

**TOWN OF ACTON**



**REQUEST FOR PROPOSALS  
PROFESSIONAL ENGINEERING SERVICES  
FOR  
REPAIR, REHABILITATION  
OF TOWN OWNED BRIDGES**

**A-02-018 Concord Road/Nashoba Brook  
A-02-011 Wetherbee Street/Nashoba Brook  
A-02-009 Brook Street/Nashoba Brook  
A-02-008 River Street/Fort Pond Brook  
A-02-021 River Street/Fort Pond Brook  
A-02-020 River Street/Fort Pond Brook  
A-02-023 Martin Street/Fort Pond Brook  
A-02-022 Stow Street/Fort Pond Brook  
A-02-007 Lawsbrook Road/Fort Pond Brook  
A-02-010 Parker Street/Fort Pond Brook**

**The Town of Acton, through its Engineering Department, is hereby requesting proposals for professional engineering services to evaluate the above town owned bridges, prepare plans and specifications for the REPAIR and/or REHABILITATION needed and inspect construction of the specified work. This project has been funded for \$60,000.00**

**This RFP may be obtained in the office of the Acton Town Manager, Town Hall, 472 Main Street, Acton, MA 01720, (978) 264-9612**

**RFP Released : June 13, 2007**

**Pre-Submittal**

**Conference: June 27, 2007, 9:00 AM, Room 204, Town Hall, 472 Main St., Acton, MA**

**Proposals Due : July 20, 2007, 4:00 PM, Town Managers Office, Town Hall  
472 Main Street, Acton, MA 01720**

**Completion Date: Phase I. October 30, 2007  
Phase II. January 31, 2007  
Phase III. December 1, 2008**

**Don P. Johnson, Town Manager  
June 13, 2007**

## **I. INTRODUCTION AND BACKGROUND**

As part of the Massachusetts Bridge Inspection Program the MassHighway inspects municipally owned bridges which have a clear span of greater than 20 feet. The Town of Acton is in receipt of reports for the 10 listed bridges. The 10 reports are attached as appendix 1 of this RFP. These reports list deficiencies in the bridge structures ranging from moderate to severe. None of the conditions was rated as critical or in need of immediate action.

The Town of Acton's goal is to take a proactive approach to the maintenance of its bridges to avoid future major problems and costs. The Consultant selected by the Town through this RFP process will provide the Town's Engineering Department the technical and construction expertise necessary to accomplish this goal.

## **II. SCOPE OF SERVICES**

### **General**

All work shall conform to the standards, policies and procedures of the Massachusetts Highway Department and all other state, federal and local laws and regulations as may be applicable. The Town of Acton will provide all required property line and topographical surveys. The Town will provide all required wetlands delineations and will file the Notice of Intent for approval under the Wetlands Protection Act.

### **Phase I.**

The Consultant will review all inspection reports for the 10 bridges and consult with the MassHighway Bridge Department as required to obtain a thorough understanding of the reports.

The Consultant will conduct its own thorough investigation of each of the 10 bridges and identify the extent of deterioration of all components of the bridge structures.

The firm will determine the most appropriate repair solution for each bridge and present a preliminary report including:

1. A description of the work required for each bridge including plans sufficient for permitting purposes. The consultant shall rank the bridges in order of those most needing repair.
2. A preliminary cost estimate for each bridge.
3. A list of permits that will be needed.

The Consultant will meet with Town Staff to review the preliminary report. The Town will submit a Notice of Intent under Ch. 131 s.40 and submit applications for other identified permits. The Consultant will be present at all public hearings and/or meetings with permitting authorities as may be required.

### **Phase II.**

The Consultant will prepare bid documents, construction documents, drawings and specifications, and cost estimates to achieve the recommended repair solution for each of the 10 bridges. Where advantageous, more than one bridge may be included in the same bid package. The bid package shall make it clear that the winning bidder shall be responsible for all police details needed to control traffic. The Consultant will assist the Town in the analysis of the bids received. The

Consultant will prepare all bid documents in compliance with all State and Federal laws, rules and procedures.

If the balance of the Specified budget of \$60,000.00 is not sufficient to prepare the above for all of the 10 bridges, the Consultant shall refer to the rank the bridges received in Phase I. The Firm will then prepare the bid documents, specifications etc. starting with the highest ranked bridge and work down the list until the budget is expended.

### **Phase III.**

If there are funds remaining in the \$60,000 budget the Consultant will provide inspection services during construction. The Consultant, will give a total amount of hours in the technical proposal to be expended in this manner.

### **III. PROPOSAL SUBMISSION REQUIREMENTS**

Submission of a sealed technical and a sealed price proposal is required. The price proposal must be sealed and submitted separately from the technical proposal. The consultant shall submit one price proposal and 4 copies of the technical proposal.

#### **1. TECHNICAL PROPOSAL-Envelope A – Repair, Rehabilitation of Town Owned Bridges** Consultant Name: \_\_\_\_\_

The technical proposal must contain the following information:

##### **A. Cover Letter**

A cover letter introducing the firm and identifying the project manager and the name, title, address and telephone number of the person with authority to negotiate and contractually commit to all services.

##### **B. Statement of Project Understanding and Approach**

A brief statement, not exceeding one page, that describes the firm's understanding and approach to the study.

##### **C. Scope of Services**

1. A scope of services generally following the scope of services outlined in this RFP, amended or expanded as deemed appropriate by the consultant.
2. A schedule of hours broken down by the phases in the scope of services.

##### **D. Relevant Experience**

The firm shall provide details of relevant experience and prior performance with projects of similar nature.

##### **E. References**

Provide a list of at least 3 projects of a similar nature completed in the last five years including a client contact person (with title, address and telephone number).

F. Certificates

Signed certificates on non-collusion and tax compliance in the form attached to this RFP.

**2. PRICE PROPOSAL-Envelope B- Repair Rehabilitation of Town Owned Bridges**

The price proposal must contain:

A. The fee for the entirety of all services proposed in the technical proposal, including but not limited to travel, meetings, telephone, postage and reproduction. This fee shall not exceed \$60,000.00

B. A breakdown of the professional service fee by each phase of the scope of services

C. The hourly rate schedule to be charged by the Consultant for services provided.

**IV. PRE-SUBMITTAL CONFERENCE**

A pre-submittal conference will be held on **June 27, 2007 at 9:00 AM in Room 204 of the Acton Town Hall, 472 Main Street, Acton, MA 01720**. No questions concerning this RFP or the project will be answered outside this conference, except in or in a memorandum following said conference. See Section IX(1)(c) below.

**V. PROPOSAL SUBMISSION LOCATION AND DEADLINE**

Proposals are due no later than **4:00 PM, July 20, 2007 at the office of the Town Manager, Acton Town Hall, 472 Main Street 01720**. Proposals sent by facsimile or email will not be accepted.

**VI. EVALUATION AND SELECTION CRITERIA**

Pursuant to G.L. c. 30B, § 1(b)(15), the provisions of the Uniform Procurement Act do not apply to contracts with designers. Subject to the information below, the Town of Acton will, however, generally follow the competitive sealed proposals procedures of G.L. c. 30B, § 6, in evaluating proposals submitted pursuant to this RFP.

**1. Minimum Evaluation Criteria**

A. Proposals must include all documentation specified under "Proposal Submission Requirements"

B. The proposed scope of services must in terms of products and services be nearly equivalent (but not necessarily identical) to the Scope of Services outlined in the RFP

C. The Firm must have Registered Professional Engineer(s) assigned to this project who have a proven track record with projects of a similar nature.

**2. Comparative Evaluation Criteria**

All proposals meeting the minimum evaluation criteria will have the following areas rated in 3 levels:

Highly Advantageous, Advantageous or Not Advantageous

a. The statement of project understanding.

- A Highly Advantageous rating will be given to a proposal that in the judgment of the evaluators demonstrates a superior understanding of the project's goals, schedule and deliverables.
- An Advantageous rating will be given to a proposal that in the judgment of the evaluators demonstrates an adequate understanding of the project's goals, schedule and deliverables.
- An Unacceptable rating will be given to a proposal that in the judgment of the evaluators fails to demonstrate an adequate understanding of the project's goals, schedule and deliverables.

b. The scope of services to be performed.

- A Highly Advantageous rating will be given to a proposal that in the judgment of the evaluators demonstrates a willingness and ability to perform and complete all aspects of all three Phases of the Project within the maximum budget.
- An Advantageous rating will be given to a proposal that in the judgment of the evaluators demonstrates a willingness and ability to perform and complete most aspects of all three Phases of the Project within the maximum budget.
- An Unacceptable rating will be given to a proposal that in the judgment of the evaluators fails to demonstrate a willingness or ability to perform and complete one or more Phases of the Project – or a substantial portion thereof - within the maximum budget.

c. The qualifications and relevant experience of the firm and the staff assigned to the project.

- A Highly Advantageous rating will be given to a proposal that in the judgment of the evaluators identifies a Project Team capable of completing the Project successfully and in an expedited manner as evidence by such factors as (a) extensive experience with similar projects, (b) an exceptional record of completing similar work on public projects under budget and/or ahead of schedule, and (c) the resumes of principals and senior staff assigned to the Project.
- An Advantageous rating will be given to a proposal that in the judgment of the evaluators identifies a Project Team capable of completing the Project acceptably and on time as evidence by such factors as (a) suitable experience with similar projects, (b) a suitable record of completing similar work on public projects on time and within budget, and (c) the resumes of principals and senior staff assigned to the Project.
- An Unacceptable rating will be given to a proposal that in the judgment of the evaluators fails to identify a Project Team capable of completing the Project acceptably and on time.

d. References

- A Highly Advantageous rating will be given to a proposal that in the judgment of the evaluators identifies a Project Team with exceptional references.

- An Advantageous rating will be given to a proposal that in the judgment of the evaluators identifies a Project Team with adequate references.
- An Unacceptable rating will be given to a proposal that in the judgment of the evaluators fails to identify a Project Team with adequate references.

### 3. Selection Process

Technical proposals will be reviewed and evaluated without knowledge of the price proposals by a committee appointed by the Town Manager. Proposals will be evaluated based on the evaluation and selection criteria set forth herein. The committee will assign a composite rating to each proposal. There will be no interviews, except that the Town reserves the right for the committee to interview two or more Consultants who are equally most qualified, following the review of their proposals based on the evaluation and selection criteria set forth herein. In that event, interviews will be scheduled as soon as possible. The Consultant who, in the opinion of the committee, presents his/her project approach in the most logical, clear and understandable manner during the interview will be rated "highly advantageous". All other Consultants that are interviewed will be rated "advantageous" or "not advantageous". The committee will assign a composite rating to each Consultant interview. The committee will report its evaluation results to the Town Manager or his designee along with recommended changes in the proposal's plan of services (proposed date of completion of tasks and sub-tasks), should the contract be awarded. The Town Manager or his designee will select the Consultant and award the contract based on the "most advantageous" proposal after taking into consideration the evaluation of the technical proposals made by the committee together with a consideration of price.

## IX. GENERAL PROVISIONS

### 1. Correspondence Prior or During Proposal Submission Period

- Any information released by the Town either verbally or in writing prior to the issuance of this RFP shall be deemed preliminary and bind neither the Town nor the Consultant.
- The Town will not accept oral supplements, revisions, or changes to the responses to this RFP. Written supplements, revisions or changes will be accepted before the proposal deadline only.
- The Town Engineer will be the Town's project coordinator. All inquiries and communication concerning this RFP must be made in writing to Town Engineer, 472 Main Street, Acton MA 01720, or if made orally, must be made at the pre-submittal conference. The Town will respond to all inquiries at the pre-submittal conference or in a memorandum following said conference, which will be mailed to all conference participants as evident from the conference participant sign-in sheet.
- Consultants must respond in writing to all follow-up questions by the Town concerning their proposal.

### 2. Contract Award

- It is the Town's goal to have a Consultant selected and contract awarded by August 8, 2007, although some minor delay may occur.
- The Town intends to award the contract only to one prime Consultant, generally referred to herein as 'the Consultant'. The Consultant shall be solely responsible for any separate

contractual agreements with its sub-consultant(s), if any are proposed and agreed to in the contract between the Town and the Consultant.

- C. Consultants must agree to honor price quotes until August 31, 2007 inclusive.
- D. Award of the contract by the Town will be conditioned upon successful negotiation of revisions to the plan of services as identified during the Consultant proposal evaluation process.
- E. Award of the contract is in the sole discretion of the Acton Town Manager or his designee.
- F. The Town reserves the right at any time to accept any proposal in whole or in any part, and to reject any or all proposals.

### 3. The Contract

Within five business days from the date of the Notice of Award, the successful Consultant will be required to execute a contract for the work in substantially the form of the Agreement attached hereto, entitled "PROFESSIONAL ENGINEERING SERVICES CONTRACT." Any exceptions to the proposed form of Contract must be itemized in the Consultant's response to the RFP. The Town reserves the right to reject any proposal setting forth any such exception if the Town decides, in its sole discretion, that such exception is not in the Town's best interests or in the public interest.

**CERTIFICATE OF NON-COLLUSION**

The undersigned hereby certifies under the penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certificate, the word person shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

\_\_\_\_\_  
Signature of person signing the bid or proposal

\_\_\_\_\_  
Name of business

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**CERTIFICATE OF TAX COMPLIANCE**

Pursuant to Ch.62C, S.49A (b) of the Massachusetts General Laws, I,

\_\_\_\_\_, authorized signatory for  
(name)

\_\_\_\_\_, do hereby certify under the pains and penalties  
(name of Consultant)

of perjury that said contractor has complied with all laws of the Commonwealth of Massachusetts relating to taxes.

Consultant

By: \_\_\_\_\_  
(Signature of authorized representative)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Date)

**REQUIRED FORM OF CONTRACT**

**[Attached]**

**REQUIRED FORM OF CONTRACT**

**[Attached]**

# **PROFESSIONAL ENGINEERING SERVICES CONTRACT**

THIS PROFESSIONAL ENGINEERING SERVICES CONTRACT (the "Contract") is made this \_\_\_\_ day of \_\_\_\_\_, 2007, by, between and among \_\_\_\_\_, a Massachusetts corporation with its principal place of business at \_\_\_\_\_, (hereinafter referred to as the "Contractor"), and the TOWN OF ACTON, a municipal corporation, with a Tax ID# of \_\_\_\_\_ having its principal office at Town Hall, 472 Main Street, Acton MA 01720 (hereinafter referred to as the "Town").

Whereas, as part of the Massachusetts Bridge Inspection Program the Massachusetts Highway Department ("MHD") has inspected Town-owned bridges which have a clear span of greater than 20 feet and has issued reports for ten (10) bridges listed in Section 1 below (the "MHD Reports"). The MHD Reports are attached as Appendix 1 to the Town's Request for Proposals dated \_\_\_\_\_, 2007 ("RFP").

Whereas, the MHD Reports list deficiencies in the bridge structures ranging from moderate to severe.

Whereas, the Town has established a goal to take a proactive approach to the maintenance of its bridges, thereby avoiding future major problems and costs.

Whereas, the Contractor has been selected by the Town, through an RFP process, to provide technical and construction services necessary to accomplish this goal.

Now therefore, the Town and the Contractor, for adequate consideration the receipt and sufficiency of which are hereby acknowledged, agree as follows:

## **1. STATEMENT OF WORK**

The Contractor shall furnish all labor, supervision, services, equipment, transportation, required materials, supplies, insurance and other resources to perform and complete the following professional engineering services with respect to the following Town bridges (designated "Included Bridges") in accordance with contract documents (collectively the "Work"):

### **BRIDGES**

<b>NUMBER</b>	<b>LOCATION</b>	<b>INCLUDED BRIDGES</b>	<b>EXCLUDED BRIDGES</b>
A-02-018	Concord Road/Nashoba Brook		
A-02-011	Wetherbee Street/Nashoba Brook		
A-02-009	Brook Street/Nashoba Brook		
A-02-008	River Street/Fort Pond Brook		
A-02-021	River Street/Fort Pond Brook		
A-02-020	River Street/Fort Pond Brook		

NUMBER	LOCATION	INCLUDED BRIDGES	EXCLUDED BRIDGES
A-02-023	Martin Street/Fort Pond Brook		
A-02-022	Stow Street/Fort Pond Brook		
A-02-007	Lawsbrook Road/fort Pond Brook		
A-02-010	Parker Street/Fort Pond Brook		

- General

The Contractor shall perform all Work in conformity with the standards, policies and procedures of the Massachusetts Highway Department and all other state, federal and local laws and regulations applicable to the Work.

Excluded from the Contract are the following services to be provided by the Town: (a) property line and topographical surveys, (b) wetlands delineations, and (c) preparation of any required Notice of Intent for approval under the Wetlands Protection Act.

- Phase I.

The Contractor shall review the MHD Reports for the Included Bridges and shall consult with the MHD Bridge Department as required to obtain a thorough understanding of the MHD Reports.

The Contractor shall conduct its own thorough investigation of each of the Included Bridges and identify the extent of deterioration of all components of the bridge structures.

The Contractor shall determine the most appropriate repair solution for each of the Included Bridges to address and correct all problems identified in the MHD Reports and by the Contractor's own investigation (the "Repair Work").

The Contractor shall present a preliminary report to the Town including:

- A description of the Repair Work required for each Included Bridge;
- Engineering plans sufficient for permitting purposes for the Repair Work required for each Included Bridge;
- A list ranking the Included Bridges in order of those most needing repair, and an explanation of the reason for each bridge's priority ranking;
- A preliminary cost estimate for the Repair Work required for each Included Bridge; and
- A list of permits that will be needed to complete the Repair Work required for each Included Bridge.

The Contractor shall meet with Town Staff to review the preliminary report.

The Town will submit a Notice of Intent under G.L. c. 131, § 40, and will submit applications for other permits identified in the preliminary report. The Contractor shall attend all public hearings and/or meetings with permitting authorities as may be required to obtain necessary governmental permits to perform the Repair Work.

### Phase II.

In compliance with all State and Federal laws, rules and procedures, the Contractor shall prepare bid documents, construction documents, drawings and specifications, and cost estimates to achieve the Repair Work required for each Included Bridge (collectively, the "Bid Documents"). The Contractor shall prepare the Bid Documents starting with the highest ranked bridge based on Phase I and working down the list until the Bid Documents have been prepared for each Included Bridge. Where advantageous to the Town, more than one bridge may be included in the same bid package. The bid package shall specify that the winning bidder shall be responsible for all police details needed to control traffic.

The Contractor shall assist the Town in the analysis of the bids received.

### Phase III.

The Contractor shall provide inspection services during construction of the Repair Work required for each Included Bridge up to the total number of hours specified in the Contractor's technical proposal in response to the Town's RFP.

## **2. TIME OF COMPLETION**

The Contractor shall commence Work under this Contract on the date specified in the written Notice of to Proceed. The Contractor shall fully complete all Work under the three Phases of this Contract as follows:

- a. Phase I shall be completed within 80 calendar days of receipt of the Notice to Proceed;
- b. Phase II shall be completed within 60 calendar days of receipt of the Town's receipt of necessary governmental permits to perform the Repair Work; and
- c. Phase III shall be completed timely and diligently during the construction process so as to avoid any delay charges to the Town or change orders attributable to the Contractor's delay in performing inspection services.

The Contractor shall adhere to the time requirements and schedules included in this Contract; shall perform its services as expeditiously as is consistent with the standard of professional skill and care required hereby; and shall perform its services in coordination with the operations of the Town on this project and with any party engaged by the Town in connection with the project. The Contractor shall timely request any

information necessary to be provided by the Town for the performance of the Contractor's services.

### **3. THE CONTRACT PRICE**

The Town shall pay the Contractor for the performance of the Contract, in current funds, subject to any additions and deductions as provided in the Contract Documents, to the maximum sum of \_\_\_\_\_ Dollars (\$\_\_\_\_\_.00). The Contractor's compensation shall be made according to the following provisions:

- a. The maximum fee shall cover all Contractor and sub-Contractor services and expenses and shall be all-inclusive. In no event shall the Town be liable for additional charges such as interest, penalties, attorney's fees, or any other expenses incurred by the Contractor or any sub-Contractor such as travel, telephone, or duplication expenses.
- b. The Contractor shall submit invoices for services rendered following the completion of each full project phase. The Contractor's invoice shall include a description of the services performed under the phase or phases covered by the invoice in such form and detail and with such supporting data as the Town may reasonably require to show the computational basis for all charges. The Contractor shall keep records pertaining to services performed employing sound bookkeeping practices and in accordance with generally accepted accounting principles.
- c. Payments to the Contractor will be made as expeditiously as possible upon the completion of each full project phase to the satisfaction to the Town.
- d. Payments under the contract will be made only to the Contractor. The Contractor shall be responsible for the compensation of any of its sub-Contractors.
- e. The Contractor shall not be compensated for any services not included in the contract scope of work, such as additional work that should have been anticipated by the Contractor in the preparation of its proposal, as reasonably determined by the Town Manager, or any services made necessary by the fault or negligence of the Contractor or any of its sub-Contractors.
- e. The Town of Acton shall not incur any charges associated with the Contractor's proposal in response to the RFP.

### **4. CONTRACT DOCUMENTS**

The Contract shall consist of the following component parts, all of which are incorporated herein by reference and made a part hereof:

- a. Request for Proposals dated \_\_\_\_\_, 2007, with all Exhibits, Appendices and Addenda \_\_\_\_ thereto (the "RFP");
- b. The Contractor's Response dated \_\_\_\_\_, 2007 to the RFP;
- c. This Contract and its Exhibits \_\_\_\_;
- d. The Town's Notice of Award \_\_\_\_\_, 2007; and
- f. The Town's Notice to Proceed to be issued upon final execution by the parties hereto.

#### **5. REQUIRED STATUTORY TERMS AND CONDITIONS**

This Contract hereby incorporates by reference any and all provisions required by statute or other applicable law to be included within a design services contract of the type and amount of this Contract. In the event of any inconsistency between the required statutory provisions and any other provisions of this Contract, the statutory requirements shall control.

