Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-048**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR09	E 835,448.00 N 812,164.88	DATE from 27.09.11 to 30.09.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
27.09.11	SW	Dry at 08:00		88						0.37 T2101 0.87	+1.06 +0.56	0.37 0.87			Wash boring. Dark grey to brownish grey, angular to subangular coarse GRAVEL sized rock fragments. (FILL) Wash boring.
	4.50 SW														
	5.00 PW HW														
27.09.11		4.46m at 18:00													
28.09.11		3.72m at 08:00						8.23		8.23	-6.80	8.23	× ×	III	Moderately strong, pinkish brown, moderately decomposed MONZONITE. Joints are medium spaced, rough planar, very narrow, limonite stained, dipping at 40°-50°.
				100	87	75	4.1	8.96		T2101	-7.08	8.51	× ×		Strong, dark grey spotted pink and black, slightly decomposed MONZONITE. Joints are medium to widely locally closely spaced, rough planar, very narrow, limonite and locally kaolin stained, dipping at 10°-20°, 30°-40° and 40°-50°.
							6.3						× ×	II	
				100	100	93	1.6	9.75		9.66 T2101	-8.57	10.00	× ×		

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 30.09.11

CHECKED EDWARD CHENG DATE 03.10.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 24.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-048**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR09	E 835,448.00 N 812,164.88	DATE from 27.09.11 to 30.09.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
															As Sheet 1 of 2.
				100	100	93	1.6	10.98		T2101 10.98					
							7.9	11.36							
	12.35 HW			100	100	90				T2101 12.36					
				100	100	100	0.9			T2101 13.80				II	
		4.15m at 18:00		100	100	97		14.69		T2101 15.16					
28.09.11							13.2	15.07							
30.09.11		4.22m at 08:00					5.0	15.67							
				100	100	97	4.3			T2101					
30.09.11								16.61		16.61	-15.18	16.61			End of drillhole at 16.61m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 30.09.11

CHECKED EDWARD CHENG DATE 03.10.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 24.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. PD/NRW-064

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC

MACHINE / No. DR04

FLUSHING MEDIUM WATER

CO-ORDINATES
E 835,495.58
N 812,158.80

ORIENTATION Vertical

JOB No. J1105S06

DATE from 02.08.11 to 04.08.11

GROUND LEVEL +6.14 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water	Recovery % Total core	Recovery % Solid core	R.Q.D.	Fracture Index	F.I.T. Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
02.08.11	PW	Dry at 08:00		28						T2101 0.00					Grey to dark grey, angular to subangular GRAVEL and COBBLE of rock fragments. (FILL)
		Dry at 18:00		93						T2101 1.20					
02.08.11										1.50					
03.08.11		Dry at 08:00		25						T2101					
	3.20 PW HW									2.50	+3.64	2.50			Wash boring.
	7.65 HW			99	99	56	14.3	7.65		7.65	-1.51	7.65		III	Moderately strong, greyish pink locally pinkish brown, moderately decomposed MONZONITE. Joints are medium to widely locally very closely spaced, rough planar, extremely narrow to very narrow, limonite and manganese stained, dipping at 0°-10° and 60°-70°.
				97	97	95	3.6	8.07		T2101 8.37					
				63	27	17	NI	9.45		T2101 9.37	-3.31	9.45		IV	Weak, pinkish brown and greyish brown, highly decomposed MONZONITE. Non intact.
								9.97			-3.83	9.97			

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 3.1.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN

DATE 04.08.11

CHECKED EDWARD CHENG

DATE 05.08.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. PD/NRW-064

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR04	E 835,495.58 N 812,158.80	DATE from 02.08.11 to 04.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.14 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
03.08.11		3.07m at 18:00		58	92	76	12.7 12.7	10.50	T2101	8.97					Strong to very strong, greyish pink locally pinkish brown spotted black and white, slightly decomposed MONZONITE. Joints are medium to widely locally very closely to closely spaced, rough planar, extremely narrow to very narrow, limonite, manganese and chlorite coated, dipping at 10°-20°, 20°-30°, 60°-70° and 70°-80°.
04.08.11		3.12m at 08:00		100	100	63	3.5		T2101	11.50					
				100	100	72	13.7	13.94	T2101	13.02				II	
04.08.11		3.39m at 18:00		100	92	87	3.4	14.67 16.14	T2101	14.57 16.11	-10.00	16.14			End of drillhole at 16.14m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 04.08.11

CHECKED EDWARD CHENG DATE 05.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 3.1.12

F76-061125

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. PD/WCH-061

SHEET 1 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,491.00 N 812,157.31	W.O. No.
MACHINE / No. DR04		DATE from 05.08.11 to 10.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water	Recovery % Total core	Recovery % Solid core	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
05.08.11	0.42 PW	Dry at 08:00		50						T2101 0.00					Brownish grey to dark grey, angular to subangular coarse GRAVEL and COBBLE sized rock fragments. (FILL)
	HW			100						T2101 0.42					
		Dry at 18:00		100						T2101 0.72					
05.08.11				63						T2101 0.97					
06.08.11		Dry at 08:00		75						T2101 1.13					
		Dry at 18:00		78						T2101 1.70					
06.08.11										T2101 2.15					
08.08.11		Dry at 08:00		41						T2101 3.00					
				80						T2101 3.50					
				50						T2101 4.10					
				72						T2101 4.60	+1.65	4.60			
											+1.45	4.80			Soft, dark grey, sandy CLAY with some angular to subangular coarse gravel sized rock fragments. (STREAM DEPOSIT)
		3.11m at 18:00		43						T2101 5.55					Dark grey to grey, angular to subangular fine to coarse GRAVEL sized rock fragments with fine to coarse sand matrix. (STREAM DEPOSIT)
08.08.11															
09.08.11		3.07m at 08:00		82						T2101 6.02	+0.23	6.02			
															Wash boring.
	9.32 HW							9.32			-3.07	9.32			
				100	38	21	17.8			T2101 9.32	-3.75	10.00	× × × × × ×	II	Strong,, grey spotted black and pink, slightly decomposed MONZONITE. Joints are medium to closely locally widely spaced, rough planar and undulating, limonite and kaolin stained, dipping at

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 10.08.11

CHECKED EDWARD CHENG DATE 11.08.11

REMARKS

DRILLHOLE LOG J1105506 - MTRC 903.GPJ TYSAN_25032005.GDT 14.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. PD/WCH-061

SHEET 2 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,491.00 N 812,157.31	W.O. No.
MACHINE / No. DR04		DATE from 05.08.11 to 10.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I.T. Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	38	21	17.8	10.22		T2101 10.22					10°-20°, 60°-70° and 80°-90°.
				99	97	97	2.3			T2101 11.67					
				99	99	90		12.81		T2101 13.24					
				100	97	74	6.3			T2101 14.79				II	
		3.10m at 18:00		98	94	81		15.52		T2101 16.36					
09.08.11 10.08.11		3.14m at 08:00		100	100	100	7.9			T2101 17.74					
				100	100	100				T2101 19.32					
10.08.11				100	100	97				T2101	-13.72	19.97			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 10.08.11

CHECKED EDWARD CHENG DATE 11.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 14.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. PD/WCH-061

SHEET 3 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,491.00 N 812,157.31	W.O. No.
MACHINE / No. DR04		DATE from 05.08.11 to 10.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I.T. Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								19.97		19.97					End of drillhole at 19.97m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 10.08.11

CHECKED EDWARD CHENG DATE 11.08.11

REMARKS

DRILLHOLE LOG J1105306 - MTRC 903.GPJ TYSAN_25032005.GDT 14.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. PD/WCH-059

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,486.88 N 812,156.20	W.O. No.
MACHINE / No. DR09		DATE from 01.08.11 to 03.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.33 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
01.08.11	PW	Dry at 08:00									+5.53	0.80			Wash boring.
		Dry at 18:00		100						0.80 T2101 1.20 T2101 1.50 T2101 1.76					Brownish grey to dark grey, angular to subangular coarse GRAVEL, COBBLE and occasional boulder sized rock fragments. (FILL)
01.08.11															
02.08.11		Dry at 08:00		100											
				100											
	2.00 PW										+4.57	1.76			Wash boring.
	HW														
				100						4.21 T2101 4.76	+2.12	4.21			Brownish grey to dark grey, angular to subangular coarse GRAVEL, COBBLE and occasional boulder sized rock fragments. (FILL)
											+1.57	4.76			Wash boring.
02.08.11	9.56 HW	3.25m at 18:00													
03.08.11		3.03m at		75						9.56 T2101 9.76 T2101	-3.23	9.56			Brownish grey to dark grey, angular to subangular coarse GRAVEL, COBBLE and occasional boulder
				100	100	87	8.2	9.76			-3.43	9.76			
											-3.67	10.00	× ×	II	

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 03.08.11

CHECKED EDWARD CHENG DATE 04.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 14.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-059**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR09	E 835,486.88 N 812,156.20	DATE from 01.08.11 to 03.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.33 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
		08:00					8.2	10.25							sized rock fragments. (FILL)
				100	100	87	3.1			T2101					Strong, greenish grey to dark grey spotted black and pink, slightly decomposed MONZONITE. Joints are medium to widely locally closely spaced, rough planar, very narrow, limonite and kaolin stained, dipping at 10°-20°, 60°-70° and 80°-90°.
								11.21		11.21					
				100	100	97				T2101					
								12.59		12.59					
				100	85	85	2.8			T2101					
								14.12		14.12				II	
				100	100	97				T2101					
								15.12		15.56					
				99	99	89	7.3			T2101					
								16.49		16.60					
				99	99	99	1.7			T2101					
03.08.11								18.28		18.28	-11.95	18.28			End of drillhole at 18.28m.

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 14.1.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 03.08.11

CHECKED EDWARD CHENG DATE 04.08.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-058**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR09	E 835,481.64 N 812,154.98	DATE from 03.08.11 to 06.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.26 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
04.08.11	PW	Dry at 08:00													Wash boring.
				71						0.91	+5.35	0.91			
	1.50 PW			50						T2101 1.21					Dark grey, angular to subangular GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
	HW			81						T2101 1.71					
										T2101 2.08	+4.18	2.08			Wash boring.
		3.25m at 18:00													
04.08.11															
05.08.11		3.26m at 08:00		86						3.33	+2.93	3.33			Dark grey, angular to subangular GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
										T2101 4.03	+2.23	4.03			Wash boring.
	9.42 HW							9.42							
				98	99	99	10.6			9.42 T2101	-3.16	9.42	× × × × × ×	III	Moderately strong, grey spotted black and pink, moderately decomposed MONZONITE. Joints are closely spaced, rough planar, narrow to very narrow,
											-3.74	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 06.08.11

CHECKED EDWARD CHENG DATE 08.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 14.1.12

F76-061125

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. PD/WCH-058

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,481.64 N 812,154.98	W.O. No.
MACHINE / No. DR09		DATE from 03.08.11 to 06.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.26 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				99	99	99	10.6			T2101 10.22				III	iron oxide, kaolin and limonite stained, dipping at 10°-20°, 20°-30° and 80°-90° from 9.51-9.67m and 10.09-10.22m.
				39	39	39	NR	10.36		T2101 10.58	-4.10	10.36			
								10.58			-4.32	10.58		V	No recovery assumed to be completely decomposed MONZONITE.
				99	99	99				T2101 11.58					Moderately strong, dark grey spotted black and white, moderately decomposed MONZONITE. Joints are medium to widely locally closely spaced, rough planar, very narrow, limonite and kaolin stained, dipping at 10°-20°, 50°-60° and 70°-80°.
				100	100	100				T2101 13.05					
				100	100	100	1.5			T2101 14.53				III	
				100	100	100		15.90		T2101 15.90					
				100	68	43	12.6	16.85		T2101 17.05					
		3.40m at 18:00					>20								
05.08.11				99	78	78		17.65		T2101 18.21					
06.08.11		3.70m at 08:00					4.4								
06.08.11				100	100	100		19.23		T2101 19.23	-12.97	19.23			End of drillhole at 19.23m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 05.08.11

CHECKED EDWARD CHENG DATE 08.08.11

REMARKS

DRILLHOLE LOG J1105506 - MTRC 903.GPJ TYSAN_25032005.GDT 14.1.12

F76-061125

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. PD/WCH-056

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,476.82 N 812,155.52	W.O. No.
MACHINE / No. DR18		DATE from 02.08.11 to 05.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.00 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I.T. Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
02.08.11	PW														Wash boring.
	1.00 PW HW	Dry at 18:00		57						0.70 T2101	+5.30	0.70			Dark grey to brownish grey, angular to subangular COBBLE sized rock fragments. (FILL)
02.08.11										1.35 T2101	+4.42	1.58			Dense, yellowish brown, coarse SAND with some angular to subangular fine to coarse gravel sized rock fragments. (FILL)
04.08.11		0.00m at 08:00		41						2.50 T2101	+3.50	2.50			Dark grey to brownish grey locally red, angular to subangular coarse GRAVEL sized rock and wood fragments. (FILL)
				34						3.60	+2.40	3.60			Wash boring.
				90						7.50 T2101	-1.50	7.50			Dark grey to brownish grey locally red, angular to subangular coarse GRAVEL sized rock and wood fragments. (FILL)
	9.94 HW							9.94		7.90	-1.90	7.90			Wash boring.
										9.94	-3.94	9.94			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 05.08.11

CHECKED EDWARD CHENG DATE 06.08.11

REMARKS

DRILLHOLE LOG J1105306 - MTRC 903.GPJ TYSAN_26032005.GDT 14.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. PD/WCH-056

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR18	E 835,476.82 N 812,155.52	DATE from 02.08.11 to 05.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.00 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				98	81	81	2.6							II	Strong, dark grey to yellowish grey spotted black and pink, slightly decomposed MONZONITE. Joints are medium to widely locally closely spaced, rough planar, very narrow to narrow, manganese, limonite and kaolin stained, dipping at 10°-20°, 20°-30°, 60°-70° and 80°-90°.
				98	81	81	2.6			T2101				II	
								10.71			-4.60	10.60			
							>20	10.84			-4.84	10.84		III	
				100	100	100	6.0			T2101					10.60- 10.84m: Moderately decomposed MONZONITE.
								11.83		10.84					
		3.30m at 18:00		100	100	100				T2101					
04.08.11										11.74					
05.08.11		4.10m at 08:00		100	100	100				T2101					
							2.1			12.57					
				100	100	100				T2101					
										13.83					
				100	91	91				T2101				II	
								15.24							
							>20			15.39					
								15.66		T2101					
				100	81	57	12.3								
								16.23		16.63					
							3.7			T2101					
		4.00m at 18:00		100	100	100									
05.08.11								18.10		18.10	-12.10	18.10			End of drillhole at 18.10m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 05.08.11

CHECKED EDWARD CHENG DATE 06.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 14.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. PD/WCH-055

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR12	E 835,471.60 N 812,154.50	DATE from 03.08.11 to 05.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.87 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I.T. Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
04.08.11	PW	Dry at 08:00		63						T2116 0.00–0.60	+4.07	0.80			Dark grey, angular to subangular COBBLE and BOULDER sized rock fragments. (FILL)
															Wash boring.
				73						T2116 1.30–1.85	+3.57 +3.02	1.30 1.85			Dark grey, angular to subangular COBBLE and BOULDER sized rock fragments. (FILL)
	2.50 PW														Wash boring.
	HW			63						T2116 2.50–3.30	+2.37 +1.57	2.50 3.30			Dark grey, angular to subangular COBBLE and BOULDER sized rock fragments. (FILL)
	10.15										-5.13	10.00			Wash boring.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED	CHECKED
S.O. CHAN	EDWARD CHENG
DATE 05.08.11	DATE 06.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 14.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-055**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,471.60 N 812,154.50	W.O. No.
MACHINE / No. DR12		DATE from 03.08.11 to 05.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.87 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I.? Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
	HW						NR	10.15			-5.28	10.15			As Sheet 1 of 2.
				84	84	84	>20	10.26		T2101 10.15				IV/III	Moderately weak to moderately strong, pinkish brown mottled pink, highly to moderately decomposed coarse grained GRANITE. Joints are closely to very closely spaced, narrow to very narrow, rough undulating and planar, iron and limonite stained, dipping at 10°-20°, 60°-70° and 80°-90°.
							8.2	10.85		T2101 10.85	-5.98	10.85			Strong, dark grey spotted pink, slightly decomposed MONZONITE. Joints are medium to widely locally closely spaced, rough planar, kaolin and limonite stained, dipping at 10°-20° and 20°-30°.
04.08.11		2.70m at 18:00		99	99	87		11.83		T2101 12.29					
05.08.11		2.50m at 08:00					2.1			T2101 13.72					
				100	100	94		13.28		T2101 15.26				II	
				100	100	86	3.9	15.06		T2101 16.00					
							19.4	15.37		T2101 16.88					
				99	85	68				T2101 18.37					
				100	100	100	4.0	16.88		T2101					
							7.6								
				100	100	100		17.80							
							1.9								
				100	100	100				T2101					
05.08.11								19.36		19.36	-14.49	19.36			End of drillhole at 19.36m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 05.08.11

CHECKED EDWARD CHENG DATE 06.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 14.1.12

F76-061125

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. PD/WCH-053

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,465.92 N 812,152.89	DATE from 25.07.11 to 26.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.56 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
25.07.11	PW	Dry at 08:00		60						PW 0.00 0.50	+4.06	0.50			Angular to subangular coarse COBBLE sized rock fragments. (FILL) Wash boring.
	6.00 PW / HW										-5.44	10.00			

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_29032005.GDT 14.1.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 26.07.11

CHECKED EDWARD CHENG DATE 27.07.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-053**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,465.92 N 812,152.89	DATE from 25.07.11 to 26.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.56 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
															As Sheet 1 of 2.
	10.74 HW							10.74		10.74	-6.18	10.74			
25.07.11		2.74m at 18:00		100	53	25				T2101					Moderately strong, pinkish grey to greenish grey spotted black and white, moderately decomposed coarse grained GRANITE. Joints are closely to very closely spaced, rough planar to undulating, limonite, iron stained occasional calcite, dipping at 10°-20°, 40°-50° and 60°-70°.
26.07.11		2.49m at 08:00					11.1			11.38				III	
				100	85	79		12.36		T2101	-7.80	12.36			
							1.0			12.88					Moderately strong to strong, pinkish grey spotted black and white, moderately to slightly decomposed coarse grained GRANITE. Joints are medium to widely locally closely spaced, very narrow, rough undulating to smooth, calcite and limonite stained, dipping at 10°-20°, 30°-40° and 50°-60°.
				100	100	96				T2101					
								14.29		14.34					
				100	100	79	11.6			T2101					
								14.68		14.68					
							1.6	14.98		T2101					
				100	100	77		15.61							
							18.0								
								16.11		16.11					
										T2101					
				100	98	95									
							1.3			17.60					
										T2101					
				100	100	100									
26.07.11								19.16		19.16	-14.60	19.16			End of drillhole at 19.16m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 26.07.11

CHECKED EDWARD CHENG DATE 27.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 14.1.12

F76-061125

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. PD/WCH-052

SHEET 1 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR10	E 835,460.58 N 812,151.70	DATE from 25.07.11 to 26.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.52 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
25.07.11	HW														Wash boring.
25.07.11 26.07.11				100						T2.10t 4.50 4.80	+0.02 -0.28	4.50 4.80			Angular to subangular, brownish green and red, COBBLE and BOULDER sized rock fragments. (FILL) Wash boring.
											-5.48	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 26.07.11

CHECKED EDWARD CHENG DATE 27.07.11

REMARKS

DRILLHOLE LOG J1105506 - MTRC 903.GPJ TYSAN_25032005.GDT 14.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. PD/WCH-052

SHEET 2 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR10	E 835,460.58 N 812,151.70	DATE from 25.07.11 to 26.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.52 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
															As Sheet 1 of 3.
	11.27 HW										-6.75	11.27			
							NI	11.27 11.40		11.27	-6.88	11.40		IV	Moderately weak, pinkish brown spotted black, highly decomposed coarse grained GRANITE. (recovered as subangular COBBLE and BOULDER sized rock fragments)
				87	37	25	4.1	11.89		T2101					Moderately strong to strong, pinkish grey mottled black, slightly decomposed coarse grained GRANITE. Joints are medium to closely spaced, very narrow to narrow, rough undulating to smooth planar, manganese, chlorite, limonite and calcite stained, dipping at 10°-20°, 30°-40° and subvertical from 12.38m to 12.82m.
				100	85	85	2.3			T2101				II	
								13.62		13.10					
				100	84	68	12.5	14.10		T2101	-9.21	13.73			
							>20	14.20							Strong to moderately strong, greenish grey mottled pink, moderately decomposed MONZONITE. Joints are medium to closely spaced locally very closely spaced, very narrow to narrow, rough undulating, chlorite, kaolinite, limonite stained, dipping at 10°-20°, 30°-40° and subvertical from 14.43m to 14.68m.
							5.6	14.55		14.56				III	
							>20	14.93		T2101	-10.35	14.67			
				100	85	70	4.5			T2101					Strong, pinkish grey spotted black and white, slightly decomposed coarse grained GRANITE. Joints are medium to widely spaced locally closely spaced, very narrow, rough undulating to smooth undulating, kaolinite, calcite, limonite and occasional chlorite stained, sipping at 10°-20° and 30°-40°.
							13.1	16.05		16.05					
				100	100	83	2.7	16.66		T2101				II	
								18.13		17.60					
				100	100	100	2.2			T2101					
										19.10	-14.77	19.29			
				100	100	86				T2101					19.29- 20.05m: Slightly decomposed MONZONITE.
											-15.48	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 26.07.11

CHECKED EDWARD CHENG DATE 27.07.11

REMARKS

DRILLHOLE LOG J1105506 - MTRC 903.GPJ TYSAN_25032005.GDT 14.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-052**

SHEET 3 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR10	E 835,460.58 N 812,151.70	DATE from 25.07.11 to 26.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.52 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I.T. Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
26.07.11				100	100	86	2.2	20.42		T2101 20.12	-15.53 -15.90	20.05 20.42		II	As Sheet 2 of 3. End of drillhole at 20.42m.

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 14.1.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED	CHECKED
S.O. CHAN	EDWARD CHENG
DATE 26.07.11	DATE 27.07.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. PD/NRW-102

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC

MACHINE / No. DR12

FLUSHING MEDIUM WATER

CO-ORDINATES
E 835,453.16
N 812,154.99

ORIENTATION Vertical

JOB No. J1105S06

DATE from 01.08.11 to 03.08.11

GROUND LEVEL +4.74 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I.7 Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
01.08.11	PW	Dry at 08:00		100						T2116	0.00				Angular COBBLE and BOULDER sized rock fragments. (FILL)
											0.50 +4.24	0.50			Wash boring.
		Dry at 16:00		76							0.80 +3.94	0.80			Angular COBBLE and BOULDER sized rock fragments. (FILL)
01.08.11										T2116	1.30				
02.08.11		Dry at 08:00		83						T2116	1.60 +2.84	1.90			
											2.30 +2.44	2.30			Wash boring.
				83						T2116	2.90 +1.84	2.90			Angular COBBLE and BOULDER sized rock fragments. (FILL)
	3.45 PW HW										3.45 +1.29	3.45			Wash boring.
				100						T2116	3.80				Angular COBBLE and BOULDER sized rock fragments. (FILL)
				83						T2116	4.40				
				100						T2116	5.10 -0.36	5.10			Wash boring.
											-5.26	10.00			

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 3.1.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 03.08.11

CHECKED EDWARD CHENG DATE 04.08.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. PD/NRW-102

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR12	E 835,453.16 N 812,154.99	DATE from 01.08.11 to 03.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.74 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start / end	Water	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
															As Sheet 1 of 2.
	11.68 HW							11.68		11.68	-6.94	11.68			
				100	96	96	3.2	12.94		T2101					Moderately strong to strong, greenish grey spotted white and pink, slightly decomposed coarse MONZONITE. Joints are closely to medium spaced, rough planar, very narrow, limonite and chlorite stained, dipping at 20°-30°, 40°-50°, 60°-70° and 80°-90°.
				100	80	69	12.1	13.93		T2101		13.07			
							3.5	14.51							
							>20	14.77		T2101		14.57			
				100	76	54	12.1	15.68						III/II	
							3.3	16.54		T2101		15.93			
02.08.11		2.55m at 18:00		100	63	58	14.0	17.08		T2101		16.93			
03.08.11		2.60m at 08:00		100	95	78	6.4	18.00		T2101	-13.26	18.00			
03.08.11															End of drillhole at 18.00m.

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 3.1.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 03.08.11

CHECKED EDWARD CHENG DATE 04.08.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-103**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,443.27 N 812,153.08	DATE from 01.08.11 to 02.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.64 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
01.08.11	PW	Dry at 08:00		60						T2116 0.00–0.50	+4.14	0.50			Grey and greyish brown, angular to subangular GRAVEL and COBBLE of concrete and rock fragments. (FILL)
															Wash boring.
				45						T2116 0.50–1.70	+2.94	1.70			Grey and greyish brown, angular to subangular GRAVEL and COBBLE of concrete and rock fragments. (FILL)
				42						T2116 1.70–3.00					
	6.00 PW / HW									T2116 3.00–4.20	+0.44	4.20			Wash boring.
								7.40			-2.76	7.40	× ×		
			43	0	0	NI				T2101 7.40–8.00			× ×	IV/III	Weak to moderately weak, greyish brown, highly to moderately decomposed MONZONITE. Non intact.
								8.00			-3.36	8.00	× ×		
											-5.36	10.00		V	Wash boring, assumed to be completely decomposed MONZONITE.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED	CHECKED
S.O. CHAN	EDWARD CHENG
DATE 03.08.11	DATE 04.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 3.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. PD/NRW-103

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,443.27 N 812,153.08	DATE from 01.08.11 to 02.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.64 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
														V	As Sheet 1 of 2.
01.08.11		3.27m at 18:00													
02.08.11		2.50m at 08:00													
	12.45 HW						NI	12.45			-7.81	12.45		IV/III	Weak to moderately weak, greyish brown, highly to moderately decomposed MONZONITE. Non intact.
								12.64			-8.00	12.64			
				100	81	50	16.4			T2101				III	Moderately strong, greyish pink and greyish brown spotted black and white, moderately decomposed MONZONITE. Joints are very closely to closely spaced, rough planar, extremely narrow, limonite and chlorite coated, dipping at 0°-10°, 10°-20° and subvertical.
								13.25			-8.61	13.25			
				100	100	98				T2101	13.41				Strong, greyish pink spotted black and white, slightly decomposed MONZONITE. Joints are closely to medium locally very closely spaced, rough planar, extremely narrow, chlorite coated, clean, dipping at 10°-20° and 20-30°.
							2.8								
				100	100	95				T2101	14.37				
											15.10				
								15.40		T2101					
				100	100	76									
											16.56			II	
				100	100	67	5.6			T2101					
											18.06				
				100	100	85				T2101					
02.08.11		2.50m at 18:00						19.51			-14.87	19.51			End of drillhole at 19.51m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 03.08.11

CHECKED EDWARD CHENG DATE 04.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 3.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. PD/NRW-001

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR11	E 835,431.15 N 812,150.65	DATE from 03.08.11 to 04.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.53 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
03.08.11	PW	Dry at 08:00		60						0.50 T2116 1.50 T2116 2.50 T2116 3.50 T2116 4.60	+4.03	0.50			Wash boring.
				66											Dark grey to brownish grey, GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
				76							-0.27	4.80			Wash boring.
	6.00 PW / HW			60							-5.47	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 04.08.11

CHECKED EDWARD CHENG DATE 05.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 6.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. PD/NRW-001

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR11	E 835,431.15 N 812,150.65	DATE from 03.08.11 to 04.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.53 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
															As Sheet 1 of 2.
		1.98m at 18:00		64	64	64	NI 5.4	10.62 11.03 11.40		T2101	10.62 -6.29 -6.50 11.03 -6.87 11.40	10.62 11.03 11.40	× ×	IV III	Moderately weak, dark grey spotted black, highly decomposed MONZONITE. Moderately strong, dark grey spotted black and white, moderately decomposed MONZONITE. Joints are medium to closely spaced, narrow to very narrow, rough undulating, iron and limonite stained, dipping at 10°-20° and 60°-70°.
03.08.11 04.08.11		2.19m at 08:00											× ×	V	Wash boring, assumed to be completely decomposed MONZONITE.
	12.89 HW						NI	12.89 13.03			12.89 -8.36 -8.50 13.03	12.89 13.03	× ×	IV	Moderately weak, dark grey to reddish brown, highly decomposed MONZONITE.
				99	73	36	8.9	14.26		T2101	14.26		× ×	II	Strong, dark grey spotted black and pink, slightly decomposed MONZONITE. Joints are medium to closely spaced, very narrow, rough planar to undulating, limonite and kaolin stained, dipping at 20°-30°, 40°-50°, 60°-70° and 80°-90°.
				100	94	90	4.1			T2101					
				100	100	90		16.68		T2101	15.81				
				100	100	100	3.9			T2101	17.35				
				100	100	100				T2101	18.81				
04.08.11								19.78			19.78 -15.25	19.78			End of drillhole at 19.78m.

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_26032005.GDT 8.12.11

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.C. CHAN

DATE 04.08.11

CHECKED EDWARD CHENG

DATE 05.08.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-006**

SHEET 1 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,719.78 N 812,172.19	DATE from 16.09.11 to 19.09.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.36 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
16.09.11	PW	Dry at 08:00		70						T2116 0.00–1.30	+5.06	1.30			Dark grey to brown, angular to subangular COBBLE and GRAVEL sized rock fragments. (FILL)
											+4.61	1.75			Wash boring.
				72						T2116 1.75–3.00					Dark grey to brown, angular to subangular COBBLE and occasional boulder sized rock fragments. (FILL)
16.09.11		Dry at 18:00													
17.09.11		Dry at 08:00		78						T2116 3.00–4.20					
										T2116 4.20–5.50					
	5.50 PW			73						T2116 5.50–6.30					
	HW			75							+0.06	6.30			Wash boring.
								6.86		T2101 6.86–7.40	-0.50	6.86	× × × ×	III	Moderately strong, grey spotted black and white, moderately decomposed MONZONITE.
				83	0	0	NI	7.40			-1.04	7.40	× ×	V	Wash boring, assumed to be completely decomposed MONZONITE.
											-3.64	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 19.09.11

CHECKED EDWARD CHENG DATE 20.09.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 18.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-006**

SHEET 2 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,719.78 N 812,172.19	DATE from 16.09.11 to 19.09.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.36 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
															As Sheet 1 of 3.
	13.28 HW							13.28		13.28 T2101	-6.92	13.28		V	
				96	0	0	NI	13.63			-7.27	13.63		IV	Moderately weak, dark brown, highly decomposed MONZONITE.
							3.5			13.73 T2101					Strong, grey spotted black and white, slightly decomposed MONZONITE. Joints are closely to medium locally widely spaced, rough planar, very narrow, dipping at 40°-50°, 60°-70° and 80°-90°.
				100	84	84		14.76							
		4.22m at 18:00					4.2								
17.09.11								15.24		15.24 T2101					
19.09.11		4.36m at 08:00		100	100	100	2.0								
								16.77		16.77 T2101				II	
				100	0	0	4.2								
								18.19		18.19 T2101					
				100	63	63	1.7								
										19.65 T2101					
				100	100	100					-13.64	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 19.09.11

CHECKED EDWARD CHENG DATE 20.09.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 18.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-006**

SHEET 3 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,719.78 N 812,172.19	W.O. No.
MACHINE / No. DR11		DATE from 16.09.11 to 19.09.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.36 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
19.09.11		4.50m at 18:00		100	100	100	1.7	20.56		T2101 20.56	-14.20	20.56	× × × × × ×	II	As Sheet 2 of 3.
															End of drillhole at 20.56m.

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_2503205.GDT 18.2.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 19.09.11

CHECKED EDWARD CHENG DATE 20.09.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-008**

SHEET 1 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,713.77 N 812,172.56	DATE from 20.09.11 to 22.09.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.34 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
20.09.11	PW	Dry at 08:00													Wash boring.
										1.75	+4.59	1.75			
				84					T2101						Dark grey and brown, angular to subangular coarse GRAVEL, COBBLE and occasional boulder sized rock fragments. (FILL)
										2.70					
				73					T2101						
										4.00					
				75					T2101						
										4.80					
				57					T2101						
	5.50 PW									5.50					
	HW								T2101						
				69											
										6.80	-0.46	6.80			Wash boring.
		3.51m at 18:00													
20.09.11										8.63	-2.29	8.63			
21.09.11		3.94m at 08:00		66					T2101				× ×	III	Moderately strong, dark grey spotted pink and white, moderately decomposed MONZONITE. (CORESTONE)
										9.00	-2.66	9.00	× ×		
														V	Wash boring, assumed to be completely decomposed MONZONITE.
											-3.66	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 22.09.11

CHECKED EDWARD CHENG DATE 23.09.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 18.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-008**

SHEET 2 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,713.77 N 812,172.56	W.O. No.
MACHINE / No. DR11		DATE from 20.09.11 to 22.09.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.34 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
														V	As Sheet 1 of 3.
	12.49 HW							12.49		12.49	-6.15	12.49			
				100	78	76	2.6			T2101				III	Moderately strong, dark grey spotted pink and white, moderately decomposed MONZONITE. Joints are closely to widely spaced, rough planar, narrow to very narrow, limonite stained, manganese and biotite stained, dipping at 10°-20° and 80°-90°.
							NI	13.63			-7.35	13.69		IV	Moderately weak to weak, dark grey spotted white, highly decomposed MONZONITE.
								14.02		14.02	-7.68	14.02			Strong, dark grey to pinkish grey spotted white, slightly decomposed MONZONITE. Joints are medium locally very widely spaced, rough planar, very narrow, limonite locally kaolin stained, dipping at 10°-20°.
				99	97	90	2.0			T2101					
								15.52		15.52					
				100	100	100				T2101					
							0.3			17.00				II	
				100	100	100				T2101					
								18.49		18.49					
				100	100	100	0.7			T2101					
21.09.11		3.51m at 18:00									-13.66	20.00			

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 18.2.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 22.09.11

CHECKED EDWARD CHENG DATE 23.09.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-008**

SHEET 3 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,713.77 N 812,172.56	DATE from 20.09.11 to 22.09.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.34 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
22.09.11		3.89m at 08:00		100	100	100	0.0	19.98		T2101 19.98			× × × × × × × ×	II	As Sheet 2 of 3.
22.09.11								20.95		20.95	-14.61	20.95	× ×		End of drillhole at 20.95m.

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_2503200S.GDT 18.2.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 22.09.11

CHECKED EDWARD CHENG DATE 23.09.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-014**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,692.98 N 812,174.72	DATE from 26.09.11 to 28.09.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.75 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
26.09.11	PW	Dry at 08:00		54						T2101 0.00–1.20	+5.55	1.20			Dark grey to yellowish brown, angular to subangular coarse GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
															Wash boring.
										T2101 2.70–3.70	+4.05	2.70			Dark grey to yellowish brown, angular to subangular coarse GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
26.09.11 27.09.11		Dry at 18:00 3.70m at 08:00		75 71						T2101 3.70–4.40 T2101 4.40–5.50					
	5.50 PW HW			68 58						T2101 5.50–6.70	+0.05	6.70			Wash boring.
	10.16										-3.25	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 28.09.11

CHECKED EDWARD CHENG DATE 29.09.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 18.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-014**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,692.98 N 812,174.72	DATE from 26.09.11 to 28.09.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.75 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
	HW							10.16		10.16	-3.41	10.16			As Sheet 1 of 2.
							19.6							III	Moderately strong, pinkish brown spotted white and black, moderately decomposed coarse ash TUFF. Joints are very closely to closely spaced, rough planar, narrow, limonite and manganese stained, dipping at 20°-30° and 40°-50°.
				98	24	15		10.62		T2101	-3.87	10.62			
							6.8	11.36		11.11					Strong, dark grey spotted black and white, streaked pink, slightly decomposed coarse ash TUFF. Joints are medium to closely spaced, rough undulating, narrow to very narrow, chlorite, limonite and occasional kaolin stained, dipping at 10°-20°, 40°-50° and 80°-90°.
							17.5								
				100	73	54		11.76		T2101					
							7.4								
								12.57		12.57					
				100	99	99				T2101					
							3.5							II	
										14.03					
				100	70	70		14.55		T2101					
		4.10m at 18:00					7.6								
27.09.11								15.47		15.47					
28.09.11		3.87m at 08:00					5.7								
							>20	15.82 16.00							
				100	45	37				T2101					
							6.1								
								16.99		16.99	-10.24	16.99		III	
							15.8	17.18			-10.43	17.18			16.99- 17.18m: Moderately decomposed TUFF.
							4.2							II	
				100	46	46	>20	17.66 17.71		T2101	-10.90	17.65			
							8.2								Moderately strong, dark pinkish grey to brownish grey, moderately deocmposed coarse ash TUFF. Joints are closely to very closely spaced, rough planar to undulating, narrow locally moderately narrow, limonite, manganese, chlorite and kaolin stained, dipping at 10°-20°, 50°-60° and 80°-90°.
								18.44		18.44				III	
							13.9	18.80		T2101					
		3.83m at 18:00		100	0	0	>20								
28.09.11								19.33		19.33	-12.58	19.33			End of drillhole at 19.33m.

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 18.2.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 28.09.11

CHECKED EDWARD CHENG DATE 29.09.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-017**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,682.81 N 812,174.90	DATE from 28.09.11 to 03.10.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.91 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
28.09.11	PW			49						T2116 0.00–1.00	+5.91	1.00			Brownish grey to brown, angular to subangular COBBLE and BOULDER sized rock and concrete fragments. (FILL)
															Wash boring.
28.09.11		3.71m at 18:00													
30.09.11		3.92m at 08:00		80						T2116 4.20–5.00	+2.71	4.20			CONCRETE.
				57						T2116 5.00–6.00	+1.91	5.00			Brownish grey to brown, angular to subangular COBBLE and BOULDER sized rock and concrete fragments. (FILL)
	6.00 PW										+0.91	6.00			
	HW			75						T2116 6.00–7.00					Yellowish brown to pale grey, subrounded to subangular coarse GRAVEL and COBBLE sized rock fragments. (ALLUVIUM)
				50						T2116 7.00–7.60					
											-0.69	7.60			Wash boring.
	9.50 HW							9.50							
				100	24	0	19.7			T2101 9.50–10.00	-2.59	9.50		III	Moderately strong, pinkish brown to yellowish brown spotted black and grey, moderately decomposed coarse ash TUFF. Joints are closely to very closely
											-3.09	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 03.10.11

CHECKED EDWARD CHENG DATE 04.10.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 18.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-017**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,682.81 N 812,174.90	DATE from 28.09.11 to 03.10.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.91 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	24	0	11.8	10.11 10.45		T2101					spaced, rough planar, narrow, kaolin and limonite stained, dipping at 10°-20° and 80°-90°.
							>20	11.09		10.82				III	
				100	54	40	8.3			T2101					
								12.17		12.07	-5.16	12.07			
		3.65m at 18:00		100	88	82	1.6			T2101					Moderately strong to strong, greenish grey to pinkish grey spotted black and white, slightly decomposed coarse ash TUFF. Joints are closely to medium spaced, rough planar, narrow to very narrow, chlorite, kaolin and limonite stained, dipping at 10°-20°, 60°-70° and 80°-90°.
30.09.11 03.10.11		3.96m at 08:00						13.40		13.54					
				100	100	94	3.2			T2101				III/II	
										15.01					
				100	90	87				T2101					
								16.20		16.43	-9.29	16.20			
				100	19	19	9.2			T2101					Moderately strong, greenish grey spotted pink, moderately decomposed coarse ash TUFF. Joints are closely to very closely spaced, rough planar to undulating, chlorite and limonite stained, dipping at 60°-70° and 80°-90°.
				100	21	21				17.16					
							>20	17.62 17.84		T2101				III	
				100	43	0				17.84					
							11.4			T2101					
		3.76m at 18:00		100	0	0				18.63					
03.10.11								19.24		T2101	-12.33	19.24			
										19.24					End of drillhole at 19.24m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 03.10.11

CHECKED EDWARD CHENG DATE 04.10.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 18.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-017A**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,674.38 N 812,176.18	DATE from 04.10.11 to 07.10.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +7.39 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
04.10.11	PW	Dry at 08:00		61						T2101 0.00–1.30	+6.09	1.30			Dark grey and yellowish brown, angular to subangular coarse GRAVEL and COBBLE sized rock fragments and locally wood fragments. (FILL)
															Wash boring.
		3.50m at 18:00													
04.10.11 06.10.11		3.62m at 08:00		61						T2101 4.05–5.50	+3.34	4.05			Dark grey and yellowish brown, angular to subangular coarse GRAVEL and COBBLE sized rock fragments and locally wood fragments. (FILL)
											+1.89	5.50			Wash boring.
	6.10 PW HW										+1.29	6.10			
				68						T2101 6.10–7.60	+1.09	6.30			Dark grey and yellowish brown, angular to subangular coarse GRAVEL and COBBLE sized rock fragments and locally wood fragments. (FILL) Yellowish brown to yellowish grey, subrounded to subangular COBBLE sized rock fragments. (ALLUVIUM)
											-0.21	7.60			Wash boring.
											-2.61	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 08.10.11

CHECKED EDWARD CHENG DATE 10.10.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 18.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-017A**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,674.38 N 812,176.18	DATE from 04.10.11 to 07.10.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +7.39 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
06.10.11	11.77 HW	3.43m at 18:00						11.77		11.77	-4.38	11.77			As Sheet 1 of 2.
07.10.11		3.45m at 08:00		97	0	0	18.8	12.09		T2101					Moderately strong, yellowish grey to pinkish grey spotted pink and black, moderately decomposed coarse ash TUFF. Joints are closely spaced, rough planar to undulating, very narrow, limonite and manganese stained, dipping at 10°-20°, 60°-70° and 80°-90°.
							6.6	12.85		12.64					
				100	60	32	11.8	13.19		T2101					
							13.2	13.57							
							9.4	13.89		13.89				III	
				100	51	25	15.3	14.48		T2101					
				100	84	84	15.7	15.56		14.48					
										T2101					
										15.56					
				100	79	76	13.2	16.09		T2101	-8.76	16.15			Strong, dark grey to pinkish grey spotted black and pink, slightly decomposed coarse ash TUFF. Joints are medium to closely spaced, rough planar, very narrow, chlorite, limonite and occasional kaolin stained, dipping at 10°-20°, 30°-40° and 80°-90°.
							7.1	17.08		16.87				II	
				100	75	75	3.5	17.65		T2101	-10.26	17.65			Moderately strong, brownish grey to pinkish brown, moderately decomposed coarse ash TUFF. Joints are closely to medium spaced, rough planar, very narrow, chlorite and limonite stained, dipping at 30°-40° and 60°-70°.
							14.5	18.34		18.34					
				100	78	78	8.0	19.47		T2101				III	
07.10.11		3.51m at 18:00								19.47	-12.08	19.47			End of drillhole at 19.47m.

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 18.2.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 08.10.11

CHECKED EDWARD CHENG DATE 10.10.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-020**

SHEET 1 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR10	E 835,663.97 N 812,176.47	DATE from 23.09.11 to 27.09.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +7.46 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
23.09.11	PW	Dry at 08:00													Wash boring.
	3.80 PW														
	HW			70						T2101 3.80 – 4.50	+3.66	3.80			Dark grey to brown, angular to subangular coarse GRAVEL, COBBLE and BOULDER sized rock fragments. (FILL)
		3.50m at 18:00		60						T2101 4.50 – 5.00					
23.09.11	5.20 HW										+2.46	5.00			
											+2.26	5.20			Wash boring.
24.09.11		3.60m at 08:00		90						T2101 5.20 – 6.20					Dark grey to brown, angular to subangular coarse GRAVEL sized rock fragments. (FILL)
				87						T2101 6.20 – 7.24	+1.26	6.20			Brown to yellowish grey, subrounded to subangular coarse GRAVEL and COBBLE sized rock fragments. (ALLUVIUM)
				100	89	89		7.24		T2101 7.24 – 8.12	+0.22	7.24			Moderately strong, dark grey to brownish grey spotted black and white, moderately decomposed coarse ash TUFF. Joints are closely to medium spaced, rough planar to undulating, narrow, limonite, kaolin and manganese stained, dipping at 30°-40°, 60°-70° and 80°-90°.
				100	94	94	4.4			T2101 8.12 – 8.92				III	
				99	51	47				T2101 8.92 – 10.00	-2.54	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 27.09.11

CHECKED EDWARD CHENG DATE 28.09.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 18.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司	DRILLHOLE RECORD CONTRACT No. 903	HOLE No. **PD/NRW-020** SHEET 2 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,663.97 N 812,176.47	W.O. No.
MACHINE / No. DR10		DATE from 23.09.11 to 27.09.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +7.46 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				99	51	47		9.99							As Sheet 1 of 2.
							10.7			T2101 10.29				III	
				93	0	0		10.74		T2101	-3.28	10.74			
							NI			11.02	-3.75	11.21		III	Moderately strong, brown to yellowish brown, moderately decomposed coarse ash TUFF, highly fractured.
				99	71	71		11.21		T2101					Strong, dark grey spotted black and white, slightly decomposed coarse ash TUFF. Joints are medium to widely spaced, rough planar, very narrow, limonite and kaolin stained, dipping at 10°-20°, 40°-50° and 80°-90°.
							3.1			11.80					
		3.40m at 18:00		100	88	81		12.52		T2101				II	
24.09.11															
26.09.11		3.45m at 08:00					8.9			13.07					
											-6.11	13.57			
				100	73	51		13.76		T2101					Moderately strong, dark grey to brownish grey spotted black and white, moderately decomposed coarse ah TUFF. Joints are closely locally very closely spaced, rough planar, narrow to very narrow, manganese, limonite and kaolin stained, dipping at 10°-20°, 30°-40° and 80°-90°.
							12.3								
								14.57		14.57					
				100	54	54	7.9			T2101					
							NI	15.33 15.46		15.33				III	
				96	81	81	6.0			T2101					
							>20	16.13 16.24		16.13					
				89	89	68	10.9			T2101					
										17.27	-9.81	17.27			
								17.43							Strong, dark grey spotted black and white, slightly decomposed coarse ash TUFF. Joints are medium to closely spaced, rough planar, very narrow, limonite stained, dipping at 10°-20° and 30°-40°.
							9.8								
				89	69	39		17.94		T2101					
		3.40m at 18:00					10.0							II	
26.09.11								18.74		18.74					
27.09.11		3.60m at 08:00													
				100	100	78	8.9			T2101					
27.09.11								19.86		19.86	-12.40	19.86			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED	CHECKED
S.O. CHAN	EDWARD CHENG
DATE 27.09.11	DATE 28.09.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 18.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-020**

SHEET 3 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR10	E 835,663.97 N 812,176.47	DATE from 23.09.11 to 27.09.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +7.46 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
															End of drillhole at 19.86m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 27.09.11

CHECKED EDWARD CHENG DATE 28.09.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 18.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-056**

SHEET 1 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR07	E 835,528.34 N 812,163.36	DATE from 02.08.11 to 04.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +5.15 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
02.08.11	HW	Dry at 08:00													Wash boring.
				73						T2101 2.70	+2.45	2.70			Dark grey and greyish pink, angular to subangular COBBLE sized rock and concrete fragments. (FILL)
										3.00	+2.15	3.00			Wash boring.
										6.17	-1.02	6.17			Dark grey and greyish pink, angular to subangular COBBLE sized rock and concrete fragments. (FILL)
								6.34			-1.19	6.34			
				64	33	13	9.2			T2101			× ×		Moderately strong, dark grey to brownish grey spotted black and white, moderately decomposed MONZONITE.
		2.70m at 18:00		100	77	52				7.14			× ×	III	
02.08.11										T2101			× ×		
03.08.11		3.10m at 08:00		78	60	60	NI 8.3	7.76 8.00		7.76 T2101			× ×		
								8.36		8.36	-3.21	8.36		V	Wash boring, assumed to be completely decomposed MONZONITE.
								8.88		8.88	-3.73	8.88			
							NI	8.96					× ×		Moderately strong, dark grey to brownish grey spotted black and white, moderately decomposed MONZONITE.
				93	52	52	5.6			T2101			× ×	III	
											-4.85	10.00	× ×		

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 04.08.11

CHECKED EDWARD CHENG DATE 05.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 18.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-056**

SHEET 2 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR07	E 835,528.34 N 812,163.36	DATE from 02.08.11 to 04.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +5.15 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
										10.08					As Sheet 1 of 3.
				91	53	53	5.6	10.75		T2101 10.75	-5.60	10.75		III	
														V	Wash boring, assumed to be completely decomposed MONZONITE.
	13.10 HW							13.10		13.10	-7.95	13.10			
				86	68	44	NI 10.0	13.30 13.60		T2101 13.60	-8.15	13.30		IV	Moderately weak, dark grey to brownish grey, highly deocmposed MONZONITE.
				100	100	100				T2101 14.57					Strong, grey to dark grey spotted black and pink, slightly decomposed MONZONITE. Joints are widely to medium locally closely spaced, rough planar, very narrow, limonite occasional kaolin stained, dipping at 10°-20°, 20°-30° and 80°-90°.
				100	100	100				T2101 15.56					
				100	100	100				T2101 16.27					
				97	97	97	1.2			T2101 17.01				II	
		2.20m at 18:00		99	99	99				T2101 17.84					
03.08.11 04.08.11		2.90m at 08:00													
				100	100	100				T2101 19.37					
				100	100	100				T2101	-14.85	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 04.08.11

CHECKED EDWARD CHENG DATE 05.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 18.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-056**

SHEET 3 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR07	E 835,528.34 N 812,163.36	DATE from 02.08.11 to 04.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +5.15 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
04.08.11				100	100	100	1.2	20.56		T2101 20.56	-15.41	20.56	× × × × × ×	II	As Sheet 2 of 3. End of drillhole at 20.56m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 04.08.11

CHECKED EDWARD CHENG DATE 05.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 18.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-012**

SHEET 1 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,705.34 N 812,172.41	DATE from 08.10.11 to 11.10.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.67 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
08.10.11	PW	Dry at 08:00		47					T2116	0.00					Brown to brownish grey, angular to subangular coarse GRAVEL and COBBLE sized rock fragments. (FILL)
										1.00	+5.67	1.00			Wash boring.
				59					T2116	2.60	+4.07	2.60			Brown to brownish grey, angular to subangular coarse GRAVEL and COBBLE sized rock fragments. (FILL)
										4.00	+2.67	4.00			Wash boring.
				53					T2116	4.85	+1.82	4.85			Brown to brownish grey, angular to subangular coarse GRAVEL and COBBLE sized rock fragments. (FILL)
				26					T2116	5.60					
	7.00 PW HW									7.00	-0.33	7.00			Wash boring.
											-3.33	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED	CHECKED
S.O. CHAN	EDWARD CHENG
DATE 11.10.11	DATE 12.10.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 18.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-012**

SHEET 2 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,705.34 N 812,172.41	DATE from 08.10.11 to 11.10.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.67 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
															As Sheet 1 of 3.
	11.49 HW							11.49		11.49	-4.82	11.49			
	NW			100	100	94	1.5			T2101			× ×	II	Strong, dark grey spotted black and pink, slightly decomposed MONZONITE. Joints are medium to widely spaced, rough planar, very narrow, limonite stained, dipping at 10°-20° and 40°-50°.
08.10.11		3.60m at 18:00													
10.10.11		3.92m at 08:00		83	83	79				12.95 T2101					
	14.44 NW						NR	14.14 14.44			-7.52	14.19			
										14.44	-7.77	14.44		V	No recovery assumed to be completely decomposed MONZONITE.
				100	97	93	5.4 2.0	15.00		TNW 15.85			× ×	II	Strong, dark grey spotted black and pink, slightly deocmposed MONZONITE. Joints are medium to widely locally closely spaced, rough planar, very narrow, limnite locally manganese stained, dipping at 10°-20° and 80°-90°.
				100	95	95		17.02		TNW					
							9.3	17.45		17.35 TNW					
				100	98	90	1.9	18.51							
							9.8	19.02		18.80	-12.44	19.11	× ×		
				99	27	27	2.6			TNW	-12.89	19.56	+ +	III	19.11- 19.56m: Moderately decomposed GRANITE.
											-13.33	20.00	× ×	II	

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_2503205.GDT 18.2.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 11.10.11

CHECKED EDWARD CHENG DATE 12.10.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-012**

SHEET 3 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,705.34 N 812,172.41	DATE from 08.10.11 to 11.10.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.67 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				99	27	27				TNW 20.28			× ×	II	As Sheet 2 of 3.
											-13.81	20.48			
				99	95	95	2.6			TNW					Strong, dark grey spotted black and white, slightly decomposed MONZONITE. Joints are widely to medium spaced, rough planar, very narrow, limonite stained, dipping at 10°-20° and 30°-40°.
				100	76	51	>20	21.69 21.76		21.76 TNW					
										22.17					
		3.65m at 18:00		100	100	100	1.8			TNW					
10.10.11 11.10.11		3.80m at 08:00								23.62				II	
				99	99	96				TNW					
								25.03		25.03					
				100	100	100	0.8			TNW					
								26.36		26.36					
				100	100	100	0.0			TNW					
11.10.11		3.55m at 18:00						27.80		27.80	-21.13	27.80			
															End of drillhole at 27.80m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 11.10.11

CHECKED EDWARD CHENG DATE 12.10.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 18.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-014**

SHEET 1 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR20	E 835,653.97 N 812,176.49	DATE from 23.08.11 to 26.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +7.59 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
23.08.11	PW	Dry at 08:00		24						T2101 0.00–1.25					Yellowish grey to brown, angular to subangular coarse GRAVEL and COBBLE sized rock fragments. (FILL)
				45						T2101 1.25–2.10	+5.49	2.10			
															Wash boring.
	4.70 PW HW														
				50						T2101 4.70–5.70	+2.89	4.70			Yellowish grey to brown, angular to subangular coarse GRAVEL and COBBLE sized rock fragments. (FILL)
		2.92m at 18:00									+1.89	5.70			
23.08.11				80						T2101 5.80–6.10	+1.79	5.80			Wash boring.
24.08.11		3.01m at 08:00		33						T2101 6.10–7.00					Yellowish grey to brown, angular to subangular coarse GRAVEL and COBBLE sized rock fragments. (FILL)
											+0.59	7.00			Wash boring.
											-2.41	10.00			

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 18.2.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 26.08.11

CHECKED EDWARD CHENG DATE 27.08.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-014**

SHEET 2 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,653.97 N 812,176.49	W.O. No.
MACHINE / No. DR20		DATE from 23.08.11 to 26.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +7.59 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
	10.26 HW							10.26		10.26	-2.67	10.26			As Sheet 1 of 3.
							>20	10.65			-3.06	10.65		IV	Moderately weak, yellowish brown to pale grey, highly decomposed coarse ash TUFF, highly fractured.
				98	55	50	9.2			T2101					Moderately strong, brownish grey to yellowish grey spotted black and white, moderately decomposed coarse ash TUFF. Joints are closely to very closely spaced, rough planar to undulating, narrow to moderately narrow, limonite, manganese and kaolin stained, dipping at 10°-20°, 30°-40°, 50°-60° and 80°-90°.
				100	61	41		12.06		11.56 T2101				III	
				100	65	54	13.6	13.16		12.49 T2101					
				100	94	78	12.2	14.06		13.30 T2101	-5.71	13.30			Strong, dark grey spotted black, slightly decomposed coarse ash TUFF. Joints are closely to medium spaced, rough planar, very narrow, limonite, chlorite and locally kaolin stained, dipping at 10°-20°, 50°-60°, 70°-80° and 80°-90°.
		2.90m at 18:00		98	82	82	6.1	15.20		14.64 T2101					
24.08.11							16.7	15.38		15.25 T2101					
25.08.11		3.11m at 08:00		100	67	67				15.64					
				100	93	83	6.8			T2101				II	
										16.88					
				98	72	64	7.9	17.44		T2101					
								18.20		18.06 T2101					
				100	84	71				18.55					
				100	98	90	8.4			T2101					
25.08.11		2.98m at 18:00									-12.41	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 26.08.11

CHECKED EDWARD CHENG DATE 27.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_2503205.GDT 18.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-014**

SHEET 3 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR20	E 835,653.97 N 812,176.49	DATE from 23.08.11 to 26.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +7.59 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
26.08.11		3.07m at 08:00						19.98		19.98					As Sheet 2 of 3.
				100	100	100				T2101					
							5.4			21.47					
				100	100	68				T2101					
										22.48					
				99	99	86		23.29		T2101				II	
							4.0								
								24.04		24.04					
				100	93	93	6.7			T2101					
								25.54		25.54					
				100	100	95	3.2			T2101					
26.08.11		2.99m at 18:00						26.80		26.80	-19.21	26.80			End of drillhole at 26.80m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 26.08.11

CHECKED EDWARD CHENG DATE 27.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 18.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-020**

SHEET 1 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR18	E 835,537.28 N 812,162.51	DATE from 18.08.11 to 23.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.95 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
18.08.11	PW	Dry at 08:00													Wash boring.
				29						T2101	0.80 / +4.15	0.80			Yellowish grey to brownish grey, angular to subangular coarse GRAVEL and COBBLE sized rock fragments with iron tubes and rubber strings. (FILL)
	1.85 PW / HW										1.85 / +3.10	1.85			Wash boring.
		3.00m at 18:00		86	83	77	2.7	4.83		T2101	4.60 / +0.35	4.60			Yellowish grey to brownish grey, angular to subangular coarse GRAVEL and COBBLE sized rock fragments with iron tubes and rubber strings. (FILL)
											+0.12	4.83			
18.08.11														II	Strong, dark grey spotted and mottled pink, slightly decomposed MONZONITE. Joints are widely to closely spaced, rough planar, narrow, limonite and manganese stained, dipping at 10°-20°.
19.08.11		2.80m at 08:00		38	0	0	NI	5.93		T2101	5.93 / -0.98	5.93			
										T2101	6.45			IV	Moderately weak, dark brown, highly deocmposed MONZONITE.
				100	63	63	6.0	6.65		T2101	-1.63	6.58		III	Moderately strong, yellowish grey to dark grey spotted white and pink, moderately decomposed MONZONITE. Joints are closely to medium spaced, rough planar, narrow to very narrow, limonite and manganese stained, dipping at 10°-20° and 80°-90°.
											-2.23	7.18		IV/III	
											-2.37	7.32		III	
				95	72	72	3.5	7.48		T2101	7.48 / -2.53	7.48			7.18- 7.32m: Highly to moderately decomposed MONZONITE.
								8.06		T2101	8.06			III/II	Moderately strong to strong, dark grey spotted pink and white, moderately to slightly decomposed MONZONITE. Joints are medium to widely spaced, rough planar, very narrow, limonite, chlorite and kaolin stained, dipping at 10°-20°, 20°-30° and 80°-90°.
				100	100	100	1.0			T2101	9.06				
				90	88	88				T2101	-5.05	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
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- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 23.08.11

CHECKED EDWARD CHENG DATE 24.08.11

REMARKS

DRILLHOLE LOG J1105506 - MTRC 903.GPJ TYSAN_25032005.GDT 18.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-020**

SHEET 2 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR18	E 835,537.28 N 812,162.51	DATE from 18.08.11 to 23.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.95 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
19.08.11	10.50 HW	3.10m at 18:00		90	88	88				T2101 10.50					As Sheet 1 of 3.
20.08.11		2.80m at 08:00					1.0							III/II	
				91	91	91				T2101 12.03	-7.08	12.03			
								12.03						V	Wash boring, assumed to be completely decomposed MONZONITE.
								12.37		12.37	-7.42	12.37		II	
											-7.57	12.52		III	Strong, dark grey spotted and mottled pink, slightly decomposed MONZONITE. Joints are medium to widely locally very closely spaced, rough planar, very narrow, limonite and kaolin stained, dipping at 10°-20°, 20°-30°, 50°-60° and 80°-90°.
				100	100	85	6.8			T2101 13.55	-7.68	12.63			12.52- 12.63m: Moderately decomposed MONZONITE.
				100	100	100		13.55							
				100	100	93				T2101 15.08					
				98	98	98				T2101 16.00				II	
							2.0			T2101 16.66					
				100	92	92				T2101 18.18					
				99	99	99				T2101 19.53					
				100	100	100				T2101	-15.05	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 23.08.11

CHECKED EDWARD CHENG DATE 24.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 18.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-020**

SHEET 3 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR18	E 835,537.28 N 812,162.51	DATE from 18.08.11 to 23.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.95 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
20.08.11		3.10m at 18:00		100	100	100	2.0			T2101 21.05					As Sheet 2 of 3.
22.08.11		2.10m at 08:00		100	100	95				T2101 22.01					
				100	79	59	>20 9.1	22.01 22.18 22.62		T2101 22.62					
				100	98	95				T2101 24.18					
22.08.11		3.10m at 18:00													
23.08.11		2.80m at 08:00		99	99	99	1.5			T2101 25.68				II	
				99	95	95				T2101 27.00					
							7.3 15.4	26.59 27.00 27.26							
				90	79	63				T2101 28.05					
23.08.11							1.8								
23.08.11				93	91	91		28.96		T2101 28.96	-24.01	28.96			
															End of drillhole at 28.96m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 23.08.11

CHECKED EDWARD CHENG DATE 24.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_2503205.GDT 18.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-051**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR05	E 835,544.62 N 812,165.63	DATE from 03.08.11 to 05.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +5.09 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
															Wash boring.
				63						0.50 T2101 2.00	+4.59 +3.09	0.50 2.00			Pale grey to brownish grey, angular to subangular GRAVEL, COBBLE and occasional boulder sized rock fragments. (FILL)
															Wash boring.
				97	64	58	4.0	9.52		9.52 T2101	-4.43 -4.91	9.52 10.00	× × × ×	III	Moderately strong, dark grey spotted black and white, moderately decomposed MONZONITE.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 06.08.11

CHECKED EDWARD CHENG DATE 07.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 12.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-051**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,544.62 N 812,165.63	JOB No. J1105S06
MACHINE / No. DR05		DATE from 03.08.11 to 05.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +5.09 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				97	64	58	4.0	10.30		T2101 10.30	-5.21	10.30	× ×	III	As Sheet 1 of 2.
								10.55		10.55	-5.46	10.55		V	Wash boring, assumed to be completely decomposed MONZONITE.
				100	100	100	1.6			T2101 12.02			× ×	II	Strong, dark grey, slightly decomposed MONZONITE. Joints are widely to medium spaced, rough planar to undulating, very narrow, chlorite, limonite and kaolin stained, dipping at 10°-20°.
				99	97	97		13.12		T2101 13.12					
				100	100	100				T2101 14.64					
				100	100	100	0.9			T2101 16.12					
				100	93	93		17.44		T2101 17.60	-12.35	17.44	+ +	III	Moderately strong, greenish grey mottled red, moderately decomposed coarse grained GRANITE. Joints re closely spaced, rough planar, very narrow to narrow, limonite stained, dipping at 10°-20° and 80°-90°.
				100	63	39	11.5	18.31		T2101 18.31	-13.22	18.31			End of drillhole at 18.31m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 06.08.11

CHECKED EDWARD CHENG DATE 07.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 12.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-202**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,714.65 N 812,181.28	DATE from 08.02.12 to 10.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.33 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
08.02.12	PW	0.00m at 08:00		47						0.35 T2101 1.20	+1.98	0.35			Wash boring.
											+1.13	1.20			Angular to subangular GRAVEL and COBBLE sized rock fragments. (FILL)
	3.50 PW HW														Wash boring.
	6.22 HW			100	100	93		6.22		6.22 T2101	-3.89	6.22			Strong , grey locally reddish brown spotted white, black and pink, slightly decomposed MONZONITE. Joints are medium to widely locally very closely and closely spaced, rough planar locally smooth, narrow to very narrow, iron and manganese and occasional calcite stained, kaolin and chlorite infilling, dipping at 0°-10°, 10°-20°, 40°-50°, 70°-80° and occasional subvertical joints from 6.48-7.90m and 17.75-17.79m.
08.02.12		0.00m at 18:00								7.46					
09.02.12		0.00m at 08:00		100	100	87	2.1			T2101				II	
										8.95					
				100	100	100				T2101					
											-7.67	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 10.02.12

CHECKED EDWARD CHENG DATE 11.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-202**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,714.65 N 812,181.28	DATE from 08.02.12 to 10.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.33 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	100	100				T2101 10.47					As Sheet 1 of 2.
				100	100	98	2.1			T2101					
							>20	11.84 11.96		11.93					
				100	100	94				T2101					
										13.48					
				100	100	81	3.0			T2101				II	
										14.99					
				100	100	89				T2101					
		0.00m at 18:00					>20	15.96 16.05		16.28					
09.02.12															
10.02.12		0.00m at 08:00									-14.31	16.64			
				100	100	100	2.9			T2101					16.64- 17.20m: Medium to coarse grained GRANITE.
		0.00m at 18:00									-14.87	17.20			
10.02.12								17.79		17.79	-15.46	17.79			End of drillhole at 17.79m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 10.02.12

CHECKED EDWARD CHENG DATE 11.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-203**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,689.63 N 812,188.53	W.O. No.
MACHINE / No. DR17		DATE from 24.02.12 to 25.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.13 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
24.02.12	PW	0.00m at 08:00		94						T2116 0.20–1.00	+1.93	0.20			Wash boring. Angular to subangular fine GRAVEL and COBBLE sized rock fragments. (FILL)
											+1.13	1.00			Wash boring.
	3.32 PW							3.32			-1.19	3.32			
	HW			100	100	28	12.5	3.56		T2116 3.32–4.12				III	Moderately strong, light brownish grey spotted white and black, moderately decomposed fine ash TUFF. Joints are very closely to closely spaced, rough planar, narrow, iron stained, kaolin infilling, dipping at 20°-30°, 50°-60° and subvertical joint from 3.62-4.20m and 4.28-4.61m.
	4.12 HW			100	100	0	>20			T2101 4.12–4.82	-2.49	4.62			
				100	100	85	6.9	4.94		T2101 4.82–6.13				II	Strong, reddish grey spotted white and black, slightly decomposed fine ash TUFF. Joints are closely to medium locally very closely spaced, rough planar, very narrow, kaolin infilling and locally iron and manganese stained, dipping at 10°-20°, 20°-30°, 50°-60° and occasional 70°-80° and subvertical joints from 5.96-6.13m, 10.08-10.70m and 13.01-13.18m.
							>20	5.23 5.28							
							1.8	5.85							
				100	100	77	13.4			T2101 6.13–7.04					
				100	100	94		7.04		T2101 7.04–8.24					
				100	100	86	4.9			T2101 8.24–9.65					
24.02.12		0.00m at 18:00													
25.02.12		0.00m at		100	100	58				T2101	-7.87	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 25.02.12

CHECKED EDWARD CHENG DATE 27.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-203**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,689.63 N 812,188.53	W.O. No.
MACHINE / No. DR17		DATE from 24.02.12 to 25.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.13 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
25.02.12		08:00		100	100	58	9.2	10.06		T2101					As Sheet 1 of 2.
								10.73							
							5.3			10.96					
				100	100	66		11.48		T2101					
							15.6	11.80							
							>20	11.87		11.87					
				100	100	100				T2101					
										12.41					
		0.00m at 18:00					8.6			T2101					
				100	100	88		13.27		13.27	-11.14	13.27		II	
															End of drillhole at 13.27m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 25.02.12

CHECKED EDWARD CHENG DATE 27.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-203A**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,682.54 N 812,190.02	W.O. No.
MACHINE / No. DR17		DATE from 23.02.12 to 25.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.10 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
23.02.12	HW	0.00m at 08:00		70						T2101 0.30–0.80	+1.80	0.30			Wash boring.
											+1.30	0.80			Angular to subangular fine GRAVEL and COBBLE sized rock fragments. (FILL)
															Wash boring.
	4.56 HW	0.00m at 18:00		100	100	41	17.6	4.56		T2101 4.56	-2.46	4.56			
23.02.12										T2101 4.90				III	Moderately strong, light brownish grey spotted white and black, moderately decomposed fine ash TUFF. Joints are closely spaced, smooth planar, narrow, iron and manganese stained, kaolin infilling, dipping at 10°-20°, 60°-70°, 70°-80°and subvertical joints from 4.56-4.69m.
24.02.12		0.00m at 08:00		100	100	48	9.7	4.90							
				100	100	0		5.52		T2101 5.52					
							3.8				-3.71	5.81			
				100	100	40		6.30		T2101 5.81					Strong, reddish grey spotted white and black, slightly decomposed fine ash TUFF. Joints are closely to medium locally very closely spaced, smooth planar locally rough, narrow to very narrow, kaolin infilling, locally iron and manganese stained, dipping at 10°-20°, 30°-40, 60°-70° and occasional 70°-80° and subvertical joint from 10.77-11.30m.
							>20	6.56							
				100	100	74	7.5	7.23		T2101 6.63					
										T2101 7.45				II	
				100	100	39	10.3			T2101 8.85					
				100	100	60		8.98		T2101 9.55					
				100	100	49	9.9			T2101	-7.90	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 25.02.12

CHECKED EDWARD CHENG DATE 27.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-203A**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,682.54 N 812,190.02	DATE from 23.02.12 to 25.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.10 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
24.02.12		0.00m at 18:00		100	100	49	9.9	10.39		T2101 10.39					As Sheet 1 of 2.
				100	100	0	>20	10.67		T2101 10.67					
				100	100	42	13.1	11.28		T2101					
							8.2	11.77		11.77				II	
25.02.12		0.00m at 08:00		100	100	65	7.9			T2101					
25.02.12		0.00m at 18:00						13.16		13.16	-11.06	13.16			End of drillhole at 13.16m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 25.02.12

CHECKED EDWARD CHENG DATE 27.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-204**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,675.68 N 812,191.68	W.O. No.
MACHINE / No. DR17		DATE from 21.02.12 to 23.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.06 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
21.02.12	HW	0.00m at 08:00								0.35	+1.71	0.35			Wash boring.
		0.00m at 18:00		67						T2101					Angular to subangular fine GRAVEL and COBBLE sized rock fragments. (FILL)
21.02.12										0.95					
22.02.12		0.00m at 08:00		57						T2101					
										1.30	+0.76	1.30			Wash boring.
	4.82 HW							4.82		4.82	-2.76	4.82			Strong, grey spotted white and black, slightly decomposed fine ash TUFF. Joints are closely to medium locally very closely spaced, smooth planar locally rough, narrow to very narrow, iron stained, kaolin infilling, dipping at 0°-10°, 30°-40°, 50°-60° and occasional 70°-80° and subvertical joint from 8.04-8.25m.
				100	100	72				T2101				II	
							4.3			5.97					
				100	100	75				T2101					
								7.16			-5.15	7.21			
							18.8			7.42				III	7.21- 7.75m: Moderately decomposed TUFF.
				100	100	0				T2101	-5.69	7.75			
								7.80		7.80					
				100	100	74	5.3			T2101				II	
								8.93		8.93					
							4.0								
				100	100	74		9.43		T2101					
							10.2				-7.94	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 23.02.12

CHECKED EDWARD CHENG DATE 24.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-204**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,675.68 N 812,191.68	DATE from 21.02.12 to 23.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.06 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								10.02							As Sheet 1 of 2.
				100	100	74	7.4			T2101 10.47					
				100	100	51	>20 12.5	11.10 11.17		T2101					
								11.57		11.57				II	
		0.00m at 18:00		100	100	71	5.7			T2101					
22.02.12								12.97		12.97					
23.02.12		0.00m at 18:00		100	100	45	9.1			T2101 13.41	-11.35	13.41			
23.02.12															End of drillhole at 13.41m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 23.02.12

CHECKED EDWARD CHENG DATE 24.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-205**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,692.85 N 812,181.66	DATE from 02.02.12 to 04.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.07 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
02.02.12	HW	0.00m at 08:00		60						0.50 T2101 1.50	+1.57	0.50			Wash boring.
											+0.57	1.50			Angular to subangular GRAVEL sized rock fragments . (FILL)
															Wash boring.
	4.57 HW	0.00m at 18:00		100	100	55	10.0	4.37		4.37 T2101	-2.30	4.37		II	
02.02.12								4.57		4.57 T2101	-2.60	4.67			Strong , dark grey spotted white and black, locally reddish grey, slightly decomposed MONZONITE. Joints are closely to medium locally very closely spaced, rough planar locally smooth, narrow to very narrow, iron and manganese stained, locally kaolin and calcite infilling, dipping at 10°-20°, 50°-60°, 60°-70°, 70°-80° and occasional subvertical joints from 6.53-6.75m, 7.93-8.26m, 8.40-8.75m, 9.05-9.37m, 9.33-9.70m and 10.50-10.73m.
03.02.12		0.00m at 08:00					4.3	4.80							
				100	100	60	12.9							III	
				100	100	86		5.73		5.44 T2101 5.73					
				100	100	32	10.9	6.28		T2101	-4.00	6.07			4.67- 6.07m: Moderately decomposed TUFF.
				100	100	87	13.2			6.90 T2101				II	
				100	100	35	>20	8.32 8.44		7.85 T2101					
				97	97	37	13.1			8.70 T2101					
							7.4	9.05 9.32		9.05	-7.16	9.23			
		0.00m		100	100	25	15.4			T2101	-7.93	10.00		III	9.23- 10.20m: Moderately decomposed TUFF.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 04.02.12

CHECKED EDWARD CHENG DATE 06.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-205**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,692.85 N 812,181.66	DATE from 02.02.12 to 04.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.07 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
03.02.12		at 18:00		100	100	25	>20	10.10 10.20		T2101 10.20	-8.13	10.20		III	As Sheet 1 of 2.
04.02.12		0.00m at 08:00		93	60	0	15.9			T2101 10.95					
				100	100	33		11.65		T2101 11.80				II	
				100	100	25	11.6 >20	12.08		T2101 12.95					
				100	100	0		13.15		T2101 13.15					
04.02.12		0.00m at 18:00		100	100	100	5.2	13.73		13.73	-11.66	13.73			End of drillhole at 13.73m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 04.02.12

CHECKED EDWARD CHENG DATE 06.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-206**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,682.19 N 812,183.57	DATE from 07.02.12 to 09.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.04 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
07.02.12	PW	0.00m at 18:00													Wash boring.
07.02.12										0.50	+1.54	0.50			
08.02.12		0.00m at 08:00		63						T2116					Angular to subangular GRAVEL and COBBLE sized rock fragments. (FILL)
										1.30	+0.74	1.30			Wash boring.
	3.92 PW							3.92			-1.88	3.92			
	HW			100	0	0	NI	4.30		3.92 T2116 4.42				IV/III	Moderately strong to moderately weak, light brown spotted white and pink, moderately to highly decomposed fine ash TUFF. Joints are very closely to closely spaced, rough planar, narrow, iron and manganese stained, locally kaolin infilling, dipping at 10°-20°, 70°-80° and subvertical from 4.42-4.50m.
				100	100	0	14.9	4.97		T2116	-2.99	5.03			
	5.52 HW						>20	5.76		5.52 T2101				II	Strong, grey spotted white and pink, slightly decomposed fine ash TUFF. Joints are closely to medium locally very closely and widely spaced, rough planar locally smooth, narrow to very narrow, iron and manganese stained, kaolin infilling, dipping at 10°-20°, 20°-30°, 50°-60° occasional 70°-80° and subvertical from 5.88-6.24m, 6.75-7.02m, 9.14-9.49m, 12.13-12.26m, 12.55-12.91m and 13.00-13.15m.
				100	100	59	8.1	7.49		7.02 T2101					
				100	100	55				7.93 T2101					
				100	100	93	5.7			9.14 T2101					
				100	100	50					-7.96	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 09.02.12

CHECKED EDWARD CHENG DATE 10.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-206**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,682.19 N 812,183.57	DATE from 07.02.12 to 09.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.04 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
08.02.12		0.00m at 18:00		100	100	50	5.7	10.66		T2101 10.66					As Sheet 1 of 2.
				100	100	30	17.8			T2101 11.10					
09.02.12		0.00m at 08:00		100	100	51	10.0	11.56		T2101				II	
							20.0	12.06							
				100	100	33		12.46		12.46 T2101 12.89					
				100	100	51	5.3	13.78		T2101 13.78	-11.74	13.78			
															End of drillhole at 13.78m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 09.02.12

CHECKED EDWARD CHENG DATE 10.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-207**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,671.57 N 812,185.46	DATE from 01.02.12 to 03.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.03 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
01.02.12	PW	0.00m at 08:00									+1.58	0.45			Wash boring.
				82						0.45 T2101 1.30					Angular to subangular GRAVEL and COBBLE sized rock fragments. (FILL)
01.02.12		0.00m at 18:00									+0.73	1.30			
02.02.12		0.00m at 08:00													Wash boring.
	3.23 PW							3.23		3.23 T2101 4.03	-1.20	3.23			Strong, grey spotted white and black, slightly decomposed fine ash TUFF. Joints are closely to medium locally very closely spaced, rough planar locally smooth, narrow to very narrow, iron and manganese stained, locally kaolin infilling, dipping at 0°-10°, 10°-20°, 50°-60°, 60°-70° and occasional 30°-40° and subvertical joints from 4.40-4.87m, 7.55-8.13m,13.30-13.66m and 13.38-13.58m.
	HW			100	100	19	>20	3.66							
	4.03 HW						12.4			T2101					
	NW			100	100	87		5.03							
	5.90 NW			100	100	63				5.55 T2101 5.90					
							7.2							II	
				100	100	78				TNW					
								7.40		7.40					
				100	100	51	>20			TNW					
							5.9	8.18							
								8.69		8.69					
				100	100	41	12.5	9.17		TNW					
							13.9	9.89			-7.97	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 03.02.12

CHECKED EDWARD CHENG DATE 04.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-207**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,671.57 N 812,185.46	DATE from 01.02.12 to 03.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.03 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
02.02.12		0.00m at 18:00		100	100	64	13.9 20.0	10.25 10.60		TNW 10.05					As Sheet 1 of 2.
03.02.12		0.00m at 08:00		100	100	69	9.0			TNW 10.79					
				100	100	94	8.0	12.16		TNW 11.97				II	
03.02.12		0.00m at 18:00		100	100	91		13.66		TNW 12.97 13.66	-11.63	13.66			End of drillhole at 13.66m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 03.02.12

CHECKED EDWARD CHENG DATE 04.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-208**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,664.47 N 812,193.37	DATE from 18.02.12 to 21.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.96 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
18.02.12	HW	0.00m at 08:00		79						T2101 0.35–0.54	+1.61	0.35			Wash boring.
											+1.42	0.54			Angular to subangular fine GRAVEL and COBBLE sized rock fragments. (FILL)
															Wash boring.
		0.00m at 18:00													
18.02.12											-0.14	2.10			
20.02.12		0.00m at 08:00		79						T2101 2.10–2.50					Angular to subangular fine GRAVEL and COBBLE sized rock fragments. (FILL)
				100						T2101 2.50–2.80	-0.84	2.80			Wash boring.
	5.06 HW							5.06			-3.10	5.06			
				99	99	0	14.5			T2101 5.06–5.89				II	Strong, grey locally light brown spotted white, slightly decomposed fine ash TUFF. Joints are closely to medium locally very closely spaced, smooth planar locally rough, narrow to very narrow, iron and manganese stained, kaolin infilling, dipping at 10°-20°, 20°-30°, 50°-60° and occasional 70°-80° and subvertical joints from 5.20-5.65m, 6.24-6.67m, 9.43-9.89m and 10.03-10.47m.
				100	100	44		5.89		T2101 5.89–6.75					
				100	100	55	8.8			T2101 6.75–7.83					
				100	100	72				T2101 7.83–9.18					
				100	100	29	>20	9.18		T2101 9.18–					
							10.7	9.35							
							>20	9.63							
							6.2	9.82			-8.04	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 21.02.12

CHECKED EDWARD CHENG DATE 22.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-208**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,664.47 N 812,193.37	DATE from 18.02.12 to 21.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.96 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
20.02.12		0.00m at 18:00		100	100	29	6.2	10.47		T2101 10.47					As Sheet 1 of 2.
21.02.12		0.00m at 08:00		99	99	49	10.0			T2101				II	
21.02.12		0.00m at 18:00		100	100	0	6.4	11.97 12.27		T2101 11.97 12.27	-10.31	12.27			End of drillhole at 12.27m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED	CHECKED
S.O. CHAN	EDWARD CHENG
DATE 21.02.12	DATE 22.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-209**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,647.02 N 812,194.13	DATE from 20.02.12 to 21.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.90 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
20.02.12	PW	0.00m at 08:00								0.35	+1.55	0.35			Wash boring.
				87						T2116					Angular to subangular fine GRAVEL and COBBLE sized rock fragments. (FILL)
	2.23 PW									1.85	+0.05	1.85			Wash boring.
								2.23		2.23	-0.33	2.23			
	2.73 HW			100	100	60				T2116 2.73				III	Strong, grey locally light brown spotted white, slightly decomposed fine ash TUFF. Joints are closely to medium locally very closely spaced, smooth planar locally rough, narrow to very narrow, kaolin and chlorite infilling, dipping at 10°-20°, 20°-30° and occasional 50°-60°, 70°-80° and occasional subvertical joint from 2.33-3.11m.
	NW			100	100	60	2.3			T2101	-1.30	3.20			2.23- 3.20m: Moderately decomposed TUFF.
								4.23		3.68					
				99	99	73				T2101					
							7.0			4.90					
				100	100	80				T2101					
								6.23		6.23				II	
				100	100	87				T2101					
	7.74 NW						4.6			7.74					
				100	100	80				TNW					
20.02.12		0.00m at 18:00						8.83							
21.02.12		0.00m at 08:00					13.8			9.07					
				100	100	77		9.48		TNW					
							5.8				-8.10	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED	CHECKED
S.O. CHAN	EDWARD CHENG
DATE 21.02.12	DATE 22.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-209**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,647.02 N 812,194.13	DATE from 20.02.12 to 21.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.90 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
21.02.12		0.00m at 18:00		100	100	77	5.8	10.34		TNW 10.34					As Sheet 1 of 2.
				100	100	0	17.3	11.15		TNW 11.05					
				100	100	39	8.8	11.49		TNW 11.82				II	
				100	100	39	18.2	11.82		TNW 12.58	-10.68	12.58			
							13.2	12.58							End of drillhole at 12.58m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 21.02.12

CHECKED EDWARD CHENG DATE 22.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-210**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,635.88 N 812,194.02	W.O. No.
MACHINE / No. DR11		DATE from 17.02.12 to 18.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.85 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
17.02.12	0.40 PW	0.00m at 08:00									+1.45	0.40			Wash boring.
	HW			60						T2116 0.40					Angular to subangular GRAVEL and COBBLE sized rock fragments. (FILL)
				69						T2116 1.90					
					96	50	13.0	2.76			-0.91	2.76		III	Moderately strong, light brown spotted white, moderately decomposed fine ash TUFF. Joints are closely locally very closely spaced, rough planar, narrow, iron stained, dipping at 10°-20°, 30°-40° and subvertical joint from 2.80-2.94m.
								3.30			-1.45	3.30			
	4.76 HW										-2.91	4.76		V	Wash boring, assumed to be completely decomposed TUFF.
				100	100	20	13.1	4.76		T2101 4.76					Moderately strong, light brown spotted white and black, moderately decomposed fine ash TUFF. Joints are very closely to closely locally medium spaced, smooth planar locally rough, narrow , iron and manganese stained, and kaolin infilling, dipping at 10°-20°, 20°-30°, 60°-70° and occasional 70°-80° and sub-vertical joints from 4.76-5.03m, 4.90-5.07m, 5.28-5.42m and 6.26-6.33m.
							>20	5.60							
							11.4	5.94							
				100	100	46	13.3	6.64		T2101 6.26				III	
								7.54		T2101 7.54					
				100	100	23	16.0	8.04							
							>20	8.34		T2101 8.34	-6.49	8.34			
				100	100	100	4.2	9.09		T2101 9.09				II	Strong, grey spotted white and black, slightly decomposed fine ash TUFF. Joints are closely to medium locally very closely spaced, smooth planar locally rough, narrow to very narrow, kaolin and calcite infilling, locally iron stained, dipping at 10°-20°, 30°-40°, 60°-70° and 70°-80°.
		0.00m at		100	100	67	4.9	9.30		T2101	-8.15	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 18.02.12

CHECKED EDWARD CHENG DATE 20.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-210**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,635.88 N 812,194.02	DATE from 17.02.12 to 18.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.85 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
18.02.12		0.00m at 08:00		100	100	93	4.9	11.15		10.04 T2101 11.15				II	As Sheet 1 of 2.
				100	100	85	4.6			T2101 12.66					
18.02.12		0.00m at 18:00						12.66			-10.81	12.66			End of drillhole at 12.66m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 18.02.12

CHECKED EDWARD CHENG DATE 20.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-211**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,625.01 N 812,193.51	W.O. No.
MACHINE / No. DR09		DATE from 14.04.12 to 16.04.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.83 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
14.04.12	HW	Dry at 08:00		56						0.30 T2116 0.85	+1.53	0.30			Wash boring.
				82						T2116 1.45	+0.38	1.45			Grey , angular to sub-angular gravel and cobble size rock fragments. (FILL)
	2.45 HW							2.45		2.45	-0.62	2.45			Wash boring.
				100	100	55				T2101 3.12			× ×		Strong, grey locally brownish grey spotted black, pink and white, slightly decomposed MONZONITE. Joints are closely to medium locally very closely spaced, rough planar, narrow to very narrow, iron and manganese stained, chlorite infilling, dipping at 10°-20°, 20°-30°, 50°-60°, 60°-70° and subvertical joints from 5.22-5.39m, 7.01-7.74m, 9.72-9.97m and 10.69-10.90m.
				97	97	64	8.1			T2101				II	
										4.00	-2.11	3.94			3.94- 5.43m: Moderately decomposed MONZONITE.
				100	100	79				T2101				III	
							>20	5.15 5.31		5.31	-3.60	5.43			
				99	99	99	2.7			T2101				II	
14.04.12		0.17m at 18:00													
16.04.12		0.00m at 08:00						6.79		6.79					
				100	100	72	10.2			T2101				II	
								8.36		8.26					
				100	100	85	6.9			T2101					
											-7.88	9.71			
				100	100	55				9.76 T2101	-8.10 -8.17	9.93 10.00		III	

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 17.04.12

CHECKED EDWARD CHENG DATE 18.04.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-211**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR09	E 835,625.01 N 812,193.51	DATE from 14.04.12 to 16.04.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.83 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
16.04.12		0.20m at 18:00		100	100	55	6.9	10.97		T2101					9.71- 9.93m: Moderately decomposed MONZONITE. As Sheet 1 of 2.
							>20	11.20		11.08				II	
				100	100	79	6.5	11.97		TNW 11.97	-10.14	11.97			End of drillhole at 11.97m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 17.04.12

