Queensland Government
Department of Main Roads

ENGINEERING BOREHOLE LOG

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/3-2005

BOREHOLE No BHP05
SHEET 1 of 3
REFERENCE No H9898

PROJECT HOUGHTON HIGHWAY BRIDGE DUPLICATION - HOUGHTON HIGHWAY UPGRADE PROJECT
LOCATION 24m RIGHT FROM EASTN PILE OF PIER 5 OF EXIST BRIDGE COORDINATES 38931.9 E; 52055.2 N
PROJECT No FG5423 SURFACE R.L. -0.76 PLUNGE DATE STARTED 22/04/06 GRID DATUM PROJECT DATUM
JOB No 165/122/35 HEIGHT DATUM AHD BEARING DATE COMPLETED 22/04/06 DRILLER CAIRNS DRILLING

DEPTH (m)	R.L. (m)	CASING / WASH BORING / CORE DRILLING	RQD ( )% CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING	INTACT STRENGTH (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
0	-0.76												
				A	**ESTUARINE SAND & SHELL** Dark grey to grey brown, wet, mainly very loose to loose. Slightly organic in some places.							pH_F = 8.05 pH_{Fox} = 6.79	HW,1,1 N=2 ASS Sample stored at Herston Geotechnical Laboratory	SPT
1				B			(SP-SM)					pH_F = 8.02 pH_{Fox} = 6.63	2,1,3 N=4 ASS Sample stored at Herston Geotechnical Laboratory	SPT
2														
	-3.16													
3				C	**ESTUARINE SILTY SAND** Dark grey, wet, very loose. Gradually becoming sandy silty clay with depth.		(SM)					pH_F = 7.36 pH_{Fox} = 3.53	HW N<1	SPT
	-4.56													
4				D	**ALLUVIAL SILTY SANDY CLAY** Mottled grey to yellow brown, moist, soft to firm. Medium plasticity.		(CI)					pH_F = 6.25 pH_{Fox} = 5.41	2,1,3 N=4 ASS Sample stored at Herston Geotechnical Laboratory	SPT
5	-5.76													
				E	**ALLUVIAL SILTY CLAY** Grey green to mottled orange brown/red, moist, mainly very stiff. Medium to high plasticity.							pH_F = 4.70 pH_{Fox} = 3.35	5,8,11 N=19 ASS Sample stored at Herston Geotechnical Laboratory	SPT
6														
7				F			(CI-CH)						7,9,14 N=23	SPT
8														
				G									7,13,18 N=31	SPT
9														
10	-10.76													

REMARKS FINE GRAINED MAINLY LAMINATED SEDIMENTARY ROCK

LOGGED BY BW / ADISS

A_ENGINEERING BOREHOLE LOG W LITHOLOGY FG5423 HIGHWAY BRIDGE.GPJ MRD_LIB_V1.2.GLB 25/10/06

Queensland Government
Department of Main Roads

ENGINEERING BOREHOLE LOG

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/3-2005

BOREHOLE No BHP05
SHEET 2 of 3
REFERENCE No H9898

PROJECT HOUGHTON HIGHWAY BRIDGE DUPLICATION - HOUGHTON HIGHWAY UPGRADE PROJECT
LOCATION 24m RIGHT FROM EASTN PILE OF PIER 5 OF EXIST BRIDGE COORDINATES 38931.9 E; 52055.2 N
PROJECT No FG5423 SURFACE R.L. -0.76 PLUNGE DATE STARTED 22/04/06 GRID DATUM PROJECT DATUM
JOB No 165/122/35 HEIGHT DATUM AHD BEARING DATE COMPLETED 22/04/06 DRILLER CAIRNS DRILLING

