in barrel #1 is covered with gravel. 90% of the floor in barrel #2 is covered with gravel.

Item 62.4 - Headwall
The South headwall has minor cracking. There is a 2 1/2 ft. diameter x 2 ft. deep sinkhole in the fill behind the South guardrail above barrel #2, 2 ft. from the back of the headwall. **See photo 3.**

Item 62.7 - Protective Coating
See Item 62.2 for comments.

CONDITION RATING GUIDE

	CODE	CONDITION	DEFECTS
	N	NOT APPLICABLE	Use if structure is not a culvert.
G	9	EXCELLENT	No deficiencies.
G	8	VERY GOOD	No noticeable or noteworthy differences which affect the condition of the culvert. Insignificant scrape marks caused by drift.
G	7	GOOD	Shrinkage cracks, light scaling, and insignificant spalling, which does not expose reinforcing steel. Insignificant damage caused by drift with not misalignment and not requiring corrective action. Some minor scouring has occurred near curtain walls, wingwalls, or pipes. Metal culverts have a smooth symmetrical curvature with superficial corrosion and no pitting.
F	6	SATISFACTORY	Deterioration or initial disintegration, minor chloride contamination, cracking with some leaching, or spalls on concrete or masonry walls and slabs. Local minor scouring at curtain walls, wingwalls, or pipes. Metal culverts have a smooth curvature, non-symmetrical shape, significant corrosion or moderate pitting.
F	5	FAIR	Moderate to major deterioration, or disintegration, extensive cracking and leaching, or spalls on concrete or masonry walls and slabs. Minor settlement or misalignment. Noticeable scouring or erosion at curtain walls, wingwalls, or pipes. Metal culverts have significant distortion and deflection in one section, significant corrosion or deep pitting.
P	4	POOR	Large spalls, heavy scaling, wide cracks, considerable efflorescence, or opened construction joints permitting loss of backfill. Considerable settlement or misalignment. Considerable scouring or erosion at curtain walls, wingwalls, or pipes. Metal culverts have significant distortion and deflection throughout, extensive corrosion or deep pitting.
P	3	SERIOUS	Any condition described in Code 4 but which is excessive in scope. Severe movement or differential settlement of the segments, or loss of fill. Holes may exist in walls or slabs. Integral wingwalls, nearly severed from culvert. Severe scour or erosion at curtain walls, wingwalls, or pipes. Metal culverts have extreme distortion and deflection in one section, extensive corrosion, or deep pitting with scattered perforations.
C	2	CRITICAL	Advance deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
C	1	"IMMINENT" FAILURE	Bridge closed. Corrective action may put back in light service.
	0	FAILED	Bridge closed. Replacement necessary.

DEFICIENCY REPORTING GUIDE

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

CATEGORIES OF DEFICIENCIES:

M= Minor Deficiency - (Examples include but are not limited to: Spalled concrete, minor to moderate corrosion to steel culverts, minor settlement or misalignment, minor scouring, minor damage to guardrail, etc.)

S= Severe/Major Deficiency- (Examples include but are not limited to: Large spalls, wide cracks, moderate to major deterioration in concrete, considerable settlement, considerable scouring or undermining, extensive corrosion and deflection in steel culverts, etc.)

C-S= Critical Deficiency - A deficiency in a structural component or element of a bridge that poses an extreme hazard or unsafe condition to the public. (Follow-up Critical Deficiency Report must be submitted separately)

URGENCY OF REPAIR:

I = Immediate- [Inspector(s) stay at the bridge until the District Maintenance crew or the responsible Agency crew(if not a State bridge) show up and corrective action is taken.]

A = ASAP- [Action will be taken by the District Maintenance Engineer or the Responsible Agency (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]

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
ACTON	259	A-02-021	A02021-259-MUN-NBI	JAN 18, 2006

REMARKS

Item 62.9 - Wearing Surface
There is a 4 ft. minor transverse crack midspan in the East bound lane.

Item 62.14 - Deformation
See Item 62.1.

