

*State of New York*  
*Office of the State Comptroller*  
*Division of Management Audit*

**NEW YORK STATE THRUWAY  
AUTHORITY**

**IMPLEMENTATION OF THE 1988  
CAPITAL PLAN**

**REPORT 95-S-109**



*H. Carl McCall*  
*Comptroller*



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# State of New York

## Office of the State Comptroller

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### Division of Management Audit

#### Report 95-S-109

Mr. Peter Tufo  
Chairman  
New York State Thruway Authority  
200 Southern Boulevard  
Albany NY 12209-2098

Dear Mr. Tufo:

The following is our audit report on the Thruway Authority's implementation of its 1988 capital plan.

This audit was performed pursuant to the State Comptroller's authority as set forth in Article X, Section 5 of the State Constitution. Major contributors to the report are listed in Appendix A.

*Office of the State Comptroller  
Division of Management Audit*

November 22, 1995

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# **Executive Summary**

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## **New York State Thruway Authority Implementation of the 1988 Capital Plan**

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### **Scope of Audit**

The New York State Thruway Authority (Authority) was created in 1950 to construct, operate and maintain the New York State Thruway, which is a 641-mile limited access highway system crossing New York State. In 1988, the Authority initiated a nine-year capital plan that was intended to improve the condition of Thruway pavement and bridges. The plan was expected to cost \$1.7 billion and be financed by operating revenue (primarily tolls), operating reserves and Federal aid. To ensure that the plan was adequately funded, in 1988 Thruway tolls were increased by 30 percent.

Our audit addressed the following question about the Authority's implementation of its 1988 capital plan:

- !** Has the Authority made substantial progress toward meeting the goals and objectives set forth in the capital plan?
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### **Audit Observations and Conclusions**

We found that, since the inception of the 1988 capital plan, substantial progress has been made by the Authority in improving the condition of Thruway pavement and bridges. We commend Authority officials for this progress. We also note that, because the Thruway is 40 years old, Authority officials believe a continuous program of repair and rehabilitation may be necessary.

The capital plan is expected to be completed in 1996. As of December 31, 1994, capital expenditures were expected to total \$1.32 billion. We found that expenditures as of this date totaled \$1.24 billion, which was about 93 percent of the targeted amount. We therefore conclude that the Authority made substantial progress toward achieving this expenditure target. We note that, because toll revenue was less than expected and expenditures unrelated to the capital plan were higher than expected, the Authority issued bonds and notes totaling \$725 million to ensure that the capital plan would be adequately funded. (See p. 3)

The Authority regularly evaluates the condition of Thruway pavement. In 1987, 5 percent of the pavement was considered to be in poor condition and the overall average condition of the pavement was rated as 6.9 on a scale of 1 to 10 (a rating of 7 to 8 is defined as good). The condition of the pavement was to be improved by the capital plan so that, by the end of 1996, none of the pavement would be in poor condition and the overall average condition of the pavement would be rated as 7.5. By the end of 1994, we found that the Authority had made substantial progress toward meeting these goals, as only

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1.3 percent of Thruway pavement was considered to be in poor condition and the overall average condition of the pavement was rated as 7.4. (See pp. 4-5)

The Authority regularly evaluates the condition of Thruway bridges on a scale of 1 to 7 (a rating of 4 or below indicates that structural repairs are needed, while a rating of 6 or above indicates that no more than minor repairs are needed). In 1989, the average rating for the bridges was 4.8 and 241 bridges were rated as needing structural repairs. By the end of 1994, substantial progress had been made in improving the condition of the bridges, as the average rating for the bridges had increased to 5.1 and the number of bridges needing structural repairs had been reduced to 166. The capital plan includes goals for improving bridge ratings, but because these goals were established before certain changes were made in the way that bridges are evaluated, we do not believe it is appropriate to compare these goals to subsequent bridge ratings. (See pp. 6-8)

While the condition of Thruway pavement and bridges has improved since the inception of the 1988 capital plan, Authority officials believe it is likely that ongoing repair and rehabilitation will be needed after 1996 for the Thruway, which is 40 years old. Accordingly, the Authority is in the process of developing a new capital plan to identify the actions that are needed to keep the Thruway in good condition through the year 2000. In the course of developing this plan, it is possible that Authority officials will identify the need for another toll increase and further bond issuances. (See p. 9)

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## **Comments of Authority Officials**

Authority officials are in agreement with this report.

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The comments of Agency Officials are not available in an electronic format. Please contact our Office if you would like us to mail you a copy of the report that contains their comments.

