

NEW MEASURING DEVICE MAY RAMP UP USE OF PUMPED PILES

To increase use of augercast piles by eliminating guesswork associated with installation, an Ohio-based foundation equipment manufacturer has developed an electronic monitor that measures and records the drilling and filling of pile shafts.

Cleveland-based Pile Dynamics Inc. has invented a 2-lb instrument, measuring 8 x 7 x 2 in., that mounts in a crane cab and monitors both drill and pump cycles. The pile installation recorder provides an operator with a readout of a drill's position, rate and torque, as well as grout pump volume versus position and grout ratio for each pile. The system also prints the information and stores it digitally.

"You can literally draw a picture of every pile," says George R. Piscsalko, PDI chief engineer. "It gives a definitive record that insures pile quality." He notes that the system works well with any pile depth or size and in any soil condition. The device sells for about \$20,000 or rents for about \$1,000 per month. Terrence N. Tucker, executive vice president for foundation contractor Richard Goettle Inc., Cincinnati, estimates the U.S. augercast market to be about \$100 million annually.

The instrument's design was finalized in late 1997 and has been tested in several locations. "It did what we needed it to do," says Martin E. Gamble, a Goettle project manager. "We had tremendous technical support and our operator caught on quickly." His firm used the device to drill about 200 augercast piles, each 14 in. in diameter, up to 60 ft deep for a parking garage foundation in Cam-

bridge, Mass. "Using a monitor was part of the specs due to previous problems with this type pile in the area," he says. "But the system took a lot of abuse and it held up. And we saved about \$180,000 on the job using augercast."



PICTURE THIS Device monitors and records pile installation.

Gamble compares the device to a similar French-made system on the market for several years. "We've used both systems. But for the Cambridge job, the PIR was the only one that would fit on the crane with swinging leads," he says. Tucker estimates that 95% of U.S. augercast work uses swinging-lead-fitted rigs. Mechanical and electrical cables link the device to a tensor reel and three sensors. Tucker notes that he put the mechanical cable in conduit because "we wanted to protect it from damage."

PDI's Piscsalko says use of augercast piles, which he claims cost less than driven piles, has been hobbled because the method of determining the volume of grout pumped into the bore was not scientific. Workers traditionally do this by first determining the volume of grout pumped per pump stroke, then counting pump strokes per 5-ft length while trying to withdraw the auger at a constant rate. "That led to uncertainty as to how much grout actually gets pumped into the hole," he says.

He adds that because of uncertainties about voids in the soils being drilled, workers automatically plan for overpumping. "This will give designers more confidence because they can record that piles are poured uniformly and built to spec," says Piscsalko.

By William J. Angelo

POPULAR SUPER-DUTY PICKUP RE-EMERGES POWERED BY SYNTHETIC FUEL

Contractors looking to the future of heavy-duty pickup trucks should be expecting exceptionally high torque engines that are much cleaner burning than even the cleanest diesel engines today, according to engineers at DaimlerChrysler AG. The manufacturer on Jan. 3 unveiled a new concept version of its popular but discontinued Dodge Power Wagon pickup truck at the North American International Auto Show in Detroit. The vehicle runs on a synthetic liquid fuel made from natural gas. It is powered by a truck engine that delivers 780 ft-lb of torque. That compares to the 450 ft-lb of

torque produced by the V-10 Dodge Ram, so far the most powerful full-size pickup on the road.

The fuel was developed as part of a joint effort that began in October with energy service firm Syntroleum Corp., Tulsa, Okla. The aim is to create "designer" fuels from natural gas. Because the fuels are sulfur-free, they offer the potential of being cleaner than other fuels available today. Licensed by Texaco, ARCO, Marathon Oil and ENRON, the approach is based on a process used in the 1940s to create liquid fuel from coal. No release date for the truck was announced.