LABORATORY REPORT

Client's Name: Rowbury

Address: 55 Hollybank Lane,
Emsworth,
PO10 7UE

Report Date: 17-Jan-11
Job No.: **47918** (If **_R** suffix appears after Job No., this indicates Revision Number)
Insurance Co.: Direct Line
Claim Ref. No.:

Project Engineer: Tom Walker-Smith
From: Crawford & Company,
Engineers Ref.: SU1006486

Contents:
Root Analysis
Swell Strain Tests
Moisture Content
Atterberg Limits
Suction Tests

Address: Mat Lab Ltd
The Dell
Bickenhill Lane
Catherine-De-Barnes
Solihull B92 0DE
E-mail: post@mat-lab.com

Phone No.: 0121 704 3339 **Fax No.:** 0121 704 4675

Authorised By:
JC - Technical Manager
Date Authorised: 17/01/2011

ROOT IDENTIFICATION

Analysis subcontracted to European Plant Science Laboratory

Your ref: 47918
Job No: Root1 10111111753

Re: Root Identification
Sample Origin: 55 Hollybank Lane, Emsworth, PO10 7UE

The sample of roots taken from the above property and received by us on 11 January 2011, has been examined and identification appears to be as follows:

Reference	Depth	Species Identified		Root Diameter	Starch
TH1	1.2-1.8m	*Pinus* spp.	1	3 mm	None Visible

Comments:

1 - Plus 2 others also identified as *Pinus* spp.

Pinus spp. are pines.

1 species was identified.

Signed FCW

Unless we are otherwise instructed in writing, the above sample material will normally be disposed of 3 years after the date of this report.

OEDOMETER RESULTS DATA

MAT LAB LIMITED

Swell/Strain Test Method **(UKAS accredited)** **Test Date: 06-Jan-11**

The In-house Procedure MTLB002 is based on "Determination of swelling and collapse characteristics" British Standards 1377:Part 5:1990 Section 4.4 , carried out on a disturbed, remoulded sample.
Test specimen has cylindrical dimensions 50mm (diameter) by 17mm (height).
Prior to the introduction of distilled water the specimen is reconsolidated to the approximate in situ vertical effective stress, calculated from the average sample extraction depth using the assumptions below.
Laboratory tests are conducted in a controlled environment within a temperature range of 16°C to 24°C.

Assumptions

Soil Bulk Density (Moist Unit Weight) is equal to 2039 kg / m3. Depth to water table has been assumed as to be below sampling depth. Any possible surcharge stresses due to construction are not considered.

Predicted Free Surface Heave Calculation **(Not UKAS accredited)**

An approximated value of 0.010 strain is deducted from the measured oedometer strain to account for remoulding of the sample. Therefore strain in excess of Remoulding Disturbance Line (see Results Chart) is extrapolated for calculation of Predicted Heave per incremental layer displayed in the following table(s), in column labelled "Dd mm". A Shrinkage factor (Sf) of 2 is also applied to each heave value. Heave values per layer are summed as a total for each Borehole (in mm), and then displayed as a range in (in cm).

Predicted Free Surface Heave is calculated over a range defined by the sample depths tested, but not shallower than 0.2m below ground level, the assumed depth of topsoil. Heave inadvertently measured above foundation depth may be discounted by deducting the relevant layer value from the Borehole total.
Please note that the swell predicted is that expected of the ground if it were allowed to fully re-hydrate and come to equilibrium. This is possibly greater than the expected annual variation; due to reasons such as persistent annual deficits, changes in vegetation and annual climatic conditions, amongst others. The predicted total swell can take many years to fully propagate and in some cases this can take up to 25 years, though usually at least 70% happens within the first few years.

Uncertainty of Measurement

The accuracy of the quoted strain measurement in an individual test is deemed to be within +/- 2.5%.
The variation of repeated results on the same sample is determined by the uniformity of sample.
Due to variability in strata changes and sample uniformity, it is more appropriate to consider the Heave Potential by the quoted range (in cm) rather than the precise total (in mm).