Item 62.15 - Scour
See Item #61.1

Item 62.17 - Channel Wall
A 5 ft. high x 4 ft. 4 inches wide x 4 ft. deep section of the Southwest channel wall has collapsed. **See photo 4.**

ITEM 61 - CHANNEL AND CHANNEL PROTECTION

Item 61.1 - Channel Scour
The upstream end is channelized with mortared granite and field stone retaining walls. The steep grade of the channel approach increases the stream flow velocity slightly. There is minor channel scour just below the West barrel at the upstream opening. Taken from previous Inspection report of 01-26-2004 due to debris across both barrels and extreme velocity condition.

Item 61.3 - Debris
There is debris upstream across both barrels. **See photo 5.**

Item 61.7 - Aggradation
See Item 62.2.

APPROACHES

Approaches a - Appr. pavement condition
There is a full width 1/4 inch wide transverse crack in the West approach.

TRAFFIC SAFETY

Item 36b - Transitions
The Northeast transition rail has minor collision damage.

Item 36c - Approach Guardrail
The Northeast approach rail has minor collision damage.

Item 36d - Approach Guardrail Ends
The Southeast terminal end end has moderate collision damage. **See photo 6.**

Photo Log
Photo 1 : Barrel #1 (West).
Photo 2 : Surface rusting to barrel. Typical.
Photo 3 : Sinkhole above barrel #2. South end.
Photo 4 : Collapse to the Southwest channel wall.
Photo 5 : Debris across both barrels at the upstream end.
Photo 6 : Collision damage to the Southeast terminal end.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
ACTON	259	A-02-021	A02021-259-MUN-NBI	JAN 18, 2006

PHOTOS

Photo 1: **Barrel #1 (West).**

Photo 2: **Surface rusting to barrel. Typical.**

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
ACTON	259	A-02-021	A02021-259-MUN-NBI	JAN 18, 2006

PHOTOS

Photo 3: **Sinkhole above barrel #2. South end.**

Photo 4: **Collapse to the Southwest channel wall.**

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
ACTON	259	A-02-021	A02021-259-MUN-NBI	JAN 18, 2006

PHOTOS

Photo 5: **Debris across both barrels at the upstream end.**

Photo 6: **Collision damage to the Southeast terminal end.**

Report Date: October 23, 2007

State Information

BDEPT#= A02021 Agency Br.No.

Town= Acton

B.I.N= 259 AASHTO= 097.4

FHWA Select List= N

Identification

(5) Inventory Route	151000000
(2) State Highway Department District	03
(3) County Code 017 (4) Place code	00380
(6) Features Intersected	WATER FORT POND BROOK
(7) Facility Carried	HWY RIVER ST
(9) Location	ACROSS FROM VANDERBELT ST
(11) Kilometerpoint	0000.805
(12) Base Highway Network	N
(13) LRS Inventory Route & Subroute	000000000000
(16) Latitude	42 DEG 27 MIN 33.58 SEC
(17) Longitude	71 DEG 26 MIN 34.57 SEC
(98) Border Bridge State Code	Share %
(99) Border Bridge Structure No. #	

Structure Type and Material

(43) Structure Type Main: Steel	Code 319
Culvert	Jointless bridge type: Not applicable
(44) Structure Type Appr: Other	Code 000
(45) Number of spans in main unit	002
(46) Number of approach spans	0000
(107) Deck Structure Type - Not applicable	Code N
(108) Wearing Surface / Protective System:	
A) Type of wearing surface - Not applicable=no deck	Code N
B) Type of membrane - Not applicable=no deck	Code N
C) Type of deck protection - Not applicable=no deck	Code N

Age and Service

(27) Year Built	1961
(106) Year Reconstructed	0000
(42) Type of Service: On - Highway	
Under - Waterway	Code 15
(28) Lanes: On Structure 02	Under structure 00
(29) Average Daily Traffic	000800
(30) Year of ADT 2002	(109) Truck ADT 15 %
(19) Bypass, detour length	003 KM

Geometric Data

(48) Length of maximum span	0002.7 M
(49) Structure Length	00006.6 M
(50) Curb or sidewalk: Left 00.0 M	Right 00.0 M
(51) Bridge Roadway Width Curb to Curb	006.4 M
(52) Deck Width Out to Out	011.0 M
(32) Approach Roadway Width (w/shoulders)	005.2 M
(33) Bridge Median - No median	Code 0
(34) Skew 41 DEG	(35) Structure Flared N
(10) Inventory Route MIN Vert Clear	99.99 M
(47) Inventory Route Total Horiz Clear	06.4 M
(53) Min Vert Clear Over Bridge Rdwy	99.99 M
(54) Min Vert Underclear ref N	00.00 M
(55) Min Lat Underclear RT ref N	00.0 M
(56) Min Lat Underclear LT	00.0 M

