VÖGELE
VÖGELE
MT 3000-2i
OFFSET

ABOVE: The rear-mount VR 600 extending screed for 10-foot pavers is designed for paving in widths between 10 and 28 feet; front- and rear-mount refers not to how the screed is mounted on the paver, but on how the extensions are configured. With a front-mount screed, the extensions are located in front of the basic screed, and with rear-mount, the extensions are located behind the basic screed. LEFT: Abdalla Naas of Caltrans District 5, San Luis Obispo, attributed the smooth and gorgeous asphalt mat on SR25 to three factors: 1) The MTV and paver combo on site; 2) The experienced foreman for Graniterock, Robert Lauderdale and his crew; and 3) The HMA mix design.

CIR PRECEDES CALIFORNIA PILOT TECHNOLOGY

BY TOM KUENNEN

On a rural highway in central California, a new-design material transfer vehicle was instrumental in providing a smooth asphalt pavement. The Caltrans pilot project in October 2015 demonstrated an MTV and asphalt intelligent compaction (IC) system on a two-lane highway in San Benito County. The roadway was S.R. 25 near Tres Pinos, about 95 miles south of the Bay Area.

Prior to the overlay that showcased the MTV and IC, Pavement Recycling Systems, Inc., of California milled a depth of 2.4 inches of the existing California 25, and then replaced the base with the cold in-place-recycling method to a depth of 0.2 feet. To compact the recycled base, the Pavement Recycling Systems crew used an HD+ 70i and an HD 90 VO compactor with Hamm Compaction Quality (HCQ) system installed.

Next, Graniterock paved the six-mile project 28 to 30 feet wide in two 14- to 15-foot wide lanes, to a depth of 1.8 inches. The crew placed some 11,500 tons, and achieved target densities ranging from 91 to 97 percent, with 94 being the average. The equipment Graniterock used included the following: a Vögele MT 3000-2i MTV paired with a new Vision 5200-2i paver with VR 600 screed; an HD+ 140 VO breakdown roller with HCQ system installed; a

"Just like the sonics on the grade control, or on augers, where you control the pile height or the depth of the screed by bouncing a signal off a fixed location, the lasers of the MTV do the same thing between the MTV and the paver," Burns said. "By adjusting the laser to point at the front of the paver, you set minimum and maximum distances, and the MTV holds forward movement in the middle, based on the speed of the paver."

GRW 280i pneumatic roller for intermediate compaction; and an HD+ 120 HF compactor in finish mode.

MTV PILOT PROJECT

In its pilot project, Caltrans was evaluating the use of an MTV for obtaining a superior hot-mix asphalt pavement. As AsphaltPro readers will recall, MTVs were developed for a number of good purposes: to eliminate contact between truck and paver, to eliminate thermal and material segregation, to provide surge capacity to allow the paving process to continue during truck exchanges, etc.

As is the fashion out west, where asphalt plants may be a great distance from paving sites, HMA is placed in large volumes by bottom-dump trailers in windrows down the center of the lane to be paved. A windrow elevator then picks up the HMA and places it in the hopper of a paver; in the case of the SR25 project, in the hopper of the MT 3000-2i. From there, the mix was conveyed to the hopper insert of the paver.

"From what I have seen in just the past few days, the mat looks absolutely perfect," Abdalla Naas said. He's the assistant regional engineer for Caltrans District 5, San Luis Obispo. "There is no segregation, and no raveling. When you drive on the mat, it's as smooth as can be, and it's because of three factors: first, these two machines; second, an experienced foreman for Graniterock, Robert Lauderdale and his crew; and third, the HMA mix design. Combined, all are playing a good role in such a good paving project."

While a penalty would apply for a mat's failure to meet profilograph specs, with what he's seen, Naas said that won't be an issue. "I would not expect a penalty with this good mat," he said. "The only penalty applied might be for not meeting the compaction requirements."

MTVs are not required under Caltrans specs; instead, they are used at the option of the contractor. "They may be required in the future," Naas said. "If it comes to that, I would like to see these machines work in California more often."

INTERCHANGEABLE IC COMPONENTS

Caltrans is also reviewing performance of IC systems in the field, and the California 25 project was one such pilot project.

"We are reviewing IC applications in the field, and we will continue to do them in the future," said Caltrans' Naas. "We want to have longer-life asphalt with good placements. We hope to use IC to get the best pavements in California. On this project, we are getting the best compaction so far, as the material is very tight and it's a good job."

"We've been doing IC projects with Caltrans and FHWA for the last few years," Mike Burns said. He's the Wirtgen Group product specialist for Nixon-Egli Equipment Co. "Pilot projects around

"ON THIS PROJECT, WE ARE GETTING THE BEST COMPACTION SO FAR, AS THE MATERIAL IS VERY TIGHT AND IT'S A GOOD JOB."—ABDALLAH NAAS

the state evaluate performance and specs. This is one of many pilot projects in which it's not mandatory, but by doing it, Caltrans gets feedback and the contractor gets experience."

IC projects have been aimed at correlating mat temperature stiffness of the asphalt with the number of rolls to a particular density, Burns said.

IC was used for compaction of the CIR layer, and IC was being used for the overlay, Burns said. "Now they can layer the two patterns over each other, and if there is a soft spot or bad area underneath the CIR layer, then it should show up on the hot mix, and it won't look as though it was a problem with the hot mix layer in the first place," he said. "It will show overall how well the CIR layer was placed."

With its HCQ Navigator, Hamm was one of the first manufacturers to launch a compaction measurement and documentation system. The system links measurement data from various sensors on the rollers with the position information obtained via global navigation satellite system (GNSS) receivers. The HCQ Navigator uses these data to determine the progress of compaction for all rollers in a group in real time. A compaction map visualizes the status for the roller operators and site management.

MTV REDUCES STOPS AFTER STARTS

Burns listed a number of features he appreciated in the MT 3000-2i: it allows paving to continue at a consistent speed without the problems of starting and stopping; it fights segregation by moving material belt to belt; when it drops mix into the hopper insert of the paver, the hopper funnels the material to the center; a grid plate across the top of the receiving hopper breaks up chunks of asphalt as well.

A distance control feature of the Vögele MTV makes it easier for the operator to pace movement in relation to the paver. This propel system, which features a unique auto distance control, keeps the feeder at a pre-set distance from the paver, so the operator can focus only on steering and the trucks dumping in front. In essence, the paver electronically pushes the feeder.

"The elimination of the stops and starts is resulting in a very smooth pavement," Burns said. "The screed lays a beautiful mat, it's amazing how good it looks, seemingly good enough to drive on immediately. There seems to be no shadowing from segregation. With other pavers, as the material comes out of the screed, you will see shadows of segregation, or highs and lows from the extensions where they can't get them quite equal with the main screed. The VR 600 is doing a beautiful job out here." AP

Edited by AsphaltPro *from material contributed by Wirtgen America Inc. Kuennen is a freelance writer in the highway construction industry.*