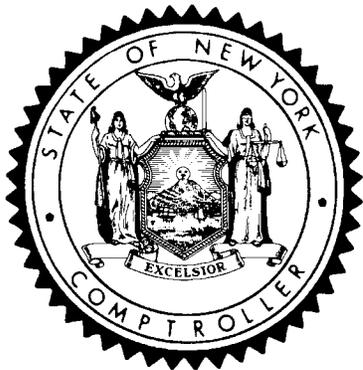


***State of New York
Office of the State Comptroller
Division of Management Audit
and State Financial Services***

**DEPARTMENT OF
TRANSPORTATION**

**STATUS OF RAILROAD
BRIDGE INSPECTION PROGRAM**

REPORT 99-S-12



H. Carl McCall
Comptroller



State of New York Office of the State Comptroller

Division of Management Audit and State Financial Services

Report 99-S-12

Mr. Joseph H. Boardman
Commissioner
Department of Transportation
State Office Building Campus — Building #5
Albany, NY 12232

Dear Mr. Boardman:

The following is our report on the status of the railroad bridge inspection program at the Department of Transportation.

This audit was performed pursuant to the State Comptroller's authority as set forth in Article V, Section 1 of the State Constitution and Article II, Section 8 of the State Finance Law. Major contributors to the report are listed in Appendix A.

*Office of the State Comptroller
Division of Management Audit
and State Financial Services*

August 31, 2000

Executive Summary

Department of Transportation Status of Railroad Bridge Inspection Program

Scope of Audit

In 1988, the State Legislature established a Temporary Task Force on Railroad Bridges (Task Force) to report on ownership, jurisdiction, inspection procedures and maintenance of all bridges under which or over which railroad tracks are located. In April 1992, the Task Force issued its report. Using the Task Force's recommendations as a guide, the State Legislature amended the Highway Law (Law) in 1994 to help ensure the safety of railroad bridges and to protect highway users, train passengers and people who live near railroad bridges from the dangers posed by their structural failure. The Law requires the Department of Transportation (Department) to establish, implement and oversee a Railroad Bridge Inspection Program (Program), to acquire an inventory of every bridge owned or used in the State from each railroad and to develop railroad bridge inspection standards. The Law required railroads to provide the Department an inventory of railroad bridges they own or use by January 1997, and to submit written Bridge Management and Inspection Procedures (Inspection Procedures) which conform to the Department's standards. The Law also requires each railroad to annually inspect bridges it is responsible for, and to certify to the Department that each bridge is safe for the loading imposed. To implement the Program, the Department developed Regulations to: meet the Law's requirements; specify the qualifications and responsibilities of individuals performing bridge inspections; describe the required scope and intensity of inspections; and require railroads to report data related to a bridge's load-bearing capability. The Department expects the Program to be fully implemented by March 15, 2001.

Our audit addressed the following questions about the Department's implementation and oversight of the Program for the period January 1, 1997 through February 18, 2000:

- ! What is the status of the Program's implementation?
- ! Is Department oversight of railroads effective in ensuring that railroads comply with the Program requirements?

Audit Observations and Conclusions

We found that implementation of the Program was delayed because of changes made to the Law, extensions granted by the Legislature to phase-in the Program and the time the Department needed to work with railroads to develop Program Regulations. The Law established the Program in 1994, but the Regulations were not adopted until August 25, 1999. While some of the delay was unavoidable, we believe the Department could have done more to develop inspection procedures and to begin evaluating compliance so that it would be prepared for its oversight responsibilities. The Department also may not have assigned sufficient resources to fulfill its oversight responsi-

bilities. For example, as of December 9, 1999, 15 of the State's 46 railroads had not reported all the bridges they own or use. The inventories were due by January 29, 1997. The Department has not developed procedures to verify that the railroads report all their bridges. The Department has not entered all the inventory data it has received thus far in its own database, and it lacks essential line capacity data (indicating the maximum weight a bridge can support) for 20 percent of the bridges in its database. Further, all railroads were required to provide the Department with their inspection procedures as of March 15, 2000; but, as of June 12, 2000, the Department had received procedures from just 14 of the 46 railroads. We found that the staff had reviewed them but had not evaluated them for compliance. We recommend the Department enforce inventory reporting requirements, obtain and review inspection procedures, and verify bridge inventories. Department officials indicate the railroads have recently submitted a substantial amount of information. (See pp. 7-10)

Of 18 railroads that responded to our survey of bridge inspection methods, 14 indicated they perform annual inspections that comply with Program requirements (i.e., performed according to Department standards by qualified personnel). Our visits to and review of records at four of these 18 railroads indicated the railroads inspected bridges annually, as required. However, at three of them, we found that inspector qualifications were inadequate or undocumented, or that some of the inspection procedures used may not comply with Department standards. We recommend the Department develop procedures that require it to regularly sample bridge inspections for compliance with Department standards. (See pp. 11-15)

The definition of a railroad bridge in the Law as amended in 1994 has been interpreted by the Department as excluding a significant number of bridges and elevated structures (e.g., bridges under 21 feet, elevated subway tracks, viaducts and trestles) that may pose at least the same risk of structural failure as do conventional bridges. Until the Law was amended in 1994, railroads were required to inspect and certify the safety of all such structures, even though they are not defined as railroad bridges. The Task Force recommended further study to determine the minimum span length of bridges requiring coverage; however, this study has not been commissioned. Since the Program's objective is to provide greater assurance of bridge safety, we recommend that the Department initiate this study. (See pp. 17-20)

Comments of Department Officials

Responding to our draft report, Department officials explained how they have worked to implement the law starting in 1994 and will continue to do so. They agree with our recommendations and identify steps they have already taken that address some of them, and actions they plan to take to implement others.

