

RJN Oversees Bridge Deck Patching Over the Edens

Full depth patching was required to repair the Edens Spur Bridge deck

The ISTHA selected RJN Group, Inc. to be the Construction Section Engineer (CSE) for the repair of a 3-span bridge over the Edens Expressway, on the Westbound lanes of the Edens Spur.

During the winter, Tollway maintenance personnel were continually placing asphalt cold patches in a growing series of potholes in the concrete bridge deck. The potholes intensified with each freeze-thaw cycle. In the Spring, one of the potholes poked through the entire deck, showering debris over the Northbound lanes of the Edens Expressway. The majority of the deterioration on the two-lane bridge was concentrated on the outside truck lane. This lane was immediately barricaded off and closed to traffic.



Within one month the Toll Authority developed plans and started repairs. RJN personnel sounded the entire bridge deck for deteriorated concrete with metal bars and hammers. In order for a complete analysis of the deck condition to be performed, the contract provisions required the contractor to provide the engineers access to the underside of the deck. With the use of a scissor-jack lift and nighttime lane closures on the expressway, the underside was sounded. Cherry pickers were used to access the undersides above the slopewalls.

Based on comparison of the soundings from above and below, RJN mapped out areas of partial and full depth bridge deck repairs. This work was done in two stages. The majority of the full depth repairs were performed on the outside truck lane, as expected, during Stage I. Surprisingly, the inside lane, which exhibited virtually no visible signs of distress, was found to require extensive partial depth repairs. This was attributed to delamination of the existing concrete deck overlay.

Consequently, the partial depth repairs greatly exceeded the plan quantity. The Tollway authorized this additional repair so that unrepaired areas would not necessitate any additional emergency repairs in the near future, considering that over half of the project cost went towards non-repair related traffic control items.

High early strength concrete with a strength of 3,000psi within 36 hours was used on the deck repairs so that the lanes were quickly reopened. Upon completion of this project, the aging Edens Spur Bridge deck was given a new lease on its life.