Yuba Company Limited

Proposed Amendment to the Approved Wan Chai Outline Zoning Plan No. S/H5/31 from Comprehensive Development Area", "Residential (Group C)", "Open Space" and "Government, Institution or Community" zones and Areas shown as "Road" to "Other Specified Uses (Residential Development with Historic Building Conserved)" and "Other Specified Uses (Elevated Walkway)" at Nos. 1, 1A, 2 and 3 Hill Side Terrace, No. 55 Ship Street (a.k.a. Nam Koo Terrace), Nos. 1-5 Schooner Street, No. 53 Ship Street, No. 18 Sau Wa Fong, Inland Lot No. 9048 and adjoining Government Land, Wan Chai

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Geotechnical Planning Review Report

August 2024

Report no: EA1425/G/R33/07

asia infrastructure solutions

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1 Introduction

We are instructed by the Applicant, Yuba Company Limited to prepare this ***Geotechnical Planning Review Report*** (***GPRR***) in support of the Proposed Amendments to the Approved Wan Chai Outline Zoning Plan No. S/H5/31 from Comprehensive Development Area", "Residential (Group C)", "Open Space" and "Government, Institution or Community" zones and Areas shown as "Road" to "Other Specified Uses (Residential Development with Historic Building Conserved)" and "Other Specified Uses (Elevated Walkway)" at Nos. 1, 1A, 2 and 3 Hill Side Terrace, No. 55 Ship Street (a.k.a. Nam Koo Terrace), Nos. 1-5 Schooner Street, No. 53 Ship Street, No. 18 Sau Wa Fong, Inland Lot No. 9048 and adjoining Government Land, Wan Chai (collectively referred to as the "***Rezoning Site***" / the "***Site***").

The geotechnical feasibility of the Indicative Development Scheme in relation to the stability of man-made slopes/retaining walls and to address any potential natural terrain landslide hazards that may affect or be affected by the Site is assessed in the report. Please refer to Appendix 1 of supplementary planning statement for the architectural plans.

2 The Site

2.1 Site Description

The Rezoning Site is located at southwestern part of Wan Chai. It is bounded by Schooner Street and Greenland House to the north, Ship Street to the east, St. Francis' Canossian College to the south and St. Francis' Canossian School to the west.

Majority of the Site is vacant except for NKT and No. 18 Sau Wa Fong. NKT is a vacant two-storey historic building built between 1915 and 1921 as a residential house which is listed by the Antiquities Advisory Board ("AAB") as a Grade I Historic Building. The Rezoning Site also includes the adjoining Government Land at the southwest and northwest edges of the Site comprising

slopes and steps. The total site area of the Rezoning Site is 3157.6 m^2 in which the development site area is 3140.7 m^2 after excluding the elevated walkway above Ship Street staircase.

Areas surrounding the Rezoning Site are characterised by a mix of land uses including residential, education, open space, commercial and retail uses.

The location of the Site is presented in Figure 1.

2.2 Ground Condition

According to the Hong Kong Geological Map, Series HGM20, Sheet No. 11 (Scale 1: 20,000), Solid and Superficial Geology of Hong Kong & Kowloon published by the Geotechnical Control Office (GCO 1986), the area of the Site is underlain by Jurassic-cretaceous medium-grained granite.

According to the existing Ground Investigation (GI) reports retrieved from the Geotechnical Engineering Office (GEO), the previous GI works were carried out in the vicinity between 1981 and 2000. The existing and proposed GI records reveal that the Site generally comprises a layer of fill of various thickness and decomposed granite. The bedrock level varies between +11.4mPD and 45.08 mPD and is dipping in a direction of south to north across the Site.

The location of existing and proposed GI is presented in Figure 2. The geological section illustrating the typical ground condition of the Site is presented in Figure 3. The records of existing and proposed GI are attached in Appendix A.

2.3 Groundwater Condition

Groundwater monitoring has been carried out at piezometers P3a and P4 within the site since April 2014 for the proposed Hopewell Centre II development. The recent groundwater monitoring records around the Ship Street Stair site are presented as in **Table 1**, below.

Piezometer	Ground Level (mPD)	Piezometer Tip Level (mPD)	Lowest Groundwater Level (mPD)	Highest Groundwater Level (mPD)
P3a	+43.65	+26.99	+21.941	+35.998
P4	+12.335	+5.235	+7.448	+12.308

Table 1: Summary Table of Measured Groundwater Levels (updated to 31 August 2021)

The groundwater contour plan approved under Site Formation Design submission for Main Site based on the groundwater monitoring readings showed that the groundwater level across the Ship Street Stair site dipping from +42 mPD in the south to +12 mPD in the north.

The layout out of the P3a and P4 indicates in Apendix D.

In borehole B1 installed in 1981, the highest measured groundwater level was at +9.47mPD.

2.4 Existing Geotechnical Features

There are ten numbers of GEO registered features in the vicinity of the Site. Three of the registered features are situated within the Site. The locations of these features are shown in Figure 4.

Desk study on previous stability assessment on these eight registered features has been carried out. The results revealed that among the 10 registered features, 4 registered features were assessed by GEO and 3 of which have been served with Dangerous Hillside Orders. A summary of the status of the registered features is presented below:

Feature No.	Status
11SW-B/CR252	GEO Stage 2 Study carried out in 2004. Advisory letter was issued to lot owner in 2004.
11SW-B/CR253	No previous study.
11SW-B/CR235	Slope upgrading works were implemented by the responsible owner, and GEO advised BD on

	28/9/2011 of no geotechnical objection to the acknowledgement of Form BA14.
11SW-B/CR349 (Wall Portion of Sub-division No. 1)	DH0035/HK/11/C served on lot owner on 3/2011. Remedial works proposal approved by BD on 11/3/2013. The remedial works are completed in 11/2017.
11SW-B/C353	No previous study.
11SW-B/R616	GEO Stage 2 Study carried out in 1995; feature found to be up to current geotechnical standards.
11SW-B/R617	GEO Stage 2 Study carried out in 1988; feature found to be up to current geotechnical standards. GEO Stage 2 Study carried out in 2014. DH0038/HK/15/C served on lot owner on 6/6/2015. DH0005/HK/21/C served on lot owner on 10/3/2021.
11SW-B/R629	DH0035/HK/11/C served on lot owner in 3/2011. Remedial works proposal approved by BD on 11/3/2013. The remedial works are completed in 11/2017. The latest remedial works approval drawings were attached in Appendix E for reference.
11SW-B/R963	No previous study.
11SW-B/R1023	New registration of Slope Feature, approved on 13 January 2024. Ackonwledged on 28 June 2023. (Under BD 6/3027/20(RD)).

Table 2: Status of Registered Features in the vicinity of the Site

The layout of the Existing Geotechnical Feautre is shown on figure 5. And The findings of the desk study are summarised in Appendix B.

Feature No.	Existing Conditions	Anticipated Affected Extent of Features
11SW-B/CR252	About 5m high 90° Concrete wall.	The feature is to be maintained. The retaining wall will modificate to proposed development. Adequate shoring system will be provided for the excavation that it requested monitoring to control the ground settlement, thus the effect on the features will be minimal.
11SW-B/CR235	About 5.5m high 90° Concrete wall.	The retaining wall will modificate to Indicative Development Scheme . Adequate shoring system will be provided for the excavation that it requested monitoring to control the ground settlement, thus the effect on the features will be minimal.
11SW-B/CR253	About 2m high 88° Masonry wall.	The retaining wall will modificate to Indicative Development Scheme . Adequate shoring system will be provided for the excavation that it requested monitoring to control the ground settlement, thus the effect on the features will be minimal.
11SW-B/CR349 (Wall Portion of Sub-division No. 1)	About 8m high 80° masonry wall.	The retaining wall will modificate to Indicative Development Scheme . Adequate shoring system will be provided for the excavation that it requested monitoring to control the ground settlement, thus the effect on the features will be minimal.
11SW-B/R963	About 5.5m high 85° Wall	The retaining wall will modificate to Indicative Development Scheme . Adequate shoring system will be provided for the excavation that it requested monitoring to control the ground settlement, thus the effect on the features will be minimal.
11SW-B/R616	About 8.3m high 83° masonry wall.	The feature is to be maintained. No adverse effect will be induced.

Feature No.	Existing Conditions	Anticipated Affected Extent of Features
11SW-B/R629	About 10m high 85° masonry wall.	The feature is to be maintained. Since the Indicative Development Scheme case will be slightly filled up at the passive side of the masonry wall only, no adverse effect will be induced.
11SW-B/R616	About 8.3m high 83° masonry wall.	feature is to be maintained. Since the Indicative Development Scheme case will be slightly filled up at the passive side of the masonry wall only, no adverse effect will be induced.
11SW-B/R617	About 11.8m high 85° masonry wall.	The feature would need to be demolished to facilitate the construction of the proposed residential building.
11SW-B/C353	About 4m high slope	The feature would need to be demolished to facilitate the construction of the proposed residential building.
11SW-B/R1023	5.6 m High Concrete Retaining Wall	The feature is to be maintained. No adverse effect will be induced.

Table 3 Effect on Geotechnical Features due to proposed development

Stability of the existing geotechnical features will affect or be affected by the proposed works will be investigated in the detailed design stage. If necessary, upgrading works will be carried out first for the features which cannot meet the current safety standard. All the man-made features are proposed to be maintained as far as possible.

2.5 Existing Structures

2.5.1 St. Francis' Canossian College comprise of a 3-storey low-rise building structure which was built in 1957 and a new 6-storey low-rise building structure

which was built in 2012 at No. 9-13 Kennedy Road. The new 6-storey building, founded on socket H-pile, is located adjacent to the proposed external staircase. The platform level of the building is generally +52.20mPD. The level difference between the platform and existing staircase is retained by a mass concrete retaining wall. Record plans are retrieved from BD and attached in Appendix E for reference.