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# Introduction

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## Background

The New York State Thruway Authority (Authority) was created in 1950 to construct, operate and maintain the New York State Thruway (Thruway). The Authority is governed by a three-member Board, whose members are appointed by the Governor for nine-year terms. The Authority has about 3,100 employees.

The Thruway is a 641-mile superhighway system crossing New York State, of which 559 miles are a toll highway. The portion of the Thruway with tolls includes the 426-mile mainline from New York City to Buffalo and other sections which make direct connections to other major highways in New York, Pennsylvania, Connecticut, Massachusetts and New Jersey. The tolled portion of the Thruway includes about 860 bridges.

The Thruway also includes the Cross-Westchester Expressway and Interstate Route 84, which were transferred to the Authority in 1991 and 1992, respectively. The Authority maintains these two highways, but has no capital responsibilities for the highways and charges no tolls on the highways.

According to the Authority's audited financial statements, for the year ended December 31, 1994, the Authority had total operating revenues of \$339.5 million, of which \$315.4 million (93 percent) was derived from Thruway tolls. The remaining revenues came from restaurant and service station concessions, investment earnings, and other sources. Operating expenses for the year, including maintenance, operations, and administration, were \$195.6 million. The remaining \$143.9 million was either deposited into the Authority's reserves or spent on projects other than the Thruway, interest expense, and other purposes.

In 1987, the Authority prepared a multi-year capital plan for the pavement and bridges on the tolled portion of the Thruway. Authority staff used condition ratings, expected deterioration rates, and the estimated cost of treatment to develop projected needs. The Authority identified a need for \$1.7 billion in capital spending to bring the Thruway into good condition by the end of 1996. The Authority intended to finance the plan through operating revenues, reserves and Federal aid.

Since the capital plan was initiated in 1988, the Authority has been assigned additional responsibilities, including overseeing the State canal system through a subsidiary corporation, financing or helping to finance certain economic development projects, and maintaining the Cross-Westchester Expressway and Interstate Route 84. The Authority received no additional funding to perform these responsibilities, but was authorized to issue bonds to finance capital projects. Although the Authority has been assigned these other responsibilities,

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it is legislatively mandated to keep the operation and maintenance of the Thruway as its main priority.

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## **Audit Scope, Objective and Methodology**

We audited the Authority's implementation of its capital plan from January 1, 1988 through July 31, 1995. The objective of our performance audit was to determine whether the Authority made substantial progress toward meeting the goals and objectives set forth in the capital plan. To achieve our objective, we interviewed Authority officials and reviewed Authority financial statements, revenue and expenditure projections, bridge and pavement condition ratings, and expenditure records.

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 operations of the Authority which are included within the audit scope. Further, these standards require that we understand the Authority's internal control structure and compliance with those laws, rules and regulations that are relevant to the operations which are included in our audit scope. An audit includes examining, on a test basis, evidence supporting transactions recorded in the accounting and operating records and applying such other auditing procedures as we consider necessary in the circumstances. An audit also includes assessing the estimates, judgments and decisions made by management. We believe that our audit provides a reasonable basis for our findings and conclusions.

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## **Response of Authority Officials**

A draft of the matters contained in this report was provided to Authority officials for their review and comment. Their comments have been considered in preparing this report and are attached as Appendix B.

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# **Capital Plan Financing**

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To implement the 1988 capital plan, the Authority anticipated spending about \$1.7 billion on Thruway bridges and pavement through 1996. To accommodate the increased capital spending, the Authority raised Thruway tolls by about 30 percent in 1988. The Authority expected having total revenues of \$2.97 billion from 1988 through 1996, of which \$2.78 billion would be from tolls. The remainder would be concession revenue and investment income. According to the Authority's audited financial statements, from 1988 through 1994, the Authority received about \$2.2 billion in total revenue, which was about \$192 million less than anticipated for those years. The Authority attributed the revenue shortfall to the effects of economic recession, service area closings for reconstruction, and major road and bridge reconstruction projects that diverted traffic from the Thruway.

Moreover, the Authority made capital expenditures on service areas, canals and economic development projects that were not anticipated when the 1988 capital plan was prepared, and Authority operating expenses between 1988 and 1994 increased at a greater rate than anticipated in the 1988 capital plan. As a result, the amount of reserves and operating revenue available for the capital plan was less than projected. To compensate for this unanticipated use of the reserves and operating revenue, as well as for the shortfall in projected operating revenue, between 1992 through early 1995, the Authority issued three series of general revenue bonds and a series of bond anticipation notes. These issuances realized nearly \$725 million, which was set aside for the capital plan. The Authority is authorized to issue bonds for capital projects by the legislation giving the Authority responsibility for the State canal system and economic development projects. Such bonds are to be repaid from Authority revenues.

