# CPR – REBUILT TO LAST

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## Concrete Pavement Restoration on State Highway in South Dakota

### >>> DIAMOND GRINDING & DOWEL BAR RETROFIT

**WATERTOWN, SOUTH DAKOTA** is a quaint town of approximately 20,000 inhabitants that offers an art center, zoo, heritage museum, stadium and an aquatic center. Located in the northeast area of the state, US 212 is a two-lane concrete pavement that goes through Watertown. In South Dakota, there are more than 2,050 two-lane miles of concrete pavement and 25 percent (488 miles) are constructed without dowel bars and have no load transfer other than aggregate interlock.

After 17 years of service, US 212 from Watertown, east to the intersection of SD 15, was in need of some timely repair. The original construction occurred in 1984 and the existing road was badly faulted approximately ¾ inches at every transverse joint due to the lack of dowel bars. The project utilized grinding, joint sealing, dowel bar retrofit (DBR) and slope flattening for the 16.6 miles of repair. Other methods considered included an overlay with asphalt as well as concrete repair and an underseal. The reason the team chose to use Concrete Pavement Restoration (CPR) was because South Dakota Department of Transportation (SDDOT) had been successfully using DBR since 1994 without any failures on similar projects and the existing pavement appeared to be an excellent CPR candidate, as evidenced by the minimal faulting with heavy truck usage and the superior aggregate quality.

In total, the project consisted of 5,801 transverse joints, spaced 15 feet apart and 291,957 square-yards of grinding. Traffic control was a challenge as the team needed to maintain two-way traffic using 24-hour flagging and a pilot car. At night, there were message boards and lighted stations to facilitate diamond grinding.

"We are very happy with the outcome of the project years after it has been completed. We knew that the results of this project would be similar to the successes we have had with other projects in the past and plan to use the method again on future projects," said Ron Sherman, Area Engineer, SDDOT.

The 129-day project was completed on October 9, 2001 for $2,665,912. The result for the public was a smooth surface that is still in good condition, eight years later. "Because this CPR project was done at the right time, this initial 1984 project construction should last its full life expectancy of 40 years or more," said Larry Engbrecht, Executive Vice-President of S.D. Chapter of American Concrete Pavement Association.

### TEAM MEMBERS

- South Dakota Department of Transportation (Owner)
- James Cape & Sons (Prime contractor: slot sawing, dowel bar placement and grinding)
- Forby's Contracting Co. (Joint sawing and sealing)
- Oban Construction Co. (Slope flattening and culvert work)
- 3-D Specialties, Inc. (Traffic control)