



## STREAMLINING ACROSS MASSACHUSETTS

### Newbury - Route 1A over the Parker River

During the initial stages of this bridge replacement project, advanced deterioration was discovered making the continued operation of the bridge during construction prohibitive. As a result the construction phasing was changed to a single stage with all traffic detoured. To decrease the impact on the community, MassHighway directed the contractor to work extended hours from the outset while a more detailed acceleration plan was negotiated. The approved acceleration plan will result in the bridge being re-opened in spring 2009, 17 months ahead of the original fall 2010 completion date, and with a cost savings of approximately \$340,000.

### Longmeadow-Springfield to Bernardston - I-91 Intelligent Transportation Systems Design-Build Project

MassHighway will soon be awarding a contract to begin a Design-Build project to install a fiber optic cable backbone over 60 miles of I-91 and I-291 with variable message signs, closed circuit television cameras and other IT infrastructure. The Design-Build project delivery method combines final design and construction into a single contract, saving time and money over the traditional Design-Bid-Build delivery method. Also, by implementing construction streamlining elements during negotiations with the Design-Build contractor, MassHighway will realize a planned reduction in construction time from 36 months to 26 months, also resulting in significant cost savings.

### Dennis - Reconstruction of Swan River Road

This project involves the road reconstruction project includes a pilot program to expedite the relocation of utilities. Normally, the affected utility companies are responsible for relocating their facilities prior to or during construction. On this project, an agreement with the primary utility company, MassHighway has assumed responsibility for moving the utilities and is paying its construction contractor directly to perform these necessary services. With responsibility and control of the movement of utilities under MassHighway, this component of the project should be completed in a timely manner.

## MESSAGE FROM THE COMMISSIONER

Dear Citizen:



This, our second quarterly ScoreCard, builds on the work started in April with the release of our first ScoreCard. At the time, as part of Governor Patrick's initiatives to streamline government and increase transparency, MassHighway set ambitious goals of measuring performance and shortening project timelines. This ScoreCard expands upon some of the information released in our first ScoreCard, reporting on more areas and adding new measures. In the coming ScoreCards, MassHighway will continue our work to accurately measure performance and to better assess our success in meeting our goals. This ScoreCard touches on the following:

1. Ensuring the safety of our roadways is the number one priority at MassHighway. This ScoreCard provides expanded information on the safety of our highways and makes note of some safety initiatives underway at MassHighway.
2. Enhancing mobility is important to both citizens and the economy. This ScoreCard provides a more detailed picture on some of the work MassHighway is doing to improve mobility. We take an in-depth look at the 511 traveler information system as well as other programs that MassHighway maintains as part of our Intelligent Transportation Systems.
3. The condition of our pavements receives a closer look in this ScoreCard. Additional information is provided on the condition of pavements on and off our interstates as well as within different regions across the Commonwealth.
4. Bridges are a critical link in the Commonwealth's transportation network. This ScoreCard takes a detailed look at the condition of Massachusetts' bridges. A report is provided on structurally deficient bridges, bridge health index, and how we rank relative to other states.
5. MassHighway is hard at work on streamlining project delivery. We are actively working to reduce project cost overrun and time extensions. We are also working closely with design consultants and contractors to improve quality and increased timeliness. MassHighway has piloted the use of incentives and disincentives in some contracts to reduce project delays and improve quality.

We look forward to reporting on our progress and we welcome your continuing comments.

**Luisa Paiewonsky**  
Commissioner



**FOR TRAVELER INFO**

# SPOTLIGHT ON SAFETY

MassHighway is proud of its excellent safety record. MassHighway puts safety first in all activities, from design and construction to operations, taking into account the well-being of drivers, bicyclists, pedestrians, and everyone who uses our roads and bridges. The agency has also implemented a strong employee safety program to ensure all of its personnel can work in a safe and secure environment.

## Fatality Rate

The roadway fatality rate in Massachusetts is less than one fatality per 100 million vehicle miles traveled. The state's fatality rate has decreased 13% since 2001, and is currently the lowest fatality rate in the United States – 55% lower than the national average.

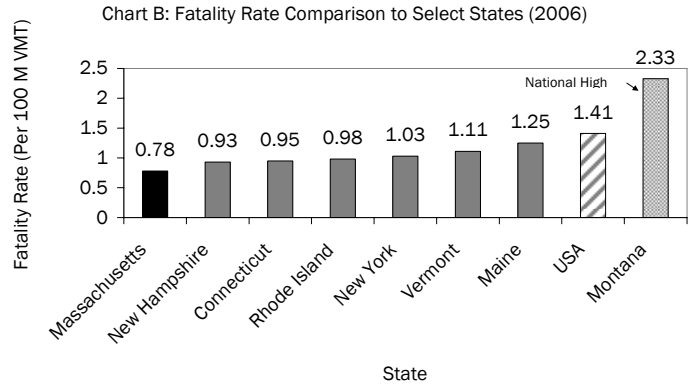
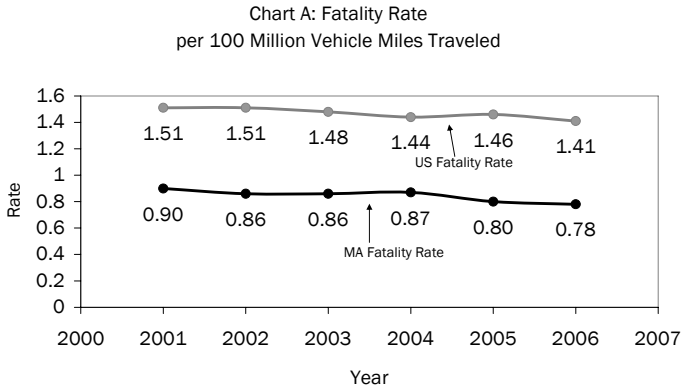
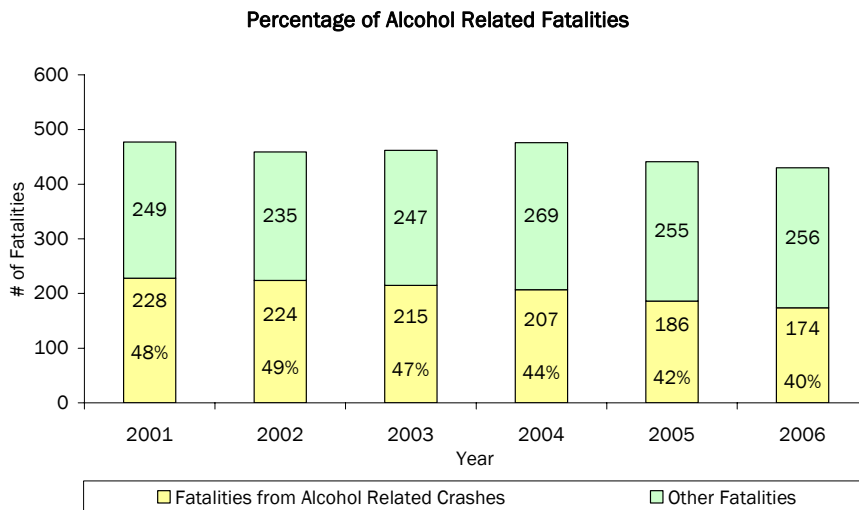


Chart A shows the fatality rate per 100M VMT over the past 6 years. In this time frame, Massachusetts' fatality rate has decreased 13%.

Chart B shows Massachusetts fatality rate relative to its neighbors and the national average.

## Fatalities in Alcohol Related Crashes

As is true in many states, driving while under the influence of alcohol is a major cause of roadway fatalities in Massachusetts. In 2005, Massachusetts passed "Melanie's Law," which toughens laws penalties for repeat offenders.



Since 2001, 1,234 people have died in Massachusetts as a result of alcohol-related crashes. As illustrated in the above chart, alcohol was a factor in nearly half of all fatal crashes through 2003. In recent years, the percentage of fatal accidents as a result of alcohol use has been greatly reduced.

All statistics cited in this section of the report are based on the Fatality Analysis Reporting System and are current through 2006, the last year complete data is available.

## SAFETY INITIATIVES

### Road Safety Audits

A road safety audit (RSA) is a formal safety performance examination of an existing or future road or intersection by an interagency group consisting of MassHighway, the Massachusetts State Police, Regional Planning Authorities, the Federal Highway Administration, and local officials. Road safety audits are an effective tool for proactively improving the future safety performance of a road project during the planning and design stages and for identifying safety issues in existing roadway facilities. RSAs can be performed at any stage in a project's life from preconstruction (design and planning stage) to construction (work zones) through post construction (operation of an existing roadway). RSAs can save both societal costs (by saving lives and reducing injuries) and reconstruction costs.

In Massachusetts, nearly half of all fatal crashes involve Lane Departures, accidents in which a vehicle departs its lane and crosses into opposing lanes, striking another vehicle or object head-on. To reduce lane departure crashes, MassHighway began a multi-agency program to conduct RSAs and implement low-cost fixes on the roadways that have been identified as "hot spots" for lane departures. In 2007, MassHighway conducted thirteen (13) RSAs. At some locations under local jurisdiction, recommended fixes have been implemented by the municipalities. Other "hot spots" will be addressed under a state-wide design contract and then installed under district wide contracts.

To address the spate of cross-median crashes (vehicles that cross the median and strike another vehicle head-on or end up in the opposing direction), MassHighway began a RSA program to address the hot spot cross-median locations. In the past two months alone, five cross median RSAs were conducted, mostly on the Interstate System. The results of these RSAs will be the prioritization of median treatments, such as guardrails or cable barriers at each location.

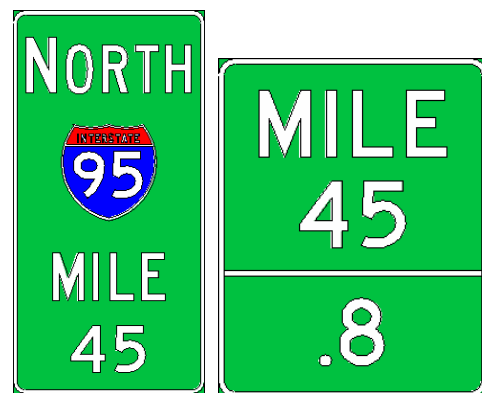
### Enhanced Mile-Marker Program

MassHighway has recently advertised four contracts for the installation of new enhanced mile marker signs on approximately 775 miles of Interstate and controlled-access highways within Massachusetts.