2.5.2 Nam Koo Terrace is located at Lot No. I.L. 2140, No. 55 Ship Street. The property comprises two independent buildings, the main building and an annex. The main building and the annex are 2 storeys high, located at 7m from the proposed Park. The rear of the main building is a courtyard. DH order no. DH161/HK/98/C regarding the feature 11SW-B/R629 was issued by BD on 10 August 1998. Wall remedial works submission was approved on 19 Nov 2001.Three amendments were submitted and approved on 10 Jun 03, 25 Aug 05 and 19 April 11 respectively. The Indicative Development Scheme is located along the west to north east side of the building. In addition, the historical building will be preserved and revitalised as part of the Indicative Deelopment Scheme. Record plans and latest remedial works approval drawings were attached in Appendix F for reference.

2.5.3 St. Luke College and Miu Kang Terrace are demolished. The proposed shop and building is located the those lot for development. Hill Side Terrace is founded on pad footing. The site is located at the northeast of the captioned building. There is an existing stone retaining wall with maximum 4m retaining height located between the Hill Side Terrace and the Site. Additional ground investigation works will be proposed to verify the configuration. Stability will be checked in detail design stage. Effect on the existing foundation due to the proposed socket H-pile foundation works for the Indicative Development Scheme should be minimal. Record plans are retrieved from BD and attached in Appendix I for reference. Miu Keng Terrace was a 6-storey building is situated at Lot No. I.L. 2903 RP, No. 53 Ship Street, was located at the southeast of the Site. According to the as-built foundation record plans (BD ref. 3/3196/72), the building structure is founded on pad footings with founding levels of +17.5mPD or 1.5m below the Ship Street step levels.

2.5.4 I.L. 199 RP (No. 18 Sau Wa Fong) was occupied by a 6 storeys residential building. An open space will be constructed in this lot. Additional ground investigation works will be proposed to verify the configuration. Stability will be checked in detailed design stage. Effect on the existing foundation due to the proposed socket H-pile foundation works for the Indicative Development Scheme should be minimal.

2.5.6 Dragon Villa located 8 Sik On Street

Dragon Villa is located at No. 2-8 Sik On Street. The captioned building was founded on 13no. of caisson piles rested on bedrock. The indicatative development scheme is located at the southeast of the captioned building. Since the site is located 10m from the Site, effect on the existing foundation due to the proposed socket H-pile foundation works for the Indicative Development Scheme should be minimal. Record plans are retrieved from BD and attached in Appendix G for reference.

2.6 General Description of the Proposed Works

As the Indicative Development Scheme is designed to encroach into the existing slope, the following geotechnical works will be participated and should be considered extremely carefully so that no adverse impact will be induced on adjacent properties. The geotechnical works related to the Indicative Development Scheme within the lot boundary will be basically listed, considered and discussed as follows.

Foundation

In view of a total of 28-storeys reinforced concrete building, loadings such as dead load, wind load and live load from the proposed superstructure are expected to be not substantial. Therefore, rock socket H-piles should be appropriate and the effect on the adjacent properties should be minimal.

In accordance with available ground investigation works, the bedrock is about 12m to 18m below existing ground. In order to take lateral loads due to soils and wind on the proposed building, piles are required to be designed socketted into rock to provide a better friction capacity for vertical as well as lateral loadings.

Detailed design calculation with assessment should be carried out and submitted for approval in order to ensure no adverse impact induced on the adjacent slopes, foundation, etc.

Excavation for construction of pilecaps and retaining wall

Since the building load is just catered for 28-storeys, pilecap is expected to be about 1.5m thick. By taking into account of 1m deep allowances for the proposed drainage system, maximum excavation height will be involved for about 2.5m deep from the proposed ground floor level.

For the level difference between the Site and adjacent ground, L-shaped retaining wall with maximum 5m retaining height is proposed.

As considered the limitation of working space, sheet pile/pipe pile, with strutting if necessary, is considered necessary for construction of the pilecap and retaining wall. The maximum retaining height is about 5m. Since the underside of the pilecap is 3m to 5m from ground level, it is likely that dewatering is not necessary. However, the method of dewatering will be considered in details and designed so as to ensure no adverse impact on the adjacent properties. For the level difference between the Site and adjacent ground, L-shaped retaining wall with maximum 5m retaining height is proposed.

During excavation, close monitoring on the adjacent properties and groundwater level will be implemented. Detailed design with assessment will be carried out and submitted for approval in order to ensure no adverse impact induced on the adjacent properties, etc.

Schematic drawings for the captioned site formation works are attached in Appendix E. All existing features affecting or being affected by the development will be investigated and, if necessary, upgrading works will be proposed and carried out. Relevant details will be designed and submitted to the Buildings Department for approval.

2.7 Construction Methods and Sequence of Works

Excavation will be generally shoring system around the Site. The stability of the proposed shoring system will be checked. The Site will be flatted for construction of the socket H-pile. Platform will be considered if piling works are carried out prior to the excavation works. Upon completion of the ELS and piling works, the proposed pile caps and retaining wall will be constructed. Upon completion of the substructures, backfilling will be carried out up to the proposed finish level. Schematic sections of the proposed ELS works and superstructure works are attached at Appendix H.

2.8 Discussion on Potential Natural Terrain Hazards

The Indicative Development Scheme is surrounded by building structures and no natural terrain is located in the vicinity of the Site. Hence, no natural terrain hazards are anticipated for the Indicative Development Scheme .

3 Geotechnical Review on Proposed Works

Majority of the Rezoning Site is vacant except Nam Koo Terrace (a Grade 1 Historic Building) and No. 18 Sau Wa Fong. The Indicative Development Scheme comprises of a 24 storey residential tower over a 3 storey podium with NKT preserved in-situ and an Open Space. Layout and cross-sections of the Indicative Development Scheme are attached at Appendix C.

The geotechnical aspects of the proposed works are presented below.

3.1 Proposed Ground Investigation Works

Site-specific ground investigation works will be proposed at the Site in order to obtain information on the subsurface profile and material characteristics, groundwater regimes and foundations of the existing building. The proposed ground investigation works will comprise the following:-

- Vertical drillholes (with piezometer/standpipe);
- Trial pits;
- Horizontal/inclined coreholes;
- Field tests;
- Laboratory tests.

The proposed ground investigation works will be carried out in compliance with the current geotechnical standards and the site supervision requirements as stipulated in the "Code of Practice for Site Supervision 2009" published by the Buildings Department (BD).

3.2 Effect on Existing GEO Registered Features

Six registered features, namely Feature Nos. 11SW-B/CR252, 11SW-B/CR253, 11SW-B/CR349, 11SW-B/R629, 11SW-B/C353 and 11SW-B/R1023 are located within the boundary of the Site. Three other registered features, namely Feature Nos. 11SW-B/R617, 11SW-B/CR235 and 11SW-B/R963, are located outside the boundary of the Site.

The Indicative Development Scheme is at close proximity to the crest of Feature Nos. 11SW-B/CR235, 11SW-BC353, 11SW-B/R617, 11SW-B/R629 and 11SW-B/R963 and hence the impact on these existing slopes due to the additional loading from the Indicative Development Scheme and its foundation system shall be investigated and stabilization works shall be proposed if found necessary. Whereas, Feature Nos. 11SW-B/CR252, 11SW-B/CR253 and 11SW-B/CR349 are located along the southern uphill side of the Indicative Development Scheme . And No. 11SW-B/R1023 was the new register feature for the level difference of Ship Street Straircase. Considering the founding levels of the foundation will be rationally well below the toe levels of these features, no adverse impact is likely to be induced to these features. These features will be modified to form the open space. A proposal for modifying or upgrading the features will be presented in the ELS plan or site formation plan to be submitted separately to the BD for approval.

Moreover, Dangerous Hillside Orders have been served on Feature Nos. 11SW-B/CR349 (Sub-division 1) and 11SW-B/R629 by the BD. The remedial works proposals, comprising buttressing works at 11SW-B/CR349

(Sub-division 1) and soil nailing works at Feature No. 11SW-B/R629, have been submitted and approved by the BD in June 2011. The remedial works are completed in November 2017. The impact on these two features due to the proposed works should be investigated. In particular, the impact on Feature No. 11SW-B/R629 due to the loading from the foundation of the Indicative Development Scheme will be reviewed and further upgrading works will be proposed if found necessary. Design amendments to the remedial works proposals incorporating the assessment of the impact to the features due to the development shall be submitted to the BD for approval.

The upgrading works comprising installation of soil nails and construction of reinforced concrete retaining walls or mass concrete walls are considered feasible subject to the actual site constraints for individual features.

3.3 Indicative Development Scheme

The Indicative Development Scheme within the Site consists of a 24 storeys over a 3 storey podium with NKT preserved in-situ and an Open Space from +19.76 mPD to +118.80 mPD (at Main Roof Level). The residential tower will be built at the same level as Nam Koo Terrace at +33.6 mPD. Layout and cross-sections of the Indicative Development Scheme are attached at Appendix C.

The existing ground level within the Site is at +19.76 mPD (Schooner Street), which is about the proposed G/F for shops and 2/F and 3/F for E/M. In designing the Proposed Comprehensive Development, consideration have been given to the type of foundation and the rockhead levels in the vicinity of the Site. Therefore, the new building is proposed to be supported by a combination of footing and pile foundations. In addition, as the Indicative Development Scheme will be built adjacent to Nam Koo Terrace, the impact of the proposed foundation on the existing foundation of Nam Koo Terrace will be investigated and preventive measures, such as sleeving will be provided. Also, Feature No. 11SW-B/R629 (served with a Dangerous Hillside Order by the Buildings Department) supporting the building platform of Nam Koo Terrace was upgraded by soil nails in November 2017. Nonetheless,

the building and ground movement of Nam Koo Terrace will be closely monitored during implementation of the proposed construction works.

Local excavation will be proposed to facilitate the construction of footing foundation or pile caps. Open excavation and ELS system are feasible options for the local excavation works.