CHECKED EDWARD CHENG DATE 18.04.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-212**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,615.63 N 812,192.71	W.O. No.
MACHINE / No. DR09		DATE from 11.04.12 to 13.04.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.80 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
11.04.12	PW	0.16m at 18:00		71						0.35 T2116 0.70	+1.45	0.35			Empty casing.
11.04.12															Angular COBBLE and BOULDER sized rock fragments. (FILL)
12.04.12		0.00m at 08:00		83						T2116 1.50					
				83						T2116 1.90	-0.10	1.90			
															Wash boring.
								4.60		4.60	-2.80	4.60			
	5.75 PW			100	100	33				T2101 5.20					Strong, greyish pink, slightly decomposed fine to corse grained GRANITE. Joints are closely to medium spaced, rough planar, very narrow, iron stained, dipping at 10°-20°, 30°-40° and 50°-60°.
	HW			100	100	100				T2101 6.49					
				100	100	100				T2101 7.15					
				100	100	78	6.8			T2101 8.05				II	
				100	100	75				TNW 9.38					
	9.20 HW	0.21m at 18:00													
12.04.12	NW														
13.04.12		0.00m at 08:00		100	100	42				TNW 9.86	-8.20	10.00			
				100	100	75				TNW					

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 13.04.12

CHECKED EDWARD CHENG DATE 14.04.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-212**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR09	E 835,615.63 N 812,192.71	DATE from 11.04.12 to 13.04.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.80 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	100	75	6.8			TNW				II	As Sheet 1 of 2.
							>20	10.75 10.83		10.83	-9.03	10.83			
				100	100	58	16.4			TNW					Moderately strong, greyish pink, moderately decomposed fine to corse grained GRANITE. Joints are closely to medium spaced, rough planar, very narrow, iron stained, dipping at 10°-20°, 30°-40° and 50°-60°.
										11.87					
	12.80 NW			100	100	50		12.20		TNW					
							4.6			12.67				III	
				100	100	78				TNW					
								13.59		13.59					
				100	100	70	11.4			TNW					
										14.60					
13.04.12		0.25m at 18:00		100	100	28		14.97		TNW 14.97	-13.17	14.97			
															End of drillhole at 14.97m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 13.04.12

CHECKED EDWARD CHENG DATE 14.04.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-220**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,650.28 N 812,186.83	DATE from 09.02.12 to 11.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.90 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
09.02.12	HW	0.00m at ~~08:00~~									+1.50	0.40			Wash boring.
09.02.12 10.02.12		0.00m at 08:00		61						0.40 T2116					Angular to subangular GRAVEL and COBBLE sized rock fragments. (FILL)
				63						1.90 T2116 2.30	-0.40	2.30			
															Wash boring.
								3.96		3.96	-2.06	3.96			
	5.40 HW			100			NI			T2116 5.40				IV/III	Moderately weak to moderately strong, reddish brown spotted white and pink, moderately to highly decomposed MONZONITE.
				100	100	10	>20	5.69			-3.79	5.69			
				100	100	67	7.6	6.66		T2101 6.53				II	Strong, grey locally reddish brown spotted white and pink, slightly decomposed MONZONITE. Joints are closely to medium locally very closely and widely spaced, smooth planar locally rough and undulating , narrow to very narrow, iron and manganese stained, kaolin locally calcite infilling, dipping at 10°-20°, 50°-60°, 60°-70° and occasional subvertical joint from 6.77-7.39m.
				100	100	65	6.6 15.3	7.97 8.58		T2101 7.97					
		0.00m		100	100	100	3.2	9.30		T2101 9.30	-8.10	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 11.02.12

CHECKED EDWARD CHENG DATE 13.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-220**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,650.28 N 812,186.83	DATE from 09.02.12 to 11.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.90 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
10.02.12		at ~~18:00~~		100	100	100	3.2	10.24		T2101 10.24					As Sheet 1 of 2.
11.02.12		0.00m at 08:00		100	100	79	8.5			T2101					
							9.6	11.06		11.06					
				100	100	61	>20	11.58 11.73		TNW				II	
							8.3			12.51					
11.02.12		0.00m at 18:00		100	100	44		13.17		TNW 13.17	-11.27	13.17			End of drillhole at 13.17m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 11.02.12

CHECKED EDWARD CHENG DATE 13.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-221**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,639.45 N 812,186.40	DATE from 11.02.12 to 14.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.88 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
11.02.12	HW	0.00m at 08:00		70							+1.53	0.35			Wash boring.
										T2101 0.35					Angular to sub-angular fine GRAVEL and COBBLE sized rock fragments. (FILL)
					70	0		1.22			+0.66	1.22			
				100	100	80	8.0			T2101 1.47					Moderately strong to moderately weak, grey spotted white and black, moderately to highly decomposed fine ash TUFF. Joints are closely to medium locally very closely spaced, smooth planar, narrow, iron and manganese stained, kaolin infilling, dipping at 20°-30°, 60°-70° and occasional subvertical joints from 3.10-3.57m, 3.72-3.85m and 2.69-2.82m.
				100	100	58	9.6	2.22		T2101 1.82				III/IV	
							NI	2.95		T2101 2.95					
				86	86	34	8.3	3.09							
							>20	3.57							
								3.85		T2101 3.85	-1.97	3.85			
														V	Wash boring, assumed to be completely decomposed TUFF.
	6.05 HW							6.05			-4.17	6.05			
				97	97	36	>20			T2101 6.05				III	Moderately strong, reddish brown spotted white and black, moderately decomposed fine ash TUFF. Joints are closely to medium locally very closely spaced, rough planar, narrow, iron and manganese stained, kaolin infilling, dipping at 0°-10°, 20°-30°, 50°-60° and occasional subvertical joint from 6.53-6.83m.
		0.00m at 18:00						7.00							
11.02.12															
13.02.12		0.00m at 08:00					13.3			T2101 7.40	-5.77	7.65			Strong , grey spotted white, pink and black, slightly decomposed fine ash TUFF. Joints are medium to widely locally very closely to closely spaced, rough planar locally smooth, narrow to very narrow, slightly kaolin infilling, dipping at 0°-10°, 50°-60°, 60°-70° and occasional subvertical joint from 8.67-8.76m.
				100	100	57		8.20							
							4.2			T2101 8.36					
								8.68							
				100	100	68	>20	8.99		T2101 9.40				II	
							0.8								
				100	100	100				T2101	-8.12	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 14.02.12

CHECKED EDWARD CHENG DATE 15.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-221**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,639.45 N 812,186.40	DATE from 11.02.12 to 14.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.88 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
13.02.12 14.02.12		0.00m at 18:00 0.00m at 08:00 0.00m at 18:00		100 100 100	100 100 100	100 100 100	0.8			T2101 10.46 T2101 11.67 T2101 12.95	-11.07	12.95		II	As Sheet 1 of 2.
14.02.12								12.95							End of drillhole at 12.95m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 14.02.12

CHECKED EDWARD CHENG DATE 15.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-222**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,626.64 N 812,186.50	DATE from 11.02.12 to 14.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.85 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
11.02.12	PW	0.00m at													Wash boring.
11.02.12		08:00													
13.02.12		0.00m at 08:00		54						T2116	0.30 +1.55	0.30			Angular to subangular fine GRAVEL and COBBLE sized rock fragments. (FILL)
											1.60 +0.25	1.60			Wash boring.
	2.88 PW										2.88 -1.03	2.88			
	HW						NI	2.88 2.93			-1.08	2.93		III/IV	Moderately strong to moderately weak , reddish brown, spotted white and black, moderately to highly decomposed fine ash TUFF.
				100	100	47	15.8 >20	3.50 3.64		T2116					Moderately strong, grey and reddish brown spotted white, pink and black, moderately decomposed fine ash TUFF. Joints are closely to medium locally very closely spaced, smooth planar locally rough, narrow to very narrow, iron and manganese stained, kaolin infilling, dipping at 0°-10°, 20°-30°, 60°-70° and occasional 40°-50°, 70°-80° and subvertical joints from 3.36-3.48m and 6.46-6.59m.
	4.13 HW						7.9				4.13				
	NW			100	100	54		4.40		T2101					
							13.9				5.16			III	
				100	100	83	>20	5.62 5.72		T2101					
							6.5				6.60				
	7.05 NW			100	100	78		6.95		T2101	7.05 -5.25	7.10			
				100	100	41	>20	7.74		TNW					Strong, grey and reddish brown spotted white, pink and black, slightly decomposed fine ash TUFF. Joints are closely to medium locally very closely spaced, smooth planar locally rough, narrow to very narrow, iron and manganese stained, kaolin infilling, dipping at 0°-10°, 20°-30°, 60°-70° and occasional 40°-50°, 70°-80° and subvertical joint from 9.08-9.27m.
							8.3				8.28				
		0.00m at 18:00		100	100	77		8.83		TNW				II	
13.02.12							15.0				8.93				
14.02.12		0.00m at 08:00		100	100	70	5.7	9.43		TNW	-8.15	10.00			

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 14.02.12

CHECKED EDWARD CHENG DATE 15.02.12

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-222**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,626.64 N 812,186.50	DATE from 11.02.12 to 14.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.85 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
14.02.12		0.00m at 18:00		100	100	8	>20	10.13		TNW 10.13					As Sheet 1 of 2.
										TNW					
				100	100	0		11.40		TNW 11.40				II	
								11.99		TNW 11.90					
				100	100	61	16.1	12.55		TNW					
							3.0	12.88		12.88	-11.03	12.88			
															End of drillhole at 12.88m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 14.02.12

CHECKED EDWARD CHENG DATE 15.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

F76-061125

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-223**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,614.88 N 812,185.05	W.O. No.
MACHINE / No. DR11		DATE from 14.02.12 to 16.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.81 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
14.02.12	PW	0.00m at 18:00													Wash boring.
14.02.12															
15.02.12		0.00m at 08:00		73						T2116 0.40–1.90	+1.41	0.40			Angular to subangular GRAVEL and COBBLE sized rock fragments. (FILL)
											-0.09	1.90			Wash boring.
	4.72 PW										-2.97	4.78			
	HW			100	100	57	3.4	4.78–5.07		T2116 4.78–5.52					Strong, grey spotted white, slightly decomposed fine ash TUFF. Joints are very closely to closely locally medium spaced, smooth planar locally rough, narrow to very narrow, iron and manganese stained, kaolin infilling, dipping at 10°-20°, 20°-30°, 40°-50°, 70°-80° and occasional subvertical joints from 9.00-9.54m and 12.47-12.73m.
	5.52 HW			100	100	84	8.7	5.99		T2101 5.52–6.32					
	NW			100	100	91	5.4			T2101 6.32–7.49				II	
				100	100	63	17.8	8.02		T2101 7.49–8.91					
	8.91 NW						5.3	8.47–8.66							
				100	100	26	18.2			TNW 8.91–					
		0.00m									-8.19	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 16.02.12

CHECKED EDWARD CHENG DATE 17.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-223**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,614.88 N 812,185.05	DATE from 14.02.12 to 16.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.81 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
15.02.12		at ~~18:00~~		100	100	26									
16.02.12		0.00m at 08:00		100	100	30	18.2	10.80		TNW 10.24					As Sheet 1 of 2.
							10.3			TNW 10.78					
				100	100	13		11.19		TNW					
							19.1	11.66		11.60				II	
				100	100	13	18.5			TNW					
								12.47		12.47					
16.02.12		0.00m at 18:00		100	100	0	>20	13.30		TNW 13.30	-11.49	13.30			
															End of drillhole at 13.30m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 16.02.12

CHECKED EDWARD CHENG DATE 17.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-224**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,605.72 N 812,183.81	W.O. No.
MACHINE / No. DR17		DATE from 14.02.12 to 16.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.78 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
14.02.12	HW	0.00m at 08:00		67						T2101 0.35–1.10	+1.43	0.35			Wash boring.
															Angular to subangular GRAVEL and COBBLE sized rock fragments. (FILL)
				40	0	0	NI	1.10		T2101 1.10–2.10	+0.68	1.10		V/IV	Weak to very weak, grey spotted white, completely to highly decomposed fine ash TUFF. (Angular to subangular fine GRAVEL and COBBLE sized rock fragments)
								2.10			-0.32	2.10		V	Wash boring, assumed to be completely decomposed TUFF.
14.02.12	3.14 HW	0.00m at 18:00						3.14			-1.36	3.14			
15.02.12		0.00m at 08:00		100	100	72	7.7	3.62		T2101 3.14–3.64	-2.19	3.97		III	Moderately strong , light brown spotted white, moderately decomposed fine ash TUFF. Joints are closely to medium locally very closely spaced, rough planar, narrow, iron and manganese stained, kaolin infilling, dipping at 10°-20°, 20°-30° and 70°-80°.
							17.6	3.96							
				100	100	49	9.6	5.42		T2101 3.64–4.92					Strong, grey spotted white and pink, slightly decomposed fine ash TUFF. Joints are closely to medium locally very closely spaced, smooth planar locally rough, narrow to very narrow, iron and manganese stained, kaolin and occasional calcite infilling, dipping at 0°-10°, 10°-20°, 50°-60°, 60°-70° and occasional 70°-80° and subvertical joint from 8.94-9.07m.
				100	100	67	6.7	6.17		T2101 4.92–6.33					
							>20	7.02						II	
				100	100	49	2.9	7.70		T2101 6.33–7.65					
				100	100	22				T2101 7.65–8.48					
							7.7								
				100	100	54				T2101 8.48–9.93					
							>20	9.77 9.93			-8.22	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 16.02.12

CHECKED EDWARD CHENG DATE 17.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-224**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,605.72 N 812,183.81	DATE from 14.02.12 to 16.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.78 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	100	43	4.5			T2101					As Sheet 1 of 2.
				100	100	43		10.60		T2101					
							13.9	10.96		10.96					
		0.00m at 18:00		100	100	45	6.2			T2101				II	
15.02.12								11.77							
16.02.12		0.00m at 0[illegible]					>20	12.25		12.13					
16.02.12		at 18:03		100	100	42	9.7	12.92		T2101 12.92	-11.14	12.92			
															End of drillhole at 12.92m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 16.02.12

CHECKED EDWARD CHENG DATE 17.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-225**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,593.67 N 812,182.22	W.O. No.
MACHINE / No. DR11		DATE from 22.10.11 to 24.10.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.76 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
22.10.11	PW	Dry at 08:00									+1.26	0.50			Wash boring.
				85						0.50 T2101 1.15					Dark grey to brown, angular to subangular COBBLE sized rock fragments. (FILL)
											+0.61	1.15			Wash boring.
	1.80 PW										-0.04	1.80			
	HW							1.80		1.80 T2101					Moderately strong, brownish grey to pinkish brown, moderately decomposed fine ash TUFF. Joints are closely to very closely spaced, rough planar, very narrow to narrow, limonite, manganese and chlorite stained, dipping at 30°-40°, 60°-70° and 80°-90°.
	3.00 HW			99	0	0	10.0	3.00		3.00 T2101					
				100	0	0	10.9	3.92		3.92 T2101					
				100	0	0	>20 13.3	4.07 4.67		4.67 T2101					
				100	85	56	13.2	5.20		5.20 T2101					
				100	21	15	11.0 15.0	5.93 6.13		5.53 T2101				III	
				99	55	42	8.1 >20 9.1	6.99 7.12		6.48 T2101 7.64					
		0.00m at 18:00		100	45	45	4.1	7.78		T2101					
22.10.11										8.75 T2101					
24.10.11		0.00m at 08:00		100	49	49	15.2	9.26		9.80 T2101					
				100	39	33					-8.24	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 24.10.11

CHECKED EDWARD CHENG DATE 25.10.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-225**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,593.67 N 812,182.22	W.O. No.
MACHINE / No. DR11		DATE from 22.10.11 to 24.10.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.76 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
24.10.11		0.00m at 18:00		100	39	33	5.6	10.05		T2101				III	As Sheet 1 of 2.
							>20	10.94							
				99	36	28	7.8	11.35		11.25	-9.99	11.75			Strong, dark grey mottled pink and black, slightly decomposed fine ash TUFF. Joints are closely to medium spaced, rough planar, very narrow, chlorite and limonite stained, dipping at 10°-20°, 50°-60° and 80°-90°.
				100	85	74	7.2	12.63		T2101				II	
								13.60		12.63 T2101 13.60	-11.84	13.60			End of drillhole at 13.60m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 24.10.11

CHECKED EDWARD CHENG DATE 25.10.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-011**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,707.17 N 812,183.40	DATE from 06.02.12 to 07.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
06.02.12	HW	Dry at 08:00													Wash boring.
	8.28 HW			100	100	0	>20	8.28 8.48		T2101	8.28 -6.03	8.28		IV	Moderately weak, reddish brown, spotted white and pink, highly decomposed quartz MONZONITE.
				100	100	36	15.4			T2101	8.48 -6.23	8.48		III	Strong, grey spotted white and pink, slightly decomposed MONZONITE. Joints are closely to medium locally very closely spaced, rough planar locally smooth, narrow to very narrow, iron and manganese stained, kaolin infilling, dipping at 10°-20°, 40°-50°, 50°-60°, 60°-70° and occasional subvertical joints from 8.67-9.01m, 10.25-11.08m,
							>20	9.13 9.18			9.18 -6.85	9.10			
				100	100	32	9.4			T2101	-7.75	10.00		II	

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 27.2.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 07.02.12

CHECKED EDWARD CHENG DATE 08.02.12

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-011**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,707.17 N 812,183.40	DATE from 06.02.12 to 07.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	100	32		10.14		T2101 10.43					15.40-15.73m and 16.15-16.65m. 8.48- 9.10m: Moderately decomposed MONZONITE.
				100	100	0	>20	10.90		T2101 11.08					
				100	100	58				T2101 11.68					
				99	99	67	9.0			T2101 13.13					
				100	100	57	17.4	13.13 13.36		T2101 14.18					
06.02.12		3.20m at 18:00					10.9			T2101 15.28					
07.02.12		3.40m at 08:00		100	100	35		14.83		T2101 15.88	-13.63	15.88		II	
				100	100	20	14.3	15.88		T2101 16.35	-14.10	16.35			15.88- 16.35m: Highly fractured.
				100	100	0	>20			T2101 16.93					
				100	100	43		16.66		T2101 17.90					
				100	100	100	4.8			T2101 18.67					
07.02.12		3.50m at 18:00		100	100	95		18.67			-16.42	18.67			End of drillhole at 18.67m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 07.02.12

CHECKED EDWARD CHENG DATE 08.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 27.2.12

F76-061125

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-011A**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR09	E 835,700.31 N 812,185.01	DATE from 21.04.12 to 24.04.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.21 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
21.04.12	PW	Dry at 08:00								0.35 T2116 0.85 T2116 1.25	+1.86	0.35			Empty casing.
				100											Angular COBBLE and BOULDER sized rock fragments. (FILL)
				100							+0.96	1.25			Wash boring.
		0.69m at 18:00		100						4.30 T2101 4.65	-2.09	4.30			Angular COBBLE and BOULDER sized rock fragments. (FILL)
21.04.12											-2.44	4.65			
23.04.12		0.00m at 08:00						4.90		4.90	-2.69	4.90			Wash boring.
	5.50 PW			100	100	100	7.9			T2101 5.28 T2101 5.42	-3.21	5.42		III/II	Moderately strong to strong, pinkish brown, moderately to slightly decomposed coarse grained GRANITE.
	HW			64	64	64		5.42							
	6.10 HW			100	100	100				T2101 6.30					Strong, greyish pink to brownish pink, slightly decomposed coarse grained GRANITE. Joints are closely to medium spaced, rough planar, very narrow, iron stained, clean, dipping at 20°-30°, 40°-50° and 60°-70°.
				100	100	100	2.7			T2101 7.66				II	
				100	100	77	6.3	7.66		TNW 8.96	-6.75	8.96			
				100	100	57				TNW 9.63				III	8.96- 10.69m: Moderately decomposed GRANITE.
				100	100	70				TNW	-7.79	10.00			

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 3.5.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 24.04.12

CHECKED EDWARD CHENG DATE 25.04.12

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-011A**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR09	E 835,700.31 N 812,185.01	DATE from 21.04.12 to 24.04.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.21 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								10.15		TNW 10.15				III	As Sheet 1 of 2.
				100	100	100	>20			TNW					
								10.63		10.63	-8.48	10.69			
				100	100	100				TNW					
		0.67m at 18:00													
23.04.12															
24.04.12		0.00m at 08:00													
				100	100	100	3.5			11.96 TNW					
										12.99				II	
				100	100	80				TNW					
							>20	14.30 14.42		14.42					
				100	100	79				TNW					
										15.39					
				100	100	75				TNW	-13.45	15.66		III	
							4.7			15.81	-13.58	15.79			15.66- 15.79m: Moderately decomposed GRANITE.
				100	100	100				TNW				II	
		0.72m at 18:00													
24.04.12				100	100	70		17.15		16.87 TNW 17.15	-14.94	17.15			End of drillhole at 17.15m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 24.04.12

CHECKED EDWARD CHENG DATE 25.04.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 3.5.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-013**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,654.20 N 812,193.91	DATE from 22.02.12 to 23.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.91 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
22.02.12	PW	0.00m at 08:00		58						0.40 T2116 1.00 T2116 1.70	+1.51	0.40			Wash boring.
				86											Angular to subangular fine GRAVEL and COBBLE sized rock fragments. (FILL)
											+0.21	1.70			Wash boring.
	3.64 PW							3.64		3.64	-1.73	3.64			
	HW 4.34 HW		100	100	100	0	17.2			T2116 4.34				III	Moderately strong, light grey spotted white and black, moderately decomposed fine ash TUFF. Joints are closely to medium locally very closely spaced, smooth planar, narrow, iron stained, kaolin infilling, dipping at 0°-10°, 30°-40° and 70°-80°.
			97	97	54	5.9	>20	4.80 5.14 5.26		T2101	-3.33	5.24			
			100	100	74	3.2				5.70 T2101 7.02				II	Strong, grey spotted white and black, slightly decomposed fine ash TUFF. Joints are closely to medium locally very closely spaced, smooth planar locally rough, very narrow , kaolin infilling and locally iron stained, dipping at 10°-20°, 60°-70° and occasional 70°-80° and subvertical joints from 6.73-7.46m, 8.32-8.48m and 11.29-13.52m.
			100	100	83	8.8		7.42		T2101					
			100	100	90	9.5		9.57		8.48 T2101					
22.02.12		0.00m at 18:00									-8.09	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 23.02.12

CHECKED EDWARD CHENG DATE 24.02.12

REMARKS

DRILLHOLE LOG - J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 5.3.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-013**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,654.20 N 812,193.91	DATE from 22.02.12 to 23.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.91 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
23.02.12		0.00m at 08:00		100	100	52		9.99		T2101 9.99					As Sheet 1 of 2.
										11.29					
				100	100	14	8.8			T2101 12.75				II	
23.02.12		0.00m at 18:00		97	97	26		13.52		T2101 13.52	-11.61	13.52			
															End of drillhole at 13.52m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 23.02.12

CHECKED EDWARD CHENG DATE 24.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 5.3.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-015**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR09	E 835,606.85 N 812,191.58	DATE from 03.04.12 to 11.04.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.81 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
03.04.12	PW	Dry at 08:00								0.46	+1.35	0.46			Empty casing.
				89						T2116					Angular COBBLE sized rock fragments. (FILL)
										1.02	+0.79	1.02			Wash boring.
		0.15m at 18:00													
03.04.12	2.60 PW									2.49	-0.68	2.49			
05.04.12		0.00m at 08:00		69						T2116					Angular COBBLE sized rock fragments. (FILL)
	3.00 HW			100						2.69 T2101					
								2.99		2.99	-1.18	2.99			
				100	100	25	7.5				-1.59	3.40		III/II	Moderately strong to strong, brownish pink, moderately to slightly decomposed fine to coarse grained GRANITE. Joints are closely to medium spaced, rough planar, very narrow, iron stained, chlorite coated, dipping at 20°-30°, 40°-50° and vertical joint from 3.40-3.79m.
							>20	3.40		T2101				III	
								3.79		3.79	-1.98	3.79			
				95	95	30	7.0			T2101				III/II	3.40- 3.79m: Moderately decomposed GRANITE.
								4.84		4.84	-3.03	4.84			
				100	100	0	>20			T2101				III	4.84- 6.03m: Moderately decomposed GRANITE.
				100	100	0				5.54 T2101					
								5.98		5.98	-4.22	6.03			
				100	100	100				T2101					Strong, greyish pink, slightly decomposed fine to coarse grained GRANITE. Joints are closely to medium spaced, rough planar, very narrow, iron stained, dipping at 20°-30°, 40°-50° and 60°-70°.
										6.56					
				100	100	78				T2101					
							6.3			7.91				II	
				100	100	86				T2101					
		0.25m at 18:00								9.30					
05.04.12										T2101					
10.04.12		0.00m at 08:00		100	100	100				9.85 T2101	-8.19	10.00			
				100	100	45									

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 11.04.12

CHECKED EDWARD CHENG DATE 12.04.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 18.4.12

F76-061125

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-015**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR09	E 835,606.85 N 812,191.58	DATE from 03.04.12 to 11.04.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.81 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	100	45				T2101 10.41					As Sheet 1 of 2.
				100	100	85	6.3			T2101 11.83					
				100	100	85	>20	11.83 12.00		TNW 13.02				II	
				100	100	52	13.3			TNW 13.81					
				100	100	0	>20	13.81 14.30		TNW 14.30					
10.04.12		0.25m at 18:00		97	97	50	11.4			TNW 15.13					
11.04.12		0.00m at 08:00		100	100	70				TNW 15.70	-13.89	15.70			
11.04.12								15.70							End of drillhole at 15.70m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 11.04.12

CHECKED EDWARD CHENG DATE 12.04.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 18.4.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-015A**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,600.97 N 812,190.74	DATE from 16.02.12 to 18.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.77 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
16.02.12	HW	Dry at									+1.47	0.30			Wash boring.
16.02.12										0.30					
17.02.12		08:00 Dry at 08:00		75						T2101 0.70					Angular to subangular GRAVEL and COBBLE sized rock fragments. (FILL)
				90						T2101 1.20	+0.57	1.20			
	1.81 HW										-0.04	1.81			Wash boring.
								1.81		1.81					
				100	100	14	9.5	2.23		T2101 2.71					Strong, grey spotted white and black, slightly decomposed fine ash TUFF. Joints are closely to medium locally very closely spaced, smooth planar locally rough, narrow to very narrow, iron and manganese stained, kaolin infilling, dipping at 20°-30°, 30°-40°, 50°-60°, 60°-70° and occasional 70°-80°.
				100	100	63	7.3			T2101 4.24					
								4.56							
				100	100	22	>20	5.00		T2101 5.72					
							11.1	5.18							
							>20	5.24							
							12.8	5.71							
				98	98	60	9.3			T2101 7.03				II	
								6.79							
							>20	7.07							
				100	100	20	11.3			T2101 8.31					
								8.31							
		3.15m at 18:00		100	100	0	11.5			T2101 8.96					
17.02.12															
18.02.12		3.20m at 08:00						9.09							
				100	100	64	4.8			T2101	-8.23	10.00			

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 24.2.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 18.02.12

CHECKED EDWARD CHENG DATE 20.02.12

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-015A**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,600.97 N 812,190.74	DATE from 16.02.12 to 18.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.77 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
18.02.12		3.33m at 18:00		100	100	64	4.8	10.45		T2101 10.45	-12.72	14.49		II	As Sheet 1 of 2.
				100	100	100		11.98		T2101 11.98					
				100	100	19	>20	12.57		T2101 13.16					
							7.9	12.95							
							>20	13.16							
				100	100	78	7.5	14.49		T2101 14.49					End of drillhole at 14.49m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 18.02.12

CHECKED EDWARD CHENG DATE 20.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 24.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-213**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,589.98 N 812,189.31	JOB No. J1105S06
MACHINE / No. DR11		DATE from 18.10.11 to 19.10.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.75 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
18.10.11	PW	Dry at 08:00									+1.35	0.40			Wash boring.
				67						T2101	0.40				Dark grey to dark brown, angular to subangular coarse GRAVEL and COBBLE sized rock fragments. (FILL)
											+0.75	1.00			Wash boring.
											1.00				
				60						T2101	-0.15	1.90			Dark grey to dark brown, angular to subangular coarse GRAVEL and COBBLE sized rock fragments. (FILL)
	3.00 PW										1.90				
	HW										-0.95	2.70			Wash boring.
	3.69 HW										2.70				
				71						T2101	-1.94	3.69			Dark grey to dark brown, angular to subangular coarse GRAVEL and COBBLE sized rock fragments. (FILL)
								3.90			3.69				
							3.2				-2.15	3.90			Moderately strong, pinkish brown spotted black and green, moderately decomposed coarse grained GRANITE. Joints are closely to medium spaced, rough planar, very narrow, chlorite, limonite and manganese stained, dipping at 40°-50°, 60°-70° and 80°-90°.
				100	69	58		4.53		T2101					
							5.8				4.93				
				100	88	80		5.56		T2101					
							10.9				6.21				
								6.48							
				100	38	38	7.3			T2101				III	
								7.57			7.57				
							2.5								
				100	41	36		8.36		T2101					
							6.8								
							14.8	9.09			9.09				
				100	19	19	6.2	9.36		T2101	-7.48	9.23			Moderately strong, pinkish grey spotted black and white, moderately decomposed MONZONITE. Joints are closely to medium spaced, rough planar, very narrow to narrow, chlorite, kaolin, limonite and
							11.5	9.84			-8.25	10.00		III	

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 19.10.11

CHECKED EDWARD CHENG DATE 20.10.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 12.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-213**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR11	E 835,589.98 N 812,189.31	DATE from 18.10.11 to 19.10.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.75 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
18.10.11		0.00m at 18:00		100	19	19	4.4	10.10		T2101 10.33			× ×		manganese stained, dipping at 10°-20°, 20°-30°, 70°-80° and 80°-90°.
				100	52	52				T2101 11.53			× ×	III	
19.10.11		0.00m at 08:00					>20	11.45 11.61					× ×		
				100	21	15	14.9			T2101 12.48			× ×		
19.10.11		0.00m at 18:00		100	34	34	11.4	12.48 12.92			-11.17	12.92	× ×		End of drillhole at 12.92m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 19.10.11

CHECKED EDWARD CHENG DATE 20.10.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 12.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-219**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR17	E 835,662.20 N 812,186.33	DATE from 04.02.12 to 07.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.96 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.T./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
04.02.12	0.50 PW	0.00m at 08:00									+1.46	0.50			Wash boring.
	HW			83						T2116 0.50					Angular to subangular GRAVEL and COBBLE sized rock fragments. (FILL)
				78						T2116 1.70					
								2.86		T2116 2.86	-0.90	2.86			Strong, grey spotted white and pink, slightly decomposed fine ash TUFF. Joints are closely to medium locally very closely spaced, rough planar locally smooth, narrow to very narrow, iron and manganese stained, locally kaolin infilling, dipping at 0°-10°, 20°-30° and occasional 70°-80° and subvertical joint from 2.95-3.53m.
	3.96 HW			95	95	0	>20			T2116 3.96					
	NW						11.5	4.17							
				93	93	47	>20	4.43 4.57		T2101 5.12					
				97	97	91	9.5			T2101 6.27					
04.02.12	6.36 NW	0.00m at 18:00		100	100	0				TNW 6.36				II	
06.02.12		0.00m at 08:00		100	100	89	3.8	6.47		TNW 7.50					
								7.25							
				100	100	83	8.8			TNW 8.43					
								8.62							
				100	100	73	9.3			TNW 9.78					
				100	100	92				TNW	-8.04	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 07.02.12

CHECKED EDWARD CHENG DATE 08.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 24.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-219**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,662.20 N 812,186.33	W.O. No.
MACHINE / No. DR17		DATE from 04.02.12 to 07.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.96 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.T./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	100	92	9.3	10.45		TNW 10.80					As Sheet 1 of 2.
				100	100	95	5.4			TNW				II	
06.02.12		0.00m at 18:00						12.11		12.11					
07.02.12		0.00m at 08:00		100	100	91	4.7			TNW					
07.02.12		0.00m at 18:00						13.40		13.40	-11.44	13.40			End of drillhole at 13.40m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 07.02.12

CHECKED EDWARD CHENG DATE 08.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 24.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-169**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR10	E 835,185.67 N 812,112.91	DATE from 08.11.11 to 11.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.83 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
08.11.11	PW														Wash boring.
				95						T2116	-3.37	4.20			
	5.20 PW										-3.77	4.60			Dark grey to yellowish brown, angular to subangular coarse GRAVEL sized rock and shell fragments and rubbers. (FILL)
		0.00m at 18:00									-4.37	5.20			Wash boring.
08.11.11				88	0	0	NI	5.20		T2116				IV	Weak, yellowish grey to brownish grey, highly decomposed fine ash TUFF.
10.11.11		0.00m at 08:00						5.76			-4.93	5.76			Moderately strong, brownish grey to yellowish grey, moderately decomposed fine ash crystal TUFF with closely to very closely spaced joints, dipping at 10°-20° and 50°-60°.
				96	42	22	10.3	6.44		T2101				III	
							>20	6.66							
							10.5	7.04			-6.09	6.92			Strong, dark grey to greenish grey, slightly decomposed fine ash crystal TUFF. Joints are closely to medium spaced, smooth planar, very narrow to narrow, kaolin and limonite stained, dipping at 10°-20°, 50°-60° and 80°-90° with some microfracture.
				100	97	97	4.5	8.60		T2101				II	
				100	53	51	5.3	9.36		T2101		8.28			
				99	42	42	8.5			T2101	-9.17	9.62 10.00			

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 10.2.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 11.11.11

CHECKED EDWARD CHENG DATE 12.11.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-169**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR10	E 835,185.67 N 812,112.91	DATE from 08.11.11 to 11.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.83 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
10.11.11		0.00m at 18:00		99	42	42	8.5	10.66		T2101					As Sheet 1 of 2.
								11.12							
				99	39	39	2.8			T2101				II	
11.11.11		0.00m at 08:00						12.47							
				100	100	100	6.1			T2101					
11.11.11								13.45		13.45	-12.62	13.45			End of drillhole at 13.45m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 11.11.11

CHECKED EDWARD CHENG DATE 12.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 10.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-170**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR10	E 835,173.52 N 812,110.01	DATE from 11.11.11 to 14.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.79 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
11.11.11	PW	0.00m at 08:00													Wash boring.
				81						T2116	6.20 -5.41	6.20			Yellowish grey to brownish grey, angular to subangular COBBLE sized rock and occasional wood fragments. (FILL)
				87	0	0	NI	7.73		T2116	7.73 -6.94	7.73			Weak to Moderately weak, brownish grey to pale grey, highly to moderately deocmposed fine ash TUFF.
	8.60 PW			74	0	0	NR	8.48 8.60		T2116	8.13			IV/III	
	HW										8.60 -7.81	8.60			Wash boring, assumed to be completely decomposed TUFF.
11.11.11	9.30 HW	0.00m at 18:00												V	
12.11.11		0.00m at 08:00					NI	9.30 9.45			9.30 -8.51	9.30		IV/III	Weak to Moderately weak, brownish grey to pale grey, highly to moderately deocmposed fine ash TUFF.
				68	0	0	16.7			T2101	-8.66	9.45		III	
							NR	9.75			-8.96	9.75		V	
											-9.17	9.96			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 14.11.11

CHECKED EDWARD CHENG DATE 15.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 10.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-170**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR10	E 835,173.52 N 812,110.01	DATE from 11.11.11 to 14.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.79 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								9.96							
				99	11	0	6.3	10.44		T2101					Moderately strong, brownish grey to dark grey spotted white, moderately decomposed fine ash TUFF. Joints are closely to very closely spaced, narrow to very narrow, limonite stained, dipping at 40°-50° and 60°-70°.
							18.8	10.76							
				100	17	17	7.0			T2101				II	No recovery assumed to be completely decomposed TUFF.
								11.62							Strong, dark grey to brownish grey spotted and streaked white, slightly decomposed fine ash crystal TUFF. Joints are closely to very closely spaced, rough planar and smooth, very narrow, limonite, chlorite and calcite stained, dipping at 10°-20°, 50°-60° and 80°-90°.
				100	20	20	7.3	12.05		T2101					
							0.0	12.60			-11.81	12.60			
				100	0	0	18.2	12.68		T2101	-11.96	12.75		III	12.60- 12.75m: Moderately strong and moderately decomposed TUFF.
								13.01							
				100	24	18	11.9	13.60		T2101					
							>20	13.79							
				100	73	60	8.7			T2101				II	
								14.71							
		0.00m at 18:00		100	22	0	12.2			T2101	-14.52	15.31			
12.11.11								15.61							
14.11.11		0.00m at 08:00													Strong, dark grey spotted and streaked white, slightly decomposed fine ash crystal TUFF. Joints are closely to medium spaced, rough planar, vary narrow, limonite and chlorite stained, dipping at 10°-20°, 60°-70° and 80°-90°.
				100	52	52	3.5			T2101				II	
14.11.11		0.00m at 18:00						16.76			-15.97	16.76			
															End of drillhole at 16.76m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 14.11.11

CHECKED EDWARD CHENG DATE 15.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 10.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-171**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR12	E 835,162.40 N 812,107.34	DATE from 12.11.11 to 14.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.75 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
12.11.11	HW	0.00m at 08:00									+0.35	0.40			Wash boring.
				84						0.40 T2116 1.20	-0.45	1.20			Black and brownish grey, angular to subangular COBBLE sized rock, concrete and wood fragments. (FILL)
															Wash boring.
								8.40			-7.65	8.40			
				90	0	0	NI			8.40 T2101 8.90	-8.15	8.90		IV/III	Moderately weak to moderately strong, greyish brown to pale grey, highly to moderately decomposed fine ash TUFF.
	9.33 HW							8.90						V	No recovery assumed to be completely decomposed TUFF.
								9.33		9.33	-8.58	9.33			
				24	0	0	NI			T2101				IV/III	Moderately weak to moderately strong, greyish brown to pale grey, highly to moderately decomposed fine ash TUFF.
							NR	9.57			-8.99	9.74			
				100	92	92	6.7	9.74		9.74 T2101	-9.25	10.00		III	

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 14.11.11

CHECKED EDWARD CHENG DATE 15.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 10.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-171**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,162.40 N 812,107.34	W.O. No.
MACHINE / No. DR12		DATE from 12.11.11 to 14.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.75 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	92	92	6.7	10.34		T2101 10.34	-9.59	10.34		III	Moderately strong, pale grey to dark grey spotted black and white, moderately decomposed coarse ash TUFF. Joints are closely spaced, rough planar, very narrow locally narrow, limonite and manganese stained, dipping at 10°-20°, 30°-40° and 60°-70°.
							4.2	10.82							
				99	99	92	8.7	11.05		T2101 11.75					Strong, dark grey spotted white and streaked yellowish grey, slightly decomposed fine ash crystal TUFF. Joints are closely to locally medium spaced, rough planar to stepped and smooth, calcite and limonite stained, dipping at 20°-30°, 40°-50°, 60°-70° and microfractures.
				100	100	81	6.3	12.81		T2101 12.81					
				100	47	47	1.5	13.48		T2101 14.08					
							8.3	14.08							
				100	87	76	5.5	15.35		T2101 15.35				II	
12.11.11		0.00m at 18:00		100	83	67	9.3	16.21		T2101 16.21					
14.11.11		0.00m at 08:00					12.9	16.52							
				100	22	16	6.8	17.30		T2101					
		0.00m at 18:00		100	74	74	3.5	17.70							
14.11.11								18.27		18.27	-17.52	18.27			
															End of drillhole at 18.27m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 14.11.11

CHECKED EDWARD CHENG DATE 15.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 10.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-182**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR10	E 835,174.05 N 812,102.24	DATE from 03.11.11 to 05.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.86 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
03.11.11	PW	0.00m at 08:00		78						0.25 T2116 0.70	+0.61	0.25			Wash boring.
											+0.16	0.70			Black and brownish grey, angular to subangular COBBLE sized rock fragments. (FILL)
															Wash boring.
				63						6.00 T2116 6.80	-5.14	6.00			Firm to stiff, yellowish brown to yellowish grey, SILT with some gravel and cobble sized rock fragments. (COLLUVIUM)
	6.80 PW										-5.94	6.80			
	HW										-6.14	7.00			Wash boring.
		0.00m at 18:00		72						7.00 T2116 7.50	-6.64	7.50			Brownish grey to yellowish brown, subangular to subrounded COBBLE sized rock fragments. (ALLUVIUM)
	7.92 HW														Wash boring.
03.11.11											-7.06	7.92			
05.11.11		0.00m at 08:00		100	0	0	12.0	7.92		7.92 T2101 8.64				III	Moderately strong, dark grey spotted white and greenish grey, moderately decomposed fine ash crystal TUFF. Joints are closely to very closely spaced, rough planar and stepped, very narrow, limonite and calcite stained, dipping at 10°-20°, 50°-60° and 80°-90° with some microfractures.
							11.8	8.48			-7.93	8.79			
				100	0	0	9.3	8.82		T2101 9.36					Strong, dark grey, slightly decomposed fine ash TUFF. Joins are closely to medium spaced, rough planar, very narrow, dipping at 30°-40°, 40°-50° and 60°-70°.
				100	0	0	11.4	9.36		T2101 9.84				II	
				100	33	0					-9.14	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 05.11.11

CHECKED EDWARD CHENG DATE 06.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 10.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-182**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR10	E 835,174.05 N 812,102.24	DATE from 03.11.11 to 05.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.86 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
							11.4	10.24							As Sheet 1 of 2.
				100	33	0	18.0	10.74		T2101 10.74					
				100	0	0	7.3	11.15		T2101				II	
							11.6	11.58		11.58					
				100	28	19	4.4	12.03		T2101	-11.22	12.08			
							10.9				-11.58	12.44		III	12.08- 12.44m: Moderately strong and moderately decomposed TUFF.
				100	0	0	10.2	12.67		12.67 T2101					
				100	26	26	7.9	13.16		13.16 T2101				II	
							14.8	13.92		13.92					
05.11.11		0.00m at 18:00		100	67	67	6.2	14.19		T2101					
								14.67		14.67	-13.81	14.67			End of drillhole at 14.67m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 05.11.11

CHECKED EDWARD CHENG DATE 06.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 10.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDD-002**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,196.58 N 812,116.66	DATE from 05.11.11 to 08.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.82 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
05.11.11	PW	0.00m at 08:00		75						T2116 0.60–0.72	+0.22 +0.10	0.60 0.72			Wash boring.
															Dark grey to black, angular to subangular COBBLE sized rock fragments. (FILL)
															Wash boring.
	3.10 PW							3.10			-2.28	3.10			
	HW						>20	3.23							Moderately weak to moderately strong, yellowish grey to yellowish brown, highly to moderately decomposed fine ash crystal TUFF. Joints are closely to very closely spaced, rough planar, narrow to very narrow, limonite, manganese and kaolin stained, dipping at 10°-20° and 50°-60°.
	3.85 HW			96	0	0	18.2	3.56		T2116					
							>20	3.85		3.85				IV/III	
							10.7			T2101	-3.78	4.60			
				78	16	0	NI	4.60			-3.95	4.77		IV	Moderately weak brownish grey to brown, highly decomposed fine ash crystal TUFF.
							NR	5.05			-4.23	5.05		V	No recovery assumed to be completely decomposed TUFF.
							NI	5.44		5.15	-4.62	5.44		IV/III	Moderately weak to moderately strong, yellowish brown to yellowish grey, highly to moderately decomposed fine ash TUFF.
				97	57	0	13.0	5.90		T2101	-5.18	6.00		III	
							>20	5.95							Moderately strong, yellowish grey, moderately decomposed fine ash crystal TUFF. Joints are closely to very closely spaced, rough planar, narrow to very narrow, manganese and kaolin stained, dipping at 10°-20° and 30°-40°.
							13.4			6.37				II	
				100	40	20				T2101	-6.62	7.44			Strong, dark grey to greenish grey spotted and streaked white, slightly decomposed fine ash crystal TUFF. Joints are closely spaced, rough planar, very narrow, limonite, manganese and locally kaolin stained, dipping at 10°-20°, 50°-60° and microfractures.
							>20	7.44						III	
								7.73		7.73	-6.91	7.73			Moderately strong, brown to brownish grey, moderately decomposed fine ash crystal TUFF. Joints are very closely to closely spaced, rough planar, very narrow, manganese, kaolin and chlorite stained, dipping at 20°-30°, 40°-50° and 60°-70°.
				99	81	71	6.3			T2101				II	
05.11.11		0.00m at 18:00													Strong, dark grey to greenish grey spotted and streaked white, slightly decomposed fine ash crystal TUFF. Joints are medium locally very closely spaced, smooth and undulating, very narrow, limonite and chlorite stained, dipping at 50°-60°, 70°-80°, 80°-90° and microfractures.
07.11.11		0.00m at 08:00		100	0	0	>20	9.25		9.15 T2101	-9.18	10.00			
							14.1	9.89							

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 08.11.11

CHECKED EDWARD CHENG DATE 09.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 10.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDD-002**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR11	E 835,196.58 N 812,116.66	DATE from 05.11.11 to 08.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.82 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	0	0	6.8			T2101 10.19					As Sheet 1 of 2.
				100	16	16	6.8	11.07		T2101 11.47					
				100	54	54	5.5	12.16		T2101 12.73					
				100	13	13	17.6	12.33		T2101 13.83				II	
07.11.11		0.00m at 18:00		99	59	55	5.6	15.02		T2101 15.02					
08.11.11		0.00m at 08:00		100	49	27	16.3	15.45		T2101 16.12					
08.11.11		0.00m at 18:00		100	75	75	5.2	16.79		T2101 16.79	-15.97	16.79			End of drillhole at 16.79m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 08.11.11

CHECKED EDWARD CHENG DATE 09.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 10.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-181**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR10	E 835,187.61 N 812,105.36	DATE from 05.11.11 to 08.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.88 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.T./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
05.11.11	PW	0.00m at 08:00		60						T2116 0.30–0.80	+0.58	0.30			Wash boring.
											+0.08	0.80			Dark grey, angular to subangular coarse GRAVEL and COBBLE sized rock fragments. (FILL)
	3.24 PW														Wash boring.
				100	40	40	8.8	3.24		T2101 3.24–3.81	-2.36	3.24			Moderately strong, yellowish grey spotted black and white, moderately decomposed fine ash crystal TUFF. Joints are closely spaced, rough planar, very narrow, manganese, limonite and calcite stained, dipping at 10°-20°, 60°-70° and 80°-90°.
		0.00m at 18:00		100	52	52	8.3	3.81		T2101 3.81–4.77				III	
05.11.11								4.77							
07.11.11		0.00m at 08:00		97	74	74	5.0			T2101 4.77–6.30	-4.89	5.77			
							NI	5.77			-5.16	6.04		IV	Weak, brownish grey to pale grey, highly decomposed fine ash TUFF.
								6.04							Strong, dark grey to greenish grey spotted black and white, slightly decomposed fine ash crystal TUFF. Joints are closely to medium spaced, rough planar, very narrow, kaolin, limonite and calcite stained, dipping at 10°-20°, 60°-70°, 70°-80° and 80°-90°.
				100	81	81	7.8	6.68		T2101 6.30–7.72	-6.72	7.60			
							4.3	7.61							7.60- 12.55m: with some microfractures.
				99	75	70	7.4			T2101 7.72–9.23				II	
				100	36	36	6.0	9.50		T2101 9.23–10.00	-9.12	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 08.11.11

CHECKED EDWARD CHENG DATE 09.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 27.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-181**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR10	E 835,187.61 N 812,105.36	DATE from 05.11.11 to 08.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.88 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								10.17		T2101 10.17					As Sheet 1 of 2.
				100	55	19	8.3			T2101					
		0.00m at 18:00						11.26						II	
07.11.11							15.6								
08.11.11		0.00m at 08:00						11.71		11.71					
				100	95	95	7.1			T2101					
08.11.11								12.55		12.55	-11.67	12.55			
															End of drillhole at 12.55m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 08.11.11

CHECKED EDWARD CHENG DATE 09.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 27.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDD-052**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR11		DATE from 12.11.11 to 16.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.85 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
12.11.11	HW	0.00m at 08:00									+0.15	0.70			Wash boring.
				94						T2116 0.70 – 1.60					Yellowish grey to brownish grey, coarse GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
				88						T2116 1.60 – 2.00	-1.15	2.00			
	2.43 HW			100	0	0		2.43		T2116 2.00 – 2.11	-1.26	2.11			Wash boring.
										T2116 2.11 – 2.43	-1.58	2.43			Yellowish grey to brownish grey, coarse GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
		0.00m at 18:00		100	0	0	9.4	3.49		AT3 2.43 – 3.49	-2.64	3.49		III	Moderately strong, grey to yellowish grey spotted black and white, moderately decomposed fine ash crystal TUFF. Joints are closely spaced, smooth planar locally rough stepped, manganese, limonite and chlorite stained, dipping at 10°-20° and 80°-90°.
12.11.11															
14.11.11		0.00m at 08:00		100	0	0	7.1	4.62		AT3 3.49 – 4.33	-3.65	4.50			Strong, dark grey spotted white, slightly decomposed fine ash vitric TUFF. Joints are closely to widely spaced, very narrow, chlorite, limonite and kaolin stained, dipping at 10°-20°, 50°-60° and 80°-90°.
				100	97	97	1.9			AT3 4.33 – 5.67					4.50- 7.80m: with some micro-fractures.
				100	100	92	9.7	6.78		AT3 5.67 – 6.94				II	
				100	80	73	6.2	7.50		T2101 6.94 – 8.47	-6.95	7.80			
				100	30	0	13.6	8.47		T2101 8.47 – 9.13					
		0.00m at 18:00		100	33	13	7.3	9.13		T2101 9.13 – 9.95	-9.15	10.00			
14.11.11								9.95							

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 16.11.11

CHECKED EDWARD CHENG DATE 17.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 1.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDD-052**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR11		DATE from 12.11.11 to 16.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.85 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
15.11.11		0.00m at 08:00		100	62	15	17.5	10.35		T2101 T2101				II	As Sheet 1 of 2.
							11.7			10.60 T2101					
				100	25	25		11.12			-10.27	11.12		III	Moderately strong, brownish grey to dark grey spotted white, moderately decomposed fine ash crystal TUFF, highly fractured with very closely to extremely closely spaced joints.
							>20	11.43		11.43	-10.58	11.43			
				100	46	30	10.0			T2101					Moderately strong to strong, dark grey spotted white, moderately to slightly decomposed fine ash TUFF. Joints are closely to very closely spaced, very narrow, limonite and chlorite stained, dipping at 10°-20°, 70°-80° and 80°-90°.
								12.43		12.43					
				100	29	29	7.7			T2101				III/II	
								13.34		13.34					
							12.9	13.65							
				100	63	36	6.8			T2101					
								14.24							
							17.4	14.47		14.47	-13.62	14.47		III	
				100	24	0	>20	14.79		T2101	-13.94	14.79			14.47- 14.79m: Moderately strong and moderately decomposed TUFF.
							16.1	15.10		15.10					
		0.00m at 18:00		100	45	17	8.6			T2101				III/II	
15.11.11								15.68		15.68					
16.11.11		0.00m at 08:00		100	38	28	10.3			T2101					
16.11.11		0.00m at 18:00						16.46		16.46	-15.61	16.46			End of drillhole at 16.46m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 16.11.11

CHECKED EDWARD CHENG DATE 17.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 1.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-059**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,504.63 N 812,179.24	W.O. No.
MACHINE / No. DR09		DATE from 03.11.11 to 05.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.48 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
03.11.11	PW	Dry at 08:00		80						T2116 0.36–0.46	+1.12	0.36			Wash boring.
											+1.02	0.46			Black, angular to subangular coarse GRAVEL and COBBLE sized rock fragments. (FILL)
		0.48m at 18:00													Wash boring.
03.11.11															
04.11.11	3.00 PW	0.26m at 08:00		100						T2101 2.74–2.99	-1.26	2.74			Black, angular to subangular coarse GRAVEL and COBBLE sized rock fragments. (FILL)
	HW										-1.51	2.99			Wash boring.
	4.20 HW							3.88		3.88	-2.40	3.88			
				100	47	47	6.4			T2101				III/II	Moderately strong to strong, yellowish grey to pale grey spotted black and pink, moderately decomposed MONZONITE. Joints are closely spaced, rough planar, very narrow, limonite and manganese stained, dipping at 10°-20°, 40°-50° and 80°-90°.
				100	53	44		4.98		4.41 T2101 4.98					
				100	87	82	3.7			T2101	-4.18	5.66			
										6.36				II	Strong, dark grey spotted pink and black, slightly decomposed MONZONITE. Joints are medium to widely locally closely spaced, rough planar, manganese and limonite stained, dipping at 10°-20°, 40°-50° and 60°-70°.
				100	96	94	9.2	7.16		T2101					
								7.81		7.76					
				100	94	91	2.9			T2101					
								9.18		9.18					
				100	92	90	3.3			T2101	-8.52	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 06.11.11

CHECKED EDWARD CHENG DATE 07.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-059**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,504.63 N 812,179.24	W.O. No.
MACHINE / No. DR09		DATE from 03.11.11 to 05.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.48 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
04.11.11		0.32m at 18:00		100	92	90	9.3	10.10		T2101 10.64			× ×		As Sheet 1 of 2.
05.11.11		0.12m at 08:00		100	0	0	11.8	10.64		T2101 10.97			× ×	II	
05.11.11				100	87	77	5.8	11.15		T2101 12.01	-10.53	12.01	× ×		End of drillhole at 12.01m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 06.11.11

CHECKED EDWARD CHENG DATE 07.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-060**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,510.97 N 812,170.98	W.O. No.
MACHINE / No. DR09		DATE from 19.07.12 to 21.07.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.55 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
19.07.12	0.25 PW HW	0.00m at 08:00		100						T2-101 0.25	+1.30	0.25			Wash boring.
										T2-101 0.50	+1.05	0.50			Grey, angular to subangular GRAVEL and COBBLE sized rock fragments. (FILL)
															Wash boring.
				88	88	61	4.0 NI	2.57 2.82 2.90		T2-101 2.57	-1.02	2.57		III	Moderately strong, brownish grey spotted white and black, moderately decomposed coarse grained GRANITE.
										2.90	-1.35	2.90			Wash boring.
				100	100	0		4.18		T2-101 4.18	-2.63	4.18			Moderately strong to moderately weak, brownish grey spotted white and black, moderately to highly decomposed coarse grained GRANITE.
				94	94	0	>20			T2-101 4.48				III/IV	
	5.56 HW			88	88	0				T2-101 5.14					
				100	100	23		5.89		T2-101 5.56	-4.01	5.56			Moderately strong to strong, pinkish grey locally greyish pink spotted white and black, moderately to slightly decomposed GRANITE. Joints are very closely to closely locally medium spaced, rough planar, narrow, iron and manganese stained, kaolin infilling, dipping at 10°-20°, 20°-30°, 50°-60° occasional 70°-80° and subvertical joints from 6.83-6.95m and 7.22-7.43m.
				100	100	42	13.3			T2-101 6.09				III/II	
							>20	7.02 7.08		7.22					
				100	100	31	14.5			T2-101 7.84	-6.29	7.84			
				100	100	0	>20	7.84		T2-101 8.36	-6.81	8.36		III/IV	Moderately strong to moderately weak, brownish grey spotted white and black, moderately to highly decomposed coarse grained GRANITE.
				100	100	48	12.4	8.36		T2-101 9.70	-8.45	10.00		III/II	Moderately strong to strong, brownish grey and greyish pink spotted white and black, moderately to slightly decomposed GRANITE. Joints are closely to medium locally very closely spaced, rough planar, narrow, iron and manganese stained, dipping at 20°-30°, 40°-50° and 60°-70°.
				100	100	38				T2-101					

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 23.07.12

CHECKED EDWARD CHENG DATE 24.07.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-060**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR09	E 835,510.97 N 812,170.98	DATE from 19.07.12 to 21.07.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.55 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
														III/II	As Sheet 1 of 2.
		0.00m at 18:00		100	100	38				T2-101	-8.97	10.52			
19.07.12															Strong, grey spotted white and black, slightly decomposed MONZONITE. Joints are closely to widely locally very closely and medium spaced, rough planar locally undulating, narrow to very narrow, chlorite, calcite and kaolin infilling, dipping at 10°-20°, 20°-30° and 60°-70°.
20.07.12		0.00m at 08:00					12.4			10.89					
				100	100	77				T2-101					
								11.82		11.82					
		0.00m at 18:00		100	100	100				T2-101				II	
20.07.12							1.3			13.29					
20.07.12		0.00m at 18:00													
				96	96	94				T2-101					
								14.82		14.82	-13.27	14.82			
															End of drillhole at 14.82m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 23.07.12

CHECKED EDWARD CHENG DATE 24.07.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-062A**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,510.70 N 812,181.47	W.O. No.
MACHINE / No. DR09		DATE from 13.07.12 to 14.07.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.35 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
13.07.12	PW	0.00m at 08:00		100						0.20 T2-101 0.70	+1.15	0.20			Wash boring. Grey, angular to subangular GRAVEL and COBBLE sized rock fragments. (FILL)
											+0.65	0.70			Wash boring.
								1.30		1.30 T2-101	+0.05	1.30	× × × × × × × ×	III/IV	Moderately strong to moderately weak, greyish brown spotted black and white, moderately to highly decomposed MONZONITE.
				71	71	18	NI	2.25		2.25	-0.90	2.25	× ×		Wash boring.
								3.19		3.19 T2-101	-1.84	3.19	× ×	III/IV	Moderately strong to moderately weak, greyish brown spotted black and white, moderately to highly decomposed MONZONITE.
				100	100	0	NI	3.59		3.59	-2.24	3.59	× ×		Moderately strong to strong, greyish brown locally grey spotted black and white, moderately to slightly decomposed MONZONITE. Joint are very closely to closely locally medium spaced, rough planar, narrow, iron and manganese stained, dipping at 0°-10°, 10°-20° occasional 60°- 70° and 70°-80°.
	4.20 PW HW			99	99	22	15.9 >20	4.22		T2-101	-2.89	4.24	× ×	III/II	4.24- 5.14m: Moderately decomposed MONZONITE.
				98	98	32	8.5	5.15		4.81 T2-101	-3.79	5.14	× ×		5.60- 5.80m: Moderately decomposed MONZONITE.
											-4.25	5.60	× ×		
											-4.45	5.80	× ×		
								6.32		6.32 T2-101	-4.97	6.32	× ×	III/IV	Moderately strong to moderately weak, greyish brown spotted black and white, moderately to highly decomposed MONZONITE.
				76	76	0	NI	6.65		6.65	-5.30	6.65	× ×		Moderately strong to strong, greyish brown locally grey spotted black and white, moderately to slightly decomposed MONZONITE. Joint are very closely to closely locally medium spaced, rough planar, narrow, iron and manganese stained, chlorite infilling, dipping at 10°-20°, 30°- 40° occasional 70°- 80° and subvertical joints from 10.00-12.82m.
	7.59 HW			100	100	61	10.8	7.85		T2-101	-5.69	7.04	× ×	III/II	6.65- 7.04m: Moderately decomposed MONZONITE.
				100	100	54	>20	8.05		7.71 T2-101	-6.50	7.85	× ×		7.85- 8.93m: Moderately decomposed MONZONITE.
				100	100	18	12.1 >20	8.38		8.19 T2-101			× ×		
				100	100	41	10.9	8.93		8.79 T2-101	-7.58	8.93	× ×		
				100	100	37	>20	9.85		9.49 T2-101	-8.65	10.00	× ×		

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 16.07.12

CHECKED EDWARD CHENG DATE 17.07.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-062A**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,510.70 N 812,181.47	W.O. No.
MACHINE / No. DR09		DATE from 13.07.12 to 14.07.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.35 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
13.07.12		0.00m at 18:00		100	100	37	>20			T2-101 10.30			× ×		As Sheet 1 of 2.
				100	100	0				T2-101 11.53	-10.18	11.53	× ×	III/II	
14.07.12		0.00m at 08:00		100	100	42				T2-101 12.82	-11.47	12.82	+ +		11.53- 12.82m: Slightly decomposed GRANITE.
14.07.12		0.00m at 18:00						12.82							End of drillhole at 12.82m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 16.07.12

CHECKED EDWARD CHENG DATE 17.07.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-063**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,498.51 N 812,170.38	W.O. No.
MACHINE / No. DR09		DATE from 05.11.11 to 08.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.54 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
05.11.11	PW	Dry at 08:00		80						T2101 0.40–0.65	+1.14	0.40			Wash boring.
											+0.89	0.65			Dark grey to yellowish brown, COBBLE sized rock fragments. (FILL)
															Wash boring.
	2.00 PW							1.88			-0.34	1.88			
	HW			86	0	0	NI			T2101 1.88–2.58			× ×	IV/III	Moderately weak to moderately strong, grey to yellowish grey, highly to moderately decomposed MONZONITE.
				85	73	73				T2101 2.58–2.98			× ×		
		0.06m at 18:00						2.98			-1.44	2.98		V	Wash boring, assumed to be completely decomposed MONZONITE.
05.11.11											-2.12	3.66			
07.11.11		1.25m at 08:00		79	0	0	NI	3.66		T2101 3.66–4.23			× ×	IV/III	Moderately weak to moderately strong, grey to yellowish grey, highly to moderately decomposed MONZONITE.
								4.23			-2.69	4.23		V	Wash boring, assumed to be completely decomposed MONZONITE.
											-3.52	5.06			
	5.60 HW			74	0	0	NI	5.06		T2101 5.06–5.40	-3.86	5.40	× ×	IV/III	Moderately weak to moderately strong, grey to yellowish grey, highly to moderately decomposed MONZONITE.
							16.7	5.40							
				100	0	0	10.5	5.58		T2101 5.58–5.96			× ×	III	Moderately strong, dark pinkish grey to yellowish grey spotted black and white, moderately decomposed MONZONITE. Joints are closely spaced, rough planar, very narrow, kaolin and limonite stained, dipping at 10°-20° and 80°-90°.
				100	77	77	10.0	5.96		T2101 5.96–6.22			× ×		
				100	0	0		6.22		T2101 6.22–6.56			× ×		
								6.56			-5.02	6.56			
				100	60	51	3.8			T2101 6.56–7.90			× ×	II	Strong, dark pinkish grey spotted black and white, slightly decomposed MONZONITE. Joints are medium to closely spaced, smooth planar, very narrow, clean, dipping at 10°-20°, 40°-50°, 60°-70° and 80°-90°.
							10.0	7.60							
								7.90							
				100	72	65	3.9			T2101 7.90–9.19			× ×		
								9.19							
				100	100	88	2.9			T2101 9.19–10.00			× ×		
											-8.46	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 08.11.11

CHECKED EDWARD CHENG DATE 09.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-063**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR09	E 835,498.51 N 812,170.38	DATE from 05.11.11 to 08.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.54 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
							2.9	10.21					× ×		As Sheet 1 of 2.
				100	100	88	15.8	10.40		T2101			× ×		
							1.2	10.70					× ×		
				100	100	90		11.21		T2101			× ×		
		0.78m at 18:00					8.5						× ×	II	
07.11.11							>20	11.80					× ×		
08.11.11		0.51m at 08:00						11.90					× ×		
				100	100	71	5.1			T2101			× ×		
08.11.11								12.97		12.97	-11.43	12.97	× ×		End of drillhole at 12.97m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 08.11.11

CHECKED EDWARD CHENG DATE 09.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-200**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR10	E 835,737.38 N 812,179.24	DATE from 08.02.12 to 10.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.51 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
08.02.12	HW	Dry at 08:00									+2.01	0.50			Wash boring.
				100						0.50 T2101 1.10	+1.41	1.10			Angular to subangular fine GRAVEL and COBBLE sized rock fragments. (FILL)
															Wash boring.
	7.09 HW							7.09			-4.58	7.09			
		0.50m at 18:00		100	66	66	NI	7.28		7.09 T2101 7.47	-4.77	7.28	× ×	IV/III	Moderately weak to moderately strong, greyish brown, highly to moderately decomposed MONZONITE.
08.02.12				100	100	100	4.3			T2101 7.85	-5.34	7.85	× ×	II	Strong , dark grey spotted white and black, slightly decomposed MONZONITE. Joints are closely to medium spaced, rough planar, narrow to very narrow, iron and manganese stained, dipping at 10°-20°, 50°-60° and 70°-80°.
09.02.12		0.50m at 08:00						7.85						V	
								8.40			-5.89	8.40			Wash boring, assumed to be completely decomposed MONZONITE.
				100	88	88	>20 5.9	8.52		T2101			× ×	II	Strong, dark grey spotted white and black, slightly decomposed MONZONITE. Joints are closely and widely spaced, rough planar, narrow to very narrow, iron and manganese stained, dipping at 10°-20° and 70°-80°.
								9.37		9.37	-6.86	9.37	× ×	V	
				100	100	89	2.5	9.75		9.75 T2101	-7.24	9.75			Wash boring, assumed to be completely decomposed MONZONITE.
											-7.49	10.00	× ×	II	

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 10.02.12

CHECKED EDWARD CHENG DATE 11.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-200**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,737.38 N 812,179.24	W.O. No.
MACHINE / No. DR10		DATE from 08.02.12 to 10.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.51 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
09.02.12		0.50m at 18:00		100	100	92	2.5	11.79		10.02 TNW 11.58				II	Strong, dark grey spotted white and black, slightly decomposed MONZONITE. Joints are closely to medium locally very closely and widely spaced, rough planar, narrow to very narrow, iron and manganese stained, locally slightly kaolin infilling, dipping at 10°-20°, 20°-30°, 50°-60 ,60°-70° and occasional 70°-80°.
				100	100	92	3.8			TNW 12.89					
				100	100	100				TNW 13.35					
				100	100	85	6.4	13.91 14.69		TNW 14.72					
10.02.12		0.50m at 08:00		100	100	86	4.8	15.95		TNW 16.17					
10.02.12		0.50m at 18:00		100	100	93	5.2	17.67		TNW 17.67	-15.16	17.67			End of drillhole at 17.67m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 10.02.12

CHECKED EDWARD CHENG DATE 11.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-201**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,728.83 N 812,180.09	W.O. No.
MACHINE / No. DR10		DATE from 11.02.12 to 13.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.42 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
11.02.12	HW	Dry at 08:00													Wash boring.
	6.40 HW							6.40		6.40	-3.98	6.40			
				100	100	54				T2101					Moderately strong, grey spotted white and pink, moderately decomposed MONZONITE. Joints are medium to widely locally very closely and closely spaced, rough planar locally smooth, narrow to very narrow, locally iron and manganese stained, kaolin infilling, dipping at 10°-20°, 20°-30° locally 60°-70°, 70°-80° and occasional subvertical from 7.43-7.56m, 7.99-8.12m and 8.09-8.41m.
							12.3			6.97				III	
				89	65	45		7.78		T2101					
							NI	7.99							
							9.9				-5.83	8.25			
								8.70		8.50					Strong, grey spotted white and pink, slightly decomposed MONZONITE. Joints are medium to widely locally very closely and closely spaced, rough planar locally smooth, narrow to very narrow, locally iron and manganese stained, kaolin infilling, dipping at 10°-20°, 20°-30° locally 60°-70° and 70°-80°.
				100	100	96				T2101				II	
							1.8			9.45					
				100	100	68				T2101	-7.58	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 13.02.12

CHECKED EDWARD CHENG DATE 14.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-201**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,728.83 N 812,180.09	W.O. No.
MACHINE / No. DR10		DATE from 11.02.12 to 13.02.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.42 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
11.02.12		0.50m at 18:00		100	100	68	1.8	10.97		T2101 10.97					As Sheet 1 of 2.
				100	100	100				T2101 12.50					
				100	100	100				T2101 14.05					
13.02.12		0.50m at 08:00		100	100	100	1.2			T2101 15.53				II	
				100	100	100				T2101 17.04					
13.02.12		0.50m at 18:00		99	99	99		18.59		T2101 18.59	-16.17	18.59			End of drillhole at 18.59m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 13.02.12

CHECKED EDWARD CHENG DATE 14.02.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-231**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,523.73 N 812,172.73	W.O. No.
MACHINE / No. DR09		DATE from 07.07.12 to 09.07.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.55 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
07.07.12	PW	0.43m at 08:00								0.53	+1.02	0.53			Wash boring.
				100						T2-101					Grey, angular to subangular GRAVEL and COBBLE sized rock fragments. (FILL)
										1.43	+0.12	1.43			Wash boring.
	4.00 PW / HW														
				97						4.89	-3.34	4.89			Grey, angular to subangular GRAVEL and COBBLE sized rock fragments. (FILL)
										T2-101 5.19	-3.64	5.19			Wash boring.
								6.14		6.14	-4.59	6.14			Strong, grey spotted black and white, slightly decomposed MONZONITE. Joints are widely to very widely locally medium spaced, rough planar, narrow to very narrow, locally chlorite infilling, dipping at 10°-20° and 40°- 50°.
				100	100	100	1.4			T2-101			× ×		
	7.60 HW							7.52		7.60			× ×		
				100	100	100				T2-101			× ×	II	
				100	100	100	0.0			8.56 T2-101			× ×		
				100	100	100				9.14 T2-101			× ×		
											-8.45	10.00	× ×		

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 09.07.12

CHECKED EDWARD CHENG DATE 10.07.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-231**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR09	E 835,523.73 N 812,172.73	DATE from 07.07.12 to 09.07.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.55 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
07.07.12		0.63m at 18:00		100	100	100				T2-101 10.68					As Sheet 1 of 2.
09.07.12		0.63m at 08:00		100	100	100	0.0			T2-101 12.14				II	
09.07.12		0.63m at 18:00						12.14			-10.59	12.14			End of drillhole at 12.14m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 09.07.12

CHECKED EDWARD CHENG DATE 10.07.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-006C**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR09	E 835,721.28 N 812,178.42	DATE from 06.06.12 to 08.06.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.16 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
06.06.12	PW	Dry at 08:00									+2.16	0.00			Wash boring.
				79						0.50 T2101 1.20	+1.66	0.50			Grey, angular to subangular GRAVEL and COBBLE sized rock fragments. (FILL)
	1.20 PW										+0.96	1.20			Wash boring.
	HW														
	7.15 HW							7.15			-4.99	7.15			
	NW									7.15 T2101					Strong, greenish grey spotted black, pink and white, slightly decomposed MONZONITE. Joints are closely to medium locally very closely and widely spaced, rough planar locally smooth, narrow to very narrow, chlorite and calcite infilling, dipping at 20°-30°, 50°-60°, 60°-70° occasional 70°-80° and subvertical joints from 9.98-10.30m and 12.25-13.61m.
		1.00m at 18:00		100	100	91									
06.06.12	8.52 NW									8.52				II	
07.06.12		1.00m at 08:00					2.8			T2101					
				100	100	92					-7.84	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 08.06.12

CHECKED EDWARD CHENG DATE 09.06.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 20.6.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-006C**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR09	E 835,721.28 N 812,178.42	DATE from 06.06.12 to 08.06.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.16 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								9.98		9.98					As Sheet 1 of 2.
				100	100	49	10.3			T2101					
								11.05		11.00				II	
				100	100	72	4.4			TNW					
											-10.21	12.37			
								12.63		12.49					12.37- 13.53m: Moderately decomposed MONZONITE.
				100	100	0				TNW				III	
		1.00m at 18:00					>20			13.11					
				100	100	0				TNW					
07.06.12								13.61		13.61	-11.37	13.53			
08.06.12		1.00m at 08:00													
				100	100	99	4.6			TNW				II	
		1.00m at 18:00													
08.06.12								15.14		15.14	-12.98	15.14			End of drillhole at 15.14m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 08.06.12

CHECKED EDWARD CHENG DATE 09.06.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 20.6.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-129A**

SHEET 1 of 1

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR06	E 835,235.22 N 812,116.80	DATE from 11.08.11 to 12.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.00 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
11.08.11	HW	0.00m at 08:00									+0.65	0.35			Wash boring.
				40						T2101 0.35					Black and brownish grey, angular to subangular COBBLE sized rock and concrete fragments. (FILL)
	1.60 HW				6	0	14.8	1.33			-0.33	1.33			
				95	70	0		1.60		T2101 1.60	-0.60	1.60		IV/III	Moderately weak to moderately strong, brownish grey, highly to moderately decomposed coarse ash TUFF.
				100	95	82	9.3			T2101 2.00					Moderately strong, black to dark grey spotted pink and white, moderately deocmposed coarse ash TUFF. Joints are closely to very closely locally medium spaced, rough planar, limonite locally kaolin stained, dipping at 10°-20°, 60°-70° and 80°-90°.
				100	94	94		3.10		T2101					
11.08.11		0.00m at 18:00		100	0	0		3.42		T2101 3.42					
12.08.11		0.00m at 08:00		98	0	0	>20			T2101 3.86				III	
				98	66	66		4.46		T2101 4.35					
				100	57	33	11.0			T2101 4.64					
							>20	5.37							
				100	64	56	11.9	5.78		T2101 5.78					
								6.62			-5.62	6.62			Strong, black spotted white, slightly decomposed fine ash TUFF. Joints are closely to medium spaced, rough planar, very narrow to narrow, chlorite, limonite locally kaolin stained, dipping at 10°-20°, 30°-40° and 80°-90°.
				100	72	66	7.1			T2101 7.03					
								7.89						II	
							33.3			8.05					
				99	49	38		8.22		T2101					
		0.00m at 18:00					8.6			8.78					
12.08.11				100	100	100		9.15		T2101 9.15	-8.15	9.15			End of drillhole at 9.15m.

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 8.12.11

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED	CHECKED
S.O. CHAN	EDWARD CHENG
DATE 12.08.11	DATE 13.08.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-217**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR22	E 835,540.82 N 812,182.58	DATE from 20.10.11 to 21.10.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.56 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
20.10.11	PW										+1.21	0.35			Wash boring.
				70						T2116	0.35				Dark grey to brownish grey, angular to subangular coarse GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
	1.85 PW HW			69						T2116	1.85				
											2.50	-0.94	2.50		Wash boring.
	5.68 HW							5.58			5.68	-4.12	5.68		
20.10.11				100	0	0	4.9			T2101					Moderately strong, grey to brownish grey spotted black and white, moderately decomposed MONZONITE. Joints are closely to medium spaced, rough planar, very narrow, chlorite and limonite stained, dipping at 10°-20°, 60°-70° and 80°-90°.
21.10.11								6.71			6.71			III	
							5.6	7.07							
				99	37	37	6.7			T2101					
								7.96			7.96	-6.40	7.96		
				99	30	30	2.6			T2101				II	Strong, dark grey spotted pink and black, slightly decomposed MONZONITE. Joints are closely to widely spaced, rough planar, very narrow, chlorite stained, dipping at 70°-80° and 80°-90°.
								9.47			9.47				
				100	97	97	1.0			T2101		-8.44	10.00		

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 21.10.11

CHECKED EDWARD CHENG DATE 22.10.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 12.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-217**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR22	E 835,540.82 N 812,182.58	DATE from 20.10.11 to 21.10.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.56 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
21.10.11				100	97	97	1.0	11.41		T2101 10.99					As Sheet 1 of 2.
				100	50	50	5.2	12.18		T2101 12.18	-10.62	12.18		II	End of drillhole at 12.18m.

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 12.12.11

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 21.10.11

CHECKED EDWARD CHENG DATE 22.10.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-230**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR22	E 835,533.66 N 812,174.07	DATE from 24.10.11 to 25.10.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.60 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
24.10.11	PW	Dry at 08:00													Wash boring.
	0.63 PW										+0.97	0.63			
	PW			75						T2116	0.63				Dark grey, angular to subangular coarse GRAVEL and COBBLE sized rock fragments. (FILL)
					11	11		1.74			-0.14	1.74			
				99	90	90	1.0			T2101	1.68			II	Strong, dark grey spotted pink and black, slightly decomposed MONZONITE. Joints are widely locally closely spaced, rough planar, very narrow, limonite and kaolin stained, dipping at 10°-20° and 20°-30°.
							>20	2.70 2.79			2.79				
											-1.19	2.79			
											2.79			V	Wash boring, assumed to be completely decomposed MONZONITE.
	4.00 PW														
	NW							4.00			4.00				
		0.00m at 18:00		100	100	100	2.2			T2101					Strong, dark grey spotted pink and black, slightly decomposed MONZONITE. Joints are widely to medium spaced, rough planar, very narrow locally narrow, limonite and chlorite stained, dipping at 20°-30°, 60°-70° and 80°-90°.
24.10.11											5.50				
25.10.11		0.00m at 08:00		93	93	93	2.1	5.96		T2101					
	6.93 NW							6.93			6.93			II	
				99	99	99	0.4			TNW					
											8.47				
				100	87	87		9.34		TNW					
							3.0				-8.40	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 25.10.11

CHECKED EDWARD CHENG DATE 26.10.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 12.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-230**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR22	E 835,533.66 N 812,174.07	DATE from 24.10.11 to 25.10.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.60 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
25.10.11		0.00m at 18:00		99	99	99	0.8	10.01 11.20		10.01 TNW 11.20	-9.60	11.20	× × × × × × × × × ×	II	As Sheet 1 of 2. End of drillhole at 11.20m.

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 12.12.11

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED	CHECKED
S.O. CHAN	EDWARD CHENG
DATE 25.10.11	DATE 26.10.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-009**

SHEET 1 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR10	E 835,746.12 N 812,179.41	DATE from 05.01.12 to 06.01.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.52 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
05.01.12	HW	Dry at 08:00													Wash boring.
				100						1.00 T2101 1.49	+1.52	1.00			Yellowish brown to dark grey, coarse GRAVEL and COBBLE sized rock fragments. (FILL)
				97						T2101 1.81					
				83						T2101 2.05	+0.47	2.05			Wash boring.
											-7.48	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 06.01.12

CHECKED EDWARD CHENG DATE 07.01.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 27.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-009**

SHEET 2 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR10	E 835,746.12 N 812,179.41	DATE from 05.01.12 to 06.01.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.52 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
05.01.12	12.58 HW	0.00m at 18:00													As Sheet 1 of 3.
06.01.12		0.00m at 08:00		99	99	99	12.9 3.8	12.58 12.89 13.94		T2101	12.58 14.10	-10.06	12.58			Strong, dark grey spotted black and white, slightly decomposed MONZONITE. Joints are widely to closely spaced, rough planar, chlorite locally kaolin stained, dipping at 10°-20°, 60°-70° and 80°-90°.
				100	96	86	7.2	15.47		T2101	-12.65 -12.98 15.64	15.17 15.50		II	15.17- 15.50m: Quartz vein.
				100	100	100	1.6			T2101	17.17				
				100	100	97		18.69		T2101	18.69				
		0.00m at		100	100	100	0.7			T2101	-17.48	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 06.01.12

CHECKED EDWARD CHENG DATE 07.01.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 27.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-009**

SHEET 3 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR10	E 835,746.12 N 812,179.41	DATE from 05.01.12 to 06.01.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +2.52 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
06.01.12		18:00		100	100	100	0.7	20.18		T2101 20.18	-17.66	20.18	× ×	II	As Sheet 2 of 3. End of drillhole at 20.18m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 06.01.12

CHECKED EDWARD CHENG DATE 07.01.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 27.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-021**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR09	E 835,519.13 N 812,179.47	DATE from 23.07.12 to 25.07.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.57 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
23.07.12	PW	0.00m at 08:00		100						0.25 T2-101 0.75	+1.32	0.25			Wash boring.
											+0.82	0.75			Grey, angular to subangular GRAVEL sized rock fragments. (FILL)
															Wash boring.
							5.9	1.60 1.77		1.60	-0.03	1.60			
				71	71	13	NI			T2-101			× × × × × × × ×	III/IV	Moderately strong to moderately weak, brownish grey spotted white and black, moderately to highly decomposed MONZONITE.
	2.70 PW							2.70		2.70	-1.13	2.70			
	HW														Wash boring.
	5.80 HW							5.80		5.80	-4.23	5.80			
		0.00m at 18:00		100	100	95				T2-101 7.15			× × × × × × × ×	III/II	Moderately strong to strong, grey spotted pink, white and black, moderately to slightly decomposed MONZONITE. Joints are closely to medium locally very closely spaced, rough planar, narrow to very narrow, iron and manganese stained, kaolin and chlorite infilling, dipping at 20°-30°, 40°-50°, 60°-70° and occassionally subvertical joints from 7.15-8.02m, 9.23-9.50m and 10.93-11.18m.
23.07.12				100	100	38	4.0			T2-101 7.89					
24.07.12		0.00m at 08:00		97	97	79				T2-101 9.31					
				99	99	71	8.0	9.84		T2-101	-8.43	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 26.07.12

CHECKED EDWARD CHENG DATE 27.07.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 27.8.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-021**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR09	E 835,519.13 N 812,179.47	DATE from 23.07.12 to 25.07.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.57 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				99	99	71	8.0			T2-101 10.81				III/II	As Sheet 1 of 2. 10.81- 11.24m: Moderately decomposed MONZONITE.
				99	99	63		11.84		T2-101 11.86	-10.26	11.83			
24.07.12		0.00m at 18:00		100	100	43	13.5	12.73		T2-101 12.73				II	Strong, grey spotted pink, black and white, slightly decomposed MONZONITE. Joints are closely to medium spaced, rough planar, narrow to very narrow, iron and manganese stained, kaolin and chlorite infilling, dipping at 20°-30° and 60°-70°. 11.83- 11.90m: Moderately decomposed MONZONITE. 12.52- 12.62m: Moderately decomposed MONZONITE.
25.07.12		0.00m at 08:00		100	100	83	4.2			T2-101					
25.07.12		0.00m at 18:00						13.69		13.69	-12.12	13.69			End of drillhole at 13.69m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 26.07.12

CHECKED EDWARD CHENG DATE 27.07.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 27.8.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-129E**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR06	E 835,220.40 N 812,123.50	DATE from 09.11.12 to 12.11.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.84 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.T./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
09.11.12	PW	0.00m at 08:00		76						T6-131 0.00					Grey and black, angular to subangular GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
				78						0.50 T6-131					
	1.30 PW HW			77						1.30 T2-101					
								1.95		1.95 T2-101	-1.11	1.95			Strong, grey spotted black, slightly decomposed fine ash TUFF. Joints are closely to medium locally very closely and widely spaced, rough planar locally smooth, narrow to very narrow, iron and manganese stained, kaolin and chlorite infilling, dipping at 10°-20°, 20°-30°, 60°-70° and occasional 70°-80°.
		0.00m at 18:00		99	96	75	6.1	3.26		3.26 T2-101					
09.11.12 10.11.12	4.08 HW	0.00m at 08:00		100	82	50				3.66 T2-101					
				100	70	59	12.9	4.50		4.40 T2-101					
				100	91	63				4.96 T2-101					
				100	100	56				6.07 T2-101				II	
				100	100	63	7.5			7.26 T2-101					
				100	100	65		8.10		8.34 T2-101					
				100	100	89	4.7			9.76 T2-101	-9.16	10.00			
				100	89	19									

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 13.11.12

CHECKED EDWARD CHENG DATE 14.11.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 19.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-129E**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR06	E 835,220.40 N 812,123.50	DATE from 09.11.12 to 12.11.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.84 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.T./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
10.11.12		0.00m at 18:00		100	89	19	4.7 >20	10.23 10.69		T2-101 10.79 T2-101				II III	As Sheet 1 of 2. 10.23- 10.40m: Moderately decomposed TUFF.
12.11.12		0.00m at 08:00		100	68	58	4.9 >20	11.10 11.35		11.35	-10.51	11.35		II	
12.11.12															End of drillhole at 11.35m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 13.11.12

CHECKED EDWARD CHENG DATE 14.11.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 19.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-129F**

SHEET 1 of 1

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR06	E 835,213.64 N 812,121.39	DATE from 12.11.12 to 13.11.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.92 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
12.11.12	PW	0.00m at 08:00		81						T6-116	0.00				Grey and black, angular to subangular GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
											-0.38	1.30			
		0.00m at 18:00						1.30			1.30				Wash boring.
12.11.12	1.95 PW							1.95			-1.03	1.95			
13.11.12	HW	0.00m at 08:00		100	33	14	>20			T6-116	1.95			IV/III	Moderately weak to moderately strong, grey spotted black and white, highly to moderately decomposed fine ash TUFF. Joint are very closely to closely spaced, rough planar, narrow, iron and manganese stained, kaolin infilling, dipping at 0°-10° and subvertical joint from 1.95-3.05m.
							10.0	2.74							
							>20	2.94							
								3.05			-2.13	3.05			
															Wash boring.
	3.97 HW										-2.76	3.68			
							N.I	3.68			-2.85	3.77		IV/III	Moderately weak to moderately strong, grey spotted black and white, highly to moderately decomposed fine ash TUFF.
				100	80	37	16.9	3.77		T2-101	3.68			III	
				100	37	19	>20	4.60		T2-101	4.43				Strong, grey spotted black and white, slightly decomposed fine ash TUFF. Joint are very closely to closely locally medium spaced, smooth planar locally rough, narrow to very narrow, iron and manganese stained, kaolin infilling, dipping at 10°-20°, 60°-70° and 70°-80°. 3.77- 3.89m: Moderately decomposed TUFF.
				100	95	67	8.2	5.00		T2-101	5.00				
				100	48	0	>20	5.98		T2-101	5.98				
								6.78			6.64			II	
				100	90	19	18.0	7.78		T2-101	7.78				
				100	88	55	11.8	8.80		T2-101	8.90				
							>20	8.90							
		0.00m at 18:00		100	100	24	20.0	9.53		T2-101	9.53				
13.11.12											-8.61	9.53			End of drillhole at 9.53m.