Unlike the mile marker signs currently in place, these enhanced signs will display the route number and direction of travel in addition to the mile number. New signs that repeat the mile number will also be installed every 2/10th of a mile between the new enhanced mile marker signs.

The intent of this program is twofold. First, it will allow a more accurate reporting of location for distressed vehicles. This will enable quicker and more accurate response from emergency services to get drivers back on their way. Second, it will provide more accurate information to pinpoint locations of crashes. The mile-marker information will be included with crash reports filed by the State Police. This information will allow MassHighway to identify areas of frequent crashes and determine a course of action to remedy these situations.

Work on these contracts, which includes a comprehensive pre-installation GPS survey of all sign locations to ensure accurate placement of signs, is expected to begin by late September of this year. All of the enhanced mile marker signs are scheduled to be in place by late November 2009. These contracts are funded by federal Highway Safety Funds and provided through the Highway Safety Division of the Executive Office of Public Safety and Security.

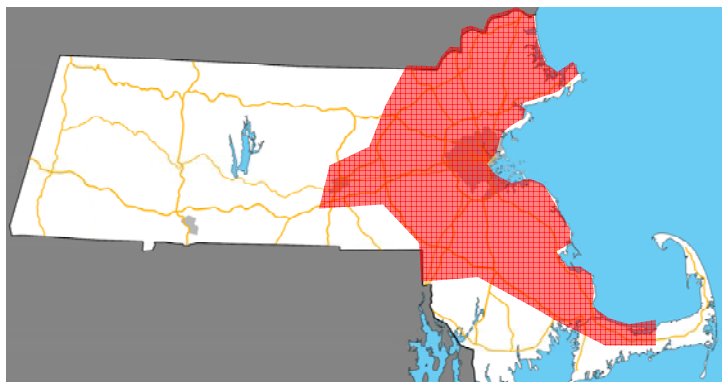


**New Mile Markers.** Sign for typical mile point marker (L) sign for intermediate mile points (R)

# SPOTLIGHT ON MOBILITY

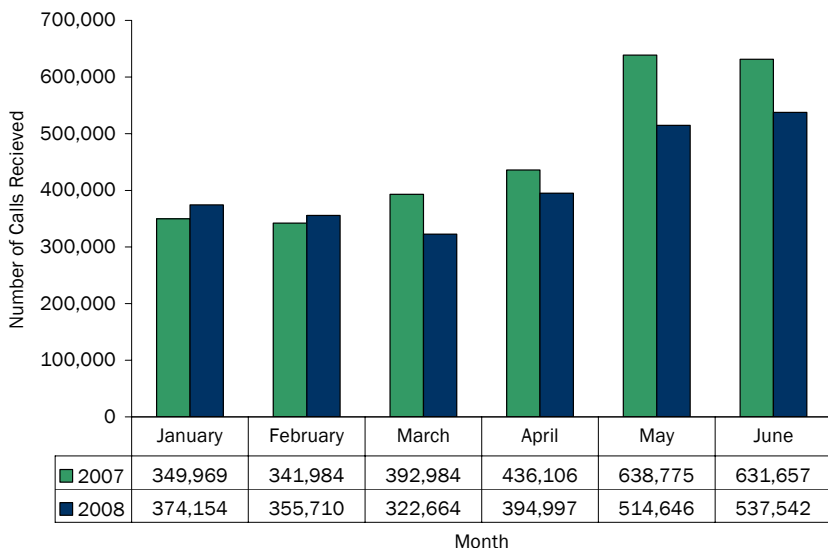
MassHighway, the Executive Office of Transportation, and the state's public safety agencies continue to make significant efforts to address and reduce congestion.

## Massachusetts 511 Traveler Information System

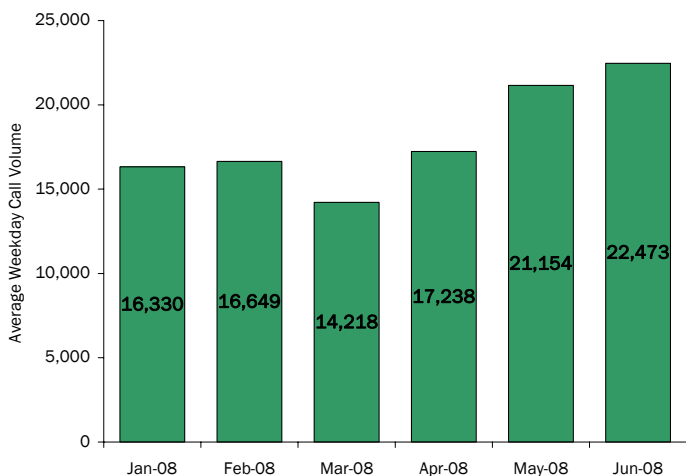


In October 2007, Massachusetts launched the 511 traveler information system, a 24 hour, free phone line providing commuters up-to-the-minute traffic condition data. 511 can be reached by simply dialing 5-1-1 from your mobile phone. Currently, 511 Massachusetts covers most of Eastern Massachusetts, from I-495 to Boston. The Massachusetts 511 system builds upon the successful travel information service previously accessed through SmarTraveler\*1 number. The 511 system also supports the Massachusetts Highway Hotline so citizens can report debris, hazards, or any roadway concerns on a 24 hour basis (see page 5). Since the inception of the Massachusetts traveler information system in 1993, the service has received more than 67 million calls.

**511 Massachusetts Coverage Area**



**511 Call Counts:** The Massachusetts 511 traveler information system received 1,447,185 calls in the last quarter. This is a 15% decrease in call volume compared to the same period last year. A portion of the reduction in call volume may be attributed to record high gas prices and the changes in travel patterns due to decreases in vehicle miles traveled.



**511 Average Weekly Call Volume:** The average weekday call usage was 22,473 in the month of June. An increase in call volume during the summer months is a pattern that has been consistent over the past 13 years of service.

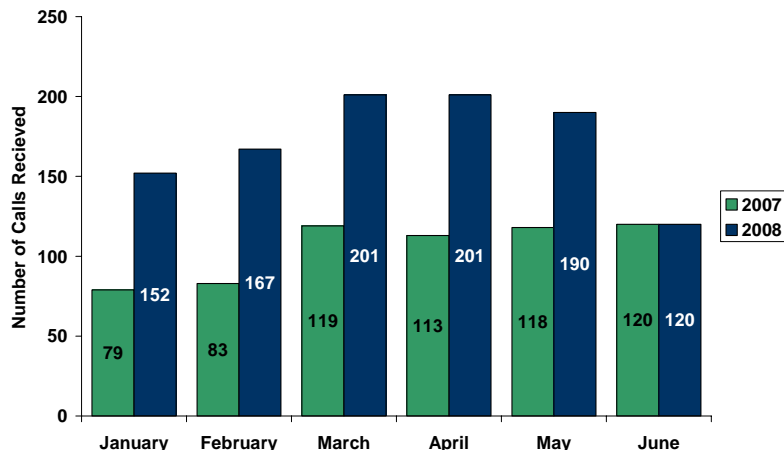
## Coming Next Quarter to 511

**Highway Cameras:** Customers, who visit [www.mass.gov/511](http://www.mass.gov/511) will be able to view MassHighway traffic cameras on the website beginning in fall 2008. MassHighway currently operates cameras on I-95 from Wakefield to Braintree, on the Southeast Expressway, and on Route 3 between Burlington and the New Hampshire border.

# SPOTLIGHT ON MOBILITY

## MassHighway: 511 Highway Hotline

In July 2007, MassHighway launched the Highway Hotline, available through the 511 system. The Highway Hotline provides citizens a direct link to the traffic operations center to call in concerns about debris, road hazards, litter and other critical issues on highways throughout the Commonwealth. The Highway Hotline is staffed around the clock through MassHighway's Traffic Operations Center.

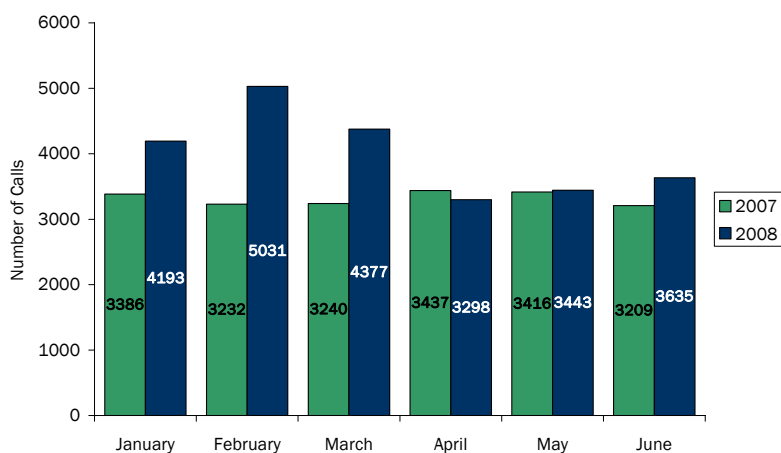


**511 Highway Hotline Call Counts:** The Highway Hotline has received 511 calls in the past quarter. This number is a significant increase over the 351 calls received during the same period last year. This demonstrates an increased awareness of the 511 and Highway Hotline systems.

## MassHighway Traffic Operations Center (TOC)

The MassHighway Traffic Operations Center (TOC) is the nerve center for the deployment of Intelligent Transportation Systems (ITS). MassHighway's ITS programs are aimed at reporting, responding to, and reducing incidents and traffic delays. In addition to incident management, ITS is used to provide drivers with the latest information on construction, traffic congestion and incidents using the telephone. The information is gathered through the deployment of cameras and speed and volume detectors. Information is relayed to the public through variable message boards and 511.

The TOC, which operates around the clock, is responsible for traffic management across the state, central radio command, GPS tracking of the Motorist Assistance Program and snowplows, and receiving and tracking all calls from the Highway Hotline.

