

KDOT's I-435

Project Provides Good Road, Quiet Alternative



I-435 in Kansas was a concrete pavement in need of rehabilitation.



Transverse tined PCC pavements like this one can make traffic noise very loud for local residents.



The new HMA overlay provided a much smoother and quieter alternative.

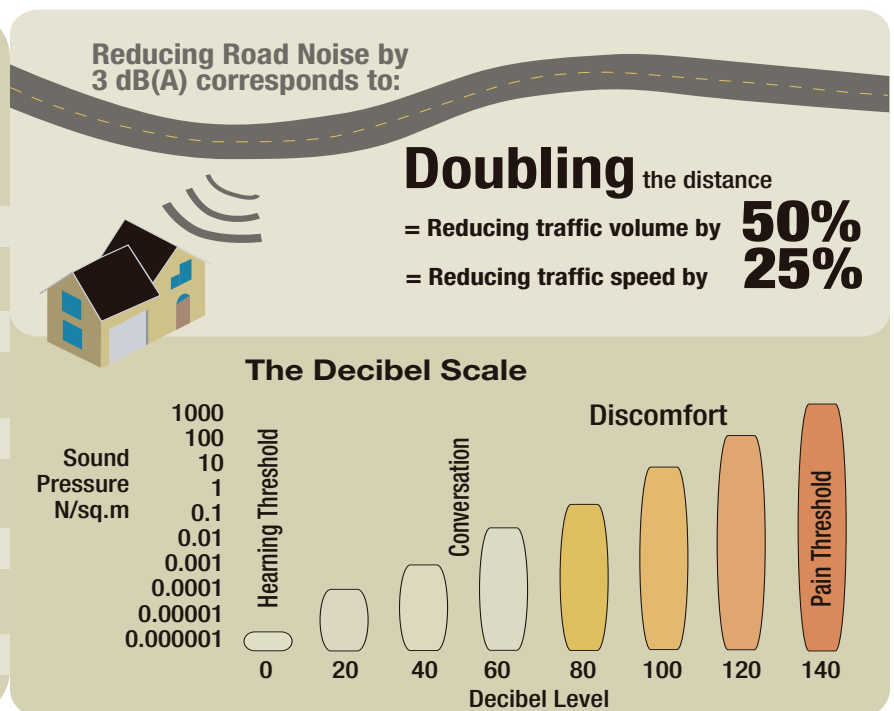
Living close to I-435 was convenient for one resident of Shawnee, Kan. What he didn't like was the noise. "The noise started at 5 a.m. and increased in volume," he said. "It was so bad that I couldn't go out on my deck in the evening and talk with friends. I couldn't hear what anyone was saying."

The Kansas Department of Transportation

decided to have eight miles of that stretch of concrete road rehabilitated. The highway serves as a major traffic artery around Kansas City, Kan. and Kansas City, Mo. On the Kansas side, it also connects I-70 on the north with I-35 on the south. KDOT plans called for 3-inches of asphalt laid over a 1-inch RCI (reflective cracking interlayer).

KDOT field engineering administrator Ruben Noguera had specified the interlayer. "We have had some good success with this product as a means of preventing cracking, so we wanted to use it in this project as well. The contractor did a good job on the paving. In terms of smoothness, it was one of the best jobs we've seen in some time."

Noises	Sound Level dB(A)
Threshold of Pain	140
Jet flyover at 1000 feet	110
Gas lawn mower at 3 feet	100
Diesel Truck at 50 feet	90
Garbage disposal at 3 feet	80
Vacuum cleaner at 10 feet	70
Heavy traffic at 300 feet	60
Dishwasher next room	50
Library	35
Threshold of hearing	0



For the residents living nearby the project, noise was an important consideration.

"KDOT agreed to allow us to do a noise study of the pavement," said Jim Jones, Executive Director, Kansas Asphalt Pavement Association. "National Center for Asphalt Technology (NCAT) brought their noise trailer out and found the pavement to be the noisiest they

had measured up to that time."

O'Donnell & Sons Construction Company Inc., Kansas, won the contract to pave the highway. The project required 110,000 tons of asphalt for three lanes of northbound traffic and three lanes of southbound traffic. O'Donnell & Sons set up a new asphalt plant in a rock quarry next to the job.

"The new plant was specifically designed for Superpave and modified to handle the high asphalt content in the interlayer that we were laying down," said Larry O'Donnell, vice president of the company. "The interlayer was a polymer with a heavy oil content. We used a modified emulsion as a tack coat between the two lifts."

The asphalt-interlayer combination was proving successful on other highway projects but was not without difficulties. "We did have a problem with bubbles in the interlayer," said O'Donnell. "But we allowed a higher percentage of air voids in subsequent batches and that solved the problem."

The new mat produced and laid down by the O'Donnell team was a dense graded Superpave mix, with 9.5-mm maximum size. The chat aggregate used was from the tailings of lead mining in southeastern Kansas. This aggregate is extremely hard and provided the road with a high skid resistance.

O'Donnell asked for top performance from paving superintendent Kevin Way and crew. "I told the crew before we started that we wanted a showcase project. And I believe we were able to achieve that."

At the conclusion of the project, a before-and-after sound measurement study by the National Center for Asphalt Technology revealed a significant reduction in pavement noise. The finished HMA overlay reduced the noise level from the original transverse tined PCC pavements by about seven decibels. Including the Shawnee pavements, NCAT has now tested approximately 244 pavement surfaces in ten states.

As always, the proof is in the pudding. When the project was completed, the Shawnee resident living a mile away from the I-435 project called O'Donnell & Sons. He was enthusiastic about now being able to have a conversation on his deck. "The difference in noise was night and day," he said. "The paving project stopped a little past my house. I only wish it could have gone further!" **HMAT**

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