

Nigel in Hospital

Nigel Cassidy was taken to hospital last week and we wait to hear how he is getting on. Hopefully he will be fully recovered ready for the Aston conference.

In the meantime, Glenda, our PhD student, is having to shoulder all of the work. Tough going digging trenches to sink the ERT cables.

Tax Benefits

The Inland Revenue encourage firms that invest in technology and research by treating every £100 they spend as £150 for tax purposes.

In short, we are really giving you money when you make a donation. Give us lots, and think how rich you will become. Thank us later.

Seriously, there are significant benefits in funding R&D, and every penny you contribute to The Clay Research Group or one of its suppliers counts.

Funding

In last months newsletter we explained the need for funding to purchase a weather station and some soil moisture sensors.

Within an hour or so of the issue being released, we had offers of support from Gary Strong of GAB, and Paul Thompson of Marishal Thompson. Many thanks to both, and welcome aboard Paul.

This month we hope to secure another contribution from some friends and colleagues - more news as it breaks.

Cyril Nazareth

Cyril is the project leader for The Clay Research Group and bringing everything together at Aldenham. No mean feat with so many parties involved, and keeping on the good side of the school at the same time.

If you need to speak with him, his mobile is 07793 019 703.

A Day in the Life....

We had secured the research site. The BGS map showed it was London Clay. We thought we would sink the deep datum first, and why not?

Sand. Pebbles and sand. Clayey sand. Panic. Had we selected a research site on a non-shrinkable medium?

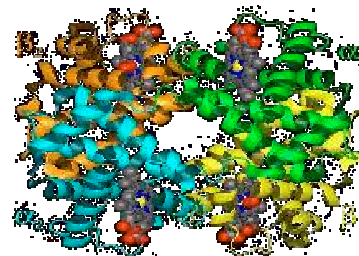
As luck would have it, this was the exception. It was a stray banding from the Bracklesham Beds situated not too far away. Phew.

Climate

The next edition will include our claims prediction for the summer of 2006. We are just waiting for the last reading of the SMD from the Meteorological Office.

Soil Treatment

Some clients have cut to the chase, and arrived at the wrong answer. Don't sprinkle the soil with salt to modify stomatal activity or you will kill the tree most likely.



Instead, use this little molecule. It's far better and should do the trick if you want to increase the osmotic potential of the soil. Or at least, we should know whether or not it will by the time the project has concluded.

That said, no vegetation likes struggling for water, but if we want to make the tree work a bit harder, sooner, this could help. We need to trigger the expression of a specific gene if possible.

ASTON CONFERENCE

Yes, we know. Sorry to go on but we are looking forward to seeing everyone at the Annual Subsidence Conference at Aston on the 15th June.

Probing Neutrons

Derek Clarke and Joel Smethurst from Southampton University made their first inspection of the site last week, accompanied by Cyril Nazareth.

They agreed it was a superb location and fitted in with their wider project exploring climate change and moisture movements in clay soils.

They have a neutron probe and it was agreed, once we obtained the approval from the school, that we would use this device to measure the moisture content of the soil and calibrate the TDR sensors at the same time.

The neutron probe actually counts the water molecules. You don't have to gather soil samples and take them to the laboratory for testing. Just imagine.

Simply drop the probe into the aluminium tube, and read the LCD panel to see the count of moisture molecules.

WEATHER STATION

We told you last month that Paul Thompson (Marishal Thompson) had agreed to fund the cost of the weather station. At the time we hadn't realised that the school already provided data to the Meteorological Office using the equipment they have on site. This is the site within the school grounds.



The new equipment will be sending data to the Met Office and the subscribing members. It's a first and should stand the insurance industry in good stead over the coming years as we gather more data to build better climate models.

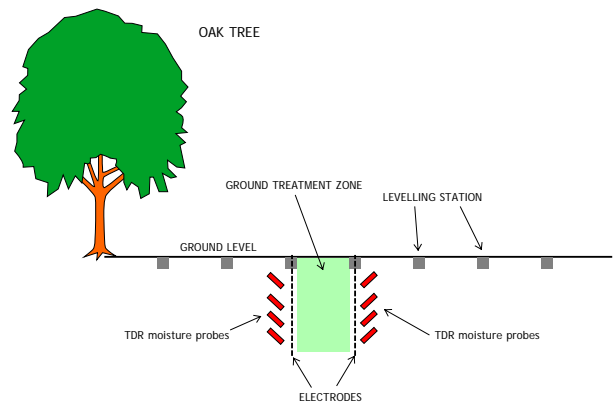
Help Needed

Funding is still needed, and fairly urgently if anyone can help. See below:-

Moisture Sensors. 8 No. to supplement those already on order. Long term measurement of moisture in a very significant part of North West London. Complete with insertion/extraction tubes. **£5,000**

Data Gathering. To obtain data from the ERT cabling, moisture sensors and weather station for publication on the web. GSM connectivity, dataloggers, installation on site below ground, setting up the web site and so forth. **£3,500**

Neutron probe access tubes and sundry associated expenses. 2 No. car batteries to power the dataloggers and a solar panel to keep them charged. **£2,800**



Don't forget we aim to distribute data from the site to members and subscribers. For a relatively low entry cost, you will effectively be at the cutting edge of the most innovative research in our industry.

