Highways Department

Agreement No. CE32/2014(HY) Elevated Pedestrian Corridor in Yuen Long Town connecting with Long Ping Station – Investigation, Design and Construction

Sediment Sampling and Testing Plan

Sediment Sampling and Testing Plan

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1 Introduction

1.1 General

Ove Arup and Partners Hong Kong Limited (Arup) was commissioned by Highways Department (HyD) of the Hong Kong Special Administrative Region (HKSAR) Government on 30 December 2014 to provide consultancy services for the investigation, design and construction of the elevated pedestrian corridor in Yuen Long Town connecting with Long Ping Station (the Project).

1.2 Project background

Over the years, with the completion of major infrastructure improvements including Light Rail Transit (LRT) in late 80s, the operation of Tai Lam Tunnel in 1998 and the West Rail Service in 2003, Yuen Long has been experiencing substantial changes. Rapid growth in major residential developments and large scale integrated developments in Yuen Long Town and its surrounding areas was observed in recent years. These new developments and growing population have further exacerbated the congestion problem in Yuen Long Town and have resulted in surging demand for safe and convenient pedestrian facilities. Inadequate pedestrian facilities are long-standing problems in the town centre of Yuen Long. However, improvements have been constrained by the existing urban characteristics such as the presence of LRT, narrow footpaths along Castle Peak Road - Yuen Long Section (CPR(YLS)).

In September 2011, HyD commissioned a Feasibility Study (FS) (CE 4/2011 (HY)) on the major improvement schemes including the proposed footbridge along Yuen Long Town Nullah (YLTN) connecting with West Rail Long Ping Station (WRLPS). A public engagement was conducted in March and April 2013 to consult the public on the preliminary proposals for the major improvement schemes formulated in the FS. The public and Yuen Long District Council expressed strong support for the proposed footbridge and urged its early implementation.

The Technical Feasibility Statement (TFS) prepared by HyD for the proposed footbridge along Yuen Long Town Nullah between WRLPS and Kau Yuk Road (KYR) with provision for future extension was approved by the Development Bureau in July 2013. The findings of the above FS and the TFS set out the basis for the current proposal for the proposed footbridge under the Project.

1.3 EIA Study Brief

The Elevated Pedestrian Corridor in Yuen Long Town connecting with Long Ping Station (the Project) involves construction of pile foundation and piers within the Yuen Long Town Nullah and construction of box culvert structure supporting the proposed pedestrian interchanges and intermediate crossings. As Yuen Long Town Nullah eventually discharges into Mai Po Marshes which is designated as a Site of Special Scientific Interest, the Project is classified as a Designated Project under the following category under Item I.1(b), Part I, Schedule 2 of the Environmental Impact Assessment Ordinance (i.e. a drainage channel or river training and diversion works which discharges or discharge into an area which is less than 300m from the nearest boundary of an existing or planned site of special scientific interest).

In accordance with the requirement of Section 5(1) of the Environmental Impact Assessment Ordinance (EIAO), a project profile (PP-514/2014) for the Project was submitted to the Director of Environmental Protection (the "DEP") for application for an EIA Study Brief in August 2014. Pursuant to Section 5(7)(a) of the EIAO, the DEP has issued a Study Brief (ESB-278/2014 dated 18 September 2014) for the EIA study.

The purpose of the study brief is to scope the key issues of the EIA study and to specify the environmental issues that are required to be reviewed and assessed in the EIA report. The Applicant has to demonstrate in the EIA report that the criteria in the relevant sections of the Technical Memorandum on the Environmental Impact Assessment Process of the Environmental Impact Assessment Ordinance (hereinafter referred to as "the TM") are complied with.

In accordance with the EIA Study Brief (No. ESB-278/2014) Clause 3.4.4 and Appendix D Section 4 (i), it is necessary to identify and quantify the excavation/ dredging, transportation and disposal of sediment/mud. According to the layout of the proposed footbridge under the Project, potential encounter of land-based marine deposit is anticipated in the section between Long Ping Station and On Ning Road. Thus this Sediment Sampling and Testing plan (SSTP) is prepared to propose the sampling and testing schedule for future evaluation of excavated sediment quality. This SSTP is prepared for EIA purpose and a separated submission should be submitted to EPD and MFC under the Dumping At Sea Ordinance (DASO) for the disposal permit for any excavated sediment to be generated by the Project.

1.4 Objective of this report

The objectives of this SSTP is to review any previous sediment data within the Project Area, and to seek agreement from EPD on:

• The proposed locations and schedule of land-based marine sediment sampling;

• Specification of chemical test and biological toxicity test of land-based marine sediment samples for the evaluation of waste management under the EIAO process.

2 Description of the Project

2.1 Project Scope

The scope of works under this Project comprises:

- construction of a covered footbridge (hereinafter refer to 'the footbridge') of about 540 m in length and 6 m clear width with staircases/lifts/escalators along Yuen Long Town Nullah (YLTN) from West Rail Long Ping Station (WRLPS) to the south of Kau Yuk Road (KYR);
- connection of the footbridge with WRLPS;
- connection of the footbridge with at-grade footways along YLTN and in Yuen Long On Ning Road (YLONR), Castle Peak Road – Yuen Long Section CPR(YLS) and KYR;
- provision at the southern end of the footbridge to allow for future extension;
- measures for mitigating impacts arising from the works;
- making allowance for providing connection with the adjoining developments along YLTN;
- landscaping and streetscape works of the footpaths along both side of YLTN between WRLPS and KYR; and
- associated civil, road, drainage, geotechnical, environmental, traffic aids, utility diversion, street lighting, landscaping and E&M works.

The Project Layout Plan is included in **Figure 2.1**.

2.2 The Site

2.2.1 Site History

Upon review of historical aerial photographs, it was observed that the Yuen Long Nullah was under construction in 1963 in the Project Area. The upstream and downstream areas were not channelized by that time. The nullah works area was surrounded by agricultural lands and fish ponds. As observed in 1973, the Yuen Long Nullah was channelized and paved with concrete. The Yuen Long Nullah was then developed into present layout and directed to Shan Pui River. The surroundings of the section of nullah associated with the Project was developing into urban uses. The status has remained unchanged since then.

2.2.2 Proposed Works

The footbridge would be built along the Yuen Long Town Nullah from WRLPS to KYR. It involves construction of pile foundation and piers within the Yuen Long Town Nullah and construction of box culvert structure supporting the proposed pedestrian interchanges and intermediate crossings. Excavation would be involved in the construction of the pile foundations, and the excavated materials would need to be disposed according to their nature and quality. For any marine deposit involved, the volume and quantity would need to be evaluated and disposed in accordance with the DASO with Marine Fill Committee's (MFC) approval. A

separated submission should be submitted to EPD and MFC for application for the sediment disposal permit.

The layout of the footbridge and the corresponding works boundary are indicated in **Figure 2.1**. The exact locations of pile foundation and piers and the excavation extent is subject to the detail design in later stage. As such, the volume of excavated sediment would be estimated in later stage.

3 Legislative Requirements

3.1 Legislation and Guidelines

The Environment, Transport and Works Bureau Technical Circular (Works) No. 34/2002 "Management of Dredged / Excavated Sediment" (ETWB TC(W) No. 34/2002) sets out the procedure for seeking approval to dredge/ excavate sediment and the management framework for marine disposal of such sediment. It outlines the requirements for sediment quality assessment and provides guidelines for the classification of sediment based on their contaminant levels. It also explains the disposal arrangement for the classified sediment.

3.2 Methodology for Sediment Quality Assessment

The management framework of dredged/excavated sediment in Hong Kong is implemented under a three-tiered approach as illustrated in **Appendix A** in accordance with the ETWB TC(W) No. 34/2002, which also sets out the guidelines for the assessment, sampling, testing and classification of sediment. **Table 3.1** summarised the sediment quality criteria for sediment classification under ETWB TC(W) No. 34/2002.

Table 3.1: Sediment quality criteria for classification of sediment under ETWB TC(W) No. 34/2002

Contaminants	**Lower Chemical Exceedance Level (LCEL)**	**Upper Chemical Exceedance Level (UCEL)**
Metals (mg/kg dry wt.)		
Cadmium (Cd)	1.5	4
Chromium (Cr)	80	160
Copper (Cu)	65	110
Mercury (Hg)	0.5	1
Nickel (Ni)[(1)]	40	40
Lead (Pb)	75	110
Silver (Ag)	1	2
Zinc (Zn)	200	270
Metalloid (mg/kg dry wt.)		
Arsenic (As)	12	42
Organic-PAHs (µg/kg dry wt.)		
Low Molecular Weight PAHs	550	3160
High Molecular Weight PAHs	1700	9600
Organic-non-PAHs (µg/kg dry wt.)		
Total PCBs	23	180
Organometallics (µg TBT/L in Interstitial water)		
Tributyltin [1]	0.15	0.15

Note:

The contaminant level is considered to have exceeded the UCEL if it is greater than the value shown.

The Sediment is classified into 3 categories based on its contaminant levels:

Category L	Sediment with all contaminant levels not exceeding the Lower Chemical Exceedance Level (LCEL). The material must be dredged, transported and disposed of in a manner which minimises the loss of contaminants either into solution or by resuspension.
Category M	Sediment with any one or more contaminant levels exceeding the Lower Chemical Exceedance Level (LCEL) and none exceeding the Upper Chemical Exceedance Level (UCEL). The material must be dredged and transported with care, and must be effectively isolated from the environment upon the final disposal unless appropriate biological tests demonstrate that the material will not adversely affect the marine environment.
Category H	Sediment with any one or more contaminant levels exceeding the Upper Chemical Exceedance Level (UCEL). The material must be dredged and transported with great care, and must be effectively isolated from the environment upon the final disposal.

Tier I Screening is a desktop screening process to review the available information and determine whether the sediment of concern belonging to Category L material is suitable for open sea disposal. If there is insufficient information to arrive at such conclusion, Tier II chemical screening shall be proceeded accordingly.

Tier II Screening is a chemical screening process to categorise sediment based on its chemical contaminant levels and to determine whether the sediment is suitable for open sea disposal without further testing. Upon Tier II screening, the sediment shall be classified as Category L, M or H material. There are three types of disposal options: namely Type 1 for open sea disposal, Type 2 for confined marine disposal and Type 3 for special treatment/disposal respectively. Category L material is suitable for open sea disposal, but Categories M and H will require Tier III screening to further determine the disposal option.

Tier III Screening is a biological screening process to identify the most appropriate disposal option for Category M (either Type 1 or 2) and certain Category H sediment (either Type 2 or 3). Sediment classified as Category M shall be subjected to the following three toxicity tests:

- A 10-day burrowing amphipod toxicity test;
- A 20-day burrowing polychaete toxicity test;
- A 48-96 hour larvae (bivalve or echinoderm) toxicity test.

Table 3.2 summarises the details of the test endpoints and failure criteria of the three toxicity tests. Sediment classified as Category H and with one or more contaminant levels exceeding 10 times LCEL shall also be subjected to the above three toxicity tests but in a diluted manner (dilution test). In case failure of biological test on Categories M material, Type 2 disposal will be required. Similarly, Type 3 disposal will be required for Category H material if biological test is failed.

Table 3.2: Test endpoints and decision criteria for Tier III biological screening under ETWB TC(W) No. 34/2002

Toxicity Test	**Endpoints Measured**	**Test Methods**	**Failure Criteria**
10-day amphipod	Survival	USEPA Standard Methods for Assessing the Toxicity of Sediment-associated Contaminants with Estuarine and Marine Amphipods	Mean survival in test sediment is significantly different ($p \leq 0.05$)[1] from mean survival in reference sediment **and** mean survival in test sediment <80% of mean survival in reference sediment.
20-day polychaete worm	Dry Weight[2]	PSEP Standard Recommended Guidelines for Conducting Laboratory Bioassays on the Puget Sound Sediments – Juvenile Polychaete Sediment Bioassay, 1995	Mean dry weight in test sediment is significantly different ($p \leq 0.05$)[1] from mean dry weight in reference sediment **and** mean dry weight in test sediment <90% of mean dry weight in reference sediment.
48-96 hour larvae (bivalve or echinoderm)	Normality Survival[3]	PSEP Standard Recommended Guidelines for Conducting Laboratory Bioassays on the Puget Sound Sediments – Bivalve Larvae Sediment Bioassay, 1995	Mean normality survival in test sediment is significantly different ($p \leq 0.05$)[1] from mean normality survival in reference sediment **and** mean normality survival in test sediment <80% of mean normality survival in reference sediment.

Notes:

[1] Statistically significant differences should be determined using appropriate two-sample comparisons (e.g., *t*-tests) at a probability of $p \leq 0.05$;

[2] Dry weight means total dry weight after deducting dead and missing worms;

[3] Normality survival integrates the normality and survival end points, and measures survival of only the normal larvae relative to the starting number

4 Review of Existing Sediment Quality Data

4.1 Existing Sediment Quality Data

Sediment quality data specific to the Yuen Long Town Nullah from previous project is not available. Hence, existing sediment quality data in the area at the downstream of the proposed excavation works has been reviewed in order to obtain a general understanding of the sediment quality. According to EPD's sediment monitoring data between 2009 and 2013 at DS1 (Inner Deep Bay) which is the closest EPD sediment monitoring station to the footbridge, the average values of all the sediment testing parameters, including heavy metals and organic contaminants, did not exceed the Lower Chemical Exceedance Level (LCEL). However, the highest level detected for Copper, Silver, Zinc and high molecular weight PAHs have exceeded the LCEL but did not exceed the Upper Chemical Exceedance Level (UCEL). Hence, the sediment samples at DS1 were classified as Category M according to ETWB TC(W) 34/2002. **Figure 4.1** shows the location of the EPD's monitoring station DS1. Summary of the sediment quality data from DS1 is given in **Table 4.1**. Apart from referencing the sediment quality of DS1, as the excavation area would be near / within the Yuen Long Town Nullah, it should also note that high level of pollutants may be present in the influent. Therefore it is more conservative to estimate the contamination level of sediment in the area as "very high".

Table 4.1: Sediment monitoring data at DS1 (Inner Deep Bay)

Contaminants	Lower Chemical Exceedance Level (LCEL)	Upper Chemical Exceedance Level (UCEL)	EPD Monitoring Data [2]
Metals (mg/kg dry wt.)			
Cadmium (Cd)	1.5	4	0.3 (0.2 - 0.5)
Chromium (Cr)	80	160	40 (21 – 57)
Copper (Cu)	65	110	60 (22 – 90)
Mercury (Hg)	0.5	1	0.13 (0.07 – 0.24)
Nickel (Ni)[(1)]	40	40	22 (13 – 31)
Lead (Pb)	75	110	47 (27 – 61)
Silver (Ag)	1	2	0.6 (0.3 – 1.1)
Zinc (Zn)	200	270	200 (100 – 270)
Metalloid (mg/kg dry wt.)			
Arsenic (As)	12	42	8.8 (6.1 – 12)
Organic-PAHs (μg/kg dry wt.)			
Low Molecular Weight PAHs	550	3160	160 (95 – 540)
High Molecular Weight PAHs	1700	9600	740 (76 – 4100)
Organic-non-PAHs (μg/kg dry wt.)			
Total PCBs	23	180	18 (18 – 18)
Organometallics (μg TBT/L in Interstitial water)			
Tributyltin[(1)]	0.15	0.15	--

Note:

[1] Sediment testing on tributyltin is not available.

[2] The arithmetic means are presented; data in brackets indicate ranges.

5 Proposed Land-based Sediment Sampling and Testing

5.1 Sampling Location

Existing geological investigation (GI) records near the footbridge are reviewed to study the geological conditions. Based on the existing records of previous drillhole along the proposed footbridge, the Project Site mainly aligns with sand fills and alluvium. Marine deposit is localised in the section between Long Ping Station and On Ning Road. According to the previous *Final Ground Investigation Data Report of KCRC West Rail Project Yuen Long Section Agreement No. DD-200*, marine deposit is only found in drillhole no. DD200/DHCH/748. The depth of the marine deposit ranges from 2m to 4.3m below ground level. Selected previous drillhole records along the concerned nullah section are included in **Appendix B** and their locations are shown in **Figure 5.1** for reference. A geological cross section is provided in **Figure 5.2** to show the geological profile along the proposed footbridge alignment. It indicates that the geology in the area mainly comprise alluvium sand and clay at upper level, and highly to completely decomposed siltstone / marble at lower level. Marine deposit is localized near the existing borehole DD200/DHCH/748.

According to the GI records in the area along the concerned nullah section, marine deposit was identified at the drillhole location DD200/DHCH/748. There is no marine deposit found in drillhole no. DD200/DNPZ/756 and DD200/DHCH/737, which are located 12m north and 15m south to DD200/DHCH/748 (refer to **Figure 5.1** and **5.2**). This shows that occurrence of marine deposit is limited to the area near DD200/DHCH/748. Two sampling locations (S1-DH03 & S1-DH04) were therefore proposed in the previous submission. Considered the localised occurrence of marine deposit in the area of DD200/DHCH/748, and the proximity to future excavation area, the 2 sampling locations are proposed to the north and south of DD200/DHCH/748 and close to the future excavation area. However, as the proposed sampling locations are on the narrow footpath along the nullah, there is not enough space for mobilizing a drilling rig at S1-DH04, which is located at the only vehicle access of Tai Kiu Village. Due to site constraint, it is now proposed to relocate S1-DH03 slightly to the north, and to cancel sampling at S1-DH04, in order to reserve enough space for passengers/ vehicles access. According to the ETWB TC(W) No. 34/2002, the sediment quality of nullahs are expected to be "very high" and a sampling grid size of 50m x 50m should be adopted. S1-DH03 alone would be able to cover the future excavation area with potential marine deposit occurrence. The proposed sampling locations for previous submission, and the new proposed location of S1-DH03 are shown in **Figure 5.1**.

Table 5.1: Proposed sediment sampling locations

Sampling ID	Sampling Method	Sampling Depth	Previously proposed location		New proposed location	
			Easting	Northing	Easting	Northing
S1-DH03	U76/U100	Top level of marine deposit, 0.9m, 1.9m, 2.9m, thereafter 3m to	820735.7	834191.6	820735.7	834197.2
S1-DH04			820734.0	834166.4	-	-

Sampling ID	Sampling Method	Sampling Depth	Previously proposed location		New proposed location	
			Easting	Northing	Easting	Northing
		the bottom of the marine deposit				
Reference [1]	Grab sample	Seabed level	850234.0	820057.0	850234.0	820057.0

Note: [1] Reference sample will be collected at Port Shelter (refer to **Section 5.4**).

5.2 Sediment Sampling

Drillholes would be constructed by means of rotary drilling method as far as practicable. For safety reason, an inspection pit will be excavated down to 1.5m below ground to inspect the presence of underground utilities at the proposed drillhole locations. Boring using drill rigs will then be performed for depth from 1.5m to the base of marine deposit layer. U76 or U100 sediment samples (stainless steel) will be collected at the marine deposit layer.

Strata logging for drillholes will be undertaken during the course of drilling/digging and sampling by a qualified geologist. The logs will include the general stratigraphic descriptions, depth of sampling, sample notation and level of groundwater (if encountered). The presence of rocks/boulders/cobbles and foreign materials such as metals, wood and plastics will be recorded.

All equipment in contact with the ground will be thoroughly decontaminated between each excavation, drilling and sampling event to minimize the potential for cross contamination. The equipment (including drilling pit, digging tools and samplers) will be decontaminated by steam cleaning/ high-pressure hot water jet, then washed by phosphate-free detergent and finally rinsed by distilled/ deionized water.

Prior to sampling, the laboratory responsible for analysis will be consulted for the particular sample size for chemical/ biological testing as well as the preservation procedures that are necessary for each chemical analysis. According to PNAP ADV-21, the recommended sample sizes for each parameter and test are shown in **Table 6.2**. The actual sample size would however be subject to agreement with the designed laboratory.

Table 6.2: Recommended sediment sample size

Parameters to be tested	Sample Size
Metals and metalloid	0.5L
Others	0.5L
Biological response	6L

All sampling bottles will be labelled with the station number, sample length, diameter and depth, sampling date and time, together with full description of the sample. If the contents are hazardous, this will be clearly marked on the container

and precautions taken during transport. The samples will be contained in laboratory cleaned high-density polyethylene bottles or wide mouth borosilicate glass bottles with Teflon lined lids in accordance with the recommendations of PNAP ADV-21 (PNAP 252 previously). The samples will be stored in dark at between 0-4℃ but never frozen. Samples will be delivered to laboratory within 24 hours of the samples being collected and analyzed within 14 days of delivery for chemical testing.

5.3 Chemical and Biological Test

Sediment quality will be assessed through laboratory analyses of sediment samples for the chemical and/or biological parameters. Based on the chemical contaminant levels, sediment will be classified into either Category L, M or H sediment according to the criteria stated in ETWB TC(W) No. 34/2002. Tier III biological screening test will only be implemented for Category M sediment. Sediment classified as Category H and with one or more contaminant levels exceeding 10 x LCEL will also undergo the biological screening test but in a diluted manner (dilution test). The chemical and biological screening parameters are summarised in **Tables 5.2** and **5.3** respectively and the preparation method for the dilution test is presented in **Table 5.4**.

Table 5.2: Chemical screening parameters for sediment quality assessment

Parameters	**Preparation Method** *US EPA Method*	**Determination Method** *US EPA Method*	**Reporting Limit**
Metals (mg/kg dry wt.)			
Cadmium (Cd)	ASTMD3974-09	6020A	0.2
Chromium (Cr)			1
Copper (Cu)			1
Mercury (Hg)			0.05
Nickel (Ni)			1
Lead (Pb)			1
Silver (Ag)			0.1
Zinc (Zn)			1
Metalloids (mg/kg dry wt.)			
Arsenic (As)	ASTMD3974-09	6020A	1
Organic-PAHs (µg/kg dry wt.)			
Low Molecular Weight PAHs^{+}	--	8270	50
High Molecular Weight PAHs^{++}	--	8270	150
Organic-non- PAHs (µg/kg dry wt.)			
Total PCBs^{+++}	--	8270	3
Organometallics (µg TBT/L in interstitial water)			
Tributyltin	--	3230	0.015

Notes:

(i) The reporting limits shown in this table are the most stringent limits which will be specified by the Director of Environmental Protection (DEP).

(ii) Any methodology for which the laboratory is accredited that will produce equivalent or better results/reporting limits as required may be used subject to approval by DEP.

\+ Low molecular weight PAHs include acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene

++ High molecular weight PAHs include benzo[a]anthracene, benzo[a]pyrene, chrysene, dibenzo]a,h]anthracene, fluoranthene, pyrene, benzo[b]fluoranthene, benzo[k] fluoranthen, indeno[1,2,3-c,d]pyrene and benzo[g,h,i]perylene

+++ The reporting limit is for individual PCB congeners. Total PCBs include 2,4' diCB, 2,2',5 triCB, 2,4,4' triCB, 2,2',3,5' tetraCB, 2,2',5,5' tetraCB, 2,3',4,4' tetraCB, 3,3',4,4' tetraCB, 2,2',4,5,5' pentaCB, 2,3,3',4,4' pentaCB, 2,3',4,4',5 pentaCB, 3,3',4,4',5 pentaCB, 2,2',3,3',4,4' hexaCB, 2,2',3,4,4',5' hexaCB, 2,2',4,4',5,5' hexaCB, 3,3',4,4',5,5' hexaCB, 2,2',3,3',4,4',5 heptaCB, 2,2',3,4,4',5,5' heptaCB, 2,2',3,4',5,5',6 heptaCB (ref: the "summation" column of Table 9.3 of Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. - Testing Manual (The Inland Testing Manual) published by USEPA).

* Krone et al. (1989), A method for analysis of butyltin species and measurement of butyltins in sediment and English Sole livers from Puget Sound, Marine Environmental Research 27 (1989) 1-18. Interstitial water to be obtained by centrifuging the sediment and collecting the overlying water.

** UNEP/ICO/IAEA refers to IAEA's Marine Environment Laboratory reference methods. These methods are available free of charge from UNEP/Water or Marine Environmental Studies Laboratory at IAEA's Marine Environment Laboratory. Interstitial water to be obtained by centrifuging the sediment and collecting the overlying water.

Table 5.3: Biological screening* parameters for sediment quality assessment

Toxicity Test	Test Method	Endpoints Measured	Failure Criteria
10-day amphipod	USEPA 600/R-94/025 June 1994 Test Method 100.4	Survival	Mean survival in test sediment is significantly different ($p \leq 0.05$)** from mean survival in reference sediment **and** mean survival in test sediment < 80% of mean survival in reference sediment.
20-day polychaete worm	Recommended Guidelines for Conducting Laboratory Bioassays on Puget Sound Sediments, PSEP, July 1995	Dry weight***	Mean dry weight in test sediment is significantly different ($p \leq 0.05$)** from mean dry weight in reference sediment **and** mean dry weight in test sediment <90% of mean dry weight in reference sediment.
48-96 hour larvae (bivalve or echinoderm)	Recommended Guidelines for Conducting Laboratory Bioassays on Puget Sound Sediments, PSEP, July 1995	Normality survival****	Mean normality survival in test sediment is significantly different ($p \leq 0.05$)** from mean normality survival in reference sediment **and** mean normality survival in test sediment <80% of mean normality survival in reference sediment.

Notes:

* Ancillary testing parameters to be analysed for all sediment samples include Moisture Content, Grain Size (<63 μm), Total Organic Carbon, Ammonia (as mg N/L), and Salinity in pore water.

** Statistically significantly differences should be determined using appropriate two-sample comparisons (e.g. *t*-tests) at a probability of $p \leq 0.05$.

*** Dry weight means total dry weight after deducting dead and missing worms.

**** Normality survival integrates the normality and survival end points, and measures survival of only the normal larvae relative to the starting number.

Table 5.4: Preparation method of dilution test

Sediment Characteristics	Preparation Method
Category H sediment (> 10 x LCEL)	Sample to be mixed with 9 portions of reference sediment
Category M sediment or Category H sediment (> 10 x LCEL) suspected of ammonia contamination	Additional set of sample (after dilution for Cat. H sediment) to be purged# for ammonia removal (for amphipod test only).

Note:

If the ammonia concentration in the overlaying water of the test system is ≥20mg/L, purging of sediment is required. This is performed by replacing the overlying water at a rate of 6 volume replacement / 24 h for 24 hours, and repeated once only if the ammonia level still exceeds 20mg/L.

Only ecologically relevant species should be used for carrying out the biological screening tests. The species to be used for each type of test are summarised in **Table 5.5**.

Table 5.5: Species to be used for biological screening test

Test types	Species	Reference Test Conditions*
10-day burrowing amphipod toxicity test	*Ampelisca abdita*	U.S.EPA(1994)/PSEP(1995)
	Leptocheirus plumulosus	U.S.EPA(1994)
	Eohaustorius estuarius	U.S.EPA(1994)/PSEP(1995)
20-day burrowing polychaete toxicity test	*Neanthes arenaceodentata*	PSEP(1995)
48-96 hour larvae (bivalve or echinoderm) toxicity test	Bivalve:	
	Mytilus spp.	PSEP(1995)
	Crassostrea gigas	PSEP(1995)
	Echinoderm:	
	Dendraster excentricus	PSEP(1995)
	Strongylocentrotus spp	PSEP(1995)

Notes:

* U.S.EPA (U.S. Environmental Protection Agency) 1994. Methods for assessing the toxicity of sediment-associated contaminants with estuarine and marine amphipods. Office of Research and Development. U.S. Environmental Protection Agency, Cincinnati, OH. EPA/600/R94/025.

PSEP (Puget Sound Estuary Program) 1995. Recommended guidelines for conducting laboratory bioassays on Puget Sound Sediments.

5.4 Sample Handling and Storage

All sediment samples will be stored at 4°C during transportation and at the laboratory prior to testing. The sampling bottle and pre-treatment methods will follow the recommendation stipulated in ETWB TC(W) No. 34/2002. Sediment samples will be extracted in the laboratory and placed in the appropriate containers directly after the sampling. All samples will be double-bagged and labelled internally and externally with indelible ink. Samples for biological testing (if any) will be stored in the same manner as described above (including for ancillary parameters).

Samples for chemical testing will be extracted and analysed within 2 weeks to ensure a Tier III Biological Testing Programme (where required) can be developed and commenced within 8 weeks from the date of sampling.

5.5 Reference Sample

Modified Van Veen grab (or equivalent) of capacity ~2L will be deployed from vessel and reference sediment (surface grab) of ~10L will be collected at Port Shelter (PS6, E850234, N820057). Individual grabs will be composited on-site and split into portions for packing. The samples will be stored at 4ºC during transportation and at the laboratory prior to testing.

5.6 QA/QC Requirements

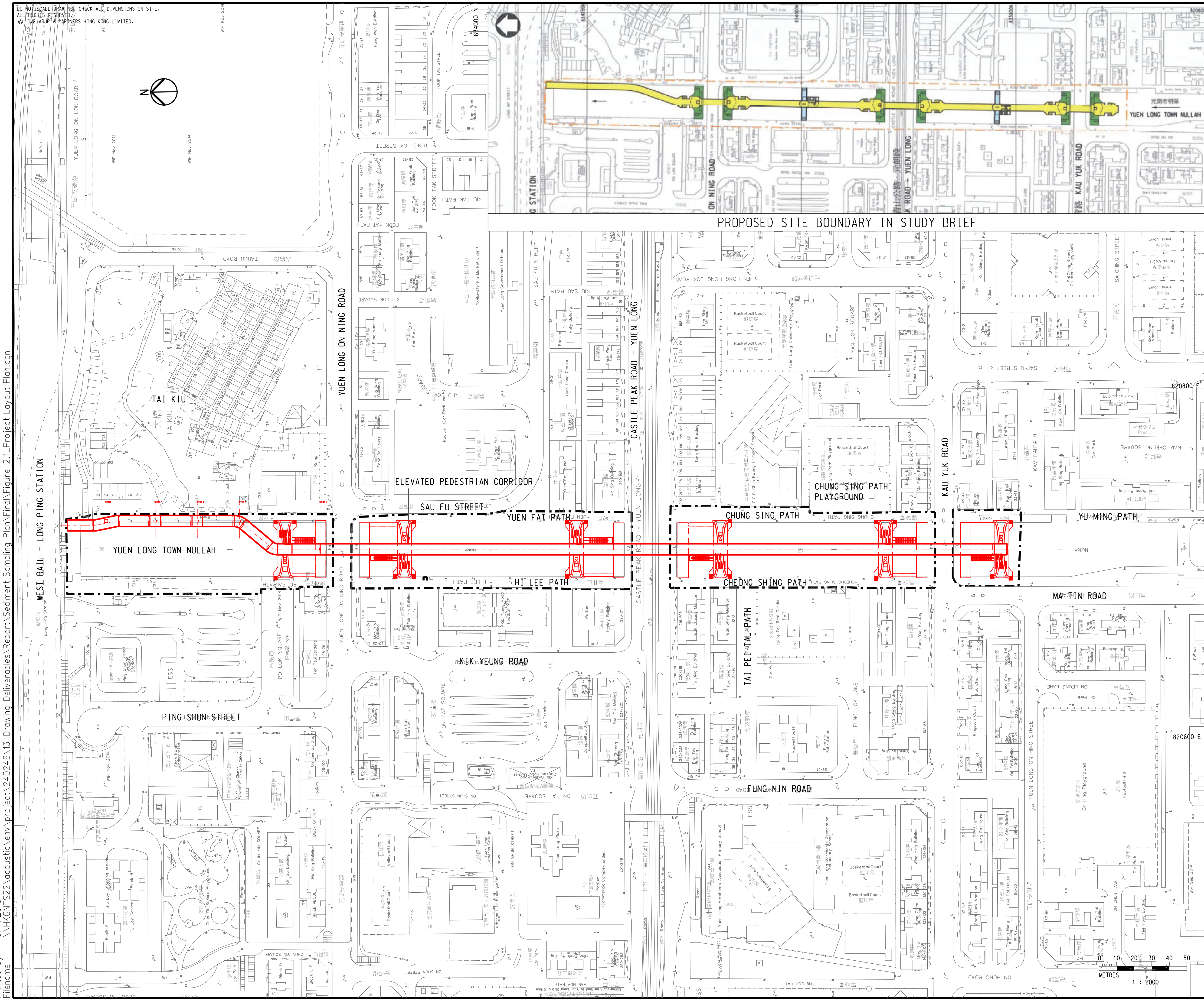
Field logs and site diary will be maintained for all on-site sampling works with date, equipment used, site activities and observations, undertaken as far as possible. Any deviation from the standard procedures and reasons will be recorded in the logs.

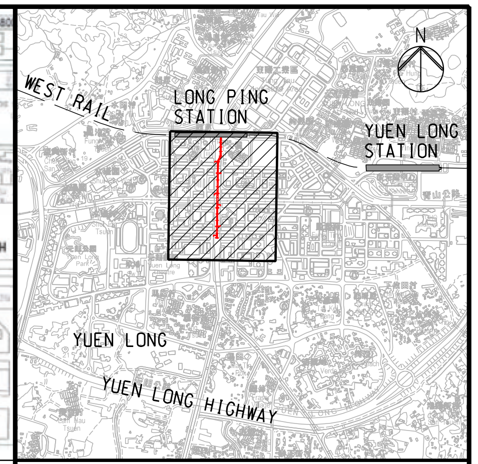
Laboratory QA/QC requirements, including analyses by HOKLAS accredited laboratory, certified reference materials, spike recovery, blank samples, duplicate samples (for every 20 samples), negative/positive control for biological test, etc. will be strictly complied.

5.7 Sediment Quality Report

Once the chemical and biological testing results are available, a sediment quality report will be prepared to summarize all the findings for submission to EPD for comments.