#### **6. CONTRACTOR'S PERFORMANCE OF THE WORK**

The Contractor shall perform and complete the Work in accordance with the terms and conditions of this Contract including, without limitation, the following:

- a. The Contractor shall complete the Work to the satisfaction of the Town. If the Contractor fails to carry out all of the Work in accordance with this Contract, the Town will provide at least three (3) business days' notice, oral or written, to Contractor of Contractor's failure. If the Contractor does not immediately commence and correct such failure, with diligence and promptness (not to exceed 10 days), the Town may, without prejudice to any other right or remedy it may have, make good these deficiencies, deduct the cost to the Town from any payments retained or then or thereafter due to Contractor, and be reimbursed by Contractor for any costs incurred by the Town in excess of moneys then and thereafter due to Contractor.
- b. All services of the Contractor shall be performed by qualified personnel. The Contractor shall perform its services in accordance with the highest professional standards of skill, care, and diligence.
- c. The services of each individual team member proposed by the Contractor and accepted by the Town to work on the project shall be required for the entire duration of his/her assignment, unless that individual team member becomes unavailable to the Contractor only for unforeseen circumstances

such as the individual's disability, termination of employment by the employee of the underlying employment relationship with the Contractor, military service or death.

- d. Unless clearly stated in the Contractor proposal and incorporated into the contract, none of the services to be provided by the Contractor pursuant to the contract shall be subcontracted or delegated to any other organization, association, individual, corporation, partnership or other such entity without the prior written consent of the Town.
- e. The Contractor and its personnel shall perform at least 50 percent of all the work under the contract, measured either in value of services rendered or in Contractor time spent on such services.
- f. No member of the project team, including sub-Contractors, shall be replaced without the written consent of the Town.
- g. The Town may require the Contractor to relieve any of the Contractor's personnel and sub-Contractors from any further work under the contract if in its sole opinion the individual or sub-Contractor does not perform at the applicable skill level, as described in the RFP and the Contractor's proposal; the individual does not deliver work which conforms to the performance standards stated in the RFP and the Contractors proposal; or personality conflicts with Town personnel hinder effective progress on the work of the project or assignment for which the individual is responsible.
- h. No subcontract or delegation shall relieve or discharge the Contractor from any obligation or liability under the contract except as specifically set forth in the instrument of consent. The Contractor shall be as fully responsible to the Town for the acts and omissions of its sub-Contractors and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly or indirectly employed by it.
- i. Without limiting the foregoing, the Town shall have the right to require the Contractor to cease providing services immediately upon written notice.

## **7. TERM**

The term of this Contract begins on the date written above and ends on the Completion of the Work as defined in Section 2, unless sooner terminated by the Town, for any reason or no reason, in accordance with the Termination section of the Contract.

## **8. TOWN'S RESPONSIBILITIES**

- a. The Town shall grant access to the site of each Included Bridge at all reasonable times to perform the Work.
- b. The Town shall accept conforming Work upon Completion.
- c. The Town will cooperate with the Contractor in scheduling the Contractor's Work on the project.
- d. The Town will give instructions directly to the designated representative of the Contractor.
- e. The Town will pay the Contractor for its Work in accordance with this Contract.

## **9. CONTRACTOR'S RESPONSIBILITIES**

The Contractor shall perform and complete the Work in accordance with the following requirements:

- a. The Contractor shall cooperate with the Town in scheduling and performing the Contractor's Work. The Contractor shall submit all reports, plans, drawings, Bid Documents, and similar submittals required by this Contract with reasonable promptness and within the specified deadlines. The Contractor shall furnish the Town with periodic written and/or oral progress reports on the Work as requested by the Town.
- b. The Contractor shall perform all Work diligently and expeditiously, and consistent with this Contract. The Contractor agrees that the Town will have the authority to reject work that does not conform to the requirements of this Contract. The Contractor shall pay for all services, materials, equipment and labor used in connection with the performance of the Work and shall furnish evidence, satisfactory to the Town, verifying compliance with the Contract's requirements.
- c. The Contractor shall comply with and shall cause its sub-contractors to comply with all laws, ordinances, rules, regulations, decisions and orders of public authorities ("Laws") bearing on the performance of its Work under this Contract, including without limitation, federal, state and local tax Laws, social security Laws, unemployment compensation Laws, environmental Laws, labor Laws, local building and electrical codes or similar Laws and workers' compensation Laws insofar as applicable to the performance of its Work under this Contract, the cost of which has been included by Contractor in its Response to the RFP. Further, the Contractor shall comply with and shall cause its sub-contractors to comply with all regulations pertaining to state or federal grants for the Work made to or applied for by the Town. Unless otherwise expressly stated in this

Contract, the Contractor shall secure and pay for all approvals, permits, fees, licenses and inspections necessary or appropriate for the proper execution and completion of its Work, the cost of which has been included by the Contractor in its Response to the RFP. The Contractor shall take any and all reasonable and prudent safety precautions with respect to the performance of its Work and the prevention of injury to persons or damage to property; and shall (without limitation or effect on its own liabilities and responsibilities to ensure safety) comply with any safety measures requested by the Town and with applicable Laws for the safety of persons and property.

- d. The Contractor shall keep the site of each Included Bridge free from accumulation of waste materials or rubbish caused by Work performed under this Contract.
- e. The Contractor shall maintain records as reasonably necessary to comply with this Contract and as may be reasonably requested by the Town. The Town may gain access, at all reasonable times and upon reasonable notice, to Contractor to the records maintained by Contractor with respect to services performed or to be performed under this Contract.

#### **10. REPORTS, DRAWINGS, ETC.**

The Contractor's proposal in response to the RFP and all Contractor reports, drawings, plans, Bid Documents, and other data, material and work product, including data, material and work product stored on electronic media, furnished to the Town during the course of the project (collectively "Materials") shall become the Town's property and may be used by the Town (or such parties as the Town may designate) thereafter in such manner and for such purposes as the Town (or such parties as the Town may designate) may deem advisable, without further employment of or additional compensation to the Contractor. The Contractor shall not release or disclose to any third party any Materials produced for the Town without obtaining the Town's prior written consent. At no time shall the Contractor release or disclose to any third party any Materials furnished to the Contractor by the Town in connection with the performance of the Contractor's services. The provisions of this section shall survive the expiration or termination of the Contract.

#### **11. INDEMNIFICATION**

To the fullest extent permitted by Law, the Contractor shall indemnify, defend (with counsel acceptable to the Town) and hold harmless the Town of Acton, and its boards, commissions, officers, employees, agents, successors, and assigns, from and against any and all suits, claims, damages, costs, fines, penalties, and fees, including but not limited to reasonable legal fees and collection costs for successfully establishing the right to indemnification, arising out of, in connection with or resulting from Contractor's actions, omissions, obligations, liabilities, performance, breach or failure to perform the

Work under this Contract, whether directly or by or through Contractor's subcontractors, anyone directly or indirectly employed by Contractor or Contractor's subcontractors. This indemnity is effective regardless of whether or not any claim, damage, loss or expense is caused in part by the party indemnified, but will not cover liability that results from the sole negligence or misconduct of the indemnified party.

This defense, indemnification and hold harmless by the Contractor shall include without limitation any and all damage to property or injury to or death of any person, including without limitation employees of the Contractor or its agents, servants or subcontractors. This indemnification is not limited by any limitation on the amount or type of damages, compensation or benefits payable by or for Contractor under workers' compensation acts, disability acts, or other employee benefit acts, nor is it limited by any provision of insurance required by the Contract

This defense, indemnification and hold harmless agreement shall survive the expiration or termination of this Contract.

## **12. CHANGE ORDERS**

The Town may make changes in the Scope of Work by issuing written modifications, additions, deletions or other revisions. Upon receipt of a change order, Contractor, PRIOR to the commencement of any Work under that change order, shall submit in writing to the Town any material adjustments to the contract sum for approval by the Town, at the Town's discretion. No change order Work may be performed without approval and authorization from the Town.

If the Town and Contractor are unable to agree on change order costs, the Town may elect to terminate this Contract and arrange for another contractor to provide such Work and change order Work. If such termination is made, the Town will pay Contractor only for Work performed, consistent with this Contract.

If any Work is deleted from the Scope of Work under this Contract by change order issued by the Town, then the Town shall be entitled to an appropriate credit against the final payment.

## **13. DISPUTES**

All claims, disputes and other matters in question between the Town and the Contractor arising out of or relating to the Contract or the breach thereof shall be submitted for resolution to a court of competent jurisdiction in Middlesex County, Massachusetts, unless otherwise agreed by the parties. No such action shall be brought, however, until the completion of all services under the Contract or its earlier termination as provided in the Contract, the parties agreeing to negotiate in good faith any claims, disputes or other matters in question during the term of the Contract before resorting to litigation.

#### **14. ASSIGNMENT, SUBCONTRACTING OR DELEGATION**

- a. Successors and Assigns: Subject to the provisions of this paragraph, the Town and the Contractor each binds itself, its partners, successors, assigns, and legal representative to the other party.
- b. The Contractor shall not assign, sublet or transfer any of its obligations, responsibilities, rights or interests (including, without limitation, its right to receive any moneys due) under the contract without written consent of the Town. Any assignment, subletting, or transfer by the Contractor in violation of this paragraph shall be void and without force and effect.
- c. If Contractor desires to subcontract or delegate any Work to be performed in connection with this Contract, the Town reserves the right to approve same in advance, which approval may be granted or withheld in the Town's sole discretion and Contractor shall provide any information and documents (including contracts and lien waivers) with respect to any third party that the Town requests. If the Town disapproves of any assignment, subcontracting or delegation, it will be null and void.
- d. The Contractor shall require in writing that each subcontractor or delegee performing any Work under this Contract be bound to the Contractor by the terms of this Contract and will assume to Contractor all obligations for its part of the Work, including, without limitation, those as to insurance, which Contractor has assumed to the Town.
- e. The Town may assign this Contract, to an assignee acceptable to the Town, as long as assignee assumes and also becomes responsible to Contractor for the performance of all of the terms and conditions to be performed by the Town under this Contract.

#### **15. WARRANTIES**

a. The Contractor warrants to the Town that all Work shall conform to the requirements of this Contract; shall be diligently and timely performed under the requirements of this Contract; and shall meet the highest standard of care governing professional design and engineering services in the Boston area. Work not conforming to these requirements may, at the Town's election, be considered defective.

b. The Contractor warrants to the Town that it is a duly organized and validly existing corporation or partnership (as indicated above), that the performance of the Work required of it under this Contract does not violate its organization documents and that the execution and delivery of this Contract and the performance by Contractor of all Work required of it hereunder has been duly authorized by all necessary legal action.

c. All warranties (express or implied) available to the Town under this Contract shall survive the expiration or termination of this Contract for the benefit the Town.

## **16. DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION**

The Contractor's Date of Commencement of Work is the day after Contractor's Receipt of the Notice to Proceed unless otherwise stated therein. The Work shall be completed in accordance with the schedule set forth in Section 2. TIME IS OF THE ESSENCE for performance by Contractor under this Contract.

## **17. INSURANCE**

a. Prior to providing any Work, Contractor shall procure and maintain, and shall cause all subcontractors to procure and maintain, insurance of the following types of coverage and limits of liability:

- (1) Comprehensive General Liability ("CGL") with a minimum limit of at least \$1,000,000 per occurrence for Bodily Injury and Property Damage on a combined single limit basis.
- (2) Workers' Compensation Insurance to the extent required by statute.
- (3) Automobile Bodily Injury and Property Damage with limits of at least \$1,000,000.
- (4) Employers' Liability Insurance with limits of at least \$100,000.
- (5) Statutory Disability Insurance if required in Massachusetts.
- (6) All Risk Property Insurance to the full replacement value of any equipment used by Contractor that belongs to the Town. (If Contractor will use its own equipment exclusively, this insurance is not needed.)
- (7) Professional Liability (Errors and Omissions) with limits of at least \$1,000,000.

b. All coverages shall be primary (unless otherwise noted), shall be written on an occurrence basis (except for the Professional Liability policy which may be written on a claims made basis) and shall be maintained without interruption from the date of this Contract until the date of termination of this Contract; provided however that the Professional Liability policy may be written on a claims made basis and shall be maintained without interruption from the date of this Contract until the date of that is at least one year after termination of this Contract.

c. Certificates of insurance acceptable to the Town shall be filed with the Town prior to commencement of Contractor's Work. The certificates and the insurance policies required by this Contract shall not expire for at least one year from the date of issuance and shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire unless the Town has received at least 30 days prior written notice. If any of the foregoing insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of this coverage shall be submitted with the final application for payment. Except for the Professional Liability policy, the certificate of insurance and the insurance policies required hereunder shall name the Town of Acton, and its successors and assigns, as additional insureds with respect to all Work performed on behalf of the Town. The insuring company shall be reputable, admitted to do business in Massachusetts and have a rating by A.M. Best of at least A. VIII.

## **18. INTEGRATED CONTRACT**

The contract documents listed in Paragraph 4 represent the entire and integrated Contract between the parties and supersede prior representations or agreements, whether oral or written.

## **19. TERMINATION**

- a. The Town may terminate the Contract without cause, on ten days' prior written notice to the Contractor.
- b. The Town is entitled to immediately terminate this Contract by written notice to Contractor upon the occurrence of any of the following events:
  - (i) Failure of Contractor to commence the Work as required by the contract documents;
  - (ii) Failure of Contractor to make prompt payments to its subcontractors;
  - (iii) Failure of Contractor to employ an adequate amount or quality of personnel or equipment to complete the Work without undue delay;
  - (iv) Failure of the Contractor to perform any of its obligations under this Contract; violation by the Contractor of any of the provisions of the Contract; abandonment by the Contractor in whole or in part its services; or inability of the Contractor to perform its services under the Contract;
  - (v) Adjudication of Contractor as a bankrupt;
  - (vi) Any general assignment by Contractor for the benefit of its creditors;

(vii) Appointment of a receiver for Contractor on account of its insolvency;  
or

(viii) Any other act of insolvency by or against Contractor.

b. In the event of termination, the Contractor shall promptly deliver to the Town all Materials, including all documents, work papers, drafts, studies, calculations, data, drawings, plans, specifications, and other tangible work product or materials, whether on paper or on electronic media, pertaining to the services performed under the Contract to the time of termination, and thereupon the Town shall then pay to the Contractor any unpaid and undisputed balance owing for services rendered prior to the date of termination. Any termination of the contract shall not affect or impair the right of the Town to recover damages occasioned by any default of the Contractor or to set off such damages against amounts otherwise owed to the Contractor. Upon any termination of the Contract by the Town, the Town may take possession of, use and rely upon all Materials required by this Contract for the performance of the Work, and may complete the Work in any manner the Town deems desirable, including, without limitation, engaging the services of other parties. If the cost to the Town for the completion of the Work exceeds the amount of the unpaid portion of the Contract Sum, the Contractor shall pay the Town an amount equal to the excess.

## **20. INCONSISTENCY**

In the event of any inconsistency among the Contract Documents, the terms of the Contract shall prevail.

## **21. NO WAIVER**

Any waiver by the Town of any of Contractor's obligations under this Contract is of no effect unless in writing and signed by the Town Manager. The failure of the Town to insist in any one or more instances upon strict performance of any of Contractor's obligations under this Contract will not be construed as a waiver of the future performance of any obligation.

The Town's review, approval, acceptance or payment for services under the Contract shall not operate as a waiver of any rights under the Contract and the Contractor shall be and remain liable to the Town for all damages incurred by the Town as the result of the Contractor's failure to perform in conformance with the terms and conditions of the Contract.

## **22. CUMULATIVE REMEDIES**

All remedies provided in this Contract are cumulative and not exclusive of each other or of any other remedy available at law or in equity.

The rights and remedies of the Town provided for under the Contract are in addition to any other rights or remedies provided by law. The Town may assert a right to recover damages by any appropriate means, including but not limited to set-off, suit, withholding, recoupment, or counter-claim either during or after performance of the Contract

### **23. NOTICES**

Unless otherwise stated in this Contract, all notices under this Contract shall be given in writing by hand delivery, by first class certified or registered mail, return receipt requested, or by overnight mail, in a sealed envelope, postage prepaid, to be effective on the earlier of (a) the second day following placement in the mail or (b) actual physical delivery to the receiver's address. Notice shall be addressed as follows:

If to Contractor, then to Contractor at its address set forth above.

**If to The Town:** Town Manager  
Town Hall  
472 Main Street  
Acton MA 01720

**with copy to:** Stephen D. Anderson, Esq.  
Anderson & Kreiger, LLP  
1 Canal Park, Suite 200  
Cambridge MA 02141

**If to Contractor:**

Either party may change the place for the giving of notice to it by like written notice to the other as provided above.

### **24. LIMITED LIABILITY**

No officer, director, member, employee, or other principal, agent or representative (whether disclosed or undisclosed) of the Town, nor any participant with the Town, shall be personally liable to the Contractor under the Contract, for the Town's payment obligations or otherwise, the Contractor agreeing under the Contract to look solely to the assets of the Town for the satisfaction of any liability of the Town under the Contract. In no event shall the Town ever be liable to the Contractor for indirect, incidental, or consequential damages.

### **25. RULES OF CONSTRUCTION**

Unless otherwise specified, the following rules of construction apply to the contract documents.

- a. Singular words include the plural and plural words include the singular.
- b. This Contract has been initially prepared by the Town and reviewed by the Contractor and their professional advisors. This Contract is the product of all of the efforts of the Town and Contractor and their separate advisors, and should not be interpreted in favor of either the Town or Contractor merely because of their respective efforts in preparing it.
- c. All captions are for convenience and reference only and in no way define or limit the construction of the terms and conditions in this Contract.
- d. The terms "include," "including," and "such as" are each to be construed as if followed by the phrase "without limitation."
- e. If any provision of the Contract shall to any extent be held invalid or unenforceable, the remainder of the Contract shall not be deemed affected thereby.
- f. Paragraph headings in the Contract are included for reference purposes only and in no way define, limit or describe the scope or intent of any of the provisions of the Contract.

## **26. AMENDMENTS**

During the project, the Town may elect to revise the contract scope of services, or change emphasis or direction, depending on interim findings and events. Any changes will be made only by written mutual agreement between the Town and the Contractor. The Contract shall be amended accordingly; provided, however, that no amendment to this Contract shall be valid unless it is in writing and signed on behalf of the Town by the Town Manager.

## **27. FURTHER ASSURANCES**

The Contractor shall do or cause to be done, all actions and things necessary, proper, or advisable to effectuate and achieve the central purpose of this Contract and the Work. All incidental work reasonably necessary to complete the Work shall be done by Contractor, without additional charge, notwithstanding that it may have been omitted from the description of the Work in the contract documents. If at any time after completion of Contractor's obligations under this Contract any further action is necessary or desirable to carry out the purposes of this Contract or the Work described in the contract documents, Contractor shall cooperate with the Town and shall take this further action, without additional charge.

**28. GOVERNING LAW**

This Contract is governed by the Laws of the Commonwealth of Massachusetts.

**29. INDEPENDENT CONTRACTORS**

The Contractor will perform the Work as an independent contractor of the Town, and this Contract will not be construed to create a partnership, joint venture or employment relationship between or among Contractor or the Town. Contractor will not represent itself to be an employee or agent of the Town and will not enter into any Contract on the Town's behalf of or in its name. Contractor will retain full control over the manner in which it performs the Work, and full control over the employment, direction, compensation, and discharge of all persons assisting it in performing the Work. Contractor and its employees are not entitled to workers' compensation, retirement, insurance or other benefits afforded to employees of the Town. Contractor is responsible for payment of all taxes arising out of Contractor's business operations and performance of the Work.

### **30. NO THIRD PARTY RIGHTS**

The provisions of this Contract are intended solely for the benefit of, and may only be enforced by, the parties hereto and their respective successors and permitted assigns. None of the rights or obligations of the parties herein set forth (or implied) is entitled to confer any claim, cause of action, remedy, defense, legal justification, indemnity, contribution claim, set-off or other right upon, or otherwise inure to the benefit of any contractor, subcontractor, worker, supplier, insurer, surety, guest, member of the public, lender, or other third parties having dealings with either of the parties hereto or involved, in any manner in the performance of this Contract.

### **31. SEVERABILITY**

If any term or condition of this Contract is held to be unenforceable, the remaining terms and conditions are binding upon the parties and are enforceable as though the unenforceable provision was not contained in this Contract, except that if the invalid, illegal or unenforceable provision goes to the heart of this Contract, the Contract may be terminated by either party on 10 days prior written notice to the other party hereto.

### **32. SURVIVAL**

All provisions of this Contract that may reasonably be interpreted as surviving beyond the term of this Contract, including without limitation those terms specifically identified in the Contract, shall survive the expiration or termination of the term.

### **33. COUNTERPARTS**

This Contract may be executed in one or more counterparts, each of which is an original.

### **34. OTHER CONTRACTS**

In the event that the Contractor has entered into other agreements with the Town with respect to other projects, the provisions of those agreements shall not apply to the Work covered by this Contract. The Contractor shall not be deemed to be a qualified contractor of the Town for purposes of any other projects by virtue of having entered into this Contract or having performed the Work at the Site.

### **35. EQUAL EMPLOYMENT OPPORTUNITY**

In connection with the performance of the Work under the Contract, the Contractor shall not discriminate against any employee, sub-Contractor or applicant for employment because of race, color, religion, creed, national origin, ancestry, gender, age or handicap. The Contractor shall post in conspicuous places, available for employees and applicants for employment, notices to be provided by the Massachusetts Commission Against

Discrimination (MCAD), One Ashburton Place, Boston, MA 02108, Tel. (617) 727-3990, setting forth the provisions of the Fair Employment Practices Law of the Commonwealth. The Contractor shall comply with all applicable laws and regulations pertaining to non-discrimination, equal opportunity, and affirmative action, including without limitation executive orders and rules and regulations of federal and state agencies of competent jurisdiction.

**36. CERTIFICATION BY CONTRACTOR**

By execution of this Contract, the Contractor certifies:

- a. The Contractor has not given, offered or agreed to give any person, corporation or other entity any gift, contribution or offer of employment as an inducement for, or in connection with, the award of the Contract.
- b. No sub-Contractor to the Contractor has given, offered or agreed to give any gift, contribution or offer of employment to the Contractor or to any other person, corporation, or entity as an inducement for, or in connection with, the award to the sub-Contractor of a contract by the Contractor.
- c. No person, corporation or other entity, other than a bona fide full time employee of the Contractor, has been retained or hired by the Contractor to solicit for or in any way assist the Contractor in obtaining the contract upon an agreement or understanding that such person, corporation or other entity be paid a fee or other consideration contingent upon the award of the Contract to the Contractor.
- d. The Contractor will comply with all applicable requirements of Section 39R of Chapter 30 of the Massachusetts General Laws.

