



NYCDOT Bridges & Tunnels Annual Condition Report 2011



NEW YORK CITY DEPARTMENT OF TRANSPORTATION DIVISION OF BRIDGES 2011 BRIDGES AND TUNNELS ANNUAL CONDITION REPORT



Rainbow Over the Brooklyn, Manhattan, and Williamsburg Bridges on the Evening of July 13, 2011.
(Credit: Olympia Beatty)

Michael R. Bloomberg, Mayor
Janette Sadik-Khan, Commissioner
Lori A. Ardito, First Deputy Commissioner

Henry D. Perahia, P.E., Chief Bridge Officer
Russell Holcomb, P.E., Deputy Chief Engineer, Maintenance, Inspections & Operations
Robert O. Collyer, P.E., Deputy Chief Engineer, Bridge Capital Design & Construction
George W. Klein, P.E., Deputy Chief Engineer, Specialty Engineering & Construction
Dorothy Roses, Executive Director, Management & Support Services
Anilkumar Vyas, P.E., Deputy Chief Engineer, Engineering Review & Support
Joannene Kidder, Chief Staff Manager/Executive Director, Community Affairs

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Cover Photograph

The Fresh Creek, Rockaway Parkway, and Paerdegat Basin Belt Parkway Bridges Under Construction in Fall 2011, and the Accompanying Tidal Wetland Mitigation Project.

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Michele N. Vulcan, Director of Analysis – Bridges
David Moidel – NYCDOT Director, Creative Services
Diane Murphy – Graphic Designer, Creative Services

Procurement of Printing Services

James Gallagher, Director, Budget & Fiscal - Bridges

Map and Inventory Preparation

Kevin McNulty, Director, Bridge Management Unit
Fitz Arthur Brown and Lidiya Akhmedova, Bridge Management Unit
Claudio Revelo, NYSDOT Region 11

Report Compiled and Prepared by:
Michele N. Vulcan, Director of Analysis - Bridges

New York City Department of Transportation
Division of Bridges
55 Water Street, 5th Floor
New York, New York 10041

A Message from the Commissioner



Dear Friends,

On behalf of the many dedicated professionals who staff the Division of Bridges, it is my pleasure to present the 2011 Edition of the New York City Department of Transportation's Annual Bridges and Tunnels Condition Report, as mandated under the New York City Charter. This report provides DOT with an opportunity to display the many achievements, innovations and improvements that were realized by the Division of Bridges during the 2011 calendar year.

The City's bridges are safe, and despite significant budget reductions, they are maintained in a state of good repair. Our bridges are extremely well managed; they are being rebuilt and upgraded by experts and are subject to one of the strongest inspection systems in the United States. DOT has been an early adopter of high-tech bridge monitoring equipment and techniques, and DOT's Division of Bridges is now further enhancing its inspection capabilities with additional technology and expertise. We now have a robust capital bridge program and have seen significant improvement in bridge conditions City-wide.

The Division of Bridges includes 714 DOT employees who manage the City's capital bridge program, conduct bridge inspections and monitorings, and maintenance. Our bridges include, among many others, the notable East River and Harlem River Bridges, the Belt Parkway Bridges, and pedestrian bridges and elevated roadways located City-wide.

Maintaining and upgrading our infrastructure is one of our core responsibilities and is an important part of keeping our fellow New Yorkers safe and our economy moving. That includes high-profile efforts like the \$508 million project to rehabilitate the approach ramps and paint the entire span of the Brooklyn Bridge, and the \$175 million to upgrade the bus ramp bridges at the St. George Ferry Terminal. Both projects received significant funding from the American Recovery and Reinvestment Act.

While the Brooklyn Bridge rehabilitation is certainly the highest profile bridge project underway, it's only part of the \$2.6 billion in capital investments we've made in our bridges in the last four years. This kind of spending helped reduce the number of bridges rated poor from seventy-four —25 years ago—to just three today, all of which are now undergoing rehabilitation.

Every day, more than 65,000 Staten Island Ferry passengers travel through the St. George Ferry Terminal, which was built in the 1940s to connect passengers to bus and train services on Staten Island and ferry service to and from Manhattan. The terminal was targeted for major infrastructure improvements to accommodate increased traffic and to rebuild some of its ramps. The project also involves architectural improvements, as well as improved pedestrian and bicycle access ways. The St. George Ferry rehabilitation project is the largest ARRA (Stimulus) funded project in New York State, with a total cost of \$175 million. Construction began in May 2010 and is expected to be completed by spring 2013.

