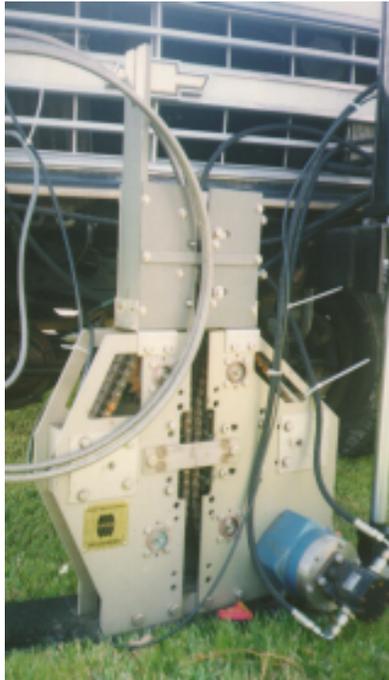




## **SAGE SIDEWINDER® Miniature Cone Penetrometer System (MCPT)**

Our miniature cone penetrometer system will revolutionize the way you perform geotechnical site characterization. Each year thousands of construction, expansion and maintenance projects are undertaken by the public and private sector. These jobs always require foundation investigation and analysis to determine the physical properties of the soil. Conventional soil sampling procedures involve exploratory drilling and laboratory analysis which is expensive, time consuming and often hazardous.



In fact, delays in starting critical projects have occurred as the result of long laboratory testing periods which sometimes yield unreliable results. Maintaining drilling and sampling equipment is expensive and requires specialized crews to perform the drilling and sampling operation. SAGE Engineering Inc., recognizing the needs for rapid, accurate method of site characterization, has designed a miniature cone penetrometer system which will rapidly replace drilling, sampling and laboratory testing for most site characterization.

SAGE Sidewinder ® miniature cone penetrometer systems are currently being used to gather site information for projects as diverse as highway systems and offshore pipeline route surveys. These systems can be adapted to perform a wide variety of site survey tasks from stratigraphic mapping to strength determination.

Although cone penetration testing is a significant departure from the traditional exploration drilling and laboratory testing approach, it has proven to be a very successful method of determining physical properties of soils in place. The increasingly popular Cone Penetration Test or CPT, consists of pushing an instrumented probe into the soil. The data acquired with the probe is used to determine soil penetration resistance, soil type and other important soil properties, such as strength and density.



This new technology may be found on the roads of Louisiana. The mobile laboratory pictured here is now being used by the Louisiana Transportation Research Center in Baton Rouge. The LTRC is evaluating the many ways in which this miniature cone system may be used to provide economical, repeatable and time-saving soil characterization.

The system is mounted in a 4-wheel drive vehicle containing all the necessary equipment to quickly perform on-site soil characterization tests. This system is especially effective in satisfying soil investigation needs of highway engineering.

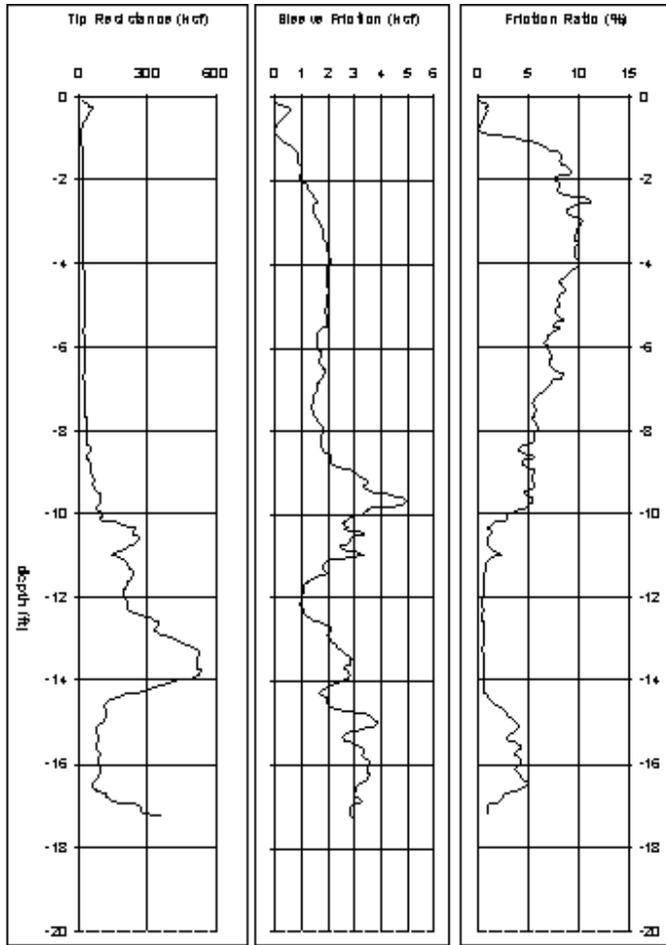


For production testing the miniature CPT system may be mounted on the front of a four wheel drive vehicle. This allows additional freedom of vehicle type and provides easy access to sites near structures or in confined spaces.

