

## BEARING CAPACITY TESTING

ON PLATFORM, FOUNDATION, ROAD'S BASE

Illustration  
of both  
methods

### Older method



### Plate bearing test

### Modern method



### Dynaplate : Dynamic plate bearing test

Standard

NF P94-117-April 1, 2000

A platform's « modulus under static load using the plate ». The test applies to earthwork and wastewater platforms intended to the construction of road, rail, airport infrastructures and realized with materials defined in the classification standard NF P 11-300 with the exception of materials containing elements whose  $D_{max}$  exceeds 200 mm. The maximum value of the modulus that can be measured by this test is 250 MPa.

NF P94-117- October 2, 2004

A platform's « modulus under dynamic load using the Dynaplate ». It describes the principle, the equipment, the modus operandi and the method of reporting the results of a dynamic stress test of a soil under a rigid plate. »

Security

Dangerous testing :

- the operator is stooping at the rear wheels of the truck

Reduction of accident risk because the operator is all the time inside his car

Ease of use

Physical because the technician has to put into place a plate that weights 26 kg

Automated : the Maxidyn is remotely-operated thanks to a remote-control system that monitors the mini-crane arm

Physical discomfort for the operator

Considerable because the tests take much time

Minimal because the tests go faster and the work stimulates the operator intellectually

	Older method	Modern method
<b>Ergonomics</b>	Tedious because the operator has to stoop down, kneel on the ground and then get up at each measurement carrying a 600mm-in-diameter plate	Ergonomical working posture because the operator stays in his car, or stands near the door
<b>Number of operators needed</b>	At least 2 and it is advisable to change operators owing to the consequences on their health (risk of musculoskeletal disorders)	Only one
<b>Number of tests per hour</b>	10 or so measuring points per hour	Up to 60 tests per hour (with an average of 30 to 50 per hour)
<b>Stored parameters</b>	Deflection under a load	Measurement of the bearing capacity Edyn2 and quality of the measurement, impact force and deflection, date of the test, location (GPS), distance between the measurement locations
<b>Data accuracy</b>	Manual reading of the pressure gauge's pointer	The measurements of the force and of the displacement are calibrated annually on a calibration bench. The measurements are automatically saved by the acquisition programme
<b>Correlation of results between both methods</b>	The Dynaplate solution was developed by the French LCPC laboratories in the 1990s. The overall results obtained with the new method for determination of the dynamic modulus show a very good correlation between this parameter and the EV2 modulus, measured by the static plate bearing test within a 10-350 MPa range (fig 13 – Cf. pdf Dynaplate II)	
<b>Securing the site works</b>	Old way : the technicians have to think of all the equipment themselves	Facilitated because the carrier vehicle is a conventional 4x4 pick-up type vehicle.



**Maxidyn**

*The first Dynaplate was used in 1976 : it was designed by the LCPC, the former French Institute of Science and Technology for Transport, Development and Networks, nowadays it has become Gustave Eiffel University.*