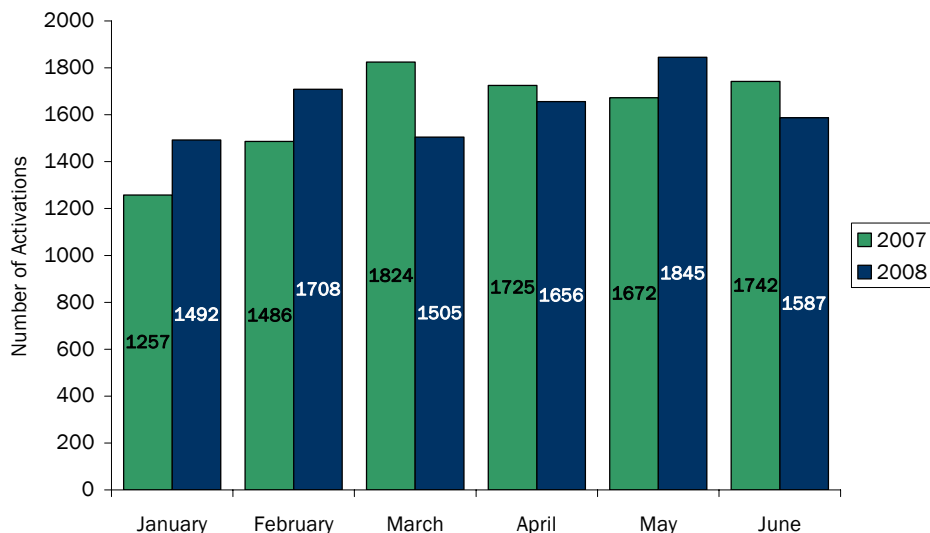


**TOC Calls Received:** The TOC received 10,376 calls in the past quarter, slightly more calls than the number of calls received in the same period last year. Calls to the TOC are generated by state and local police, MassHighway personnel, CaresVan drivers, 511 Operations Center, citizens, and other agencies. These entities alert the TOC to accidents in the roadway and other impediments to drivers, such as snow, ice, debris, ongoing construction, and lane closures. The more information the TOC receives, the better it is equipped to respond to problems or incidents.

# SPOTLIGHT ON MOBILITY

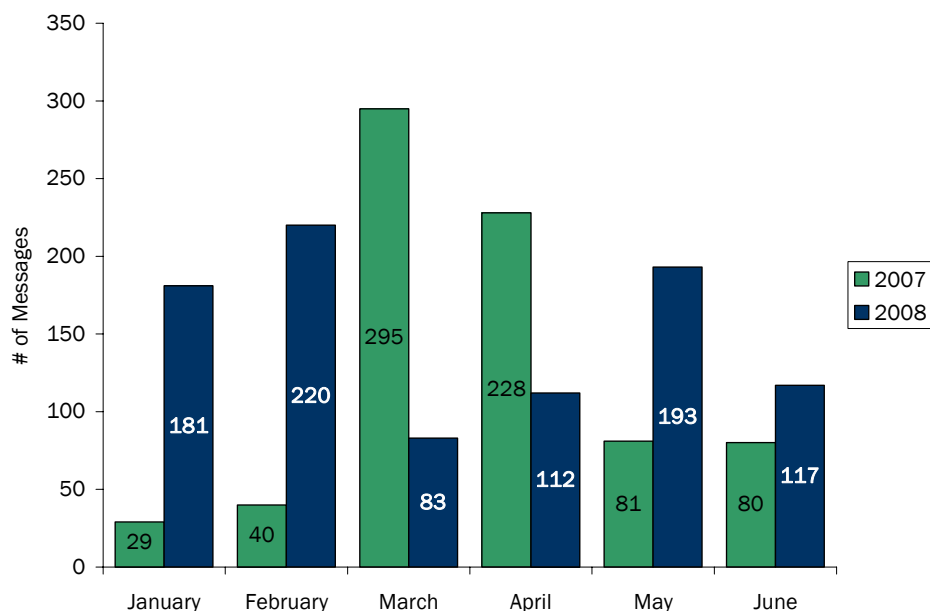
## Variable Message System

MassHighway maintains a system of 140 variable message boards throughout the Commonwealth. These boards are an important tool in informing drivers of conditions on roadways, allowing them to avoid delays.



### Variable Message Boards—Traffic Messages:

One of the most important uses of the variable message system (VMS) is to broadcast traffic messages about conditions such as lane restrictions. In the most recent quarter, VMS boards broadcast 5,088 traffic messages, compared to the 5,139 messages in the same time period in 2007. MassHighway plans to continue increased use of the VMS system while ensuring that all information is useful and accurate.



### Variable Message Boards— Advisory

**Messages:** Another key use of the VMS system is to broadcast advisory messages as part of safety campaigns that are done at the request of the Executive Office of Public Safety. These messages consist of public service announcements designed to reduce drunk driving and highlight the importance of seat belt usage. Messages are posted more frequently around safety campaigns. Spikes in usage of this system reflect those campaigns. In the most recent quarter, VMS boards broadcast 422 advisory messages compared to 389 messages in the same time period in 2007.

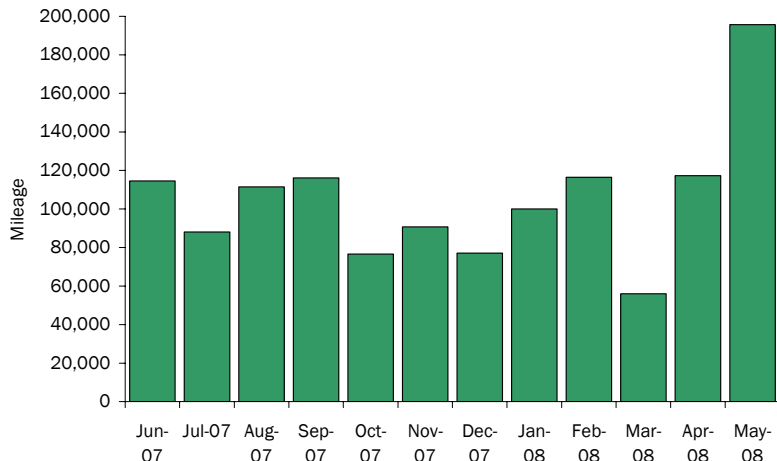
## VMS Initiatives

- In the coming months MassHighway will begin, on a limited roadway trial basis, providing travel time information on the VMS as is currently done on the Southeast Expressway. On the Southeast Expressway, MassHighway posts the travel time in the HOV lane on a VMS board prior to the driver making a decision to enter the lane.
- In the fall of 2008 MassHighway will provide expanded travel time information to the public on Rte 128.

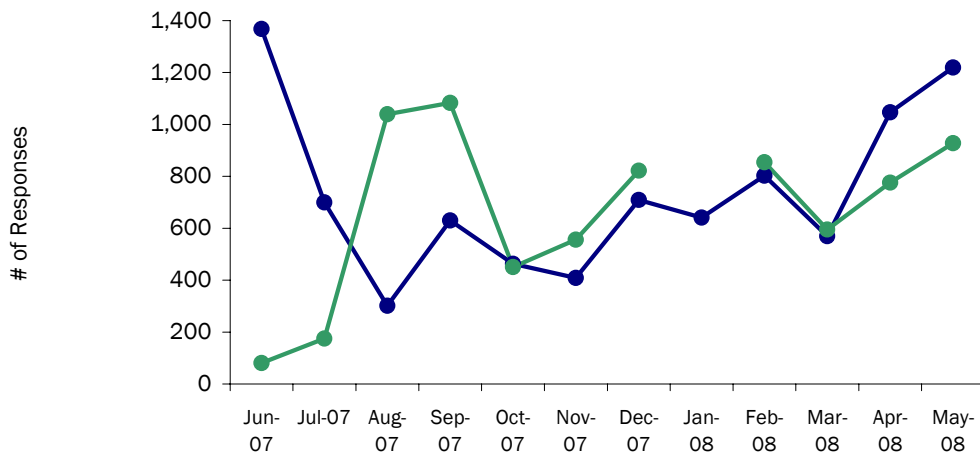
# SPOTLIGHT ON MOBILITY

## MassHighway Motorist Assistance (CaresVan) Program

The CaresVans Motorist Assistance Program, started in 1993, and is co-sponsored by MassHighway, the Federal Highway Administration and Commerce Insurance. CaresVans perform roving assistance patrols on major highways during peak travel periods, reporting information back to the TOC on roadway incidents, length of roadway backups, and locations of debris in the roadway.



**CaresVans Mileage:** In May 2008, CaresVans logged 135,633 miles in assisting motorists. In 2007, CaresVans mileage totaled 1,233,470 miles. As the number of patrols is increased, the total mileage of the program will increase.



**CaresVans Response Statistics:** CaresVans assisted 1,219 disabled vehicles and 928 drivers in May 2008. Numbers of disabled vehicles and drivers assisted tends to rise in both the summer and winter months as the heat and winter conditions increase incidents on highways.

	Jun-2007	Jul-2007	Aug-2007	Sep-2007	Oct-2007	Nov-2007	Dec-2007	Jan-2008	Feb-2008	Mar-2008	Apr-2008	May-2008
Disabled Vehicles	1,368	700	302	630	463	409	709	641	803	570	1,047	1,219
Motorists Assisted	81	175	1,039	1,083	451	556	822		854	595	776	928

## CaresVans Update

- By the end of 2008, new contracts will expand the program from 22 to 25 routes.
- As a result of these new contracts, the hours of operation will expand from 7 to 8 hours per day.