In conclusion, no geotechnical difficulty is anticipated arising from the required excavation and foundation works of the Indicative Development Scheme .

4 Conclusion

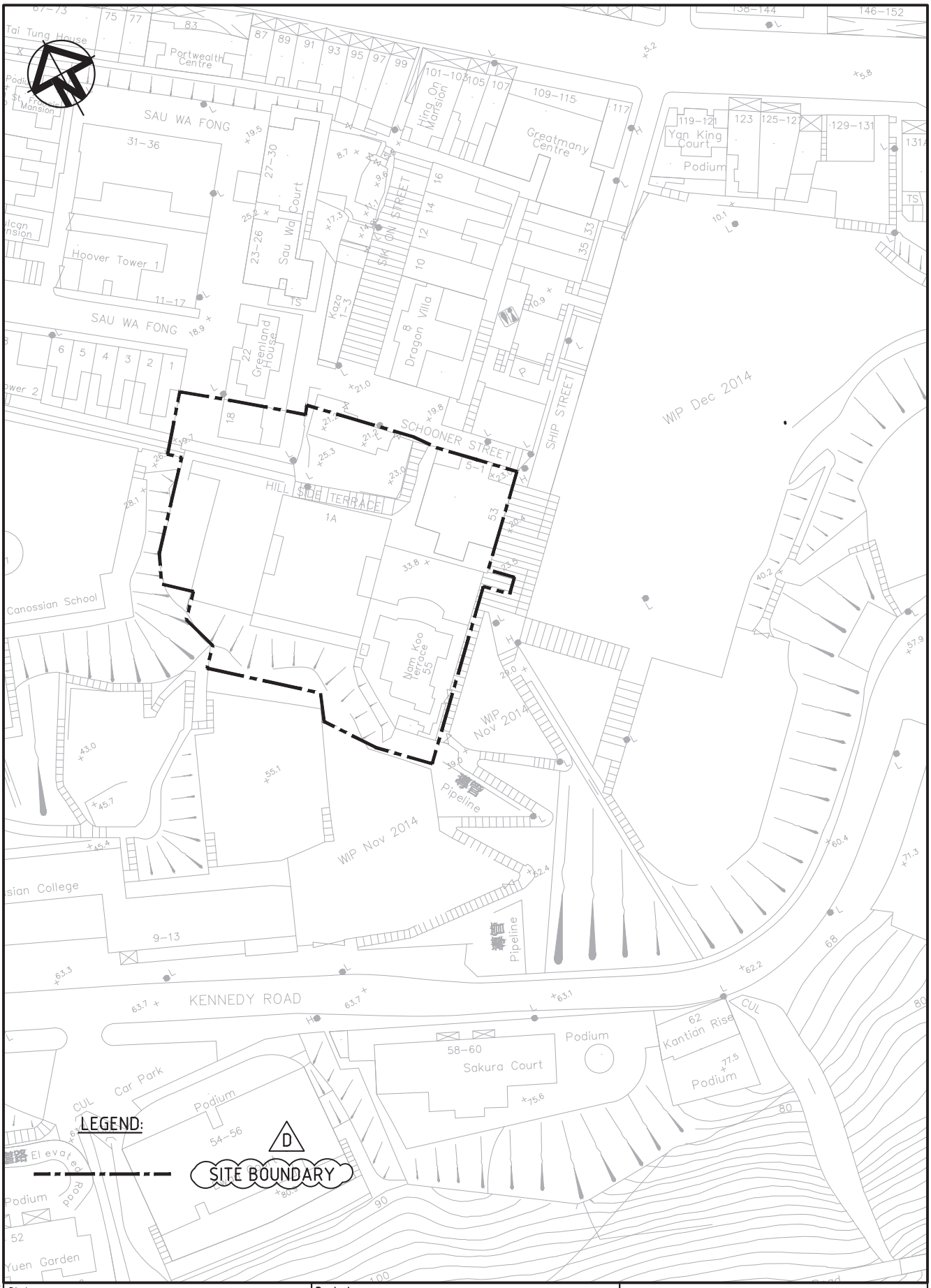
The purpose of this report is to present a Geotechnical Planning Review on the Indicative Development Scheme at Approved Wan Chai Outline Zoning Plan No. S/H5/31 from Comprehensive Development Area", "Residential (Group C)", "Open Space" and "Government, Institution or Community" zones and Areas shown as "Road" to "Other Specified Uses (Residential Development with Historic Building Conserved)" and "Other Specified Uses (Elevated Walkway)" at Nos. 1, 1A, 2 and 3 Hill Side Terrace, No. 55 Ship Street (a.k.a. Nam Koo Terrace), Nos. 1-5 Schooner Street, No. 53 Ship Street, No. 18 Sau Wa Fong, Inland Lot No. 9048 and adjoining Government Land, Wan Chai to illustrate how the proposed works may affect or be affected by the existing features within and in the vicinity of the Site.

As the proposed works may have impacts on some of the slopes and retaining walls, the overall stability will be examined during the detailed design stage, and if necessary, be modified to comply with the current geotechnical standards. A proposal for modifying and upgrading the features within the Site will be presented in the ELS plan or site formation plan (including Pipe Pile Work) to be submitted separately.

Additional ground investigation works will be carried out at within the Site area to obtain adequate geotechnical & geological for carrying out design of site formation, ELS and pipe foundation works of the Indicative Development Scheme .

In conclusion, the Indicative Development Scheme is geotechnically feasible to be implemented within the Site.

Figures



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© Copyright reserved			

Project
PROPOSED AMENDMENT TO THE APPROVED WAN CHAI OUTLINE ZONING PLAN NO. S/H5/31 AT NOS. 1, 1A, 2 AND 3 HILL SIDE TERRACE, NO. 55 SHIP STREET (A.K.A. NAM KOO TERRACE), NOS 1-5 SCHOONER STREET, NO. 53 SHIP STREET, NO. 18 SAU WA FONG, INLAND LOT NO. 9048 AND ADJOINING GOVERNMNET LAND, WAN CHAI

Title
LOCATION PLAN

asia infrastructure solutions
亞愛(亞洲)工程顧問有限公司

Drawing No.	Project No.	Issue
FIGURE 1	EA01425	D

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PROPOSED AMENDMENT TO THE APPROVED WAN CHAI OUTLINE ZONING PLAN NO. S/H5/31 AT NOS. 1, 1A, 2 AND 3 HILL SIDE TERRACE, NO. 55 SHIP STREET (A.K.A. NAM KOO TERRACE), NOS 1-5 SCHOONER STREET, NO. 53 SHIP STREET, NO. 18 SAU WA FONG, INLAND LOT NO. 9048 AND ADJOINING GOVERNMNET LAND, WAN CHAI

Title
EXISTING GROUND INVESTIGATION PLAN

asia infrastructure solutions

Drawing No.	Project No.	Issue
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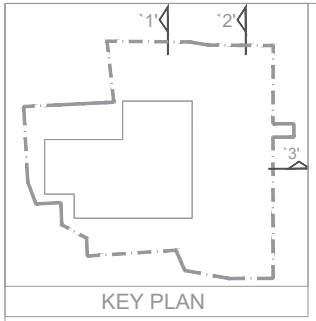

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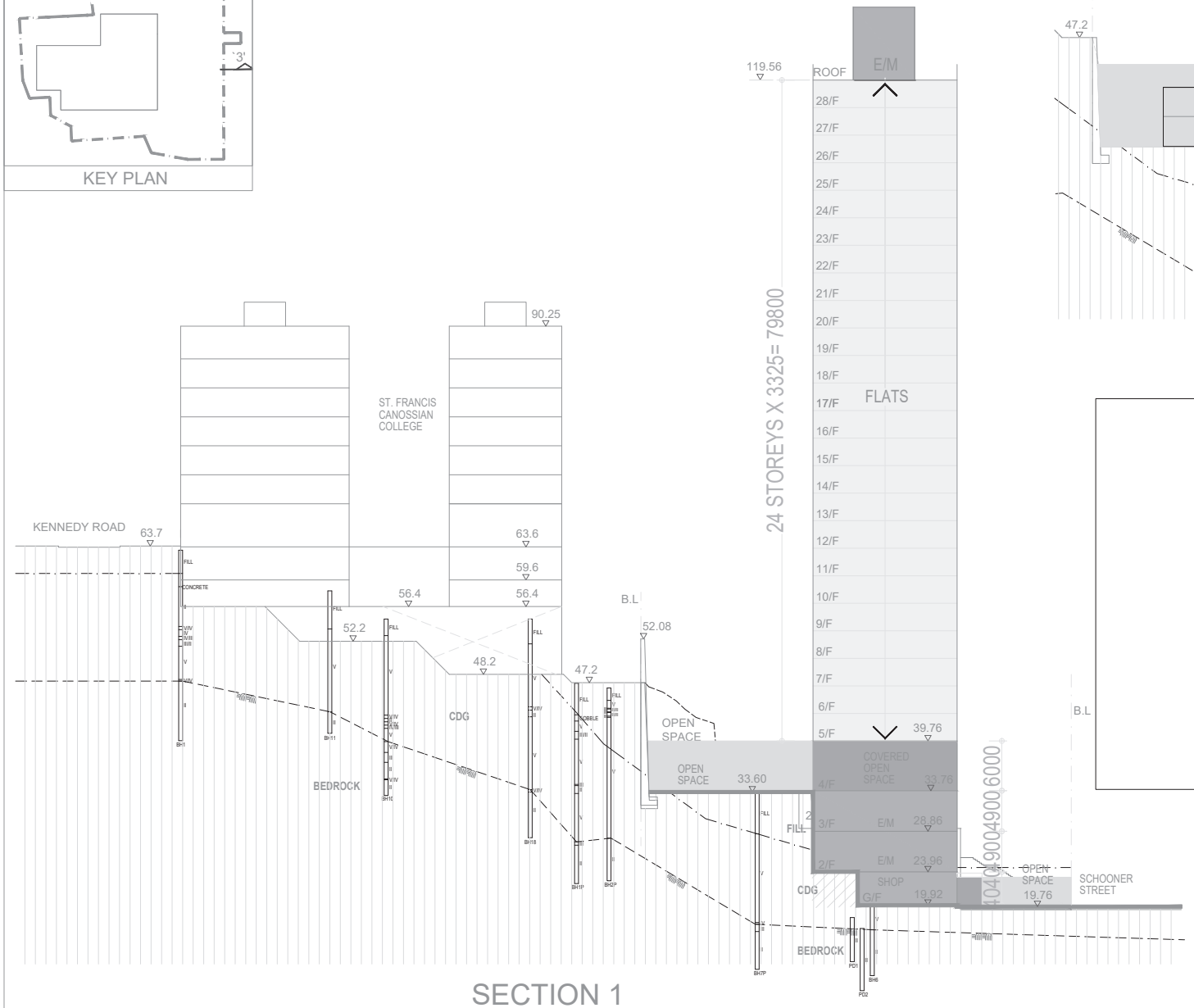