Navigation Data

(38) Navigation Control - No navigation control on waterway	Code 0
(111) Pier Protection	Code
(39) Navigation Vertical Clearance	000.0 M
(116) Vert-lift Bridge Nav Min Vert Clear	M
(40) Navigation Horizontal Clearance	0000.0 M

Classification

	Code
(112) NBIS Bridge Length	Y
(104) Highway System	N
(26) Functional Class - Urban Local	19
(100) Defense Highway	0
(101) Parallel Structure	N
(102) Direction of Traffic - 2-way traffic	2
(103) Temporary Structure	N
(105) Federal Lands Highways	0
(110) Designated National Network	N
(20) Toll - On free road	3
(21) Maintain - Town Agency	03
(22) Owner - Town Agency	03
(37) Historical Significance undetermined	

Condition

	Code
(58) Deck	N
(59) Superstructure	N
(60) Substructure	N
(61) Channel & Channel Protection	7
(62) Culverts	7

Load Rating and Posting

	Code
(31) Design Load - Other/Unknown	0
(63) Operating Rating Method - No rating analysis performed	5
(64) Operating Rating	44.1
(65) Inventory Rating Method - No rating analysis performed	5
(66) Inventory Rating	32.4
(70) Bridge Posting	5
(41) Structure - Open	A

Appraisal

	Code
(67) Structural Evaluation	7
(68) Deck Geometry	5
(69) Underclearances, vert. and horiz.	N
(71) Waterway adequacy	6
(72) Approach Roadway Alignment	8
(36) Traffic Safety Features	1 1 1 1
(113) Scour Critical Bridges	8

Inspections

(90) Inspection Date 01/18/06 (91) Frequency 24 MO

(92) Critical Feature Inspection:				(93) CFI DATE
(A) Fracture Critical Detail	N	00	MO A)	00/00/00
(B) Underwater Inspection	N	00	MO B)	07/01/85
(C) Other Special Inspection	N	00	MO C)	00/00/00
(*) Other Inspection ()	N	00	MO *)	00/00/00
(*) Closed Bridge	N	00	MO *)	00/00/00
(*) UW Special Inspection	N	00	MO *)	00/00/00
(*) Damage Inspection			MO *)	00/00/00

Rating Loads

Report Date 00/00/00	H20	Type 3	Type 3S2	Type HS
Operating	27.0	34.0	49.0	49.0
Inventory	20.0	25.0	36.0	36.0

Field Posting

Status DESIGN Posting Date 01/01/61

	2 Axle	3 Axle	5 Axle
Actual			
Recommended			

Missing Signs N

Misc.

Bridge Name

N Anti-missile fence N Acrow Panel N Jointless Bridge

Freeze/Thaw N : Not Applicable

Accessibility (Needed/Used)

N / N	Liftbucket	N / N	Rigging	Inspection
N / N	Ladder	N / N	Staging	Hours: 008
N / N	Boat	N / N	Traffic Control	
Y / Y	Wader	N / N	RR Flagperson	
N / N	Inspector 50	N / N	Police	

MASSACHUSETTS HIGHWAY DEPARTMENT

STRUCTURES INSPECTION FIELD REPORT

CULVERT INSPECTION

2-DIST	B.I.N.	BR. DEPT. NO.
03	25B	A-02-023

CITY/TOWN	8-STRUCTURE NO.	11-Kilo. POINT	41-STATUS	90-ROUTINE INSP. DATE
ACTON	A02023-25B-MUN-NBI	000.386	A:OPEN	JAN 6, 2006

07-FACILITY CARRIED	MEMORIAL NAME/LOCAL NAME	27-YR BUILT	106-YR REBUILT	YR REHAB'D (NON 106)
HWY MARTIN ST		1965	0000	0000