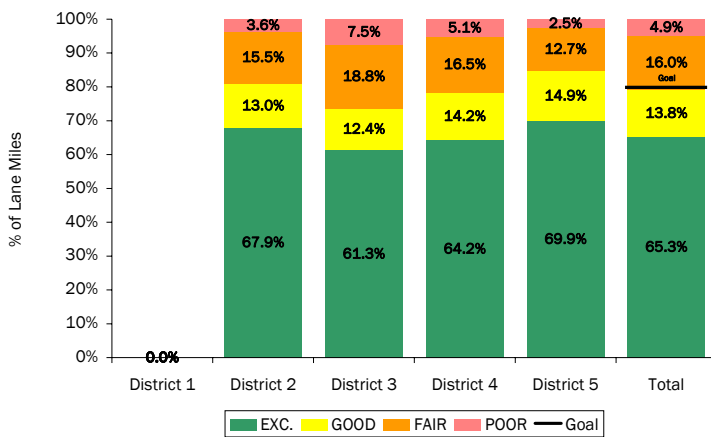
# PAVEMENT CONDITION REPORT

MassHighway measures the condition of pavements on the Interstate System, the National Highway System, all other roads under MassHighway jurisdiction, and on state-numbered routes not under MassHighway jurisdiction. In Massachusetts, the NHS is comprised of the entire Interstate Highway System (435 centerline miles, 2,525 lane-miles, not including the Turnpike), other major highways such as Route 3 and Route 24, and some major arterial roads such as Routes 9 and 20, for a total of 1,829 centerline miles and 6,715 lane-miles of highway. Overall, MassHighway collects and analyzes data on approximately half of the 11,129 federal-aid eligible roadways.

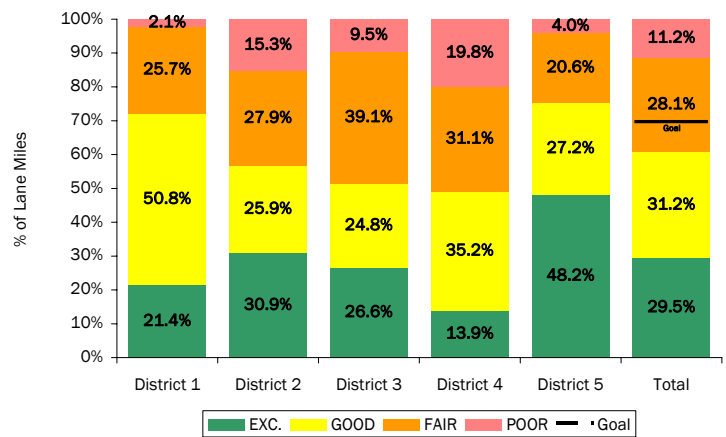
Pavement data is collected and evaluated using MassHighway's special high-tech vehicle, the Automatic Road Analyzer, or ARAN, on a bi-annual cycle. The ARAN measures pavement roughness (International Roughness Index, or IRI) as well as indicators of pavement distress such as cracking, rutting, and raveling, and then combines them all into an overall pavement condition indicator (Pavement Serviceability Index, or PSI).

## CURRENT CONDITION OF THE NATIONAL HIGHWAY SYSTEM: PSI

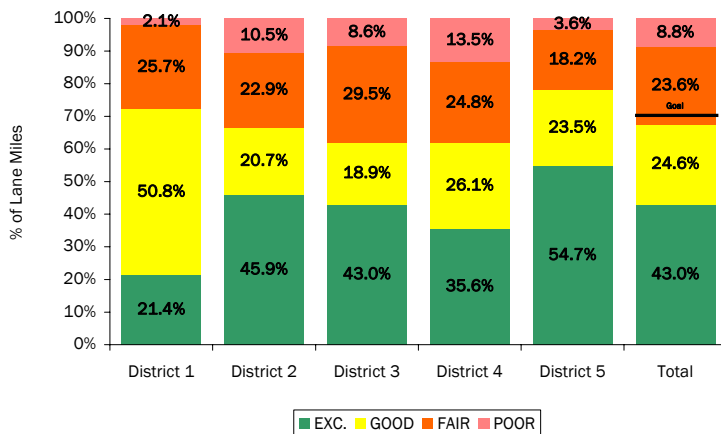
PSI By District: Interstate System



PSI By District Non-Interstate NHS



PSI By District Full NHS



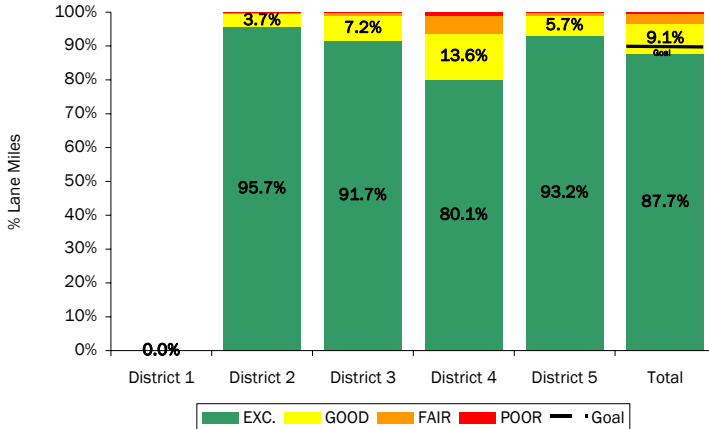
These three graphs show the current condition – based on PSI – of the Massachusetts Interstate System, the non-Interstate portion of the National Highway System, and the total NHS, for each of the five MassHighway Districts.

As shown, 79.1% of the Interstate system is in Excellent or Good condition, nearly reaching the MassHighway goal of 80%. For the non-Interstate portion, 60.7% is in Excellent or Good condition. For the total NHS system, 67.6% is in Excellent or Good condition, slightly below the MassHighway goal of 70%. MassHighway is responsible for the entire Interstate system, excluding the Massachusetts Turnpike (I-90), and about two-thirds of the non-Interstate NHS system.

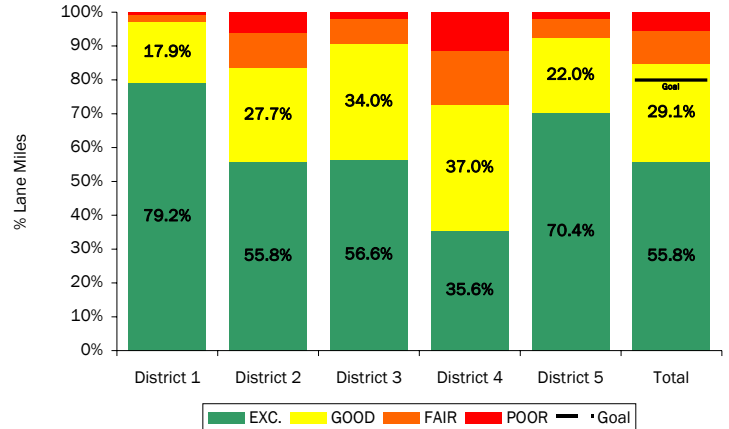
# PAVEMENT CONDITION REPORT

## CURRENT CONDITION OF THE NATIONAL HIGHWAY SYSTEM: PSI

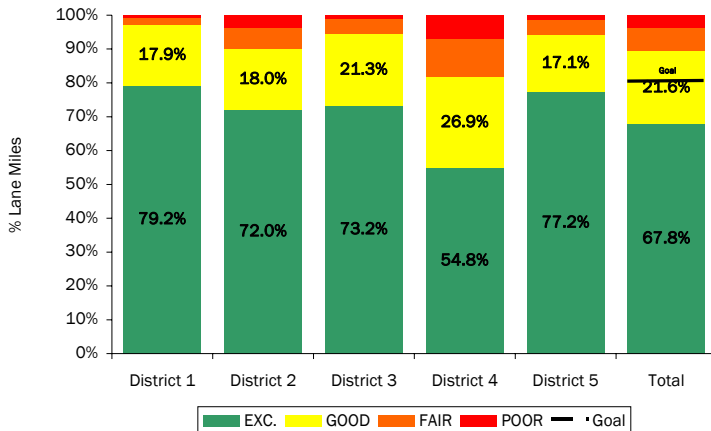
Interstate System - IRI by District



Non-Interstate NHS System - IRI by District



Total NHS - IRI by District



These three graphs show the current condition – based on IRI, a measure of pavement smoothness – of the Massachusetts Interstate System, the non-Interstate portion of the National Highway System, and the total NHS, for each of the five MassHighway Districts.

As shown, 96.8% of the Interstate system is in Excellent or Good condition, exceeding the MassHighway goal of 90%. For the non-Interstate portion, 84.1% of pavements are in Excellent or Good condition. For the total NHS system, 89.4% of pavements are in Excellent or Good condition, exceeding the MassHighway goal of 80%.

## Pavement Improvement Initiatives

- Initiated new \$15 million statewide NHS pavement preservation program.
- Re-focused pavement rehabilitation program toward more cost-effective preventive maintenance strategies.
- Invested over \$1 million in pavement research at the University of Massachusetts.
- Tested and used a variety of innovative pavement technologies as part of the Interstate and NHS programs, warm-mix placement, gap-graded and stone matrix pavement designs.
- In cooperation with FHWA and the Massachusetts's MPOs, increased annual funding for the Interstate Maintenance Program to \$75 million.
- Began full implementation of Superpave for Interstate Maintenance pavement rehabilitation projects advertised in 2008.

