



Associated Construction
Publications
Reed Construction Data
Reed Business Information (RBI)

TEXAS Contractor

February 16, 2009

www.acppubs.com

*An Associated Construction
Publication serving Texas since 1923*



Preserving Pavement

Learning About
Warm Mix Asphalt

FOCUS:
Asphalt

A Lincoln Windrow Elevator feeds HMA to hopper of Barber Greene 260D paver as Asphalt Paving Company of Austin overlays US 290 in Hays County.



Underseal Helps Preserve Pavement

TxDOT solves problem of slippage between old and new pavements by substituting chip seal look-alike for ordinary tack coat

BY PAUL FOURNIER

The installation of asphalt pavement overlay on US 290 in Hays County, TX, recently incorporated the use of underseal, an innovative process designed to prevent slippage between new and old pavement.

Asphalt Paving Company of Austin, under subcontract to Joe Bland Construction, also of Austin, installed both the underseal and the overlay on a 5-mile section of highway between Austin and Dripping Springs, TX. Introduced a few years ago by the Austin District of the Texas Department of Transportation, underseal is replacing the traditional asphalt tack coat used to create a bond between existing pavement and an overlay.

Development and inspection of the US 290 project are the responsibilities

of Donald Nyland, area engineer for the South Travis office of the Austin District, one of the state's 25 districts. Headed by Robert B. Daigh, P.E., the Austin District includes 11 counties with roughly 1.7 million people and is responsible for maintaining nearly 3,350 miles of roads.

Integrating With Pavement Preservation

Unlike chip seal, which it resembles, underseal is not a traffic wearing

course but instead is an integral part of a surface maintenance treatment aimed at preserving the roadway's pavement. Terry McCoy, P.E., area engineer for the North Travis office of the Austin District, outlined the overall procedure:

"Typically, we mill off 2 inches of existing pavement, install the underseal, and then overlay with 2 inches of hot mix asphalt," he said. He described the underseal portion of the process as spraying the milled surface with asphalt emulsion binder and broadcasting aggregate over the binder with a chip spreader. He added that an underseal can withstand trucks and equipment during hot-mix placement.



Making A Good Product Better

In wishing to achieve the best bonding characteristics, the Austin District experimented with various binders for the underseal, including liquid asphalt and anionic asphalt emulsions. They finally settled on cationic asphalt emulsion. McCoy said the main reason they chose cationic “high-float” CHFRS-2P asphalt emulsion, which is modified with SBR latex manufactured by BASF Corporation, is because of its quick set-up time.

“With cationic high-float emulsion, the time between placing the underseal and covering it with the overlay is minimized,” he said. “Another thing we like about the cationic emulsion is



Top: Ahead of paver, Etnyre ChipSpreader broadcasts aggregate on cationic high-float asphalt emulsion to create underseal designed to bond overlay to existing pavement.

Bottom: Edge of underseal shows overspread of white limestone aggregate. Application rate for asphalt emulsion is significantly less than that for a chip seal.

Underseal Helps Preserve Pavement



Above: Terry McCoy, P.E., North Travis area engineer for TxDOT's Austin District, says underseal can withstand trucks and equipment during HMA placement.



Myles McKemie, marketing vice president, and David Stroud, regional sales manager, both of Ergon Asphalt and Emulsions Inc., observe placement of underseal.



Allen Knox, project manager for Asphalt Paving Company of Austin Inc., stands before 2,000-gallon Etnyre distributor used for the job.

that it's more versatile. It'll work over a wider temperature and humidity variation." He also said the combination of high-float emulsion and aggregate creates a product durable enough so that if for some reason the paving crew could not cover the underseal with HMA that day, the underseal could serve as a temporary traffic wearing course.

When Looks Deceive

David Stroud, regional sales manager for Ergon Asphalt and Emulsions Inc., which supplied the cationic emulsion for the US 290 project, explained the difference between the underseal and a traditional chip seal.

"The underseal does look like a chip seal, but it uses only a relatively light shot of the emulsion," said Stroud. "For example, the type of limestone aggregate used for this job would normally receive a minimum application of .36 gallons per square yard if it were to be used as a chip seal. But they applied only .3 gallons per square yard for the underseal." He said if left uncovered by HMA, the underseal would perform satisfactorily for a short time, but high traffic would eventually unravel the stone.

Creating The Underseal

Working with the cationic binder was no different than with anionic

binder for the crew, with one exception according to Allen Knox, project manager for Asphalt Paving Company.

"It cures quicker. And that's good. We didn't have to wait as long to put the overlay on it," said Knox.

Knox employed a crew of 16 to perform the work. Cationic emulsion was delivered to the job from Ergon's Waco plant by Skinner Transport Inc. STI left a 6,500-gallon tanker on the job site at all times to enable the contractor's 2,000-gallon Etnyre distributor to continually fill up. All told, it took about 32,000 gallons of the emulsion to properly coat the five-lane highway – in increments. TxDOT specs call for undersealing no more roadway than can be covered the same day with HMA overlay. "That's why we used only one distributor," said Knox. "You can't get too far ahead of the paver."

As they covered each section of road with emulsion, the crew followed up with an Etnyre ChipSpreader, broadcasting 3/8-inch limestone aggregate at the rate of 1 cubic yard for each 140 square yards of roadway. The contractor employed an Ingersoll Rand PT125 pneumatic roller to compact the aggregate. Colorado Materials of Hunter supplied about 850 cubic yards of the white stone for the job.

Covering With HMA

Once a section had been undersealed, a steady parade of up to 20 bottom-discharge tractor-trailer trucks (referred to as "belly dumps" by Knox) deposited a windrow of HMA for the Barber Greene 260D paver. A Lincoln Windrow Elevator attached to the paver fed the asphalt mix to the paver's hopper. The contractor's sister company, **Industrial Asphalt** Company, provided about 14,500 tons of HMA from its plant in Buda. Asphalt Paving compacted the HMA with three rollers. An Ingersoll Rand DD110 double drum vibratory roller performed initial compaction, followed by a HYPAC 25-ton pneumatic roller, with an Ingersoll Rand DD24 completing the compaction.

High Marks

According to Knox, the entire job took 18 working days, and received high marks for the smoothness of the finished product.

"The job turned out great. In fact we got a great bonus from the state, because the pavement scored high on the ride index test." ■