By using the bond proceeds, revenues, reserves and Federal aid, the Authority's capital spending for pavement and bridge projects for the seven years ended December 31, 1994 (\$1.24 billion) was about 93 percent of its planned expenditure target for the period (\$1.32 billion). We therefore conclude that the Authority made substantial progress toward achieving this expenditure target.

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# Pavement

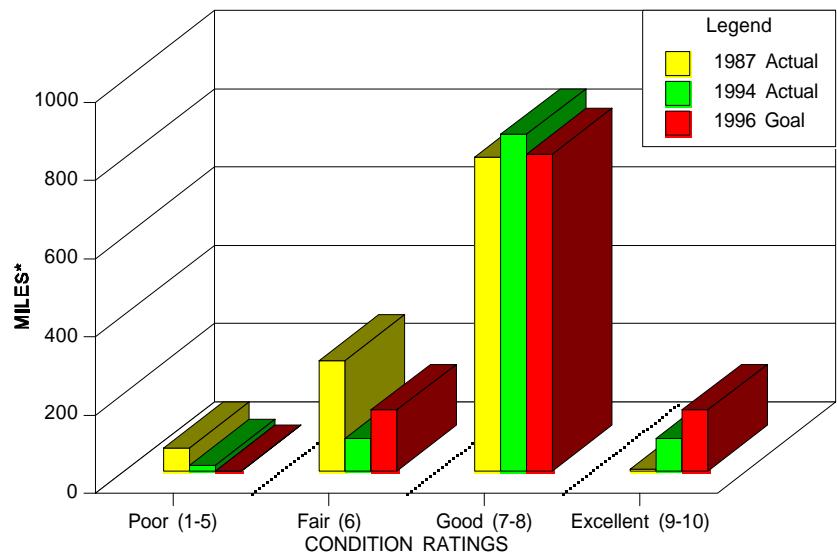
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For planning, capital and maintenance work, the Authority divides the Thruway into sections identified by beginning and ending mileposts. Each section is one mile or less in length. The Authority uses a New York State Department of Transportation methodology to rate the condition of Thruway pavement. In this method, trained observers travel the length of the Thruway, survey the pavement and assess its condition. Pavement conditions are examined for stresses such as rutting, cracking and sealant damage. The condition is then rated on a scale of 1 to 10, with 1 to 5 considered poor, 6 considered fair, 7 to 8 considered good, and 9 to 10 considered excellent.

In developing the 1988 capital plan, Authority officials considered the 1987 condition ratings for each pavement section in the tolled portion of the Thruway. Then, using expected deterioration rates based on pavement structure and traffic volumes, they estimated when each pavement section would require certain treatments through 1996. In 1987, 5 percent of the Thruway's pavement (not including the Cross-Westchester Expressway and Interstate Route 84) was rated as poor and the average condition rating was 6.9. The goals to be reached by the end of 1996 were to have no Thruway sections rated as poor, and the average condition rating to be 7.5.

We compared the pavement condition ratings in 1987 to the ratings in 1994 to evaluate the Authority's progress in meeting these goals. We found that the Authority made substantial progress in meeting these goals, as in 1994, only 1.3 percent of the Thruway pavement was rated poor and the average pavement condition was 7.4. The extent to which the pavement is rated at fair or better is very close to the established goals for 1996, as shown in the following chart.

## PAVEMENT CONDITION



\* The condition of the pavement on each half of the divided highway is rated separately. That is, eastbound pavement is rated separately from westbound pavement, and northbound pavement is rated separately from southbound pavement. As a result, in total, 1,118 miles of pavement are rated for the 559-mile portion of the Thruway with tolls.

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# Bridges

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Authority bridge engineers and consultants determine bridge conditions through inspections done according to a uniform code of bridge inspections established by the New York State Department of Transportation. The uniform code prescribes standards for bridge inspections and evaluations, requirements for the establishment of a rating system, and the qualifications for the engineers who perform or supervise the inspections and evaluations.

Bridge inspections are to be performed at least every two years. Upon inspection, each bridge receives a general recommendation rating of its condition, showing the level of repair required. General recommendations are expressed on the following numerical scale:

- 1- Very Poor
- 2- Poor
- 3- Major Structural Repairs Required
- 4- Structural Repairs Required
- 5- Repairs Required
- 6- Minor Repairs Required
- 7- Good Condition

Recommendations 1 and 2 indicate impairment of a bridge's designed load capacity. Recommendations 1 through 4 indicate structural repairs are needed and usually indicate the need for rehabilitation or replacement. Recommendation 5 could indicate the need for extensive non-structural repairs.