Figure





LOCATION PLAN

LEGEND

WORKS BOUNDARY

PROPOSED PROJECT LAYOUT

Rev	Description	By	Date
B	SECOND ISSUE	KY	09/15
A	FIRST ISSUE	KW	05/15

Consultant

ARUP

Contract No. and Title

Agreement No. CE 32/2014 (HY)
Elevated Pedestrian Corridor in Yuen Long Town connecting with Long Ping Station
– Investigation, Design and Construction

Drawing title

PROJECT LAYOUT PLAN

Drawing no. Figure 2.1 Rev. B

Drawn	Date	Checked	Approved
KY	09/15	KIaW	FC

Scale 1:2000 @A3 Status FINAL

路政署
HIGHWAYS DEPARTMENT
主要工程管理處
MAJOR WORKS PROJECT MANAGEMENT OFFICE

Printed by : 9/7/2015
Filename : \\HKGNTS22\acoustic\env\project\240246\13 Drawing Deliverables\Report\Sediment Sampling Plan\Final\Figure 2.1_Project Layout Plan.dgn

DS1

MAI PO NATURE RESERVE
(RESTRICTED AREA)

DEEP BAY

MAI PO

FUNG LOK WAI

TIN SHUI WAI

YUEN LONG
INDUSTRIAL
ESTATE

KAM TIN RIVER

SHAN PUI RIVER

NAM SANG WAI

LONG PING STATION

N

0 100 200 300 400 500
METRES

LEGEND

WORKS BOUNDARY

PROPOSED PROJECT LAYOUT

SEDIMENT MONITORING STATION

Rev	Description	By	Date
A	FIRST ISSUE	KY	09/15

Consultant

ARUP

Contract No. and Title

Agreement No. CE 32/2014 (HY)

Elevated Pedestrian Corridor in Yuen Long Town connecting with Long Ping Station – Investigation, Design and Construction

Drawing title

EPD SEDIMENT MONITORING STATION - DS1

Drawing no.			Rev.
FIGURE 4.1			A
Drawn: KY	Date: 09/15	Checked: KIaW	Approved: FC
Scale: 1:20000 @A3		Status: FINAL	

路政署
HIGHWAYS DEPARTMENT
主要工程管理處
MAJOR WORKS PROJECT MANAGEMENT OFFICE

Printed by : 9/2/2015
Filename : \\HKGNTS22\acoustic\env\project\240246\13 Drawing Deliverables\Report\Sediment Sampling Plan\Final\Figure 4.1 - EPD Sediment Monitoring Station + DS1.dgn

S1-DH03 (PREVIOUS)
S1-DH03 (NEW)
50m x 50m GRID
35413/DD200/DHCH/748
S1-DH04 (PREVIOUS)
LONG YIP STREET
LONG PING STATION
YUEN LONG ON NING ROAD
SAU FU STREET
MATCH LINE
FOR CONTINUATION SEE DWG. AS BELOW
CASTLE PEAK ROAD - YUEN LONG
KAU YUK ROAD
KIK YEUNG ROAD
TAI PEI TAU PATH
CHEONG SHING PATH
YUEN FAT PATH
HILEE PATH
POSSIBLE FUTURE EXTENSION
MA TIN ROAD
Figure 5.2

KEY PLAN

LONG PING STATION
YUEN LONG ON NING ROAD
CASTLE PEAK ROAD
KAU YUK ROAD

LEGEND

- WORKS BOUNDARY
- PROPOSED PROJECT LAYOUT
- S1-DH01 — NEW PROPOSED SAMPLING LOCATION
- S1-DH03 — PREVIOUS PROPOSED SAMPLING LOCATION
- 35413/DD200/DH/748 — EXISTING BOREHOLE WITH MARINE DEPOSIT
- 35413/DD200/DH/736 — EXISTING BOREHOLE WITH NO MARINE DEPOSIT

Rev	Description	By	Date
B	SECOND ISSUE	CF	04/15
A	FIRST ISSUE	CF	03/15

Consultant
ARUP

Contract No. and Title
Agreement No. CE 32/2014 (HY)
Elevated Pedestrian Corridor in Yuen Long Town connecting with Long Ping Station – Investigation, Design and Construction

Drawing title
PROPOSED SAMPLING LOCATION

Drawing no.	Rev.
Figure 5.1	B

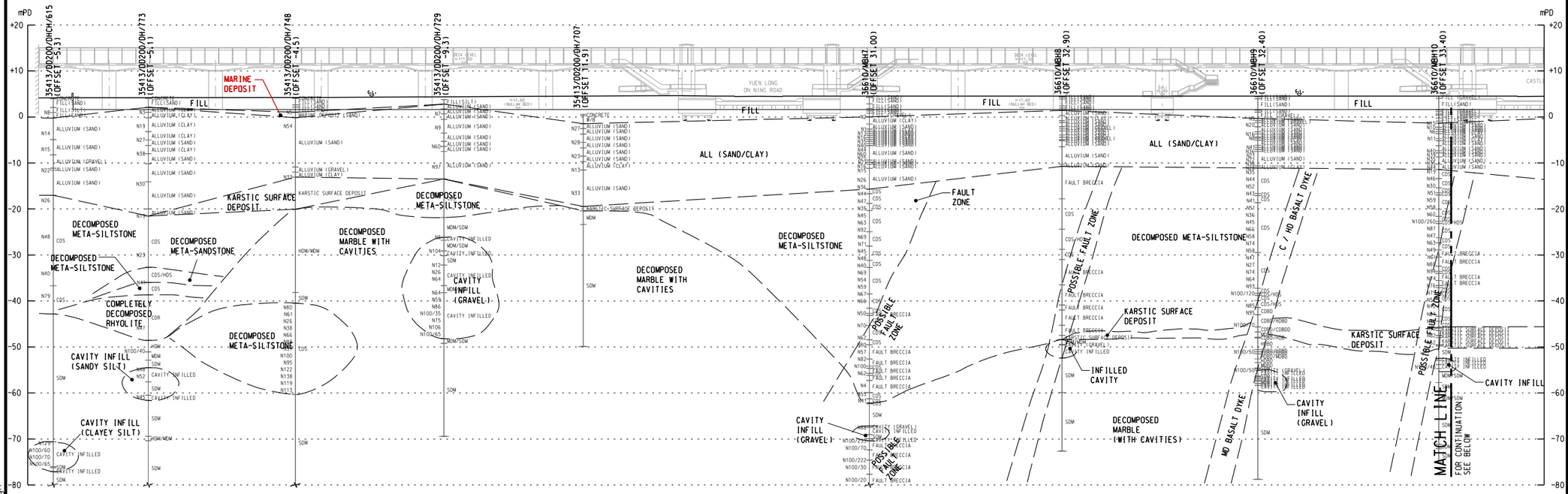
Drawn	Date	Checked	Approved
THW	01/15	CF	DS

Scale 1:1000 @ A3
Status FINAL

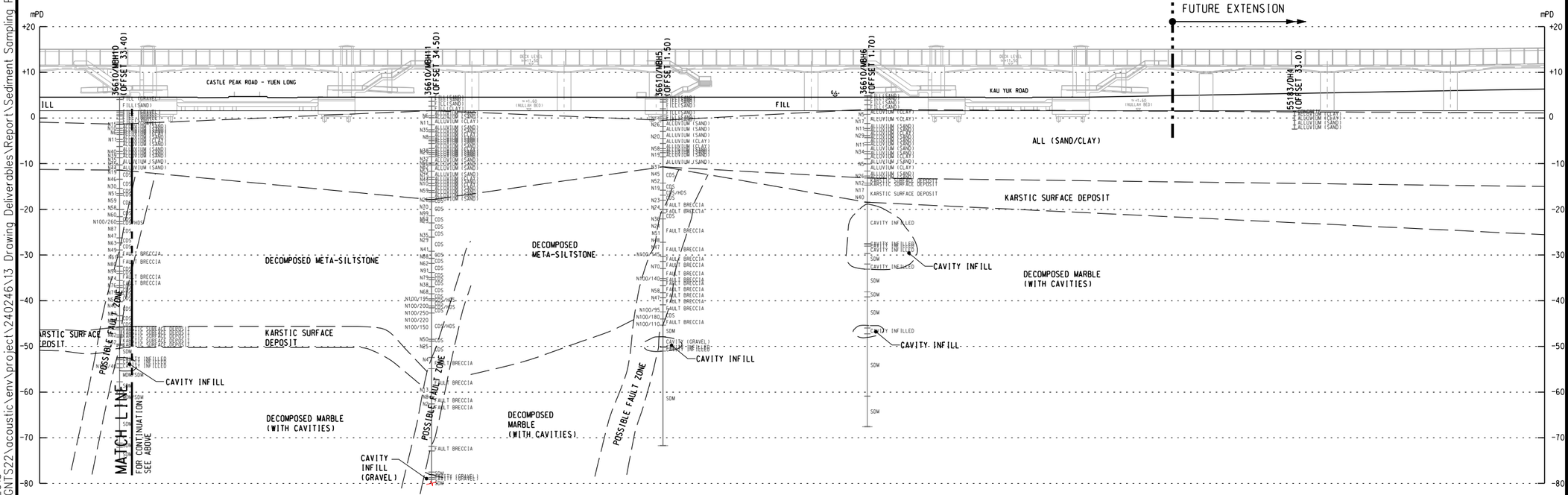
路政署
HIGHWAYS DEPARTMENT
主要工程管理處
MAJOR WORKS PROJECT MANAGEMENT OFFICE

METRES 0 10 20 30 40 50
1 : 1000

Printed by : 9/2/2015
Filename : \\HKGNTS22\acoustic\env\project\240246\13 Drawing Deliverables\Report\Sediment Sampling Plan\From Geo\Figure 5.1.dgn



SECTION 1
SCALE 1 : 1000 Figure 5.1



SECTION 1
SCALE 1 : 1000 Figure 5.1

LEGEND

—— ——	INFERRED GEOLOGICAL BOUNDARY
ALL	ALLUVIUM
CDS	COMPLETELY DECOMPOSED META - SILTSTONE/ META - SANDSTONE
HDS	HIGHLY DECOMPOSED META - SILTSTONE
CDR	COMPLETELY DECOMPOSED RHYOLITE
HDM	HIGHLY DECOMPOSED MARBLE
MDM	MODERATELY DECOMPOSED MARBLE
SDM	SLIGHTLY DECOMPOSED MARBLE
CDBD	COMPLETELY DECOMPOSED BASALT DYKE
HDBD	HIGHLY DECOMPOSED BASALT DYKE
MDBD	MODERATELY DECOMPOSED BASALT DYKE
CDMS	COMPLETELY DECOMPOSED MUDSTONE
MDB	MODERATELY DECOMPOSED BASALT

Rev	Description	By	Date
-	FIRST ISSUE	CF	01/15

Consultant
ARUP

Contract No. and Title
Agreement No. CE 32/2014 (HY)
Elevated Pedestrian Corridor in Yuen Long Town connecting with Long Ping Station
– Investigation, Design and Construction

Drawing title
GEOLOGICAL SECTION

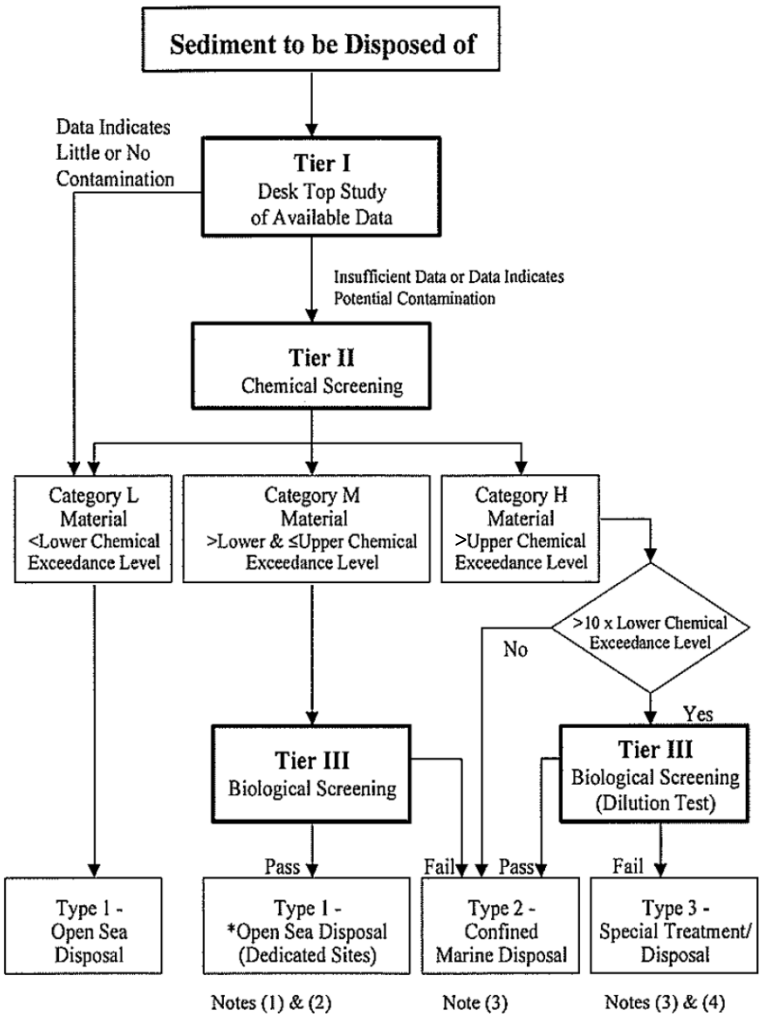
Drawing no.			Rev.
Figure 5.2			-
Drawn	Date	Checked	Approved
THW	01/15	CF	DS
Scale		Status	
1 : 1000 @ A3		FINAL	

路政署
HIGHWAYS DEPARTMENT
主要工程管理處
MAJOR WORKS PROJECT MANAGEMENT OFFICE

Printed by : 9/2/2015
Filename : \\HKGNTS22\acoustic\env\project\240246\13 Drawing Deliverables\Report\Sediment Sampling Plan\From Geo\Figure 5.2.dgn

Appendix A
Management Framework for Dredged/Excavated Sediment

Management Framework for Dredged/Excavated Sediment



Notes

(1) Most open sea disposal sites are multi-user facilities and as a consequence their management involves a flexibility to accommodate varying and unpredictable circumstances. Contract documents should include provisions to allow the same degree of flexibility should it be necessary to divert from one disposal site to another during the construction period of a contract.

(2) Dedicated Sites will be monitored to confirm that there is no adverse impact.

(3) For sediment requiring Type 2 or Type 3 disposal, contract documents shall state the allocation conditions of MFC and Director of Environmental Protection (DEP). At present, East Sha Chau mud pits are designated for confined marine disposal.

(4) If any sediment suitable for Type 3 disposal (Category H sediment failing the biological dilution test) is identified, it is the responsibility of the project proponent, in consultation with DEP, to identify and agree with him/her, the most appropriate treatment and/or disposal arrangement. Such a proposal is likely to be very site and project specific and therefore cannot be prescribed. This will not preclude treatment of this sediment to render it suitable for confined marine disposal.

(5) The allocation of disposal space may carry a requirement for the project proponent to arrange for chemical analysis of the sediment sampled from 5% of the vessels en-route to the disposal site. For Category M and certain Category H sediment, the chemical tests will be augmented by biological tests. Vessel sampling will normally entail mixing five samples to form a composite sample from the vessel and undertaking laboratory tests on this composite sample. All marine disposal sites will be monitored under the general direction of the Civil Engineering Department. However, exceptionally large allocations might require some additional disposal site monitoring. These will be stipulated at the time of allocation.

(6) Trailer suction hopper dredgers disposing of sediment at East Sha Chau mustuse a down-a-pipe disposal method, the design of which must be approved in advance by DCE. The dredging contractor must provide equipment for such disposal.

Appendix B
Previous Ground Investigation Drillhole Records

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/707

DRILLHOLE RECORD

SHEET 1 of 6

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	WB + RC	CO-ORDINATES E 820718.14 N 834120.49	Job No. GCE/98/014/SI/R
MACHINE & No.	D34		DATE from 15/10/98 to 19/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 0.59 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
15/10/98	SW								0.29	0.30			Concrete slab.
													Washed boring.
			100					1 2.00	-1.46	2.05		A3	Light grey, mottled yellowish brown, slightly silty fine to medium SAND. (ALLUVIUM)
							3,5, 5,5, 8,9, N=27	2 3.10 3 4 3.55	-2.51	3.10		A3	Medium dense, yellowish brown, silty fine to medium SAND with some angular to subangular fine gravel sized quartz fragments. (ALLUVIUM)
			65					5 5.00	-3.71	4.30		A3	Dark grey, clayey/silty fine to coarse SAND with some angular to subangular fine gravel sized quartz fragments. (ALLUVIUM)
							3,3, 5,7, 7,9, N=28	6 6.10 7 8 6.55	-5.51	6.10		A3	Medium dense, brownish grey, fine to coarse SAND with much angular to subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
			60					9 8.00	-6.71	7.30		A3	Light grey, mottled light yellowish green, clayey/silty fine to coarse SAND with much angular to subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
15/10/98							2,3, 3,5, 6,9, N=23	10 9.10 11 12 9.55	-8.51	9.10		A3	Medium dense, light greenish brown, slightly silty fine to coarse SAND with some angular to subangular fine to occasionally medium gravel sized quartz fragments. (ALLUVIUM)
									-9.41	10.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 20/10/98

CHECKED Tom Lo

DATE 21/10/98

REMARKS

-

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/707

DRILLHOLE RECORD

SHEET 2 of 6

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	WB + RC	CO-ORDINATES E 820718.14 N 834120.49	Job No. GCE/98/014/SI/R
MACHINE & No.	D34		DATE from 15/10/98 to 19/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 0.59 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
15/10/98	SW								-9.71	10.30		A3	See sheet 1 of 6 for details.
11			100					13 11.00				A2	Firm, grey, dappled light yellowish grey, slightly sandy, very silty CLAY with occasional angular to subangular fine gravel sized quartz fragments. (ALLUVIUM)
12							1,2, 2,3, 3,5, N=13	14 12.10 15 16 12.55	-11.51	-12.10		A3	Medium dense, light grey and light brownish grey, clayey/silty fine to coarse SAND with much angular to subangular fine to occasionally medium gravel sized quartz fragments. (ALLUVIUM) From 12.10m to 14.30m : Light brownish grey.
13													
14													
15													
16			80					17 16.00					
17							4,4, 6,7, 9,11, N=33	18 17.10 19 20 17.55					
18													
19													
15/10/98 20	SW 20.03m												

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 20/10/98

CHECKED Tom Lo

DATE 21/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/707

DRILLHOLE RECORD

SHEET 3 of 6

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	WB + RC	CO-ORDINATES E 820718.14 N 834120.49	Job No. GCE/98/014/SI/R
MACHINE & No.	D34		DATE from 15/10/98 to 19/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 0.59 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
16/10/98	PW	0.62m at 08:00	57	0	0	NI			20.03 -19.44	20.03		C4	Angular to subangular fine to coarse GRAVEL sized marble and quartz fragments. (KARSTIC SURFACE DEPOSIT)
						NR		T210I	-19.99	20.58			From 20.58m to 21.00m : Core loss, inferred silty SAND.
21			100	48	48	5.0			21.00 -20.41	21.00		III	Moderately strong, locally moderately weak, moderately decomposed, highly fractured fine crystalline MARBLE.
						NI		T210I	-20.61	21.20		III/IV	From 21.20m to 21.76m : Moderately to highly decomposed.
			47	0	0				21.40				From 21.76m to 22.17m : Core loss, inferred cavity infilled with silty sand.
22						NR		T210I	-21.17	21.76			From 22.64m to 22.97m : Core loss, inferred cavity infilled with silty sand.
			59	8	0	NI			22.17 -21.58	22.17		III	From 23.63m to 23.97m : Core loss, inferred cavity infilled with silty sand.
	PW 22.97m							T210I	-22.05	22.64			
23	HW					NR			22.97 -22.38	22.97			
			66	8	0	NI		T210I	-23.04	23.63		III	
						NR			23.97 -23.38	23.97			
24			92	86	86	0.7		T210I				II	Strong, locally moderately weak to moderately strong, dark grey, streaked, dappled white, slightly decomposed, fine crystalline MARBLE. Joints are medium to widely, locally very closely and closely spaced, rough stepped, tight to extremely narrow, calcite infilled and iron oxide stained, dipping at 20° to 30°, 40° to 50° and 50° to 60°.
25									25.37				
			94	62	48	>20		T210I					
16/10/98						2.9			25.87				At 25.32m and from 25.86m to 26.18m : Solution features.
26		1.02m at 08:00	100	87	79	>20		T210I					
17/10/98						6.2			26.63				
			100	100	88			T210I					
27						0.8							
28	HW 28.15m							T210I	28.15				
			100	100	100								
29								T210I	29.27				
			94	48	48				-28.90	29.49			
						NI		T210I	-29.37	29.96		III	From 29.49m to 29.96m : Moderately to highly decomposed and slightly fractured.
17/10/98 30													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U78 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 20/10/98

CHECKED Tom Lo

DATE 21/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/707

DRILLHOLE RECORD

SHEET 4 of 6

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	WB+RC	CO-ORDINATES E 820718.14 N 834120.49	Job No. GCE/98/014/SI/R
MACHINE & No.	D34		DATE from 15/10/98 to 19/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 0.59 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
17/10/98						1.7		30.22	-29.41	30.00		II	Strong, locally moderately strong, dark grey, streaked, mottled white, slightly decomposed, fine crystalline MARBLE. Joints are very widely to extremely widely, locally very closely to closely and medium spaced, rough stepped, tight to extremely narrow, clean and calcite infilled with occasional iron oxide stained, dipping at 10° to 20°, 20° to 30° and 40° to 50°, occasionally 70° to 80°.
			100	100	100			T2101 30.52					
			100	90	77								
31									-30.57	31.16			
						>20		T2101	-30.91	31.50		III/II	
						3.4						II	
32			100	100	93			31.92 T2101					
17/10/98													
33								32.99	-32.40	32.99			From 31.16m to 31.50m : Moderately to slightly decomposed with very closely spaced joints and fractured.
19/10/98		1.17m at 08:00	100	29	29	NI		T2101	-32.86	33.45		III/II	From 32.99m to 33.45m : Moderately to slightly decomposed with very closely spaced joints and fractured.
						0.8		33.64				II	
34			100	100	100			T2101					
						2.7							
35								35.09					
			100	100	100			T2101 35.34					
			100	100	100								
						0.3		T2101					
36								36.20					
			100	100	100			T2101					
37								37.13					
			100	100	100			T2101					
38								38.02					
			100	100	100			T2101					
						5.4							
39						0.2		39.39					At 38.50m and 38.87m : Two slickensided stepped, calcite infilled, 45° joints.
			100	100	100			T2101					
19/10/98									-39.41	40.00			
40													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 20/10/98

CHECKED Tom Lo

DATE 21/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/707

DRILLHOLE RECORD

SHEET 5 of 6

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	WB + RC	CO-ORDINATES E 820718.14 N 834120.49	Job No. GCE/98/014/SI/R
MACHINE & No.	D34		DATE from 15/10/98 to 19/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 0.59 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
19/10/98								T2101 40.54				II	See sheet 4 of 6 for details.
41			100	100	100			T2101 42.04					
42			100	100	100			T2101 43.24					
43			100	100	100			T2101 44.16					
44			100	100	100			T2101 45.66					
45						2.1		T2101 46.57					
46			100	100	100			T2101 47.37					
47			100	100	100			T2101 47.90					
48			100	100	100	0.4		T2101 49.01					
49			100	100	100			T2101					
19/10/98 50									-49.41	50.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 20/10/98

CHECKED Tom Lo

DATE 21/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/707

DRILLHOLE RECORD

SHEET 6 of 6

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	WB+RC	CO-ORDINATES E 820718.14 N 834120.49	Job No. GCE/98/014/SI/R
MACHINE & No.	D34		DATE from 15/10/98 to 19/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 0.59 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
19/10/98								T2X01				II	See sheet 4 of 6 for details.
19/10/98								50.53	-49.94	50.53			End of investigation hole at 50.53m.

51 52 53 54 55 56 57 58 59 60

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 20/10/98

CHECKED Tom Lo

DATE 21/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/717

DRILLHOLE RECORD

SHEET 1 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP + WB + RC	CO-ORDINATES E 820737.97 N 834133.20	Job No. GCE/98/014/SI/R
MACHINE & No.	D22		DATE from 26/09/98 to 12/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.22 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
26/09/98	SW							0.00	4.12	0.10		F3	Concrete slab.
								Inspection Pit 1 0.50	3.72	0.50		F3	Brown, silty fine to coarse SAND with much angular fine to coarse gravel and occasionally brick, concrete fragments. (FILL - Excavated soils of assorted origin)
								2 1.00					Brownish grey, clayey/silty fine to coarse SAND with some angular to subangular fine to occasionally coarse gravel with occasional concrete and brick fragments. (FILL - Alluvium sand)
								3 1.50					
								4 2.00	2.22	2.00			Washed boring.
26/09/98									-5.78	10.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L.Chiu

DATE 13/10/98

CHECKED Tom Lo

DATE 14/10/98

REMARKS

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GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/717

DRILLHOLE RECORD

SHEET 2 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820737.97 N 834133.20	Job No. GCE/98/014/SI/R
MACHINE & No.	D22		DATE from 26/09/98 to 12/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.22 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
26/09/98	SW												See sheet 1 of 8 for details.
11													
26/09/98 12	SW 12.00m												
28/09/98	PW	8.50m at 08:00											
13													
14													
15													
16													
17													
18													
19													
28/09/98 20									-15.78	20.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L.Chiu

DATE 13/10/98

CHECKED Tom Lo

DATE 14/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/717

DRILLHOLE RECORD

SHEET 3 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820737.97 N 834133.20	Job No. GCE/98/014/SI/R
MACHINE & No.	D22		DATE from 26/09/98 to 12/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.22 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
28/09/98	PW												See sheet 1 of 8 for details.
21													
22													
23													
24													
28/09/98 25													
29/09/98		3.60m at 08:00											
26													
27													
28													
29													
29/09/98 30	PW 30.00m								-25.78	30.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L.Chiu

DATE 13/10/98

CHECKED Tom Lo

DATE 14/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/717

DRILLHOLE RECORD

SHEET 4 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820737.97 N 834133.20	Job No. GCE/98/014/SI/R
MACHINE & No.	D22		DATE from 26/09/98 to 12/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.22 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
29/09/98	HW												See sheet 1 of 8 for details.
31													
32													
33													
34													
35													
36													
29/09/98									36.60 -32.38	36.60			
30/09/98		3.80m at 08:00	87	73	73	5.4		T2101				II/III	Strong, locally moderately strong, dark grey, streaked white, slightly to moderately decomposed, fine crystalline MARBLE.
37													
38						NR			-33.68	37.90			
			70	59	59	6.3			38.10 -33.88	38.10		II/III	From 37.90m to 38.10m : Core loss, inferred cavity with solution features at 37.90m to 38.10m.
39								T2101					
						NR			-34.83	39.05			At 39.02m : Solution features.
			25	20	0	10.0			39.45 -35.23	39.45			From 39.05m to 39.45m : Core loss, inferred cavity.
30/09/98						NR		T2101	-35.33	39.55		II/III	At 39.05m : Solution features.
40									39.85 -35.63	39.85		II/III	From 39.55m to 39.85m : Core loss, inferred

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L.Chiu

DATE 13/10/98

CHECKED Tom Lo

DATE 14/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/717

DRILLHOLE RECORD

SHEET 5 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820737.97 N 834133.20	Job No. GCE/98/014/SI/R
MACHINE & No.	D22		DATE from 26/09/98 to 12/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.22 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
30/09/98	HW		29	0	0	7.1		T2(O)	-35.77	39.99			cavity.
						NR			40.34 -36.12	40.34			From 39.99m to 40.34m : Core loss, inferred cavity.
			100	45	0	NI			40.45 -36.23	40.45		II/III	Firm, light brownish grey, sandy SILT with occasional angular fine gravel sized quartz fragments. (CAVITY INFILLED)
30/09/98 41								5	41.00				
02/10/98		2.03m at 08:00					4,3, 2,3, 3,4 N=12	6	41.45				
42									42.40	-38.18	42.40		
			83	51	51	5.0		T2(O)		-38.38	42.60	III	Strong, locally moderately strong, dark grey, locally light greyish white, streaked, dappled white, slightly decomposed, fine crystalline MARBLE.
						NI			42.99	-38.67	42.89	IV/III	Joints are medium to widely, locally very closely and closely spaced, rough stepped with occasional rough planar and undulating, tight to occasionally extremely narrow, calcite with occasional chlorite infilled and iron oxide stained, dipping at 20° to 30°, 40° to 50°, 50° to 60° and 60° to 70°.
43						12.5				-38.83	43.05	III	
			100	100	96	0.9		T2(O)				II	
44									44.51				
						12.5		T2(O)					From 42.40m to 42.60m : Moderately decomposed with discoloured marble.
			100	88	73	1.5				-40.88	45.10		From 42.60m to 42.89m : Moderately weak to moderately strong and highly to moderately decomposed and highly fractured.
45						5.6		T2(O)	45.61			II/III	From 42.89m to 43.05m : Moderately decomposed.
			100	83	83					-41.65	45.87		From 45.10m to 45.87m : Slightly to moderately decomposed with closely spaced joints and an 80° to vertical, rough stepped joint from 45.43m to 45.87m.
46												II	
						0.8		T2(O)	46.50				
47			100	100	100								
								T2(O)	47.50				
48			100	100	90								
02/10/98								T2(O)	48.50				
03/10/98		1.23m at 08:00	100	100	100								
49								T2(O)					
03/10/98									49.99	-45.78	50.00		
50													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L.Chiu

DATE 13/10/98

CHECKED Tom Lo

DATE 14/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/717

DRILLHOLE RECORD

SHEET 6 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820737.97 N 834133.20	Job No. GCE/98/014/SI/R
MACHINE & No.	D22		DATE from 26/09/98 to 12/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.22 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
03/10/98	HW		100	100	100			50.13				II	
			100	89	89			T2IOI					
51									-47.01	51.23			
						4.3		51.54				II/III	From 51.23m to 52.39m : Slightly to moderately decomposed.
			64	62	62			T2IOI					
52									-48.17	52.39			
						NR		52.79	-48.57	52.79			From 52.39m to 52.79m : Core loss, inferred cavity.
			33	0	0	10.0		T2IOI	-48.77	52.99		II/III	From 52.79m to 52.99m : Slightly to moderately decomposed.
53						NR		53.39	-49.17	53.39			From 52.99m to 53.39m : Core loss, inferred cavity.
			100	53	41	6.3		T2IOI	-49.55	53.77		III	From 53.39m to 53.77m : Moderately decomposed, fractured and partly dissolved.
54	HW											II	
03/10/98	54.19m							54.19	-49.97	54.19			
08/10/98		1.30m at 08:00	38	0	0	NI		T2IOI	-50.17	54.39		III/II	From 54.19m to 54.39m : Moderately to slightly decomposed and fractured.
						NR		54.71	-50.49	54.71			
55			100	100	100	2.5		T2IOI				II	From 54.39m to 54.71m : Core loss, inferred cavity.
													Strong, dark grey, streaked, striped white, slightly decomposed, fine crystalline MARBLE. Joints are medium to widely, locally closely and very widely spaced, rough stepped and planar, tight to occasionally extremely narrow, calcite and chlorite infilled with occasional iron oxide and carbon stained, dipping at 30° to 40°, 50° to 60°, occasionally 20° to 30° and 60° to 70°.
56			100	100	100			55.99					
								T2IOI					
57													
								57.54					
			100	100	100			T2IOI					
58													
08/10/98						0.7		58.46					
09/10/98		1.40m at 08:00	100	100	100			T2IOI					
59													
								59.40					
			100	100	96			T2IOI					
09/10/98													
60						3.1			-55.78	60.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L.Chiu

DATE 13/10/98

CHECKED Tom Lo

DATE 14/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/717

DRILLHOLE RECORD

SHEET 7 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP + WB + RC	CO-ORDINATES E 820737.97 N 834133.20	Job No. GCE/98/014/SI/R
MACHINE & No.	D22		DATE from 26/09/98 to 12/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.22 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
09/10/98								T2IOI 60.69				II	See sheet 6 of 8 for details.
61			100	100	94			T2IOI 62.16					
62			100	100	94			T2IOI 63.71					
63						1.3							
64			100	100	100			T2IOI 65.17					
65													
09/10/98 10/10/98		3.00m at 08:00	100	100	100			T2IOI 65.98					
66			100	100	100								
67						1.2		T2IOI 67.45					
68			100	100	100			T2IOI 68.80					
69			100	100	100			T2IOI 69.77					
10/10/98 70			100	100	100				-65.78	70.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L.Chiu

DATE 13/10/98

CHECKED Tom Lo

DATE 14/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/717

DRILLHOLE RECORD

SHEET 8 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820737.97 N 834133.20	Job No. GCE/98/014/SI/R
MACHINE & No.	D22		DATE from 26/09/98 to 12/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.22 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
10/10/98						0.2		T2IOI 70.87				II	See sheet 6 of 8 for details.
10/10/98													
71 12/10/98		3.04m at 08:00	100	100	100								
72			100	100	100			T2IOI 72.24					
73			100	100	100			T2IOI 73.34					
74								T2IOI					
75 12/10/98								75.28	-71.06	75.28			
													End of investigation hole at 75.28m.
76													
77													
78													
79													
80													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L.Chiu

DATE 13/10/98

CHECKED Tom Lo

DATE 14/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHCH/729

DRILLHOLE RECORD

SHEET 1 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820739.34 N 834150.79	Job No. GCE/98/014/SI/R
MACHINE & No.	D23		DATE from 12/10/98 to 20/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 3.80 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
12/10/98	SW							Inspection Pit 1 0.50				F3	Firm, dark brownish grey, sandy, very clayey SILT with occasional subangular fine to medium gravel. (FILL - Soil derived from alluvium sand)
1								2 1.00	2.80	1.00		A3	Brownish grey clayey/silty fine to medium SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
2			100					3 1.50					
								4 2.00	1.80	2.00		A3	Light grey, silty fine to medium SAND. (ALLUVIUM)
3								5					
								6 3.10	0.70	3.10		A3	Loose, dark grey, clayey/silty fine SAND. (ALLUVIUM)
							1,1, 1,2, 2,2, N=7	7					
4								8 3.55					
									-0.50	4.30		A3	Loose, light greyish white, silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
5			85					9 5.00					
								10 6.10					
6							1,1, 2,2, 2,3, N=9	11 6.55					
7									-3.50	7.30		A3	Orangish brown, mottled pink and light grey, clayey/silty fine to coarse SAND with some angular to subangular fine to occasionally medium gravel sized quartz fragments. (ALLUVIUM)
8			40					12 8.00					
9			82					13 9.10	-5.30	9.10		A3	Light greyish white, clayey/silty fine to coarse SAND with some angular to subangular fine gravel sized quartz fragments. (ALLUVIUM)
								14					
12/10/98 10									-6.20	10.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 21/10/98

CHECKED Tom Lo

DATE 22/10/98

REMARKS

1) 75mm diameter PVC pipe installed at 73.24m.

