Keeping the Chicago Skyway Open

The rehab of Chicago's Skyway demonstrates just how well the city that works, works.

The Chicago Skyway is an 8-mile-long, six-lane tollway that runs from the city's border with Northwest Indiana to the Dan Ryan Expressway, carrying Interstate 90 traffic north into the Loop.

Built in 1958, this vital route carries 51,000 vehicles daily over an elevated roadway that combines a series of graded overpasses running up to a spectacular 3.4-mile span that rises to 15 stories over the Calumet River.

For the past three years, the Chicago Department of Transportation has been managing a project that includes a complete redecking of the 2.5-mile-long span, rebuilding much of the earthen roadway and overpasses that make up the balance of the 7.8-mile Skyway, and construction of an additional connector ramp. Given its high level of service, a complete shutdown of the Skyway was out of the question.

Getting underway

According to Frank Brinskelle, assistant project director and Skyway capital improvements manager, if CDOT had used a conventional work-zone design and traffic management techniques, the Skyway redecking would have taken three years to complete.

However, his team came up with a scenario that reduced total construction time by a third. And, as the redecking phase of the construction completes its second year, CDOT can point to significant savings in both time and money, while keeping customer inconvenience to a minimum.

When CDOT planners first sat
down in 1999 to devise the Skyway project, they started with the idea of customer satisfaction, then, built out the plan from there. "This project began with traffic control," Brinskelle said. "We decided to use a moveable barrier system to move traffic through and around the work sites. And this decision, essentially, drove everything else in the plan."

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**Moving lanes**

The moveable barrier system, supplied by Barrier Systems, Inc., of Rio Vista, California, has opened and closed lanes coming into and out of work-zone areas for almost two decades. It uses concrete barrier sections similar to conventional California barrier, that are hinged together to form a single chain that can be picked up and moved laterally across lanes by a specially designed transfer machine.

The system permits moving an entire section of barrier across lanes at speeds up to 6 miles per hour.

On the Chicago Skyway, 2.5 miles of barrier was moved twice daily as part of a contra-lane design to provide an additional lane to carry rush hour traffic into or out of the city. The entire process takes 30 to 40 minutes to move the barrier, or an hour in total including the installation of tapers.

**PROJECT CHALLENGES**

1. The Skyway's 2.5-mile-long span needed complete redecking.

2. The rest of the 7.8-mile-long roadway needed rebuilding as well.

3. With 51,000 vehicles daily and few alternative routes, the Skyway could not be closed for work.

4. Originally, a three-year work period was forecast, which was unacceptable to drivers.

"Moveable barrier gave us the positive separation characteristics of Jersey barrier in a very flexible configuration," Brinskelle said. "While we realized that the rehabilitation project would cut Skyway capacity by up to 50%, the barrier allowed us to maximize the lanes we do have, which in the first phase of the project were three out of a total of six."

"Keeping it open"

"With a moveable barrier set-up..."
On Labor Day weekend, 2003, we actually reversed the barrier three times in an eight-hour period.

PROJECT SOLUTIONS

1. Budgets and material specs for the redecking were set by the Chicago Department of Transportation.

2. Plans were made to rebuild earthen roadway and overpasses and to build an additional connector ramp.

3. Traffic management with moveable lanes to fit traffic flow allowed CDOT to keep the bridge open, even at night.

4. Barrier systems’ concrete barrier formed a single chain that can be picked up and moved laterally across lanes by a specially designed transfer machine.

Traffic only dropped 3 to 10% during work.

we did not have to close down the Skyway at night, as is common with these types of projects. What’s more, with the moveable barrier system we could maintain a larger overall work area, which pleased our consultants and contractors. This is a pay-as-you-go thoroughfare,” Brinskelle said. “If we don’t provide our customers with an advantage, they can leave and go to alternate routes.

“Since the beginning of the project we have monitored traffic monthly and have seen usage drop from 3 to 10%. This compares to 20% drops on other freeway projects in Chicago. Essentially, we have seen little decline in traffic even with a 50% reduction in capacity.

“Flow during the week has been unobstructed. This is because week-day traffic is highly predictable and we can reverse our lanes with accuracy twice daily to accommodate rush-hour traffic into and out of the city. Weekends are more difficult since flow tends to be equal in both directions throughout the day, making it difficult to predict increases in flow in either direction. To handle this we have installed 11 monitoring cameras, supported by people in vehicles, which drive the roadway and mirror flow in the opposite direction, and report backups. This data is sent to our Skyway tower control center, where it is compared to historic data going back for three years to evaluate when to open or close opposing lanes. On Labor Day weekend, 2003, we actually reversed the barrier three times in an eight-hour period.” BR