

Friday 5 January 2007

## Asphalt's properties are checked out

### *A variety of equipment makes it easier to test the properties of asphalt*

The compaction of cylindrical specimens of bituminous mixtures using a gyratory compactor is achieved by combining a rotary shearing action and a vertical resultant force applied by a mechanical head.

This method can be used for the preparation of specimens of a given height at a predetermined density for subsequent testing of their mechanical properties, the derivation of a curve density versus number of gyrations, or the void content for a given number of gyrations, says Italian company **Controls**, which offers the ict 250 Series gyratory compactors. The above standard applies to bituminous mixtures with an upper aggregate size not larger than 37.5mm.

During operation the bituminous mixture is contained in a cylindrical mould and kept at a constant temperature within specified tolerances throughout the whole test. Compaction is achieved by the simultaneous action of a low static compression and of the shearing action.

 click image to enlarge



A controls' ict 250 Series gyratory compactor

This method is used to produce asphalt specimens that best predict long term pavement performance.

Controls' 76-B0252 model portable unit complies with all international standards, and allows connection to a PC control with continuous measurement of the specimen density as a function of cycles. Compaction results can be followed during the test and are recorded by PC for further usage.

The 81-B0143 automatic ring and ball apparatus is one of the most recent products introduced by Controls in the roadbuilding sector, and is a fully automatic machine used to determine the softening point of bitumen.

Meanwhile, Controls has been presenting the range from IPC Global, the Australian-based international designer/producer of advanced test systems for dynamic analysis and evaluation of pavement (road) materials. The products are distributed by the Controls Group.

### **EDG from Humboldt**

The Electrical Density Gauge (EDG) from Humboldt Manufacturing is a nuclear-free alternative for nuclear gauges in determining the physical properties of compacted soils used in road beds and foundations.

 click image to enlarge



A portable, battery-powered instrument, it is capable of being used anywhere in the world without the problems associated with nuclear safety.

"For the contractor the advantages of using the EDG is that it does not require a highly trained or licensed technician; is easy to learn, which enables anyone to be trained, and is so simple to use that measurements are fast and can be done at greater intervals for a more thorough evaluation," says Humboldt.

"The unit measures and displays the wet and dry density, gravimetric moisture content and percent compaction, and it can be used as a construction aid to monitor day-to-day compaction operations by providing performance and measurement results highly comparable to those achieved with traditional methods, including nuclear gauge, sand-cone and oven drying methods."

The EDG's accuracy is achieved using point-to-point radio frequency, measuring directly between electrodes driven into the soil, ensuring positive measurements through the soil at full depth of electrodes. There is no need to make sure the soil is homogeneous or to rely on radio frequency 'waves' to penetrate soil materials from the surface.

### **French collection**

**Cooper Research's** new CTM (Compression Testing Machine) is the final machine in its range of French testing equipment. However, unlike the French wheel tracker, French roller compactor and two-point trapezoidal test, the CTM was developed to perform a variety of tension and compressive strength tests. These include Duriez (NF P98-251-1/4), Marshall stability (ASTM D6927), and Indirect Tensile Strength (EN12697-23).

Features of the CTM include a bench-height base unit housing a hydraulic cylinder, electronic control system and host computer, and two 70mm diameter stainless steel columns which are vertically mounted 500mm apart. The hydraulic cylinder has a stroke of 400mm, a speed of travel of 50 to 70mm/min and a maximum load of 300kN.

The control software is written using the industry standard LabView graphical development environment, although other software is available.

### **Testing times**

**Gilson's** Micro-Deval Apparatus, used to test abrasion resistance and durability of mineral aggregates in the 9.5 to 19mm size range, uses a sophisticated electronic timer with an optical sensing system to accurately control test time, and jar revolutions.

 click image to enlarge



For soil and asphalt testing the company offers its multi-use load frames and component sets. One or two load frames can often perform many of the strength tests in a laboratory, requiring only a quick change of components. Component sets and accessories required are available for testing of soil, soil-cement and asphalt specimens .

Controls

[www.controls.it](http://www.controls.it)

Humboldt

[www.humboldtmfg.com](http://www.humboldtmfg.com)

Cooper Research

[www.cooper.co.uk](http://www.cooper.co.uk)

Gilson

[www.globalgilson.com](http://www.globalgilson.com)