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHCH/729

DRILLHOLE RECORD

SHEET 2 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820739.34 N 834150.79	Job No. GCE/98/014/SI/R
MACHINE & No.	D23		DATE from 12/10/98 to 20/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 3.80 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
12/10/98	SW							15 10.20	-6.40	10.20		A3	See sheet 1 of 8 for details.
11							6,8, 12,14, 16,18, N=60	16 17 10.65				A3	Very dense, dark grey, silty fine to coarse SAND with some angular to subangular fine gravel sized quartz fragments. (ALLUVIUM)
12/10/98 12	SW 12.00m								-7.50	11.30		A3	Very dense, light greyish white, fine to coarse SAND with much angular to subangular fine gravel sized quartz fragments. (ALLUVIUM)
13/10/98 13	PW	1.00m at 08:00	0					12.00 18 13.10					
			0										
14								19 14.20					
			89				B=144	20 21 14.65					
15		/					6,9, 18,22, 25,32, N=97	22 23 15.10					
16													
17									-13.50	17.30		V	Extremely weak, yellowish brown, completely decomposed, meta-siltstone. (Stiff, slightly fine sandy SILT) (C.D. meta-SILTSTONE)
18													
19								24 19.50					
13/10/98 20			94						-16.20	20.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 21/10/98

CHECKED Tom Lo

DATE 22/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHCH/729

DRILLHOLE RECORD

SHEET 3 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820739.34 N 834150.79	Job No. GCE/98/014/SI/R
MACHINE & No.	D23		DATE from 12/10/98 to 20/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 3.80 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
13/10/98	PW											V	See sheet 2 of 8 for details.
21							2,3, 4,6, 8,11, N=29	25 20.60 26 27 21.05					
22													
23													
24													
25													
13/10/98	PW 25.65m	1						25.65	-21.85	25.65			
14/10/98	HW	1.21m at 08:00	70	40	0	NI		T2(O)	-22.15	25.95		III	Moderately strong to strong, light brownish white, moderately to slightly decomposed, fine crystalline MARBLE.
26						8.6		26.15				III/II	From 25.65m to 25.95m : Moderately strong, moderately decomposed, fractured and dissolved.
			69	56	45	NI			-22.60	26.40			From 26.30m to 26.40m : Moderately strong, moderately decomposed, fractured and dissolved.
						NR		T2(O)	-22.93	26.73			From 26.40m to 26.73m : Core loss, inferred cavity infilled.
27						3.9		27.23				III/II	
			78	33	0			T2(O)					
								27.92					
28			91	47	25			T2(O)					
								28.45					
			40	35	35				-25.25	29.05			From 29.05m to 29.95m : Core loss, inferred cavity infilled.
29						NR		T2(O)					
14/10/98								29.95	-26.15	29.95			
30													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 21/10/98

CHECKED Tom Lo

DATE 22/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHCH/729

DRILLHOLE RECORD

SHEET 4 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820739.34 N 834150.79	Job No. GCE/98/014/SI/R
MACHINE & No.	D23		DATE from 12/10/98 to 20/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 3.80 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
14/10/98	HW						8,2, 2,2, 2,2, N=8	30.00 28 30.45 30.60	-26.80	30.60			Brown, sandy angular fine to coarse GRAVEL sized rock fragments. (CAVITY INFILLED)
31			67	67	57	3.3		T2101	-27.40	31.20		III/II	Moderately strong to strong, yellowish brown and grey, moderately to slightly decomposed, fine crystalline MARBLE.
						NR		31.50	-27.70	31.50			From 31.20m to 31.50m : Core loss, inferred cavity infilled with silty, sandy fine to coarse gravel.
32			69	69	56	2.0		T2101	-28.68	32.48		III/II	
						NR		32.93	-29.13	32.93			From 32.48m to 32.93m : Core loss, inferred cavity infilled with silty, sandy fine to coarse gravel.
33							4,16, 20,21, 24,39, N=104	29 33.00 30 33.45					Very dense, greyish brown, silty, sandy angular fine to coarse gravel sized rock fragments. (CAVITY INFILLED)
14/10/98 34								33.96	-30.16	33.96			
15/10/98		1.32m at 08:00	65	29	20	NI		T2101	-30.62	34.42		III	Strong, locally moderately strong, grey and yellowish brown, slightly decomposed, fine crystalline MARBLE.
						NR			-30.97	34.77			From 33.96m to 34.42m : Moderately decomposed and fractured.
35			74	43	43	2.6		34.96				III/II	From 34.42m to 34.77m : Core loss, inferred cavity infilled with silty, sandy gravel.
								T2101	-31.74	35.54			
						NI			-31.93	35.73		III	From 35.54m to 35.73m : Moderately decomposed and fractured.
36						NR		36.00	-32.20	36.00			From 35.73m to 36.00m : Core loss, inferred cavity infilled with silty, sandy gravel.
							8,10, 1,3, 3,5, N=12	31 36.45					Medium dense to dense, brown and light grey, clayey/silty, sandy angular fine to coarse GRAVEL sized rock fragments. (CAVITY INFILLED)
37								37.50					
38							1,0, 1,1, 12,12, N=26	32 37.95					
39								39.00					
							6,8, 10,13, 19,22, N=64	33 39.45					
15/10/98 40									-36.20	40.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 21/10/98

CHECKED Tom Lo

DATE 22/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHCH/729

DRILLHOLE RECORD

SHEET 5 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820739.34 N 834150.79	Job No. GCE/98/014/SI/R
MACHINE & No.	D23		DATE from 12/10/98 to 20/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 3.80 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
15/10/98	HW								40.48 -36.68	40.48			See sheet 4 of 8 for details.
			30	20	17	2.9 NI NR		T210	-37.13	40.93		II/III	Moderately strong to strong, grey, slightly to moderately decomposed, fine crystalline MARBLE. From 40.83m to 40.93m : Moderately decomposed and fractured. From 40.93m to 42.00m : Core loss, inferred cavity infilled.
41													
42							6,10, 15,15, 16,18, N=64	34 42.45	42.00 -38.20	42.00			Very dense, dark brownish grey and dark grey, clayey/silty, sandy angular fine to coarse GRAVEL sized rock fragments. (CAVITY INFILLED)
43									43.50				
44							6,9, 12,12, 15,20, N=59	35 43.95					
45									45.00				
46							7,10, 15,18, 20,33, N=86	36 45.45					
47							32, 18/20mm, 100/35mm	46.50 37 46.63					
48									48.00				
49							9,13, 14,16, 18,27, N=75	38 48.45					
15/10/98 50							10,15, 18,24, 29,35, N=106	39 49.95	49.50 -46.20	50.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 21/10/98

CHECKED Tom Lo

DATE 22/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHCH/729

DRILLHOLE RECORD

SHEET 6 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP + WB + RC	CO-ORDINATES E 820739.34 N 834150.79	Job No. GCE/98/014/SI/R
MACHINE & No.	D23		DATE from 12/10/98 to 20/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 3.80 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
15/10/98	HW												See sheet 5 of 8 for details.
15/10/98 51													
16/10/98		1.29m at 08:00					29, 21/30mm, 100/65mm	40 51.00 51.17					
52			90	87	60	6.3		T2101 52.00	-48.20	52.00		II/III	Strong, locally moderately strong, grey, slightly to moderately decomposed, fine crystalline MARBLE. From 52.80m to 53.00m : Fractured.
53	HW 53.00m		75	48	0	NI		T2101 53.00	-49.20	53.00			
54			100	100	100	3.3		T2101 53.62				II	Strong, dark grey, streaked, striped and dappled white, slightly decomposed, fine crystalline MARBLE. Joints are widely to very widely, locally closely and medium spaced, rough stepped with occasional planar, tight, calcite with occasional chlorite infilled, dipping at 30° to 40°, 50° to 60°, occasionally 60° to 70°.
16/10/98			100	100	93	1.1		T2101 54.63					
17/10/98 55		1.22m at 08:00	100	100	100			T2101 56.11					
56			100	100	100			T2101 57.16					
57			100	100	100			T2101 58.13					
58			100	100	100			T2101 59.23					
59			100	100	100			T2101	-56.20	60.00			
17/10/98 60													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 21/10/98

CHECKED Tom Lo

DATE 22/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHCH/729

DRILLHOLE RECORD

SHEET 7 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820739.34 N 834150.79	Job No. GCE/98/014/SI/R
MACHINE & No.	D23		DATE from 12/10/98 to 20/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 3.80 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
17/10/98												II	See sheet 6 of 8 for details.
17/10/98						0.4		T2IOI 60.68					
19/10/98		1.23m at 08:00	100	100	100								
61								T2IOI 62.13					
62			100	100	100								
63			100	100	100			T2IOI 63.42					
64			100	100	100			T2IOI 64.43					
65			100	100	100			T2IOI 65.80					
66			100	100	100			T2IOI 67.24					
67			100	100	100			T2IOI 68.20					
68								T2IOI 69.01					
19/10/98								T2IOI					
20/10/98		1.23m at 08:00	100	100	100								
69			100	100	100								
20/10/98									-66.20	70.00			
70													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 21/10/98

CHECKED Tom Lo

DATE 22/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHCH/729

DRILLHOLE RECORD

SHEET 8 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820739.34 N 834150.79	Job No. GCE/98/014/SI/R
MACHINE & No.	D23		DATE from 12/10/98 to 20/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 3.80 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
20/10/98								T2IOI 70.38				II	See sheet 6 of 8 for details.
71			100	100	100			T2IOI 71.66					
72			100	100	100	2.1		T2IOI 72.32					
73			100	100	100			T2IOI 73.24	-69.44	73.24			
20/10/98													End of investigation hole at 73.24m.
74													
75													
76													
77													
78													
79													
80													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
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- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 21/10/98

CHECKED Tom Lo

DATE 22/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/737

DRILLHOLE RECORD

SHEET 1 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820737.71 N 834167.73	Job No. GCE/98/014/SI/R
MACHINE & No.	D24		DATE from 29/09/98 to 13/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.10 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
29/09/98	PW								4.00	0.10		F2	Concrete slab.
								Inspection Pit 1 0.50	3.60	0.50		F3	Stiff, grey, clayey, sandy SILT with occasional angular medium gravel. (FILL - Soil derived from alluvium silt)
1								2 1.00					Brownish grey, silty fine to coarse SAND with some angular to subangular fine to medium gravel and occasional brick fragments and pockets of clay. (FILL - Soil derived from alluvium sand)
								3 1.50					
2								4 2.00	2.10	2.00			Washed boring.
3													
4													
5													
6													
7													
8													
9													
29/09/98 10									-5.90	10.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED K.M. To

DATE 14/10/98

CHECKED Tom Lo

DATE 15/10/98

REMARKS

-

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/737

DRILLHOLE RECORD

SHEET 2 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP + WB + RC	CO-ORDINATES E 820737.71 N 834167.73	Job No. GCE/98/014/SI/R
MACHINE & No.	D24		DATE from 29/09/98 to 13/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.10 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
29/09/98	PW												See sheet 1 o f 9 for details.
11													
12													
13													
14													
15													
16													
17													
29/09/98 18	PW 18.00m												
30/09/98	HW	2.10m at 08:00											
19													
30/09/98 20									-15.90	20.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED K.M. To

DATE 14/10/98

CHECKED Tom Lo

DATE 15/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/737

DRILLHOLE RECORD

SHEET 3 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820737.71 N 834167.73	Job No. GCE/98/014/SI/R
MACHINE & No.	D24		DATE from 29/09/98 to 13/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.10 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
30/09/98	HW												See sheet 1 of 9 for details.
21													
22													
23													
24													
25													
26									25.10	-22.00	26.10		
			40	17	17	3.0				-22.33	26.43	II/III	Moderately strong to strong, light grey, locally yellowish brown, slightly to moderately decomposed, fine crystalline MARBLE.
						NI				-22.60	26.70	III	From 26.43m to 26.70m : Moderately decomposed and fractured.
27						NR		T2101					From 26.70m to 27.60m, 27.92m to 28.40m, 28.76m to 29.00m and 29.26m to 29.46m : Core losses, inferred cavities.
			41	38	33	6.3			27.60	-23.50	27.60		
28						NR		T2101		-23.82	27.92	II/III	
			60	18	0	NI			28.40	-24.30	28.40		
						NR		T2101		-24.66	28.76	II/III	
29			57	57	50	7.7			29.00	-24.90	29.00		
						NR		T2101		-25.16	29.26	II/III	
30/09/98			100	0	0	NI			29.46	-25.36	29.46		
02/10/98								TBP	29.65	-25.55	29.65	III	From 29.46m to 29.65m : Moderately decomposed and fractured.
30									30.00	-25.90	30.00		

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED K.M. To

DATE 14/10/98

CHECKED Tom Lo

DATE 15/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/737

DRILLHOLE RECORD

SHEET 4 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP + WB + RC	CO-ORDINATES E 820737.71 N 834167.73	Job No. GCE/98/014/SI/R
MACHINE & No.	D24		DATE from 29/09/98 to 13/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.10 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
02/10/98	HW	1.60m at 08:00					2,2, 2,3, 3,4, N=12	5 30.45					Soft, dark yellowish brown, sandy SILT with occasional angular fine to medium gravel sized rock fragments. (CAVITY INFILLED)
31								31.50					
							1,1, 1,1, 1,1, N=4	6 31.95					
32													
33							1,1, 1,1, 1,1, N=4	33.00					
								7 33.45					
								33.60	-29.50	33.60			
34			56	0	0	NI		T2101				III	Moderately strong, locally strong, yellowish brown and brownish grey, moderately decomposed, fractured and dissolved, fine crystalline MARBLE.
						NR			-30.00	-34.10			
			100	80	58	8.0		34.50	-30.40	34.50		III/II	From 34.10m to 34.50m : Core loss, inferred cavity.
								T2101					
35								35.00	-30.90	35.00			From 34.50m to 35.00m : Moderately to slightly decomposed and dissolved.
							1,1, 1,1, 1,1, N=4	8 35.45					Soft, dark brown, very clayey SILT. (CAVITY INFILLED)
36								36.50					
							1,1, 1,1, 1,5, N=8	9 36.95	-32.90	37.00			
37													Firm to stiff, dark brown, sandy, very clayey SILT with occasional angular coarse gravel sized rock fragments. (CAVITY INFILLED)
38								38.00					
							1,2, 3,5, 5,6, N=19	10 38.45					
39													
							4,5, 6,7, 7,11, N=31	39.50					
02/10/98 40								11 39.95	-35.90	40.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED K.M. To

DATE 14/10/98

CHECKED Tom Lo

DATE 15/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/737

DRILLHOLE RECORD

SHEET 5 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP + WB + RC	CO-ORDINATES E 820737.71 N 834167.73	Job No. GCE/98/014/SI/R
MACHINE & No.	D24		DATE from 29/09/98 to 13/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.10 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
02/10/98	HW								40.20	-36.10	40.20		See sheet 4 of 9 for details.
02/10/98			92	33	0	NI		T2101	40.80	-36.70	40.80	III	Moderately strong, yellowish brown, moderately decomposed and fractured, fine crystalline MARBLE.
41 03/10/98		1.80m at 08:00					2,4, 4,6, 12,13, N=35	12	41.25	-37.90	42.00		Very dense, dark brown, sandy angular to subangular fine to coarse GRAVEL sized rock fragments. (CAVITY INFILLED)
42									42.75				Dense to very dense, yellowish brown, sandy angular fine to coarse GRAVEL sized rock fragments. (CAVITY INFILLED)
43							4,4, 5,7, 12,13, N=37	13	43.20				
44									44.50				
45							2,4, 6,7, 8,10, N=31	14	44.95				
46									46.00				
47							10,11, 14,17, 20,21, N=72	15	46.45				
48							10,11, 12,14, 16,20, N=62	16	47.50	-44.40	48.50		
49									47.95				Loose to medium dense, dark brownish grey, silty, sandy angular to subangular fine to coarse GRAVEL sized rock fragments. (CAVITY INFILLED)
03/10/98 50							6,7, 10,11, 14,26, N=61	17	49.00	-45.90	50.00		

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED K.M. To

DATE 14/10/98

CHECKED Tom Lo

DATE 15/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.
GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/737

DRILLHOLE RECORD

SHEET 6 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820737.71 N 834167.73	Job No. GCE/98/014/SI/R
MACHINE & No.	D24		DATE from 29/09/98 to 13/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.10 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
03/10/98	HW						4,7, 10,11, 14,29, N=64	18 50.95	50.50				See sheet 5 of 9 for details.
03/10/98 51		1.80m at 08:00											
05/10/98 52							7,9, 10,11, 12,19, N=52	19 52.45	52.00				
53													
54							4,7, 11,14, 19,21, N=65	20 53.95	53.50				
55													
56							1,1, 1,2, 2,2, N=7	21 55.45	55.00				
57							50/45mm, 150/65mm	22 56.61	56.50	-52.70	56.80		Very dense, dark grey, sandy angular fine to coarse GRAVEL sized rock fragments. (CAVITY INFILLED)
58							10,11, 13,16, 17,20, N=66	23 58.45	58.00				
59													
05/10/98 60							11,12, 16,17, 18,21, N=72	24 59.95	59.50	-55.90	60.00		

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED K.M. To

DATE 14/10/98

CHECKED Tom Lo

DATE 15/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/737

DRILLHOLE RECORD

SHEET 7 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP + WB + RC	CO-ORDINATES E 820737.71 N 834167.73	Job No. GCE/98/014/SI/R
MACHINE & No.	D24		DATE from 29/09/98 to 13/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.10 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
05/10/98	HW												See sheet 6 of 9 for details.
61							10,11, 14,18, 20,29, N=81	61.00					
								25 61.45					
62													
63	HW 63.50m												
			100	100	100	0.9		63.50	-59.40	63.50		II	Strong to very strong, dark grey, streaked and striped white, slightly decomposed, fine crystalline MARBLE. Joints are widely to very widely, locally closely to medium spaced, rough stepped with occasional planar and undulating, tight to occasionally extremely narrow, calcite with occasional chlorite infilled and carbonaceous stained, dipping at 20° to 30°, 40° to 50° and 50° to 60°, occasionally 70° to 80°. From 65.25m to 65.50m : Slightly to moderately decomposed and fractured.
64								T2101 64.60					
05/10/98													
09/10/98		1.02m at 08:00	100	67	47	3.1							
65								T2101	-61.15	65.25			
						NI			-61.40	65.50		II/III	
			100	100	100	1.8		65.65				II	
66								T2101					
67								67.05					
			100	100	100			T2101					
68								68.11					
			100	100	100			T2101					
69													
09/10/98								69.68					
10/10/98			100	95	90			T2101	-65.90	70.00			
70													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED K.M. To

DATE 14/10/98

CHECKED Tom Lo

DATE 15/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/737

DRILLHOLE RECORD

SHEET 8 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820737.71 N 834167.73	Job No. GCE/98/014/SI/R
MACHINE & No.	D24		DATE from 29/09/98 to 13/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.10 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
10/10/98		2.94m at 08:00				6.8		T2IOI				II	See sheet 7 for 9 for details.
71			100	100	100	1.7		71.18					
72								T2IOI					
10/10/98								72.45					
12/10/98		2.65m at 08:00	100	100	100			T2IOI					
73								73.70					
74			100	100	100			T2IOI					
75			100	100	100			74.62					
12/10/98						0.2		T2IOI					
76								76.06					
13/10/98		0.30m at 08:00	100	100	100			T2IOI					
77								77.39					
78			100	100	100			T2IOI					
			100	100	100			78.32					
79								T2IOI					
			100	100	100			79.22					
13/10/98								T2IOI					
80									-75.90	80.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED K.M. To

DATE 14/10/98

CHECKED Tom Lo

DATE 15/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/737

DRILLHOLE RECORD

SHEET 9 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820737.71 N 834167.73	Job No. GCE/98/014/SI/R
MACHINE & No.	D24		DATE from 29/09/98 to 13/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.10 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
13/10/98												II	See sheet 7 of 9 for details.
81			100	100	100	1.7		T2101 80.62					
82			100	100	100			T2101 81.49					
83			100	100	100			T2101 82.81					
13/10/98								T2101 83.76	-79.66	83.76			
84													End of investigation hole at 83.76m.
85													
86													
87													
88													
89													
90													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED K.M. To

DATE 14/10/98

CHECKED Tom Lo

DATE 15/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHCH/748

DRILLHOLE RECORD

SHEET 1 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820734.53 N 834183.06	Job No. GCE/98/014/SI/R
MACHINE & No.	D35		DATE from 22/10/98 to 04/11/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.13 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
22/10/98	SW							0.00	4.03	0.10		F3	Concrete slab.
								Inspection Pit 1 0.50					Greyish brown and brown, silty fine to coarse SAND with some angular to subangular fine to medium gravel. (FILL - Soil derived from HDV and CDV)
								2 1.00					
								3 1.50	2.63	1.50		F3	Yellowish brown, slightly clayey silty fine to coarse SAND with some angular to subangular fine to medium gravel. (FILL - Soil derived from HDV and CDV)
								4 2.00	2.13	2.00			
			100					5				F3	Dark grey, clayey silty fine to coarse SAND with occasional angular to subangular fine to medium gravel and wood pieces. (FILL - Marine deposits)
								6 3.10	1.03	3.10			
							1,1, 1,1, 1,2 N=5	7				M3	Medium dense, grey, slightly clayey silty fine to coarse SAND with some angular to subangular fine gravel sized rock and shell fragments. (MARINE DEPOSITS)
								8 3.55					
			90					9 5.00	-0.17	4.30		A3	Very dense, light grey locally dark grey, slightly silty fine to coarse SAND with some angular to subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
	SW 6.10m PW							10 6.10					
							3,5, 8,12, 16,18 N=54	11					
								12 6.55					
			0					8.00					
			0					13 9.10					
22/10/98									-5.87	10.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED M.Chiu

DATE 05/11/98

CHECKED Tom Lo

DATE 06/11/98

REMARKS

1) Permeability test carried out at 9.30m to 10.60m and 19.50m to 20.80m.
2) 75mm diameter PVC pipe installed at 85.44m.

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHCH/748

DRILLHOLE RECORD

SHEET 2 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820734.53 N 834183.06	Job No. GCE/98/014/SI/R
MACHINE & No.	D35		DATE from 22/10/98 to 04/11/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.13 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
22/10/98	PW		69				B=119	14 10.20				A3	See sheet 1 of 9 for details.
22/10/98								15					
23/10/98 11		3.42m at 08:00						16 10.65					
23/10/98													
12 24/10/98		3.87m at 08:00											
13													
14													
15								15.00	-10.87	15.00			
			18					T2101				A4	Light grey and white, sandy angular to subangular fine to coarse GRAVEL sized quartz fragments. (ALLUVIUM)
16								17 16.10	-11.97	16.10			
			90									A2	Firm, yellowish brown, sandy clayey SILT with much angular to subangular fine to coarse gravel sized quartz fragments. (ALLUVIUM)
17								18 17.20	-13.07	17.20			
							3,4, 5,7, 9,12 N=33	19				C2	Stiff to very stiff, dark grey and yellowish brown, slightly sandy clayey SILT with occasional angular to subangular fine to medium gravel sized rock fragments. (KARSTIC SURFACE DEPOSITS)
18								20 17.65					
19													
24/10/98 20								20.00	-15.87	20.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED M.Chiu

DATE 05/11/98

CHECKED Tom Lo

DATE 06/11/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHCH/748

DRILLHOLE RECORD

SHEET 3 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820734.53 N 834183.06	Job No. GCE/98/014/SI/R
MACHINE & No.	D35		DATE from 22/10/98 to 04/11/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.13 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
24/10/98	PW		90					21				C2	See sheet 2 of 9 for details.
21							5,9, 12,19, 27,31 N=89	22 21.10					
24/10/98 22								23					
27/10/98		3.69m at 08:00						24 21.55					
23													
24								24.17	-20.04	24.17			
			60	16	16	NI		T2101				IV/III	Weak to moderately strong, grey and brownish grey, highly to moderately decomposed, MARBLE. Joints are closely to medium spaced and stepped to highly fractured, rough planar and stepped, very narrow, iron-manganese oxide stained, calcite infilled, dipping at 0° to 10°, 20° to 30° and 40° to 50°, occasional 30° to 40°.
25								25.17	-21.04	25.17			
			0	0	0	NR		T2101					From 25.17m to 25.83m : Core loss, assumed to be cavity.
								25.83	-21.70	25.83			
26			90	84	84	4.0		T2101				II	From 25.83m to 26.33m : Strong and slightly decomposed.
								26.33	-22.20	26.33			
			0	0	0	NR		T2101					From 26.33m to 26.80m : Core loss, assumed to be cavity.
								26.80	-22.67	26.80			
27			94	71	67	3.8		T2101				II	From 26.80m to 27.32m : Strong and slightly decomposed.
						NR			-23.19	27.32			
								27.70	-23.57	27.70			From 27.32m to 27.70m : Core loss, assumed to be cavity.
28			59	43	43	3.6			-24.12	28.25		II	From 27.70m to 28.25m : Strong and slightly decomposed.
						NI		T2101	-24.45	28.58		IV/III	
						NR							From 25.58m to 29.20m : Core loss, assumed to be cavity.
29								29.20	-25.07	29.20			
			65	54	36	NI			-25.40	29.53		IV/III	
	PW					NR		T2101					From 29.53m to 29.99m : Core loss, assumed to be cavity.
27/10/98 30		30.00m							-25.86	29.99			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED M.Chiu

DATE 05/11/98

CHECKED Tom Lo

DATE 06/11/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHCH/748

DRILLHOLE RECORD

SHEET 4 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820734.53 N 834183.06	Job No. GCE/98/014/SI/R
MACHINE & No.	D35		DATE from 22/10/98 to 04/11/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.13 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
27/10/98	HW					2.9		T2IOI	-25.87	30.00		II	From 29.99m to 30.69m : Strong and slightly decomposed.
			83	49	27	NI		30.50 T2IOI	-26.56	30.69		IV/III	
31								31.20	-27.17	31.30			
27/10/98													
29/10/98		3.63m at 08:00	87	76	76	NR			-27.37	31.50			From 31.30m to 31.50m : Core loss, assumed to be cavity.
						4.2						II	From 31.50m to 33.16m : Strong and slightly decomposed.
32								T2IOI					
								32.70					
33			82	41	37				-29.03	33.16			
						NI			-29.19	33.32		IV/III	
						4.3		T2IOI	-29.42	33.55		II	From 33.32m to 33.55m : Strong and slightly decomposed.
						NR			-29.62	33.75			
						NI						IV/III	From 33.55m to 33.75m : Core loss, assumed to be cavity.
34								34.20					
			55	7	0			T2IOI	-30.62	34.75			
35						NR							From 34.75m to 35.20m : Core loss, assumed to be cavity.
								35.20	-31.07	35.20			
			63	28	26	NI			-31.32	35.45		IV/III	
						NR		T2IOI	-31.77	35.90			From 35.45m to 35.90m : Core loss, assumed to be cavity.
36						NI			-32.12	36.25		IV/III	
29/10/98						8.6		36.40				II	From 36.25m to 36.60m : Strong and slightly decomposed.
30/10/98		3.91m at 08:00	93	15	10				-32.47	36.60			
						NI						IV/III	
37								T2IOI	-33.07	37.20			
						NR							From 37.20m to 37.90m : Core loss, assumed to be cavity.
38			60	0	0	NI		37.90	-33.77	37.90			
						NR		T2IOI	-34.07	38.20		IV/III	
			72	12	0	NI		38.40 T2IOI	-34.27	38.40			From 38.20m to 38.40m : Core loss, assumed to be cavity.
39								38.90				IV/III	
			67	17	11			T2IOI					
30/10/98									-35.77	39.90			
40													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
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- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED M.Chiu

DATE 05/11/98

CHECKED Tom Lo

DATE 06/11/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHCH/748

DRILLHOLE RECORD

SHEET 5 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP + WB + RC	CO-ORDINATES E 820734.53 N 834183.06	Job No. GCE/98/014/SI/R
MACHINE & No.	D35		DATE from 22/10/98 to 04/11/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.13 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
30/10/98	HW					NR		T2IOI	-35.87	40.00			From 39.90m to 40.40m : Strong and slightly decomposed.
			92	66	63	4.0		40.40	-36.27	40.40		II	From 40.40m to 40.90m : Strong and slightly decomposed.
41									-36.77	40.90			
						NI		T2IOI	-37.19	41.32		IV/III	
						2.6		41.70	-37.57	41.70		II	From 41.32m to 41.70m : Strong and slightly decomposed.
42			83	60	56	NI			-37.90	42.03		IV/III	
						NR			-38.15	42.28			From 42.03m to 42.28m : Core loss, assumed to be cavity.
						5.1		T2IOI				II	Strong, grey, slightly decomposed, MARBLE. Joints are closely to medium spaced, rough planar and undulating, extremely to very narrow, iron oxide stained, calcite infilled, dipping at 10° to 20°, 30° to 40° and 40° to 50°.
43			100	100	94			43.20					
44								T2IOI					
30/10/98								44.63	-40.50	44.63			
31/10/98		3.71m at 08:00										V	Extremely weak, yellowish brown and brownish grey, completely decomposed, meta-siltstone. (Stiff to very stiff, slightly sandy clayey SILT with occasional angular to subangular fine gravel sized rock fragments) (C.D. meta-SILTSTONE)
45							6,9, 13,17, 21,29 N=80	25	45.50				
46								26	45.95				
47							4,7, 9,14, 17,21 N=61	27	47.00				
48								28	47.45				
49							3,3, 6,6, 7,7 N=26	29	48.50				
31/10/98 50								30	48.95				
								50.00	-45.87	50.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED M.Chiu

DATE 05/11/98

CHECKED Tom Lo

DATE 06/11/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHCH/748

DRILLHOLE RECORD

SHEET 6 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820734.53 N 834183.06	Job No. GCE/98/014/SI/R
MACHINE & No.	D35		DATE from 22/10/98 to 04/11/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.13 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
31/10/98	HW						3,5, 5,8, 12,13 N=38	31 32 50.45				V	See sheet 5 of 9 for details.
51							6,7, 10,15, 19,22 N=66	33 51.50 34 51.95					
52													
53							6,9, 14,19, 26,29 N=88	35 53.00 36 53.45					
54													
55							7,10, 17,21, 27,32 N=97	37 54.50 38 54.95					
56							4,7, 17,20, 29,34 N=100	39 56.00 40 56.45					
57													
58							5,9, 18,20, 26,31 N=95	41 57.50 42 57.95					
59													
31/10/98 60							10,17, 22,27, 34,39 N=122	43 59.00 44 59.45	-55.87	60.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED M.Chiu

DATE 05/11/98

CHECKED Tom Lo

DATE 06/11/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHCH/748

DRILLHOLE RECORD

SHEET 7 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820734.53 N 834183.06	Job No. GCE/98/014/SI/R
MACHINE & No.	D35		DATE from 22/10/98 to 04/11/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.13 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
31/10/98	HW						7,19, 36,31, 32,39 N=138	45 60.50 46 60.95				V	See sheet 5 of 9 for details.
31/10/98 61 02/11/98		3.69m at 08:00											
62							10,15, 20,29, 33,37 N=119	47 62.00 48 62.45					
63													
64	HW 64.43m						6,12, 17,26, 31,39 N=113	49 63.50 50 63.95 64.45	-60.30	64.43			
65			100	100	90	10.6 2.7		T2101 65.49				II	Strong, dark grey, slightly decomposed, MARBLE. Joints are closely to medium spaced with occasional very closely and widely spaced, rough planar and undulating with occasional rough stepped, extremely narrow, clean and calcite infilled, dipping at 0° to 10°, 20° to 30°, 30° to 40° and 50° to 60°.
66			100	100	100			T2101 66.43					
67			100	100	100			T2101 67.63					
68			100	100	100	1.2		T2101 69.15					
69			100	100	100			T2101					
02/11/98 70									-65.87	70.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED M.Chiu
DATE 05/11/98
CHECKED Tom Lo
DATE 06/11/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHCH/748

DRILLHOLE RECORD

SHEET 8 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820734.53 N 834183.06	Job No. GCE/98/014/SI/R
MACHINE & No.	D35		DATE from 22/10/98 to 04/11/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.13 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
02/11/98								T2101 70.28				II	See sheet 7 of 9 for details.
03/11/98		2.96m at 08:00	100	100	100								
71								T2101 71.74					
72			100	100	100	5.0		T2101 72.87					
73			100	100	100	1.4		T2101 74.09					
74			100	100	99			T2101 75.53					
75						5.3		T2101 76.57					
76			100	100	100			T2101 77.82					
77			100	98	98	3.1		T2101 78.86					
78			100	100	100			T2101					
79			100	100	100				-75.87	80.00			
03/11/98 80													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED M.Chiu

DATE 05/11/98

CHECKED Tom Lo

DATE 06/11/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHCH/748

DRILLHOLE RECORD

SHEET 9 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820734.53 N 834183.06	Job No. GCE/98/014/SI/R
MACHINE & No.	D35		DATE from 22/10/98 to 04/11/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.13 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
03/11/98								T2101 80.31				II	See sheet 7 of 9 for details.
81			100	100	96			T2101 81.65					
03/11/98													
04/11/98		3.02m at 08:00	100	100	100	>20							
82						4.1		T2101 82.22					
			100	100	100			T2101 83.67					
83													
			100	100	100			T2101 84.10					
84													
			100	100	100	1.5		T2101 85.44	-81.31	85.44			
85													
04/11/98													
86													End of investigation hole at 85.44m.
87													
88													
89													
90													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED M.Chiu

DATE 05/11/98

CHECKED Tom Lo

DATE 06/11/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/755

DRILLHOLE RECORD

SHEET 1 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	WB+RC	CO-ORDINATES E 820717.89 N 834199.76	Job No. GCE/98/014/SI/R
MACHINE & No.	D31		DATE from 16/10/98 to 22/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 0.38 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
16/10/98	SW							0.00	0.08	0.30			Concrete slab.
													Washed boring.
			75					1 2.00	-1.62	2.00		A2	Firm, light brownish grey, sandy, very silty CLAY. (ALLUVIUM)
							0,1, 1,2, 2,3 N=8	2 3.10 3 4 3.55	-3.92	4.30		A3	Light greyish white, clayey/silty fine to coarse SAND with occasional subangular fine gravel quartz fragments. (ALLUVIUM)
			100					5 5.00	-5.72	6.10		A3	Dense, light greyish white, silty fine to coarse SAND with some subangular fine gravel sized quartz fragments. (ALLUVIUM)
16/10/98							1,2, 4,8, 9,11 N=32	6 6.10 7 8 6.55					
17/10/98		0.18m at 08:00							-6.92	7.30		A3	Dark grey, silty fine to coarse SAND with some subangular fine to occasionally medium gravel sized quartz fragments. (ALLUVIUM)
			100					9 8.00	-8.72	9.10		A3	Dense, light greyish white, silty fine to coarse SAND with some subangular fine gravel sized quartz fragments. (ALLUVIUM)
	SW 9.10m PW						1,3, 5,6, 8,12 N=31	10 9.10 11 12 9.55					
17/10/98									-9.62	10.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L.Chiu

DATE 23/10/98

CHECKED Tom Lo

DATE 24/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/755

DRILLHOLE RECORD

SHEET 2 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	WB+RC	CO-ORDINATES E 820717.89 N 834199.76	Job No. GCE/98/014/SI/R
MACHINE & No.	D31		DATE from 16/10/98 to 22/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 0.38 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
17/10/98	PW								-9.92	10.30		A3	See sheet 1 of 8 for details.
												A3	Light greyish white, fine to coarse SAND with much angular to subangular fine to coarse gravel sized quartz fragments. (ALLUVIUM)
11			0					13 11.00 11.10					
12			89				B=142	14 12.20 15 16 12.65	-12.27	12.65			
13							2,4, 4,5, 6,7 N=22	17 18 13.10				A3	Medium dense, light greyish white, silty fine to coarse SAND with some subangular fine gravel sized quartz fragments. (ALLUVIUM)
14									-14.12	14.50			
15												A2	Firm, orangish brown, mottled red, sandy, very clayey SILT. (ALLUVIUM)
16			100					19 16.00					
17								20 17.10	-16.72	17.10			
							4,4, 5,8, 13,14 N=40	21 22 17.55				A3	Medium dense to dense, orangish and yellowish brown, silty fine to coarse SAND with some angular to subangular fine to coarse gravel sized quartz fragments. (ALLUVIUM)
18													
19													
17/10/98 20								20.00	-19.62	20.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L.Chiu

DATE 23/10/98

CHECKED Tom Lo

DATE 24/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/755

DRILLHOLE RECORD

SHEET 3 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	WB+RC	CO-ORDINATES E 820717.89 N 834199.76	Job No. GCE/98/014/SI/R
MACHINE & No.	D31		DATE from 16/10/98 to 22/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 0.38 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
17/10/98	PW		0									A3	See sheet 2 of 8 for details.
21			0					23 21.10					
22			0				B=112	24 22.20					
23							1,2, 4,5, 5,7 N=21	25 22.65					
17/10/98								26 23.10					
19/10/98		0.00m at 08:00											
24													
25									-25.22	25.60			
26												C2	Stiff, light greenish grey, mottled brown, clayey, sandy SILT with some angular fine to medium gravel sized rock fragments. (KARSTIC SURFACE DEPOSIT)
27													
28			100					27 28.00					
29								28 29.10	-28.72	29.10			
19/10/98 30							3,4, 3,5, 7,8 N=23	29 30 29.55	-29.62	30.00		C2	Stiff, brown, clayey, sandy SILT. (KARSTIC SURFACE DEPOSIT)

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L.Chiu

DATE 23/10/98

CHECKED Tom Lo

DATE 24/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/755

DRILLHOLE RECORD

SHEET 4 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	WB+RC	CO-ORDINATES E 820717.89 N 834199.76	Job No. GCE/98/014/SI/R
MACHINE & No.	D31		DATE from 16/10/98 to 22/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 0.38 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
19/10/98	PW											C2	See sheet 3 of 8 for details.
31													
32													
33													
34													
35	PW 35.20m								35.20 -34.82	35.20			
	HW		96	52	52	8.0		T2IOI	35.70 -35.32	35.70		II/III	Strong, grey, slightly to moderately decomposed, fine crystalline MARBLE. At 35.20m and 35.70m : Solution features.
36			100					31 36.00					Firm, dark brown, SILT. (CAVITY INFILLED)
37								32 37.10	-36.72	-37.10			
			89	79	79	3.6		T2IOI				II/III	Strong, locally moderately strong, grey, locally brownish grey, slightly to moderately decomposed, fine crystalline MARBLE.
38			100	100	100			38.20 T2IOI					
39			95	80	75			39.00 T2IOI					
19/10/98 40									-39.62	40.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L.Chiu

