

Combined Magnetometer Cone

In conjunction with Geopoint and partner Zetica, Lankelma has developed a new magcone. This new system allows for the detection of ferrous items (such as unexploded ordnance - UXO) to be run concurrently with a standard 15cm² piezocone test. This in effect halves the site investigation time by providing the geotechnical soil profile at the same time as giving the 'all clear' for UXOs.

Unexploded ordnance

When developing new or existing building sites, it can be necessary to survey the site for unexploded bombs (UXB's). This depends on the site's location and history. Many sites are contaminated with World War II airdropped ordnance.

The depth of the survey depends on the design of the foundation; is it a shallow foundation or a piled foundation? Also the sort of subsoil is important; the penetration of airdropped bombs is much deeper in soft soils like peat, than in stiff London clay.

Operation

The cone for bomb detection (magnetometer probe) is hydraulically pushed into the soil while the magnetometer takes real time readings of the amplitude of the earth's magnetic field. Buried ferrous items result in localised distortions of the magnetic field. These local disturbances are manifested as anomalies in the data that are invaluable for locating buried metal objects such as tanks, drums, pipes or bombs.

The caesium vapour magnetometer has a detection radius of 2.0 m for detecting large items such as a 500 kg bomb. The magnetometer probe is pushed into the soil, using a standard CPT rig. A maximum pressure of 15 tonnes will be applied. Where soils comprise made ground deposits, hard strata or hardcover, it is necessary to drill each position and line the borehole with a plastic pipe, before pushing the probe into the soil.

Procedure

In the event of uncovering explosive ordnance, there is a written standard procedure of how to handle. This procedure is followed to ensure that it is not a false alarm. Where the item is positively identified as a large airdropped bomb, the site Geophysicist is to inform the emergency services, as the police and the Ministry of Defence.

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