Operated by a minimal crew (as small as one person), the vehicle is first positioned over the site. The testing equipment is then lowered to the soil surface using a hydraulic support system which provides the leveling and reaction needed during penetration. With the cone guide tube appropriately leveled, the cone penetrometer is advanced into the ground using a hydraulic powered, continuous thrusting device. The cone rod is a 1/2 inch diameter stainless steel tube which is uncoiled as it is advanced into the soil.



This single piece coiled thrust rod minimizes the complexities of waterproofing of the cone electronics by eliminating threaded connections found on conventional cone penetrometer systems. The probe tip is equipped with an electronic load cell that measures resistance offered by the soil during intrusion. The shaft of the probe is equipped with a friction sleeve to measure the local friction with surrounding soil.



As the cone penetrometer penetrates the soil, the continually changing electronic signals generated by the cone tip and friction sleeve are transmitted to modules that convert the analog signal to digital data. A laptop computer is used for acquisition, processing and analysis of the soil data.

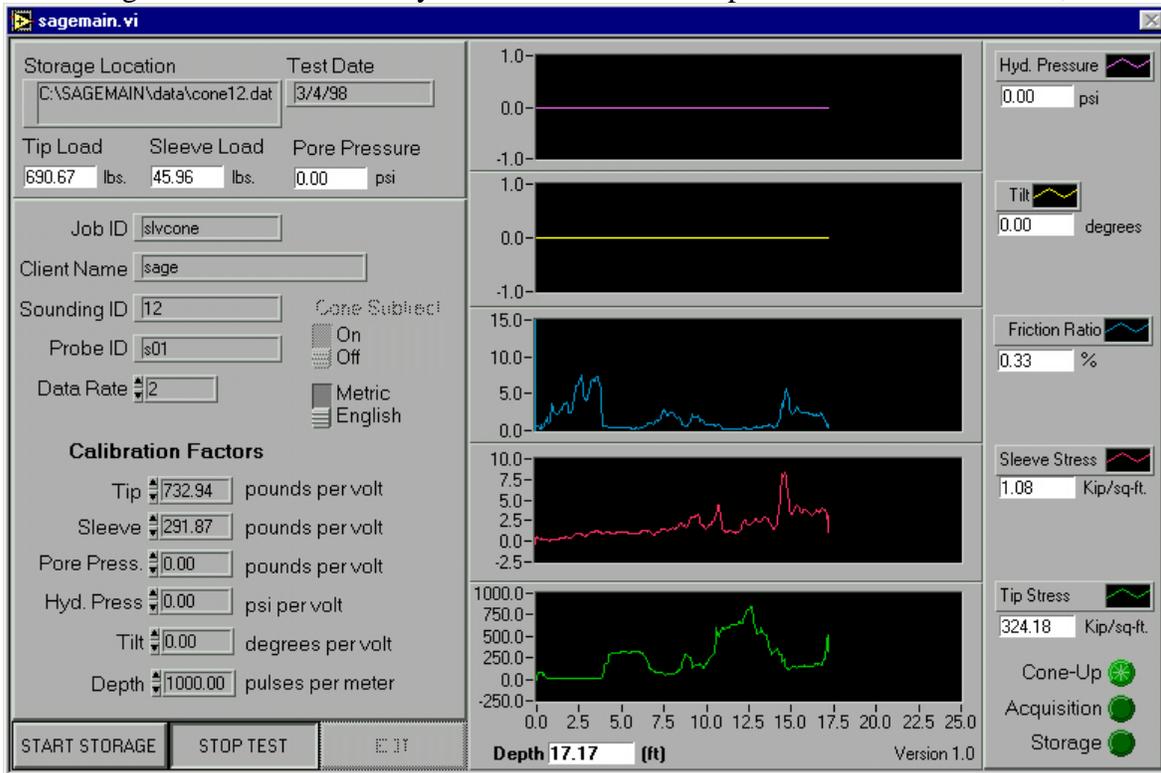
A global positioning system also may be added to provide test site location information directly to the computer. Within minutes of test completion, engineers are provided with accurate soil characterization and precise location information.

Delays associated with the older exploratory drill and sample method are significantly reduced. There are still other advantages to this new cone penetrometer system. The miniature cone penetrometer gives more detailed stratigraphic information than any other standard

available technique.

Soil data obtained can be used in the design of foundations, piles and piers and abutments supporting bridges. The system may be used to test beneath existing pavement through a 1 inch access hole making it less intrusive than conventional boring methods. And to provide for greater mobility and greater accessibility to offroad sites, the cone penetrometer system can be mounted on a wide variety of offroad vehicles.

According to Dr. Mehmet Tumay of the Louisiana Transportation Research Center,



"There is no doubt about it, the new mini cone truck is going to change the way soil characterization tests are conducted as part of the Louisiana Transportation Projects. The continuous intrusion cone penetration system, I think will be the system to use in the future because it's reliable, economical, repeatable and certainly very fast. It uses minimal crew. It's very mobile. The system that we have also incorporates the global positioning system so that when the testing is done you know the exact location where you are looking in the subsurface."

For more information about our Miniature Cone Penetrometer system contact us via [e-mail](#) or call our office at 713-988-6635.

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