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 15.11.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 13.11.12

CHECKED EDWARD CHENG DATE 14.11.12

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-218**

SHEET 1 of 1

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR09	E 835,529.32 N 812,181.00	DATE from 10.07.12 to 11.07.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.24 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.T./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
10.07.12	PW	Dry at 08:00		100						T2-101 0.15–0.65	+1.09	0.15			Wash boring.
											+0.59	0.65			Grey, angular to subangular GRAVEL and COBBLE sized rock fragments. (FILL)
															Wash boring.
								3.03			-1.79	3.03			
	4.00 PW			100	100	100	2.0	3.53		T2-101 3.03–4.34					Strong, grey spotted black and white, slightly decomposed MONZONITE. Joint are medium and very widely spaced, rough planar, narrow to very narrow, clean, dipping at 40°- 50 °.
		2.01m at 18:00		100	100	100				T2-101 4.34–5.73					
10.07.12															
11.07.12		2.12m at 08:00		100	100	100	0.0			T2-101 5.73–7.03				II	
				100	100	100				T2-101 7.03–8.60					
		2.10m at 18:00													
11.07.12								8.60			-7.36	8.60			End of drillhole at 8.60m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 12.07.12

CHECKED EDWARD CHENG DATE 13.07.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 23.7.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-062**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR22	E 835,496.16 N 812,178.49	DATE from 04.11.01 to 07.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.44 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
04.11.11	PW	0.00m at 08:00									+0.79	0.65			Wash boring.
				51						0.65 T2101 1.00	+0.44	1.00			Yellowish grey, angular to subangular COBBLE sized rock fragments. (FILL)
															Wash boring.
	4.82 PW							4.82			-3.38	4.82			
	HW 5.52 HW			100	0	0	7.1			4.82 T2101			× ×	III	Moderately strong, pinkish brown and yellowish grey, moderately decomposed MONZONITE. Joints are closely to very closely spaced, rough planar, very narrow, limonite, manganese and kaolin stained, dipping at 10°-20° and 80°-90°.
							>20	5.52		5.52	-4.26	5.70			
		0.00m at 18:00		99	66	58	3.2	5.70		T2101				II	Strong, dark pinkish grey spotted black and white, slightly decomposed MONZONITE. Joints are medium to closely spaced, rough planar, very narrow, limonite, manganese locally kaolin stained, dipping at 10°-20°, 70°-80° and 80°-90°.
							>20	6.33 6.47							
04.11.11							9.0			7.00	-5.66	7.10			
05.11.11		0.00m at 08:00						7.14							
							18.2	7.36						III	7.10- 7.73m: Moderately strong and moderately decomposed MONZONITE.
				100	35	24	10.4			T2101	-6.29	7.73			
								7.84							
							3.5			8.24					
							>20	8.70							
				100	67	67		8.85		T2101				II	
							4.4								
				99	95	82				9.59 T2101	-8.56	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 07.11.11

CHECKED EDWARD CHENG DATE 08.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 7.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-062**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR22	E 835,496.16 N 812,178.49	DATE from 04.11.01 to 07.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +1.44 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.T./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				99	95	82	4.4			T2101					As Sheet 1 of 2.
								11.11		11.11					
		0.00m at 18:00		100	15	0	9.5			T2101				II	
05.11.11								11.95		11.95					
07.11.11		0.00m at 08:00 0.00m at 18:00		100	67	59	5.8			T2101					
07.11.11								12.98		12.98	-11.54	12.98			End of drillhole at 12.98m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 07.11.11

CHECKED EDWARD CHENG DATE 08.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 7.2.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-129B**

SHEET 1 of 1

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR06	E 835,223.47 N 812,113.63	DATE from 19.11.12 to 20.11.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.93 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
19.11.12	PW	0.00m at 08:00		82						T6-116	0.00				Grey , angular to sub-angular GRAVEL and COBBLE size rock fragments. (FILL)
								1.10			-0.17	1.10			
							7.7	1.36			1.10				Moderately weak to moderately strong, grey and brownish grey spotted black and white, highly to moderately decomposed fine ash TUFF.
				98	54	16	>20	1.78		T6-116				IV/III	
	2.11 PW						12.1	2.11			-1.03	1.96			
							>20	2.46			2.11			III	Moderately strong to strong , grey locally brown spotted black and white, moderately to slightly decomposed fine ash TUFF. Joint are closely to medium locally very closely spaced, rough planar, narrow to very narrow, iron and manganese stained, kaolin and chlorite infilling, dipping at 0°-10°, 40°-50°, 60°-70° and 70°- 80°.
				100	64	35	9.5	3.20		T2-101	-1.53	2.46			1.96- 2.46m: Moderately decomposed TUFF.
		0.00m at 18:00		100	100	49	>20	3.64		T2-101	2.94				
19.11.12															
20.11.12		0.00m at 08:00								T2-101	3.83				
				99	99	89									
				98	98	96	7.7			T2-101	5.07			III/II	
										T2-101	5.58				
				100	98	68				T2-101					
											6.82				
				100	100	72		7.02		T2-101	7.43				
							11.4				-6.66	7.59			
		0.00m at 18:00		100	100	80				T2-101			× × × ×	II	Strong, grey spotted black and white, slightly decomposed MONZONITE. Joints are closely spaced, rough planar, narrow to very narrow, kaolin and chlorite infilling, dipping at 10°-20° and 40°-50°.
20.11.12								8.07			-7.14	8.07			End of drillhole at 8.07m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 21.11.12

CHECKED EDWARD CHENG DATE 22.11.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 21.12.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-129C**

SHEET 1 of 1

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR06	E 835,214.75 N 812,111.15	DATE from 07.11.12 to 09.11.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.94 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
07.11.12	PW	0.00m at 08:00		94						T6-131 0.00					Grey and black, angular to subangular GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
	1.46 PW / HW			100	89	89		1.28		T6-131 1.28	-0.34	1.28			Strong, grey spotted black, slightly decomposed fine ash TUFF. Joints are closely to medium locally very closely and widely spaced, rough planar locally smooth, narrow to very narrow, iron and manganese stained, kaolin infilling, dipping at 0°-10°, 40°-50°, 60°-70° and 70°-80°.
				100	100	25	15.1			T2-101 1.46					
				98	86	68	NI	2.14 2.18		T2-101 1.94					
				100	95	87	6.8			T2-101 3.11				II	
07.11.12	4.05 HW	0.00m at 18:00								T2-101 4.05					
08.11.12		0.00m at 08:00		100	86	73	15.6	4.53		T2-101				III	
				100	100	67		5.30		T2-101 5.30					4.89- 5.00m: Modertely decomposed TUFF.
				100	100	59				T2-101 5.88					
				100	100	86	8.7			T2-101 7.00				II	
08.11.12		0.00m at 18:00		100	100	84				T2-101 7.84					
09.11.12		0.00m at 08:00		100	87	75				T2-101 8.39					
09.11.12		0.00m at 18:00					>20	9.23 9.38		9.38	-8.44	9.38			End of drillhole at 9.38m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 13.11.12

CHECKED EDWARD CHENG DATE 14.11.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 19.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-129D**

SHEET 1 of 1

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR06	E 835,228.76 N 812,120.39	DATE from 14.11.12 to 15.11.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.97 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
14.11.12	PW	0.00m at 08:00		65						T2-101 0.00					Grey, angular to subangular GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
										T2-101 1.10					
				96				1.47		T2-101	-0.50	1.47			
					0	0	NI	1.63		1.63	-0.66	1.63		IV/III	Moderately weak to moderately strong, brownish grey spotted black and white, highly to moderately decomposed fine ash crystal TUFF.
	2.37 PW			100	100	18				T2-101 2.37				III/II	Moderately strong, brownish grey spotted black and white, moderately decomposed fine ash crystal TUFF. Joints are very closely to closely spaced, rough planar, narrow, iron and manganese stained, kaolin infilling, dipping at 0°-10° and 70°-80°.
				100	78	0	15.1			T2-101 2.88	-1.91	2.88			
				100	94	14				T2-101 3.76					Strong, dark grey spotted black and white, slightly decomposed fine ash TUFF. Joints are very closely to closely locally medium spaced, rough planar, narrow to very narrow, iron and manganese stained, kaolin infilling, dipping at 0°-10°, 60°-70°, 70°-80° and occasional subvertical joints from 3.13-3.34m, 4.60-4.98m and 7.01-7.54m.
							>20	3.87							
				100	94	24	16.7	4.16		T2-101					
14.11.12		0.00m at 18:00													
15.11.12		0.00m at 08:00						4.88		4.88					
							15.7							II	
				100	100	54		5.58		T2-101					
							13.0								
								6.35		6.35					
				100	100	8	17.6			T2-101					
		0.00m at 18:00													
15.11.12								7.54		7.54	-6.57	7.54			
															End of drillhole at 7.54m.

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 11.12.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 16.11.12

CHECKED EDWARD CHENG DATE 17.11.12

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-056**

SHEET 1 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR07	E 835,528.34 N 812,163.36	DATE from 02.08.11 to 04.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +5.15 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
02.08.11	HW	Dry at 08:00													Wash boring.
				73						T2101 2.70–3.00	+2.45 +2.15	2.70 3.00			Dark grey and greyish pink, angular to subangular COBBLE sized rock and concrete fragments. (FILL)
															Wash boring.
								6.34			-1.02 -1.19	6.17 6.34			Dark grey and greyish pink, angular to subangular COBBLE sized rock and concrete fragments. (FILL)
				64	33	13	9.2			T2101 6.17–7.14			× ×		Moderately strong, dark grey to brownish grey spotted black and white, moderately decomposed MONZONITE.
		2.70m at 18:00		100	77	52				T2101 7.14–7.76			× ×	III	
02.08.11								7.76					× ×		
03.08.11		3.10m at 08:00		78	60	60	NI 8.3	8.00		T2101 7.76–8.36			× ×		
								8.36			-3.21	8.36		V	Wash boring, assumed to be completely decomposed MONZONITE.
								8.88			-3.73	8.88			
							NI	8.96					× ×		Moderately strong, dark grey to brownish grey spotted black and white, moderately decomposed MONZONITE.
				93	52	52	5.6			T2101 8.88–10.00			× ×	III	
											-4.85	10.00	× ×		

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN — DATE 04.08.11

CHECKED EDWARD CHENG — DATE 05.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-056**

SHEET 2 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,528.34 N 812,163.36	W.O. No.
MACHINE / No. DR07		DATE from 02.08.11 to 04.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +5.15 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
										10.08					As Sheet 1 of 3.
				91	53	53	5.6	10.75		T2101 10.75	-5.60	10.75		III	
														V	Wash boring, assumed to be completely decomposed MONZONITE.
	13.10 HW							13.10		13.10	-7.95	13.10		IV	Moderately weak, dark grey to brownish grey, highly deocmposed MONZONITE.
				86	68	44	NI 10.0	13.30 13.60		T2101 13.60	-8.15	13.30			Strong, grey to dark grey spotted black and pink, slightly decomposed MONZONITE. Joints are widely to medium locally closely spaced, rough planar, very narrow, limonite occasional kaolin stained, dipping at 10°-20°, 20°-30° and 80°-90°.
				100	100	100				T2101 14.57					
				100	100	100				T2101 15.56					
				100	100	100				T2101 16.27					
				97	97	97	1.2			T2101 17.01				II	
		2.20m at 18:00		99	99	99				T2101 17.84					
03.08.11 04.08.11		2.90m at 08:00		100	100	100				T2101 19.37					
				100	100	100				T2101	-14.85	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 04.08.11

CHECKED EDWARD CHENG DATE 05.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-056**

SHEET 3 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,528.34 N 812,163.36	W.O. No.
MACHINE / No. DR07		DATE from 02.08.11 to 04.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +5.15 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
04.08.11				100	100	100	1.2	20.56		T2101 20.56	-15.41	20.56	× × × × × ×	II	As Sheet 2 of 3.
															End of drillhole at 20.56m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 04.08.11

CHECKED EDWARD CHENG DATE 05.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-058**

SHEET 1 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,518.11 N 812,161.83	W.O. No.
MACHINE / No. DR21		DATE from 08.11.11 to 10.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
08.11.11	HW	Dry at 08:00									+4.35	1.90			Wash boring.
				100						1.90 T2101 2.50	+3.75	2.50			Angular COBBLE sized rock fragments. (FILL)
											+3.35	2.90			Wash boring.
				77						2.90 T2101 3.80	+2.45	3.80			Angular COBBLE sized rock fragments. (FILL)
											+1.06	5.19			Wash boring.
				81	50	36	2.0 NI 3.8	5.19 5.60 6.30		5.19 T2101 6.59			× ×	IV/III	Moderately weak to moderately strong, brownish grey, highly to moderately decomposed MONZONITE with closely to medium spaced joints.
		0.50m at 18:00		93	30	30	NI	7.10 7.20		T2101	-0.95	7.20			
09.11.11		0.50m at 08:00		100	100	100	1.4	7.54		T2101 8.88				II	Strong, grey spotted pink, slightly decomposed MONZONITE. Joints are widely locally closely spaced, rough planar, very narrow, iron stained, dipping at 20°-30° and 40°-50°.
				100	100	93				T2101	-3.75	10.00			
							>20	9.70 9.80							

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 10.11.11

CHECKED EDWARD CHENG DATE 11.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-058**

SHEET 2 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,518.11 N 812,161.83	W.O. No.
MACHINE / No. DR21		DATE from 08.11.11 to 10.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	100	93	0.0	10.41		T2101 10.41				II	As Sheet 1 of 3.
				100	100	60	16.6	10.85		T2101 11.15	-4.60	10.85		III	Moderately strong, greyish brown, moderately decomposed MONZONITE. Joints are closely to medium spaced, rough planar, very narrow, iron stained, dipping at 20°-30° and 40°-50°.
				100	100	80	8.1	11.15		T2101 12.01	-5.76	12.01		V	Wash boring, assumed to be completely decomposed MONZONITE.
								12.01			-6.31	12.56			
								12.56							
	13.25 HW NW			100	100	100	1.2			T2101 13.25				II	Strong, grey spotted pink, slightly decomposed MONZONITE.
				98	98	93	>20	14.23		TNW 14.63	-8.38	14.63		V	Wash boring, assumed to be completely decomposed MONZONITE.
							0.0	14.29			-8.75	15.00			
								14.63							
	15.00 NW							15.00		TNW 15.00					
				100	100	50	10.0			15.28				II	Strong, grey spotted pink, slightly decomposed MONZONITE. Joints are widely locally closely spaced, rough planar, very narrow, clean, dipping at 20°-30°, 40°-50° and 60°-70°.
				100	100	79		16.10		TNW 16.75					
		1.00m at 18:00		100	100	100	1.1			TNW 18.21					
09.11.11															
10.11.11		1.00m at 08:00													
				100	100	100				TNW 19.74					
				100	100	100				TNW	-13.75	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 10.11.11

CHECKED EDWARD CHENG DATE 11.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 22.11.12

F76-061125

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-058**

SHEET 3 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR21	E 835,518.11 N 812,161.83	DATE from 08.11.11 to 10.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
10.11.11		1.00m at 18:00		100	100	100	1.1	20.56		TNW 20.56					As Sheet 2 of 3.
				100	100	100	0.0	21.51		TNW 21.51	-15.26	21.51		II	
															End of drillhole at 21.51m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 10.11.11

CHECKED EDWARD CHENG DATE 11.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-061**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,509.46 N 812,161.18	W.O. No.
MACHINE / No. DR09		DATE from 16.07.12 to 17.07.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.55 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
16.07.12	PW	Dry at 08:00													Wash boring.
	3.70 PW														
	HW			100						T2-101	+2.85 3.70	3.70			Grey, angular to subangular GRAVEL and COBBLE sized rock fragments. (FILL)
											+2.25 4.30	4.30			Wash boring.
				100	100	100	3.3	5.20		T2-101	+1.35 5.20	5.20	× ×	II	Strong, grey spotted white and black, slightly decomposed MONZONITE.
								5.50			+1.05 5.50	5.50			Wash boring.
				82	82	0	15.9	6.70		T2-101	-0.15 6.70	6.70	× ×	IV/III	Moderately strong to moderately weak, brownish grey spotted white and black, moderately to highly decomposed MONZONITE.
	7.58 HW							7.58			-1.03 7.58	7.58			Moderately strong to strong, grey spotted white and black, moderately to slightly decomposed MONZONITE. Joints are closely to medium locally very closely and widely spaced, rough planar, narrow to very narrow, iron and manganese stained, dipping at 20°-30°, 50°-60°, 70°-80° and occasional subvertical joint from 11.14-11.26m.
				99	99	99				T2-101					
							0.9				8.60				
				100	100	100				T2-101				III/II	
											9.59				
				100	100	51	>20	9.86		T2-101	-3.45	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 18.07.12

CHECKED EDWARD CHENG DATE 19.07.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-061**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR09	E 835,509.46 N 812,161.18	DATE from 16.07.12 to 17.07.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.55 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	100	51	11.1	9.97 10.33		T2-101					As Sheet 1 of 2.
										10.56					
		4.10m at 18:00		100	100	27	>20			T2-101				III/II	
16.07.12								11.38							
17.07.12		3.90m at 08:00					7.3			11.60	-5.24	11.79			11.25- 11.38m: Moderately decomposed MONZONITE.
				100	100	23		11.79		T2-101					Moderately strong to strong, greyish pink locally pink spotted white and black, moderately to slightly decomposed coarse grained GRANITE. Joints are closely to medium locally very closely spaced, rough planar, narrow to very narrow, iron and manganese stained, dipping at 10°-20°, 40°-50°, 70°-80° and occasional subvertical joint from 13.22-13.33m.
										12.29					
				100	100	100	17.1			T2-101					12.81- 13.43m: Moderately decomposed GRANITE.
										13.33					
				96	96	49		13.43		T2-101					
										13.82					
							10.6							III/II	
				100	100	65				T2-101					
								15.04							
							>20	15.33		15.24					
										T2-101					
		4.00m at 18:00		100	100	95	2.0								
17.07.12								16.80		16.80	-10.25	16.80			
															End of drillhole at 16.80m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 18.07.12

CHECKED EDWARD CHENG DATE 19.07.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 22.11.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-064A**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR09	E 835,501.15 N 812,161.69	DATE from 21.11.11 to 22.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.92 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples		Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
21.11.11	HW	Dry at 08:00														Wash boring.
				63						T2116	1.76	+3.16	1.76			Dark grey to yellowish brown, angular to subangular coarse GRAVEL sized rock fragments. (FILL)
											2.16	+2.76	2.16			Wash boring.
				75				5.11		T2116	4.91 5.11	+0.01 -0.19	4.91 5.11			Dark grey to yellowish brown, angular to subangular coarse GRAVEL sized rock fragments. (FILL)
				92	36	25	13.2	5.64		T2101	5.64	-0.72	5.64		III	Moderately strong, pinkish grey to brownish grey spotted black and white, moderately decomposed MONZONITE. Joints are closely spaced, rough planar, very narrow, limonite stained, kaolin coated, dipping at 10°-20°, 60°-70° and 80°-90°.
								6.17			6.17	-1.25	6.17		V	Wash boring, assumed to be completely decomposed MONZONITE.
				99	0	0	7.8			T2101					III	Moderately strong, pinkish grey to brownish grey spotted black and white, moderately decomposed MONZONITE. Joints are closely spaced, rough planar, very narrow, limonite stained, kaolin coated, dipping at 10°-20°, 60°-70° and 80°-90°.
				61	0	0	NI	7.07		T2101	7.07	-2.15	7.07		IV/III	
								7.48			7.48	-2.56	7.48		V	Moderately weak to moderately strong, dark brown to brownish grey spotted black, highly to moderately decomposed MONZONITE.
																Wash boring, assumed to be completely decomposed MONZONITE.
							NI	9.02			9.02	-4.10	9.02			
	9.50 HW			91	29	29	NA	9.22		T2101		-4.30	9.22		IV/III	Moderately weak to moderately strong, dark brown to brownish grey spotted black, highly to moderately decomposed MONZONITE.
								9.50				-4.58	9.50		IV	
				99	85	85	12.5			T2101	9.68	-5.08	10.00		II	Weak to moderately weak, dark brown spotted black, highly decomposed MONZONITE.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 22.11.11

CHECKED EDWARD CHENG DATE 23.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 16.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-064A**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR09	E 835,501.15 N 812,161.69	DATE from 21.11.11 to 22.11.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.92 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
							12.5	10.22						II	Strong, pinkish grey spotted black, slightly decomposed slightly decomposed MONZONITE. Joints are closely to very closely spaced, rough, very narrow to narrow, limonite and manganese stained, dipping at 10°-20°, 60°-70° and 80°-90°.
				99	85	85				T2101					
											-5.73	10.65		III	
		3.91m at 18:00					10.1			10.65	-5.86	10.78			
				100	71	36				T2101				II	
21.11.11											-6.29	11.21			
22.11.11		4.12m at 08:00					>20	11.21 11.38		11.21	-6.46	11.38		III	10.65- 10.78m: Moderately strong and moderately decomposed MONZONITE.
															11.21- 11.38m: Moderately strong and moderately decomposed MONZONITE.
				100	87	81	3.5			T2101					Strong, dark pinkish grey spotted black and white, slightly decomposed MONZONITE. Joints are medium to closely spaced, rough planar to undulating, limonite and manganese coated, dipping at 10°-20° and 50°-60°.
								12.51		12.51					
				100	100	92	5.7			T2101					
								13.57						II	
							3.5			13.89					
								14.14							
							19.5								
				100	96	85		14.55		T2101					
							6.2			15.32					
		3.95m at 18:00		100	84	84				T2101					
22.11.11								16.01		16.01	-11.09	16.01			End of drillhole at 16.01m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 22.11.11

CHECKED EDWARD CHENG DATE 23.11.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 16.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-129F**

SHEET 1 of 1

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR06	E 835,213.64 N 812,121.39	DATE from 12.11.12 to 13.11.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.92 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
12.11.12	PW	0.00m at 08:00		81				0.00		T6-116					Grey and black, angular to subangular GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
								1.30			-0.38	1.30			
12.11.12	1.95 PW	0.00m at 18:00						1.95			-1.03	1.95			Wash boring.
13.11.12	HW	0.00m at 08:00		100	33	14	>20			T6-116				IV/III	Moderately weak to moderately strong, grey spotted black and white, highly to moderately decomposed fine ash TUFF. Joint are very closely to closely spaced, rough planar, narrow, iron and manganese stained, kaolin infilling, dipping at 0°-10° and subvertical joint from 1.95-3.05m.
							10.0	2.74							
							>20	2.94 3.05			-2.13	3.05			
															Wash boring.
	3.97 HW							3.68			-2.76	3.68		IV/III	
							N.I	3.77			-2.85	3.77		III	Moderately weak to moderately strong, grey spotted black and white, highly to moderately decomposed fine ash TUFF.
				100	80	37	16.9			T2-101					Strong, grey spotted black and white, slightly decomposed fine ash TUFF. Joint are very closely to closely locally medium spaced, smooth planar locally rough, narrow to very narrow, iron and manganese stained, kaolin infilling, dipping at 10°-20°, 60°-70° and 70°-80°.
				100	37	19	>20	4.60		T2-101	4.43				3.77- 3.89m: Moderately decomposed TUFF.
								5.00			5.00				
				100	95	67	8.2			T2-101					
								5.98			5.98				
				100	48	0	>20			T2-101					
								6.78			6.64			II	
				100	90	19	18.0			T2-101					
								7.78			7.78				
				100	88	55	11.8			T2-101					
							>20	8.80 8.90			8.90				
		0.00m at 18:00		100	100	24	20.0			T2-101					
13.11.12								9.53			-8.61	9.53			End of drillhole at 9.53m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 13.11.12

CHECKED EDWARD CHENG DATE 14.11.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 15.11.12

F76-061125

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-168**

SHEET 1 of 1

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR09	E 835,205.87 N 812,117.53	DATE from 07.12.12 to 10.12.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.92 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
07.12.12	PW	Dry at 08:00		83						T6-131 0.00–0.30	+0.62	0.30			CONCRETE.
		0.16m at 18:00		47						T6-131 0.30–1.04	-0.12	1.04			Grey, angular to subangular GRAVEL and COBBLE sized rock fragments. (FILL)
07.12.12															
08.12.12		0.00m at 08:00													Wash boring.
	2.60 PW										-1.55	2.47			
	HW			56						T6-116 2.47–3.01	-2.09	3.01			Grey, angular to subangular GRAVEL sized rock fragments. (FILL)
				100	56	29		3.01		T6-116 3.01–3.35					Moderately weak to moderately strong, grey locally brownish grey spotted black and white, highly to moderately decomposed fine ash TUFF.
				100	53	22	15.5			T6-116 3.35–3.95				IV/III	
							NI	3.85			-3.03	3.95			
	4.40 HW			100	100	83		3.95		T2-101 3.95–4.30					Strong, grey spotted black and white, slightly decomposed fine ash TUFF. Joints are closely to medium locally very closely spaced, rough planar, narrow to very narrow, iron and manganese stained, locally calcite and kaolin infilling, dipping at 10°-20°, 50°-60°, 70°-80° and occasional subvertical joint from 7.18-7.41m.
				96	96	90				T2-101 4.30–5.37					
				100	100	95	7.8			T2-101 5.37–6.47				II	
				100	100	40		7.14		T2-101 6.47–7.89					
		0.19m at 18:00					16.0	7.89							
08.12.12				97	91	42	12.7			T2-101 7.89–8.22					
10.12.12		0.00m at 08:00						8.44							
		0.20m at 18:00		100	100	45	17.8			T2-101 8.22–9.34					
10.12.12								9.34		9.34	-8.42	9.34			End of drillhole at 9.34m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 11.12.12

CHECKED EDWARD CHENG DATE 12.12.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 20.12.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-129C**

SHEET 1 of 1

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,214.75 N 812,111.15	W.O. No.
MACHINE / No. DR06		DATE from 07.11.12 to 09.11.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.94 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
07.11.12	PW	0.00m at 08:00		94						T6-131 0.00					Grey and black, angular to subangular GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
	1.46 PW / HW			100	89	89		1.28		T2-101 1.28	-0.34	1.28			Strong, grey spotted black, slightly decomposed fine ash TUFF. Joints are closely to medium locally very closely and widely spaced, rough planar locally smooth, narrow to very narrow, iron and manganese stained, kaolin infilling, dipping at 0°-10°, 40°-50°, 60°-70° and 70°-80°.
				100	100	25	15.1			T2-101 1.46					
				98	86	68	NI	2.14 2.18		T2-101 1.94					
				100	95	87	6.8			T2-101 3.11				II	
07.11.12	4.05 HW	0.00m at 18:00								T2-101 4.05					
08.11.12		0.00m at 08:00		100	86	73	15.6	4.53		T2-101				III	
				100	100	67		5.30		T2-101 5.30					4.89- 5.00m: Modertely decomposed TUFF.
				100	100	59				T2-101 5.88					
				100	100	86	8.7			T2-101 7.00				II	
		0.00m at 18:00		100	100	84				T2-101 7.84					
08.11.12 09.11.12		0.00m at 08:00 0.00m at 18:00		100	87	75				T2-101 8.39					
09.11.12							>20	9.23 9.38		9.38	-8.44	9.38			End of drillhole at 9.38m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 13.11.12

CHECKED EDWARD CHENG DATE 14.11.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 15.11.12

F76-061125

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDD-051**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR11	E 835,207.15 N 812,106.51	DATE from 21.12.11 to 22.12.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.86 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
21.12.11	HW														Wash boring.
	1.50 HW														
				67						T2116 1.50	-0.64	1.50			Dark grey and black, angular to subangular COBBLE sized rock fragments. (FILL)
				60						T2116 2.75					
							15.6	3.55		T2116 3.55	-2.69	3.55			Moderately strong, yellowish grey spotted black, moderately decomposed fine ash crystal TUFF. Joints are closely spaced, very narrow, rough planar to undulating, limonite stained, dipping at 10°-20° and 80°-90°.
				100	100	77	7.0	3.87		T2101					
							12.3	4.44		T2101 4.72				III	
				98	91	36		5.09		T2101 5.38					
							10.5	5.66		T2101 6.09	-5.23	6.09			
				100	82	30									
							17.4	6.75		T2101 7.00					Strong, dark grey and black spotted white, slightly decomposed fine ash crystal TUFF. Joints are closely to very closely spaced, smooth planar to undulating, chlorite, limonite and kaolin stained, dipping at 10°-20°, 60°-70° and 80°-90° with some microfractures.
21.12.11				100	48	16									
22.12.11							>20	7.10		T2101 8.48					
							13.9	7.89		T2101 9.04					
				100	91	55									
							7.1	8.88		T2101	-9.14	10.00		II	
				100	68	68									
				99	77	44	12.1								

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 22.12.11

CHECKED EDWARD CHENG DATE 23.12.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 3.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDD-051**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR11	E 835,207.15 N 812,106.51	DATE from 21.12.11 to 22.12.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +0.86 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								10.12							As Sheet 1 of 2.
				100	94	71	6.3	10.75		T2101				II	
										11.16					
				100	86	51	10.3			T2101					
								12.01		12.01	-11.15	12.01			
				100	0	0	>20			T2101				II	Strong, dark grey and black spotted white, slightly decomposed fine ash crystal TUFF, highly fractured.
				100	0	0		13.00		T2101	12.84 13.00	-12.14	13.00		
22.12.11				100	100	89	8.9	13.79		T2101	13.79	-12.93	13.79	II	Strong, dark grey and black spotted white, slightly decomposed fine ash crystal TUFF. Joints are closely spaced, rough planar to undulating, very narrow, chlorite and limonite stained, dipping at 10°-20°, 60°-70° and 80°-90°.
															End of drillhole at 13.79m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 22.12.11

CHECKED EDWARD CHENG DATE 23.12.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 3.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-108**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR06	E 835,215.30 N 812,104.15	DATE from 15.11.12 to 16.11.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +5.09 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
15.11.12	PW														Wash boring.
										1.70	+3.39	1.70			
				82						T2-101					Grey, angular to subangular GRAVEL and COBBLE sized rock fragments. (FILL)
										2.80					
				50						T2-101					
	3.70 PW									3.70					
	HW									T2-101					
				100											
15.11.12										4.50	+0.59	4.50			
16.11.12															Wash boring.
								4.80		4.80	+0.29	4.80			
				71	23	0	>20			T2-101				IV/III	Moderately weak to moderately strong, grey spotted black and white, highly to moderately decomposed fine ash TUFF.
	5.69 HW							5.50		5.50	-0.41	5.50			
								5.69		5.69	-0.60	5.69		III	Wash boring.
				96	92	39				T2-101					Strong, grey spotted black and white, slightly decomposed fine ash TUFF. Joint are closely to medium closely locally very closely spaced, smooth planar, narrow to very narrow, iron and manganese stained, kaolin and chlorite infilling, dipping at 10°-20°, 50°-60° and 70°-80°. 5.69- 5.82m: Moderately decomposed TUFF.
							9.8			6.69					
				100	100	37				T2-101					
							>20	7.43							
								7.79		7.79				II	
				99	97	64	8.3			T2-101					
								9.11		9.11					
				100	100	67	10.7			T2-101					
										9.94	-4.91	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test / BHTV
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 17.11.12

CHECKED EDWARD CHENG DATE 19.11.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 5.12.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-108**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	W.O. No.
MACHINE / No. DR06	E 835,215.30 N 812,104.15	DATE from 15.11.12 to 16.11.12
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +5.09 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				97	82	38				T2-101					As Sheet 1 of 2.
				97	82	38	10.7			T2-101				II	
							>20	10.80 10.91		10.91					
16.11.12				100	100	39	17.9	11.19		T2-101 11.19	-6.10	11.19			End of drillhole at 11.19m.

Small Disturbed Sample
Large Disturbed Sample
SPT Liner Sample
U76 Undisturbed Sample
U100 Undisturbed Sample
Mazier Sample
Piston Sample
Water Sample
Water Level
Standard Penetration Test
Permeability Test
Impression Packer Test / BHTV
Standpipe/Piezometer Tip
In-situ Vane Shear Test
Point Load Test

LOGGED S.O. CHAN DATE 17.11.12

CHECKED EDWARD CHENG DATE 19.11.12

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 5.12.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-038**

SHEET 1 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR08	E 835,595.85 N 812,172.90	DATE from 15.08.11 to 17.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +7.31 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
15.08.11	PW	Dry at 08:00													Wash boring.
				55						T2101 2.10–2.30	+5.21 +5.01	2.10 2.30			Yellowish grey to brownish grey, angular to subangular coarse GRAVEL, COBBLE and occasional boulder sized rock fragments. (FILL)
															Wash boring.
				73						T2101 3.00–3.55	+4.31	3.00			Yellowish grey to brownish grey, angular to subangular coarse GRAVEL, COBBLE and occasional boulder sized rock fragments. (FILL)
	4.00 PW / HW			80						T2101 3.55–4.05	+3.26	4.05			Wash boring.
15.08.11		4.20m at 18:00													
16.08.11		4.10m at 08:00													
											-2.69	10.00			

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 5.1.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 17.08.11

CHECKED EDWARD CHENG DATE 18.08.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-038**

SHEET 2 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR08	E 835,595.85 N 812,172.90	DATE from 15.08.11 to 17.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +7.31 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
															As Sheet 1 of 3.
				82				11.64		T2101	11.53				
							7.1				-4.33	11.64		IV/III	Moderately weak to moderately strong, brownish grey and white, highly to moderately decomposed MONZONITE.
				97	89	82	NI	12.20 12.35		T2101					Moderately strong to strong, dark grey, moderately to slightly decomposed MONZONITE. Joints are medium to closely locally very closely spaced, rough planar, very narrow locally narrow, manganese and limonite stained, dipping at 10°-20° and 30°-40°.
	12.90 HW						3.3				12.90			III//II	
								13.26							
				100	84	60	12.0			T2101					
								13.85			-6.54	13.85			
				100	60	60	11.6			T2101	14.19			III	Moderately strong, locally moderately weak, pinkish brown to grey spotted black, moderately decomposed MONZONITE. Joints are closely spaced, rough planar, narrow, manganese and limonite stained, dipping at 60°-70° and 80°-90°.
								14.97			14.64				
				100	100	66				T2101	-7.66	14.97		III	Moderately strong, dark grey mottled pink and spotted black, moderately decomposed MONZONITE. Joints are closely to medium spaced, rough planar, very narrow, manganese, limonite and locally kaolin stained, dipping at 10°-20° and 80°-90°
											-8.39	15.70			Strong, dark grey mottled pink and spotted black, slightly decomposed MONZONITE. Joints are closely to widely spaced, rough planar to rough undulating, very narrow, limonite and locally kaolin stained, dipping at 10°-20°, 30-40° and 80°-90°
							7.5				16.10				
				99	99	90				T2101					
16.08.11		4.20m at 18:00													
17.08.11		5.10m at 08:00						17.62			17.62			II	
				100	100	100				T2101					
							1.7				19.04				
				100	100	100				T2101					
											-12.69	20.00			

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 5.1.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 17.08.11

CHECKED EDWARD CHENG DATE 18.08.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-038**

SHEET 3 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR08	E 835,595.85 N 812,172.90	DATE from 15.08.11 to 17.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +7.31 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
17.08.11		4.80m at 18:00		100	100	100	1.7	21.18		T2101 20.54 T2101 21.18	-13.87	21.18	× × × × × × × × × ×	II	As Sheet 2 of 3. End of drillhole at 21.18m.
				100	100	94									

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 5.1.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED	CHECKED
S.O. CHAN	EDWARD CHENG
DATE 17.08.11	DATE 18.08.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-041**

SHEET 1 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR08	E 835,585.66 N 812,171.85	DATE from 11.08.11 to 13.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.74 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
11.08.11	PW	Dry at 08:00													Wash boring.
				87						1.46	+5.28	1.46			
	2.32 PW								T2101						Grey to dark grey and brownish grey, angular to subangular coarse GRAVEL, COBBLE and occasional boulder sized rock sized rock fragments. (FILL)
	HW									2.32	+4.42	2.32			
11.08.11		2.00m at 18:00													Wash boring.
12.08.11		Dry at 08:00		80						3.00	+3.74	3.00			
									T2101						Grey to dark grey and brownish grey, angular to subangular coarse GRAVEL, COBBLE and occasional boulder sized rock sized rock fragments. (FILL)
				74						3.41					
									T2101						
				88						3.79					
									T2101						
				88						4.04					
									T2101						
										4.60	+2.14	4.60			
															Wash boring.
										8.50	-1.76	8.50	× × × × × ×	IV	Moderately weak, brownish grey to pinkish brown, highly decomposed MONZONITE. (Recovered as coarse GRAVEL and COBBLE sized rock fragments)
				78					T2101						
										9.10	-2.36	9.10		V	Wash boring, assumed to be completely decomposed MONZONITE.
											-3.26	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 15.08.11

CHECKED EDWARD CHENG DATE 16.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-041**

SHEET 2 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR08	E 835,585.66 N 812,171.85	DATE from 11.08.11 to 13.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.74 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								13.71		13.71	-6.97	13.71		V	As Sheet 1 of 3.
				96	37	28	NI 9.4	14.05 14.37		T2101	-7.31	14.05		IV	Moderately weak, brownish grey to pinkish brown, highly decomposed MONZONITE. (Recovered as coarse GRAVEL and COBBLE sized rock fragments)
12.08.11	14.97 HW	2.90m at 18:00		100	0	0	>20 13.3	14.74 15.04		14.53 T2101				III	Moderately strong, grey to brownish grey mottled pink and white, moderately decomposed quartz MONZONITE. Joints are closely spaced, narrow to very narrow, rough planar, limonite and manganese stained, dipping at 10°-20°, 30°-40°, 50°-60° and 80°-90°.
13.08.11		4.90m at 08:00		100	97	97	2.8			14.97 T2101	-8.23	14.97		II	Strong, dark grey spotted pink and white locally mottled pink, slightly decomposed quartz MONZONITE. Joints are medium to widely spaced, very narrow, rough planar, limonite locally kaolin stained, dipping at 10°-20°, 40°-50° and 80°-90°.
				100	94	94				16.47 T2101					
				99	94	94	10.6 1.4	17.86 18.33		17.86 T2101					
				100	100	100				19.35 T2101	-13.26	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 15.08.11

CHECKED EDWARD CHENG DATE 16.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-041**

SHEET 3 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR08	E 835,585.66 N 812,171.85	DATE from 11.08.11 to 13.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.74 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
13.08.11		5.50m at 18:00		100	100	100	1.4	21.82		T2101 20.86	-15.08	21.82	× × × × × × × × × × × × × × × × × × × ×	II	As Sheet 2 of 3.
				100	100	100				T2101 21.82					End of drillhole at 21.82m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 15.08.11

CHECKED EDWARD CHENG DATE 16.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-041A**

SHEET 1 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR08	E 835,578.28 N 812,170.99	DATE from 09.08.11 to 10.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.02 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
09.08.11	PW	Dry at 08:00													Wash boring.
	2.00 PW / HW			73						2.00 T2101 2.64	+4.02	2.00			Dark grey to black locally red, angular to subangular coarse GRAVEL and COBBLE sized rock fragments. (FILL)
				79						T2101 3.12	+2.90	3.12			Wash boring.
											-3.98	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 15.08.11

CHECKED EDWARD CHENG DATE 16.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-041A**

SHEET 2 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR08	E 835,578.28 N 812,170.99	DATE from 09.08.11 to 10.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.02 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
															As Sheet 1 of 3.
09.08.11 10.08.11	15.33 HW	3.70m at 18:00 3.40m at 08:00		97	39	39	NI	14.74 14.91		T2101 14.74	-8.72 -8.89	14.74 14.91		IV/III	Moderately weak, brown and grey, highly to moderately decomposed MONZONITE.
				100	67	67	5.8	16.12		T2101 15.33 T2101 16.12					Moderately strong to strong, grey spotted black and pink, moderately decomposed MONZONITE. Joints are medium to widely locally closely spaced, very narrow to narrow, rough planar and undulating, chlorite and limonite stained, dipping at 10°-20°, 50°-60° and 80°-90°.
				100	100	96				T2101 17.36				III	
				100	100	87	0.2			T2101 18.91					
				100	100	87				T2101	-13.98	20.00			

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 6.1.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 15.08.11

CHECKED EDWARD CHENG DATE 16.08.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-041A**

SHEET 3 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR08	E 835,578.28 N 812,170.99	DATE from 09.08.11 to 10.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.02 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
10.08.11		4.10m at 18:00		100	100	87	0.2	21.12		T2101 20.46 T2101 21.12	-15.10	21.12	× × × × × × × × × ×	III	As Sheet 2 of 3. End of drillhole at 21.12m.
				100	100	100									

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 15.08.11

CHECKED EDWARD CHENG DATE 16.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-045**

SHEET 1 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,570.70 N 812,170.16	JOB No. J1105S06
MACHINE / No. DR08		DATE from 22.07.11 to 27.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +5.77 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
22.07.11	HW	Dry at 08:00													Wash boring.
				70						1.62 T2101	+4.15	1.62			Dark grey to pinkish brown, angular to subangular coarse GRAVEL and COBBLE sized rock and wood fragments. (FILL)
				34						2.15 T2101 2.50	+3.27	2.50			Wash boring.
				76						3.95 T2101	+1.82	3.95			Dark grey to pinkish brown, angular to subangular coarse GRAVEL and COBBLE sized rock and wood fragments. (FILL)
										4.37	+1.40	4.37			Wash boring.
22.07.11		1.70m at 18:00													
23.07.11		4.20m at 08:00		70						5.70 T2101	+0.07	5.70			Brown, subrounded to subangular coarse GRAVEL sized rock fragments with some sandy silt matrix. (ALLUVIUM)
										6.00	-0.23	6.00			Wash boring.
											-4.23	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 28.07.11

CHECKED EDWARD CHENG DATE 29.07.11

REMARKS

DRILL HOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-045**

SHEET 2 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,570.70 N 812,170.16	JOB No. J1105S06
MACHINE / No. DR08		DATE from 22.07.11 to 27.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +5.77 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
															As Sheet 1 of 3.
	11.29 HW										-5.52	11.29			
				93						T2101 11.29					Pinkish brown and brownish grey, angular GRAVEL and COBBLE sized rock fragments with silty sand matrix. (COLLUVIUM)
				100						T2101 11.69					
				78						T2101 12.22					
								12.85		T2101 12.85	-7.08	12.85			
				90	72	72	5.5			T2101				III	Moderately strong, greenish grey to pinkish grey, moderately decomposed coarse grained GRANITE. Joints are closely to medium spaced, very narrow to narrow, rough undulating, limonite, kaolin and chlorite coated, dipping at 10°-20°, 30°-40° and 60°-70°.
								14.30		T2101 14.10	-8.33	14.10			
				100	14	0	>20	14.67		T2101				III	Moderately strong, greenish grey to pinkish grey locally pinkish brown, moderately deocmposed coarse grained GRANITE. Joints are closely locally very closely and extremely closely spaced, smooth planar to rough undulating, limonite, iron oxide, chlorite and calcite coated, dipping at 40°-50°, 70°-80° and 80°-90°.
		3.10m at 18:00		100	0	0	17.0			T2101 14.88					
23.07.11								15.49		T2101 15.49	-9.72	15.49			
26.07.11		3.60m at 08:00		88	21	0	>20			T2101 15.87				IV/III	Moderately weak to moderately strong, brown to dark brown, highly to moderately decomposed coarse grained GRANITE, highly fractured.
								16.10							
				100	0	0	NI	16.35							
							>20	16.63		T2101 16.63	-10.86	16.63			
				100	88	80	11.8			T2101					Moderately strong to strong, pinkish grey to greenish grey spotted black and grey, moderately to slightly decomposed coarse grained GRANITE. Joints are closely to medium spaced, very narrow to narrow, smooth planar to rough undulating, chlorite, kaolin, calcite locally limonite stained, dipping at 10°-20°, 30°-40°, 60°-70° and 70°-80°.
				100	0	0		17.37		T2101 17.37					
								17.65		T2101 17.65					
				100	92	92				T2101				III/II	
				97	87	82	6.0			T2101 18.39					
		2.90m at 18:00								T2101 19.57					
26.07.11				100	46	22	>20	19.82		T2101	-14.23	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 28.07.11

CHECKED EDWARD CHENG DATE 29.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-045**

SHEET 3 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR08	E 835,570.70 N 812,170.16	DATE from 22.07.11 to 27.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +5.77 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
27.07.11		4.10m at 08:00		100	21	21	>20	20.25		T2101 20.03					As Sheet 2 of 3.
				100	20	20	10.0	20.61		T2101					
								21.05		21.11				III/II	
							>20	21.40							
27.07.11		3.00m at 18:00		100	64	64	6.0	22.40		T2101 22.40	-16.63	22.40			End of drillhole at 22.40m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 28.07.11

CHECKED EDWARD CHENG DATE 29.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-048**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,552.69 N 812,166.51	JOB No. J1105S06
MACHINE / No. DR08		DATE from 05.08.11 to 06.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +5.08 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
05.08.11	PW	Dry at 08:00													Wash boring.
	1.48 PW														
	HW			87						1.48 T2101	+3.60	1.48			Dark grey to brown, angular to subangular GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
				81						1.91 T2101 2.02	+3.06	2.02			Wash boring.
							NI	8.79		8.79	-3.71	8.79		IV/III	
								8.96			-3.88	8.96			Moderately weak to moderately strong, brownish pink to brownish grey, highly to moderately decomposed MONZONITE. (Covered by angular to subangular GRAVEL and COBBLE sized rock fragments)
	9.53 HW			99	0	0	7.5			T2101				III	
								9.53		9.53 T2101	-4.45	9.53			Moderately strong, brownish pink to brownish grey spotted black, moderately decomposed MONZONITE.
				100	100	95	2.5				-4.92	10.00		II	

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED	CHECKED
S.O. CHAN	EDWARD CHENG
DATE 08.08.11	DATE 09.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-048**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR08	E 835,552.69 N 812,166.51	DATE from 05.08.11 to 06.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +5.08 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
05.08.11		2.90m at 18:00		100	100	95	2.5	13.57		T2101 11.07				II	Joints re closely spaced, rough planar, narrow to very narrow, iron oxide, manganese and kaolin stained, dipping at 10°-20° and 80°-90° from 9.15-9.53m. Strong, dark grey spotted black and pink, slightly decomposed MONZONITE. Joints are medium to widely locally closely spaced, rough planar, very narrow, limonite and kaolin stained, dipping at 10°-20°, 30°-40° and 80°-90° from 10.71-11.07m.
				99	99	99				T2101 11.90					
				99	99	99				T2101 12.65					
				100	100	100				T2101	-8.92	14.00			
06.08.11		3.20m at 08:00					2.8			14.14					Moderately strong, greenish grey mottled pink, moderately decomposed MONZONITE. Joints are closely spaced, very narrow, rough planar, chlorite and limonite stained, dipping at 10°-20°, 40°-50°, 70°-80° and 80°-90° from 15.63-16.25m and 16.71-16.87m.
				100	86	74	11.9	14.99 15.41		T2101 15.63				III	
				100	59	59	9.6 >20	16.24 16.39		T2101 16.39					
06.08.11		2.70m at 18:00		100	90	47	12.8	17.25		T2101 17.25	-12.17	17.25			
															End of drillhole at 17.25m.

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 6.1.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 08.08.11

CHECKED EDWARD CHENG DATE 09.08.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-051**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR05	E 835,544.62 N 812,165.63	DATE from 03.08.11 to 05.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +5.09 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
											+4.59	0.50			Wash boring.
				63						0.50 T2101 2.00					Pale grey to brownish grey, angular to subangular GRAVEL, COBBLE and occasional boulder sized rock fragments. (FILL)
											+3.09	2.00			Wash boring.
				97	64	58	4.0	9.52		9.52 T2101	-4.43	9.52	× × × ×	III	Moderately strong, dark grey spotted black and white, moderately decomposed MONZONITE.
											-4.91	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 06.08.11

CHECKED EDWARD CHENG DATE 07.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-051**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR05	E 835,544.62 N 812,165.63	DATE from 03.08.11 to 05.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +5.09 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				97	64	58	4.0	10.30		T2101 10.30	-5.21	10.30	× ×	III	As Sheet 1 of 2.
								10.55		10.55	-5.46	10.55		V	Wash boring, assumed to be completely decomposed MONZONITE.
				100	100	100	1.6			T2101 12.02			× ×		Strong, dark grey, slightly decomposed MONZONITE. Joints are widely to medium spaced, rough planar to undulating, very narrow, chlorite, limonite and kaolin stained, dipping at 10°-20°.
				99	97	97		13.12		T2101 13.12			× ×		
				100	100	100				T2101 14.64			× ×	II	
				100	100	100	0.9			T2101 16.12			× ×		
				100	93	93		17.44		T2101 17.60	-12.35	17.44	× ×		
				100	63	39	11.5	18.31		T2101 18.31	-13.22	18.31	+ +	III	Moderately strong, greenish grey mottled red, moderately decomposed coarse grained GRANITE. Joints re closely spaced, rough planar, very narrow to narrow, limonite stained, dipping at 10°-20° and 80°-90° .
															End of drillhole at 18.31m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 06.08.11

CHECKED EDWARD CHENG DATE 07.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-018**

SHEET 1 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,561.30 N 812,168.54	JOB No. J1105S06
MACHINE / No. DR08		DATE from 16.07.11 to 20.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +5.03 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
16.07.11	HW	Dry at 08:00													Wash boring.
				85						1.20 T2101 1.85	+3.83	1.20			Angular COBBLE and BOULDER sized rock fragments. (FILL)
											+3.18	1.85			Wash boring.
				33						2.55 T2101 2.84	+2.48	2.55			Angular COBBLE and BOULDER sized rock fragments. (FILL)
											+2.19	2.84			Wash boring.
16.07.11		4.10m at 18:00													
18.07.11		4.90m at 08:00													
				100						8.19 T2101 8.68	-3.16	8.19			Angular COBBLE and BOULDER sized rock and brick fragments. (FILL)
											-3.65	8.68			Wash boring.
	9.60 HW														
			98	89		39	NI 13.0	9.60 9.74		9.60 T2101	-4.57	9.60		IV/III	Moderately weak to moderately strong, pinkish brown, highly to moderately decomposed medium grained
											-4.71	9.74		III	
											-4.97	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 22.07.11

CHECKED EDWARD CHENG DATE 23.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-018**

SHEET 2 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR08	E 835,561.30 N 812,168.54	DATE from 16.07.11 to 20.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +5.03 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				98	89	39	13.0			T2101 10.83				III	GRANITE.
				100	100	83		11.00		T2101 11.73	-5.97	11.00			Strong, brownish pink spotted black, slightly decomposed medium grained GRANITE. Joints are closely to medium locally very closely spaced, rough planar, very narrow, iron stained, dipping at 10°-20°, 30°-40° and 50°-60°.
				100	100	85	7.9			T2101 13.17					9.74- 11.00m: Moderately decomposed GRANITE.
				100	100	71		13.80		T2101 14.37					
				99	99	99	1.4			T2101 15.21					
				100	100	70	11.0			T2101 16.25				II	
18.07.11		4.60m at 18:00		94	94	20	>20			T2101 17.14					
19.07.11		5.10m at 08:00						17.34							
				100	100	70	0.0	17.60		T2101 18.12					
							>20	17.80							
				100	100	82	5.3			T2101 18.86					
				100	75	55		19.35		T2101 19.81					
							>20	19.65							
							10.0	19.81			-14.97	20.00			
				100	81	69	>20								

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 6.1.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED	CHECKED
S.O. CHAN	EDWARD CHENG
DATE 22.07.11	DATE 23.07.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/VDC-018**

SHEET 3 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR08	E 835,561.30 N 812,168.54	DATE from 16.07.11 to 20.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +5.03 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								20.00							As Sheet 2 of 3.
				100	81	69	8.3	20.60		T2101 20.67					
							>20	20.80							
				100	91	73				T2101 21.49				II	
				100	100	80	11.5			T2101 22.07					
19.07.11		3.00m at 18:00		100	100	100		22.71		T2101 22.71	-17.68	22.71			
															End of drillhole at 22.71m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 22.07.11

CHECKED EDWARD CHENG DATE 23.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_2503200S.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-064**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR04	E 835,495.58 N 812,158.80	DATE from 02.08.11 to 04.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.14 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
02.08.11	PW	Dry at 08:00		28						T2101 0.00					Grey to dark grey, angular to subangular GRAVEL and COBBLE of rock fragments. (FILL)
		Dry at 18:00		83						T2101 1.20					
02.08.11										1.50					
03.08.11		Dry at 08:00		25						T2101 2.50	+3.64	2.50			
	3.20 PW HW														Wash boring.
	7.65 HW							7.65		7.65	-1.51	7.65	× ×		Moderately strong, greyish pink locally pinkish brown, moderately deocmposed MONZONITE. Joints are medium to widely locally very closely spaced, rough planar, extremely narrow to very narrow, limonite and manganese stained, dipping at 0°-10° and 60°-70°.
			99	99	56	14.3		8.07		T2101 8.37			× ×	III	
			97	97	95	3.6		9.45		T2101 9.37	-3.31	9.45	× ×		
			63	27	17	NI		9.87		T2101 -3.83		9.97	× ×	IV	Weak, pinkish brown and greyish brown, highly decomposed MONZONITE. Non intact.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 04.08.11

CHECKED EDWARD CHENG DATE 05.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 3.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-064**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR04	E 835,495.58 N 812,158.80	DATE from 02.08.11 to 04.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.14 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
03.08.11		3.07m at 18:00		98	92	76	12.7 12.7	10.50		T2101 9.97 – 11.50			× ×		Strong to very strong, greyish pink locally pinkish brown spotted black and white, slightly decomposed MONZONITE. Joints are medium to widely locally very closely to closely spaced, rough planar, extremely narrow to very narrow, limonite, manganese and chlorite coated, dipping at 10°-20°, 20°-30°, 60°-70° and 70°-80°.
04.08.11		3.12m at 08:00		100	100	63	3.5			T2101 11.50 – 13.02			× ×		
				100	100	72	13.7	13.94		T2101 13.02 – 14.57			× ×	II	
04.08.11		3.39m at 18:00		100	92	87	3.4	14.67		T2101 14.57 – 16.14	-10.00	16.14	× ×		End of drillhole at 16.14m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 04.08.11

CHECKED EDWARD CHENG DATE 05.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 3.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-056**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR18	E 835,476.82 N 812,155.52	DATE from 02.08.11 to 05.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.00 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
02.08.11	PW														Wash boring.
	1.00 PW HW	Dry at 18:00		57						0.70 T2101 1.35	+5.30	0.70			Dark grey to brownish grey, angular to subangular COBBLE sized rock fragments. (FILL)
02.08.11 04.08.11		0.00m at 08:00		41						T2101 2.50	+4.42	1.58			Dense, yellowish brown, coarse SAND with some angular to subangular fine to coarse gravel sized rock fragments. (FILL)
				34						T2101 3.60	+3.50	2.50			Dark grey to brownish grey locally red, angular to subangular coarse GRAVEL sized rock and wood fragments. (FILL)
											+2.40	3.60			Wash boring.
				90						7.50 T2101 7.90	-1.50	7.50			Dark grey to brownish grey locally red, angular to subangular coarse GRAVEL sized rock and wood fragments. (FILL)
											-1.90	7.90			Wash boring.
	9.94 HW							9.94		9.94	-3.94	9.94			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 05.08.11

CHECKED EDWARD CHENG DATE 06.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 16.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-056**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR18	E 835,476.82 N 812,155.52	DATE from 02.08.11 to 05.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.00 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
04.08.11		3.30m at 18:00		98	81	81	2.6	10.71		T2101	-4.60	10.60		II	Strong. dark grey to yellowish grey spotted black and pink, slightly decomposed MONZONITE. Joints are medium to widely locally closely spaced, rough planar, very narrow to narrow, manganese, limonite and kaolin stained, dipping at 10°-20°, 20°-30°, 60°-70° and 80°-90°.
05.08.11		4.10m at 08:00		98	81	81	2.6			T2101					
							>20	10.84		10.84	-4.84	10.84		III	
				100	100	100	6.0			T2101					10.60- 10.84m: Moderately decomposed MONZONITE.
								11.83		11.74					
				100	100	100				T2101					
										12.57					
				100	100	100	2.1			T2101					
										13.83					
				100	91	91				T2101				II	
								15.24		15.39					
							>20	15.66		T2101					
				100	81	57	12.3	16.23		16.63					
										T2101					
				100	100	100	3.7								
05.08.11		4.00m at 18:00						18.10		18.10	-12.10	18.10			End of drillhole at 18.10m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 05.08.11

CHECKED EDWARD CHENG DATE 06.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 16.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-061**

SHEET 1 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,491.00 N 812,157.31	JOB No. J1105S06
MACHINE / No. DR04		DATE from 05.08.11 to 10.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
05.08.11	0.42 PW	Dry at 08:00		50						T2101 0.00					Brownish grey to dark grey, angular to subangular coarse GRAVEL and COBBLE sized rock fragments. (FILL)
	HW			100						T2101 0.42					
		Dry at 18:00		100						T2101 0.72					
05.08.11				63						T2101 0.97					
06.08.11		Dry at 08:00		75						T2101 1.13					
		Dry at 18:00		76						T2101 1.70					
06.08.11										T2101 2.15					
08.08.11		Dry at 08:00		41						T2101 3.00					
				80						T2101 3.50					
				50						T2101 4.10					
				72						T2101 4.60	+1.65	4.60			
		3.11m at 18:00		43						T2101	+1.45	4.80			Soft, dark grey, sandy CLAY with some angular to subangular coarse gravel sized rock fragments. (STREAM DEPOSIT)
08.08.11															Dark grey to grey, angular to subangular fine to coarse GRAVEL sized rock fragments with fine to coarse sand matrix. (STREAM DEPOSIT)
09.08.11		3.07m at 08:00		32						T2101 5.55					
										6.02	+0.23	6.02			Wash boring.
	9.32 HW							9.32		T2101 9.32	-3.07	9.32	× × × × × ×	II	Strong,, grey spotted black and pink, slightly decomposed MONZONITE. Joints are medium to closely locally widely spaced, rough planar and undulating, limonite and kaolin stained, dipping at
				100	38	21	17.8				-3.75	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 10.08.11

CHECKED EDWARD CHENG DATE 11.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 16.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-061**

SHEET 2 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR04	E 835,491.00 N 812,157.31	DATE from 05.08.11 to 10.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	38	21	17.8	10.22		T2101 10.22					10°-20°, 60°-70° and 80°-90°.
				99	97	97	2.3			T2101 11.67					
				99	99	90		12.81		T2101 13.24					
				100	97	74	6.3			T2101 14.79					
				98	94	81		15.52		T2101 16.36					
09.08.11		3.10m at 18:00													
10.08.11		3.14m at 08:00		100	100	100	7.9			T2101 17.74					
				100	100	100				T2101 19.32					
10.08.11				100	100	97				T2101	-13.72	19.97			

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 16.12.11

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 10.08.11

CHECKED EDWARD CHENG DATE 11.08.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-061**

SHEET 3 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR04	E 835,491.00 N 812,157.31	DATE from 05.08.11 to 10.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								19.97		19.97					End of drillhole at 19.97m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 10.08.11

CHECKED EDWARD CHENG DATE 11.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 16.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-052**

SHEET 1 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR10	E 835,460.58 N 812,151.70	DATE from 25.07.11 to 26.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.52 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
25.07.11	HW														Wash boring.
25.07.11 26.07.11				100						T2 101 4.50 4.80	+0.02 -0.28	4.50 4.80			Angular to subangular, brownish green and red, COBBLE and BOULDER sized rock fragments. (FILL) Wash boring.
											-5.48	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 26.07.11

CHECKED EDWARD CHENG DATE 27.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 7.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-052**

SHEET 2 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,460.58 N 812,151.70	JOB No. J1105S06
MACHINE / No. DR10		DATE from 25.07.11 to 26.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.52 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
															As Sheet 1 of 3.
	11.27 HW														
				87	37	25	NI 4.1	11.27 11.40		T2101	11.27 -6.75	11.27 -6.88		IV	Moderately weak, pinkish brown spotted black, highly decomposed coarse grained GRANITE. (recovered as subangular COBBLE and BOULDER sized rock fragments)
				100	85	85	2.3	11.89		T2101	11.89	11.40		II	Moderately strong to strong, pinkish grey mottled black, slightly decomposed coarse grained GRANITE. Joints are medium to closely spaced, very narrow to narrow, rough undulating to smooth planar, manganese, chlorite, limonite and calcite stained, dipping at 10°-20°, 30°-40° and subvertical from 12.38m to 12.82m.
										T2101	13.10				
				100	84	68	12.5	13.62		T2101	-9.21	13.73		III	Strong to moderately strong, greenish grey mottled pink, moderately decomposed MONZONITE. Joints are medium to closely spaced locally very closely spaced, very narrow to narrow, rough undulating, chlorite, kaolinite, limonite stained, dipping at 10°-20°, 30°-40° and subvertical from 14.43m to 14.68m.
							>20 5.6	14.10 14.20							
							>20	14.56		T2101	14.56				
				100	85	70	4.5	14.93		T2101	-10.35	14.87		II	Strong, pinkish grey spotted black and white, slightly decomposed coarse grained GRANITE. Joints are medium to widely spaced locally closely spaced, very narrow, rough undulating to smooth undulating, kaolinite, calcite, limonite and occasional chlorite stained, sipping at 10°-20° and 30°-40°.
							13.1	16.05		T2101	16.05				
				100	100	83	2.7	16.66		T2101	17.60				
				100	100	100	2.2	18.13		T2101	19.10				
				100	100	86				T2101	-14.77	19.29			19.29- 20.05m: Slightly decomposed MONZONITE.
											-15.48	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 26.07.11

CHECKED EDWARD CHENG DATE 27.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 7.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-052**

SHEET 3 of 3

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,460.58 N 812,151.70	JOB No. J1105S06
MACHINE / No. DR10		DATE from 25.07.11 to 26.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.52 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
26.07.11				100	100	86	2.2	20.42		T2101 20.42	-15.53	20.05		II	As Sheet 2 of 3.
											-15.90	20.42			End of drillhole at 20.42m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 26.07.11

CHECKED EDWARD CHENG DATE 27.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 7.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-053**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR11	E 835,465.92 N 812,152.89	DATE from 25.07.11 to 26.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.56 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
25.07.11	PW	Dry at 08:00		64						PW 0.00					Angular to subangular coarse COBBLE sized rock fragments. (FILL)
										0.50	+4.06	0.50			Wash boring.
	6.00 PW / HW														
											-5.44	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN

DATE 26.07.11

CHECKED EDWARD CHENG

DATE 27.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 7.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-053**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,465.92 N 812,152.89	JOB No. J1105S06
MACHINE / No. DR11		DATE from 25.07.11 to 26.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.56 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
	10.74 HW							10.74		10.74	-6.18	10.74			As Sheet 1 of 2.
25.07.11		2.74m at 18:00		100	53	25				T2101					Moderately strong, pinkish grey to greenish grey spotted black and white, moderately decomposed coarse grained GRANITE. Joints are closely to very closely spaced, rough planar to undulating, limonite, iron stained occasional calcite, dipping at 10°-20°, 40°-50° and 60°-70°.
26.07.11		2.49m at 08:00					11.1			11.38				III	
				100	85	79		12.36		T2101	-7.80	12.36			
							1.0			12.88					Moderately strong to strong, pinkish grey spotted black and white, moderately to slightly decomposed coarse grained GRANITE. Joints are medium to widely locally closely spaced, very narrow, rough undulating to smooth, calcite and limonite stained, dipping at 10°-20°, 30°-40° and 50°-60°.
				100	100	96				T2101					
				100	100	79	11.6	14.29		14.34					
								14.98		T2101 14.68					
				100	100	77	1.6	15.61		T2101					
							18.0	16.11		16.11				III/II	
				100	98	95				T2101					
							1.3			17.60					
				100	100	100				T2101					
26.07.11								19.16		19.16	-14.60	19.16			End of drillhole at 19.16m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 26.07.11

CHECKED EDWARD CHENG DATE 27.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 7.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-055**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR12	E 835,471.60 N 812,154.50	DATE from 03.08.11 to 05.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.87 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
04.08.11	PW	Dry at 08:00		63						T2116 0.00–0.80	+4.07	0.80			Dark grey, angular to subangular COBBLE and BOULDER sized rock fragments. (FILL)
															Wash boring.
				72						T2116 1.30–1.85	+3.57 +3.02	1.30 1.85			Dark grey, angular to subangular COBBLE and BOULDER sized rock fragments. (FILL)
	2.50 PW / HW														Wash boring.
				65						T2116 2.50–3.30	+2.37 +1.57	2.50 3.30			Dark grey, angular to subangular COBBLE and BOULDER sized rock fragments. (FILL)
	10.15										-5.13	10.00			Wash boring.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 05.08.11

CHECKED EDWARD CHENG DATE 06.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 7.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-055**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR12	E 835,471.60 N 812,154.50	DATE from 03.08.11 to 05.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.87 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
	HW						NR	10.15 10.26		10.15	-5.28	10.15			As Sheet 1 of 2.
				84	84	84	>20			T2101				IV/III	Moderately weak to moderately strong, pinkish brown mottled pink, highly to moderately decomposed coarse grained GRANITE. Joints are closely to very closely spaced, narrow to very narrow, rough undulating and planar, iron and limonite stained, dipping at 10°-20°, 60°-70° and 80°-90°.
								10.85		10.85	-5.98	10.85			
				99	99	87	8.2	11.83		T2101					Strong, dark grey spotted pink, slightly decomposed MONZONITE. Joints are medium to widely locally closely spaced, rough planar, kaolin and limonite stained, dipping at 10°-20° and 20°-30°.
04.08.11		2.70m at 18:00													
05.08.11		2.50m at 08:00					2.1	13.28		12.29					
				100	100	94				T2101					
							3.9			13.72					
				100	100	86				T2101					
								15.06		15.26				II	
							19.4	15.37		T2101					
				99	85	68				16.00					
							4.0			T2101					
				100	100	100				16.88					
								16.88		T2101					
							7.6			18.37					
				100	100	100		17.80		T2101					
							1.9			19.36					
				100	100	100				T2101					
05.08.11								19.36			-14.49	19.36			End of drillhole at 19.36m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 05.08.11

CHECKED EDWARD CHENG DATE 06.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 7.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-058**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR09	E 835,481.64 N 812,154.98	DATE from 03.08.11 to 06.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.26 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
04.08.11	PW	Dry at 08:00		71					T2101	0.91	+5.35	0.91			Wash boring.
	1.50 PW HW			60					T2101	1.21					Dark grey, angular to subangular GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
				81					T2101	1.71					
		3.25m at 18:00								2.08	+4.18	2.08			Wash boring.
04.08.11 05.08.11		3.26m at 08:00		86					T2101	3.33	+2.93	3.33			Dark grey, angular to subangular GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
										4.03	+2.23	4.03			Wash boring.
	9.42 HW			99	99	99	10.6	9.42	T2101	9.42	-3.16	9.42	× × × × × ×	III	Moderately strong, grey spotted black and pink, moderately decomposed MONZONITE. Joints are closely spaced, rough planar, narrow to very narrow,
											-3.74	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 06.08.11

CHECKED EDWARD CHENG DATE 08.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 7.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-058**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR09	E 835,481.64 N 812,154.98	DATE from 03.08.11 to 06.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.26 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				99	99	99	10.6			T2101 10.22				III	iron oxide, kaolin and limonite stained, dipping at 10°-20°, 20°-30° and 80°-90° from 9.51-9.67m and 10.09-10.22m.
				39	39	39	NR	10.36		T2101 10.58	-4.10	10.36		V	No recovery assumed to be completely decomposed MONZONITE.
				99	99	99		10.58			-4.32	10.58			Moderately strong, dark grey spotted black and white, moderately decomposed MONZONITE. Joints are medium to widely locally closely spaced, rough planar, very narrow, limonite and kaolin stained, dipping at 10°-20°, 50°-60° and 70°-80°.
				100	100	100				T2101 11.58					
				100	100	100	1.5			T2101 13.05					
				100	100	100				T2101 14.53				III	
				100	68	43	12.6	15.90		T2101 15.90					
								16.85		T2101 17.05					
				99	78	78	>20	17.65		T2101 18.21					
05.08.11		3.40m at 18:00													
06.08.11		3.70m at 08:00		100	100	100	4.4			T2101 19.23	-12.97	19.23			End of drillhole at 19.23m.
06.08.11								19.23							

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 06.08.11

CHECKED EDWARD CHENG DATE 08.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 7.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-059**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR09	E 835,486.88 N 812,156.20	DATE from 01.08.11 to 03.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.33 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
01.08.11	PW	Dry at 08:00													Wash boring.
		Dry at 18:00		100						0.80 T2101	+5.53	0.80			
01.08.11										1.20 T2101					Brownish grey to dark grey, angular to subangular coarse GRAVEL, COBBLE and occasional boulder sized rock fragments. (FILL)
02.08.11		Dry at 08:00		100						1.50 T2101					
	2.00 PW			100						1.76	+4.57	1.76			
	HW														Wash boring.
										4.21 T2101	+2.12	4.21			
				100											Brownish grey to dark grey, angular to subangular coarse GRAVEL, COBBLE and occasional boulder sized rock fragments. (FILL)
										4.76	+1.57	4.76			Wash boring.
02.08.11	9.56 HW	3.25m at 18:00													
03.08.11		3.03m at		75						T2101 9.56	-3.23	9.56			
				100	100	87	8.2	9.76		T2101 9.76	-3.43	9.76	× ×	II	Brownish grey to dark grey, angular to subangular coarse GRAVEL, COBBLE and occasional boulder
											-3.67	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 03.08.11

CHECKED EDWARD CHENG DATE 04.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 7.12.11

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/WCH-059**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR09	E 835,486.88 N 812,156.20	DATE from 01.08.11 to 03.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +6.33 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
		08:00					8.2	10.25							sized rock fragments. (FILL)
				100	100	87	3.1			T2101					Strong, greenish grey to dark grey spotted black and pink, slightly decomposed MONZONITE. Joints are medium to widely locally closely spaced, rough planar, very narrow, limonite and kaolin stained, dipping at 10°-20°, 60°-70° and 80°-90°.
								11.21							
				100	100	97				T2101					
								12.59							
				100	85	85	2.8			T2101					
								14.12						II	
				100	100	97				T2101					
								15.12							
				99	99	89	7.3			T2101					
								16.49							
				99	99	99	1.7			T2101					
03.08.11								18.28			-11.95	18.28			End of drillhole at 18.28m.

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 7.12.11

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 03.08.11

CHECKED EDWARD CHENG DATE 04.08.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-102**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR12	E 835,453.16 N 812,154.99	DATE from 01.08.11 to 03.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.74 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
01.08.11	PW	Dry at 08:00		100						T2116 0.00–0.50	+4.24	0.50			Angular COBBLE and BOULDER sized rock fragments. (FILL)
											+3.94	0.80			Wash boring.
		Dry at 18:00		76						T2116 0.80–1.30					Angular COBBLE and BOULDER sized rock fragments. (FILL)
01.08.11 02.08.11		Dry at 08:00		83						T2116 1.30–1.90	+2.84	1.90			
											+2.44	2.30			Wash boring.
				83						T2116 2.30–2.90					Angular COBBLE and BOULDER sized rock fragments. (FILL)
	3.45 PW										+1.84	2.90			Wash boring.
	HW			100						T2116 3.45–3.80	+1.29	3.45			Angular COBBLE and BOULDER sized rock fragments. (FILL)
				83						T2116 3.80–4.40					
				100						T2116 4.40–5.10	-0.36	5.10			Wash boring.
											-5.26	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 03.08.11

CHECKED EDWARD CHENG DATE 04.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 3.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-102**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,453.16 N 812,154.99	JOB No. J1105S06
MACHINE / No. DR12		DATE from 01.08.11 to 03.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.74 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
															As Sheet 1 of 2.
	11.68 HW							11.68		11.68	-6.94	11.68			
				100	96	96	3.2	12.94		T2101 13.07					Moderately strong to strong, greenish grey spotted white and pink, slightly decomposed coarse MONZONITE. Joints are closely to medium spaced, rough planar, very narrow, limonite and chlorite stained, dipping at 20°-30°, 40°-50°, 60°-70° and 80°-90°.
				100	80	59	12.1	13.93		T2101 14.57					
							3.5	14.51							
				100	76	54	>20	14.77		T2101 15.93				III/II	
							12.1	15.68							
				100	63	58	3.3	16.58		T2101 16.93					
02.08.11		2.55m at 18:00					14.0								
03.08.11		2.60m at 08:00		100	95	78	5.4	17.08		T2101 18.00	-13.26	18.00			
03.08.11								18.00							End of drillhole at 18.00m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 03.08.11

CHECKED EDWARD CHENG DATE 04.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 3.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-001**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,431.15 N 812,150.65	JOB No. J1105S06
MACHINE / No. DR11		DATE from 03.08.11 to 04.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.53 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
03.08.11	PW	Dry at 08:00		60						0.50 T2116 1.50 T2116 2.50 T2116 3.50 T2116 4.80	+4.03	0.50			Wash boring.
				66											Dark grey to brownish grey, GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
				76											
				60							-0.27	4.80			
	6.00 PW HW														Wash boring.
											-5.47	10.00			

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 6.1.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 04.08.11

CHECKED EDWARD CHENG DATE 05.08.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-001**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR11	E 835,431.15 N 812,150.65	DATE from 03.08.11 to 04.08.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.53 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
															As Sheet 1 of 2.
		1.98m at 18:00		84	64	64	NI 5.4	10.82 11.03		T2101 10.82	-6.29	10.82			
											-6.50	11.03	× ×	IV	Moderately weak, dark grey spotted black, highly decomposed MONZONITE.
03.08.11													× ×	III	Moderately strong, dark grey spotted black and white, moderately decomposed MONZONITE. Joints are medium to closely spaced, narrow to very narrow, rough undulating, iron and limonite stained, dipping at 10°-20° and 60°-70°.
04.08.11		2.19m at 08:00						11.40		11.40	-6.87	11.40	× ×	V	Wash boring, assumed to be completely decomposed MONZONITE.
	12.89 HW						NI	12.89 13.03		12.89	-8.36 -8.50	12.89 13.03	× ×	IV	Moderately weak, dark grey to reddish brown, highly decomposed MONZONITE.
				99	73	36	8.9			T2101			× ×		Strong, dark grey spotted black and pink, slightly decomposed MONZONITE. Joints are medium to closely spaced, very narrow, rough planar to undulating, limonite and kaolin stained, dipping at 20°-30°, 40°-50°, 60°-70° and 80°-90°.
								14.26		14.26			× ×		
				100	94	90	4.1			T2101			× ×		
										15.81			× ×		
				100	100	90		16.68		T2101			× ×	II	
										17.35			× ×		
				100	100	100	3.9			T2101			× ×		
										18.81			× ×		
04.08.11				100	100	100		19.78		T2101 19.78	-15.25	19.78	× ×		End of drillhole at 19.78m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 04.08.11

CHECKED EDWARD CHENG DATE 05.08.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-073**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR02	E 835,419.56 N 812,148.32	DATE from 02.07.11 to 08.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.55 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
02.07.11	HW	Dry at 08:00									+4.13	0.42			Empty casing.
				83						T2101	0.42				Angular COBBLE and BOULDER sized rock and concrete fragments. (FILL)
02.07.11		Dry at 18:00									+3.05	1.50			
04.07.11		Dry at 08:00									1.50				Wash boring.
				66						T2101	+2.75	1.80			Angular COBBLE and BOULDER sized rock and concrete fragments. (FILL)
											3.30	+1.25	3.30		Wash boring.
											4.10	+0.45	4.10		Angular COBBLE and BOULDER sized rock and concrete fragments. (FILL)
				47						T2101	5.60	-1.05	5.60		Wash boring.
				83						T2101	5.90	-1.35	5.90		Angular COBBLE and BOULDER sized rock and concrete fragments. (FILL)
	7.18 HW										6.50	-1.95	6.50		Wash boring.
				98	95	80		7.18		T2101	7.18	-2.63	7.18		Moderately weak to moderately strong, light yellowish brown to white, highly to moderately decomposed fine ash TUFF with closely to medium spaced joints.
							8.5			T2101	7.77			IV/III	
		3.10m at 18:00		80	74	50		8.40		T2101		-3.85	8.40		
04.07.11							NI	8.65				-4.10	8.65	IV	
05.07.11		6.10m at 08:00					10.0	8.75			8.75	4.20	8.75	IV/III	8.40- 8.65m: Highly decomposed TUFF and highly fractured.
				100	42	16	NI			T2101				IV	8.75- 9.37m: Highly decomposed TUFF and highly fractured.
								9.37			9.37	-4.82	9.37		Moderately strong to strong, light yellowish brown to light grey, moderately to slightly decomposed fine ash TUFF. Joints are closely to medium spaced, rough
				99	83	70	6.3			T2101		-5.45	10.00	III/II	

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 10.07.11

CHECKED EDWARD CHENG DATE 11.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-073**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR02	E 835,419.56 N 812,148.32	DATE from 02.07.11 to 08.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.55 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				99	83	70	>20	10.16 10.40		T2101				III/II	planar, very narrow, iron stained, dipping at 10°-20° and 30°-40°.
							9.0			10.79					
		2.90m at 18:00		88	84	84	NI	11.45 11.60		T2101	-6.90 -7.05	11.45 11.60		III	
05.07.11															11.45- 11.60m: Moderately decomposed TUFF.
06.07.11		5.90m at 08:00					4.0			11.92					Strong, light grey, slightly decomposed fine ash TUFF. Joints are closely to medium spaced, rough planar, very narrow, clean, dipping at 10°-20° and 30°-40°.
				97	97	41		12.70		T2101					
							>20	13.10							
							7.5			13.37					
				100	63	38	>20	13.53		T2101					
								13.77		13.77				II	
		2.50m at 18:00		100	100	70				T2101					
06.07.11															
08.07.11		3.20m at 08:00		100	100	100	2.4			14.64					
										T2101					
										15.47					
				100	100	100				T2101					
08.07.11								16.10		16.10	-11.55	16.10			
															End of drillhole at 16.10m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 10.07.11

CHECKED EDWARD CHENG DATE 11.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-079**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR11	E 835,386.87 N 812,141.46	DATE from 18.07.11 to 19.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.47 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples		Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
18.07.11	HW	Dry at 08:00														Wash boring.
				100						T2101	1.57	+2.90	1.57			Angular COBBLE and BOULDER sized rock and concrete fragments. (FILL)
				75						T2101	2.47					
				89						T2101	3.27					
											4.03	+0.44	4.03			Wash boring.
	7.21 HW	1.95m at 18:00		100	100	65		7.21		T2101	7.21	-2.74	7.21			Strong, yellowish grey, slightly decomposed fine ash TUFF with closely to medium spaced joints.
18.07.11											7.53				II	
19.07.11		2.07m at 08:00		100	82	82	5.0			T2101						
							NI	8.60				-4.13	8.60		IV	
								8.80				-4.33	8.80			Weak, brown, highly decomposed fine ash TUFF. (SILT with some gravel sized rock fragments)
											9.04				III/II	Moderately strong to strong, grey mottled brown, moderately to slightly decomposed fine ash TUFF with medium spaced joints.
				98	89	73	3.0			T2101						
							>20	9.80				-5.38	9.85		III	
												-5.53	10.00			

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 6.1.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 20.07.11

CHECKED EDWARD CHENG DATE 21.07.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-079**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR11	E 835,386.87 N 812,141.46	DATE from 18.07.11 to 19.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.47 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I.? Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								10.00							9.85- 10.00m: Moderately decomposed TUFF. Strong, light grey to grey, slightly decomposed fine ash TUFF. Joints are closely to medium spaced, rough planar, very narrow, iron stained, dipping at 20°-30° and 40°-50°.
				98	89	73				T2101 10.53					
				100	100	77				T2101 11.44					
				100	100	100				T2101 12.11				II	
				98	92	81	4.8			T2101	-8.79	13.26			
											-9.09	13.56		III	13.26- 13.56m: Yellowish brown and moderately decomposed TUFF.
19.07.11		1.99m at 18:00		100	100	100				T2101 13.61				II	
								14.82		14.82	-10.35	14.82			End of drillhole at 14.82m.