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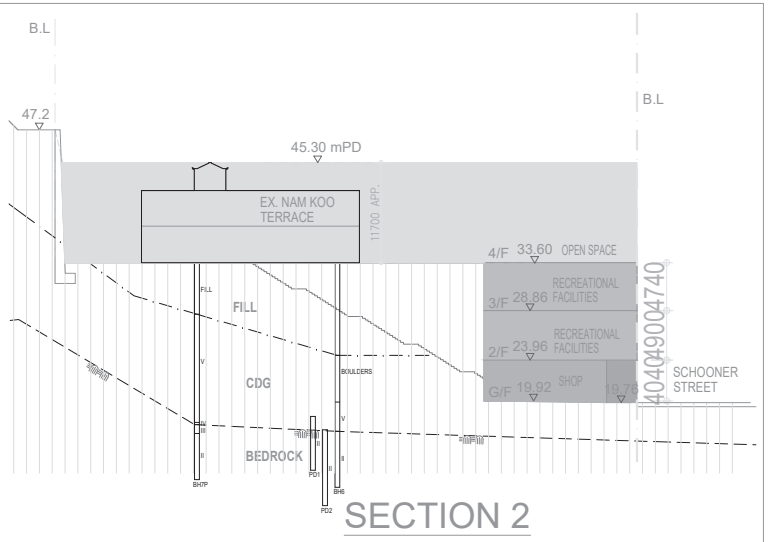

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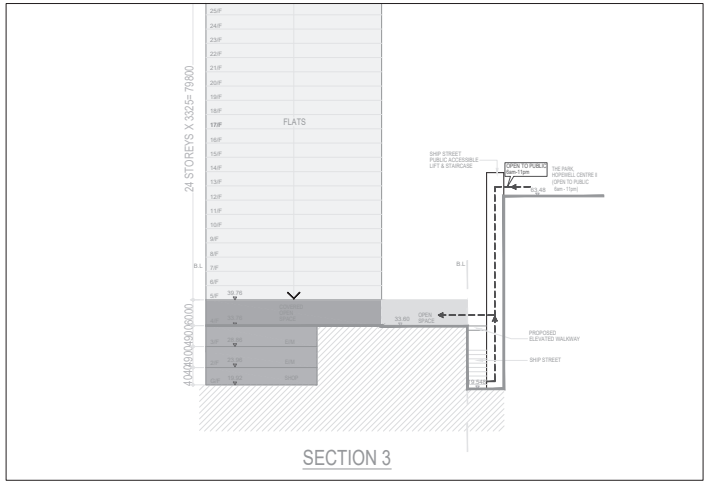

SECTION 3

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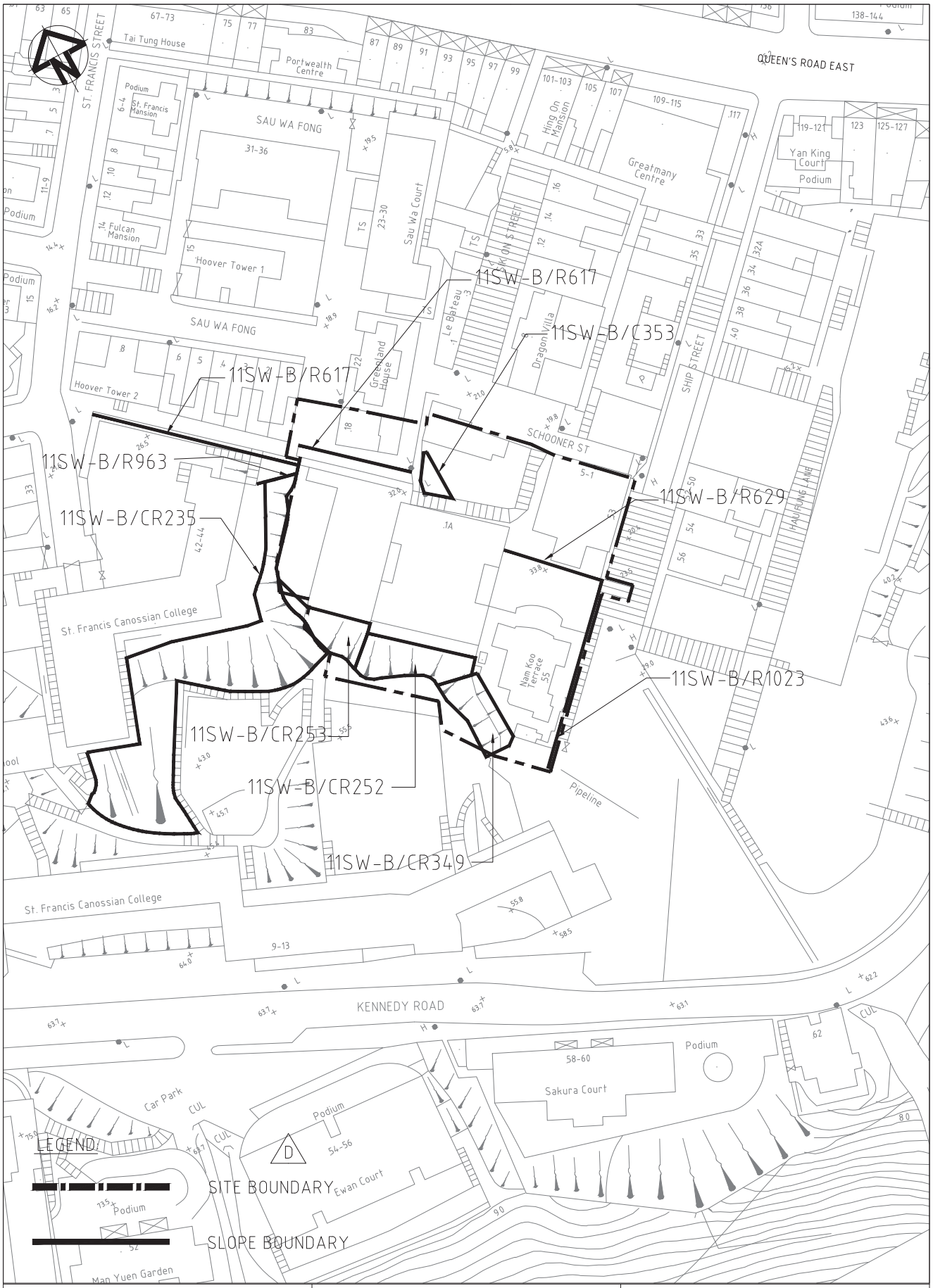
PROJECT : PROPOSED AMENDMENT TO THE APPROVED WAN CHAI OUTLINE ZONING PLAN NO. S/H5/31 AT NOS. 1, 1A, 2 AND 3 HILL SIDE TERRACE, NO. 55 SHIP STREET (A.K.A. NAM KOO TERRACE), NOS 1-5 SCHOONER STREET, NO. 53 SHIP STREET, NO. 18 SAU WA FONG, INLAND LOT NO. 9048 AND ADJOINING GOVERNMNET LAND, WAN CHAI	PROJECT NO : EA01425 DRAWING NO : FIGURE 3 ISSUE : D	0 5 10 15m SCALE 1:500@A3
TITLE : Geological Section		asia infrastructure solutions



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Status		Project	PROPOSED AMENDMENT TO THE APPROVED WAN CHAI OUTLINE ZONING PLAN NO. S/H5/31 AT NOS. 1, 1A, 2 AND 3 HILL SIDE TERRACE, NO. 55 SHIP STREET (A.K.A. NAM KOO TERRACE), NOS 1-5 SCHOONER STREET, NO. 53 SHIP STREET, NO. 18 SAU WA FONG, INLAND LOT NO. 9048 AND ADJOINING GOVERNMNET LAND, WAN CHAI
Scales	1 : 1000	Original Size	A4
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© Copyright reserved		Title	LOCATION PLAN OF EXISTING REGISTERED SLOPES /RETAINING WALLS