DATE 23/10/98

CHECKED Tom Lo

DATE 24/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/755

DRILLHOLE RECORD

SHEET 5 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	WB + RC	CO-ORDINATES E 820717.89 N 834199.76	Job No. GCE/98/014/SI/R
MACHINE & No.	D31		DATE from 16/10/98 to 22/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 0.38 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
19/10/98	HW					NI		T2IOI	-39.74	40.12		II/III	From 40.12m to 40.60m : Moderately decomposed, fractured and dissolued.
								40.50	-40.22	40.60		III	
			33	0	0	NR		T2IOI 40.80	-40.42	40.80			From 40.60m to 40.80m : Core loss, inferred cavity infilled.
41			60	32	29	2.0			-40.92	41.30		II/III	
						NI		T2IOI	-41.32	41.70		III	From 41.30m to 41.70m : Moderately decomposed, fractured and dissolued.
						NR							From 41.70m to 42.30m : Core loss, inferred cavity infilled.
42								42.30	-41.92	42.30			
								42.50					Stiff, dark brown, SILT. (CAVITY INFILLED)
19/10/98 43							10,7, 3,5, 6,6 N=20	33 42.95					
20/10/98		0.15m at 08:00											
44							4,4, 5,6, 6,7 N=24	34 44.00					
								35 44.45					
45													
							3,2, 5,5, 7,10 N=27	36 45.50					
46								37 45.95					
									-46.12	46.50			
47							7,10, 10,11, 14,15 N=50	38 47.00					Stiff, dark brown and orangish brown, sandy SILT with occasional angular fine to medium gravel sized quartz fragments. (CAVITY INFILLED)
								39 47.45					
48													
							3,3, 7,6, 11,13 N=37	40 48.50					
49								41 48.95					
20/10/98 50								50.00	-49.62	50.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L.Chiu

DATE 23/10/98

CHECKED Tom Lo

DATE 24/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/755

DRILLHOLE RECORD

SHEET 6 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	WB + RC	CO-ORDINATES E 820717.89 N 834199.76	Job No. GCE/98/014/SI/R
MACHINE & No.	D31		DATE from 16/10/98 to 22/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 0.38 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
20/10/98	HW						5,5, 6,7, 14,16 N=43	42 • 43 50.45 50.80	-50.42	50.80			See sheet 5 of 8 for details.
51			83	33	33	NI NR 2.2		T2IOI	-50.72 -51.17	51.10 51.55		II	Brownish grey, angular to subangular medium to coarse GRAVEL sized rock fragments. (CAVITY INFILLED) From 50.90m to 51.10m : Core loss, inferred cavity infilled.
52			60	0	0	NI NR		T2IOI 52.00 T2IOI 53.00	-51.72 -52.22 -52.62	52.10 52.60 53.00		II III/IV	Strong, greenish grey, slightly decomposed, fine crystalline MARBLE. Very strong, white, slightly decomposed, fractured QUARTZ DYKE. Weak to moderately weak, yellowish brown, moderately to highly decomposed, highly fractured, fine crystalline MARBLE. From 52.60m to 53.00m : Core loss, inferred cavity infilled.
20/10/98 53													
21/10/98		0.00m at 08:00					50/50mm, 100/70mm	• 44 53.12					
54								54.48	-54.10	54.48			Very stiff, greyish brown, sandy SILT with occasional angular fine to medium gravel sized rock fragments. (CAVITY INFILLED)
55			69	50	40	4.0 NR		T2IOI 55.20	-54.60 -54.82	54.98 55.20		II/III	Moderately strong to strong, brownish grey, slightly to moderately decomposed, fine crystalline MARBLE. From 54.98m to 55.20m : Core loss, inferred cavity infilled.
56							50/55mm, 100/75mm	55.50 • 45 55.63 56.80	-56.42	56.80			Very dense, dark brown, clayey/silty fine to coarse SAND with some angular fine to medium gravel sized rock fragments. (CAVITY INFILLED)
57			88	61	54	NI 2.5		T2IOI	-56.62 -57.41	57.00 57.79		II/III	From 56.80m to 57.00m : Grey and brownish grey, medium to coarse gravel sized meta-siltstone and marble fragments. Strong, light brownish white and dark grey, slightly to moderately decomposed, fine crystalline MARBLE.
58	HW 58.30m		95 100	70 94	0 94	NI 5.7		58.10 58.30 T2IOI	-57.72	58.10		III/IV II	From 57.79m to 58.10m : Dark grey, moderately weak to moderately strong and moderately to highly decomposed, highly fractured.
59						0.6		59.80	-59.62	60.00			Strong, dark grey, streaked, striped, dappled white, slightly decomposed, fine crystalline MARBLE. Joints are widely to very widely, locally closely and medium spaced, rough stepped and planar, tight, calcite with occasional
21/10/98 60			100	100	100								

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L.Chiu

DATE 23/10/98

CHECKED Tom Lo

DATE 24/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/755

DRILLHOLE RECORD

SHEET 7 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	WB + RC	CO-ORDINATES E 820717.89 N 834199.76	Job No. GCE/98/014/SI/R
MACHINE & No.	D31		DATE from 16/10/98 to 22/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 0.38 mPD

Drilling Progress	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
21/10/98						T2IOI				II	chlorite infilled, dipping at 10° to 20°, 30° to 40°, 50° to 60°, occasionally 60° to 70°. From 58.10m to 58.87m : Joints are closely to medium, locally very closely spaced. From 60.63m to 60.98m : Joints are closely to medium, locally very closely spaced.
61					8.6						
					0.2						
		100	100	100		61.27					
62						T2IOI					
		100	100	100		62.07					
						T2IOI					
63											
		100	100	100		63.32					
64						T2IOI					
		100	100	100		64.72					
65						T2IOI					
		100	100	100		65.92					
66					1.9	T2IOI					
		100	100	100		67.09					
21/10/98 67						T2IOI					
22/10/98	0.10m at 08:00	100	100	100							
68					0.7						
		100	100	100		68.61					
69						T2IOI					
		100	100	100		69.64					
22/10/98 70						T2IOI	-69.62	70.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L.Chiu

DATE 23/10/98

CHECKED Tom Lo

DATE 24/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DH/755

DRILLHOLE RECORD

SHEET 8 of 8

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	WB + RC	CO-ORDINATES E 820717.89 N 834199.76	Job No. GCE/98/014/SI/R
MACHINE & No.	D31		DATE from 16/10/98 to 22/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 0.38 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
22/10/98								T2IOI 70.59					
71			100	100	100			T2IOI 72.14					
72			100	100	100			T2IOI 73.44					
73			100	100	100			T2IOI 74.88					From 74.88m to 75.36m : An 80° to vertical, rough planar, calcite infilled joint.
74			100	100	100			T2IOI 76.26					
75			100	100	100	0.3		T2IOI 77.21					
76			100	100	100			T2IOI 77.89					
77			100	100	100			T2IOI 78.92	-78.54	78.92			End of investigation hole at 78.92m.
78			100	100	100								
22/10/98 79													
80													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U75 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L.Chiu

DATE 23/10/98

CHECKED Tom Lo

DATE 24/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHPZ/756

DRILLHOLE RECORD

SHEET 1 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820735.05 N 834195.45	Job No. GCE/98/014/SI/R
MACHINE & No.	D2		DATE from 09/10/98 to 19/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.08 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
09/10/98	SW								3.98	0.10		F3	Concrete slab.
								Inspection Pit 1 0.50					Greyish brown, clayey/silty fine to coarse SAND with occasional angular to subangular fine to coarse gravel. (FILL - Alluvium sand)
								2 1.00					
								3 1.50	2.58	1.50		F3	Greyish brown, very clayey/silty fine to coarse SAND with occasional angular to subangular fine gravel. (FILL - Alluvium sand)
								4 2.00	2.08	2.00			Washed boring.
09/10/98 9	SW 9.00m												
10/10/98	PW	2.09m at 08:00											
10/10/98 10									-5.92	10.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 20/10/98

CHECKED Tom Lo

DATE 21/10/98

REMARKS
1) Open standpipe installed at 10.00m.
2) Piezometer tip installed at 19.00m.

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHPZ/756

DRILLHOLE RECORD

SHEET 2 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820735.05 N 834195.45	Job No. GCE/98/014/SI/R
MACHINE & No.	D2		DATE from 09/10/98 to 19/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.08 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
10/10/98	PW												See sheet 1 of 9 for details.
11													
12													
13													
14													
15													
16													
17													
18													
19								■					
10/10/98 20									-15.92	20.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- △ WATER SAMPLE
- ▲ PIEZOMETER TIP
- STANDPIPE
- ↓ STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- V IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 20/10/98

CHECKED Tom Lo

DATE 21/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHPZ/756

DRILLHOLE RECORD

SHEET 3 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820735.05 N 834195.45	Job No. GCE/98/014/SI/R
MACHINE & No.	D2		DATE from 09/10/98 to 19/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.08 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
10/10/98	PW												See sheet 1 of 9 for details.
21													
22													
23													
24													
25													
26													
27													
28													
29													
10/10/98 30									-25.92	30.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 20/10/98

CHECKED Tom Lo

DATE 21/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHPZ/756

DRILLHOLE RECORD

SHEET 4 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820735.05 N 834195.45	Job No. GCE/98/014/SI/R
MACHINE & No.	D2		DATE from 09/10/98 to 19/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.08 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
10/10/98	PW												See sheet 1 of 9 for details.
31													
32													
33													
34													
35													
10/10/98 36	PW 36.00m												
12/10/98	HW	2.84m at 08:00											
37													
38													
39													
12/10/98 40									-35.92	40.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 20/10/98

CHECKED Tom Lo

DATE 21/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.
GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHPZ/756

DRILLHOLE RECORD

SHEET 5 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820735.05 N 834195.45	Job No. GCE/98/014/SI/R
MACHINE & No.	D2		DATE from 09/10/98 to 19/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.08 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
12/10/98	HW												See sheet 1 of 9 for details.
41													
42													
43													
44													
45													
46													
47													
48													
49													
12/10/98 50									-45.92	50.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu
DATE 20/10/98
CHECKED Tom Lo
DATE 21/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHPZ/756

DRILLHOLE RECORD

SHEET 6 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP + WB + RC	CO-ORDINATES E 820735.05 N 834195.45	Job No. GCE/98/014/SI/R
MACHINE & No.	D2		DATE from 09/10/98 to 19/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.08 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
13/10/98	HW	3.04m at 08:00											See sheet 1 of 9 for details.
51													
52													
53													
54													
55													
56													
57													
58													
59													
13/10/98 60									-55.92	60.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 20/10/98

CHECKED Tom Lo

DATE 21/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHPZ/756

DRILLHOLE RECORD

SHEET 7 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820735.05 N 834195.45	Job No. GCE/98/014/SI/R
MACHINE & No.	D2		DATE from 09/10/98 to 19/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.08 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
13/10/98	HW												See sheet 1 of 9 for details.
61													
13/10/98													
62													
14/10/98		2.61m at 08:00											
63													
	HW 63.71m								63.71 -59.63	63.71			
64			69	50	43	NI						C4	Dark grey, locally light yellowish brown, angular to subangular medium to coarse GRAVEL sized quartz, marble and quartzphyric rhyolite fragments. (KARSTIC SURFACE DEPOSIT)
						18.8			-60.26	64.34			
						0.2			-60.58	64.66		II/III	
14/10/98 65			100	100	100			T2IOI	64.82			II	Strong, locally moderately strong, dark grey, streaked, stripped white, slightly decomposed, fine crystalline MARBLE with occasional carbonaceous.
15/10/98		3.12m at 08:00	100	100	100			T2IOI	65.03				Joints are medium to widely, locally very closely to closely and very widely spaced, rough stepped with occasional planar, tight and occasionally extremely narrow, calcite with occasional pyrite infilled and iron oxide stained, dipping at 10° to 20°, 40° to 50°, occasionally 60° to 70° and 70° to 80°. From 64.34m to 64.66m : Slightly to moderately decomposed and slightly fractured.
66			100	100	100			T2IOI	66.41				
67			100	100	100			T2IOI	67.39				
68			100	100	100			T2IOI	68.28				
69			100	98	98	2.8		T2IOI	68.95				
15/10/98 70								T2IOI	-65.92	70.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 20/10/98

CHECKED Tom Lo

DATE 21/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHPZ/756

DRILLHOLE RECORD

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820735.05 N 834195.45	Job No. GCE/98/014/SI/R
MACHINE & No.	D2		DATE from 09/10/98 to 19/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.08 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
15/10/98			100	100	100			70.17 T2IOI				II	See sheet 7 of 9 for details.
71						0.9		71.51 T2IOI					
15/10/98 16/10/98		7.13m at 08:00	100	100	98								
72						11.1		72.96 T2IOI					
						1.7							
73			100	100	100			73.91 T2IOI					
74			100	100	100			74.40 T2IOI					
			100	96	79	7.2							
75						1.3		75.68 T2IOI					
76			100	100	100								
16/10/98 77								76.98 T2IOI					
17/10/98		1.10m at 08:00	100	100	100			77.49 T2IOI					
78			100	100	100								
			100	100	98			78.46 T2IOI					
79													
17/10/98 80			100	100	100			79.60 T2IOI	-75.92	80.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 20/10/98

CHECKED Tom Lo

DATE 21/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. DD200/DHPZ/756

DRILLHOLE RECORD

SHEET 9 of 9

PROJECT Ground Investigation Works of KCRC West Rail DD200 Yuen Long Section

METHOD	IP+WB+RC	CO-ORDINATES E 820735.05 N 834195.45	Job No. GCE/98/014/SI/R
MACHINE & No.	D2		DATE from 09/10/98 to 19/10/98
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.08 mPD

Drilling Progress	Casing size	Water level (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
17/10/98												II	See sheet 7 of 9 for details.
81						1.7		T2101 81.08					
			100	100	100								
17/10/98 82								T2101 82.14					
19/10/98		3.26m at 08:00	100	92	92								
83			100	100	100	0.3		T2101 82.90					
84													
			100	100	100			T2101 84.42					
85			100	100	100			T2101 84.82					
19/10/98								T2101 85.84	-81.76	85.84			
86													End of investigation hole at 85.84m.
87													
88													
89													
90													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST

LOGGED S.L. Chiu

DATE 20/10/98

CHECKED Tom Lo

DATE 21/10/98

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH1B**

SHEET 1 of 12

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820732.00 N 834046.77	Works Order No. GE/2001/14.24
MACHINE & No.	DR105		DATE from 19/08/2002 to 19/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.20 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
19/08/2002	SX								4.20	0.00			
									4.13	0.07			BRICK SURFACE.
								1		0.50			Light reddish brown (5YR 6/4) mottled grey, very silty fine to coarse SAND with occasional angular to subangular fine to coarse gravel sized rock fragments. (FILL)
								2	3.20	1.00			
								3	2.70	1.50			Brown (7.5YR 7/4) mottled grey, silty fine to coarse SAND with some angular to subangular fine gravel sized quartz and rock fragments. (FILL)
19/08/2002		Dry at 18:00						INSPECTION PIT		2.00			Firm, dark brownish gey (7.5YR 4/2) spotted, mottled and striped yellowish brown, sandy, silty CLAY with occasional subangular fine gravel sized quartz fragments. (FILL-Reworked alluvium clay)
20/08/2002		Dry at 08:00						4					
		Dry at 18:00						5	1.70	2.50			Greyish brown (2.5Y 5/2), clayey, silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (FILL-Reworked alluvium sand)
20/08/2002								6	1.20	3.00			
21/08/2002		Dry at 08:00	85					7					Soft, dark grey (7.5YR 4/1), slightly sandy, silty CLAY. (ALLUVIUM)
							0,1 0,0,1,1 N=2	8	0.10	4.10			
			65					9		4.55			Soft, dark grey (7.5YR 4/1) mottled light brown, sandy, silty CLAY with occasional subangular fine gravel sized quartz fragments and decayed wood pieces. (ALLUVIUM)
								10					
		1.30m at 18:00						11	-1.45	5.65			
21/08/2002								12		6.10			Medium dense, light grey (7.5YR 7/1), fine to coarse SAND with much angular to subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
22/08/2002		2.70m at 08:00	84				20 bls	13					
							4,5 3,4,4,4 N=15	14		6.55			
			89				48 bls	15					
								16		7.00			
							2,4 3,4,3,2 N=12	17	-3.25	7.45			
			84				45 bls	18					Yellowish brown (10YR 5/8), slightly silty fine to coarse SAND with some angular to subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
								19	-3.70	7.90			
							3,5 3,2,2,2 N=9	20					Loose, light yellow (5Y 7/4) mottled grey, silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
			89				27 bls	21	-4.15	8.35			
								22					
								23	-4.60	8.80			Brownish yellow (10YR 6/8) mottled light grey, clayey, silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
							3,4 4,5,6,5 N=20	24					
			84				28 bls	25		9.25			
								26					
								27		9.70			Medium dense to dense, dark grey (7.5YR 4/1) mottled light brown, silty fine to coarse SAND with occasional subangular fine gravel sized
							3,5 3,5,9,13	28					

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 23/09/2002

CHECKED James Lu

DATE 24/09/2002

REMARKS

1. Falling head permeability test was carried out from 12.00m to 13.50m depths.
2. Constant head permeability test was carried out from 21.50m to 23.00m depths.

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.
GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH1B**

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820732.00 N 834046.77	Works Order No. GE/2001/14.24
MACHINE & No.	DR105		DATE from 19/08/2002 to 19/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.20 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Grade	Description
10	SX						N=30 35 bls	29, 30	-5.95	10.00 – 10.15		quartz fragments. (ALLUVIUM)
			89					31	-6.40	10.60		Firm, light grey (7.5YR 7/1), slightly sandy, silty CLAY. (ALLUVIUM)
11			89				4,4 5,5,6,10 N=26; 49 bls; 4,7 8,8,9,10 N=35	32, 33, 34, 35, 36	-7.75	11.05; 11.50; 11.95		Medium dense to dense, grey (7.5YR 6/1), silty fine to coarse SAND with some angular to subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
12; 22/08/2002		2.00m at 18:00	84				74 bls	37, 38, 39	-8.20	12.40		Grey (7.5YR 6/1) mottled dark grey, slightly silty fine to coarse SAND with some angular to subangular fine to coarse gravel sized quartz and rock fragments. (ALLUVIUM)
23/08/2002		2.80m at 08:00					3,6 8,10,10,14 N=42	40, 41	-8.65	12.85		Dense, light grey (7.5YR 7/1), silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
13			67				50 bls	42, 43	-9.10	13.30		Grey (7.5YR 6/1), fine to coarse SAND with some angular to subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
			82				90 bls	44, 45	-9.55	13.75		Grey (7.5YR 6/1), silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
14							3,5 7,7,7,7 N=28	46, 47	-10.00	14.20		Medium dense, light grey (7.5YR 7/1) mottled light brown, fine to coarse SAND with some subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
			82				66 bls	48, 49	-10.45	14.65		Grey (7.5YR 6/1), slightly silty fine to coarse SAND with some angular to subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
15; 23/08/2002; 24/08/2002; 16		1.90m at 18:00; 2.90m at 08:00	85				5,6 4,3,5,13 N=25	50, 51, 52, 53	-12.00	15.10; 16.20	V	Extremely weak, dark grey (7.5YR 4/1) mottled yellow, completely decomposed, META-SILTSTONE with relict brown stained joints. (Stiff, SILT with occasional angular fine to medium gravel sized weak rock fragments)
24/08/2002	SX 16.65	1.10m at 18:00					6,7 9,15,22,44 N=90	54, 55	-12.45	16.65	V/IV	Very weak, dark grey (7.5YR 4/1) mottled yellow, completely to highly decomposed, META-SILTSTONE. (Very stiff, sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
26/08/2002; 17	PX	3.30m at 08:00	85					56, 57	-13.55	17.75	V	Extremely weak, grey (7.5YR 6/1) striped and streaked yellowish brown, completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
18			95				50/60mm 100/40mm (100bls/40mm)	58, 59, 60	-14.75	17.85; 18.95	V/IV	Very weak, dark grey (7.5YR 4/1) mottled yellowish brown, completely to highly decomposed, META-SILTSTONE. (Very stiff, sandy SILT with much angular fine to coarse gravel sized weak rock fragments)
19; 20			95				4,13 14,15,20,22 N=71	61, 62, 63		19.40	V	Extremely weak, dark grey (7.5YR 4/1) mottled and dappled yellowish brown, completely decomposed, META-SILTSTONE. (Very stiff, SILT with occasional angular fine to medium gravel sized weak rock fragments)

Legend	
● SMALL DISTURBED SAMPLE	△ WATER SAMPLE
LARGE DISTURBED SAMPLE	PIEZOMETER TIP
SPT LINER SAMPLE	STANDPIPE
U76 UNDISTURBED SAMPLE	STANDARD PENETRATION TEST
U100 UNDISTURBED SAMPLE	PERMEABILITY TEST
MAZIER SAMPLE	IMPRESSION PACKER TEST
PISTON SAMPLE	V IN-SITU VANE SHEAR TEST
	PACKER TEST

LOGGED K.M. To

DATE 23/09/2002

CHECKED James Lu

DATE 24/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH1B**

SHEET 3 of 12

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820732.00 N 834046.77	Works Order No. GE/2001/14.24
MACHINE & No.	DR105		DATE from 19/08/2002 to 19/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.20 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
20	PX									-20.00			See sheet 2 of 12 for details.
							6,5 6,7,7,9 N=29	64 65 66 67		20.50 20.95			
21			95										
22							10,13 15,16,18,19 N=68	68 69 70 71		22.05 22.50			
23			95										
24		1.90m at 18:00					7,10 12,21,22,25 N=80	72 73		23.60			
25	26/08/2002 27/08/2002	3.10m at 08:00	0					74	-19.85	24.05		V/IV	Extremely weak to weak, dark grey (7.5YR 4/1) mottled and striped yellowish brown, completely to highly decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with much angular fine to coarse gravel sized weak rock fragments)
			83					75	-20.95	25.15		V	Extremely weak, dark grey (7.5YR 4/1) mottled, dappled yellowish brown and grey, completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
26							4,7 9,10,15,21 N=55	76 77 78		26.25			
27			95					79 80		26.70			
	27/08/2002	1.90m at 18:00						81		27.80			
28	28/08/2002	2.90m at 08:00					12,15 15,17,19,27 N=78	82					
			95					83 84		28.25			
29							10,10 10,12,18,19 N=59	85 86		29.35			
30			60					87	-25.60	29.80		V/IV	Extremely weak to weak, yellowish brown (10YR

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 23/09/2002

CHECKED James Lu

DATE 24/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH1B**

SHEET 4 of 12

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT **CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation**

METHOD	**Rotary Cored**	CO-ORDINATES **E 820732.00**	Works Order No. **GE/2001/14.24**
MACHINE & No.	**DR105**	**N 834046.77**	DATE from **19/08/2002** to **19/09/2002**
FLUSHING MEDIUM	**Water**	ORIENTATION **Vertical**	GROUND LEVEL **4.20** mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
30	PX							88		30.00			5/8) mottled dark grey, completely to highly decomposed, META-SILTSTONE. (Very stiff, sandy SILT with much angular fine to medium gravel sized weak rock fragments)
								89	-26.70	30.90			
31			95					90				V	Extremely weak, dark grey (7.5YR 4/1) mottled, dappled yellowish brown, completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
32							10,14 12,20,28,38 N=98	91 92 93 94		32.00 32.45			
33			95										
							10,13 16,22,22,24 N=84	95 96 97 98		33.55 34.00			
34			97										
35							4,6 13,20,32,33 N=98	99 100 101 102		35.10 35.55			
36			95										
	28/08/2002	1.60m at 18:00						103		36.65			
37	29/08/2002	2.95m at 08:00					4,5 13,18,17,22 N=70	104 105 106		37.10			
			95										
38								107	-34.00	38.20		V/IV	Extremely weak to weak, yellowish brown (10YR 5/8) mottled dark grey, completely to highly decomposed, META-SILTSTONE. (Very stiff, sandy SILT with much angular fine to medium and occasional coarse gravel sized weak rock fragments)
							17,30 43,57/75mm (100blS/150mm)	108 109 110		38.50			
39			85										
							18,30 52,48/25mm (100blS/100mm)	111 112		39.60 39.65			
40			95										

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED **K.M. To**

DATE **23/09/2002**

CHECKED **James Lu**

DATE **24/09/2002**

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH1B**

SHEET 5 of 12

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT **CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation**

METHOD	**Rotary Cored**	CO-ORDINATES **E 820732.00**	Works Order No. **GE/2001/14.24**
MACHINE & No.	**DR105**	**N 834046.77**	DATE from **19/08/2002** to **19/09/2002**
FLUSHING MEDIUM	**Water**	ORIENTATION **Vertical**	GROUND LEVEL **4.20** mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
40	PX							113		40.00			See sheet 4 of 12 for details.
41							5,10 14,17,21,35 N=87	114 115 116 117	-36.75	40.95 41.40		V	Extremely weak, dark grey (7.5YR 4/1) mottled yellowish brown, completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
42			98					118	-38.30	42.50			
43			98				15,35/45mm 100/30mm (100blS/30mm)	119 120 121		42.65		V/IV	Extremely weak to weak, light brown (7.5YR 6/4) mottled grey, completely to highly decomposed, META-SILTSTONE. (Very stiff, sandy SILT with much angular fine to coarse gravel sized weak rock fragments)
44	29/08/2002 30/08/2002	1.40m at 18:00 3.05m at 08:00					50/50mm 100/30mm (100blS/30mm)	122 123		43.75 43.83			
45			95					124	-40.00	44.20		V	Extremely weak, dark grey (7.5YR 4/1) mottled yellowish brown and reddish brown, completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
46			98				15,31 23,26,30,21/25mm (100blS/250mm)	125 126 127 128		45.30 45.70 45.75			
47							8,18 24,50,26/20mm (100blS/170mm)	129 130 131	-42.65 -42.97	46.85 47.17		V/IV	Extremely weak to very weak, dark grey (7.5YR 4/1) mottled yellowish brown, completely to
48			98					132		47.30		V	highly decomposed, META-SILTSTONE. (Very stiff, sandy SILT with some angular fine to medium gravel sized weak rock fragments) Extremely weak, light brown (7.5YR 6/4) mottled grey, completely decomposed, META-SILTSTONE. (Very stiff, SILT)
49			98				7,8 15,17,23,35 N=90	133 134 135	-44.65	48.40 48.85		V/IV	Extremely weak to very weak, greenish brown (2.5YR 5/2), completely to highly decomposed, META-SILTSTONE. (Very stiff, sandy SILT with some angular fine to medium gravel sized weak rock fragments)
50		1.76m						136 137		49.95			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED **K.M. To**

DATE **23/09/2002**

CHECKED **James Lu**

DATE **24/09/2002**

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH1B**

SHEET 6 of 12

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820732.00 N 834046.77	Works Order No. GE/2001/14.24
MACHINE & No.	DR105		DATE from 19/08/2002 to 19/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.20 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
50	PX	18:00 2.85m at 08:00					14,27 35,65/75mm (100blS/150mm)	138 139 140		50.00 50.25 50.40			See sheet 5 of 12 for details.
30/08/2002 31/08/2002									-46.20			V	Extremely weak, greyish brown (2.5YR 5/2), completely decomposed, META-SILTSTONE. (Very stiff, SILT with occasional angular fine to medium gravel sized weak rock fragments)
51			95				7,15 15,15,21,36 N=87	141 142		51.50			
52			98					143 144		51.95			
53							9,12 14,15,15,18 N=62	145 146	-48.85	53.05		V	Extremely weak, dark grey (7.5YR 4/1) mottled and dappled yellowish brown, completely decomposed, META-SILTSTONE. (Very stiff, SILT)
54			98					147 148		53.50			
31/08/2002 02/09/2002		2.20m at 18:00 2.30m at 06:00						149		54.60			
55			98				12,17 18,22,23,35 N=98	150 151 152		55.05			
56							50/50mm 100/40mm (100blS/40mm)	153 154	-51.95	56.15 56.24		V/IV	Extremely weak to very weak, dark grey (7.5YR 4/1) mottled light reddish brown, completely to highly decomposed, META-SILTSTONE. (Very stiff, sandy SILT with some angular fine to medium gravel sized weak rock fragments)
57			98					155		56.60			
58							50/60mm 100/30mm (100blS/30mm)	156 157		57.70 57.79			
59			80					158		58.15			
60			98				50/20mm 100/30mm (100blS/30mm)	159 160 161	-55.50	59.25 59.30 59.70		V/IV	Extremely weak to very weak, light reddish

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U75 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 23/09/2002

CHECKED James Lu

DATE 24/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH1B**

SHEET 7 of 12

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT **CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation**

METHOD	**Rotary Cored**	CO-ORDINATES **E 820732.00 N 834046.77**	Works Order No. **GE/2001/14.24**
MACHINE & No.	**DR105**		DATE from **19/08/2002** to **19/09/2002**
FLUSHING MEDIUM	**Water**	ORIENTATION **Vertical**	GROUND LEVEL **4.20** mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
60										60.00			
	PX							162		60.80			brown (5YR 6/4) mottled dark grey, completely to highly decomposed, META-SILTSTONE. (Very stiff, sandy SILT with some angular fine to medium gravel sized weak rock fragments)
61							50/30mm 100/20mm (100blc/20mm)	163		60.85			
			98					164		61.25			
62		1.80m at 18:00											
02/09/2002 03/09/2002		2.35m at 08:00					50/50mm 100/30mm (100blc/30mm)	165		62.35			
								166		62.43			
									-58.60	62.80		V	Extremely weak, light reddish brown (5YR 6/4) mottled dark grey, completely decomposed, META-SILTSTONE. (Very stiff, SILT)
63			65					167					
								168	-59.70	63.90		V	Extremely weak, dark grey (7.5YR 4/1), completely decomposed, META-SILTSTONE. (Very stiff, SILT)
64			98					169					
								170		65.00			
65		1.95m at 18:00					27,23/15mm 100/10mm (100blc/10mm)	171		65.10			
03/09/2002 04/09/2002		2.20m at 08:00							-61.25	65.45		V	Extremely weak, dark grey (7.5YR 4/1) mottled and streaked yellowish brown, completely decomposed, META-SILTSTONE. (Very stiff, SILT)
66			98					172					
								173		66.55			
							10,12 15,21,23,32 N=91	174					
67								175	-62.80	67.00		V/IV	Extremely weak to very weak, dark brownish grey (7.5YR 4/2), completely to highly decomposed, META-SILTSTONE. (Very stiff, sandy SILT with some angular fine to medium gravel sized weak rock fragments)
			98					176					
68								177		68.10			
							50/50mm 100/30mm (100blc/30mm)	178		68.18			
									-64.35	68.55		V	Extremely weak, dark grey (7.5YR 4/1) mottled and streaked reddish brown and yellowish brown, completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT)
			98					179					
69													
								180		69.65			
70							50/60mm 100/40mm	181		69.75			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED **K.M. To**

DATE **23/09/2002**

CHECKED **James Lu**

DATE **24/09/2002**

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH1B**

SHEET 8 of 12

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT **CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation**

METHOD	**Rotary Cored**	CO-ORDINATES **E 820732.00 N 834046.77**	Works Order No. **GE/2001/14.24**
MACHINE & No.	**DR105**		DATE from **19/08/2002** to **19/09/2002**
FLUSHING MEDIUM	**Water**	ORIENTATION **Vertical**	GROUND LEVEL **4.20** mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
70	PX		98				(100bls/40mm)	182		70.00 70.10			See sheet 7 of 12 for details.
71								183	-67.00	71.20			
							50/60mm 100/40mm (100bls/40mm)	184		71.30		V/IV	Extremely weak to very weak, light reddish brown (5YR 6/4) spotted, mottled dark grey, completely to highly decomposed, FAULT BRECCIA with relict brecciated structure. (Very stiff, sandy SILT with some angular fine to coarse gravel sized weak rock fragments)
			98					185		71.65			
72		1.50m at 18:00								72.75			
04/09/2002							27,23/25mm 100/20mm (100bls/20mm)	186		72.87			
73 05/09/2002		2.38m at 08:00						187		73.20			
			80					188					
74								189	-70.10	74.30		IV/V	Very weak to weak, reddish brown (5YR 5/4) spotted and mottled dark grey, highly to completely decomposed, FAULT BRECCIA. (Clayey, silty and sandy angular fine to coarse GRAVEL sized moderately weak rock fragments)
			50				T2101			74.70 74.76			
75							50/40mm 100/20mm (100bls/20mm)	190					
			0							75.15			
76								191	-72.05	76.25		V/IV	Extremely weak to very weak, dark brownish grey (7.5YR 4/2) spotted and mottled dark grey and yellowish brown, completely to highly decomposed, FAULT BRECCIA. (Very stiff, sandy SILT with some angular fine to medium gravel sized weak rock fragments)
			80					192					
77										77.35			
							17,33/25mm 100/10mm (100bls/10mm)	193		77.46			
								194	-73.60	77.80			
78			0									V/IV	Extremely weak to very weak, dark greyish brown (2.5YR 4/2) spotted and mottled dark grey and yellowish brown, completely to highly decomposed, FAULT BRECCIA. (Very stiff, clayey, sandy SILT with some angular fine to medium gravel sized weak rock fragments)
								195		78.90			
79								196					
			95										
80 05/09/2002		1.40m at 18:00						197	-75.80	80.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED **K.M. To**

DATE **23/09/2002**

CHECKED **James Lu**

DATE **24/09/2002**

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH1B**

SHEET 9 of 12

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT **CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation**

METHOD	**Rotary Cored**	CO-ORDINATES **E 820732.00**	Works Order No. **GE/2001/14.24**
MACHINE & No.	**DR105**	**N 834046.77**	DATE from **19/08/2002** to **19/09/2002**
FLUSHING MEDIUM	**Water**	ORIENTATION **Vertical**	GROUND LEVEL **4.20** mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
80										80.00			
06/09/2002	PX	2.50m at 08:00	55				50/40mm 100/30mm (100bls/30mm)	198 199		80.07 80.45		V/IV	Extremely weak to weak, dark greyish brown (2.5YR 4/2) spotted and mottled dark grey and yellowish brown, completely to highly decomposed, FAULT BRECCIA. (Very stiff, clayey, sandy SILT with much angular fine to coarse gravel sized weak rock fragments)
81			95					200 201		81.55			
82								202		82.65			
83	PX 83.00 HX		30				11,22 36,64/75mm (100bls/150mm)	203 204 205		82.95 83.10			
84			95					206 207		84.20			
85		2.10m at 18:00						208		85.30			
06/09/2002 07/09/2002		2.65m at 08:00					50/50mm 100/20mm (100bls/20mm)	209		85.37			
86			65					210	-81.55	85.75		IV/V	Very weak to weak, dark grey (7.5YR 4/1), highly to completely decomposed, META-SILTSTONE . (Sandy angular fine to coarse GRAVEL sized weak rock fragments)
87			95					211 212	-82.65	86.85		V/IV	Extremely weak to weak, dark greyish brown (2.5YR 4/2) spotted and mottled dark grey, occasionally spotted and streaked white, completely to highly decomposed, FAULT BRECCIA. (Very stiff, clayey, sandy SILT with much angular fine to coarse gravel sized weak rock fragments)
88			0				17,33/35mm 100/20mm (100bls/20mm)	213 214		87.95 88.08 88.40			
89													
90			95					215 216		89.50			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED **K.M. To**