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Introduction

Background

Since 1944, railroads have been required to make a thorough inspection of every bridge, trestle and culvert it owns or uses at least once in each calendar year, and to annually certify the safety of all such structures to the New York State Public Service Commission. In April 1974, railroads were required to submit the annual certifications to the New York State Department of Transportation (Department) instead of the Public Service Commission. In 1988, the State Legislature established the Temporary Task Force On Railroad Bridges (Task Force) to report on the ownership, jurisdiction, inspection procedures and maintenance of all bridges under which or over which railroad tracks are located. Members of the Task Force included a representative from: the Department's Counsel's Office; the City of Binghamton; Conrail Railroad; Long Island Railroad; Triboro Bridge Authority; the New York State Senate; and the New York State Assembly. In April 1992, the Task Force issued its report, which recommended requiring railroads to provide a bridge inventory to the Department, giving the Department specific authority to adopt rules and regulations related to railroad bridges and having the Department develop a definition of a railroad bridge. Using the Task Force's recommendations as a guide, the State Legislature amended Section 236 of the State Highway Law (Law) in 1994 to better protect highway users, train passengers and people who live near railroad bridges from the dangers posed by the structural failure of these bridges. The Law authorized the Department to establish and oversee a Railroad Bridge Inspection Program (Program) and to develop railroad bridge inspection guidelines and standards. The Legislature extended the timetable for phasing in the Program in 1996, and again in 1998. The Legislature also amended Section 230 of the State Highway Law in 1994 to add a definition of a railroad bridge. The major improvements between the requirements established by the Law and the inspections that have been required since 1944 are as follows:

- ! the Law defined what was considered a railroad bridge and therefore what must be inspected;
 - ! railroads must now submit an inventory of all bridges they own or use to the Department;
 - ! railroads must now perform the inspections to meet standards established by the Department in consultation with the railroads;
 - ! railroads must now submit written bridge management and inspection procedures to the Department which describes their inspection program and the qualifications of the inspectors performing the inspections; and
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- ! the person in charge of planning, preparing and performing the inspection must now meet certain qualifications.

The Law required that railroads provide the Department with an inventory of every railroad bridge they own or use by January 29, 1997. The Law directed the Department to develop railroad bridge inspection standards, in consultation with the railroads operating in the State, and to publish these standards. Railroads must conform to the standards, and must send the Department their written bridge management and inspection procedures. The Law also requires railroads to use qualified personnel to inspect every railroad bridge in the State for which they have inspection responsibility. Inspections must be performed at least once every calendar year and following an occurrence which the railroad reasonably believes may have reduced a bridge's capacity. If any inspection finds that a bridge is unsafe, the railroad must notify the Department and take remedial action needed to ensure its safety.

The Department adopted Part 910 of Title 17 of the Official Compilation of Codes, Rules and Regulations to implement the Program on January 22, 1997. In Part 910, the Department required the railroads to report the bridges they own or use by January 29, 1997, the date set in the Law. The Department developed railroad bridge inspection standards in July 1999, and published these standards in a manual in July 1999. On August 25, 1999, the Department repealed Part 910 and adopted Part 913 of the Regulations (Regulations) to specify what railroads must do to comply with the Law. The Regulations:

- ! require every railroad to submit a bridge inventory;
- ! specify the qualifications and responsibilities of individuals who do bridge inspections, and require railroads to document the qualifications of those who perform inspections;
- ! require that inspections be performed according to the railroad's formal Bridge Management and Inspection Procedures (Inspection Procedures), and require that they comply with Department inspection standards and be submitted to the Department;

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- ! describe the scope and intensity required for the inspection;
 - ! require railroads to report each bridge's line capacity (the maximum load allowed between two geographic points over which a railroad operates);
 - ! allow the railroad's engineer to determine the level and detail of load rating analysis (a way of determining a safe load for an individual bridge, not necessarily the maximum load a bridge can withstand);
 - ! require railroads to keep bridge inspection documentation for a minimum of five years; and
 - ! require annual reporting on or before March 15 of each year. The annual report must include the last inspection date for all bridges under the railroad's maintenance responsibility, and must certify that these bridges are safe for the loading imposed.

In developing the above Regulations, the Department had to identify and consult with the numerous railroads operating in the State to obtain their cooperation in adding to and changing procedures the railroads had been following on their own since 1944. The Department also had to consider feedback from railroads about the feasibility of meeting certain requirements and make related changes to draft versions of the Regulations. Because the final Regulations were not adopted until August 25, 1999, the Department did not expect full compliance with some original reporting dates. For example, inspections that were originally due on January 1, 1999 (for bridges that carry passenger trains), and the certifications for these bridges due by March 15, 1999, are now due on January 1 and March 15, 2000, respectively. Inspections and certifications that were originally due on July 1, 1999 (for bridges that carry freight trains) were now due to the Department on March 15, 2000. However, the Department did not set any submission dates for compliance with other requirements. The Department expects the Program to be fully implemented by March 15, 2001, by which time all railroads will be required to certify that all their bridges have been inspected in conformance with Program standards.

In 1994, the Department estimated that its cost to operate the Program would be about \$325,000 a year. However, the Department did not receive additional funding for overseeing railroad bridge inspections, and manages the Program with existing funds and staff. Currently, only two employees work part-time on this Program. As of January 13, 2000, Department records show that 33 of the 46 railroads operating in the State own or use a total of 3,003 railroad bridges. (See *Exhibit A*.) It should be noted that there are many more railroad bridges and structures in the State. For example, the

Task Force did a survey in September 1991 of the approximately 37 rail operators in the State. Of that number, 28 rail operators reported a total of 8,730 structures that were over 20 feet long. This number includes about 6,200 elevated subway spans in New York City that are not included in the inventory data reported to the Department as of January 13, 2000. The 28 rail operators also reported a total of 2,185 structures that were between 5 feet and 20 feet long. Railroad bridges of 20 feet or less are not required to be included in the inventory data as of January 13, 2000.