**37. TAXES**

By execution of this Contract, the Contractor, pursuant to Section 49A of Chapter 62C of the Massachusetts General Laws, certifies under the penalties of perjury that it has, to the best knowledge and belief of the person(s) who signed the Contract on the Contractor's behalf, filed all state tax returns and paid all state and local taxes required under law.

**38. CONFLICT OF INTEREST**

By execution of a contract with the Town, the Contractor acknowledges that the Town is a municipality for the purposes of Chapter 268A of the Massachusetts General Laws (the Massachusetts conflict of interest statute), and agrees, as circumstances require, to take actions and to forbear from taking actions so as to be in compliance at all times with obligations of the Contractor based on said statute.

39 MISCELLANEOUS

The contract awarded will contain the following miscellaneous provisions.

- a. Confidentiality: The Contractor shall not, without the Town's prior written consent, release or disclose any information relating to the project to anyone except as necessary to perform its duties hereunder.
- b. Certifications: The Contractor shall, from time to time, make such certifications and statements to the Town as the Town shall reasonably request, and in such form as the Town shall reasonably request, provided that the Contractor determines that such certifications are true and correct based upon services performed by the Contractor under the contract.

This Contract is entered into as of the day and year first above written.

IN WITNESS WHEREOF, the parties hereunto set their hands and seals by their duly authorized officers on the date first above written.

WITNESS/ATTEST:

Town of Acton,  
a Massachusetts Corporation

[SEAL]

BY:  
Name: \_\_\_\_\_  
Title: Town Manager

CORPORATE ACKNOWLEDGMENT

COMMONWEALTH OF MASSACHUSETTS,

COUNTY OF MIDDLESEX, ss:

I CERTIFY that on \_\_\_\_\_, 2007,

personally came before me and acknowledged under oath that he/she:

(a) is the Town Manager of the Town of Acton, the municipal corporation  
named in the attached instrument,

- (b) was authorized to execute this instrument on behalf of the Town of Acton  
and  
(c) executed the instrument as the act of the Town of Acton.

\_\_\_\_\_  
Notary Public  
My Commission Expires:

**TREASURER'S CERTIFICATION**

Pursuant to M.G.L. c. 44, § 31C, as Town Treasurer, I certify that an appropriation in the amount of such contract is available therefor and that an officer or agent of the Town of Acton has been authorized to execute said contract and approve all requisitions and change orders.

\_\_\_\_\_  
John Murray, Town Treasurer

**CONTRACT APPROVED AS TO FORM**

\_\_\_\_\_  
BY: Stephen D. Anderson  
NAME: Anderson & Kreiger  
TITLE: Town Counsel

**CONTRACTOR**

WITNESS/ATTEST:

Contractor:

a Massachusetts Corporation

BY

\_\_\_\_\_, President

[SEAL]

**CORPORATE ACKNOWLEDGMENT**

COMMONWEALTH OF MASSACHUSETTS,  
COUNTY OF MIDDLESEX, ss:

I CERTIFY that on \_\_\_\_\_, 2007, \_\_\_\_\_ personally came before me and acknowledged under oath that he/she:

(a) is the President of \_\_\_\_\_ (the AContractor”) named in the attached instrument,

(b) was authorized to execute this instrument on behalf of the Contractor and

(c) executed the instrument as the act of the Contractor.

Notary Public

My Commission Expires:

**APPENDIX 1**

**MASSHIGHWAY BRIDGE INSPECTION REPORTS**



THE COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF TRANSPORTATION  
MASSACHUSETTS HIGHWAY DEPARTMENT

**EOT**

DEVAL L. PATRICK  
GOVERNOR

BERNARD COHEN  
SECRETARY

TIMOTHY P. MURRAY  
LIEUTENANT GOVERNOR

LUISA PAIEWONSKY  
COMMISSIONER

May 9, 2007

Town of Acton  
Board of Selectmen  
472 Main St.  
Acton, MA 01720

Attn: Don Johnson, Town Manager

SUBJECT: NATIONAL BRIDGE INSPECTION STANDARDS (NBIS)  
UNDERWATER BRIDGE INSPECTION

LAWSBROOK RD / FORT POND BROOK  
Bridge No. A-02-007  
Structure No. A02007-23X-MUN-NBI

Dear Mr. Johnson:

Enclosed for your information is a copy of an Underwater Inspection Report of 3/21/07 for the bridge that carries the LAWSBROOK RD over the FORT POND BROOK.

A copy of the report is on file at our District 3 office located in Worcester. Please feel free to contact the District with any questions you may have concerning the bridge.

Sincerely,



Alexander K. Bardow, P.E.  
Director of Bridges and Structures

JBD/jbd  
cc: FR  
DHD, D-3  
DBIE, D-3  
Enclosure



DEVAL L. PATRICK  
GOVERNOR

TIMOTHY F. MURRAY  
LIEUTENANT GOVERNOR

THE COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF TRANSPORTATION  
MASSACHUSETTS HIGHWAY DEPARTMENT

cc: BOS  
BRUCE

**EOT**

BERNARD COHEN  
SECRETARY

LUISA PALEWOSKY  
COMMISSIONER

March 12, 2007

Town of Acton  
Board of Selectmen  
472 Main St.  
Acton, MA 01720

03-15-07 A10:37 IN

Attn: Don Johnson, Town Manager

SUBJECT: NATIONAL BRIDGE INSPECTION STANDARDS (NBIS)  
BRIDGE INSPECTION REPORTS

A-02-018 (240) CONCORD RD / NASHOBA BROOK Dated: 1/2/07

Dear Mr. Johnson:

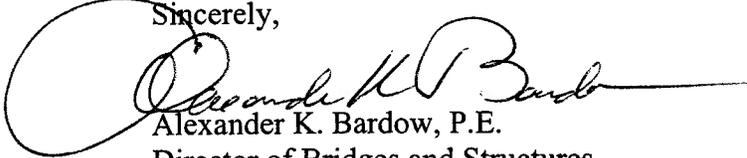
As part of the Massachusetts Bridge Inspection Program the MassHighway is involved with the inspection of municipally owned bridges which have a clear span of greater than 20 feet. These bridges are scheduled to be inspected every two years or less.

For your records, forwarded herewith is a copy of recent bridge inspection field report for the referenced Town owned bridge.

Repair, rehabilitation or reconstruction of any bridges to address the deficiencies reported is the owner/custodian's responsibility.

Questions regarding the content of the report may be directed to the District Bridge Inspection Engineer, Leonard A. Gauthier, telephone (508) 929-3822.

Sincerely,

  
Alexander K. Bardow, P.E.  
Director of Bridges and Structures

LAG/lag  
cc: BIE (2)  
DHD, D-3  
DBIE, D-3  
Enclosure

# MASSACHUSETTS HIGHWAY DEPARTMENT

## STRUCTURES INSPECTION FIELD REPORT

2-DIST <b>03</b>	B.I.N. <b>240</b>
---------------------	----------------------

BR. DEPT. NO. <b>A-02-018</b>
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### CULVERT INSPECTION

CITY/TOWN <b>ACTON</b>	8-STRUCTURE NO. <b>A02018-240-MUN-NBI</b>	11-Kilo. POINT <b>000.161</b>	41-STATUS <b>A:OPEN</b>	90-ROUTINE INSP. DATE <b>JAN 2, 2007</b>
07-FACILITY CARRIED <b>HWY CONCORD RD</b>	MEMORIAL NAME/LOCAL NAME	27-YR BUILT <b>1994</b>	106-YR REBUILT <b>0000</b>	YR REHAB'D (NON 106) <b>0000</b>
06-FEATURES INTERSECTED <b>WATER NASHOBA BROOK</b>	26-FUNCTIONAL CLASS <b>Urban Minor Arterial</b>	DIST. BRIDGE INSPECTION ENGINEER <b>L. A. Gauthier</b> <i>L. A. Gauthier</i>		
43-STRUCTURE TYPE <b>Concrete Culvert</b>	22-OWNER <b>Town Agency</b>	21-MAINTAINER <b>Town Agency</b>	TEAM LEADER <b>G. B. Harrington</b> <i>G. B. Harrington</i>	
107-DECK TYPE <b>Not applicable</b>	WEATHER <b>Sunny</b>	TEMP. (air) <b>7°C</b>	TEAM MEMBERS <b>Z. GIKAS</b>	

<b>TYPE OF CULVERT:</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px;">SHAPE:</td> <td style="padding: 5px;">RECTANGULAR</td> </tr> <tr> <td style="padding: 5px;">MATERIAL:</td> <td style="padding: 5px;">REINF. CONCRETE</td> </tr> <tr> <td style="padding: 5px;">COATING:</td> <td style="padding: 5px;">NONE</td> </tr> </table>	SHAPE:	RECTANGULAR	MATERIAL:	REINF. CONCRETE	COATING:	NONE	<b>BARRELS: (In Meters)</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">SIZE: <b>2.75mx1.80m</b></td> <td style="width: 50%; padding: 5px;">NUMBER: <b>2</b></td> </tr> </table> <b>DEPTH OF COVER</b> (To the nearest tenth of a meter) <table style="display: inline-table; margin-left: 20px;"> <tr> <td style="text-align: center;">N</td> <td style="text-align: center;">S</td> </tr> <tr> <td style="text-align: center; border: 1px solid black;">1.2</td> <td style="text-align: center; border: 1px solid black;">1.2</td> </tr> </table> <b>CURB REVEAL</b> (In millimeters) <table style="display: inline-table; margin-left: 20px;"> <tr> <td style="text-align: center; border: 1px solid black;">110</td> <td style="text-align: center; border: 1px solid black;">170</td> </tr> </table>	SIZE: <b>2.75mx1.80m</b>	NUMBER: <b>2</b>	N	S	1.2	1.2	110	170
SHAPE:	RECTANGULAR														
MATERIAL:	REINF. CONCRETE														
COATING:	NONE														
SIZE: <b>2.75mx1.80m</b>	NUMBER: <b>2</b>														
N	S														
1.2	1.2														
110	170														

<b>ITEM 62 CULVERT &amp; RETAINING WALLS</b> <span style="float: right; border: 1px solid black; padding: 2px;">7</span>	162 (Dive Report): <span style="border: 1px solid black; padding: 2px;">7</span>	162 (This Report): <span style="border: 1px solid black; padding: 2px;">7</span>																																																																																
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<b>ITEM 61 CHANNEL &amp; CHANNEL PROTECTION</b> <span style="float: right; border: 1px solid black; padding: 2px;">7</span> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Dive This Rpt.</th> <th>Rpt.</th> <th>DEF</th> <th></th> <th>Dive This Rpt.</th> <th>Rpt.</th> <th>DEF</th> </tr> </thead> <tbody> <tr> <td>1. Channel Scour</td> <td>8</td> <td>8</td> <td>-</td> <td>5. Utilities</td> <td>N</td> <td>N</td> <td>-</td> </tr> <tr> <td>2. Embankment Erosion</td> <td>7</td> <td>8</td> <td>-</td> <td>6. Rip-Rap/Slope Protection</td> <td>7</td> <td>8</td> <td>-</td> </tr> <tr> <td>3. Debris</td> <td>8</td> <td>8</td> <td>-</td> <td>7. Aggradation</td> <td>8</td> <td>8</td> <td>-</td> </tr> <tr> <td>4. Vegetation</td> <td>7</td> <td>8</td> <td>-</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Dive This Rpt.	Rpt.	DEF		Dive This Rpt.	Rpt.	DEF	1. Channel Scour	8	8	-	5. Utilities	N	N	-	2. Embankment Erosion	7	8	-	6. Rip-Rap/Slope Protection	7	8	-	3. Debris	8	8	-	7. Aggradation	8	8	-	4. Vegetation	7	8	-					<b>STREAM FLOW VELOCITY:</b> Tidal ( <input type="checkbox"/> ) High ( <input type="checkbox"/> ) Moderate ( <input type="checkbox"/> ) Low ( <input checked="" type="checkbox"/> )  <b>ITEM 61 (Dive Report):</b> <span style="border: 1px solid black; padding: 2px;">7</span>  <b>ITEM 61 (This Report):</b> <span style="border: 1px solid black; padding: 2px;">7</span>  <b>93b- U/W INSP DATE:</b> <span style="border: 1px solid black; padding: 2px;">08/23/2006</span>	<b>APPROACH CONDITION</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>DEF</th> </tr> </thead> <tbody> <tr> <td>a. Appr. pavement condition</td> <td style="text-align: center;">8 -</td> </tr> <tr> <td>b. Appr. Roadway Settlement</td> <td style="text-align: center;">8 -</td> </tr> <tr> <td>c. Appr. Sidewalk Settlement</td> <td style="text-align: center;">8 -</td> </tr> <tr> <td>d.</td> <td></td> </tr> </tbody> </table>		DEF	a. Appr. pavement condition	8 -	b. Appr. Roadway Settlement	8 -	c. Appr. Sidewalk Settlement	8 -	d.	
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<b>ITEM 36 TRAFFIC SAFETY</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>36</th> <th>COND</th> <th>DEF</th> </tr> </thead> <tbody> <tr> <td>A. Bridge Railing</td> <td style="text-align: center;">1</td> <td style="text-align: center;">8</td> <td style="text-align: center;">-</td> </tr> <tr> <td>B. Transitions</td> <td style="text-align: center;">1</td> <td style="text-align: center;">8</td> <td style="text-align: center;">-</td> </tr> <tr> <td>C. Approach Guardrail</td> <td style="text-align: center;">1</td> <td style="text-align: center;">8</td> <td style="text-align: center;">-</td> </tr> <tr> <td>D. Approach Guardrail Ends</td> <td style="text-align: center;">1</td> <td style="text-align: center;">8</td> <td style="text-align: center;">-</td> </tr> </tbody> </table>		36	COND	DEF	A. Bridge Railing	1	8	-	B. Transitions	1	8	-	C. Approach Guardrail	1	8	-	D. Approach Guardrail Ends	1	8	-	<b>ACCESSIBILITY (Y/N/P):</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Needed</th> <th>Used</th> <th>Other:</th> <th>Needed</th> <th>Used</th> </tr> </thead> <tbody> <tr> <td>Ladder</td> <td style="text-align: center;">N</td> <td style="text-align: center;">N</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Boat</td> <td style="text-align: center;">N</td> <td style="text-align: center;">N</td> <td></td> <td style="text-align: center;">N</td> <td style="text-align: center;">N</td> </tr> <tr> <td>Waders</td> <td style="text-align: center;">Y</td> <td style="text-align: center;">N</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Needed	Used	Other:	Needed	Used	Ladder	N	N				Boat	N	N		N	N	Waders	Y	N				<b>TOTAL HOURS</b> <span style="border: 1px solid black; padding: 2px;">8</span>  <b>PLANS (Y/N)</b> <span style="border: 1px solid black; padding: 2px;">N</span>  <b>(V.C.R.) (Y/N)</b> <span style="border: 1px solid black; padding: 2px;">N</span>  <b>TAPE#:</b>
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<b>RATING</b>	Request for Rating or Rerating (Y/N): <span style="border: 1px solid black; padding: 2px;">N</span>	If YES please give priority: HIGH ( <input type="checkbox"/> ) MEDIUM ( <input type="checkbox"/> ) LOW ( <input type="checkbox"/> )
Rating Report (Y/N): <span style="border: 1px solid black; padding: 2px;">N</span>	REASON: <span style="border: 1px solid black; padding: 2px;"> </span>	
Date: <span style="border: 1px solid black; padding: 2px;">00/00/00</span>		

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

CITY/TOWN <b>ACTON</b>	B.I.N. <b>240</b>	BR. DEPT. NO. <b>A-02-018</b>	8.-STRUCTURE NO. <b>A02018-240-MUN-NBI</b>	INSPECTION DATE <b>JAN 2, 2007</b>
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### REMARKS, PHOTOS & SKETCHES

#### BRIDGE ORIENTATION

The approaches are West and East and the elevations are South and North. This is a two barrel precast segment reinforced concrete box culvert bridge, with barrels referenced as West and East. The brook flows from the North to the South.

#### GENERAL REMARKS

**Note:** There is only 1 ft. of clearance from the water line to the roof of the culvert. The water flow is low, and there is a single box culvert (Bri.) approximately 40 ft. to the East, which will help relieve high water conditions because of its' higher clearance (**see photo 1**).

#### ITEM 62 - CULVERT

##### Item 62.1 - Roof

The roof segments are placed slightly uneven.

##### Item 62.2 - Floor

The culvert floor is inaccessible due to the small rip rap placed along the entire length of both barrels, high water.

##### Item 62.3 - Walls

Condition based on visible area above water.

### 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>ACTON</b>	B.I.N. <b>240</b>	BR. DEPT. NO. <b>A-02-018</b>	8.-STRUCTURE NO. <b>A02018-240-MUN-NBI</b>	INSPECTION DATE <b>JAN 2, 2007</b>
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**REMARKS**

**Item 62.4 - Headwall**

There is a crack 10 ft. long x up to 1/2 in. wide at the top of the South headwall (see photo 2). There is a minor hairline vertical crack near the centerline of the South headwall (see photo 3).

**Item 62.9 - Wearing Surface**

The wearing surface has been resurfaced since the previous inspection.

**Item 62.17 - Curbs**

There is a minor crack in the curb above the South headwall.

**APPROACHES**

**Approaches a - Appr. pavement condition**

Both approaches have been resurfaced since the previous inspection.

**Photo Log**

Photo 1 : North headwall with a 1 ft. clearance.

Photo 2 : A crack 10 ft. long x up to 1/2 in. wide at the top of the South headwall.

Photo 3 : Vertical hairline crack near the centerline of the South headwall.

CITY/TOWN <b>ACTON</b>	B.I.N. <b>240</b>	BR. DEPT. NO. <b>A-02-018</b>	8.-STRUCTURE NO. <b>A02018-240-MUN-NBI</b>	INSPECTION DATE <b>JAN 2, 2007</b>
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CITY/TOWN ACTON	B.I.N. 240	BR. DEPT. NO. A-02-018	8-STRUCTURE NO. A02018-240-MUN-NBI	INSPECTION DATE JAN 2, 2007
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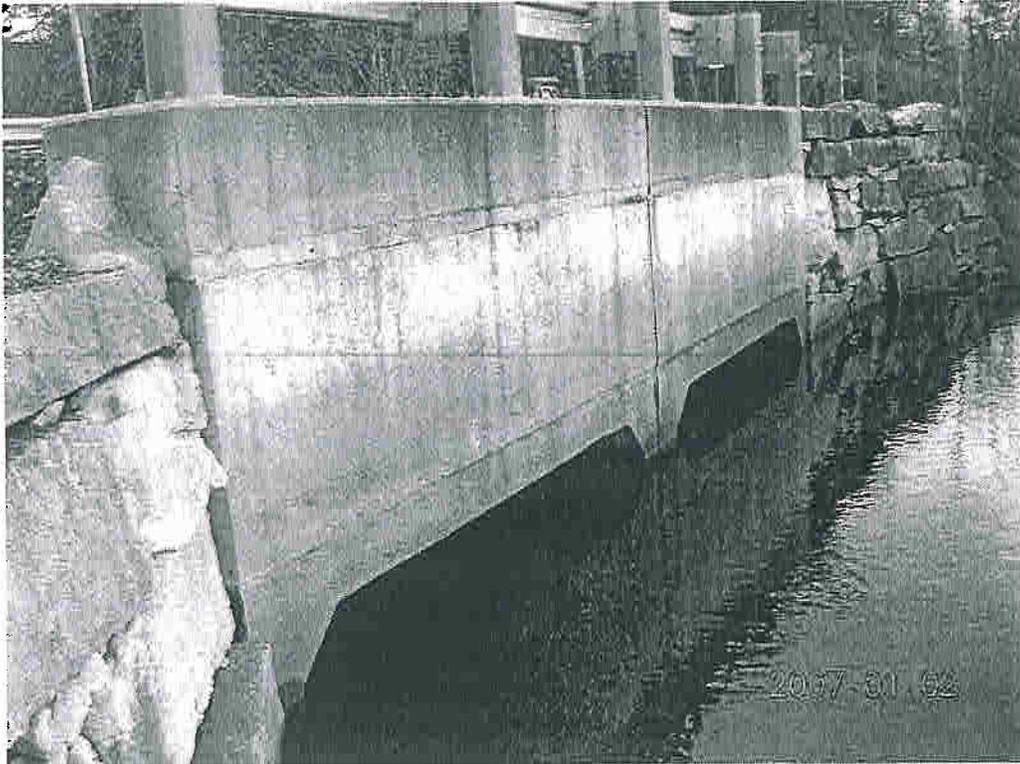
**PHOTOS**

Photo 1: North headwall with a 1 ft. clearance.