DATE **23/09/2002**

CHECKED **James Lu**

DATE **24/09/2002**

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH1B**

SHEET 10 of 12

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT **CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation**

METHOD	**Rotary Cored**	CO-ORDINATES **E 820732.00** **N 834046.77**	Works Order No. **GE/2001/14.24**
MACHINE & No.	**DR105**		DATE from **19/08/2002** to **19/09/2002**
FLUSHING MEDIUM	**Water**	ORIENTATION **Vertical**	GROUND LEVEL **4.20** mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
90	HX									90.00			See sheet 9 of 12 for details.
							50/50mm 100/30mm (100blS/30mm)	217 218		90.60 90.68			
91			95					219		91.05			
92		1.00m at 18:00 07/09/2002 09/09/2002 2.60m at 08:00					50/60mm 100/40mm (100blS/40mm)	220 221		92.15 92.25			
			50					222	-88.40	92.60		V/IV	Extremely weak to very weak, dark grey (7.5YR 4/1) spotted, mottled and streaked brown and white, completely to highly decomposed, FAULT BRECCIA. (Very stiff, slightly clayey, sandy SILT with some angular fine to medium gravel sized weak rock fragments)
93								223		93.70			
			95					224					
94													
								225	-90.60	94.80		V/IV	Extremely weak to weak, greyish brown (2.5YR 4/2) mottled dark grey and light reddish brown, completely to highly decomposed, FAULT BRECCIA. (Very stiff, slightly clayey, sandy SILT with much angular fine to coarse gravel sized weak and moderately weak rock fragments)
95							37,13/5mm 100/20mm (100blS/20mm)	226		94.90 95.25			
			0										
96													
								227		96.35			
			90					228					
97		1.10m at 18:00 09/09/2002 10/09/2002 2.00m at 08:00											
							50/50mm 100/30mm (100blS/30mm)	229 230		97.45 97.53			
98									-93.70	97.90		V/IV	Extremely weak to very weak, dark grey (7.5YR 4/1) spotted and mottled light brown, completely to highly decomposed, FAULT BRECCIA. (Very stiff, slightly clayey, sandy SILT with some angular fine to medium gravel sized weak rock fragments)
			90					231					
99		1.80m at 18:00 10/09/2002 11/09/2002 1.75m at 08:00											
							50/40mm 100/20mm (100blS/20mm)	232 233		99.00 99.06			
		11/09/2002 12/09/2002 0.80m at 12:00 2.26m	45					234	-95.25	99.45		V/IV	Extremely weak to very weak, light brown (7.5YR 6/4), occasionally mottled white and dark grey, completely to highly decomposed, FAULT
100													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED **K.M. To**

DATE **23/09/2002**

CHECKED **James Lu**

DATE **24/09/2002**

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH1B**

SHEET 11 of 12

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820732.00 N 834046.77	Works Order No. GE/2001/14.24
MACHINE & No.	DR105		DATE from 19/08/2002 to 19/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.20 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
100	HX	08:00								100.00			BRECCIA. (Very stiff, slightly clayey, sandy SILT with some angular fine to medium gravel sized meta-siltstone and quartz fragments)
								235	-96.35	100.55		V/IV	Extremely weak to weak, dark grey (7.5YR 4/1), completely to highly decomposed, FAULT BRECCIA. (Very stiff, slightly clayey, sandy SILT with some angular fine to coarse gravel sized weak and moderately weak meta-siltstone fragments)
101			30					236					
								237		101.65			
							50/50mm 100/30mm (100blS/30mm)	238		101.73			
102			0							102.10			
			100	100	100	0		239	-98.25	102.45		II	From 102.35m to 102.45m : With occasional cobble sized marble fragments. Strong, dark grey streaked light grey and white, slightly decomposed, IMPURE MARBLE.
103		1.80m at 18:00						T2101					
12/09/2002 13/09/2002		2.35m at 08:00	69	0	0	NI			-99.38	103.58		IV/V	Very weak to weak, dark grey (7.5YR 4/1) mottled yellowish brown, highly to completely decomposed, FAULT BRECCIA. (Clayey, silty and sandy angular fine to coarse GRAVEL and occasional cobble sized marble and meta-siltstone fragments)
104		1.80m at 12:00				NR		T2101	-100.08	104.28		V/IV	
13/09/2002 17/09/2002		2.15m at 08:00							-100.40	104.60		IV/V	No core recovered, assumed to be completely to highly decomposed FAULT.
105			0				50/50mm 100/20mm (100blS/20mm)	240		104.67			Very weak to weak, greyish brown (2.5Y 5/2) mottled dark grey, highly to completely decomposed, FAULT BRECCIA. (Clayey, silty and sandy angular fine to coarse GRAVEL sized marble and meta-siltstone fragments)
								241	-101.50	105.05			
		1.60m at 18:00	97	27	0	NI		T2101		105.70		IV/V	
106									-101.80	106.00		IV/V	Very weak to weak, brown (7.5YR 5/4) mottled, dappled grey and dark grey, highly to completely decomposed, FAULT BRECCIA. (Clayey, silty and sandy angular COBBLE with much fine to coarse gravel sized marble and meta-siltstone fragments)
17/09/2002 18/09/2002		2.30m at 08:00					50/50mm 100/30mm (100blS/30mm)	242		106.09			
			35					243		106.45			Very weak to weak, dark grey (7.5YR 4/1) mottled dark brown, highly to completely decomposed, FAULT BRECCIA. (Slightly clayey, silty and sandy angular to subangular fine to coarse GRAVEL sized marble and meta-siltstone fragments)
107										107.55			
			0					244					
108										108.65			
		1.60m at 18:00					50/50mm 100/20mm (100blS/20mm)	245		108.72			
109								246		109.10			
18/09/2002 19/09/2002		2.20m at 08:00	0										
110													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 23/09/2002

CHECKED James Lu

DATE 24/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH1B**

SHEET 12 of 12

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820732.00 N 834046.77	Works Order No. GE/2001/14.24
MACHINE & No.	DR105		DATE from 19/08/2002 to 19/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.20 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
110	HX		0					247		110.00 110.20			See sheet 11 of 12 for details.
111							50/40mm 100/20mm (100blS/20mm)	248 249		111.30 111.36			
112			0							111.75			
19/09/2002	HX 112.85	1.40m at 18:00						250	-108.65	112.85			Hole completed at 112.85m.
113													
114													
115													
116													
117													
118													
119													
120													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 23/09/2002

CHECKED James Lu

DATE 24/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH2**

SHEET 1 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820731.58 N 834003.32	Works Order No. GE/2001/14.24
MACHINE & No.	DR105		DATE from 30/09/2002 to 15/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.40 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
30/09/2002	ZX							1	4.33	0.07			BRICK SURFACE. Brown (7.5YR 5/4) mottled white, dark grey and pinkish brown, silty fine to coarse SAND with some angular fine to medium gravel sized rock fragments. (FILL)
		Dry at 18:00 30/09/2002						2	3.40	1.00			Dark brownish grey (7.5YR 4/2), silty fine to coarse SAND with some angular fine to medium gravel sized rock fragments. (FILL)
		Dry at 08:00 02/10/2002						3 INSPECTION PIT		1.50			
								4		2.00			
								5		2.50			
			0					6	1.40	3.00			Soft, dark grey (7.5YR 4/1), sandy, silty CLAY. (ALLUVIUM)
		0.90m at 18:00 02/10/2002						7	0.30	4.10			Soft, dark grey (7.5YR 4/1), silty CLAY. (ALLUVIUM)
		3.20m at 08:00 03/10/2002	40					8					
							0,1 0,1,1,1 N=3	9	-0.80	5.20			Firm, yellowish brown (10YR 5/8) mottled light grey, slightly sandy, clayey SILT. (ALLUVIUM)
			95					10					
								11		5.65			
								12					
								13	-2.35	6.75			
							1,2 1,2,2,3 N=8	14					Firm, light grey (7.5YR 7/1), silty CLAY. (ALLUVIUM)
								15	-2.80	7.20			
			95					16					Light grey (7.5YR 7/1) mottled yellowish brown, clayey, silty fine to medium SAND. (ALLUVIUM)
								17	-3.90	8.30			
							3,2 2,2,4,9 N=17	18	-4.35	8.75			Medium dense, dark grey (7.5YR 4/1), silty fine to medium SAND. (ALLUVIUM)
								19					Firm, light grey (7.5YR 7/1), silty CLAY. (ALLUVIUM)
			95					20					
							4,4	21	-5.45	9.85			Medium dense, dark grey (7.5YR 4/1), silty fine

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 16/10/2002

CHECKED James Lu

DATE 17/10/2002

REMARKS
1. Piezometer tip was installed at 14.60m and 47.60m depths.

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH2**

SHEET 2 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT **CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation**

METHOD	**Rotary Cored**	CO-ORDINATES **E 820731.58** **N 834003.32**	Works Order No. **GE/2001/14.24**
MACHINE & No.	**DR105**		DATE from **30/09/2002** to **15/10/2002**
FLUSHING MEDIUM	**Water**	ORIENTATION **Vertical**	GROUND LEVEL **4.40** mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
10	ZX						6,8,7,7 N=28	22		10.00			
								23	-5.90	10.30			to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
			60					24					Light grey (7.5YR 7/1), clayey, silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
11													
								25	-7.00	11.40			
			0										Medium dense, dark grey (7.5YR 4/1), slightly silty fine to coarse SAND with some angular to subangular fine to occasionally medium gravel sized quartz fragments and occasional decayed wood pieces. (ALLUVIUM)
12													
							3,2 4,5,4,3 N=16	26		12.50			
13							37 bls	27		12.95			
			60					28					
								29	-9.00	13.40			
			89				42 bls	30					Dense, light grey (7.5YR 7/1), fine to coarse SAND with some angular to subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
14							7,10 10,8,11,17 N=46	31		13.85			
								32					
			89				85 bls	33	-9.90	14.30			
								34					Dense, dark grey (7.5YR 4/1), silty fine to coarse SAND with some subangular fine to occasionally medium gravel sized quartz fragments. (ALLUVIUM)
								35		14.75			
15		1.60m at 18:00					5,7 9,8,10,9 N=36	36					
03/10/2002								37		15.20			
04/10/2002		3.10m at 08:00	89				56 bls	38					
								39	-11.25	15.65			
							4,7 3,4,5,6 N=18						Medium dense, dark grey (7.5YR 4/1), clayey, silty fine to coarse SAND with occasional subangular fine to medium gravel sized quartz and meta-siltstone fragments. (ALLUVIUM)
16									-11.70	16.10		V	
			89				32 bls	40					
								41					
									-12.15	16.55		V	Extremely weak, reddish brown (5YR 5/4) striped yellowish brown, completely decomposed, META-SILTSTONE with relict brown stained joints. (Firm, slightly clayey SILT)
							3,4 6,8,9,11 N=34	42					
								43					
17								44		17.00			
			80					45					Extremely weak, dark grey (7.5YR 4/1), occasionally mottled light brown and streaked red, completely decomposed, META-SILTSTONE. (Stiff to very stiff, SILT)
18										18.10			
							8,7 8,10,9,13 N=40	46					
	ZX							47					
	18.55							48		18.55			
	SX		95					49					
19													
								50		19.65			
20							6,7 14,12,16,18	51					

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED **K.M. To**

DATE **16/10/2002**

CHECKED **James Lu**

DATE **17/10/2002**

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH2**

SHEET 3 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820731.58 N 834003.32	Works Order No. GE/2001/14.24
MACHINE & No.	DR105		DATE from 30/09/2002 to 15/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.40 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
20	SX		85				N=60	52 53	-15.70	20.00 20.10		V	See sheet 2 of 8 for details. Extremely weak, dark brownish grey (7.5YR 4/2), occasionally mottled yellowish brown, completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
21		1.90m at 18:00 04/10/2002						54		21.20			
		3.00m at 08:00 05/10/2002					5,11 15,15,29,32 N=91	55 56		21.65			
22			95					57					
								58		22.75			
23							8,8 13,24,26,28 N=91	59 60		23.20			
			95					61					
24								62		24.30			
							5,5 8,10,11,11 N=40	63 64	-20.35	24.75		V	Extremely weak, reddish brown (5YR 5/4), completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
25			95					65					
								66	-21.45	25.85		V	Extremely weak, dark grey (7.5YR 4/1) mottled light reddish brown, completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
26							15,32 47,53/25mm (100blS/100mm)	67 68		26.10 26.30			
			95					69					
27								70		27.40 27.50			
							33,17/15mm 100/10mm (100blS/10mm)	71					
28			95					72		27.85			
								73		28.95			
29							4,6 11,25,18,24 N=78	74					
			95					75 76	-25.00	29.40		V/IV	Very weak to weak, dark brownish grey (7.5YR 4/2), highly to completely decomposed, META-SILTSTONE. (Sandy angular fine to
30													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 16/10/2002

CHECKED James Lu

DATE 17/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH2**

SHEET 4 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820731.58 N 834003.32	Works Order No. GE/2001/14.24
MACHINE & No.	DR105		DATE from 30/09/2002 to 15/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.40 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
										30.00			coarse GRAVEL sized rock fragments)
	SX	2.20m at 18:00						77	-26.10	30.50		V/IV	Extremely weak to very weak, dark brownish grey (7.5YR 4/2), completely to highly decomposed, META-SILTSTONE. (Very stiff, sandy SILT with some angular fine to coarse gravel sized weak rock fragments)
05/10/2002 07/10/2002		3.10m at 08:00					5,10 15,20,30,32 N=97	78					
31			95					79 80		30.95			
32							10,20 24,23,31,22/25mm (100blts/250mm)	81 82 83		32.05 32.45			
			90					84		32.50			
33										33.60			
							3,8 11,16,16,19 N=62	85 86 87					
34			95					88		34.05			
35							13,25 37,63/35mm (100blts/110mm)	89 90		35.15 35.41			
			55					91	-31.20	35.60		V/IV	Extremely weak to very weak, dark grey (7.5YR 4/1), occasionally mottled yellowish brown and light reddish brown, completely to highly decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with some angular fine to coarse gravel sized weak rock fragments)
36	SX 36.70 PX												
37			95					92 93		36.70			
07/10/2002 08/10/2002		1.95m at 18:00						94		37.80			
38		3.10m at 08:00					8,14 14,18,24,32 N=88	95 96 97		38.25			
			95										
39										39.35			
							7,14 18,19,25,33 N=95	98 99 100					
40			95							39.80			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 16/10/2002

CHECKED James Lu

DATE 17/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH2**

SHEET 5 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT **CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation**

METHOD	**Rotary Cored**	CO-ORDINATES **E 820731.58**	Works Order No. **GE/2001/14.24**
MACHINE & No.	**DR105**	**N 834003.32**	DATE from **30/09/2002** to **15/10/2002**
FLUSHING MEDIUM	**Water**	ORIENTATION **Vertical**	GROUND LEVEL **4.40** mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
40	PX							101		40.00			See sheet 4 of 8 for details.
41							17,30 45,55/25mm (100blS/100mm)	102 103		40.90 41.15			
			95					104	-36.95	41.35		V/IV	Extremely weak to very weak, dark brownish grey (7.5YR 4/2) spotted, mottled yellowish brown, dark grey and white, completely to highly decomposed, FAULT BRECCIA with relict brecciated structure. (Very stiff, slightly sandy SILT with occasional angular fine to coarse gravel sized weak rock fragments)
42								105		42.45			
							6,14 14,16,41,29/25mm (100blS/250mm)	106 107		42.85 42.90			
43			60					108					
44								109	-39.60	44.00			
			95					110				V/IV	Extremely weak to very weak, dark grey (7.5YR 4/1) striped yellowish brown, completely to highly decomposed, meta-SILTSTONE with relict slickensided planar joints. (Very stiff, slightly sandy SILT with some angular fine to coarse gravel sized weak rock fragments)
45		1.60m at 18:00						111		45.10			
	08/10/2002 09/10/2002	3.00m at 08:00					32,18/15mm 100/30mm (100blS/30mm)	112		45.22			
			45					113	-41.15	45.55		V/IV	Extremely weak to very weak, dark grey (7.5YR 4/1) spotted, mottled white and yellowish brown, completely to highly decomposed, FAULT BRECCIA. (Very stiff, sandy SILT with some angular fine to medium gravel sized weak rock fragments)
46										46.65			
			95					114 115					
47													
								116		47.75			
48							39,11/5mm 100/20mm (100blS/20mm)	117		47.85			
			0							48.20			
49													
			95					118	-44.90	49.30		V	Extremely weak, greenish grey (GLEY1 5/1), completely decomposed, meta-SILTSTONE with relict slickensided planar joints. (Very stiff, SILT)
50								119					

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED **K.M. To**

DATE **16/10/2002**

CHECKED **James Lu**

DATE **17/10/2002**

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH2**

SHEET 6 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820731.58 N 834003.32	Works Order No. GE/2001/14.24
MACHINE & No.	DR105		DATE from 30/09/2002 to 15/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.40 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
50	PX									50.00			See sheet 5 of 8 for details.
							17,21 25,30,45/50mm (100blS/200mm)	120 121 122 123	-46.00	50.40 50.75 50.85		V/IV	Extremely weak to very weak, dark grey (7.5YR 4/1) spotted, mottled white and yellowish brown, completely to highly decomposed, FAULT BRECCIA. (Very stiff, sandy SILT with much angular fine to coarse gravel sized meta-siltstone fragments)
51			60										
52			95					124 125		51.95			
53	PX 53.05	1.40m at 18:00						126		53.05 53.13			
09/10/2002 10/10/2002	HX	3.15m at 08:00					50/60mm 100/20mm (100blS/20mm)	127					
			50					128		53.50			
54													
			0					129		54.60			
55								130	-50.85	55.25			Dark grey (7.5YR 4/1) mottled and dappled light grey, angular COBBLES with some medium to coarse gravel sized meta-siltstone and occasionally quartz fragments. (KARST SURFACE DEPOSIT)
			77					T2IOI	-51.05	55.45			
									-51.50	55.90			
56			60				50/60mm 100/40mm (100blS/40mm)	131	-51.60	56.00			Very stiff, dark grey (7.5YR 4/1), slightly clayey, sandy SILT with much angular to subangular fine to coarse gravel sized meta-siltstone and marble fragments. (KARST SURFACE DEPOSIT)
								T2IOI	-51.92	56.32			
57							35,15/15mm 100/20mm (100blS/20mm)	132		57.00 57.11			Very dense, dak grey (7.5YR 4/1), silty, sandy angular fine to medium GRAVEL sized marble fragments. (KARST SURFACE DEPOSIT)
			0							57.45			
58	HX 58.00		100	100	100	0.3		133	-53.60	58.00		I	Dark grey (7.5YR 4/1), angular to subangular COBBLE with occasional medium to coarse gravel sized dissolved impure marble fragments with occasional dark grey sandy silt material. (KARST SURFACE DEPOSIT)
								T2IOI					Very stiff, dark grey (7.5YR 4/1) mottled and dappled dark brownish grey and yellowish brown, sandy SILT with some angular fine to coarse gravel sized marble fragments. (KARST SURFACE DEPOSIT)
59		1.90m at 18:00											Very stiff, dark grey (7.5YR 4/1) mottled, dappled, streaked and striped white and light grey, fresh, IMPURE MARBLE. Joints are very widely spaced, locally widely and medium spaced, rough stepped and rough
10/10/2002 11/10/2002		3.05m at 08:00	100	100	100			T2IOI		59.48			
60													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 16/10/2002

CHECKED James Lu

DATE 17/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH2**

SHEET 7 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT **CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation**

METHOD	**Rotary Cored**	CO-ORDINATES **E 820731.58**	Works Order No. **GE/2001/14.24**
MACHINE & No.	**DR105**	**N 834003.32**	DATE from **30/09/2002** to **15/10/2002**
FLUSHING MEDIUM	**Water**	ORIENTATION **Vertical**	GROUND LEVEL **4.40** mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
60										60.00			planar, occasionally rough undulating, tight to extremely narrow, calcite infilled, dipping at 10° to 20°, 50° to 60° and 60° to 70°.
61			100	100	100			T2IO1		61.00			
62			100	100	100			T2IO1		62.55			
63			100	100	100			T2IO1		64.06			
64			100	100	100			T2IO1		65.62			
65			100	100	100			T2IO1		66.38			
66			100	100	100			T2IO1		67.86			
67			100	100	100			T2IO1		68.67			
68			100	100	100			T2IO1		69.69			
69			100	100	100			T2IO1					
70		1.40m											

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED **K.M. To**

DATE **16/10/2002**

CHECKED **James Lu**

DATE **17/10/2002**

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH2**

SHEET 8 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820731.58 N 834003.32	Works Order No. GE/2001/14.24
MACHINE & No.	DR105		DATE from 30/09/2002 to 15/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.40 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
70										70.00			
11/10/2002 12/10/2002		at 18:00 3.10m at 08:00	100	100	100			T2101		70.26			See sheet 7 of 8 for details.
71						2.5				71.72			
72			100	100	100			T2101					
73						0.5				73.18			
74			100	100	100			T2101					
75										74.72			
12/10/2002		1.40m at 18:00	100	100	100			T2101					
75 15/10/2002		3.10m at 08:00								75.88			
77			100	100	100			T2101					
78										77.43			
79 15/10/2002		2.20m at 12:00						T2101	-74.54	78.94			Hole completed at 78.94m.
80													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 16/10/2002

CHECKED James Lu

DATE 17/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH3**

SHEET 1 of 7

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820730.87 N 833931.14	Works Order No. GE/2001/14.24
MACHINE & No.	DR106		DATE from 02/10/2002 to 15/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.45 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
02/10/2002	SX								4.45	0.00			
								1	4.38	0.07			BRICK SURFACE. Light reddish brown (5YR 6/4) mottled grey and white, slightly clayey, silty fine to coarse SAND with occasional angular fine to coarse gravel sized rock fragments. (FILL)
								2		0.50			
1								3		1.00			
								INSPECTION PIT		1.50			
02/10/2002		Dry at 18:00						4	2.45	2.00			
03/10/2002		Dry at 08:00						5	1.95	2.50			Orangish brown (10YR 3/6) mottled grey, slightly clayey, silty fine to coarse SAND with occasional subangular fine gravel sized quartz and rock fragments. (FILL)
		Dry at 18:00											
03/10/2002								6	1.45	3.00			Greyish brown (2.5Y 5/2), slightly clayey, silty fine to coarse SAND with some angular to subangular fine to medium gravel sized quartz and rock fragments. (FILL)
05/10/2002		Dry at 08:00	0										Soft, grey (7.5YR 6/1), occasionally mottled yellowish brown, sandy CLAY. (ALLUVIUM)
4													
			89				4 bls	7	0.35	4.10			
								8					Grey (7.5YR 6/1), clayey, silty fine SAND. (ALLUVIUM)
								9	-0.10	4.55			
							0,0 1,0,1,0 N=2	10					Soft, light grey (7.5YR 7/1) mottled black and yellow, slightly sandy, silty CLAY with occasional organic material. (ALLUVIUM)
5			0					11		5.00			
6								12	-1.65	6.10			
			56				63 bls	13					Light yellow (5Y 7/4), fine to coarse SAND with some subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
								14	-2.10	6.55			
							0,0 1,2,2,2 N=7	15					Firm, light yellowish brown (10YR 6/4) mottled light grey and red, silty CLAY. (ALLUVIUM)
7			84				42 bls	16		7.00			
								17					
								18	-3.00	7.45			
							6,8 10,10,12,14 N=46	19					Dense, light reddish brown (5YR 6/4) mottled yellow, clayey, silty fine to coarse SAND with some subangular fine gravel sized quartz fragments. (ALLUVIUM)
								20	-3.45	7.90			
8		1.90m at 18:00	89				49 bls	21					
05/10/2002								22	-3.90	8.35			Light reddish brown (5YR 6/4), silty fine to coarse SAND with some subangular fine gravel sized quartz fragments. (ALLUVIUM)
07/10/2002		2.17m at 08:00					3,3 2,3,3,4 N=12	23					
								24	-4.35	8.80			Firm, dark grey (7.5YR 4/1), slightly sandy, clayey SILT. (ALLUVIUM)
9			89				24 bls	25					
								26	-4.80	9.25			Firm, light grey (7.5YR 7/1) mottled light reddish brown, slightly sandy, silty CLAY with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
							2,2 2,3,4,5 N=14	27					
								28		9.70			Firm, light grey (7.5YR 7/1), silty CLAY.
10			89				29 bls	29					

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 16/10/2002

CHECKED James Lu

DATE 17/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.
GROUND INVESTIGATION DEPARTMENT

HOLE NO.	MBH3
SHEET	2 of 7

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820730.87 N 833931.14	Works Order No. GE/2001/14.24
MACHINE & No.	DR106		DATE from 02/10/2002 to 15/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.45 mPD

Strata

Reduced Level	Depth (m)	Grade	Description
-5.70	10.00–10.15		(ALLUVIUM)
-6.15	10.15–10.60		Dense, light grey (7.5YR 7/1) mottled light yellow, slightly silty fine to coarse SAND. (ALLUVIUM)
-6.60	10.60–11.05		Dark grey (7.5YR 4/1), occasionally mottled black, slightly clayey, silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments and organic material. (ALLUVIUM)
-7.05	11.05–11.50		Very dense, light grey (7.5YR 7/1), silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
-7.50	11.50–11.95		Light yellowish brown (10YR 6/4) mottled light grey and red, silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
-7.95	11.95–12.40		Dense, grey (7.5YR 6/1), silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
-8.40	12.40–12.85		Grey (7.5YR 6/1), clayey, silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
-10.65	12.85–15.10		Medium dense to very dense, grey (7.5YR 6/1), silty fine to coarse SAND with occasional subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
-11.10	15.10–15.55		Grey (7.5YR 6/1), occasionally mottled black, silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments and organic material. (ALLUVIUM)
-12.00	15.55–16.45		Dense, grey (7.5YR 6/1), silty fine to coarse SAND with some angular to subangular fine to coarse gravel sized quartz fragments. (ALLUVIUM)
-13.35	16.45–17.80	V	Extremely weak, dark grey (7.5YR 4/1), occasionally mottled yellowish brown, completely decomposed, META-SILTSTONE with relict brown stained joints. (Stiff to very stiff, SILT)
-14.45	17.80–18.90	V/IV	Extremely weak to weak, dark grey (7.5YR 4/1) striped yellowish brown, completely to highly decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with much angular fine to coarse gravel sized rock fragments)
	18.90–	V	Extremely weak, dark grey (7.5YR 4/1) mottled yellowish brown and reddish brown, completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)

Tests, samples and core recovery

Depth (m)	Casing size	Water level (m) & Time	Total core Recovery %	Tests	Samples
10.00–10.15	SX				30
10.15–10.60				3,4 9,10,10,11 N=40	31
10.60–11.05			89	39 bls	32, 33
11.05–11.50				5,9 13,13,15,17 N=58	34, 35
11.50–11.95			89	65 bls	36, 37
11.95–12.40				5,7 8,10,11,15 N=44	38, 39
12.40–12.85			89	48 bls	40, 41
12.85–13.30				4,3 3,2,6,10 N=21	42, 43
13.30–13.75			89	54 bls	44, 45
13.75–14.20				3,5 7,10,11,14 N=42	46, 47
14.20–14.65			89	56 bls	48, 49
14.65–15.10				2,4 8,11,18,19 N=56	50, 51
15.10–15.55			89	92 bls	52, 53
15.55–16.00		1.40m at 18:00		7,14 15,11,7,9 N=42	54, 55
16.00–16.45		2.13m at 08:00	89	69 bls	56, 57
16.45–16.90				1,2 3,5,7,9 N=24	58, 59
16.90–17.35			89	79 bls	60, 61
17.35–17.80				6,7 8,10,12,16 N=46	62, 63
17.80–18.90			95		64, 65, 66
18.90–19.35				8,6 6,8,11,14 N=39	67
19.35–20.00			95		68, 69

Drilling Progress: 07/10/2002 / 08/10/2002 (at 16.00 m)

Key		
SMALL DISTURBED SAMPLE	WATER SAMPLE	
LARGE DISTURBED SAMPLE	PIEZOMETER TIP	
SPT LINER SAMPLE	STANDPIPE	
U76 UNDISTURBED SAMPLE	STANDARD PENETRATION TEST	
U100 UNDISTURBED SAMPLE	PERMEABILITY TEST	
MAZIER SAMPLE	IMPRESSION PACKER TEST	
PISTON SAMPLE	IN-SITU VANE SHEAR TEST	
	PACKER TEST	

LOGGED	K.M. To
DATE	16/10/2002
CHECKED	James Lu
DATE	17/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH3**

SHEET 3 of 7

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820730.87 N 833931.14	Works Order No. GE/2001/14.24
MACHINE & No.	DR106		DATE from 02/10/2002 to 15/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.45 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
20	SX									20.00			See sheet 2 of 7 for details.
							7,8 7,8,10,12 N=37	70 71 72 73		20.45 20.90			
21			90										
22							6,9 15,15,17,16 N=63	74 75		22.00			
	SX 22.45 PX							76	-18.00	22.45		V/IV	Extremely weak to weak, dark grey (7.5YR 4/1) striped brown, completely to highly decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with much angular fine to coarse gravel sized rock fragments)
23			95					77					
							9,17 21,20,19,22 N=82	78 79 80 81	-19.10	23.55 24.00		V	Extremely weak, dark grey (7.5YR 4/1) striped and mottled yellowish brown, completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
24			84										
25							12,12 14,19,27,30 N=90	82 83 84 85		25.10 25.55			
26			82										
							6,8 16,23,22,30 N=91	86 87 88 89		26.65 27.10			
27			90										
28							14,13 14,17,22,25 N=78	90 91 92 93		28.20 28.65			
29			95										
		1.40m at 18:00 08/10/2002											
30		2.47m at 09/10/2002					7,15 15,20,27,33	94 95		29.75			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 16/10/2002

CHECKED James Lu

DATE 17/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH3**

SHEET 4 of 7

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820730.87 N 833931.14	Works Order No. GE/2001/14.24
MACHINE & No.	DR106		DATE from 02/10/2002 to 15/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.45 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
30	PX	08:00	95				N=96	96 97		30.00 30.20			See sheet 3 of 7 for details.
31							18,21 19,21,25,34 N=99	98 99 100 101		31.30 31.75			
32			85										
33							12,21 27,40,33/50mm (100blls/200mm)	102 103 104 105		32.85 33.20			
34			95										
35							17,31 41,58/65mm (100blls/140mm)	106 107 108 109	-30.40	34.40 34.69 34.85		V/IV	Extremely weak to very weak, dark grey (7.5YR 4/1) striped and mottled yellowish brown, completely to highly decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with some angular fine to coarse gravel sized weak rock fragments)
36			95										
37			90				23,27/55mm 100/70mm (100blls/70mm)	110 111 112 113		35.95 36.15 36.40			
38									-33.05	37.50		V	Extremely weak, dark grey (7.5YR 4/1) striped yellowish brown, completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
39			95				34,16/25mm 84,16/15mm (100blls/90mm)	114 115 116 117		37.69 37.95			
40			95				12,18 37,63/65mm (100blls/140mm)	118 119 120 121		39.05 39.34 39.50			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 16/10/2002

CHECKED James Lu

DATE 17/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH3**

SHEET 5 of 7

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820730.87 N 833931.14	Works Order No. GE/2001/14.24
MACHINE & No.	DR106		DATE from 02/10/2002 to 15/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.45 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
40	PX									40.00			See sheet 4 of 7 for details.
41			95				17,28 41,56/55mm (100blS/130mm)	122 123 124 125		40.60 40.88 41.05			
42		1.90m at 18:00 09/10/2002 2.78m at 08:00 10/10/2002					30,20/65mm 33,40,27/50mm (100blS/200mm)	126 127 128 129		42.15 42.49 42.60			
43			95										
44			90				13,15 40,60/65mm (100blS/140mm)	130 131 132 133		43.70 43.99 44.15			
45							15,34 47,53/65mm (100blS/140mm)	134 135 136		45.25 45.54			
46			90					137	-41.25	45.70		V	Extremely weak, dark grey (7.5YR 4/1) spotted, mottled, dappled white and yellowish brown, completely decomposed, FAULT BRECCIA with relict brecciated structure and smooth planar joints. (Very stiff, slightly sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
47							12,16 25,35,40/60mm (100blS/210mm)	138 139 140		46.80 47.16 47.25			
48			95					141					
49	PX 48.80 HX		90				10,14 23,38,39/70mm (100blS/220mm)	142 143 144 145		48.35 48.72 48.80			
50	HX 49.80	1.90m at 18:00 10/10/2002 3.01m 11/10/2002	100	84	84	NI		146	-45.35	49.80		II	Strong, dark grey streaked and striped white,

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 16/10/2002

CHECKED James Lu

DATE 17/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH3**

SHEET 6 of 7

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820730.87 N 833931.14	Works Order No. GE/2001/14.24
MACHINE & No.	DR106		DATE from 02/10/2002 to 15/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.45 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
50		08:00	100	100	100	1.3		T2101		50.00		I	fresh, IMPURE MARBLE. Joints are widely to very widely spaced, locally medium spaced, rough stepped and rough undulating, tight to extremely narrow, calcite infilled, dipping at 20° to 30° and 30° to 40°, occasionally 80° to 90°. From 49.80m to 49.89m : Strong, slightly dissolved, slightly decomposed and fractured, impure marble.
51										50.35			
52			100	100	100	0.3		T2101		51.90			
53										53.46			
54			100	100	100			T2101					From 54.22m to 55.05m : An 80° to 90° joint.
55			100	100	100			T2101		54.87			
56			100	100	100			T2101		55.41			
57			100	100	100			T2101		56.96			
58		1.90m at 18:00											
	11/10/2002 12/10/2002	3.00m at 08:00	100	100	100			T2101		58.46			From 58.96m to 59.62m : An 80° to 90° joint.
59													
60													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 16/10/2002

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REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH3**

SHEET 7 of 7

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820730.87 N 833931.14	Works Order No. GE/2001/14.24
MACHINE & No.	DR106		DATE from 02/10/2002 to 15/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.45 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
60			100	100	100			T2IO1		60.00			
										60.01			
61			100	100	100			T2IO1		61.52			
62			100	100	100			T2IO1		63.04			
63			100	100	100	1.9		T2IO1		64.57			
64			100	100	100			T2IO1		66.09			From 66.70m to 69.92m : Spotted, mottled and dappled very dark grey, light grey and white.
65			100	100	100	0.2		T2IO1		67.56			
66			100	100	100			T2IO1		68.36			
67			100	100	100			T2IO1					
68		1.70m at 18:00 12/10/2002											
		3.10m at 08:00 15/10/2002	100	100	100								
69									-65.47	69.92			Hole completed at 69.92m.
70		2.90m at 12:00 15/10/2002											