Audit Scope, Objectives and Methodology

We audited the Department's railroad bridge inspection program for the period January 1, 1997 through February 18, 2000. The objectives of our performance audit were to determine the status of the Department's implementation of the Program, and to determine whether the Department ensures that railroads comply with the Program requirements and that all railroad bridges in the State are safe for the loads imposed. To accomplish our objectives, we interviewed Department officials to understand the Department's view of its oversight role and to identify Department procedures and systems for monitoring the Program. We obtained copies of bridge inventories submitted and compared them to inventory data entered into the Department's bridge inventory database. We contacted the Federal Railroad Administration for its definition of a railroad bridge and for data on the number of railroads operating in the State. We also did our own research to identify railroads operating in New York State.

In addition, we contacted officials responsible for 24 railroads to discuss their progress in implementing the Program. This sample of 24 railroads comprises all 10 railroads (plus 4 subsidiaries of one of these railroads) that had not submitted railroad bridge inventories to the Department as of December 9, 1999, and 10 railroads selected judgmentally from among the 31 railroads that had submitted inventories by this date. The 10 railroads were selected to provide a cross section of railroads based on size, type of carrier (freight or passenger), and ownership type (public authority, private company, and State owned). We also visited four of these railroads to review their inspection procedures, documentation of inspector qualifications and inspection reports.

We conducted our audit in accordance with generally accepted government auditing standards. Such standards require that we plan and perform our audit to adequately assess those Department operations that are within our scope. Further, these standards require that we understand the Department's internal control structure and compliance with those laws, rules and regulations that are relevant to our audit scope. An audit includes examining on a test basis evidence supporting transactions in the accounting and operating records and applying such other procedures we consider necessary in the circumstances. An audit also includes assessing the estimates,

decisions and judgments made by management. We believe our audit provides a reasonable basis for our findings, conclusions and recommendations.

We use a risk-based approach to select activities for audit. Therefore, we focus our efforts on those activities we identify as having the greatest potential for needing improvement. Consequently, by design, we use finite audit resources to identify where and how improvements can be made. We devote little audit effort to reviewing operations that may be relatively efficient and effective. As a result, we prepare our audit reports on "an exception basis." This report, therefore, highlights areas needing improvement and does not address activities that may be functioning properly.

Comments of Department Officials to Audit

A draft copy of this audit report was provided to Department officials for their review and comment. Department officials responded that their efforts to implement the law started in August of 1994 and will continue to do so. They provided information on actions already taken that address the recommendations. They also indicate that the staff resources assigned to this Program are based on operational needs, and if additional staff are required, appropriate action will be taken to provide them. Several points were made to clarify the report which we have incorporated, where appropriate. Their comments were considered in preparing this final report and are included as Appendix B.

Within 90 days after final release of this report, as required by Section 170 of the Executive Law, the Commissioner of the Department of Transportation shall report to the Governor, the State Comptroller, and leaders of the Legislature and fiscal committees of the State of New York, advising what steps were taken to implement the recommendations contained herein, and where recommendations were not implemented, the reasons therefor.

Railroad Bridge Inspection Program

The Program has not yet been fully implemented due to delays that resulted from a number of factors. These factors include the numerous changes made in the Law, the extensions that were granted to phase-in the Program and the time required for the Department to develop Regulations to carry out the Program. We recognize that some delay may have been unavoidable. However, we also believe the Department has not done all it could have to work towards the Program which is designed to ensure the safety of the railroad bridges in the State. For example, the Department has not received bridge inventories from all railroads or developed procedures to verify these inventories are complete and reliable. Further, the Department has not obtained most railroads' Inspection Procedures for review, evaluated whether bridge inspectors are qualified to do inspections or sampled inspection results. In addition, the Department's definition of a railroad bridge, per Section 230 of the Highway Law, excludes a significant number of bridges or elevated structures that pose at least the same risk of structural failure as do those included in the definition.

Railroad Bridge Inventory

The Law and Regulations set January 29, 1997 as the date by which the railroads were supposed to submit their railroad bridge inventories. Department officials told us, and we confirmed, that they had sent railroads three letters requesting inventories. Officials stated that they had not aggressively pursued this information, however, because they had no plans to use it until March 15, 2000 when the railroads are required to inspect and certify that the bridges are safe.

As of December 9, 1999, 15 railroads had not submitted inventories to the Department. (See *Exhibit A.*) The Department was in the process of determining if one of these railroads owns or uses any railroad bridges in the State. We tried to contact representatives of the 14 remaining railroads to find out when they expected to submit their inventories. Of this number:

- ! six railroads did not respond to our inquiries;
- ! four said they expected to submit their inventories by March 15, 2000; (two of these railroads submitted inventories by January 13, 2000);
- ! one railroad stated it was awaiting approval from its legal department before submitting the inventory;
- ! two stated their inventories would be reported by other railroads; and

! one stated that it does not own or operate over any bridges.

In addition, the Department has not developed procedures to verify that the railroads are reporting all the bridges they own or use as required by the Law. Department officials stated that they plan to rely on the railroads to report all bridges because they lack the resources to determine if all bridges are accounted for. The Department is also allowing railroads to report inventories by identifying only the bridges they own, as well as the other railroads that use their bridges. However, by allowing railroads to report inventories this way - rather than requiring them to report all bridges they own or use - the Department may not achieve a comprehensive inventory of all railroad bridges in the State. According to the Task Force's report, there is a risk that some bridges could remain unclaimed because the ownership of the bridges may be unknown or in dispute. Having railroads self-report only the bridges they own may not identify such bridges. Requiring railroads to report all bridges they own or use provides a valuable cross check, since any bridges omitted by one railroad may be identified by other railroads.

The Department is compiling an automated database of railroad bridge inventories from inventory reports submitted by the railroads. The Department plans on using this database in carrying out its oversight activities. For the database to be useful as an oversight tool it must be complete, accurate, and reliable. However, we found that the Department has not entered some of the data received from railroads and does not have essential bridge condition data for some bridges. Department officials told us these problems result from having insufficient staff to implement the Program.

