



# Smoothness in the north woods

Northern Wisconsin mill-and-fill project takes honors for asphalt paving

By Allen Zeyher  
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**H**aving the state governor visit your construction site is always an honor. Northeast Asphalt Inc. was doubly honored when the Greenville, Wis., contractor was named a finalist for the coveted Sheldon G. Hayes Award, given by the National Asphalt Pavement Association.

The project resurfaced 15.25 miles of U.S. 45 from Eagle River, Wis., north to the Michigan border. The highway is a major thoroughfare for the area.

The two-lane, 30-ft-wide roadway showed severe distress cracking, according to John

Bartoszek, P.E., a regional manager for Northeast Asphalt, but the base was still sound.

Northeast milled off 5 in. of the old asphalt, totaling 269,000 sq yd, and laid 77,000 tons of asphalt back in two lifts containing 12% reclaimed asphalt pavement recycled from the material previously milled from the highway.

The original plan called for Northeast Asphalt to mill 4 in. of the old asphalt from one lane and then go back later and fill it with two lifts of asphalt. The plan would have created a 4-in. drop-off between lanes, and Northeast Asphalt would have had to place barrels down the centerline of the road for the entire length and duration of the project. Traffic delays would have resulted, since vehicles would not have been able to pass slow traffic



anywhere in the 15.25-mile work zone.

Northeast Asphalt suggested, and the Wisconsin Department of Transportation (WisDOT) agreed, to pave each road section immediately after milling. During the day, the company would mill 2 miles of one lane, with the paver following behind. The next day, it would repeat the paving process in the other lane. This paving pattern minimized the elevation difference between lanes, kept traffic safer and reduced the project's cost.

For the milling operation, Northeast Asphalt used two Wirtgen 2200 milling machines. "Those are some of the larger mills," Bartoszek told *ROADS & BRIDGES*, "approximately 970 hp each."



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A 400-tph Bituma parallel-flow plant produced the hot-mix asphalt to rebuild U.S. 45. The plant was equipped with a "Wrap Wrangler" to make sure no oversize RAP lumps were fed into the plant. Oversize lumps might restrict or stop material flow into the drum, contributing inconsistencies in the blending process. The mix was about 315°F as it came out of the plant and about 275°F as it went down on the roadway.

Before it hit the ground, the mix was dumped into a Roadtec Shuttle Buggy material transfer device and fed into a Blaw-Knox 3200 paving machine with a Carlson EZ IV screed. Attached to the paver was a 50-ft ski on the centerline

and a mat-reference pan-style ski on the outside.

"Once the project was completed, our IRI [international roughness index] average was 32 in./mile in the northbound lane and 31.2 in./mile in the southbound lane," said Bartoszek. "Those are very outstanding numbers, and one of the reasons we got those numbers was because of using that 50-ft ski. They're very cumbersome to use, because they're so big and heavy. We did earn ride incentives on the project as well."

Another reason for the smooth finished product was the profilograph testing the crew did after each lift.

"We do check [each lift] to ensure

that we are getting ride improvements for each layer," said Bartoszek. "What we generally see is approximately a 45-50% improvement with each layer."

## Superpaving

Northeast Asphalt used Superpave asphalt mixes for both lifts. The bottom lift was 3 in. of E-3 19.0-mm asphalt mixture with a PG 58-28 binder. The surface lift was 2 in. of E-3 12.5-mm

asphalt mixture with PG 58-28 binder.

Northeast Asphalt used an Ingersoll Rand DD138 compactor as a breakdown roller, a Cat 900 rubber-tire machine as an intermediate roller and a Bomag BW11 static roller as a finish roller. Together, they pounded and kneaded the asphalt mat to a 93% average density, above their target of 91.5% and good enough to earn Northeast Asphalt a density incentive from WisDOT.

Northeast's U.S. 45 project began milling and paving operations on Aug. 4, 2009, and completed those tasks on Oct. 15, 2009. The remainder of the project was completed and the road fully opened to traffic on Oct. 26, 2009.

Along with Northeast Asphalt, 13 subcontractors worked on the project, which was funded by the American Recovery and Reinvestment Act (ARRA).

## In the ARRA

"I think it's important that this was an ARRA job," said Bartoszek. "We provided approximately 70 company employees with work on the job." Wisconsin Gov. Jim Doyle visited the jobsite in August 2009 to emphasize the importance of ARRA. "He talked to the contractors and the personnel on the job about the importance of ARRA jobs and how they're providing people work."

The Sheldon G. Hayes Award winner and finalists are determined through a two-year process. Highway pavement projects using more than 50,000 tons of asphalt are eligible for consideration. Initially, they must win a Quality in Construction (QIC) Award, which is determined by numerical scores given by pavement engineers at the National Center for Asphalt Technology on the basis of how well the contractor met the specifications and achieved density on the finished pavement. All the pavements that meet a benchmark figure are given the QIC Award.

The year after a project wins a QIC Award, it may be considered for the Sheldon G. Hayes Award. The top-ranked projects from each year are tested for smoothness and then visually inspected by an independent pavement consultant with many years of experience in the industry. This year, the evaluators praised the contestants for high-quality construction practices resulting in smooth, safe and durable pavements.

Bartoszek said he thought the Hayes Award process was an extremely valuable experience for his company while at the same time looking forward for the next opportunity to compete for the top award. **R&B**

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