

All-wheel drive E.D. Etnyre & Co. ChipSpreader broadcasts bottom stone at rate of 38 lb per sq yd over Cherokee County, Ala., Route 29 near U.S. Route 411 intersection.



First Use of Cationic High Float Emulsion in Alabama County

By Paul Fournier

An Alabama contractor introduced a rapid setting asphalt emulsion for a Cherokee County, Ala., pavement preservation treatment that saved time between applications and expedited the return of traffic to the county road.

Gadsden, Ala., paving specialist Charles E. Watts, Inc., received permission from the county highway department to use CHFRS-2P, a cationic, high-float rapid-setting emulsion modified with latex, on its contract to double chipseal a section of County Route 29. This was the first-time use of the product in an Alabama county.

Double chip seal, also called double surface treatment, is the chief pavement maintenance tool employed by the department for most roads in its care. Located in northeastern Alabama in the state's mountain region, Cherokee County is essentially rural in nature, with just under 24,000 residents and only seven small cities and towns connected by 800

miles of low- to medium-traffic roads. The most significant residential development is concentrated in one area, that surrounding Lake Weiss, a 33,000-acre lake known for fishing and recreation.

MORE ROADS FOR THE DOLLAR

Double chip seal treatment consists of spraying a pavement surface with asphalt emulsion, covering this with a layer of stone and repeating the process using the same emulsion at a different application rate and smaller stone. Compaction by rollers forces the smaller stone to interlock with the larger. Over the years this process has proven to be the best surface maintenance treatment for their roads according to County Engineer Corey Chambers, who heads up the department's staff of 30 personnel.

"We get more roads done for the dollar with double chip seal than we do with 1 1/2- to 2-inch hot mix asphalt, about



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three times the length," said Chambers. He said the treatment adds 10 years or more of pavement life, citing as an example the pilot application of latex-modified high-float emulsion, which took place on a section of County Route 29 that was last double chip sealed in 1991.

A TIGHT BUDGET

Usually, between 30 and 35 miles of county roads undergo this treatment each year; however, this year's budget has been seriously impacted by the cost of a critical bridge replacement project, allowing the department to treat just six miles.

In general, private contractors perform the double chip sealing under contract with the county, but the road is prepared by the highway department. In many instances where the road surface shows significant signs of distress, the highway crew reclaims the pavement. This was the case for the Route 29 pilot project, which consisted of double chip sealing a 2.2-mile stretch of the road about eight miles north of Centre, the county seat.

The highway department crew used the county's Caterpillar RM 250 reclaimer to grind up and blend the surface with the underlying base and then shaped and smoothed the material with two of the department's Cat 140H graders. A Dynapac CA 250 vibratory roller mounted with a sheepsfoot drum initially compacted the material, followed by a Dynapac CA 252 roller with a smooth static drum. During this process, the department kept the road surface moist to prevent drying and flaking using a freightliner dump truck carrying a water tank and a spray bar. The crew employed an Ingersoll-Rand PT125 pneumatic roller for final compaction.

With the road prepared, Watts took over, sweeping the surface free of loose material before launching the double chip seal process. The contractor decided to do half of the 20-foot-wide road at a time, allowing one-way traffic to proceed in a 10-foot-wide lane through the construction area. Watts' flaggers maintained traffic control.



Charles E. Watts, Inc.'s E.D. Etnyre & Co. distributor sprays high-float emulsion at rate of 0.395 gal per sq yd on Route 29 surface following reclamation by Cherokee County, Ala., forces.



Smaller, top stone, spread at 24 to 25 lb per sq yd, will interlock with bottom stone when compacted by rollers.



Initial compaction is provided by Ingersoll-Rand pneumatic roller.

DIFFERENT SIZES, DIFFERENT RATES

Several of the contractor's 6,200-gal E.D. Etnyre & Co. tankers were on hand to continuously feed three Etnyre distributors that applied the high-float emulsion at the rate of 0.395 gal per sq yd. The emulsion, modified with SBR latex polymer manufactured by BASF Corporation, was supplied by the Birmingham, Ala., facility of Ergon Asphalt & Emulsions, Inc.

Stone application followed, with an Etnyre Quad ChipSpreader broadcasting the bottom course of aggregate, a No. 6 limestone (county specs). Measuring between 5/8 in and 3/4 in, the stone was spread at the rate of 38 lb per sq yd. Watts rolled the stone first with the Ingersoll-Rand pneumatic roller and followed with the Dynapac smooth steel drum roller.

Almost immediately, the crew proceeded with the top course of the double chip seal. This time they applied the emulsion at a lower rate — 0.36 to 0.365 gal per sq yd. Then they spread a smaller No. 78 limestone aggregate at the rate of 24 to 25 lb per sq yd. Rolling took place as with the bottom course.

NO DELAYS


There was no waiting between applications or before traffic was allowed on completed sections of road. “Normally, the contractor would use a CRS-2 emulsion and then wait for it to set up,” Chambers said. “But the cationic high float set up quickly, ready for the next layer of stone. It speeded up the job.”

“It [high-float emulsion] saves about 45 minutes between applications,” said Charlie Watts, president of the contracting firm. “And it cuts down on the loose stone so there’s less chance of broken windshields.”

This first application of high-float emulsion in an Alabama county follows a five-year period involving

many applications in Texas, according to Myles McKemie, vice president of marketing for Ergon Asphalt & Emulsions.

McKemie said the emulsion’s quick setting and stone retention characteristics are due to a thicker film of asphalt residue that coats the stone as compared to conventional asphalt emulsion. He added that latex polymer, supplied by BASF under the trade name Butonal, creates a gelling structure that results in the thicker film on the aggregate.

According to Charlie Watts, the company has been chip sealing roads in Alabama since the late 1960s. Founded by his late father, Charles E. Watts Sr., in 1951 as a heavy/highway contractor, the company began specializing in chip sealing some 35 years ago and currently employs about 50 people, including Charlie’s son, Blake Watts, vice president. 

Information for this article contributed by BASF Corporation. Paul Fournier is a long-time writer in the construction industry.

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