We obtained the bridge inventory data which the Department had received from railroads as of December 9, 1999 and which officials stated had been entered on the System, and compared it to System inventory data. We found that Department staff had entered the inventories for 22 of the 31 inventories that had been received. The Department's System showed these 22 railroads' inventories totaled 1,169 bridges.

To determine whether the Department's data was complete and accurate for the 22 inventories that Department staff had actually entered on the System, we compared the bridge inventory data submitted by 7 of these railroads (reporting a total of 1,281 bridges) to the System data for these railroads. These 7 railroads were judgmentally selected because they were in our other samples and represent inventories from both large and small railroads. We found that Department staff had data entered only 704 (55 percent) of the 1,281 bridges the railroads had reported. When asked why the other 577 bridges were omitted, Department officials told us that some of the bridges

did not fall under the inventory reporting requirements. Examples of such bridges include highway or pedestrian bridges that pass over railroad tracks and other structures that do not meet the Department's definition of railroad bridge. However, other omissions were data input errors, which Department officials told us they would correct.

The Regulations also require that railroads report the condition of each bridge, which the Department determines by collecting data on the bridge's line capacity. Line capacity is the maximum load allowed between two geographic points over which a railroad operates. The capacity can be set for many reasons e.g. rail capacity, bridge capacity. However, we found that three of the above seven railroads, which account for 177 bridges in the database, did not report the line capacity. Our review of the Department's database showed that line capacity was missing for 234 (20 percent) of the 1,169 bridges entered.

During our visits to four railroads, we asked railroad officials how they determined the reported line capacity. One railroad (Adirondack Scenic) had load rating analysis done to determine their line capacity. Load rating analysis is an engineering review that is intended to provide a safe load rating for an individual bridge, not necessarily the maximum load a bridge can withstand. Two other railroads (CSX and NYCTA) determine line capacity by using the load rating calculated for the bridge when it was first built, and factor in the current condition of the bridge including any deterioration. This determination is made by a professional engineer and is considered a reasonable methodology by Department officials. In contrast, the Staten Island Railway reported the weight of the heaviest piece of equipment that it uses on its railroad rather than the actual line capacity. This method may not be in compliance with the Department's regulations. The Department should obtain information about how each railroad determines line capacity to evaluate whether the method is in compliance with the regulations.

For the Department's database of railroad bridges to be complete, it is also essential that the Department identify all the railroads operating in New York State. To determine whether the Department has identified all the railroads currently operating in the State, we contacted the Federal Railroad Administration and searched the Internet. Our Internet search found one railroad which the Department had not previously identified. Officials from this railroad told us they had one bridge in the State that would fit the Department's definition of a railroad bridge, but that it was not currently in use. Department officials stated that the railroad must still report this bridge so it can be properly inventoried. Department officials told us it is difficult to maintain a current list of railroad operators because of frequent changes in ownership and operation. Officials from the Department's Freight and Economic Development Unit told us that changes in railroad ownership and

construction of new lines must go through the Federal Surface Transportation Board and a hearing process and therefore, are published in the Federal Register. They also told us that they review the Federal Register daily to identify such changes.

Recommendations

1. Enforce compliance with railroad bridge inventory reporting requirements.

(Department officials replied to our draft that its enforcement powers are limited to oversight. They added that they are working with the railroads towards full compliance. However, if it does not occur, there is the option of filing civil litigation.)

2. Develop and implement procedures to ensure the inventories railroads submit are data entered, complete and include the line capacity for each bridge and ensure line capacity is being determined in compliance with the regulations.

3. Determine the options that are available to the Department for assigning other staff resources to the implementation of the Program. If this assessment indicates that additional resources are needed, then the Department should prepare a resource request and submit it to the Division of the Budget.

(Department officials replied staff resources are provided based on operational need. For the railroad bridge inspection program they will continue to assess the activities, and, if additional staff are required, the Department will take action to provide them.)

Bridge Management and Inspection Procedures

The Law requires the Department to develop and publish railroad bridge inspection standards, in consultation with the railroads, to be used by the railroads when performing bridge inspections. The Department published a manual of inspection standards in July 1999. Railroads may adopt the Department's inspection standards or incorporate them into their own Inspection Procedures. The Law also requires the railroads to submit to the Department their Inspection Procedures including the titles and responsibilities of the individuals performing the inspections and to report the qualifications of the individuals performing inspection activities. It is important that the Department obtain and review this information to determine if the railroads are performing inspections in compliance with the Department's standards.

As of January 24, 2000, the Department had received Inspection Procedures and inspector qualifications from only 3 of the State's 46 railroads. The low submission rate is likely due, at least in part, to the fact that the Law did not specify a date by which Inspection Procedures must be submitted. The Department's regulations has set this due date as March 15, 2000. By June 12, 2000, inspection procedures were received from only 14 of the 46 Railroads. Railroads are required to have inspected all their bridges in compliance with Inspection Procedures that conform to the Department's standards by January 1, 2001.

Department staff have reviewed the three sets of Inspection Procedures they received, but have not evaluated whether the procedures comply with the Department's bridge inspection standards or if the inspectors meet the required qualifications. We reviewed the Inspection Procedures submitted by two of the three railroads and found that one set appeared to comply with the Department's manual, while the other set was incomplete. For example, the inspection procedures did not provide technical information on what the inspectors look at during an inspection. The procedures also reference the railroad's inspection manual, which the railroad had not submitted. After we informed Department officials about the missing manual, they stated that they told the railroad's representatives to submit it.