06-FEATURES INTERSECTED	26-FUNCTIONAL CLASS	DIST. BRIDGE INSPECTION ENGINEER
WATER FORT POND BROOK	Urban Local	L. A. Gauthier

43-STRUCTURE TYPE	22-OWNER	21-MAINTAINER	TEAM LEADER
Steel Culvert	Town Agency	Town Agency	R. C. Angell

107-DECK TYPE	WEATHER	TEMP (air)	TEAM MEMBERS
Not applicable	Cloudy	1°C	L. A. GAUTHIER

TYPE OF CULVERT:

SHAPE:	PIPE ARCH
MATERIAL:	CORRUGATED STEEL
COATING:	ASPHALTIC

BARRELS: (In Meters)

SIZE:	NUMBER:
1.80mx2.70m	2

DEPTH OF COVER (To the nearest tenth of a meter) — E: 0.3, W: 0.6

CURB REVEAL (In millimeters) — E: N, W: N

ITEM 62 CULVERT & RETAINING WALLS — 7

I62 (Dive Report): N — I62 (This Report): 7

	Dive This Rpt.	Dive Rpt.	DEF		Dive This Rpt.	Dive Rpt.	DEF		Dive This Rpt.	Dive Rpt.	DEF
1. Roof	N	7	-	7. Protective Coating	N	6	M-P	13. Member Alignment	N	7	-
2. Floor	N	6	M-P	8. Embankment	N	7	-	14. Deformation	N	7	-
3. Walls	N	7	-	9. Wearing Surface	N	8	-	15. Scour	N	7	-
4. Headwall	N	7	M-P	10. Railing	N	8	-	16. Settlement	N	7	-
5. Wingwall	N	7	-	11. Sidewalks	N	8	-	17.			
6. Pipe	N	N	-	12. Utilities	N	N	-	18.			

UNDERMINING (Y/N) If YES please explain: N

COLLISION DAMAGE: Please explain
None (X) Minor ( ) Moderate ( ) Severe ( )

LOAD VIBRATION: Please explain
None (X) Minor ( ) Moderate ( ) Severe ( )

ITEM 61 CHANNEL & CHANNEL PROTECTION — 7

	Dive This Rpt.	Dive Rpt.	DEF		Dive This Rpt.	Dive Rpt.	DEF
1. Channel Scour	N	7	-	5. Utilities	N	H	-
2. Embankment Erosion	N	6	M-P	6. Rip-Rap/Slope Protection	N	7	-
3. Debris	N	7	-	7. Aggradation	N	7	-
4. Vegetation	N	7	-				

STREAM FLOW VELOCITY: Tidal ( ) High ( ) Moderate (X) Low ( )

ITEM 61 (Dive Report): N

ITEM 61 (This Report): 7

93b-U/W INSP DATE: 00/00/00

APPROACH CONDITION

		DEF
a. Appr. pavement condition	8	-
b. Appr. Roadway Settlement	8	-
c. Appr. Sidewalk Settlement	8	-
d.		

WEIGHT POSTING

Not Applicable: X

	H	3	3S2	Single
Actual Posting	N	N	N	N
Recommended Posting	17	23	36	N

Waived Date: 07/21/1982 EJDMT Date: 00/00/00

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

At bridge		Advance	
N	S	N	S

ITEM 36 TRAFFIC SAFETY

	36	COND	DEF
A. Bridge Railing	1	8	-
B. Transitions	1	8	-
C. Approach Guardrail	1	8	-
D. Approach Guardrail Ends	0	8	-

ACCESSIBILITY (Y/N/P):

	Needed	Used		Needed	Used
Ladder	N	N	Other:		
Boat	N	N		N	N
Waders	Y	Y			

TOTAL HOURS: 8

PLANS (Y/N): Y

(V.C.R.) (Y/N): N

TAPE#: _____

RATING

Rating Report (Y/N): Y

Date: 03/01/1982

Request for Rating or Rerating (Y/N): N

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

REASON:

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

Rtn.Cul.(1)7-06

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
ACTON	25B	A-02-023	A02023-25B-MUN-NBI	JAN 6, 2006

REMARKS, PHOTOS & SKETCHES

BRIDGE ORIENTATION
The approaches are S to N and the elevations are W to E. This a two span pipe arch with the barrels numbered from S to N. The brook flows from W to E.