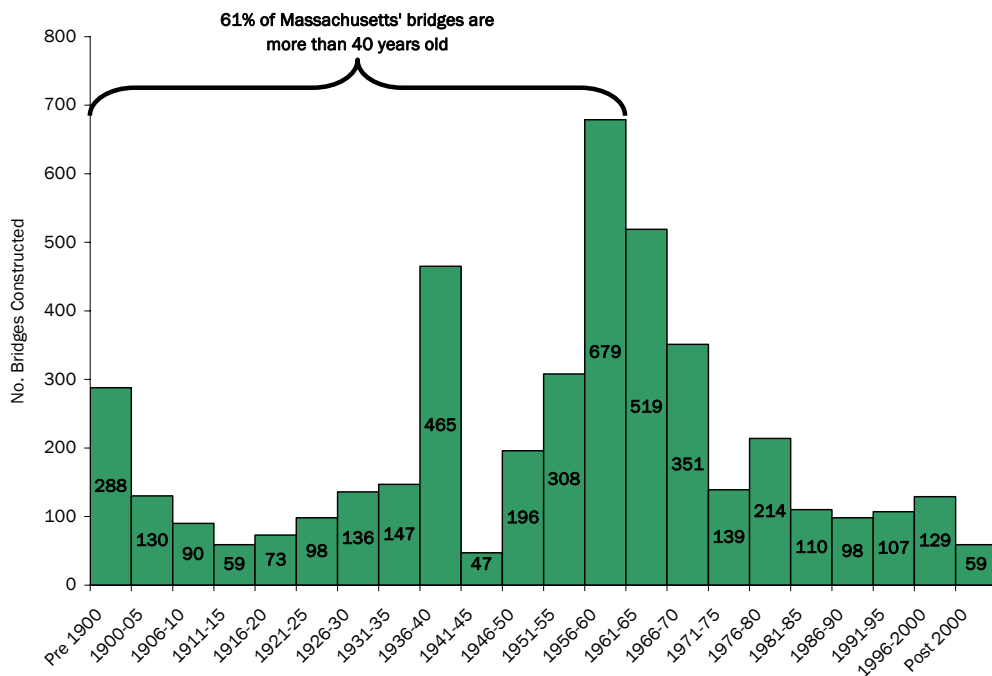
# BRIDGE CONDITION REPORT

Massachusetts' bridges are the centerpiece of the Commonwealth's infrastructure. MassHighway owns 2,863 bridges across the Commonwealth, and inspects 1,547 municipally owned bridges at least every two years. The continued maintenance of Massachusetts bridges is vital to continued mobility for people and goods. This report provides an overview of bridge conditions across the Commonwealth.

## The Massachusetts Perspective

Massachusetts is one of the oldest settled areas in the United States, so, not surprisingly, we also have some of the oldest infrastructure. The age of Massachusetts bridges coupled with New England's rough winters has created a situation where our bridges require substantial focus and attention.

## Bridge Construction 1900—Present



61% of Massachusetts' bridges were built by 1960. The vast majority of these bridges were built either by the Works Progress Association during the Great Depression, or as part of the construction of the Interstate Highway System. 42% of the Commonwealth's bridges are between 40-60 years old. As a result of their age, many bridges have reached the end of their useful life and are in need of significant investment.

## Bridge Inspection Program

MassHighway inspects over 4,400 bridges at least every two years. These inspections help MassHighway to determine which bridges need the most attention and understand the overall condition of Massachusetts bridges.

Bridge Inspection Teams examine and analyze every element of the bridge, assigning each with a condition rating on a scale of 0 to 9 (with 9 being "excellent" and zero being "imminent failed"). For all bridges with footings in the water, underwater inspections are conducted using specially trained MassHighway dive teams.

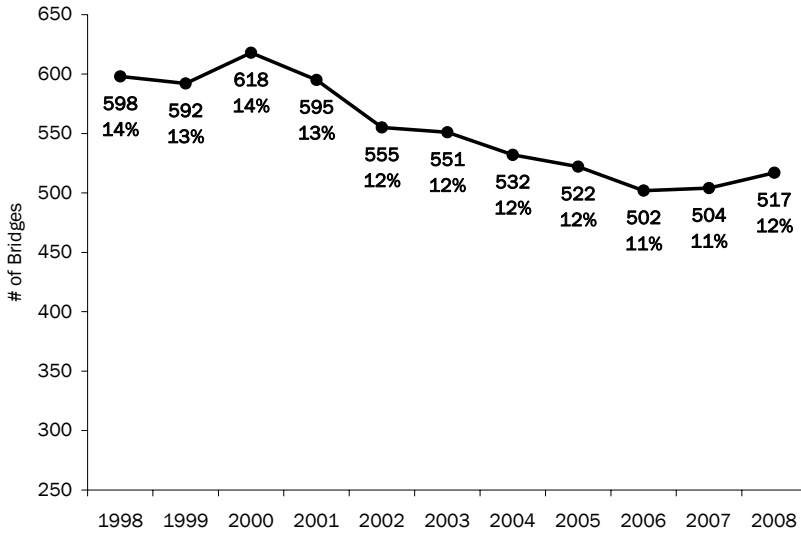
After the inspection is performed, all data, sketches, photos, and videos are entered into MassHighway's nationally used, state-of-the-art Bridge Inspection Management System Database. In 2007, MassHighway bridge inspectors conducted 2,817 bridge inspections.

# BRIDGE CONDITION REPORT

## Structurally Deficient Bridges Report

One of the most prominent measures of bridges is whether or not a bridge is structurally deficient. A structurally deficient (SD) bridge is one for which the deck (driving surface), the superstructure (supports immediately beneath the driving surface), or the substructure (foundation and supporting posts and piers) are rated in condition 4 or less on a scale of 1-10. Structural deficiency does not necessarily imply that a bridge is unsafe. It does, however, mean that a structure is deteriorated to the point of needing repairs immediately to prevent restrictions on the bridge.

## Trend of Structurally Deficient Bridges 1998-Present



From 1998 to 2006, the number of structurally deficient bridges dropped from 598 to 502 as shown in chart A. These improvements reduced the percentage of SD bridges in the state from 14% to 11%. Since 2006, the number of structurally deficient bridges in Massachusetts has increased slightly to 517 from 504.

## Number of SD Bridges Added vs. SD Removed – August 2007 to Present

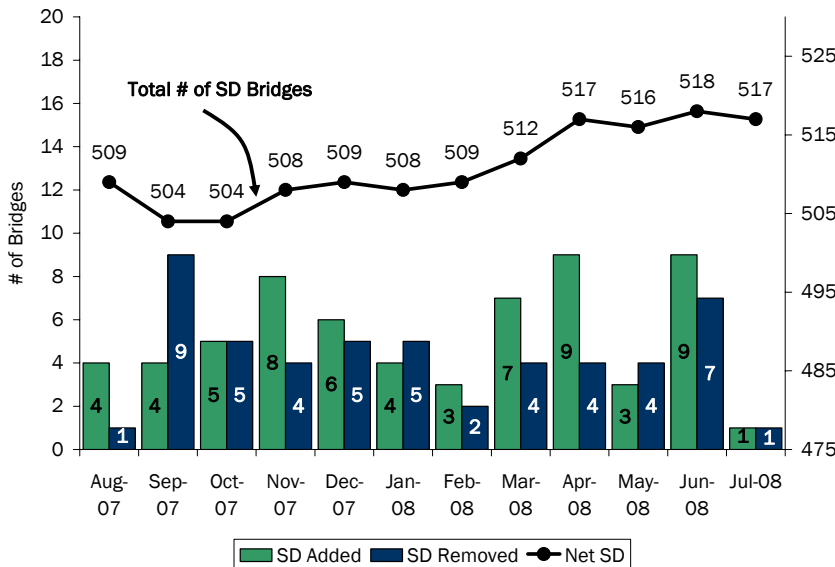


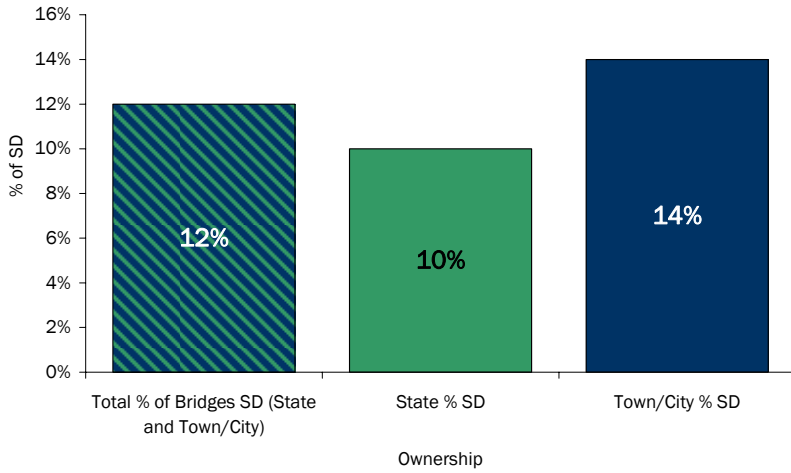
Chart B shows the number of bridges that became structurally deficient and the number of bridges that were removed from the list of structurally deficient in each month since August 2007. As this chart indicates, bridges are becoming structurally deficient at a faster rate than MassHighway is able to remove bridges from structurally deficient status. This trend is due in large part to unmet maintenance needs on many of Massachusetts' bridges, especially older bridges.

To reverse this trend, Massachusetts must work to simultaneously remove bridges from Structurally Deficient status, while also precluding others from falling into Structural Deficiency. For every bridge we are able to remove from the list of structurally deficient bridges, 1.1 bridges become structurally deficient.