Of our sample of 24 railroads (which includes the 14 railroads that had not submitted an inventory plus 10 additional railroads), 1 had submitted its Inspection Procedures by December 9, 1999, and 6 railroads did not respond to our requests for information. (See *Exhibit B.*) When we contacted officials from the remaining 17 railroads to determine when they expected to submit their Inspection Procedures, we found that:

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- ! three had not started developing procedures and were not sure when they would submit them;
 - ! eleven railroads expected to submit their procedures by March 15, 2000 (one submitted its procedures as of January 24, 2000);
 - ! two told us they will not submit procedures, since they operate over bridges, but do not own (have inspection responsibility for) any bridges; and
 - ! one did not own or operate over any bridges in the State.

Department officials said they are planning to develop procedures for evaluating whether railroad inspection procedures and inspector qualifications comply with Department standards. However, officials told us they are waiting until more railroads submit their procedures to determine how much staff time will be needed for this task. Based on the Department's due date of March 15, 2000, evaluation procedures should have been developed. Unless it has established a system for verifying whether railroad Inspection Procedures meet Department standards, and that qualified personnel do inspections, the Department cannot ensure that railroad inspections comply with the Law for ensuring bridge safety.

Recommendation

4. Expedite the development, and document the process that will be used to analyze railroads' Inspection Procedures and inspector qualifications for compliance with Program requirements.

Monitoring Bridge Inspections

The Law requires that railroads conduct inspections of all the bridges for which they have responsibility at least once in each calendar year and following an occurrence which the railroad reasonably believes may have reduced the capacity of any bridge. Department Regulations require that railroads complete inspections of bridges by January 1, 2000 and submit certifications for those bridges by March 15, 2000. Because railroads do the annual bridge inspections throughout the year, and the Program Regulations were not adopted until August 25, 1999, the Department is allowing railroads until January 1, 2001 to complete inspections according to Program requirements (i.e., done by qualified personnel in compliance with Department standards). Certifications that inspections were done according to Program requirements are due March 15, 2001.

Railroads satisfy the qualified personnel requirement when the person in charge of planning, preparing and performing the inspection is present during the entire inspection and meets one of the following qualifications: is an engineer; has at least five years experience in bridge inspection, design or construction assignments in a responsible capacity, and received documented training in bridge inspection; or holds a National Institute for Certification of Engineering Technicians Level III or IV certification in Bridge Safety Inspection.

We contacted the 24 railroads in our sample to determine how frequently they perform bridge inspections, whether their current inspections comply with the Department's bridge inspection standards and whether their inspectors are qualified. Six of the 24 railroads did not respond to our inquiries. Fourteen of the other 18 railroads told us they perform annual inspections that meet Department standards and use qualified inspectors. One railroad said it conducts annual inspections, but the inspections it does do not meet Department standards, and its inspectors are not qualified. Three railroads stated they had no bridge inspection responsibilities.

We also visited four of the 24 railroads (Staten Island Railway, New York City Transit Authority (NYCTA), CSX Transportation and Adirondack Scenic Railroad) to interview inspection officials and review inspection reports, inspection procedures and inspector qualifications. We selected these four railroads for a variety of reasons. One was based on its responses to our phone survey (Staten Island Railway), two were selected based on their size and type of carrier (one large passenger (NYCTA) and one large freight carrier (CSX Transportation)), and one was selected because it is inspected by Department employees (Adirondack Scenic Railroad). Based on the samples of inspection reports we reviewed, we concluded that these railroads

did conduct inspections annually, as required. However, at three of the railroads, we found that some inspection procedures may not comply with the Department's bridge inspection standards or lack documentation to support the inspectors' qualifications. The details of our four visits are as follows:

! Staten Island Railway. The Staten Island Railway (Railway) did not provide its inspectors with an inspection procedure manual to use during inspections. The inspectors (one foreman and three workers) are all classified as General Mechanics. According to the Railway's professional engineer, these inspectors do not have the qualifications required by the Regulations. In response to our preliminary audit findings, Railway officials stated that they plan to have a consultant inspect their bridges and submit a certification to the Department by December 31, 2000. We also reviewed inspection reports for each bridge the Railway uses and found that each bridge was inspected twice during calendar year 1999. However, there was no evidence to show the professional engineer had evaluated the reports.

! New York City Transit Authority. New York City Transit Authority (NYCTA) inspections are conducted by four gangs, each consisting of one supervisor and four inspectors. All these individuals are iron or steelworkers who receive two weeks of training provided by NYCTA. Inspections are conducted from track and street level, and the inspectors are provided with mirrors to check the condition of the steel under the ties and chipping hammers to remove loose paint and corrosion. The Regulations require a 100 percent close-up, hands-on, visual inspection of all fracture-critical metal superstructure and metal substructure elements. Department officials explain that this kind of inspection requires the inspector to be close enough to touch the surface. The Regulations state that doing the inspection may require the use of lift trucks or other special access equipment. Currently, NYCTA inspectors do not have lift trucks or other special access equipment for their inspections. NYCTA's professional engineer told us he believes the railroad's inspections of elevated structures are nonetheless adequate. In addition, NYCTA officials stated that they plan to obtain two lift trucks for the inspections. Department officials stated they would have to evaluate NYCTA's inspection procedures to determine if they meet the Department's inspection standards.

We also reviewed inspection records for a random sample of 10 conventional bridges out of a population of 69 and 45 elevated structures out of a population of approximately 6,500 that run about 70 miles, and found that each one had been inspected during calendar year 1999. While there was evidence that NYCTA's professional engineer had evaluated the reports for the conventional bridges in our

sample, there was no evidence that he had reviewed inspection results for the 45 elevated structures.

- ! CSX Transportation. CSX officials told us that their inspections are performed by a professional engineer or by other employees with over 20 years of bridge inspection experience. However, officials state they do not maintain records to document that inspectors are trained to perform bridge inspections. We reviewed inspection records for a random sample of ten bridges out of a population of 715 and found that each one had been inspected at least once during calendar year 1999. Inspection reports are currently sent to Philadelphia, Pennsylvania where a team of engineers evaluates the inspection results.

