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Queensland  
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Main Roads

## ENGINEERING BOREHOLE LOG

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

BOREHOLE No BHP13

SHEET 1 of 3

REFERENCE No H9919

PROJECT HOUGHTON HIGHWAY BRIDGE DUPLICATION - HOUGHTON HIGHWAY UPGRADE PROJECT

LOCATION 24m RIGHT FROM EASTN PILE OF PIER 13 OF EXIST BRIDGE COORDINATES 39025.9 E; 52253.6 N

PROJECT No FG5423 SURFACE R.L. -0.65 PLUNGE DATE STARTED 13/06/06 GRID DATUM PROJECT DATUM

JOB No 165/122/35 HEIGHT DATUM AHD BEARING DATE COMPLETED 14/06/06 DRILLER CAIRNS DRILLING

DEPTH (m)	R.L. (m)	CASING WASH BORING CORE DRILLING	RQD (%)	CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC WEATHERING	INTACT STRENGTH	DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
0	-0.65					<b>ESTUARINE SAND AND SHELL</b> Dark grey, moist to mainly wet, very loose to loose.  Fine grained sand; slightly organic throughout; some partly decomposed shell fragments.							
1													
2					A		(SP-SM)					$pH_e = 7.65$ $pH_{Fax} = 6.82$	3,2,2 N=4 SPT
3													
4	-3.95				B	<b>ESTUARINE SILTY CLAY</b> Dark grey, moist to mainly wet, very soft.  High organic content and high plasticity.						$pH_e = 8.27$ $pH_{Fax} = 7.43$	HW N<1 SPT
5							(OH)						
6					C							$pH_e = 7.77$ $pH_{Fax} = 4.37$	RW N<1 SPT
7	-5.85					<b>ALLUVIAL SILTY CLAY</b> Pale grey green to dark grey, wet, very stiff.  Medium to high plasticity.							
8					D								5,10,15 N=25 SPT
9													
10	-10.65				E		(CL-CH)						4,7,9 N=16 SPT

REMARKS

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# ENGINEERING BOREHOLE LOG

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

BOREHOLE No **BHP13**

SHEET **2** of **3**

REFERENCE No **H9919**

PROJECT HOUGHTON HIGHWAY BRIDGE DUPLICATION - HOUGHTON HIGHWAY UPGRADE PROJECT

LOCATION 24m RIGHT FROM EASTN PILE OF PIER 13 OF EXIST BRIDGE COORDINATES 39025.9 E; 52253.6 N

PROJECT No FG5423 SURFACE R.L. -0.65 PLUNGE \_\_\_\_\_ DATE STARTED 13/06/06 GRID DATUM PROJECT DATUM

JOB No 165/122/35 HEIGHT DATUM AHD BEARING \_\_\_\_\_ DATE COMPLETED 14/06/06 DRILLER CAIRNS DRILLING

DEPTH (m)	R.L. (m)	CASING WASH BORING CORE DRILLING	RQD (%)	CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC WEATHERING	INTACT STRENGTH	DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
10	-10.65					ALLUVIAL SILTY CLAY (As above.)							
11													
12					F		(CI-CH)					4,7,10 N=17	SPT
13													
14													
15	-15.35				G	ALLUVIAL SILTY SAND Brown, wet, medium dense.						5,7,7 N=14	SPT
16							(SM)						
17													
18	-18.35				H	ALLUVIAL GRAVELLY SAND Brown, moist to mainly wet, mainly medium dense. (Fine fraction > Coarse fraction)						9,10,10 N=20	SPT
19	-19.85					Fine fraction - Fine to coarse grained subangular to sub rounded quartzitic sand. Coarse fraction - Angular to subangular quartz and sandstone particles sizing up to 40mm.	(SP)						
20	-20.65				J	ALLUVIAL SILTY CLAY (Driller's record only.)	(CL)					6,8,14 N=22	SPT

REMARKS \_\_\_\_\_

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## ENGINEERING BOREHOLE LOG

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

BOREHOLE No **BHP13**

SHEET **3** of **3**

REFERENCE No **H9919**

PROJECT HOUGHTON HIGHWAY BRIDGE DUPLICATION - HOUGHTON HIGHWAY UPGRADE PROJECT

LOCATION 24m RIGHT FROM EASTN PILE OF PIER 13 OF EXIST BRIDGE COORDINATES 39025.9 E; 52253.6 N

PROJECT No FG5423 SURFACE R.L. -0.65 PLUNGE        DATE STARTED 13/06/06 GRID DATUM PROJECT DATUM

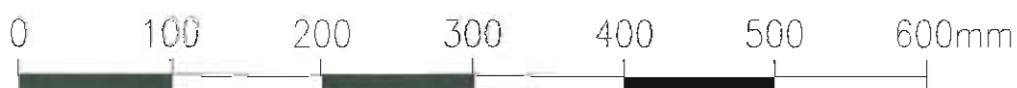
JOB No 165/122/35 HEIGHT DATUM AHD BEARING        DATE COMPLETED 14/06/06 DRILLER CAIRNS DRILLING