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 6.1.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 20.07.11

CHECKED EDWARD CHENG DATE 21.07.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-081**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR08	E 835,375.45 N 812,138.86	DATE from 12.07.11 to 14.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.60 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
12.07.11	HW	Dry at 08:00													Wash boring.
				86						1.25 T2101 1.60	+3.35 +3.00	1.25 1.60			Angular COBBLE sized rock fragments. (FILL)
															Wash boring.
		3.10m at 18:00													
12.07.11															
13.07.11		1.90m at 08:00													
	6.50 HW							6.50		6.50 T2101	-1.90	6.50			Angular COBBLE sized rock fragments. (FILL)
				73	59	38	NI	6.85			-2.25	6.85		IV/III	Moderately weak to moderately strong, yellowish grey locally mottled brown, highly to moderately decomposed fine ash TUFF with closely to medium spaced joints and highly fractured.
							6.0	7.30		7.30 T2101	-2.70	7.30		IV	
							NI	7.50			-2.90	7.50		IV/III	7.30- 7.50m: Highly decomposed TUFF.
				38	25	25	10.0	7.80			-3.20	7.80		IV	7.80- 8.30m: Highly decomposed TUFF.
							NI	8.30		8.22 T2101	-3.70	8.30		IV/III	
				94	58	37	10.0	8.50			-3.90	8.50		IV	
							NI	8.70			-4.10	8.70			8.50- 8.70m: Highly decomposed TUFF.
				97	97	81	3.0			8.94 T2101				II	Strong, light grey to grey, slightly decomposed fine ash TUFF. Joints are closely to medium spaced, rough planar, iron stained, clean, dipping at 10°-20°, 30°-40° and 50°-60°.
											-5.40	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 14.07.11

CHECKED EDWARD CHENG DATE 15.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-081**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR08	E 835,375.45 N 812,138.86	DATE from 12.07.11 to 14.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.60 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
13.07.11		3.90m at 18:00		97	97	81	3.0	10.18		T2101 10.18–10.49					As Sheet 1 of 2.
14.07.11		1.70m at 08:00		100	100	100				T2101 10.49–11.63					
				98	98	98				T2101 11.63–12.74					
				100	100	100	2.9			T2101 12.74–13.71				II	
				98	98	30				T2101 13.71–14.24					
				100	100	100				T2101 14.24–15.01					
14.07.11				100	100	100		15.01			-10.41	15.01			End of drillhole at 15.01m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 14.07.11

CHECKED EDWARD CHENG DATE 15.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-084A**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,353.35 N 812,132.19	JOB No. J1105S06
MACHINE / No. DR11		DATE from 15.07.11 to 16.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.44 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I. / Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
15.07.11	HW														Wash boring.
							NI	4.54			-0.10	4.54		IV/III	Moderately weak to moderately strong, yellowish brown to yellowish grey, highly to moderately decomposed fine ash TUFF.
				97	76	38		4.94		T2101 4.54	-0.50	4.94			Moderately strong to strong, grey, moderately to slightly decomposed fine ash TUFF. Joints are closely to medium spaced, rough planar, very narrow, iron stained, dipping at 20°-30°, 50°-60° and vertical joint from 4.94-5.40m.
				100	100	70	5.4			T2101 5.98				III/II	
	7.41 HW							7.41		T2101 7.41	-2.97	7.41			Strong, light grey to grey, slightly decomposed fine ash TUFF. Joints are closely to medium locally very closely spaced, rough planar, very narrow, iron stained and slightly kaolin coated, dipping at 10°-20°, 30°-40°, 50°-60° and subvertical joint from 11.10-12.10m.
				100	100	74	4.0			T2101 8.09					
				100	63	50	>20	8.49		T2101 8.88				II	
							0.0	8.88							
				100	100	60	>20	9.10		T2101 9.30					
15.07.11 16.07.11							3.3								
				100	86	72		9.90		T2101 9.71	-5.56	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 18.07.11

CHECKED EDWARD CHENG DATE 19.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-084A**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR11	E 835,353.35 N 812,132.19	DATE from 15.07.11 to 16.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.44 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
16.07.11				100	86	72	>20	10.05		T2101 10.40					As Sheet 1 of 2.
				100	92	30	10.0	11.57		T2101 11.57					
				100	100	0	>20	12.10		T2101 12.10				II	
				100	90	40	13.1			T2101 13.11					
				100	100	30		13.72		T2101 13.72	-9.28	13.72			End of drillhole at 13.72m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 18.07.11

CHECKED EDWARD CHENG DATE 19.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-075**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR09	E 835,404.62 N 812,145.99	DATE from 13.07.11 to 18.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.42 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
13.07.11	SW	Dry at 08:00													Wash boring.
	1.50 SW			100						1.20 T2116 1.40	+3.22 +3.02	1.20 1.40			Angular COBBLE and BOULDER sized rock and concrete fragments. (FILL)
	PW	2.00m at 18:00													Wash boring.
13.07.11 14.07.11		2.00m at 08:00		60						2.00 T2116 2.10	+2.42 +2.32	2.00 2.10			Angular COBBLE and BOULDER sized rock and concrete fragments. (FILL)
															Wash boring.
				91						2.90 T2101	+1.52	2.90			Angular COBBLE and BOULDER sized rock and concrete fragments. (FILL)
		2.15m at 18:00		85						3.54 T2101					
14.07.11										4.30	+0.12	4.30			
15.07.11	4.70 PW	2.20m at 08:00													Wash boring.
	HW	2.17m at 18:00		90						4.65 T2101	-0.23	4.65			Angular COBBLE and BOULDER sized rock and concrete fragments. (FILL)
15.07.11				100						4.85 T2101 5.02	-0.60	5.02			
16.07.11		2.25m at 08:00		100						5.09 T2101 5.49	-0.67 -1.07	5.09 5.49			Wash boring. Angular COBBLE and BOULDER sized rock and concrete fragments. (FILL) Wash boring.
	8.81 HW			68	77	20	NI 15.0	8.15 8.33 9.40		8.15 T2101 9.65	-3.73	8.15		IV/III	Moderately weak to moderately strong, yellowish brown to brown, highly to moderately decomposed fine ash TUFF with closely to very closely spaced joints.
				96	98	90	NI 3.6	9.65		T2101	-5.23 -5.58	9.65 10.00		II	Strong, light grey, slightly decomposed fine ash TUFF. Joints are closely to medium spaced, rough

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 18.07.11

CHECKED EDWARD CHENG DATE 19.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-075**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR09	E 835,404.62 N 812,145.99	DATE from 13.07.11 to 18.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.42 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
16.07.11		2.95m at 18:00		98	98	90				T2101 10.95					planar, very narrow, iron stained, dipping at 10°-20°, 30°-40° and subvertical joint from 8.33-9.20m.
				100	100	100				T2101 12.34					
18.07.11		2.55m at 08:00					3.6							II	
				100	100	100				T2101 13.57					
				97	86	72				T2101 14.96	-10.18	14.60			
							NI	14.60 14.75							Moderately strong, light grey to light pink mottled green, moderately decomposed fine ash TUFF. Joints are closely spaced, rough planar, very narrow, kaolin and chlorite stained, dipping at 10°-20°, 30°-40°. 14.60- 15.77m: Subvertical joint with fractured zone 20-30mm along joint face.
18.07.11		2.66m at 18:00		100	100	0	>20	15.77		T2101 15.77	-11.35	15.77		III	
															End of drillhole at 15.77m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 18.07.11

CHECKED EDWARD CHENG DATE 19.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-075A**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR18	E 835,412.23 N 812,146.73	DATE from 06.09.11 to 08.09.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.66 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
06.09.11	PW														Wash boring.
06.09.11	3.00 PW														
07.09.11	HW														
				94						T2101 4.30 – 4.80	+0.36	4.30			Brownish grey and black, angular to subangular coarse GRAVEL and COBBLE sized rock fragments. (FILL)
											-0.14	4.80			Wash boring.
	7.96 HW							7.96		T2101 7.96 – 9.03	-3.30	7.96		III/II	Moderately strong to strong, dark grey spotted black and white, fine ash TUFF. Joints are medium to closely locally widely spaced, rough planar, very narrow, limonite and kaolin coated ,dipping at 10°-20°, 40°-50° and 80°-90°.
				100	100	100	5.2			T2101 9.03 – 9.90					
				99	99	85		9.90		T2101 9.90 –	-5.34	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 08.09.11

CHECKED EDWARD CHENG DATE 09.09.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-075A**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR18	E 835,412.23 N 812,146.73	DATE from 06.09.11 to 08.09.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.66 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	100	100	8.6								As Sheet 1 of 2.
				100	100	100	8.6			T2101					
								10.83		10.83					
							15.2	11.16							
				98	86	81				T2101				III/II	
							4.7								
										12.13					
				96	71	60		12.65		T2101					
							10.0								
							>20	13.25			-8.59	13.25		III	
07.09.11								13.48		13.48	-8.82	13.48			13.25- 13.48m: Moderately deocmposed TUFF, highly fractured.
08.09.11				100	94	69	9.3			T2101				III/II	
08.09.11								14.34		14.34	-9.68	14.34			End of drillhole at 14.34m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 08.09.11

CHECKED EDWARD CHENG DATE 09.09.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-077**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,394.33 N 812,143.68	JOB No. J1105S06
MACHINE / No. DR09		DATE from 19.07.11 to 20.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.48 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I.? Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
19.07.11	HW	Dry at 08:00									+4.48	0.00			Wash boring.
				87						T2101 1.30	+3.18	1.30			Angular, grey and greyish brown, GRAVEL and COBBLE of concrete and rock fragments. (FILL)
										1.60	+2.88	1.60			Wash boring.
				78						T2101 1.80	+2.68	1.80			Angular, pinkish grey and purplish brown, medium to coarse GRAVEL of rock fragments. (FILL)
										2.40	+2.08	2.40			Wash boring.
				98						T2101 2.84	+1.64	2.84			Angular, purplish brown, light and dark grey, COBBLE and BOULDER of moderately and slightly decomposed tuff fragments. (FILL)
										3.44					
				87						T2101 4.04					
		2.15m at 18:00		63						T2101 4.84					
19.07.11											-0.36	4.84			
20.07.11		2.20m at 08:00													Wash boring.
	8.54 HW							8.54		8.54	-4.06	8.54			Angular to subangular, fine to coarse GRAVEL of concrete and rock fragments. (FILL)
							NA	8.84			-4.36	8.84			Moderately strong, light grey spotted white, moderately decomposed fine ash TUFF. Joints are closely to medium spaced, rough planar, extremely to very narrow, limonite and manganese coated, dipping at 10°-20°, 40°-50° and 70°-80°.
				94	73	58	3.7			T2101				III	
											-5.02	9.50			
				100	100	79				9.64 T2101				II	
											-5.52	10.00			Very strong, dark grey streaked white, slightly

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 20.07.11

CHECKED EDWARD CHENG DATE 21.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_2503205.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-077**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR09	E 835,394.33 N 812,143.68	DATE from 19.07.11 to 20.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.48 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I.? Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
20.07.11		2.00m at 18:00		100	100	79				T2101 10.91					decomposed fine ash TUFF. Joints are closely to medium spaced, rough planar, extremely narrow, calcite or limonite coated, dipping at 10°-20°, 20°-30°, 40°-50°, 60°-70° and 70°-80°.
				100	100	55				T2101 12.37					
							3.7							II	
				100	100	60				T2101 13.73					
				100	100	100		14.83		T2101 14.83	-10.35	14.83			
															End of drillhole at 14.83m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 20.07.11

CHECKED EDWARD CHENG DATE 21.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_2503200S.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-083**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,362.72 N 812,134.85	JOB No. J1105S06
MACHINE / No. DR10		DATE from 14.07.11 to 18.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.40 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
14.07.11	HW	Dry at 08:00													Wash boring.
								1.00		1.00	+3.40	1.00			
				79	0	0	NI			T2101				IV/III	Moderately weak to moderately strong, yellowish grey, highly to moderately decomposed fine ash TUFF.
	1.96 HW							1.70		1.70	+2.70	1.70			
		1.40m at 18:00						1.96		1.96	+2.44	1.96		V	Wash boring, assumed to be completely decomposed TUFF.
14.07.11				85	85	85				T2101					
15.07.11		2.10m at 08:00								2.28					Moderately strong, yellowish brown to yellowish grey, moderately decomposed fine ash TUFF. Joints are closely to medium spaced, rough planar, very narrow to narrow, iron stained, dipping at 20°-30°, 40°-50° and 75°-80°.
				100	100	74				T2101					
										3.64					
				100	82	82	4.2			T2101				III	
										5.20					
				88	87	87				T2101					
								6.80		6.67	-2.40	6.80			
				95	95	95				T2101					Very strong, dark grey, slightly decomposed fine ash TUFF. Joints are medium to widely spaced, rough planar, very narrow, iron stained, dipping at 20°-30° and 40°-50°.
				100	100	100				7.62 T2101					
										8.06				II	
		1.20m at 18:00		100	100	88	3.8			T2101					
15.07.11											-4.60	9.00			
16.07.11		0.20m at 08:00		100	100	100				9.12 T2101					Strong, light grey to grey, slightly decomposed fine ash TUFF. Joints are closely to medium spaced, rough planar, very narrow, slightly kaolin coated, dipping at 20°-30°, 40°-50°, 60°-70° and subvertical joint from 10.90-11.50m.
				100	100	100				9.63 T2101				II	
											-5.60	10.00			

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 6.1.12

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 18.07.11

CHECKED EDWARD CHENG DATE 19.07.11

REMARKS

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-083**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR10	E 835,362.72 N 812,134.85	DATE from 14.07.11 to 18.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.40 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
16.07.11		0.10m at 18:00		100	100	100	3.8	10.90		T2101 10.40					As Sheet 1 of 2.
18.07.11		1.80m at 08:00		100	100	100				T2101 10.90					
				99	90	90				T2101 12.03					
				100	100	100				T2101 12.63				II	
				100	100	52	5.9			T2101 13.79					
18.07.11		1.60m at 18:00		100	100	86		14.49		T2101 14.49	-10.09	14.49			End of drillhole at 14.49m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 18.07.11

CHECKED EDWARD CHENG DATE 19.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-084**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES E 835,364.25 N 812,136.05	JOB No. J1105S06
MACHINE / No. DR09		DATE from 23.07.11 to 26.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.39 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
23.07.11	PW	Dry at 08:00													Wash boring.
23.07.11		1.32m at 18:00													
25.07.11		1.84m at 08:00													
	3.80 PW														
				100						T2116	3.71	+0.68	3.71		Brownish grey, angular to subangular coarse GRAVEL and COBBLE sized rock fragments. (FILL / COLLUVIUM)
				76						T2116	3.98	+0.04	4.35		
				100	65	65	11.0	4.70		T2116	4.70	-0.31	4.70	III	Moderately strong, dark grey, moderately decomposed fine ash TUFF. Joints are closely to very closely spaced, rough planar, narrow, kaolin, iron stained and limonite stained, dipping at 10°-20°.
							>20	5.06 5.13							
							8.2								Moderately strong, brownish grey to grey spotted white, moderately decomposed fine ash TUFF. Joints are closely to medium spaced, rough planar to undulating, very narrow to narrow, iron oxide, limonite and kaolin stained, dipping at 10°-20°, 20°-30° and 60°-70°.
				95	63	63	2.7	5.62		T2101	4.93				
							16.7	5.99							
								6.53			6.45			III	
				100	89	80	3.7			T2101					
							7.3	7.35							
								7.90			7.90				
							14.0			T2101					
				100	57	22		8.32				-4.06	8.45		
							16.3	8.81		T2101	8.81				Moderately strong to strong, dark grey spotted and streaked white, fine ash TUFF. Joints are closely to medium locally very closely to closely spaced, rough smooth to planar undulating, kaolin, limonite, chlorite and calcite stained, dipping at 10°-20°, 30°-40°, 60°-70° and 80°-90°.
				94	71	42	5.1			T2101	9.53			III/II	
				89	96	96				T2101		-5.61	10.00		

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 28.07.11

CHECKED EDWARD CHENG DATE 29.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 6.1.12

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-084**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR09	E 835,364.25 N 812,136.05	DATE from 23.07.11 to 26.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.39 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.I./ Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
25.07.11		2.08m at 18:00		99	96	96	5.1			T2101 10.22				III/II	As Sheet 1 of 2.
26.07.11		2.27m at 08:00		100	100	85				T2101 11.00					
				100	96	84				T2101 11.68					
				100	100	100		12.14		T2101 12.14					
				100	0	0	14.0	12.64		T2101 12.64					
				100	0	0	>20			T2101 13.24					
				100	0	0		13.42 13.42		T2101 13.59					
				100	0	0				T2101 13.92					
26.07.11				97	27	27	10.9	14.80		T2101 14.80	-10.41	14.80			End of drillhole at 14.80m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 28.07.11

CHECKED EDWARD CHENG DATE 29.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN 25032005.GDT 6.1.12

PRELIMINARY

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-84A**

SHEET 1 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR11	E 835,353.35 N 812,132.19	DATE from 15.07.11 to 16.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.44 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.T./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
15.07.11	HW														Wash boring.
								4.54		4.54	-0.10	4.54		IV/III	Moderately weak to moderately strong, yellowish brown to yellowish grey, highly to moderately decomposed fine ash TUFF.
				97	76	38	NI	4.94		T2101	-0.50	4.94			Moderately strong to strong, grey, moderately to slightly decomposed fine ash TUFF. Joints are closely to medium spaced, rough planar, very narrow, iron stained, dipping at 20°-30°, 50°-60° and vertical joint from 4.94-5.40m.
				100	100	70	5.4	5.98		T2101				III/II	
	7.41 HW							7.41		7.41	-2.97	7.41			Strong, light grey to grey, slightly decomposed fine ash TUFF. Joints are closely to medium locally very closely spaced, rough planar, very narrow, iron stained and slightly kaolin coated, dipping at 10°-20°, 30°-40°, 50°-60° and subvertical joint from 11.10-12.10m.
				100	100	74	4.0	8.09		T2101					
				100	63	50	>20	8.49		T2101				II	
							0.0	8.88		8.88					
				100	100	60	>20	9.10 9.30		T2101					
15.07.11 16.07.11							3.3	9.71			-5.56	10.00			
				100	86	72		9.90		T2101					

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 18.07.11

CHECKED EDWARD CHENG DATE 19.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 20.7.11

PRELIMINARY

Tysan Geotechnical Limited 泰昇土力工程有限公司

DRILLHOLE RECORD

CONTRACT No. 903

HOLE No. **PD/NRW-84A**

SHEET 2 of 2

PROJECT MTR South Island Line (East) Contract 903, Ocean Park Station, Wong Chuk Hang Station, Viaducts and Aberdeen Channel Bridge

METHOD RC	CO-ORDINATES	JOB No. J1105S06
MACHINE / No. DR11	E 835,353.35 N 812,132.19	DATE from 15.07.11 to 16.07.11
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +4.44 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	F.T./Test Depth	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								10.05							As Sheet 1 of 2.
				100	86	72	>20			T2101					
										10.40					
				100	92	30	10.0			T2101					
								11.57		11.57					
				100	100	0	>20			T2101				II	
								12.10		12.10					
				100	90	40	13.1			T2101					
										13.11					
				100	100	30				T2101					
16.07.11								13.72		13.72	-9.28	13.72			
															End of drillhole at 13.72m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Standpipe/Piezometer Tip
- In-situ Vane Shear Test
- Point Load Test

LOGGED S.O. CHAN DATE 18.07.11

CHECKED EDWARD CHENG DATE 19.07.11

REMARKS

DRILLHOLE LOG J1105S06 - MTRC 903.GPJ TYSAN_25032005.GDT 20.7.11

REPORT ON SOIL AND ROCK TESTS

CLIENT : MTR Corporation Limited

PROJECT : Contract No.912-Ground Investigation for South Island Line East

SIL REPORT NO. : VOLUME 1 - PART 1 OF 4

MTR SCHEDULE NOS. : C902-1, C902-3, C903-1, C903-2, C903-3

MTR CORPORATION LIMITED

CONTRACT NO. 912- GROUND INVESTIGATION FOR SOUTH ISLAND LINE EAST

LABORATORY TEST REPORT SUMMARY CONTENTS LIST

VOLUME NUMBER	REPORTED SCHEDULES	PART NOS.	CONTENTS	REMARKS
VOLUME 1	C902-1	1 OF 4	Soil Summary Tables, Classification Tests, Chemical Tests	Results from 5 Nos. schedules collated in one report presented in Drillhole/ trial pit order
	C902-3	2 OF 4	Triaxial Tests	
	C903-1	3 OF 4	Triaxial Tests	
	C903-2	4 OF 4	Consolidation Tests and Rock Tests	
	C903-3			
VOLUME 2	C903-4	1 OF 1	Soil Summary Tables, Classification Tests, Chemical Tests,Triaxial Test & Rock Test Results	Results from 1 No. schedule collated in one report presented
VOLUME 3	C902-5	1 OF 2	Soil Summary Tables, Classification Tests, Chemical Tests, Triaxial Tests and Consolidation Tests	Results from 2 Nos. schedule collated in one report presented in Drillhole/ trial pit order
	C902-6	2 OF 2	Rock Test Results	
VOLUME 4	C902-7	1 OF 3	Soil Summary Tables, Classification Tests, Chemical Tests	Results from 2 No. schedules collated in one report presented in Drillhole/ trial pit order
	C904-1	2 OF 3	Compaction Test Results and Triaxial Test & Rock Test Results	
		3 OF 3	Rock Test Results	

PROJECT : CONTRACT NO.912 - GROUND INVESTIGATION FOR SOUTH ISLAND LINE EAST

CLIENT : MTR CORPORATION LIMITED

SOIL AND ROCK LABORATORY TEST REPORT

VOLUME 1

CONTENTS

PART 1	APPENDIX A.	Summary of Soil and Rock Test Results
	APPENDIX B.	Moisture Content
	APPENDIX C.	Bulk Density
	APPENDIX D.	Particle Density
	APPENDIX E.	Liquid and Plastic Limits
	APPENDIX F.	Particle Size Distribution
	APPENDIX G.	Compaction Tests
	APPENDIX H.	Chemical Tests
PART 2	APPENDIX I.	1 Triaxial Compression tests (Drillhole 912/SIL/D222 to D230)
PART 3	APPENDIX I.	2 Triaxial Compression tests (Drillhole 912/SIL/D231 to D265)
PART 4	APPENDIX I.	3 Triaxial Compression tests (Drillhole 912/SIL/D272(P) to D275(P))
	APPENDIX J.	One Dimensional Consolidation Test
	APPENDIX K.	Porosity / Density Determination of Rock Speciment Using Saturation and Buoyancy Techniques
	APPENDIX L.	Point Load Test
	APPENDIX M.	Unconfined Compressive Strength of Rock Core
	APPENDIX N.	Determination of the Elastic Moduli of Rock Core
	APPENDIX O.	Direct Shear Test
	APPENDIX P.	Dimensional and Shape Tolerances for UCS Test on Rock Core

APPENDIX A. SUMMARY OF SOIL AND ROCK TEST RESULTS

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Website : www.fugro.com

MateriaLab

Test Report No. : 090562SL90169(3)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 21-08-2009

Bore Hole No.	Sample No.	Sample Type	Sample Depth m	Sample Ref.	Description	*Nat. MC %	#Density Bulk Mg/m³	#Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	*Atterberg Limits PL %	*Atterberg Limits PI %	*Atterberg Limits <425μm %	*Atterberg Limits Condition	*Particle Size Distribution Gravel %	*Particle Size Distribution Sand %	*Particle Size Distribution Silt %	*Particle Size Distribution Clay %	*Compaction MDD Mg/m³	*Compaction OMC %	*Triaxial Test Type	*Triaxial Test s' kPa	*Triaxial Test t kPa	*Triaxial Test σ_3' kPa	*1-D Consolidation e_0	Material Type from Client
TP210		D	0.50		Moist, brown, slightly gravelly, slightly sandy SILT/CLAY.					50	27	23	80	Sieved	8	13	45	34	1.53	27						FILL

Remarks : PD - Particle Density. * - HOKLAS accredited test. # - Test results from Triaxial test.

Checked by : H.Y. Hung Date : 19 NOV 2009

Certified by : M.T. Lai Date : 19 NOV 2009

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MateriaLab

Test Report No. : 090562SL90276(9)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited
Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 30-12-2009

Bore Hole No.	Sample No.	Sample Type	Sample Depth m	Sample Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425μm %	Cond-ition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	*Compaction MDD Mg/m³	OMC %	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*I-D Consolidation e_0	Material Type from Client
TP218		D	0.50		Moist, brown, slightly sandy, slightly gravelly SILT/CLAY.	17				42	26	16	64	Sieved	28	15	57									COLLUVIUM

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : M.T. Po Date : 04 FEB 2010

Certified by : M.T. Lai Date : 04 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(10)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited
Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 30-12-2009

Bore Hole No.	Sample No.	Sample Type	Sample Depth m	Sample Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425μm %	Condition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	*Compaction MDD Mg/m³	OMC %	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*1-D Consolidation e_0	Material Type from Client
TP219		D	0.50		Moist, brown, slightly sandy, slightly gravelly SILT/CLAY.	23				40	26	13	71	Sieved	19	15	66										COLLUVIUM
TP219		D	1.50		Moist, yellowish brown, slightly gravelly, slightly sandy SILT/CLAY.	25				38	26	11	73	Sieved	17	20	63										COLLUVIUM

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : M.T. Po Date : 04 FEB 2010

Certified by : M.T. Lai Date : 04 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(4)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited
Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 30-12-2009

Bore Hole No.	Sample No.	Type	Depth m	Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425µm %	Condition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	*Compaction MDD Mg/m³	OMC %	*Triaxial Test Type	s' kPa	t kPa	σ3' kPa	*1-D Consolidation e0	Material Type from Client
TP226		D	0.50		Moist, dark brown, very silty/clayey, very sandy GRAVEL.	14				30	NP	-	33	Sieved	43	26	21		1.85	7.8						FILL
TP226		D	1.50		Moist, dark brown, very silty/clayey, very sandy GRAVEL.	11				36	21	15	27	Sieved	49	33	18		2.01	12						FILL

Remarks : PD - Particle Density. * - HOKLAS accredited test. NP - Non-Plastic.

Checked by : M.T. Po Date : 04 FEB 2010

Certified by : M.T. Lai Date : 04 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(5)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited
Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 30-12-2009

Bore Hole No.	Sample No.	Type	Depth m	Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425μm %	Cond-ition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	*Compaction MDD Mg/m³	OMC %	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*I-D Consolidation e_0	Material Type from Client
TP227		D	0.50		Moist, dark brown, very silty/clayey, very sandy GRAVEL.	14				37	24	13	32	Sieved	47	28	25		1.93	12						FILL
TP227		D	1.50		Moist, dark brown, very silty/clayey, very sandy GRAVEL.	18				37	24	13	38	Sieved	42	32	26		1.92	11						FILL
TP227		D	2.50		Moist, dark brown, very silty/clayey, very gravelly SAND.	13				37	24	13	43	Sieved	31	40	29		1.83	9.9						FILL

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : M.T. Po Date : 04 FEB 2010

Certified by : M.T. Lai Date : 04 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(6)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited
Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 30-12-2009

Bore Hole No.	Sample No.	Type	Depth m	Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425μm %	Condition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	*Compaction MDD Mg/m³	OMC %	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*1-D Consolidation e_0	Material Type from Client
TP228		D	0.50		Moist, orangish brown, very gravelly SAND & SILT/CLAY.	13				50	33	17	39	Sieved	29	36	35		1.86	14						FILL
TP228		D	1.50		Moist, orangish brown, very silty/clayey, very sandy GRAVEL.	12				46	28	18	30	Sieved	41	39	20		1.92	12						FILL
TP228		D	2.50		Moist, orangish brown, very silty/clayey, very gravelly SAND.	10				40	26	14	35	Sieved	35	42	23		1.95	12						FILL

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : M.T. Po Date : 04 FEB 2010

Certified by : M.T. Lai Date : 04 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(7)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited
Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 30-12-2009

Bore Hole No.	Sample No.	Type	Depth m	Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425µm %	Condition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	*Compaction MDD Mg/m³	OMC %	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*I-D Consolidation e_0	Material Type from Client
TP230		D	0.50		Moist, dark brown, very silty/clayey, very gravelly SAND.	13				36	23	13	31	Sieved	37	42	21		1.90	9.3						FILL

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : M.T. Po Date : 04 FEB 2010

Certified by : M.T. Lai Date : 04 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(8)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 30-12-2009

Bore Hole No.	Sample No.	Sample Type	Sample Depth m	Sample Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425µm %	Cond-ition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	*Compaction MDD Mg/m³	OMC %	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*I-D Consolidation e_0	Material Type from Client
TP232		D	0.50		Moist, dark brown, very silty/clayey, very sandy GRAVEL.	14				32	19	13	35	Sieved	55	24	21		1.98	11						FILL

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : M.T. Po Date : 04 FEB 2010

Certified by : M.T. Lai Date : 04 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(11)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 30-12-2009

Bore Hole No.	Sample No.	Type	Depth m	Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425μm %	Cond-ition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	*Compaction MDD Mg/m³	OMC %	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*I-D Consolidation e_0	Material Type from Client
TP233		D	0.50		Moist, brown, slightly sandy, slightly gravelly SILT/CLAY.	20				32	19	13	65	Sieved	29	13	58									COLLUVIUM
TP233		D	1.50		Moist, yellowish brown, slightly sandy, slightly gravelly SILT/CLAY.	26				36	23	14	63	Sieved	26	18	56									COLLUVIUM

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : M.T. Po Date : 04 FEB 2010

Certified by : M.T. Lai Date : 04 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(12)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited
Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 30-12-2009

Bore Hole No.	Sample No.	Sample Type	Sample Depth m	Sample Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425μm %	Cond-ition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	*Compaction MDD Mg/m³	OMC %	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*1-D Consolidation e_0	Material Type from Client
TP234		D	0.50		Moist, dark brown, slightly sandy, slightly gravelly SILT/CLAY.	19				31	24	7	59	Sieved	35	19	46									COLLUVIUM

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : M.T. Po Date : 04 FEB 2010

Certified by : M.T. Lai Date : 04 FEB 2010

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Test Report No. : 090562SL90276(13)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 30-12-2009

Bore Hole No.	Sample No.	Sample Type	Sample Depth m	Sample Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425μm %	Condition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	*Compaction MDD Mg/m³	OMC %	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*1-D Consolidation e_0	Material Type from Client
TP239		D	0.50		Moist, brown, slightly gravelly, slightly sandy SILT/CLAY.	16				32	24	8	72	Sieved	13	27	60									COLLUVIUM

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : _____ Date : 04 FEB 2010
M.T. Po

Certified by : _____ Date : 04 FEB 2010
M.T. Lai

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Test Report No. : 090562SL90276(14)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited
Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 30-12-2009

Bore Hole No.	Sample No.	Sample Type	Sample Depth m	Sample Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425μm %	Condition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	*Compaction MDD Mg/m³	OMC %	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*I-D Consolidation e_0	Material Type from Client
TP240		D	0.50		Moist, yellowish brown, slightly gravelly, slightly sandy SILT/CLAY.	26				39	27	12	71	Sieved	14	19	67										COLLUVIUM
TP240		D	1.50		Moist, yellowish brown, slightly gravelly, slightly sandy SILT/CLAY.	20				39	24	16	78	Sieved	9	16	75										COLLUVIUM

Remarks : PD - Particle Density. * - HOKLAS accredited test.

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Certified by : _____ Date : 04 FEB 2010
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MateriaLab

Test Report No. : 090562SL90169

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 21-08-2009

Bore Hole No.	Sample No.	Type	Depth m	Ref.	Description	*Nat. MC %	#Density Bulk Mg/m³	#Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425μm %	Condition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	Falling Head Permeability k_{20} m/s	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*1-D Consolidation e_0	Material Type from Client
D222	11	M	6.00		Moist, greyish brown spotted with white, black and dark brown, slightly gravelly, sandy SILT/CLAY.		1.96 1.95 1.93	1.52 1.52 1.49		47	30	18	60	Sieved	10	51	23	16		CUS	88.8 115.4 171.8	55.0 73.1 102.4	40 80 160		CDS
D222	30	M	18.20		Moist, brown spotted with white, black and dark brown, slightly gravelly, slightly sandy SILT/CLAY.		2.05 2.02 2.06	1.75 1.67 1.80		40	24	16	60	Sieved	21	23	29	27		CUS	382.0 374.1 562.5	243.9 224.8 345.1	90 180 360		CDS

Remarks : PD - Particle Density. * - HOKLAS accredited test. # - Test results from Triaxial test.

Checked by : H.Y. Hung Date : 27 OCT 2009

Certified by : M.T. Lai Date : 27 OCT 2009

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MateriaLab

Test Report No. : 090562SL10076

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited
Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 27-01-2009

Bore Hole No.	Sample No.	Type	Depth m	Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425μm %	Condition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	Falling Head Permeability k_{20} m/s	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*I-D Consolidation e_0	Material Type from Client
D224		M	5.50		Moist, brown spotted with red and white, slightly gravelly, sandy SILT/CLAY.	26	1.90	1.51		56	44	12	63	Sieved	24	36	28	12		CUM	67.3	47.4	25		FILL
																					109.0	73.5	50		
																					187.2	117.0	100		
D224		M	8.00		Moist, brown dappled with black and white, slightly gravelly, sandy SILT/CLAY.	31	1.87	1.43							9	52	32	7		CUS	78.2	46.9	40		CDM
																					98.3	45.8	80		
																					247.7	149.5	160		
D224		M	18.00		Moist, brown spotted with white, slightly gravelly, sandy SILT/CLAY.	29	1.92	1.49							10	46	32	12		CUS	145.1	90.5	90		CDM
																					225.5	136.0	180		
																					379.1	222.2	360		

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : M.T. Po Date : 25 FEB 2010

Certified by : M.T. Lai Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL10076(1)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited
Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 27-01-2009

Bore Hole No.	Sample No.	Type	Depth m	Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425µm %	Condition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	Falling Head Permeability k_{20} m/s	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*I-D Consolidation e_0	Material Type from Client
D225		M	6.00		Moist, brown spotted with black and white, mottled with grey, slightly gravelly, sandy SILT/CLAY.	31	1.86	1.42		53	35	19	70	Sieved	14	48	32	6		CUM	58.3 102.7 182.7	40.4 63.9 112.8	30 60 120		CDM
D225		M	18.00		Moist, brown spotted with white, mottled with dark brown, slightly gravelly, sandy SILT/CLAY.	20	1.95	1.62							16	42	36	6		CUS	117.8 181.2 303.9	72.1 103.9 170.7	90 180 360		CDM

Remarks : PD - Particle Density. * HOKLAS accredited test.

Checked by : M.T. Po Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL10076(2)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited
Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 27-01-2009

Bore Hole No.	Sample No.	Sample Type	Sample Depth m	Sample Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425µm %	Cond-ition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	Falling Head Permeability k_{20} m/s	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*1-D Consolidation e_0	Material Type from Client
D226		M	5.50		Moist, brown spotted with white, slightly clayey, very silty, gravelly SAND.	24	1.90	1.53		45	31	14	66	Sieved	11	58	28	3		CUM	59.3	39.7	30		CDR
																				99.7	63.4	60		
																				175.4	104.5	120		
D226		M	19.50		Moist, light yellowish brown spotted with white, mottled with brown, slightly gravelly, sandy SILT/CLAY.	19	2.03	1.70		42	29	13	66	Sieved	11	53	26	10		CUM	107.1	65.3	100		CDR
																				224.7	129.2	200		
																				452.5	247.1	400		

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : M.T. Po Date : 25 FEB 2010

Certified by : M.T. Lai Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL10076(3)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 27-01-2009

Bore Hole No.	Sample No.	Sample Type	Sample Depth m	Sample Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425μm %	Condition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	Falling Head Permeability k_{20} m/s	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*1-D Consolidation e_0	Material Type from Client
D227		M	2.00		Moist, yellowish brown mottled with brown, slightly sandy SILT/CLAY.	23	1.96	1.59		33	21	12	96	Sieved	2	23	57	18		CUM	47.5	31.5	20		FILL
																					73.2	46.4	30		
																					121.6	67.2	40		
D227		M	6.10		Moist, light brownish grey mottled with yellow and white, slightly sandy SILT/CLAY.	17	2.09	1.79		32	20	13	90	Sieved	3	33	50	14		CUM	191.3	140.2	30		ALL
																					327.5	233.1	60		
																					745.1	491.5	120		
D227		M	8.10		Moist, light brownish grey mottled with orange and brown, slightly sandy SILT/CLAY.	15	2.12	1.85							4	28	66	2		CUS	434.4	250.8	40		HDT
																					365.3	236.3	80		
																					568.5	394.3	160		
D227		M	11.30		Moist, light grey spotted with brown, slightly sandy SILT/CLAY.	7.7	2.23	2.07							0	24	72	4		CUS	230.1	173.5	55		CDT
																					757.6	612.2	110		
																					989.3	747.5	220		

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : _____ Date : 25 FEB 2010
M.T. Po

Certified by : _____ Date : 25 FEB 2010
M.T. Lai

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Test Report No. : 090562SL10076(6)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 27-01-2009

Bore Hole No.	Sample No.	Sample Type	Sample Depth m	Sample Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425µm %	Cond-ition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	Falling Head Permeability k_{20} m/s	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*I-D Consolidation e_0	Material Type from Client
D228		M	3.00		Moist, grey, slightly gravelly, slightly sandy SILT/CLAY.	21	2.03	1.68		34	20	14	76	Sieved	17	29	39	15		CUM	59.3	39.3	20		FILL
																					117.8	76.3	40		
																					213.9	127.3	60		

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : _____ Date : 25 FEB 2010
M.T. Po

Certified by : _____ Date : 25 FEB 2010
M.T. Lai

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Test Report No. : 090562SL90169(1)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 21-08-2009

Bore Hole No.	Sample No.	Type	Depth m	Ref.	Description	*Nat. MC %	#Density Bulk Mg/m³	#Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425μm %	Cond-ition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	Falling Head Permeability k_{20} m/s	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*I-D Consolidation e_0	Material Type from Client
D230	17	M	10.90		Moist, dark greyish brown spotted with white, black and dark brown, very silty/clayey, gravelly SAND.		1.91 1.97 1.94	1.48 1.57 1.54		@					@					CUS	98.0 210.0 217.7	63.7 128.4 135.2	50 100 150		CDT

Remarks : PD - Particle Density. * - HOKLAS accredited test. # - Test results from Triaxial test. @ - The sample is not enough for Atterberg Limits and PSD tests.

Checked by : H.H. Hung Date : 27 OCT 2009

Certified by : M.T. Lai Date : 27 OCT 2009

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Test Report No. : 090562SL10076(4)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 27-01-2009

Bore Hole No.	Sample No.	Type	Depth m	Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425μm %	Condition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	Falling Head Permeability k_{20} m/s	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*I-D Consolidation e_0	Material Type from Client
D231		M	5.50		Moist, brown spotted with orange, mottled with white, slightly gravelly, sandy SILT/CLAY.	33	1.78	1.34		44	30	13	70	Sieved	9	55	27	9		CUM	89.6	64.8	30		CDM
																					145.1	101.5	60		
																					240.6	161.3	120		
D231		M	9.50		Moist, brown spotted with black, mottled with white and dark brown, slightly gravelly, sandy SILT/CLAY.	32	1.82	1.38							8	49	34	9		CUS	99.1	65.2	50		CDM
																					148.8	98.0	100		
																					267.9	152.5	200		

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : M.T. Po Date : 25 FEB 2010

Certified by : M.T. Lai Date : 25 FEB 2010

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Test Report No. : 090562SL10076(5)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 27-01-2009

Bore Hole No.	Sample No.	Type	Depth m	Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425µm %	Condition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	Falling Head Permeability k_{20} m/s	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*I-D Consolidation e_0	Material Type from Client
D232		M	7.60		Moist, dark grey, sandy SILT/CLAY with shell fragments.	26	1.98	1.57		35	24	12	89	Sieved	3	39	45	13						0.74	MD
D232		M	9.60		Moist, dark grey, slightly gravelly, sandy SILT/CLAY with shell fragments.	30	1.87	1.45		32	24	8	88	Sieved	5	36	42	17		CUM	70.5 114.8 187.9	44.9 69.8 108.8	50 100 200		MD
D232		M	14.55		Moist, brown spotted with white, slightly gravelly, sandy SILT/CLAY.	39	1.87	1.35							7	53	28	12		CUS	155.5 186.8 273.3	102.0 114.9 152.5	75 150 300		CDM

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : M.T. Po Date : 25 FEB 2010

Certified by : M.T. Lai Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL90169(2)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 21-08-2009

Bore Hole No.	Sample No.	Type	Depth m	Ref.	Description	*Nat. MC %	#Density Bulk Mg/m³	#Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425μm %	Cond-ition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	Falling Head Permeability k_{20} m/s	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*I-D Consolidation e_0	Material Type from Client
D237	7	M	3.00		Moist, brownish grey spotted with white and black, slightly gravelly, slightly sandy SILT/CLAY.		2.01 1.94 1.96	1.64 1.57 1.61		@					15	28	43	14		CUS	105.0 144.7 194.7	63.1 93.1 126.9	20 40 80		ALL

Remarks : PD - Particle Density. * - HOKLAS accredited test. # - Test results from Triaxial test. @ - The sample is not enough for Atterberg Limits tests.

Checked by : H.H. Hung Date : 27 OCT 2009

Certified by : M.T. Lai Date : 27 OCT 2009

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MateriaLab

Test Report No. : 090562SL90277

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 30-12-2009

Bore Hole No.	Sample No.	Type	Depth m	Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425µm %	Cond-ition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	Falling Head Permeability k_{20} m/s	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*I-D Consolidation e_0	Material Type from Client
912/SIL/D243		M	2.00 -3.00		Moist, orangish brown mottled with yellow, slightly sandy SILT/CLAY.	29	1.89	1.47		46	29	17	91	Sieved	1	10	82	7		CUM	49.2 80.6 139.9	30.8 47.8 78.7	25 50 100		FILL
912/SIL/D243		M	4.50 -5.50		Moist, orangish brown mottled with white and yellow, slightly gravelly, slightly sandy SILT/CLAY with some tree roots.	28	1.85	1.45		42	28	13	84	Sieved	11	11	59	19		CUM	79.9 142.6 266.7	50.4 84.5 139.5	50 100 200		CDT

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : M.T. Po Date : 27 JAN 2010

Certified by : M.T. Lai Date : 27 JAN 2010

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MateriaLab

Test Report No. : 090562SL90277(1)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited
Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 30-12-2009

Bore Hole No.	Sample No.	Sample Type	Sample Depth m	Sample Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425μm %	Condition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	Falling Head Permeability k_{20} m/s	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*1-D Consolidation e_0	Material Type from Client
912/SIL/D244		M	2.00 -2.90		Moist, dark brownish grey, mottled with brown, slightly sandy, slightly gravelly SILT/CLAY.	44	1.89	1.31		34	26	8	42	Sieved	34	23	43			CUM	121.3	113.4	20		HDT
																					238.0	208.5	40		
																					584.8	459.6	80		

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : _____ Date : 27 JAN 2010
M.T. Po

Certified by : _____ Date : 27 JAN 2010
M.T. Lai

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MateriaLab

Test Report No. : 090562SL90277(2)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 30-12-2009

Bore Hole No.	Sample No.	Type	Depth m	Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425μm %	Condition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	Falling Head Permeability k_{20} m/s	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*I-D Consolidation e_0	Material Type from Client
912/SIL/D248		M	3.00 -4.00		Moist, orangish brown mottled with red and yellow, slightly sandy SILT/CLAY.	30	1.86	1.43	2.67						0	5	67	28		CUM	73.5 122.0 187.1	48.9 74.7 89.7	35 70 140		COLL
912/SIL/D248		M	5.50 -6.50		Moist, reddish brown mottled with white and dark grey, SILT/CLAY.	31	1.83	1.40		42	27	15	97	Sieved	0	3	81	16		CUM	119.0 197.1 363.9	81.1 125.2 207.9	60 120 240		COLL
912/SIL/D248		M	10.50 -11.50		Moist, purplish red streaked with white, SILT/CLAY.	40	1.76	1.26	2.69						0	3	85	12		CUM	158.3 266.1 419.3	105.9 155.0 219.2	110 220 440		CDT
912/SIL/D248		M	13.00 -14.00		Moist, reddish brown streaked with black and white, SILT/CLAY.	38	1.76	1.28		54	32	22	96	Sieved	0	4	85	11		CUM	219.0 339.1 525.6	154.5 213.8 308.9	135 270 540		CDT
912/SIL/D248		M	16.60 -17.60		Moist, brown spotted and streaked with white, slightly sandy SILT/CLAY.	23	1.96	1.59	2.69	36	30	6	92	Sieved	0	12	51	37		CUM	224.9 420.7 757.1	124.8 210.5 370.5	170 340 680		CDT

Remarks : PD - Particle Density. ^ - HOKLAS accredited test.

Checked by : M.T. Po Date : - 5 MAR 2010

Certified by : M.T. Lai Date : - 5 MAR 2010

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MateriaLab

Test Report No. : 090562SL90277(3)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited
Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 30-12-2009

Bore Hole No.	Sample No.	Type	Depth m	Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425μm %	Cond-ition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	Falling Head Permeability k_{20} m/s	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*1-D Consolidation e_0	Material Type from Client
912/SIL/D265		M	22.10 -23.10		Moist, dark grey, slightly gravelly, slightly sandy SILT/CLAY with shell fragments.	32	1.85	1.39	2.68						7	25	68			CUM	184.5 334.7 481.3	110.3 188.8 273.2	225 450 600		MD
912/SIL/D265		M	24.60 -25.60		Moist, dark grey, slightly sandy SILT/CLAY with shell fragments.	44	1.75	1.21							4	25	71							1.19	MD
912/SIL/D265		M	27.10 -28.10		Moist, dark grey, slightly gravelly, sandy SILT/CLAY with shell fragments.	45	1.76	1.21	2.60						5	41	54			UUS	Su=	55.4 kPa	550		MD
912/SIL/D265		M	31.00 32.00		Moist, yellowish and greyish brown mottled with white, slightly gravelly, slightly sandy SILT/CLAY.	27	1.96	1.55	2.62	35	28	6	82	Sieved	6	16	64	14		CUM	234.3 528.3 1087.2	140.7 304.9 591.5	170 340 680		CDT

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : M.T. Po Date : 27 JAN 2010

Certified by : M.T. Lai Date : 27 JAN 2010

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Test Report No. : 090562SL90276

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited
Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 30-12-2009

Bore Hole No.	Sample No.	Type	Depth m	Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425μm %	Cond-ition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	*Compaction MDD Mg/m³	OMC %	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*I-D Consolidation e_0	Material Type from Client
D272(P)	4	M	1.50 -2.50		Moist, orangish brown spotted with white, very silty/clayey, very sandy GRAVEL.	18	2.03	1.72		30	NP	-	32	Sieved	42	38	20				CUM	80.4	57.0	20		CDG
																						132.2	89.6	40		
																						214.5	132.9	60		
D272(P)	8	M	4.00 -4.45		Moist, orangish brown spotted with grey, mottled with white and red, slightly SILT/CLAY gravelly SAND.																CUM	189.0	152.2	60		CDG
																						341.4	261.4	120		
																						802.2	512.5	180		

Remarks : PD - Particle Density. * - HOKLAS accredited test. NP - Non-Plastic.

Checked by : M.T. Po Date : 04 FEB 2010

Certified by : M.T. Lai Date : 04 FEB 2010

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Test Report No. : 090562SL90276(1)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited
Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 30-12-2009

Bore Hole No.	Sample No.	Type	Depth m	Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425µm %	Condition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	*Compaction MDD Mg/m³	OMC %	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*1-D Consolidation e_0	Material Type from Client
D273	1	M	1.30 -2.20		Moist, brown, very silty/clayey, slightly gravelly SAND.																CUM	49.7	35.2	20		CDG
																						78.5	54.6	30		
																						113.7	74.2	40		

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : M.T. Po Date : 04 FEB 2010

Certified by : M.T. Lai Date : 04 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(2)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited
Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 30-12-2009

Bore Hole No.	Sample No.	Type	Depth m	Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425µm %	Cond-ition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	*Compaction MDD Mg/m³	OMC %	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*1-D Consolidation e_0	Material Type from Client
D274	5	M	2.00 -3.00		Moist, orangish brown spotted with grey and white, slightly silty/clayey, slightly gravelly SAND.																CUM	98.9	71.1	25		HDG
																						173.4	123.4	50		
																						311.5	207.0	100		

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : M.T. Po Date : 04 FEB 2010

Certified by : M.T. Lai Date : 04 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(3)

SUMMARY OF SOIL TEST RESULTS

Client : MTR Corporation Limited
Project : Contract 912 Ground Investigation for South Island Line (EAST)

Date Received : 30-12-2009

Bore Hole No.	Sample No.	Sample Type	Sample Depth m	Sample Ref.	Description	*Nat. MC %	Density Bulk Mg/m³	Density Dry Mg/m³	*PD Mg/m³	*Atterberg Limits LL %	PL %	PI %	<425μm %	Condition	*Particle Size Distribution Gravel %	Sand %	Silt %	Clay %	*Compaction MDD Mg/m³	OMC %	*Triaxial Test Type	s' kPa	t kPa	σ_3' kPa	*1-D Consolidation e_0	Material Type from Client
D275(P)	5	M	2.00 -3.00		Moist, dark brown spotted with orangish, mottled with dark grey, very silty/clayey, slightly gravelly SAND.																CUM	88.4	62.2	25		
																						172.4	119.3	50		
																						351.2	229.9	100		

Remarks : PD - Particle Density. * - HOKLAS accredited test.

Checked by : _____ Date : 04 FEB 2010
M.T. Po

Certified by : _____ Date : 04 FEB 2010
M.T. Lai

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SUMMARY OF ROCK TEST REPORT

Client : MTR Corporation Limited
Project : Ground Investigation for South Island Line (EAST)
Contract No. : 912
Date sample received : 25-08-2009

Borehole No.	Sample Depth	Client Sample No.	Sample Type	Sample Description	Proposity	Bulk Density	Dry Density	Point Load			Uniaxial Compression Strength	Elastic Moduli			Rock Joint Shear Test				
													Elastic Moduli	Poisson's Ratio	Initial Normal Stress	Peak Shear Strength		Residual Shear Strength	
								I_s	$I_{s(50)}$	Type						Corrected Normal Stress	Corrected Shear Stress	Corrected Normal Stress	Corrected Shear Stress
	m				%	kg/m^3	kg/m^3	MPa	MPa		MPa		MPa		kPa	kPa	kPa	kPa	kPa
D80	18.00	Nil	-	Tuff				>7.19	>9.05	D									
D80	22.00	Nil	-	Tuff				2.66	3.34	D									
D80	25.00	Nil	-	Tuff				1.22	1.53	D									
D80	30.00	Nil	-	Tuff				>7.22	>9.08	D									
D80	34.00	Nil	-	Tuff				3.36	4.24	D									
D80	38.00	Nil	-	Tuff							298.5								
D80	45.00	Nil	-	Tuff				6.40	8.05	D									
D80	48.00	Nil	-	Tuff				3.41	4.29	D									
D81	17.00	Nil	-	Tuff				6.23	7.83	D									
D81	22.00	Nil	-	Tuff				5.74	7.22	D									
D81	28.00	Nil	-	Tuff				3.57	4.49	D									
D81	33.00	Nil	-	Tuff				>8.13	>9.96	D									
D81	36.00	Nil	-	Tuff							218.9								
D81	40.00	Nil	-	Tuff				>7.18	>9.04	D									
D81	46.00	Nil	-	Tuff				>7.19	>9.05	D									
D82	17.00	Nil	-	Tuff				4.72	5.95	D									
D82	23.00	Nil	-	Tuff				>7.17	>9.03	D									
D82	29.00	Nil	-	Tuff				>7.22	>9.08	D									
D82	31.00	Nil	-	Tuff				0.90	1.14	D									
D82	35.00	Nil	-	Tuff				0.29	0.36	D									
D82	36.00	Nil	-	Tuff							53.5								
D82	41.00	Nil	-	Tuff				5.31	6.68	D									
D82	43.00	Nil	-	Tuff				5.50	6.93	D									
D82	45.00	Nil	-	Tuff				>7.18	>9.04	D									

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SUMMARY OF ROCK TEST REPORT

Client : MTR Corporation Limited
Project : Ground Investigation for South Island Line (EAST)
Contract No. : 912
Date sample received : 25-08-2009

Borehole No.	Sample Depth m	Client Sample No.	Sample Type	Sample Description	Proposity %	Bulk Density kg/m^3	Dry Density kg/m^3	Point Load			Uniaxial Compression Strength MPa	Elastic Moduli			Rock Joint Shear Test				
								I_s MPa	$I_{s(50)}$ MPa	Type			Elastic Moduli MPa	Poisson's Ratio	Initial Normal Stress kPa	Peak Shear Strength		Residual Shear Strength	
																Corrected Normal Stress kPa	Corrected Shear Stress kPa	Corrected Normal Stress kPa	Corrected Shear Stress kPa
D83	21.00	Nil	-	Tuff				4.88	6.15	D									
D83	25.00	Nil	-	Tuff				6.08	7.66	D									
D83	32.00	Nil	-	Tuff				>7.16	>9.02	D									
D83	38.00	Nil	-	Tuff							17.1								
D83	43.00	Nil	-	Tuff				6.27	7.90	D									
D83	45.00	Nil	-	Tuff				6.40	8.08	D									
D85	25.00	Nil	-	Tuff				3.44	4.31	D									
D85	31.00	Nil	-	Tuff				1.09	1.37	D									
D85	33.00	Nil	-	Tuff				>7.19	>9.05	D									
D85	36.00	Nil	-	Tuff				>7.21	>9.07	D									
D85	43.00	Nil	-	Tuff				>7.20	>9.06	D									
D85	44.73	Nil	-	Tuff				>7.18	>9.04	D									
D85	47.00	Nil	-	Tuff				8.26	8.99	D									

Remarks:

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MateriaLab

SUMMARY OF ROCK TEST REPORT

Client : MTR Corporation Limited
Project : Ground Investigation for South Island Line (EAST)
Contract No. : 912
Date sample received : 08-09-2009

Borehole No.	Sample Depth m	Client Sample No.	Sample Type	Sample Description	Proposity %	Bulk Density kg/m^3	Dry Density kg/m^3	Point Load			Uniaxial Compression Strength MPa	Elastic Moduli			Rock Joint Shear Test				
								I_s MPa	$I_{s(50)}$ MPa	Type			Elastic Moduli MPa	Poisson's Ratio	Initial Normal Stress kPa	Peak Shear Strength		Residual Shear Strength	
																Corrected Normal Stress kPa	Corrected Shear Stress kPa	Corrected Normal Stress kPa	Corrected Shear Stress kPa
D228	6.60	Nil	-	MDT							66.5								
D228	8.00	Nil	-	MDT	3.7	2560	2550	1.44	1.82	D					80	27.7	130.4	3.6	132.6
															160	104.9	176.6	132.5	232.3
															240	124.2	263.9	142.9	222.5
															320	217.6	288.1	264.6	276.3
D228	11.10	Nil	-	MDT				0.97	1.23	D									
D228	23.60	Nil	-	MDT				4.27	5.39	D									

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MateriaLab

SUMMARY OF ROCK TEST REPORT

Client : MTR Corporation Limited
Project : Ground Investigation for South Island Line (EAST)
Contract No. : 912
Date sample received : 08-09-2009

Borehole No.	Sample Depth	Client Sample No.	Sample Type	Sample Description	Proposity	Bulk Density	Dry Density	Point Load			Uniaxial Compression Strength	Elastic Moduli			Rock Joint Shear Test				
															Initial Normal Stress	Peak Shear Strength		Residual Shear Strength	
								I_s	$I_{s(50)}$	Type			Elastic Moduli	Poisson's Ratio		Corrected Normal Stress	Corrected Shear Stress	Corrected Normal Stress	Corrected Shear Stress
	m				%	kg/m^3	kg/m^3	MPa	MPa		MPa		MPa		kPa	kPa	kPa	kPa	kPa
D230	18.00	Nil	-	SDT				>7.20	>9.06	D	151.5								
D230	19.30	Nil	-	SDT				1.13	1.42	D									
D230	22.30	Nil	-	SDT	0.4	2660	2650	3.79	4.77	D									

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Date sample received : 08-09-2009

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													Elastic Moduli	Poisson's Ratio	Initial Normal Stress	Peak Shear Strength		Residual Shear Strength	
								I_s	$I_{s(50)}$	Type						Corrected Normal Stress	Corrected Shear Stress	Corrected Normal Stress	Corrected Shear Stress
	m				%	kg/m^3	kg/m^3	MPa	MPa		MPa		MPa		kPa	kPa	kPa	kPa	kPa
D234	4.10	Nil	-	SDT				>7.25	>9.11	D	275.6								
D234	8.20	Nil	-	SDT				>7.21	>9.07	D									
D234	9.60	Nil	-	SDT	0.3	2660	2660	1.28	1.62	D					100	106.6	80.1	105.5	79.4
															200	224.0	146.4	224.1	146.0
															300	345.5	224.5	349.1	224.7
															400	470.2	296.1	479.8	287.1

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															Initial Normal Stress	Peak Shear Strength		Residual Shear Strength	
								I_s	$I_{s(50)}$	Type			Elastic Moduli	Poisson's Ratio		Corrected Normal Stress	Corrected Shear Stress	Corrected Normal Stress	Corrected Shear Stress
	m				%	kg/m^3	kg/m^3	MPa	MPa		MPa		MPa		kPa	kPa	kPa	kPa	kPa
D235	6.40	Nil	-	SDT	4.1	2560	2550	>7.19	>9.05	D					60	37.7	57.4	40.8	51.3
															120	26.1	127.7	63.9	132.3
															180	154.8	190.5	183.9	179.1
															240	216.4	216.1	222.7	219.8
D235	8.30	Nil	-	SDT							172.0								
D235	9.60	Nil	-	SDT				3.38	4.21	D									
D235	10.00	Nil	-	SDT				5.75	7.17	D									

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Project : Ground Investigation for South Island Line (EAST)
Contract No. : 912
Date sample received : 08-09-2009

Borehole No.	Sample Depth	Client Sample No.	Sample Type	Sample Description	Proposity	Bulk Density	Dry Density	Point Load			Uniaxial Compression Strength	Elastic Moduli			Rock Joint Shear Test				
															Initial Normal Stress	Peak Shear Strength		Residual Shear Strength	
								I_s	$I_{s(50)}$	Type			Elastic Moduli	Poisson's Ratio		Corrected Normal Stress	Corrected Shear Stress	Corrected Normal Stress	Corrected Shear Stress
	m				%	kg/m^3	kg/m^3	MPa	MPa		MPa		MPa		kPa	kPa	kPa	kPa	kPa
D237	13.60	Nil	-	SDT	0.6	2660	2650	1.80	2.27	D	88.9								
D237	18.00	Nil	-	SDT				5.63	7.09	D									

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SUMMARY OF ROCK TEST REPORT

Client : MTR Corporation Limited
Project : Ground Investigation for South Island Line (EAST)
Contract No. : 912
Date sample received : 30-12-2009

Borehole No.	Sample Depth	Client Sample No.	Sample Type	Sample Description	Proposity	Bulk Density	Dry Density	Point Load			Uniaxial Compression Strength	Elastic Moduli			Rock Joint Shear Test				
													Elastic Moduli	Poisson's Ratio	Initial Normal Stress	Peak Shear Strength		Residual Shear Strength	
								I_s	$I_{s(50)}$	Type						Corrected Normal Stress	Corrected Shear Stress	Corrected Normal Stress	Corrected Shear Stress
	m				%	kg/m^3	kg/m^3	MPa	MPa		MPa		MPa		kPa	kPa	kPa	kPa	kPa
912/SIL/D243	13.64	Nil	-	SDT							168.7								

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Contract No. : 912
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															Initial Normal Stress	Peak Shear Strength		Residual Shear Strength	
								I_s	$I_{s(50)}$	Type			Elastic Moduli	Poisson's Ratio		Corrected Normal Stress	Corrected Shear Stress	Corrected Normal Stress	Corrected Shear Stress
	m				%	kg/m^3	kg/m^3	MPa	MPa		MPa		MPa		kPa	kPa	kPa	kPa	kPa
912/SIL/D244	13.33	Nil	-	-							57.7								

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															Initial Normal Stress	Peak Shear Strength		Residual Shear Strength	
								I_s	$I_{s(50)}$	Type			Elastic Moduli	Poisson's Ratio		Corrected Normal Stress	Corrected Shear Stress	Corrected Normal Stress	Corrected Shear Stress
	m				%	kg/m^3	kg/m^3	MPa	MPa		MPa		MPa		kPa	kPa	kPa	kPa	kPa
912/SIL/D248	22.56	Nil	-	SDT							82.6								

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															Initial Normal Stress	Peak Shear Strength		Residual Shear Strength	
								I_s	$I_{s(50)}$	Type			Elastic Moduli	Poisson's Ratio		Corrected Normal Stress	Corrected Shear Stress	Corrected Normal Stress	Corrected Shear Stress
	m				%	kg/m^3	kg/m^3	MPa	MPa		MPa		MPa		kPa	kPa	kPa	kPa	kPa
															800	658.3	770.5	756.2	699.9
912/SIL/D250	36.00	Nil	-	Tuff											950	1142.9	334.3	1144.4	352.6
912/SIL/D250	36.00	Nil	-	Tuff											1100	1188.7	437.2	1325.3	432.6
912/SIL/D250	36.00	Nil	-	Tuff															
912/SIL/D250	40.00	Nil	-	Tuff				3.73	4.69	D									
912/SIL/D250	45.00	Nil	-	Tuff				2.67	3.36	D									

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															Initial Normal Stress kPa	Peak Shear Strength		Residual Shear Strength	
								I_s MPa	$I_{s(50)}$ MPa	Type			Elastic Moduli MPa	Poisson's Ratio		Corrected Normal Stress kPa	Corrected Shear Stress kPa	Corrected Normal Stress kPa	Corrected Shear Stress kPa
912/SIL/D251	42.00	Nil	-	Tuff				>7.15	>9.02	D									
912/SIL/D251	45.00	Nil	-	Tuff				5.81	7.3	D									
912/SIL/D251	47.93	Nil	-	Tuff							409.4	Tangent	177273	0.420					
												Average	178169	0.424					
												Secant	164702	0.415					

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								I_s MPa	$I_{s(50)}$ MPa	Type			Elastic Moduli MPa	Poisson's Ratio	Initial Normal Stress kPa	Peak Shear Strength		Residual Shear Strength	
																Corrected Normal Stress kPa	Corrected Shear Stress kPa	Corrected Normal Stress kPa	Corrected Shear Stress kPa
912/SIL/D252	20.00	Nil	-	Tuff				4.42	5.57	D									
912/SIL/D252	27.00	Nil	-	Tuff				>7.21	>9.07	D									
912/SIL/D252	32.12	Nil	-	Tuff							324.3	Tangent	60577	0.337					
912/SIL/D252	35.00	Nil	-	Tuff											900	737.6	809.9	929.7	720.7
912/SIL/D252	35.00	Nil	-	Tuff											1000	760	1000.2	955.8	782.6

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															Initial Normal Stress	Peak Shear Strength		Residual Shear Strength	
								I_s	$I_{s(50)}$	Type			Elastic Moduli	Poisson's Ratio		Corrected Normal Stress	Corrected Shear Stress	Corrected Normal Stress	Corrected Shear Stress
	m				%	kg/m^3	kg/m^3	MPa	MPa		MPa		MPa		kPa	kPa	kPa	kPa	kPa
912/SIL/D254	38.00	Nil	-	Tuff				6.18	7.78	D									
912/SIL/D254	42.00	Nil	-	Tuff				>7.15	>9.01	D									
912/SIL/D254	46.00	Nil	-	Tuff				6.09	7.68	D									
912/SIL/D254	50.67	Nil	-	-							214.5	Tangent	88571	0.250					
												Average	89119	0.254					
												Secant	77038	0.221					

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															Initial Normal Stress	Peak Shear Strength		Residual Shear Strength	
								I_s	$I_{s(50)}$	Type			Elastic Moduli	Poisson's Ratio		Corrected Normal Stress	Corrected Shear Stress	Corrected Normal Stress	Corrected Shear Stress
	m				%	kg/m^3	kg/m^3	MPa	MPa		MPa		MPa		kPa	kPa	kPa	kPa	kPa
912/SIL/D256	12.00	Nil	-	Tuff				>7.18	>9.04	D									
912/SIL/D256	18.00	Nil	-	Tuff				>7.17	>9.03	D									
912/SIL/D256	27.00	Nil	-	Tuff				1.17	1.47	D									
912/SIL/D256	46.00	Nil	-	Tuff				1.16	1.46	D									
912/SIL/D256	52.00	Nil	-	Tuff				7.23	9.09	D									
912/SIL/D256	34.30	Nil	-	-							74.5	Tangent	74279	0.163					
												Average	71805	0.160					
												Secant	74166	0.180					

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Contract No. : 912
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															Initial Normal Stress	Peak Shear Strength		Residual Shear Strength	
								I_s	$I_{s(50)}$	Type			Elastic Moduli	Poisson's Ratio		Corrected Normal Stress	Corrected Shear Stress	Corrected Normal Stress	Corrected Shear Stress
	m				%	kg/m^3	kg/m^3	MPa	MPa		MPa		MPa		kPa	kPa	kPa	kPa	kPa
912/SIL/D265	56.50	Nil	-	-				0.76	0.95										

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APPENDIX B. MOISTURE CONTENT

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MateriaLab

Test Report No. : 090562SL90276(21)

HKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-				
Borehole No.		TP218				
Depth (m)	From	0.50				
	To	-				
Sample origin		Colluvium				
Description		-				

Additional Laboratory Information

Laboratory sample I.D.		SL90276/18				
Specimen reference		-				
Sample type		D				
Location and Orientation within original sample	m	Full mix.				

Visual description : SL90276/18 : Moist, brown, slightly gravelly/sandy SILT/CLAY.

Mass of container	(m_1)	g	176.65				
Mass of wet soil and container	(m_2)	g	566.50				
Mass of dry soil and container	(m_3)	g	510.89				
Duration of drying		h	69				

Test Result

Moisture Content	%	**17**				

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager – CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

The Hong Kong Accreditation Service (HKAS) has accredited Fugro Technical Services Limited under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories. The results shown in this report were determined by this laboratory in accordance with its terms of accreditation. The copyright of this report is owned by Fugro Technical Services Limited. It may not be reproduced except with prior written approval from the issuing laboratory.

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MateriaLab

Test Report No. : 090562SL90276(22)

HKAS HOKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-	-			
Borehole No.		TP219	TP219			
Depth (m)	From	0.50	1.50			
	To	-	-			
Sample origin		Colluvium	Colluvium			
Description		-	-			

Additional Laboratory Information

Laboratory sample I.D.	SL90276/19	SL90276/51			
Specimen reference	-	-			
Sample type	D	D			
Location and Orientation within original sample m	Full mix.	Full mix.			

Visual description : SL90276/19 : Moist, brown, slightly gravelly/sandy SILT/CLAY.
SL90276/51 : Moist, yellowish brown, slightly gravelly/sandy SILT/CLAY.

Mass of container	(m_1)	g	177.67	174.77		
Mass of wet soil and container	(m_2)	g	541.68	510.39		
Mass of dry soil and container	(m_3)	g	474.44	443.72		
Duration of drying		h	69	69		

Test Result

Moisture Content	%	**23**	**25**		

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(16)

HOKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-	-			
Borehole No.		TP226	TP226			
Depth (m)	From	0.50	1.50			
	To	-	-			
Sample origin		Fill	Fill			
Description		-	-			

Additional Laboratory Information

Laboratory sample I.D.	SL90276/6	SL90276/7			
Specimen reference	-	-			
Sample type	D	D			
Location and Orientation within original sample m	Full mix.	Full mix.			

Visual description : SL90276/6 : Moist, dark brown, very silty/clayey, very sandy GRAVEL.
SL90276/7 : Moist, dark brown, very silty/clayey, very sandy GRAVEL.

Mass of container	(m_1) g	179.36	167.54			
Mass of wet soil and container	(m_2) g	535.00	573.78			
Mass of dry soil and container	(m_3) g	492.18	534.30			
Duration of drying	h	69	69			

Test Result

Moisture Content	%	**14**	**11**			

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(17)

HKAS HOKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-	-	-		
Borehole No.		TP227	TP227	TP227		
Depth (m)	From	0.50	1.50	2.50		
	To	-	-	-		
Sample origin		Fill	Fill	Fill		
Description		-	-	-		

Additional Laboratory Information

Laboratory sample I.D.	SL90276/8	SL90276/9	SL90276/10		
Specimen reference	-	-	-		
Sample type	D	D	D		
Location and Orientation within original sample m	Full mix.	Full mix.	Full mix.		

Visual description :
SL90276/8 : Moist, dark brown, very silty/clayey, very sandy GRAVEL.
SL90276/9 : Moist, dark brown, very silty/clayey, very sandy GRAVEL.
SL90276/10 : Moist, dark brown, very silty/clayey, very gravelly SAND.

Mass of container	(m_1) g	180.51	177.71	178.83		
Mass of wet soil and container	(m_2) g	581.10	510.78	535.25		
Mass of dry soil and container	(m_3) g	533.11	460.24	494.37		
Duration of drying	h	69	69	69		

Test Result

Moisture Content	%	**14**	**18**	**13**		

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(18)

HKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-	-	-		
Borehole No.		TP228	TP228	TP228		
Depth (m)	From	0.50	1.50	2.50		
	To	-	-	-		
Sample origin		Fill	Fill	Fill		
Description		-	-	-		

Additional Laboratory Information

Laboratory sample I.D.	SL90276/11	SL90276/12	SL90276/13		
Specimen reference	-	-	-		
Sample type	D	D	D		
Location and Orientation within original sample m	Full mix.	Full mix.	Full mix.		

Visual description : SL90276/11 : Moist, orangish brown, slightly gravelly, sandy SILT/CLAY.
SL90276/12 : Moist, orangish brown, very silty/clayey, very sandy GRAVEL.
SL90276/13 : Moist, orangish brown, very silty/clayey, very gravelly SAND.

Mass of container	(m_1) g	178.98	178.09	179.90		
Mass of wet soil and container	(m_2) g	566.26	540.56	587.95		
Mass of dry soil and container	(m_3) g	520.22	500.85	549.62		
Duration of drying	h	69	69	69		

Test Result

Moisture Content	%	**13**	**12**	**10**		

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager – CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

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MateriaLab

Test Report No. : 090562SL90276(19)

HOKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-				
Borehole No.		TP230				
Depth (m)	From	0.50				
	To	-				
Sample origin		Fill				
Description		-				

Additional Laboratory Information

Laboratory sample I.D.	SL90276/14				
Specimen reference	-				
Sample type	D				
Location and Orientation within original sample m	Full mix.				

Visual description : SL90276/14 : Moist, dark brown, very silty/clayey, very gravelly SAND.

Mass of container	(m_1) g	176.68				
Mass of wet soil and container	(m_2) g	530.24				
Mass of dry soil and container	(m_3) g	490.21				
Duration of drying	h	69				

Test Result

Moisture Content	%	**13**				

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager – CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(20) Page 1 of 1

HOKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-				
Borehole No.		TP232				
Depth (m)	From	0.50				
	To	-				
Sample origin		Fill				
Description		-				

Additional Laboratory Information

Laboratory sample I.D.	SL90276/16				
Specimen reference	-				
Sample type	D				
Location and Orientation within original sample m	Full mix.				

Visual description : SL90276/16 : Moist, dark brown, very silty/clayey, very sandy GRAVEL.

Mass of container	(m_1) g	175.47				
Mass of wet soil and container	(m_2) g	544.77				
Mass of dry soil and container	(m_3) g	500.30				
Duration of drying	h	69				

Test Result

Moisture Content	%	**14**				

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(23)

HOKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-	-			
Borehole No.		TP233	TP233			
Depth (m)	From	0.50	1.50			
	To	-	-			
Sample origin		Colluvium	Colluvium			
Description		-	-			

Additional Laboratory Information

Laboratory sample I.D.	SL90276/20	SL90276/21			
Specimen reference	-	-			
Sample type	D	D			
Location and Orientation within original sample m	Full mix.	Full mix.			

Visual description : SL90276/20 : Moist, brown, slightly gravelly/sandy SILT/CLAY.
SL90276/21 : Moist, yellowish brown, slightly gravelly/sandy SILT/CLAY.

Mass of container	(m_1) g	176.65	156.85			
Mass of wet soil and container	(m_2) g	537.04	537.51			
Mass of dry soil and container	(m_3) g	477.89	458.94			
Duration of drying	h	69	69			

Test Result

Moisture Content	%	**20**	**26**			

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager—CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(24)

HKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-				
Borehole No.		TP234				
Depth (m)	From	0.50				
	To	-				
Sample origin		Colluvium				
Description		-				

Additional Laboratory Information

Laboratory sample I.D.	SL90276/22				
Specimen reference	-				
Sample type	D				
Location and Orientation within original sample m	Full mix.				

Visual description : SL90276/22 : Moist, dark brown, slightly gravelly/sandy SILT/CLAY.

Mass of container	(m_1) g	177.70				
Mass of wet soil and container	(m_2) g	515.98				
Mass of dry soil and container	(m_3) g	463.11				
Duration of drying	h	69				

Test Result

Moisture Content	%	**19**				

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager—CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(25) Page 1 of 1

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-				
Borehole No.		TP239				
Depth (m)	From	0.50				
	To	-				
Sample origin		Colluvium				
Description		-				

Additional Laboratory Information

Laboratory sample I.D.	SL90276/23				
Specimen reference	-				
Sample type	D				
Location and Orientation within original sample m	Full mix.				

Visual description : SL90276/23 : Moist, brown, slightly gravelly/sandy SILT/CLAY.

Mass of container	(m_1) g	160.52				
Mass of wet soil and container	(m_2) g	537.75				
Mass of dry soil and container	(m_3) g	487.07				
Duration of drying	h	69				

Test Result

Moisture Content	%	**16**				

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager – CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 03 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(26)

HKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-	-			
Borehole No.		TP240	TP240			
Depth (m)	From	0.50	1.50			
	To	-	-			
Sample origin		Colluvium	Colluvium			
Description		-	-			

Additional Laboratory Information

Laboratory sample I.D.	SL90276/24	SL90276/25			
Specimen reference	-	-			
Sample type	D	D			
Location and Orientation within original sample m	Full mix.	Full mix.			

Visual description : SL90276/24 : Moist, yellowish brown, slightly gravelly/sandy SILT/CLAY.
SL90276/25 : Moist, yellowish brown, slightly gravelly/sandy SILT/CLAY.

Mass of container	(m_1)	g	175.64	179.20		
Mass of wet soil and container	(m_2)	g	595.88	581.49		
Mass of dry soil and container	(m_3)	g	509.66	513.21		
Duration of drying		h	69	69		

Test Result

Moisture Content	%	**26**	**20**		

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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MateriaLab

Test Report No. : 090562SL100076(9)

HOKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 10-02-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-	-	-		
Borehole No.		D224	D224	D224		
Depth (m)	From	5.50	8.00	18.00		
	To	-	-	-		
Sample origin		FILL	CDM	CDM		
Description		-	-	-		

Additional Laboratory Information

Laboratory sample I.D.	SL100076/1	SL100076/2	SL100076/3		
Specimen reference	B	D	D		
Sample type	M	M	M		
Location and Orientation within original sample m	5.60-6.30, Full mix.	8.00-8.40, Full mix.	18.00-18.40, Full mix.		

Visual description : SL100076/1 : Moist, brown, slightly gravelly, sandy SILT/CLAY.
SL100076/2 : Moist, brown, slightly gravelly, sandy SILT/CLAY.
SL100076/3 : Moist, brown, slightly gravelly, sandy SILT/CLAY.

Mass of container	(m_1) g	180.11	179.08	174.66		
Mass of wet soil and container	(m_2) g	552.56	568.42	504.39		
Mass of dry soil and container	(m_3) g	474.76	475.53	431.19		
Duration of drying	h	45	21	45		

Test Result

Moisture Content	%	**26**	**31**	**29**		

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : For Borehole No.: D224, Depth(m) : 8.00;
The mass of soil sample used for testing do not meet the specification requirement for the total mass of sample required
(The total mass required for fine-grained soils, medium-grained soils & coarse-grained soils are 500g, 5kg and 30 kg respectively).

Certified by : ~~Paul Richard Cooper (Operations Manager—CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

The Hong Kong Accreditation Service (HKAS) has accredited Fugro Technical Services Limited under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories. The results shown in this report were determined by this laboratory in accordance with its terms of accreditation. The copyright of this report is owned by Fugro Technical Services Limited. It may not be reproduced except with prior written approval from the issuing laboratory.

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MateriaLab

Test Report No. : 090562SL100076(10)

HKAS HOKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 08-02-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-	-			
Borehole No.		D225	D225			
Depth (m)	From	6.00	18.00			
	To	-	-			
Sample origin		CDM	CDM			
Description		-	-			

Additional Laboratory Information

Laboratory sample I.D.	SL100076/4	SL100076/5			
Specimen reference	B	D			
Sample type	M	M			
Location and Orientation within original sample m	6.00-6.80, Full mix.	18.00-18.40, Full mix.			

Visual description : SL100076/4 : Moist, brown, slightly gravelly, sandy SILT/CLAY.
SL100076/5 : Moist, yellowish brown, slightly gravelly, sandy SILT/CLAY.

Mass of container	(m_1)	g	176.67	156.49		
Mass of wet soil and container	(m_2)	g	564.14	565.34		
Mass of dry soil and container	(m_3)	g	471.62	496.86		
Duration of drying		h	45	45		

Test Result

Moisture Content	%	**31**	**20**		

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : For Borehole No.: D225, Depth(m) : 18.00;
The mass of soil sample used for testing do not meet the specification requirement for the total mass of sample required
(The total mass required for fine-grained soils, medium-grained soils & coarse-grained soils are 500g, 5kg and 30 kg respectively).

Certified by : ~~Paul Richard Cooper (Operations Manager – CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL100076(11)

HOKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 08-02-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-	-			
Borehole No.		D226	D226			
Depth (m)	From	5.50	19.50			
	To	-	-			
Sample origin		CDR	CDR			
Description		-	-			

Additional Laboratory Information

Laboratory sample I.D.	SL100076/6	SL100076/7			
Specimen reference	B	B			
Sample type	M	M			
Location and Orientation within original sample m	5.60-5.90, 6.10-6.50, Full mix.	19.50-19.90, 20.10-20.50, Full mix,			

Visual description : SL100076/6 : Moist, brown, very silty/clayey, gravelly SAND.
SL100076/7 : Moist, yellowish brown, slightly gravelly, sandy SILT/CLAY.

Mass of container	(m_1) g	167.00	179.14			
Mass of wet soil and container	(m_2) g	581.11	566.53			
Mass of dry soil and container	(m_3) g	500.26	503.80			
Duration of drying	h	45	45			

Test Result

Moisture Content	%	**24**	**19**			

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL100076(12)

HKAS HOKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 08-02-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-	-	-	-	
Borehole No.		D227	D227	D227	D227	
Depth (m)	From	2.00	6.10	8.10	11.30	
	To	-	-	-	-	
Sample origin		FILL	ALL	HDT	CDT	
Description		-	-	-	-	

Additional Laboratory Information

Laboratory sample I.D.	SL100076/8	SL100076/9	SL100076/10	SL100076/11	
Specimen reference	B	B	D	B	
Sample type	M	M	M	M	
Location and Orientation within original sample m	2.10-2.40, 2.60-3.00, Full mix.	6.10-6.50, 6.70-7.10, Full mix.	8.10-8.50, Full mix.	11.30-11.70, Full mix.	

Visual description :
SL100076/8 : Moist, brownish grey, slightly gravelly/sandy SILT/CLAY.
SL100076/9 : Moist, light grey, slightly gravelly/sandy SILT/CLAY.
SL100076/10 : Moist, greyish brown, slightly gravelly/sandy SILT/CLAY.
SL100076/11 : Moist, light grey, slightly sandy SILT/CLAY.

Mass of container	(m_1) g	173.42	179.44	178.19	157.43	
Mass of wet soil and container	(m_2) g	569.62	662.19	575.91	514.78	
Mass of dry soil and container	(m_3) g	494.38	592.36	524.97	489.34	
Duration of drying	h	45	45	21	45	

Test Result

Moisture Content	%	**23**	**17**	**15**	**8**	

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : For Borehole No.: D227, Depth(m) : 8.10 and Depth(m) : 11.30;
The mass of soil sample used for testing do not meet the specification requirement for the total mass of sample required
(The total mass required for fine-grained soils, medium-grained soils & coarse-grained soils are 500g, 5kg and 30 kg respectively).

Certified by : ~~Paul Richard Cooper (Operations Manager – CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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MaterialLab

Test Report No. : 090562SL100076(15)

HKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 08-02-2010
Date test completed : 10-02-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-				
Borehole No.		D228				
Depth (m)	From	3.00				
	To	-				
Sample origin		FILL				
Description		-				

Additional Laboratory Information

Laboratory sample I.D.	SL100076/17				
Specimen reference	B				
Sample type	M				
Location and Orientation within original sample m	3.00-3.40, 3.60-4.00, Full mix.				

Visual description : SL100076/17 : Moist, brownish grey, slightly gravelly/sandy SILT/CLAY.

Mass of container	(m_1) g	158.05				
Mass of wet soil and container	(m_2) g	571.17				
Mass of dry soil and container	(m_3) g	499.71				
Duration of drying	h	45				

Test Result

Moisture Content	%	**21**				

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL100076(13)

HOKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 08-02-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-	-			
Borehole No.		D231	D231			
Depth (m)	From	5.50	9.50			
	To	-	-			
Sample origin		CDM	CDM			
Description		-	-			

Additional Laboratory Information

Laboratory sample I.D.	SL100076/12	SL100076/13			
Specimen reference	B	D			
Sample type	M	M			
Location and Orientation within original sample m	5.60-5.90, 6.10-6.50, Full mix.	9.50-9.90, Full mix.			

Visual description : SL100076/12 : Moist, yellowish brown, slightly gravelly/sandy SILT/CLAY.
SL100076/13 : Moist, yellowish brown, slightly gravelly, sandy SILT/CLAY.

Mass of container	(m_1)	g	177.87	177.15		
Mass of wet soil and container	(m_2)	g	555.21	558.84		
Mass of dry soil and container	(m_3)	g	462.63	466.39		
Duration of drying		h	45	45		

Test Result

Moisture Content	%	**33**	**32**		

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : For Borehole No.: D231, Depth(m) : 9.50;
The mass of soil sample used for testing do not meet the specification requirement for the total mass of sample required
(The total mass required for fine-grained soils, medium-grained soils & coarse-grained soils are 500g, 5kg and 30 kg respectively).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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MateriaLab

HKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 10-02-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-	-	-		
Borehole No.		D232	D232	D232		
Depth (m)	From	7.60	9.60	14.55		
	To	-	-	-		
Sample origin		MD	MD	CDM		
Description		-	-	-		

Additional Laboratory Information

Laboratory sample I.D.	SL100076/14	SL100076/15	SL100076/16		
Specimen reference	B	B	D		
Sample type	M	M	M		
Location and Orientation within original sample m	7.70-8.30, Full mix.	9.70-10.00, 10.20-10.60, Full mix.	14.55-14.95, Full mix.		

Visual description :
SL100076/14 : Moist, dark grey, slightly gravelly, sandy SILT/CLAY with shell fragments.
SL100076/15 : Moist, dark grey, slightly gravelly, sandy SILT/CLAY with shell fragments.
SL100076/16 : Moist, greyish brown, slightly gravelly, sandy SILT/CLAY.

Mass of container	(m_1) g	162.58	164.12	172.75		
Mass of wet soil and container	(m_2) g	530.78	583.10	527.85		
Mass of dry soil and container	(m_3) g	454.60	487.64	428.64		
Duration of drying	h	45	45	45		

Test Result

Moisture Content	%	**26**	**30**	**39**		

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : For Borehole No.: D232, Depth(m) : 14.55;
The mass of soil sample used for testing do not meet the specification requirement for the total mass of sample required
(The total mass required for fine-grained soils, medium-grained soils & coarse-grained soils are 500g, 5kg and 30 kg respectively).

Certified by : ~~Paul Richard Cooper (Operations Manager—CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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MateriaLab

HOKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 22-01-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-	-			
Borehole No.		912/SIL/D243	912/SIL/D243			
Depth (m)	From	2.00	4.50			
	To	3.00	5.50			
Sample origin		FILL	CDT			
Description		-	-			

Additional Laboratory Information

Laboratory sample I.D.	SL90277/1	SL90277/2			
Specimen reference	B	B			
Sample type	M	M			
Location and Orientation within original sample m	2.00-2.40, 2.60-3.00, Full mix.	4.50-4.90, 5.10-5.50, Full mix.			

Visual description : SL90277/1 : Moist, orangish brown, slightly sandy SILT/CLAY.
SL90277/2 : Moist, yellowish brown, slightly gravelly/sandy SILT/CLAY.

Mass of container	(m_1)	g	44.246	174.87		
Mass of wet soil and container	(m_2)	g	133.806	536.13		
Mass of dry soil and container	(m_3)	g	113.634	456.80		
Duration of drying		h	45	45		

Test Result

Moisture Content	%	**29**	**28**		

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager – GMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 27 JAN 2010

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MateriaLab

Test Report No. : 090562SL90277(5)

HOKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 22-01-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-				
Borehole No.		912/SIL/D244				
Depth (m)	From	2.00				
	To	2.90				
Sample origin		HDT				
Description		-				

Additional Laboratory Information

Laboratory sample I.D.		SL90277/4				
Specimen reference		B				
Sample type		M				
Location and Orientation within original sample	m	2.00-2.40, 2.60-2.90, Full mix.				

Visual description : SL90277/4 : Moist, brownish grey, slightly sandy, gravelly SILT/CLAY.

Mass of container	(m_1)	g	172.49				
Mass of wet soil and container	(m_2)	g	485.36				
Mass of dry soil and container	(m_3)	g	389.80				
Duration of drying		h	45				

Test Result

Moisture Content	%	**44**				

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager – CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 27 JAN 2010

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MateriaLab

HKAS HOKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 22-01-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-	-	-	-	-
Borehole No.		912/SIL/D248	912/SIL/D248	912/SIL/D248	912/SIL/D248	912/SIL/D248
Depth (m)	From	3.00	5.50	10.50	13.00	16.60
	To	4.00	6.50	11.50	14.00	17.60
Sample origin		COLL	COLL	CDT	CDT	CDT
Description		-	-	-	-	-

Additional Laboratory Information

Laboratory sample I.D.		SL90277/6	SL90277/7	SL90277/8	SL90277/9	SL90277/10
Specimen reference		B	B	B	B	B
Sample type		M	M	M	M	M
Location and Orientation within original sample	m	3.00-3.40, 3.60-4.00, Full mix.	5.50-5.90, 6.10-6.50, Full mix.	10.50-10.90, 11.10-11.50, Full mix.	13.00-13.40, 13.60-14.00, Full mix.	16.60-17.00, 17.20-17.60, Full mix.

Visual description :
SL90277/6 : Moist, orangish brown, slightly sandy SILT/CLAY.
SL90277/7 : Moist, orangish brown, slightly sandy SILT/CLAY.
SL90277/8 : Moist, reddish brown, slightly sandy SILT/CLAY.
SL90277/9 : Moist, reddish brown, slightly sandy SILT/CLAY.
SL90277/10 : Moist, yellowish brown, slightly sandy SILT/CLAY.

Mass of container	(m_1) g	43.896	43.071	41.571	44.216	176.55
Mass of wet soil and container	(m_2) g	139.336	158.994	143.206	158.482	494.91
Mass of dry soil and container	(m_3) g	117.201	131.650	114.131	127.190	434.61
Duration of drying	h	45	45	45	45	45

Test Result

Moisture Content	%	**30**	**31**	**40**	**38**	**23**

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : - 5 MAR 2010

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MateriaLab

Test Report No. : 090562SL90277(7)

HOKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 22-01-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		-	-	-	-	
Borehole No.		912/SIL/D265	912/SIL/D265	912/SIL/D265	912/SIL/D265	
Depth (m)	From	22.10	24.60	27.10	31.00	
	To	23.10	25.60	28.10	32.00	
Sample origin		MD	MD	MD	CDT	
Description		-	-	-	-	

Additional Laboratory Information

Laboratory sample I.D.	SL90277/12	SL90277/13	SL90277/14	SL90277/15	
Specimen reference	B	C	B	B	
Sample type	M	M	M	M	
Location and Orientation within original sample m	22.10-22.50, 22.70-23.10, Full mix.	24.60-25.30, Full mix.	27.10-27.90, Full mix.	31.00-31.40, 31.60-32.00, Full mix.	

Visual description :
SL90277/12 : Moist, grey, slightly gravelly/sandy SILT/CLAY with shell fragments.
SL90277/13 : Moist, grey, slightly gravelly/sandy SILT/CLAY with shell fragments.
SL90277/14 : Moist, grey, slightly gravelly/sandy SILT/CLAY with shell fragments.
SL90277/15 : Moist, light yellowish brown, slightly gravelly/sandy SILT/CLAY.

Mass of container	(m_1)	g	40.717	36.256	41.146	37.902	
Mass of wet soil and container	(m_2)	g	161.891	120.024	89.470	141.562	
Mass of dry soil and container	(m_3)	g	132.214	94.425	74.434	119.656	
Duration of drying		h	45	45	45	45	

Test Result

Moisture Content		%	**32**	**44**	**45**	**27**	

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 27 JAN 2010

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MateriaLab

Test Report No. : 090562SL90276(15)

HKLAS 015

TEST REPORT ON DETERMINATION OF MOISTURE CONTENT BY OVEN-DRYING AT 45 ± 5°C

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912 Ground Investigation for South Island Line (EAST)

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 5.1

Additional Information supplied by Client

Client sample No.		4				
Borehole No.		D272(P)				
Depth (m)	From	1.50				
	To	2.50				
Sample origin		CDG				
Description		-				

Additional Laboratory Information

Laboratory sample I.D.	SL90276/1				
Specimen reference	B				
Sample type	M				
Location and Orientation within original sample m	1.50-2.30, Full mix.				

Visual description : SL90276/1 : Moist, orangish brown, very silty/clayey, very sandy GRAVEL.

Mass of container	(m_1) g	179.25				
Mass of wet soil and container	(m_2) g	566.79				
Mass of dry soil and container	(m_3) g	508.99				
Duration of drying	h	69				

Test Result

Moisture Content	%	**18**				

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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APPENDIX C. BULK DENSITY

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MateriaLab

Test Report No. : 090562SL100076(16)

TEST REPORT ON DETERMINATION OF DENSITY OF SOIL

Information supplied by Client

Client : MTR Corporation Limied
Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No.		-	-	-		
Borehole No.		D224	D224	D224		
Depth (m)	From	5.50	8.00	18.00		
	To	-	-	-		
Sample origin		FILL	CDM	CDM		

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 29-01-2010
Date test completed : 10-02-2010
Test method used : BS 1377 : Part 2 : 1990 clause 7.2 (Cylindrical Specimen)
Moisture content test method : Geospec 3 (November 2001) Test Method 5.1

Laboratory sample I.D.		SL100076/1	SL100076/2	SL100076/3		
Sample reference		A	A	A		
Sample type		M	M	M		
Specimen depth (m)	From	6.30	8.40	18.40		
	To	6.50	8.60	18.60		

Visual description : SL100076/1 : Moist, brown, silty/clayey, gravelly SAND.
SL100076/2 : Moist, mottled with black, slightly gravelly, sandy SILT/CLAY.
SL100076/3 : Moist, brown spotted with white, silty/clayey, gravelly SAND.

Mass of specimen + container	g	1764.7	1738.4	1776.5		
Mass of container	g	95.3	92.8	93.9		
Mass of specimen	g	1669.4	1645.6	1682.6		
Mean diameter	mm	74.6	74.6	74.6		
Mean length	mm	200.6	200.9	200.6		

Moisture content	%	26.4	31.3	28.5		

Test Result

Bulk density	(ρ)	Mg/m³	1.90	1.87	1.92		
Dry density	(ρ_d)	Mg/m³	1.51	1.43	1.49		

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager – CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL100076(17)

TEST REPORT ON DETERMINATION OF DENSITY OF SOIL

Information supplied by Client

Client : MTR Corporation Limied
Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No.		-	-			
Borehole No.		D225	D225			
Depth (m)	From	6.00	18.00			
	To	-	-			
Sample origin		CDM	CDM			

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 29-01-2010
Date test completed : 08-02-2010
Test method used : BS 1377 : Part 2 : 1990 clause 7.2 (Cylindrical Specimen)
Moisture content test method : Geospec 3 (November 2001) Test Method 5.1

Laboratory sample I.D.		SL100076/4	SL100076/5			
Sample reference		A	A			
Sample type		M	M			
Specimen depth (m)	From	6.80	18.40			
	To	7.00	18.60			

Visual description : SL100076/4 : Moist, brown spotted with black and white, silty/clayey, gravelly SAND.
SL100076/5 : Moist, brown spotted with white, silty/clayey, gravelly SAND.

Mass of specimen + container	g	1728.6	1792.2			
Mass of container	g	96.1	86.7			
Mass of specimen	g	1632.5	1705.5			
Mean diameter	mm	74.6	74.6			
Mean length	mm	200.8	200.3			

Moisture content	%	31.4	20.1			

Test Result

Bulk density	(ρ)	Mg/m³	1.86	1.95			
Dry density	(ρ_d)	Mg/m³	1.42	1.62			

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager—CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL100076(18)

TEST REPORT ON DETERMINATION OF DENSITY OF SOIL

Information supplied by Client

Client : MTR Corporation Limied
Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No.		-	-			
Borehole No.		D226	D226			
Depth (m)	From	5.50	19.50			
	To	-	-			
Sample origin		CDR	CDR			

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 01-02-2010
Date test completed : 08-02-2010
Test method used : BS 1377 : Part 2 : 1990 clause 7.2 (Cylindrical Specimen)
Moisture content test method : Geospec 3 (November 2001) Test Method 5.1

Laboratory sample I.D.		SL100076/6	SL100076/7			
Sample reference		A	A			
Sample type		M	M			
Specimen depth (m)	From	5.90	19.90			
	To	6.10	20.10			

Visual description : SL100076/6 : Moist, brown spotted with white, silty/clayey, gravelly SAND.
SL100076/7 : Moist, light yellowish brown, slightly silty/clayey, gravelly SAND.