- ! Adirondack Scenic Railroad. The Department is responsible for the inspection of bridges on the Adirondack Scenic Railroad (Railroad). The Department uses professional engineers to perform the inspections. Our review found that the inspectors were using the Department's bridge inspection standards. We reviewed inspection records for all nine Railroad bridges (one bridge is actually classified as a culvert because it is only 20 feet long) and found that each one had been inspected during calendar year 1999. We also found evidence that the supervising professional engineer had reviewed the inspection reports.

Recommendation

5. Develop procedures to sample inspections and ensure that all inspections are being done in accordance with bridge inspection standards.

Railroad Bridge Definition

Since 1944, each railroad is required to make a thorough inspection of every bridge, trestle and culvert which it owns or operates on at least once in each calendar year. In 1992, the Task Force recommended establishing the Program, and adding a new definition of railroad bridge to the Law. The Task Force recommended that the definition include conventional bridges, trestles, viaducts or a series of spans (such as the elevated subway tracks found in New York City). The Task Force also stated that the railroad bridge definition could be patterned after the highway bridge definition (which includes structures with spans exceeding 20 feet), but recommended further study to determine the minimum span length of railroad bridges.

Department officials told us that no study has been done to develop a new definition for a railroad bridge or to determine what minimum length should be used. The Law used the highway bridge definition for a railroad bridge, including the minimum length. As a result, even though the Task Force recommended defining railroad bridges to include a variety of structures, the current definition includes only conventional bridges. The current definition of a railroad bridge in the Law excludes spans that would be included in the Federal Railroad Administration's definition, which includes structures with a span of at least 12 feet. In fact, under the new Program, railroads no longer have to inspect and certify spans they formerly had to inspect and certify before the Law was amended.

Department officials told us that they are letting individual railroads decide whether a structure, other than a conventional bridge, falls within the definition of a railroad bridge. NYCTA officials told us they have about 70 miles of elevated subway tracks which they believe do not meet the definition of a railroad bridge in the Law. During our initial interview, they stated that these elevated structures are inspected annually, but they will not certify to the Department that they are safe for the loads imposed. However, in response to our preliminary audit findings, NYCTA officials stated that they will certify that each elevated structure has been inspected and is safe for the loads imposed even though the structures do not meet the definition of a railroad bridge. They also stated that the certification would be done by subway line, rather than by structure, because they do not treat each individual structure as a separate bridge.

Staten Island Railway officials told us that they own a one-half mile long viaduct (a concrete structure to elevate the railroad above the ground). Officials stated that, while they inspect the entire structure, they will only certify to the Department that the five sections of the viaduct that pass over a highway (which they believe meet the definition) are safe for the loads

imposed. Figure 1 shows the Wave Street bridge section of the Staten Island viaduct which Railway officials consider included in the Railroad Bridge Inspection Program.



Figure 1

In contrast,

Railway officials do not consider an adjoining section of the viaduct to be covered by the program as shown in Figure 2.



Figure 2

Department officials said they would have to evaluate these structures to determine whether they should be covered by the railroad bridge definition.

The current definition also excludes bridges that some of the railroads consider to be bridges. For example, CSX Transportation and Guilford Rail Systems both define a structure as a bridge if it has a span of at least ten feet. Officials from both railroads told us that they inspect these bridges annually, but will not certify their safety because they do not fall within the definition.

It is possible that some structures that do not meet the current definition of a railroad bridge, such as spans not exceeding 20 feet, elevated subway tracks, viaducts and trestles, may pose at least the same risk of structural failure as conventional bridges. For example, Figure 3 shows a conventional bridge on the Transit Authority's Canarsie Line over Linden Boulevard that is included in the Bridge Inspection Program.



Figure 3

In contrast the Transit Authority operates an elevated subway line over the Belt Parkway which is not included in the Inspection Program as shown in Figure 4.



Figure 4

We believe that the Legislature intended to include subway lines within its railroad bridge inspection program because the New York City Transit Authority is specifically included within the definition of "Railroad." Further, the purpose of the Program was to protect the users of highways, passengers on trains, and persons residing in the area of railroad bridges from dangers inherent in the structural failure of such bridges. The failure of an elevated subway structure would present the same dangers as the failure of a railroad bridge. The Task Force specifically recommended further study to determine the minimum span length of bridges requiring coverage. The Department, as the regulatory agency, should commission this study.

Recommendation

6. Implement the Task Force's recommendation to further study the structures which should be covered to provide maximum public safety.

Railroad Submission of Bridge Inventories			
Railroad	Number of Bridges Reported	Report Submitted as of 12/9/1999	Report Submitted as of 1/13/2000
1. Adirondack Scenic Railroad	7	X	
2. Arcade & Attica	2	X	
3. Amtrak			
4. Batten Kill	21	X	
5. Guilford Transportation			
6. Buffalo & Pittsburgh	62	X	
7. Buffalo & Southern	18	X	
8. Canadian National	5	X	
9. Catskill Mountain	9	X	
10. Clarendon & Piitsford	3	X	
11. Cooperstown & Charlotte Valley	5	X	
12. CSX Transportation	715	X	
13. Dansville & Mt. Morris	8	X	
14. Delaware & Hudson	343	X	
15. Delaware & Ulster Rail Ride	12	X	
16. Depew Lancaster & Western			
17. Falls Road			
18. Finger Lakes	44	X	
19. Genesee & Mohawk Valley			
20. Genesee & Wyoming	32	X	
21. Livonia, Avon & Lakeville	25	X	
22. Lowville & Beaver River			
23. Long Island Railroad	525	X	
24. Metro-North Commuter	156	X	
25. Mohawk, Adirondack & Northern			
26. Middletown & New Jersey			
27. Massena Terminal	8	X	
28. New Jersey Transit	6	X	
29. Niagara Mohawk			
30. New York & Atlantic			
31. New York City Transit	68	X	
32. New York Cross Harbor			
33. New York & Lake Erie	12	X	
34. New York & Ogdensburg	8	X	
35. New York Susquehanna & Western	237	X	
36. Norfolk Southern	500	X	
37. Ontario Central	4	X	
38. Ontario Midland	6	X	
39. Owego & Hartford	17		X
40. Providence & Worcester			
41. Rochester & Southern	78	X	
42. Somerset	6	X	
43. South Buffalo	16	X	
44. Staten Island Railway	32	X	
45. Upper Hudson River	13		X
46. Wellsboro & Corning			
Total Bridges	3,003	31	2