ITEM 62 - CULVERT

Item 62.2 - Floor
The floors of both barrels show heavy surface rusting and minor to moderate corrosion throughout, from high waterline down. The asphaltic coating has worn off throughout most of both barrel floors. No photo taken due to high water.

Item 62.4 - Headwall
There is one granite headwall block missing at the waterline, at the upstream nose, between the two barrels.

Item 62.7 - Protective Coating
Re: Item 62.2.

Item 62.9 - Wearing Surface
The bit. conc. wearing surface is new since last inspection.

Item 62.10 - Railing
There is chain link fence behind "SS" type bridgerail at E side of culvert (sidewalk side). This fence acts as a pedestrian safety barricade. See photo #1.

CONDITION RATING GUIDE

	CODE	CONDITION	DEFECTS
	N	NOT APPLICABLE	Use if structure is not a culvert.
G	9	EXCELLENT	No deficiencies.
G	8	VERY GOOD	No noticeable or noteworthy differences which affect the condition of the culvert. Insignificant scrape marks caused by drift.
G	7	GOOD	Shrinkage cracks, light scaling, and insignificant spalling, which does not expose reinforcing steel. Insignificant damage caused by drift with not misalignment and not requiring corrective action. Some minor scouring has occurred near curtain walls, wingwalls, or pipes. Metal culverts have a smooth symmetrical curvature with superficial corrosion and no pitting.
F	6	SATISFACTORY	Deterioration or initial disintegration, minor chloride contamination, cracking with some leaching, or spalls on concrete or masonry walls and slabs. Local minor scouring at curtain walls, wingwalls, or pipes. Metal culverts have a smooth curvature, non-symmetrical shape, significant corrosion or moderate pitting.
F	5	FAIR	Moderate to major deterioration, or disintegration, extensive cracking and leaching, or spalls on concrete or masonry walls and slabs. Minor settlement or misalignment. Noticeable scouring or erosion at curtain walls, wingwalls, or pipes. Metal culverts have significant distortion and deflection in one section, significant corrosion or deep pitting.
P	4	POOR	Large spalls, heavy scaling, wide cracks, considerable efflorescence, or opened construction joints permitting loss of backfill. Considerable settlement or misalignment. Considerable scouring or erosion at curtain walls, wingwalls, or pipes. Metal culverts have significant distortion and deflection throughout, extensive corrosion or deep pitting.
P	3	SERIOUS	Any condition described in Code 4 but which is excessive in scope. Severe movement or differential settlement of the segments, or loss of fill. Holes may exist in walls or slabs. Integral wingwalls, nearly severed from culvert. Severe scour or erosion at curtain walls, wingwalls, or pipes. Metal culverts have extreme distortion and deflection in one section, extensive corrosion, or deep pitting with scattered perforations.
C	2	CRITICAL	Advance deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
C	1	"IMMINENT" FAILURE	Bridge closed. Corrective action may put back in light service.
	0	FAILED	Bridge closed. Replacement necessary.

DEFICIENCY REPORTING GUIDE

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

CATEGORIES OF DEFICIENCIES:

M= Minor Deficiency - (Examples include but are not limited to: Spalled concrete, minor to moderate corrosion to steel culverts, minor settlement or misalignment, minor scouring, minor damage to guardrail, etc.)

S= Severe/Major Deficiency- (Examples include but are not limited to: Large spalls, wide cracks, moderate to major deterioration in concrete, considerable settlement, considerable scouring or undermining, extensive corrosion and deflection in steel culverts, etc.)

C-S= Critical Deficiency - A deficiency in a structural component or element of a bridge that poses an extreme hazard or unsafe condition to the public. (Follow-up Critical Deficiency Report must be submitted seperately)

URGENCY OF REPAIR:

I = Immediate- (Inspector(s) stay at the bridge until the District Maintenance crew or the responsible Agency crew(if not a State bridge) show up and corrective action is taken.)

A = ASAP- (Action will be taken by the District Maintenance Engineer or the Responsible Agency (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).

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
ACTON	25B	A-02-023	A02023-25B-MUN-NBI	JAN 6, 2006

REMARKS

Item 62.11 - Sidewalks
A bit. conc. sidewalk has been installed since last inspection.