Mass of specimen + container	g	1752.5	1858.8			
Mass of container	g	86.3	86.7			
Mass of specimen	g	1666.2	1772.1			
Mean diameter	mm	74.7	74.4			
Mean length	mm	200.2	200.4			

Moisture content	%	24.3	19.3			

Test Result

Bulk density	(ρ)	Mg/m³	1.90	2.03			
Dry density	(ρ_d)	Mg/m³	1.53	1.70			

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

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Test Report No. : 090562SL100076(19) Page 1 of 1

TEST REPORT ON DETERMINATION OF DENSITY OF SOIL

Information supplied by Client

Client : MTR Corporation Limied
Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No.		-	-	-	-	
Borehole No.		D227	D227	D227	D227	
Depth (m)	From	2.00	6.10	8.10	11.30	
	To	-	-	-	-	
Sample origin		FILL	ALL	HDT	CDT	

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 30-01-2010
Date test completed : 08-02-2010
Test method used : BS 1377 : Part 2 : 1990 clause 7.2 (Cylindrical Specimen)
Moisture content test method : Geospec 3 (November 2001) Test Method 5.1

Laboratory sample I.D.		SL100076/8	SL100076/9	SL100076/10	SL100076/11	
Sample reference		A	A	A	A	
Sample type		M	M	M	M	
Specimen depth (m)	From	2.40	6.50	8.50	11.70	
	To	2.60	6.70	8.70	11.90	

Visual description :
SL100076/8 : Moist, yellowish brown, slightly gravelly, sandy SILT/CLAY.
SL100076/9 : Moist, light brownish grey, silty/clayey, gravelly SAND.
SL100076/10 : Moist, light brownish grey, silty/clayey, gravelly SAND.
SL100076/11 : Moist, light grey mottled with brown, silty/clayey, gravelly SAND.

Mass of specimen + container	g	1792.1	1925.7	1954.3	2041.4	
Mass of container	g	85.4	93.2	95.5	94.2	
Mass of specimen	g	1706.7	1832.5	1858.8	1947.2	
Mean diameter	mm	74.4	74.6	74.6	74.5	
Mean length	mm	200.5	200.5	200.6	200.4	

Moisture content	%	23.4	16.9	14.7	7.7	

Test Result

Bulk density	(ρ)	Mg/m^3	1.96	2.09	2.12	2.23	
Dry density	(ρ_d)	Mg/m^3	1.59	1.79	1.85	2.07	

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

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MateriaLab

Test Report No. : 090562SL100076(22)

TEST REPORT ON DETERMINATION OF DENSITY OF SOIL

Information supplied by Client

Client : MTR Corporation Limied
Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No.		-				
Borehole No.		D228				
Depth (m)	From	3.00				
	To	-				
Sample origin		FILL				

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 30-01-2010
Date test completed : 10/2/2010
Test method used : BS 1377 : Part 2 : 1990 clause 7.2 (Cylindrical Specimen)
Moisture content test method : Geospec 3 (November 2001) Test Method 5.1

Laboratory sample I.D.		SL100076/17				
Sample reference		A				
Sample type		M				
Specimen depth (m)	From	3.40				
	To	3.60				

Visual description : SL100076/17 : Moist, grey, silty/clayey, slightly gravelly SAND.

Mass of specimen + container	g	1869.8				
Mass of container	g	89.9				
Mass of specimen	g	1779.9				
Mean diameter	mm	74.6				
Mean length	mm	200.6				

Moisture content	%	20.9				

Test Result

Bulk density	(ρ)	Mg/m³	2.03				
Dry density	(ρ_d)	Mg/m³	1.68				

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager – CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 25 FEB 2010

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Test Report No. : 090562SL100076(20)

TEST REPORT ON DETERMINATION OF DENSITY OF SOIL

Information supplied by Client

Client : MTR Corporation Limied
Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No.		-	-			
Borehole No.		D231	D231			
Depth (m)	From	5.50	9.50			
	To	-	10.50			
Sample origin		CDM	CDM			

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 01-02-2010
Date test completed : 10/2/2010
Test method used : BS 1377 : Part 2 : 1990 clause 7.2 (Cylindrical Specimen)
Moisture content test method : Geospec 3 (November 2001) Test Method 5.1

Laboratory sample I.D.		SL100076/12	SL100076/13			
Sample reference		A	A			
Sample type		M	M			
Specimen depth (m)	From	5.90	9.90			
	To	6.10	10.10			

Visual description : SL100076/12 : Moist, brown streaked with black, silty/clayey, gravelly SAND.
SL100076/13 : Moist, brown spotted with white, slightly gravelly, sandy SILT/CLAY.

Mass of specimen + container	g	1657.7	1673.4			
Mass of container	g	95.1	92.1			
Mass of specimen	g	1562.6	1581.3			
Mean diameter	mm	74.7	74.3			
Mean length	mm	200.2	200.5			

Moisture content	%	32.5	32.0			

Test Result

Bulk density	(ρ)	Mg/m³	1.78	1.82			
Dry density	(ρ_d)	Mg/m³	1.34	1.38			

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL100076(21)

TEST REPORT ON DETERMINATION OF DENSITY OF SOIL

Information supplied by Client

Client : MTR Corporation Limied
Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No.		-	-	-		
Borehole No.		D232	D232	D232		
Depth (m)	From	7.60	9.60	14.55		
	To	-	-	15.55		
Sample origin		MD	MD	CDM		

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 28-01-2010
Date test completed : 10-02-2010
Test method used : BS 1377 : Part 2 : 1990 clause 7.2 (Cylindrical Specimen)
Moisture content test method : Geospec 3 (November 2001) Test Method 5.1

Laboratory sample I.D.		SL100076/14	SL100076/15	SL100076/16		
Sample reference		B	A	A		
Sample type		M	M	M		
Specimen depth (m)	From	8.30	10.00	14.95		
	To	8.50	10.20	15.15		

Visual description : SL100076/14 : Moist, dark grey, slightly sandy SILT/CLAY with shell fragments.
SL100076/15 : Moist, dark grey, slightly gravelly, sandy SILT/CLAY with shell fragments.
SL100076/16 : Moist, brown, slightly silty/clayey, slightly gravelly SAND.

Mass of specimen + container	g	1818.9	1702.6	1736.4		
Mass of container	g	90.3	94.3	95.2		
Mass of specimen	g	1728.6	1608.3	1641.2		
Mean diameter	mm	74.4	73.9	74.6		
Mean length	mm	201.2	200.3	200.8		

Moisture content	%	26.1	29.5	38.8		

Test Result

Bulk density	(ρ)	Mg/m^3	1.98	1.87	1.87		
Dry density	(ρ_d)	Mg/m^3	1.57	1.45	1.35		

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL90277(8)

TEST REPORT ON DETERMINATION OF DENSITY OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No.		-	-			
Borehole No.		912/SIL/D243	912/SIL/D243			
Depth (m)	From	2.00	4.50			
	To	3.00	5.50			
Sample origin		FILL	CDT			

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 08-01-2010
Date test completed : 22-01-2010
Test method used : BS 1377 : Part 2 : 1990 clause 7.2 (Cylindrical Specimen)
Moisture content test method : Geospec 3 (November 2001) Test Method 5.1

Laboratory sample I.D.		SL90277/1	SL90277/2			
Sample reference		A	A			
Sample type		M	M			
Specimen depth (m)	From	2.40	4.90			
	To	2.60	5.10			

Visual description : SL90277/1 : Moist, orangish brown, slightly gravelly, slightly sandy SILT/CLAY.
SL90277/2 : Moist, brown mottled with white, slightly gravelly, sandy SILT/CLAY with some tree roots.

Mass of specimen + container	g	1732.3	1718.1			
Mass of container	g	86.4	92.7			
Mass of specimen	g	1645.9	1625.4			
Mean diameter	mm	74.4	74.6			
Mean length	mm	200.1	200.8			

Moisture content	%	29.1	28.1			

Test Result

Bulk density	(ρ)	Mg/m³	1.89	1.85			
Dry density	(ρ_d)	Mg/m³	1.47	1.45			

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager—CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 27 JAN 2010

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Test Report No. : 090562SL90277(9) Page 1 of 1

TEST REPORT ON DETERMINATION OF DENSITY OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No.		-				-
Borehole No.		912/SIL/D244				
Depth (m)	From	2.00				
	To	2.90				
Sample origin		HDT				

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 09-01-2010
Date test completed : 22-01-2010
Test method used : BS 1377 : Part 2 : 1990 clause 7.2 (Cylindrical Specimen)
Moisture content test method : Geospec 3 (November 2001) Test Method 5.1

Laboratory sample I.D.		SL90277/4				
Sample reference		A				
Sample type		M				
Specimen depth (m)	From	2.40				
	To	2.60				

Visual description : SL90277/4 : Moist, dark brown grey, slightly gravelly, sandy SILT/CLAY.

Mass of specimen + container	g	1777.7				
Mass of container	g	93.4				
Mass of specimen	g	1684.3				
Mean diameter	mm	74.8				
Mean length	mm	202.8				

Moisture content	%	44.0				

Test Result

Bulk density	(ρ)	Mg/m³	1.89				
Dry density	(ρ_d)	Mg/m³	1.31				

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 27 JAN 2010

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MateriaLab

Test Report No. : 090562SL90277(10) Page 1 of 1

TEST REPORT ON DETERMINATION OF DENSITY OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No.		-	-	-	-	-
Borehole No.		912/SIL/D248	912/SIL/D248	912/SIL/D248	912/SIL/D248	912/SIL/D248
Depth (m)	From	3.00	5.50	10.50	13.00	16.60
	To	4.00	6.50	11.50	14.00	17.60
Sample origin		COLL	COLL	CDT	CDT	CDT

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 09-01-2010
Date test completed : 22-01-2010
Test method used : BS 1377 : Part 2 : 1990 clause 7.2 (Cylindrical Specimen)
Moisture content test method : Geospec 3 (November 2001) Test Method 5.1

Laboratory sample I.D.		SL90277/6	SL90277/7	SL90277/8	SL90277/9	SL90277/10
Sample reference		A	A	A	A	A
Sample type		M	M	M	M	M
Specimen depth (m)	From	3.40	5.90	10.90	13.40	17.00
	To	3.60	6.10	11.10	13.60	17.20

Visual description :
SL90277/6 : Moist, orangish brown, slightly gravelly, sandy SILT/CLAY.
SL90277/7 : Moist, reddish brown, slightly gravelly, slightly sandy SILT/CLAY.
SL90277/8 : Moist, purple, slightly gravelly, slightly sandy SILT/CLAY.
SL90277/9 : Moist, reddish brown streaked with black, slightly gravelly, slightly sandy SILT/CLAY.
SL90277/10 : Moist, brown spotted with yellow, slightly gravelly, slightly sandy SILT/CLAY.

Mass of specimen + container	g	1742.1	1698.1	1639.7	1639.4	1827.6
Mass of container	g	91.4	93.4	91.4	89.9	96.4
Mass of specimen	g	1650.7	1604.7	1548.3	1549.5	1731.2
Mean diameter	mm	74.7	74.7	74.7	74.8	74.8
Mean length	mm	202.5	200.5	200.5	200.8	201.0

Moisture content	%	30.2	30.9	40.1	37.7	23.4

Test Result

Bulk density	(ρ)	Mg/m³	1.86	1.83	1.76	1.76	1.96
Dry density	(ρ_d)	Mg/m³	1.43	1.40	1.26	1.28	1.59

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : - 5 MAR 2010

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MateriaLab

Test Report No. : 090562SL90277(11)

TEST REPORT ON DETERMINATION OF DENSITY OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No.		-	-	-	-	
Borehole No.		912/SIL/D265	912/SIL/D265	912/SIL/D265	912/SIL/D265	
Depth (m)	From	22.10	24.00	27.10	31.00	
	To	23.10	25.60	28.10	32.00	
Sample origin		M.D.	MD	MD	CDT	

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 07-01-2010
Date test completed : 22-01-2010
Test method used : BS 1377 : Part 2 : 1990 clause 7.2 (Cylindrical Specimen)
Moisture content test method : Geospec 3 (November 2001) Test Method 5.1

Laboratory sample I.D.		SL90277/12	SL90277/13	SL90277/14	SL90277/15	
Sample reference		A	A	A	A	
Sample type		M	M	M	M	
Specimen depth (m)	From	22.50	25.30	27.90	31.40	
	To	22.70	25.50	28.10	31.60	

Visual description : SL90277/12 : Moist, dark grey, slightly gravelly, sandy SILT/CLAY with shell fragments.
SL90277/13 : Moist, dark grey, slightly sandy SILT/CLAY with shell fragments.
SL90277/14 : Moist, dark grey, slightly sandy SILT/CLAY with shell fragments.
SL90277/15 : Moist, yellowish brown mottled with white, slightly gravelly, slightly sandy SILT/CLAY.

Mass of specimen + container	g	1877.0	1622.4	1642.7	1802.8	
Mass of container	g	83.6	91.2	103.6	86.8	
Mass of specimen	g	1793.4	1531.2	1539.1	1716.0	
Mean diameter	mm	74.8	74.6	74.7	74.6	
Mean length	mm	221.2	200.4	200.1	200.1	

Moisture content	%	32.4	44.0	45.2	26.8	

Test Result

Bulk density	(ρ)	Mg/m³	1.85	1.75	1.76	1.96	
Dry density	(ρ_d)	Mg/m³	1.39	1.21	1.21	1.55	

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager – CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 27 JAN 2010

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MateriaLab

Test Report No. : 090562SL90276(27)

TEST REPORT ON DETERMINATION OF DENSITY OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No.		4				
Borehole No.		D272(P)				
Depth (m)	From	1.50				
	To	2.50				
Sample origin		CDG				

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 14-01-2010
Date test completed : 14-01-2010
Test method used : BS 1377 : Part 2 : 1990 clause 7.2 (Cylindrical Specimen)
Moisture content test method : Geospec 3 (November 2001) Test Method 5.1

Laboratory sample I.D.		SL90276/1				
Sample reference		A				
Sample type		M				
Specimen depth (m)	From	2.30				
	To	2.50				

Visual description : SL90276/1 : Moist, orangish brown, slightly silty/clayey, gravelly SAND.

Mass of specimen + container	g	1874.9				
Mass of container	g	104.1				
Mass of specimen	g	1770.8				
Mean diameter	mm	74.5				
Mean length	mm	200.6				

Moisture content	%	17.5				

Test Result

Bulk density	(ρ)	Mg/m³	2.03				
Dry density	(ρ_d)	Mg/m³	1.72				

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 03 FEB 2010

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APPENDIX D. PARTICLE DENSITY

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MateriaLab

Test Report No. : 090562SL90277(12)

HOKLAS 015

TEST REPORT ON DETERMINATION OF PARTICLE DENSITY BY SMALL PYKNOMETER METHOD

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : 912/SIL/D248
Depth (m) From : 3.00
To : 4.00
Sample origin : COLL
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 24-01-2010
Test method used : Geospec 3 (November 2001) Test Method 7.2
Method of preparation : Oven-drying
Drying temperature : 45 ± 5°C

Laboratory sample I.D. : SL90277/6
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 3.00-3.40m, 3.60-4.00m, Full mix.

Liquid used : Air-free distilled water
Density of used liquid, ρ_L : - Mg/m³
Visual description : Moist, orangish brown, slightly sandy SILT/CLAY.

Determination No.			1	2
Mass of density bottle	(m_1)	g	36.5504	36.6795
Mass of bottle + dry soil	(m_2)	g	45.5470	45.3132
Mass of bottle + soil + liquid	(m_3)	g	92.5723	92.4549
Mass of bottle + liquid	(m_4)	g	86.9522	87.0566
Particle density	$\rho_s = \frac{\rho_L(m_2 - m_1)}{(m_4 - m_1) - (m_3 - m_2)}$	Mg/m³	2.664	2.669

ρ_L = density of the liquid used at the constant test temperature, not applicable if it is air-free distilled water.

Test Result : Average value of the particle density, ρ_s = 2.67 Mg/m³

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : Paul Richard Cooper (Operations Manager - CMT) / ~~Lai Mei Ting (Assistant Manager—Soil)~~ Date : 27 JAN 2010

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MateriaLab

Test Report No. : 090562SL90277(13)

HKLAS 015

TEST REPORT ON DETERMINATION OF PARTICLE DENSITY BY SMALL PYKNOMETER METHOD

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : 912/SIL/D248
Depth (m) From : 10.50
To : 11.50
Sample origin : CDT
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 24-01-2010
Test method used : Geospec 3 (November 2001) Test Method 7.2
Method of preparation : Oven-drying
Drying temperature : 45 ± 5°C

Laboratory sample I.D. : SL90277/8
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 10.50-10.90m, 11.10-11.50m, Full mix.

Liquid used : Air-free distilled water
Density of used liquid, ρ_L : - Mg/m³
Visual description : Moist, reddish brown, slightly sandy SILT/CLAY.

Determination No.			1	2
Mass of density bottle	(m_1)	g	36.3664	35.8051
Mass of bottle + dry soil	(m_2)	g	43.9206	45.4186
Mass of bottle + soil + liquid	(m_3)	g	93.1423	91.8508
Mass of bottle + liquid	(m_4)	g	88.3954	85.8084
Particle density	$\rho_s = \frac{\rho_L(m_2 - m_1)}{(m_4 - m_1) - (m_3 - m_2)}$	Mg/m³	2.691	2.692

ρ_L = density of the liquid used at the constant test temperature, not applicable if it is air-free distilled water.

Test Result : Average value of the particle density, ρ_s = 2.69 Mg/m³

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : Paul Richard Cooper (Operations Manager - CMT) / ~~Lai Mei Ting (Assistant Manager—Soil)~~ Date : 5 MAR 2010

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Test Report No. : 090562SL90277(14)

HKLAS 015

TEST REPORT ON DETERMINATION OF PARTICLE DENSITY BY SMALL PYKNOMETER METHOD

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : 912/SIL/D248
Depth (m) From : 16.60
To : 17.60
Sample origin : CDT
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 24-01-2010
Test method used : Geospec 3 (November 2001) Test Method 7.2
Method of preparation : Oven-drying
Drying temperature : 45 ± 5°C

Laboratory sample I.D. : SL90277/10
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 16.60-17.00m, 17.20-17.60m, Full mix.

Liquid used : Air-free distilled water
Density of used liquid, ρ_L : - Mg/m³
Visual description : Moist, yellowish brown, slightly sandy SILT/CLAY.

Determination No.			1	2
Mass of density bottle	(m_1)	g	31.4611	36.0422
Mass of bottle + dry soil	(m_2)	g	41.3432	45.8557
Mass of bottle + soil + liquid	(m_3)	g	89.2231	93.2301
Mass of bottle + liquid	(m_4)	g	83.0060	87.0665
Particle density	$\rho_s = \frac{\rho_L(m_2 - m_1)}{(m_4 - m_1) - (m_3 - m_2)}$	Mg/m³	2.696	2.689

ρ_L = density of the liquid used at the constant test temperature, not applicable if it is air-free distilled water.

Test Result : Average value of the particle density, ρ_s = 2.69 Mg/m³

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : Paul Richard Cooper (Operations Manager - CMT) / ~~Lai Mei Ting (Assistant Manager – Soil)~~ Date : 27 JAN 2010

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MateriaLab

Test Report No. : 090562SL90277(15)

HKLAS 015

TEST REPORT ON DETERMINATION OF PARTICLE DENSITY BY SMALL PYKNOMETER METHOD

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : 912/SIL/D265
Depth (m) From : 22.10
To : 23.10
Sample origin : MD
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 24-01-2010
Test method used : Geospec 3 (November 2001) Test Method 7.2
Method of preparation : Oven-drying
Drying temperature : 45 ± 5°C

Laboratory sample I.D. : SL90277/12
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 22.10-22.50m, 22.70-23.10m, Full mix.

Liquid used : Air-free distilled water
Density of used liquid, ρ_L : - Mg/m³
Visual description : Moist, grey, slightly gravelly/sandy SILT/CLAY with shell fragments.

Determination No.			1	2
Mass of density bottle	(m_1)	g	36.1178	35.7561
Mass of bottle + dry soil	(m_2)	g	45.2888	45.4297
Mass of bottle + soil + liquid	(m_3)	g	90.8210	92.6021
Mass of bottle + liquid	(m_4)	g	85.0688	86.5392
Particle density $\rho_s = \frac{\rho_L(m_2 - m_1)}{(m_4 - m_1) - (m_3 - m_2)}$		Mg/m³	2.683	2.679

ρ_L = density of the liquid used at the constant test temperature, not applicable if it is air-free distilled water.

Test Result : Average value of the particle density, ρ_s = 2.68 Mg/m³

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : Paul Richard Cooper (Operations Manager - CMT) / ~~Lai Mei Ting (Assistant Manager - Soil)~~ Date : 27 JAN 2010

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Test Report No. : 090562SL90277(16) Page 1 of 1

HKLAS 015

TEST REPORT ON DETERMINATION OF PARTICLE DENSITY BY SMALL PYKNOMETER METHOD

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -
Borehole No. : 912/SIL/D265
Depth (m) From : 27.10
To : 28.10
Sample origin : MD
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 24-01-2010
Test method used : Geospec 3 (November 2001) Test Method 7.2
Method of preparation : Oven-drying
Drying temperature : 45 ± 5°C

Laboratory sample I.D. : SL90277/14
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 27.10-27.90m, Full mix.

Liquid used : Air-free distilled water
Density of used liquid, ρ_L : - Mg/m³
Visual description : Moist, grey, slightly gravelly/sandy SILT/CLAY with shell fragments.

Determination No.			1	2
Mass of density bottle	(m_1)	g	35.5029	31.5763
Mass of bottle + dry soil	(m_2)	g	42.9911	39.3838
Mass of bottle + soil + liquid	(m_3)	g	90.2858	87.8433
Mass of bottle + liquid	(m_4)	g	85.6784	83.0289
Particle density $\rho_s = \frac{\rho_L(m_2-m_1)}{(m_4-m_1)-(m_3-m_2)}$		Mg/m³	2.599	2.608

ρ_L = density of the liquid used at the constant test temperature, not applicable if it is air-free distilled water.

Test Result : Average value of the particle density, ρ_s = 2.60 Mg/m³

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : Paul Richard Cooper (Operations Manager - CMT) / ~~Lai Mei Ting (Assistant Manager—Soil)~~ Date : 27 JAN 2010

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Test Report No. : 090562SL90277(17)

HKAS HOKLAS 015

TEST REPORT ON DETERMINATION OF PARTICLE DENSITY BY SMALL PYKNOMETER METHOD

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : 912/SIL/D265
Depth (m) From : 31.00
To : 32.00
Sample origin : CDT
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 24-01-2010
Test method used : Geospec 3 (November 2001) Test Method 7.2
Method of preparation : Oven-drying
Drying temperature : 45 ± 5°C

Laboratory sample I.D. : SL90277/15
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 31.00-31.40m, 31.60-32.00m, Full mix.

Liquid used : Air-free distilled water
Density of used liquid, ρ_L : - Mg/m³
Visual description : Moist, light yellowish brown, slightly gravelly/sandy SILT/CLAY.

Determination No.			1	2
Mass of density bottle	(m_1)	g	35.9943	34.9902
Mass of bottle + dry soil	(m_2)	g	43.8384	44.7396
Mass of bottle + soil + liquid	(m_3)	g	90.8549	90.9880
Mass of bottle + liquid	(m_4)	g	86.0031	84.9691
Particle density	$\rho_s = \frac{\rho_L(m_2 - m_1)}{(m_4 - m_1) - (m_3 - m_2)}$	Mg/m³	2.621	2.613

ρ_L = density of the liquid used at the constant test temperature, not applicable if it is air-free distilled water.

Test Result : Average value of the particle density, ρ_s = 2.62 Mg/m³

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : Paul Richard Cooper (Operations Manager - CMT) / ~~Lai Mei Ting (Assistant Manager - Soil)~~ Date : 27 JAN 2010

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APPENDIX E. LIQUID AND PLASTIC LIMITS

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MateriaLab

HKLAS 015

Test Report No. : 090562SL90169(14) Page 1 of 1

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP210
Depth (m) From : 0.50
To : -
Sample origin : FILL
Description : -

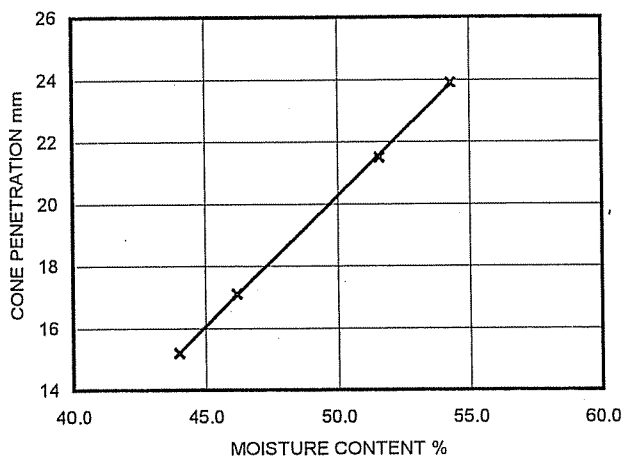
Laboratory Information

Date sample received : 13-11-2009
Date test commenced : 14-11-2009
Date test completed : 19-11-2009
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90236/1
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Wet mass of soil used : 998.36 g
Mass ret. on 425μm sieve : 162.05 g
Moisture content : 21.6 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	15.2	17.1	21.5	23.9	-	-
Mass of container	g	28.744	28.370	26.509	29.009	29.009	29.040
Mass of wet soil + container	g	40.248	38.692	41.518	40.180	37.226	40.719
Mass of dry soil + container	g	36.733	35.430	36.409	36.249	35.494	38.265
Moisture content	%	44.0	46.2	51.6	54.3	26.7	26.6



TEST RESULTS

LIQUID LIMIT % : 50
PLASTIC LIMIT % : 27
PLASTICITY INDEX % : 23
LIQUIDITY INDEX : 0.01
PERCENTAGE PASSING 425μm % : 80

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager—CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 19 NOV 2009

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HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP218
Depth (m) From : 0.50
To : -
Sample origin : Colluvium
Description : -

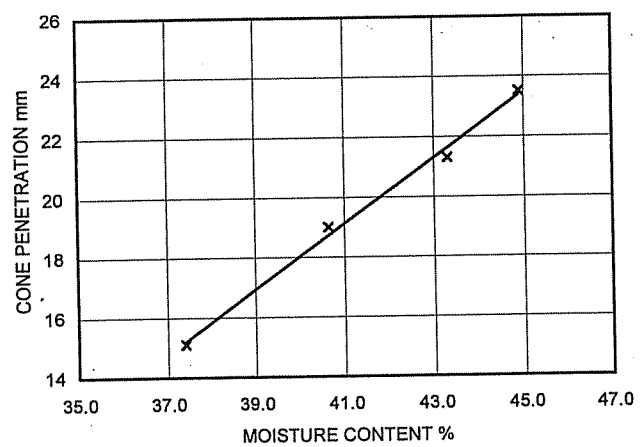
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 28-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90276/18
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Wet mass of soil used : 1128.94 g
Mass ret. on 425μm sieve : 349.57 g
Moisture content : 16.1 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	15.1	19.0	21.3	23.5	-	-
Mass of container	g	27.862	28.840	28.413	28.454	27.807	27.574
Mass of wet soil + container	g	40.549	40.124	42.902	42.866	38.304	38.024
Mass of dry soil + container	g	37.095	36.863	38.524	38.400	36.158	35.874
Moisture content	%	37.4	40.6	43.3	44.9	25.7	25.9



TEST RESULTS

LIQUID LIMIT % : 42
PLASTIC LIMIT % : 26
PLASTICITY INDEX % : 16
LIQUIDITY INDEX : -0.04
PERCENTAGE PASSING 425μm % : 64

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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HKAS HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP219
Depth (m) From : 0.50
To : -
Sample origin : Colluvium
Description : -

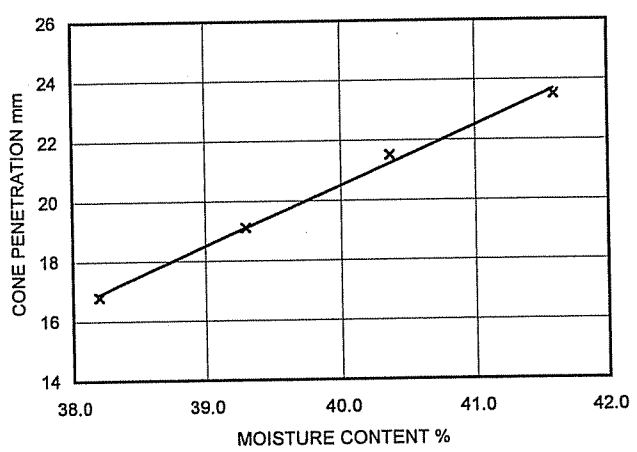
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 28-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90276/19
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Wet mass of soil used : 1261.27 g
Mass ret. on 425μm sieve : 296.58 g
Moisture content : 22.0 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	16.8	19.1	21.5	23.5	-	-
Mass of container	g	28.778	28.369	26.482	29.026	28.999	29.034
Mass of wet soil + container	g	46.122	40.583	38.444	45.771	39.271	39.631
Mass of dry soil + container	g	41.328	37.137	35.004	40.852	37.126	37.411
Moisture content	%	38.2	39.3	40.4	41.6	26.4	26.5



TEST RESULTS

LIQUID LIMIT % : 40
PLASTIC LIMIT % : 26
PLASTICITY INDEX % : 13
LIQUIDITY INDEX : 0.34
PERCENTAGE PASSING 425μm % : 71

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(41) Page 1 of 1

HKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP219
Depth (m) From : 1.50
To : -
Sample origin : Colluvium
Description : -

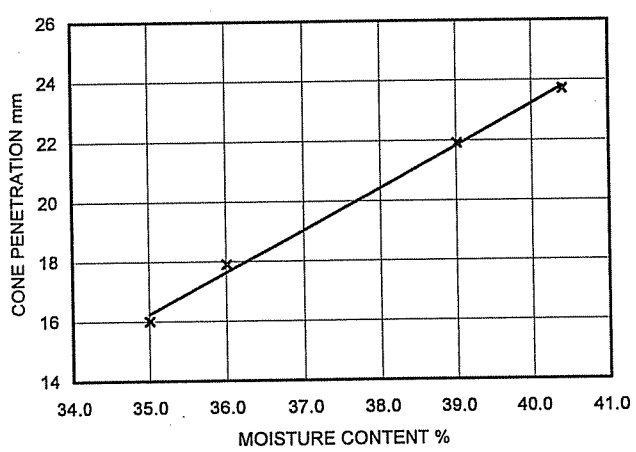
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 30-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, yellowish brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90276/51
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Wet mass of soil used : 935.89 g
Mass ret. on 425μm sieve : 199.96 g
Moisture content : 24.8 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	16.0	17.9	21.9	23.7	-	-
Mass of container	g	28.654	28.154	26.331	27.412	26.236	28.452
Mass of wet soil + container	g	42.957	41.800	40.338	42.105	35.339	40.123
Mass of dry soil + container	g	39.248	38.187	36.407	37.876	33.449	37.678
Moisture content	%	35.0	36.0	39.0	40.4	26.2	26.5



TEST RESULTS

LIQUID LIMIT % : 38
PLASTIC LIMIT % : 26
PLASTICITY INDEX % : 11
LIQUIDITY INDEX : 0.65
PERCENTAGE PASSING 425μm % : 73

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - GMT)~~ /
Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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HKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP226
Depth (m) From : 0.50
To : -
Sample origin : Fill
Description : -

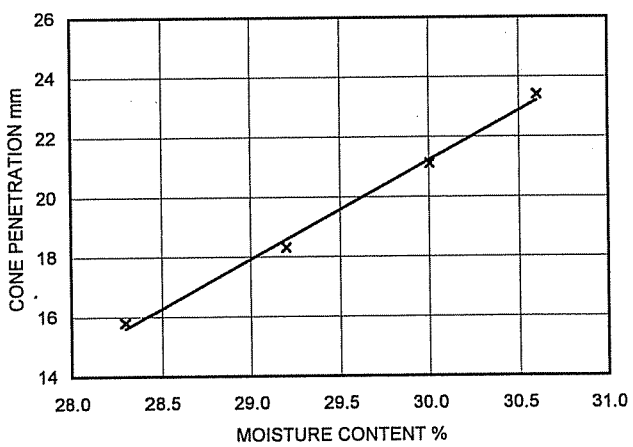
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 30-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, dark brown, very silty/clayey, very sandy GRAVEL.

Laboratory sample I.D. : SL90276/6
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Wet mass of soil used : 1324.99 g
Mass ret. on 425μm sieve : 773.91 g
Moisture content : 14.3 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	15.8	18.3	21.1	23.4	-	-
Mass of container	g	58.270	59.533	55.830	57.959	-	-
Mass of wet soil + container	g	72.279	75.179	69.452	74.650	-	-
Mass of dry soil + container	g	69.189	71.643	66.308	70.739	-	-
Moisture content	%	28.3	29.2	30.0	30.6	-	-



TEST RESULTS

LIQUID LIMIT % : 30
PLASTIC LIMIT % : Non-Plastic
PLASTICITY INDEX % : -
LIQUIDITY INDEX : -
PERCENTAGE PASSING 425μm % : 33

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - GMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(30) Page 1 of 1

HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP226
Depth (m) From : 1.50
To : -
Sample origin : Fill
Description : -

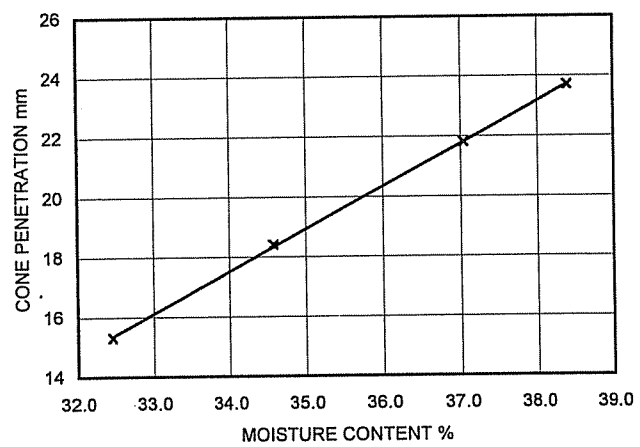
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 29-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, dark brown, very silty/clayey, very sandy GRAVEL.

Laboratory sample I.D. : SL90276/7
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Wet mass of soil used : 1500.74 g
Mass ret. on 425µm sieve : 989.94 g
Moisture content : 11.2 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	15.3	18.4	21.8	23.7	-	-
Mass of container	g	61.025	61.088	42.444	57.527	64.231	58.957
Mass of wet soil + container	g	75.455	75.555	56.603	71.364	75.606	69.388
Mass of dry soil + container	g	71.919	71.838	52.776	67.525	73.647	67.606
Moisture content	%	32.5	34.6	37.0	38.4	20.8	20.6



TEST RESULTS

LIQUID LIMIT % : 36
PLASTIC LIMIT % : 21
PLASTICITY INDEX % : 15
LIQUIDITY INDEX : 1.41
PERCENTAGE PASSING 425µm % : 27

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(31) Page 1 of 1

HKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP227
Depth (m) From : 0.50
To : -
Sample origin : Fill
Description : -

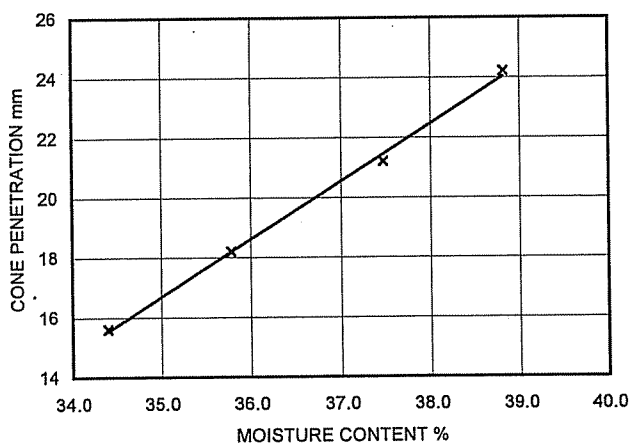
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 29-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, brown, very silty/clayey, very sandy GRAVEL.

Laboratory sample I.D. : SL90276/8
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Wet mass of soil used : 1206.98 g
Mass ret. on 425μm sieve : 727.97 g
Moisture content : 13.3 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	15.6	18.2	21.2	24.2	-	-
Mass of container	g	40.534	59.242	38.082	41.664	42.349	42.241
Mass of wet soil + container	g	53.869	76.166	52.228	57.141	53.168	52.709
Mass of dry soil + container	g	50.456	71.706	48.372	52.813	51.109	50.697
Moisture content	%	34.4	35.8	37.5	38.8	23.5	23.8



TEST RESULTS

LIQUID LIMIT	**%**	**: 37**
PLASTIC LIMIT	**%**	**: 24**
PLASTICITY INDEX	**%**	**: 13**
LIQUIDITY INDEX		**: 1.40**
PERCENTAGE PASSING 425μm	**%**	**: 32**

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP227
Depth (m) From : 1.50
To : -
Sample origin : Fill
Description : -

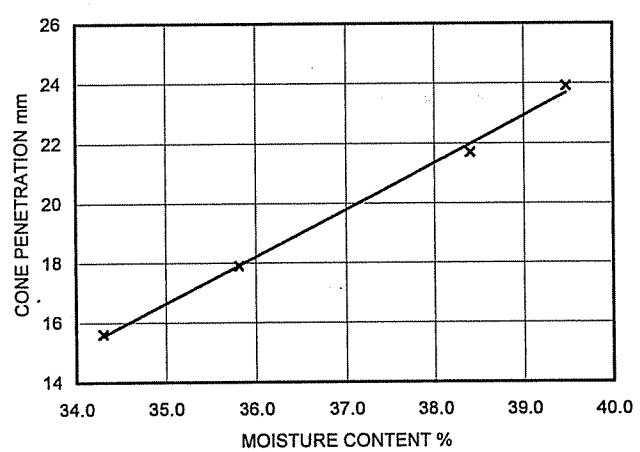
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 29-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, dark brown, very silty/clayey, very sandy GRAVEL.

Laboratory sample I.D. : SL90276/9
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Wet mass of soil used : 1271.63 g
Mass ret. on 425μm sieve : 667.84 g
Moisture content : 18.6 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	15.6	17.9	21.7	23.9	-	-
Mass of container	g	28.603	56.285	62.835	39.008	39.527	40.961
Mass of wet soil + container	g	45.184	68.948	76.617	54.796	49.883	51.671
Mass of dry soil + container	g	40.949	65.609	72.793	50.327	47.865	49.591
Moisture content	%	34.3	35.8	38.4	39.5	24.2	24.1



TEST RESULTS

LIQUID LIMIT	**%**	**: 37**
PLASTIC LIMIT	**%**	**: 24**
PLASTICITY INDEX	**%**	**: 13**
LIQUIDITY INDEX		**: 1.95**
PERCENTAGE PASSING 425μm	**%**	**: 38**

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(33) Page 1 of 1

HKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP227
Depth (m) From : 2.50
To : -
Sample origin : Fill
Description : -

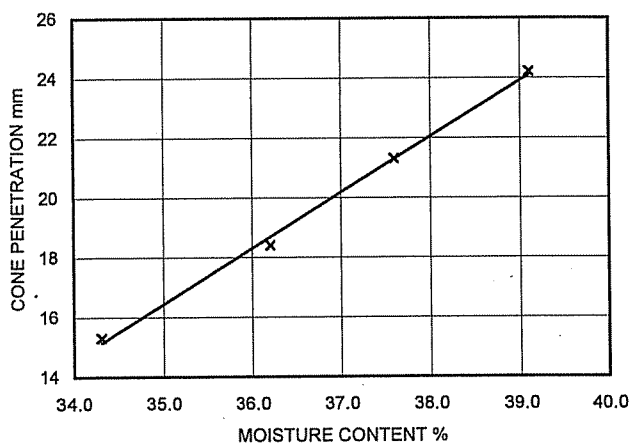
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 30-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, dark brown, very silty/clayey, very gravelly SAND.

Laboratory sample I.D. : SL90276/10
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Wet mass of soil used : 1307.73 g
Mass ret. on 425μm sieve : 655.86 g
Moisture content : 13.1 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	15.3	18.4	21.3	24.2	-	-
Mass of container	g	28.197	37.126	40.473	59.897	60.640	39.509
Mass of wet soil + container	g	44.198	53.961	55.087	73.241	70.858	49.907
Mass of dry soil + container	g	40.111	49.486	51.094	69.490	68.887	47.874
Moisture content	%	34.3	36.2	37.6	39.1	23.9	24.3



TEST RESULTS

LIQUID LIMIT % : 37
PLASTIC LIMIT % : 24
PLASTICITY INDEX % : 13
LIQUIDITY INDEX : 0.48
PERCENTAGE PASSING 425μm % : 43

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager—CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(34) Page 1 of 1

HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP228
Depth (m) From : 0.50
To : -
Sample origin : Fill
Description : -

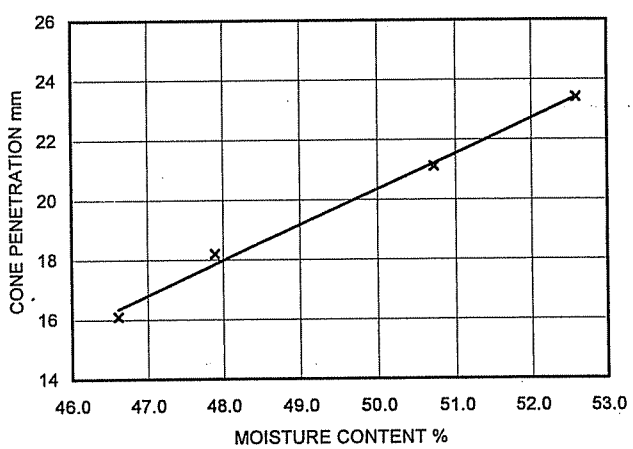
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 29-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, orangish brown, slightly gravelly, sandy SILT/CLAY.

Laboratory sample I.D. : SL90276/11
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Wet mass of soil used : 1281.14 g
Mass ret. on 425µm sieve : 685.02 g
Moisture content : 14.1 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	16.1	18.2	21.1	23.4	-	-
Mass of container	g	57.563	63.160	36.810	38.937	34.946	29.089
Mass of wet soil + container	g	71.496	75.917	51.890	52.356	45.094	40.278
Mass of dry soil + container	g	67.066	71.786	46.815	47.731	42.576	37.477
Moisture content	%	46.6	47.9	50.7	52.6	33.0	33.4



TEST RESULTS

LIQUID LIMIT	**%**	**: 50**
PLASTIC LIMIT	**%**	**: 33**
PLASTICITY INDEX	**%**	**: 17**
LIQUIDITY INDEX		**: 0.18**
PERCENTAGE PASSING 425µm	**%**	**: 39**

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(35) Page 1 of 1

HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP228
Depth (m) From : 1.50
To : -
Sample origin : Fill
Description : -

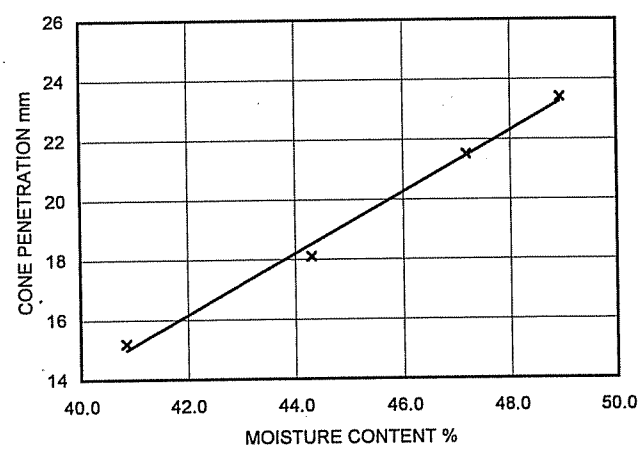
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 29-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, orangish brown, very silty/clayey, very sandy SILT/CLAY.

Laboratory sample I.D. : SL90276/12
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Wet mass of soil used : 1219.12 g
Mass ret. on 425µm sieve : 764.10 g
Moisture content : 11.9 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	15.2	18.1	21.5	23.4	-	-
Mass of container	g	58.276	59.538	55.832	57.958	28.957	27.373
Mass of wet soil + container	g	71.560	71.909	70.072	71.296	39.406	37.514
Mass of dry soil + container	g	67.707	68.111	65.507	66.913	37.114	35.296
Moisture content	%	40.9	44.3	47.2	48.9	28.1	28.0



TEST RESULTS

LIQUID LIMIT % : 46
PLASTIC LIMIT % : 28
PLASTICITY INDEX % : 18
LIQUIDITY INDEX : 0.66
PERCENTAGE PASSING 425µm % : 30

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(36) Page 1 of 1

HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP228
Depth (m) From : 2.50
To : -
Sample origin : Fill
Description : -

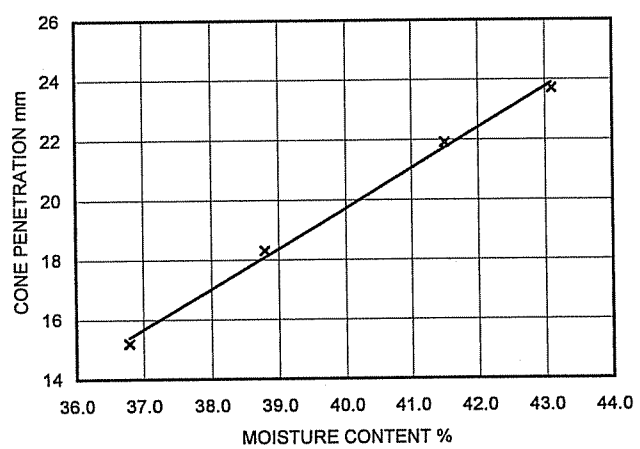
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 30-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, orangish brown, very silty/clayey, very gravelly SAND.

Laboratory sample I.D. : SL90276/13
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Wet mass of soil used : 1356.73 g
Mass ret. on 425μm sieve : 795.46 g
Moisture content : 10.2 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	15.2	18.3	21.9	23.7	-	-
Mass of container	g	35.594	38.397	37.475	36.941	26.830	37.366
Mass of wet soil + container	g	52.818	54.634	52.242	51.934	37.528	47.944
Mass of dry soil + container	g	48.185	50.095	47.911	47.418	35.327	45.748
Moisture content	%	36.8	38.8	41.5	43.1	25.9	26.2



TEST RESULTS

LIQUID LIMIT % : 40
PLASTIC LIMIT % : 26
PLASTICITY INDEX % : 14
LIQUIDITY INDEX : 0.19
PERCENTAGE PASSING 425μm % : 35

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(37) Page 1 of 1

HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP230
Depth (m) From : 0.50
To : -
Sample origin : Fill
Description : -

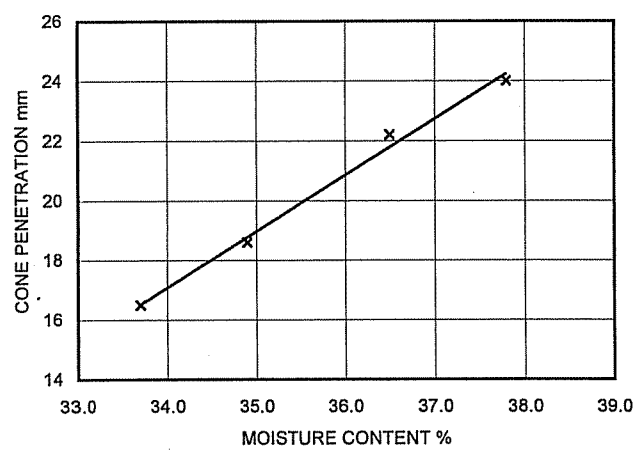
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 28-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, dark brown, very silty/clayey, very gravelly SAND.

Laboratory sample I.D. : SL90276/14
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Wet mass of soil used : 1282.48 g
Mass ret. on 425μm sieve : 787.90 g
Moisture content : 12.7 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	16.5	18.6	22.2	24.0	-	-
Mass of container	g	35.612	38.399	37.466	36.933	26.826	37.358
Mass of wet soil + container	g	50.163	57.124	52.721	48.304	37.281	48.405
Mass of dry soil + container	g	46.495	52.280	48.642	45.185	35.326	46.369
Moisture content	%	33.7	34.9	36.5	37.8	23.0	22.6



TEST RESULTS

LIQUID LIMIT % : 36
PLASTIC LIMIT % : 23
PLASTICITY INDEX % : 13
LIQUIDITY INDEX : 1.45
PERCENTAGE PASSING 425μm % : 31

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ /
Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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HKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP232
Depth (m) From : 0.50
To : -
Sample origin : Fill
Description : -

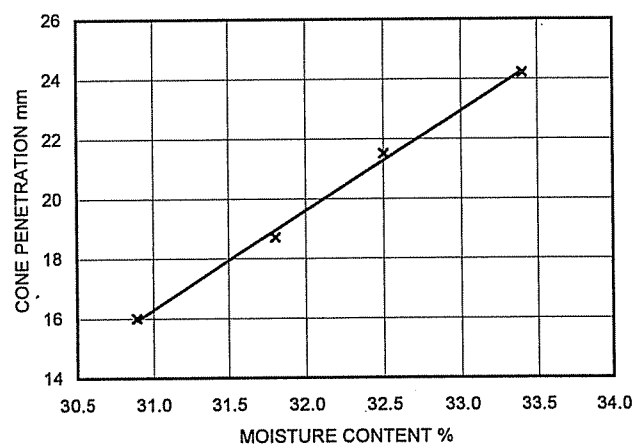
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 30-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, dark brown, very silty/clayey, very sandy GRAVEL.

Laboratory sample I.D. : SL90276/16
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Wet mass of soil used : 1326.21 g
Mass ret. on 425μm sieve : 761.35 g
Moisture content : 13.8 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	16.0	18.7	21.5	24.2	-	-
Mass of container	g	27.857	26.843	28.431	28.453	27.809	27.579
Mass of wet soil + container	g	41.292	42.658	41.028	40.966	38.370	37.618
Mass of dry soil + container	g	38.121	38.842	37.938	37.833	36.684	35.987
Moisture content	%	30.9	31.8	32.5	33.4	19.0	19.4



TEST RESULTS

LIQUID LIMIT % : 32
PLASTIC LIMIT % : 19
PLASTICITY INDEX % : 13
LIQUIDITY INDEX : 1.60
PERCENTAGE PASSING 425μm % : 35

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(42) Page 1 of 1

HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP233
Depth (m) From : 0.50
To : -
Sample origin : Colluvium
Description : -

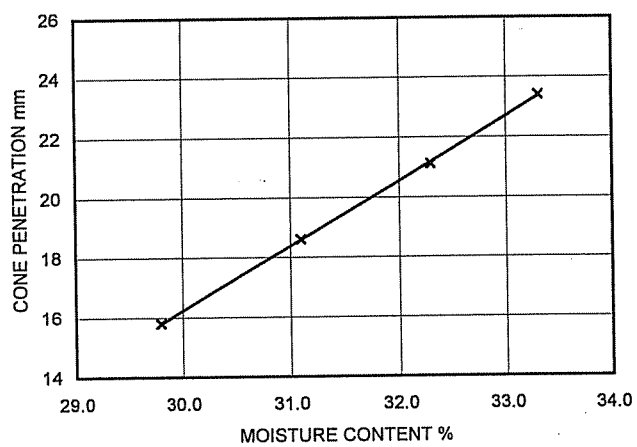
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 29-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90276/20
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Wet mass of soil used : 1290.65 g
Mass ret. on 425μm sieve : 383.03 g
Moisture content : 19.6 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	15.8	18.6	21.1	23.4	-	-
Mass of container	g	28.181	37.128	40.472	59.911	60.645	39.511
Mass of wet soil + container	g	41.446	51.655	53.678	73.085	71.203	49.834
Mass of dry soil + container	g	38.401	48.209	50.454	69.793	69.488	48.179
Moisture content	%	29.8	31.1	32.3	33.3	19.4	19.1



TEST RESULTS

LIQUID LIMIT % : 32
PLASTIC LIMIT % : 19
PLASTICITY INDEX % : 13
LIQUIDITY INDEX : 0.89
PERCENTAGE PASSING 425μm % : 65

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP233
Depth (m) From : 1.50
To : -
Sample origin : Colluvium
Description : -

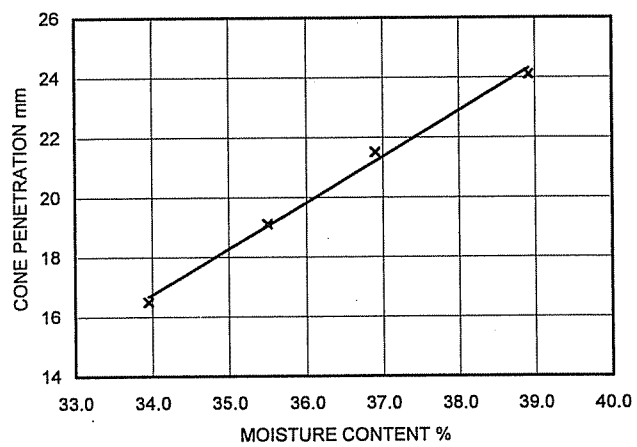
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 29-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, yellowish brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90276/21
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Wet mass of soil used : 1041.36 g
Mass ret. on 425μm sieve : 301.67 g
Moisture content : 27.0 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	16.5	19.1	21.5	24.1	-	-
Mass of container	g	37.322	58.036	42.065	40.244	41.723	39.245
Mass of wet soil + container	g	51.666	74.392	56.514	56.189	52.033	49.631
Mass of dry soil + container	g	48.030	70.107	52.619	51.722	50.126	47.723
Moisture content	%	34.0	35.5	36.9	38.9	22.7	22.5



TEST RESULTS

LIQUID LIMIT % : 36
PLASTIC LIMIT % : 23
PLASTICITY INDEX % : 14
LIQUIDITY INDEX : 1.49
PERCENTAGE PASSING 425μm % : 63

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(44) Page 1 of 1

HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP234
Depth (m) From : 0.50
To : -
Sample origin : Colluvium
Description : -

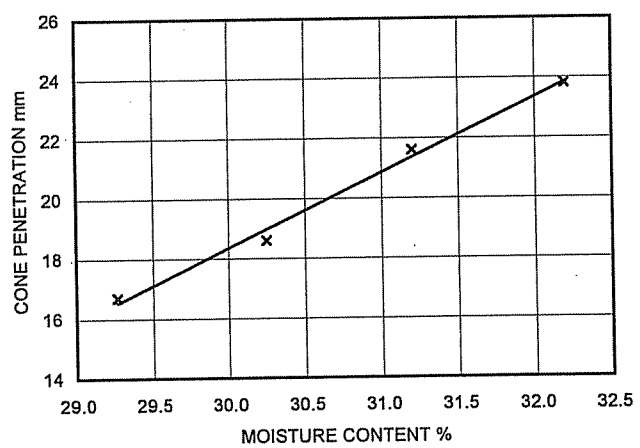
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 28-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, dark brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90276/22
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Wet mass of soil used : 1122.96 g
Mass ret. on 425μm sieve : 390.46 g
Moisture content : 18.2 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	16.7	18.6	21.6	23.8	-	-
Mass of container	g	28.658	28.183	26.350	27.406	26.230	28.448
Mass of wet soil + container	g	42.593	39.327	39.305	39.691	34.553	37.986
Mass of dry soil + container	g	39.438	36.739	36.224	36.699	32.953	36.128
Moisture content	%	29.3	30.2	31.2	32.2	23.8	24.2



TEST RESULTS

LIQUID LIMIT	**%**	**: 31**
PLASTIC LIMIT	**%**	**: 24**
PLASTICITY INDEX	**%**	**: 7**
LIQUIDITY INDEX		**: 1.03**
PERCENTAGE PASSING 425μm	**%**	**: 59**

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(45) Page 1 of 1

HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP239
Depth (m) From : 0.50
To : -
Sample origin : Colluvium
Description : -

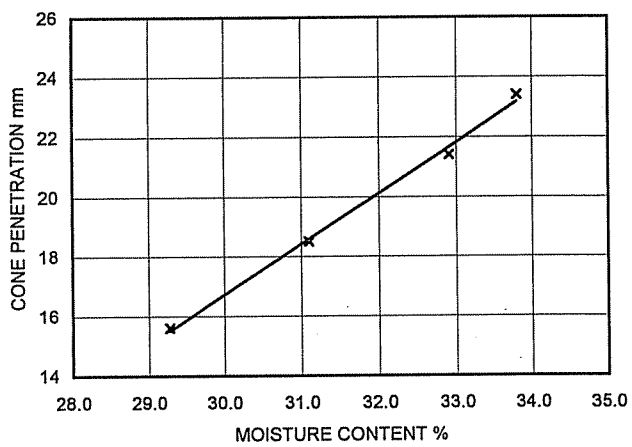
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 30-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90276/23
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Wet mass of soil used : 1042.50 g
Mass ret. on 425μm sieve : 251.20 g
Moisture content : 15.6 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	15.6	18.5	21.4	23.4	-	-
Mass of container	g	28.791	28.365	26.485	29.021	29.000	29.035
Mass of wet soil + container	g	42.528	45.323	41.057	43.303	40.129	38.669
Mass of dry soil + container	g	39.417	41.300	37.449	39.695	37.961	36.767
Moisture content	%	29.3	31.1	32.9	33.8	24.2	24.6



TEST RESULTS

LIQUID LIMIT	**%**	**: 32**
PLASTIC LIMIT	**%**	**: 24**
PLASTICITY INDEX	**%**	**: 8**
LIQUIDITY INDEX		**: -0.37**
PERCENTAGE PASSING 425μm	**%**	**: 72**

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP240
Depth (m) From : 0.50
To : -
Sample origin : Colluvium
Description : -

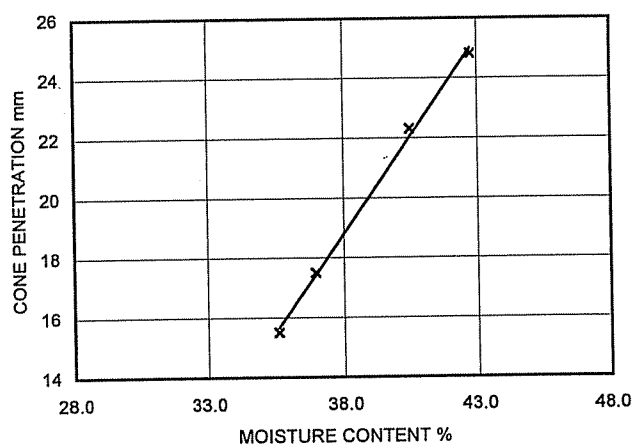
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 28-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90276/24
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Wet mass of soil used : 903.82 g
Mass ret. on 425μm sieve : 206.07 g
Moisture content : 25.9 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	15.5	17.5	22.3	24.8	-	-
Mass of container	g	37.310	58.034	42.056	40.235	41.171	39.240
Mass of wet soil + container	g	51.551	72.048	56.193	54.437	49.885	50.693
Mass of dry soil + container	g	47.812	68.266	52.119	50.183	48.038	48.258
Moisture content	%	35.6	37.0	40.5	42.8	26.9	27.0



TEST RESULTS

LIQUID LIMIT % : 39
PLASTIC LIMIT % : 27
PLASTICITY INDEX % : 12
LIQUIDITY INDEX : 0.78
PERCENTAGE PASSING 425μm % : 71

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(47)

HKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP240
Depth (m) From : 1.50
To : -
Sample origin : Colluvium
Description : -

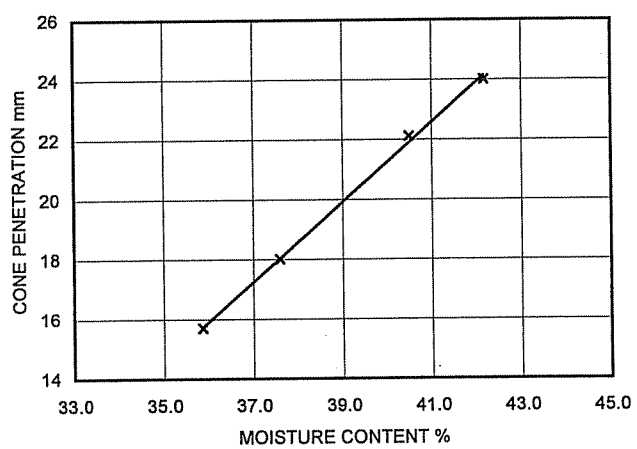
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 28-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, yellowish brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90276/25
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Wet mass of soil used : 1135.80 g
Mass ret. on 425μm sieve : 211.36 g
Moisture content : 20.6 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	15.7	18.0	22.1	24.0	-	-
Mass of container	g	42.707	39.878	62.278	36.708	41.346	35.796
Mass of wet soil + container	g	56.903	53.089	77.203	49.605	52.337	46.038
Mass of dry soil + container	g	53.155	49.480	72.901	45.779	50.238	44.082
Moisture content	%	35.9	37.6	40.5	42.2	23.6	23.6



TEST RESULTS

LIQUID LIMIT % : 39
PLASTIC LIMIT % : 24
PLASTICITY INDEX % : 16
LIQUIDITY INDEX : 0.19
PERCENTAGE PASSING 425μm % : 78

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90169(8) Page 1 of 1

HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : 11

Borehole No. : D222
Depth (m) From : 6.00
To : -
Sample origin : CDS
Description : -

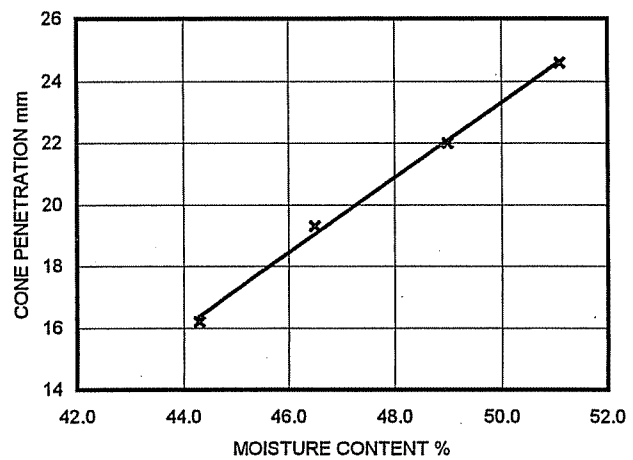
Laboratory Information

Date sample received : 21-08-2009
Date test commenced : 11-09-2009
Date test completed : 18-09-2009
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, light brown, slightly gravelly, sandy SILT/CLAY.

Laboratory sample I.D. : SL90169/1
Specimen reference : D
Sample type : M
Location and Orientation within original sample : 6.00-6.20m, 6.80-7.00m, Full mix.

Wet mass of soil used : 773.05 g
Mass ret. on 425µm sieve : 245.21 g
Moisture content : 27.2 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	16.2	19.3	22.0	24.6	-	-
Mass of container	g	61.029	61.071	42.449	57.482	64.221	58.950
Mass of wet soil + container	g	74.175	78.682	73.561	75.209	75.618	69.314
Mass of dry soil + container	g	70.139	73.092	63.330	69.214	73.008	66.947
Moisture content	%	44.3	46.5	49.0	51.1	29.7	29.6



TEST RESULTS

LIQUID LIMIT % : 47
PLASTIC LIMIT % : 30
PLASTICITY INDEX % : 18
LIQUIDITY INDEX : 0.90
PERCENTAGE PASSING 425µm % : 60

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 27 OCT 2009

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Test Report No. : 090562SL90169(9) Page 1 of 1

HKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : 30

Borehole No. : D222
Depth (m) From : 18.20
To : -
Sample origin : CDS
Description : -

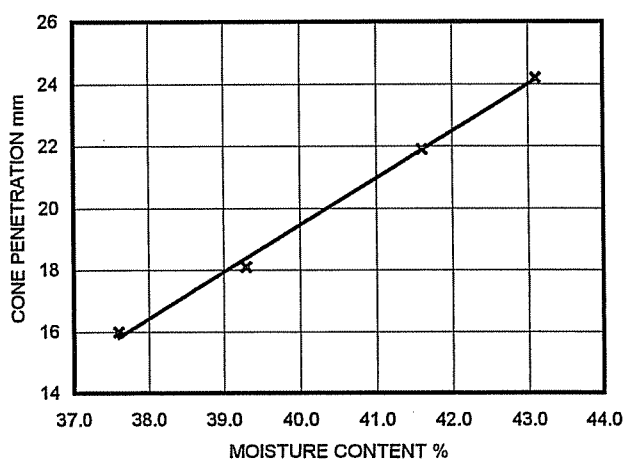
Laboratory Information

Date sample received : 21-08-2009
Date test commenced : 11-09-2009
Date test completed : 18-09-2009
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, light yellowish brown, slightly gravelly, sandy SILT/CLAY.

Laboratory sample I.D. : SL90169/2
Specimen reference : D
Sample type : M
Location and Orientation within original sample : 18.30-18.60m, Full mix.

Wet mass of soil used : 1677.37 g
Mass ret. on 425µm sieve : 601.12 g
Moisture content : 12.9 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	16.0	18.1	21.9	24.2	-	-
Mass of container	g	40.468	59.229	38.146	41.650	42.347	42.235
Mass of wet soil + container	g	58.403	73.627	57.619	58.065	52.661	52.845
Mass of dry soil + container	g	53.502	69.565	51.898	53.121	50.638	50.785
Moisture content	%	37.6	39.3	41.6	43.1	24.4	24.1



TEST RESULTS

LIQUID LIMIT % : 40
PLASTIC LIMIT % : 24
PLASTICITY INDEX % : 16
LIQUIDITY INDEX : -0.15
PERCENTAGE PASSING 425µm % : 60

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 27 OCT 2009

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Test Report No. : 090562SL100076(23) Page 1 of 1

HKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : D224
Depth (m) From : 5.50
To : -
Sample origin : FILL
Description : -

Laboratory Information

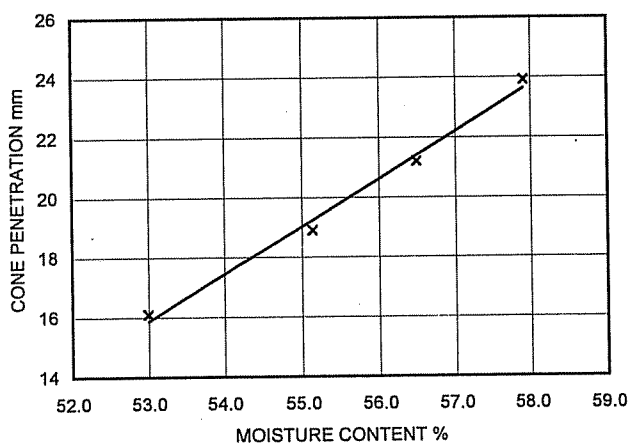
Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 16-02-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, brown, slightly gravelly, sandy SILT/CLAY

Laboratory sample I.D. : SL100076/1
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 5.6-6.3

Wet mass of soil used : 1592.32 g
Mass ret. on 425μm sieve : 471.90 g
Moisture content : 26.5 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	16.1	18.9	21.2	23.9	-	-
Mass of container	g	27.089	37.140	40.542	59.917	60.645	39.512
Mass of wet soil + container	g	38.111	53.460	52.132	71.662	75.978	51.491
Mass of dry soil + container	g	34.293	47.660	47.948	67.355	71.256	47.881
Moisture content	%	53.0	55.1	56.5	57.9	44.5	43.1

Error, Plastic Limit > 0.5



TEST RESULTS

LIQUID LIMIT	**%**	**: 56**
PLASTIC LIMIT	**%**	**: 44**
PLASTICITY INDEX	**%**	**: 12**
LIQUIDITY INDEX		**: -0.12**
PERCENTAGE PASSING 425μm	**%**	**: 63**

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : D225
Depth (m) From : 6.00
To : -
Sample origin : CDM
Description : -

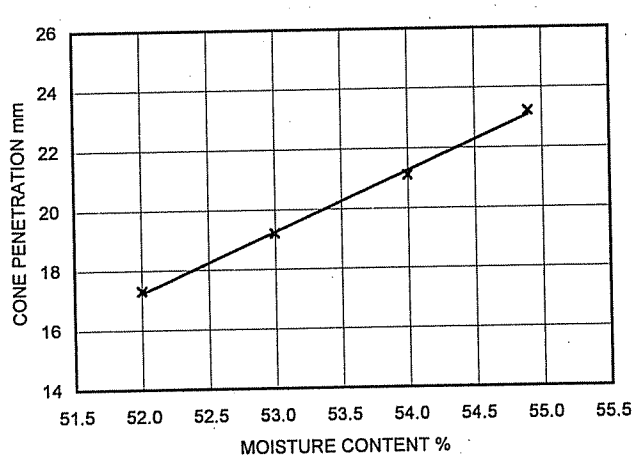
Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 16-02-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, brown, slightly gravelly, sandy SILT/CLAY

Laboratory sample I.D. : SL100076/4
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 6.0-6.8

Wet mass of soil used : 1301.18 g
Mass ret. on 425µm sieve : 296.68 g
Moisture content : 30.6 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	17.3	19.2	21.1	23.2	-	-
Mass of container	g	57.579	63.321	36.834	38.969	34.952	29.098
Mass of wet soil + container	g	73.293	81.687	52.052	55.732	48.654	44.206
Mass of dry soil + container	g	67.917	75.325	46.716	49.791	45.124	40.289
Moisture content	%	52.0	53.0	54.0	54.9	34.7	35.0



TEST RESULTS

LIQUID LIMIT % : 53
PLASTIC LIMIT % : 35
PLASTICITY INDEX % : 19
LIQUIDITY INDEX : 0.47
PERCENTAGE PASSING 425µm % : 70

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : D226
Depth (m) From : 5.50
To : -
Sample origin : CDR
Description : -

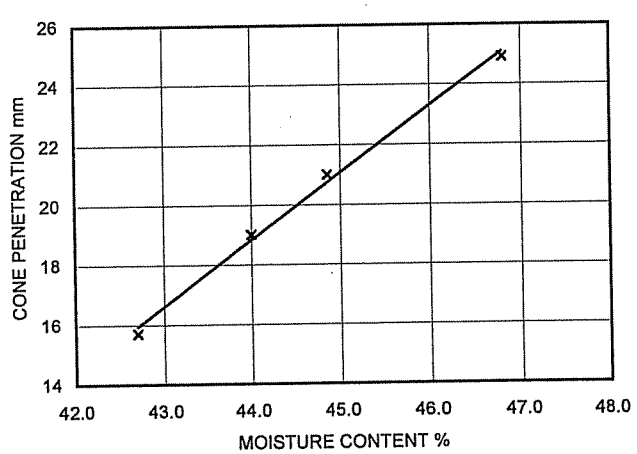
Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 16-02-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, brown, very silty/clayey, gravelly, SAND

Laboratory sample I.D. : SL100076/6
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 5.6-5.9/6.1-6.5

Wet mass of soil used : 1469.26 g
Mass ret. on 425µm sieve : 400.69 g
Moisture content : 24.6 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	15.7	19.0	21.0	24.9	-	-
Mass of container	g	37.341	58.049	42.077	40.249	41.705	58.958
Mass of wet soil + container	g	50.030	74.733	61.932	57.394	59.399	74.679
Mass of dry soil + container	g	46.233	69.635	55.784	51.928	55.243	71.014
Moisture content	%	42.7	44.0	44.9	46.8	30.7	30.4



TEST RESULTS

LIQUID LIMIT	**%**	**: 45**
PLASTIC LIMIT	**%**	**: 31**
PLASTICITY INDEX	**%**	**: 14**
LIQUIDITY INDEX		**: 0.49**
PERCENTAGE PASSING 425µm	**%**	**: 66**

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL100076(26)

HKAS HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : D226
Depth (m) From : 19.50
To : -
Sample origin : CDR
Description : -

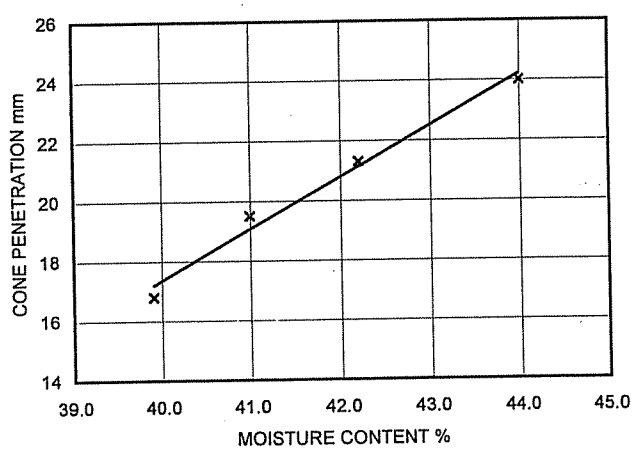
Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 19-02-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, yellowish brown, slightly gravelly, sandy SILT/CLAY

Laboratory sample I.D. : SL100076/7
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 19.5-19.9/20.1-20.5

Wet mass of soil used : 1422.37 g
Mass ret. on 425µm sieve : 405.44 g
Moisture content : 19.5 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	16.8	19.5	21.3	24.0	-	-
Mass of container	g	42.725	39.903	62.247	36.872	41.359	35.805
Mass of wet soil + container	g	55.662	54.626	78.347	54.562	61.303	55.538
Mass of dry soil + container	g	51.972	50.345	73.569	49.157	56.807	51.126
Moisture content	%	39.9	41.0	42.2	44.0	29.1	28.8



TEST RESULTS

LIQUID LIMIT % : 42
PLASTIC LIMIT % : 29
PLASTICITY INDEX % : 13
LIQUIDITY INDEX : 0.05
PERCENTAGE PASSING 425µm % : 66

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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Test Report No. : 090562SL100076(27) Page 1 of 1

HKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : D227
Depth (m) From : 2.00
To : -
Sample origin : FILL .
Description : -

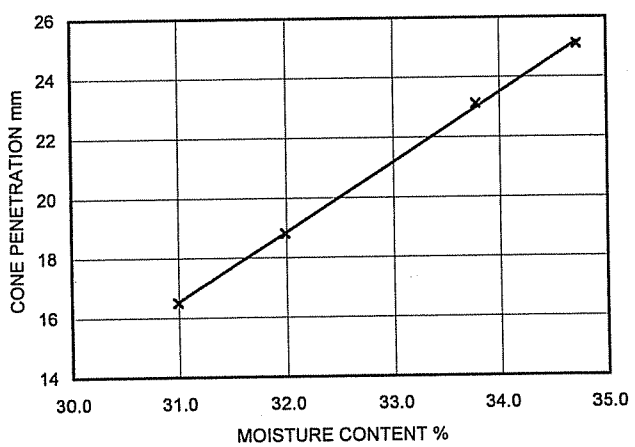
Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 16-02-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, brownish grey, slightly gravelly / sandy SILT/CLAY

Laboratory sample I.D. : SL100076/8
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 2.1-2.4/2.6-3.0

Wet mass of soil used : 1337.91 g
Mass ret. on 425µm sieve : 44.82 g
Moisture content : 22.1 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	16.5	18.8	23.1	25.1	-	-
Mass of container	g	45.542	41.041	39.983	35.550	41.060	40.062
Mass of wet soil + container	g	65.844	54.310	57.139	49.372	57.007	56.807
Mass of dry soil + container	g	61.040	51.094	52.807	45.809	54.283	53.924
Moisture content	%	31.0	32.0	33.8	34.7	20.6	20.8



TEST RESULTS

LIQUID LIMIT % : 33
PLASTIC LIMIT % : 21
PLASTICITY INDEX % : 12
LIQUIDITY INDEX : 0.19
PERCENTAGE PASSING 425µm % : 96

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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Test Report No. : 090562SL100076(28) Page 1 of 1

HKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : D227
Depth (m) From : 6.10
To : -
Sample origin : FILL
Description : -

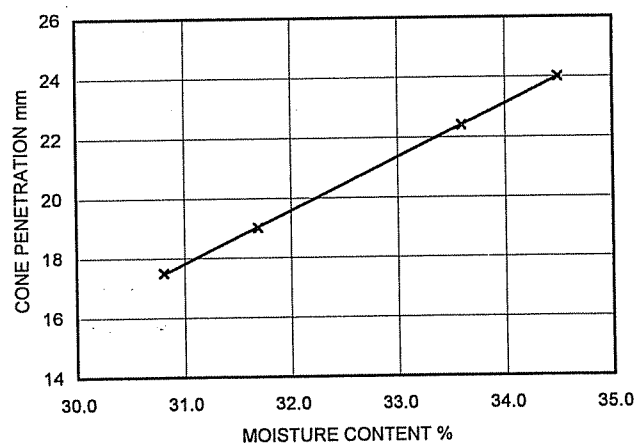
Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 17-02-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, light grey, slightly gravelly / sandy SILT/CLAY

Laboratory sample I.D. : SL100076/9
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 6.1-6.5/6.7-7.1

Wet mass of soil used : 1313.87 g
Mass ret. on 425μm sieve : 108.63 g
Moisture content : 16.6 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	17.5	19.0	22.4	24.0	-	-
Mass of container	g	28.678	28.192	26.372	27.579	26.300	28.484
Mass of wet soil + container	g	39.824	40.329	40.412	39.712	36.721	38.594
Mass of dry soil + container	g	37.199	37.408	36.881	36.600	35.013	36.944
Moisture content	%	30.8	31.7	33.6	34.5	19.6	19.5



TEST RESULTS

LIQUID LIMIT % : 32
PLASTIC LIMIT % : 20
PLASTICITY INDEX % : 13
LIQUIDITY INDEX : -0.10
PERCENTAGE PASSING 425μm % : 90

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : D231
Depth (m) From : 5.50
To : -
Sample origin : CDM
Description : -

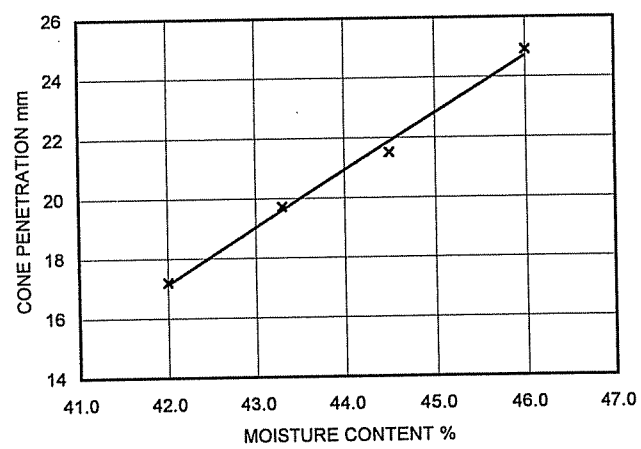
Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 17-02-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, yellowish brown, slightly gravelly / sandy SILT/CLAY

Laboratory sample I.D. : SL100076/12
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 5.6-5.9/6.1-6.5

Wet mass of soil used : 1349.49 g
Mass ret. on 425μm sieve : 309.14 g
Moisture content : 32.6 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	17.2	19.7	21.5	24.9	-	-
Mass of container	g	27.082	37.138	40.478	59.904	60.644	39.511
Mass of wet soil + container	g	38.147	50.283	53.944	73.907	77.948	54.388
Mass of dry soil + container	g	34.874	46.311	49.797	69.495	73.945	50.911
Moisture content	%	42.0	43.3	44.5	46.0	30.1	30.5



TEST RESULTS

LIQUID LIMIT % : 44
PLASTIC LIMIT % : 30
PLASTICITY INDEX % : 13
LIQUIDITY INDEX : 1.25
PERCENTAGE PASSING 425μm % : 70

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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Test Report No. : 090562SL100076(32) Page 1 of 1

HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : D228
Depth (m) From : 3.00
To : -
Sample origin : FILL
Description : -

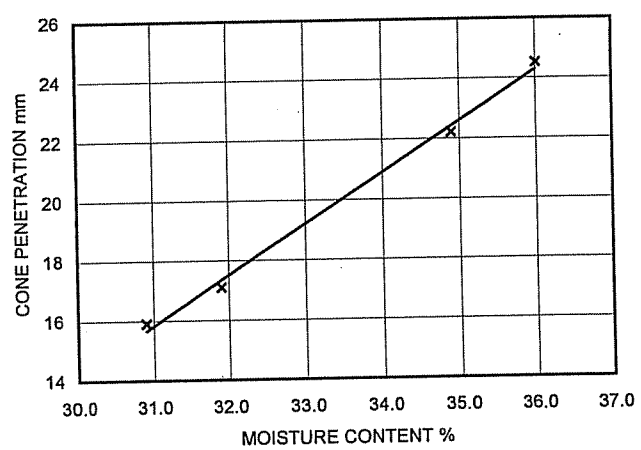
Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 08-02-2010
Date test completed : 21-02-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, brownish grey, slightly gravelly / sandy SILT/CLAY

Laboratory sample I.D. : SL100076/17
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 3.0-3.4/3.6-4.0

Wet mass of soil used : 1350.41 g
Mass ret. on 425μm sieve : 272.70 g
Moisture content : 18.3 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	15.9	17.1	22.2	24.5	-	-
Mass of container	g	28.850	28.537	26.631	29.012	29.056	29.100
Mass of wet soil + container	g	39.710	41.714	38.812	40.140	43.310	40.458
Mass of dry soil + container	g	37.146	38.527	35.661	37.194	40.924	38.573
Moisture content	%	30.9	31.9	34.9	36.0	20.1	19.9



TEST RESULTS

LIQUID LIMIT	%	34
PLASTIC LIMIT	%	20
PLASTICITY INDEX	%	14
LIQUIDITY INDEX		0.30
PERCENTAGE PASSING 425μm	%	76

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL100076(30)

HKAS HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : D232
Depth (m) From : 7.60
To : -
Sample origin : MD
Description : -

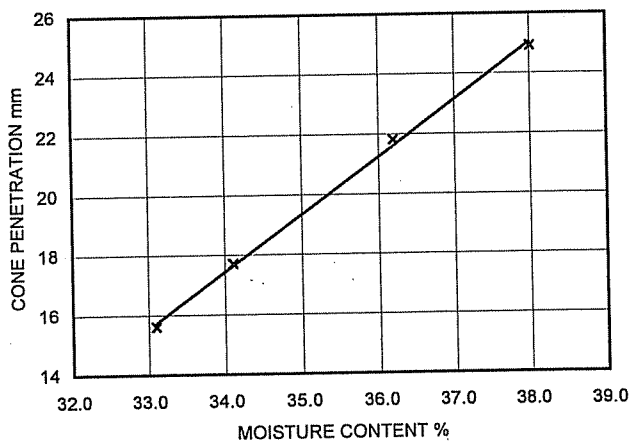
Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 17-02-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, dark grey, slightly gravelly, sandy SILT/CLAY with shell fragements

Laboratory sample I.D. : SL100076/14
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 7.7-8.3

Wet mass of soil used : 1350.32 g
Mass ret. on 425μm sieve : 115.22 g
Moisture content : 27.3 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	15.6	17.7	21.8	24.9	-	-
Mass of container	g	40.708	28.303	58.177	27.711	66.424	65.543
Mass of wet soil + container	g	53.933	39.753	71.791	39.305	81.127	81.150
Mass of dry soil + container	g	50.644	36.841	68.173	36.112	78.329	78.150
Moisture content	%	33.1	34.1	36.2	38.0	23.5	23.8



TEST RESULTS

LIQUID LIMIT % : 35
PLASTIC LIMIT % : 24
PLASTICITY INDEX % : 12
LIQUIDITY INDEX : 0.59
PERCENTAGE PASSING 425μm % : 89

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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Test Report No. : 090562SL100076(31) Page 1 of 1

HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : D232
Depth (m) From : 9.60
To : -
Sample origin : MD
Description : -

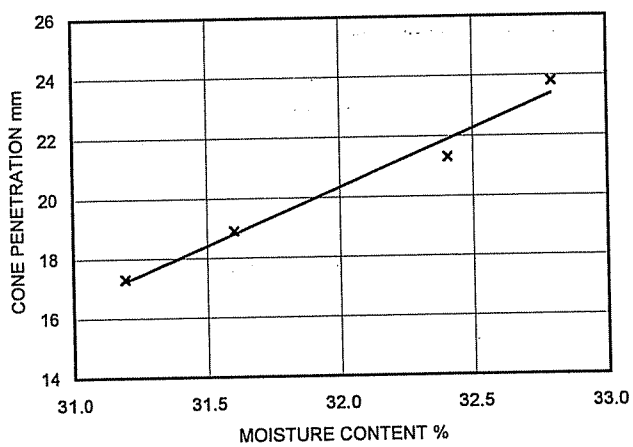
Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 08-02-2010
Date test completed : 21-02-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, dark grey, slightly gravelly, sandy SILT/CLAY with shell fragements

Laboratory sample I.D. : SL100076/15
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 9.7-10.0/10.2-10.6

Wet mass of soil used : 1391.49 g
Mass ret. on 425µm sieve : 132.21 g
Moisture content : 30.1 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	17.3	18.9	21.3	23.8	-	-
Mass of container	g	28.648	28.173	26.338	27.402	26.295	28.474
Mass of wet soil + container	g	40.192	39.304	39.527	40.141	39.023	39.940
Mass of dry soil + container	g	37.447	36.631	36.299	36.995	36.602	37.752
Moisture content	%	31.2	31.6	32.4	32.8	23.5	23.6



TEST RESULTS

LIQUID LIMIT	%	32
PLASTIC LIMIT	%	24
PLASTICITY INDEX	%	8
LIQUIDITY INDEX		1.29
PERCENTAGE PASSING 425µm	%	88

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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Test Report No. : 090562SL90277(18) Page 1 of 1

HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : 912/SIL/D243
Depth (m) From : 2.00
To : 3.00
Sample origin : FILL
Description : -

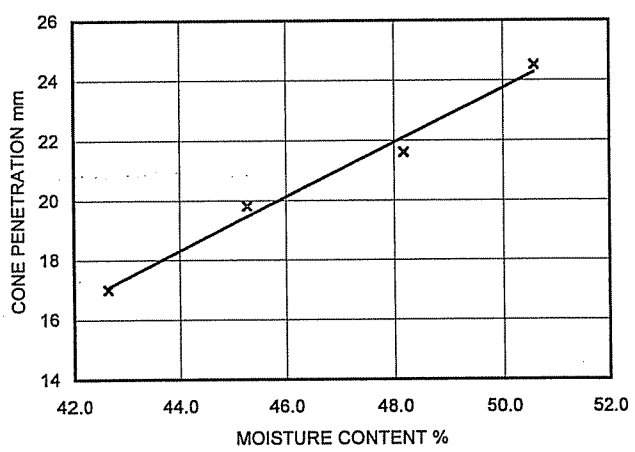
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, orangish brown, slightly sandy SILT/CLAY.

