

Lightweight Deflectometer

The Lightweight Deflectometer (LWD) is used to test pavement system, soils and prepared earth for stiffness. Olson Instruments Lightweight Deflectometer will allow for the measurement of in-situ soil modulus, confirming compaction.

Designed specifically to collect the most appropriate data and remove uncertainty about impact force it incorporates several additional benefits into its form factor.

Olson's design is unique in the market, it will measure the actual impact force with a dual sensor system to calculate stiffness and modulus based upon soil type.

The LWD has also been used as a replacement or supplement for nuclear density gauge testing. The combination of the two being a very powerful tool for insitu compaction, and the LWD test alone a good pass fail QA check.



Tablet

The LWD-1 is supplied with a GPS enabled, sunlight-viewable touchscreen tablet.

- Tablet meets MIL STD-810-G
- Easily readable when outdoors
- User-friendly WinLWD Acquisition & Analysis Software

Applications

- Roadway Construction: subgrade, subbase and road base compaction QA
- Airport Runways
- Railroad Track Bed Compaction Testing
- Overlot Fill Grading and Parking Lots
- Earth Retaining Walls
- Earthen Dams

Features

- Embedded load cell measures actual impact force to calculate stiffness (peak force ÷ peak displacement) and modulus based on soil type (granular, clay or mixed)
- Calibrated geophone receiver measures plate deflection
- Simple design embeds spring assembly inside falling weight, preventing noise of loose spring motion on sensors
- Multiple plate diameters available — 300, 200, 150 and 100 mm
- Two additional external geophones can be added to the system for deflection basin or Spectral Analysis of Surface Waves (SASW) layer moduli determination
- Durable stainless steel design
- Quick and easy on-site testing; can be performed with no special certification with immediate results
- Portable and lightweight - single person operation

Lightweight Deflectometer

Lightweight Deflectometer Principal

A LWD measures the deflection caused when a dropped weight applied force to a bearing plate placed upon soil and pavement systems. The calculation of Young's Modulus relies upon solving for a load applied through a rigid circular plate onto an elastic material.

In practice the included WinLWD software is used to calculate stiffness and modulus from three sample drops taken after the machine is correctly seated in the test position.

Sample results in WinLWD



Force curve during impact



Deflection curve during impact

Specifications

- 27 kg Total Unit Weight
- 9 kg Falling Weight
- 600 mm Drop Height
- 9 kN Impulse Loading
- 20 millisecond Impulse Duration
- Includes Olson Instruments four channel NDE 360™ Platform with touch screen and compact flash.

About PCTE

PCTE have over 30 years' experience in the measurement and testing of construction materials. PCTE can provide more than just the equipment, they can provide expert training. PCTE have a service centre in Sydney in which they can provide calibration, repairs and warranty repairs.

Other Equipment

PCTE supply three main ranges: NDT, Lab and Geotech Instrumentation.

NDT includes: Rebound Hammers, Covermeters, Ultrasonics, GPR, Corrosion Testing, Coating Testing and Foundation Testing

Lab includes equipment for: Concrete, Cement, Aggregate, Soil, Asphalt and Metal

Geotech Instrumentation includes: Strain Gauges, Piezometers, Inclometers, Extensometers, Tiltmeters, Load Cells and Dataloggers