

NEW GENERATIONS

by Arnie Consdorf, Contributing Editor

Versatility on Trial

Roadtec says its new SP-200 spray paver can lay down ultra-thin bonded wear treatments in one pass or it can function as a conventional 10-foot asphalt paver. Good concept, but does it work? We interview an early user to find out.

Roadtec SP-200 Spray Paver



A Roadtec SP-200 Spray Paver receives material from a Shuttle Buggy as it simultaneously sprays a binding emulsion and lays down an ultra-thin asphalt overlay on a recent job in Texas.

Road departments find themselves looking at more preventive maintenance treatments as they search for economical ways to preserve roads.

Some of these treatments require specifically trained contractors and specialized equipment. That sometimes leads to the proverbial chicken or egg problem for contractors and specifiers. What comes first — contractor investment in specialized equipment and training with the hope of bidding on future work, or enough specified work to justify the investment in the first place?

But now there's an answer for ultra-thin wear treatments, like bonded asphalt. And it comes in the form of machine versatility.

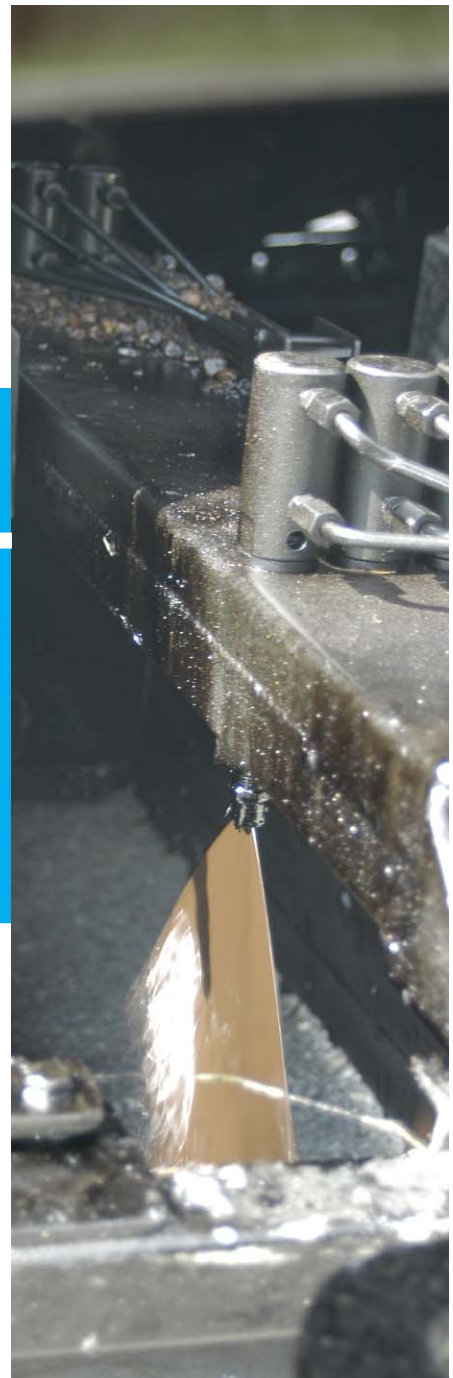
The SP-200 Spray Paver from Roadtec is finding work on a growing number of bonded asphalt jobs, especially in Texas. This unique spray paving machine can handle the precise process of ultra-thin wear treatments in one pass on one job, then turn around and perform with the best of conventional asphalt pavers on the next. Versatility wipes away that concern of

having a machine too specialized for day-to-day operations and yet too expensive to have sitting idle.

"We have a growing amount of experience with the machine and the process," says Michael Kuhn, general superintendent with Austin Bridge & Road. "We just did a big job — 600,000 square yards. It was an ultra-thin Type C bonded asphalt at three-quarters of an inch. That's what you'll see a lot of in Texas."

That's also what Austin saw as a subcontractor on another Texas job not long ago — State Highway 287 south of Wichita Falls. The road was not in serious failure, but reflective cracking was starting to work through to the surface. The highway had a 10-inch concrete base with a 4-inch asphalt overlay. Heavy truck and automobile traffic was creating a need for quick action to preserve the road.

"We were looking for something economical, as our budget did not allow for a full-depth or 2-inch overlay," says Monty Brown, transportation engineer for the Wichita Falls District of the State of Texas Department of Transportation.



A computer-controlled spray bar assembly gives the Roadtec SP-200 its unique capability as a spray paver for bonded asphalt and thin-lift wear course applications. Self-cleaning valves in sets of three on the spray bar assembly can deliver the bonding agent, or tack, at rates usually between 0.13 to 0.22 gallons per square yard of mix to be laid. The bonding agent is kept in a continuously recycling 2,100-gallon tank heated by a 500,000 Btu diesel-fired helical coil heater. The spray bar extends and retracts as necessary with the screed. Excess spray is caught in a pan and pumped back into the heated tank. When the SP-200 is being used as a conventional asphalt paver, the spray system is turned off.

The SP-200 sprays the special polymer-modified bonding membrane, or emulsion, directly in front of the paver's auger and screed.

The District looked at seal coating, but heavy traffic worked against that approach. The same was true for micro-surfacing. They settled on an ultra-thin bonded asphalt process with a binding membrane from SEM Materials. The 0.75-inch asphalt gave them the protective surface they needed, along with good skid resistance and a more porous surface for drainage.

Duininck Brothers was the prime contractor on SH 287. They did the preparation work, including restoration and base patching where serious deterioration existed, and provided the asphalt mix. Duininck subcontracted the overlay work to Austin because they had just acquired the equipment and completed the training necessary to handle the bonded asphalt process.

"There was approximately 20,000 tons of asphalt let on this job, which doesn't seem like a lot of asphalt," says Brown. "However, when you're only laying the asphalt three-quarters of an inch thick on a 12-foot-wide lane, this equates to more than 92 lane miles of coverage."

This was Austin's first job with the new Roadtec spray paver. The

machine was one of the first production units.

"We had some challenges when we first started," says Kuhn. "Some of it was gaining experience. Early on, some of it was adjustments that needed to be made to the machine, especially the spray system."

In operation, the SP-200 sprays the special polymer-modified bonding membrane, or emulsion, directly in front of the paver's auger and screed. The asphalt mix is laid over the bonding material. On the Wichita Falls job, emulsion was sprayed at 170 degrees F. One on-board heater keeps 2,100 gallons of material at the proper temperature.

The one-pass bonded asphalt process and the thin overlay allow traffic back on the surface quickly. And since no tack or emulsion is placed in front of the paving train, traffic can move in front of the paving operation without tracking oil all over. The thin lift also helps maintain overhead clearances and curb and drainage profiles.

"We've sent several crews to Roadtec training," says Kuhn. "Then you get the real-life training and experience on the job. The SP-200 is straight forward to operate.

Computer controls handle the precision tasks. Clean-down is automatic — the machine does it for you and recovers the wash-down fluids so you can recycle the release agents. That saves money and is a lot more environmentally friendly.

"Spray paving can be complicated because it is very precise work," continues Kuhn. "Since we've gained experience and got the machine running well, it's been awesome. We recently laid 70,000 square yards in one day."

The SP-200 was designed to be used in conjunction with a Roadtec Shuttle Buggy material transfer vehicle. Price wise, the spray paver falls into the range of a traditional paver along with a tack truck.

"You have to use the Shuttle Buggy," says Kuhn. "It's more than just controlling temperature, which is very important. It's also non-stop paving. If you stop for even a short time — several minutes — the material sets up. There are no real fines in the mix and you're using high-grade oil, so it will set up fast. The Shuttle Buggy and the Spray Paver go hand-in-hand to get the precision and production you need."

Asphalt for the Wichita Falls job came from Duininck's on-site





The Roadtec SP-200 Spray Paver was designed to be used in a continuous paving operation with a material transfer vehicle like the Roadtec SB-2500C Shuttle Buggy used on the Wichita Falls, Texas, SH 287 job shown here. The Shuttle Buggy remixes asphalt to deliver the mix at a uniform temperature to the paver, which prevents cold-spot damage of ultra-thin lifts during compaction. On the Wichita Falls bonded asphalt job, the mix was targeted for 300 degrees F at laydown. Below 300 degrees F, the material sticks to just about everything.

portable Barber-Greene Parallel Flow Drum Mixer. The mix was targeted to be delivered at 310 degrees F to the Shuttle Buggy and laid at 300 degrees F by the paver. It was a gap-graded design with up to 10% air voids. On the job, the plant stopped making mix anytime there was a break in trucks coming into the plant until the paving crew caught up.

“The newly formed crew laid the asphalt and this was their first job with the new Roadtec spray paver,” Says TxDOT’s Brown. “They took to the machinery extremely well and a quality job was performed.” BR

Duinick Brothers was the prime contractor on Wichita Falls SH 287, responsible for preparation work, patching, and hot-mix delivery to the paving train. Subcontractor Austin Bridge & Road used its Roadtec SP-200 Spray Paver with a Roadtec SB-2500C Shuttle Buggy material transfer vehicle in a continuous one-pass process to spray a bonding emulsion and lay an ultra-thin 0.75-inch coarse aggregate hot mix over the emulsion membrane on about 92 lane miles. The bonded asphalt preventive maintenance treatment provides a durable, skid-resistant surface with good drainage to protect road surfaces and extend their life.

Hall Shuttles Its Way to Ride Bonus

It’s always good to get a bonus for what you do. When the bonus is big enough to pay for a machine that helped make it possible, it’s even better.

This was the case not long ago for R.K. Hall Construction and their use of a Roadtec SB-2500C Shuttle Buggy on the 13-mile, four-lane section of State Highway 155 south of Tyler, Texas.

“The Shuttle Buggy eliminates segregation and also increases your production,” says Robert Hall, president of R.K. Hall Construction. “You get a mat with uniform temperature and that means a smoother finish.

“We got the better ride and an outstanding smoothness bonus. In today’s market, with tougher mixes and ride bonuses in play, you can’t afford the time or cost to go back and mill out and fix problem spots. With the Shuttle Buggy, you can maximize ride quality and eliminate problem areas associated with today’s new hot-mix specifications.”

Hall Construction used the Shuttle Buggy in a paving train with a Roadtec RP-190 asphalt paver to overlay 2 inches of asphalt on the project after milling, some leveling work, and seal coating.



R. K. Hall Construction paving train works on SH 155 south of Tyler, Texas. Hall used a Roadtec SB-2500C Shuttle Buggy and an RP-190 Asphalt Paver to complete the work and achieve a significant bonus for smoothness.