Laboratory sample I.D. : SL90277/1
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 2.00-2.40m, 2.60-3.00m, Full mix.

Wet mass of soil used : 842.92 g
Mass ret. on 425µm sieve : 57.40 g
Moisture content : 29.2 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	17.0	19.8	21.6	24.5	-	-
Mass of container	g	61.012	61.061	42.437	57.515	64.223	58.949
Mass of wet soil + container	g	76.672	73.107	56.384	72.434	73.169	66.240
Mass of dry soil + container	g	71.990	69.353	51.849	67.422	71.147	64.579
Moisture content	%	42.6	45.3	48.2	50.6	29.2	29.5



TEST RESULTS

LIQUID LIMIT % : 46
PLASTIC LIMIT % : 29
PLASTICITY INDEX % : 17
LIQUIDITY INDEX : 0.16
PERCENTAGE PASSING 425µm % : 91

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 27 JAN 2010

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Test Report No. : 090562SL90277(19) Page 1 of 1

HKAS HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : 912/SIL/D243
Depth (m) From : 4.50
To : 5.50
Sample origin : CDT
Description : -

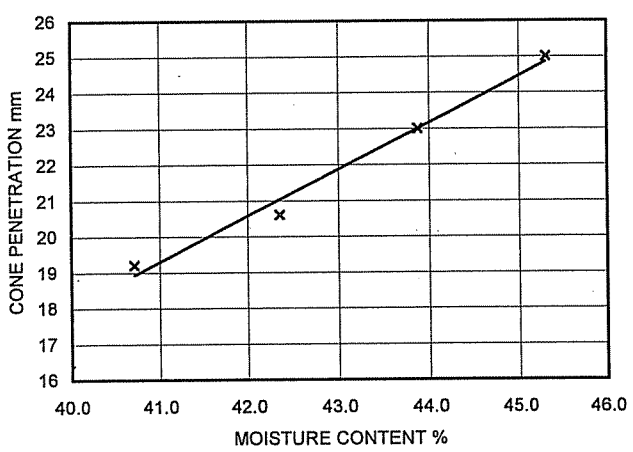
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 21-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, yellowish brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90277/2
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 4.50-4.90m, 5.10-5.50m, Full mix.

Wet mass of soil used : 918.26 g
Mass ret. on 425μm sieve : 115.69 g
Moisture content : 27.5 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	19.2	20.6	23.0	25.0	-	-
Mass of container	g	40.455	59.228	38.073	41.652	42.344	42.237
Mass of wet soil + container	g	54.155	72.431	52.679	57.427	52.339	53.209
Mass of dry soil + container	g	50.191	68.503	48.225	52.508	50.140	50.782
Moisture content	%	40.7	42.4	43.9	45.3	28.2	28.4



TEST RESULTS

LIQUID LIMIT % : 42
PLASTIC LIMIT % : 28
PLASTICITY INDEX % : 13
LIQUIDITY INDEX : 0.34
PERCENTAGE PASSING 425μm % : 84

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 27 JAN 2010

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Test Report No. : 090562SL90277(20) Page 1 of 1

HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : 912/SIL/D244
Depth (m) From : 2.00
To : 2.90
Sample origin : HDT
Description : -

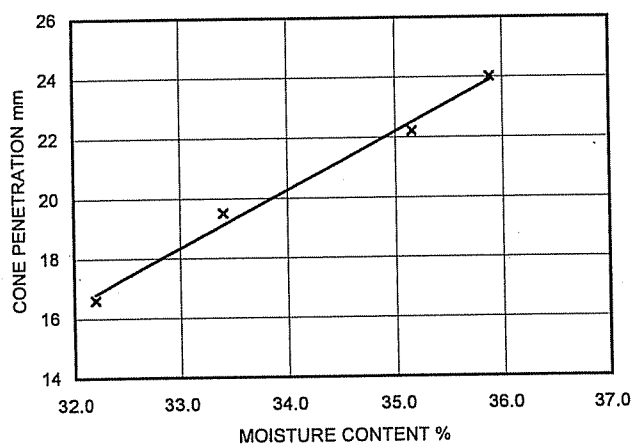
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, brownish grey, slightly sandy, gravelly SILT/CLAY.

Laboratory sample I.D. : SL90277/4
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 2.00-2.40m, 2.60-2.90m, Full mix.

Wet mass of soil used : 1196.47 g
Mass ret. on 425μm sieve : 487.04 g
Moisture content : 43.2 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	16.6	19.5	22.2	24.0	-	-
Mass of container	g	28.594	56.276	62.814	38.987	39.527	40.956
Mass of wet soil + container	g	41.961	67.662	76.608	55.319	48.121	49.669
Mass of dry soil + container	g	38.705	64.811	73.020	51.006	46.337	47.866
Moisture content	%	32.2	33.4	35.2	35.9	26.2	26.1



TEST RESULTS

LIQUID LIMIT % : 34
PLASTIC LIMIT % : 26
PLASTICITY INDEX % : 8
LIQUIDITY INDEX : 9.94
PERCENTAGE PASSING 425μm % : 42

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 27 JAN 2010

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Test Report No. : 090562SL90277(21) Page 1 of 1

HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : 912/SIL/D248
Depth (m) From : 5.50
To : 6.50
Sample origin : COLL
Description : -

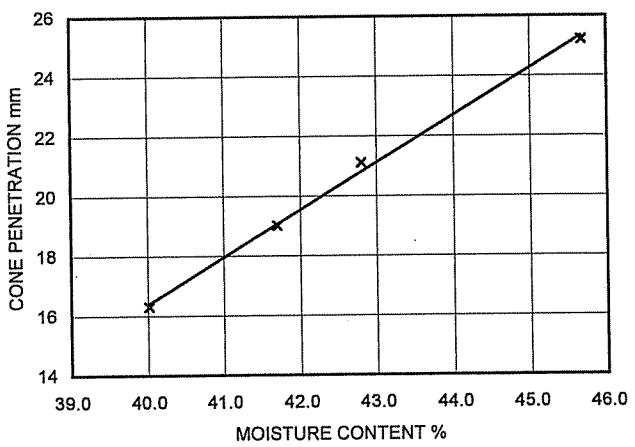
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, orangish brown, slightly sandy SILT/CLAY.

Laboratory sample I.D. : SL90277/7
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 5.50-5.90m, 6.10-6.50m, Full mix.

Wet mass of soil used : 804.44 g
Mass ret. on 425μm sieve : 16.80 g
Moisture content : 29.7 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	16.3	19.0	21.1	25.2	-	-
Mass of container	g	37.301	58.023	42.050	40.231	41.720	39.243
Mass of wet soil + container	g	50.065	70.236	56.382	52.104	49.996	50.332
Mass of dry soil + container	g	46.417	66.642	52.086	48.381	48.231	47.940
Moisture content	%	40.0	41.7	42.8	45.7	27.1	27.5



TEST RESULTS

LIQUID LIMIT	**%**	**: 42**
PLASTIC LIMIT	**%**	**: 27**
PLASTICITY INDEX	**%**	**: 15**
LIQUIDITY INDEX		**: 0.21**
PERCENTAGE PASSING 425μm	**%**	**: 97**

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 27 JAN 2010

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Test Report No. : 090562SL90277(22)

HKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : 912/SIL/D248
Depth (m) From : 13.00
To : 14.00
Sample origin : CDT
Description : -

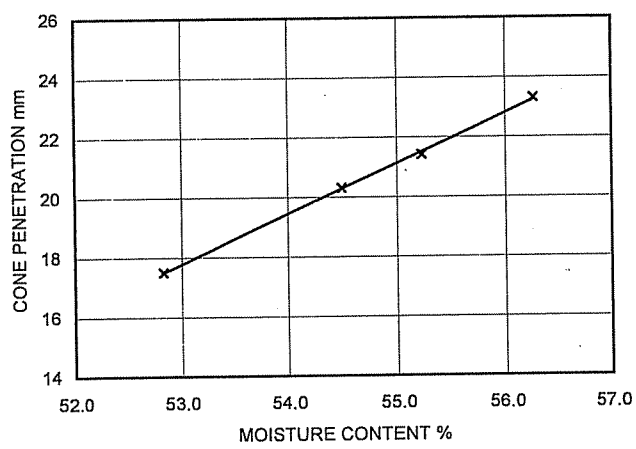
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, reddish brown, slightly sandy SILT/CLAY.

Laboratory sample I.D. : SL90277/9
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 13.00-13.40m, 13.60-14.00m, Full mix.

Wet mass of soil used : 711.19 g
Mass ret. on 425μm sieve : 21.38 g
Moisture content : 37.6 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	17.5	20.3	21.4	23.3	-	-
Mass of container	g	42.690	39.863	62.222	36.709	41.350	35.799
Mass of wet soil + container	g	55.528	50.982	75.058	49.004	49.225	46.120
Mass of dry soil + container	g	51.090	47.060	70.491	44.577	47.307	43.583
Moisture content	%	52.8	54.5	55.2	56.3	32.2	32.6



TEST RESULTS

LIQUID LIMIT % : 54
PLASTIC LIMIT % : 32
PLASTICITY INDEX % : 22
LIQUIDITY INDEX : 0.31
PERCENTAGE PASSING 425μm % : 96

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - GMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : - 5 MAR 2010

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Test Report No. : 090562SL90277(23) Page 1 of 1

HKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : 912/SIL/D248
Depth (m) From : 16.60
To : 17.60
Sample origin : CDT
Description : -

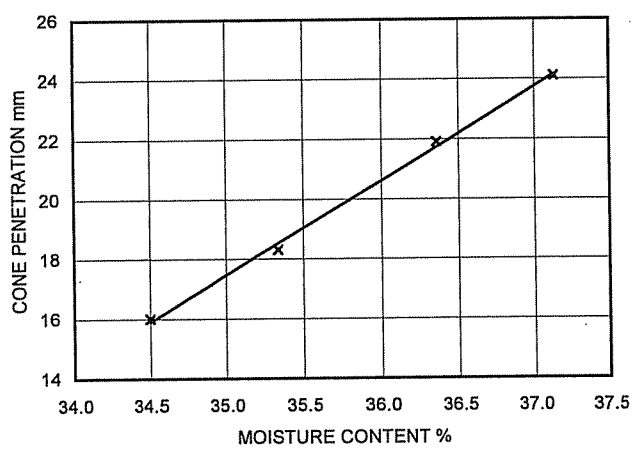
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, yellowish brown, slightly sandy SILT/CLAY.

Laboratory sample I.D. : SL90277/10
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 16.60-17.00m, 17.20-17.60m, Full mix.

Wet mass of soil used : 921.62 g
Mass ret. on 425μm sieve : 61.88 g
Moisture content : 24.2 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	16.0	18.3	21.9	24.1	-	-
Mass of container	g	45.519	41.006	39.958	35.498	41.053	40.050
Mass of wet soil + container	g	56.805	52.917	51.884	48.690	51.229	52.197
Mass of dry soil + container	g	53.910	49.807	48.704	45.118	48.905	49.415
Moisture content	%	34.5	35.3	36.4	37.1	29.6	29.7



TEST RESULTS

LIQUID LIMIT	**%**	**: 36**
PLASTIC LIMIT	**%**	**: 30**
PLASTICITY INDEX	**%**	**: 6**
LIQUIDITY INDEX		**: -0.54**
PERCENTAGE PASSING 425μm	**%**	**: 92**

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 27 JAN 2010

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Test Report No. : 090562SL90277(24) Page 1 of 1

HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : 912/SIL/D265
Depth (m) From : 31.00
To : 32.00
Sample origin : CDT
Description : -

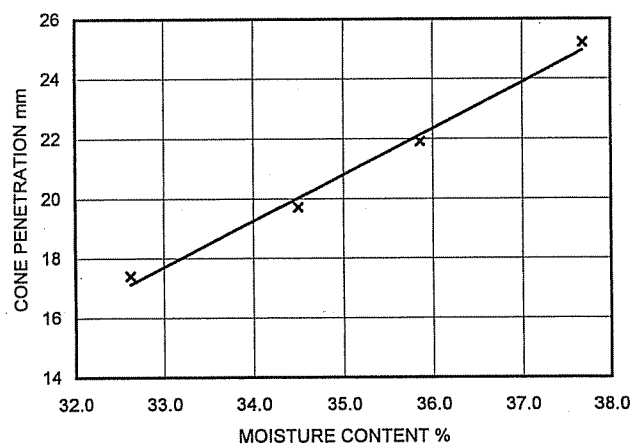
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, light yellowish brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90277/15
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 31.00-31.40m, 31.60-32.00m, Full mix.

Wet mass of soil used : 943.42 g
Mass ret. on 425μm sieve : 134.56 g
Moisture content : 25.9 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	17.4	19.7	21.9	25.2	-	-
Mass of container	g	57.545	63.144	36.793	38.924	34.947	29.093
Mass of wet soil + container	g	71.341	77.620	53.706	53.491	45.968	40.707
Mass of dry soil + container	g	67.947	73.907	49.242	49.503	43.544	38.124
Moisture content	%	32.6	34.5	35.9	37.7	28.2	28.6



TEST RESULTS

LIQUID LIMIT % : 35
PLASTIC LIMIT % : 28
PLASTICITY INDEX % : 6
LIQUIDITY INDEX : 0.52
PERCENTAGE PASSING 425μm % : 82

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 27 JAN 2010

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Test Report No. : 090562SL90276(28) Page 1 of 1

HKAS HOKLAS 015

TEST REPORT ON DETERMINATION OF LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : 4

Borehole No. : D272(P)
Depth (m) From : 1.50
To : 2.50
Sample origin : CDG
Description : -

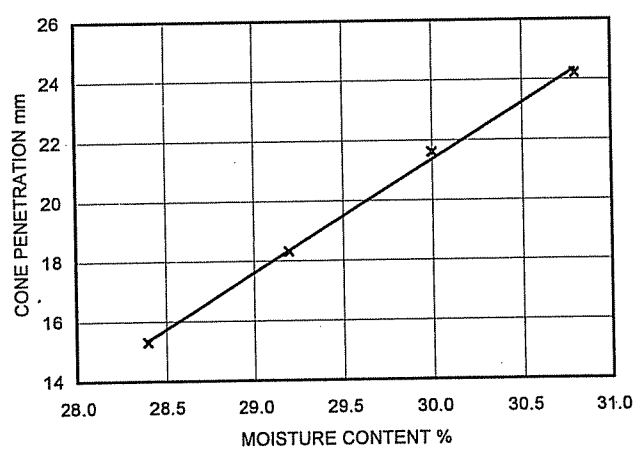
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 6.1 and 6.2
Method of preparation : The sample has been subjected to wet sieving
History of sample : Tested as-received
Initial drying temperature : - °C (not applicable if sample tested as-received)
Duration of initial drying : - Hrs (not applicable if sample tested as-received)
Visual description : Moist, orangish brown, very silty/clayey, very sandy GRAVEL.

Laboratory sample I.D. : SL90276/1
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 1.50-2.30m, Full mix.

Wet mass of soil used : 1092.53 g
Mass ret. on 425μm sieve : 628.16 g
Moisture content : 17.4 %

Test Type		Liquid Limit				Plastic Limit	
Determination No.		1	2	3	4	1	2
Cone penetration	mm	15.3	18.3	21.6	24.2	-	-
Mass of container	g	28.654	32.605	30.173	31.569	-	-
Mass of wet soil + container	g	42.633	46.509	44.187	48.683	-	-
Mass of dry soil + container	g	39.541	43.367	40.953	44.653	-	-
Moisture content	%	28.4	29.2	30.0	30.8	-	-



TEST RESULTS

LIQUID LIMIT % : 30
PLASTIC LIMIT % : Non-Plastic
PLASTICITY INDEX % : -
LIQUIDITY INDEX : -
PERCENTAGE PASSING 425μm % : 32

Abbreviations used : Sample type : U = U76 or U100, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :-

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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APPENDIX F. PARTICLE SIZE DISTRIBUTION

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HOKLAS 015

Test Report No. : 090562SL90169(15) Page 1 of 1

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line
(EAST)

Borehole No. : TP210
Depth (m) From : 0.50
To : -
Sample origin : FILL
Description : -

Laboratory Information

Date sample received : 13-11-2009
Date test commenced : 14-11-2009
Date test completed : 19-11-2009
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90236/1
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 249.720

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	249.720	
Riffled passing (m_3) 20	249.720	
Wash passing (m_4) 20	52.610	
14	0.000	100
10	0.000	100
6.3	0.000	100
Passing (m_5) 6.3	52.610	
Riffled passing (m_6) 6.3	52.610	
5.0	5.402	98
3.35	5.763	96
2.00	7.639	92
1.18	8.317	89
0.600	8.340	86
0.425	3.138	85
0.300	2.589	84
0.212	2.544	82
0.150	2.637	81
0.063	6.231	79
Pan (m_f)	0.006	

Test Result (Sedimentation Analysis)

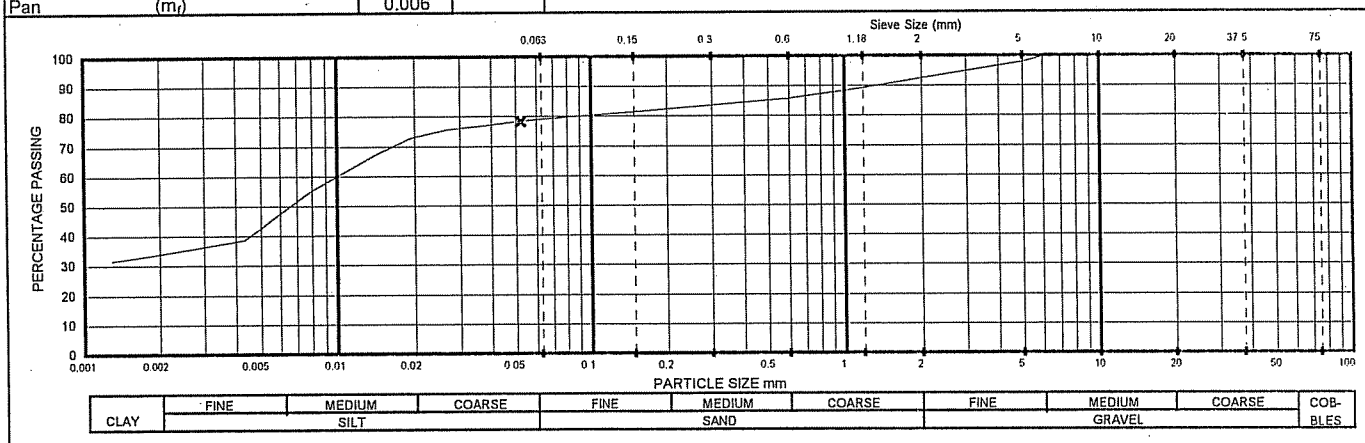
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.70
Initial dry mass g : 54.901
Mass retained on 63µm g : 9.253

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
18/11/2009	09:10	0.5	25.16	29.0	0.5	0.052	82	78
		1	25.16	28.5	0.5	0.037	81	77
		2	25.16	28.0	0.5	0.027	80	76
		4	25.16	27.0	0.5	0.019	77	73
		8	25.16	25.0	0.5	0.014	71	67
		30	25.16	20.5	0.5	0.0079	58	55
		120	25.16	14.5	0.5	0.0043	41	38
		480	25.16	13.0	0.5	0.0022	36	34
		1440	25.16	12.0	0.5	0.0013	33	32

Hydrometer reading in solution only (R_0')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	8
SAND	%	:	13
SILT	%	:	45
CLAY	%	:	34



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager—GMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 19 NOV 2009

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Test Report No. : 090562SL90276(59) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : TP218
Depth (m) From : 0.50
To : -
Sample origin : Colluvium
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 27-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, brown, slightly gravelly/sandy SILT/CLAY.

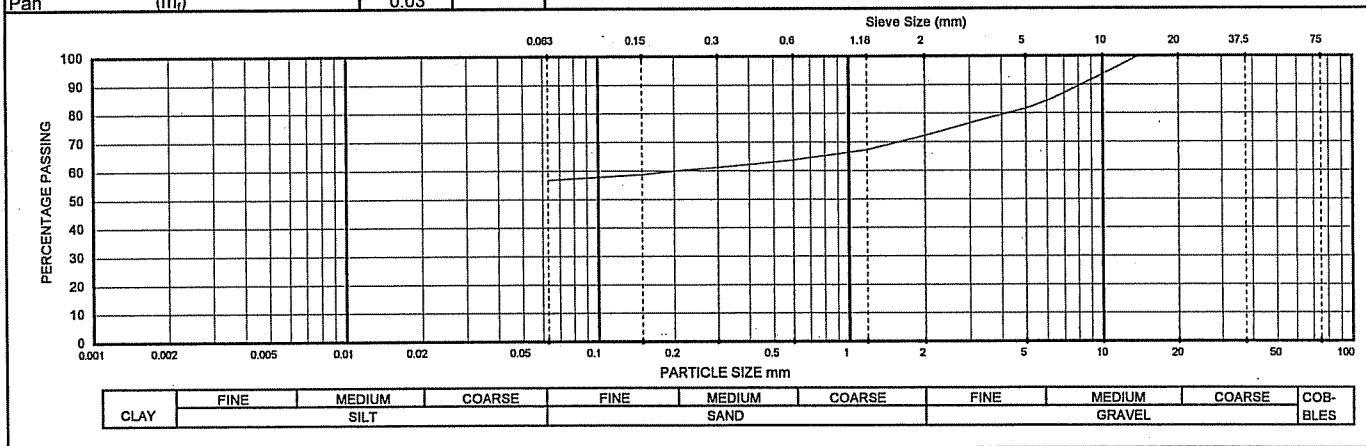
Laboratory sample I.D. : SL90276/18
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 867.94

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	867.94	
Riffled passing	(m_3)	20	867.94	
Wash passing	(m_4)	20	376.20	
		14	0.00	100
		10	55.90	94
		6.3	73.94	85
Passing	(m_5)	6.3	246.36	
Riffled passing	(m_6)	6.3	120.76	
		5.0	14.75	82
		3.35	16.72	78
		2.00	23.18	72
		1.18	21.18	67
		0.600	14.91	64
		0.425	5.93	62
		0.300	5.14	61
		0.212	4.42	60
		0.150	6.04	59
		0.063	8.42	57
Pan	(m_f)		0.03	

SUMMATION : GRAVEL % : 28
SAND % : 15
SILT & CLAY % : 57



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 03 FEB 2010

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Test Report No. : 090562SL90276(60) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP219
Depth (m) From : 0.50
To : -
Sample origin : Colluvium
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 27-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, brown, slightly gravelly/sandy SILT/CLAY.

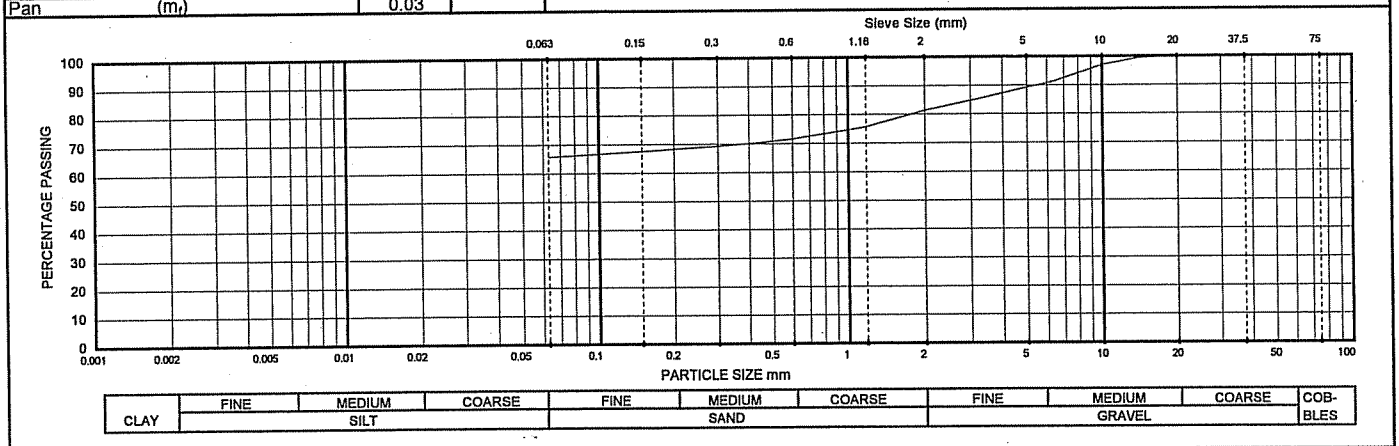
Laboratory sample I.D. : SL90276/19
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 784.11

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	784.11	
Riffled passing	(m_3)	20	784.11	
Wash passing	(m_4)	20	268.84	
		14	5.04	99
		10	18.90	97
		6.3	45.97	91
Passing	(m_5)	6.3	198.93	
Riffled passing	(m_6)	6.3	132.71	
		5.0	10.11	89
		3.35	18.60	86
		2.00	22.52	81
		1.18	29.47	76
		0.600	21.44	72
		0.425	6.67	70
		0.300	5.26	69
		0.212	4.42	68
		0.150	4.92	67
		0.063	9.21	66
Pan	(m_f)		0.03	

SUMMATION : GRAVEL % : 19
SAND % : 15
SILT & CLAY % : 66



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(61) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP219
Depth (m) From : 1.50
To : -
Sample origin : Colluvium
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 27-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, yellowish brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90276/51
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

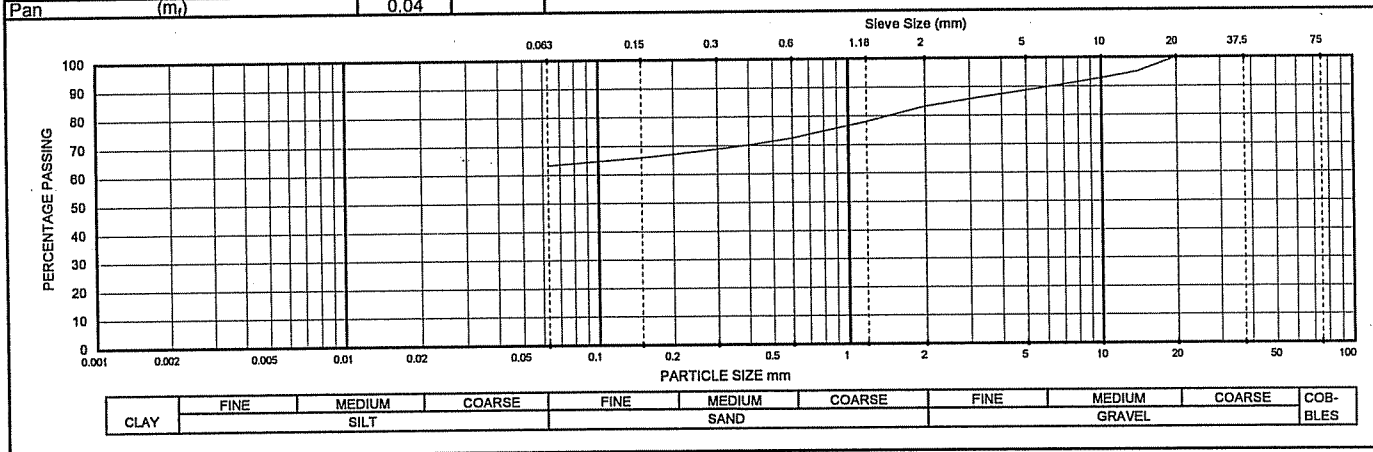
Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 555.86

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	555.86	
Riffled passing (m_3) 20	555.86	
Wash passing (m_4) 20	203.91	
14	27.33	95
10	12.53	93
6.3	15.85	90
Passing (m_5) 6.3	148.20	
Riffled passing (m_6) 6.3	148.20	
5.0	7.72	89
3.35	12.57	86
2.00	17.61	83
1.18	28.49	78
0.600	30.81	72
0.425	11.34	70
0.300	9.51	69
0.212	8.03	67
0.150	7.66	66
0.063	14.42	63
Pan (m_f)	0.04	

SUMMATION :

GRAVEL	%	:	17
SAND	%	:	20
SILT & CLAY	%	:	63



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(49) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : TP226
Depth (m) From : 0.50
To : -
Sample origin : Fill
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 27-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, dark brown, very silty/clayey, very sandy GRAVEL.

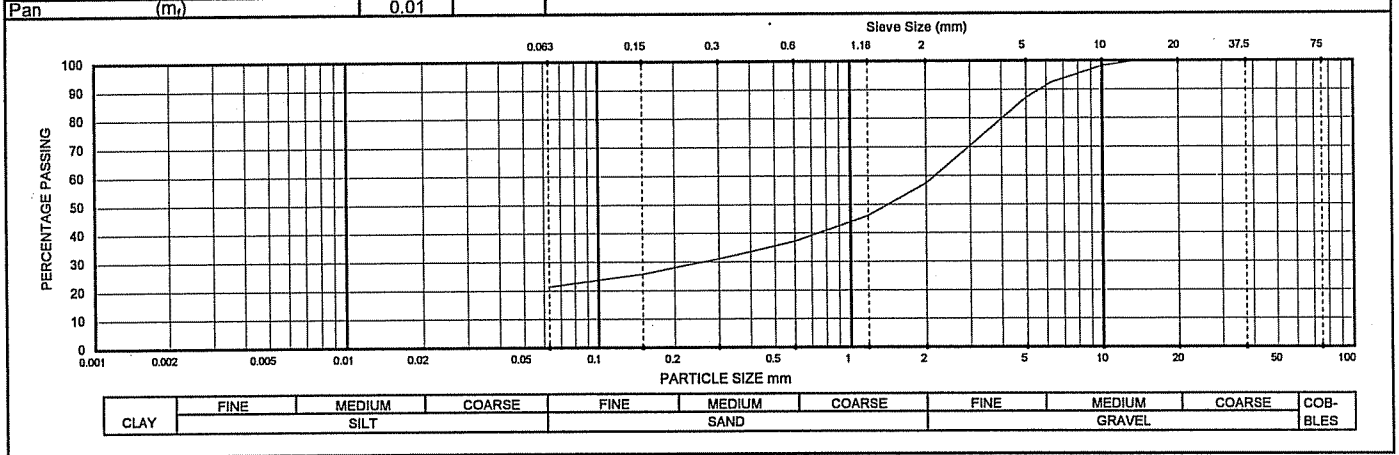
Laboratory sample I.D. : SL90276/6
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 647.83

	Sieve size mm	Mass retained (g)	Percent passing (%)
	100	0	100
	75	0	100
	63	0	100
	50	0	100
	37.5	0	100
	28	0	100
	20	0	100
Passing (m_2)	20	647.83	
Riffled passing (m_3)	20	647.83	
Wash passing (m_4)	20	509.62	
	14	0.00	100
	10	11.86	98
	6.3	36.79	92
Passing (m_5)	6.3	460.97	
Riffled passing (m_6)	6.3	111.20	
	5.0	8.46	87
	3.35	20.44	74
	2.00	26.08	57
	1.18	17.73	46
	0.600	13.90	37
	0.425	4.95	34
	0.300	4.46	31
	0.212	4.10	28
	0.150	4.22	26
	0.063	6.85	21
Pan (m_f)		0.01	

SUMMATION : GRAVEL % : 43
SAND % : 36
SILT & CLAY % : 21



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 03 FEB 2010

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Test Report No. : 090562SL90276(50) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP226
Depth (m) From : 1.50
To : -
Sample origin : Fill
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 27-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, dark brown, very silty/clayey, very sandy GRAVEL.

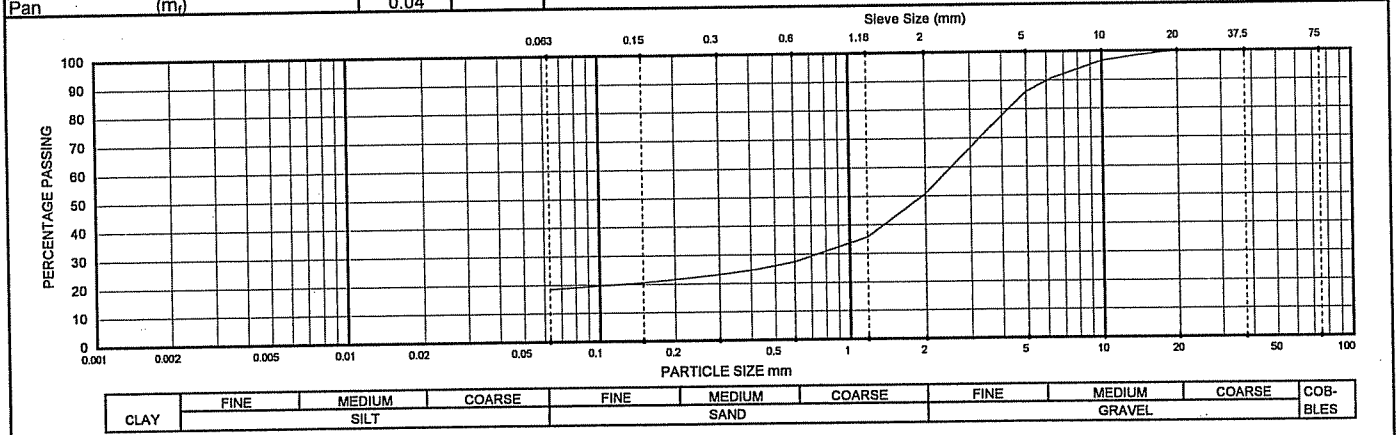
Laboratory sample I.D. : SL90276/7
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 939.98

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	939.98	
Riffled passing (m_3) 20	939.98	
Wash passing (m_4) 20	766.60	
14	14.13	98
10	18.01	97
6.3	55.86	91
Passing (m_5) 6.3	678.60	
Riffled passing (m_6) 6.3	142.16	
5.0	9.01	86
3.35	29.71	71
2.00	39.84	51
1.18	29.63	36
0.600	16.60	27
0.425	4.75	25
0.300	3.49	23
0.212	2.70	22
0.150	2.31	21
0.063	4.05	18
Pan (m_f)	0.04	

SUMMATION : GRAVEL % : 49
SAND % : 33
SILT & CLAY % : 18



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 03 FEB 2010

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Test Report No. : 090562SL90276(51) Page 1 of 1

HKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP227
Depth (m) From : 0.50
To : -
Sample origin : Fill
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 27-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, dark brown, very silty/clayey, very sandy GRAVEL.

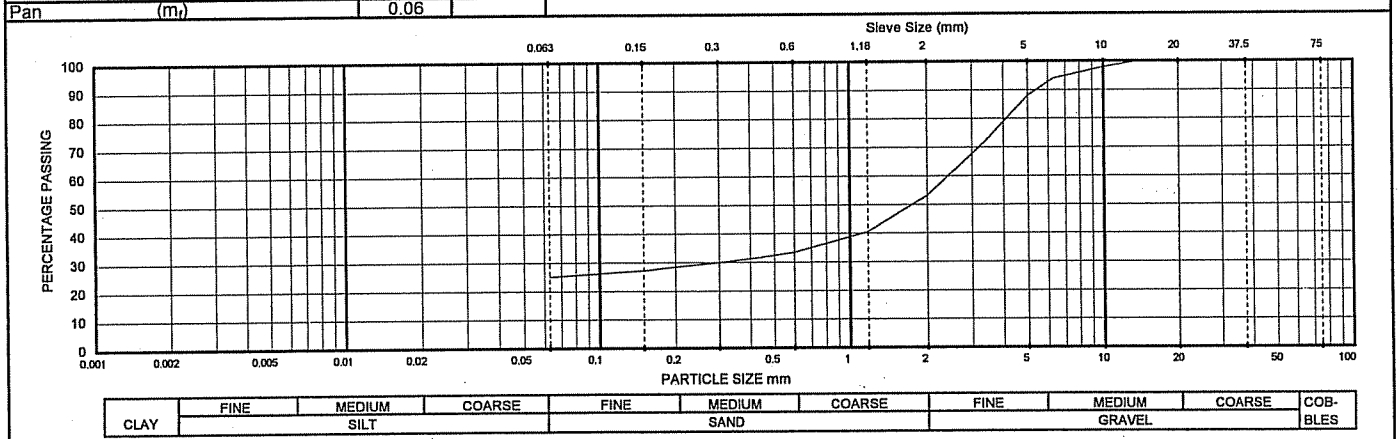
Laboratory sample I.D. : SL90276/8
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 719.77

	Sieve size mm	Mass retained (g)	Percent passing (%)
	100	0	100
	75	0	100
	63	0	100
	50	0	100
	37.5	0	100
	28	0	100
	20	0	100
Passing (m_2)	20	719.77	
Riffled passing (m_3)	20	719.77	
Wash passing (m_4)	20	539.97	
	14	0.00	100
	10	15.63	98
	6.3	28.23	94
Passing (m_5)	6.3	496.11	
Riffled passing (m_6)	6.3	136.22	
	5.0	11.78	88
	3.35	32.31	72
	2.00	36.65	53
	1.18	24.81	40
	0.600	14.09	33
	0.425	3.85	31
	0.300	2.99	30
	0.212	2.45	29
	0.150	2.98	27
	0.063	4.21	25
Pan (m_7)		0.06	

SUMMATION : GRAVEL % : 47
SAND % : 28
SILT & CLAY % : 25



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 03 FEB 2010

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Test Report No. : 090562SL90276(52) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP227
Depth (m) From : 1.50
To : -
Sample origin : Fill
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 27-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, dark brown, very silty/clayey, very sandy GRAVEL.

Laboratory sample I.D. : SL90276/9
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

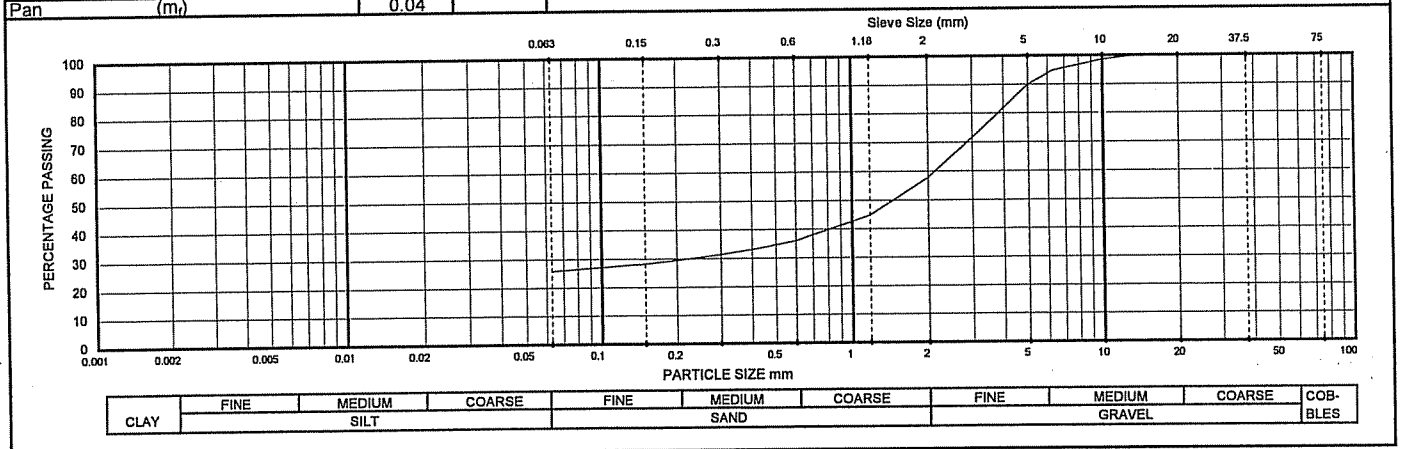
Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 736.78

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	736.78	
Riffled passing	(m_3)	20	736.78	
Wash passing	(m_4)	20	546.80	
		14	0.00	100
		10	11.19	98
		6.3	26.99	95
Passing	(m_5)	6.3	508.62	
Riffled passing	(m_6)	6.3	122.19	
		5.0	8.72	90
		3.35	25.58	75
		2.00	31.39	58
		1.18	22.99	45
		0.600	15.49	36
		0.425	4.62	33
		0.300	3.63	31
		0.212	2.83	30
		0.150	2.74	28
		0.063	4.12	26
Pan	(m_f)		0.04	

SUMMATION :

GRAVEL	%	:	42
SAND	%	:	32
SILT & CLAY	%	:	26



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 03 FEB 2010

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Test Report No. : 090562SL90276(53) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP227
Depth (m) From : 2.50
To : -
Sample origin : Fill
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 27-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, dark brown, very silty/clayey, very gravelly SAND.

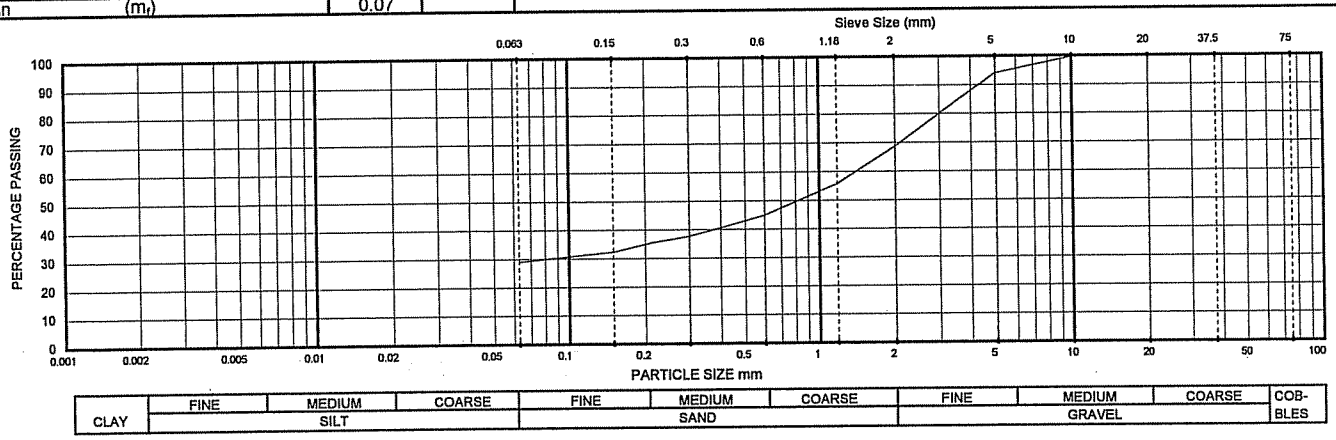
Laboratory sample I.D. : SL90276/10
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 585.11

	Sieve size mm	Mass retained (g)	Percent passing (%)
	100	0	100
	75	0	100
	63	0	100
	50	0	100
	37.5	0	100
	28	0	100
	20	0	100
Passing (m_2)	20	585.11	
Riffled passing (m_3)	20	585.11	
Wash passing (m_4)	20	416.04	
	14	0.00	100
	10	2.40	100
	6.3	21.08	96
Passing (m_5)	6.3	392.56	
Riffled passing (m_6)	6.3	149.38	
	5.0	4.30	94
	3.35	24.37	83
	2.00	32.11	69
	1.18	28.83	56
	0.600	24.12	45
	0.425	8.43	41
	0.300	7.74	38
	0.212	4.89	35
	0.150	7.20	32
	0.063	7.28	29
Pan (m_7)		0.07	

SUMMATION : GRAVEL % : 31
SAND % : 40
SILT & CLAY % : 29



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 03 FEB 2010

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HOKLAS 015

Test Report No. : 090562SL90276(54) Page 1 of 1

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP228
Depth (m) From : 0.50
To : -
Sample origin : Fill
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 27-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, orangish brown, slightly gravelly, sandy SILT/CLAY.

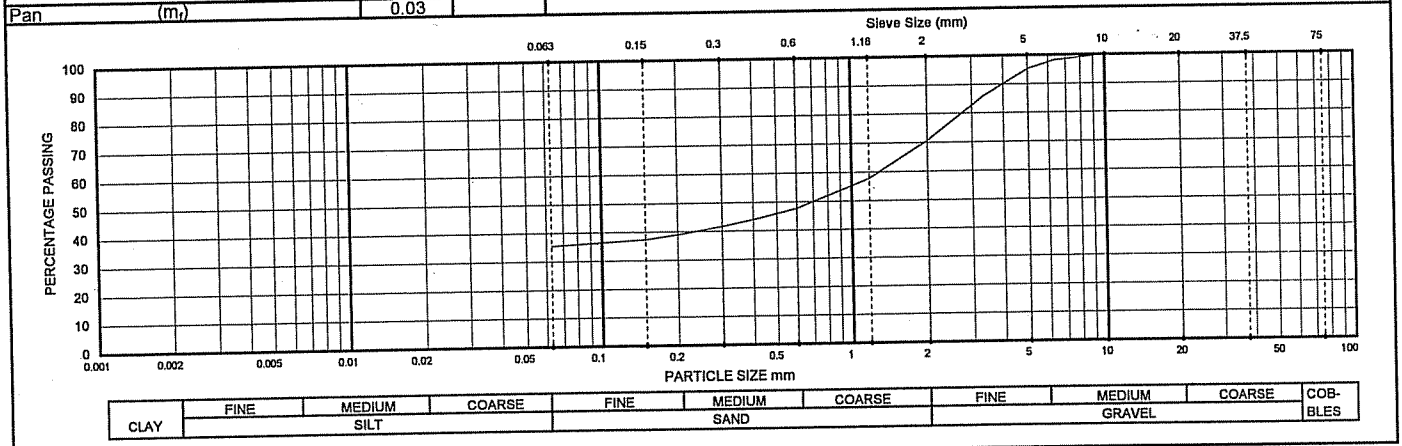
Laboratory sample I.D. : SL90276/11
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 673.43

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	673.43	
Riffled passing (m_3) 20	673.43	
Wash passing (m_4) 20	434.81	
14	0.00	100
10	0.00	100
6.3	12.55	98
Passing (m_5) 6.3	422.26	
Riffled passing (m_6) 6.3	109.69	
5.0	5.20	95
3.35	16.26	86
2.00	26.70	71
1.18	22.50	58
0.600	17.86	48
0.425	5.67	44
0.300	4.80	42
0.212	4.07	39
0.150	3.24	37
0.063	3.31	35
Pan (m_f)	0.03	

SUMMATION : GRAVEL % : 29
SAND % : 36
SILT & CLAY % : 35



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 03 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(55)

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP228
Depth (m) From : 1.50
To : -
Sample origin : Fill
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 27-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, orangish brown, very silty/clayey, sandy SILT/CLAY.

Laboratory sample I.D. : SL90276/12
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

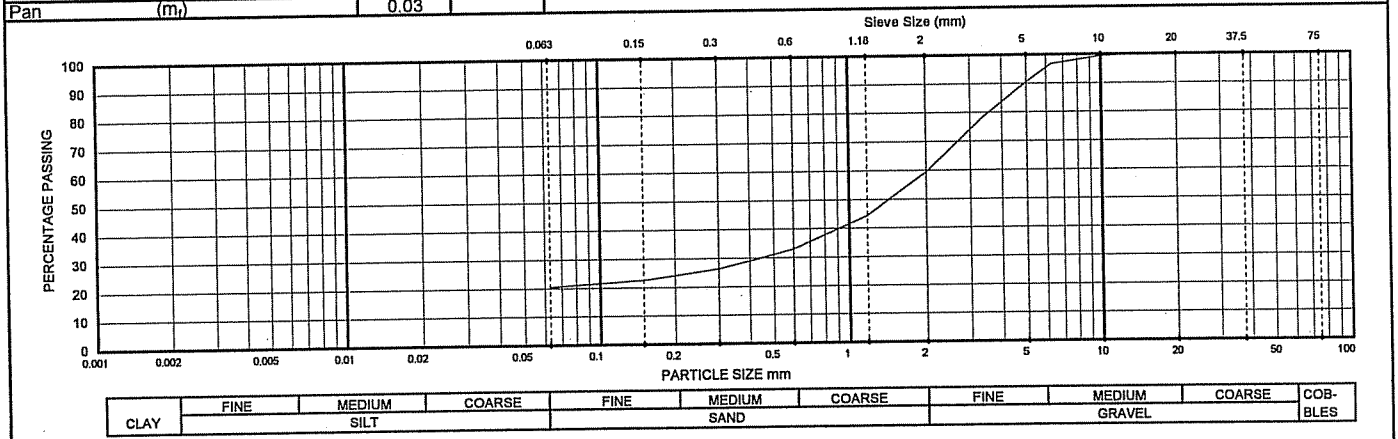
Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 676.44

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	676.44	
Riffled passing (m_3) 20	676.44	
Wash passing (m_4) 20	538.77	
14	0.00	100
10	4.45	99
6.3	17.90	97
Passing (m_5) 6.3	516.42	
Riffled passing (m_6) 6.3	119.97	
5.0	9.87	90
3.35	19.31	78
2.00	29.54	59
1.18	23.69	44
0.600	17.75	33
0.425	5.57	29
0.300	4.88	26
0.212	3.03	24
0.150	2.80	23
0.063	3.44	20
Pan (m_f)	0.03	

SUMMATION :

GRAVEL	%	:	41
SAND	%	:	39
SILT & CLAY	%	:	20



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(56) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP228
Depth (m) From : 2.50
To : -
Sample origin : Fill
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 27-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, orangish brown, very silty/clayey, very gravelly SAND.

Laboratory sample I.D. : SL90276/13
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

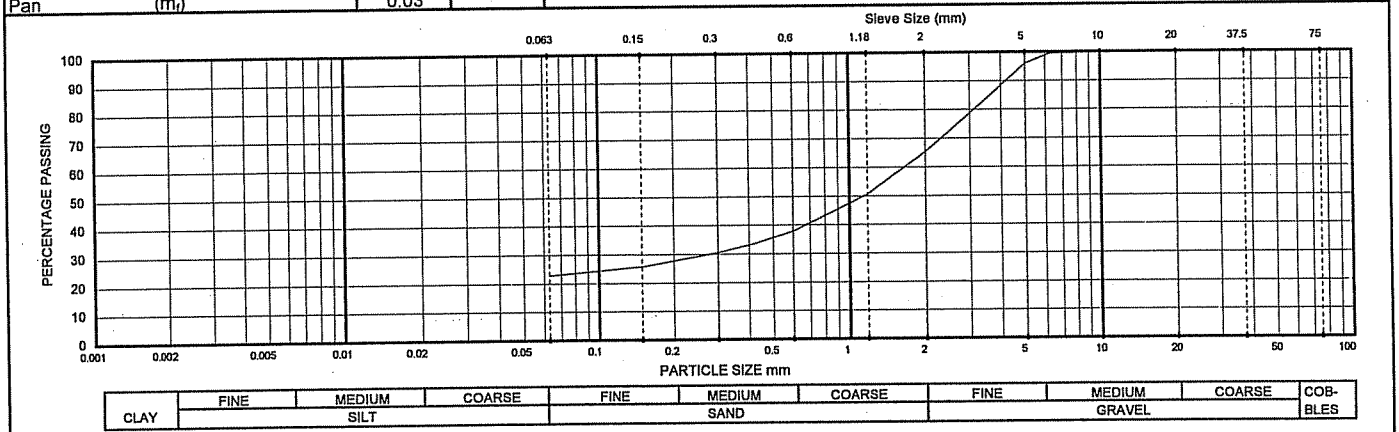
Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 685.12

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	685.12	
Riffled passing (m_3) 20	685.12	
Wash passing (m_4) 20	529.48	
14	0.00	100
10	1.84	100
6.3	2.08	99
Passing (m_5) 6.3	525.56	
Riffled passing (m_6) 6.3	129.19	
5.0	5.92	96
3.35	22.87	82
2.00	28.69	65
1.18	24.91	51
0.600	21.39	38
0.425	7.03	34
0.300	5.34	30
0.212	3.93	28
0.150	4.07	26
0.063	4.95	23
Pan (m_f)	0.03	

SUMMATION :

GRAVEL	%	:	35
SAND	%	:	42
SILT & CLAY	%	:	23



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(57) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP230
Depth (m) From : 0.50
To : -
Sample origin : Fill
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 27-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, dark brown, very silty/clayey, very gravelly SAND.

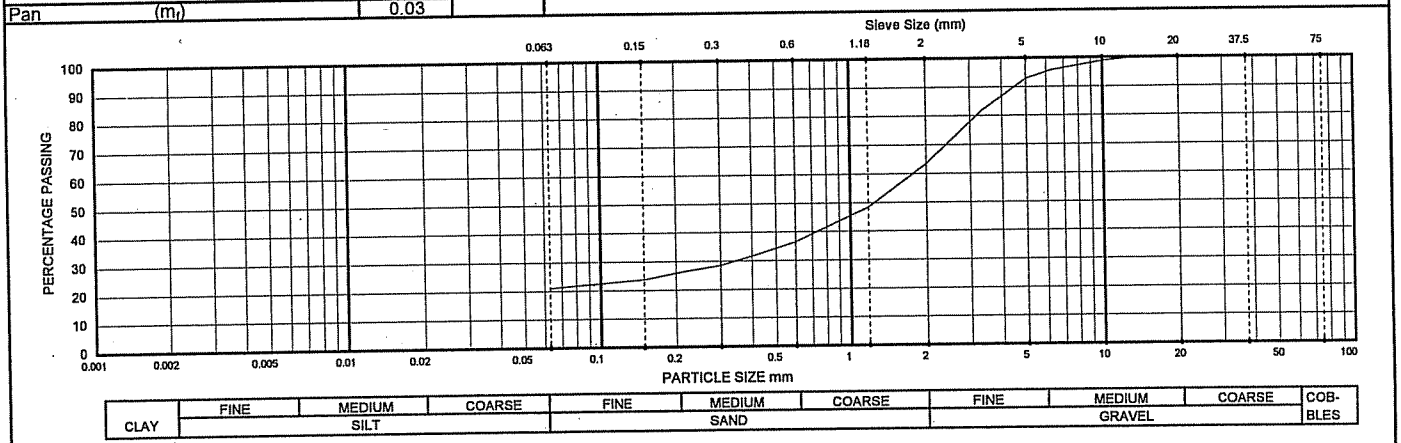
Laboratory sample I.D. : SL90276/14
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 593.83

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	593.83	
Riffled passing	(m_3)	20	593.83	
Wash passing	(m_4)	20	469.58	
		14	0.00	100
		10	7.17	99
		6.3	18.17	96
Passing	(m_5)	6.3	444.24	
Riffled passing	(m_6)	6.3	104.62	
		5.0	4.16	93
		3.35	15.19	82
		2.00	25.94	63
		1.18	20.99	48
		0.600	16.74	36
		0.425	5.80	32
		0.300	5.30	28
		0.212	3.10	26
		0.150	3.57	24
		0.063	3.71	21
Pan	(m_7)		0.03	

SUMMATION : GRAVEL % : 37
SAND % : 42
SILT & CLAY % : 21



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 03 FEB 2010

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Test Report No. : 090562SL90276(58) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP232
Depth (m) From : 0.50
To : -
Sample origin : Fill
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 27-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, dark brown, very silty/clayey, very sandy GRAVEL.

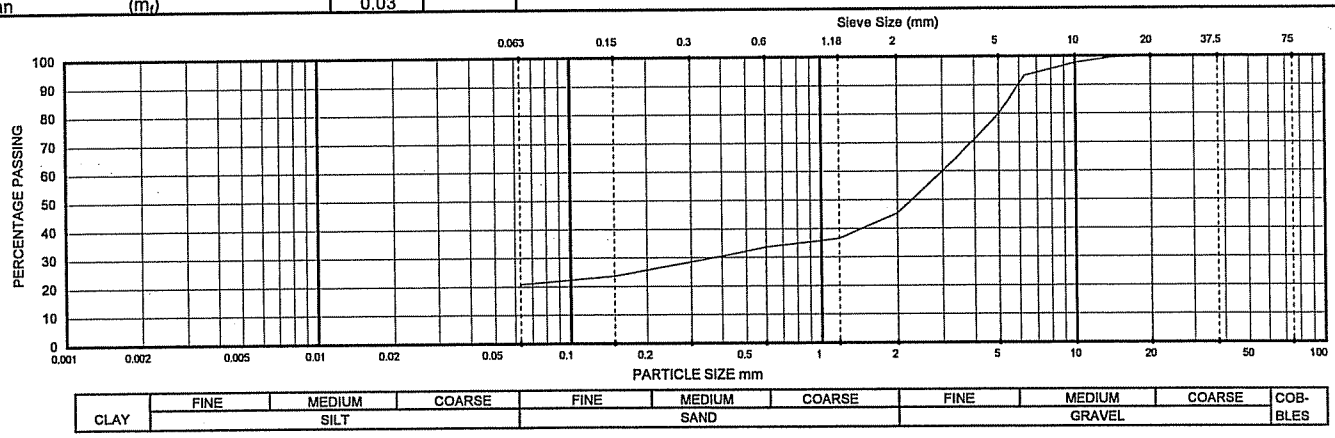
Laboratory sample I.D. : SL90276/16
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 764.91

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	764.91	
Riffled passing	(m_3)	20	764.91	
Wash passing	(m_4)	20	606.39	
		14	4.30	99
		10	13.48	98
		6.3	33.97	93
Passing	(m_5)	6.3	554.64	
Riffled passing	(m_6)	6.3	140.42	
		5.0	25.84	80
		3.35	30.72	64
		2.00	36.42	45
		1.18	17.08	36
		0.600	5.64	33
		0.425	5.23	31
		0.300	4.45	28
		0.212	4.58	26
		0.150	5.02	24
		0.063	5.35	21
Pan	(m_7)		0.03	

SUMMATION : GRAVEL % : 55
SAND % : 24
SILT & CLAY % : 21



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 03 FEB 2010

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Test Report No. : 090562SL90276(62) Page 1 of 1

HKAS HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP233
Depth (m) From : 0.50
To : -
Sample origin : Colluvium
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 27-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90276/20
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

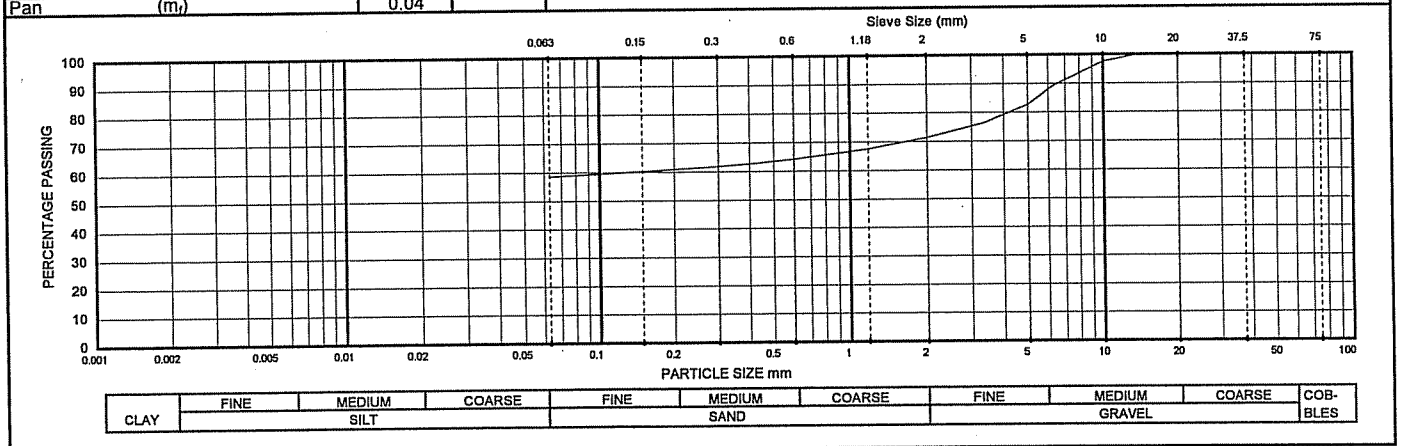
Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 981.91

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	981.91	
Riffled passing	(m_3)	20	981.91	
Wash passing	(m_4)	20	407.79	
		14	0.00	100
		10	24.07	98
		6.3	80.79	89
Passing	(m_5)	6.3	302.93	
Riffled passing	(m_6)	6.3	116.65	
		5.0	25.09	83
		3.35	24.11	76
		2.00	18.57	71
		1.18	14.81	67
		0.600	12.74	64
		0.425	4.91	63
		0.300	3.76	62
		0.212	3.06	61
		0.150	3.15	60
		0.063	6.37	58
Pan	(m_7)		0.04	

SUMMATION :

GRAVEL	%	:	29
SAND	%	:	13
SILT & CLAY	%	:	58



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(63) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP233
Depth (m) From : 1.50
To : -
Sample origin : Colluvium
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 27-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, yellowish brown, slightly gravelly/sandy SILT/CLAY.

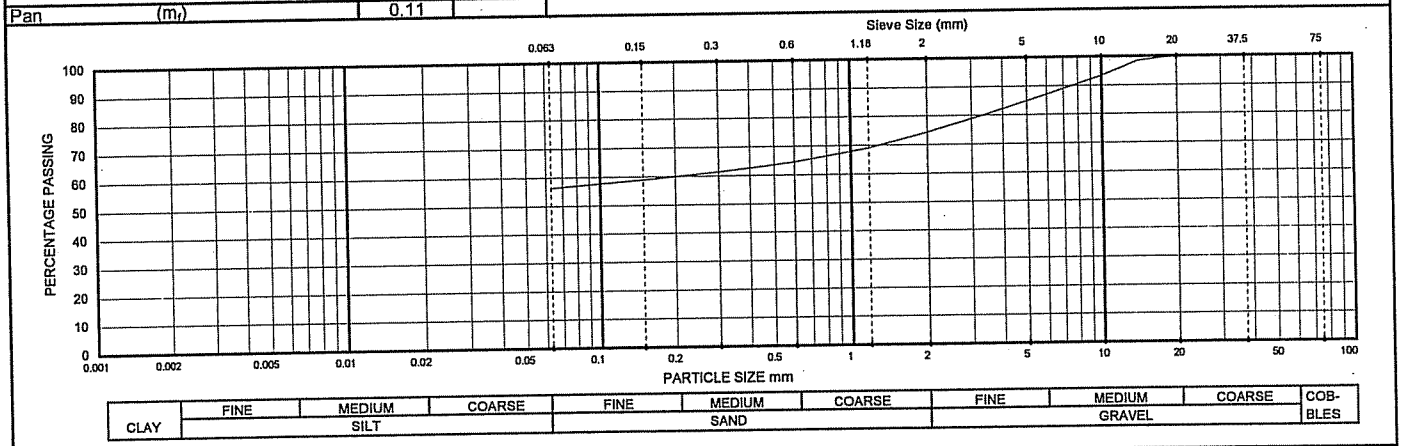
Laboratory sample I.D. : SL90276/21
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 821.90

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	821.90	
Riffled passing (m_3) 20	821.90	
Wash passing (m_4) 20	360.16	
14	12.91	98
10	41.71	93
6.3	47.49	88
Passing (m_5) 6.3	258.05	
Riffled passing (m_6) 6.3	128.50	
5.0	11.41	85
3.35	19.19	80
2.00	23.88	74
1.18	21.56	69
0.600	18.42	64
0.425	6.96	63
0.300	5.91	61
0.212	4.94	60
0.150	5.19	59
0.063	10.87	56
Pan (m_f)	0.11	

SUMMATION : GRAVEL % : 26
SAND % : 18
SILT & CLAY % : 56



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(64) Page 1 of 1

HKAS HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP234
Depth (m) From : 0.50
To : -
Sample origin : Colluvium
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 27-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, dark brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90276/22
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

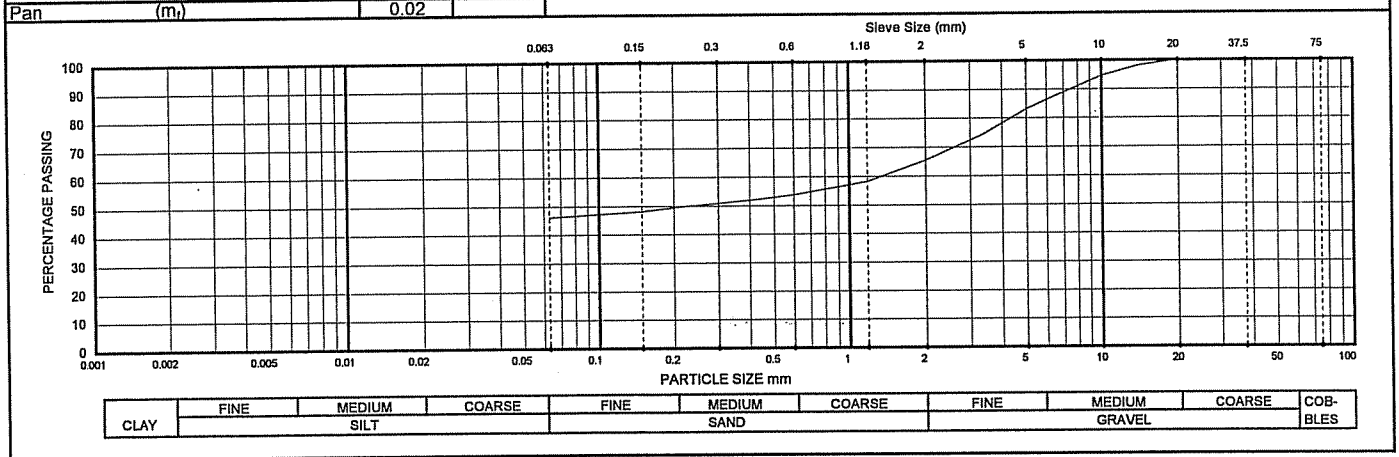
Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 795.69

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	795.69	
Riffled passing	(m_3)	20	795.69	
Wash passing	(m_4)	20	429.15	
		14	14.89	98
		10	27.92	95
		6.3	59.66	87
Passing	(m_5)	6.3	326.68	
Riffled passing	(m_6)	6.3	119.51	
		5.0	11.79	83
		3.35	25.76	74
		2.00	25.51	65
		1.18	21.33	58
		0.600	13.04	54
		0.425	4.45	52
		0.300	3.80	51
		0.212	3.20	50
		0.150	4.93	48
		0.063	5.68	46
Pan	(m_7)		0.02	

SUMMATION :

GRAVEL	%	:	35
SAND	%	:	19
SILT & CLAY	%	:	46



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(65) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP239
Depth (m) From : 0.50
To : -
Sample origin : Colluvium
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 27-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90276/23
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

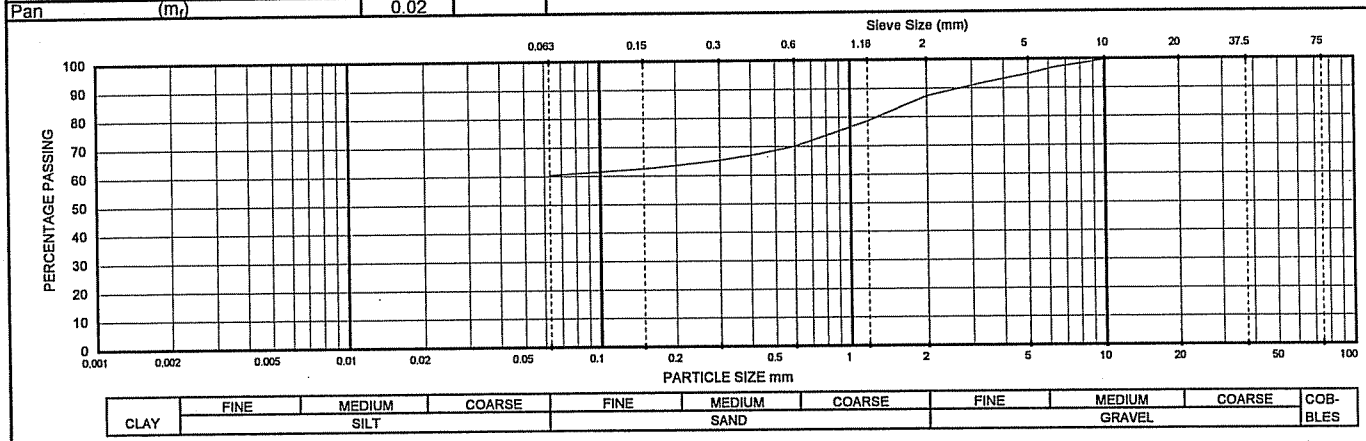
Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 715.03

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	715.03	
Riffled passing	(m_3)	20	715.03	
Wash passing	(m_4)	20	283.94	
		14	0.00	100
		10	3.42	100
		6.3	18.37	97
Passing	(m_5)	6.3	262.15	
Riffled passing	(m_6)	6.3	131.69	
		5.0	7.75	95
		3.35	10.87	92
		2.00	16.25	87
		1.18	30.66	79
		0.600	31.22	70
		0.425	9.80	67
		0.300	7.07	65
		0.212	5.27	64
		0.150	4.89	62
		0.063	7.89	60
Pan	(m_7)		0.02	

SUMMATION :

GRAVEL	%	:	13
SAND	%	:	27
SILT & CLAY	%	:	60



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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Test Report No. : 090562SL90276(66) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP240
Depth (m) From : 0.50
To : -
Sample origin : Colluvium
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 27-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, yellowish brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90276/24
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

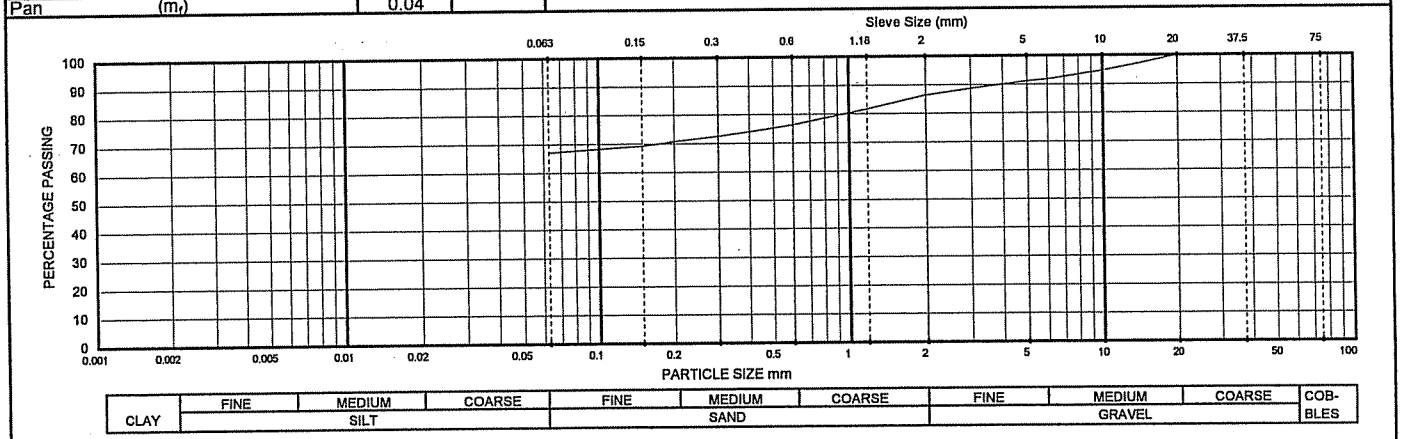
Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 542.06

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	542.06	
Riffled passing (m_3) 20	542.06	
Wash passing (m_4) 20	178.51	
14	15.80	97
10	13.09	95
6.3	14.37	92
Passing (m_5) 6.3	135.25	
Riffled passing (m_6) 6.3	135.25	
5.0	5.16	91
3.35	10.21	89
2.00	15.11	86
1.18	25.84	82
0.600	28.96	76
0.425	10.98	74
0.300	9.34	73
0.212	7.95	71
0.150	9.89	69
0.063	11.77	67
Pan (m_f)	0.04	

SUMMATION :

GRAVEL	%	:	14
SAND	%	:	19
SILT & CLAY	%	:	67



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 03 FEB 2010

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Test Report No. : 090562SL90276(67) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP240
Depth (m) From : 1.50
To : -
Sample origin : Colluvium
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 27-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, yellowish brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90276/25
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

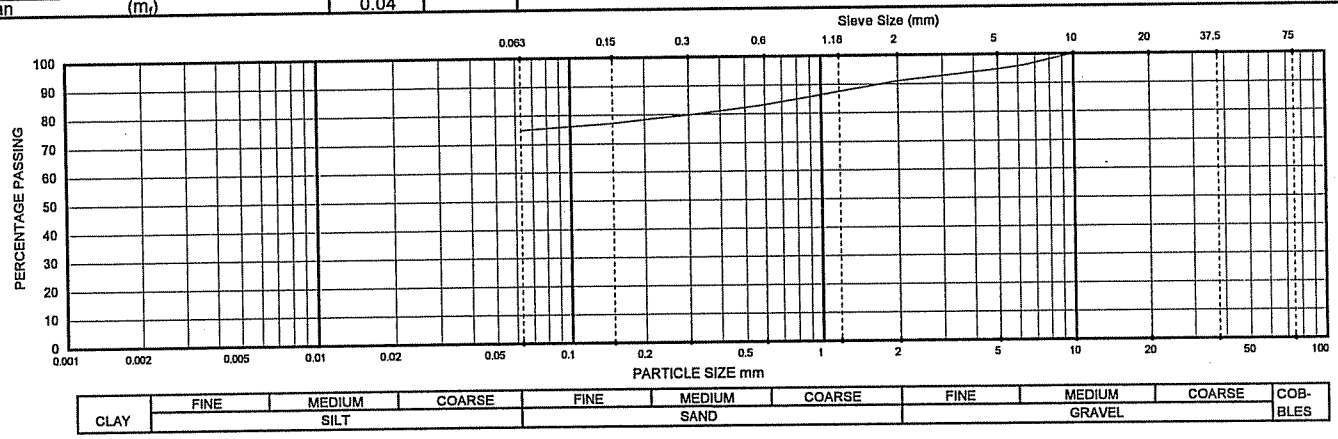
Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 629.73

	Sieve size mm	Mass retained (g)	Percent passing (%)
	100	0	100
	75	0	100
	63	0	100
	50	0	100
	37.5	0	100
	28	0	100
	20	0	100
Passing (m_2)	20	629.73	
Riffled passing (m_3)	20	629.73	
Wash passing (m_4)	20	157.61	
	14	0.00	100
	10	0.00	100
	6.3	24.94	96
Passing (m_5)	6.3	132.67	
Riffled passing (m_6)	6.3	132.67	
	5.0	7.78	95
	3.35	10.45	93
	2.00	13.98	91
	1.18	21.57	87
	0.600	27.68	83
	0.425	11.20	81
	0.300	9.66	80
	0.212	7.84	79
	0.150	9.33	77
	0.063	13.09	75
Pan (m_7)		0.04	

SUMMATION :

GRAVEL	%	:	9
SAND	%	:	16
SILT & CLAY	%	:	75



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager—GMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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FUGRO TECHNICAL SERVICES LIMITED

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MateriaLab

HOKLAS 015

Test Report No. : 090562SL90169(10) Page 1 of 1

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : 11

Project : Contract 912
Ground Investigation for South Island Line
(EAST)

Borehole No. : D222
Depth (m) From : 6.00
To : -
Sample origin : CDS
Description : -

Laboratory Information

Date sample received : 21-08-2009
Date test commenced : 11-09-2009
Date test completed : 18-09-2009
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, light brown, slightly gravelly, sandy SILT/CLAY.

Laboratory sample I.D. : SL90169/1
Specimen reference : D
Sample type : M
Location and Orientation within original sample : 6.00-6.20m, 6.80-7.00m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 239.700

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	239.700	
Riffled passing	(m_3)	20	239.700	
Wash passing	(m_4)	20	145.958	
		14	0.000	100
		10	0.000	100
		6.3	0.000	100
Passing	(m_5)	6.3	145.958	
Riffled passing	(m_6)	6.3	145.958	
		5.0	0.995	100
		3.35	8.085	96
		2.00	15.590	90
		1.18	21.786	81
		0.600	29.433	68
		0.425	14.278	62
		0.300	19.697	54
		0.212	13.235	49
		0.150	12.422	43
		0.063	10.398	39
Pan	(m_f)		0.027	

Test Result (Sedimentation Analysis)

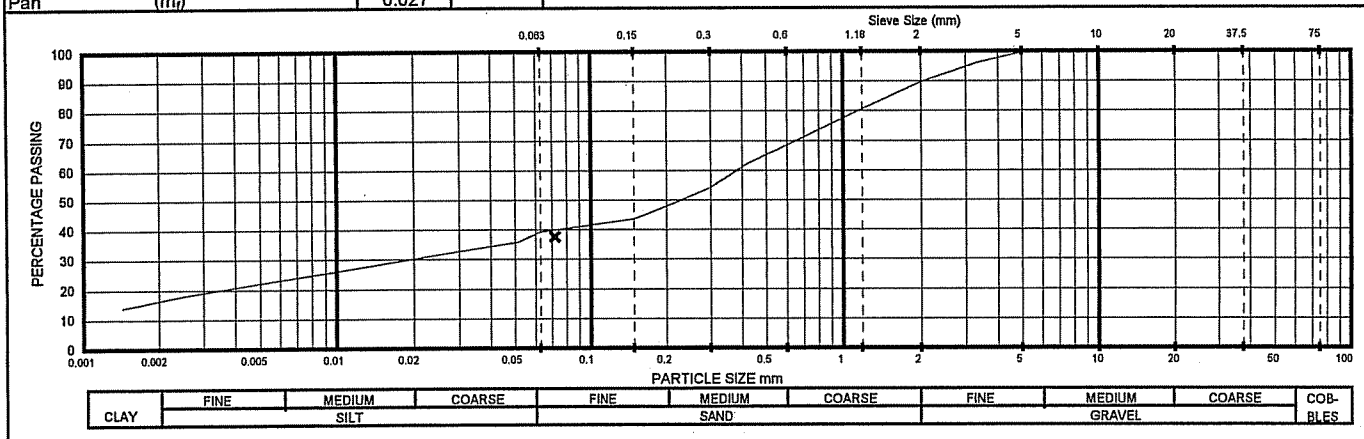
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 39.467
Mass retained on 63µm g : 23.624

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
17/09/2009	08:40	0.5	25.00	10.0	0.5	0.072	39	38
		1	25.00	9.5	0.5	0.051	37	36
		2	25.00	9.0	0.5	0.036	35	34
		4	25.00	8.5	0.5	0.026	33	32
		8	25.00	8.0	0.5	0.018	31	30
		30	25.00	7.0	0.5	0.0096	26	26
		120	25.00	6.0	0.5	0.0049	22	22
		480	25.00	5.0	0.5	0.0025	18	18
		1440	25.03	4.0	0.5	0.0014	14	14

Hydrometer reading in solution only (R_0')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	10
SAND	%	:	51
SILT	%	:	23
CLAY	%	:	16



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 27 OCT 2009

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MateriaLab

HOKLAS 015

Test Report No. : 090562SL90169(11) Page 1 of 1

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : 30

Project : Contract 912
Ground Investigation for South Island Line
(EAST)

Borehole No. : D222
Depth (m) From : 18.20
To : -
Sample origin : CDS
Description : -

Laboratory Information

Date sample received : 21-08-2009
Date test commenced : 11-09-2009
Date test completed : 18-09-2009
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, light yellowish brown, slightly gravelly, sandy SILT/CLAY.

Laboratory sample I.D. : SL90169/2
Specimen reference : D
Sample type : M
Location and Orientation within original sample : 18.30-18.60m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 450.52

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	450.52	
Riffled passing	(m_3)	20	450.52	
Wash passing	(m_4)	20	198.95	
		14	40.04	91
		10	12.76	88
		6.3	15.69	85
Passing	(m_5)	6.3	130.46	
Riffled passing	(m_6)	6.3	130.46	
		5.0	1.46	84
		3.35	6.69	83
		2.00	18.16	79
		1.18	23.45	74
		0.600	26.96	68
		0.425	11.36	65
		0.300	9.99	63
		0.212	8.61	61
		0.150	8.50	59
		0.063	14.94	56
Pan	(m_f)		0.30	

Test Result (Sedimentation Analysis)

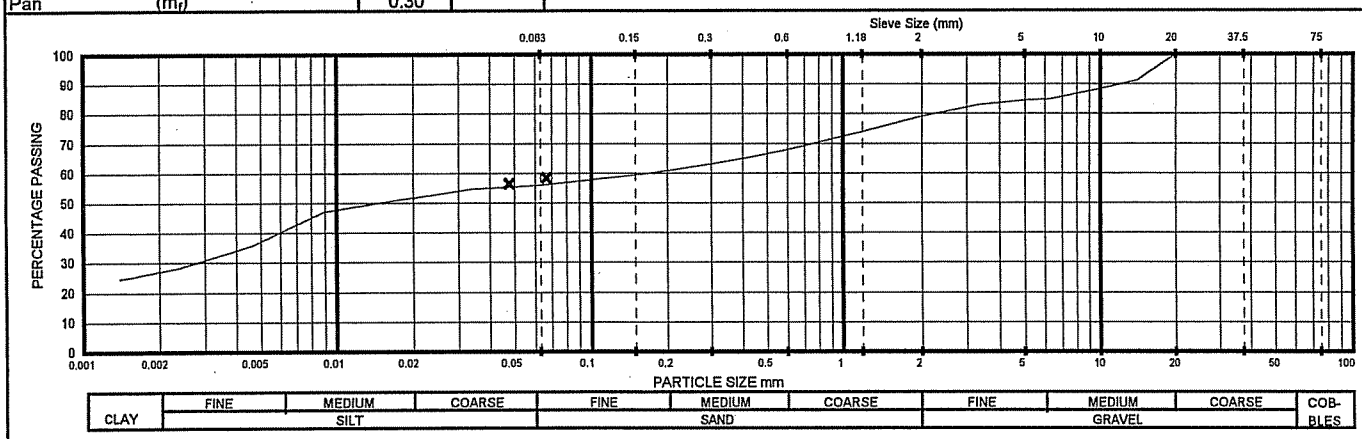
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 45.195
Mass retained on 63µm g : 21.337

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
17/09/2009	08:50	0.5	25.00	16.0	0.5	0.067	55	58
		1	25.00	15.5	0.5	0.048	53	56
		2	25.00	15.0	0.5	0.034	52	55
		4	25.00	14.5	0.5	0.024	50	53
		8	25.00	14.0	0.5	0.017	48	51
		30	25.00	13.0	0.5	0.0090	44	47
		120	25.00	10.0	0.5	0.0047	34	36
		480	25.00	8.0	0.5	0.0024	27	28
		1440	25.03	7.0	0.5	0.0014	23	24

Hydrometer reading in solution only (R_0')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	21
SAND	%	:	23
SILT	%	:	29
CLAY	%	:	27



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 27 Oct 2009

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MateriaLab

Test Report No. : 090562SL100076(33) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : D224
Depth (m) From : 5.50
To : -
Sample origin : FILL
Description : -

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 11-02-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, brown, slightly gravelly, sandy SILT/CLAY.

Laboratory sample I.D. : SL100076/1
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 5.60-6.30m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 299.54

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	299.54	
Riffled passing	(m_3)	20	299.54	
Wash passing	(m_4)	20	180.32	
		14	0.00	100
		10	0.00	100
		6.3	3.38	99
Passing	(m_5)	6.3	176.94	
Riffled passing	(m_6)	6.3	130.09	
		5.0	3.73	97
		3.35	17.24	89
		2.00	30.03	76
		1.18	22.78	65
		0.600	18.74	57
		0.425	6.59	54
		0.300	5.94	51
		0.212	5.61	49
		0.150	6.29	46
		0.063	13.14	40
Pan	(m_f)		0.11	

Test Result (Sedimentation Analysis)

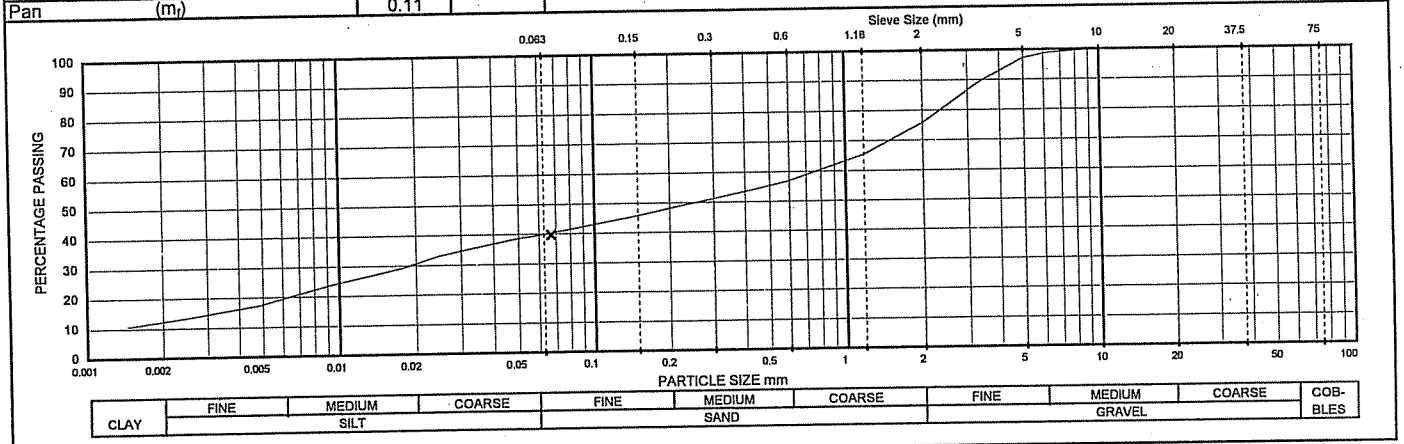
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 60.548
Mass retained on 63µm g : 36.322

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
08/02/2010	10:15	0.5	25.08	15.5	0.5	0.067	40	40
		1	25.08	15.0	0.5	0.048	38	38
		2	25.08	14.0	0.5	0.034	36	36
		4	25.08	13.0	0.5	0.025	33	33
		8	25.08	11.5	0.5	0.018	29	29
		30	25.08	9.5	0.5	0.0094	24	24
		120	25.08	7.0	0.5	0.0048	17	17
		480	25.08	5.5	0.5	0.0024	13	13
		1440	25.07	4.5	0.5	0.0014	11	11

Hydrometer reading in solution only (R_0')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	24
SAND	%	:	36
SILT	%	:	28
CLAY	%	:	12



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - GMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL100076(34)

HKAS HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : D224
Depth (m) From : 8.00
To : -
Sample origin : CDM
Description : -

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 09-02-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, brown, slightly gravelly, sandy SILT/CLAY.

