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ENGINEERING BOREHOLF

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/2-2004

GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION - GATEWAY UPGRADE PROJECT **PROJECT** LOCATION PIER 11 - DOWN STREAM END COORDINATES 10048.2 E; 168279.2 N PROJECT No FG5388 ____ SURFACE R.L. 4.13 DATE STARTED _16/2/05__ DATUM SETP JOB No DATUM _AHD _. DATE COMPLETED 18/2/05 DRILLER R&D DRILLING PTY LTD R.L ROD INTACT (m) ()% STRENGTH SPACING ADDITIONAL DATA DEPTH (m) MATERIAL (mm) .ITHOLOGY AND SAMPLES DESCRIPTION USC WEAT 2000 2000 2000 2000 2000 CORE TEST RESULTS REC % 0 4.13 ESTUARINE WEATHERED OC CRUST Dark grey to mottled grey, slightly moist to mainly dry, stiff silty clay. Some organics in the upper area. OL **I** 18/02/05 SPT N=10 2.53 ESTUARINE SILTY CLAY Dark grey to black, moist, very soft to soft. |-2 BOREHOLE WITH LITHOLOGY 24.5. 2005 - NORTHERN APPROACH PIERS AND ABUTMENT BOREHOLES.GPJ ENGINEERING BOREHOLE 09_04.GDT 31/8/05 High plasticity. SPT ОН RW,-,-SPT -0.87 ALLUVIAL SAND Grey brown to brown, wet, medium dense becoming loose with depth. Medium grained sand, some shell 4,5,6 SPT fraaments. SPT N=10SP 3,2,3 SPT REMARKS SPT N values in clayey gravel can overestimate density due to influence of coarser size gravel particles. Defect angles LOGGED BY A. DISSANAYAKE (DISS) have been measured with respect to a horizontal plane.



ENGINEERING BOREHOLE

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/2-2004 A. DISSANAYAKE (DISS)

GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION - GATEWAY UPGRADE PROJECT **PROJECT** PIER 11 - DOWN STREAM END COORDINATES 10048.2 E; 168279.2 N PROJECT No _FG5388 _ _ _ _ SURFACE R.L. _ 4.13_ __. DATE STARTED _16/2/05_ DATUM SETP _____ JOB No DATUM _AHD ___ DATE COMPLETED _18/2/05 DRILLER R&D DRILLING PTY LTD INTACT DEFECT AÜĞER CASING WASH BORING CORE ORILLING (m) ()% STRENGTH SPACING ADDITIONAL DATA ε MATERIAL. DEPTH (AND SAMPLES DESCRIPTION SAMPL TESTS CORE TEST RESULTS REC % 10 ALLUVIAL SAND 1.1.2 Becoming very loose along the profile. SPI SP -7.37 SILTY SAND / SANDY SILT RW,-,-N<1 Grey brown to brown, wet, becoming very SPT loose. 12 ENGINEERING BOREHOLE 09 04.GDT 31/8/05 Fine to medium grained sand. SM RW,- -SPT N<1 -9.87 ESTUARINE SILTY CLAY Dark grey to black, moist, very soft. Y 24 5, 2005 - NORTHERN APPROACH PIERS AND ABUTMENT BOREHOLES.GPU RW,-,-SPT OH N<1 -11.37 SILTY SAND Grey brown to brown, wet, mainly very loose. - 16 Fine grained sand, minor shell content. 1.RW,-SPI SM 1.RW. SPT -14.37 BOREHOLE WITH LITHOLOGY SILTY SAND / SAND Dark grey to dark brown, wet, medium dense, becoming loose with depth. - 19 6,7,7 SPT SP REMARKS GOT N values in clayey gravel can overestimate density due to Influence of coarser size gravel particles. Defect angles LOGGED BY

have been measured with respect to a horizontal plane.



ENGINEERING BORFHOLF

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/2-2004

PROJECT		GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION - GATEWAY UPGRADE PROJECT									
										OORDINATES 10048.2 E; 168279.2 N	
		<u>FG5388</u>									
JOB	No				DATUM AHD		DAT	E COMPLET	ED <u>18/2/</u>	<u>05</u>	DRILLER R&D DRILLING PTY L
DEPTH (m)	R.L. (m) -15.87	AUGER DASING MASH BORING CORE DRILLING	RQD ()% CORE REC%	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	JSC VEATHERING	INTACT STRENGTH	DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS WE ST
20	-15.67		NCO 78	0,	SILTY SAND / SAND	-			1111	0	
-21					As above. Frequent very loose interbeds, fine sand becoming medium with depth.						4,5,6 N≈11 SPT
01E 09 04:GDT 31/8/05		9									RW,-,1 N<1 SPT
S.GPJ ENGINEERING BOREH											1,2,6 N=8
AND ABUTMENT BOREHOLES							SM- SP				RW.5- N<1
NORTHERN APPROACH PIERS /					·						5.4,1 N=5
BOREHOLE WITH LITHOLOGY 24-5-2005 - NORTHERN APPROACH PIERS AND ABUTMENT BOREHOLES.GPJ ENGINEERING BOREHOLE 09-04.GDT 31/8/06-											5,8,2 N=10
BOREHOLE 80	-25.87										1,5,2 N=7

REMARKS SPT N values in clayey gravel can overestimate density due to influence of coarser size gravel particles. Defect angles have been measured with respect to a horizontal plane.

