



McLeod County CSAH 7, Hutchinson, Minn.

CONCRETE OVERLAY

IN ORDER TO EXTEND THE LIFE of any highway, preventive maintenance is a must. The same was true for County State Aid Highway (CSAH) 7, located in McLeod County, Minn. This 2.5-mile stretch of highway surface had deteriorated from one half mile north of CSAH 18 to School Road in Hutchinson, Minn. This highway had been overlayed with asphalt in 1990 and was due for rehabilitation, so McLeod County chose to use a Portland Cement Concrete (PCC) overlay. Having recently completed a reconstruction adjacent to CSAH 7 that was surfaced with concrete, the County sought a solution to minimize the future reflective cracks that would most likely occur with a traditional 1.5-inch bituminous overlay, as well as choosing a consistent method.

The existing hot mix asphalt (HMA) was milled to an engineered profile, which varied from 1 to 4 inches in depth, and conventional, 5-inch thick slipform PCC was placed 26 feet wide. This project was unique because it was the first highway in the state of Minnesota to receive a 5-inch PCC overlay. In addition, channels were grooved for paint marking applications made in the plastic concrete. This process protects the paint stripes from snow plow operations and increases the life of the paint stripe. Although McLeod County considered a conventional "Reclaim & HMA Overlay" method, the existing HMA was deemed too thick, making this option cost prohibitive.

The project commenced during sweet corn harvest time in June 2009, which meant that lo-



cal farmers had to have access to their fields. In order to meet this need, re-cleaning of the milled surface was necessary prior to applying the PCC overlay. Another challenge was matching the transverse joints in the PCC to coincide with the major transverse temperature cracks in the HMA surface. County inspectors marked the location of major transverse cracks with paint on the shoulder so joints in the concrete could match the cracks below. Further, in an effort to maintain a uniform longitudinal profile, a consistent milling profile was required. The milling operations were controlled by using the same stringline as the concrete paving operations.

When asked what lessons were learned, John Brunkhorst, McLeod County Engineer, thinks aligning major cracks in the HMA with the new joints in the PCC was important to help prevent random cracking in the new concrete.

"Our design panel length was 6 feet, but after discussions about the major transverse cracks, we modified the spacing to 4 feet to 8 feet to account for the major HMA cracks. I really think this was important and should prevent premature cracks from propagating in the concrete," said Brunkhorst.

With a total project value of \$1.021 million, or approximately \$408,000 per mile, the results for McLeod County went beyond expectations. CSAH 7 is now a low maintenance highway route that will last for approximately 35 years, all while saving tax dollars for residents and the county highway system. The project was completed in the fall of 2009.

"I wasn't sure what to think about this rehabilitation strategy at first but after seeing the success of this project, a concrete overlay fix is now likely in the top drawer of our rehabilitation tool box," said Brunkhorst.

TEAM MEMBERS ■■■■■■

- McLeod County (Owner)
- McLeod County Highway Department (Engineer)
- Duininck Bros. (Prime contractor)

- Hoffman Concrete (PCC contractor)
- RMI (Milling contractor)