* Railroads in bold were sampled for inventory submission

**Compliance With Selected Program Requirements
Sample of 24 Railroads**

Railroad	Inspection Procedures Submitted As Of January 13, 2000	Comment
1. Rochester & Southern	No	Have not started developing Procedures
2. Owego & Hartford	No	Have not started developing Procedures
3. NYC Transit Authority	No	Expects to submit by 3/ 15/2000
4. CSX Transportation	No	Expects to submit by 3/15/2000
5. Ontario & Midland	No	Expects to submit by 3/15/2000
6. Guilford Rail Systems	No	Expects to submit by 3/15/2000
7. Adirondack Scenic RR	No	Expects to submit by 3/15/2000
8. Metro-North Commuter	No	Expects to submit by 3/15/2000
9. Upper Hudson	No	Expects to submit by 3/15/2000
10. Amtrak	No	Expects to submit by 3/15/2000
11. Long Island Rail Road	No	Expects to submit by 3/15/2000
12. Wellsboro & Corning	No	Expects to submit by 3/15/2000
13. Batten Kill	No	Submitted on 1/24/00
14. Delaware & Hudson	Yes	Submitted prior to audit
15. Staten Island Railway	No	Have not started developing Procedures
16. NY & Atlantic	No	States it will not submit Procedures since other railroads have inspection
17. Providence & Worcester	No	States it will not submit Procedures since other railroads have inspection responsibility
18. New York Cross Harbor	No	States it will not submit Procedures since it has no bridge inspection responsibilities
19. Genesee & Mohawk Valley 20. - 23. (four subsidiaries)*	No	Contacted-not responsive about its own Procedures or those of its subsidiaries
24. Middletown & New Jersey	No	Contacted-not responsive

*Represents five railroads (Nos. 19, 20, 21, 22, 23)

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JOSEPH H. BOARDMAN
COMMISSIONER

August 4, 2000

GEORGE E. PATAKI
GOVERNOR

Office of State Comptroller
Division of Management Audit & State Financial Services
123 William Street, 21st Floor
New York, New York 10038

Attention: Ms. Carmen Maldonado, Audit Director

Dear Ms. Maldonado:

Re: Draft Audit Report 99-S-12

We have reviewed the Draft audit report and will respond by providing a brief history and general comments regarding the Railroad Bridge Inspection Program and the actions the Department has taken to implement the Program. We also provide comments on specific portions of the Draft report and respond to your six recommendations.

History:

In 1994 a railroad bridge inspection bill was signed into law, making New York State the only state in the nation to require railroad bridge inspections on an annual basis. The law required the Department to develop railroad bridge inspection standards in consultation with the railroad industry and exercise oversight. Standards were drafted in 1995 but changes made to the law in 1996 and 1998 required modifications. Proposed standards were published in the State Register June 9, 1999 for public review and comment and were adopted August 25, 1999, (17 NYCRR Part 913).

Prior to the adoption of the rule in 1999, Part 910 of Title 17 was adopted January 22, 1997. This rule implemented the inventory requirements for railroad bridges. This rule was repealed with the August 25, 1999 adoption of Part 913. The inventory requirements of Part 910 were expressly included in the 1998 law and also in Part 913. The Department has had numerous correspondence and meetings with railroad companies announcing and explaining the law, developing the code and requesting required information. The effort started in August of 1994, shortly after the law was passed and continues to date.

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General Comments:

- Section 236(1) of the Highway Law directs the Department to establish, implement and oversee a program of railroad bridge inspection. The Department has complied with this mandate by: promulgating rules and regulations, developing a bridge inspection procedure manual as guidance, reaching out to all railroads in the state to insure that they are aware of the mandate and the schedule for implementation.
- Section 236(1) of the Highway Law gives the Department oversight over the program of Railroad Bridge Inspection. It does require railroads to annually certify that the structures are "safe for the loading imposed".
- Section 236(2) of the Highway Law requires railroads to submit an inventory of all the bridges they own or use. The law specifically identifies the information required. Inventories were required to be submitted by January 29, 1997.
- Section 236(3)(d) requires railroads inspect their bridges at least once each calendar year.
- Bridge management and inspection procedures are required to be developed and submitted by the railroads. While Section 236 does not require Department approval of the railroads' procedures, the Department intends to review bridge management and inspection procedures of railroads to assure they meet the requirements of the law and regulations. In this way, we will be exercising oversight of the program and providing reasonable assurances that the inspections are proper. We also intend, as staff resources allow, to conduct random audits of railroad's inspection procedures and office records.
- The Department developed a railroad bridge inspection manual in July of 1999 in anticipation of the code requirement. We also made this available to all railroads to adopt or use as a guide in preparing their own procedures.
- The Law does not provide the Commissioner with any specific enforcement powers, nor does it specify any penalty for lack of compliance. Section 236(4) authorizes the Commissioner to generally adopt rules to "enforce any standard" and to maintain a civil suit to compel compliance with the law.
- We will continue to work with all railroads to achieve full compliance with all aspects of the law.

Specific Comments on Text of Draft Report

EXECUTIVE SUMMARY

Scope of Audit:

- Section 236(2) requires railroads to provide inventory of bridges to the Department. It does not require the Department to compile an inventory database of railroad bridges. The Department elected to automate the data to facilitate our program oversight responsibilities.