asia infrastructure solutions

Drawing No.	Project No.	Issue
FIGURE 4	EA01425	D

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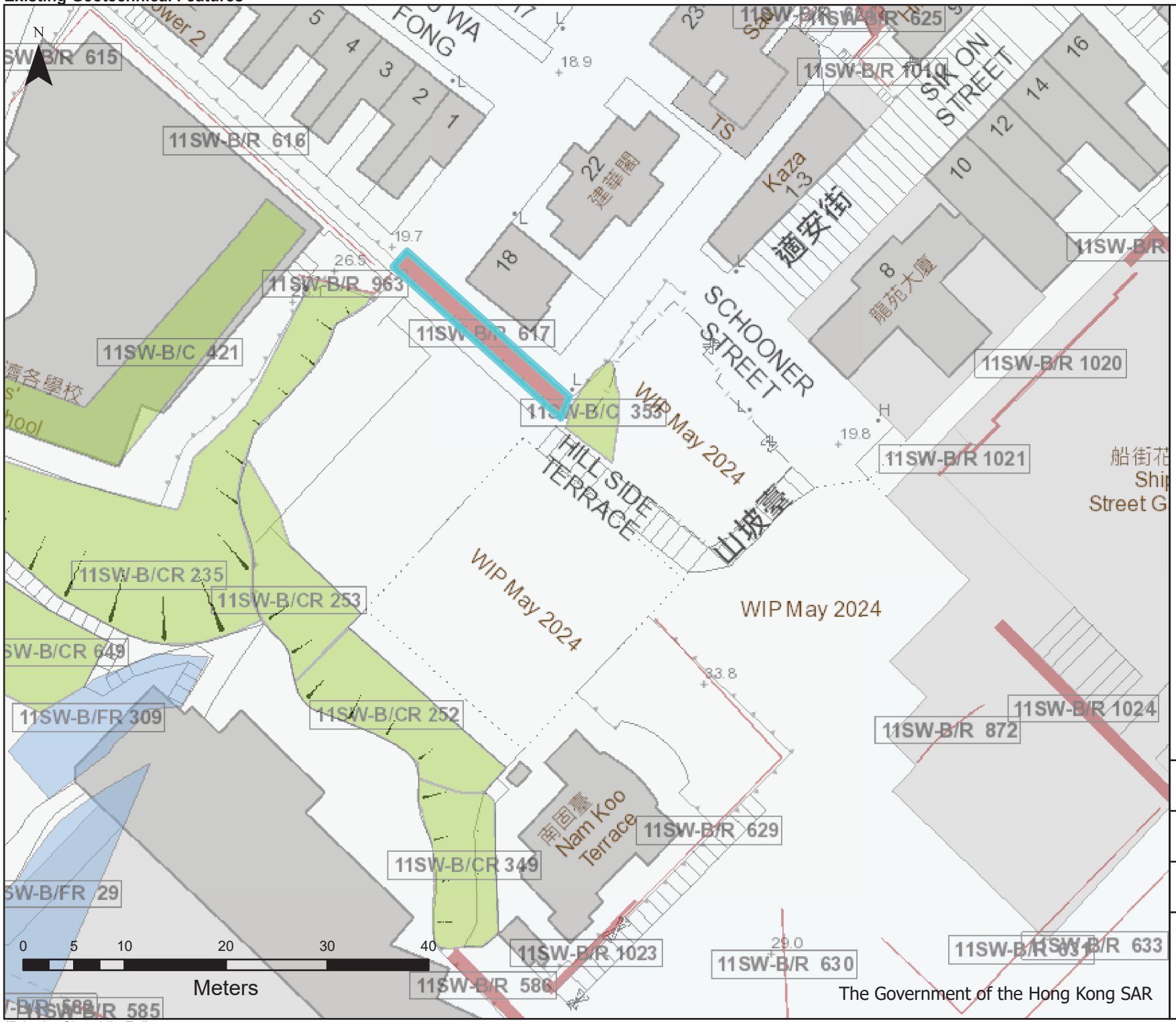
Existing Geotechnical Features



Man Made Slope

Man-made Features

- Cut slopes
- Disturbed terrain
- Fill slopes
- NT defence measures
- NT stabilisation measures
- Retaining walls

Slope Features

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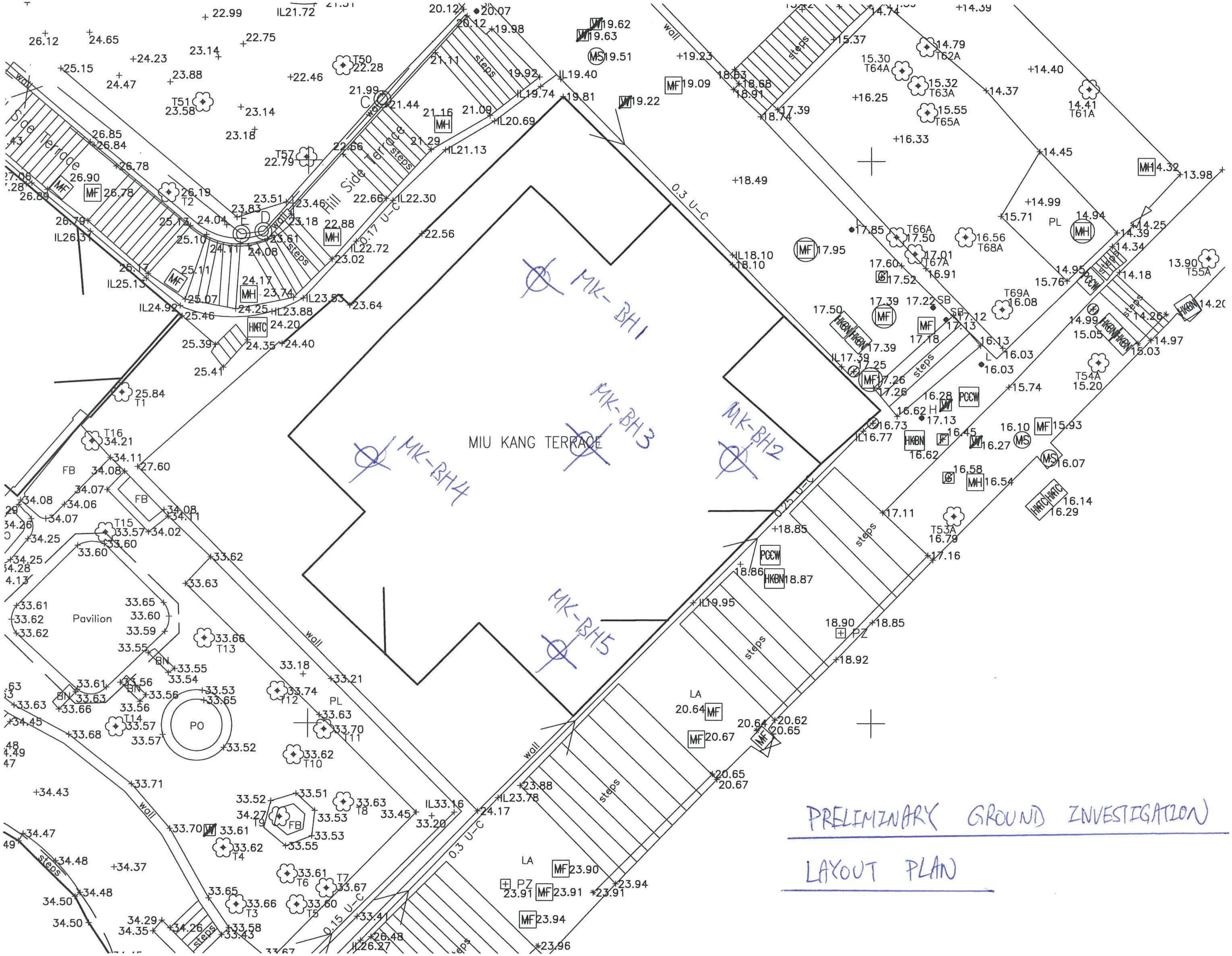
GEOTECHNICAL ENGINEERING OFFICE
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

(Print by Chan Hin Fai)