Laboratory sample I.D. : SL100076/2
Specimen reference : D
Sample type : M
Location and Orientation within original sample : 8.00-8.40m, Full mix.

Test Result (Sieve Analysis)

		Sieve size mm	Mass retained (g)	Percent passing (%)
Initial dry mass (m_1) g :		259.87		
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	259.87	
Riffled passing	(m_3)	20	259.87	
Wash passing	(m_4)	20	159.03	
		14	0.00	100
		10	0.00	100
		6.3	0.28	100
Passing	(m_5)	6.3	158.75	
Riffled passing	(m_6)	6.3	117.68	
		5.0	0.31	100
		3.35	2.14	99
		2.00	13.82	91
		1.18	24.28	79
		0.600	26.37	65
		0.425	10.36	60
		0.300	10.21	54
		0.212	8.06	50
		0.150	7.89	46
		0.063	13.57	39
Pan	(m_7)		0.63	

Test Result (Sedimentation Analysis)

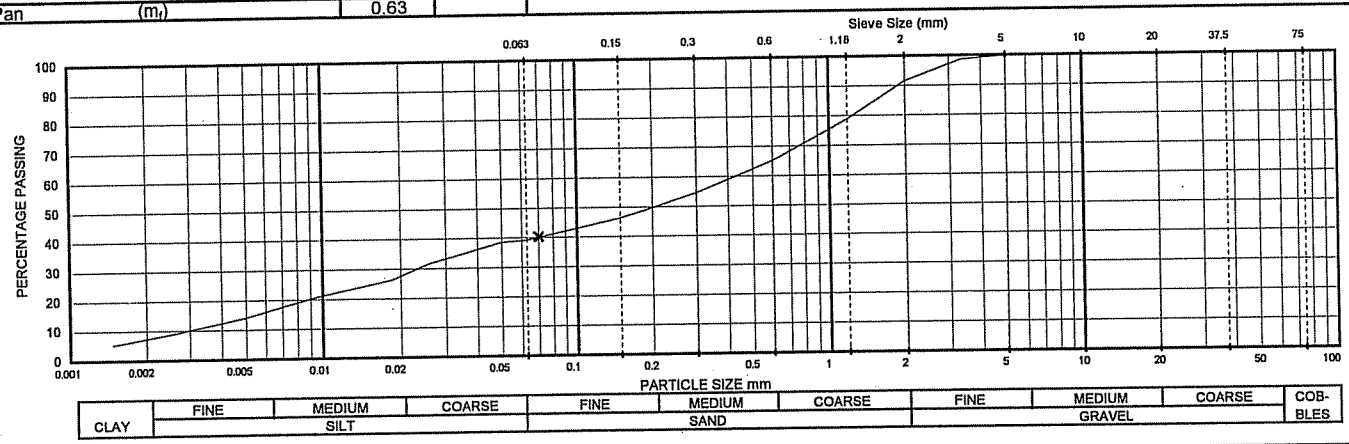
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 44.770
Mass retained on 63µm g : 26.794

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
08/02/2010	10:25	0.5	25.08	12.0	0.5	0.070	41	40
		1	25.08	11.5	0.5	0.050	39	38
		2	25.08	10.5	0.5	0.036	36	35
		4	25.08	9.5	0.5	0.026	32	32
		8	25.08	8.0	0.5	0.018	27	26
		30	25.08	6.5	0.5	0.0097	22	21
		120	25.08	4.5	0.5	0.0049	14	14
		480	25.08	3.0	0.5	0.0025	9	9
		1440	25.07	2.0	0.5	0.0015	5	5

Hydrometer reading in solution only (R_0')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	9
SAND	%	:	52
SILT	%	:	32
CLAY	%	:	7



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).
The mass of soil sample used for testing do not meet the specification requirement for the total mass of sample required (The total mass required for fine-grained soils, medium-grained soils & coarse-grained soils are 500g, 5kg and 30 kg respectively).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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MaterialLab

Test Report No. : 090562SL100076(35) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : D224
Depth (m) From : 18.00
To : -
Sample origin : CDM
Description : -

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 08-02-2010
Date test completed : 12-02-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, brown, slightly gravelly, sandy SILT/CLAY.

Laboratory sample I.D. : SL100076/3
Specimen reference : -
Sample type : M
Location and Orientation within original sample : 18.00-18.40m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 293.42

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	293.42	
Riffled passing	(m_3)	20	293.42	
Wash passing	(m_4)	20	164.05	
		14	0.00	100
		10	0.00	100
		6.3	0.00	100
Passing	(m_5)	6.3	164.05	
Riffled passing	(m_6)	6.3	123.82	
		5.0	1.27	99
		3.35	5.08	97
		2.00	15.42	90
		1.18	21.51	80
		0.600	22.53	70
		0.425	11.36	65
		0.300	12.15	60
		0.212	8.56	56
		0.150	9.18	52
		0.063	16.35	44
Pan	(m_f)		0.35	

Test Result (Sedimentation Analysis)

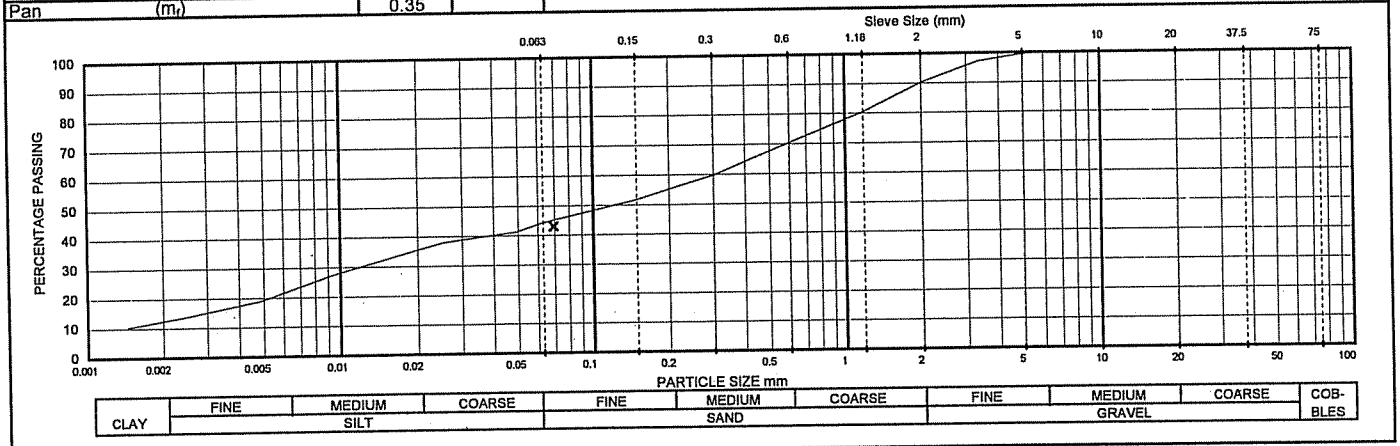
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 47.916
Mass retained on 63µm g : 27.249

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
11/02/2010	10:15	0.5	25.03	13.0	0.5	0.069	42	43
		1	25.03	12.5	0.5	0.049	40	41
		2	25.03	12.0	0.5	0.035	39	40
		4	25.03	11.5	0.5	0.025	37	38
		8	25.03	10.5	0.5	0.018	34	34
		30	25.03	8.5	0.5	0.0095	27	28
		120	25.03	6.0	0.5	0.0049	18	19
		480	25.03	4.5	0.5	0.0025	13	14
		1440	25.04	3.5	0.5	0.0014	10	10

Hydrometer reading in solution only (R_n')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	10
SAND	%	:	46
SILT	%	:	32
CLAY	%	:	12



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL100076(36) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : D225
Depth (m) From : 6.00
To : -
Sample origin : CDM
Description : -

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 11-02-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, brown, slightly gravelly, sandy SILT/CLAY.

Laboratory sample I.D. : SL100076/4
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 6.00-6.80m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 259.27

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	259.27	
Riffled passing	(m_3)	20	259.27	
Wash passing	(m_4)	20	160.66	
		14	0.00	100
		10	0.00	100
		6.3	0.49	100
Passing	(m_5)	6.3	160.17	
Riffled passing	(m_6)	6.3	117.87	
		5.0	0.84	99
		3.35	8.51	95
		2.00	17.94	86
		1.18	16.12	77
		0.600	19.20	67
		0.425	8.87	62
		0.300	11.04	57
		0.212	7.62	53
		0.150	9.73	47
		0.063	17.88	38
Pan	(m_7)		0.07	

Test Result (Sedimentation Analysis)

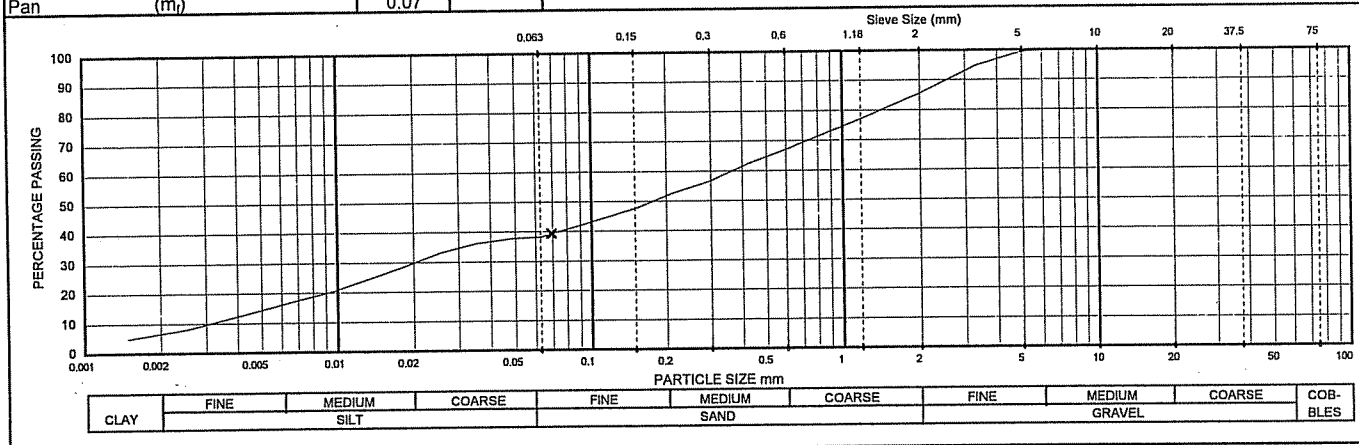
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 50.941
Mass retained on 63µm g : 31.501

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
08/02/2010	10:35	0.5	25.08	13.0	0.5	0.069	39	39
		1	25.08	12.5	0.5	0.049	38	38
		2	25.08	12.0	0.5	0.035	36	36
		4	25.08	11.0	0.5	0.025	33	33
		8	25.08	9.5	0.5	0.018	28	28
		30	25.08	7.0	0.5	0.0096	20	20
		120	25.08	5.0	0.5	0.0049	14	14
		480	25.08	3.0	0.5	0.0025	8	8
		1440	25.07	2.0	0.5	0.0015	5	5

Hydrometer reading in solution only (R_0')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	14
SAND	%	:	48
SILT	%	:	32
CLAY	%	:	6



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL100076(37) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : D225
Depth (m) From : 18.00
To : -
Sample origin : CDM
Description : -

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 11-02-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, yellowish brown, slightly gravelly, sandy SILT/CLAY.

Laboratory sample I.D. : SL100076/5
Specimen reference : D
Sample type : M
Location and Orientation within original sample : 18.00-18.40m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 281.40

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	281.40	
Riffled passing	(m_3)	20	281.40	
Wash passing	(m_4)	20	163.23	
		14	0.00	100
		10	5.28	98
		6.3	14.46	93
Passing	(m_5)	6.3	143.49	
Riffled passing	(m_6)	6.3	143.49	
		5.0	3.63	92
		3.35	7.08	89
		2.00	15.60	84
		1.18	21.84	76
		0.600	29.25	65
		0.425	14.02	60
		0.300	14.44	55
		0.212	10.63	52
		0.150	11.33	48
		0.063	15.43	42
Pan	(m_7)		0.24	

Test Result (Sedimentation Analysis)

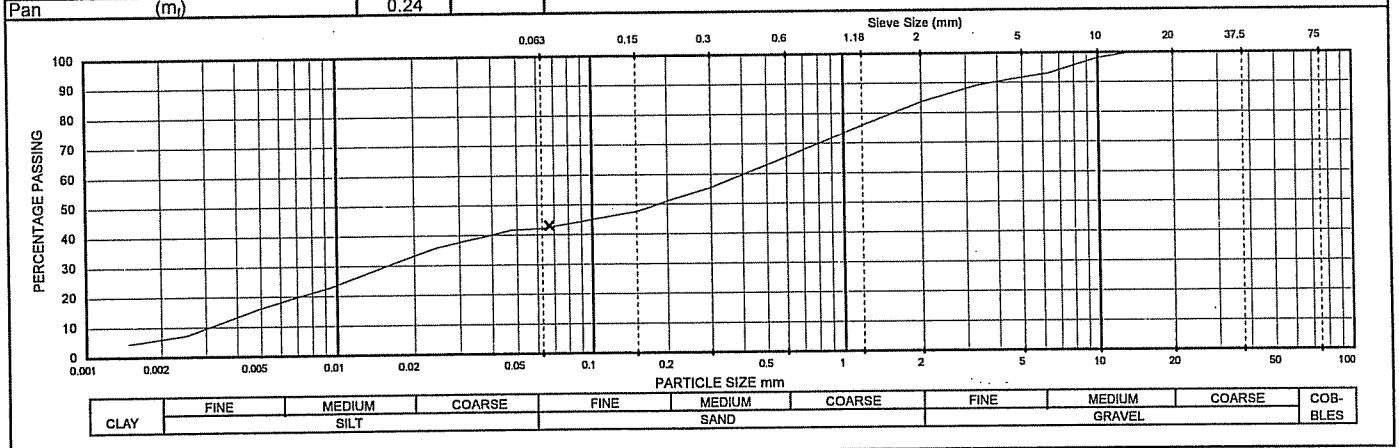
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 52.300
Mass retained on 63µm g : 28.782

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
08/02/2010	10:45	0.5	25.08	15.5	0.5	0.067	46	43
		1	25.08	15.0	0.5	0.048	45	42
		2	25.08	14.0	0.5	0.034	41	39
		4	25.08	13.0	0.5	0.025	38	36
		8	25.08	11.5	0.5	0.018	34	32
		30	25.08	8.5	0.5	0.0095	25	23
		120	25.08	6.0	0.5	0.0049	17	16
		480	25.08	3.0	0.5	0.0025	8	7
		1440	25.07	2.0	0.5	0.0015	5	4

Hydrometer reading in solution only (R_0')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	16
SAND	%	:	42
SILT	%	:	36
CLAY	%	:	6



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :
Point x(s) on graph indicate(s) modified hydrometer reading(s).
The mass of soil sample used for testing do not meet the specification requirement for the total mass of sample required (The total mass required for fine-grained soils, medium-grained soils & coarse-grained soils are 500g, 5kg and 30 kg respectively).

Certified by : ~~Paul Richard Cooper (Operations Manager - GMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL100076(38)

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : D226
Depth (m) From : 5.50
To : -
Sample origin : CDR
Description : -

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 11-02-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, brown, very silty/clayey, gravelly SAND.

Laboratory sample I.D. : SL100076/6
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 5.60-5.90m, 6.10-6.50m, Full mix.

Test Result (Sieve Analysis)

		Sieve size mm	Mass retained (g)	Percent passing (%)
Initial dry mass (m_1) g :	267.83			
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing (m_2)		20	267.83	
Riffled passing (m_3)		20	267.83	
Wash passing (m_4)		20	184.33	
		14	0.00	100
		10	0.00	100
		6.3	0.69	100
Passing (m_5)		6.3	183.64	
Riffled passing (m_6)		6.3	135.57	
		5.0	0.46	100
		3.35	3.93	98
		2.00	16.96	89
		1.18	27.91	75
		0.600	27.57	61
		0.425	11.16	55
		0.300	11.88	49
		0.212	9.53	44
		0.150	10.74	39
		0.063	14.80	31
Pan (m_7)			0.58	

Test Result (Sedimentation Analysis)

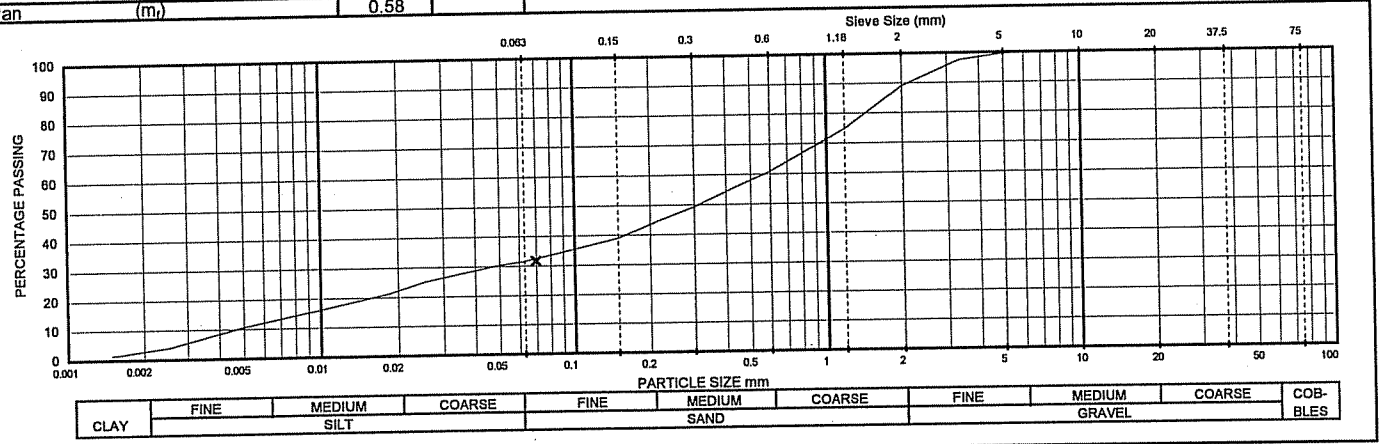
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 58.175
Mass retained on 63µm g : 39.017

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
08/02/2010	10:55	0.5	25.25	12.5	0.5	0.070	33	32
		1	25.25	12.0	0.5	0.050	32	30
		2	25.25	11.0	0.5	0.036	29	28
		4	25.25	10.0	0.5	0.025	26	25
		8	25.25	8.5	0.5	0.018	22	21
		30	25.25	6.5	0.5	0.0097	17	16
		120	25.25	4.5	0.5	0.0049	11	11
		480	25.25	2.0	0.5	0.0025	4	4
		1440	25.26	1.0	0.5	0.0015	1	1

Hydrometer reading in solution only (R_n')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	11
SAND	%	:	58
SILT	%	:	28
CLAY	%	:	3



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 25 FEB 2010

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MateriaLab

HOKLAS 015

Test Report No. : 090562SL100076(39) Page 1 of 1

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : D226
Depth (m) From : 19.50
To : -
Sample origin : CDR
Description : -

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 08-02-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, yellowish brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL100076/7
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 19.50-19.90m, 20.10-20.50m, Full mix.

Test Result (Sieve Analysis)

		Sieve size mm	Mass retained (g)	Percent passing (%)
Initial dry mass (m_1) g :	291.37			
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing (m_2)		20	291.37	
Riffled passing (m_3)		20	291.37	
Wash passing (m_4)		20	187.12	
		14	0.00	100
		10	0.00	100
		6.3	2.56	99
Passing (m_5)		6.3	184.56	
Riffled passing (m_6)		6.3	146.06	
		5.0	0.80	99
		3.35	4.78	97
		2.00	16.92	89
		1.18	29.19	77
		0.600	33.47	62
		0.425	13.39	56
		0.300	12.47	51
		0.212	9.88	47
		0.150	9.94	42
		0.063	14.92	36
Pan (m_f)			0.27	

Test Result (Sedimentation Analysis)

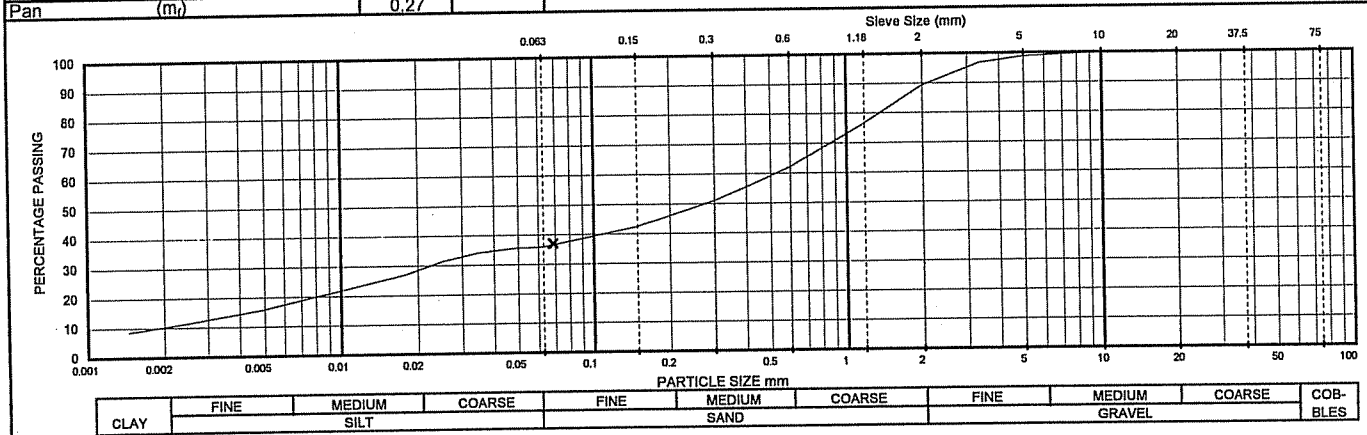
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 54.214
Mass retained on 63µm g : 33.935

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
08/02/2010	11:05	0.5	25.25	13.5	0.5	0.069	39	37
		1	25.25	13.0	0.5	0.049	37	36
		2	25.25	12.5	0.5	0.035	36	34
		4	25.25	11.5	0.5	0.025	33	31
		8	25.25	10.0	0.5	0.018	28	27
		30	25.25	8.0	0.5	0.0095	22	21
		120	25.25	6.0	0.5	0.0049	16	16
		480	25.25	4.5	0.5	0.0025	12	11
		1440	25.26	3.5	0.5	0.0014	9	9

Hydrometer reading in solution only (R_n')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	11
SAND	%	:	53
SILT	%	:	26
CLAY	%	:	10



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL100076(40)

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : D227
Depth (m) From : 2.00
To : -
Sample origin : FILL
Description : -

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 11-02-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, brownish grey, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL100076/8
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 2.10-2.40m, 2.60-3.00m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 291.65

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	291.65	
Riffled passing (m_3) 20	291.65	
Wash passing (m_4) 20	73.131	
14	0.000	100
10	0.000	100
6.3	3.116	99
Passing (m_5) 6.3	70.015	
Riffled passing (m_6) 6.3	70.015	
5.0	0.238	99
3.35	0.887	99
2.00	0.855	98
1.18	1.855	98
0.600	5.043	96
0.425	3.728	95
0.300	5.086	93
0.212	6.038	91
0.150	10.154	87
0.063	36.116	75
Pan (m_7)	0.009	

Test Result (Sedimentation Analysis)

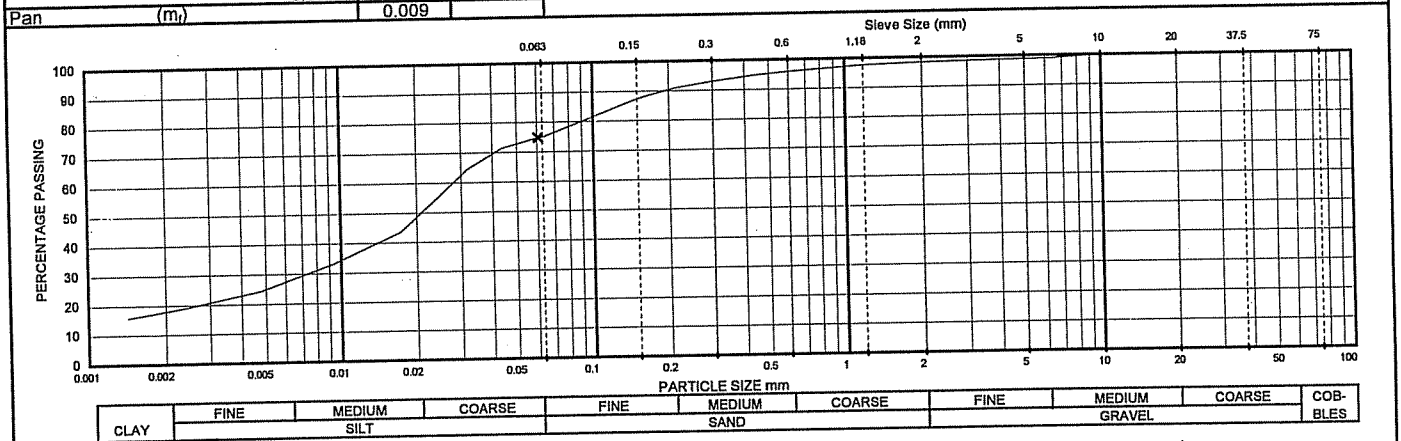
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 47.015
Mass retained on 63µm g : 12.420

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
08/02/2010	11:15	0.5	25.25	22.0	0.5	0.061	73	75
		1	25.25	21.0	0.5	0.044	70	71
		2	25.25	19.0	0.5	0.032	63	64
		4	25.25	16.0	0.5	0.024	53	54
		8	25.25	13.0	0.5	0.017	43	43
		30	25.25	10.0	0.5	0.0093	32	33
		120	25.25	7.5	0.5	0.0048	24	24
		480	25.25	6.0	0.5	0.0024	19	19
		1440	25.26	5.0	0.5	0.0014	15	16

Hydrometer reading in solution only (R_n')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	% :	2
SAND	% :	23
SILT	% :	57
CLAY	% :	18



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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HKAS HOKLAS 015

Test Report No. : 090562SL100076(41)

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : D227
Depth (m) From : 6.10
To : -
Sample origin : ALL
Description : -

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 11-02-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, light grey, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL100076/9
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 6.10-6.50m, 6.70-7.10m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 306.82

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	306.82	
Riffled passing (m_3) 20	306.82	
Wash passing (m_4) 20	110.90	
14	0.000	100
10	0.000	100
6.3	0.000	100
Passing (m_5) 6.3	110.90	
Riffled passing (m_6) 6.3	110.90	
5.0	0.690	100
3.35	3.270	99
2.00	6.440	97
1.18	9.930	93
0.600	15.950	88
0.425	7.350	86
0.300	7.430	83
0.212	7.450	81
0.150	11.500	77
0.063	40.840	64
Pan (m_7)	0.050	

Test Result (Sedimentation Analysis)

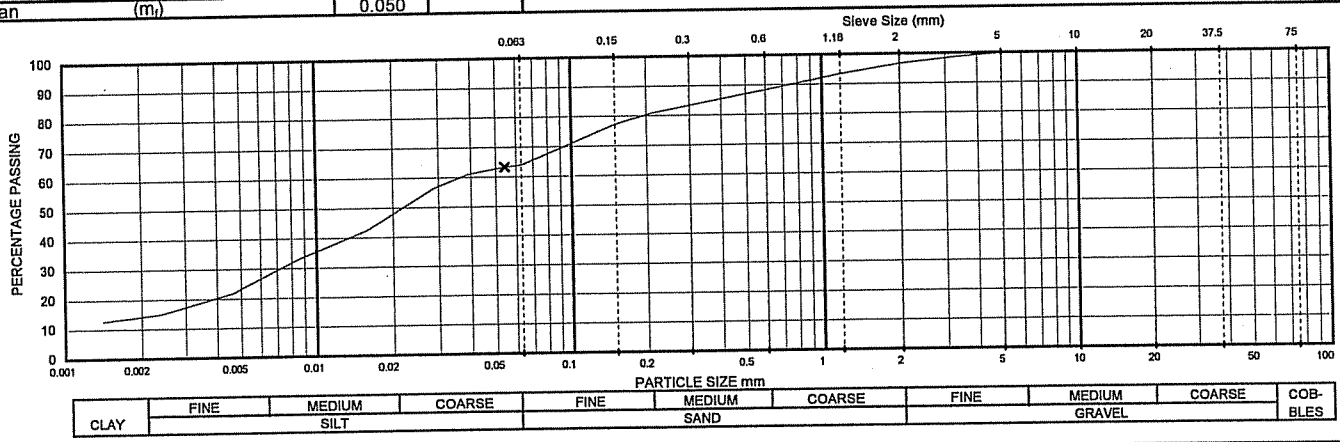
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 69.706
Mass retained on 63µm g : 25.103

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
08/02/2010	11:25	0.5	25.25	28.0	0.5	0.054	63	63
		1	25.25	27.0	0.5	0.039	61	61
		2	25.25	25.0	0.5	0.029	56	56
		4	25.25	22.0	0.5	0.021	50	49
		8	25.25	19.0	0.5	0.016	43	43
		30	25.25	15.0	0.5	0.0087	33	33
		120	25.25	10.0	0.5	0.0046	22	22
		480	25.25	7.0	0.5	0.0024	15	15
		1440	25.26	6.0	0.5	0.0014	13	13

Hydrometer reading in solution only (R_n')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	3
SAND	%	:	33
SILT	%	:	50
CLAY	%	:	14



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager – CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 25 FEB 2010

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MateriaLab

HOKLAS 015

Test Report No. : 090562SL100076(42) Page 1 of 1

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : D227
Depth (m) From : 8.10
To : -
Sample origin : HDT
Description : -

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 11-02-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, greyish brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL100076/10
Specimen reference : D
Sample type : M
Location and Orientation within original sample : 8.10-8.50m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 336.08

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	336.08	
Riffled passing (m_3) 20	336.08	
Wash passing (m_4) 20	107.46	
14	0.00	100
10	2.99	99
6.3	2.68	98
Passing (m_5) 6.3	101.79	
Riffled passing (m_6) 6.3	101.79	
5.0	0.57	98
3.35	3.38	97
2.00	4.71	96
1.18	10.12	93
0.600	17.06	88
0.425	7.94	85
0.300	7.91	83
0.212	6.46	81
0.150	8.45	78
0.063	34.88	68
Pan (m_7)	0.27	

Test Result (Sedimentation Analysis)

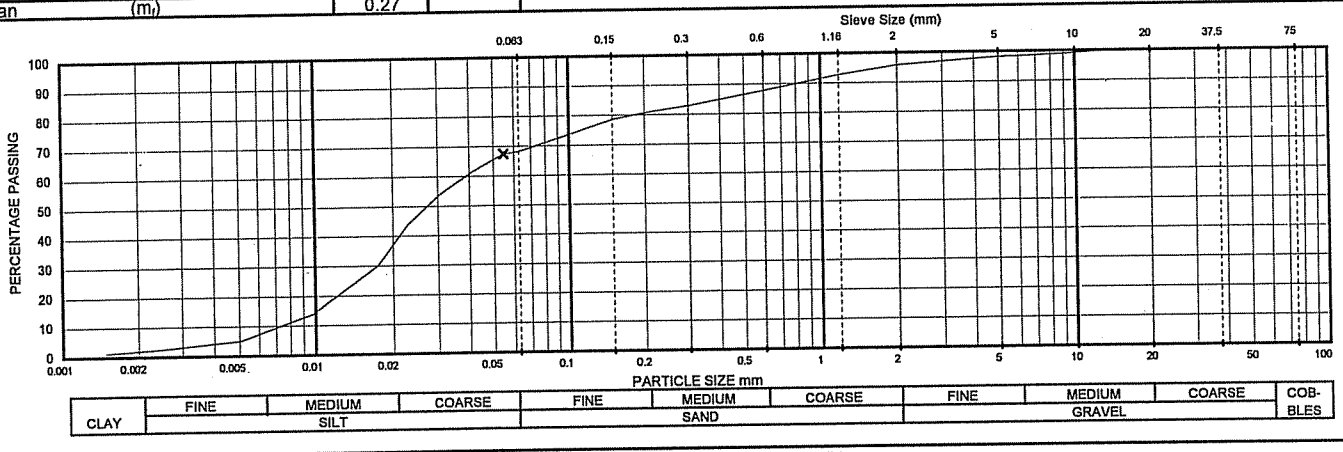
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 63.860
Mass retained on 63μm g : 20.057

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
08/02/2010	11:35	0.5	25.25	27.5	0.5	0.055	68	67
		1	25.25	25.0	0.5	0.041	62	61
		2	25.25	22.0	0.5	0.030	54	54
		4	25.25	18.0	0.5	0.023	44	44
		8	25.25	12.5	0.5	0.017	30	30
		30	25.25	6.0	0.5	0.0097	14	14
		120	25.25	2.5	0.5	0.0050	5	5
		480	25.25	1.5	0.5	0.0025	3	2
		1440	25.26	1.0	0.5	0.0015	1	1

Hydrometer reading in solution only (R_0')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	4
SAND	%	:	28
SILT	%	:	66
CLAY	%	:	2



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL100076(43) Page 1 of 1

HKAS HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : D227
Depth (m) From : 11.30
To : -
Sample origin : CDT
Description : -

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 08-02-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, light grey, slightly sandy SILT/CLAY.

Laboratory sample I.D. : SL100076/11
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 11.30-11.70m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 322.60

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	322.60	
Riffled passing (m_3) 20	322.60	
Wash passing (m_4) 20	77.122	
14	0.000	100
10	0.000	100
6.3	0.000	100
Passing (m_5) 6.3	77.122	
Riffled passing (m_6) 6.3	77.122	
5.0	0.000	100
3.35	0.056	100
2.00	0.526	100
1.18	1.482	99
0.600	6.824	97
0.425	7.030	95
0.300	13.307	91
0.212	11.438	87
0.150	12.307	84
0.063	24.070	76
Pan (m_7)	0.066	

Test Result (Sedimentation Analysis)

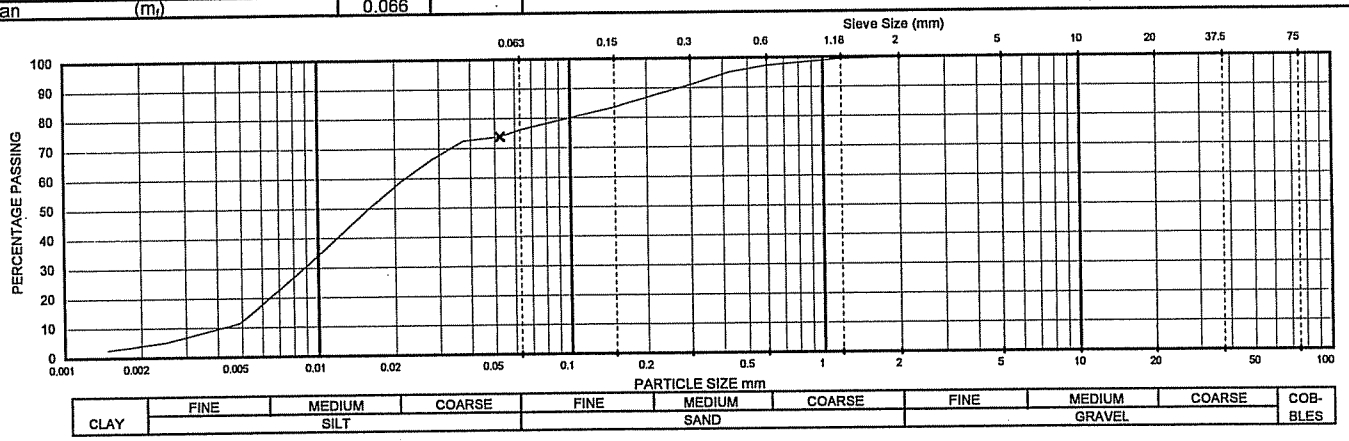
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 63.538
Mass retained on 63μm g : 15.524

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
08/02/2010	11:45	0.5	25.25	29.5	0.5	0.052	73	74
		1	25.25	29.0	0.5	0.038	72	73
		2	25.25	26.5	0.5	0.028	66	66
		4	25.25	23.5	0.5	0.021	58	59
		8	25.25	20.0	0.5	0.016	49	50
		30	25.25	12.5	0.5	0.0090	30	31
		120	25.25	5.0	0.5	0.0049	11	11
		480	25.25	2.5	0.5	0.0025	5	5
		1440	25.26	1.5	0.5	0.0015	3	3

Hydrometer reading in solution only (R_0')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	0
SAND	%	:	24
SILT	%	:	72
CLAY	%	:	4



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).
The mass of soil sample used for testing do not meet the specification requirement for the total mass of sample required
(The total mass required for fine-grained soils, medium-grained soils & coarse-grained soils are 500g, 5kg and 30 kg respectively).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL100076(49)

HKAS HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : D228
Depth (m) From : 3.00
To : -
Sample origin : FILL
Description : -

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 08-02-2010
Date test completed : 12-02-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, brownish grey, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL100076/17
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 3.00-3.40m, 3.60-4.00m, Full mix.

Test Result (Sieve Analysis)

		Sieve size mm	Mass retained (g)	Percent passing (%)
Initial dry mass (m_1) g :		333.98		
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing (m_2)		20	333.98	
Riffled passing (m_3)		20	333.98	
Wash passing (m_4)		20	155.26	
		14	0.00	100
		10	18.14	95
		6.3	11.51	91
Passing (m_5)		6.3	125.61	
Riffled passing (m_6)		6.3	125.61	
		5.0	8.02	89
		3.35	7.50	86
		2.00	12.82	83
		1.18	16.61	78
		0.600	22.84	71
		0.425	9.60	68
		0.300	10.26	65
		0.212	8.70	62
		0.150	8.36	60
		0.063	20.61	54
Pan (m_7)			0.23	

Test Result (Sedimentation Analysis)

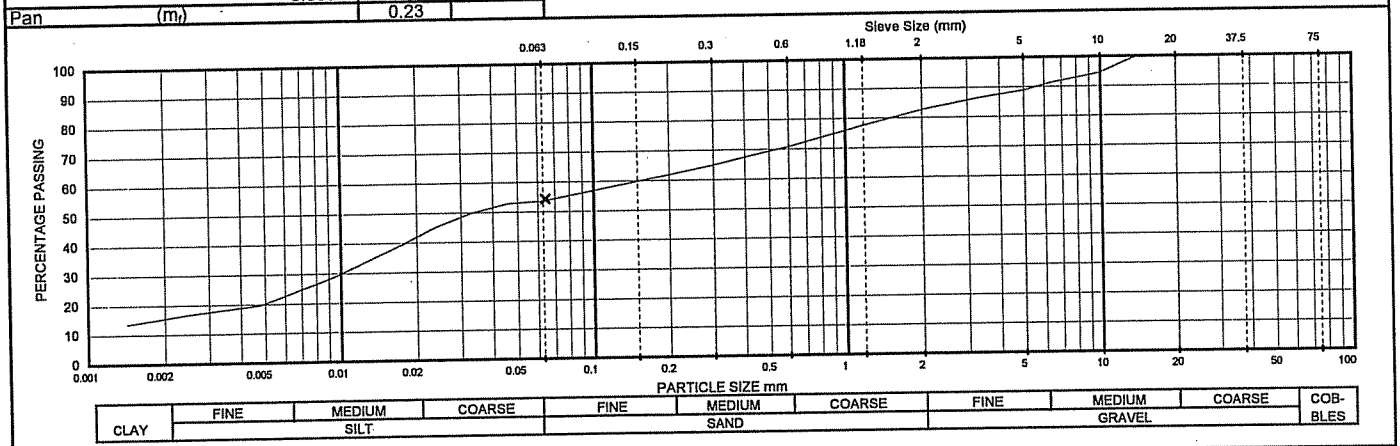
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 50.077
Mass retained on 63µm g : 21.516

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
11/02/2010	09:55	0.5	25.03	18.5	0.5	0.064	58	54
		1	25.03	18.0	0.5	0.046	56	53
		2	25.03	17.0	0.5	0.033	53	50
		4	25.03	15.5	0.5	0.024	48	45
		8	25.03	13.5	0.5	0.017	42	39
		30	25.03	10.0	0.5	0.0093	30	29
		120	25.03	7.0	0.5	0.0048	21	20
		480	25.03	6.0	0.5	0.0024	18	17
		1440	25.04	5.0	0.5	0.0014	14	14

Hydrometer reading in solution only (R_0')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	17
SAND	%	:	29
SILT	%	:	39
CLAY	%	:	15



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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Test Report No. : 090562SL100076(44)

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

HOKLAS 015

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : D231
Depth (m) From : 5.50
To : -
Sample origin : CDM
Description : -

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 11-02-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, yellowish brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL100076/12
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 5.60-5.90m, 6.10-6.50m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 257.95

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	257.95	
Riffled passing	(m_3)	20	257.95	
Wash passing	(m_4)	20	165.72	
		14	0.00	100
		10	0.00	100
		6.3	0.24	100
Passing	(m_5)	6.3	165.48	
Riffled passing	(m_6)	6.3	148.15	
		5.0	0.14	100
		3.35	4.78	98
		2.00	14.61	91
		1.18	25.53	80
		0.600	31.07	67
		0.425	14.01	61
		0.300	13.46	55
		0.212	11.52	50
		0.150	14.08	44
		0.063	18.62	36
Pan	(m_f)		0.32	

Test Result (Sedimentation Analysis)

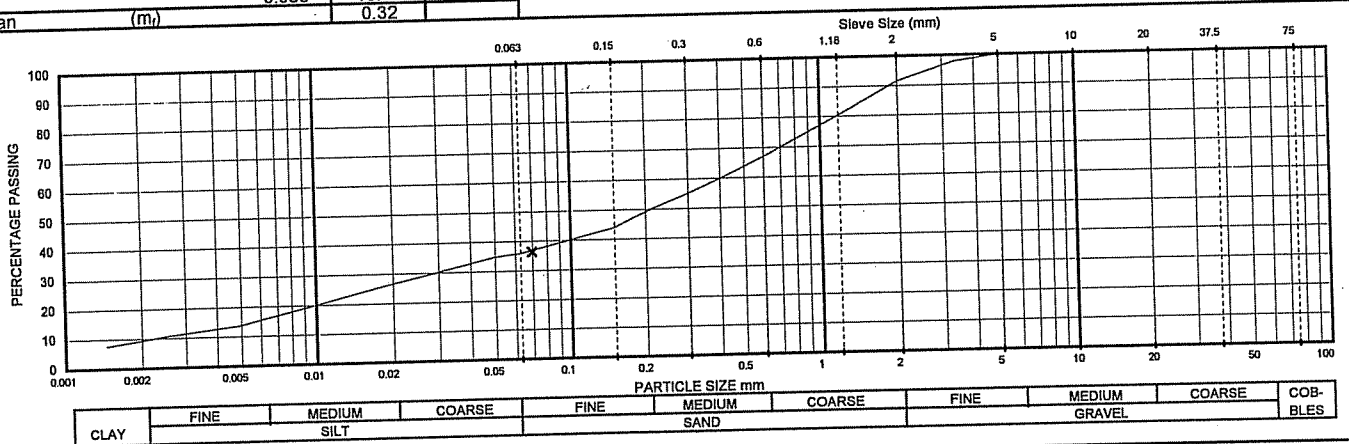
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 49.029
Mass retained on 63µm g : 29.966

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
08/02/2010	11:55	0.5	25.25	12.5	0.5	0.070	39	36
		1	25.25	12.0	0.5	0.050	38	35
		2	25.25	11.0	0.5	0.036	34	32
		4	25.25	10.0	0.5	0.025	31	29
		8	25.25	9.0	0.5	0.018	28	26
		30	25.25	7.0	0.5	0.0096	21	20
		120	25.25	5.0	0.5	0.0049	15	14
		480	25.25	4.0	0.5	0.0025	11	11
		1440	25.26	3.0	0.5	0.0014	8	8

Hydrometer reading in solution only (R_n')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	9
SAND	%	:	55
SILT	%	:	27
CLAY	%	:	9



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 25 FEB 2010

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MateriaLab

HOKLAS 015

Test Report No. : 090562SL100076(45)

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -
Borehole No. : D231
Depth (m) From : 9.50
To : -
Sample origin : CDM
Description : -

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 08-02-2010
Date test completed : 12-02-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, yellowish brown, slightly gravelly, sandy SILT/CLAY.

Laboratory sample I.D. : SL100076/13
Specimen reference : D
Sample type : M
Location and Orientation within original sample : 9.50-9.90m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 286.91

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	286.91	
Riffled passing (m_3) 20	286.91	
Wash passing (m_4) 20	164.50	
14	0.00	100
10	0.00	100
6.3	0.00	100
Passing (m_5) 6.3	164.50	
Riffled passing (m_6) 6.3	122.04	
5.0	0.00	100
3.35	3.88	98
2.00	13.62	92
1.18	23.99	81
0.600	26.81	68
0.425	9.14	64
0.300	9.82	59
0.212	7.91	55
0.150	9.98	51
0.063	16.58	43
Pan (m_7)	0.28	

Test Result (Sedimentation Analysis)

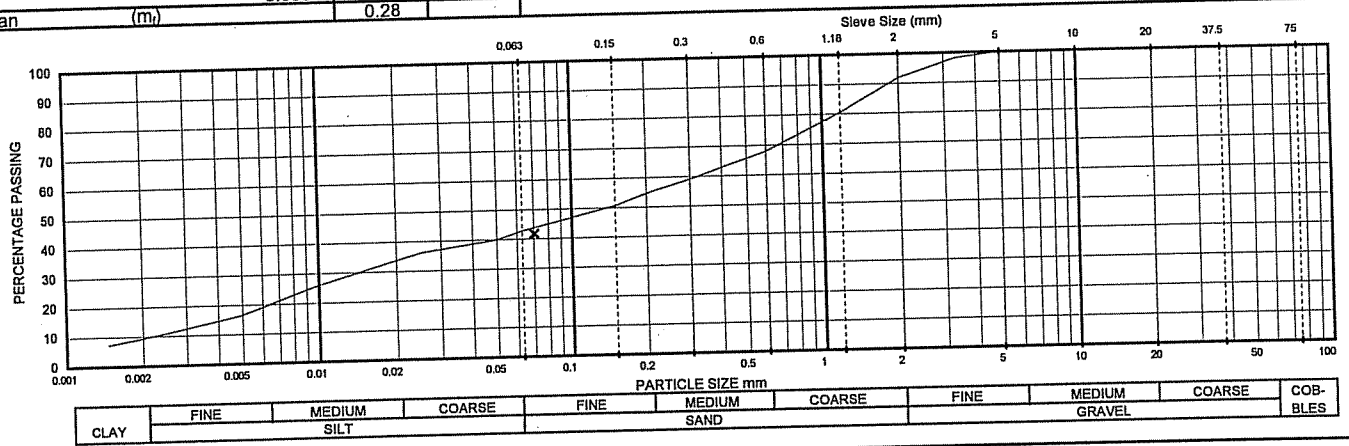
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 45.065
Mass retained on 63µm g : 26.100

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
11/02/2010	10:05	0.5	25.03	12.0	0.5	0.070	41	42
		1	25.03	11.5	0.5	0.050	39	40
		2	25.03	11.0	0.5	0.036	37	38
		4	25.03	10.5	0.5	0.025	36	36
		8	25.03	9.5	0.5	0.018	32	33
		30	25.03	7.5	0.5	0.0096	25	25
		120	25.03	5.0	0.5	0.0049	16	16
		480	25.03	3.5	0.5	0.0025	11	11
		1440	25.04	2.5	0.5	0.0015	7	7

Hydrometer reading in solution only (R_0')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	8
SAND	%	:	49
SILT	%	:	34
CLAY	%	:	9



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks :
Point x(s) on graph indicate(s) modified hydrometer reading(s).
The mass of soil sample used for testing do not meet the specification requirement for the total mass of sample required (The total mass required for fine-grained soils, medium-grained soils & coarse-grained soils are 500g, 5kg and 30 kg respectively).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL100076(46)

HKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : D232
Depth (m) From : 7.60
To : -
Sample origin : MD
Description : -

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 06-02-2010
Date test completed : 12-02-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, dark grey, slightly gravelly, sandy SILT/CLAY with shell fragments.

Laboratory sample I.D. : SL100076/14
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 7.70-8.30m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 242.30

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	242.30	
Riffled passing (m_3) 20	242.30	
Wash passing (m_4) 20	102.02	
14	0.00	100
10	0.00	100
6.3	1.67	99
Passing (m_5) 6.3	100.35	
Riffled passing (m_6) 6.3	100.35	
5.0	1.03	99
3.35	1.53	98
2.00	3.00	97
1.18	6.61	94
0.600	13.25	89
0.425	7.80	86
0.300	9.93	82
0.212	10.92	77
0.150	13.39	71
0.063	32.40	58
Pan (m_7)	0.43	

Test Result (Sedimentation Analysis)

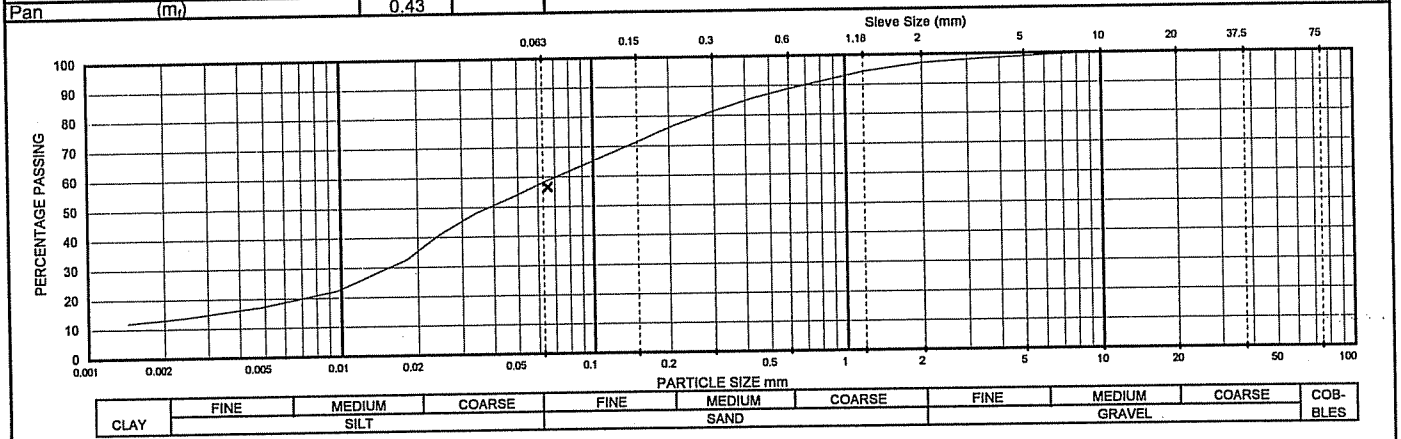
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 45.694
Mass retained on 63µm g : 18.458

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
10/02/2010	08:30	0.5	25.09	17.0	0.5	0.066	58	57
		1	25.09	16.0	0.5	0.047	54	53
		2	25.09	14.5	0.5	0.034	49	48
		4	25.09	12.5	0.5	0.025	42	41
		8	25.09	10.0	0.5	0.018	33	33
		30	25.09	7.0	0.5	0.0096	23	22
		120	25.09	5.5	0.5	0.0049	18	17
		480	25.09	4.5	0.5	0.0025	14	14
		1440	25.03	4.0	0.5	0.0014	12	12

Hydrometer reading in solution only (R_n')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	3
SAND	%	:	39
SILT	%	:	45
CLAY	%	:	13



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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MateriaLab

Test Report No. : 090562SL100076(47)

HKAS HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : D232
Depth (m) From : 9.60
To : -
Sample origin : MD
Description : -

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 08-02-2010
Date test completed : 10-02-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, dark grey, slightly gravelly, sandy SILT/CLAY with shell fragments.

Laboratory sample I.D. : SL100076/15
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 9.70-10.00m, 10.20-10.60m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 246.06

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	246.06	
Riffled passing (m_3) 20	246.06	
Wash passing (m_4) 20	101.238	
14	0.000	100
10	3.820	98
6.3	1.360	98
Passing (m_5) 6.3	96.058	
Riffled passing (m_6) 6.3	96.058	
5.0	1.150	97
3.35	1.570	97
2.00	3.998	95
1.18	8.369	92
0.600	13.887	86
0.425	7.544	83
0.300	14.982	77
0.212	7.746	74
0.150	9.341	70
0.063	27.116	59
Pan (m_7)	0.049	

Test Result (Sedimentation Analysis)

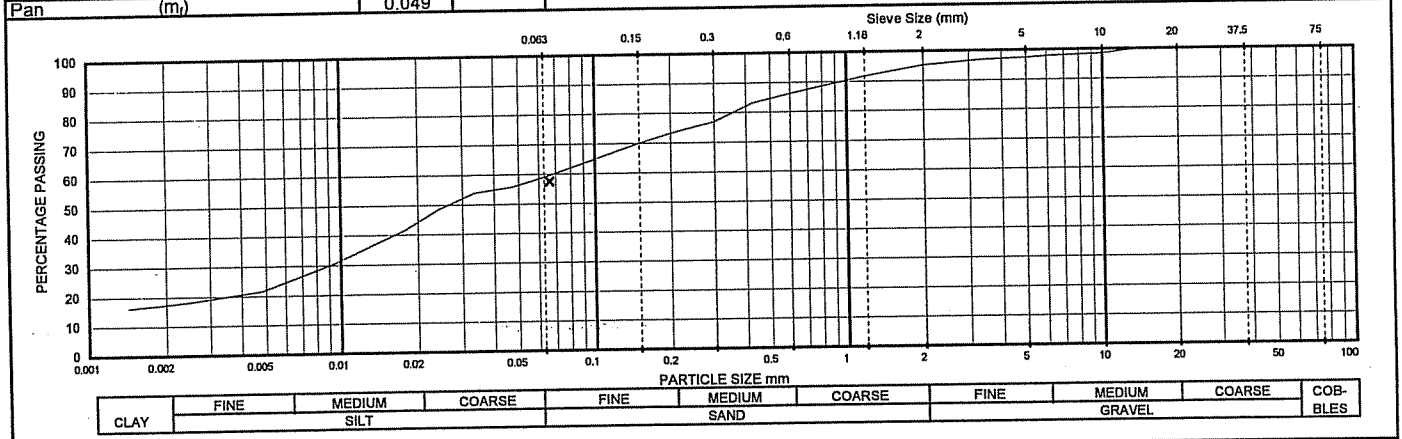
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 45.817
Mass retained on 63µm g : 19.493

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
11/02/2010	09:35	0.5	25.03	16.5	0.5	0.066	56	57
		1	25.03	16.0	0.5	0.047	54	56
		2	25.03	15.5	0.5	0.034	53	54
		4	25.03	14.0	0.5	0.024	47	48
		8	25.03	12.0	0.5	0.018	40	41
		30	25.03	9.0	0.5	0.0094	30	31
		120	25.03	6.5	0.5	0.0048	21	22
		480	25.03	6.5	0.5	0.0024	18	18
		1440	25.04	5.0	0.5	0.0014	16	16

Hydrometer reading in solution only (R_0')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	5
SAND	%	:	36
SILT	%	:	42
CLAY	%	:	17



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 25 FEB 2010

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MateriaLab

HOKLAS 015

Test Report No. : 090562SL100076(48) Page 1 of 1

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : D232
Depth (m) From : 14.55
To : -
Sample origin : CDM
Description : -

Laboratory Information

Date sample received : 27-01-2010
Date test commenced : 08-02-2010
Date test completed : 12-02-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, greyish brown, slightly gravelly, sandy SILT/CLAY.

Laboratory sample I.D. : SL100076/16
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 14.55-14.95m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 254.48

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	254.48	
Riffled passing (m_3) 20	254.48	
Wash passing (m_4) 20	153.81	
14	0.00	100
10	0.00	100
6.3	1.54	99
Passing (m_5) 6.3	152.27	
Riffled passing (m_6) 6.3	115.48	
5.0	0.79	99
3.35	2.62	98
2.00	9.70	93
1.18	19.24	83
0.600	23.45	70
0.425	11.58	64
0.300	12.06	58
0.212	9.73	53
0.150	10.03	48
0.063	15.69	40
Pan (m_7)	0.54	

Test Result (Sedimentation Analysis)

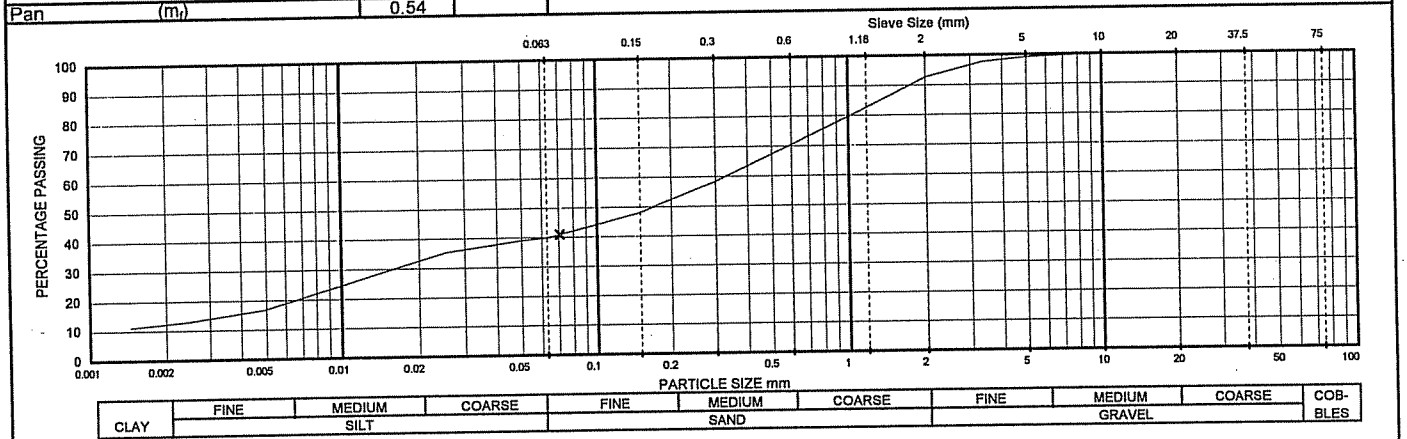
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 42.863
Mass retained on 63µm g : 25.634

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
11/02/2010	09:45	0.5	25.03	11.5	0.5	0.071	41	41
		1	25.03	11.0	0.5	0.050	39	39
		2	25.03	10.5	0.5	0.036	37	37
		4	25.03	10.0	0.5	0.025	36	35
		8	25.03	9.0	0.5	0.018	32	32
		30	25.03	7.0	0.5	0.0096	24	24
		120	25.03	5.0	0.5	0.0049	17	17
		480	25.03	4.0	0.5	0.0025	13	13
		1440	25.04	3.5	0.5	0.0014	11	11

Hydrometer reading in solution only (R_n')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	7
SAND	%	:	53
SILT	%	:	28
CLAY	%	:	12



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).
The mass of soil sample used for testing do not meet the specification requirement for the total mass of sample required
(The total mass required for fine-grained soils, medium-grained soils & coarse-grained soils are 500g, 5kg and 30 kg respectively).

Certified by : ~~Paul Richard Cooper (Operations Manager—CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 25 FEB 2010

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MateriaLab

HOKLAS 015

Test Report No. : 090562SL90169(12) Page 1 of 1

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line
(EAST)

Client sample No. : 7

Borehole No. : D237
Depth (m) From : 3.00
To : -
Sample origin : ALL
Description : -

Laboratory Information

Date sample received : 21-08-2009
Date test commenced : 21-10-2009
Date test completed : 24-10-2009
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, dark grey, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90169/4
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 3.30-3.40m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 329.23

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	329.23	
Riffled passing (m_3) 20	329.23	
Wash passing (m_4) 20	142.77	
14	15.49	95
10	6.41	93
6.3	7.66	91
Passing (m_5) 6.3	113.21	
Riffled passing (m_6) 6.3	113.21	
5.0	1.67	91
3.35	5.90	89
2.00	12.11	85
1.18	14.09	81
0.600	18.30	75
0.425	8.37	73
0.300	9.52	70
0.212	12.27	66
0.150	10.17	63
0.063	20.74	57
Pan (m_7)	0.01	

Test Result (Sedimentation Analysis)

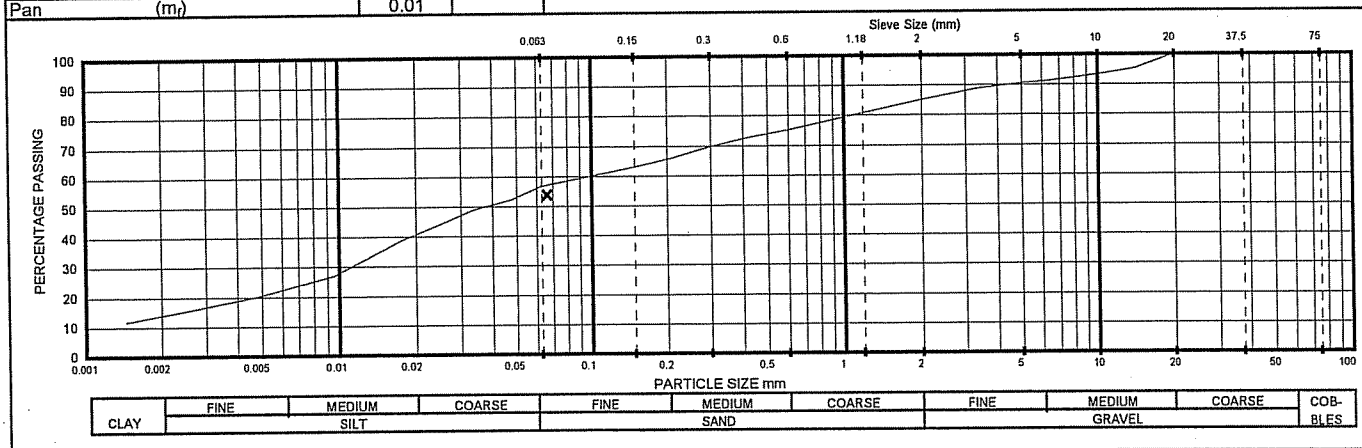
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 46.731
Mass retained on 63µm g : 19.708

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
23/10/2009	08:30	0.5	24.97	16.5	0.5	0.066	55	54
		1	24.97	16.0	0.5	0.047	53	52
		2	24.97	15.0	0.5	0.034	50	49
		4	24.97	13.5	0.5	0.024	45	44
		8	24.97	12.0	0.5	0.018	40	39
		30	24.97	8.5	0.5	0.0095	27	27
		120	24.97	6.5	0.5	0.0048	21	20
		480	24.97	5.0	0.5	0.0025	15	15
		1440	24.99	4.0	0.5	0.0014	12	12

Hydrometer reading in solution only (R_0')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	15
SAND	%	:	28
SILT	%	:	43
CLAY	%	:	14



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).
The mass of soil sample used for testing do not meet the specification requirement for the total mass of sample required
(The total mass required for fine-grained soils, medium-grained soils & coarse-grained soils are 500g, 5kg and 30 kg respectively).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 27 OCT 2009

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MateriaLab

HKLAS 015

Test Report No. : 090562SL90277(25) Page 1 of 1

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : 912/SIL/D243
Depth (m) From : 2.00
To : 3.00
Sample origin : FILL
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 23-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, orangish brown, slightly sandy SILT/CLAY.

Laboratory sample I.D. : SL90277/1
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 2.00-2.40m, 2.60-3.00m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 244.221

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	244.221	
Riffled passing	(m_3)	20	244.221	
Wash passing	(m_4)	20	25.665	
		14	0.000	100
		10	0.000	100
		6.3	0.000	100
Passing	(m_5)	6.3	25.665	
Riffled passing	(m_6)	6.3	25.665	
		5.0	0.000	100
		3.35	0.000	100
		2.00	1.662	99
		1.18	1.542	99
		0.600	4.000	97
		0.425	2.661	96
		0.300	2.891	95
		0.212	2.559	94
		0.150	2.871	93
		0.063	7.479	89
Pan	(m_f)		0.002	

Test Result (Sedimentation Analysis)

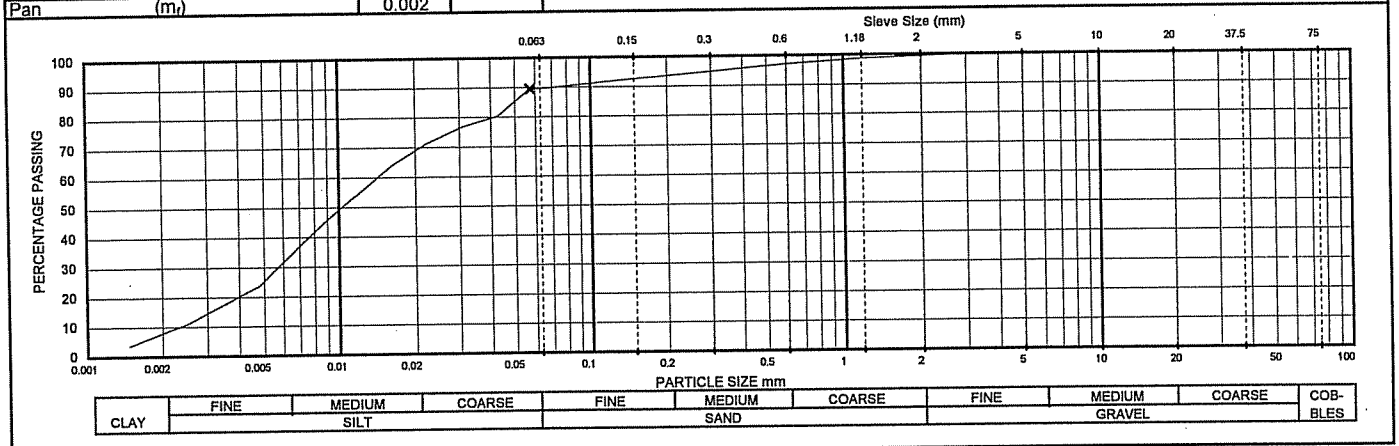
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 45.229
Mass retained on 63µm g : 5.853

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
22/01/2010	11:45	0.5	25.29	25.0	0.5	0.058	87	89
		1	25.29	22.5	0.5	0.043	78	80
		2	25.29	21.5	0.5	0.031	75	77
		4	25.29	20.0	0.5	0.022	69	71
		8	25.29	18.0	0.5	0.016	62	64
		30	25.29	13.0	0.5	0.0089	44	46
		120	25.29	7.0	0.5	0.0048	23	24
		480	25.29	3.5	0.5	0.0025	11	11
		1440	25.27	1.5	0.5	0.0015	4	4

Hydrometer reading in solution only (R_0')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	1
SAND	%	:	10
SILT	%	:	82
CLAY	%	:	7



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 27 JAN 2010

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MateriaLab

Test Report No. : 090562SL90277(26) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : 912/SIL/D243
Depth (m) From : 4.50
To : 5.50
Sample origin : CDT
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, yellowish brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90277/2
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 4.50-4.90m, 5.10-5.50m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 241.53

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	241.53	
Riffled passing	(m_3)	20	241.53	
Wash passing	(m_4)	20	53.66	
		14	19.240	92
		10	2.146	91
		6.3	1.312	91
Passing	(m_5)	6.3	30.962	
Riffled passing	(m_6)	6.3	30.962	
		5.0	0.821	90
		3.35	1.506	90
		2.00	1.917	89
		1.18	3.006	88
		0.600	5.371	85
		0.425	2.774	84
		0.300	2.553	83
		0.212	2.271	82
		0.150	2.614	81
		0.063	8.117	78
Pan	(m_7)		0.012	

Test Result (Sedimentation Analysis)

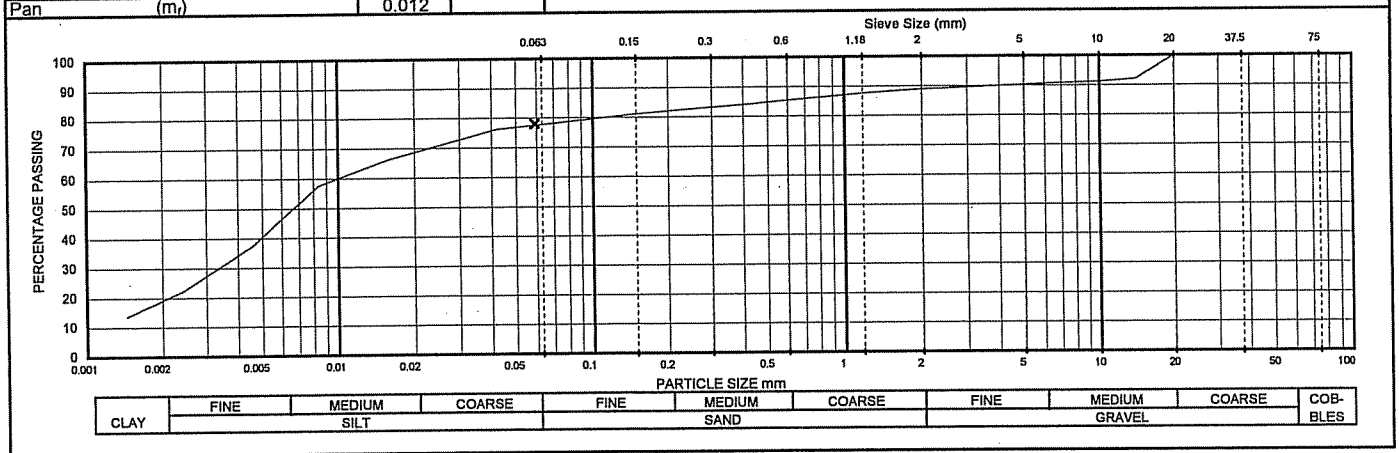
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 47.584
Mass retained on 63µm g : 10.710

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
24/01/2010	10:50	0.5	25.19	23.5	0.5	0.059	78	78
		1	25.19	23.0	0.5	0.042	76	76
		2	25.19	22.0	0.5	0.030	73	73
		4	25.19	21.0	0.5	0.022	69	69
		8	25.19	20.0	0.5	0.016	66	66
		30	25.19	17.5	0.5	0.0084	57	58
		120	25.19	11.5	0.5	0.0046	37	37
		480	25.19	7.0	0.5	0.0024	22	22
		1440	25.28	4.5	0.5	0.0014	14	14

Hydrometer reading in solution only (R_h')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	11
SAND	%	:	11
SILT	%	:	59
CLAY	%	:	19



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 27 JAN 2010

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Test Report No. : 090562SL90277(27) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : 912/SIL/D244
Depth (m) From : 2.00
To : 2.90
Sample origin : HDT
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 23-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, brownish grey, slightly sandy, gravelly SILT/CLAY.

Laboratory sample I.D. : SL90277/4
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 2.00-2.40m, 2.60-2.90m, Full mix.

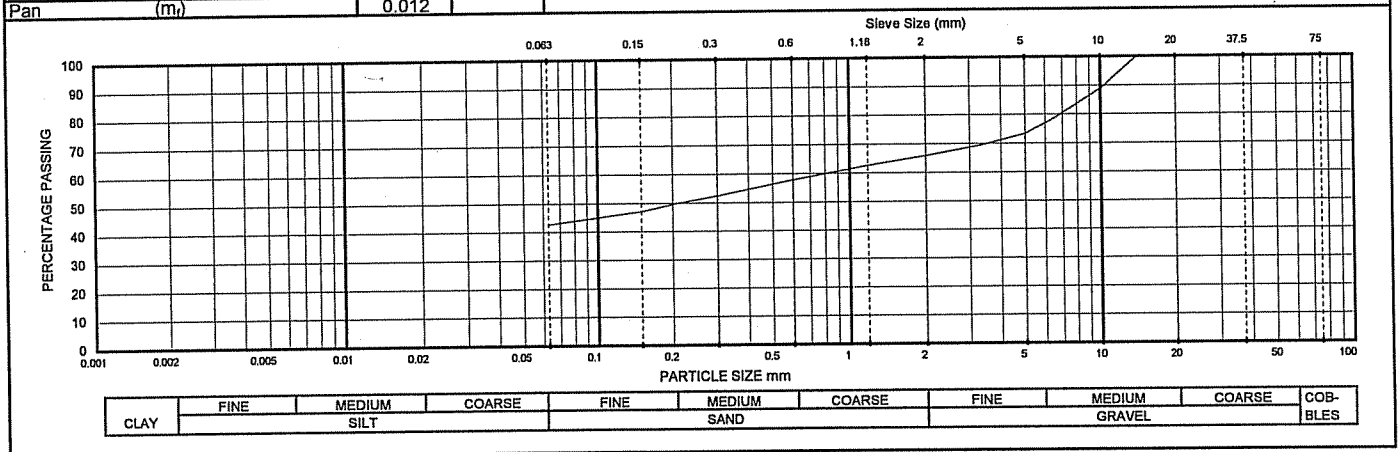
Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 234.65

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	234.65	
Riffled passing	(m_3)	20	234.65	
Wash passing	(m_4)	20	134.66	
		14	0.000	100
		10	26.106	89
		6.3	25.790	78
Passing	(m_5)	6.3	82.764	
Riffled passing	(m_6)	6.3	82.764	
		5.0	10.832	73
		3.35	9.026	69
		2.00	8.284	66
		1.18	7.762	63
		0.600	11.442	58
		0.425	6.194	55
		0.300	6.354	52
		0.212	5.652	50
		0.150	6.902	47
		0.063	10.304	43
Pan	(m_f)		0.012	

SUMMATION :

GRAVEL	%	:	34
SAND	%	:	23
SILT & CLAY	%	:	43



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 27 JAN 2010

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Test Report No. : 090562SL90277(28) Page 1 of 1

HKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -
Borehole No. : 912/SIL/D248
Depth (m) From : 3.00
To : 4.00
Sample origin : COLL
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, orangish brown, slightly sandy SILT/CLAY.

Laboratory sample I.D. : SL90277/6
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 3.00-3.40m, 3.60-4.00m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 256.408

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	256.408	
Riffled passing (m_3) 20	256.408	
Wash passing (m_4) 20	13.737	
14	0.000	100
10	0.000	100
6.3	0.000	100
Passing (m_5) 6.3	13.737	
Riffled passing (m_6) 6.3	13.737	
5.0	0.000	100
3.35	0.000	100
2.00	0.000	100
1.18	0.624	100
0.600	0.917	99
0.425	0.522	99
0.300	0.628	99
0.212	1.716	98
0.150	1.900	98
0.063	7.422	95
Pan (m_7)	0.008	

Test Result (Sedimentation Analysis)

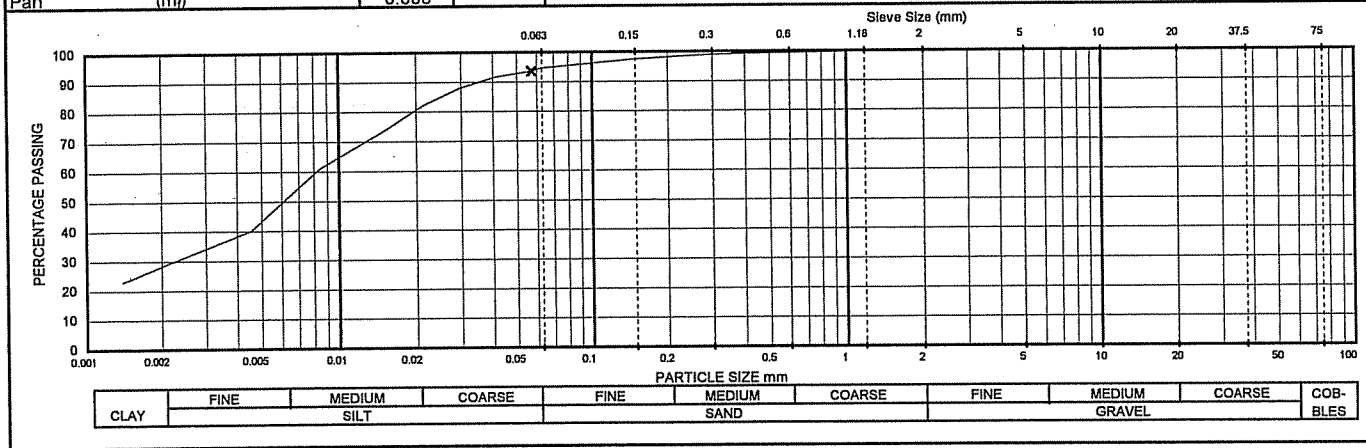
Hydrometer Serial No. : 766
Particle density (Measured) : 2.67
Initial dry mass g : 43.320
Mass retained on 63µm g : 3.692

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
24/01/2010	10:40	0.5	25.19	25.0	0.5	0.057	90	94
		1	25.19	24.5	0.5	0.041	89	92
		2	25.19	23.5	0.5	0.029	85	88
		4	25.19	22.0	0.5	0.021	79	82
		8	25.19	20.0	0.5	0.016	72	74
		30	25.19	16.5	0.5	0.0085	59	61
		120	25.19	11.0	0.5	0.0046	39	40
		480	25.19	8.5	0.5	0.0024	30	31
		1440	25.28	6.5	0.5	0.0014	22	23

Hydrometer reading in solution only (R_n')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	0
SAND	%	:	5
SILT	%	:	67
CLAY	%	:	28



Abbreviations used : Sample type.: U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 27 JAN 2010

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Test Report No. : 090562SL90277(29) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : 912/SIL/D248
Depth (m) From : 5.50
To : 6.50
Sample origin : COLL
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, orangish brown, slightly sandy SILT/CLAY.

Laboratory sample I.D. : SL90277/7
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 5.50-5.90m, 6.10-6.50m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 219.529

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	219.529	
Riffled passing (m_3) 20	219.529	
Wash passing (m_4) 20	7.129	
14	0.000	100
10	0.000	100
6.3	0.000	100
Passing (m_5) 6.3	7.129	
Riffled passing (m_6) 6.3	7.129	
5.0	0.512	100
3.35	0.174	100
2.00	0.216	100
1.18	0.376	99
0.600	0.351	99
0.425	0.394	99
0.300	0.975	99
0.212	1.722	98
0.150	1.566	97
0.063	0.825	97
Pan (m_7)	0.018	

Test Result (Sedimentation Analysis)

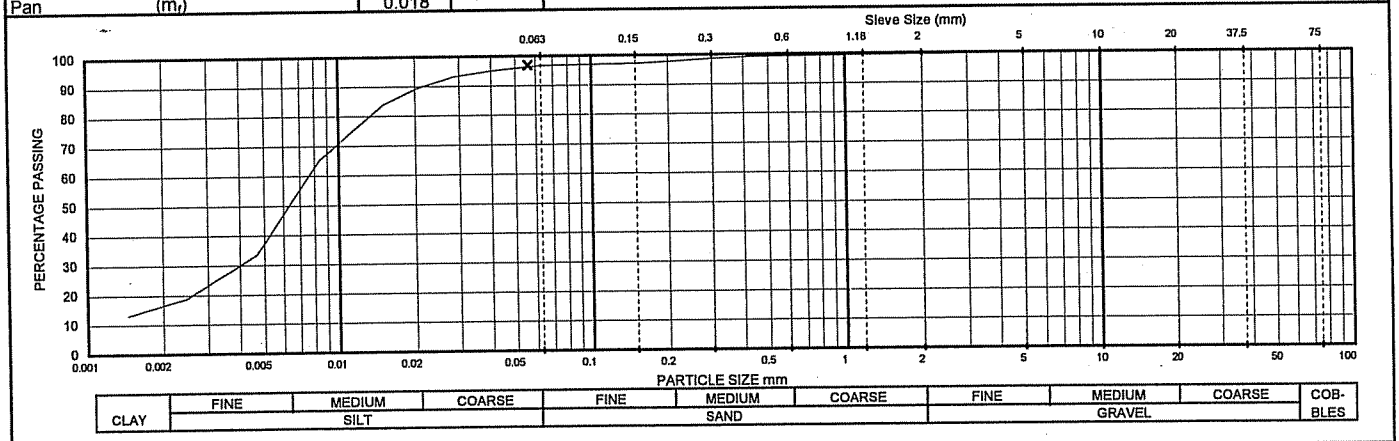
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 45.700
Mass retained on 63µm g : 3.973

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
24/01/2010	09:10	0.5	24.98	26.5	0.5	0.056	91	97
		1	24.98	26.0	0.5	0.040	90	95
		2	24.98	25.5	0.5	0.029	88	93
		4	24.98	24.5	0.5	0.021	84	89
		8	24.98	23.0	0.5	0.015	79	84
		30	24.98	18.0	0.5	0.0084	62	65
		120	24.98	9.5	0.5	0.0047	32	34
		480	24.98	5.5	0.5	0.0025	18	19
		1440	25.06	4.0	0.5	0.0014	12	13

Hydrometer reading in solution only (R_n')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	0
SAND	%	:	3
SILT	%	:	81
CLAY	%	:	16



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 27 JAN 2010

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HKAS HOKLAS 015

Test Report No. : 090562SL90277(30) Page 1 of 1

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : 912/SIL/D248
Depth (m) From : 10.50
To : 11.50
Sample origin : CDT
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, reddish brown, slightly sandy SILT/CLAY.

Laboratory sample I.D. : SL90277/8
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 10.50-10.90m, 11.10-11.50m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 212.806	Sieve size mm	Mass retained (g)	Percent passing (%)
	100	0	100
	75	0	100
	63	0	100
	50	0	100
	37.5	0	100
	28	0	100
	20	0	100
Passing (m_2)	20	212.806	
Riffled passing (m_3)	20	212.806	
Wash passing (m_4)	20	5.943	
	14	0.000	100
	10	0.000	100
	6.3	0.000	100
Passing (m_5)	6.3	5.943	
Riffled passing (m_6)	6.3	5.943	
	5.0	0.000	100
	3.35	0.000	100
	2.00	0.000	100
	1.18	0.000	100
	0.600	0.000	100
	0.425	1.624	99
	0.300	1.117	99
	0.212	1.428	98
	0.150	0.914	98
	0.063	0.862	97
Pan (m_f)		0.000	

Test Result (Sedimentation Analysis)

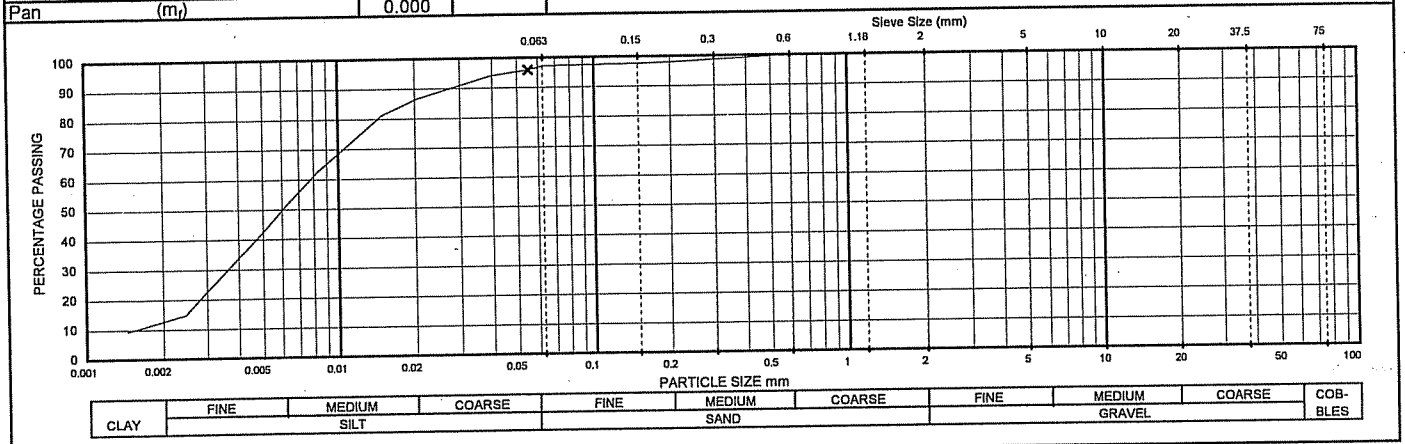
Hydrometer Serial No. : 766
Particle density (Measured) : 2.69
Initial dry mass g : 46.443
Mass retained on 63µm g : 4.502

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
24/01/2010	09:00	0.5	24.98	26.5	0.5	0.055	89	96
		1	24.98	26.0	0.5	0.040	87	94
		2	24.98	25.0	0.5	0.029	84	90
		4	24.98	24.0	0.5	0.021	81	87
		8	24.98	22.5	0.5	0.015	75	81
		30	24.98	17.5	0.5	0.0083	58	63
		120	24.98	11.0	0.5	0.0045	36	39
		480	24.98	4.5	0.5	0.0024	14	15
		1440	25.06	3.0	0.5	0.0014	9	9

Hydrometer reading in solution only (R_0')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	0
SAND	%	:	3
SILT	%	:	85
CLAY	%	:	12



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : - 5 MAR 2010

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HOKLAS 015

Test Report No. : 090562SL90277(31) Page 1 of 1

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : 912/SIL/D248
Depth (m) From : 13.00
To : 14.00
Sample origin : CDT
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, reddish brown, slightly sandy SILT/CLAY.