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 16/10/2002

CHECKED James Lu

DATE 17/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH4**

SHEET 1 of 9

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820735.52 N 833872.74	Works Order No. GE/2001/14.24
MACHINE & No.	DR104		DATE from 18/08/2002 to 16/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.44 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
18/08/2002	SX								4.44	0.00			
									4.37	0.07			BRICK SURFACE.
								1					Brown (7.5YR 5/4), silty fine to coarse SAND with occasional angular to subangular fine to medium gravel sized rock fragments. (FILL)
									3.94	0.50			
								2					Firm, yellowish brown (10YR 5/8) mottled light grey and pink, clayey, sandy SILT. (FILL)
										1.00			
								3					
									2.94	1.50			
		Dry at 18:00											Firm, dark brownish grey (7.5YR 4/2) spotted, mottled and dappled light reddish brown, clayey, sandy SILT. (FILL)
2 18/08/2002 19/08/2002		Dry at 08:00						4		2.00			
										2.50			
		Dry at 18:00						5					
3 18/08/2002 24/09/2002		Dry at 08:00	100					6	1.44	3.00			
								7					Light grey (7.5YR 7/1) mottled light brown, slightly clayey, silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
								8	0.34	4.10			
							1,1 2,2,2,2 N=8	9					Firm, light grey (7.5YR 7/1) mottled light brown, slightly sandy, clayey SILT. (ALLUVIUM)
			100					10		4.55			
								11					
								12	-1.21	5.65			
							1,2 2,2,2,3 N=9	13					Loose, yellowish brown (10YR 5/8) mottled light grey, clayey, silty fine to coarse SAND. (ALLUVIUM)
								14	-1.66	6.10			
			100					15					Soft, light grey (7.5YR 7/1) mottled pink, silty CLAY. (ALLUVIUM)
								16	-2.76	7.20			
							1,1 1,1,1,2 N=5	17					Soft, light yellowish brown (10YR 6/4) mottled red, sandy, clayey SILT with occasional subangular medium gravel sized quartz fragments. (ALLUVIUM)
			50					18	-3.21	7.65			
								19					Light grey (7.5YR 7/1) mottled light brown, silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
								20	-4.31	8.75			
			84				81 blo	21					Light brown (7.5YR 6/4) mottled light grey, silty fine to coarse SAND with some subangular fine gravel sized quartz fragments. (ALLUVIUM)
								22	-4.76	9.20			
							2,5 8,10,11,10 N=39	23					Dense, light grey (7.5YR 7/1), slightly silty fine to coarse SAND with some subangular fine gravel sized quartz fragments. (ALLUVIUM)
								24	-5.21	9.65			
			45					25					Light yellowish brown (10YR 6/4) mottled light

INSPECTION PIT

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 17/10/2002

CHECKED James Lu

DATE 18/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH4**

SHEET **2** of **9**

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT **CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation**

METHOD	**Rotary Cored**	CO-ORDINATES **E 820735.52**	Works Order No. **GE/2001/14.24**
MACHINE & No.	**DR104**	**N 833872.74**	DATE from **18/08/2002** to **16/10/2002**
FLUSHING MEDIUM	**Water**	ORIENTATION **Vertical**	GROUND LEVEL **4.44** mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
10	SX									10.00			grey, occasionally dappled dark grey, silty fine to coarse SAND with occasional pockets of dark grey clayey sand. (ALLUVIUM)
								26	-6.31	10.75			
11			0				21 bls						Very loose, light grey (7.5YR 7/1), occasionally mottled dark grey, fine to coarse SAND with some angular to subangular fine to medium gravel sized quartz fragments and occasional pockets of dark grey clayey sand. (ALLUVIUM)
							1,0 0,0,0,2 N=2	27		11.20			
								28	-7.21	11.65			
12			89				100 bls	29					Dense, light grey (7.5YR 7/1) mottled light yellow, slightly silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
								30		12.10			
							2,4 6,7,8,10 N=31	31					
								32	-8.11	12.55			
			89				97 bls	33					Light yellow (5Y 7/4) mottled light grey, slightly silty fine to coarse SAND with much angular to subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
13								34	-8.56	13.00			
							4,7 7,8,8,9 N=32	35					Medium dense to dense, light grey (7.5YR 7/1), slightly clayey, silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
			85					36		13.45			
								37					
14		1.85m at 18:00											
24/09/2002 25/09/2002		2.85m at 08:00						38		14.55			
							1,2 2,2,3,5 N=12						
15			0					39	-10.56	15.00			Grey (7.5YR 6/1) mottled dark grey, slightly silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
16								40	-11.66	16.10			
			89				99 bls	41					Grey (7.5YR 6/1) mottled dark grey, silty fine to coarse SAND with occasional subangular fine to medium gravel sized quartz fragments and occasional pockets of dark grey sandy silt. (ALLUVIUM)
								42	-12.11	16.55		V	
							2,4 5,9,14,15 N=43	43					
17								44	-12.56	17.00			
			100					45				V/IV	Extremely weak, dark grey (7.5YR 4/1), completely decomposed, META-SILTSTONE with relict white silt infilled joints. (Very stiff, SILT)
18								46		18.10			Extremely weak to very weak, dark grey (7.5YR 4/1) streaked and mottled brown, completely to highly decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with some angular fine to medium gravel sized weak rock fragments)
							2,8 11,16,30,36 N=93	47					
								48	-14.11	18.55			
			100					49				V	Extremely weak, dark grey (7.5YR 4/1) striped brown and white, completely decomposed, META-SILTSTONE with relict brown stained and white silt infilled joints. (Very stiff, SILT)
19													
								50		19.65			
							7,6 8,12,13,16	51					
20													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED **K.M. To**

DATE **17/10/2002**

CHECKED **James Lu**

DATE **18/10/2002**

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH4**

SHEET 3 of 9

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820735.52 N 833872.74	Works Order No. GE/2001/14.24
MACHINE & No.	DR104		DATE from 18/08/2002 to 16/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.44 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
20	SX		100				N=49	52 53		20.00 20.10			See sheet 2 of 9 for details.
21							5,10 16,20,35,29/35mm (100blr/260mm)	54 55 56	-16.76	21.20 21.61		V/IV	Extremely weak to very weak, dark grey (7.5YR 4/1), completely to highly decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with some angular fine to medium gravel sized weak rock fragments)
22			100					57	-17.21	21.65		V	Extremely weak, dark grey (7.5YR 4/1), completely decomposed, META-SILTSTONE. (Very stiff, SILT)
23		1.90m at 18:00					6,11 24,27,37,12/10mm (100blr/235mm)	58 59 60	-18.76	22.75 23.14 23.20			
24	25/09/2002 26/09/2002	2.80m at 08:00	100				3,5 8,8,15,20 N=51	61 62 63 64	-19.86	24.30		V/IV	Extremely weak to very weak, dark grey (7.5YR 4/1), completely to highly decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with some angular fine to medium gravel sized weak rock fragments)
25			95					65		24.75		V	Extremely weak, very dark grey (GLEY1 3/1), completely decomposed, META-SILTSTONE with relict brown stained and white silt infilled joints. (Very stiff, SILT)
26							7,13 13,17,23,27 N=80	66 67		25.85			
27			90					68 69		26.30			
28							4,7 9,11,20,23 N=63	70 71 72		27.40 27.85			
29			95					73					
30			100				11,22 23,27,30,20/15mm (100blr/240mm)	74 75 76 77		28.95 29.34 29.40			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
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- PIEZOMETER TIP
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- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 17/10/2002

CHECKED James Lu

DATE 18/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH4**

SHEET 4 of 9

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820735.52 N 833872.74	Works Order No. GE/2001/14.24
MACHINE & No.	DR104		DATE from 18/08/2002 to 16/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.44 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
30	SX									30.00			See sheet 3 of 9 for details.
							4,6 9,11,13,15 N=48	78 79 80 81		30.50 30.95			
31			100										
32 26/09/2002 27/09/2002		0.80m at 18:00 2.85m at 08:00					7,10 10,11,13,15 N=49	82 83 84 85		32.05 32.50			
33			100										
							2,4 10,15,24,37 N=86	86 87 88 89	-29.16	33.60 34.05		V	Extremely weak, dark grey (GLEY1 3/1) to very dark grey striped and mottled brown, completely decomposed, META-SILTSTONE.(Very stiff, slightly sandy SILT)
34			100										
35							13,15 11,10,11,12 N=44	90 91 92 93		35.15 35.60			
36			100										
37							8,17 28,54,18/10mm (100blr/160mm)	94 95 96 97		36.70 37.01 37.15			
38			100										
27/09/2002 28/09/2002		0.95m at 18:00 2.85m at 08:00					15,20 24,40,36/40mm (100blr/190mm)	98 99 100 101		38.25 38.59 38.70			
39			85										
40							5,15	102 103		39.80			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

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REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH4**

SHEET 5 of 9

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820735.52 N 833872.74	Works Order No. GE/2001/14.24
MACHINE & No.	DR104		DATE from 18/08/2002 to 16/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.44 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
40	SX		100				19,27,34,20/25mm (100blis/250mm)	104 105		40.00 40.20 40.25			See sheet 4 of 9 for details.
41							10,17 23,25,52/60mm (100blis/210mm)	106 107 108	-37.36	41.35 41.70 41.80		V/IV	Extremely weak to very weak, dark brownish grey (7.5YR 4/2) mottled dark grey, yellowish brown and pink, completely to highly decomposed, FAULT BRECCIA with relict brecciated structure. (Very stiff, slightly clayey, sandy SILT with some angular fine to medium gravel sized weak rock fragments)
42			45					109 110	-38.46	42.90		V	Extremely weak, yellowish brown (10YR 5/8) spotted, mottled and dappled dark grey, completely decomposed, FAULT BRECCIA with relict brecciated structure. (Very stiff, sandy SILT)
43			100					111					
44							2,6 11,14,18,22 N=65	112 113 114	-40.01	44.00 44.45		V	Extremely weak, dark grey (7.5YR 4/1) mottled brown, completely decomposed, FAULT BRECCIA. (Very stiff, slightly sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
45			100					115					
46							12,23 33,41,26/50mm (100blis/200mm)	116 117 118 119		45.55 45.90 46.00			
47		1.10m at 18:00 28/09/2002	100										
48		2.85m at 08:00 30/09/2002					9,22 19,23,27,31/45mm (100blis/270mm)	120 121 122 123	-42.66	47.10 47.52 47.55		V	Extremely weak, yellowish brown (10YR 5/8) spotted, mottled, dappled grey, dark grey, brown and white, completely decomposed, FAULT BRECCIA with relict brecciated structure. (Very stiff, slightly sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
49			100										
50			95				6,9 13,14,15,18 N=60	124 125 126 127		48.65 49.10			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 17/10/2002

CHECKED James Lu

DATE 18/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH4**

SHEET 6 of 9

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820735.52 N 833872.74	Works Order No. GE/2001/14.24
MACHINE & No.	DR104		DATE from 18/08/2002 to 16/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.44 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
50	SX						12,21 26,15,17,20 N=78	128 129 130		50.00 50.20			See sheet 5 of 9 for details.
									-46.21	50.65		V/IV	Extremely weak to very weak, greyish brown (2.5Y 5/2), highly to completely decomposed, FAULT BRECCIA. (Slightly silty, sandy angular fine to coarse GRAVEL sized rock fragments)
51			40					131					
								132	-47.31	51.75			
			30					133				V	Extremely weak, brown (7.5YR 5/4) spotted, mottled dark grey, light brown and pink, completely decomposed, FAULT BRECCIA. (Firm, slightly sandy, clayey SILT)
52									-48.41	52.85			
							6,21 22,23,30,25/15mm (100blr/240mm)	134 135		53.24		V	Extremely weak, light grey (7.5YR 7/1) mottled brown and grey, completely decomposed, FAULT BRECCIA. (Very stiff, sandy SILT)
53								136	-48.86	53.30		V/IV	Extremely weak to weak, brown (7.5YR 5/4) mottled, dappled grey, dark grey and yellow, completely decomposed, FAULT BRECCIA. (Very stiff, slightly clayey, sandy SILT with much angular fine to medium gravel sized weak rock fragments)
			0										
54		1.20m at 18:00											
		30/09/2002 02/10/2002 2.85m at 08:00	90					137		54.40			
55								138					
	SX 55.60 PX							139	-51.06	55.50		V	Extremely weak, brown (7.5YR 5/4) spotted yellow, grey and dark grey, completely decomposed, FAULT BRECCIA. (Very stiff, slightly sandy SILT)
							5,7 8,7,11,15 N=41	140					
56			83					141	-51.51	55.95		V	Extremely weak, dark greyish brown (2.5YR 4/2) spotted and mottled white, completely decomposed, FAULT BRECCIA. (Firm, clayey, sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
								142					
57								143	-52.61	57.05		V	Extremely weak, dark grey (7.5YR 4/1) mottled, striped brown and yellow, completely decomposed, FAULT BRECCIA. (Stiff, slightly sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
							2,4 5,7,8,12 N=32	144					
			63					145		57.50			
58								146					
								147		58.35			
			90						-54.16	58.60		V/IV	Extremely weak to weak, brown (7.5YR 5/4), mottled and dappled yellow, completely to highly decomposed, FAULT BRECCIA. (Very stiff, sandy SILT with much angular fine to medium gravel sized weak rock fragments)
59								148					
								149	-55.26	59.70		V	Extremely weak, dark grey (7.5YR 4/1) mottled
60							6,22 23,20,20,25	150					

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 17/10/2002

CHECKED James Lu

DATE 18/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH4**

SHEET 7 of 9

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820735.52 N 833872.74	Works Order No. GE/2001/14.24
MACHINE & No.	DR104		DATE from 18/08/2002 to 16/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.44 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
60	PX						N=88	151	-55.71	60.00 60.15		V	brown, completely decomposed, FAULT BRECCIA. (Very stiff, sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
61		1.30m at 18:00	100					152					Extremely weak, yellowish brown (10YR 5/8) spotted white, completely decomposed, BASALT DYKE with relict brown stained joints. (Firm, slightly clayey SILT)
	02/10/2002 03/10/2002	2.85m at 08:00					6,8 14,20,26,31 N=91	153	-56.81	61.25		V/IV	Extremely weak to weak, dark grey (7.5YR 4/1), completely to highly decomposed, FAULT BRECCIA. (Very stiff, sandy SILT with much angular fine to medium gravel sized weak rock fragments)
62			50					154 155 156	-57.26	61.70		V/IV	
								157		62.30			Extremely weak to weak, brown (7.5YR 5/4) mottled dark grey, completely to highly decomposed, FAULT BRECCIA. (Very stiff, sandy SILT with much angular fine to coarse gravel sized weak rock fragments)
63			60					158		62.80			
								159	-59.46	63.90			
64							9,20 32,43,25/25mm (100blS/175mm)	160 161		64.23			Very stiff, dark yellowish brown (10YR 3/6) spotted and mottled white and yellow, slightly clayey, sandy SILT. (KARST SURFACE DEPOSIT)
								162		64.35			
65			90					163	-61.01	65.45			
		1.20m at 18:00					7,41 100/50mm (100blS/50mm)	164		65.65			Very stiff, dark brown (7.5YR 3/4), sandy SILT with occasional angular fine to medium gravel sized weak rock fragments. (KARST SURFACE DEPOSIT)
	03/10/2002 04/10/2002	2.85m at 08:00	0 85	36	23	NI		165 166	-61.56	65.80 66.00		III	From 65.90m to 66.00m : With much angular medium to coarse gravel and occasional cobble sized brown dissolved marble fragments.
			86	88	66	0.9	T2101		-62.17	66.47 66.61		I	Moderately strong, light yellow dappled brown, moderately decomposed, heavily dissolved and fractured, MARBLE.
67			100	100	100		T2101			66.88			Strong, white mottled and dappled grey, fresh, PURE MARBLE. Joints are widely to very widely spaced, locally medium and very closely spaced, rough stepped and rough planar, tight to extremely narrow, calcite infilled and iron oxide stained, dipping at 20° to 30°, 60° to 70° and 70° to 80°. From 68.32m to 68.97m : Grey marble.
68			100	100	100		T2101			68.07			
69		1.05m at 18:00					T2101						
	04/10/2002 05/10/2002	2.85m at 08:00	100	100	100		T2101			69.50			
70													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 17/10/2002

CHECKED James Lu

DATE 18/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH4**

SHEET 8 of 9

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820735.52 N 833872.74	Works Order No. GE/2001/14.24
MACHINE & No.	DR104		DATE from 18/08/2002 to 16/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.44 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
70	PX							T2IOI		70.00			
71			100	100	100			T2IOI		70.93			From 71.95m to 73.61m : Grey marble.
72			100	100	100			T2IOI		72.33			
73			100	100	100			T2IOI		73.21			From 73.93m to 74.45m : Grey marble.
74			100	100	97			T2IOI		74.04			From 74.93m to 75.29m : Grey marble.
75						>20 2.5		T2IOI		75.48			From 75.83m to 76.32m : Grey marble.
76		1.25m at 18:00	100	94	94			T2IOI	-71.88	76.32			From 76.15m to 76.32m : With solution feature.
05/10/2002 07/10/2002		2.65m at 08:00 1.80m at	0	0	0	NR		T2IOI	-72.51	76.95			No core recovered, assumed to be CAVITY.
07/10/2002 08/10/2002		18:00 2.85m at 08:00	100	100	100	0.8		T2IOI	-73.69	78.13		I	At 76.95m : With solution feature. Strong, white, fresh, PURE MARBLE. From 77.66m to 78.13m : An 80° to 90° joint.
78			0	0	0	NR		T2IOI	-74.44	78.68			No core recovered, assumed to be CAVITY.
79	PX 78.88 HX		100	100	100	1.5		T2IOI				I	Strong, white, fresh, PURE MARBLE. Joints are widely to very widely spaced, locally medium spaced, rough undulating and rough stepped, tight to extremely narrow, calcite infilled and iron oxide stained, dipping at 10° to 20°, 30° to 40° and 50° to 60°, occasionally 70° to 80°.
80		1.90m at											

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 17/10/2002

CHECKED James Lu

DATE 18/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH4**

SHEET 9 of 9

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820735.52 N 833872.74	Works Order No. GE/2001/14.24
MACHINE & No.	DR104		DATE from 18/08/2002 to 16/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.44 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
80										80.00			
08/10/2002	HX	18:00											At 78.88m : With solution feature.
15/10/2002	80.20	2.85m at 08:00	100	100	100			T2101		80.20			
81													
			100	100	100	0.7		T2101		81.48			From 81.48m to 81.58m : With solution feature.
82													
			100	74	74	6.0		T2101		82.85			
83													
			100	100	100	0.4		T2101		84.26			
84													
85		1.95m at 18:00						T2101					
15/10/2002													
16/10/2002		2.85m at 08:00	100	100	100					85.69			
86		2.70m at 12:00											
16/10/2002									-82.05	86.49			Hole completed at 86.49m.
87													
88													
89													
90													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 17/10/2002

CHECKED James Lu

DATE 18/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH6**

SHEET 1 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820728.35 N 833770.68	Works Order No. GE/2001/14.24
MACHINE & No.	DR104		DATE from 20/08/2002 to 03/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.91 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
20/08/2002	SX								4.81	0.10			BRICK SURFACE.
								1		0.50			Brown (7.5YR 5/4), silty fine to coarse SAND with occasional angular fine to medium gravel sized rock fragments. (FILL)
								2	3.91	1.00			
								3 INSPECTION PIT		1.50			Brown (7.5YR 5/4), slightly clayey, silty fine to coarse SAND with occasional angular fine to medium gravel sized rock fragments. (FILL)
								4	2.91	2.00			
								5		2.50			Brown (7.5YR 5/4), clayey, silty fine to coarse SAND with occasional angular fine gravel sized rock fragments. (FILL)
20/08/2002		Dry at 18:00						6	1.91	3.00			
21/08/2002		Dry at 08:00	83					7					Firm, grey (7.5YR 6/1) mottled light yellowish grey, sandy CLAY. (ALLUVIUM)
								8	0.81	4.10			
							1,1 1,1,1,2 N=5	9					Firm, light greenish grey (GLEY1 7/1) mottled yellowish brown, sandy, clayey SILT. (ALLUVIUM)
			87					10		4.55			
								11					
							3,5 6,5,3,3 N=17	12		5.65			
								13					
			95					14	-1.19	6.10			
								15					Yellow (5Y 8/8), slightly clayey, silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
								16	-2.29	7.20			
							2,2 2,2,2,5 N=11	17	-2.74	7.65			Medium dense, reddish brown (5YR 5/4) mottled light grey, silty fine SAND. (ALLUVIUM)
			100					18					Firm, light grey (7.5YR 7/1) mottled red, sandy, silty CLAY. (ALLUVIUM)
								19					
	SX 8.75 PX							20	-3.84	8.75			
							1,1 5,7,7,10 N=29	21					Medium dense, yellow (5Y 8/8), silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
			0					22	-4.29	9.20			Firm, light grey (7.5YR 7/1), fine to coarse SAND with much subangular fine gravel sized quartz fragments. (ALLUVIUM)

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 04/09/2002

CHECKED James Lu

DATE 05/09/2002

REMARKS
1. Piezometer tips were installed at 18.00m and 38.00m depths.
2. Disturbed samples were taken from 32.95m to 34.58m and 36.89m to 38.01m as instructed by R.E. on site.

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH6**

SHEET 2 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT **CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation**

METHOD	**Rotary Cored**	CO-ORDINATES **E 820728.35** **N 833770.68**	Works Order No. **GE/2001/14.24**
MACHINE & No.	**DR104**		DATE from **20/08/2002** to **03/09/2002**
FLUSHING MEDIUM	**Water**	ORIENTATION **Vertical**	GROUND LEVEL **4.91** mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
10										10.00			
	PX							23	-5.39	10.30			See sheet 1 of 8 for details.
			0				39 blo						Light grey (7.5YR 7/1), fine to coarse SAND with much subangular fine gravel sized quartz fragments. (ALLUVIUM)
								24	-5.84	10.75			
11							1,1 1,1,3,8 N=11	25					Medium dense, dark grey (7.5YR 4/1), silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
			93					26		11.20			
12								27					
								28	-7.39	12.30			
							1,1 2,8,12,12 N=34	29					Dense, pink (5YR 7/4) mottled yellow, silty fine to coarse SAND with some angular to subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
								30	-7.84	12.75			
13			20					31					Firm, grey (7.5YR 6/1) mottled dark grey and yellow, sandy, silty CLAY with occasional angular to subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
		1.80m at 18:00											
21/08/2002								32	-8.94	13.85			
22/08/2002		1.60m at 08:00	0										Light grey (7.5YR 7/1), fine to coarse SAND with some angular to subangular fine to occasional medium gravel sized quartz fragments. (ALLUVIUM)
15								33	-10.04	14.95			
							1,1 1,1,1,2 N=5	34					Firm, light yellow (5Y 7/4), slightly sandy, clayey SILT with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
								35		15.40			
			60					36					
16													
								37	-11.59	16.50			
			0										Light grey (7.5YR 7/1) mottled yellowish brown, silty fine SAND. (ALLUVIUM)
17													
								38	-12.69	17.60			
							2,4 4,6,8,8 N=26	39					Medium dense, light grey (7.5YR 7/1), silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
18								40	-13.14	18.05			
			84					41					Brown (7.5YR 5/4) mottled grey, light grey and yellow, clayey, silty and sandy angular fine to coarse GRAVEL sized quartz and siltstone fragments. (KARST SURFACE DEPOSIT)
19													
								42	-14.24	19.15			
							1,1 2,2,3,5 N=12	43					Firm, brown (7.5YR 5/4), sandy, silty CLAY with much angular fine to medium gravel sized quartz fragments. (KARST SURFACE DEPOSIT)
			85					44	-14.69	19.60			
20								45					Firm to very stiff, dark brown (7.5YR 3/4) mottled white, grey, dark grey, red and yellow, sandy.

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED **K.M. To**

DATE **04/09/2002**

CHECKED **James Lu**

DATE **05/09/2002**

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH6**

SHEET 3 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820728.35 N 833770.68	Works Order No. GE/2001/14.24
MACHINE & No.	DR104		DATE from 20/08/2002 to 03/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.91 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
20	PX						1,1 2,2,5,8 N=17	46 47		20.70			clayey SILT with much angular fine to coarse gravel sized completely decomposed and highly decomposed rock fragments and occasional slickensided planar fissure. (KARST SURFACE DEPOSIT)
21			100					48 49		21.15			
22							1,2 5,9,11,15 N=40	50 51		22.25			
	PX 22.70 HX							52 53		22.70			
23			55					54	-18.44	23.35			
24		1.20m at 18:00	100	87	87	1.3 NI 1.5		T2101		24.48		I	Strong, white, occasionally dappled grey and light yellow, fresh, PURE MARBLE. Joints are medium to widely spaced, locally closely spaced, rough stepped and rough planar, extremely narrow, iron oxide stained and calcite infilled, dipping at 10° to 20°, 20° to 30° and 40° to 50°, occasionally 70° to 80°. From 24.11m to 24.26m : Soft, dark brown, sandy, clayey SILT with some angular medium to coarse gravel sized dissolved marble fragments. (CAVITY INFILLED)
	22/08/2002 23/08/2002	1.60m at 08:00											
25			100	100	100			T2101					
26			100	100	100			T2101		26.00			
27										27.53			
28			100	100	100			T2101					
29			100	100	100			T2101		29.08			From 28.36m to 29.80m : Grey, pure marble. At 28.55m : With occasional solution striped voids, 100mm x 100mm x 5mm in size.
30													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 04/09/2002

CHECKED James Lu

DATE 05/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH6**

SHEET 4 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820728.35 N 833770.68	Works Order No. GE/2001/14.24
MACHINE & No.	DR104		DATE from 20/08/2002 to 03/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.91 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
30	HX							T2I01		30.00			
			100	100	100					30.56			From 30.40m to 30.90m : Grey, pure marble.
31								T2I01					
										32.06			
32			71	71	71			T2I01	-27.47	32.38			
						NR			-27.59	32.50			No core recovered, assumed to be cavity infilled.
		1.85m at 18:00					0,0 0,0,0,0 N=0	55					Very soft, brown (7.5YR 5/4), clayey SILT with occasional angular medium gravel sized marble fragments. (CAVITY INFILLED)
33	23/08/2002 24/08/2002							56	-28.04	32.95			
		2.65m at 08:00						57					Brown (7.5YR 5/4), silty fine to coarse SAND with some subangular fine gravel sized quartz and rock fragments. (CAVITY INFILLED)
34													
		1.75m at 18:00											
	24/08/2002 26/08/2002	2.65m at 08:00	100	99	99	8.0			-29.67	34.58		I	Strong, grey dappled white, fresh, PURE MARBLE. Joints are widely spaced, locally closely spaced, rough stepped, extremely narrow, iron oxide stained and calcite infilled, dipping at 20° to 30° and 30° to 40°. From 34.58m to 34.60m : Fractured.
35						0.6		HMLC					
36			99	99	99					36.13			
								HMLC					
37								58	-31.96	36.89			Brown (7.5YR 5/4), slightly clayey, silty fine to coarse SAND with much angular fine to coarse gravel sized rock fragments. (CAVITY INFILLED)
38			100	100	100	1.3			-33.10	38.01		I	Strong, white, locally dappled grey, fresh, PURE MARBLE. Joints are medium to widely spaced, locally closely spaced, rough stepped, occasionally slickensided undulating, extremely narrow to very narrow, iron oxide stained and calcite infilled, dipping at 30° to 40° and 40° to 50°, occasionally 70° to 80°.
39								HMLC					
			100	100	100					39.31			
40								HMLC					

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 04/09/2002

CHECKED James Lu

DATE 05/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH6**

SHEET 5 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820728.35 N 833770.68	Works Order No. GE/2001/14.24
MACHINE & No.	DR104		DATE from 20/08/2002 to 03/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.91 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
40	HX	1.25m at 18:00						HMLC		40.00			See sheet 4 of 8 for details.
26/08/2002 27/08/2002 41		2.80m at 08:00	99	99	99			HMLC		40.60			
42			98	90	83	4.7		HMLC		41.82			
43			99	83	61	9.5		HMLC	-38.08	42.99		II	Strong, dark grey striped white, slightly decomposed, META-SILTSTONE. Joints are very closely to closely spaced, locally medium spaced, rough planar and rough undulating, extremely narrow to very narrow, calcite infilled and iron oxide stained, dipping at 10° to 20°, 20° to 30° and 40° to 50°. From 43.83m to 44.09m : Weak to moderately strong and moderately to highly decomposed meta-siltstone with extremely closely to very closely spaced joints.
44		1.30m at 18:00				>20			-39.18	44.09		III/IV	
27/08/2002 28/08/2002 45		2.80m at 08:00	100	100	100	0.7		HMLC		44.37		I	Strong, white, locally mottled and dappled grey, fresh, PURE MARBLE. Joints are widely spaced, locally closely spaced, rough stepped and smooth planar, tight to very narrow, calcite infilled and clean, dipping at 10° to 20° and 40° to 50°.
46			100	100	96			HMLC		45.91			
47			100	100	100			HMLC		47.47			
48			100	100	100			HMLC		49.02			
49			100	100	100	2.5		HMLC					
50													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 04/09/2002

CHECKED James Lu

DATE 05/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH6**

SHEET 6 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820728.35 N 833770.68	Works Order No. GE/2001/14.24
MACHINE & No.	DR104		DATE from 20/08/2002 to 03/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.91 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
50	HX							HMLC		50.00			See sheet 5 of 8 for details.
			100	100	100			HMLC	-45.96	50.42 50.87			
51													Brown (7.5YR 5/4) mottled grey, silty fine to coarse SAND with much angular fine to coarse gravel sized rock fragments. (CAVITY INFILLED)
		1.90m at 18:00	0				0 bls			51.50			
25/08/2002 29/08/2002 29/08/2002 30/08/2002		2.80m at 08:00						59	-47.24	51.95 52.15			
		2.35m at 18:00	100	92	79	NI		HMLC				II	Strong, white, locally mottled and dappled grey, fresh, PURE MARBLE. Joints are widely spaced, locally closely and medium spaced, rough stepped and rough undulating, some smooth planar, tight to very narrow, clean, occasionally iron oxide stained and calcite infilled, dipping at 10° to 20°, 30° to 40° and 60° to 70°, occasionally 70° to 80°. From 52.15m to 52.62m : Strong and slightly decomposed, locally fractured and slightly dissolved.
53		2.90m at 08:00				0.7				53.50		I	
			100	97	80								
54						13.8							
55	HX 55.00		100	100	95	1.1		HMLC		55.00			
56													
			98	98	93					56.34			
57						4.9							
		1.60m at 18:00				1.9		HMLC					From 57.60m to 57.85m : Grey, pure marble.
30/08/2002 31/08/2002		2.80m at 08:00	100	90	90					57.88			
59								HMLC					
			100	99	94					59.33			
60								HMLC					

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 04/09/2002

CHECKED James Lu

DATE 05/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH6**

SHEET 7 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820728.35 N 833770.68	Works Order No. GE/2001/14.24
MACHINE & No.	DR104		DATE from 20/08/2002 to 03/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.91 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
60										60.00			
61			100	80	64	14.3		HMLC		60.91		II	From 60.18m to 60.66m : Grey, pure marble. From 61.07m to 62.12m : Strong and slightly decomposed marble with very closely to closely spaced joints and slightly dissolved.
62			100	100	100	1.6		HMLC		62.23		I	
63		1.35m at 18:00						HMLC					
31/08/2002 02/09/2002 64		2.80m at 08:00	100	94	76	10.3		HMLC		63.70			
65			100	99	97	2.3		HMLC		65.22			
66								HMLC	-61.01	65.92		I	Strong, grey dappled white, fresh, PURE MARBLE. Joints are widely spaced, locally closely and medium spaced, rough stepped, occasionally rough undulating and smooth planar, extremely narrow, calcite infilled and clean, dipping at 10° to 20°, 30° to 40° and 50° to 60°. From 67.00m to 67.70m : White, pure marble.
67			100	100	100			HMLC		66.74			
68			100	100	94			HMLC		68.21			From 68.21m to 69.00m : White, pure marble.
69		1.85m at 18:00						HMLC					
02/09/2002 03/09/2002 70		2.80m at 08:00	100	100	100			HMLC		69.64			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 04/09/2002

CHECKED James Lu

DATE 05/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.
GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH6**

SHEET 8 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820728.35 N 833770.68	Works Order No. GE/2001/14.24
MACHINE & No.	DR104		DATE from 20/08/2002 to 03/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.91 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
70										70.00			See sheet 7 of 8 for details.
71			100	100	98			HMLC		70.98			
72		2.10m at 12:00 03/09/2002						HMLC	-67.59	72.50			Hole completed at 72.50m.
73													
74													
75													
76													
77													
78													
79													
80													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 04/09/2002

CHECKED James Lu

DATE 05/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH10**

SHEET 1 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT **CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation**

METHOD	**Rotary Cored**	CO-ORDINATES **E 820696.64**	Works Order No. **GE/2001/14.24**
MACHINE & No.	**DR133**	**N 833934.49**	DATE from **14/08/2002** to **02/09/2002**
FLUSHING MEDIUM	**Water**	ORIENTATION **Vertical**	GROUND LEVEL **4.55** mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
14/08/2002	PX								4.55	0.00			Greyish brown (2.5YR 5/2) dappled yellowish brown, silty sandy angular to subangular fine to coarse GRAVEL sized rock fragments. (FILL)
								1	4.05	0.50			Brown (7.5YR 5/4) dappled yellowish brown, silty fine to coarse SAND with much angular to subangular fine to coarse gravel sized rock fragments and some concrete fragments. (FILL)
								2		1.00			
								3 INSPECTION PIT		1.50			
								4		2.00			
14/08/2002		Dry at 18:00											
15/08/2002		Dry at 08:00						5		2.50			
15/08/2002		Dry at 18:00						6	1.55	3.00			
17/08/2002		Dry at 08:00	75					7					Grey (7.5YR 6/1), slightly silty, sandy angular GRAVEL sized concrete with some rock fragments. (FILL)
		1.40m at 18:00	96					8 T2101	1.15	3.40			
17/08/2002									0.90	3.65			Brown (7.5YR 5/4), decayed wood pieces. (FILL)
19/08/2002		2.80m at 08:00	66					T2101		3.90			Grey (7.5YR 6/1), BOULDER sized concrete fragments. (FILL)
			94						0.42	4.13			Grey (7.5YR 6/1), angular COBBLE with some coarse gravel sized rock and concrete fragments. (FILL)
			0							4.60			
			44				16 bls		-0.23	4.78			Light grey (7.5YR 7/1), fine to coarse SAND with some subangular fine to medium gravel sized rock and quartz fragments. (FILL)
			0				64 bls	9		5.00			
								10	-0.90	5.45			Greyish brown (10YR 5/2), sandy angular to subangular fine to coarse GRAVEL sized rock fragments. (FILL)
							3,3 3,3,4,5 N=15	11	-1.35	5.90			Medium dense, greyish brown (10YR 5/2) dappled brownish yellow, slightly silty fine to coarse SAND with occasional subangular fine to medium gravel sized rock and quartz fragments. (ALLUVIUM)
			89				60 bls	12		6.35			
								13					
								14					
								15	-2.25	6.80			From 6.35m to 6.80m : Grey (7.5YR 6/1).
							1,1 2,3,3,2 N=10	16					Loose to medium dense, grey (7.5YR 6/1), slightly clayey, slightly silty fine to medium SAND. (ALLUVIUM)
								17	-2.70	7.25			
			89				14 bls	18					
								19	-3.15	7.70			Greyish brown (10YR 5/2) dappled yellowish brown, very clayey, silty fine to coarse SAND. (ALLUVIUM)
		2.10m at 18:00					3,2 2,1,1,2 N=6	20					
19/08/2002								21	-3.60	8.15			Soft to firm, light brownish grey (10YR 6/2) dappled yellowish brown, sandy, very silty CLAY. (ALLUVIUM)
20/08/2002		2.70m at 08:00	160					22					Light yellowish brown (10YR 6/4), slightly silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
								23	-4.70	9.25			
							2,2 2,2,3,4 N=11	24					Firm, grey (7.5YR 6/1), sandy, very silty CLAY with occasional decayed woods. (ALLUVIUM)
								25	-5.15	9.70			
			50					26					Grey (7.5YR 6/1) dappled dark grey, slightly

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED **Y.K. Lee**

DATE **03/09/2002**

CHECKED **James Lu**

DATE **04/09/2002**

REMARKS

1. Constant head permeability tests were carried out from 7.00m to 8.50m and 17.00m to 18.50m depths.
2. Impression packer test was carried out from 64.00m to 65.50m depths.

