



## **Waseca County adds years of service life to CSAH 3 and CSAH 7 using Concrete Pavement Repair (CPR) techniques**

An interview with Nathan Richman, Waseca County Engineer

### **What was the problem?**

Waseca County combined two highway segments (10 miles apart) requiring concrete rehabilitation in the summer of 2017 to get better pricing by using the same concrete repair contractor. The first segment was CSAH 3 and stretched for 6 1/2 miles between Janesville and Elysian, Minnesota. This segment was 30 years old with deterioration caused by truck traffic and salt and sand use. The second segment was 4 miles of a 20-year-old section of CSAH 7 from Trunk Highway 13 to the north county line. The ride had grown bumpy due to faulting along the joints.

"In a rural county, we salt and sand the hills, curbs and intersections," said Waseca County Engineer Nathan Richman, PE. "That ends up causing environmental damage to the road, and so the repairs are congregated where we have more salt and sand use."

### **What was the solution?**

In formulating a strategy for repairing these highways, Richman tapped into MnDOT's Concrete Office for ideas and help with estimating project costs and time. He also sought advice from the Concrete Paving Association of Minnesota (CPAM). In the end, knowing they couldn't afford to repair every imperfection in the road, the county utilized partial- and full-depth repair strategies and dowel bar retrofitting. Dowel bar retrofitting involves inserting epoxy-coated steel dowel bars in slots cut across the transverse joints. The dowel bars link the slabs together and prevent vertical movement between them.

The contractor finished both road segments with diamond grinding. The diamond grinding eliminated the faulted joints, improved skid resistance and produced a quieter ride than when the original road segments were constructed.

"I expect this work will last 15 to 20 or more years and that the next project will be an unbonded concrete overlay," said Richman. "We likely will do more partial-depth repairs or full-depth replacements in the years leading up to the next project."

(continued)

## Final comments

"The unit cost was very close to MnDOT's average annual bid prices," said Richman. "Each of the individual things was close to what the DOT has been paying on other projects."

## Key facts about the project

- ▶ The project started in July 2017 and ended in October 2017.
- ▶ The roads were 24 feet wide with 9-inch-thick concrete at the pavement edge and 7 inches at the centerline (9-7-9 design).
- ▶ A 400-foot rehabilitation of Le Sueur CSAH 62 was also included in this project.
- ▶ The total project cost was approximately \$2 million.
- ▶ The average per-mile project cost was \$197,300 for 10.73 miles of work: 25% for partial- and full-depth repairs, 25% for diamond grinding, and 50% for the dowel bar retrofit.
- ▶ The 30-year-old CSAH 3 received the bulk of the partial- and full-depth repairs.
- ▶ The repairs are expected to last at least 15 years for the 30-year-old CSAH 3, and 20 or more years for the 20-year-old CSAH 7.

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| ▶ Owner: Waseca County                                  | ▶ Contractor: Interstate Improvement, Inc.   |
| ▶ County Engineer: Nathan Richman, PE                   | ▶ Ready-Mixed Concrete Supplier: Cemstone  |
| ▶ Project Numbers:<br>S.P. 81-603-034; S.P. 81-607-005  | ▶ For more information, contact:<br>Nathan Richman, PE<br>507-835-0660<br>nathan.richman@co.waseca.mn.us |
| ▶ Technical Advisors: MnDOT Concrete<br>Office and CPAM |  |
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