We recently announced the completion of the first phase of a \$365 million contract to reconstruct three of the Belt Parkway bridges, at Paerdegat Basin, Rockaway Parkway and Fresh Creek Basin, which carry 150,000 cars a day. Started in 2009, this phase included the completion of the new eastbound bridge over Paerdegat Basin. In another contract milestone, the westbound half of the new bridge at Rockaway Parkway, along with entrance and exit ramps, was completed. Both new structures began carrying traffic in December 2011. Work also continues at Fresh Creek Basin, with all three bridges scheduled for completion in 2014.

Preventive maintenance is essential to preserve the City's multi-billion dollar investment in its bridges. These steel and concrete structures must be protected from the stresses of weather, traffic, deterioration and neglect. In the last year alone, 20,488 square feet of concrete were used to renew sidewalks, curbs, and road decks; some 9,743 cubic yards of debris were removed; 1,692 bridge drains were cleaned; and crews eliminated 3,996,213 square feet of graffiti. DOT crews also eliminated 466 safety flag conditions that presented clear vehicle or pedestrian traffic hazards.

New York City has a rich tradition of bridge design, construction, maintenance and administration. The Department of Transportation appreciates the importance of its duties and responsibilities, and the Division of Bridges is proud to shoulder the task of maintaining and rehabilitating our city's vital bridge infrastructure.

Sincerely,



Janette Sadik-Khan
Commissioner

Inventory

In calendar year 2011, the inventory of bridges under the jurisdiction of the Division remained at 787. NYCDOT owns, operates, and/or maintains 757 non-movable bridges, 25 movable bridges, and five tunnels. Over the past 10 years, there has been a decline in the number of bridges rated "Poor," and an increase in the number of bridges rated "Very Good," as shown below.

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Poor	8	4	6	4	3	3	3	4	4	3
Fair	451	429	456	458	456	459	455	456	462	459
Good	202	209	212	210	210	215	213	209	207	215
Vgood	94	111	116	118	118	111	116	116	113	109
Closed						1	1	1	1	1
	755	753	*790	790	787	789	788	786	787	787

* In 2004, 32 Department of Parks and Recreation structures, 1 Department of Education structure, and 7 Division of Ferries structures were absorbed into the inventory. 30 of these additions (22 from Parks, 6 from Ferries, and the 1 from Education) were rated "Fair," which accounted for the increase in Fair rated bridges. 1 of the Parks additions, Flushing Meadow Park Pedestrian Bridge over Willow Lake and 76th Road, was rated "Poor." It has since been closed.

¹ In 2009, the newly "Poor" rated Hill Drive Bridge in Prospect Park was closed to vehicular traffic. In 2009, 93 of the Parks bridges accounted for 20.4% of the "Fair" rated structures. In 2010, 96 of the Parks bridges accounted for 20.8% of the "Fair" rated structures. In 2011, 98 of the Parks bridges accounted for 21.3% of the "Fair" rated structures.

The City has three bridges that were rated "poor" after their last inspections. A poor rating means that there are components of the bridge that must be rehabilitated; it does not mean that the bridge is unsafe. If a bridge was deemed unsafe, it would be closed. The term "structural deficiency" is an engineering term-of-art used by the Federal government to indicate a defect requiring corrective action. According to the FHWA, "structurally deficient" means there are elements of the bridge that need to be monitored and/or repaired. The fact that a bridge is "deficient" does not imply that it is likely to collapse or that it is unsafe. It means they must be monitored, inspected, and maintained. Because we use the New York State rating system, we do not use that term and instead use the terms "very good," "good," "fair" and "poor." As with the Federal term, the terms "fair" and "poor" describe the condition of bridge elements and whether they are functioning as designed. Although these elements are not considered hazardous, the ratings are used to determine whether the elements require repair or rehabilitation. Again, any bridge deemed unsafe would be shut to the public. As this document goes to press, two "poor" rated bridges are in construction and the final design phase of the third has been suspended until such time as funding is available.

The three City bridges that are rated "poor" include the pedestrian bridge at 78th Street over the FDR Drive. A Notice to Proceed for the project to replace the bridge was issued to the contractor with a start date of July 12, 2010. The bridge was closed to pedestrians on October 19, 2010. The new bridge will be opened in January 2012, and construction is expected to be complete in early 2012, at which time a new inspection will be conducted.