Laboratory sample I.D. : SL90277/9
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 13.00-13.40m, 13.60-14.00m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 210.304

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	210.304	
Riffled passing (m_3) 20	210.304	
Wash passing (m_4) 20	7.916	
14	0.000	100
10	0.000	100
6.3	0.000	100
Passing (m_5) 6.3	7.916	
Riffled passing (m_6) 6.3	7.916	
5.0	0.000	100
3.35	0.000	100
2.00	0.309	100
1.18	0.626	100
0.600	1.737	99
0.425	0.914	98
0.300	0.771	98
0.212	0.606	98
0.150	0.755	97
0.063	2.191	96
Pan (m_f)	0.007	

Test Result (Sedimentation Analysis)

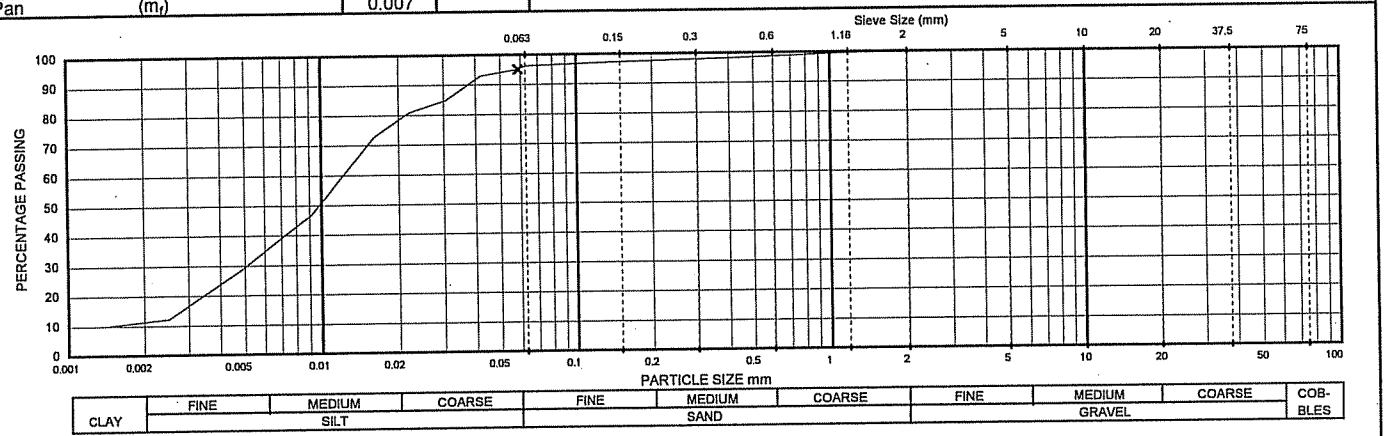
Hydrometer Serial No. : 766
Particle density (Assumed) : 2.65
Initial dry mass g : 42.745
Mass retained on 63µm g : 4.512

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
24/01/2010	09:20	0.5	24.98	24.0	0.5	0.059	88	95
		1	24.98	23.5	0.5	0.042	86	93
		2	24.98	21.5	0.5	0.031	79	85
		4	24.98	20.5	0.5	0.022	75	81
		8	24.98	18.5	0.5	0.016	68	73
		30	24.98	12.0	0.5	0.0091	43	46
		120	24.98	7.5	0.5	0.0048	26	28
		480	24.98	3.5	0.5	0.0025	11	12
		1440	25.06	3.0	0.5	0.0015	9	10

Hydrometer reading in solution only (R_0')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	0
SAND	%	:	4
SILT	%	:	85
CLAY	%	:	11



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 5 MAR 2010

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MateriaLab

Test Report No. : 090562SL90277(32)

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : 912/SIL/D248
Depth (m) From : 16.60
To : 17.60
Sample origin : CDT
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 23-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, yellowish brown, slightly sandy SILT/CLAY.

Laboratory sample I.D. : SL90277/10
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 16.60-17.00m, 17.20-17.60m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 263.48

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	263.48	
Riffled passing (m_3) 20	263.48	
Wash passing (m_4) 20	31.524	
14	0.000	100
10	0.000	100
6.3	0.000	100
Passing (m_5) 6.3	31.524	
Riffled passing (m_6) 6.3	31.524	
5.0	0.000	100
3.35	0.096	100
2.00	0.277	100
1.18	1.044	99
0.600	6.564	97
0.425	5.956	95
0.300	5.641	93
0.212	4.126	91
0.150	3.647	90
0.063	4.156	88
Pan (m_f)	0.017	

Test Result (Sedimentation Analysis)

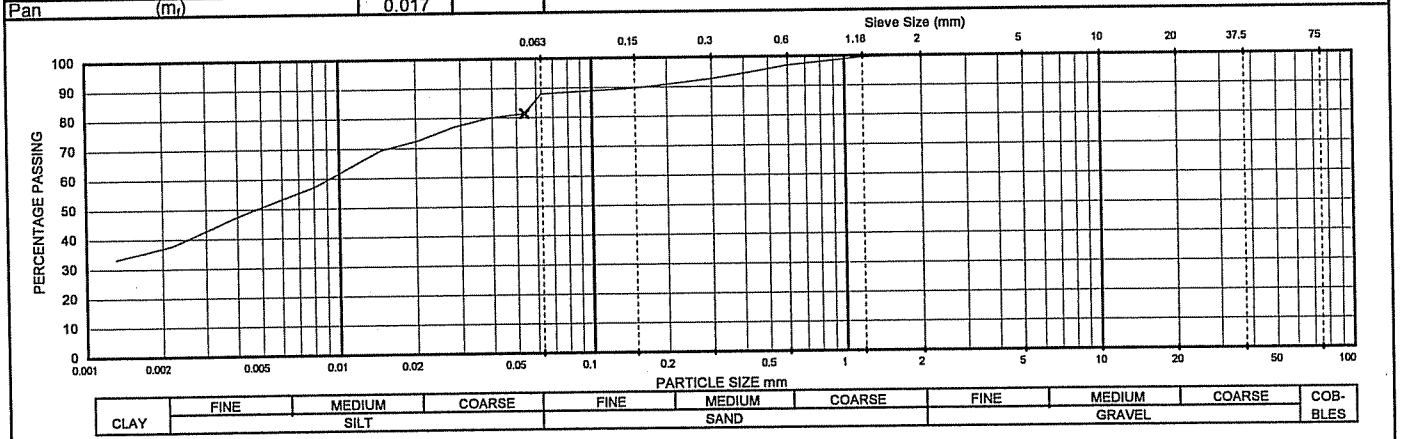
Hydrometer Serial No. : 766
Particle density (Measured) : 2.69
Initial dry mass g : 53.408
Mass retained on 63µm g : 6.925

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
22/01/2010	11:55	0.5	25.29	27.5	0.5	0.054	80	81
		1	25.29	27.0	0.5	0.039	79	80
		2	25.29	26.0	0.5	0.028	76	77
		4	25.29	24.5	0.5	0.020	72	72
		8	25.29	23.5	0.5	0.015	69	69
		30	25.29	19.5	0.5	0.0081	57	57
		120	25.29	16.5	0.5	0.0042	48	48
		480	25.29	13.0	0.5	0.0022	37	38
		1440	25.27	11.5	0.5	0.0013	33	33

Hydrometer reading in solution only (R_0')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	0
SAND	%	:	12
SILT	%	:	51
CLAY	%	:	37



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 27 JAN 2010

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MateriaLab

Test Report No. : 090562SL90277(33) Page 1 of 1

HKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : 912/SIL/D265
Depth (m) From : 22.10
To : 23.10
Sample origin : MD
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 23-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, grey, slightly gravelly/sandy SILT/CLAY with shell fragments.

Laboratory sample I.D. : SL90277/12
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 22.10-22.50m, 22.70-23.10m, Full mix.

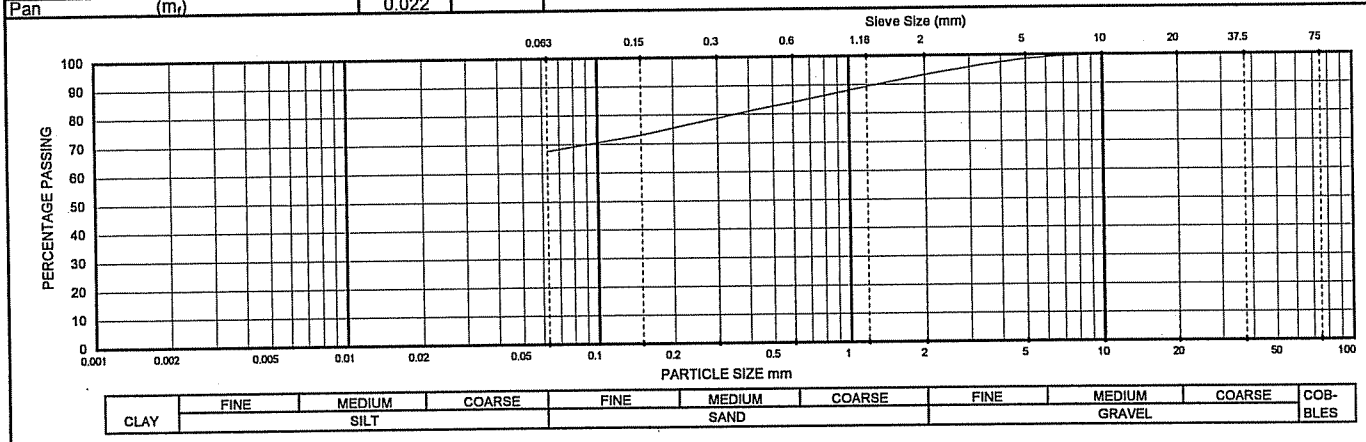
Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 204.343

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	204.343	
Riffled passing (m_3) 20	204.343	
Wash passing (m_4) 20	66.065	
14	0.000	100
10	0.000	100
6.3	1.624	99
Passing (m_5) 6.3	64.441	
Riffled passing (m_6) 6.3	64.441	
5.0	1.471	98
3.35	4.034	97
2.00	6.633	93
1.18	8.116	89
0.600	10.769	84
0.425	5.114	82
0.300	5.796	79
0.212	5.742	76
0.150	5.857	73
0.063	10.887	68
Pan (m_f)	0.022	

SUMMATION :

GRAVEL	%	:	7
SAND	%	:	25
SILT & CLAY	%	:	68



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager—CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 27 JAN 2010

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Test Report No. : 090562SL90277(34) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : 912/SIL/D265
Depth (m) From : 24.60
To : 25.60
Sample origin : MD
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 23-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, grey, slightly gravelly/sandy SILT/CLAY with shell fragments.

Laboratory sample I.D. : SL90277/13
Specimen reference : C
Sample type : M
Location and Orientation within original sample : 24.60-25.30m, Full mix.

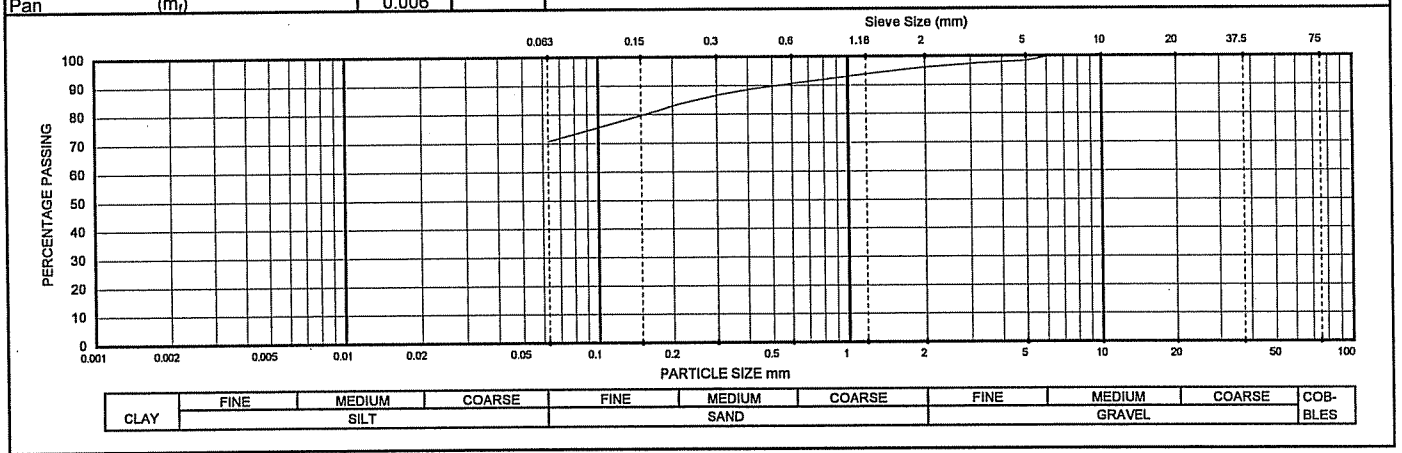
Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 188.924

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	188.924	
Riffled passing	(m_3)	20	188.924	
Wash passing	(m_4)	20	55.308	
		14	0.000	100
		10	0.000	100
		6.3	0.000	100
Passing	(m_5)	6.3	55.308	
Riffled passing	(m_6)	6.3	55.308	
		5.0	3.369	98
		3.35	1.244	98
		2.00	2.814	96
		1.18	4.256	94
		0.600	6.162	91
		0.425	3.174	89
		0.300	4.342	87
		0.212	5.786	84
		0.150	7.341	80
		0.063	16.814	71
Pan	(m_7)		0.006	

SUMMATION :

GRAVEL	%	:	4
SAND	%	:	25
SILT & CLAY	%	:	71



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 27 JAN 2010

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Test Report No. : 090562SL90277(35) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : 912/SIL/D265
Depth (m) From : 27.10
To : 28.10
Sample origin : MD
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 23-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, grey, slightly gravelly/sandy SILT/CLAY with shell fragments.

Laboratory sample I.D. : SL90277/14
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 27.10-27.90m, Full mix.

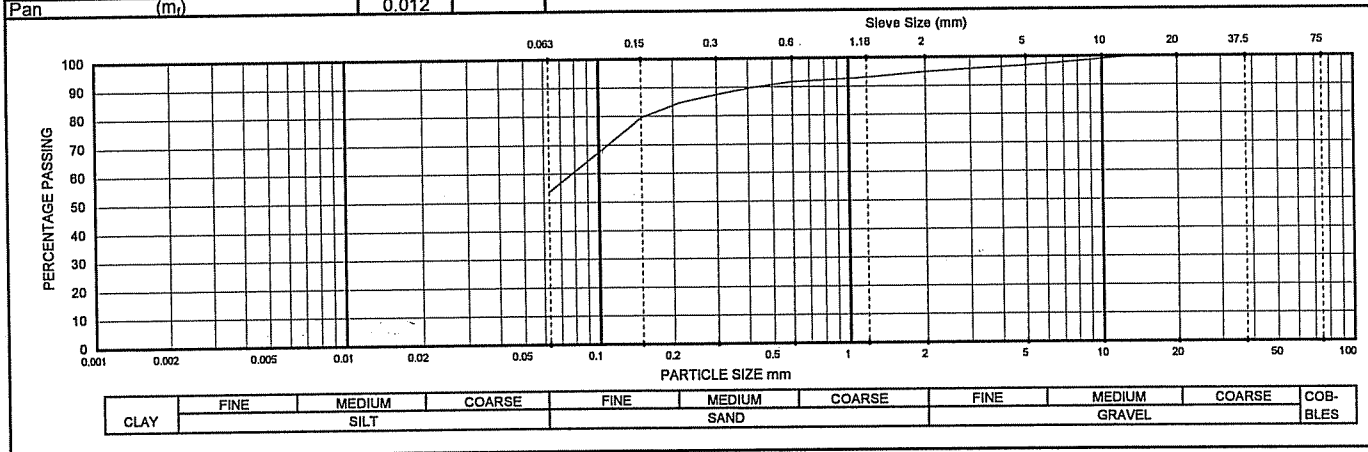
Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 239.735

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	239.735	
Riffled passing	(m_3)	20	239.735	
Wash passing	(m_4)	20	111.313	
		14	0.000	100
		10	2.316	99
		6.3	3.662	98
Passing	(m_5)	6.3	105.335	
Riffled passing	(m_6)	6.3	105.335	
		5.0	1.611	97
		3.35	1.994	96
		2.00	2.912	95
		1.18	4.206	93
		0.600	3.290	92
		0.425	4.391	90
		0.300	5.876	87
		0.212	6.742	85
		0.150	12.353	79
		0.063	61.948	54
Pan	(m_7)		0.012	

SUMMATION :

GRAVEL	%	:	5
SAND	%	:	41
SILT & CLAY	%	:	54



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 27 JAN 2010

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Test Report No. : 090562SL90277(36) Page 1 of 1

HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : -

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : 912/SIL/D265
Depth (m) From : 31.00
To : 32.00
Sample origin : CDT
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 20-01-2010
Date test completed : 25-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1 / 8.5 / 8.7
Method of preparation : Method B
Visual description : Moist, light yellowish brown, slightly gravelly/sandy SILT/CLAY.

Laboratory sample I.D. : SL90277/15
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 31.00-31.40m, 31.60-32.00m, Full mix.

Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 261.829

Sieve size mm	Mass retained (g)	Percent passing (%)
100	0	100
75	0	100
63	0	100
50	0	100
37.5	0	100
28	0	100
20	0	100
Passing (m_2) 20	261.829	
Riffled passing (m_3) 20	261.829	
Wash passing (m_4) 20	58.634	
14	0.000	100
10	2.351	99
6.3	5.861	97
Passing (m_5) 6.3	50.422	
Riffled passing (m_6) 6.3	50.422	
5.0	2.652	96
3.35	3.262	95
2.00	2.624	94
1.18	4.282	92
0.600	8.064	89
0.425	4.037	87
0.300	4.106	86
0.212	3.948	84
0.150	5.517	82
0.063	11.907	78
Pan (m_7)	0.021	

Test Result (Sedimentation Analysis)

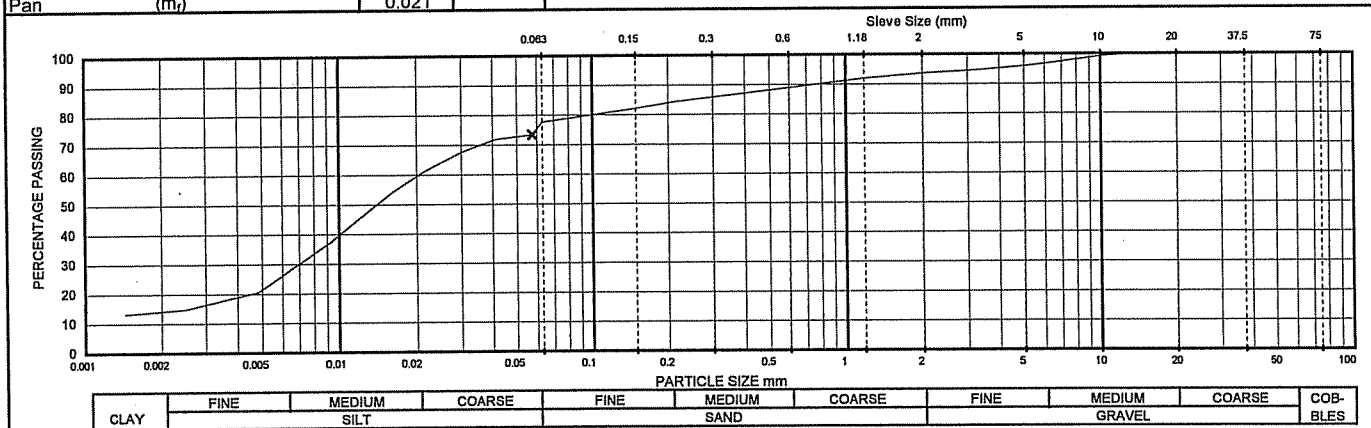
Hydrometer Serial No. : 766
Particle density (Measured) : 2.62
Initial dry mass g : 52.911
Mass retained on 63µm g : 10.135

Date	Time Started	Period min	Temp. °C	Hydro. Rdg	Hydro. Rdg #	Particle dia. mm	K %	K* %
24/01/2010	08:50	0.5	24.98	25.5	0.5	0.058	76	73
		1	24.98	25.0	0.5	0.041	75	72
		2	24.98	23.5	0.5	0.030	70	67
		4	24.98	21.5	0.5	0.022	64	62
		8	24.98	19.0	0.5	0.016	57	54
		30	24.98	13.0	0.5	0.0091	38	37
		120	24.98	7.5	0.5	0.0048	21	21
		480	24.98	5.5	0.5	0.0025	15	15
		1440	25.06	5.0	0.5	0.0014	14	13

Hydrometer reading in solution only (R_0')
K* modified according to Geospec 3 (November 2001) Test Method 8.7

SUMMATION :

GRAVEL	%	:	6
SAND	%	:	16
SILT	%	:	64
CLAY	%	:	14



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : Point x(s) on graph indicate(s) modified hydrometer reading(s).

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 27 JAN 2010

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Test Report No. : 090562SL90276(48) Page 1 of 1

HKAS HOKLAS 015

TEST REPORT ON PARTICLE SIZE DISTRIBUTION OF SOIL

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Client sample No. : 4

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Borehole No. : D272(P)
Depth (m) From : 1.50
To : 2.50
Sample origin : CDG
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 22-01-2010
Date test completed : 27-01-2010
Test method used : Geospec 3 (November 2001) Test Method 8.1
Method of preparation : Method B
Visual description : Moist, orangish brown, very silty/clayey, very sandy GRAVEL.

Laboratory sample I.D. : SL90276/1
Specimen reference : B
Sample type : M
Location and Orientation within original sample : 1.50-2.30m, Full mix.

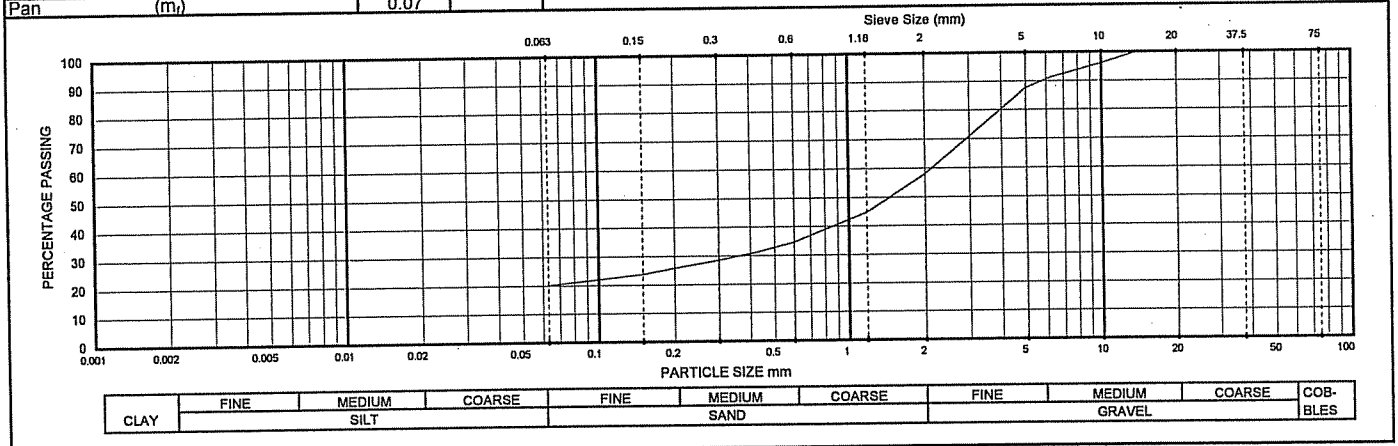
Test Result (Sieve Analysis)

Initial dry mass (m_1) g : 600.14

		Sieve size mm	Mass retained (g)	Percent passing (%)
		100	0	100
		75	0	100
		63	0	100
		50	0	100
		37.5	0	100
		28	0	100
		20	0	100
Passing	(m_2)	20	600.14	
Riffled passing	(m_3)	20	600.14	
Wash passing	(m_4)	20	479.89	
		14	0.00	100
		10	23.74	96
		6.3	28.29	91
Passing	(m_5)	6.3	427.86	
Riffled passing	(m_6)	6.3	103.96	
		5.0	5.46	88
		3.35	19.29	74
		2.00	23.99	58
		1.18	19.13	45
		0.600	15.07	34
		0.425	4.86	31
		0.300	4.00	28
		0.212	3.23	26
		0.150	3.55	24
		0.063	5.25	20
Pan	(m_7)		0.07	

SUMMATION :

GRAVEL	%	:	42
SAND	%	:	38
SILT & CLAY	%	:	20



Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager – CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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APPENDIX G. COMPACTION TESTS

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MateriaLab

HOKLAS 015

Test Report No. : 090562SL90169(13) Page 1 of 1

TEST REPORT ON RESULT OF DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP OF SOIL (using 1000cc mould & 2.5kg rammer)

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Ground Investigation for South Island Line (EAST)

Client sample No. : -

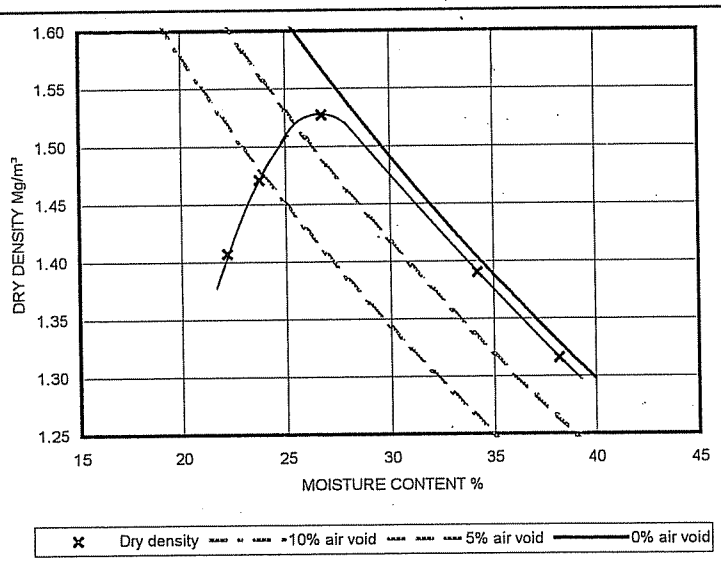
Borehole No. : TP210
Depth (m) From : 0.50
To : -
Sample Origin : FILL
Description : -

Laboratory Information

Date sample received : 13-11-2009
Date test commenced : 13-11-2009
Date test completed : 17-11-2009
Test method used : Geospec 3 (November 2001) Test Method 10.2
Method of preparation : Oven dried ≤ 50°C
Separated batches were used for this test
% passing 37.5 mm sieve : 100
% passing 20 mm sieve : 100
Zone of grading of sample : Zone 1
Visual description : Moist, brown, slightly gravelly/sandy SILT/CLAY.
Particle density : 2.70 Mg/m³ (Assumed)
If measured, method used : -
Mass of mould : 4932.9 g
Volume of mould : 996.6 cm³

Laboratory sample I.D. : SL90236/1
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Determination No.		1	2	3	4	5		
Mass of mould + wet soil	g	6646.4	6747.6	6862.2	6793.3	6745.1		
Mass of container + wet soil	g	564.55	588.36	575.89	598.37	628.24		
Mass of container + dry soil	g	491.06	505.96	487.50	485.14	497.97		
Mass of container	g	160.00	159.51	157.38	154.29	156.80		
Bulk density	Mg/m³	1.719	1.821	1.936	1.867	1.818		
Moisture content	%	22.2	23.8	26.8	34.2	38.2		
Dry density	Mg/m³	1.407	1.471	1.527	1.391	1.316		



TEST RESULTS

Maximum Dry Density : 1.53 Mg/m³
Optimum Moisture Content : 27 %

Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 19 NOV 2009

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MateriaLab

Test Report No. : 090562SL90276(72)

TEST REPORT ON RESULT OF DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP OF SOIL (using 1000cc mould & 2.5kg rammer)

HOKLAS 015

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Groudn Investigation for South Island Line (EAST)

Client sample No. : -
Borehole No. : TP226
Depth (m) From : 0.5
To : -
Sample Origin : FILL
Description : -

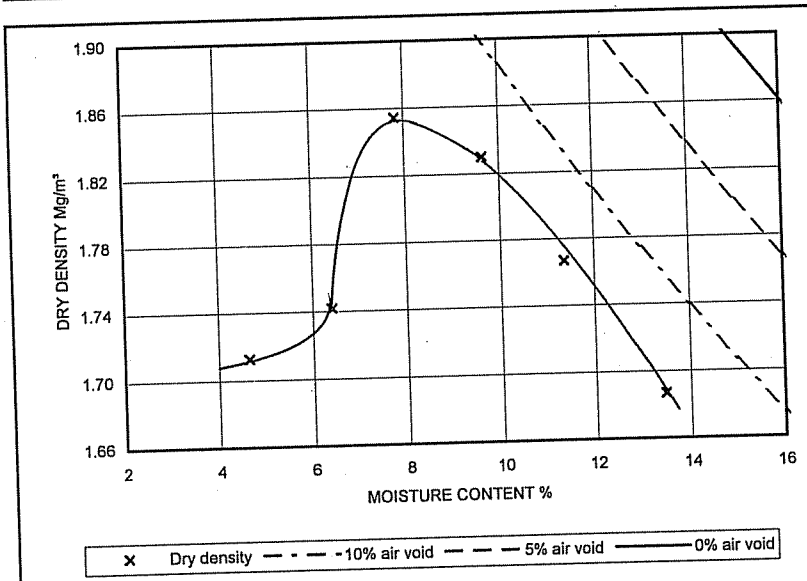
Laboratory Information

Date sample received : 30-12-2012
Date test commenced : 12-01-2010
Date test completed : 15-01-2010
Test method used : Geospec 3 (November 2001) Test Method 10.1
Method of preparation : Oven dried ≤ 50°C
Single batch was used for this test

% passing 37.5 mm sieve : 100
% passing 20 mm sieve : 98
Zone of grading of sample : Zone 1
Visual description : Moist, brown, very silty/clayey, very sandy GRAVEL.
Particle density : 2.65 Mg/m³ (Assumed)
If measured, method used : -
Mass of mould : 4053.2 g
Volume of mould : 997.7 cm³

Laboratory sample I.D. : SL90276/6
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Determination No.		1	2	3	4	5	6
Mass of mould + wet soil	g	5841.1	5902.3	6047.9	6054.9	6016.2	5962.7
Mass of container + wet soil	g	590.84	602.70	606.47	606.74	603.71	606.25
Mass of container + dry soil	g	571.80	575.80	573.85	567.19	557.88	552.64
Mass of container	g	161.02	155.66	156.42	157.11	154.30	154.52
Bulk density	Mg/m³	1.792	1.853	1.999	2.006	1.968	1.914
Moisture content	%	4.6	6.4	7.8	9.6	11.4	13.5
Dry density	Mg/m³	1.713	1.742	1.854	1.830	1.767	1.687



TEST RESULTS

Maximum Dry Density : 1.85 Mg/m³
Optimum Moisture Content : 7.8 %

Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ /
Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2013

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MateriaLab

Test Report No. : 090562SL90276(73) Page 1 of 1

HOKLAS 015

TEST REPORT ON RESULT OF DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP OF SOIL (using 1000cc mould & 2.5kg rammer)

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Groudn Investigation for South Island Line (EAST)

Client sample No. : -

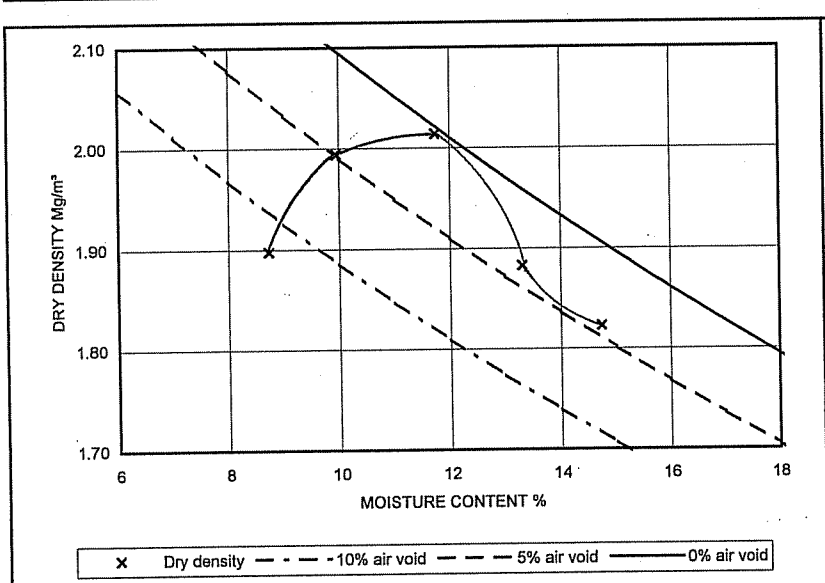
Borehole No. : TP226
Depth (m) From : 1.50
To : -
Sample Origin : FILL
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 11-01-2010
Date test completed : 16-01-2010
Test method used : Geospec 3 (November 2001) Test Method 10.1
Method of preparation : Oven dried ≤ 50°C
Single batch was used for this test
% passing 37.5 mm sieve : 100
% passing 20 mm sieve : 100
Zone of grading of sample : Zone 1
Visual description : Moist, dark brown, very silty/clayey, very sandy GRAVEL.
Particle density : 2.65 Mg/m³ (Assumed)
If measured, method used : -
Mass of mould : 4053.2 g
Volume of mould : 997.7 cm³

Laboratory sample I.D. : SL90276/7
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Determination No.		1	2	3	4	5		
Mass of mould + wet soil	g	6111.5	6240.3	6298.0	6181.9	6139.7		
Mass of container + wet soil	g	603.24	604.92	608.20	609.94	605.23		
Mass of container + dry soil	g	567.45	564.63	561.27	556.11	547.77		
Mass of container	g	157.54	160.01	161.41	151.88	157.76		
Bulk density	Mg/m³	2.063	2.192	2.250	2.134	2.091		
Moisture content	%	8.7	10.0	11.7	13.3	14.7		
Dry density	Mg/m³	1.897	1.994	2.014	1.883	1.823		



TEST RESULTS

Maximum Dry Density : 2.01 Mg/m³
Optimum Moisture Content : 12 %

Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 03 FEB 2010

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MaterialLab

Test Report No. : 090562SL90276(74)

HOKLAS 015

TEST REPORT ON RESULT OF DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP OF SOIL (using 1000cc mould & 2.5kg rammer)

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Groudn Investigation for South Island Line (EAST)

Client sample No. : -

Borehole No. : TP227
Depth (m) From : 0.50
To : -
Sample Origin : FILL
Description : -

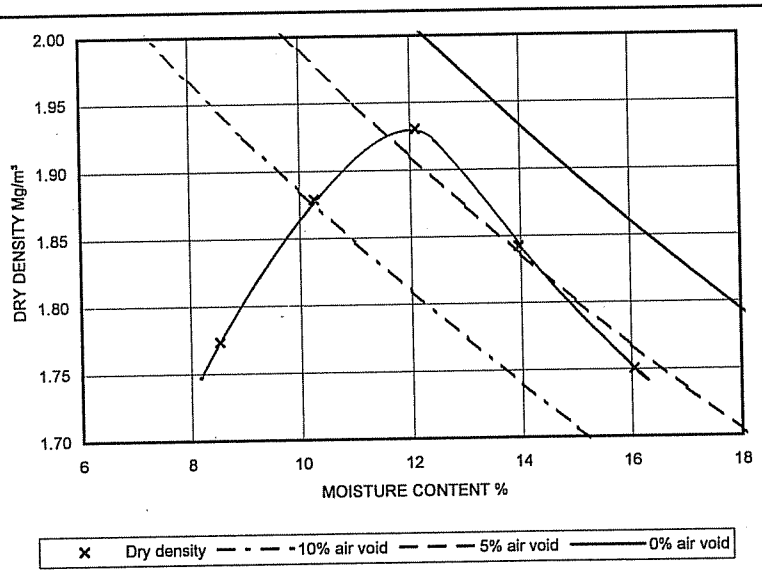
Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 12-01-2010
Date test completed : 16-01-2010
Test method used : Geospec 3 (November 2001) Test Method 10.1
Method of preparation : Oven dried ≤ 50°C
Single batch was used for this test

% passing 37.5 mm sieve : 100
% passing 20 mm sieve : 100
Zone of grading of sample : Zone 1
Visual description : Moist, brown, very silty/clayey, very sandy GRAVEL.
Particle density : 2.65 Mg/m³ (Assumed)
If measured, method used : -
Mass of mould : 4053.2 g
Volume of mould : 997.7 cm³

Laboratory sample I.D. : SL90276/8
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Determination No.		1	2	3	4	5		
Mass of mould + wet soil	g	5973.6	6119.9	6212.1	6147.8	6080.0		
Mass of container + wet soil	g	609.90	607.71	606.51	607.54	606.60		
Mass of container + dry soil	g	573.92	566.07	557.97	551.93	544.17		
Mass of container	g	152.47	160.46	156.78	153.73	155.36		
Bulk density	Mg/m³	1.925	2.071	2.164	2.099	2.031		
Moisture content	%	8.5	10.3	12.1	14.0	16.1		
Dry density	Mg/m³	1.773	1.879	1.930	1.842	1.750		



TEST RESULTS

Maximum Dry Density : 1.93 Mg/m³
Optimum Moisture Content : 12 %

Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ /
Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(75)

HKAS HOKLAS 015

TEST REPORT ON RESULT OF DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP OF SOIL (using 1000cc mould & 2.5kg rammer)

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Groudn Investigation for South Island Line (EAST)

Client sample No. : -

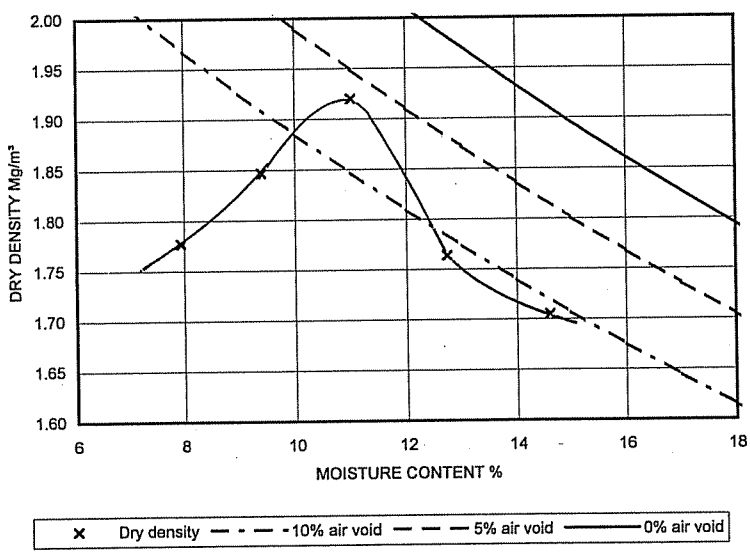
Borehole No. : TP227
Depth (m) From : 1.50
To : -
Sample Origin : FILL
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 12-01-2010
Date test completed : 16-01-2010
Test method used : Geospec 3 (November 2001) Test Method 10.1
Method of preparation : Oven dried ≤ 50°C
Single batch was used for this test
% passing 37.5 mm sieve : 100
% passing 20 mm sieve : 100
Zone of grading of sample : Zone 1
Visual description : Moist, dark brown, very silty/clayey, very sandy GRAVEL.
Particle density : 2.65 Mg/m³ (Assumed)
If measured, method used : -
Mass of mould : 4053.2 g
Volume of mould : 997.7 cm³

Laboratory sample I.D. : SL90276/9
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Determination No.		1	2	3	4	5		
Mass of mould + wet soil	g	5966.7	6068.7	6179.3	6037.0	6002.6		
Mass of container + wet soil	g	602.16	605.43	606.30	603.29	602.37		
Mass of container + dry soil	g	569.27	566.63	561.56	553.35	545.84		
Mass of container	g	154.93	154.18	155.27	161.13	158.83		
Bulk density	Mg/m³	1.918	2.020	2.131	1.988	1.954		
Moisture content	%	7.9	9.4	11.0	12.7	14.6		
Dry density	Mg/m³	1.777	1.846	1.920	1.764	1.705		



TEST RESULTS

Maximum Dry Density : 1.92 Mg/m³
Optimum Moisture Content : 11 %

Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(76)

HKAS HOKLAS 015

TEST REPORT ON RESULT OF DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP OF SOIL (using 1000cc mould & 2.5kg rammer)

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Groudn Investigation for South Island Line (EAST)

Client sample No. : -

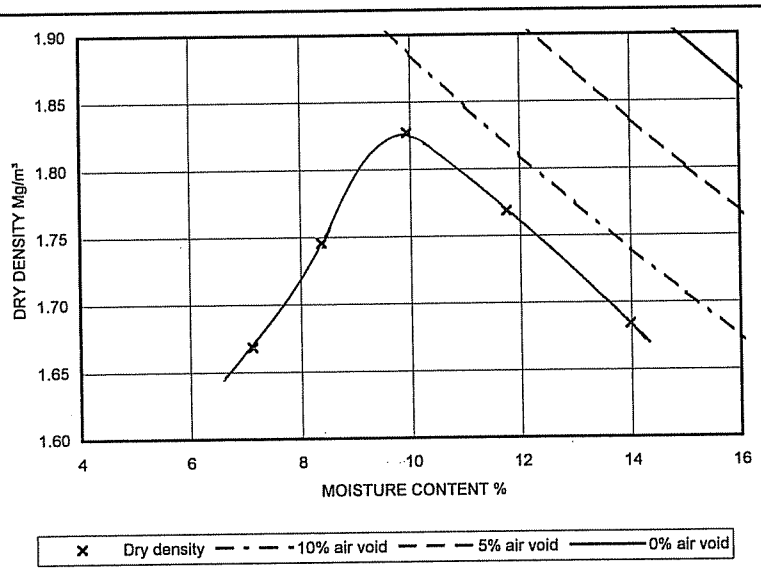
Borehole No. : TP227
Depth (m) From : 2.50
To : -
Sample Origin : FILL
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 12-01-2010
Date test completed : 16-01-2010
Test method used : Geospec 3 (November 2001) Test Method 10.1
Method of preparation : Oven dried ≤ 50°C
Single batch was used for this test
% passing 37.5 mm sieve : 100
% passing 20 mm sieve : 100
Zone of grading of sample : Zone 1
Visual description : Moist, brown, very silty/clayey, very gravelly SAND.
Particle density : 2.65 Mg/m³ (Assumed)
If measured, method used : -
Mass of mould : 4053.2 g
Volume of mould : 997.7 cm³

Laboratory sample I.D. : SL90276/10
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Determination No.		1	2	3	4	5		
Mass of mould + wet soil	g	5836.7	5940.4	6057.3	6025.1	5968.6		
Mass of container + wet soil	g	602.69	605.45	607.20	601.89	605.29		
Mass of container + dry soil	g	572.92	571.01	566.47	555.18	550.14		
Mass of container	g	156.26	159.71	156.52	157.77	155.77		
Bulk density	Mg/m³	1.788	1.892	2.009	1.976	1.920		
Moisture content	%	7.1	8.4	9.9	11.8	14.0		
Dry density	Mg/m³	1.668	1.745	1.827	1.769	1.684		



TEST RESULTS

Maximum Dry Density : 1.83 Mg/m³
Optimum Moisture Content : 9.9 %

Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 03 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(77)

HKLAS 015

TEST REPORT ON RESULT OF DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP OF SOIL (using 1000cc mould & 2.5kg rammer)

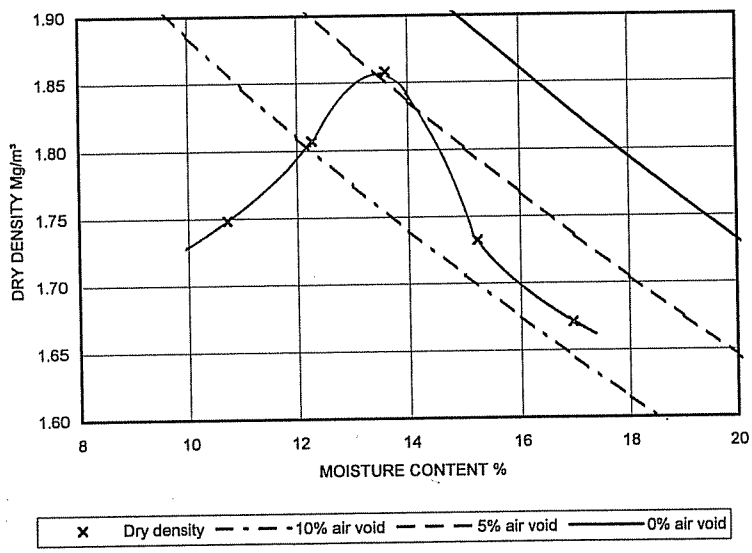
Information supplied by Client

Client	:	MTR Corporation Limited	Client sample No.	:	-
Client's Address	:	Not requested to be reported	Borehole No.	:	TP228
			Depth (m) From	:	0.50
			To	:	-
Project	:	Contract 912	Sample Origin	:	FILL
		Groudn Investigation for South Island Line (EAST)	Description	:	-

Laboratory Information

Date sample received	:	30-12-2009	Laboratory sample I.D.	:	SL90276/11
Date test commenced	:	11-01-2010	Specimen reference	:	-
Date test completed	:	16-01-2010	Sample type	:	D
Test method used	:	Geospec 3 (November 2001) Test Method 10.1	Location and Orientation within original sample	:	Full mix.
Method of preparation	:	Oven dried ≤ 50°C Single batch was used for this test			
% passing 37.5 mm sieve	:	100			
% passing 20 mm sieve	:	100			
Zone of grading of sample	:	Zone 1			
Visual description	:	Moist, orangish brown, slightly gravelly, sandy SILT/CLAY.			
Particle density	:	2.65 Mg/m³ (Assumed)			
If measured, method used	:	-			
Mass of mould	:	4053.2 g			
Volume of mould	:	997.7 cm³			

Determination No.		1	2	3	4	5		
Mass of mould + wet soil	g	5984.2	6077.2	6159.1	6044.7	6003.2		
Mass of container + wet soil	g	603.65	602.71	602.31	602.87	603.82		
Mass of container + dry soil	g	560.77	553.88	549.04	543.96	539.26		
Mass of container	g	160.64	156.00	157.32	157.07	158.79		
Bulk density	Mg/m³	1.935	2.029	2.111	1.996	1.954		
Moisture content	%	10.7	12.3	13.6	15.2	17.0		
Dry density	Mg/m³	1.748	1.807	1.858	1.732	1.671		



TEST RESULTS

Maximum Dry Density : 1.86 Mg/m³
Optimum Moisture Content : 14 %

Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 03 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(78)

TEST REPORT ON RESULT OF DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP OF SOIL (using 1000cc mould & 2.5kg rammer)

HOKLAS 015

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Groudn Investigation for South Island Line (EAST)

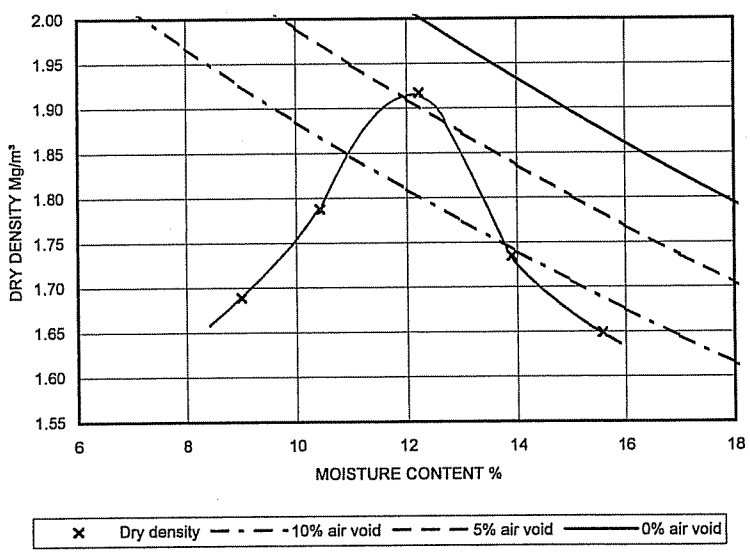
Client sample No. : -
Borehole No. : TP228
Depth (m) From : 1.5
To : -
Sample Origin : FILL
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 11-01-2010
Date test completed : 19-01-2010
Test method used : Geospec 3 (November 2001) Test Method 10.1
Method of preparation : Oven dried ≤ 50°C
Single batch was used for this test
% passing 37.5 mm sieve : 100
% passing 20 mm sieve : 100
Zone of grading of sample : Zone 1
Visual description : Moist, orangish brown, very silty/clayey, very sandy GRAVEL.
Particle density : 2.65 Mg/m³ (Assumed)
If measured, method used : -
Mass of mould : 4053.2 g
Volume of mould : 995.1 cm³

Laboratory sample I.D. : SL90276/12
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Determination No.		1	2	3	4	5		
Mass of mould + wet soil	g	5885.2	6017.8	6193.7	6018.9	5949.6		
Mass of container + wet soil	g	603.94	607.74	600.72	608.78	592.40		
Mass of container + dry soil	g	567.03	564.64	552.89	554.02	533.79		
Mass of container	g	157.75	151.87	161.49	160.01	157.55		
Bulk density	Mg/m³	1.841	1.974	2.151	1.975	1.906		
Moisture content	%	9.0	10.4	12.2	13.9	15.6		
Dry density	Mg/m³	1.689	1.788	1.917	1.734	1.649		



TEST RESULTS

Maximum Dry Density : 1.92 Mg/m³
Optimum Moisture Content : 12 %

Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 03 FEB 2010

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Test Report No. : 090562SL90276(79) Page 1 of 1

TEST REPORT ON RESULT OF DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP OF SOIL (using 1000cc mould & 2.5kg rammer)

HOKLAS 015

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Groudn Investigation for South Island Line (EAST)

Client sample No. : -

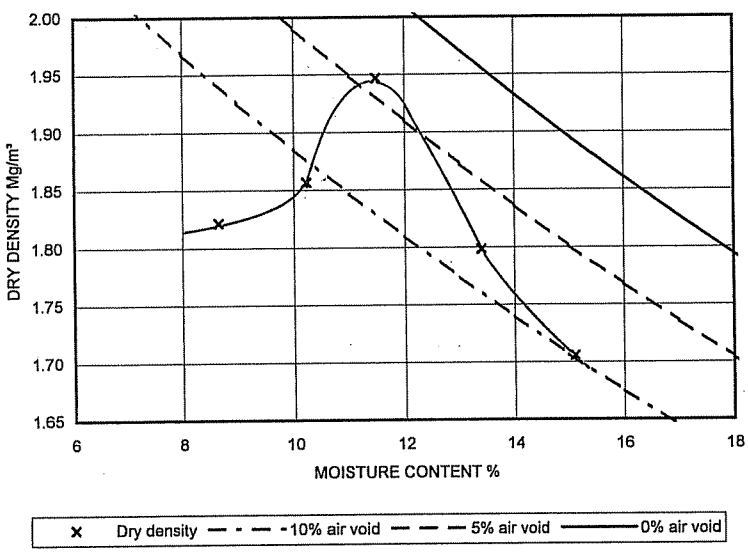
Borehole No. : TP228
Depth (m) From : 2.50
To : -
Sample Origin : FILL
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 11-01-2010
Date test completed : 16-01-2010
Test method used : Geospec 3 (November 2001) Test Method 10.1
Method of preparation : Oven dried ≤ 50°C
Single batch was used for this test
% passing 37.5 mm sieve : 100
% passing 20 mm sieve : 100
Zone of grading of sample : Zone 1
Visual description : Moist, orangish brown, very silty/clayey, very gravelly SAND.
Particle density : 2.65 Mg/m³ (Assumed)
If measured, method used : -
Mass of mould : 4053.2 g
Volume of mould : 997.7 cm³

Laboratory sample I.D. : SL90276/13
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Determination No.		1	2	3	4	5		
Mass of mould + wet soil	g	6027.7	6094.8	6218.6	6087.4	6012.0		
Mass of container + wet soil	g	609.87	604.38	602.80	602.45	606.55		
Mass of container + dry soil	g	573.95	563.40	557.37	549.68	547.28		
Mass of container	g	159.03	162.77	161.61	155.54	155.24		
Bulk density	Mg/m³	1.979	2.046	2.170	2.039	1.963		
Moisture content	%	8.7	10.2	11.5	13.4	15.1		
Dry density	Mg/m³	1.821	1.856	1.947	1.798	1.705		



TEST RESULTS

Maximum Dry Density : 1.95 Mg/m³
Optimum Moisture Content : 12 %

Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)
Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 03 FEB 2010

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MateriaLab

HKLAS 015

Test Report No. : 090562SL90276(80) Page 1 of 1

TEST REPORT ON RESULT OF DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP OF SOIL (using 1000cc mould & 2.5kg rammer)

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Groudn Investigation for South Island Line (EAST)

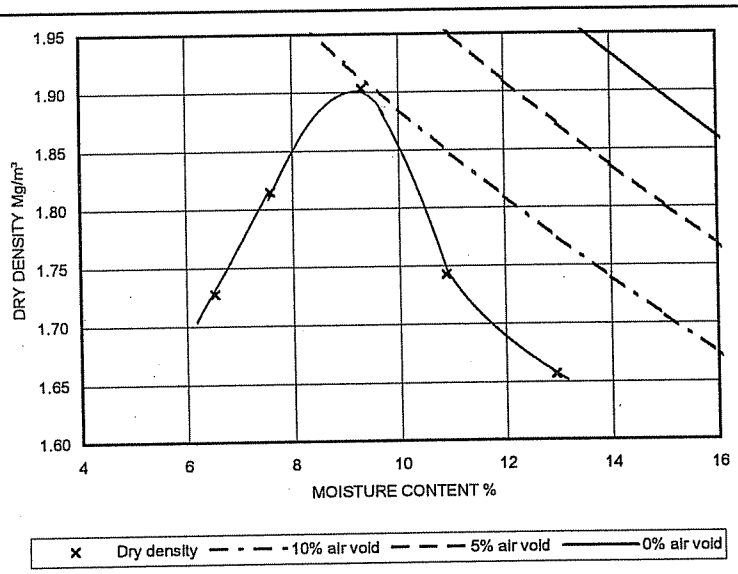
Client sample No. : -
Borehole No. : TP230
Depth (m) From : 0.5
To : -
Sample Origin : FILL
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 12-01-2010
Date test completed : 15-01-2010
Test method used : Geospec 3 (November 2001) Test Method 10.1
Method of preparation : Oven dried ≤ 50°C
Single batch was used for this test
% passing 37.5 mm sieve : 100
% passing 20 mm sieve : 98
Zone of grading of sample : Zone 1
Visual description : Moist, brown, very silty/clayey, very gravelly SAND.
Particle density : 2.65 Mg/m³ (Assumed)
If measured, method used : -
Mass of mould : 4053.2 g
Volume of mould : 997.2 cm³

Laboratory sample I.D. : SL90276/14
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Determination No.		1	2	3	4	5		
Mass of mould + wet soil	g	5888.4	5999.9	6128.3	5980.5	5919.4		
Mass of container + wet soil	g	603.65	604.15	602.69	601.09	608.20		
Mass of container + dry soil	g	576.34	572.45	564.69	557.83	556.80		
Mass of container	g	157.95	154.79	157.00	160.48	159.32		
Bulk density	Mg/m³	1.840	1.952	2.081	1.933	1.871		
Moisture content	%	6.5	7.6	9.3	10.9	12.9		
Dry density	Mg/m³	1.728	1.814	1.904	1.743	1.657		



TEST RESULTS

Maximum Dry Density : 1.90 Mg/m³
Optimum Moisture Content : 9.3 %

Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil) Date : 03 FEB 2010

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MateriaLab

Test Report No. : 090562SL90276(81)

HOKLAS 015

TEST REPORT ON RESULT OF DETERMINATION OF DRY DENSITY / MOISTURE CONTENT RELATIONSHIP OF SOIL (using 1000cc mould & 2.5kg rammer)

Information supplied by Client

Client : MTR Corporation Limited
Client's Address : Not requested to be reported

Project : Contract 912
Groudn Investigation for South Island Line (EAST)

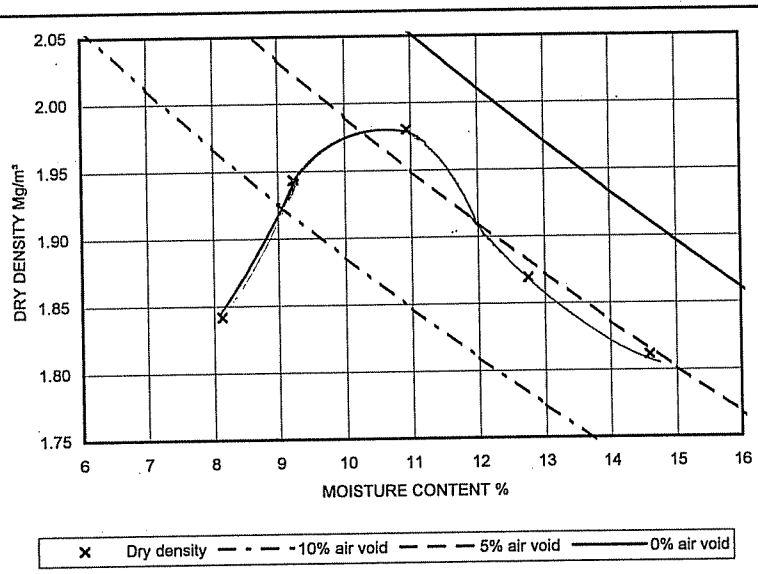
Client sample No. : -
Borehole No. : TP232
Depth (m) From : 0.5
To : -
Sample Origin : FILL
Description : -

Laboratory Information

Date sample received : 30-12-2009
Date test commenced : 11-01-2010
Date test completed : 19-01-2010
Test method used : Geospec 3 (November 2001) Test Method 10.1
Method of preparation : Oven dried ≤ 50°C
Single batch was used for this test
% passing 37.5 mm sieve : 100
% passing 20 mm sieve : 100
Zone of grading of sample : Zone 1
Visual description : Moist, dark brown, very silty/clayey, very sandy GRAVEL.
Particle density : 2.65 Mg/m³ (Assumed)
If measured, method used : -
Mass of mould : 4036.9 g
Volume of mould : 995.1 cm³

Laboratory sample I.D. : SL90276/16
Specimen reference : -
Sample type : D
Location and Orientation within original sample : Full mix.

Determination No.		1	2	3	4	5		
Mass of mould + wet soil	g	6018.5	6149.2	6223.1	6134.1	6102.5		
Mass of container + wet soil	g	604.67	603.59	605.36	607.67	606.05		
Mass of container + dry soil	g	571.15	565.85	561.18	556.61	549.34		
Mass of container	g	158.77	157.05	157.33	156.00	160.64		
Bulk density	Mg/m³	1.991	2.123	2.197	2.108	2.076		
Moisture content	%	8.1	9.2	10.9	12.7	14.6		
Dry density	Mg/m³	1.842	1.943	1.980	1.869	1.811		



TEST RESULTS

Maximum Dry Density : 1.98 Mg/m³
Optimum Moisture Content : 11 %

Abbreviations used : Sample type : U = undisturbed, P = piston, M = mazier, BLK = block, D = disturbed (bulk)

Remarks : -

Certified by : ~~Paul Richard Cooper (Operations Manager - CMT)~~ / Lai Mei Ting (Assistant Manager - Soil)

Date : 03 FEB 2010

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APPENDIX H. CHEMICAL TESTS

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MateriaLab

Report No. : 090562CH91510

HOKLAS 015

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D222 Sample No. / Type - 11/M Sample Depth (m) - 6.00 Soil Recovery (%) - 100 Geological Stratum - CDS
Test required	:	1. Organic matter content 2. Total sulphate content (as SO_3) 3. Water-soluble sulphate content (as SO_3) 4. Water-soluble chloride content (as Cl^-) 5. pH value

Laboratory Information

Laboratory sample ID.	:	CH91510/1
Date of receipt of sample	:	25/08/2009
Date test commenced	:	25/08/2009
Date test completed	:	07/09/2009
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1 2 & 3. GEOSPEC 3: 2001 Test 9.3 4. GEOSPEC 3: 2001 Test 9.4 5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	97 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Not detected
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve	<0.1 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.02 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.01 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	<0.01%
5. pH value of sample	6.8

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 8/9/2009

Note : This report refers only to the sample(s) tested.

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MateriaLab

Report No. : 090562CH91510(1)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	- .
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D222 Sample No. / Type - 11/M Sample Depth (m) - 6.00 Soil Recovery (%) - 100 Geological Stratum - CDS
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH91510/1
Date of receipt of sample	:	25/08/2009
Date test commenced	:	25/08/2009
Date test completed	:	07/09/2009
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... 0.80 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 8/9/2009

Note : This report refers only to the sample(s) tested.

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MateriaLab

Report No. : 090562CH91510(2)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D222 Sample No. / Type - 11/M Sample Depth (m) - 6.00 Soil Recovery (%) - 100 Geological Stratum - CDS
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH91510/1
Date of receipt of sample	:	25/08/2009
Date test commenced	:	25/08/2009
Date test completed	:	07/09/2009
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by : _____
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 8/9/2009

Note : This report refers only to the sample(s) tested.

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MateriaLab

Report No. : 090562CH100203

HOKLAS 015

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D224 Sample No. / Type - M Sample Depth (m) - 5.50 Soil Recovery (%) - 89 Geological Stratum - FILL
Test required	:	1. Organic matter content 2. Total sulphate content (as SO_3) 3. Water-soluble sulphate content (as SO_3) 4. Water-soluble chloride content (as Cl^-) 5. pH value

Laboratory Information

Laboratory sample ID.	:	CH100203/1
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1 2 & 3. GEOSPEC 3: 2001 Test 9.3 4. GEOSPEC 3: 2001 Test 9.4 5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	96 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Not detected
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve	<0.1 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.02 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.01 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	<0.01%
5. pH value of sample	5.8

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 5/2/2010

Note : This report refers only to the sample(s) tested.

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MateriaLab

Report No. : 090562CH100203(1)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D224 Sample No. / Type - M Sample Depth (m) - 5.50 Soil Recovery (%) - 89 Geological Stratum - FILL
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH100203/1
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... 0.09 %

Supervised by : Bruce K.M. Au

Certified by :

Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

Note : This report refers only to the sample(s) tested.

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MateriaLab

Report No. : 090562CH100203(2)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D224 Sample No. / Type - M Sample Depth (m) - 5.50 Soil Recovery (%) - 89 Geological Stratum - FILL
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH100203/1
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :

Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

Note : This report refers only to the sample(s) tested.

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MateriaLab

Report No. : 090562CH100203(3)

HOKLAS 015

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D224
		Sample No. / Type - M
		Sample Depth (m) - 8.00
		Soil Recovery (%) - 97
		Geological Stratum - CDM
Test required	:	1. Organic matter content
		2. Total sulphate content (as SO_3)
		3. Water-soluble sulphate content (as SO_3)
		4. Water-soluble chloride content (as Cl^-)
		5. pH value

Laboratory Information

Laboratory sample ID.	:	CH100203/2
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1
		2 & 3. GEOSPEC 3: 2001 Test 9.3
		4. GEOSPEC 3: 2001 Test 9.4
		5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	85 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Not detected
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve	<0.1 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.02 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.01 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	<0.01%
5. pH value of sample	6.4

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

Note : This report refers only to the sample(s) tested.

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MateriaLab

Report No. : 090562CH100203(4)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D224 Sample No. / Type - M Sample Depth (m) - 8.00 Soil Recovery (%) - 97 Geological Stratum - CDM
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH100203/2
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... 0.26 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(5)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D224 Sample No. / Type - M Sample Depth (m) - 8.00 Soil Recovery (%) - 97 Geological Stratum - CDM
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH100203/2
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :

Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(6)

HOKLAS 015

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D224 Sample No. / Type - M Sample Depth (m) - 18.00 Soil Recovery (%) - 97 Geological Stratum - CDM
Test required	:	1. Organic matter content 2. Total sulphate content (as SO_3) 3. Water-soluble sulphate content (as SO_3) 4. Water-soluble chloride content (as Cl^-) 5. pH value

Laboratory Information

Laboratory sample ID.	:	CH100203/3
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1 2 & 3. GEOSPEC 3: 2001 Test 9.3 4. GEOSPEC 3: 2001 Test 9.4 5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	99 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Not detected
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve	<0.1 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.02 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.01 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	<0.01%
5. pH value of sample	6.4

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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Report No. : 090562CH100203(7)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D224 Sample No. / Type - M Sample Depth (m) - 18.00 Soil Recovery (%) - 97 Geological Stratum - CDM
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH100203/3
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... 0.35 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(8)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D224 Sample No. / Type - M Sample Depth (m) - 18.00 Soil Recovery (%) - 97 Geological Stratum - CDM
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH100203/3
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :

Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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Report No. : 090562CH100203(9)

HKAS HOKLAS 015

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D225 Sample No. / Type - M Sample Depth (m) - 6.00 Soil Recovery (%) - 100 Geological Stratum - CDM
Test required	:	1. Organic matter content 2. Total sulphate content (as SO_3) 3. Water-soluble sulphate content (as SO_3) 4. Water-soluble chloride content (as Cl^-) 5. pH value

Laboratory Information

Laboratory sample ID.	:	CH100203/4
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1 2 & 3. GEOSPEC 3: 2001 Test 9.3 4. GEOSPEC 3: 2001 Test 9.4 5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	87 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Not detected
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve	<0.1 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.02 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.01 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	<0.01%
5. pH value of sample	6.0

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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Report No. : 090562CH100203(10)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D225 Sample No. / Type - M Sample Depth (m) - 6.00 Soil Recovery (%) - 100 Geological Stratum - CDM
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH100203/4
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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Report No. : 090562CH100203(11)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D225 Sample No. / Type - M Sample Depth (m) - 6.00 Soil Recovery (%) - 100 Geological Stratum - CDM
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH100203/4
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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Report No. : 090562CH100203(12)

HOKLAS 015

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D225 Sample No. / Type - M Sample Depth (m) - 18.00 Soil Recovery (%) - 100 Geological Stratum - CDM
Test required	:	1. Organic matter content 2. Total sulphate content (as SO_3) 3. Water-soluble sulphate content (as SO_3) 4. Water-soluble chloride content (as Cl^-) 5. pH value

Laboratory Information

Laboratory sample ID.	:	CH100203/5
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1 2 & 3. GEOSPEC 3: 2001 Test 9.3 4. GEOSPEC 3: 2001 Test 9.4 5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	92 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Not detected
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve	<0.1 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.02 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.01 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	<0.01%
5. pH value of sample	6.0

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(13)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D225 Sample No. / Type - M Sample Depth (m) - 18.00 Soil Recovery (%) - 100 Geological Stratum - CDM
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH100203/5
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... 0.53 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

Note : This report refers only to the sample(s) tested.

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Report No. : 090562CH100203(14)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D225 Sample No. / Type - M Sample Depth (m) - 18.00 Soil Recovery (%) - 100 Geological Stratum - CDM
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH100203/5
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :

Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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Report No. : 090562CH100203(15)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D226 Sample No. / Type - M Sample Depth (m) - 5.50 Soil Recovery (%) - 93 Geological Stratum - CDR
Test required	:	1. Organic matter content 2. Total sulphate content (as SO_3) 3. Water-soluble sulphate content (as SO_3) 4. Water-soluble chloride content (as Cl^-) 5. pH value

Laboratory Information

Laboratory sample ID.	:	CH100203/6
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1 2 & 3. GEOSPEC 3: 2001 Test 9.3 4. GEOSPEC 3: 2001 Test 9.4 5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	92 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Not detected
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve	<0.1 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.02 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.01 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	<0.01%
5. pH value of sample	5.3

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(16)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D226 Sample No. / Type - M Sample Depth (m) - 5.50 Soil Recovery (%) - 93 Geological Stratum - CDR
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH100203/6
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... 0.53 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(17)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D226 Sample No. / Type - M Sample Depth (m) - 5.50 Soil Recovery (%) - 93 Geological Stratum - CDR
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH100203/6
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

Note : This report refers only to the sample(s) tested.

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MateriaLab

HKLAS 015

Report No. : 090562CH100203(18)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D226 Sample No. / Type - M Sample Depth (m) - 19.50 Soil Recovery (%) - 100 Geological Stratum - CDR
Test required	:	1. Organic matter content 2. Total sulphate content (as SO_3) 3. Water-soluble sulphate content (as SO_3) 4. Water-soluble chloride content (as Cl^-) 5. pH value

Laboratory Information

Laboratory sample ID.	:	CH100203/7
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1 2 & 3. GEOSPEC 3: 2001 Test 9.3 4. GEOSPEC 3: 2001 Test 9.4 5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	98 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Not detected
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve	<0.1 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.02 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.01 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	<0.01%
5. pH value of sample	6.9

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(19)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D226 Sample No. / Type - M Sample Depth (m) - 19.50 Soil Recovery (%) - 100 Geological Stratum - CDR
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH100203/7
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... 0.26 %

Supervised by : Bruce K.M. Au

Certified by

Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(20)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D226 Sample No. / Type - M Sample Depth (m) - 19.50 Soil Recovery (%) - 100 Geological Stratum - CDR
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH100203/7
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :

Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(21)

HOKLAS 015

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D227 Sample No. / Type - M Sample Depth (m) - 2.00 Soil Recovery (%) - 92 Geological Stratum - FILL
Test required	:	1. Organic matter content 2. Total sulphate content (as SO_3) 3. Water-soluble sulphate content (as SO_3) 4. Water-soluble chloride content (as Cl^-) 5. pH value

Laboratory Information

Laboratory sample ID.	:	CH100203/8
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1 2 & 3. GEOSPEC 3: 2001 Test 9.3 4. GEOSPEC 3: 2001 Test 9.4 5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	95 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Not detected
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.1 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.02 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.01 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	<0.01%
5. pH value of sample	6.9

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(22)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D227 Sample No. / Type - M Sample Depth (m) - 2.00 Soil Recovery (%) - 92 Geological Stratum - FILL
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH100203/8
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... 0.26 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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Report No. : 090562CH100203(23)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D227 Sample No. / Type - M Sample Depth (m) - 2.00 Soil Recovery (%) - 92 Geological Stratum - FILL
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH100203/8
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :

Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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HKAS HOKLAS 015

Report No. : 090562CH100203(24)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D227 Sample No. / Type - M Sample Depth (m) - 6.10 Soil Recovery (%) - 100 Geological Stratum - ALL
Test required	:	1. Organic matter content 2. Total sulphate content (as SO_3) 3. Water-soluble sulphate content (as SO_3) 4. Water-soluble chloride content (as Cl^-) 5. pH value

Laboratory Information

Laboratory sample ID.	:	CH100203/9
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1 2 & 3. GEOSPEC 3: 2001 Test 9.3 4. GEOSPEC 3: 2001 Test 9.4 5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	99 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Not detected
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve	<0.1 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.02 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.01 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	<0.01%
5. pH value of sample	7.0

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(25)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D227 Sample No. / Type - M Sample Depth (m) - 6.10 Soil Recovery (%) - 100 Geological Stratum - ALL
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH100203/9
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

Note : This report refers only to the sample(s) tested.

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MateriaLab

Report No. : 090562CH100203(26)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D227 Sample No. / Type - M Sample Depth (m) - 6.10 Soil Recovery (%) - 100 Geological Stratum - ALL
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH100203/9
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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Report No. : 090562CH100203(27)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D227
		Sample No. / Type - M
		Sample Depth (m) - 8.10
		Soil Recovery (%) - 100
		Geological Stratum - HDT
Test required	:	1. Organic matter content
		2. Total sulphate content (as SO_3)
		3. Water-soluble sulphate content (as SO_3)
		4. Water-soluble chloride content (as Cl^-)
		5. pH value

Laboratory Information

Laboratory sample ID.	:	CH100203/10
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1
		2 & 3. GEOSPEC 3: 2001 Test 9.3
		4. GEOSPEC 3: 2001 Test 9.4
		5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	94 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Not detected
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.1 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.02 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.01 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	<0.01%
5. pH value of sample	6.7

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(28)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D227 Sample No. / Type - M Sample Depth (m) - 8.10 Soil Recovery (%) - 100 Geological Stratum - HDT
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH100203/10
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... 0.18 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(29)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D227 Sample No. / Type - M Sample Depth (m) - 8.10 Soil Recovery (%) - 100 Geological Stratum - HDT
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH100203/10
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by : _____
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(30)

HKLAS 015

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D227 Sample No. / Type - M Sample Depth (m) - 11.30 Soil Recovery (%) - 100 Geological Stratum - CDT
Test required	:	1. Organic matter content 2. Total sulphate content (as SO_3) 3. Water-soluble sulphate content (as SO_3) 4. Water-soluble chloride content (as Cl^-) 5. pH value

Laboratory Information

Laboratory sample ID.	:	CH100203/11
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1 2 & 3. GEOSPEC 3: 2001 Test 9.3 4. GEOSPEC 3: 2001 Test 9.4 5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	90 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Not detected
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve	<0.1 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.02 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.01 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	<0.01%
5. pH value of sample	6.9

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(31)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D227 Sample No. / Type - M Sample Depth (m) - 11.30 Soil Recovery (%) - 100 Geological Stratum - CDT
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH100203/11
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... 0.09 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

Note : This report refers only to the sample(s) tested.

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MateriaLab

Report No. : 090562CH100203(32)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D227 Sample No. / Type - M Sample Depth (m) - 11.30 Soil Recovery (%) - 100 Geological Stratum - CDT
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH100203/11
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

Note : This report refers only to the sample(s) tested.

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MateriaLab

Report No. : 090562CH91510(3)

HOKLAS 015

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D230
		Sample No. / Type - 17/M
		Sample Depth (m) - 10.90
		Soil Recovery (%) - 70
		Geological Stratum - CDT
Test required	:	1. Organic matter content
		2. Total sulphate content (as SO_3)
		3. Water-soluble sulphate content (as SO_3)
		4. Water-soluble chloride content (as Cl^-)
		5. pH value

Laboratory Information

Laboratory sample ID.	:	CH91510/2
Date of receipt of sample	:	25/08/2009
Date test commenced	:	25/08/2009
Date test completed	:	07/09/2009
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1
		2 & 3. GEOSPEC 3: 2001 Test 9.3
		4. GEOSPEC 3: 2001 Test 9.4
		5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	98 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Detected
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.1 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.02 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.01 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	0.01%
5. pH value of sample	7.9

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 8/9/2009

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MateriaLab

Report No. : 090562CH91510(4)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D230 Sample No. / Type - 17/M Sample Depth (m) - 10.90 Soil Recovery (%) - 70 Geological Stratum - CDT
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH91510/2
Date of receipt of sample	:	25/08/2009
Date test commenced	:	25/08/2009
Date test completed	:	07/09/2009
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... 0.44 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 8/9/2009

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MateriaLab

Report No. : 090562CH91510(5)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D230 Sample No. / Type - 17/M Sample Depth (m) - 10.90 Soil Recovery (%) - 70 Geological Stratum - CDT
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH91510/2
Date of receipt of sample	:	25/08/2009
Date test commenced	:	25/08/2009
Date test completed	:	07/09/2009
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by : _____
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 8/9/2009

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MateriaLab

Report No. : 090562CH100203(33)

HOKLAS 015

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D231 Sample No. / Type - M Sample Depth (m) - 5.50 Soil Recovery (%) - 90 Geological Stratum - CDM
Test required	:	1. Organic matter content 2. Total sulphate content (as SO_3) 3. Water-soluble sulphate content (as SO_3) 4. Water-soluble chloride content (as Cl^-) 5. pH value

Laboratory Information

Laboratory sample ID.	:	CH100203/12
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1 2 & 3. GEOSPEC 3: 2001 Test 9.3 4. GEOSPEC 3: 2001 Test 9.4 5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	91 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Not detected
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve	<0.1 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.02 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.01 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	<0.01%
5. pH value of sample	5.8

Supervised by : Bruce K.M. Au

Certified by : _____
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 7/2/2010

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MateriaLab

Report No. : 090562CH100203(34)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D231 Sample No. / Type - M Sample Depth (m) - 5.50 Soil Recovery (%) - 90 Geological Stratum - CDM
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH100203/12
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... 0.26 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(35)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D231 Sample No. / Type - M Sample Depth (m) - 5.50 Soil Recovery (%) - 90 Geological Stratum - CDM
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH100203/12
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(36)

HOKLAS 015

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D231 Sample No. / Type - M Sample Depth (m) - 9.50 Soil Recovery (%) - 95 Geological Stratum - CDM
Test required	:	1. Organic matter content 2. Total sulphate content (as SO_3) 3. Water-soluble sulphate content (as SO_3) 4. Water-soluble chloride content (as Cl^-) 5. pH value

Laboratory Information

Laboratory sample ID.	:	CH100203/13
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1 2 & 3. GEOSPEC 3: 2001 Test 9.3 4. GEOSPEC 3: 2001 Test 9.4 5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	96 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Presence
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve.....	<0.1 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve.....	0.02 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.01 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	0.02 %
5. pH value of sample	5.4

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(37)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D231 Sample No. / Type - M Sample Depth (m) - 9.50 Soil Recovery (%) - 95 Geological Stratum - CDM
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH100203/13
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... 0.18 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(38)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D231 Sample No. / Type - M Sample Depth (m) - 9.50 Soil Recovery (%) - 95 Geological Stratum - CDM
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH100203/13
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(39)

HOKLAS 015

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D232 Sample No. / Type - M Sample Depth (m) - 7.60 Soil Recovery (%) - 87 Geological Stratum - MD
Test required	:	1. Organic matter content 2. Total sulphate content (as SO_3) 3. Water-soluble sulphate content (as SO_3) 4. Water-soluble chloride content (as Cl^-) 5. pH value

Laboratory Information

Laboratory sample ID.	:	CH100203/14
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1 2 & 3. GEOSPEC 3: 2001 Test 9.3 4. GEOSPEC 3: 2001 Test 9.4 5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	93 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Presence
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve	1.6 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.04 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.02 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	0.01 %
5. pH value of sample	7.5

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(40)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D232 Sample No. / Type - M Sample Depth (m) - 7.60 Soil Recovery (%) - 87 Geological Stratum - MD
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH100203/14
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... 0.53 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 9/2/2010

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MateriaLab

Report No. : 090562CH100203(41)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D232 Sample No. / Type - M Sample Depth (m) - 7.60 Soil Recovery (%) - 87 Geological Stratum - MD
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH100203/14
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(42)

HKLAS 015

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D232 Sample No. / Type - M Sample Depth (m) - 9.60 Soil Recovery (%) - 93 Geological Stratum - MD
Test required	:	1. Organic matter content 2. Total sulphate content (as SO_3) 3. Water-soluble sulphate content (as SO_3) 4. Water-soluble chloride content (as Cl^-) 5. pH value

Laboratory Information

Laboratory sample ID.	:	CH100203/15
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1 2 & 3. GEOSPEC 3: 2001 Test 9.3 4. GEOSPEC 3: 2001 Test 9.4 5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	95 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Not detected
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve.....	2.2 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve.....	0.05 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.02 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	<0.01%
5. pH value of sample	6.5

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

Note : This report refers only to the sample(s) tested.

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Website : www.materialab.com.hk

MateriaLab

Report No. : 090562CH100203(43)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D232 Sample No. / Type - M Sample Depth (m) - 9.60 Soil Recovery (%) - 93 Geological Stratum - MD
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH100203/15
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... 0.35 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(44)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D232 Sample No. / Type - M Sample Depth (m) - 9.60 Soil Recovery (%) - 93 Geological Stratum - MD
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH100203/15
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(45)

HOKLAS 015

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D232 Sample No. / Type - M Sample Depth (m) - 14.55 Soil Recovery (%) - 100 Geological Stratum - CDM
Test required	:	1. Organic matter content 2. Total sulphate content (as SO_3) 3. Water-soluble sulphate content (as SO_3) 4. Water-soluble chloride content (as Cl^-) 5. pH value

Laboratory Information

Laboratory sample ID.	:	CH100203/16
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1 2 & 3. GEOSPEC 3: 2001 Test 9.3 4. GEOSPEC 3: 2001 Test 9.4 5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	96 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Not detected
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve	<0.1 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.02 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.01 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	<0.01%
5. pH value of sample	7.4

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(46)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D232 Sample No. / Type - M Sample Depth (m) - 14.55 Soil Recovery (%) - 100 Geological Stratum - CDM
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH100203/16
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... 0.18 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(47)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D232 Sample No. / Type - M Sample Depth (m) - 14.55 Soil Recovery (%) - 100 Geological Stratum - CDM
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH100203/16
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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Report No. : 090562CH100203(48)

HOKLAS 015

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D228 Sample No. / Type - M Sample Depth (m) - 3.00 Soil Recovery (%) - 100 Geological Stratum - FILL
Test required	:	1. Organic matter content 2. Total sulphate content (as SO_3) 3. Water-soluble sulphate content (as SO_3) 4. Water-soluble chloride content (as Cl^-) 5. pH value

Laboratory Information

Laboratory sample ID.	:	CH100203/17
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1 2 & 3. GEOSPEC 3: 2001 Test 9.3 4. GEOSPEC 3: 2001 Test 9.4 5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	92 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Not detected
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.7 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.02 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.01 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	<0.01%
5. pH value of sample	7.3

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MaterialLab

Report No. : 090562CH100203(49)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D228 Sample No. / Type - M Sample Depth (m) - 3.00 Soil Recovery (%) - 100 Geological Stratum - FILL
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH100203/17
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... 0.62 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

Note : This report refers only to the sample(s) tested.

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MateriaLab

Report No. : 090562CH100203(50)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D228 Sample No. / Type - M Sample Depth (m) - 3.00 Soil Recovery (%) - 100 Geological Stratum - FILL
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH100203/17
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :

Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(51)

HOKLAS 015

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D235
		Sample No. / Type - M
		Sample Depth (m) - 3.00
		Soil Recovery (%) - 90
		Geological Stratum - CDT
Test required	:	1. Organic matter content
		2. Total sulphate content (as SO_3)
		3. Water-soluble sulphate content (as SO_3)
		4. Water-soluble chloride content (as Cl^-)
		5. pH value

Laboratory Information

Laboratory sample ID.	:	CH100203/18
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1
		2 & 3. GEOSPEC 3: 2001 Test 9.3
		4. GEOSPEC 3: 2001 Test 9.4
		5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	89 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Presence
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve.....	<0.1 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve.....	0.02 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.01 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	0.08 %
5. pH value of sample	6.9

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(52)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D235 Sample No. / Type - M Sample Depth (m) - 3.00 Soil Recovery (%) - 90 Geological Stratum - CDT
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH100203/18
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... 0.18 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

Note : This report refers only to the sample(s) tested.

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MateriaLab

Report No. : 090562CH100203(53)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D235 Sample No. / Type - M Sample Depth (m) - 3.00 Soil Recovery (%) - 90 Geological Stratum - CDT
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH100203/18
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :

Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

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MateriaLab

Report No. : 090562CH100203(54)

HOKLAS 015

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D236 Sample No. / Type - M Sample Depth (m) - 7.00 Soil Recovery (%) - 100 Geological Stratum - CDT
Test required	:	1. Organic matter content 2. Total sulphate content (as SO_3) 3. Water-soluble sulphate content (as SO_3) 4. Water-soluble chloride content (as Cl^-) 5. pH value

Laboratory Information

Laboratory sample ID.	:	CH100203/19
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1 2 & 3. GEOSPEC 3: 2001 Test 9.3 4. GEOSPEC 3: 2001 Test 9.4 5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	95 %
1. Qualitative check for (i) sulphides	Not detected
(ii) chlorides	Not detected
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve	<0.1 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve	0.02 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.01 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	<0.01%
5. pH value of sample	5.9

Supervised by : Bruce K.M. Au

Certified by :

Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 11/2/2010

Note : This report refers only to the sample(s) tested.

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MateriaLab

Report No. : 090562CH100203(55)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D236 Sample No. / Type - M Sample Depth (m) - 7.00 Soil Recovery (%) - 100 Geological Stratum - CDT
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH100203/19
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

Note : This report refers only to the sample(s) tested.

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MateriaLab

Report No. : 090562CH100203(56)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D236 Sample No. / Type - M Sample Depth (m) - 7.00 Soil Recovery (%) - 100 Geological Stratum - CDT
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH100203/19
Date of receipt of sample	:	02/02/2010
Date test commenced	:	02/02/2010
Date test completed	:	10/02/2010
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample ..... <0.01 %

Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample ..... <0.01 %

Supervised by : Bruce K.M. Au

Certified by :

Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 12/2/2010

Note : This report refers only to the sample(s) tested.

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MateriaLab

Report No. : 090562CH91510(6)

HOKLAS 015

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D237 Sample No. / Type - 7/M Sample Depth (m) - 3.00 Soil Recovery (%) - 85 Geological Stratum - ALL
Test required	:	1. Organic matter content 2. Total sulphate content (as SO_3) 3. Water-soluble sulphate content (as SO_3) 4. Water-soluble chloride content (as Cl^-) 5. pH value

Laboratory Information

Laboratory sample ID.	:	CH91510/3
Date of receipt of sample	:	25/08/2009
Date test commenced	:	25/08/2009
Date test completed	:	07/09/2009
Test method used	:	1. GEOSPEC 3: 2001 Test 9.1 2 & 3. GEOSPEC 3: 2001 Test 9.3 4. GEOSPEC 3: 2001 Test 9.4 5. GEOSPEC 3: 2001 Test 9.5

Results :

Sample passing a 2mm test sieve by oven-dry mass of the original sample	99 %
1. Qualitative check for (i) sulphides	Detected
(ii) chlorides	Not detected
The organic matter content by oven-dry mass of the fraction of soil passing a 2 mm test sieve.....	0.5 %
2. Total sulphate content (as SO_3) by oven-dry mass of the fraction of soil passing a 2 mm test sieve.....	0.03 %
3. Water-soluble sulphate content (as SO_3) in the 2:1 water-soil extract	0.02 g/L
4. Water-soluble chloride content (as Cl^-) in the 2:1 water-soil extract	<0.01%
5. pH value of sample	7.1

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 8/9/2009

Note : This report refers only to the sample(s) tested.

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MateriaLab

Report No. : 090562CH91510(7)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D237 Sample No. / Type - 7/M Sample Depth (m) - 3.00 Soil Recovery (%) - 85 Geological Stratum - ALL
Test required	:	Carbonate content (as CO_2)

Laboratory Information

Laboratory sample ID.	:	CH91510/3
Date of receipt of sample	:	25/08/2009
Date test commenced	:	25/08/2009
Date test completed	:	07/09/2009
Test method used	:	BS 1377: Part 3: 1990 Cl.6.3

Result :

Carbonate content (as CO_2) by oven-dry mass of the sample ..... 1.15 %

Supervised by : Bruce K.M. Au

Certified by

Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 8/9/2009

Note : This report refers only to the sample(s) tested.

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Report No. : 090562CH91510(8)

Test Report on Analysis of Soil

Information Supplied by Client

Client	:	MTR Corporation Limited
Client's address	:	-
Project	:	Contract 912, Ground Investigation for South Island Line (East)
Sample description	:	One sample of soil
Client sample ID.	:	Drillhole No. - D237 Sample No. / Type - 7/M Sample Depth (m) - 3.00 Soil Recovery (%) - 85 Geological Stratum - ALL
Test required	:	Sulphide and hydrogen sulphide content

Laboratory Information

Laboratory sample ID.	:	CH91510/3
Date of receipt of sample	:	25/08/2009
Date test commenced	:	25/08/2009
Date test completed	:	07/09/2009
Test method used	:	In-house method C-T-096

Results :

Sulphide content (as $S^{=}$) by oven-dry mass of the sample	0.03	%
Hydrogen sulphide content (as H_2S) by oven-dry mass of the sample	0.03	%

Supervised by : Bruce K.M. Au

Certified by :
Approved Signatory: HO Kin Man, John
Manager – Chemical & Environmental

Date : 8/9/2009

Note : This report refers only to the sample(s) tested.

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