FRACTIONATING RAP

Banks Construction Company wanted a better way to handle the gradation of their RAP material while meeting their internal quality-control standards

AN INCREASING NUMBER of producers are looking for the best methods to improve and streamline the way they are currently handling reclaimed asphalt pavement (RAP). There are several reasons for this widespread effort. First, many states are increasing the amount of RAP that they allow in particular mixes. And second, in the face of rising prices for asphalt, using RAP just makes good sense.

For those asking questions about a good system for RAP handling, the best answer they get might be "fractionating RAP"—that is, the process of crushing and screening RAP to into several predetermined sizes and then feeding the sized material into the hot-mix asphalt (HMA) plant according to the requirements of the mix.

Those who have already applied the concept of fractionating RAP have come to realize that it is the best answer to streamlining the use of reclaimed material in HMA. To find out why this process is such a good option, you need only to ask Reid Banks, president of Banks Construction Company. He can provide a single, very concise reason for using RAP:

> "Fractionating RAP allows you to gain better control and consistency over your end product, while maintaining high percentages of RAP."

Banks Construction Company is located in Charleston, South Carolina. They have worked over the last several years to establish an efficient crushing and screening system that could fractionate RAP and provide them with the improved results they expected.

The first step in that process came in 2001 when the company eliminated an older, in-line crushing system that simply crushed RAP and fed it directly into the HMA plant. There were two drawbacks to the old system: (1) it did not allow them to fractionate the RAP and (2) it fed directly into the HMA plant, thereby preventing them from crushing the RAP at a pace that was independent of the plant's hot-mix production.

According to Hank Lane, plant manager for Banks Construction Company, the old crushing system was creating problems. "We realized that we needed to get away from having the RAP conveyor system going directly into the plant," said Lane. "That's where the bottleneck was."

Instead of continuing to use the old system, Banks Construction Company purchased a 6 x 12-ft. (1.8 x 3.7-m) 2612D Fold 'N Go mobile screening plant. With this new setup, RAP was fed into a small impact crusher, then sent across the screen to be sized into two products. Meanwhile, oversized material was returned automatically to the crusher.

This modified setup gave Banks Construction the kind of control over their end-product that they had hoped for.

"After we purchased the system, it worked well for us," said Banks. "We felt that if we were going to run high percentages of RAP on a regular basis, we were going to need more control over the consistency of the gradation."

With time, however, the small crusher and the mobile screening plant were not able to keep up with the company's demand for RAP. So Banks Construction conferred with Astec Mobile Screens, and they worked together to set

up the right equipment that could handle their production needs.

In August 2004, installation was completed on Banks Construction Company's new crushing and screening plant. The setup includes a new Astec Mobile Screens STS 2618VM stationary screening plant with high-frequency screens. It is also equipped with a higher-capacity impact crusher than the previous plant offered.

Here's how the setup works:

Milled material (or *Category One* material) that comes from the Interstates and primary routes is fed directly onto the screening plant. The RAP is screened to two sizes: 0.25 x 0 in. (0.64 x 0 cm) and 0.625 x 0.25 in. (1.59 x 0.64 cm). Overs are automatically fed back through the crusher before being screened again. Material that is ripped up and comes from secondary routes and returns (or *Category Two* material) is fed directly into the crusher before being screened.

The sized RAP is deposited into stockpiles using a radial stacker. The stockpiles are on a wedge-shaped, sloped, and paved area that allows water to easily drain away from the aggregate and

The company's key equipment is an impact crusher and a stationary screening plant from Astec Mobile Screens that fractionates RAP into two sizes

reclaimed material. In order to have enough material on hand for the HMA-production process, Lane said the company stockpiles about 4,000 tons (3,629 tonnes) of each kind of RAP.

Lane also said the new system has been able to keep up with that demand. In the year following the installation of the new Astec Mobile Screens STS 2618VM stationary screening plant, the company has seen significant positive results.

"When we got this equipment," said Banks, "we thought that if we could get a better handle on the consistency of the gradation in our RAP material, we would gain the ability to meet the high quality-control standards we expect for ourselves," said Banks. "This new setup has done just that."

In terms of production, the system has done everything that has been asked of it—and more. "With our old setup, we were barely meeting the production requirements that we set internally," said Banks. "But this past year, our production has increased to the point that if we were still operating with our previous equipment, we would not have been able to keep up."

FOR MORE INFORMATION

about the wide range of products offered by Astec Mobile Screens, call Ron Earl at Astec Mobile Screens:

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In addition to an increase in productivity, Banks Construction company has seen an increase in the incentives it receives from its local department of transportation for meeting mix specifications.

"If you stay within their specifications, the South Carolina DOT offers incentives of up to five percent," explained Lane. "This year we've had a record incentive year. We believe fractionating our RAP is the main reason for that."

For Banks, the process of discovering the best way to handle RAP was well worth their time because the company got a piece of equipment that helps them work more efficiently and produce a better product. And that's probably the most important point, said Banks.

"Our RAP fractionating system has been doing an awesome job," said Banks. "We get very good production out of the system. It enables us to keep up with the RAP percentages that we want to maintain. And fractionating the RAP gives us great control over our hot-mix products.

"We've been very pleased, and we will continue to work that equipment very hard in the future." ▼▲▼

The STS 2618VM stationary screening plant from Astec Mobile Screens may be hard to spot in these photos of the Banks Construction Company plant site—but it is a key element in their effort to fractionate RAP to help them achieve high production rates while maintaining their tight quality-control standards. The STS 2618VM screens the RAP material into two sizes. The company maintains stockpiles of about 4,000 tons (3,600 tonnes) of each size of RAP.