

# LANKELMA

CONE PENETRATION TESTING LTD.

## WINTER NEWSLETTER 2004

### Tilbury Pull Out Resistance Tests – Tilbury Docks

At the request of Keller Ground Engineering, Lankelma has just completed a phase ground investigation as part of the installation and testing of Lime Cement Columns at Tilbury Docks, SE England.

The works comprised of Cone Penetration Tests and Mostap sampling through previously installed Lime Cement Columns and Pull-Out Resistance Tests (PORTs).

CPTs were used to determine the engineering properties of the Lime cement Columns. Continuous 65mm diameter Mostap samples were obtained for subsequent laboratory testing by the Client.

Lime cement columns were installed as the ground improvement system for this particular site. At selected column locations, 500mm wide flat vane were installed at the base of the column and an attached pull-out cable run out to ground level. Following the column curing, one of Lankelma's 20 tonne crawler units, with modified 20 tonne capacity hydraulic rams, was used to connect up to the cable and pull the flat vane to ground surface.

As with CPTs, the force required to pull the vane through the column back to ground surface was recorded and downloaded using a modified and calibrated pressure gauge, data logger and logging software. The results obtained were used to determine the undrained shear strength (and so working strength) of the individual Lime Cement Columns tested. The net pressure was determined by dividing the net force used to retract the vane by the vane's cross-sectional area. A factor of 0.1 was then applied to derive the undrained shear strength profile for the column.



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### 25<sup>th</sup>-28<sup>th</sup> November 2003, Site Investigation



Over a possession of three night shifts, Lankelma CPT Ltd completed a site investigation for the construction of a new taxiway at an airport for Ritchies. Difficulties encountered included the location of some very important buried services and the time constraints placed on all workers because of security clearance and flight operations.

Thirty three tests to an average depth of  $\approx 5.0$ m were completed on an area of soft grass adjacent to the aircraft dispersal and main runway that required minimum disturbance of the ground surface to control the dangers of FOD damage to air-side traffic. The all-wheel drive 'Track-Truck' performed impressively in the very wet conditions leaving behind only flattened grass.

### Breakfast Seminars

Lankelma CPT Ltd and Pennine Vibropilling are running 6 joint breakfast seminars in the forth coming months. The following dates have already been arranged: 1) 4th March, Leeds Castle, Maidstone. 2) 11th March, Aviation Museum, Duxford. 3) 18th March, Ascot Racecourse, Ascot.

At the seminar, Pennine will present developments in ground improvement techniques. Lankelma's presentation will be on the development of cone penetration techniques. Lankelma can also come to your offices to give a lunchtime presentation. For more information please e-mail: [sophiebateman@lankelma.co.uk](mailto:sophiebateman@lankelma.co.uk).

## Restricted Access Contracts

During December 2003, Lankelma CPT Ltd mobilised its 'Mini-Crawler' restricted access unit to complete three jobs that required its specialist capabilities.

### 1) Sheltered Housing

The Mini-Crawler went on to perform tests at an extremely difficult access location for Mouchel Parkman at Gale Farm, Sheltered Housing complex near York.

The rig was required to manoeuvre through a 1.2m wide passageway to reach a central courtyard where it performed five tests (using its ground anchors to produce a 20 Tonne reaction force) to a depth of  $\approx 18.0\text{m}$ . Piezometer standpipes were pushed to a depth of 7.0 and 8.0 metres respectively to allow measurement of ground water levels.



### 2) Flood Defences



At the request of Norwest Holst, The rig performed tests to a maximum requested depth of  $\approx 15.0\text{m}$  on a flood defence embankment at Goole on Humberside.

Scaffold platforms had been built to allow testing 'over water' from a stable, level platform.

The reduced weight of the rig was ideal for access to this narrow platform and performance was outstanding giving maximum penetration with minimum disruption to other site works.

### 3) Lock Farm

The third job reverted back to flood defences, this time at the request of Allied Exploration & Geotechnics Ltd at Lock Farm near Pontefract, at an embankment.



Access to this embankment was narrow but well within the capabilities of the rig. Lankelma produced  $\approx 45.0\text{m}$  of quality data, identifying various units along the profile of the embankment that correlated well with samples performed by others.

## Basement Work

Lankelma CPT has recently had to carry out several basement ground investigations within the London area. With our specialised basement equipment we are able to work in headroom as low as 1.80 metres (6 foot).

The basement rig can get its reaction from concrete floors, walls or ceilings. On a job in January 2004 depths of up to 20 metres were reached through London gravels down into London clay. Our electrical rig keeps the sound down to a minimum and the basement tidy.



To find out more about the way Lankelma can help with your specific projects log onto [www.lankelma.com](http://www.lankelma.com). Alternatively you could write to us at [info@lankelma.co.uk](mailto:info@lankelma.co.uk) or call us on 01797 280050.  
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