In 1986, the average general recommendation rating for Thruway bridges was 5.08 and 196 bridges needed structural repair (recommendations 1 - 4). When they prepared the 1988 capital plan, Authority officials estimated how much the condition of the bridges would deteriorate and planned the repairs needed to make the following improvements by the end of 1996:

- ! increase the average general recommendation rating from 5.08 to 5.61, and
- ! reduce the number of bridges needing structural repair (rated at 4 or less) from 196 to 92.

We tried to evaluate the Authority's progress in meeting these goals on the basis of bridge inspections done in 1993 and 1994. However, two factors made this evaluation difficult. First, as the 1988 capital plan began to be implemented, the inspection methodology was changed to a 100 percent hands-on inspection of certain critical bridge elements. Previously, these bridge elements were not subject to such intensive inspection procedures.

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Second, there were several bridge failures in New York State and throughout the country. Authority staff believe bridge inspector ratings were influenced by these failures. Therefore, these two factors may have led to more conservative ratings by the inspectors. As shown by the following table, the bridges inspected during 1988 and 1989 did, on average, receive significantly lower ratings from the inspectors than they had in their previous inspection:

General Recommendation	Number of Bridges *	
	1986	1988-89
1	1	1
2	2	8
3	30	26
4	163	206
5	344	406
6	275	143
7	13	9
Average	5.08	4.84

\* The total number of bridges is not the same for each period because bridges undergoing rehabilitation or replacement are not inspected.

Because the Authority did not revise its goals for the bridges or alter its planned capital effort in response to the lower bridge ratings, we do not believe it is appropriate to compare the 1993 and 1994 ratings to the goals in the 1988 capital plan, as these goals did not take into account subsequent changes in the inspection environment. However, as shown in the following table, the bridge condition ratings for 1993 and 1994 showed substantial improvement when compared to the ratings for 1988 and 1989. In particular, the number of bridges requiring structural repair (recommendations 1-4) decreased from 241 to 166, and the number of seriously deteriorated bridges (recommendations 1-3) decreased from 35 to 5.

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<b>General Recommendation</b>	<b>Number of Bridges *</b>	
	<b>1988-89</b>	<b>1993-94</b>
1	1	0
2	8	0
3	26	5
4	206	161
5	406	405
6	143	176
7	9	38
<b>Average</b>	<b>4.84</b>	<b>5.10</b>

\* The total number of bridges is not the same for each period because bridges undergoing rehabilitation or replacement are not inspected.

We therefore conclude that, since the inception of the 1988 capital plan, the Authority has made substantial progress in improving the condition of its bridges.

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## **Future Capital Planning**

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The condition of Thruway pavement and bridges has improved since the inception of the 1988 capital plan. However, according to Authority officials, considering that the Thruway is 40 years old, it is likely that routine maintenance will not be enough to keep the Thruway in good condition, and ongoing repair and rehabilitation will be needed after 1996. For example, bridge rehabilitation and deterioration occur simultaneously. As rehabilitated bridges improve, other bridges deteriorate due to exposure to harsh weather conditions and heavy traffic loads. As of June 1995, 153 bridges that needed structural repair according to the 1988 and 1989 ratings were improved to recommendations 5, 6 or 7. At the same time, 73 bridges rated at 5 or more in 1988 and 1989 had declined into recommendations of 4 or less.

We also note that more than half of the Thruway bridges were still rated at general recommendation 4 or 5 as of 1993 and 1994. The bridges rated at 4 will require structural repairs, while the bridges rated at 5 may need repairs to prevent deterioration into a structural repair recommendation. Therefore, while the overall condition of Thruway bridges has improved since 1988 and 1989, ongoing repair and rehabilitation will be needed beyond the end of the capital plan in 1996. The situation with the Thruway pavement is similar, as some sections of pavement deteriorate as other sections are improved.

Accordingly, the Authority is in the process of developing a new capital plan to identify the actions that are needed to keep the Thruway in good condition through the year 2000. The plan is in its early stages and its likely cost has yet to be estimated. In the course of developing this plan, it is possible that Authority officials will identify the need for another toll increase and further bond issuances. We believe the size of any such increase or issuance needs to be carefully considered by State policymakers to ensure that it is appropriate.

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## **Major Contributors to This Report**

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Robert Blot  
David R. Hancox  
Gerald Tysiak  
Larry Wagner  
Tom Riley  
Larry Julien  
Mark Radley  
Laura Smith  
Dana Newhouse