

INTERROUTE

FACTUAL REPORT
on
GROUND INVESTIGATION
at
A303,
HORTON

JUNE 2008
REPORT NO: 721450

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DOCUMENT ISSUE RECORD

Contract No: 721450

Client: InterRoute

Contract: A303 Horton

Document: Factual Ground Investigation Report

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Date:

June 2008

REVISION RECORD

Revision	Date	Description	Prepared by
	May 2008	Draft Report	MA
1	June 2008	Final Report	RMD

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1 INTRODUCTION

This investigation was carried out on the instructions of and on behalf of InterRoute. The purpose of the work was to investigate ground conditions and provide information relating to ground stability on the northern slope of the A303 embankment near to Horton. The ground investigation has been carried out using dynamic sampling and hand dug trial pitting in general accordance with the recommendations of BS5930: 1999 *Code of Practice for Site Investigations*. Whilst every attempt is made to record full details of the strata encountered in the exploratory holes, techniques of hole formation and sampling will inevitably lead to disturbance, mixing or loss of material in some soils and rocks. A comprehensive desk study, other than an inspection of geological maps, has not been requested or undertaken as part of this investigation.

All information given in this report is based on the ground conditions encountered during the site work, and on the results of laboratory and field tests performed during the investigation. However, there may be conditions at the site which have not been taken into account, such as unpredictable soil strata and water conditions between or below exploratory holes. It should be noted that groundwater levels usually vary due to seasonal and/or other effects and may at times differ to those measured during the investigation.

This report was prepared by Structural Soils Ltd for the sole and exclusive use of InterRoute in response to particular instructions. Any other parties using the information contained in this report do so at their own risk and any duty of care to those parties is excluded.



2 SITE DESCRIPTION

2.1 Location and Topography

The site is located on the eastbound carriageway of the A303 south west of Horton in Devon. The British National Grid Reference for the site is ST 316 144.

At this location the A303 is a single carriageway road with a 50mph speed limit. Access to the site is only possible when traffic management is in place.

The site consists of an earthwork embankment approximately 100m in length, between chainages 225/9.70 to 226/0.70, along the northern (eastbound) side of the A303 carriageway, approximately 400m south west of the village of Horton. A drainage ditch runs approximately parallel to the A303 eastbound lane at the base of the embankment. At the time of the investigation the embankment was heavily vegetated with trees and shrubs. The embankment itself sloped down towards the north at angles of between 27° to 24°.

A north-south orientated stream runs in a culvert beneath the A303 and the embankment, emerging on the northern side of the road underneath the site. The culvert was not encountered during the sitework. A pond, possibly fed by the stream, is marked on the service plans and other maps of the site, located on the northern side of the road surrounded by hedges. However no pond was observed during the sitework, possibly due to it not being visible from the site, having been drained, or dried up naturally.

The immediate and wider surroundings to the site consist predominantly of gently undulating open farmland.

2.2 Geology

The Geological Survey Map of Great Britain (sheet 311, scale 1:50,000) shows the site be underlain by shales within the Lower Lias, of Jurassic age.



3 FIELDWORK

4 no. boreholes (BH01 to BH04) and 3 no. hand dug trial pits were completed between 12 and 18 March 2008 at locations shown on the Exploratory Hole Location Map in Appendix A. The scope of investigation and choice of investigation equipment was decided by InterRoute. The positions were also selected and set out by InterRoute.

The boreholes were drilled utilising the dynamic sampling capabilities of a Comacchio MC300. The boreholes were 110mm diameter at the surface reducing in diameter with depth and extended to between 6.0m and 12.0m depth. The holes generally encountered a sequence of predominantly cohesive made ground underlain by clay.

113mm diameter steel casing was inserted where necessary to offer temporary support to the hole. All samples were extruded horizontally and laid out sequentially in wooden coreboxes prior to being returned to the laboratory. All samples were then logged and photographed prior to testing. Logs and photographs for the boreholes are contained in Appendix B.

Standard Penetration Tests were carried out at regular intervals in accordance with BS1377: Part 9: 1990: 3.3. Test results are given in detail in Appendix B and summarised on the borehole logs. Sampling and testing details were specified by InterRoute.

On completion a 19mm standpipe piezometer was installed into BH02, the design having been specified by InterRoute. All other exploratory holes were backfilled with bentonite.

The trial pits were excavated by hand and were approximately 0.5m x 0.5m in plan area and up to 1.5m deep. The trial pits encountered cohesive made ground to depth. Hand vane tests were carried out in the cohesive strata in the trial pits and disturbed samples were taken and returned to the laboratory for testing. Logs for the pits are contained in Appendix B.



4 LABORATORY TESTING

The following laboratory tests were carried out on samples unless indicated otherwise generally in accordance with BS1377: 1990, *Methods of test for soils for civil engineering purposes*, parts 1 to 8. Where non-standard procedures have been undertaken, this will be recorded on the report sheet. The results are reported in tabular and/or graphical form included as Appendix C of this report.

Samples for geotechnical testing were returned to the company's laboratory in Bristol. Geotechnical tests were scheduled by InterRoute.

4.1 Moisture Content

56 no. moisture contents were undertaken using the oven-drying method in accordance with BS1377: Part 2: 1990. The results are tabulated in the Summary of Classification Tests.

4.2 Liquid Limit, Plastic Limit and Plasticity Index

56 no. liquid and plastic limit tests were performed in accordance with BS1377: Part 2: 1990. The results are tabulated in an A Line Plot (in accordance with BS5930: 1999) and the Summary of Classification Tests.

4.3 Particle Size Distribution

16 no. particle size distribution tests were undertaken by sieving in accordance with BS1377: Part 2: 1990. The results are represented graphically as particle size distribution curves and in tabular format.

4.4 Point Load Index

15 no. point load index determinations were carried out using irregular tests in accordance with ISRM (1985).


4.5 Contamination

1 no. WAC – E (Full Leachate and Total Solid waste suite) was undertaken. The results are tabulated in Appendix D.



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A handwritten signature in black ink, appearing to be 'M Addinall'.

M Addinall BSc(Hons) 

A large, stylized handwritten signature in black ink, appearing to be 'A R Handcock'.

A R Handcock MA CEng MICE CGeol FGS



5 REFERENCES

- 5.1** BS 5930:1999 *Code of Practice for Site Investigations*
- 5.2** Geological Survey of Great Britain *sheet 311 scale 1:50,000*
- 5.3** BS 1377:1990 *Methods of Test for Soils for Civil Engineering Purposes*