



SERVICE DATA SHEET

Panda Probing (V.2)

Allied Exploration & Geotechnics Limited (AEG) are pleased to offer our Panda® Probe equipment as an extremely useful and cost effective in-situ investigation technique which can assist in providing an additional tier of geotechnical support, and complement those more traditional intrusive methods that are used in small scale works. In these cases the Panda® can provide supplementary information which is specific to the ground profile revealed.

The Panda® probe provides a continuous read-out of cone resistance (Q_d) versus depth as it is percussively driven into the underlying deposits. Accordingly Q_d (in MPa) can be used to derive undrained shear strength (c_u) based on recognised empirical relationships for fine grained (cohesive) materials, whereas equivalent N-values can be determined for fine, medium and coarse granular soils. Where traditional in-situ tests (i.e. standard penetration in boreholes and window sample holes or hand shear vanes) are available, these can assist in optimising the empirical relationship that should be applied to each stratum; for instance the value of N_k (cone resistance factor) for clay soils, or alternatively the N to Q_d ratio. In addition, a linear relationship has also been proven with the Transport Research Laboratory's DCP device (mm/blow) for establishing equivalent in-situ California Bearing Ratio (CBR) (in %).

The Process

- ◆ The device can be used to assess the performance and quality of landfill clay liner placement works, trench reinstatements and earthwork compaction operations. The system comes with software that has material specific compaction performance data that can be superimposed onto the Q_d versus depth graphical plot. These 'lines of tolerance' can be used to establish the effectiveness of the compaction procedures applied to various fill materials.
- ◆ In practice the Panda® can be operated quantitatively, to derive geotechnical parameters, as well as qualitatively comparing one location to another, perhaps from a perspective of establishing material variations and weak zones.
- ◆ Various geotechnical parameters can technically be determined when the Panda® used in a quantitative manner; namely standard penetration N-value, equivalent CBR, undrained shear strength (c_u) and TRRL mm/blow information.



Summary

The technique is fully integrated with our other QCA site services, which in turn are effectively supported by the Company's overall range of investigation and laboratory services.

The use of the device has greater relevance where used with other forms of investigation e.g. a probe hole next to a trial pit.

In typical conditions the Panda® is routinely capable of achieving depths of up to 5 metres in soil conditions between 20 and 30 MPa; even deeper where lesser cone resistance applies.

Benefits

- A continuous plot of CBR (or other parameter set) can be established using the same raw data, which can then be used for design purposes.
- The Panda® offers greater flexibility than alternative methods of probing, and in our opinion is better than the TRRL procedure.
- Correlations have also been postulated with dynamic cone penetrometer (DCP) devices (DCP N10) after research by the Building Research Establishment; however, these are currently tentative.
- The data is fully processed and reported in a concise annotated graphical format.

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