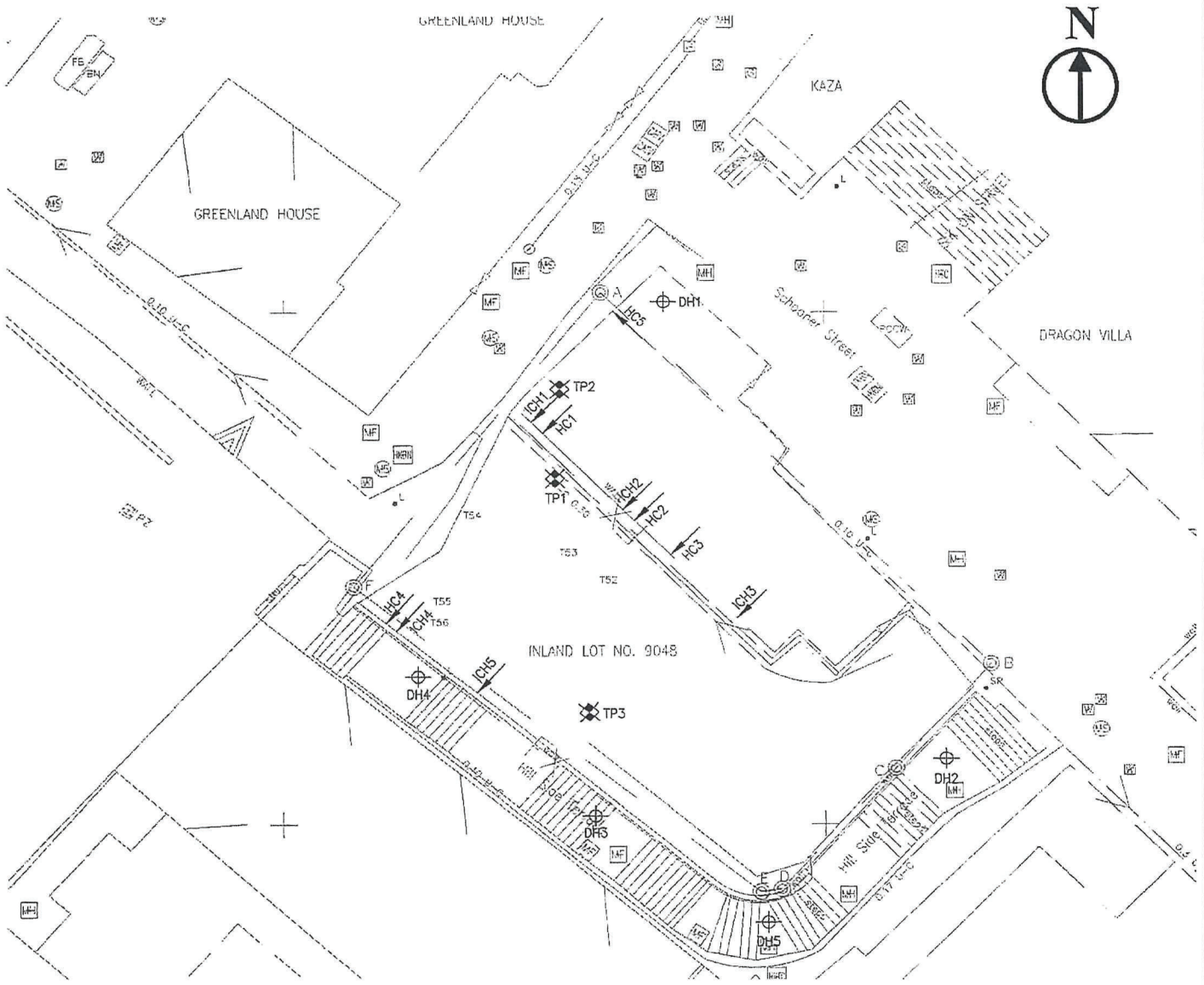
Appendix A

Records of Existing and Proposed Ground Investigation Works



PRELIMINARY GROUND INVESTIGATION

LAYOUT PLAN



LEGEND

DH1–DH5	PROPOSED VERTICAL BOREHOLE (TO BE TERMINATED INTO AT LEAST 5m INTO GRADE III OR BETTER MATERIAL WITH MIN. TCR OF 85%)
TP1–TP3	PROPOSED TRIAL PIT (MAX. 3m DIP)
HC1–HC5 ICH1–ICH5	PROPOSED HORIZONTAL AND INCLINED COREHOLES (2M MAX.)

ENGINEER:

HYDER CONSULTING LTD.

CLIENT:

HOPEWELL CONSTRUCTION LTD.

PROPOJECT TITLE:

SCHOONER STREET DEVELOPMENT AT DEVELOPMENT AT I.L. 9048

DRAWING TITLE:

GROUND INVESTIGATION PLAN

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: DH1
Sheet: 1 of 3
Date: 27.12.2015 to 03.01.2015

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835534.02 N: 815180.42	Rock Corebit: T-120/T2-101
Machine Optr.: WAN		Hole Dia: PX/HX
Flushing Medium: WATER	Orientation: VERTICAL	Ground Level: +21.26 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
27/12									A		0.50	+21.26	0.00			Loose, dark brown, gravelly silty fine to coarse SAND. (FILL)
										Inspection Pit						
									B		1.00	+20.26	1.00		V	Extremely weak, dark brown spotted white, completely decomposed medium to coarse grained GRANITE. (silty fine to coarse SAND.)
27/12		Dry PM							C		1.50	+19.76	1.50		V	Extremely weak, dark brownish grey spotted white & black, completely decomposed medium to coarse grained GRANITE. (gravelly silty fine to coarse SAND.)
30/12		Dry AM									2.00					
				100					1							
									2		3.10					
								7,6,7,8,9 N=33	3							
									4		3.55					
											4.00	+17.26	4.00		IV	Very weak, brownish grey & grey spotted white & black, highly decomposed medium to coarse grained GRANITE. (sandy fine to coarse GRAVEL.)
				58	52	32	NI		T-120							
							9.4						4.68		III	From 4.68m to 5.00m: moderately strong, moderately decomposed.
	PX										5.00	+16.26	5.00		V	Extremely weak, light pinkish brown spotted white & black, completely decomposed medium to coarse grained GRANITE. (silty fine to coarse SAND.)
								6,6,7,8,13,18 N=46	5							
									6		5.45					
											5.60	+15.66	5.60		III	Moderately strong, light brownish grey & grey spotted white & black, moderately decomposed medium to coarse GRANITE with widely spaced & iron stained joints. (Corestone)
				100	100	97	3.2		T-120							
											6.45	+14.81	6.45		V	Extremely weak to very weak, light grey spotted white & black, completely decomposed medium to coarse grained GRANITE. (gravelly silty fine to coarse SAND.)
								5,10,15,32,33,38 N=118			6.50					
									7							
									8		6.95					
											7.00					
				100					9							
		3.60m PM							10		8.10					
30/12									11							
31/12		Dry AM						15,28,32,40,54,74 N=200	12		8.55					
											9.00	+12.26	9.00		IV	Very weak, brownish grey spotted white & black, highly decomposed medium to coarse grained GRANITE. (very sandy fine to coarse GRAVEL.)
				100					13			+11.26	10.00			

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 12-01-2015
Checked by: LIU
Date: 13-01-2015

Remarks:

Standpipe installed at depth of 18.70m.
Acoustic borehole televiewer(ABT) test carried out at depth of 17.20m to 24.69m.

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: DH1
Sheet: 2 of 3
Date: 27.12.2015 to 03.01.2015

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835534.02 N: 815180.42	Rock Corebit: T-120/T2-101
Machine Optr.: WAN		Hole Dia: PX/HX
Flushing Medium: WATER	Orientation: VERTICAL	Ground Level: +21.26 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								19,23,33,39,44,47 N=163	14		10.10	+11.26	10.00		IV	See sheet 1 of 3 for details.
									15							
									16		10.55					
											11.00					
				100												
									17							
								50/6mm,200/60mm N=200/60mm	18		12.10					
									19		12.22					
											13.00					
				100												
31/12		2.10m PM							20							
02/01		11.50m AM						50/40mm,200/60mm N=200/60mm	21		14.10					
	HX								22		14.20					
											14.85	+6.41	14.85		III	Moderately strong, light brownish grey & grey spotted white & black, moderately decomposed medium to coarse GRANITE . Joints are medium to widely, occasional closely to very closely spaced, extremely narrow to narrow, rough planar, rough undulating, iron stained, dipping at 10-30, 45-60 & occasional subvertical. 14.85m to 15.25m, 16.84m to 17.10m, 17.43m to 17.90m: moderately strong, moderately decomposed. From 15.25m to 15.67m, 17.10m to 17.43m: very weak, light brown, highly decomposed medium to coarse grained granite. (sandy fine to coarse gravel.) From 18.52m to 18.72m, 19.08m to 19.21m: no recovery, assumed to be highly decomposed.
				94	79	41	10			T2-101			15.25		IV	
							>20				15.67		15.67		III	
				91	91	91	1.7			T2-101						
											16.84					
				100	96	62	15.3			T2-101						
								50/70mm,200/60mm N=200/60mm			17.10		17.10		IV	
									23		17.23					
											17.43		17.43		III	
				100	100	100	2.8			T2-101						
											18.52		18.52		IV	Moderately strong to strong, light brownish grey & grey spotted white & black, slightly decomposed medium to coarse GRANITE . Joints are medium to closely, occasional very closely spaced, extremely narrow, rough planar, rough undulating, iron stained, dipping at 10-30, 45-60. From 20.70m to 21.20m, 22.40m to 22.55m: moderately strong, moderately decomposed.
											18.72		18.72		III	
				100	100	100	5.6			T2-101						
											19.08		19.08		IV	
											19.21	+2.05	19.21		II	
				100	100	100	2.1			T2-101						
												+1.26	20.00			

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 12-01-2015
Checked by: LIU
Date: 13-01-2015

Remarks:

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: DH1
Sheet: 3 of 3
Date: 27.12.2015 to 03.01.2015

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835534.02 N: 815180.42	Rock Corebit: T-120/T2-101
Machine Optr.: WAN		Hole Dia: PX/HX
Flushing Medium: WATER	Orientation: VERTICAL	Ground Level: +21.26 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
												+1.26	20.00		II	See sheet 2 of 3 for details.
										T2-101	20.45		20.70		III	
				98	98	90	13.3			T2-101	21.90		21.20		II	
02/01		1.60m PM														
03/01		11.40m AM		100	100	93				T2-101	23.34		22.40		III	
							1.3						22.55		II	
				100	100	100				T2-101	24.74	-3.48	24.74			End of hole at depth of 24.74m.
03/01																

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 12-01-2015
Checked by: LIU
Date: 13-01-2015

Remarks:

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: DH2
Sheet: 1 of 3
Date: 06.01.2015 to 09.01.2015

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835544.46 N: 815162.53	Rock Corebit: T2-101
Machine Optr.: WAN		Hole Dia: PX/HX
Flushing Medium: WATER	Orientation: VERTICAL	Ground Level: +21.15 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
06/01									A	Inspection Pit	0.50	+21.15	0.00			Loose, light greyish brown, gravelly silty fine to coarse SAND. (FILL)
									B		1.00	+20.15	1.00		V	Extremely weak, light yellowish brown & brown spotted white & black, completely decomposed medium to coarse grained GRANITE. (silty fine to coarse SAND.)
									C		1.50					
	PX			100					1		2.00					
									2		3.10					
								1,3,2,2,3,5 N=12	3		3.50					
									4		3.95					
				100					5		4.00					
									6		5.10					
								1,5,8,10,10,15 N=43	7		5.50					
06/01		1.60m PM							8		5.95					
07/01		Dry AM							9		6.00					
				100					10		7.10					
								3,7,11,15,16,17 N=59	11		7.50					
									12		7.95	+13.15	8.00		V	Extremely weak, light red spotted white & black, completely decomposed medium to coarse grained GRANITE. (silty fine to coarse SAND.)
	HX								13		8.00					
				100					14		9.10					
								2,6,10,15,18,21 N=64	15		9.50					
									16		9.95	+11.15	10.00			

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 12-01-2015
Checked by: LIU
Date: 13-01-2015

Remarks:
Standpipe installed at depth of 18.10m.
Acoustic borehole televiewer(ABT) test carried out at depth of 17.80m to 24.21m.