ITEM 61 - CHANNEL AND CHANNEL PROTECTION

Item 61.2 - Embankment Erosion
There is minor to moderate erosion of the channel embankments at the downstream SE corner, approx. 50 ft. downstream of the bridge. This is minor erosion at the SW & NW (upstream) corners that is starting to slightly dislodge several rip rap stones.

Item 61.3 - Debris
There is a very minor build up of alluvial material thru-out several areas of both barrels.

Item 61.5 - Utilities
The utilities are hidden below channel.

Item 61.7 - Aggradation
Re: Item #61.3.

APPROACHES

Approaches a - Appr. pavement condition
The bit. conc. approach pavement is new siince last inspection..

Approaches b - Appr. Roadway Settlement
Re: Approaches:a.

Approaches c - Appr. Sidewalk Settlement
Re: Item #62.11.

Photo Log
Photo 1 : Chain link pedestrian barricade at E side of culvert (sidewalk side)

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
ACTON	25B	A-02-023	A02023-25B-MUN-NBI	JAN 6, 2006

PHOTOS

Photo 1: **Chain link pedestrian barricade at E side of culvert (sidewalk side)**

Report Date: October 23, 2007

State Information

BDEPT#= A02023 Agency Br.No.

Town= Acton

B.I.N= 26B AASHTO= 089.7

FHWA Select List= N

Identification

Structure Number	A0202325BMUNNBI
(5) Inventory Route	151000000
(2) State Highway Department District	03
(3) County Code 017 (4) Place code	00360
(6) Features Intersected	WATER FORT POND BROOK
(7) Facility Carried	HWY MARTIN ST
(9) Location	0.6MI N OF MAYNARD TWN.LN
(11) Kilometerpoint	0000.386
(12) Base Highway Network	N
(13) LRS Inventory Route & Subroute	000000000000
(16) Latitude	42 DEG 27 MIN 31.69 SEC
(17) Longitude	71 DEG 27 MIN 45.00 SEC
(98) Border Bridge State Code	Share %
(99) Border Bridge Structure No. #	

Structure Type and Material

(43) Structure Type Main: Steel Code 319

Culvert Jointless bridge type: Not applicable

(44) Structure Type Appr:

Other Code 000

(45) Number of spans in main unit 002

(46) Number of approach spans 0000

(107) Deck Structure Type - Not applicable Code N

(108) Wearing Surface / Protective System:

A) Type of wearing surface - Not applicable=no deck Code N

B) Type of membrane - Not applicable=no deck Code N

C) Type of deck protection - Not applicable=no deck Code N

Age and Service

(27) Year Built 1985

(106) Year Reconstructed 0000

(42) Type of Service: On - Highway-Ped

Under - Waterway Code 55

(28) Lanes: On Structure 02 Under structure 00

(29) Average Daily Traffic 003300

(30) Year of ADT 2006 (109) Truck ADT 06 %

(19) Bypass, detour length 002 KM

Geometric Data

(48) Length of maximum span 0002.7 M

(49) Structure Length 00008.4 M

(50) Curb or sidewalk: Left 00.0 M Right 00.0 M

(51) Bridge Roadway Width Curb to Curb 000.0 M

(52) Deck Width Out to Out 000.0 M

(32) Approach Roadway Width (w/shoulders) 007.9 M

(33) Bridge Median - No median Code 0

(34) Skew 12 DEG (35) Structure Flared N

(10) Inventory Route MIN Vert Clear 99.99 M

(47) Inventory Route Total Horiz Clear 10.4 M

(53) Min Vert Clear Over Bridge Rdwy 99.99 M

(54) Min Vert Underclear ref N 00.00 M

(55) Min Lat Underclear RT ref N 00.0 M

(56) Min Lat Underclear LT 00.0 M

Navigation Data

(38) Navigation Control - No navigation control on waterway Code 0

(111) Pier Protection Code

(39) Navigation Vertical Clearance 000.0 M

(116) Vert-lift Bridge Nav Min Vert Clear M

(40) Navigation Horizontal Clearance 0000.0 M

Classification

	Code
(112) NBIS Bridge Length	Y
(104) Highway System	N
(26) Functional Class - Urban Local	19
(100) Defense Highway	0
(101) Parallel Structure	N
(102) Direction of Traffic - 2-way traffic	2
(103) Temporary Structure	N
(105) Federal Lands Highways	0
(110) Designated National Network	N
(20) Toll - On free road	3
(21) Maintain - Town Agency	03
(22) Owner - Town Agency	03
(37) Historical Significance built after 1949 presumed to be not eligi	Z

