

Bridge Authority Looks to Next 20 Years of Preservation Work

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 “well above” estimates, said Mr. Sweeney. Since then, the project has been redesigned and the MBA will seek bids again this fall.
 “We’re hoping we’ll see more reasonable bids,” he said, acknowledging that many factors can affect costs, including the

price of fuel, which is used in the production of asphalt.
 Bridge maintenance projects are included in the annual strategic plan approved by the MBA. A 20-year strategic plan guides bridge operations and financial planning. Internally, maintenance projects are tracked closely and projections adjusted, said Mr.

Sweeney, and updates are given to the board.
 “A big part of the plan is estimating what our traffic is going to be,” he said, “because the traffic has a big impact on our tolls and revenues.”
 Over the years, bridge crews have become more experienced at maintaining the structure, and are able to perform more work on the bridge. Maintenance projects are separated into three categories and comprise the bridge’s infrastructure preservation program, which includes routine maintenance, planned preventive maintenance, and work based on the annual inspection.

performed on the bridge can impact maintenance schedules and bridge operations. These inspections include an annual inspection of the bridge, an in-depth cable inspection, which takes place every three years, underwater inspections, and a fracture critical inspection, which is performed every other year.
 Projects identified during the annual inspection, which is performed by the Parsons Corporation of New York, become a higher priority than others and are categorized by their importance, said Mr. Sweeney. The Parsons’ inspection takes three weeks. A team of inspectors from the company works with bridge personnel, since MBA crews inspect the bridge while working on it throughout the year.

have been found to be in excellent condition.”
 A fracture critical inspection involves looking at components that, if they were to fail, would close the bridge.
 “For example, if our main tower failed, that’s a fracture critical,” he said. “The bridge would be closed to traffic until it was repaired.”
 An underwater pier inspection is performed every five years. Inspectors look for deterioration and erosion around and under the piers. Videos from previous inspections are used to look for changes in the base of the piers and any movement in the material around them.



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The next planned unique project is the replacement of the tower hanger. The bridge deck is connected to the two towers at the hanger. The \$850,000 project is scheduled to begin in 2009 and will be completed in 2012.
 Routine maintenance is performed every year, ultimately extending the life of the bridge, said Mr. Sweeney. That work includes joint repairs, cleaning beams, and clearing debris from the bridge.
 The bridge also has planned long-term strategic preventive maintenance work, which may take several years to complete, and extends the life of different components of the structure, said Mr. Sweeney. This includes grate replacement, touch-up painting, replacing bearings, cable inspections, and removing rust from the tower cells.

Results from four inspections and snow.

With a 2.5% average decline in bridge traffic and dropping revenues over the last five years, Mr. Sweeney said, major projects like developing a Mackinaw City holding, inspection, and weigh area are being pushed back.

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and snow.
 In the early part of winter when winds are stronger, the causeway leading to the bridge from the north is vulnerable to wind-blown water that sprays and freezes on the road surface. Crews focus on keeping that area cleared, said Bob Sweeney, executive secretary of the Mackinac Bridge Authority (MBA).
 As winter progresses, ice and snow builds up along the bridge railing and forms a natural protective barrier for the causeway, reducing the spray that can reach the road. However, the causeway is then subject to blowing snow, which can cause near whiteout conditions.

“These are definitely very desirable and very beneficial for the bridge,” said Mr. Sweeney, “but when our toll revenues aren’t matching what our projections are, that’s stuff we’re probably not going to spend money on until it becomes urgent.”
 In the meantime, the MBA has partnered with the motor carrier division of the Michigan State Police for northbound weight-enforcement issues. MBA is seeking grants to help fund the estimated \$3 million Mackinaw City project.

Three plow trucks clear snow and sand the roadway. Mainly sand, rather than salt, is used on the bridge, while calcium chloride is applied at the toll booth plaza for the protection of the toll booth operators and vehicles stopping to pay the toll. Road salt is not used on the bridge, as it is corrosive to the structure.

Year-around Maintenance Plan Guides Bridge Work

By Karen Gould
 Nearly 100 people work at the Mackinac Bridge. In the winter, work focuses on keeping the roadway clear of ice and snow. In the summer, employees maintain and preserve the structure, and some major projects can take the crew 552 feet above the water.
 A 20-year, long-term strategic plan is used to map out projects and track budget requirements. The plan is updated annually.
 From January through March, working with a skeleton maintenance crew, the Mackinac Bridge Authority focuses on keeping the north and south approaches, bridge deck, causeway, and toll plaza clear of ice

and snow.
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With the stronger winter winds, partial bridge closures are common, and extra staff is needed to manage lane closures and to escort larger vehicles over the span.
 The number of vehicles crossing in the winter can be as low as one-tenth of the summer volume. Toll booth staff is reduced to match the drop in traffic, said Mr. Sweeney.
 Efficiency of toll collections also drops in the winter. In the summer, toll collectors can process an average of 400 vehicles per hour, while in the winter, approximately 200 vehicles per hour will be processed at the toll booths.
 “It is interesting and there is a logical reason for these differences,” said Mr. Sweeney. “Because of the cold weather, our collectors have the doors partially closed and it takes a little longer to process a vehicle.”
 Toll collection efficiency is monitored and patterns are tracked to assist the MBA when planning work schedules.
 Security patrols are performed year-around. In the summer, boats are monitored, and in the winter, snowmobiles are tracked as ice forms in the Straits and snowmobilers venture near the bridge. Signs are posted that advise trespassing

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