The second bridge is the Hill Drive Bridge (Terrace Bridge) over Prospect Park Lake, and it is owned by the Department of Parks and Recreation. Repairs requiring immediate attention are performed by the When and Where contractor. This bridge is closed to vehicular traffic.

The third bridge is the Brooklyn Bridge. It was given a "poor" rating during its last inspection because there are certain elements of the bridge that need to be rehabilitated. While the main spans are in good condition, the decks on both the Manhattan and Brooklyn ramps to the bridge are aging and will be replaced during a rehabilitation project that began on January 19, 2010. It

should be noted that of the 75 spans of the bridge, only 6 spans contribute to the low condition rating. None of them are among the three suspended spans (i.e. between the anchorages).

Contract Acceleration

Acceleration measures are a contract provision used in some reconstruction projects that is implemented through a contract pay item. This contract provision provides a mechanism to implement measures to accelerate the contractor's work to maintain critical path milestones. This provision does not apply to measures undertaken by the contractor to make up for time it lost in the progress schedule. Only the NYCDOT representative invokes this provision when the contract schedule is compromised due to unforeseen conditions during construction that are out of the contractor's control, and when it is deemed in the City's interests to accelerate.

Incentive and disincentive (I/D) clauses are another contract provision used in some reconstruction projects that is implemented through a contract pay item. Under this provision, the contractor is compensated a certain amount of money for each day if the identified work in a critical milestone is completed ahead of schedule and is assessed a deduction for each day the contract overruns the allocated time. The amounts for the I/D clauses are based upon such items as traffic safety, maintenance and road user delay costs, Resident Engineering & Inspection (REI) expenses and cost of traffic enforcement agents. These amounts are implemented in accordance with guidelines established by Federal Highway Administration (FHWA).

East River Bridges Anti-Icing Program

The Division's Anti-Icing Program uses the liquid chemical potassium acetate and aggregate chemical sodium acetate. The anti-icing fleet consists of twenty-two spray trucks, six plow trucks and several smaller plows. Ten of the spray trucks are combination spray/plow trucks with a 1,000 gallon tank capacity, and five are spray-spreader/plow trucks with a 360 gallon spray capacity, and a nine cubic yard spreader capacity. There are twenty chemical storage tanks, with a total storage capacity of 114,250 gallons.

In the winter of 2010-2011, a total of 49,950 gallons of potassium acetate and 239 tons of sodium acetate were applied on the roadways of all four East River Bridges.

Marine Borer Remediation

In October 1999, the Department began a study to assess the present damage caused by marine borers as well as the potential for future damage at several waterfront DOT structures, including the supporting structures of the relieving platforms along the FDR and Harlem River Drives, and the timber piles and structures of the Carroll Street and Ocean Avenue bridges in Brooklyn. The underwater inspection of timber piles supporting the FDR Drive began on May 8, 2000. Inspection of the Brooklyn sites was conducted during the week of October 23, 2000. The inspections were completed in October 2000, and the Marine Borer Evaluation Report was published in June 2001. Using the results of the underwater inspections, preliminary plans were developed for the implementation of repairs and remediation measures to protect the structures from attack. These preliminary plans were completed in December 2001. An updated underwater inspection was performed within the limits of the proposed contract in 2009. The final design is now complete. The construction work is expected to commence in April 2012, and to be complete in April 2016.

2011 Awards

In 2011, the outstanding work of the Division was recognized by the receipt of several awards.

In March 2011, *New York Construction Magazine* selected the Manhattan Bridge project (Contract #14) as one of the top 25 project starts in the Tri-State Region in 2010.

In March 2011, the Fund for the City of New York and the Alfred P. Sloan Foundation selected Chief Bridge Officer Henry Perahia for a Sloan Public Service Award, recognizing him as a career public servant who shows exemplary government service that goes above and beyond his assigned duties.

In October 2011, Truck Permit Unit and Special Projects Director Kevin Lobat was selected as the Agency's recipient of the 2011 Excellence in Customer Service Award.

In October 2011, Deputy Chief Engineer Russell Holcomb received an Outstanding Achievement Award from the South Asian American Association.

The dedication and hard work of all members of the Division ensures that the Department is stronger than ever and more capable than ever to meet the challenges of maintaining a diverse and impressive bridge infrastructure.