*
Note

Audit Observations and Conclusions:

- Proposed regulations were published June 9, 1999 in the State Register and adopted August 25, 1999.
- Status (August, 2000) of required submittals by railroads:
 - Inventory - 39 inventories received
6 missing, 5 of which from same management organization
 - Annual Inspection Certificates received for calendar year 1999
36 received
3 not required
6 missing
 - Bridge Management Programs -
33 received
3 not required
9 missing

Note: Niagara Mohawk was initially listed as a railroad company, but they were removed from the list because they are not a "railroad" as defined in Section 230(7) of the Highway Law.

- Regulated railroads are required to inspect and submit inventories of railroad bridges as defined by the Highway Law. Section 230(6) defines a bridge as having a span of "more than twenty feet". Accordingly, one of the responsibilities of regulated railroads is to determine which of the structures under their jurisdiction constitute railroad bridges under the program.

INTRODUCTION

Background:

- The draft audit states the legislature also amended Section 231 of the State Highway Law in 1994 to add a definition of a railroad bridge. The Section is 230, not 231.
- The draft audit lists major improvements between the requirements established by the new law and the requirements of 1944. In addition to those noted, the Department also considers the following as major improvements:
 - Page 2 - Bridge management and inspection procedures are required to be developed under the supervision of a Professional Engineer who is authorized to practice engineering under Title VIII of the Education Law.
 - Page 2 - Railroad bridge inspections must be performed by acceptable personnel in appropriate detail and submitted to a Professional Engineer who shall make an evaluation of the capacity and safety of the bridge.
- In the draft audit where you list bullets concerning the regulations:
 - Page 2 - Section 913.4(d) requires railroad's inspection procedures to be consistent with Standards set forth in Part 913.
 - Page 3 - The line capacity is the maximum load allowed between two geographic points over which a railroad operates. The capacity can be set for many reasons; geometry of track, rail capacity, bridge capacity, etc. It is not necessarily set by the weakest bridge on a line.
 - Page 3 - The original reporting dates were established and changed by law; Ch. 542 of laws of 1996 and Ch. 455 of laws of 1998; DOT's 1999 Regulations formalized the annual certification process. No extension or "advance" of the March 15, 2000 certification due date was issued by NYSDOT.

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Note

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Note

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Note

RAILROAD BRIDGE INSPECTION PROGRAM

- Page 6 - "Railroad Bridge" is defined in Section 230(6) of this Highway Law; NYSDOT's regulatory definitions do not modify that definition.

Railroad Bridge Inventory:

- Page 8 - DOT's definition is the definition set forth in Section 230(6) of the Highway Law.

BRIDGE MANAGEMENT AND INSPECTION PROCEDURES

- Page 10 - Section 913.4(c) of the DOT regulation requires railroads to describe "Titles and Responsibilities" in the inspection procedures. Qualifications are set forth in the Law (§236) and the Regulation.

* Note

MONITORING BRIDGE INSPECTIONS

- Page 12 - Section 236 (3)(d) requires bridge inspections at least once in each calendar year and following an occurrence which the railroad reasonably believes may have reduced the capacity of any bridge. Department regulations do not change these requirements.

COMMENTS ON RECOMMENDATIONS

Recommendation No. 1:

The Department enforcement powers are limited to oversight. Although the law does not provide the Department with enforcement powers, we intend to continue our efforts to work with the railroads toward full compliance. The six railroads not in compliance have been contacted. Five of the six are under the same management and they have indicated they are in the process of complying. As in other cases of non-compliance with the Highway Law, the Department retains the option of filing civil litigation.

Recommendation No. 2:

The law requires that each railroad provide to the Department an inventory of every bridge either owned or used by that railroad. The Department is developing an automated inventory system as a means of facilitating the management of the inventory information submitted, since it may be submitted in many different forms. The "official" inventory file is composed of the submissions made by the various railroads, in which there are some errors and omissions. Railroads will be asked to correct or complete their inventories as those discrepancies are identified.

Recommendation No. 3:

The Department provides the resources for the delivery of services based on operational needs. For the railroad bridge inspection program, we will continue to assess the program activities and assign staff as needed. If additional staff are required, the Department will take the appropriate action to provide them.

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Recommendation No. 4:

The Department has developed a compliance review procedure and checklist that will assure railroad inspection procedures comply with program requirements. The checklist will be completed as a railroad's procedures are reviewed. Any deficiencies noted will be brought to the attention of railroad officials.

Recommendation No. 5:

Consistent with its program oversight responsibilities, the Department will exercise the authority provided in the law to periodically sample bridge inspection reports for compliance with the requirements of the regulations. Inconsistencies will be noted and the individual railroad notified in writing. This is a Quality Assurance action by the Department. The responsibility for the accuracy and completeness of the individual inspections remains with the railroads.

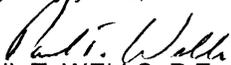
Recommendation No. 6:

The definition of a railroad bridge in the law is consistent with the definition of a highway bridge as found in other parts of the Highway Law. While we note the FRA bridge definition refers to spans 12 feet or more, we also note that the criterion is not consistent throughout the railroad industry. We, therefore, believe the 20 foot span criterion is an appropriate value. While structures with spans less than 20 feet are not required to be certified, we expect that railroads will continue to inspect these structures to ensure safety and protect their capital investment.

We are concerned that some railroads may exclude certain structure types that they consider to be other than bridges. We intend to work with the railroads in an effort to resolve possible confusion regarding structures such as viaducts and trestles. We will consider whether this requires clarification to the current legislation.

This concludes comments on the draft report. Please include this reply as an Appendix to your report.

Very truly yours,


PAUL T. WELLS, P.E.
Assistant Commissioner
and Chief Engineer

TJM/nn/comptrollerjuly