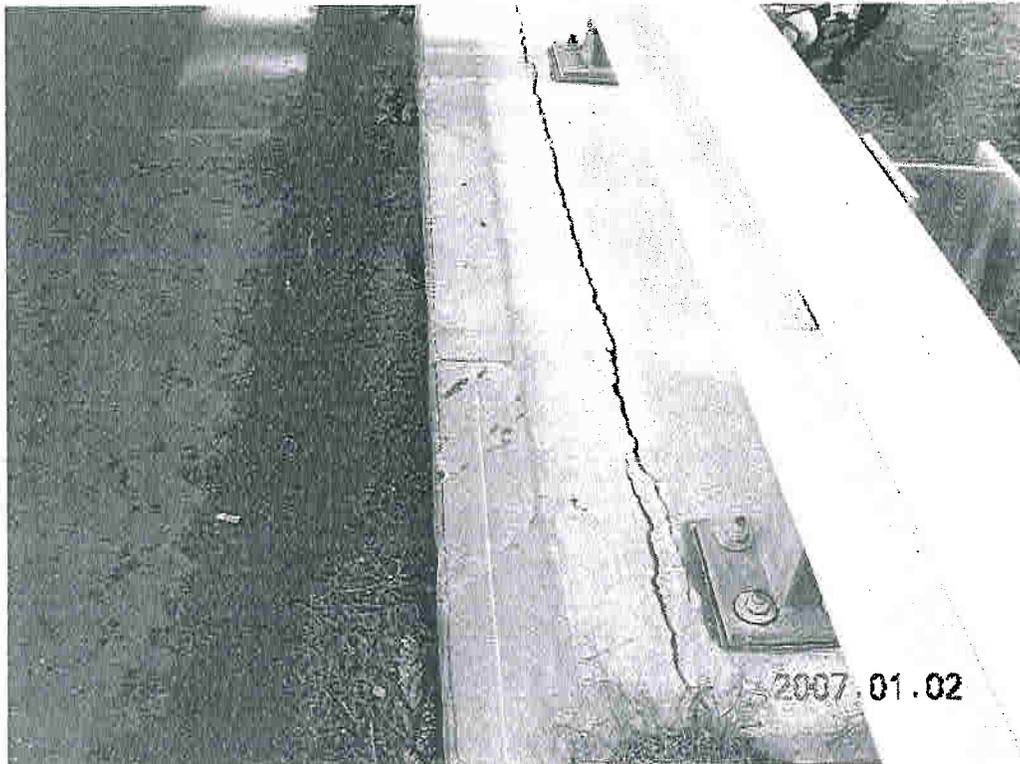
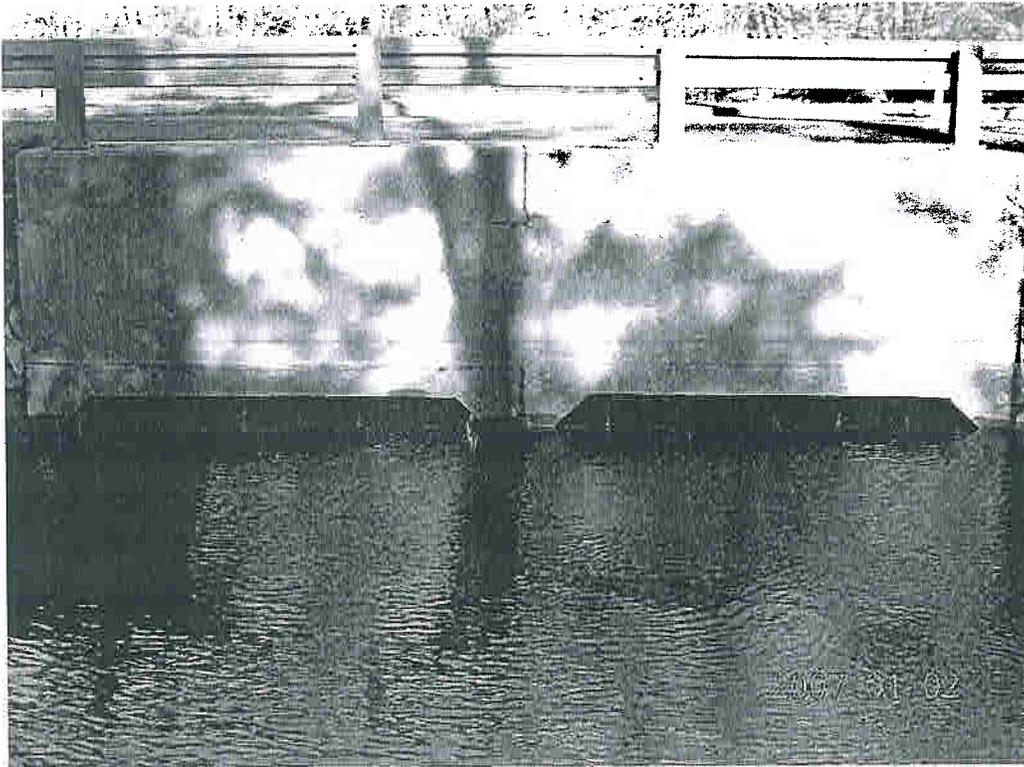


Photo 2: A crack 10 ft. long x up to 1/2 in. wide at the top of the South headwall.

CITY/TOWN <b>ACTON</b>	B.I.N. <b>240</b>	BR. DEPT. NO. <b>A-02-018</b>	8-STRUCTURE NO. <b>A02018-240-MUN-NBI</b>	INSPECTION DATE <b>JAN 2, 2007</b>
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**PHOTOS**



**Photo 3: Vertical hairline crack near the centerline of the South headwall.**

UNDERWATER OPERATIONS TEAM  
ROUTINE UNDERWATER INSPECTION REPORT

BR. DEPT. NO.

A-02-018

2-DIST 03 B.I.N. 240

CITY/TOWN <b>ACTON</b>	8-STRUCTURE NO. <b>A02018-240-MUN-NBI</b>	LEVEL OF INSPECTION <b>II</b>	93B-DATE INSPECTED <b>AUG 23, 2006</b>
07-FACILITY CARRIED <b>HWY CONCORD RD</b>	ACCESS TO BRIDGE <b>EMBANKMENT</b>	UNDERWATER OPERATIONS ENGINEER <b>JOHN B. DESMOND</b>	
06-FEATURES INTERSECTED <b>WATER NASHOBA BROOK</b>	DEPTH <b>0.5 m</b>	VISIBILITY <b>0.5 m</b>	TEAM LEADER (DIVE MASTER) <b>EDWARD P. TERNSKY</b>
BOTTOM CONDITION <b>DUMPED STONE</b>	CURRENT <b>SLIGHT</b>	TEAM MEMBERS <b>S. A. BEGLEY</b>	

Report submitted by:  
*Edward P. Ternsky*

ITEM 60		N	
SUBSTRUCTURE		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	-	

ITEM 61 CHANNEL & CHANNEL PROTECTION		7	
		DEF	
1. Channel Scour	8	-	
2. Embankment Erosion	7	-	
3. Debris	8	-	
4. Vegetation	7	-	
5. Utilities	N	-	
6. Rip-Rap/Slope Protection	7	-	
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 62		7	
CULVERTS		DEF	
1. Roof	7	-	
2. Floor	H	-	
3. Walls	7	-	
4. Headwall	N	-	
5. Wingwall	N	-	
6. Pipe	N	-	
7. Protective Coating	N	-	
8. Embankment	7	-	
9. Wearing Surface	N	-	
10. Railing	N	-	
11. Sidewalks	N	-	
12. Utilities	N	-	
13. Member Alignment	7	-	
14. Deformation	N	-	
15. Scour	8	-	
16. Settlement	7	-	
17.	N	-	
18.	N	-	
UNDERMINING (Y/N)		N	

ITEM 59 SUPERSTRUCTURE		DEF	
	N	-	
	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.]

CITY/TOWN <b>ACTON</b>	B.I.N. <b>240</b>	BR. DEPT. NO. <b>A-02-018</b>	8.-STRUCTURE NO. <b>A02018-240-MUN-NBI</b>	INSPECTION DATE <b>AUG 23, 2006</b>
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### REMARKS

#### GENERAL REMARKS

This structure consists of a precast concrete, double box culvert. There is a single box culvert 40' to the left of the double box culvert which has the Bridge Department Number A-02-041. The single box culvert is in the dry and was not inspected by the Underwater Operations Team.

- 1) Orientation - Barrels designated left and right when facing downstream. Walls are labeled left and right when facing downstream.
- 2) Sta 10+00 is at the upstream end.

#### ITEM 62 CULVERTS

2. Floor: The floors are covered with small dumped stone.
3. Walls: The vertical joints between precast sections have been previously patched with mortar from the mudline to the upper fillet. All of the joints now have some missing mortar above the waterline with penetrations up to 6 inches.
5. Wingwall: All of the wingwalls are dry laid with some loss of fill and penetrations up to 30 inches.
13. Member Alignment: There is some misalignment to sections, this appears to have occurred during construction.

#### Sketch Log

- Sketch 1 : PLAN VIEW (NOT TO SCALE)  
 Sketch 2 : ELEVATION VIEW AT STA 10+00 (NOT TO SCALE)

CITY/TOWN  
ACTON

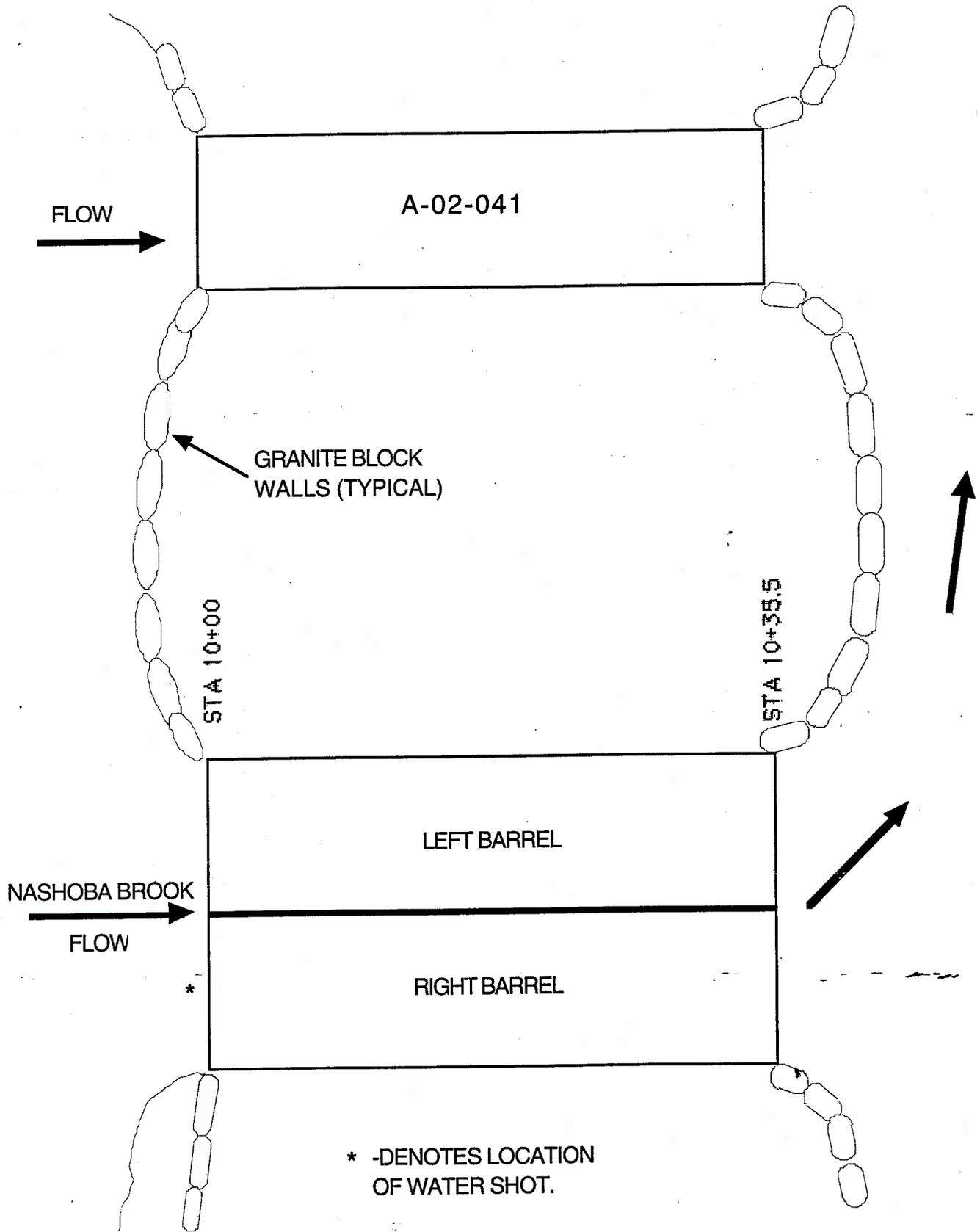
B.I.N.  
240

BR. DEPT. NO.  
A-02-018

8.-STRUCTURE NO.  
A02018-240-MUN-NBI

INSPECTION DATE  
AUG 23, 2006

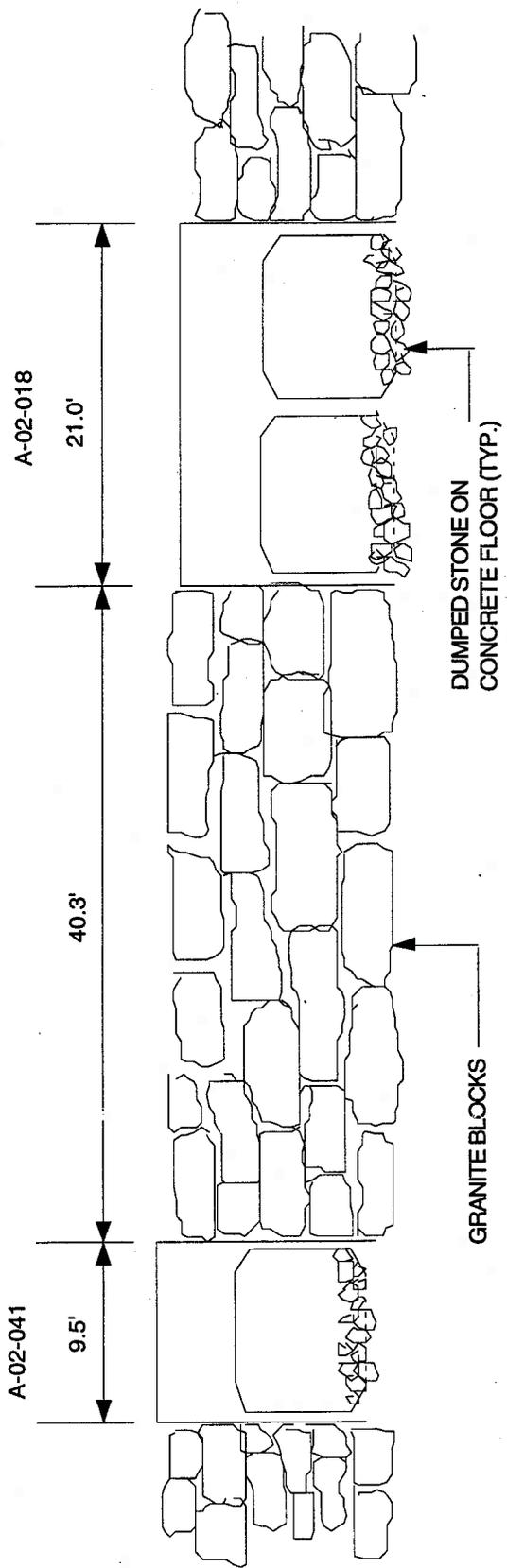
SKETCHES



Sketch 1: PLAN VIEW (NOT TO SCALE)

CITY/TOWN ACTON	B.I.N. 240	BR. DEPT. NO. A-02-018	8-STRUCTURE NO. A02018-240-MUN-NBI	INSPECTION DATE AUG 23, 2006
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SKETCHES



Sketch 2: ELEVATION VIEW AT STA 10+00 (NOT TO SCALE)



**MASSACHUSETTS HIGHWAY DEPARTMENT**  
**STRUCTURES INSPECTION FIELD REPORT**

2-DIST **03** B.I.N. **257**

BR. DEPT. NO.  
**A-02-011**

**CULVERT INSPECTION**

CITY/TOWN <b>ACTON</b>	8-STRUCTURE NO. <b>A02011-257-MUN-NBI</b>	11-Kilo. POINT <b>000.338</b>	41-STATUS <b>A:OPEN</b>	90-ROUTINE INSP. DATE <b>JAN 12, 2006</b>
07-FACILITY CARRIED <b>HWY WETHERBEE ST</b>	MEMORIAL NAME/LOCAL NAME	27-YR BUILT <b>1997</b>	106-YR REBUILT <b>0000</b>	YR REHAB'D (NON 106) <b>0000</b>
06-FEATURES INTERSECTED <b>WATER NASHOBA BROOK</b>	26-FUNCTIONAL CLASS <b>Urban Local</b>	DIST. BRIDGE INSPECTION ENGINEER <b>L. A. Gauthier</b>		
43-STRUCTURE TYPE <b>Concrete Culvert</b>	22-OWNER <b>Town Agency</b>	21-MAINTAINER <b>Town Agency</b>	TEAM LEADER <b>R. C. Angel</b>	
107-DECK TYPE <b>Not applicable</b>	WEATHER <b>Sunny</b>	TEMP. (air) <b>12°C</b>	TEAM MEMBERS <b>P. J. LEOVICH</b>	

**TYPE OF CULVERT:**

SHAPE:	<b>RECTANGULAR</b>
MATERIAL:	<b>CONCRETE</b>
COATING:	<b>NONE</b>

**BARRELS:** (In Meters)

SIZE:	<b>2.40mx3.00m</b>	NUMBER:	<b>3</b>
<b>DEPTH OF COVER</b> (To the nearest tenth of a meter)		E	W
		<b>0.3</b>	<b>0.3</b>
<b>CURB REVEAL</b> (In millimeters)		<b>125</b>	<b>125</b>

**ITEM 62 CULVERT & RETAINING WALLS** **7** 162 (Dive Report): **7** 162 (This Report): **7**

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

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

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

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

**ITEM 61 CHANNEL & CHANNEL PROTECTION** **7** STREAM FLOW VELOCITY: Tidal ( ) High ( ) Moderate ( ) Low (  )

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

**ITEM 61 (Dive Report):** **8**  
**ITEM 61 (This Report):** **7**

93b- U/W INSP DATE: **07/08/2004**

**APPROACH CONDITION**

	DEF
a. Appr. pavement condition	<b>7</b> -
b. Appr. Roadway Settlement	<b>7</b> -
c. Appr. Sidewalk Settlement	<b>7</b> -
d.	

**WEIGHT POSTING**

Actual Posting **N** **N** **N** **N**

Recommended Posting **N** **N** **N** **N**

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

Not Applicable  Signs In Place (Y=Yes, N=No, NR=Not Required) **N** **S** **N** **S**

Legibility/Visibility **N** **S** **N** **S**

**ITEM 36 TRAFFIC SAFETY** ACCESSIBILITY (Y/N/P):

	36	COND	DEF	Needed	Used	Needed	Used	TOTAL HOURS
A. Bridge Railing	<b>1</b>	<b>7</b>	<b>M-P</b>	<b>N</b>	<b>N</b>			<b>8</b>
B. Transitions	<b>1</b>	<b>7</b>	-	<b>N</b>	<b>N</b>	<b>N</b>	<b>N</b>	
C. Approach Guardrail	<b>1</b>	<b>5</b>	<b>S-P</b>	<b>Y</b>	<b>Y</b>			
D. Approach Guardrail Ends	<b>0</b>	<b>5</b>	<b>S-P</b>					

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

**RATING** Request for Rating or Rerating (Y/N): **N** If YES please give priority: HIGH ( ) MEDIUM ( ) LOW ( )

Rating Report (Y/N): **Y**

Date: **07/01/1999** **AD**

CITY/TOWN <b>ACTON</b>	B.I.N. <b>257</b>	BR. DEPT. NO. <b>A-02-011</b>	8-STRUCTURE NO. <b>A02011-257-MUN-NBI</b>	INSPECTION DATE <b>JAN 12, 2006</b>
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### REMARKS, PHOTOS & SKETCHES

#### BRIDGE ORIENTATION

The approaches are S to N and the elevations are W to E. This is a three span box culvert. The spans are numbered from S to N. The brook flows from W to E.

#### ITEM 62 - CULVERT

##### Item 62.1 - Roof

There is minor leakage to several culvert sections along roof joints.

##### Item 62.2 - Floor

The floors are inaccessible due to high water.

##### Item 62.4 - Headwall

Both concrete headwalls show two full height hairline cracks with light efflorescence stains.

##### Item 62.5 - Wingwall

The SW wingwall has some minor honeycombing & minor efflorescence near center.

##### Item 62.10 - Railing

There is a chain link bridgerail fence behind both "SS" type Steel guardrails. Most of the top vertical post caps, on both fences, are missing.

### 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>ACTON</b>	B.I.N. <b>257</b>	BR. DEPT. NO. <b>A-02-011</b>	8-STRUCTURE NO. <b>A02011-257-MUN-NBI</b>	INSPECTION DATE <b>JAN 12, 2006</b>
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### REMARKS

#### **Item 62.13 - Member Alignment**

All three box culvert sections are slightly out of alignment. This mis-alignment is unchanged since the Initial Routine Inspection done on 1/23/98.

#### **Item 62.17 - Culvert Joints**

The grout is falling out in several areas of the center and N barrels.

#### **ITEM 61 - CHANNEL AND CHANNEL PROTECTION**

#### **Item 61.7 - Aggradation**

There is a build up of sand and silt up to 1 ft. deep in the left box. This remark taken from 7/8/04 Routine Underwater Inspection report, due to high water.

#### **TRAFFIC SAFETY**

#### **Item 36a - Bridge Railing**

The bridgerails consist of steel "SS" type guardrails that extend accross culvert and into traffic safety feature areas. There is a chain link pedestrian fence over culvert, at both sides.

#### **Item 36c - Approach Guardrail**

There is severe collision damage to NW approach guardrail. Two guardrail panels and two posts are bent and there is a small tear to top of guardrail in this collision area. See photo #1.

#### **Item 36d - Approach Guardrail Ends**

The NW & NE terminal ends are boxing glove ends not buried or sufficiently turned from traffic. The NE terminal end shows severe collision denting. See photo #2.

#### **Photo Log**

Photo 1 : Collision damage to NW approach guardrail.  
Photo 2 : Collision damage to NE terminal end.

CITY/TOWN  
ACTON

B.I.N.  
257

BR. DEPT. NO.  
A-02-011

8-STRUCTURE NO.  
A02011-257-MUN-NBI

INSPECTION DATE  
JAN 12, 2006

PHOTOS



Photo 1: Collision damage to NW approach guardrail.



Photo 2: Collision damage to NE terminal end.

# UNDERWATER OPERATIONS TEAM ROUTINE UNDERWATER INSPECTION REPORT

CITY/TOWN <b>ACTON</b>		8-STRUCTURE NO. <b>A02009-23Y-MUN-NBI</b>		LEVEL OF INSPECTION <b>II</b>		93B-DATE INSPECTED <b>APR 25, 2007</b>	
07-FACILITY CARRIED <b>HWY BROOK ST</b>		ACCESS TO BRIDGE <b>EMBANKMENT</b>		UNDERWATER OPERATIONS ENGINEER <b>JOHN B. DESMOND</b>			
06-FEATURES INTERSECTED <b>WATER NASHOBA BROOK</b>		DEPTH <b>1.3 m</b>	VISIBILITY <b>1 m</b>	TEAM LEADER (DIVE MASTER) <b>SHARON A. BEGLEY</b>		Report submitted by: <i>[Signature]</i>	
BOTTOM CONDITION <b>GRAVEL</b>		CURRENT <b>MODERATE</b>		TEAM MEMBERS <b>E. P. TERNOISKY</b>			

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	-	-

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 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

ITEM 59 SUPERSTRUCTURE		N	DEF
	N	-	-
	N	-	-
	N	-	-

### DEFICIENCY REPORTING GUIDE

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**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.]