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH10**

SHEET 2 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820696.64 N 833934.49	Works Order No. GE/2001/14.24
MACHINE & No.	DR133		DATE from 14/08/2002 to 02/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.55 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
10	PX									10.00			clayey, silty fine to medium SAND. (ALLUVIUM)
								27	-6.25	10.80			
11			30					28					Yellowish brown (10YR 5/8), slightly clayey fine to coarse SAND with occasional subangular fine to medium gravel sized rock and quartz fragments. (ALLUVIUM)
								29	-7.35	11.90			
12		1.60m at 18:00					2,5 8,10,11,11 N=40	30					Dense, light brownish grey (10YR 6/2), slightly silty fine to medium SAND with occasional subangular fine to medium gravel sized rock and quartz fragments. (ALLUVIUM)
		20/08/2002 21/08/2002 2.95m at 08:00	89				92 bls	31	-7.80	12.35			
								32					Dense, light grey (7.5YR 7/1), slightly clayey, silty fine to coarse SAND with some subangular fine to medium gravel sized rock and quartz fragments. (ALLUVIUM)
13							3,4 7,10,10,12 N=39	33		12.60			
								34					
			89				102 bls	35	-8.70	13.25			
								36					Dense, dark grey (GLEY1 5/1), clayey, silty fine to coarse SAND with occasional subangular fine to medium gravel sized rock and quartz fragments. (ALLUVIUM)
								37		13.70			
14							5,6 8,8,9,10 N=35	38					
			82				68 bls	39		14.15			
								40					
								41	-10.05	14.60			
							6,6 8,9,10,10 N=35	42					Dense, light grey (7.5YR 7/1), slightly silty fine to coarse SAND with occasional subangular fine to medium gravel sized rock and quartz fragments. (ALLUVIUM)
15								43		15.05			
			84				80 bls	44					
								45		15.50			
							6,8 11,12,11,10 N=44	46					
								47	-11.40	15.95			
16			89				33 bls	48				V	Extremely weak, dark grey (GLEY1 4/4) striped white, completely decomposed, META-SILTSTONE. (Firm, slightly clayey SILT) From 16.40m to 16.85m : Greyish brown (2.5YR 4/2).
								49		16.40			
							4,4 4,3,5,7 N=19	50					
								51		16.85			
17			100					52					
								53	-13.40	17.95			
18		1.30m at 18:00					8,7 11,11,11,13 N=46	54				V	Extremely weak, greyish brown (2.5YR 5/2) dappled yellowish brown, completely decomposed, META-SILTSTONE with relict brown stained joints. (Stiff, slightly sandy SILT with occasional angular fine to medium gravel sized rock fragments)
		21/08/2002 22/08/2002 3.70m at 08:00	100					55		18.40			
								56					
19													
								57		19.50			
							5,6 6,6,8,10 N=30	58					
20								59	-15.40	19.95			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED Y.K. Lee

DATE 03/09/2002

CHECKED James Lu

DATE 04/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH10**

SHEET 3 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT **CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation**

METHOD	**Rotary Cored**	CO-ORDINATES **E 820696.64**	Works Order No. **GE/2001/14.24**
MACHINE & No.	**DR133**	**N 833934.49**	DATE from **14/08/2002** to **02/09/2002**
FLUSHING MEDIUM	**Water**	ORIENTATION **Vertical**	GROUND LEVEL **4.55** mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
20	PX		100					60		20.00		V	Extremely weak, dark grey (GLEY1 4/4) striped white and brown, completely decomposed, META-SILTSTONE. (Stiff, slightly sandy SILT)
21								61	-16.50	21.05			
	PX	2.10m at 18:00					6,8 10,12,14,15 N=51	62				V	Extremely weak, yellowish brown (10YR 5/8), completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with occasional subangular fine to medium gravel sized rock fragments)
22/08/2002	21.50							63	-16.95	21.50			
23/08/2002	HX	3.80m at 08:00	90					64				V	
22													Extremely weak, greyish brown (2.5YR 5/2) striped brown, completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT)
								65		22.60			
							8,10 13,14,15,17 N=59	66					
23								67		23.05			
			100					68					
24													
								69		24.15			
							5,8 11,14,15,18 N=58	70					
								71	-20.05	24.60			
			100					72				V	Extremely weak, dark grey (GLEY1 4/4) striped brown and brownish red, completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT)
25													
								73		25.70			
							8,9 10,11,18,21 N=60	74					
26								75	-21.60	26.15			
			100					76				V	Extremely weak, greyish brown (2.5YR 5/2) striped reddish brown, completely decomposed, META-SILTSTONE. (Very stiff, sandy SILT with much angular to subangular fine to medium gravel sized rock fragments)
27													
								77	-22.70	27.25			
							9,15 17,20,34,29/55mm (100blS/280mm)	78		27.68		V/IV	Extremely weak to very weak, greyish brown (2.5YR 5/2) dappled yellowish brown, completely to highly decomposed, META-SILTSTONE. (Very stiff, sandy SILT)
								79	-23.15	27.70			
28			100					80				V	Extremely weak, greyish brown (10YR 5/2) striped and dappled yellowish brown, completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT)
								81		28.60			
29							5,7 10,14,24,39 N=87	82					
								83		29.25			
			100					84					
30													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED **Y.K. Lee**

DATE **03/09/2002**

CHECKED **James Lu**

DATE **04/09/2002**

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH10**

SHEET 4 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820696.64 N 833934.49	Works Order No. GE/2001/14.24
MACHINE & No.	DR133		DATE from 14/08/2002 to 02/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.55 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
30	HX									30.00			See sheet 3 of 8 for details.
							8,9 9,9,11,18 N=47	85 86 87		30.35			
									-26.25	30.80			
31			100					88				V	Extremely weak, reddish brown (5YR 4/4) dappled brownish red, completely decomposed, META-SILTSTONE. (Very stiff, sandy SILT with occasional angular fine to medium gravel sized rock fragments)
								89	-27.35	31.90			
32		2.90m at 18:00					6,9 11,15,17,20 N=63	90				V	Extremely weak, dark grey (GLEY1 4/4) dappled reddish brown, completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT)
	23/08/2002 24/08/2002	3.80m at 08:00	100					91 92		32.35			
33								93	-28.90	33.45			
							4,6 9,12,13,15 N=49	94				V	Extremely weak, greyish brown (2.5YR 5/2) dappled yellowish brown, completely decomposed, FAULT BRECCIA. (Stiff, slightly sandy SILT) From 33.90m to 35.00m : With occasional angular fine to medium gravel sized rock fragments.
34			95					95 96		33.90			
35								97	-30.45	35.00			
							7,10 11,16,16,18 N=61	98				V	Extremely weak, yellowish brown (10YR 5/8) striped white and brown, completely decomposed, FAULT BRECCIA. (Very stiff, slightly sandy SILT)
								99 100		35.45			
36								101		36.55			
							8,10 13,17,22,28 N=80	102					
37			100					103	-32.45	37.00			
								104				V	Extremely weak, brown (7.5YR 5/4) dappled yellowish brown, completely decomposed, META-SILTSTONE. (Very stiff, sandy SILT with some angular fine to medium gravel sized rock fragments)
38								105	-33.55	38.10			
							8,10 12,18,29,35 N=94	106				V	Extremely weak, greyish brown (2.5YR 5/2) dappled yellowish brown, completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT)
								107	-34.00	38.55			
39			100					108				V	Extremely weak, dark grey (GLEY1 4/4) dappled yellowish brown, completely decomposed, FAULT BRECCIA. (Very stiff, sandy SILT with some subangular fine to coarse gravel sized rock fragments)
								109		39.65			
40							5,11 15,18,19,22	110					

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED Y.K. Lee

DATE 03/09/2002

CHECKED James Lu

DATE 04/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH10**

SHEET 5 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820696.64 N 833934.49	Works Order No. GE/2001/14.24
MACHINE & No.	DR133		DATE from 14/08/2002 to 02/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.55 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
40	HX		83				N=74	111 112	-35.55	40.00 40.10		V	See sheet 4 of 8 for details. Extremely weak, brown (7.5YR 5/4) dappled brownish yellow, completely decomposed, FAULT BRECCIA. (Very stiff, sandy SILT with much angular to subangular fine to medium gravel sized rock fragments)
41							9,11 14,18,20,24 N=76	113 114	-36.65 -37.10	41.20 41.65		V	Extremely weak, greyish brown (2.5YR 5/2), completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT)
42		1.15m at 18:00	100					115 116				V	Extremely weak, dark grey (GLEY1 4/4) striped white, completely decomposed, META-SILTSTONE. (Silty fine to coarse SAND with much angular to subangular fine to medium gravel sized rock fragments)
24/08/2002 26/08/2002 43		3.80m at 08:00					9,10 14,19,21,25 N=79	117 118	-38.20 -38.65	42.75 43.20		V	Extremely weak, greyish brown (2.5YR 4/2) striped, yellowish brown, completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT)
			95					119 120				V	Extremely weak, reddish yellow (5YR 7/8) striped white and yellowish brown, completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT with occasional fine to medium gravel sized quartz and rock fragment) From 44.30m to 44.75m : Reddish brown (5YR 4/4).
44							7,9 10,14,15,18 N=57	121 122		44.30			
45			100					123 124	-40.20	44.75		V	Extremely weak, dark grey (GLEY1 4/4) dappled yellowish brown, completely decomposed, META-SILTSTONE with relict brown stained joints. (Stiff, slightly sandy SILT)
46							6,8 7,9,11,13 N=40	125 126		45.85			
			90					127 128		46.30			
47								129 130		47.40			
48			100				4,6 7,9,9,12 N=37	131 132	-43.30	47.85		V	Extremely weak, greyish brown (2.5YR 4/2), completely decomposed, META-SILTSTONE. (Very stiff, sandy SILT with much angular fine to coarse gravel sized rock fragments)
49		2.70m at 18:00					5,5 6,8,10,12 N=36	133 134	-44.40	48.95		V	Extremely weak, greyish brown (10YR 4/2) dappled yellowish brown, completely decomposed, META-SILTSTONE. (Stiff, slightly sandy SILT)
26/08/2002 27/08/2002 50		3.75m at 08:00	100					135 136		49.40			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED Y.K. Lee

DATE 03/09/2002

CHECKED James Lu

DATE 04/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH10**

SHEET 6 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820696.64	Works Order No. GE/2001/14.24
MACHINE & No.	DR133	N 833934.49	DATE from 14/08/2002 to 02/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.55 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
	HX									50.00			See sheet 5 of 8 for details.
							4,4 6,9,9,11 N=35	137 138	-45.95	50.50			Stiff, brown (7.5YR 5/4) dappled white, slightly clayey, sandy SILT with occasional subangular fine to medium gravel sized rock fragments. (KARST SURFACE DEPOSIT)
51			100					139 140	-46.40	50.95			Stiff, pinkish white (5YR 8/2) pocket of brown, slightly sandy SILT. (KARST SURFACE DEPOSIT)
52							6,12 13,15,16,18 N=62	141 142	-47.50	52.05			Very stiff, brown (7.5YR 5/4) dappled white, sandy SILT with some subangular fine to coarse gravel sized rock fragments. (KARST SURFACE DEPOSIT)
53			80					143 144	-47.95	52.50			Very stiff, yellowish brown (10YR 5/8), occasional spotted white, slightly clayey, sandy SILT with occasional subangular fine to medium gravel sized rock fragments. (KARST SURFACE DEPOSIT)
							6,8 11,12,14,15 N=52	145		53.60			
54		2.70m at 18:00	0					146	-49.50	54.05			
27/08/2002 28/08/2002		3.80m at 08:00	99	80	80	>20 4.8		147	-49.75	54.30		I	White (5Y 8/1), subangular medium to coarse GRAVEL with occasional cobble sized marble, quartz and metasiltstone fragments. (KARST SURFACE DEPOSIT)
55			100	100	100	1.7		T2IO1		55.05			Very strong, greyish white, fresh MARBLE. Joints are closely to medium spaced, rough planar, some rough stepped, extremely narrow to very narrow, iron oxide stained, calcite infilled (1mm thick), dipping at 10° to 20°, 30° to 40° and 50° to 60°. From 54.30m to 54.42m : Fractured.
56								T2IO1					
			81	61	52	7.4				56.33			
57								T2IO1	-52.48	57.03			
						NR							No core recovered, assumed to be CAVITY INFILLED.
							0,0 0,0,0,0 N=0	148	-52.92	57.47			Very loose, yellowish brown (10YR 5/8), clayey, very silty fine to coarse SAND with some subangular fine to medium gravel sized marble and metasiltstone fragments. (CAVITY INFILLED)
58			89				0 bls	149 150		57.92			
		2.00m at 16:00	89				0 bls	151 152	-53.82	58.37			Brown (7.5YR 5/4), slightly clayey, silty fine to coarse SAND with some subangular fine to coarse gravel sized marble fragments. (CAVITY INFILLED)
28/08/2002 29/08/2002 59	HX 59.24	3.90m at 08:00					50/30mm 100/40mm (100bls/40mm)	153 154		58.82 58.85			
			100	89	89	17.4 1.9		HMLC	-54.69	59.24		III/II	Moderately strong to strong, dark grey striped white, moderately to slightly decomposed IMPURE MARBLE. Joints are closely to medium spaced, locally very
60													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
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- U100 UNDISTURBED SAMPLE
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- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED Y.K. Lee

DATE 03/09/2002

CHECKED James Lu

DATE 04/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH10**

SHEET 7 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT **CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation**

METHOD	**Rotary Cored**	CO-ORDINATES **E 820696.64**	Works Order No. **GE/2001/14.24**
MACHINE & No.	**DR133**	**N 833934.49**	DATE from **14/08/2002** to **02/09/2002**
FLUSHING MEDIUM	**Water**	ORIENTATION **Vertical**	GROUND LEVEL **4.55** mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
60								HMLC		60.00			
			100	87	60	8.8				60.20			closely spaced, rough planar, extremely narrow to very narrow, iron oxide stained, calcite infilled (1mm thick), dipping at 0° to 10°, 40° to 50° and 50° to 60°.
61		1.70m at 18:00 29/08/2002						HMLC		61.75			
		3.95m at 08:00 30/08/2002	100	93	86	>20 5.3			-57.75	62.30		II	Strong, dark grey striped white, slightly decomposed, IMPURE MARBLE. Joints are medium spaced, rough planar, extremely narrow to very narrow, iron oxide stained, chlorite coated, calcite infilled (2mm to 3mm thick), dipping at 20° to 30° and 30° to 40°.
62						2.5							
63			100	100	100	4.4		HMLC		63.10			
64						9.3		HMLC	-59.45	64.00		III/II	Moderately strong to strong, dark grey striped white, moderately to slightly decomposed, IMPURE MARBLE. Joints are closely to medium spaced, occasionally very closely spaced, rough planar and undulating, occasionally slickensided planar, extremely narrow to very narrow, iron oxide stained, chlorite coated, calcite infilled (1mm to 2mm thick), dipping at 10° to 20° and 30° to 40°, occasionally 60° to 70°.
			100	96	54			T2I01		64.49			
65			100	82	68			T2I01		64.97			
						11.1							
66			100	97	82	8.5		T2I01		65.68			
		1.70m at 18:00 30/08/2002								66.39			
		3.80m at 08:00 31/08/2002	100	99	77	4.2							
67						11.4		T2I01		67.31			
						1.6			-62.76			II	Strong, dark grey striped white, slightly decomposed, IMPURE MARBLE. Joints are medium to widely spaced, rough planar, some rough undulating and smooth planar, extremely narrow, iron oxide stained, calcite infilled (1mm to 2mm thick), dipping at 10° to 20°, 30° to 40° and 50° to 60°.
68			95	95	95					67.91			
						4.2		T2I01					
69						1.4				69.45			
			100	100	100			T2I01					
70													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED **Y.K. Lee**

DATE **03/09/2002**

CHECKED **James Lu**

DATE **04/09/2002**

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH10**

SHEET 8 of 8

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820696.64 N 833934.49	Works Order No. GE/2001/14.24
MACHINE & No.	DR133		DATE from 14/08/2002 to 02/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.55 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
70										70.00			See sheet 7 of 8 for details.
						5.6							
						1.1		T2IO1					
71			100	100	100					70.95			
						3.1		T2IO1					
72										72.42			
			100	100	100	0.8		T2IO1					
73										73.65			
		2.10m at 18:00				3.5		T2IO1					
74	31/08/2002 02/09/2002	3.85m at 08:00	100	100	96					75.35			
75								T2IO1					
			100	100	94				-71.17	75.72		II	Strong, dark grey striped white, slightly decomposed, IMPURE MARBLE. Joints are closely to medium spaced, rough planar, occasional rough undulating, extremely narrow, clean, calcite infilled (1mm thick), dipping at 10° to 20° and 20° to 30°.
76						5.3		T2IO1					
			100	98	98	1.1			-72.30	76.85		II	Strong, dark grey striped white, slightly decomposed, IMPURE MARBLE. Joints are medium to widely spaced, rough planar, extremely narrow, clean, calcite infilled (1mm thick), chlorite coated, dipping at 10° to 20° and 40° to 50°, occasionally 60° to 70°.
77													
						1.6		T2IO1		78.35			
78			100	97	90	14.3							
						0.9							
79		1.20m at 18:00						T2IO1					
	02/09/2002								-75.15	79.70			Hole completed at 79.70m.
80													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED Y.K. Lee

DATE 03/09/2002

CHECKED James Lu

DATE 04/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH11**

SHEET 1 of 13

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820695.47 N 833866.14	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 19/08/2002 to 11/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.62 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
0									4.62	0.00			
19/08/2002	SX								4.52	0.10			BRICK.
								1		0.50			Greyish brown (10YR 5/2) dappled yellowish brown, silty fine to coarse SAND with much angular to subangular fine to coarse gravel sized rock fragments. (FILL)
1								2	3.62	1.00			
		Dry at 16:00						3		1.50			Reddish brown (5YR 5/4) dappled reddish pink, slightly clayey, silty fine to coarse SAND with some angular to subangular fine to medium gravel sized rock fragments. (FILL)
2 19/08/2002								4	2.62	2.00			
20/08/2002		Dry at 08:00						5		2.50			Soft, yellowish brown (10YR 5/8) dappled greyish brown, sandy, very silty CLAY with much angular to subangular fine to coarse gravel sized rock fragments. (FILL)
		Dry at 16:00						6	1.62	3.00			
3 20/08/2002								7					Greyish brown (10YR 5/2), silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
21/08/2002		Dry at 08:00	82										
4								8	0.52	4.10			
							2,1 1,2,1,2 N=6	9					Loose, light brownish grey (10YR 6/2), silty fine to coarse SAND. (ALLUVIUM)
								10	0.07	4.55			
			100					11					Firm, brownish yellow (10YR 6/8) dappled brownish grey, sandy, clayey SILT with occasional subangular fine to medium gravel sized quartz and rock fragments. (ALLUVIUM)
5								12		5.65			
							1,2 2,3,3,3 N=11	13					
6								14	-1.48	6.10			
			100					15					Light grey (7.5YR 7/1), slightly silty fine to medium SAND. (ALLUVIUM)
7								16	-2.58	7.20			
							6,10 11,10,9,5 N=35	17					Dense, brownish yellow (10YR 6/8), slightly silty fine to coarse SAND with some subangular fine to medium gravel sized rock fragments. (ALLUVIUM)
								18	-3.03	7.65			
			90					19					Soft to firm, light grey (7.5YR 7/1), sandy, very silty CLAY. (ALLUVIUM)
8								20	-4.13	8.75			
							1,1 1,2,2,3 N=6	21					Loose, grey (7.5YR 6/1), silty fine to medium SAND. (ALLUVIUM)
9								22	-4.58	9.20			
								23	-4.98	9.60			Light yellow (5Y 7/4), slightly clayey, silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
10													Light grey (7.5YR 7/1), silty fine to coarse SAND

INSPECTION PIT

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- △ WATER SAMPLE
- ▲ PIEZOMETER TIP
- ⏃ STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- V IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED Y.K. Lee

DATE 12/09/2002

CHECKED James Lu

DATE 13/09/2002

REMARKS
1. Falling head permeability test was carried out from 10.50m to 12.00m depths.
2. Pressuremeter test was carried out from 9.20m to 10.20m depths. (Failed)
3. Large disturbed samples were taken from 9.20m to 10.20m and 76.50m to 77.50m depths as insturcted by R.E. on site.
4. Disturbed sample was taken from 60.60m to 63.00m depths as insturcted by R.E. on site.

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH11**

SHEET 2 of 13

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820695.47 N 833866.14	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 19/08/2002 to 11/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.62 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
10	SX		40					24	-5.58	10.20			with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
11								25	-6.68	11.30			Reddish yellow (5YR 7/8), slightly clayey, silty fine to coarse SAND with some subangular fine to medium gravel sized quartz and rock fragments. (ALLUVIUM)
21/08/2002	SX 11.75	0.40m at 18:00	0				70 blo						Firm, dark grey (GLEY1 4/), sandy, very silty CLAY with occasional decayed wood fragments. (ALLUVIUM)
22/08/2002 12	PX	2.40m at 08:00					4,6 10,10,10,8 N=38	26 27	-7.13	11.75			Dense, brownish yellow (10YR 6/8), silty fine to coarse SAND with some subangular fine to medium gravel sized rock and quartz fragments. (ALLUVIUM)
			89				53 blo	28 29	-7.58	12.20			
13							3,4 5,8,7,11 N=29	30	-8.03	12.65			Light yellowish brown (10YR 6/4), slightly clayey, silty fine to coarse SAND with much subangular fine to medium gravel sized rock and quartz fragments. (ALLUVIUM)
			84				81 blo	31 32	-8.48	13.10			Medium dense, light brownish grey (10YR 6/2), fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
							5,9 9,9,7,7 N=32	33 34		13.55			
14			89				78 blo	35 36		14.00			Dense, dark grey (GLEY1 4/), clayey, silty fine to coarse SAND with occasional subangular fine to medium gravel sized rock and quartz fragments. (ALLUVIUM)
							5,12 14,14,14,14 N=56	37 38	-9.83	14.45			Very dense, grey (7.5YR 6/1), silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
15			82				74 blo	39 40	-10.28	14.90			Very dense, dark grey (GLEY1 4/), silty fine to coarse SAND with some subangular fine to medium gravel sized rock and quartz fragments. (ALLUVIUM)
		0.60m at 18:00					5,10 14,26,22,20 N=82	41 42		15.35			
22/08/2002 23/08/2002 16		2.51m at 08:00	89				111 blo	43 44		15.80			
							2,4 14,14,12,13 N=53	45 46	-11.63	16.25			Very dense, grey (7.5YR 6/1), slightly silty fine to coarse SAND with some subangular fine to medium gravel sized rock and quartz fragments. (ALLUVIUM)
17			89				94 blo	47 48		16.70			
							5,10 15,15,24,21 N=75	49 50		17.15			
			89				23 blo	51 52	-12.98	17.60			Firm to stiff, grey (7.5YR 6/1), sandy, very silty CLAY. (ALLUVIUM)
18							2,2 4,9,12,19 N=44	53 54	-13.43	18.05			Dense, grey (7.5YR 6/1), slightly silty fine to coarse SAND with some subangular fine to medium gravel sized rock and quartz fragments. (ALLUVIUM)
			89				109 blo	55 56		18.50			
19							1,2 2,2,3,3 N=10	57 58	-14.33	18.95			Firm, light grey (7.5YR 7/1), slightly clayey, sandy SILT. (ALLUVIUM)
			95					59 60	-14.78	19.40			Grey (7.5YR 6/1), slightly clayey, silty fine SAND. (ALLUVIUM)
20													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED Y.K. Lee

DATE 12/09/2002

CHECKED James Lu

DATE 13/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH11**

SHEET 3 of 13

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820695.47 N 833866.14	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 19/08/2002 to 11/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.62 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
20	PX									20.00			See sheet 2 of 13 for details.
	PX 20.50 HX						6,11 15,15,14,15 N=59	61 62	-15.88	20.50			Very dense, grey (7.5YR 6/1), slightly silty fine to coarse SAND with much subangular fine to medium gravel sized rock and quartz fragments. (ALLUVIUM)
21			0					63	-16.33	20.95			Light grey (7.5YR 7/1), fine to coarse SAND with much subangular fine to coarse gravel sized quartz fragments. (ALLUVIUM)
22			89				21 blo	64	-17.43	22.05			Light grey (7.5YR 7/1), fine to medium SAND. (ALLUVIUM)
							1,3 4,5,9,8 N=26	65 66 67	-17.88	22.50		V	Extremely weak, greenish grey (GLEY1 5/1) dappled yellowish brown, completely decomposed, META-SILTSTONE. (Firm, slightly sandy SILT)
23			100					68 69	-18.33	22.95		V	Extremely weak, dark grey (GLEY1 4/) striped brown, completely decomposed, META-SILTSTONE with relict brown stained joints. (Very stiff, slightly sandy SILT)
24		2.08m at 18:00						70		24.05			
	23/08/2002 24/08/2002	2.32m at 08:00					7,9 13,13,20,24 N=70	71 72		24.50			
25			100					73					
							7,33 30,27,21,21 N=99	74 75		25.60			
26			100					76 77	-21.43	26.05		V	Extremely weak, yellowish brown (10YR 5/8) striped brownish red, completely decomposed, META-SILTSTONE with relict white silt (1mm thick) infilled joint. (Firm, slightly sandy SILT)
27								78		27.15			From 27.15m to 27.60m : Dark reddish brown (5YR 3/4).
							10,8 5,5,7,8 N=25	79 80	-22.98	27.60		V	Extremely weak, greyish brown (10YR 5/2) striped brown, completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT)
28			100					81					
29							8,10 14,12,11,15 N=52	82 83		28.70			
			95					84 85	-24.53	29.15		V	Extremely weak, yellowish brown (10YR 5/8) dappled brownish red, completely decomposed, META-SILTSTONE with relict brown stained joints. (Stiff, slightly sandy SILT)
30													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED Y.K. Lee

DATE 12/09/2002

CHECKED James Lu

DATE 13/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH11**

SHEET 4 of 13

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820695.47 N 833866.14	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 19/08/2002 to 11/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.62 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
	HX						5,8 5,8,10,12 N=35	86 87		30.00 30.25			See sheet 3 of 13 for details.
								88	-26.08	30.70		V	Extremely weak, dark reddish brown (5YR 3/4), completely decomposed, META-SILTSTONE with relict light brownish grey silt (1mm thick) infilled joint. (Stiff, slightly sandy SILT)
			100					89					
							4,4 6,7,7,9 N=29	90 91		31.80			
			100					92 93		32.25			
								94		33.35			
24/08/2002		1.80m at 18:00					3,4 7,10,12,12 N=41	95					
26/08/2002		2.30m at 08:00	100					96 97	-29.18	33.80		V	Extremely weak, dark grey (GLEY1 4/), completely decomposed, META-SILTSTONE. (Firm, slightly sandy SILT)
							8,11 17,29,21,21 N=88	98 99		34.90			
			100					100	-30.73	35.35		V	Extremely weak, reddish brown (5YR 5/4) dappled brownish red, completely decomposed, META-SILTSTONE with relict brown stained joints. (Stiff, slightly sandy SILT)
								101					
							6,9 11,12,12,27 N=62	102 103	-31.83	36.45		V	Extremely weak, dark grey (GLEY1 4/) dappled greyish brown and striped reddish brown, completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT)
			100					104 105		36.90			
							9,14 16,25,22,28 N=91	106 107		38.00			
			100					108	-33.83	38.45		V	Extremely weak, yellowish brown (10YR 5/8) striped dark grey, completely decomposed, META-SILTSTONE. (Very stiff, sandy SILT with occasional angular fine to medium gravel sized rock fragments)
								109					
							11,13 16,17,19,27 N=79	110 111	-34.93	39.55		V	Extremely weak, dark grey (GLEY1 4/), completely decomposed, META-SILTSTONE
									-35.38	40.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED Y.K. Lee

DATE 12/09/2002

CHECKED James Lu

DATE 13/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH11**

SHEET 5 of 13

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820695.47 N 833866.14	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 19/08/2002 to 11/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.62 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
40	HX		100					112		40.00		V	with relict brown stained joints. (Very stiff, slightly sandy SILT)
								113					Extremely weak, dark reddish brown (5YR 3/4), completely decomposed, META-SILTSTONE with relict brown stained joints. (Stiff, slightly sandy SILT)
41							8,8 8,9,10,11 N=38	114		41.10			
								115					
								116	-36.93	41.55			
			90					117				V	Extremely weak, dark grey (GLEY1 4/) dappled reddish brown, completely decomposed, META-SILTSTONE with relict brown stained joints. (Very stiff, slightly sandy SILT)
42		2.30m at 18:00											
26/08/2002		2.48m at 08:00						118		42.65			
27/08/2002							9,9 11,14,19,24 N=68	119					
43								120	-38.48	43.10			
			100					121				V	Extremely weak, greyish brown (2.5Y 5/2), completely decomposed, META-SILTSTONE. (Very stiff, sandy SILT with some angular fine to medium gravel sized rock fragments)
44													
								122	-39.58	44.20			
							17,26 26,41,33/45mm (100blS/195mm)	123				V/IV	Extremely weak to very weak, light brownish grey (10YR 6/2), completely to highly decomposed, META-SILTSTONE with relict brown stained joints. (Very stiff, sandy SILT)
								124	-40.03	44.65			
45			100					125				V	Extremely weak, dark grey (GLEY1 4/) striped yellowish brown, completely decomposed, META-SILTSTONE with relict brown stained joints. (Very stiff, slightly sandy SILT)
								126	-41.13	45.75			
46							10,22 28,36,36/50mm (100blS/200mm)	127		46.10		V/IV	Extremely weak to very weak, light brownish grey (10YR 6/2), completely to highly decomposed, META-SILTSTONE. (Very stiff, sandy SILT)
								128	-41.58	46.20			
			100					129				V	Extremely weak, dark grey (GLEY1 4/), completely decomposed, META-SILTSTONE with relict brown stained joints. (Very stiff, slightly sandy SILT)
47													
								130	-42.68	47.30			
							10,19 25,27,37,11/25mm (100blS/250mm)	131				V/IV	Extremely weak to very weak, greyish brown (2.5Y 5/2) striped yellowish brown, completely to highly decomposed, META-SILTSTONE with relict brown stained joints. (Very stiff, sandy SILT) From 47.30m to 47.75m : Reddish brown (5YR 5/4).
								132		47.70 47.75			
48			100					133					
49		2.30m at 18:00					12,22 28,27,45/70mm (100blS/220mm)	134		48.85			
								135					
27/08/2002		2.53m at 08:00						136		49.22 49.30			
28/08/2002			100					137					
50													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED Y.K. Lee

DATE 12/09/2002

CHECKED James Lu

DATE 13/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH11**

SHEET 6 of 13

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT **CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation**

METHOD	**Rotary Cored**	CO-ORDINATES **E 820695.47**	Works Order No. **GE/2001/14.24**
MACHINE & No.	**DR132**	**N 833866.14**	DATE from **19/08/2002** to **11/09/2002**
FLUSHING MEDIUM	**Water**	ORIENTATION **Vertical**	GROUND LEVEL **4.62** mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
50	HX									50.00			See sheet 5 of 13 for details.
							16,23 43,57/75mm (100blS/150mm)	138 139 140		50.40 50.70			
51			60					141		50.85			
52			100					142 143		51.95			
53							7,9 11,12,13,14 N=50	144 145	-48.43	53.05		V	Extremely weak, light brownish grey (10YR 6/2), completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT)
								146	-48.88	53.50		V	Extremely weak, dark grey (GLEY1 4/) dappled reddish brown, completely decomposed, META-SILTSTONE. (Firm, sandy SILT with occasional subangular fine to medium gravel sized rock fragments)
54			100					147 148		54.60			
55							10,10 7,6,5,7 N=25	149 150		55.05			
56			100					151					
			0				0 bls	152		56.15			From 56.15m to 57.05m : No sample recovery, assumed to be completely decomposed meta-siltstone.
57			0				0 bls	153		56.60			
		2.43m at 18:00	89				18 bls	154 155	-52.43	57.05		V	Extremely weak, grey (7.5YR 6/1) dappled yellowish brown, completely decomposed, FAULT BRECCIA. (Firm to stiff, sandy SILT with some angular fine to coarse gravel sized rock fragments)
58	28/08/2002 29/08/2002	2.48m at 08:00	50				1,1 1,1,1,1 N=4	156 157 158 159		57.50 57.95			From 57.95m to 59.05m : Greyish brown (2.5Y 5/2).
59								160		59.05			
60			30					161	-54.88	59.50		V	Extremely weak, greyish brown (2.5Y 5/2) dappled yellowish brown, completely decomposed, FAULT BRECCIA (Firm, sandy

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
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- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED **Y.K. Lee**

DATE **12/09/2002**

CHECKED **James Lu**

DATE **13/09/2002**

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH11**

SHEET 7 of 13

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820695.47 N 833866.14	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 19/08/2002 to 11/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.62 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
60	HX							162 163		60.00 60.60			SILT with occasional angular to subangular fine to medium gravel sized rock fragments)
61													
62													
63			95					164		63.00			
64							1,0 0,0,6,7 N=13	165 166 167 168		64.10 64.55			
65			100										
66			100				1,0 0,0,4,4 N=8	169 170 171 172	-61.03	65.65 66.10		V	Extremely weak, dark greyish brown (2.5Y 4/2) dappled reddish brown, completely decomposed, FAULT BRECCIA. (Firm, sandy SILT with occasional subangular fine to medium gravel sized rock fragments)
67		2.40m at 18:00											
	29/08/2002 30/08/2002	2.46m at 08:00						173	-62.58	67.20		V	Extremely weak, light brownish grey dappled yellowish brown, completely decomposed, FAULT BRECCIA. (Very soft, sandy SILT with occasional subangular fine to medium gravel sized rock fragments)
68			72				1,0 0,1,0,1 N=2	174 175 176		67.65			
69			0					177	-64.13	68.75			Void.
70								178		69.85			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED Y.K. Lee

DATE 12/09/2002

CHECKED James Lu

DATE 13/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH11**

SHEET 8 of 13

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820695.47 N 833866.14	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 19/08/2002 to 11/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.62 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
70	HX									70.00			See sheet 7 of 13 for details.
71													
72													
73													
74													
75													
76									-71.88	76.50			
77								179 ↕	-72.88	77.50		V	Extremely weak, dark grey dappled yellowish brown, completely decomposed, FAULT BRECCIA. (Firm, sandy SILT with occasional subangular fine to medium gravel sized rock fragments)
78													Void.
79													
80													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED Y.K. Lee

DATE 12/09/2002

CHECKED James Lu

DATE 13/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH11**

SHEET 9 of 13

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820695.47 N 833866.14	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 19/08/2002 to 11/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.62 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
80	HX									80.00			See sheet 8 of 13 for details.
81													
82									-77.51	82.13			
			48	33	20	7.5						II	Strong, greyish white, slightly decomposed, MARBLE with slightly solution along joint surface.
						>20		HMLC	-78.09	82.71			Joints are very closely to closely spaced, rough planar, extremely narrow to very narrow, iron oxide stained, dipping at 0° to 10°, 50° to 60° and 70° to 80°.
83		2.51m at 18:00				NR							
30/08/2002									-78.71	83.33			No core recovered, assumed to be CAVITY.
31/08/2002		2.40m at 08:00											CAVITY.
	HX 83.77								-79.15	83.77			
84	NX		99	93	93	>20						I	Very strong, greyish white, fresh MARBLE. Joints are medium to widely spaced, locally very closely to closely spaced, rough planar, extremely narrow, clean, iron oxide stained, dipping at 0° to 10° and 20° to 30°. From 83.77m to 83.88m : Fractured.
						2.3		HMLC					
85			100	97	90					85.33			
								HMLC					
86						7.9							
		2.41m at 18:00	0	0	0	NR		HMLC	-81.86	86.48			No core recovered, assumed to be CAVITY.
31/08/2002									-82.21	86.83			
87 02/09/2002		2.43m at 08:00	29	17	0	18.8			-82.53	87.15		II	Strong, light grey, slightly decomposed, MARBLE with slightly solution along joint surface.
						NR		TNW					Joints are very closely to closely spaced, rough planar, extremely narrow to very narrow, iron oxide stained, dipping at 0° to 10°, 50° to 60° and 80° to 90°
02/09/2002		2.43m at 18:00								87.95			
03/09/2002		2.43m at 08:00	0	0	0			TNW	-83.58	88.20			No core recovered, assumed to be CAVITY.
			100	98	98	2.3						I	Very strong, greyish white, fresh MARBLE. Joints are very widely spaced, locally medium spaced, rough planar, extremely narrow, clean, dipping at 40° to 50°. From 88.20m to 88.50m : Light reddish brown.
89						0.4							
			100	100	100			TNW		89.38			
90													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED Y.K. Lee