All contributions will be recorded in the Newsletter, but the earlier we get help, the more data we gather and the quicker we can apply it to building new solutions.

SURGE

It is topical and every year we worry as soon as the sun comes out. How do we tackle it when it arrives? Recruit more people overnight?

No. Apply technology. Make your visit in the usual way. Arrange for tilt and moisture sensors to be fitted. Deliver first class service without all of the fuss.

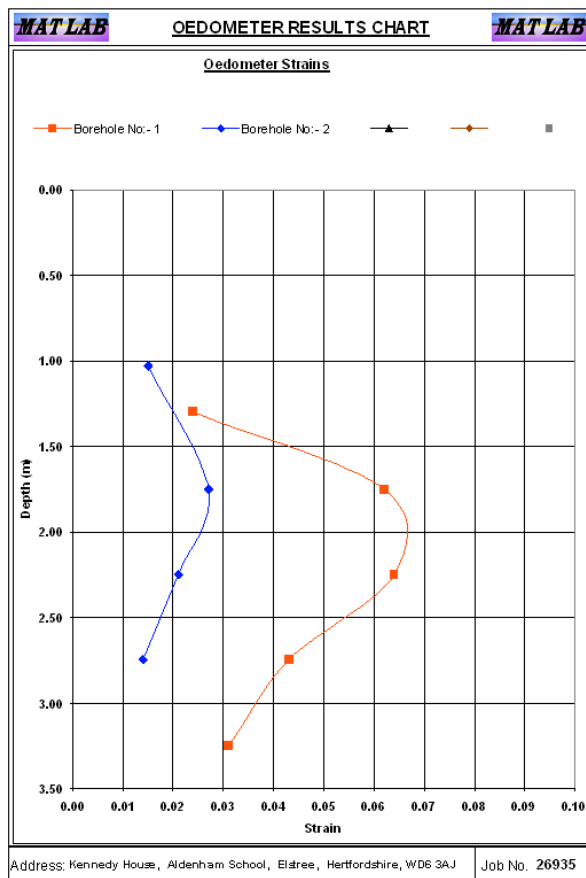
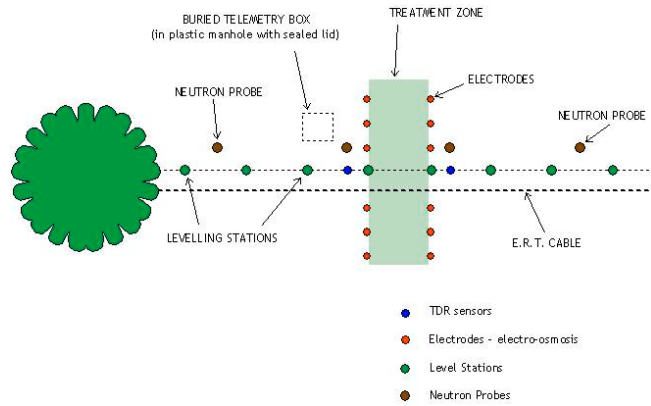
INSTRUMENTATION

This is a plan of the instrumented site and you can see we have to be careful that we aren't simply reading the equipment.

Soil sensors, levelling stations, neutron probes, ERT cables and treatment zones are all in close proximity, and then we add the need for boreholes to retrieve soil samples for testing.

Add the complexity of the treatment zone and you can see how tricky it can be.

In addition, we have to sink a monitoring station into the ground to record the data from the moisture sensors every hour. It isn't easy.



PERSISTENT MOISTURE DEFICIT

The first boreholes were sunk at Aldenham in May and the results are shown to the left. As usual we used our preferred method of testing - the oedometer.

Note the strains on the graph. Clear evidence of a persistent moisture deficit. Winter rehydration hadn't caused them to expire completely and as the foundations are only 550mm deep, they are effectively sitting directly on top of a zone of shrinking and swelling clay that extends down to 3mtrs and more.

Roots from the willow were retrieved from depths up to 3mtrs bGL. The trees had already been cut back quite severely when we first visited site, and the estimate of swell from the laboratory was about 60mm or so.

Movement is likely to be ongoing for a number of years if the trees are removed, but hopefully the ensuing damage shouldn't be enough to cause more than superficial damage.