CITY/TOWN

ACTON

B.I.N.

23Y

BR. DEPT. NO.

A-02-009

8-STRUCTURE NO.

A02009-23Y-MUN-NBI

INSPECTION DATE

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**

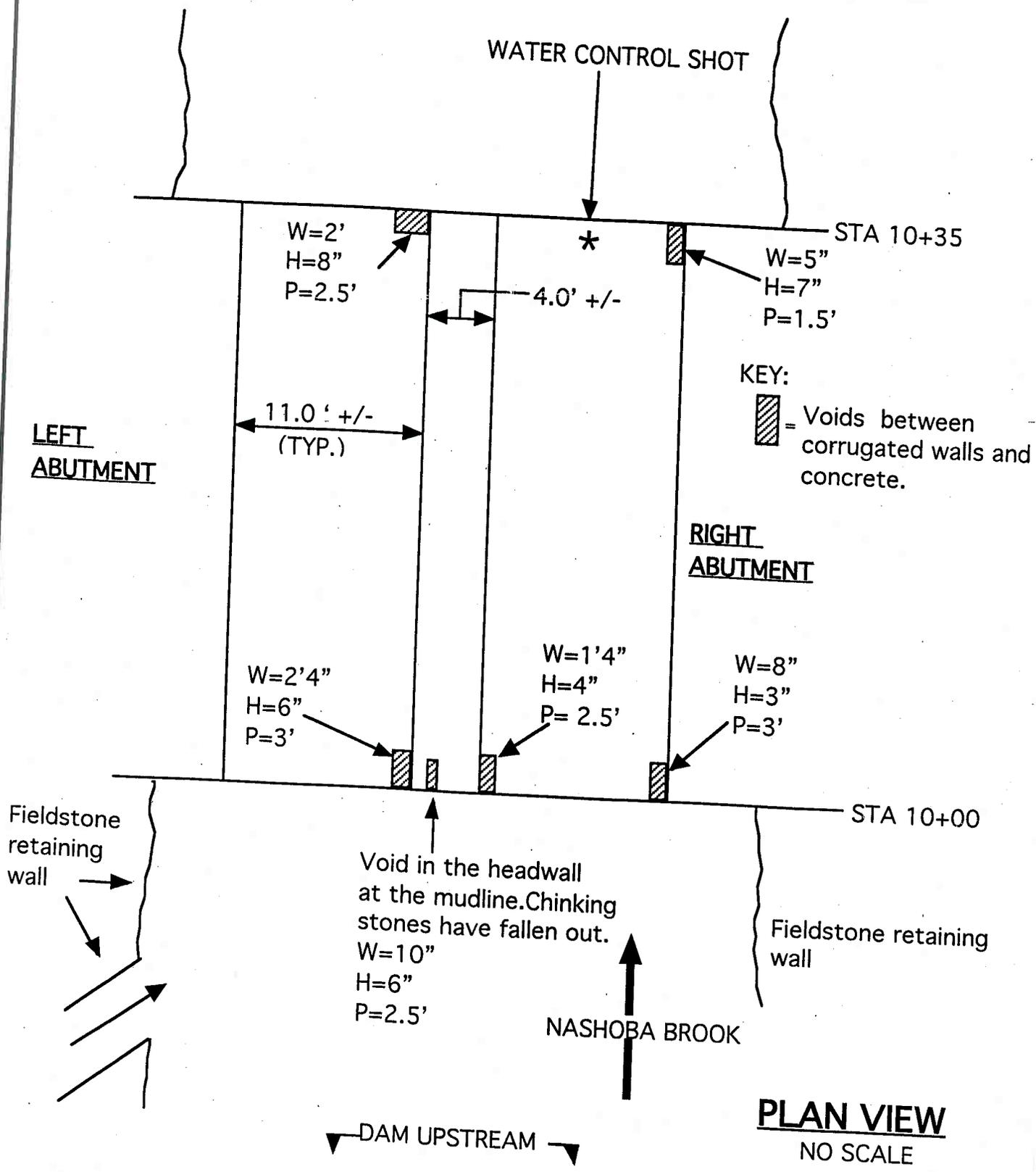
The river bed covers the invert of the pipe ends resulting in no exposure. There are several voids between pipes and walls at each end. See sketch for locations and dimensions.

**Sketch / Chart Log**

Sketch 1 : PLAN VIEW

Chart 1 : SCOUR MONITORING

SKETCHES



**PLAN VIEW**  
NO SCALE

Sketch 1: PLAN VIEW

**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	1.5	1.8	1.9	1.8
DOWNSTREAM LEFT CENTER OF SPAN	1.2	1.9	1.4	1.5	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**



**MASSACHUSETTS HIGHWAY DEPARTMENT  
STRUCTURES INSPECTION FIELD REPORT**

2 - DIST  
3

B.I.N.  
23Y

**ROUTINE ARCH INSPECTION**  
(Lamson Engineering Corporation)

CITY/TOWN <b>Acton</b>	8 - STRUCTURE NO. <b>A02009 23Y MUN NBI</b>	11-KILO. POINT <b>0000.354</b>	41 - STATUS <b>A-Open</b>	90 - ROUTINE INSP DATE <b>12/01/2003</b>
07 - FACILITY CARRIED <b>Brook Street</b>	MEMORIAL NAME / LOCAL NAME <b>None</b>	27 - YR BUILT <b>1938</b>	106 - YR BUILT <b>0000</b>	YR REHAB'D (NON 106) <b>0000</b>
06 - FEATURES INTERSECTED <b>Nashoba Brook</b>	26 - FUNCTIONAL CLASS. <b>17-Urban Collector</b>	DIST. BRIDGE INSPECTION ENGINEER <b>Leonard A. Gauthier</b>		
43 - STRUCTURE TYPE <b>311-2 Span Steel Corrugated Plate Deck Arch</b>	22 - OWNER <b>03-Town</b>	21 - MAINTAINER <b>03-Town</b>	TEAM LEADER <b>L. I. Tong</b>	PROJECT MANAGER. <b>Kin C. Lam, PE #32881</b>
107 - DECK TYPE <b>None</b>	WEATHER <b>Cloudy</b>	TEMP. (air) <b>10°C</b>	TEAM MEMBERS <b>S. Saelim</b>	

**ITEM 58**      **N**

**DECK**      DEF

1. Wearing surface	7	-
2. Deck Condition	N	-
3. Stay in place forms	N	-
4. Curbs	7	-
5. Median	N	-
6. Sidewalks	6	MP
7. Parapets/Coping	N	-
8. Railing	6	MP
9. Anti Missile Fence	N	-
10. Drainage System	N	-
11. Lighting Standards	N	-
12. Utilities	N	-
13. Deck Joints	N	-
14. Spandrel Fill	7	-
15.		
16.		

**Curb Reveal**      N/E      S/W  
(In millimeters)      **75**      **75**

**ITEM 59**      **7**

**SUPERSTRUCTURE**      DEF

1. Arch/Arch Ring	7	-
2. Keystone Area	7	-
3. Stringers/Tee Beams	N	-
4. Floor Beams	N	-
5. Spandrel Walls	6	MP
6. Spring Lines	6	MP
7. Diaphragms	N	-
8. Conn Plt's, Gussets	N	-
9. Hangers	N	-
10. Masonry Joints	6	MP
11 Rivets & Bolts	7	-
12. Welds	N	-
13. Deformation/Flattening	7	-
14. Member Alignment	7	-
15. Paint /Coating	6	MP

Year Painted:      N

**ITEM 60**      **7**      **6**

**SUBSTRUCTURE**      DEF

<b>1. Abutments</b>		Dive Rpt.	This Rpt.	7	DEF
a. Pedestals		N	N		-
b. Bridge Seats		N	N		-
c. Backwalls		N	N		-
d. Breastwalls		N	7		-
e. Wingwalls		N	7		-
f. Slope Pavings/Rip-Rap		N	N		-
g. Pointing		N	7		-
h. Footings		N	N		-
i. Piles		N	N		-
j. Scour	7	N	7		-
k. Settlement	7	N	7		-
l. Erosion Headwalls	6	N	N		-
m. Debris on Seats		N	N		-
<b>2. Piers or Bents</b>				7	DEF
a. Pedestals		N	N		-
b. Caps		N	N		-
c. Columns		N	N		-
d. Stems/Webs/Pierwalls		N	7		-
e. Pointing		N	N		-
f. Footing		N	N		-
g. Piles		N	N		-
h. Scour		N	7		-
i. Settlement		N	7		-
j.					
k.					
<b>3. Pile Bents</b>				N	DEF
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 <b>Y</b>					
COLLISION DAMAGE <b>6</b>					
None (X) Minor ( ) Moderate ( ) Severe ( )					
I-60 (Dive Report) <b>N</b> I-60 (This Report): <b>7</b> <b>6</b>					
93b-UW (DIVE) INSP DATE: <b>7/5/2001</b>					

**APPROPRIATE**      DEF

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

**APPROPRIATE**      (Y/N)      **N**

(Attached to bridge)

**DEF**

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

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

**Any Cracks: (Y/N)**      **N**

City/Town <b>Acton</b>	B.I.N. <b>23Y</b>	Br. Dept. No. <b>A-02-009</b>	8 - Structure No. <b>A02009 23Y MUN NBI</b>	90 - Inspection Date <b>12/01/2003</b>
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**ITEM 61** 7

**CHANNEL & CHANNEL PROTECTION**

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

**STREAM FLOW VELOCITY:**

Tidal  High  Moderate  Low

I-61 (Dive Report): 7      I-61 (This Report): 7

93b-U/W INSP. DATE: 7/5/2001

**ITEM 36 TRAFFIC SAFETY**

	36	COND	DEF
1. Bridge Railing	0	7	-
2. Transitions	0	7	-
3. Approach Guardrail	1	7	-
4. Approach Guardrail Ends	0	7	-

**WEIGHT POSTING:** Not Applicable

Actual Posting: H 3 3S2 SINGLE

Recommended Posting:  

Waived Date:        EJDMT Date: 12/17/87

Signs in Place (Y=Yes N=No):

At bridge		Other Advance	
N/E	S/W	N/E	S/W
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Legibility/		Legibility/	
Visibility		Visibility	

**CLEARANCE POSTING:** N/E SW

Not Applicable       ft in ft in meter

Actual Field Measurement:          

Posted Clearance:          

Signs in Place (Y=Yes N=No):

At bridge		Advance	
N/E	S/W	N/E	S/W
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Legibility/		Legibility/	
Visibility		Visibility	

**RESPONSIBILITY** (Y/N/P)

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

**TOTAL HOURS:** 8

**PLANNING** (Y/N) N

**NOTICE** (Y/N) N

**TAPE #:**  

**List of Field Tests Performed:**

**Visual Inspection**

**RATING:** (To be filled out by DBIE)      If YES please give priority:

Rating Report (Y/N): Y      Request for Rating or Rerating (Y/N): N      HIGH  MEDIUM  LOW

Date: 12/87      Reason:  

**CONDITION RATING GUIDE (for Items 58, 59, 60)**

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 to 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 corroding 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 included 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) contact District Bridge Inspection Engineer (DBIE) to report the Deficiency and to receive further instruction from him/her].

**A= As soon as possible -** [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].

City/Town Acton	B.I.N. 23Y	Br. Dept. No. A-02-009	8 - Structure No. A02009 23Y MUN NBI	90 - Inspection Date 12/01/2003
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**Remarks & Photos**

**Orientation:** Brook Street travels east and west. The Nashoba Brook flows from north to south. This bridge is a two-span corrugated steel plate deck arch structure.

**Item 58-Deck**

58.1 **Wearing Surface:** There are ¼" W x full width transverse cracks at west end and center of bridge.

58.8 **Railing:** The bridge railing consists of granite stone masonry wall that extends up from the spandrel wall. South bridge railing exhibits minor cracking and some mortar pointing missing. There is 1" W x full height x 4" D crack on the roadway side at center of west arch (Photo 3). This crack is also present on the exterior face and originates from the top of west arch through bridge railing (Photo 4). It becomes wider at the top. As shown on Photo 4, the crack is a ½" W x full height along the mortared joints. There are also two top (cap) stones of bridge railing that are slightly dislodged with ½" W gap over the cracked area. The condition of bridge railing appears unchanged since the last inspection.

**Approaches**

(a) **Approach pavement condition:** Approach pavements are in good condition with some ¼" W longitudinal cracks.

**Item 59-Superstructure**

59.1& 59.15 **Arch & Asphaltic coating:** The asphaltic coating on the walls exhibits minor wear below waterline. There is also some minor corrosion along outside edges of the corrugated metal arches where weathering is prevalent (Photo 5).

59.5 **Spandrel Walls:** Spandrel walls consist of cut granite blocks. For south spandrel wall, see Item 58.8. The north spandrel wall has several small voids up to 12" D at the pier wall due to dislodged chinking stones and some joint deterioration (Photo 6).

**Undermining:** The underwater inspection noted several areas of undermining to both arches. See Underwater Inspection Report (7/5/2001).

**Item 36 Traffic Safety**

36.1 **Bridge railing:** See Item 58.8

36.2, 3 & 4 **Transitions, Approach Guardrail & Ends:** These elements are single panel "SS" type guardrail with boxing glove ends butted up to the bridge railing. The terminal ends at all corners are also boxing glove ends. NE, NW and SW approach guardrails show moderate rusting throughout. SE approach guardrail exhibits minor rusting.

**Photo Log**

Photo 1 – West Approach Looking East

Photo 2 – North Elevation Looking South

Photo 3 – South Bridge Railing

Photo 4 – South Bridge Railing and Spandrel Wall over West Arch

Photo 5 – East Arch at SE Corner

Photo 6 – North Spandrel Wall

City/Town Acton	B.I.N. 23Y	Br. Dept. No. A-02-009	8 - Structure No. A02009 23Y MUN NBI	90 - Inspection Date 12/01/2003
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Remarks & Photos



Photo 1  
West Approach Looking East



Photo 2  
North Elevation Looking South

City/Town Acton	B.I.N. 23Y	Br. Dept. No. A-02-009	8 - Structure No. A02009 23Y MUN NBI	90 - Inspection Date 12/01/2003
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## Remarks &amp; Photos



Photo 3  
**South Bridge Railing**  
1" W x full height x 4" D void/gap.  
(For condition on the exterior face, see Photo 4)



Photo 4  
**South Bridge Railing and Spandrel Wall over West Arch**  
 $\frac{1}{2}$ " W x full height crack along mortared joint.  
(For condition on the roadway side, see Photo 3)

City/Town Acton	B.I.N. 23Y	Br. Dept. No. A-02-009	8 - Structure No. A02009 23Y MUN NBI	90 - Inspection Date 12/01/2003
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Remarks & Photos



Photo 5  
**East Arch at SE Corner**  
Minor corrosion.  
(Similar condition at other corners)



12" L x 1.5" W x 7" D

20" L x 2" W x 12" D

Photo 6  
**North Spandrel Wall**  
Stones dislodged and some joint deterioration.  
(Also see Photo 2)



City/Town <b>Acton</b>	B.I.N. <b>255</b>	Br. Dept. No. <b>A-02-008</b>	8 - Structure No. <b>A02008 255 MUN NBI</b>	90 - Inspection Date <b>12/01/2003</b>
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<b>ITEM 61</b>	<b>7</b>								
<b>CHANNEL &amp; CHANNEL PROTECTION</b>									
	<table style="font-size: small;"> <tr> <td></td> <td style="text-align: center;">Dive</td> <td style="text-align: center;">This</td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">Rpt.</td> <td style="text-align: center;">Rpt.</td> <td style="text-align: center;">DEF</td> </tr> </table>		Dive	This			Rpt.	Rpt.	DEF
	Dive	This							
	Rpt.	Rpt.	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 -								

<b>ITEM 36</b>	<b>TRAFFIC SAFETY</b>				
	<table style="font-size: small;"> <tr> <td></td> <td style="text-align: center;">36</td> <td style="text-align: center;">COND</td> <td style="text-align: center;">DEF</td> </tr> </table>		36	COND	DEF
	36	COND	DEF		
1. Bridge Railing	0	7	-		
2. Transitions	0	7	-		
3. Approach Guardrail	1	7	-		
4. Approach Guardrail Ends	0	7	-		

<b>RESPONSIBILITY</b>	(Y/N/P)	
	Needed	Used
Lift Bucket	N	N
Ladder	N	N
Boat	N	N
Wader	Y	Y
Inspector 50	N	N
Rigging	N	N
Staging	N	N
Traffic Control	N	N
RR Flagger	N	N
Police	N	N
Other:		

**STREAM FLOW VELOCITY:**  
Tidal  High  Moderate  Low

I-61 (Dive Report):  N      I-61 (This Report):  7

93b-U/W INSP. DATE:  N

**WEIGHT POSTING:** Not Applicable

H 3 3S2 SINGLE

Actual Posting:

Recommended Posting:

Waived Date:  EJDMT Date:  12/17/87

	At bridge		Other Advance	
	N/E	S/W	N/E	S/W
Signs in Place (Y=Yes N=No)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Legibility/Visibility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**TOTAL HOURS:**  8

**CLEARANCE POSTING:**

N/E S/W

Not Applicable

Actual Field Measurement:  ft  in  ft  in meter

Posted Clearance:  ft  in  ft  in

	At bridge		Advance	
	N/E	S/W	N/E	S/W
Signs in Place (Y=Yes N=No)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Legibility/Visibility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**PLANS:** (Y/N)  N

**VIDEO:** (Y/N)  N

**TAPE #:**

List of Field Tests Performed:  
**Visual Inspection**

**RATING:** (To be filed out by DBIE)

Rating Report (Y/N):  Y      Request for Rating or Rerating (Y/N):  N      HIGH  MEDIUM  LOW

Date:  12/81      Reason:  *6*

If YES please give priority:

**CONDITION RATING GUIDE (for Items 58, 59, 60)**

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 sheer cracks in concrete may be present.
C 2	Critical	Advance deterioration of primary structural elements. Fatigue cracks in steel or sheer 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 to 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 corroding 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 included 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) contact District Bridge Inspection Engineer (DBIE) to report the Deficiency and to receive further instruction from him/her].

**A= As soon as possible -** [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].

City/Town Acton	B.I.N. 255	Br. Dept. No. A-02-008	8 - Structure No. A02008 255 MUN NBI	90 - Inspection Date 12/01/2003
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### Remarks & Photos

**Orientation:** River Street travels east and west. The Fort Pond Brook flows from south to north. This bridge is a single span corrugated metal plate deck arch structure.

#### Item 58-Deck

58.1 **Wearing Surface:** The bituminous concrete wearing surface has been re-paved. It is in good condition. There is approximately 2"± pavement added on the top since last inspection as a result of the completed sewer project.

58.4 **Curbs:** The stone curbs are extensions of bridge railing. There are deteriorations of the cement grout throughout at the base of bridge railing on the top of the stone curb (Photo 4). There is also a heavy amount of sand and debris built up along south curb (Photo 1).

58.8 **Railing:** The bridge railing consists of cut granite blocks. The cap stones at SE, NE and NW corners are slightly dislodged and loose (Photo 3). There is minor cracking and some mortar pointing missing at intermittent locations.

#### Item 59-Superstructure

59.1& 59.6 **Arch/Arch Ring & Spring lines:** There are welded plates installed along both spring line areas after the 1981 rating report, due to the deterioration of the original lower plates. The plates were painted. There are two areas of surface rusting and failed painting at the spring lines. One is 2' H x 6" W at NW corner. The other one is 42" L x 10" H at SW corner (Photo 5). The nuts and bolts are used to secure the corrugated metal panels. There are some corroded nuts on the underside at NW, SE and SW corners. There is also a nut missing on the underside at NW corner.

#### Item 60-Substructure

60.1 d & e **Abutment & Wingwalls:** The abutments and wingwalls consist of cut granite blocks. The NE wingwall exhibits minor pointing missing and voids between stone pieces up to 1' L x 5" H x 14" D (max.) at many locations (Photo 6).

#### Item 36 Traffic Safety

36.1 **Bridge railing:** See Item 58.8

36.2, 3 & 4 **Transitions, Approach Guardrail & Ends:** These elements are of double panels "SS" type guardrail with boxing glove ends butted up to the bridge railing. The terminal ends at all corners are also boxing glove ends. All of these elements are in good condition.

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#### Photo Log

Photo 1 – East Approach Looking West

Photo 2 – North Elevation Looking South

Photo 3 – NW Corner of Bridge Railing

Photo 4 – South Curb

Photo 5 – Spring line at SW Corner

Photo 6 – NE Wingwall

City/Town <b>Acton</b>	B.I.N. <b>255</b>	Br. Dept. No. <b>A-02-008</b>	8 - Structure No. <b>A02008 255 MUN NBI</b>	90 - Inspection Date <b>12/01/2003</b>
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**Remarks & Photos**



**Photo 1  
East Approach Looking West**



**Photo 2  
North Elevation Looking South**

City/Town <b>Acton</b>	B.I.N. <b>255</b>	Br. Dept. No. <b>A-02-008</b>	8 - Structure No. <b>A02008 255 MUN NBI</b>	90 - Inspection Date <b>12/01/2003</b>
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**Remarks & Photos**



**Photo 3**  
**NW Corner of Bridge Railing**  
Cap stone is slightly dislodged and loose.  
(Similar condition at NE and SE corners)



**Photo 4**  
**South Curb**  
Deteriorated cement grout at the base of bridge railing.  
(Similar condition at north curb)

City/Town Acton	B.I.N. 255	Br. Dept. No. A-02-008	8 - Structure No. A02008 255 MUN NBI	90 - Inspection Date 12/01/2003
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Remarks & Photos

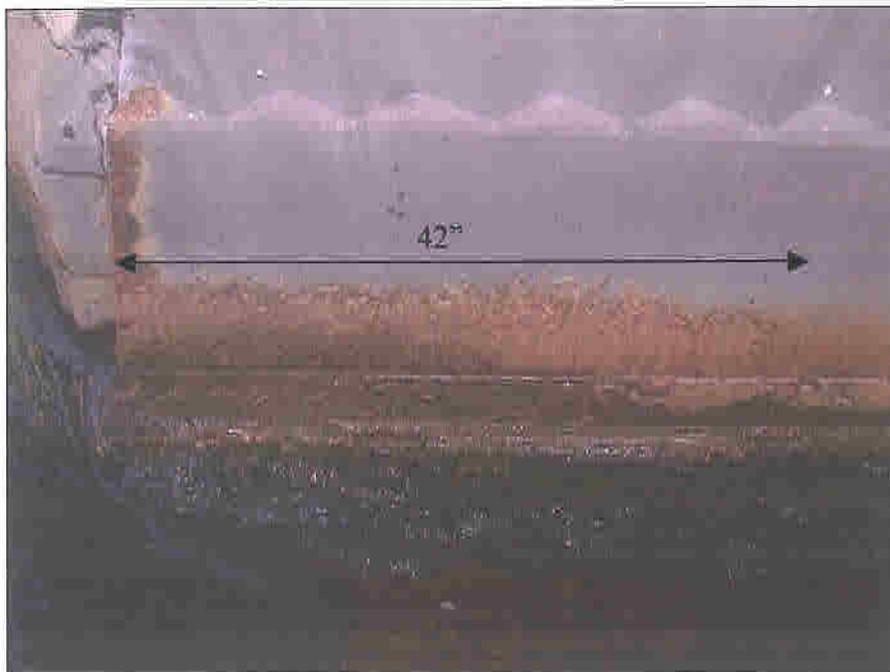


Photo 5  
**Spring line at SW Corner**  
42" L x 10" H surface rusting and failed painting.



