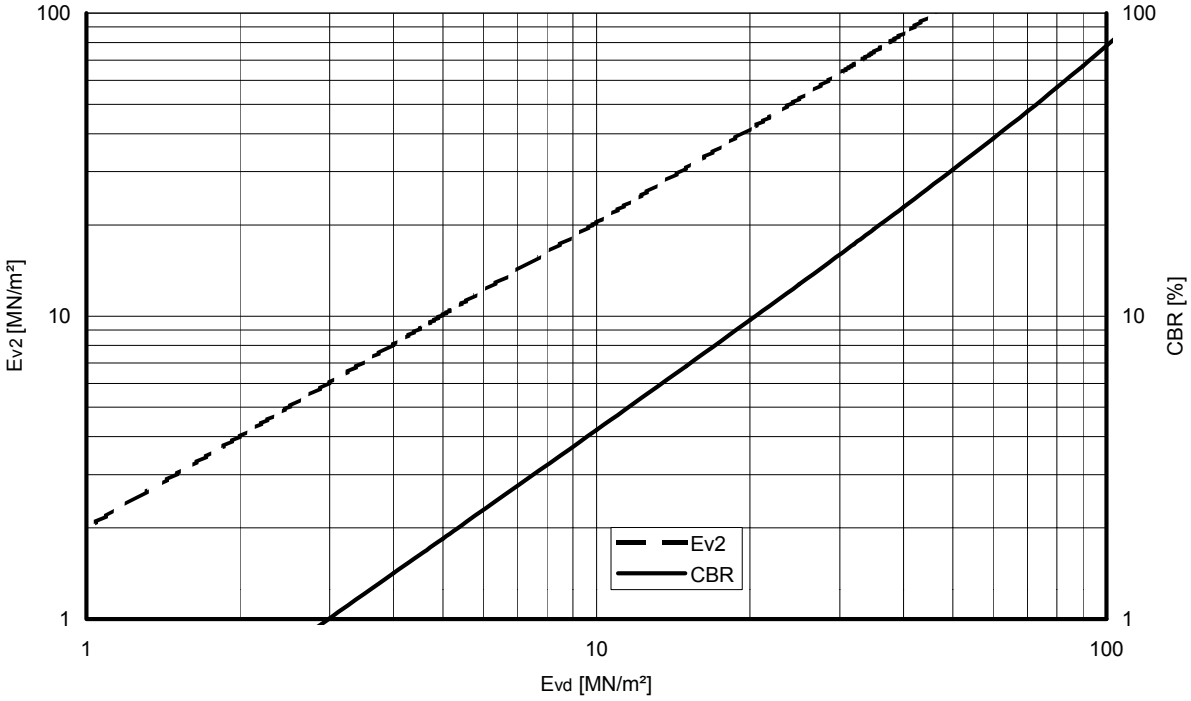
The Light Drop Weight Tester the ideal replacement for CBR and Plate Bearing Test

Traditionally the load-carrying capacity of soils is determined by strength tests, such as the California Bearing Ratio (CBR) and the Plate Bearing Test (DIN18134; similar to BS 1377; ASTM D1195, D1196). With CBR-test you have to get samples of the soil and send the samples to a lab for CBR testing. In worst case it take some days to get the results and the conditions at the road works may have changed (e.g. rain or drain). The Plate Bearing Test is expensive, it needs a heavy truck as a counter weight.
The Light Drop Weight Tester (LDWT) is a mobile device to determine the load-carrying capacity of soils at the road works in minutes:

- Put the loading device at the soil surface
- Do 3 preloading pulses
- Start measurement
- Do 3 loading pulses
- Read the bearing capacity (E_{vd} in MN/m²) from the display or Print a test sheet

Below we provide a relationship for soils between E_{vd} of the LDWT, the CBR-value and E_{v2} of the Plate Bearing Test. Our Light Drop Weight Testers ZFG2000 and ZFG02 are well suited for this test.



Important hint:
The relationship should be treated as approximation to get a first clue how to compare LDWT and CBR. The relationship between E_{vd} and CBR is derived from various sources in the literature. We recommend to make your own tests and correlations. We are very interested in contacts with universities or research institutes for further research in the fields of the CBR and LDWT. Please contact us mailto:**info@zorn-online.de**.

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The graph of Ev2, Evd and CBR is a theoretical relationship based on optimum material. In practice, you have to evaluate the relationship of real existing soils. There is no general relationship.

The empirical equations to derive the graph plot are as follows:

Ev2 = 2 x Evd

The dynamic CBR - value is approximately calculated with the equation:

$$\mathbf{CBR_d = 24.26 * p / s^{0.59}}$$

s [mm]: setting amplitude of the CBR - load stamp
p [N/mm^2]: loading amplitude of shock

The graphed results for CBR assume the optimum water content with test done in the laboratory. The moisture content of samples are given by mass % of water and are not soaked.