DEPTH (m)	R.L. (m)	Casing Wash Boring Core Drilling	RQD (%)	CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC WEATHERING	INTACT STRENGTH	DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
20	-20.65					<b>SANDSTONE</b> <b>FINE TO MEDIUM GRAINED SLIGHTLY LAMINATED TO MASSIVE POORLY CEMENTED SEDIMENTARY ROCK</b> <b>HW:</b> (Driller's record only.)							
21							HW					No recovery	30/50 N>50
22	-22.15				(97)	<b>MW:</b> Orange-brown to pale orange-grey, fine grained, laminated, very low to low strength.  <b>Defects:</b> Lamination partings <10° (4-5/m). <b>SW:</b> Pale grey, fine grained, mainly massive, low to mainly medium strength.  Occasional carbonaceous laminations.  <b>Defects:</b> Generally rare. - Occasional drilling-induced lamination partings <5° (1/2m).	MW					Is(50)=0.26 MPa Is(50)=0.26 MPa Is(50)=0.03 MPa	x o o
23	-22.85						SW					Is(50)=0.05 MPa Is(50)=0.06 MPa Is(50)=0.10 MPa Is(50)=0.09 MPa  Is(50)=0.44 MPa Is(50)=0.38 MPa Is(50)=0.31 MPa Is(50)=0.39 MPa	x o x o  x o x o
24	-25.15				100							Is(50)=0.28 MPa Is(50)=0.40 MPa	x o
25						Borehole terminated at 24.5m							
26													
27													
28													
29													
30													

REMARKS

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Project: **Houghton Highway Bridge Duplication**  
Borehole No: **BHP13**  
Start Depth: 21.50m  
Finish Depth: 24.50m  
Project No: FG5423  
H No: 9919



# Point Load Strength Index - Test Report

**Project: Houghton Highway Bridge Investigation**

**Project No: FG5423**

**Date Sampled 13/06/06**

**Feature: N/A**

**Sample Type: NMLC Core**

**Date Tested 28/06/06**

**Report No. FG5423/GS06-564/AS4133.4.1**

Sample Number	Sample Location	Depth (m)	Test Type D,A,B,I*	Is (MPa)	Is50 (MPa)	Strength Descriptor**	Lithology
GS06/564.A	BHP 13	21.61	D	0.26	0.26	L	Sandstone
GS06/564.B	BHP 13	21.63	A	0.27	0.26	L	Sandstone
GS06/564.C	BHP 13	21.70	A	0.04	0.03	EL	Sandstone
GS06/564.D	BHP 13	22.14	D	0.05	0.05	VL	Sandstone
GS06/564.E	BHP 13	22.16	A	0.07	0.06	VL	Sandstone
GS06/564.F	BHP 13	22.32	D	0.10	0.10	VL	Sandstone
GS06/564.G	BHP 13	22.34	A	0.09	0.09	VL	Sandstone
GS06/564.H	BHP 13	22.77	D	0.44	0.44	M	Sandstone
GS06/564.J	BHP 13	22.79	A	0.40	0.38	M	Sandstone
GS06/564.K	BHP 13	23.05	D	0.31	0.31	M	Sandstone

## Sample Remarks

GS06/564.C- See Note 1  
GS06/564.D- See Note 1  
GS06/564.E- See Note 1  
GS06/564.F- See Note 1  
GS06/564.G- See Note 1

\* 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:

"Note 1: The measured failure load is outside the range at which the accuracy of the load cell is compliant with the test method"

Test Method: AS4133.4.1

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

Signatory .....

( Mr Peter Reynolds )



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## Point Load Strength Index - Test Report

Project: Houghton Highway Bridge Investigation

Project No: FG5423

Date Sampled 13/06/06

Feature: N/A

Sample Type: NMLC Core

Date Tested 28/06/06

Report No. FG5423/GS06-564/AS4133.4.1

Sample Number	Sample Location	Depth (m)	Test Type D,A,B,I*	Is (MPa)	Is50 (MPa)	Strength Descriptor**	Lithology
GS06/564.L	BHP 13	23.07	A	0.39	0.39	M	Sandstone
GS06/564.M	BHP 13	24.41	D	0.28	0.28	L	Sandstone
GS06/564.N	BHP 13	24.43	A	0.42	0.40	M	Sandstone

Sample Remarks

\* D - Diametral; A - Axial; B - Block; I - Irregular;

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