Photo 6  
**NE Wingwall**  
1' L x 5" H x 14" D (max.) void/gap.

# MASSACHUSETTS HIGHWAY DEPARTMENT STRUCTURES INSPECTION FIELD REPORT

2-DIST **03** B.I.N. **259**

BR. DEPT. NO.  
**A-02-021**

## CULVERT INSPECTION

CITY/TOWN <b>ACTON</b>		8-STRUCTURE NO. <b>A02021-259-MUN-NBI</b>		11-Kilo. POINT <b>000.805</b>	41-STATUS <b>A:OPEN</b>	90-ROUTINE INSP. DATE <b>JAN 18, 2006</b>
07-FACILITY CARRIED <b>HWY RIVER ST</b>			MEMORIAL NAME/LOCAL NAME		27-YR BUILT <b>1981</b>	106-YR REBUILT <b>0000</b>
06-FEATURES INTERSECTED <b>WATER FORT POND BROOK</b>			26-FUNCTIONAL CLASS <b>Urban Local</b>		DIST. BRIDGE INSPECTION ENGINEER <i>L. A. Gauthier</i>	
43-STRUCTURE TYPE <b>Steel Culvert</b>		22-OWNER <b>Town Agency</b>	21-MAINTAINER <b>Town Agency</b>	TEAM LEADER <i>S. A. Begley</i>		
107-DECK TYPE <b>Not applicable</b>		WEATHER <b>Rain</b>	TEMP. (air) <b>6°C</b>	TEAM MEMBERS <b>M. DYGON</b>		

**TYPE OF CULVERT:**

SHAPE:	<b>PIPE ARCH</b>
MATERIAL:	<b>CORRUGATED STEEL</b>
COATING:	<b>ASPHALTIC</b>

**BARRELS: (In Meters)**

SIZE: <b>2.70mx2.00m</b>	NUMBER: <b>2</b>
-----------------------------	---------------------

**DEPTH OF COVER**  
(To the nearest tenth of a meter)

N <b>0.6</b>	S <b>0.6</b>
-----------------	-----------------

**CURB REVEAL** (In millimeters)

N	N
---	---

**ITEM 62 CULVERT & RETAINING WALLS** 162 (Dive Report): **N** 162 (This Report): **7**

	Dive This Rpt.	DEF		Dive This Rpt.	DEF		Dive 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 (  ) Minor ( ) Moderate ( ) Severe ( )

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

**ITEM 61 CHANNEL & CHANNEL PROTECTION** 7

	Dive This Rpt.	DEF		Dive 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 (  ) 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**

**Actual Posting:**  Not Applicable

**Recommended Posting:**  H  3  3S2  Single

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

**Signs In Place (Y=Yes, N=No, NR=Not Required):**

At bridge		Advance	
E	W	E	W
N	N	N	N
Legibility/Visibility		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	Other:	Needed	Used
Ladder	N	N			
Boat	N	N		N	N
Waders	Y	Y			

**TOTAL HOURS** **8**

**PLANS (Y/N)** **Y**

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

**TAPE#:** \_\_\_\_\_

**RATING**

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

**Rating Report (Y/N):** **N**

**Date:** **00/00/00**

**REASON:** **Based on Design** *AD*

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

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

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

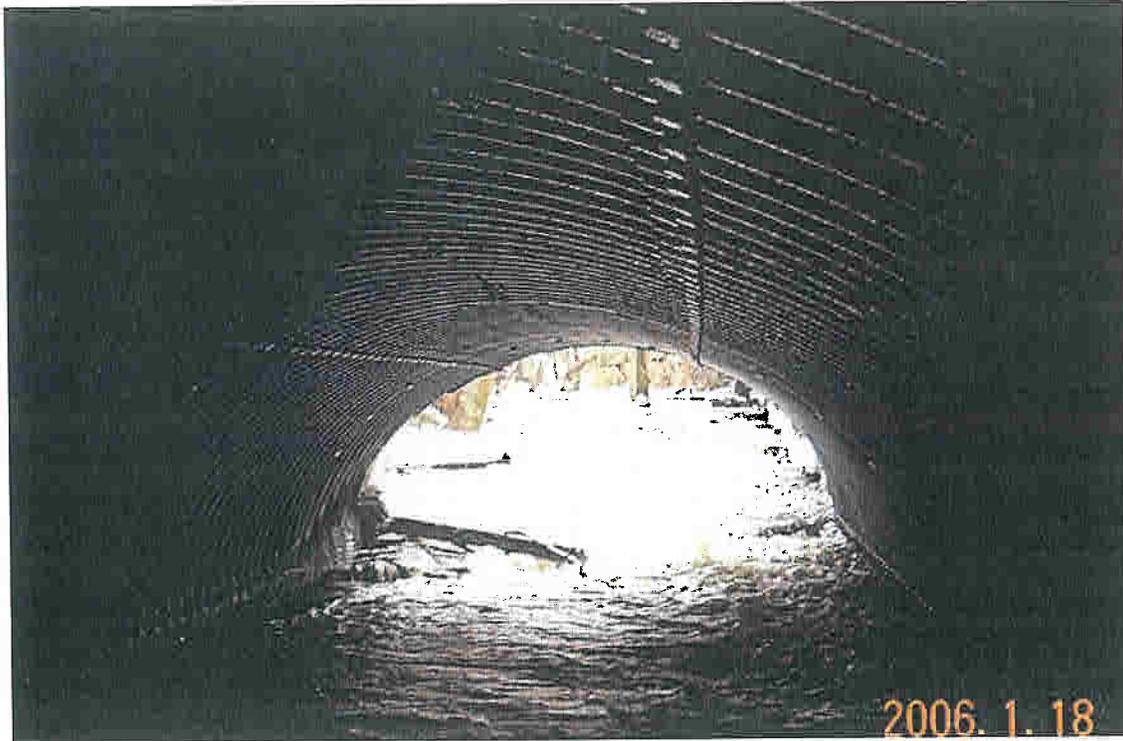
CITY/TOWN <b>ACTON</b>	B.I.N. <b>259</b>	BR. DEPT. NO. <b>A-02-021</b>	8-STRUCTURE NO. <b>A02021-259-MUN-NBI</b>	INSPECTION DATE <b>JAN 18, 2006</b>
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**REMARKS****Photo Log**

- 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>ACTON</b>	B.I.N. <b>259</b>	BR. DEPT. NO. <b>A-02-021</b>	8-STRUCTURE NO. <b>A02021-259-MUN-NBI</b>	INSPECTION DATE <b>JAN 18, 2006</b>
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**PHOTOS**



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



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

CITY/TOWN  
ACTON

B.I.N.  
259

BR. DEPT. NO.  
A-02-021

8-STRUCTURE NO.  
A02021-259-MUN-NBI

INSPECTION DATE  
JAN 18, 2006

PHOTOS



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



Photo 4: Collapse to the Southwest channel wall.

CITY/TOWN  
**ACTON**

B.I.N.  
**259**

BR. DEPT. NO.  
**A-02-021**

8-STRUCTURE NO.  
**A02021-259-MUN-NBI**

INSPECTION DATE  
**JAN 18, 2006**

**PHOTOS**



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



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

**MASSACHUSETTS HIGHWAY DEPARTMENT**  
**STRUCTURES INSPECTION FIELD REPORT**

2-DIST **03** B.I.N. **258**

BR. DEPT. NO.  
**A-02-020**

**CULVERT INSPECTION**

CITY/TOWN <b>ACTON</b>	8-STRUCTURE NO. <b>A02020-258-MUN-NBI</b>	11-Kilo. POINT <b>001.046</b>	41-STATUS <b>A:OPEN</b>	90-ROUTINE INSP. DATE <b>JAN 6, 2006</b>
07-FACILITY CARRIED <b>HWY RIVER ST</b>	MEMORIAL NAME/LOCAL NAME	27-YR BUILT <b>1981</b>	106-YR REBUILT <b>0000</b>	YR REHAB'D (NON 106) <b>0000</b>
06-FEATURES INTERSECTED <b>WATER FORT POND BROOK</b>	26-FUNCTIONAL CLASS <b>Urban Local</b>	DIST. BRIDGE INSPECTION ENGINEER <b>L. A. Gauthier</b> <i>[Signature]</i>		
43-STRUCTURE TYPE <b>Steel Culvert</b>	22-OWNER <b>Town Agency</b>	21-MAINTAINER <b>Town Agency</b>	TEAM LEADER <b>R. C. (Angell)</b> <i>[Signature]</i>	
107-DECK TYPE <b>Not applicable</b>	WEATHER <b>Cloudy</b>	TEMP. (air) <b>1°C</b>	TEAM MEMBERS <b>L. A. GAUTHIER</b>	

<b>TYPE OF CULVERT:</b>	<b>BARRELS: (In Meters)</b>
SHAPE: <b>ROUND</b>	SIZE: <b>3.00mx3.05m</b> NUMBER: <b>2</b>
MATERIAL: <b>CORRUGATED STEEL</b>	DEPTH OF COVER (To the nearest tenth of a meter) N <b>0.6</b> S <b>0.6</b>
COATING: <b>ASPHALTIC</b>	CURB REVEAL (In millimeters) N <b>N</b> S <b>N</b>

**ITEM 62 CULVERT & RETAINING WALLS** **7** 162 (Dive Report): **N** 162 (This Report): **7**

	Dive This Rpt.	Rpt.	DEF		Dive This Rpt.	Rpt.	DEF		Dive This Rpt.	Rpt.	DEF		
1. Roof	N	N	-	7. Protective Coating	N	6	M-P	13. Member Alignment	N	8	-	UNDERMINING (Y/N) If YES please explain	N
2. Floor	N	N	-	8. Embankment	N	7	-	14. Deformation	N	8	-	COLLISION DAMAGE: <i>Please explain</i> None ( X ) Minor ( ) Moderate ( ) Severe ( )	
3. Walls	N	N	-	9. Wearing Surface	N	8	-	15. Scour	N	6	S-P		
4. Headwall	N	7	-	10. Railing	N	8	-	16. Settlement	N	7	-	LOAD VIBRATION: <i>Please explain</i> None ( X ) Minor ( ) Moderate ( ) Severe ( )	
5. Wingwall	N	7	-	11. Sidewalks	N	N	-	17.					
6. Pipe	N	7	M-P	12. Utilities	N	N	-	18.					

**ITEM 61 CHANNEL & CHANNEL PROTECTION** **7** STREAM FLOW VELOCITY: Tidal ( ) High ( ) Moderate ( X ) Low ( )

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

ITEM 61 (Dive Report): **N**  
 ITEM 61 (This Report): **7**  
 93b- U/W INSP DATE: **00/00/00**

a. Appr. pavement condition	<b>7</b>	-
b. Appr. Roadway Settlement	<b>8</b>	-
c. Appr. Sidewalk Settlement	<b>N</b>	-
d.		

**WEIGHT POSTING**

Actual Posting	H	3	3S2	Single
<input checked="" type="checkbox"/> Not Applicable	N	N	N	N
Recommended Posting	N	N	N	N
Waived Date: <b>00/00/00</b>	EJDMT Date: <b>00/00/00</b>			

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

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

**ITEM 36 TRAFFIC SAFETY** **36** **COND** **DEF**

A. Bridge Railing	<b>1</b>	<b>7</b>	-
B. Transitions	<b>1</b>	<b>7</b>	-
C. Approach Guardrail	<b>1</b>	<b>7</b>	-
D. Approach Guardrail Ends	<b>0</b>	<b>7</b>	S-P

**ACCESSIBILITY (Y/N/P):**

	Needed	Used	Needed	Used
Ladder	N	N		
Boat	N	N	N	N
Waders	Y	Y		

**TOTAL HOURS** **8**

**PLANS (Y/N)** **Y**

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

**TAPE#:** \_\_\_\_\_

**RATING** Request for Rating or Rerating (Y/N): **Y** If YES please give priority: HIGH ( ) MEDIUM ( ) LOW ( X )

Rating Report (Y/N): **N**

Date: **00/00/00**

REASON: **Based on design.** *RP*

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

CITY/TOWN <b>ACTON</b>	B.I.N. <b>258</b>	BR. DEPT. NO. <b>A-02-020</b>	S.-STRUCTURE NO. <b>A02020-258-MUN-NBI</b>	INSPECTION DATE <b>JAN 6, 2006</b>
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### 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 are 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 diameter 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>ACTON</b>	B.I.N. <b>258</b>	BR. DEPT. NO. <b>A-02-020</b>	8-STRUCTURE NO. <b>A02020-258-MUN-NBI</b>	INSPECTION DATE <b>JAN 6, 2006</b>
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**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 to 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  
ACTONB.I.N.  
258BR. DEPT. NO.  
A-02-0208-STRUCTURE NO.  
A02020-258-MUN-NBIINSPECTION DATE  
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.

**MASSACHUSETTS HIGHWAY DEPARTMENT  
STRUCTURES INSPECTION FIELD REPORT**

2-DIST  
**03**

B.I.N.  
**25B**

BR. DEPT. NO.  
**A-02-023**

**ROUTINE CULVERT INSPECTION**

CITY/TOWN <b>ACTON</b>	8-STRUCTURE NO. <b>A02023-25B-MUN-NBI</b>	11-Kilo. POINT <b>000.386</b>	41-STATUS <b>A:OPEN</b>	90-ROUTINE INSP. DATE <b>JAN 7, 2004</b>
07-FACILITY CARRIED <b>HWY MARTIN ST</b>	MEMORIAL NAME/LOCAL NAME	27-YR BUILT <b>1965</b>	106-YR REBUILT <b>0000</b>	YR REHAB'D (NON 106) <b>0000</b>
06-FEATURES INTERSECTED <b>WATER FORT POND BROOK</b>	26-FUNCTIONAL CLASS <b>Urban Local</b>	DIST. BRIDGE INSPECTION ENGINEER <i>L. A. Gauthier</i>		
43-STRUCTURE TYPE <b>Steel Culvert</b>	22-OWNER <b>Town Agency</b>	21-MAINTAINER <b>Town Agency</b>	TEAM LEADER <i>G. B. Harrington</i>	
107-DECK TYPE <b>Not Applicable</b>	WEATHER <b>SUNNY</b>	TEMP [Air] <b>-6 °C</b>	TEAM MEMBERS <i>P. M. Amorello</i>	

<b>TYPE OF CULVERT:</b>	<b>BARRELS: (In Meters)</b>																
<table border="1"> <tr> <td>SHAPE:</td> <td><b>PIPE ARCH</b></td> </tr> <tr> <td>MATERIAL:</td> <td><b>CORRUGATED STEEL</b></td> </tr> <tr> <td>COATING:</td> <td><b>ASPHALTIC</b></td> </tr> </table>	SHAPE:	<b>PIPE ARCH</b>	MATERIAL:	<b>CORRUGATED STEEL</b>	COATING:	<b>ASPHALTIC</b>	<table border="1"> <tr> <td>SIZE:</td> <td><b>1.80mx2.70m</b></td> <td>NUMBER</td> <td><b>2</b></td> </tr> </table> <p><b>DEPTH OF COVER</b> (To the nearest tenth of a meter)</p> <table border="1"> <tr> <td>E</td> <td>W</td> </tr> <tr> <td><b>0.6</b></td> <td><b>0.6</b></td> </tr> </table> <p><b>CURB REVEAL</b> (In millimeters)</p> <table border="1"> <tr> <td>N</td> <td>N</td> </tr> </table>	SIZE:	<b>1.80mx2.70m</b>	NUMBER	<b>2</b>	E	W	<b>0.6</b>	<b>0.6</b>	N	N
SHAPE:	<b>PIPE ARCH</b>																
MATERIAL:	<b>CORRUGATED STEEL</b>																
COATING:	<b>ASPHALTIC</b>																
SIZE:	<b>1.80mx2.70m</b>	NUMBER	<b>2</b>														
E	W																
<b>0.6</b>	<b>0.6</b>																
N	N																

**ITEM 62 CULVERT & RETAINING WALLS** **7** 162 (Dive Report): **N** 162 (This Report): **7**

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

APPROACH CONDITION

	DEF
a. Appr. pavement condition	<b>7</b> M-P
b. Appr. Roadway Settlement	<b>7</b> -
c. Appr. Sidewalk Settlement	<b>N</b> -
d.	

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

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

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

**WEIGHT POSTING**

Not Applicable  X

Actual Posting: **N N N N** (H 3 3S2 Single)

Recommended Posting: **N N N N**

Waived Date: **7/21/82** EJDMT Date: **00/00/00**

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

At bridge		Advance	
N	S	N	S
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Legibility/Visibility

**ITEM 36 TRAFFIC SAFETY**

	36	COND	DEF	Accessibility: (Y/N/P):	Needed	Used	Needed	Used	TOTAL HOURS:
A. Railing Over Culvert	<b>1</b>	<b>7</b>	-	Ladder	<b>N</b>	<b>N</b>	Other:		<b>8</b>
B. Transitions	<b>1</b>	<b>7</b>	-	Boat	<b>N</b>	<b>N</b>		<b>N</b> <b>N</b>	PLANS (Y/N) <b>Y</b>
C. Approach Guardrail	<b>1</b>	<b>7</b>	-	Waders	<b>Y</b>	<b>Y</b>			(V.C.R.) (Y/N) <b>N</b>
D. Approach Guardrail Ends	<b>1</b>	<b>7</b>	-						TAPE#: _____

**RATING**

Request for Rating or Rerating (Y/N): **N** If YES please give priority:  
HIGH ( ) MEDIUM ( ) LOW ( )

Rating Report (Y/N): **Y** REASON: **LAG**

Date: **3/1/82**

CITY/TOWN <b>ACTON</b>	B.I.N. <b>25B</b>	BR. DEPT. NO. <b>A-02-023</b>	8.-STRUCTURE NO. <b>A02023-25B-MUN-NBI</b>	INSPECTION DATE <b>JAN 7, 2004</b>
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### REMARKS, PHOTOS & SKETCHES

#### GENERAL REMARKS

The approaches are North and South, and the elevations are East and West. This is a two span pipe arch with the barrels numbered from South to North. The brook flows from West to East.

#### Item 62.2 - Floor

The floors of both barrels show heavy surface rusting and minor to moderate corrosion throughout, from waterline down. The asphaltic coating has worn off throughout most of the both barrel floors. See photo 1.

#### Item 62.7 - Protective Coating

See item 62.2.

#### Item 62.8 - Embankment

See item 61.2.

#### Item 62.9 - Wearing Surface

There are several longitudinal and transverse cracks throughout the bit. concrete wearing surface in both approaches and over the culvert, with most cracks sealed, and beginning to separate. See photo 2.

#### Item 61.2 - Embankment Erosion

There is minor to moderate erosion of the embankments at the downstream Southeast corner, approx. 50 ft. from the bridge. This is minor erosion at the Southwest corner and starting to slightly dislodge several rip rap stones.

### 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>ACTON</b>	B.I.N. <b>25B</b>	BR. DEPT. NO. <b>A-02-023</b>	8.-STRUCTURE NO. <b>A02023-25B-MUN-NBI</b>	INSPECTION DATE <b>JAN 7, 2004</b>
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**REMARKS****Item 61.3 - Debris**

The debris build up of leaves and branches at the upstream end of both barrels, noted on the previous inspection has been removed.

**Item 61.6 - Rip-Rap/Slope Protection**

There is one granite rip rap block missing at the waterline, at the upstream nose, between the two barrels.

**Approaches a - Appr. pavement condition**

See item 62.9.

**Photo Log**

Photo 1 : Moderate rusting at waterline with corrosion, typical throughout both barrels.

Photo 2 : Sealed cracks in the wearing surface, beginning to separate

CITY/TOWN  
ACTONB.I.N.  
25 BBR. DEPT. NO  
A-02-0238.-STRUCTURE NO.  
A02023-25B-MUN-NBIINSPECTION DATE  
JAN 7, 2004

## PHOTOS



**Photo 1: Moderate rusting at waterline with corrosion, typical throughout both barrels.**



**Photo 2: Sealed cracks in the wearing surface, beginning to separate**

STRUCTURES INSPECTION FIELD REPORT

ROUTINE INSPECTION

BR. DEPT. NO.