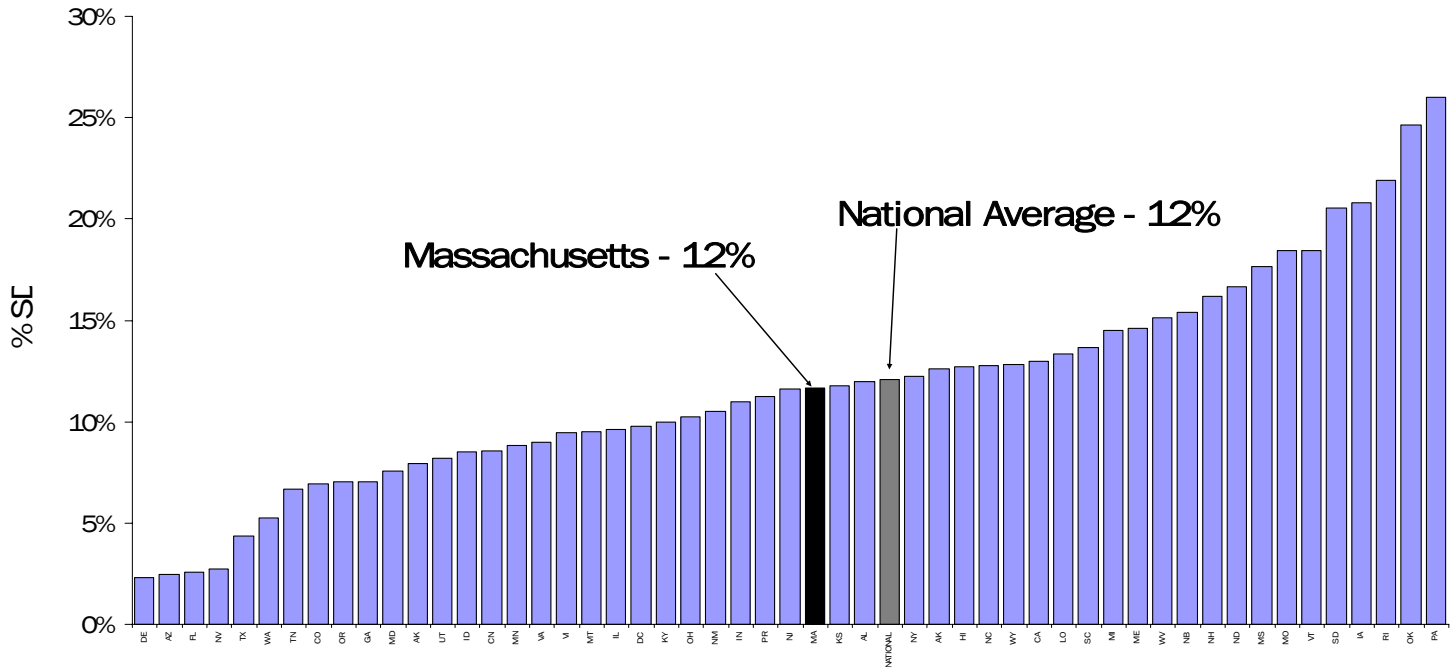
To remove bridges from structurally deficient status, costly bridge rehabilitation and reconstruction projects may be required. It is more cost effective to prevent bridges from reaching structural deficiency. To do this, bridge preservation projects are required. Bridge preservation includes extensive bridge painting projects to protect steel elements from corrosion, abutment repairs to repair spalling (deteriorated concrete), as well as deck and deck joint replacements to prevent water from entering the superstructure.

# BRIDGE CONDITION REPORT

## Structurally Deficient Bridges By Ownership



Bridges owned by municipalities are inspected by MassHighway every two years. As the above chart shows, bridges owned by MassHighway have a lower percentage of structurally deficient bridges than bridges owned by municipalities. The difference in condition between MassHighway and municipality bridges is the result of the limited funding many cities and towns have for their bridges. MassHighway is working with cities and towns on strategies to improve the condition of municipality owned bridges.

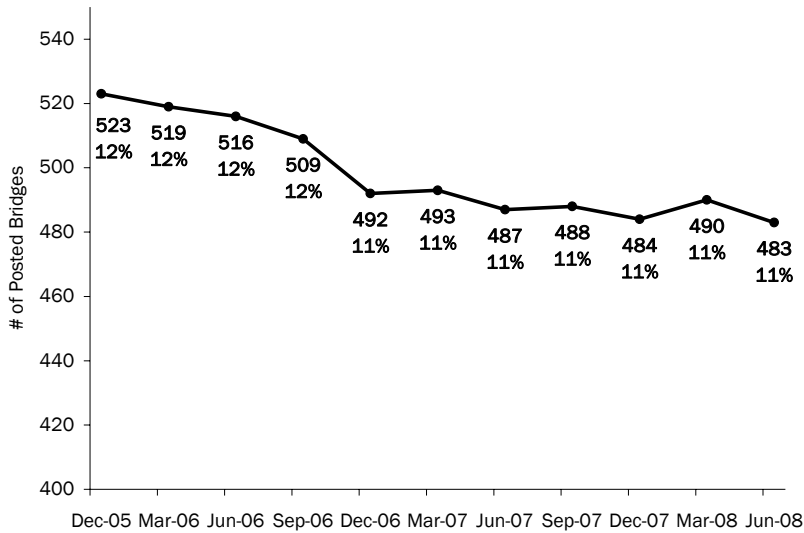


The above chart shows the percentage of SD bridges in Massachusetts relative to the rest of the nation. Massachusetts has 12% structurally deficient bridges, in line with the national average of 12%. Delaware has the lowest percentage of SD bridges with 2%. Pennsylvania has the highest percentage SD with 26%.

**SOURCE: Federal Highway Administration**

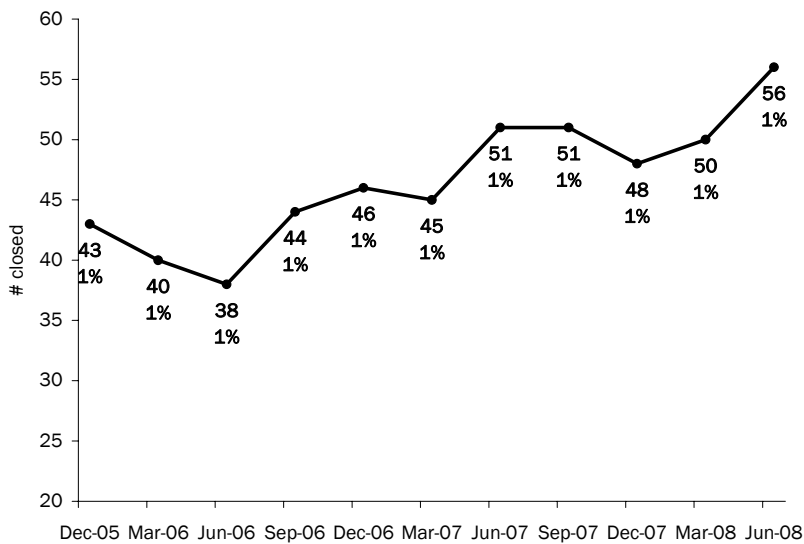
# BRIDGE CONDITION REPORT

## Massachusetts Posted Bridges



When an engineering evaluation determines that the carrying capacity of a bridge is less than the Massachusetts statutory load, that bridge is posted with a weight restriction. 483 of Massachusetts bridges are currently posted. MassHighway's bridge section has a program to address posted bridges which focuses first on numbered routes. Numbered routes receive the most traffic and hold the most significance to Massachusetts transportation network.

## Massachusetts Closed Bridges



56 of Massachusetts bridges are currently closed. For a bridge to be closed, it must have deteriorated to such a deficient condition that it has been determined to be unsafe for traffic. For these bridges to be re-opened, rehabilitation or complete replacement is required.

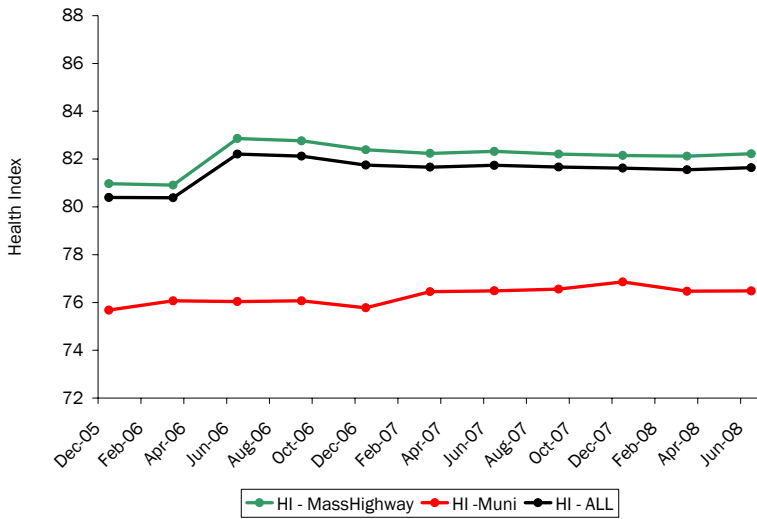
# BRIDGE CONDITION REPORT

## Bridge Health Index Report

MassHighway also measures bridge condition with Bridge Health Index. Bridge Health Index is the ratio of the current condition of each element to perfect condition expressed as a score from 0 to 100, with a value of zero indicating all of particular bridge's elements to be in the worst condition. A bridge health index of 85 would indicate that the condition of a system of bridges to be good. MassHighway's goal is to achieve a bridge health index of 85 or greater. Health Index is especially useful to characterize the physical condition of a bridge or set of bridges. Health Index provides MassHighway bridge engineers with a way of assessing the overall conditions of all bridges, or subsets of bridges, in Massachusetts.

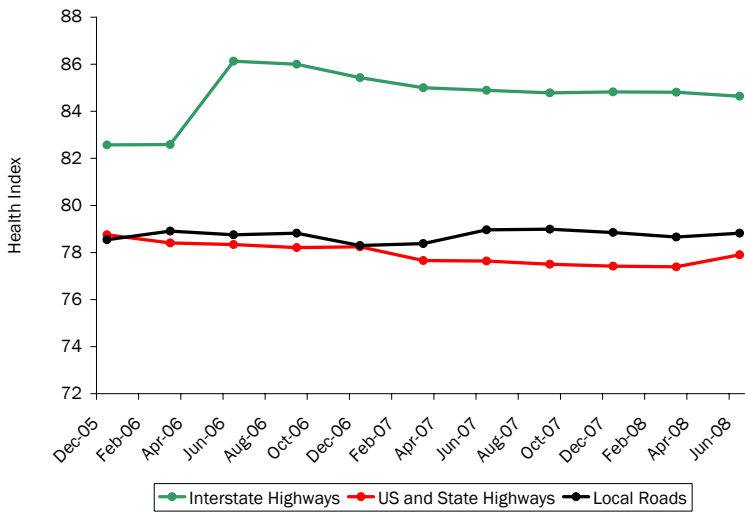
Massachusetts overall bridge health index is 81.64. MassHighway is working to reach an overall bridge health index of 85 in Massachusetts. A health index of 85 would indicate the system of bridges in Massachusetts to be in good condition.

## Health Index By Bridge Owner



The above chart shows a comparison the health index of bridges owned by MassHighway, Municipalities, and on a whole. MassHighway owned bridges have a health index of 82.22 while municipality owned bridges have a health index of 76.48.