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: DH2
Sheet: 2 of 3
Date: 06.01.2015 to 09.01.2015

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835544.46 N: 815162.53	Rock Corebit: T2-101
Machine Optr.: WAN		Hole Dia: PX/HX
Flushing Medium: WATER	Orientation: VERTICAL	Ground Level: +21.15 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
											10.00	+11.15	10.00		V	See sheet 1 of 3 for details.
				100					17							
									18	●	11.10					
								4,6,11,18,28,38 N=95			11.50					
									19							
									20	●	11.95	+9.15	12.00		IV	Very weak, light greyish brown spotted white & black, highly decomposed medium to coarse grained GRANITE. (sandy fine to coarse GRAVEL.)
				100							12.00					
									21							
									22	●	12.70	+8.45	12.70		III	Very weak to moderately strong, dark greyish brown & brown spotted white & black, highly decomposed medium to coarse grained GRANITE. Joints are medium to very closely spaced, extremely narrow to narrow, rough planar, smooth planar, rough undulating, iron stained, kaolin coated, dipping at 20-30, 45-60 & 60-70. From 12.70m to 13.05m & 16.78m to 17.08m: moderately strong, moderately decomposed. From 17.08m to 17.60m: very weak, light brownish grey spotted white, highly decomposed medium to coarse grained granite. (sandy fine to coarse gravel.)
				100	82	61			T2-101				13.05		IV	
	HX						8.2				14.10					
				91	86	13			T2-101							
											15.52					
				86	82	10	>20		T2-101							
07/01		3.60m PM									16.68					
08/01		12.60m AM		88	80	38	NI		T2-101				16.78		III	
							10				17.08		17.08		IV	
								50/40mm,200/60mm N=200/60mm	23	●	17.20 17.30					
											17.60	+3.55	17.60		III	Moderately strong to strong, light brownish grey & grey spotted white & black, slightly decomposed medium to coarse grained GRANITE. Joints are medium to widely, occasional closely to very closely spaced, extremely narrow to tight, rough planar, rough undulating, iron stained, dipping at 10-20, 45-60 & 60-70.
				95	95	66	6		T2-101				17.80			
											18.60				II	From 17.60m to 17.80m: moderately weak, moderately decomposed. From 17.80m to 18.84m, 20.00m to 20.20m: moderately strong, moderately decomposed.. From 23.55m to 23.80m: strong, dark grey, slightly decomposed fine to medium grained granite.
				100	100	100			T2-101							
							3.3				19.07					
				100	100	92			T2-101							
												+1.15	20.00			

● Small disturbed sample
Large disturbed sample
SPT liner sample
U100 undisturbed sample
Mazier sample
P/S Piston sample

Water table
Standard Penetration Test
Permeability test
Piezometer tip
Standpipe tip
Vane shear test

Logged by: C.B. LEE
Date: 12-01-2015
Checked by: LIU
Date: 13-01-2015

Remarks:

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: DH2
Sheet: 3 of 3
Date: 06.01.2015 to 09.01.2015

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835544.46 N: 815162.53	Rock Corebit: T2-101
Machine Optr.: WAN		Hole Dia: PX/HX
Flushing Medium: WATER	Orientation: VERTICAL	Ground Level: +21.15 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
												+1.15	20.00		III	
													20.20		II	See sheet 2 of 3 for details.
										T2-101	20.51					
				100	100	83	10.0			T2-101	21.91					
08/01		2.60m PM														
09/01		11.80m AM		100	100	94	3.7			T2-101	23.35					
				100	100	93				T2-101	24.27					
09/01												-3.12	24.27			
																End of hole at depth of 24.27m.

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 12-01-2015
Checked by: LIU
Date: 13-01-2015

Remarks:

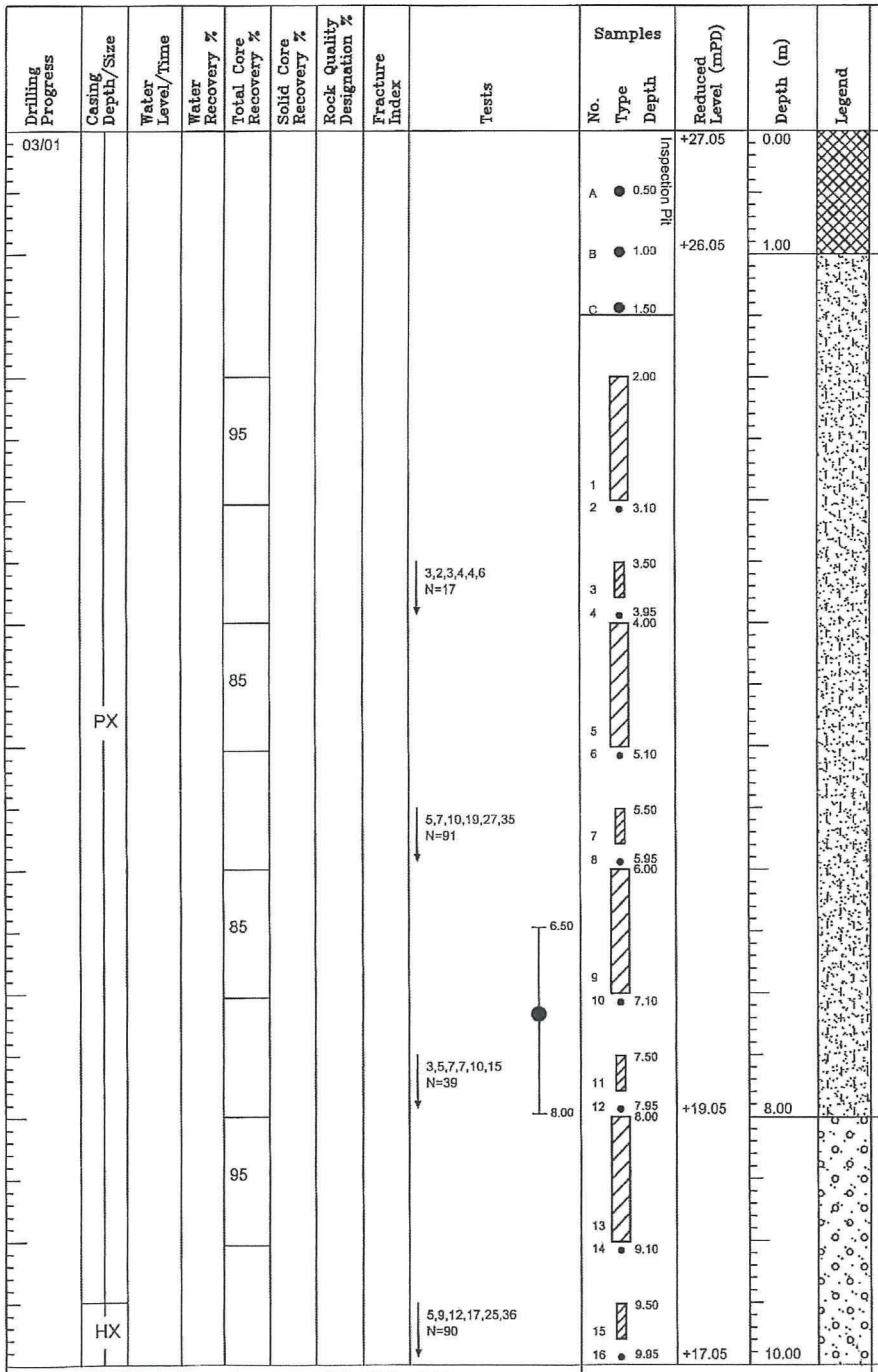
Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: DH3
Sheet: 1 of 3
Date: 03.01.2015 to 06.01.2015

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835531.50 N: 815160.32	Rock Corebit: T2-101
Machine Optr.: WAH		Hole Dia: PX/HX
Flushing Medium: WATER	Orientation: VERTICAL	Ground Level: +27.05 mPD



- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 12-01-2015
Checked by: LIU
Date: 13-01-2015

Remarks:

Constant head permeability test carried out at depth of 6.50m to 8.00m.
Acoustic borehole televiewer(ABT) test carried out at depth of 19.22m to 24.59m.

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: DH3
Sheet: 2 of 3
Date: 03.01.2015 to 06.01.2015

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835531.50 N: 815160.32	Rock Corebit: T2-101
Machine Optr.: WAH		Hole Dia: PX/HX
Flushing Medium: WATER	Orientation: VERTICAL	Ground Level: +27.05 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				95							10.00	+17.05	10.00		IV	See sheet 1 of 3 for details.
									17							
									18		11.10					
03/01		3.60m PM						50/50mm,200/70mm N=200/70mm								
05/01		03/01 Dry							19		11.50 11.95					
				90							12.00					
									20							
									21		13.10					
								50/40mm,200/60mm N=200/60mm	4		13.50 13.60	+13.45	13.60			
				100	61	0	>20		T2-101						III	Moderately strong, light greyish & pink spotted white & black, moderately decomposed medium to coarse grained GRANITE. Joints are medium to very closely spaced, extremely narrow to very narrow, rough planar, rough undulating, iron stained, dipping at 10-20, 45-60 & 60-70. From 15.41m to 15.60m & 18.18m to 18.30m: moderately weak, highly decomposed. From 15.09m to 15.41m: very weak, light pinkish brown, highly decomposed medium grained granite. (sandy fine to coarse gravel.)
				100	93	69	8.6				13.93					
	HX								T2-101							
											15.09		15.09			
								50/50mm,200/50mm N=200/50mm	22		15.20 15.30				IV	
							NI				15.41		15.41		III	
				86	77	23	10.7		T2-101							
											16.07					
				100	100	83	4.3		T2-101							
											17.48					
				96	91	15	14.6		T2-101							
							>20				18.58	+8.47	18.58			
								50/50mm,200/70mm N=200/70mm	23		18.70 18.82				IV	Very weak, light pinkish brown spotted white & black, highly decomposed medium to coarse grained GRANITE. (sandy fine to coarse GRAVEL.)
05/01		6.80m PM									19.22	+7.83	19.22			
06/01		19.20m Dry		100	100	59	16.1		T2-101						III	See sheet 3 of 3 for details.
				100	100	93	3.0				19.75	+7.05	20.00			

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 12-01-2015
Checked by: LIU
Date: 13-01-2015

Remarks:

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: DH3
Sheet: 3 of 3
Date: 03.01.2015 to 06.01.2015

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835531.50 N: 815160.32	Rock Corebit: T2-101
Machine Optr.: WAH		Hole Dia: PX/HX
Flushing Medium: WATER	Orientation: VERTICAL	Ground Level: +27.05 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
06/01										T2-101	20.74	+7.05	20.00		II	Moderately strong to strong, light grey spotted white & black, slighlty decomposed medium to coarse grained GRANITE. Joints are medium to widely, occasional closely to very closely spaced, extremely narrow to tight, rough planar, rough undulating, iron stained, chlorite coated dipping at 10-20, 45-60 & 60-70. From 19.22m to 20.00m: moderately strong, light greyish pink, moderately decomposed medium grained granite.
				100	100	100				T2-101	21.54					
				100	100	96				T2-101	22.44					
				100	100	83	10.6			T2-101	23.89					
				100	100	100	4.8			T2-101	24.68	+2.37	24.68			End of hole at depth of 24.68m.