LOGGED BY A. DISSANAYAKE (DISS)



31/8/05

ENGINEERING BOREHOLE

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/2-2004

BOREHOLE No __ BH23 SHEET __4__ of __5_ REFERENCE No _H9572

A. DISSANAYAKE (DISS)

GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION - GATEWAY UPGRADE PROJECT **PROJECT** PIER 11 - DOWN STREAM END LOCATION COORDINATES 10048.2 E; 168279.2 N PROJECT No _FG5388 _ _ _ _ SURFACE R.L. __4.13 ___ DATE STARTED _16/2/05 DATUM SETP_____ JOB No DATUM __AHD___ DATE COMPLETED 18/2/05 DRILLER R&D DRILLING PTY LTD R.L ROD INTACT DEFECT (m)()% STRENGTH SPACING ADDITIONAL DATA DEPTH (m) MATERIAL AND GRAPHIC SAMPLES DESCRIPTION TESTS CORE SSSSS 프子프로구크 88888 TEST RESULTS REC % _30 -25.87 11311 SAND AND GRAVEL Grey to grey brown, wet, medium dense. Gravel band Sub-angular to sub-rounded quartzitic and lithic fragments sizing up to 50mm. 8,8,5 SPT N=13 - 32 Gravel band ENGINEERING BOREHOLE 09_04.GDT GP-GM 5,6,6 SPT 26,22,19 SPT N=41 NORTHERN APPROACH PIERS AND ABUTMENT BOREHOLES.GPJ -30.87 GRAVELLY SANDY CLAY Brown, moist, hard Sub-angular to sub-rounded quartzitic and lithic fragments up to 50mm. 9.8.12 SPT CL -32.87 SANDSTONE 20.30/95. SPT N>50 HW: Generally exhibits engineering properties of orange to green, moist, very HW dense silty sand. 24 5 2005 -33.87 -38 MUDSTONE HW: Dark grey to black, slightly moist, hard şilty clay. BOREHOLE WITH LITHOLOGY 30/125,-N>50 Highly fissured with some cubic structures. HW - 39 -35.37 (25) INTERBEDDED SANDSTONE & MUDSTONE SW SW: (See below) -35.87 REMARKS SPT N values in clayey graded can overestimate density due to influence of coarser size gravel particles. Defect angles LOGGED BY

have been measured with respect to a horizontal plane.



AND

ENGINEERING

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/2-2004

BH23 BOREHOLE No _5_ of _5_ SHEET __H9572_ REFERENCE No

A. DISSANAYAKE (DISS)

GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION - GATEWAY UPGRADE PROJECT PROJECT PIER 11 - DOWN STREAM END LOCATION COORDINATES 10048.2 E; 168279.2 N PROJECT No FG5388 DATE STARTED _16/2/05_ SURFACE R.L. __4.13 DATUM SETP____ DATUM AHD DATE COMPLETED _18/2/05__ JOB No DRILLER R&D DRILLING PTY LTD RL. ROD INTACT (m) ()% STRENGTH SPACING ADDITIONAL DATA STRENGTH SPACING (mm)

STRENGTH SPACING (mm)

STRENGTH SPACING (mm) ε AUSER ORIUM MATERIAL DEPTH LITHOLOGY AND GRAPHIC SAMPLES DESCRIPTION SAMPL TESTS CORE TEST RESULTS OSC REC % 40 ls(50)=0.45 MPa INTERBEDDED SANDSTONE & MUDSTONE Is(50)=0.74 MPa 0 SW: Pale grey to black, laminated and bedded, low to medium strength with occasional high strength bands. Is(50)=0.83 MPa 100 0 ls(50)=1.09 MPa (38)SW х Defects - Frequent lamination partings 30°-60° (5-10/m).
- Joints @ 80° (1/m). ls(50)=0.24 MPa - Broken zones <100mm. -37.37 Core has been generally broken between (60)40.80m and 41.5m SANDSTONE 42 Is(50)=0.58 MPa FINE TO MEDIUM GRAINED, SW Is(50)=0.16 MPa LAMINATED SEDIMENTARY ROCK. 0 SW: Pale grey to white, low to medium ENGINEERING BOREHOLE 09 04.GDT strength. -38.47 Is(50)=0.87 MPa ٥ Defects - Joints at 50-60° (2-3/m). 100 Joints at 80° (1/m). Some mudstone (<50mm) interbeds 43 High strength Is(50)=2.75 MPa MUDSTONE sandstone interbed is(50)=1.93 MPa FINE GRAINED THINLY LAMINATED 0 SEDIMENTARY ROCK. (16)MW: Dark grey to black, thinly laminated, nearly brown, very low to low strength. Occasional high strength sandstone interbeds up to 200mm. Defects - Frequent lamination partings 35° MW (>10/m). High strength sandstone interbed (50) 징 Broken and weak zones >0.5m. ABUTMENT BOREHOLES. Core has been generally broken and High strength sandstone interbed altered throughout. Very low to low strength rock kernels in high plastic clay Becoming very weak below 45.10m. -41.67 72 (88) SANDSTONE MEDIUM TO COARSE GRAINED, MASSIVE CALCAROUSLY CEMENTED -46 Broken zone PIERS / ls(50)=1.52 MPa ls(50)=0.46 MPa ls(50)=0.74 MPa SEDIMENTARY ROCK. SW o x SW: Pale grey to white, mainly medium to - NORTHERN APPROACH high strength Broken zone ls(50)=0.58 MPa -42.67 100 <u>(s(50)=0.85 MPa</u> ls(50)=0.61 MPa Defects - Joints at 50° (2-3/m). -47 - Broken zones <100mm Borehole terminated at 46.8m - 48 - 48 24.5 BOREHOLE WITH LITHOLOGY REMARKS SPT N values in clayey gravel can overestimate density due to influence of coarser size gravel particles. Defect angles LOGGED BY

have been measured with respect to a horizontal plane.

Project: Gateway Bridge Duplication Investigation

Borehole No: BH 23
Start Depth: 39.50m
Finish Depth: 46.80m
Project No: FG5388