Condition

	Code
(58) Deck	N
(59) Superstructure	N
(60) Substructure	N
(61) Channel & Channel Protection	7
(62) Culverts	7

Load Rating and Posting

	Code
(31) Design Load - H 20=M 18	4
(63) Operating Rating Method - Allowable Stress (AS)	2
(64) Operating Rating	31.7
(65) Inventory Rating Method - Allowable Stress (AS)	2
(66) Inventory Rating	22.6
(70) Bridge Posting	4
(41) Structure - Open	A

Appraisal

	Code
(67) Structural Evaluation	6
(68) Deck Geometry	N
(69) Underclearances, vert. and horiz.	N
(71) Waterway adequacy	6
(72) Approach Roadway Alignment	7
(36) Traffic Safety Features	1 1 1 0
(113) Scour Critical Bridges	6

Inspections

(90) Inspection Date 01/08/06 (91) Frequency 24 MO

(92) Critical Feature Inspection: (93) CFI DATE

(A) Fracture Critical Detail	N	00	MO A)	00/00/00
(B) Underwater Inspection	N	00	MO B)	07/01/85
(C) Other Special Inspection	N	00	MO C)	00/00/00
(*) Other Inspection ()	N	00	MO *)	00/00/00
(*) Closed Bridge	N	00	MO *)	00/00/00
(*) UW Special Inspection	N	00	MO *)	00/00/00
(*) Damage Inspection			MO *)	00/00/00

Rating Loads

Report Date 03/01/82	H20	Type 3	Type 3S2	Type HS
Operating	20.0	32.0	50.0	0.0
Inventory	17.0	23.0	36.0	0.0

Field Posting

Status WAIVED Posting Date 07/21/82

	2 Axle	3 Axle	5 Axle
Actual			
Recommended			

Missing Signs N

Misc.

Bridge Name

N Anti-missile fence N Acrow Panel N Jointless Bridge

Freeze/Thaw N : Not Applicable

Accessibility (Needed/Used)

N / N	Liftbucket	N / N	Rigging	Inspection
N / N	Ladder	N / N	Staging	Hours: 008
N / N	Boat	N / N	Traffic Control	
Y / Y	Wader	N / N	RR Flagperson	
N / N	Inspector 50	N / N	Police	

Blood Lab - know diff cell types & how to do blood typing .. draw pics.

Heart Lab- Draw and label - aorta, vena cave, pulm veins, valves, atriums and ventricles, septum, etc

EKG Lab- ekg machine, know PQRST when is what on the picture.. what do they mean

Respiratory System Lab- 2 vs. 3 lobes, primary secondary and tertiary bronchi, trachea, esophagus is behind trachea, thyroid cartilage (adams apple), tracheal cartilage, spirometor (name of the machine), diff volumes (tidal etc know what they mean) and be able to identify them on the picture of diff volumes.

Stomach Lab- on the model there is a green area that is the gall bladder. know liver, (little green area = bile duct), duodenum = sm intestine connects to stomach. (on models the white lines = pancreatic duct and vessels) know microvilli, LACTEAL is the indicator it is Sm intestines (she emphasized that) there was a model with layers. layers go mucosa - submucosa - muscular - serosa

Kidney Lab- draw and ID a picture of a kidney

Urinalysis and Urinary Sys Lab- draw and label urinary sys. (i cant find my urinalysis info, but all we did was stick strips into fake pee and determined which pee was normal, which had too much glucose, and which had too much something else)

Reproductive Sys Lab- prostate gland, 635 pic, 630 pic, ductus deferens, ejac. duct, prostate, bulb. gland.. etc.. just draw out pics and label them, but she was very insistant we know the prostate and prostate gland... and then all the female junk... and know placenta.
Cumulative breathe