A-02-022

2-DIST 03 B.I.N. 25A

CITY/TOWN <b>ACTON</b>		8-STRUCTURE NO. <b>A02022-25A-MUN-NBI</b>		11-Kilo. POINT <b>001.207</b>	41-STATUS <b>A:OPEN</b>	90-ROUTINE INSP. DATE <b>APR 13, 2006</b>
07-FACILITY CARRIED <b>HWY STOW ST</b>		MEMORIAL NAME/LOCAL NAME		27-YR BUILT <b>1924</b>	106-YR REBUILT <b>0000</b>	YR REHAB'D (NON 106) <b>0000</b>
06-FEATURES INTERSECTED <b>WATER FORT POND BROOK</b>		26-FUNCTIONAL CLASS <b>Urban Collector</b>		DIST. BRIDGE INSPECTION ENGINEER <b>L. A. Gauthier</b>		
43-STRUCTURE TYPE <b>Steel Stringer/Girder</b>		22-OWNER <b>Town Agency</b>	21-MAINTAINER <b>Town Agency</b>	TEAM LEADER <b>J. Long</b> <i>J. Long #46210</i>		PROJ MGR <b>BSC Group #3371A</b> <i>Edward Malina</i>
107-DECK TYPE <b>Concrete Cast-in-Place</b>		WEATHER <b>P/C</b>	TEMP. (air) <b>18°C</b>	TEAM MEMBERS <b>S. YUNG CHEN</b>		

<b>ITEM 58</b>	<b>6</b>	
<b>DECK</b>		<b>DEF</b>
1. Wearing surface	7	-
2. Deck Condition	6	M-P
3. Stay in place forms	N	-
4. Curbs	5	M-P
5. Median	N	-
6. Sidewalks	N	-
7. Parapets	N	-
8. Railing	8	-
9. Anti Missile Fence	N	-
10. Drainage System	N	-
11. Lighting Standards	N	-
12. Utilities	H	-
13. Deck Joints	N	-
14.	N	-
15.	N	-
16.	N	-
<b>CURB REVEAL</b> (In millimeters)	N 85 S 85	

<b>ITEM 59</b>	<b>5</b>	
<b>SUPERSTRUCTURE</b>		<b>DEF</b>
1. Stringers	5	M-P
2. Floorbeams	N	-
3. Floor System Bracing	N	-
4. Girders or Beams	N	-
5. Trusses - General	N	-
a. Upper Chords	N	-
b. Lower Chords	N	-
c. Web Members	N	-
d. Lateral Bracing	N	-
e. Sway Bracings	N	-
f. Portals	N	-
g. End Posts	N	-
6. Pin & Hangers	N	-
7. Conn Pit's, Gussets & Angles	N	-
8. Cover Plates	N	-
9. Bearing Devices	H	-
10. Diaphragms/Cross Frames	N	-
11. Rivets & Bolts	H	-
12. Welds	N	-
13. Member Alignment	7	-
14. Paint/Coating	N	-
15. Concrete Encasement	4	S-P
<b>Year Painted</b>	<b>N</b>	

**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**

<b>ITEM 60</b>	<b>6</b>	
<b>SUBSTRUCTURE</b>		<b>DEF</b>
<b>1. Abutments</b>	Dive Cur	<b>6</b>
a. Pedestals	N N	-
b. Bridge Seats	N H	-
c. Backwalls	N H	-
d. Breastwalls	N 6	M-P
e. Wingwalls	N 6	M-P
f. Slope Paving/Rip-Rap	N N	-
g. Pointing	N N	-
h. Footings	N H	-
i. Piles	N N	-
j. Scour	N 7	-
k. Settlement	N 7	-
l.	N N	-
m.	N N	-
<b>2. Piers or Bents</b>		<b>5</b>
a. Pedestals	N N	-
b. Caps	N 7	-
c. Columns	N N	-
d. Stems/Webs/Pierwalls	N 5	S-P
e. Pointing	N N	-
f. Footing	N H	-
g. Piles	N N	-
h. Scour	N N	-
i. Settlement	N 7	-
j.	N N	-
k.	N N	-
<b>3. Pile Bents</b>		<b>N</b>
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 ( )

**SCOUR:** *Please explain*  
None (X) Minor ( ) Moderate ( ) Severe ( )

**I-60 (Dive Report):** **N** **I-60 (This Report):** **6**

**93B-U/W (DIVE) Insp** **00/00/00**

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

CITY/TOWN <b>ACTON</b>	B.I.N. <b>25A</b>	BR. DEPT. NO. <b>A-02-022</b>	8.-STRUCTURE NO. <b>A02022-25A-MUN-NBI</b>	INSPECTION DATE <b>APR 13, 2006</b>
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**ITEM 61** 6

**CHANNEL & CHANNEL PROTECTION**

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

**ITEM 36 TRAFFIC SAFETY**

	36	COND	DEF
A. Bridge Railing	0	8	-
B. Transitions	0	8	-
C. Approach Guardrail	1	8	-
D. Approach Guardrail Ends	0	5	M-P

**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

**WEIGHT POSTING** Not Applicable

	H	3	3S2	Single
Actual Posting	N	N	N	N
Recommended Posting	13	27	43	N

Waived Date: 02/01/1995 EJDMT Date: 00/00/00

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

At bridge		Other Advance	
E	W	E	W
/	/	/	/

**TOTAL HOURS** 16

**STREAM FLOW VELOCITY:**

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

ITEM 61 (Dive Report):  N ITEM 61 (This Report)  6

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

**CLEARANCE POSTING**

Not Applicable

N		S		meter
ft	in	ft	in	
0	0	0	0	

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

At bridge		Advance	
N	S	N	S
/	/	/	/

**PLANS (Y/N):** N

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

**TAPE#:** \_\_\_\_\_

List of field tests performed:

**RATING**

Hating Report (Y/N)  Y

Date: 12/01/1993

**(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].

CITY/TOWN <b>ACTON</b>	B.I.N. <b>25A</b>	BR. DEPT. NO. <b>A-02-022</b>	8.-STRUCTURE NO. <b>A02022-25A-MUN-NBI</b>	INSPECTION DATE <b>APR 13, 2006</b>
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## REMARKS

### **BRIDGE ORIENTATION**

Bridge No. A-02-022 (25A) is a continuous two span concrete encased steel stringer bridge, which carries Stow Street over Fort Pond Brook. Stow Street travels West and East and the brook flows from North to South. The superstructure consists of 9 stringers and 8 bays numbered from South to North. The substructure consists of two concrete gravity abutments and a concrete pierwall.

### **GENERAL REMARKS**

The previous inspection report indicated that plans were available for this bridge. The plans are actually for a replacement bridge, which was never constructed. No plans are on file for the existing bridge.

### **ITEM 58 - DECK**

#### **Item 58.2 - Deck Condition**

The bottom of the deck has areas of efflorescence staining throughout most of the bays. A 12 in. diameter spall with exposed reinforcing is on the bottom of the utility slab near the West end of bay 1 in the West span (See Photo No. 1). Honeycombing exists throughout bay 2 in the West span. A 12 ft. long x 8 in. high x 3 in. deep spall is located along the West end of the North deck slab fascia (See Photo No. 2). The East end of the North deck slab fascia has minor horizontal cracking with efflorescence.

#### **Item 58.4 - Curbs**

A 2 ft. long x 2 in. high x 2 in. deep spall is located at the second rail post from the West on the North concrete curb (See Photo No. 3).

#### **Item 58.8 - Railing**

The thrie beam guardrail, which is used as both bridge and approach railing, is generally in very good condition. The bridge railings do not meet current AASHTO impact criteria.

### **ITEM 59 - SUPERSTRUCTURE**

#### **Item 59.1 - Stringers**

The bottom of the concrete encasement has spalled off the bottom of stringers 3 through 7 and 9 in the West span and stringers 4 through 9 in the East span (See Photo No. 4). Stringer 8 in the West span has delamination along the bottom of the concrete encasement with heavy horizontal cracking for its entire length. All of the exposed bottom flanges have minor rusting. Some of the exposed stringer ends have moderate rusting with less than 10% section loss to the bottom flange. West span stringer 9 has heavy rusting for the entire length of the bottom flange with up to 10% section loss (See Photo No. 5). The North edge of the concrete cover for stringer 3 is spalled with heavy efflorescence in the West span and is delaminated with moderate efflorescence in the East span. The sides of some of the concrete encasements have areas of minor scaling. There is moderate to heavy efflorescence staining adjacent to stringers 3 and 9 in both spans (See Photo No. 6).

#### **Item 59.15 - Concrete Encasement**

See Item No. 59.1 comments.

CITY/TOWN <b>ACTON</b>	B.I.N. <b>25A</b>	BR. DEPT. NO. <b>A-02-022</b>	8.-STRUCTURE NO. <b>A02022-25A-MUN-NBI</b>	INSPECTION DATE <b>APR 13, 2006</b>
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## REMARKS

### ITEM 60 - SUBSTRUCTURE

#### Item 60.1.d - Breastwalls

Minor concrete abrasion exists along the waterline on both abutments. The South end of the West abutment has some moderate cracking with minor spalling. A minor vertical crack is located below bay 2 on the West abutment. There is a minor vertical crack with some minor delamination adjacent to it located below bay 5 on the East abutment. A 1 ft. H x 8 in. W x 4 in. deep spall with a large aggregate stone exposed is located adjacent to stringer 6 in bay 6 of the East abutment (See Photo No. 7).

#### Item 60.1.e - Wingwalls

Both of the wingwalls on the North side of the bridge have minor abrasion at the waterline. There is a minor horizontal crack at the top of the NE wingwall.

#### Item 60.2.d - Stems/Webs/Pierwalls

The pierwall has moderate abrasion along both sides at the waterline. The upstream (North end) nose of the pierwall has heavy abrasion at the waterline (See Photo No. 8). The SW corner has an 18 in. L x 12 in. H x 6 in. D spall (See Photo No. 9). A 2 ft. x 2 ft. area of delamination is located at the SE corner along with a 12 in. L x 6 in. H x 6 in. D spall (See Photo No. 10). A few minor vertical and horizontal cracks are located throughout both sides.

### ITEM 61 - CHANNEL AND CHANNEL PROTECTION

#### Item 61.2 - Embankment Erosion

The embankment at the SE corner of the bridge is heavily eroded and has exposed most of the approach rail end post (See Photo No. 11).

#### Item 61.6 - Rip-Rap/Slope Protection

Most of the slope protection at the SE corner has washed out (See Photo No. 11).

### TRAFFIC SAFETY

#### Item 36a - Bridge Railing

See Item No. 58.8 comments.

#### Item 36d - Approach Guardrail Ends

The ends of the approach railings are boxing glove type and do not meet current AASHTO impact criteria. The SE end has moderate collision damage and has heavy embankment erosion around the post (See Photo No. 11). The NW end shows some minor damage.

#### Photo Log

- Photo 1 : Spall and honeycombing on the bottom of the utility slab near the West end of bay 1 in the West span
- Photo 2 : Spall along the North deck slab fascia in the West span
- Photo 3 : Spall on the North curb
- Photo 4 : Spalling of the concrete encasements in East span looking South
- Photo 5 : Rusting and section loss to bottom flange of stringer 9 in West span
- Photo 6 : Heavy efflorescence along stringer 3 in West span
- Photo 7 : Spall on East abutment adjacent to stringer 6
- Photo 8 : Heavy abrasion to North end of pierwall
- Photo 9 : Abrasion and spalling at SW corner of pierwall
- Photo 10 : Abrasion and spalling at SE corner of pierwall

CITY/TOWN <b>ACTON</b>	B.I.N. <b>25A</b>	BR. DEPT. NO. <b>A-02-022</b>	8.-STRUCTURE NO. <b>A02022-25A-MUN-NBI</b>	INSPECTION DATE <b>APR 13, 2006</b>
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**REMARKS****Photo Log (Cont'd)**

Photo 11 : Collision damage to SE approach rail end and embankment erosion

CITY/TOWN  
**ACTON**

B.I.N.  
**25A**

BR. DEPT. NO.  
**A-02-022**

8.-STRUCTURE NO.  
**A02022-25A-MUN-NBI**

INSPECTION DATE  
**APR 13, 2006**

## PHOTOS



**Photo 1: Spall and honeycombing on the bottom of the utility slab near the West end of bay 1 in the West span**



**Photo 2: Spall along the North deck slab fascia in the West span**

CITY/TOWN  
**ACTON**B.I.N.  
**25A**BR. DEPT. NO.  
**A-02-022**8.-STRUCTURE NO.  
**A02022-25A-MUN-NBI**INSPECTION DATE  
**APR 13, 2006****PHOTOS****Photo 3: Spall on the North curb****Photo 4: Spalling of the concrete encasements in East span looking South**

CITY/TOWN  
**ACTON**B.I.N.  
**25A**BR. DEPT. NO.  
**A-02-022**8.-STRUCTURE NO.  
**A02022-25A-MUN-NBI**INSPECTION DATE  
**APR 13, 2006****PHOTOS**

**Photo 5: Rusting and section loss to bottom flange of stringer 9 in West span**



**Photo 6: Heavy efflorescence along stringer 3 in West span**

CITY/TOWN  
**ACTON**B.I.N.  
**25A**BR. DEPT. NO.  
**A-02-022**8.-STRUCTURE NO.  
**A02022-25A-MUN-NBI**INSPECTION DATE  
**APR 13, 2006****PHOTOS**

**Photo 7: Spall on East abutment adjacent to stringer 6**



**Photo 8: Heavy abrasion to North end of pierwall**

CITY/TOWN  
**ACTON**B.I.N.  
**25A**BR. DEPT. NO.  
**A-02-022**8.-STRUCTURE NO.  
**A02022-25A-MUN-NBI**INSPECTION DATE  
**APR 13, 2006****PHOTOS**

**Photo 9: Abrasion and spalling at SW corner of pierwall**



**Photo 10: Abrasion and spalling at SE corner of pierwall**

CITY/TOWN <b>ACTON</b>	B.I.N. <b>25A</b>	BR. DEPT. NO. <b>A-02-022</b>	8.-STRUCTURE NO. <b>A02022-25A-MUN-NBI</b>	INSPECTION DATE <b>APR 13, 2006</b>
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**PHOTOS**

**Photo 11: Collision damage to SE approach rail end and embankment erosion**

**MASSACHUSETTS HIGHWAY DEPARTMENT**  
**STRUCTURES INSPECTION FIELD REPORT**

2-DIST **03** B.I.N. **23X**

**ROUTINE INSPECTION**

BR. DEPT. NO.  
**A-02-007**

CITY/TOWN <b>ACTON</b>	8-STRUCTURE NO. <b>A02007-23X-MUN-NBI</b>	11-Kilo. POINT <b>000.032</b>	41-STATUS <b>A:OPEN</b>	90-ROUTINE INSP. DATE <b>JAN 24, 2006</b>
07-FACILITY CARRIED <b>HWY LAWSBROOK RD</b>	MEMORIAL NAME/LOCAL NAME	27-YR BUILT <b>1928</b>	106-YR REBUILT <b>0000</b>	YR REHAB'D (NON 106) <b>0000</b>
06-FEATURES INTERSECTED <b>WATER FORT POND BROOK</b>	26-FUNCTIONAL CLASS <b>Urban Collector</b>	DIST. BRIDGE INSPECTION ENGINEER <i>L. A. Gauthier</i>		
43-STRUCTURE TYPE <b>Concrete Tee Beam</b>	22-OWNER <b>Town Agency</b>	21-MAINTAINER <b>Town Agency</b>	TEAM LEADER <b>S. A. Begley</b> <i>S. A. Begley</i>	
107-DECK TYPE <b>Concrete Cast-in-Place</b>	WEATHER <b>Clear</b>	TEMP. (air) <b>2°C</b>	TEAM MEMBERS <b>E. P. TERNOŠKY</b>	

<b>ITEM 58</b>	<b>6</b>	
<b>DECK</b>		<b>DEF</b>
1. Wearing surface	7	-
2. Deck Condition	6	M-A
3. Stay in place forms	N	-
4. Curbs	5	M-P
5. Median	N	-
6. Sidewalks	N	-
7. Parapets	5	S-P
8. Railing	6	M-P
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	-
<b>CURB REVEAL</b> (In millimeters)	E <b>50</b>	W <b>75</b>

<b>ITEM 59</b>	<b>6</b>	
<b>SUPERSTRUCTURE</b>		<b>DEF</b>
1. Stringers	N	-
2. Floorbeams	N	-
3. Floor System Bracing	N	-
4. Girders or Beams	6	M-P
5. Trusses - General	N	-
a. Upper Chords	N	-
b. Lower Chords	N	-
c. Web Members	N	-
d. Lateral Bracing	N	-
e. Sway Bracings	N	-
f. Portals	N	-
g. End Posts	N	-
6. Pin & Hangers	N	-
7. Conn Pl'ts, Gussets & Angles	N	-
8. Cover Plates	N	-
9. Bearing Devices	N	-
10. Diaphragms/Cross Frames	N	-
11. Rivets & Bolts	N	-
12. Welds	N	-
13. Member Alignment	8	-
14. Paint/Coating	N	-
15.	N	-
<b>Year Painted</b>	N	

<b>ITEM 60</b>	<b>6</b>			
<b>SUBSTRUCTURE</b>		<b>DEF</b>		
<b>1. Abutments</b>	Dive	Cur	7	
a. Pedestals	N	N		-
b. Bridge Seats	N	7		-
c. Backwalls	N	6		M-P
d. Breastwalls	7	7		-
e. Wingwalls	7	7		-
f. Slope Paving/Rip-Rap	N	7		-
g. Pointing	N	N		-
h. Footings	H	H		-
i. Piles	N	N		-
j. Scour	6	7		-
k. Settlement	8	8		-
l.	N	N		-
m.	N	N		-
<b>2. Piers or Bents</b>			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		-
<b>3. Pile Bents</b>			N	
a. Pile Caps	N	N		-
b. Piles	N	N		-
c. Diagonal Bracing	N	N		-
d. Horizontal Bracing	N	N		-
e. Fasteners	N	N		-

<b>APPROACHES</b>		<b>DEF</b>
a. Appr. pavement condition	7	-
b. Appr. Roadway Settlement	7	-
c. Appr. Sidewalk Settlement	N	-
d.	N	-

<b>OVERHEAD SIGNS (Y/N)</b>	<b>N</b>	
		<b>DEF</b>
a. Condition of Welds	N	-
b. Condition of Bolts	N	-
c. Condition of Signs	N	-

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

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

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

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

**Any Cracks:** (Y/N)  **N**

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

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

**SCOUR:** *Please explain*  
None (  ) Minor ( ) Moderate ( ) Severe ( )

I-60 (Dive Report):  **6** I-60 (This Report):  **6**

**93B-U/W (DIVE) Insp**  **04/13/2004**

CITY/TOWN <b>ACTON</b>	B.I.N. <b>23X</b>	BR. DEPT. NO. <b>A-02-007</b>	8-STRUCTURE NO. <b>A02007-23X-MUN-NBI</b>	INSPECTION DATE <b>JAN 24, 2006</b>
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**ITEM 61** 6

**CHANNEL & CHANNEL PROTECTION**

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

**STREAM FLOW VELOCITY:**  
Tidal ( ) High ( ) Moderate (X) Low ( ) None ( )

ITEM 61 (Dive Report): 6 ITEM 61 (This Report) 6

93b-U/W INSP. DATE: 04/13/2004

**ITEM 36 TRAFFIC SAFETY**

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

**WEIGHT POSTING** Not Applicable

	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		Other Advance	
N	S	N	S
/	/	/	/

**CLEARANCE POSTING**

	E		W		meter
	ft	in	ft	in	
Actual Field Measurement		0		0	
Posted Clearance		0		0	

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

At bridge		Advance	
E	W	E	W
/	/	/	/

**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** 8

**PLANS (Y/N)** N

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

**TAPE#:** \_\_\_\_\_

**List of field tests performed:**

**RATING**

Rating Report (Y/N): Y

Date: 12/02/1997

(To be filled out by DBIE)  
Request for Rating or Rerating (Y/N): N

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

REASON: D

**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].

CITY/TOWN <b>ACTON</b>	B.I.N. <b>23X</b>	BR. DEPT. NO. <b>A-02-007</b>	8-STRUCTURE NO. <b>A02007-23X-MUN-NBI</b>	INSPECTION DATE <b>JAN 24, 2006</b>
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## REMARKS

### BRIDGE ORIENTATION

The approaches are South and North and the elevations are West and East. There are 7 concrete Tee Beams and 6 bays numbered from West to East. The brook flows from West to East.

### GENERAL REMARKS

District III Team C camera does not work in the cold. Pictures were taken with an alternative camera during inspection that did not include the date.

There is one small drain at the South end of the deck that does not appear to be active.

### ITEM 58 - DECK

#### Item 58.2 - Deck Condition

There is a 1 1/2 ft. diameter x 3 inch deep spall/pop out to the underside of the concrete deck in bay #5. There is a piece of wood, rusting reinforcement, and rust leaching in this spall. **See photo 1.** The deck in bay # 6 has a 6 inch diameter spall/pop out with rusting rebar.

#### Item 58.4 - Curbs

Both curbs were spot checked. Comments are from inspection of 01-29-2004 due to heavy snow and ice. The East concrete curb has minor spalling throughout. The steel edging along the East curb is bent, broken and corroded throughout. The West curb steel edging is heavily surface rusted throughout.

#### Item 58.7 - Parapets

The East parapet has concrete deterioration 9 ft. long x full height x 3 in. deep with exposed rusting rebar at midspan. This scaling is undermining 1/2 of the steel bridgerail post and exposing two anchor bolts at this location. **See photo 2.** The East parapet also has efflorescence leaching throughout.

#### Item 58.8 - Railing

Both bridgerails consist of single panel "SS" type guardrail w/steel posts. The East rail posts are twisted slightly. The West rail posts are bent towards the North 4 inches to 5 inches. The West rail has minor movement. The post @ center of East rail is undermined approx. 50% (See Item #58.7). The steel "SS" type panels on both sides of the bridge are in good condition.

### APPROACHES

#### Approaches a - Appr. pavement condition

The North approach pavement has been re-paved since last inspection. There is a full width transverse construction joint in the North approach where the existing and new pavement were joined. This joint has opened up.

### ITEM 59 - SUPERSTRUCTURE

#### Item 59.4 - Girders or Beams

The West face of beam #1 has 5 minor vertical spalls with exposed rusting reinforcing. There is a small area of scaling at the bottom Southwest end with delamination cracking above. **See photo 3.**

Beam #3 has minor honeycombing along both faces and a minor pop out at the Northeast end.

Beam #4 has a 2 ft. long delamination crack 1/3 out from its' Northeast face.

Beam #5 has a 3 ft. long delamination crack to its' bottom Northeast end and a vertical pop out 1 ft. high x 3 inches wide with exposed stirrup reinforcing.