DATE 12/09/2002

CHECKED James Lu

DATE 13/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH11**

SHEET **10** of **13**

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT **CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation**

METHOD	**Rotary Cored**	CO-ORDINATES **E 820695.47**	Works Order No. **GE/2001/14.24**
MACHINE & No.	**DR132**	**N 833866.14**	DATE from **19/08/2002** to **11/09/2002**
FLUSHING MEDIUM	**Water**	ORIENTATION **Vertical**	GROUND LEVEL **4.62** mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
90	NX							TNW		90.00			See sheet 9 of 13 for details.
91			98	54	54	NI		TNW	-86.51	90.87 91.13			Greyish brown (2.5Y 5/2), clayey, silty, sandy subangular fine to coarse GRAVEL sized marble fragments. (CAVITY INFILLED)
			0	0	0	NR		TNW	-86.73	91.35			No core recovered, assumed to be CAVITY INFILLED.
92		2.43m at 18:00	100	100	91	3.0		TNW	-87.13	91.75		I	Very strong, greyish white, some striped dark grey, fresh MARBLE. Joints are widely to very widely spaced, locally medium spaced, rough planar, extremely narrow, clean, iron oxide stained, dipping at 10° to 20°, 40° to 50° and 80° to 90°. From 91.75m to 92.15m : Light reddish brown.
03/09/2002 04/09/2002		2.46m at 08:00	100	100	100	1.2		TNW		92.42			
93			100	100	100	0.4		TNW		93.10			
			100	100	100			TNW		93.62			
94								TNW					
95			100	100	100			TNW		95.10			
96						0.9		TNW					
			100	100	100			TNW		96.63			
97						2.2		TNW					
			100	100	100			TNW		97.55			
98						0.5		TNW		98.19			
			100	100	100			TNW					
99								TNW		99.69			
100		2.58m	100	100	100	1.8		TNW					

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED **Y.K. Lee**

DATE **12/09/2002**

CHECKED **James Lu**

DATE **13/09/2002**

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH11**

SHEET 11 of 13

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820695.47 N 833866.14	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 19/08/2002 to 11/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.62 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
100										100.00			
04/09/2002	NX	18:00 2.45m							-95.62	100.24			See sheet 10 of 13 for details.
05/09/2002		at 08:00	0	0	0	NR		TNW					No core recovered, assumed to be CAVITY.
101									-96.82	101.44		I	Strong to very strong, light grey, fresh MARBLE. Joints are widely spaced, locally closely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0° to 10°, 20° to 30° and 60° to 70°.
102			88	80	76	1.4		TNW					
						16.1			-97.84	102.46		II	From 102.15m to 102.46m : Strong, slightly decomposed marble with slightly solution along joint surface.
						NR			-98.02	102.64			No core recovered, assumed to be CAVITY.
						1.4				102.89		I	Strong to very strong, greyish white, fresh MARBLE. Joints are medium to widely spaced, locally closely spaced, rough planar, extremely narrow, clean, iron oxide stained, dipping at 10° to 20° and 60° to 70°.
103			100	100	100			TNW					
104		2.48m at 18:00											
05/09/2002													
06/09/2002		2.48m at 08:00	100	100	100								
105								TNW					
										104.18		II	From 105.20m to 106.40m : Strong, slightly decomposed marble with slightly solution along joint surface.
			52	44	43								
106										105.62			
						14.3		TNW	-101.78	106.40			
						NR							No core recovered, assumed to be CAVITY.
107									-102.50	107.12			
			56	48	48	10.7		TNW	-102.78	107.40		II	Strong, light grey, slightly decomposed, MARBLE with slightly solution along joint surface. Joints are closely to medium spaced, rough planar, extremely narrow to very narrow, iron oxide stained, dipping at 0° to 10° and 50° to 60°.
						NR				107.62			
108			0	0	0			TNW	-103.50	108.12			
			100	100	100	1.0						I	No core recovered, assumed to be CAVITY.
08/09/2002		2.45m at 18:00						TNW		108.82			Strong to very strong, greyish white, fresh MARBLE. Joints are medium to widely spaced, occasionally closely spaced, rough planar, extremely narrow, clean, iron oxide stained, dipping at 0° to 10° and 20° to 30°. From 108.82m to 109.90m : Light reddish brown.
07/09/2002 109		2.48m at 08:00	100	98	98								
						6.1				109.42			
			100	100	100	1.3		TNW					
110													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED Y.K. Lee

DATE 12/09/2002

CHECKED James Lu

DATE 13/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH11**

SHEET 12 of 13

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820695.47 N 833866.14	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 19/08/2002 to 11/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.62 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
110										110.00			
	NX							TNW					See sheet 11 of 13 for details.
111			100	100	100			TNW		110.78			
			51	42	42			TNW		111.17			
								TNW	-107.18	111.80			
112						NI		TNW	-107.32	111.94			Brown (7.5YR 5/4), slightly silty fine to medium SAND. (CAVITY INFILLED)
						NR							No core recovered, assumed to be CAVITY INFILLED.
07/09/2002		2.46m at 18:00							-108.05	112.67			
09/09/2002		2.43m at 08:00	97	97	97	1.4		TNW				II	Strong, light reddish brown, slightly decomposed, MARBLE with slightly solution along joint surface.
113									-108.75	113.37			Joints are closely spaced, rough planar, extremely narrow to very narrow, iron oxide stained, dipping at 50° to 60°.
			0	0	0	NR		TNW					No core recovered, assumed to be CAVITY.
114									-109.55	114.17			
			80	50	50	6.7		TNW				II	Strong to very strong, grey, fresh MARBLE.
			96	96	96	1.0				114.47		I	Joints are medium to widely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 10° to 20° and 70° to 80°.
115								TNW				II	From 114.17m to 114.47m : Strong, light reddish brown, slightly decomposed marble with slightly solution along joint surface.
			0	0	0	NR			-110.81	115.43			From 115.05m to 115.43m : Strong, light reddish brown, slightly decomposed marble with slightly solution along joint surface.
116		2.49m at 18:00						TNW					No core recovered, assumed to be CAVITY.
09/09/2002									-111.53	116.15			
10/09/2002		2.44m at 08:00	100	100	100	2.9		TNW	-111.88	116.50		II	Strong, light reddish brown, slightly decomposed, MARBLE with slightly solution along joint surface.
			0	0	0	NR							Joints are medium spaced, rough planar, extremely narrow to very narrow, iron oxide stained, dipping at 0° to 10°.
117								TNW	-112.38	117.00			No core recovered, assumed to be CAVITY.
			100	100	100	0.9						II	Strong, light reddish brown, slightly decomposed, MARBLE with slightly solution along joint surface.
								TNW					Joints are widely spaced, rough planar, extremely narrow to very narrow, iron oxide stained, dipping at 10° to 20°.
118									-113.50	118.12			No core recovered, assumed to be CAVITY.
			0	0	0	NR		TNW	-113.80	118.42			
			99	74	64	3.5		TNW				III	Moderately strong to strong, reddish yellow, slightly decomposed, MARBLE with solution along joint surface.
119									-114.53	119.15			Joints are closely to medium spaced, rough planar and stepped, very narrow, iron oxide stained, dipping at 20° to 30°, 40° to 50° and 70° to 80°.
			0	0	0	NR		TNW					From 118.42m to 119.15m : Moderately strong
									-115.10	119.72			
120			100	95	70	3.5		TNW				II	

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED Y.K. Lee

DATE 12/09/2002

CHECKED James Lu

DATE 13/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH11**

SHEET 13 of 13

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820695.47 N 833866.14	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 19/08/2002 to 11/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 4.62 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
120	NX		0	0	0	NR			-115.50	120.00 120.12			and moderately decomposed marble with heavily solution along joint surface.
									-115.75	120.37			From 119.15m to 119.72m : No core recovered, assumed to be cavity.
			100	100	100	2.2						II	No core recovered, assumed to be CAVITY.
121						0.6		TNW				I	Strong to very strong, grey, fresh MARBLE. Joints are medium to widely spaced, rough planar, extremely narrow to very narrow, iron oxide stained, dipping at 10° to 20° and 50° to 60°.
			100	100	100					121.73			From 120.37m to 120.83m : Strong, light reddish brown, slightly decomposed marble with slightly solution along joint surface.
122								TNW				II	From 122.17m to 122.47m : Strong, light reddish brown, slightly decomposed marble with slightly solution along joint surface.
19/08/2002	NX 122.72	2.40m at 18:00	20	20	0	NR 20.0			-117.85 -118.05 -118.10	122.47 122.67 122.72		II	No core recovered, assumed to be CAVITY.
123													Strong, light reddish brown, slightly decomposed, MARBLE.
													Hole completed at 122.72m.
124													
125													
126													
127													
128													
129													
130													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED Y.K. Lee

DATE 12/09/2002

CHECKED James Lu

DATE 13/09/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH13**

SHEET 1 of 9

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820694.15 N 833788.06	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 13/09/2002 to 28/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 5.21 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
13/09/2002	SX								5.21	0.00			
									5.14	0.07			BRICK SURFACE.
								1	4.71	0.50			Brown (7.5YR 5/4) spotted and mottled yellow and grey, slightly clayey, silty fine to coarse SAND. (FILL)
								2	4.21	1.00			Greyish brown (2.5Y 5/2), slightly clayey, silty fine to coarse SAND. (FILL)
13/09/2002		Dry at 18:00						3 INSPECTION PIT	3.71	1.50			Brown (7.5YR 5/4) mottled grey, silty fine to coarse SAND. (FILL)
14/09/2002		Dry at 08:00						4	3.21	2.00			Greyish brown (2.5Y 5/2), clayey, silty fine to coarse SAND. (FILL)
								5		2.50			Brown (7.5YR 5/4), clayey, silty fine to coarse SAND with occasional angular medium gravel sized quartz fragments. (FILL)
14/09/2002		Dry at 18:00						6	2.21	3.00			
16/09/2002		2.80m at 08:00	65					7					Firm, yellowish brown (10YR 5/8) mottled light grey and black, sandy, clayey SILT with occasional organic material. (ALLUVIUM)
								8	1.11	4.10			
			87					9					Light greenish grey (GLEY1 2/1) mottled yellowish brown, clayey, silty fine to coarse SAND. (ALLUVIUM)
								10	0.01	5.20			
			100					11					Light grey (7.5YR 7/1) mottled yellow, clayey, silty fine to coarse SAND with some subangular fine gravel sized quartz fragments. (ALLUVIUM)
								12	-1.09	6.30			
			82					13					Light yellowish brown (10YR 6/4), silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
								14	-2.19	7.40			
			0										Light greyish white (5Y 8/1), silty fine to coarse SAND with some angular to subangular fine gravel sized quartz fragments. (ALLUVIUM)
								15		8.50			
			89				77 bls	16					
			89				38 bls	17		8.95			
								18					
			89				24 bls	19		9.40			
								20					
			89				35 bls	21		9.85			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
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- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 30/09/2002

CHECKED James Lu

DATE 02/10/2002

REMARKS
1. Disturbed sample was taken from 40.70m to 42.30m (Failed).
2. Piezometer tips were installed at 15.60m and 22.60m depths.

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH13**

SHEET 2 of 9

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820694.15 N 833788.06	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 13/09/2002 to 28/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 5.21 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
10	SX							22		10.00			See sheet 1 of 9 for details.
			89				53 bls	23		10.30			
								24	-5.54	10.75			
11		2.42m at 18:00	89				24 bls	25					Firm, light grey (7.5YR 7/1), occasionally streaked black, silty CLAY with occasional organic material. (ALLUVIUM)
		16/09/2002						26	-5.99	11.20			
		17/09/2002 2.46m at 08:00	82					27					Dark orangish brown (10YR 3/6) mottled red, silty fine to medium SAND. (ALLUVIUM)
12								28					
			0					29	-7.09	12.30			
13													Dark orangish brown (10YR 3/6) mottled yellow, silty fine to coarse SAND with occasional subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
			82				54 bls	30	-8.19	13.40			
			0				42 bls	31					Light grey (7.5YR 7/1) mottled and dappled light yellowish brown, sandy angular to subangular fine to coarse GRAVEL sized quartz fragments, with occasional pocket of clayey sand. (ALLUVIUM)
14								32		13.65			
			89				44 bls	33		14.30			
								34					
			89				33 bls	35	-9.54	14.75			
15								36					
			82				72 bls	37		15.20			Light grey (7.5YR 7/1) mottled light brown, silty fine to coarse SAND with occasional subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
								38					
			89				67 bls	39	-10.44	15.65			
16								40					Light grey (7.5YR 7/1) mottled light yellow, silty fine SAND. (ALLUVIUM)
			89				124 bls	41	-10.89	16.10			
	SX 16.55 PX							42					Light grey (7.5YR 7/1), slightly silty fine to coarse SAND with some angular to subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
			89				74 bls	43		16.55			
17								44					
			89				69 bls	45	-11.79	17.00			
								46					Light grey (7.5YR 7/1) spotted black, fine to coarse SAND with some angular to subangular fine gravel sized quartz and meta-siltstone fragments. (ALLUVIUM)
			89				46 bls	47		17.45			
								48	-12.69	17.90			
18			80					49				V	Extremely weak, dark grey (7.5YR 4/1) striped and streaked dark brownish grey and yellowish brown, completely decomposed, META-SILTSTONE. (Very stiff, sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
								50					
19			95					51		19.00			
								52					
20		2.45m 18hrs											

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 30/09/2002

CHECKED James Lu

DATE 02/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH13**

SHEET 3 of 9

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT **CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation**

METHOD	**Rotary Cored**	CO-ORDINATES **E 820694.15**	Works Order No. **GE/2001/14.24**
MACHINE & No.	**DR132**	**N 833788.06**	DATE from **13/09/2002** to **28/09/2002**
FLUSHING MEDIUM	**Water**	ORIENTATION **Vertical**	GROUND LEVEL **5.21** mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
17/09/2002 18/09/2002	PX	2.45m at 08:00	100					53 54 55	-14.89	20.00 20.10		V	See sheet 2 of 9 for details. Extremely weak, dark brownish grey (7.5YR 4/2), completely decomposed, META-SILTSTONE. (Very stiff, slightly sandy SILT)
			100					56 57 58 59	-15.99	21.20 22.30 23.40		V	Extremely weak, dark grey (7.5YR 4/1) mottled dark brown, completely decomposed, FAULT BRECCIA with relict brecciated structure. (Very stiff, clayey, sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
			60						-18.19				
			30					60 61 62 63 64 65 66 67 68 69		24.50 25.60 26.70 27.80 28.90		V	Extremely weak, brown (7.5YR 5/4) spotted mottled dark grey, white and yellow, completely decomposed, FAULT BRECCIA with relict brecciated structure. (Very stiff, slightly clayey, sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
			70										
			81										
			70										
			63										
			100					70 71	-23.69	30.00		V	Extremely weak, dark brown (7.5YR 3/4) spotted and mottled dark grey and white, completely decomposed, FAULT BRECCIA. (Very stiff, slightly clayey, sandy SILT with occasional angular fine to medium gravel sized weak rock fragments)
	PX 30.00												

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED **K.M. To**

DATE **30/09/2002**

CHECKED **James Lu**

DATE **02/10/2002**

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.
GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH13**

SHEET 4 of 9

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820694.15 N 833788.06	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 13/09/2002 to 28/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 5.21 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
30	HX		100					72		30.00			See sheet 3 of 9 for details.
31			92					73 74		31.10			
32			50					75 76		32.20			
33		2.42m at 18:00 18/09/2002						77	-28.09	33.30			
34		2.48m at 08:00 19/09/2002	85					78 79		34.40		V	Extremely weak, very dark brown (7.5YR 3/4) spotted and mottled white, dark grey and yellowish brown, completely decomposed, FAULT BRECCIA. (Very stiff, slightly clayey, sandy SILT with occasional angular fine to coarse gravel sized meta-siltstone and quartz fragments)
35			85					80					
36			100					81 82		35.50			
37			82					83 84		36.60			
38			100					85 86		37.70			
39			100					87 88		38.80			
40			0					89	-34.75	39.90 39.96			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 30/09/2002

CHECKED James Lu

DATE 02/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH13**

SHEET 5 of 9

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820694.15 N 833788.06	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 13/09/2002 to 28/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 5.21 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
40	HX		57	22	0	NI		90 T2IOI	-35.17	40.00		II	From 39.90m to 39.96m : With coarse gravel sized marble fragments.
						NR			-35.49	40.38			Strong, white dappled grey, slightly decomposed, slightly dissolved and fractured, PURE MARBLE.
										40.70			No core recovered, assumed to be CAVITY.
41													No sample recovered, assumed to be CAVITY.
42			100						-37.09	42.30			
43								91					Firm, dark brown (7.5YR 3/4) spotted white, clayey, sandy SILT with occasional angular fine to medium gravel sized quartz fragments. (CAVITY INFILLED)
		1.20m at 18:00	0					92	-38.19	43.40			White (5Y 8/1) mottled grey, angular medium to coarse GRAVEL sized dissolved marble fragments. (CAVITY INFILLED)
19/09/2002								93	-38.65	43.86			
20/09/2002		2.48m at 08:00	100	93	93	NI 0.6		T2IOI				I	Strong, white, fresh, PURE MARBLE. Joints are widely spaced, rough planar, extremely narrow, clean, dipping at 60° to 70°. From 43.86m to 44.44m : Grey marble with occasional fractured from 43.86m to 43.93m.
45			100	100	100			T2IOI		44.91			
			0	0	0	NR		T2IOI	-40.44	45.65			No core recovered, assumed to be CAVITY.
46			100	100	100	0.4		T2IOI	-40.76	45.97		I	Strong, white, occasionally streaked and dappled grey, fresh, PURE MARBLE. Joints are widely to very widely spaced, locally closely and medium spaced, rough planar, tight to extremely narrow, calcite infilled and clean, dipping at 40° to 50°, occasionally 80° to 90°. From 46.93m to 47.57m : Grey marble.
47								T2IOI		47.30			
48			100	100	100			T2IOI					
						2.3							
49			100	100	100			T2IOI		48.87			From 48.87m to 49.82m : An 80° to 90° joint.
50													From 49.85m to 50.53m : Grey marble

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 30/09/2002

CHECKED James Lu

DATE 02/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH13**

SHEET 6 of 9

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820694.15 N 833788.06	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 13/09/2002 to 28/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 5.21 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
50	HX	2.46m at 18:00				0.3		T2IOI		50.00			
20/09/2002 23/09/2002		2.44m at 08:00	100	100	100			T2IOI		50.38			
51													
52			100	100	100			T2IOI		51.94			
			100	100	100			T2IOI		52.49			
53													From 52.90m to 54.05m : Grey marble.
			100	100	100			T2IOI		53.47			
54		2.45m at 18:00	0	0	0	NR		T2IOI	-48.84	54.05			
23/09/2002 24/09/2002		2.38m at 08:00	100	100	100	0.3		T2IOI	-49.03	54.24		I	No core recovered, assumed to be CAVITY with solution feature at 54.05m. Strong, white, occasionally dappled grey, fresh, PURE MARBLE. Joints are widely to very widely spaced, locally closely and medium spaced, rough stepped and rough undulating, extremely narrow, clean, occasionally iron oxide stained and calcite infilled, dipping at 30° to 40°, 50° to 60° and 60° to 70°. From 54.24m to 54.26m : Grey marble.
55													
			100	100	100			T2IOI		55.56			
56													
			100	100	100			T2IOI		56.26			
57													
			100	100	94			T2IOI		57.11			
58						5.7							
			100	100	93			T2IOI		58.59			
59													
			100	100	90			T2IOI		59.59			
60													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 30/09/2002

CHECKED James Lu

DATE 02/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD. GROUND INVESTIGATION DEPARTMENT	HOLE NO. MBH13	SHEET 7 of 9

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT: CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820694.15 N 833788.06	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 13/09/2002 to 28/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 5.21 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
60	HX		100	100	100			T2101		60.00 / 60.09			
61						0.3							From 60.67m to 61.00m : Grey marble.
			100	100	100			T2101		61.61			
62 24/09/2002		2.35m at 18:00											
25/09/2002		2.48m at 08:00	100	100	100			T2101		62.05			
63			100	100	100			T2101		63.04			
			100	100	100			T2101	-58.52	63.48 / 63.73			
64			0	0	0	NR		T2101					No core recovered, assumed to be CAVITY with solution feature at 63.73m and 64.87m.
25/09/2002	HX 64.87	2.40m at 18:00							-59.66	64.87			
65 26/09/2002		2.48m at 08:00	100	100	100	0.5		T2101				I	Strong, white, occasionally streaked and dappled grey, fresh, PURE MARBLE. Joints are widely to very widely spaced, rough stepped and rough undulation, extremely narrow, iron oxide stained and calcite infilled, dipping at 40° to 50° and 50° to 60°. From 64.87m to 65.67m : With occasional streaked light brown and grey.
66			100	100	100			T2101		65.57			
67			100	100	100			T2101		66.68			From 66.94m to 67.34m : Grey marble.
			100	100	100			T2101		67.46			
68			100	100	100			T2101	-63.59	68.17 / 68.80			
69								T2101				I	Strong, grey, occasionally dappled white and streaked dark grey, fresh, PURE MARBLE. Joints are widely to very widely spaced, locally closely and medium spaced, rough stepped and rough undulating, clean and occasionally calcite infilled, dipping at 30° to 40°, 40° to 50° and 60° to 70°, occasionally 80° to 90°.
26/09/2002		2.44m at 18:00											
27/09/2002		2.43m at 08:00	100	100	100			T2101		69.58			
70													

Legend: SMALL DISTURBED SAMPLE; LARGE DISTURBED SAMPLE; SPT LINER SAMPLE; U76 UNDISTURBED SAMPLE; U100 UNDISTURBED SAMPLE; MAZIER SAMPLE; PISTON SAMPLE; WATER SAMPLE; PIEZOMETER TIP; STANDPIPE; STANDARD PENETRATION TEST; PERMEABILITY TEST; IMPRESSION PACKER TEST; IN-SITU VANE SHEAR TEST; PACKER TEST

LOGGED	K.M. To
DATE	30/09/2002
CHECKED	James Lu
DATE	02/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH13**

SHEET 8 of 9

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820694.15 N 833788.06	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 13/09/2002 to 28/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 5.21 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
70										70.00			
71			100	100	100	2.4		T2101		71.14			At 71.50m : With occasional solution void, 20mm x 30mm in size.
72			100	100	96			T2101		72.65			From 72.96m to 73.28m : White marble.
73								T2101					From 73.73m to 74.19m : An 80° to 90° joint.
74			100	100	100	0.5		T2101	-69.15	74.19 74.36		I	Strong, white, occasionally streaked and dappled grey, fresh, PURE MARBLE. Joints are widely to very widely spaced, locally medium spaced, rough stepped and rough planar, tight to extremely narrow, calcite infilled and iron oxide stained, some clean, dipping at 40° to 50° and 60° to 70°. From 74.36m to 77.36m : With occasional streaked and mottled dark grey.
75			100	100	100			T2101		74.78			
76			100	100	100			T2101		75.72			
77		2.45m at 18:00						T2101					
27/09/2002 28/09/2002		2.42m at 08:00	100	100	100					77.26			
78			100	100	100			T2101		78.31			
79			100	100	100			T2101		78.72			
80													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 30/09/2002

CHECKED James Lu

DATE 02/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH13**

SHEET 9 of 9

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820694.15 N 833788.06	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 13/09/2002 to 28/09/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 5.21 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
80										80.00			
			100	100	100			T60N		80.26			From 80.26m to 81.43m : With occasional streaked grey and dark grey.
81								T2IOI					
			100	100	100					81.81			
82								T2IOI					
						2.8							
83			100	100	100					83.36			
								T2IOI					
84		2.30m at 18:00 28/09/2002							-79.70	84.91			
85													Hole completed at 84.91m.
86													
87													
88													
89													
90													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 30/09/2002

CHECKED James Lu

DATE 02/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH14**

SHEET 1 of 5

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820693.89 N 833758.70	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 02/09/2002 to 09/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 5.32 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
02/09/2002	SX								5.32	0.00			
									5.25	0.07			BRICK SURFACE.
								1	4.82	0.50			Brown (7.5YR 5/4), silty fine to coarse SAND with occasional angular fine to coarse gravel sized rock fragments. (FILL)
								2		1.00			Greyish brown (2.5Y 5/2) mottled grey and dark brown, slightly clayey, silty fine to coarse SAND with occasional angular to subangular fine to medium gravel sized quartz fragments. (FILL)
								3		1.50			
02/09/2002		Dry at 18:00						4		2.00			
03/09/2002		Dry at 08:00						5		2.50			
03/09/2002		Dry at 18:00						6	2.32	3.00			
04/10/2002		Dry at 08:00	80					7					Soft, grey (7.5YR 6/1) mottled yellowish brown and pink, sandy CLAY. (ALLUVIUM)
								8	1.22	4.10			
							1,1 1,1,1,1 N=4	9					Loose, grey (7.5YR 6/1), clayey fine to coarse SAND with occasional subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
			0					10	0.77	4.55			Soft, dark brownish grey (7.5YR 4/2) mottled red, sandy CLAY with some wood pieces. (ALLUVIUM)
								11	-0.33	5.65			
			70					12					Soft, light grey (7.5YR 7/1) mottled yellow, sandy CLAY with occasional wood pieces. (ALLUVIUM)
								13	-1.43	6.75			
							4,4 4,3,2,2 N=11	14					Firm, yellowish brown (10YR 5/8) mottled light grey, sandy, clayey SILT. (ALLUVIUM)
								15	-1.88	7.20			
			100					16					Light greyish white (5Y 8/1), silty fine to coarse SAND with occasional wood pieces. (ALLUVIUM)
								17	-2.98	8.30			
							2,2 2,2,5,9 N=18	18					Loose to medium dense, light greyish white (5Y 8/1), occasionally mottled light brown, slightly silty fine to coarse SAND with some subangular fine gravel sized quartz fragments. (ALLUVIUM)
			89				50 blo	19		8.75			
								20					
								21		9.20			
							3,3 3,7,7,7 N=24	22					
								23		9.65			
			89				32 blo	24					

INSPECTION PIT

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 10/10/2002

CHECKED James Lu

DATE 11/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH14**

SHEET 2 of 5

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820693.89 N 833758.70	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 02/09/2002 to 09/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 5.32 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
										10.00			
	SX						2,2 1,1,1,3 N=6	25 26		10.10			See sheet 1 of 5 for details.
							20 blo	27	-5.23	10.55			Soft, grey (7.5YR 6/1) mottled dark grey, silty CLAY with occasional organic material. (ALLUVIUM)
			71					28					
11		0.90m at 16:00	89				12 blo	29 30		11.00			
04/10/2002 05/10/2002		3.20m at 08:00					2,2 2,6,16,13 N=37	31	-6.13	11.45			Dense, orangish brown (10YR 3/6) mottled light grey and pink, silty fine to coarse SAND with some subangular fine gravel sized quartz fragments. (ALLUVIUM)
12			89				51 blo	32 33 34		11.90			
							5,7 7,10,7,10 N=34	35 36	-7.03	12.35			
									-7.46	12.80			Dense, pink (5YR 7/4) mottled light grey, silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
13			86				60 blo	37 38					Dense, light grey (7.5YR 7/1), slightly silty fine to coarse SAND with some subangular fine gravel sized quartz fragments. (ALLUVIUM)
							3,5 10,7,7,9 N=33	39 40		13.25			
			0				46 blo	41	-8.38	13.70			
14			89				41 blo	42	-8.83	14.15			Light grey (7.5YR 7/1), fine to coarse SAND with much angular to subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
								43					Light yellowish brown (10YR 6/4) mottled and dappled light grey, silty fine to coarse SAND with occasional subangular fine gravel sized quartz fragments. (ALLUVIUM)
							1,2 1,9,13,13 N=36	44 45	-9.26	14.60			
15			84				31 blo	46	-9.73	15.05			Dense, light grey (7.5YR 7/1), silty fine SAND. (ALLUVIUM)
								47					
							2,4 10,10,12,15 N=47	48 49	-10.18	15.50			Light grey (7.5YR 7/1) mottled yellow, slightly clayey, silty fine to coarse SAND with occasional subangular fine to medium gravel sized quartz fragments. (ALLUVIUM)
16			89				36 blo	50		15.95			
							3,9 11,13,16,19 N=59	51 52 53		16.40			Dense to very dense, light grey (7.5YR 7/1) mottled and dappled light yellow, silty fine to coarse SAND with some subangular fine gravel sized quartz fragments. (ALLUVIUM)
								54	-11.53	16.85			
17			89				126 blo	55					Light yellow (5Y 7/4), slightly silty fine to coarse SAND with much angular to subangular fine to coarse gravel sized quartz fragments. (ALLUVIUM)
								56	-11.98	17.30			
	SX 17.75 PX						10,18 12,11,9,12 N=44	57					Dense, dark grey (7.5YR 4/1), silty fine to coarse SAND with occasional angular fine gravel sized quartz and meta-siltstone fragments. (ALLUVIUM)
18		2.88m at 18:00	89				69 blo	58 59	-12.43	17.75			
05/10/2002 07/10/2002		3.15m at 08:00					1,1 1,1,1,2 N=5	60	-12.88	18.20			Yellowish brown (10YR 5/8) spotted dark grey, fine to coarse SAND with some angular to subangular fine gravel sized quartz and meta-siltstone fragments. (ALLUVIUM)
								61					
19			100					62 63		18.65			Soft to firm, dark yellowish brown (10YR 3/6) spotted and mottled white and dark grey, sandy, clayey SILT with occasional angular fine to coarse gravel sized quartz and meta-siltstone fragments. (KARST SURFACE DEPOSIT)
							1,1 1,2,2,3	64 65		19.75			
20													

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- SPT LINER SAMPLE
- U78 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED K.M. To

DATE 10/10/2002

CHECKED James Lu

DATE 11/10/2002

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH14**

SHEET 3 of 5

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT **CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation**

METHOD	**Rotary Cored**	CO-ORDINATES **E 820693.89**	Works Order No. **GE/2001/14.24**
MACHINE & No.	**DR132**	**N 833758.70**	DATE from **02/09/2002** to **09/10/2002**
FLUSHING MEDIUM	**Water**	ORIENTATION **Vertical**	GROUND LEVEL **5.32** mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
										20.00			
	PX		89				N=8	66 67	-14.88	20.20			See sheet 2 of 5 for details.
													Soft, dark brown (7.5YR 3/4) mottled white, sandy, clayey SILT with some angular fine to coarse gravel sized quartz fragments. (KARST SURFACE DEPOSIT)
							4,3 4,5,7,35 N=51	68 69	-15.98	21.30			Very stiff, dark brown (7.5YR 3/4) spotted and mottled white and dark grey, clayey, sandy SILT with occasional angular fine gravel sized quartz fragments. (KARST SURFACE DEPOSIT)
	PX 21.75		100	100	100	0.9		70 T2101	-16.43	21.75		I	Strong, white, occasionally mottled and dappled light grey and grey, fresh, PURE MARBLE. Joints are widely to very widely spaced, locally medium spaced, rough stepped and rough undulating, occasionally rough planar, tight to extremely narrow, clean, occasionally calcite infilled and iron oxide stained, dipping at 20° to 30°, 40° to 50° and 60° to 70°.
			100	100	100			T2101		23.18			
			100	100	100			T2101		24.59			From 25.00m to 25.60m : Grey marble.
			100	100	100			T2101		26.14			From 25.90m to 26.14m : Grey marble.
		3.20m at 18:00	100	100	100			T2101		27.63			
07/10/2002 08/10/2002		3.20m at 08:00						T2101					
						3.6							From 28.60m to 29.06m : Rough slickensided joint dipping at 50°.
			100	100	100			T2101	-23.74	29.06 29.13		I	Strong, grey mottled dappled light grey and white, fresh, PURE MARBLE. Joints are widely to very widely spaced, locally medium spaced, rough stepped and rough planar, tight to extremely narrow, calcite infilled
						0.7							

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
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- U76 UNDISTURBED SAMPLE
- U100 UNDISTURBED SAMPLE
- MAZIER SAMPLE
- PISTON SAMPLE
- WATER SAMPLE
- PIEZOMETER TIP
- STANDPIPE
- STANDARD PENETRATION TEST
- PERMEABILITY TEST
- IMPRESSION PACKER TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST

LOGGED **K.M. To**

DATE **10/10/2002**

CHECKED **James Lu**

DATE **11/10/2002**

REMARKS

GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.

GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH14**

SHEET 4 of 5

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820693.89 N 833758.70	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 02/09/2002 to 09/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 5.32 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
30										30.00			and some clean, dipping at 40° to 50° and 60° to 70°.
31			100	100	100			T2IO1		30.68			From 31.57m to 32.06m : White marble.
32			100	100	100			T2IO1		32.21			From 33.08m to 33.52m : White marble.
33			100	100	100			T2IO1		33.75			From 34.21m to 34.80m : White marble.
34			100	100	100			T2IO1		35.23			From 35.10m to 35.25m : White marble.
35			100	100	100			T2IO1	-30.50	35.82		I	Strong, white, occasionally mottled and dappled light grey and grey, fresh, PURE MARBLE. Joints are widely to very widely spaced, locally medium spaced, rough planar, tight to extremely narrow, calcite infilled, occasionally iron oxide stained and clean, dipping at 40° to 50°.
36		3.30m at 18:00 08/10/2002				2.6							
37		3.20m at 08:00 09/10/2002	100	100	100			T2IO1		36.76			From 37.36m to 37.86m : Grey marble.
38			100	100	100			T2IO1		38.22			From 38.40m to 38.60m : Grey marble.
39						0.3							
40			100	100	100			T2IO1		39.73			

- SMALL DISTURBED SAMPLE
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REMARKS

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GROUND INVESTIGATION DEPARTMENT

HOLE NO. **MBH14**

SHEET 5 of 5

DRILLHOLE RECORD

CONTRACT NO. GE/2001/14

PROJECT CE/37/2001 Flyover & Adjoining Footbridge between Yuen Long On Ling Road & Kau Yuk Road Investigation Assignment Ground Investigation

METHOD	Rotary Cored	CO-ORDINATES E 820693.89 N 833758.70	Works Order No. GE/2001/14.24
MACHINE & No.	DR132		DATE from 02/09/2002 to 09/10/2002
FLUSHING MEDIUM	Water	ORIENTATION Vertical	GROUND LEVEL 5.32 mPD

Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
40										40.00			
41		2.95m at 18:00 09/10/2002	100	100	100			T2101 T2101	-36.63	41.28 41.95			From 41.34m to 41.66m : Grey marble.
42													Hole completed at 41.95m.
43													
44													
45													
46													
47													
48													
49													
50													

- SMALL DISTURBED SAMPLE
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