

CPR – REBUILT TO LAST

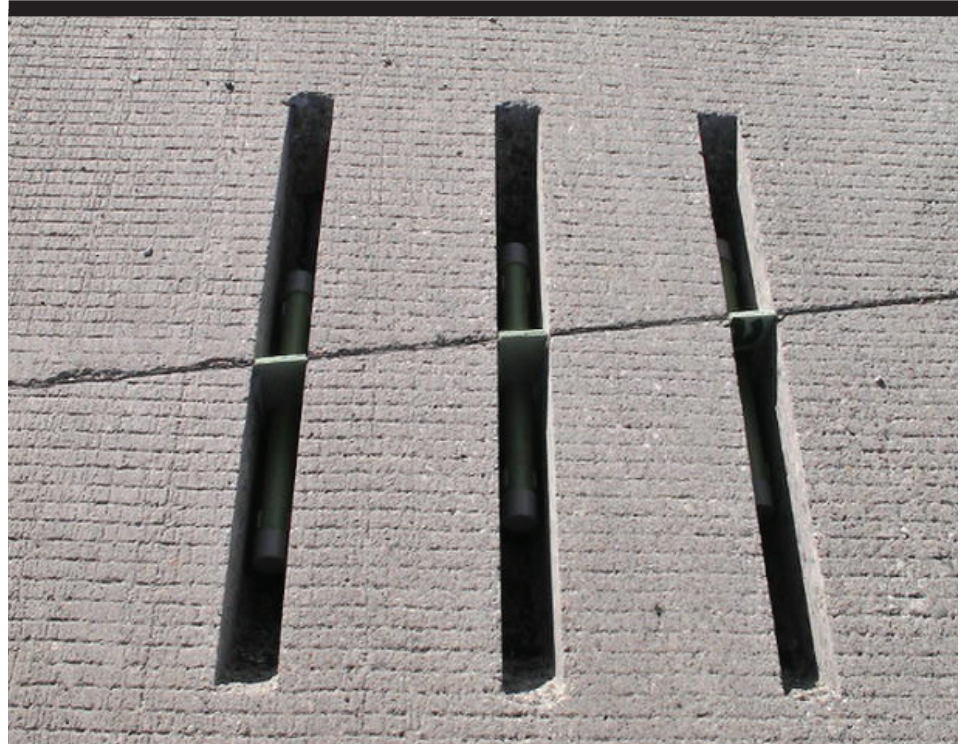
National Highway Route 60/MT200, Great Falls, MT

>>> DOWEL BAR RETROFIT, FULL- AND PARTIAL-DEPTH REPAIR, DIAMOND GRINDING, JOINT RESEALING

THE NATIONAL HIGHWAY Route 60/MT200 is a four-lane highway located in Great Falls, Mont. (Cascade County) that connects several small towns in central and eastern areas of the state. As the longest state highway in the United States, it is known for its challenging driving conditions in the winter. By 2009, a three-mile stretch of this undoweled, jointed-plain pavement had begun to show its age and was producing a rough riding surface. In order to make this roadway smooth and safe for drivers, the Montana Department of Transportation (MDT) implemented its first Dowel Bar Retrofit (DBR) project to make the necessary repairs.

The project involved repairing approximately 12 lane miles of nine-inch Portland Cement Concrete (PCC). The DBR operation was conducted on the 12-foot travel lanes going in each direction for the full length of the project. In addition, both full- and partial-depth repairs were completed at various locations throughout the project, including the inside and outside concrete shoulders. The sawing of the slots for the DBR was conducted around the clock, with crews following close behind removing the concrete between the saw cuts. Dowel bar installation and concrete placement were completed during the daytime hours. Once the concrete repairs were completed, the entire project was diamond ground and the existing joints were resealed.

Detours and traffic disruptions were non-existent for this project, and the repairs were



executed smoothly. By closing off two of the four lanes of traffic, the workers were able to make the repairs safely while leaving two lanes of two-way traffic for travelers. The contract allowed for 120 working days for project completion with all work completed in just 110 working days.

According to Randy Aafedt, Engineering Project Manager at MDT, this was the first DBR project let by the MDT. "We were all surprised by the cost-effectiveness of these repair procedures and the results," said Aafedt. "The grinding applied to the roadway produced a smoother surface and better ride quality."

The ride quality specifications for the project required a profile index of 10 inches per mile for each 0.10-mile section utilizing a 0.20-inch blanking band per California Test Method 526. In addition, an incentive of \$0.50 per-square-yard was paid for sections having a profile index of less than six inches per mile. Following the diamond grinding operation, testing of the pavement smoothness was conducted and the results significantly exceeded the specification. The profilograph results showed an average

TEAM MEMBERS

- Montana Department of Transportation (Owner)
- Interstate Improvement (Prime contractor)
- Construction Materials, Inc. (Materials supplier)
- A-Core of Idaho, Inc. (Joint sawing and sealing)
- Five Star Products (DBR cement supplier)

profile index of 0.75 inches per mile for the mainline pavement, and 1.61 inches per mile for the ramps. The contractor received smoothness incentive for more than 98 percent of the square yards ground.

With a total project value of \$1,811,361, or approximately \$150,947 per lane mile, this project proved to be a cost-effective solution for the State of Montana. The project was completed in 2009.