## Health Index By Road Category

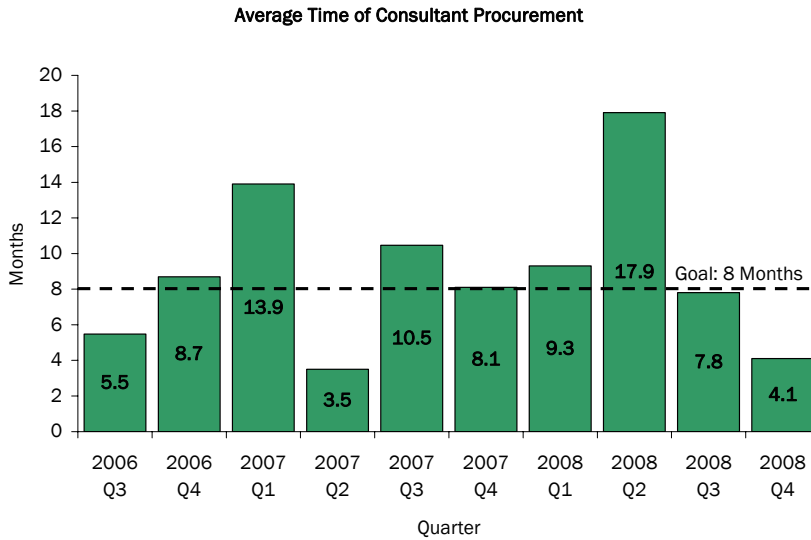


The above chart shows a comparison the Health Index of bridges on Interstates, US and State Highways, and local roads. The condition of bridges on the interstates is higher than the condition of US, State, and Local Roads. These better condition of bridges on the interstate system is attributed to the increased focus and funding assistance for Interstate Bridges.

# SPOTLIGHT ON PROJECT DELIVERY

MassHighway is committed to streamlining project delivery. In April 2008, Governor Patrick, Transportation Secretary Cohen and Commissioner Paiewonsky, set forth a plan to reduce the average project of \$4-6 million timeline from ten years to less than six years.

## Project Development and Design Streamlining - Consultant Procurement



One of the first steps in the project delivery process is the procurement of design services to prepare construction plans, specifications, and cost estimates. The adjacent chart shows the average duration of the consultant contract procurement process for design contracts, beginning with identification of the procurement need, selection of a consultant firm, and ending with a Notice to Proceed (NTP).

MassHighway is committed to reaching an average time of eight months, using a variety of strategies, including eliminating duplicative steps, re-training project managers, tracking schedules closely, and providing enhanced oversight and guidance to all those involved in the process. Each quarter, MassHighway will provide updated performance information on the number of contracts awarded and the time it took to procure each contract.

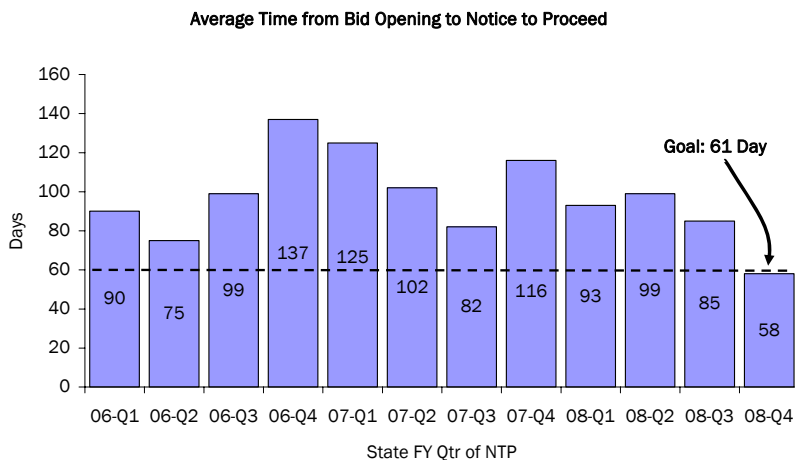
## Project Development and Design Streamlining: Initiatives

MassHighway has determined that the most effective way to advance a project quickly through the design process, is to develop a well defined scope of work at the very beginning of the project. In 2006, MassHighway released the new Project Development and Design Guide. This document provides excellent guidance to project proponents on how best to determine the scope a project. The nationally recognized, award-winning, Design Guide also provides valuable information on developing appropriate public outreach strategies.

High quality design submittals are also important to maintaining project schedules. Poor quality design documents take longer to review and often require re-submittals. MassHighway now requires that the Principal in Charge of the engineering firm responsible for preparing the design sign a design-review checklist. This policy ensures that the leadership of the firms responsible for preparing design documents is aware of the importance of quality.

MassHighway is also working with the American Council of Engineering Companies (ACEC) to develop a Webinar that will address the importance of quality design submittals.

## Construction Streamlining—Contract Bidding and Award



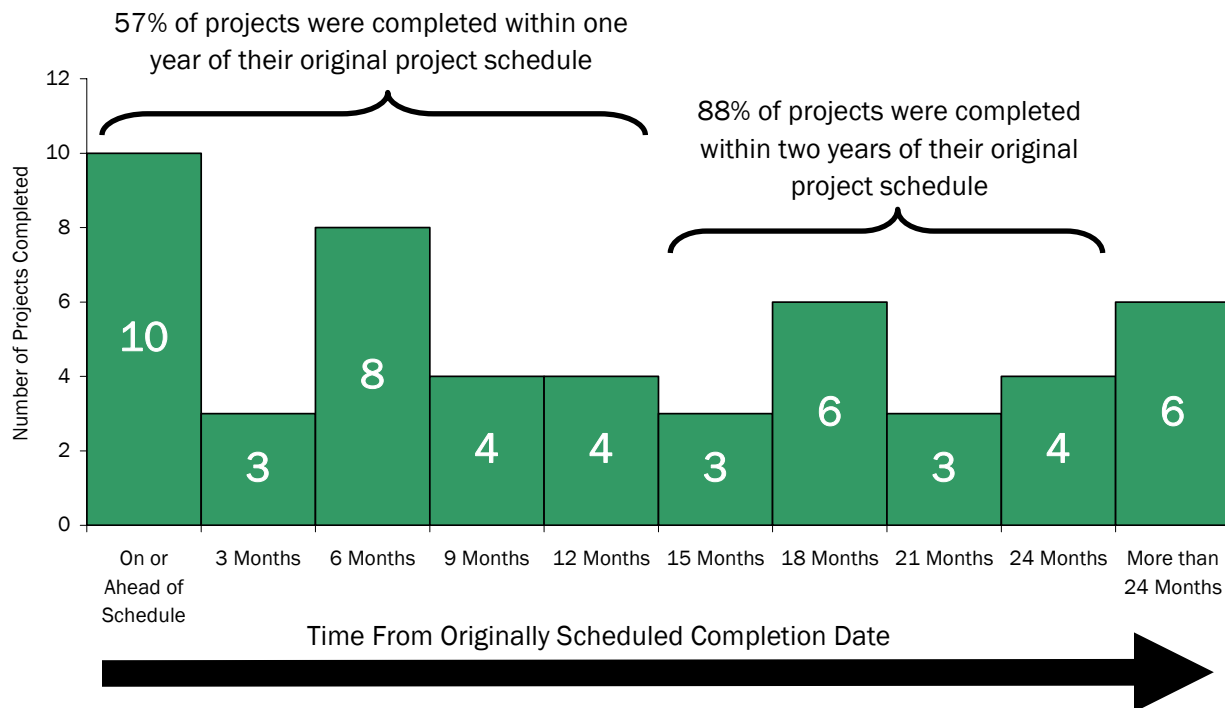
MassHighway uses several indicators to measure the amount of time it takes to contract for and construct a road or bridge project. As shown in the adjacent table, under past practice at MassHighway, it would take between 75 and 137 days, or an average of 108 days, from the time construction bids were opened to the time a contractor was issued a "Notice to Proceed," or directive to begin work.

MassHighway is committed to reducing that time by 45%, to 61 days. To accomplish this goal, MassHighway will use a variety of strategies, including online bidding and a new streamlined contracting process. MassHighway will report quarterly on the time it takes to issue a notice-to-proceed for construction contracts. In the last quarter, MassHighway's average was 58 days, or a 46% reduction

# SPOTLIGHT ON PROJECT DELIVERY

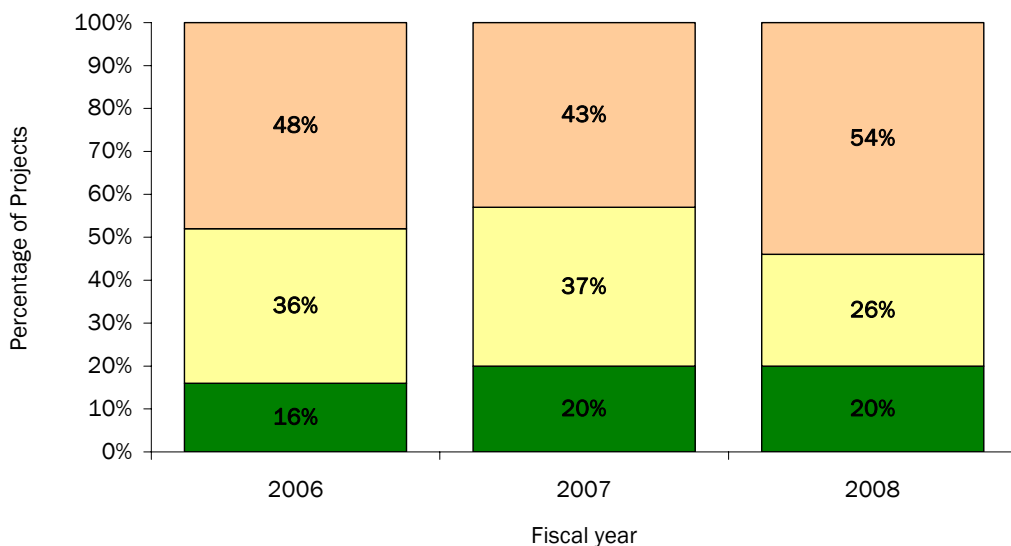
## Construction Completion Report

These pages provide a report on MassHighway's adherence to time and budget schedules.