DEPTH (m)	R.L. (m)	CASING / WASH BORING / CORE DRILLING	RQD ( )% CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING	INTACT STRENGTH (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES	TESTS
10	-10.76			H	**ALLUVIAL SANDY SILTY CLAY** Grey to mottled orange brown, moist, stiff to mainly very stiff. Medium to high plasticity.							7,11,15 N=26		SPT
11				J								5,4,7 N=11		SPT
12							(CI-CH)							
13				K								3,5,9 N=14		SPT
14	-14.76				**SANDSTONE** **FINE TO MEDIUM GRAINED MASSIVE TO MAINLY LAMINATED POORLY CEMENTED SEDIMENTARY ROCK** **XW:** Generally exhibits engineering properties of pale yellow brown to mottled orange brown, moist, mainly very stiff to hard silty clay. Medium plasticity. Gradually becoming hard with depth.								
15				L								3,10,13 N=23		SPT
16				M								3,6,9 N=15		SPT
17							XW							
18				N								3,6,13 N=19		SPT
19				P								7,16,30 N=46		SPT
20	-20.76													

REMARKS FINE GRAINED MAINLY LAMINATED SEDIMENTARY ROCK

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A_ENGINEERING BOREHOLE LOG W LITHOLOGY FG5423 HIGHWAY BRIDGE.GPJ MRD_LIB_V1.2.GLB 25/10/06

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ENGINEERING BOREHOLE LOG

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/3-2005

BOREHOLE No BHP05
SHEET 3 of 3
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PROJECT HOUGHTON HIGHWAY BRIDGE DUPLICATION - HOUGHTON HIGHWAY UPGRADE PROJECT
LOCATION 24m RIGHT FROM EASTN PILE OF PIER 5 OF EXIST BRIDGE COORDINATES 38931.9 E; 52055.2 N
PROJECT No FG5423 SURFACE R.L. -0.76 PLUNGE DATE STARTED 22/04/06 GRID DATUM PROJECT DATUM
JOB No 165/122/35 HEIGHT DATUM AHD BEARING DATE COMPLETED 22/04/06 DRILLER CAIRNS DRILLING

DEPTH (m)	R.L. (m)	CASING / WASH BORING / CORE DRILLING	RQD ( )% CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING	INTACT STRENGTH (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES / TESTS
20	-20.76				**HW**: Pale orange brown to brown, moist, very dense silty sand gradually grading into very low to low strength rock.							30/110 N>50	SPT
21				Q									
22				R			HW					30/100 N>50	SPT
23													
	-24.26		(100)		**MW**: Pale orange brown to brown, fine to medium grained, slightly massive to mainly laminated, mainly low to medium strength. Defects: Generally rare. - Occasional drilling-induced lamination partings <10° (1-2/m).		MW					Is(50)=0.18 MPa Is(50)=0.12 MPa Is(50)=0.21 MPa Is(50)=0.21 MPa Is(50)=0.20 MPa Is(50)=0.42 MPa Is(50)=0.29 MPa Is(50)=0.25 MPa	o x o x x o o x
24													
25													
	-26.22		100									Is(50)=0.16 MPa	o
			(93)		**MUDSTONE (See Remarks)** **MW**: Dark grey to black, fine grained, thinly laminated, mainly low to occasionally medium low strength. Defects: Frequent drilling-induced lamination partings <10° (6/m).		MW					Is(50)=0.22 MPa Is(50)=0.29 MPa Is(50)=0.19 MPa Is(50)=0.23 MPa Is(50)=0.44 MPa Is(50)=0.16 MPa	x o o x x o
26	-27.21											Is(50)=0.66 MPa	x
					INTERBEDDED MUDSTONE AND SANDSTONE FINE TO MEDIUM GRAINED MAINLY LAMINATED POORLY CEMENTED SEDIMENTARY ROCK **SW**: Dark grey, black to white banded , fine to medium grained, mainly laminated, mainly low to medium strength. Defects: Some drilling-induced lamination partings <10° (2/m).		SW					Is(50)=0.72 MPa Is(50)=0.13 MPa Is(50)=0.37 MPa Is(50)=0.25 MPa Is(50)=0.39 MPa Is(50)=0.69 MPa	o x o o x o
27	-27.86												
	-28.76		93				SW					Core left in the borehole	
29					**MUDSTONE** (As above.) **MW**: Dark grey to black, fine grained, thinly laminated, very low to mainly low strength. Defects: Generally rare. - Occasional drilling-induced lamination partings <10° (1/m). Borehole terminated at 28m								
30													