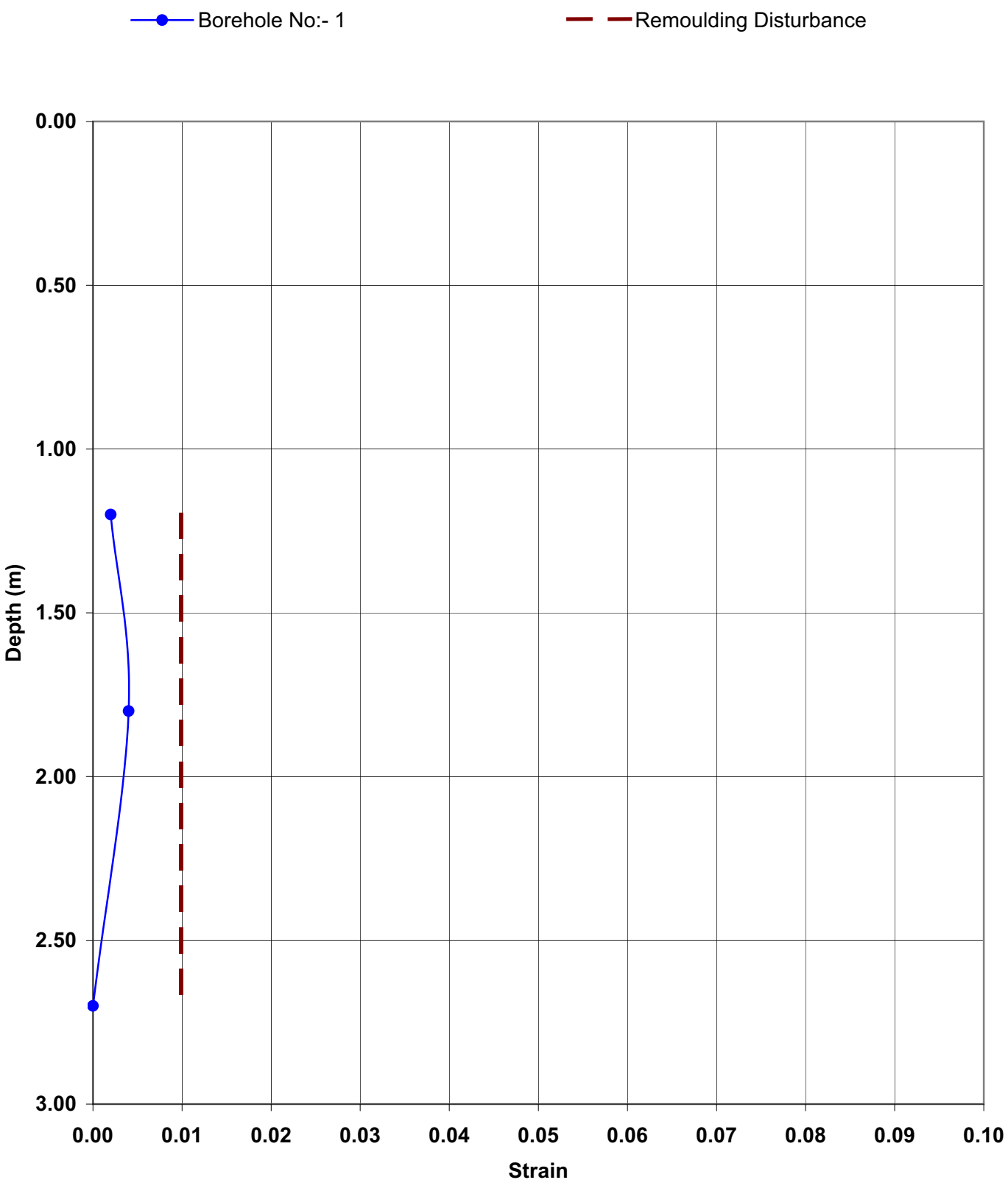
Further information relating to Swell/Strain Test is available on the MAT LAB Website:- www.mat-lab.com

OEDOMETER RESULTS DATA

Borehole No:- 1			
Location	N/A		
Depth(m)	Specimen No. & Comments	STRAIN	Dd (mm)
1.2	Specimen No. 1A	0.0020	0.0
1.8	Specimen No. 2A	0.0040	0.0
2.7	Specimen No. 3A	0.0000	0.0
Total Column Dd=0mm Therefore Free Surface Heave Potential Over B/H Depth Is About 0cm to 2cm.			