This chart provides an overview of actual project completion dates compared to scheduled completion dates. In FY 2008, 51 projects were completed by MassHighway. 10 projects were completed on or ahead of schedule without time extension. Cumulatively, 29 projects (57%) were completed within one year of their original schedule. Cumulatively, 45 projects (88%) were completed within two years of their original schedule. As part of MassHighway's streamlining efforts, we are working hard to complete more projects within original schedules. On projects where delays occur, we will limit those delays so that projects are completed as close to original schedules as possible.

## Performance Overview



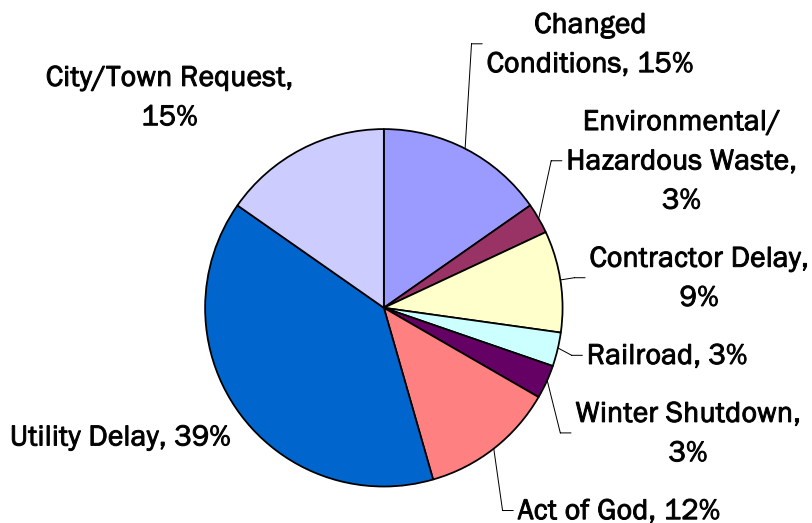
21% of MassHighway projects completed in Fiscal Year 2008 received no time extension, up from 20% in the previous year. 25% of projects received extensions for external factors, beyond MassHighway control, down from 37% last year. 54% of projects received extensions for reasons caused by MassHighway, up from 43% last year.

■ Original Schedule Met ■ Extension for External Delay ■ Extension: MassHighway Delay

# SPOTLIGHT ON PROJECT DELIVERY

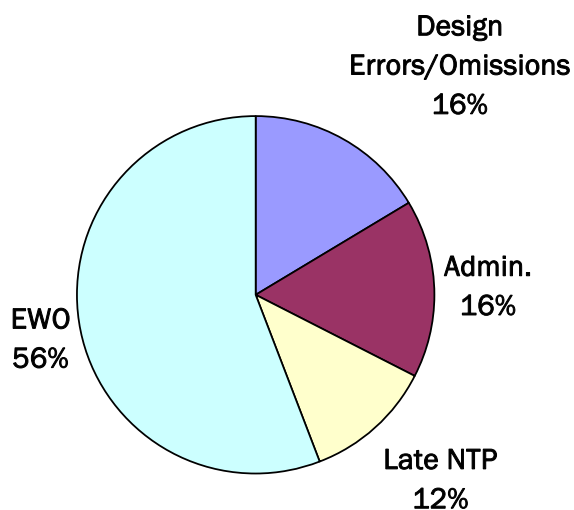
## Construction Time Extension Report

### Causes of External Extensions



This chart breaks out the causes and frequency of external delays to the construction process in FY 2008. As shown, the most frequent cause of approved schedule extensions was associated with a utility company's need to relocate their poles, wires, and equipment. The second leading cause of external delays is requests from municipalities for new elements to be included in projects. The third leading cause of external extensions is for changed conditions (usually subsurface conditions). Other causes include winter shutdown.

### Causes of MassHighway Extensions



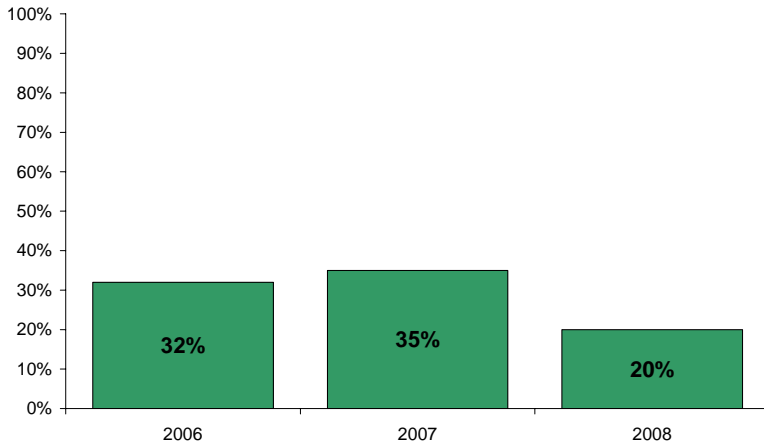
This chart breaks out the causes and frequency of MassHighway delays to construction projects completed in FY 2008. As shown, the primary reason for internal construction delays was the need for Extra Work Orders, additional work required to complete the original design which was not included in the contract.

Other causes include design errors and omissions, and administrative delays. As part of the construction streamlining effort, MassHighway will significantly reduce the number and extent of project delays regardless of cause. MassHighway will also focus on improving the quality of design, whether that design is overseen by MassHighway or a local government.

For an explanation of key terms please see page 19

# SPOTLIGHT ON PROJECT DELIVERY

## On-Budget Performance

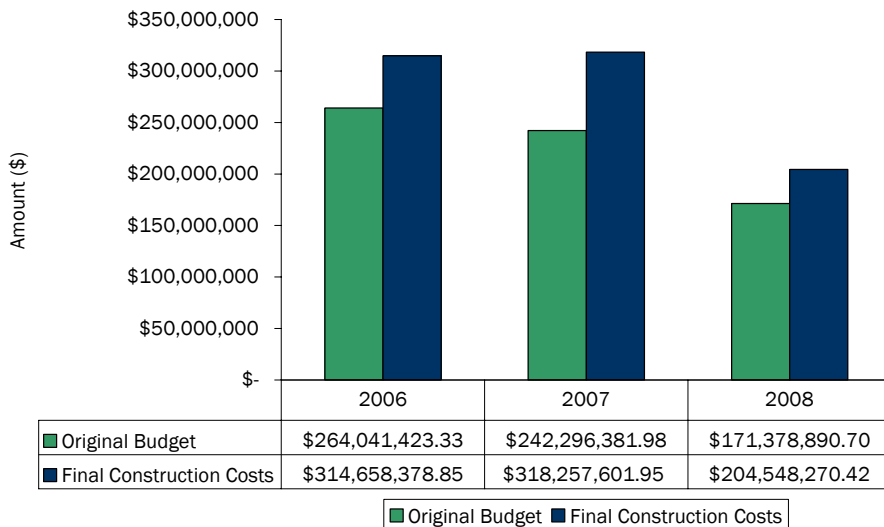


This chart indicates MassHighway's current on-budget performance for Fiscal Years 2006, 2007, and 2008. In this case, we define on-budget as a project completed without the need for additional funds beyond the contract bid amount. There are many factors that result in the need to add funds to a construction contract, they range from simply adding work at the request of a municipality (such as additional tree plantings or additional signage), to resolving unforeseen site conditions in the field. Other budget increases are due to contractual adjustment clauses for increases in the price of asphalt, a primary material in MassHighway construction jobs.

MassHighway also builds many projects that are designed by municipalities. At times, design quality issues have resulted in the need for additional funds during the construction phase. Recognizing that many municipal governments have limited resources and lack day-to-day experience in managing roadway design, MassHighway will hold municipal design workshops throughout the state in 2008. These workshops complement a series of right-of-way training sessions for municipal employees sponsored by MassHighway earlier this year. Implementing quality initiatives and improved utility company coordination during the design phase will result in significant cost savings during the construction phase. These quality initiatives will reduce costs and eliminate additional delays.

Over the coming year, MassHighway will continue its aggressive efforts to improve the quality of our own designs and those overseen by our local partners. As more of the current multi-year construction projects are completed and new, higher-quality designed, projects are built, the on-budget measures will improve significantly.

## Construction Program: Estimated Costs vs. Final Cost



The above shows the difference between the original budget and final construction costs for projects completed in FY 2008. The final cost of projects completed in Fiscal Year 2008 totaled \$204 million, \$33 million more than the original budget for these projects. The final costs of these projects were, on a whole, 19% higher than original estimates, an improvement from a 31% differential in FY 2007.

**Late NTP:** Notice To Proceed is notification to the contractor to begin work. If it issued later than anticipated when contract duration was set a contractor is entitled to additional time according to the contract.

**Utility Delay:** Construction delayed waiting for utility companies to move their facilities.

**EWO:** Extra Work Order, additional work required to complete the original design which was not included in the contract.

**City/Town Request:** Requests made by a municipality during construction that was not included in the contract.

**Permits:** Construction delays due to time required to modify or issue a permit such as Army Corp., DEP, MHC, local Conservation Commission, etc.

**Design Errors/Omissions:** items that were either the result of a defect in the original design or not included in the contract.

**Changed Conditions:** Delays caused by subsurface or latent field conditions that could not have been known before construction; usually underground soil conditions that require changes to the base scope.

**Environ/Haz Waste:** Delays resulting from unexpected hazardous soils or other unexpected environmental conditions, usually resulting for special handling required.

**Act of God:** Any restriction to the work as a result of an extraordinary event that could not have been foreseen nor prepared for at the time of bid such as extreme weather events, acts of governments, fires, etc.

**Third Party:** Any delay caused by the actions of a third party not more specifically defined in any other category, such as an abutter.

**ROW:** Delays caused by procuring right of way (property or access to property) necessary for base scope work.

**Admin:** Administrative extensions for processing paperwork at contract closeout after all field work has been completed.

**Railroad:** Delays caused by railroad companies

**Contractor Delay:** Delays caused solely by the Contractor.

**Winter Shutdown:** Extensions required to allow work that is weather sensitive that cannot be completed during the winter months.

## MassHighway Districts:

