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MACHINES PUT TO THE TEST FOR COLLECTING

Roadside Litter

The amount of litter and debris along Pennsylvania's roadways was growing, and state authorities decided that the highway system needed to do more to get rid of it. Along with that decision had come about \$3 million in funding for equipment to do the job.

The Pennsylvania Department of Transportation (PennDOT) annually conducts the Maintenance Executive Development Program (MEDP). PennDOT uses MEDP to train staff and showcase products of potential interest to the department's 11 dis-

tricts throughout the state. At the April 2001 MEDP in Lancaster, H. Barber & Sons (Naugatuck, Connecticut) was invited to demonstrate its truck-towed litter collector, the Road Rake Model 200, and tractor-towed Litter Picker LP-1. The machines drew interest, and they earned a trial from equipment managers throughout the districts.

PILOT TEST

The pilot models of the equipment were submitted to the routine thorough testing and evaluation given to all PennDOT purchases. A road rake (RR) first went to Pete Wohlers, District 6-5 equipment manager in

Philadelphia, and a litter picker (LP) initially went to Gary Snyder, Wohlers' counterpart in District 8 in Harrisburg. Then the machines were cycled through some of the other districts.

Wohlers remembers the RR's performance during the tests: "The machine was durable and well-constructed. It was also easy to operate." The RR improved efficiency, too, Wohlers says. The four-cu yd hopper was "more than adequate to accommodate a day's worth of litter and was easy to off load."

Gary Snyder, reporting on the LP tested in Dauphin County notes that it removed about "90 percent of all

litter on the first pass," and that it worked without mechanical failure or downtime. He recommended the machine "as a very effective litter control unit for our grass areas on all four-lane divided and interstate highways."

CUSTOMER-DRIVEN IMPROVEMENTS

PennDOT wanted the machines, but the managers had some ideas of their own that they wanted to recommend. Before delivering the 22 units (split evenly between RRs and LPs) PennDOT had ordered, the company had to deal with those enhancements to the RR recommended by the managers.

The basic technology for the RR and LP is based on a beach cleaner called the Surf Rake that the company's founder developed about 36 years ago. The LP and RR use spring steel tines mounted on a bar flight conveyor to lift debris from the surface being cleaned and carry it up to the hopper, which can be raised and dumped when full.

The RR gathers, hoists, collects, and dumps litter and debris at a top speed of 18 mph. The machine can be towed by a truck as small as a one-ton pickup at highway speeds up to 55 mph. A single worker operating the machine from the inside of the towing vehicle can clean an area of pavement over 11 ft wide.

The LP is less than eight and a half ft high or wide, and 14 ft long. It can clean an area of grass or pavement seven ft wide, clears up to eight acres an hour, and can be operated by one

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person from the seat of a towing tractor.

Ray Rugh, PennDOT's highway equipment manager and chief of specifications for the equipment division of the Bureau of Maintenance and Operations, found the results of the pilot test to be successful. "We took delivery of the machines throughout 2002, and every one of our 11 districts got either a road rake, a litter picker, or both."

THE CHANGES

Most of the changes recommended came from Wohlers who had tested the RR. Several of those changes made servicing the equipment easier. One addressed a safety concern, and another improved overall operation.

For convenience, the engine compartment doors were made easier to open by switching from wing nuts to quick acting latches. The air cleaner was moved to the top of the engine to facilitate filter cartridge replacement. And the hydraulic fill tube was extended up through the engine compartment to make it more accessible.

For safety purposes a stronger leg with gear reduction replaced the existing support leg at the front of the machine. And operation was improved when the radiator cooling fan was repositioned to blow from the front of the radiator, ensuring ambient dust from road cleaning would not obstruct the radiator.

Barber incorporated all of the suggested changes into the

RR, upgrading the model and including them as standard features in all current RRs sold. The company also made 11 additional improvements on its own initiative to the RR.

Even with the improvements, the RR still faced a tough challenge in the PennDOT system. Wohlers, who has been president of The Fleet Maintenance Association of Philadelphia for the past 12 years, describes the challenge:

"My district has responsibility for several interstates—I-95, I-76, I-676, and the Route 1 extension in the Philly area.

"Philly is probably one of the worst cities in the country when it comes to highway debris. Commuters treat the roads like trash receptacles. Rubber alligators [huge pieces of blown truck or car tires] are everywhere. So is the usual collection of hubcaps, cans, paper, and plastic. The road rake does a great job on this stuff. And it's improved our productivity greatly. Daily production of litter pickup and sweeping went from two miles a day to 15 miles a day."

Wohlers says following the RR with a sweeper "we get our highways clean in one efficient operation, as opposed to having someone walking on the shoulder of the road in front of the sweeper and picking up the big stuff."

SAFETY BENEFIT

Because the RR removes debris without the need for workers on the highway, it eliminates the hazardous environment for highway maintenance personnel.

"There's always a chance of someone getting hurt or killed by the traffic that is flying by us at 70 to 80 miles an hour," Wohlers says. "During our pilot training as I was showing the road rake operation to a representative from Harrisburg, our crash truck was rear-ended on the shoulder of the road at 70 miles per hour. It was not pretty. It reinforced my belief that this type of machine was critical to our operation."

PW



Tractor-towed litter picker collects debris scattered on tough to clean grassy areas adjacent to highways.