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The right party

APAC-Missouri celebrates first Hayes victory

When roads have term limits you know there is a chance of a strong candidate in something.

A 15.3-mile stretch of I-44 in Jasper County, Mo., had reached the end of its time serving the motoring public, and the Missouri Department of Transportation (MoDOT) was determined to meet its seven-year

maintenance cycle on this piece of interstate. APAC-Missouri Inc., Springfield, Mo., had campaigned, and won, in the area before. In 2005, it was the top bidder on a different part of I-44 in Jasper and earned a Sheldon G. Hayes finalist nod from the National Asphalt Pavement Association.

A few years later, in 2013, the Hayes came knocking on the door again, and this time APAC-Missouri had the votes necessary for the top honor in asphalt paving. The Sheldon G. Hayes Award winner and



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branch manager, APAC-Missouri

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 Hayes Award. The top-ranked projects from each year are tested for smoothness, then visually inspected by an independent pavement consultant with many years of experience in the industry.

"I'm proud of everyone that was involved with [the I-44 job]," APAC-Missouri Branch Manager Mike Eshleman told *ROADS & BRIDGES*. "Yes, it's a great accomplishment for everybody that was involved—from the quarry to the truckers to the flaggers—everybody not just the paving crew. It gives us bragging rights for now."

"We think [winning the Hayes] is an awesome thing, and we are really happy for APAC and happy for MoDOT as well," Gregory Chapman, who was a MoDOT resident engineer on the I-44 job, told *ROADS & BRIDGES*. "We wish all of our projects had the same sort of quality on them."

Satisfying the seven-year-maintenance itch on interstate highways could become some sort of problem. Missouri could be facing a

road-funding crisis if lawmakers cannot come up with a new source of revenue. Since 2009, the state's war chest, which at the time was stuffed with \$1.3 billion annually for road and bridge work, has shrunk to the size of a cupboard. In 2014, \$685 million is available, and that figure is projected to drop to \$325 million by FY 2017.

Chapman, however, is not feeling the panic where he is standing. Currently he is a deputy director on a design-build project in Springfield.

"At this time we are still going to try to maintain what we have been previously doing," he said. "There are some talks about a [1-cent transportation sales tax], but everything I have heard is we are going to keep continuing to do the same things we



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have been doing and keep that paving plan in place.”

Strong rock, zero sway

The plan was relatively simple and straightforward on the \$4.7 million, 15.3-mile section of I-44. Since there were little signs of fatigue, APAC-Missouri’s job was to go in and make quick work of the upgrade. However, since all of the activity went on at night, the task was not an easy one. The contractor used Carlson balloon lights on all of the paving and compaction equipment to keep the working area bright, but no one could really tell the perfections that were being achieved by looking at the freshly laid dark pavement.

“We had the best lights you can get to attach on the equipment, but it is still tough to see everything and make sure you get a nice job in the end,” Tyson Collins of APAC-Missouri told *ROADS & BRIDGES*.

Milling and paving went hand in hand on this job. As soon as crews would chew up a ½ in. of pavement with a Wirtgen 2200 with sonic sensors on the outside edges of the machine, a Caterpillar 1055D asphalt paver would come along with a fresh mat. APAC-Missouri was replacing 2.8 lane-miles of pavement a night, which called for 1,900 tons of hot-mix asphalt (HMA). A 12.5-mm BSMR mix (ESALs >30 million) with a PG 76-22 binder was used on the mainlines. BSMR is a MoDOT stone-matrix mix design that does not allow the use of reclaimed asphalt pavement (RAP) or recycled asphalt shingles (RAS). RAP and RAS were used for shoulder work.

HMA originated from an Astec Double Barrel asphalt plant located about 12 miles

from the work site near Joplin, Mo. Mix was about 320°F at the plant, which was generating about 250 tons an hour, and once it reached the paver it was 310°F. The Cat AP1055D, which came equipped with noncontact skis, produced a 12-ft-wide, 1¾-in.-thick lift. The compaction train consisted of three Volvo steel double-drum rollers. Two Volvo 138s were the breakdown rollers and ran in tandem so they never turned on the mat. A Volvo 118 served as the finish roller. Setting up the rolling pattern was a bit tricky at the start. APAC-Missouri settled on one that called for six to eight passes with the breakdown rollers operating in the vibrating mode and one to two passes for the finish roller operating in the static mode. Since it was an interstate route, MoDOT’s density requirement was elevated to 94% or above. APAC-Missouri was achieving densities in the 95% to 97% range. A nuclear density gauge was used quite extensively at the start of compaction, then was reduced to just one check every hour.

Eshleman said the quality of rock from Joplin Stone subdued the trial-and-error portion significantly.

“A lot of times it goes back to the rock producer. If [the rock] does not run real consistent we’ll have trouble keeping our mix consistent, then when you get to the road you have a hard time keeping your densities consistent.

“This one, everything hit. Things weren’t yo-yoing up and down when you are trying to keep them within the limits. Once you established your rolling pattern you didn’t have to vary it from day to day or hour to hour, and you ended up with a consistent, very smooth piece of road.”

Once the mainline was complete, crews

worked on laying down an overlay on the shoulders, which called for a different mix. MoDOT specified a ½-in. minus one design that contained 15% RAP and 3% RAS, as well as a PG 64-22 binder. The outside shoulder was 10 ft wide and APAC-Missouri used the same Cat paver that produced the mat on the traveling and passing lanes. The inside shoulder was 4 ft wide and was handled by a Road Widener.

The rolling pattern also changed. A Volvo 138 and a Caterpillar PS-360B pneumatic-tire roller served as the breakdown rollers for the outside shoulder. The Volvo 118 handled finishing duties. The pneumatic roller was pulled from the train during inside-shoulder compaction. Six passes were required, two in the vibratory mode.

An Ames high-speed profilograph was used to check for pavement smoothness, and APAC-Missouri was hitting a score of 6.79 in. per mile.

“The job went smooth,” said Chapman. “APAC was very good to work with. If there was an issue they did correct it immediately, which is what we expect. The volumetrics for that project were right on the money, and I want to say the majority if not all of the project was in the bonus as a result of the volumetrics.”

Along with density, MoDOT also checked the percentage of AC content, voids in mineral aggregate (VMA) and air voids. MoDOT wanted to see an AC content of 6.7%, VMA in the 17.0 range and air voids at the 4.0 mark, and APAC-Missouri produced 6.7%, 17.0 and 4.2, respectively. **R&B**

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