REMARKS FINE GRAINED MAINLY LAMINATED SEDIMENTARY ROCK

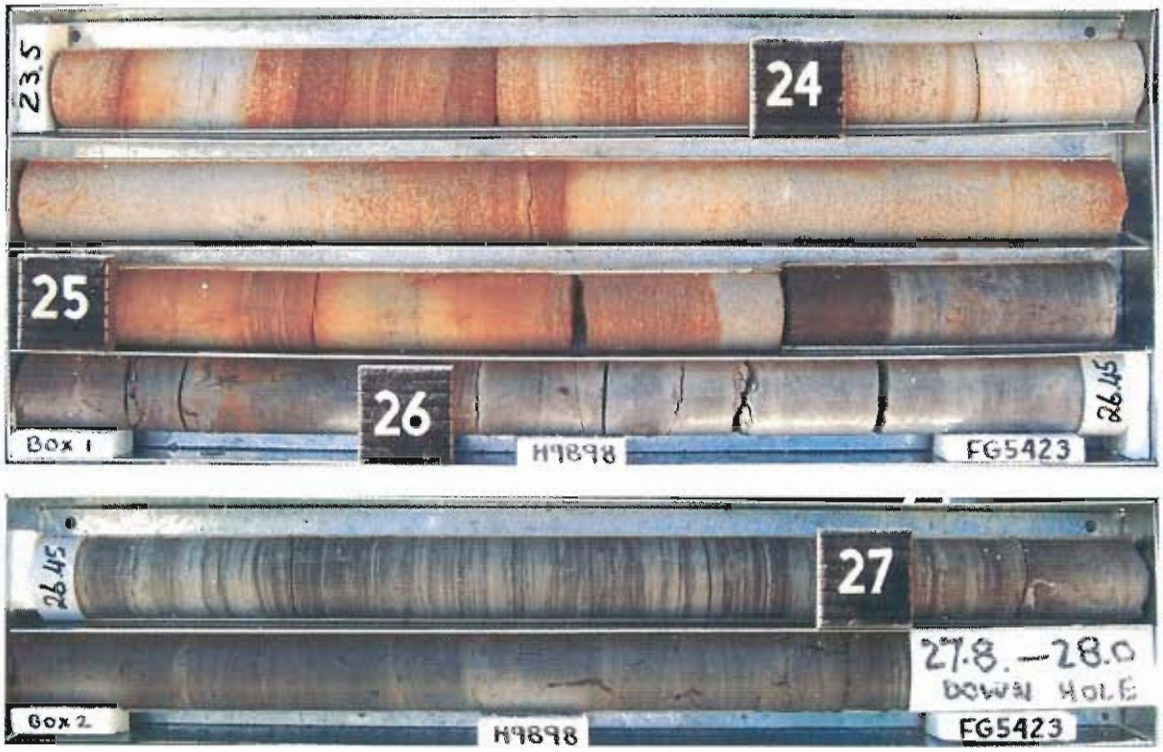
LOGGED BY
BW / ADISS

A_ENGINEERING BOREHOLE LOG W LITHOLOGY FG5423 HIGHWAY BRIDGE.GPJ MRD_LIB_V1.2.GLB 25/10/06

Project: **Houghton Highway Bridge Duplication**

Borehole No: **BHP5**

Start Depth: 23.50m
Finish Depth: 28.00m
Project No: FG5423
H No: 9898



Queensland Government
Department of Main Roads

Road System & Engineering
35 Butterfield Street
Herston Qld 4006

Point Load Strength Index - Test Report

Project: Houghton Highway Bridge Investigation
Project No: FG5423

Date Sampled 17/05/06 **Date Tested 06/06/06**
Feature: N/A
Sample Type: NMLC Core