OEDOMETER RESULTS CHART

Oedometer Strains



Address: **55 Hollybank Lane, Emsworth, PO10 7UE**	Job No. **47918**

Notes relating to Soils Report

Date Soil Samples Received in Laboratory: 06-Jan-11
Date Testing Requirements Approved: N/A

This Soils Report contains results for 1 borehole(s) on 1 page(s)

General

Soils were prepared in accordance with BS1377:Part 1:1990 Section 7

Laboratory soil sample descriptions in general accordance with BS5930:1999

Where samples are not tested on same date for a particular test type, Test Date quoted refers to the day of testing of final sample

All samples will be disposed of within 1 month of presentation of this report unless otherwise advised

Natural Moisture Content

Test Date: 06-Jan-11

Tested in accordance to BS1377:Part 2:1990 Section 3.2

A sample quantity of 100g is used for fine-grained soils, where available

Where sample quantity is critical, a minimum of 50g may be used, in accordance with BS1377:Part 2:1990

A sample quantity of 300g to 350g is used for medium-grained soils, 3kg is used for coarse-grained soils.

Atterberg Limits

Test Date: 07-Jan-11

Tested in accordance to BS1377:Part 2:1990; Section 4.4 for the Liquid Limit, Section 5 for the determination of the Plastic Limit and Plasticity Index

Suction Tests

Test Date: 12-Jan-11 (Q)*

Suction Test carried out in accordance to the accredited In-house Procedure MTLB001 with reference to the BRE paper IP4/93 (Corrected) 'A Method of Determining the State of Desiccation in Clay Soils'

(Unless otherwise stated the filter paper moisture content was determined after 5 to 10 days contact and the test was prepared from a remoulded disturbed sample in accordance with in-house procedures)

* *Where denoted by '(Q)' following Test Date above, the test has been performed using 2 soil discs and quartered filter papers.*

The filter paper tests are conducted in a controlled environment within a temperature range of 16oC to 24oC.

Average Suction values (in kPa) calculated using the BRE paper IP4/93 calibration are quoted with the maximum and minimum suction obtained, as indicated by error bars either side of plotted point.

Where possible, suction values should be compared with remote borehole values, to determine relative desiccation.

Each new batch of filter papers used for testing is checked for its consistency against the standard BRE calibration curve using a pressure membrane extractor. The current filter paper batch, J113976969, shows good consistency against the BRE curve, more information is available upon request. Studies on In-house calibrations using a pressure membrane extractor continue.

This Report shall not be reproduced except in full, without prior writtten approval being obtained from the Quality Manager of Mat Lab Ltd. It may contain private, confidential, or privileged information intended for the individual or entity to whom it is addressed. No confidentiality or privilege is waived or lost by any mistransmission.

SOILS LABORATORY RESULTS.

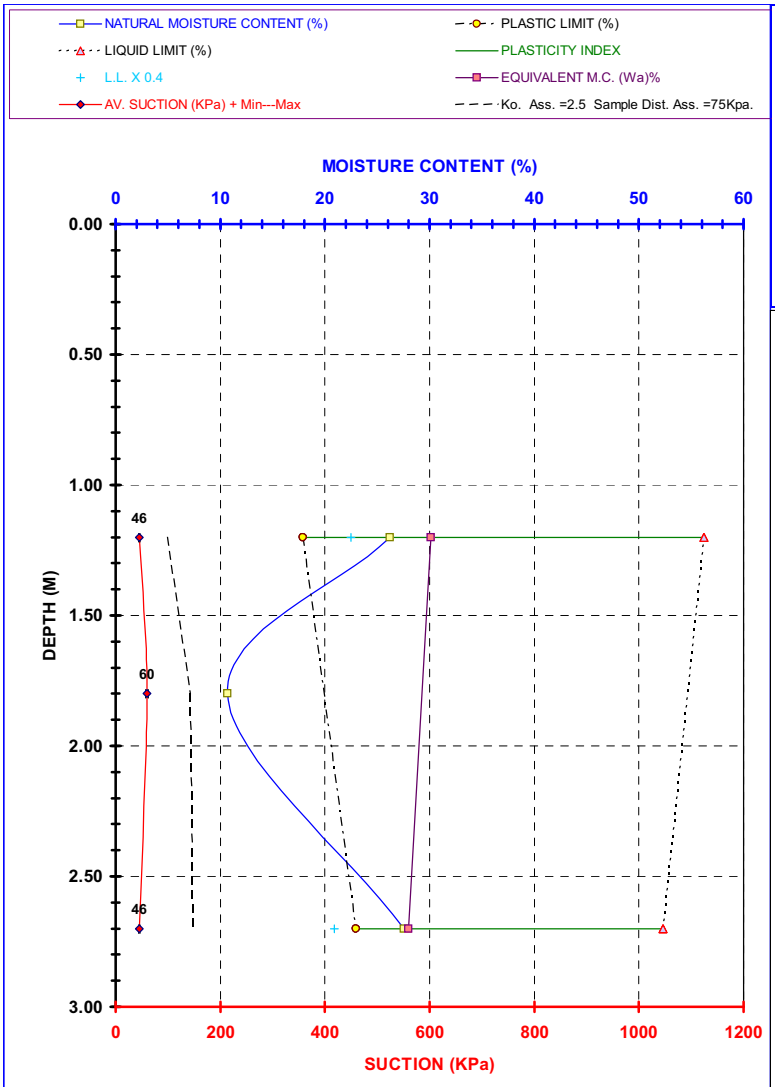
MAT LAB LTD. 0121 704 3339

Opinions and interpolations expressed herein are outside the scope of UKAS accreditation.

JOB No.:-	**47918**	**INSURANCE COMPANY**	**Direct Line REF:-**
DATE SAMPLES REC'D:-	**22 Dec 10**	**ENGINEER:-**	**Tom Walker-Smith REF:-SU1006486**
CLIENT/INSURED NAME:-	**Rowbury**	**FROM :-**	**Crawford & Company,**
ADDRESS:-	**55 Hollybank Lane,**	**B.H. No. :-**	**1**
	Emsworth,	**LOCATION:-**	**N/A**
	PO10 7UE	**REPORT DATE:-**	**17 Jan 11**

NOTE :- Column "dh" below is outside of UKAS accreditation and is an inference based on the heave analysis [dh (Blue) extrapolated]. "N.P." in the plastic limit column ="Non-Plastic"

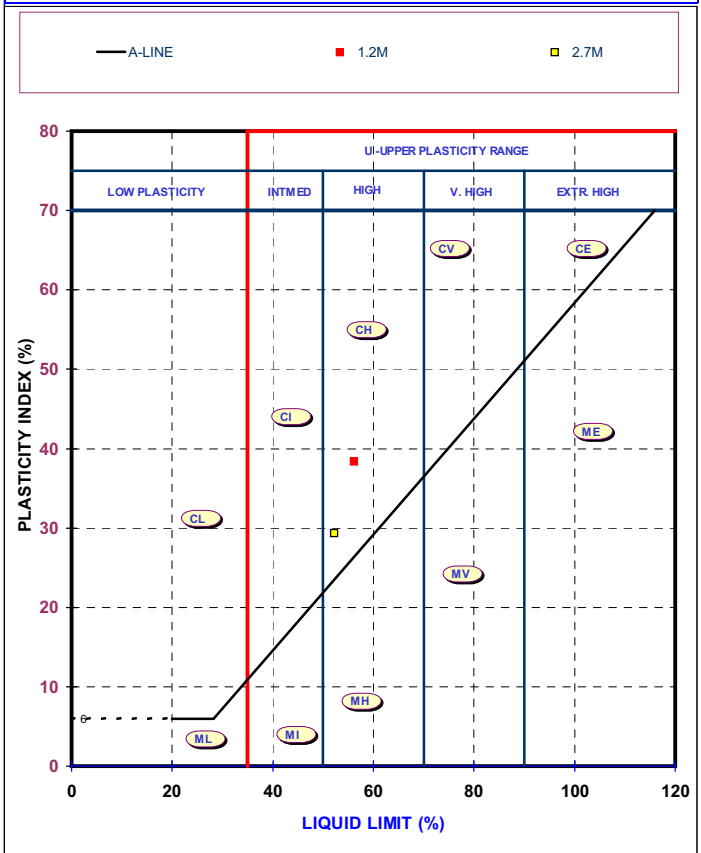
		ATTERBERG LIMITS.						
DEPTH. M.	M.C. (%)	L.L. (%)	P.L. (%)	P.I. (%)	425um (%)	AV. Filter Paper M.C.(%) & No.	dh (mm)	BRIEF SOIL DESCRIPTION
1.20	26	56	18	38	86	58.8746 (3)	0.0	Soft/firm brown/light brown/dark brown slightly sandy CLAY with occasional fine gravel & light grey veinings.
1.80	11	-	-	-	-	52.782 (3)	*0.0*	Firm light brown/brown sandy CLAY with rare fine gravel & light grey veinings.
2.70	28	52	23	29	100	58.9987 (3)	0.0	Firm light brown/brown slightly sandy CLAY with rare fine gravel & light grey veinings.



Opinions and interpretations expressed in the chart above are outside the scope of UKAS accreditation.

The interpretations below are outside of UKAS accreditation.

A Heave Potential Analysis is not possible due to the low magnitude of the Suction Values.



Authorised by :-	JC