CITY/TOWN <b>ACTON</b>	B.I.N. <b>23X</b>	BR. DEPT. NO. <b>A-02-007</b>	8-STRUCTURE NO. <b>A02007-23X-MUN-NBI</b>	INSPECTION DATE <b>JAN 24, 2006</b>
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## REMARKS

### Item 59.4 - Girders or Beams (Cont'd)

The Southwest end of beam #6 has a 1 ft. and a 4 ft. long delamination crack and two small vertical pop outs up to 6 inches high with exposed rusting rebar. There is a rectangular hole/spall to the West face below the spall in the deck of bay #5, 4 to 5 inches high x 3 inches deep with exposed rusting rebar. **See photo 4.** The bottom Southeast end of beam #7 has a 2 1/2 ft. long x 7 inches wide x 2 inches deep area of scaling with exposed rusting reinforcement ( **See photo 5** ) and a 22 inches long x 2 inches high x 1 inch deep spall. Midspan there is a 6 1/2 ft. long x 7 inches wide x 4 inches deep area of scaling with exposed rusting reinforcement. **See photo 2.** The bottom North end of beam #7 has delamination cracking up to the scaled area at midspan.

Most of the pop outs are caused by the reinforcing being placed too close to the surface. All beams have minor honeycombing.

### ITEM 60 - SUBSTRUCTURE

#### Item 60.1.c - Backwalls

The North backwall of Bay # 1 has two 1 1/2 ft. long x 2 inch high horizontal spalls with exposed reinforcing. The North backwall of bay #3 has a 6 inches x 1 1/2 inches high x 1/2 inch deep pop out. The South backwall in bay #4 has a horizontal pop out 1 ft. long x up to 6 inches high with exposed rusting reinforcing. The North backwall in bay #4 has a two horizontal pop outs 1 1/2 ft. long x up to 6 inches deep. **See photo 6.** The South backwall in bay #5 has a full length delamination crack. The North has three horizontal pop outs up to 1 ft. long x 6 inches high with exposed rusting reinforcing. **See photo 7.** The North backwall of bay #6 has a 4 inch diameter pop out with rusting reinforcing

#### Item 60.1.d - Breastwalls

Both breastwalls have minor waterline abrasion.

### ITEM 61 - CHANNEL AND CHANNEL PROTECTION

#### Item 61.1 - Channel Scour

The timber sheeting along the South abutment is exposed for a length of 27 ft. with a maximum height of 2 1/2 ft. The timber sheeting along the North abutment is exposed for a length of 26 ft. with a maximum height of 1 1/2 ft. See Underwater Inspection Report report dated 04-13-2004.

#### Item 61.2 - Embankment Erosion

There is embankment erosion behind the Northeast wingwall with penetrations up to 3 ft. deep.

#### Item 61.3 - Debris

There is debris at the Northwest wingwall/abutment. **See photo 8.**

### TRAFFIC SAFETY

#### Item 36a - Bridge Railing

See Item #58.8.

#### Item 36b - Transitions

Transitions are single panel "SS" type guardrail which are not stiffened.

CITY/TOWN <b>ACTON</b>	B.I.N. <b>23X</b>	BR. DEPT. NO. <b>A-02-007</b>	8-STRUCTURE NO. <b>A02007-23X-MUN-NBI</b>	INSPECTION DATE <b>JAN 24, 2006</b>
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**REMARKS****Item 36d - Approach Guardrail Ends**

The Southwest, Northwest, and Southeast are terminal ends not turned away. The Northeast is a buried end.

**Photo Log**

- Photo 1 : Spall to the deck in bay #5.
- Photo 2 : Scaling to the East parapet at midspan.
- Photo 3 : Scaling and delamination cracking to the Southwest end of beam #1.
- Photo 4 : Hole/spall in the West face of beam #6.
- Photo 5 : Scaling to the bottom Southeast end of beam #7.
- Photo 6 : Pop outs in the North backwall of bay #4. Typical.
- Photo 7 : Pop outs in the backwall of bay #5.
- Photo 8 : Debris at the Northwest wingwall/abutment.

CITY/TOWN  
**ACTON**

B.I.N.  
**23X**

BR. DEPT. NO.  
**A-02-007**

8-STRUCTURE NO.  
**A02007-23X-MUN-NBI**

INSPECTION DATE  
**JAN 24, 2006**

**PHOTOS**



**Photo 1: Spall to the deck in bay #5.**



**Photo 2: Scaling to the East parapet at midspan.**

CITY/TOWN  
**ACTON**

B.I.N.  
**23X**

BR. DEPT. NO.  
**A-02-007**

8-STRUCTURE NO.  
**A02007-23X-MUN-NBI**

INSPECTION DATE  
**JAN 24, 2006**

**PHOTOS**



**Photo 3: Scaling and delamination cracking to the Southwest end of beam #1.**



**Photo 4: Hole/spall in the West face of beam #6.**

CITY/TOWN  
**ACTON**

B.I.N.  
**23X**

BR. DEPT. NO.  
**A-02-007**

8.-STRUCTURE NO.  
**A02007-23X-MUN-NBI**

INSPECTION DATE  
**JAN 24, 2006**

**PHOTOS**



**Photo 5: Scaling to the bottom Southeast end of beam #7.**



**Photo 6: Pop outs in the North backwall of bay #4. Typical.**

CITY/TOWN  
ACTONB.I.N.  
23XBR. DEPT. NO.  
A-02-0078.-STRUCTURE NO.  
A02007-23X-MUN-NBIINSPECTION DATE  
JAN 24, 2006

## PHOTOS



**Photo 7: Pop outs in the backwall of bay #5.**



**Photo 8: Debris at the Northwest wingwall/abutment.**



CITY/TOWN <b>ACTON</b>	B.I.N. <b>23X</b>	BR. DEPT. NO. <b>A-02-007</b>	8-STRUCTURE NO. <b>A02007-23X-MUN-NBI</b>	INSPECTION DATE <b>MAR 21, 2007</b>
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**REMARKS****GENERAL REMARKS**

This structure is a single span bridge supported by concrete abutments and footings.

- 1) Orientation - Abutments are labeled left and right when facing downstream.
- 2) Sta 10+00 is at the upstream end.

**ITEM 60 - SUBSTRUCTURE****Item 60.1 - Abutments****Item 60.1.d - Breastwalls**

Both breastwalls have minor waterline abrasion with some small random ratholes having penetrations up to 0.2'. Timber sheeting was exposed only along the Left Abutment and is severely deteriorated. Maximum exposure of the sheeting was 1.5'.

**Sketch / Chart Log**

Sketch 1 : PLAN

Chart 1 : SCOUR MONITORING

CITY/TOWN  
**ACTON**

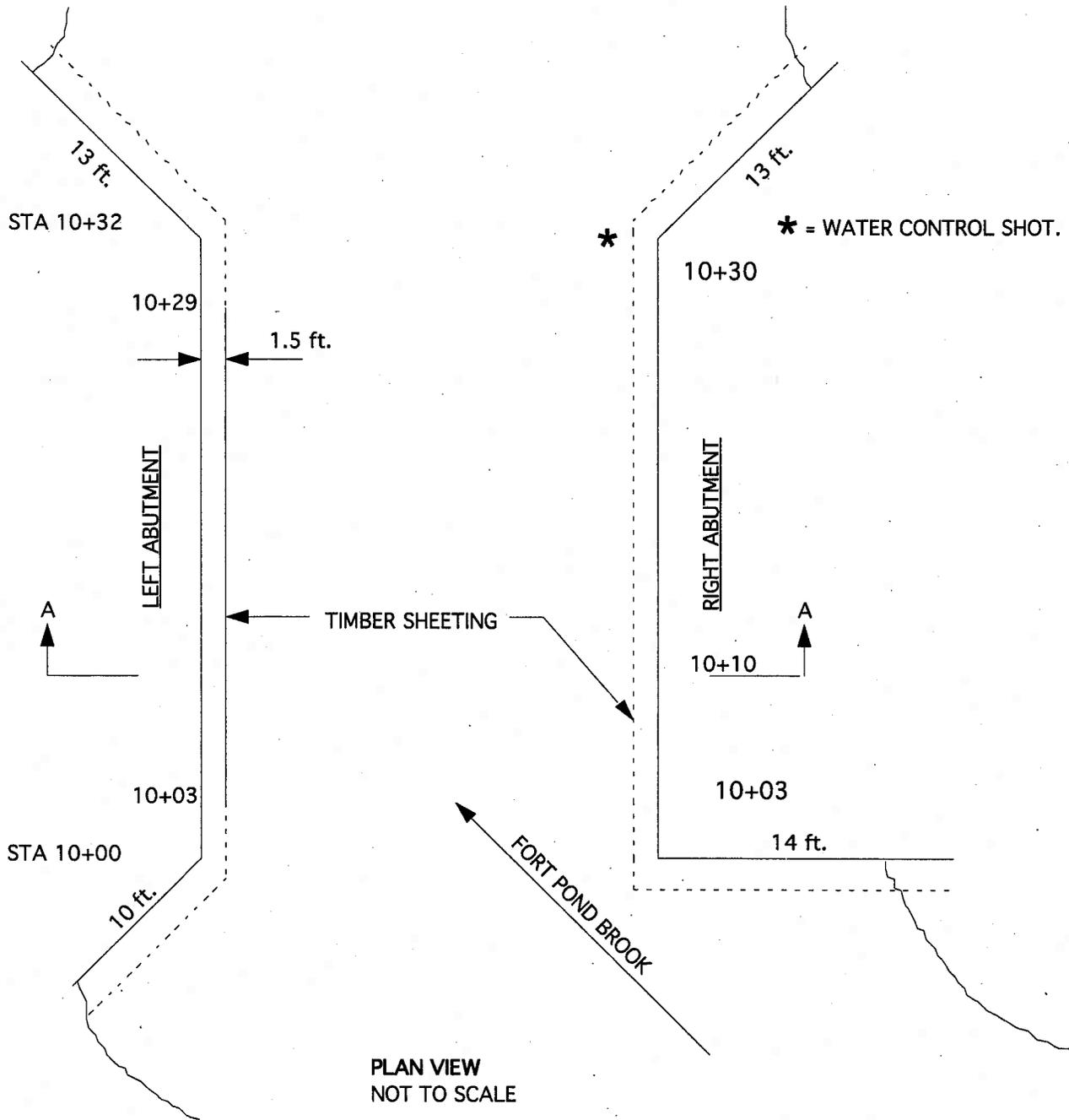
B.I.N.  
**23X**

BR. DEPT. NO.  
**A-02-007**

8-STRUCTURE NO.  
**A02007-23X-MUN-NBI**

INSPECTION DATE  
**MAR 21, 2007**

**SKETCHES**



**Sketch 1: PLAN**

CITY/TOWN <b>ACTON</b>	B.I.N. <b>23X</b>	BR. DEPT. NO. <b>A-02-007</b>	8-STRUCTURE NO. <b>A02007-23X-MUN-NBI</b>	INSPECTION DATE <b>MAR 21, 2007</b>
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## CHARTS

### SCOUR MONITORING CHART @ STA 10+10 SECTION A-A

OFFSETS	4/28/95	4/23/98	4/9/01	4/13/04	3/21/07
LT ABUT(INSIDE SHEETING)	3.0'	3.0'	3.0'	2.5'	2.2
LT ABUT(OUTSIDE SHEETING)	3.6'	3.6'	3.6'	3.6'	3.3
5' OFF LT ABUT	3.3'	3.3'	3.0'	3.6'	3.2
CENTER SPAN	3.3'	3.3'	3.0'	3.6'	2.8
5' OFF RT ABUT	1.6'	3.0'	4.3'	4.1'	2.3
RT ABUT(OUTSIDE SHEETING)	2.3'	2.3'	3.6'	3.1'	-
RT ABUT(INSIDE SHEETING)	1.3'	1.6'	2.3'	1.7'	1.6
Y	4.8'	3.9'	1.9'	3.0'	2.9
CORRECTION	---	-0.9'	-2.8'	-1.8'	-1.9

#### Notes

1. Water control shot (Y) = Waterline to bottom of downstream fascia beam at right abutment.
2. For comparison all soundings are adjusted to 1995 water level.
3. Station 10+00 is located at the upstream end.

**Chart 1: SCOUR MONITORING**



**MASSACHUSETTS HIGHWAY DEPARTMENT**  
**STRUCTURES INSPECTION FIELD REPORT**

2-DIST <b>03</b>	B.I.N. <b>256</b>
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BR. DEPT. NO. <b>A-02-010</b>
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**ROUTINE ARCH INSPECTION**

CITY/TOWN <b>ACTON</b>	8-STRUCTURE NO. <b>A02010-256-MUN-NBI</b>	11-Kilo. POINT <b>000.241</b>	41-STATUS <b>A:OPEN</b>	90-ROUTINE INSP. DATE <b>JAN 4, 2006</b>
07-FACILITY CARRIED <b>HWY PARKER ST</b>	MEMORIAL NAME/LOCAL NAME	27-YR BUILT <b>1938</b>	106-YR REBUILT <b>0000</b>	YR REHAB'D (NON 106) <b>0000</b>
06-FEATURES INTERSECTED <b>WATER FORT POND BROOK</b>	26-FUNCTIONAL CLASS <b>Urban Collector</b>	DIST. BRIDGE INSPECTION ENGINEER <b>L. A. Gauthier</b>		
43-STRUCTURE TYPE <b>Steel Arch - Deck</b>	22-OWNER Town Agency	21-MAINTAINER Town Agency	TEAM LEADER <b>S. A. Begley</b>	
107-DECK TYPE <b>Not applicable</b>	WEATHER <b>Clear</b>	TEMP. (air) <b>1°C</b>	TEAM MEMBERS <b>L. A. GAUTHIER</b>	

<b>ITEM 58</b>	<b>N</b>	
<b>DECK</b>		<i>DEF</i>
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	5	M-P
8. Railing	7	M-P
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	-

<b>ITEM 59</b>	<b>5</b>	
<b>SUPERSTRUCTURE</b>		<i>DEF</i>
1. Arch/Arch Ring	6	M-P
2. Keystone Area	5	S-P
3. Stringers	6	M-P
4. Floorbeams	N	-
5. Spandrel Walls	5	M-P
6. Spring Lines	6	M-P
7. Diaphragms/Cross Frames	N	-
8. Conn Pl'ts, Gussets & Angles	N	-
9. Pin & Hangers	N	-
10. Masonry Joints	5	M-P
11. Rivets & Bolts	7	M-P
12. Welds	N	-
13. Deformation/Flattening	7	-
14. Member Alignment	7	-
15. Paint/Coating	5	S-P
16.	N	-

<b>ITEM 60</b>	<b>5</b>		
<b>SUBSTRUCTURE</b>		<i>DEF</i>	
1. Abutments	Dive	Cur	5
a. Pedestals	N	N	-
b. Bridge Seats	N	N	-
c. Backwalls	N	N	-
d. Breastwalls	N	6	M-P
e. Wingwalls	N	5	S-P
f. Slope Paving/Rip-Rap	N	N	-
g. Pointing	N	5	M-P
h. Footings	N	N	-
i. Piles	N	N	-
j. Scour	N	7	-
k. Settlement	N	5	S-P
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	-

CURB REVEAL (In millimeters)	E	W
	50	125

<b>APPROACHES</b>		<i>DEF</i>
a. Appr. pavement condition	7	-
b. Appr. Roadway Settlement	7	-
c. Appr. Sidewalk Settlement	N	-
d.	N	-

<b>OVERHEAD SIGNS</b> (Attached to bridge)	(Y/N)	<b>N</b>
		<i>DEF</i>
a. Condition of Welds	N	-
b. Condition of Bolts	N	-
c. Condition of Signs	N	-

Year Painted	N
COLLISION DAMAGE: <i>Please explain</i>	
None (X) Minor ( ) Moderate ( ) Severe ( )	
LOAD DEFLECTION: <i>Please explain</i>	
None (X) Minor ( ) Moderate ( ) Severe ( )	
LOAD VIBRATION: <i>Please explain</i>	
None (X) Minor ( ) Moderate ( ) Severe ( )	
Any Fracture Critical Member: (Y/N)	<b>N</b>
Any Cracks: (Y/N)	<b>N</b>

UNDERMINING (Y/N) If YES please explain	<b>N</b>
COLLISION DAMAGE: None (X) Minor ( ) Moderate ( ) Severe ( )	
I-60 (Dive Report):	<b>N</b>
I-60 (This Report):	<b>5</b>
93B-U/W (DIVE) Insp	<b>00/00/00</b>

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**ITEM 61** 6

**CHANNEL & CHANNEL PROTECTION**

	Dive	Cur	DEF
1. Channel Scour	N	7	-
2. Embankment Erosion	N	6	M-P
3. Debris	N	7	-
4. Vegetation	N	6	M-P
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) 6

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

**ITEM 36 TRAFFIC SAFETY**

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

**WEIGHT POSTING** Not Applicable

	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=Not Required)  
Legibility/Visibility

At bridge		Other Advance	
N	S	N	S
/	/	/	/

**CLEARANCE POSTING**

Not Applicable

	E		W		meter
	ft	in	ft	in	
Actual Field Measurement		0		0	
Posted Clearance		0		0	

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

At bridge		Advance	
E	W	E	W
/	/	/	/

**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** 8

**PLANS (Y/N)** N

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

**TAPE#:** \_\_\_\_\_

*List of field tests performed:*

**RATING**

Rating Report (Y/N): Y

Date: 03/01/1982

(To be filled out by DBIE)  
Request for Rating or Rerating (Y/N): N

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

**REASON:** *AD*

**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

The approaches are South and North and the elevations are West and East. The brook flows from West to East.

### GENERAL REMARKS

Bridge is a single span corrugated steel plate deck arch structure.

### ITEM 58 - DECK

#### Item 58.1 - Wearing surface

The wearing surface has minor longitudinal cracking up to 3 ft. long in several locations.

#### Item 58.4 - Curbs

Both concrete curbs have minor surface scaling and hairline cracks throughout. This condition rating and comment from previous inspection report of 01-05-2004 due to heavy ice and snow cover.

#### Item 58.7 - Parapets

The East parapet has a 1 ft. long x 3 inch high x 2 inch deep spall at midspan and longitudinal hairline cracking with efflorescence on the exterior face.

#### Item 58.8 - Railing

The bridge railing consists of double panel "SS" guardrail continuing across both sides of the structure into transitions, approaches, and terminal ends. Three feet of the bridge railing at the Southwest end is not double panel. There is collision damage to the Northwest terminal end.

### APPROACHES

#### Approaches a - Appr. pavement condition

The north approach has minor longitudinal cracking at the centerline.

### ITEM 59 - SUPERSTRUCTURE

#### Item 59.1 - Arch/Arch Ring

The galvanized steel arch has a partial asphaltic coating along the entire length, partially up both sidewalls for a height of 4 1/2 ft. Most of this coating has minor to moderate surface flaking and corrosion from the waterline down. **See photo 1.**

#### Item 59.2 - Keystone Area

The stones in the east keystone area are missing. **See photo 2.**

#### Item 59.3 - Stringers

Both outer edges of the roadway below the bridge rail are supported by several steel stringers, which are encased with only their bottom flanges exposed. The West has minor to moderate surface rusting. The East has moderate to severe surface rusting. **See photo 3.**

#### Item 59.5 - Spandrel Walls

Both spandrel walls have several loose mortared stones, some missing chinking stones, some cracking of mortar, missing mortar and minor loss of fill. The Southwest spandrel wall has a void above its' arch ring with 31 inches of penetration. **See photo 4.** Also see Item 59.2.

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### REMARKS

**Item 59.6 - Spring Lines**

See Item 59.1.

**Item 59.10 - Masonry Joints**

See Item 59.5.

**Item 59.11 - Rivets & Bolts**

There is minor surface rusting to several of the bolts throughout.

**Item 59.15 - Paint/Coating**

See Item 59.1.

**ITEM 60 - SUBSTRUCTURE**

**Item 60.1.d - Breastwalls**

Condition rating from previous inspection of 01-05-2004 due to high water level. No comments on previous inspection.

**Item 60.1.e - Wingwalls**

All four wingwalls consist of mortared granite blocks and fieldstones. The Northeast wingwall is separated 2 inches from the spandrel wall with up to 26 inches of penetration. **See photo 5.** This was not mentioned in the previous inspection report of 01-05-2004. There is a 4 1/2 ft. x 2 ft. high x 2 1/2 ft. deep void at the base of the Northeast wingwall where a stone has fallen out. **See photo 6.** This void extends an additional 2 ft. upstream behind the fascia stones. The stones above this void are cracked. The Northeast wingwall also has several other areas where chinking stones, mortar, and fill are missing with penetrations up to 18 inches deep. There is a 15 inch R.C.P. pipe at the end of the Northeast wingwall that is missing its fill with a penetration of 3 ft. The Northwest and Northeast walls have some settlement up to 2 inches with a few missing chinking stones and some missing mortar. The remaining wingwalls have some missing mortar and cracking at joint locations.

**Item 60.1.g - Pointing**

See Item 60.1.e.

**Item 60.1.k - Settlement**

See Item 60.1.e.

**ITEM 61 - CHANNEL AND CHANNEL PROTECTION**

**Item 61.2 - Embankment Erosion**

There is embankment erosion and undercutting at all four corners of the wingwalls.

**Item 61.4 - Vegetation**

There is vegetation at all four corners.

**TRAFFIC SAFETY**

**Item 36a - Bridge Railing**

See Item 58.8.

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**REMARKS****Item 36b - Transitions**

Transitions are not double panel or stiffened. See Item 58.8 also.

**Item 36c - Approach Guardrail**

See Item 58.8.

**Item 36d - Approach Guardrail Ends**

There is collision damage to the Northwest terminal end.

**Photo Log**

- Photo 1 : Minor to moderate surface rusting of arch at the waterline.
- Photo 2 : Missing stones at the East keystone area.
- Photo 3 : Surface rusting to East stringer flanges.
- Photo 4 : Void to the Southwest spandrel wall above the arch ring.
- Photo 5 : Two inch separation between the East spandrel wall and Northeast wingwall.
- Photo 6 : Void at the base of the Northeast wingwall.

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## PHOTOS



**Photo 1: Minor to moderate surface rusting of arch at the waterline.**



**Photo 2: Missing stones at the East keystone area.**

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**PHOTOS**



**Photo 3: Surface rusting to East stringer flanges.**



**Photo 4: Void to the Southwest spandrel wall above the arch ring.**

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## PHOTOS



**Photo 5: Two inch separation between the East spandrel wall and Northeast wingwall.**



**Photo 6: Void at the base of the Northeast wingwall.**

BOXBOROUGH

LITTLETON

TOWN OF ACTON

WESTFORD

CARLISLE

CONCORD

# LOCUS PLAN FOR REPAIR, REHABILITATION OF TOWN OWNED BRIDGES

JUNE 13, 2007

STOW

MAYNARD

SUDBURY