Report No. FG5423/GS06-426/AS4133.4.1

Sample Number	Sample Location	Depth (m)	Test Type D,A,B,I*	Is (MPa)	Is50 (MPa)	Strength Descriptor**	Lithology
GS06/426.A	BHP 05	23.85	A	0.18	0.18	L	Sandstone
GS06/426.B	BHP 05	23.88	D	0.12	0.12	L	Sandstone
GS06/426.C	BHP 05	24.15	A	0.22	0.21	L	Sandstone
GS06/426.D	BHP 05	24.18	D	0.21	0.21	L	Sandstone
GS06/426.E	BHP 05	24.55	A	0.42	0.42	M	Sandstone
GS06/426.F	BHP 05	24.50	D	0.20	0.20	L	Sandstone
GS06/426.G	BHP 05	24.90	A	0.28	0.29	L	Sandstone
GS06/426.H	BHP 05	24.95	D	0.25	0.25	L	Sandstone
GS06/426.J	BHP 05	25.38	A	0.16	0.16	L	Sandstone
GS06/426.K	BHP 05	25.40	D	0.22	0.22	L	Sandstone

Sample Remarks

* D - Diametral; A - Axial; B - Block; I - Irregular; ** EL - Extremely Low; VL - Very Low; L - Low; M - Medium; H - High; VH - Very High; EH - Extremely High (taken from AS1726 Table 8A)

Remarks / Variations to Test Procedures:

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Test Method: AS4133.4.1
Software Version 2.03 April 2005

Client Name: Department of Main Roads
Client Address: PO Box 70, Spring Hill QLD 4004

Signatory 16/6/06

(Peter W Reynolds)

Accreditation Number: 2302
Accredited for compliance with ISO/IEC 17025

This document is issued in accordance with NATA's

Queensland Government
Department of Main Roads

Road System & Engineering
35 Butterfield Street
Herston Qld 4006

Point Load Strength Index - Test Report

Project: Houghton Highway Bridge Investigation
Project No: FG5423

Date Sampled 17/05/06 **Date Tested 06/06/06**
Feature: N/A
Sample Type: NMLC Core

Report No. FG5423/GS06-426/AS4133.4.1

Sample Number	Sample Location	Depth (m)	Test Type D,A,B,I*	Is (MPa)	Is50 (MPa)	Strength Descriptor**	Lithology
GS06/426.L	BHP 05	25.48	A	0.30	0.29	L	Mudstone
GS06/426.M	BHP 05	25.51	A	0.20	0.19	L	Mudstone
GS06/426.N	BHP 05	25.70	D	0.23	0.23	L	Mudstone
GS06/426.P	BHP 05	25.90	D	0.44	0.44	M	Mudstone
GS06/426.Q	BHP 05	25.95	A	0.16	0.16	L	Mudstone
GS06/426.R	BHP 05	26.42	A	0.70	0.72	M	Mudstone
GS06/426.S	BHP 05	26.40	D	0.67	0.66	M	Mudstone
GS06/426.T	BHP 05	26.50	D	0.13	0.13	L	Mudstone
GS06/426.U	BHP 05	26.52	A	0.39	0.37	M	Mudstone
GS06/426.V	BHP 05	26.85	D	0.43	0.39	M	Mudstone

Sample Remarks

* D - Diametral; A - Axial; B - Block; I - Irregular; ** EL - Extremely Low; VL - Very Low; L - Low; M - Medium; H - High; VH - Very High; EH - Extremely High (taken from AS1726 Table 8A)

Remarks / Variations to Test Procedures:

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Point Load Strength Index - Test Report

Project: Houghton Highway Bridge Investigation
Project No: FG5423

Date Sampled 17/05/06 **Date Tested 06/06/06**
Feature: N/A
Sample Type: NMLC Core

Report No. FG5423/GS06-426/AS4133.4.1

Sample Number	Sample Location	Depth (m)	Test Type D,A,B,I*	Is (MPa)	Is50 (MPa)	Strength Descriptor**	Lithology
GS06/426.X	BHP 05	26.83	A	0.25	0.25	L	Mudstone
GS06/426.Y	BHP 05	27.15	A	0.71	0.69	M	Mudstone

Sample Remarks

* D - Diametral; A - Axial; B - Block; I - Irregular; ** EL - Extremely Low; VL - Very Low; L - Low; M - Medium; H - High; VH - Very High; EH - Extremely High (taken from AS1726 Table 8A)

Remarks / Variations to Test Procedures:

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