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 12-01-2015
Checked by: LIU
Date: 13-01-2015

Remarks:

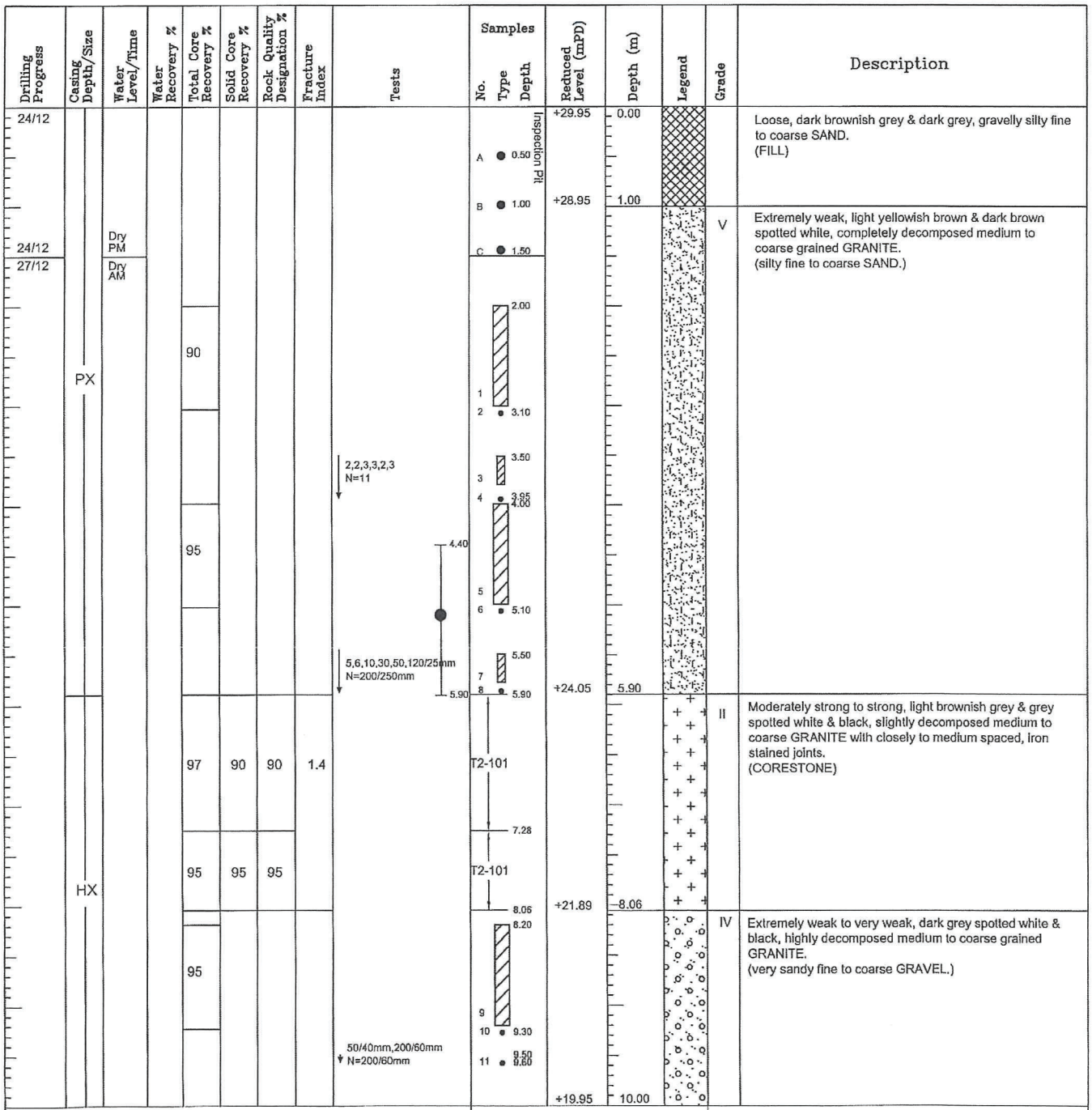
Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: DH4
Sheet: 1 of 3
Date: 24.12.2014 to 31.12.2014

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835524.98	Rock Corebit: T2-101
Machine Optr.: WAH	N: 815165.78	Hole Dia: PX/HX
Flushing Medium: WATER	Orientation: VERTICAL	Ground Level: +29.95 mPD



- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 05-01-2015
Checked by: LIU
Date: 06-01-2015

Remarks:

Constant head permeability test carried out at depth of 4.40m to 5.90m.
Piezometer installed at depth of 22.30m.
Acoustic borehole televiewer(ABT) test carried out at depth of 19.60m to 27.96m.

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: DH4
Sheet: 2 of 3
Date: 24.12.2014 to 31.12.2014

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835524.98 N: 815165.78	Rock Corebit: T2-101
Machine Optr.: WAH		Hole Dia: PX/HX
Flushing Medium: WATER	Orientation: VERTICAL	Ground Level: +29.95 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
									T2-101		10.14	+19.95	10.00		IV	See sheet 1 of 3 for details.
												+19.81	10.14		II	Strong, light grey spotted white & black, slightly decomposed medium to coarse GRANITE. Joints are widely, occasional very closely spaced, extremely narrow, rough planar, rough undulating, iron stained, dipping at 10-30. (CORESTONE)
				100	100	100	0.8		T2-101							
27/12		1.30m PM									11.10					
29/12		Dry AM		100	100	100			T2-101							From 13.77m to 13.87m: moderately strong, moderately decomposed.
											11.70					
				100	100	100			T2-101							
											12.36					
				100	100	97			T2-101							
											13.78	+16.08	13.87			
								50/30mm,200/40mm N=200/40mm	12	•	14.00 14.07				IV	Very weak, dark greyish brown spotted white & black, highly decomposed medium to coarse grained GRANITE. (sandy fine to coarse GRAVEL.)
29/12		4.60m PM									14.20					
30/12		12.00m AM		100					13							
	HX								14	•	14.80					
											15.13	+14.82	15.13			
				100	92	78	6.8		T2-101						III	Moderately strong, light greyish brown & dark brown spotted white & black, moderately decomposed medium to coarse GRANITE . Joints are medium to very closely spaced, extremely narrow, rough planar, rough undulating, iron stained, dipping at 10-20, 45-60. (CORESTONE)
											16.80	+13.51	16.44			
								50/50mm,200/70mm N=200/70mm	15	•	17.00 17.12				IV	Very weak, dark brownish grey spotted white & black, highly decomposed medium to coarse grained GRANITE. (sandy fine to coarse GRAVEL.) From 16.44m to 16.54m: very weak, highly decomposed with non-intact. From 19.61m to 19.65m: very weak to moderately weak, highly decomposed.
				0					16		18.70 18.80					
								50/30mm,200/40mm N=200/40mm	17	•	19.00 19.07					
											19.61	+10.34	19.61			
				100	100	97	1.8		T2-101			+9.95	20.00		II	See sh eet 3 of 3 for details.

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 05-01-2015
Checked by: LIU
Date: 06-01-2015

Remarks:

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: DH4
Sheet: 3 of 3
Date: 24.12.2014 to 31.12.2014

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835524.98	Rock Corebit: T2-101
Machine Optr.: WAH	N: 815165.78	Hole Dia: PX/HX
Flushing Medium: WATER	Orientation: VERTICAL	Ground Level: +29.95 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
												+9.95	20.00		II	Moderately strong to strong, light grey spotted white & black, slightly decomposed medium to coarse GRANITE . Joints are medium to closely spaced, extremely narrow, rough planar, rough undulating, iron stained, dipping at 10-30, 45-60 & 60-70. From 22.23m to 22.46m: no recovery, assumed to be highly decomposed.
	HX			83	83	82				T2-101	21.11					
										T2-101						
							NA				22.46	+7.49	22.23 22.46		IV	
30/12		3.80m PM														Wash boring, assumed to be highly decomposed.
											22.83	+7.12	22.83			
31/12		12.10m AM		100	98	76	5.2			T2-101	23.61		23.10		III II	Moderately strong to strong, light grey spotted white & black, slightly decomposed medium to coarse GRANITE . Joints are medium to widely, occasional closely to very closely spaced, extremely narrow, rough planar, rough undulating, iron stained, dipping at 10-30, 45-60. From 22.83m to 23.10m, 25.80m to 26.70m: moderately strong, moderately decomposed.
				100	100	100	2.6			T2-101	25.13					
				100	100	100				T2-101			25.80		III	
											26.53		26.70		II	
				100	100	100	2.0			T2-101						
31/12											28.05	+1.90	28.05			
																End of hole at depth of 28.05m.

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 05-01-2015
Checked by: LIU
Date: 06-01-2015

Remarks:

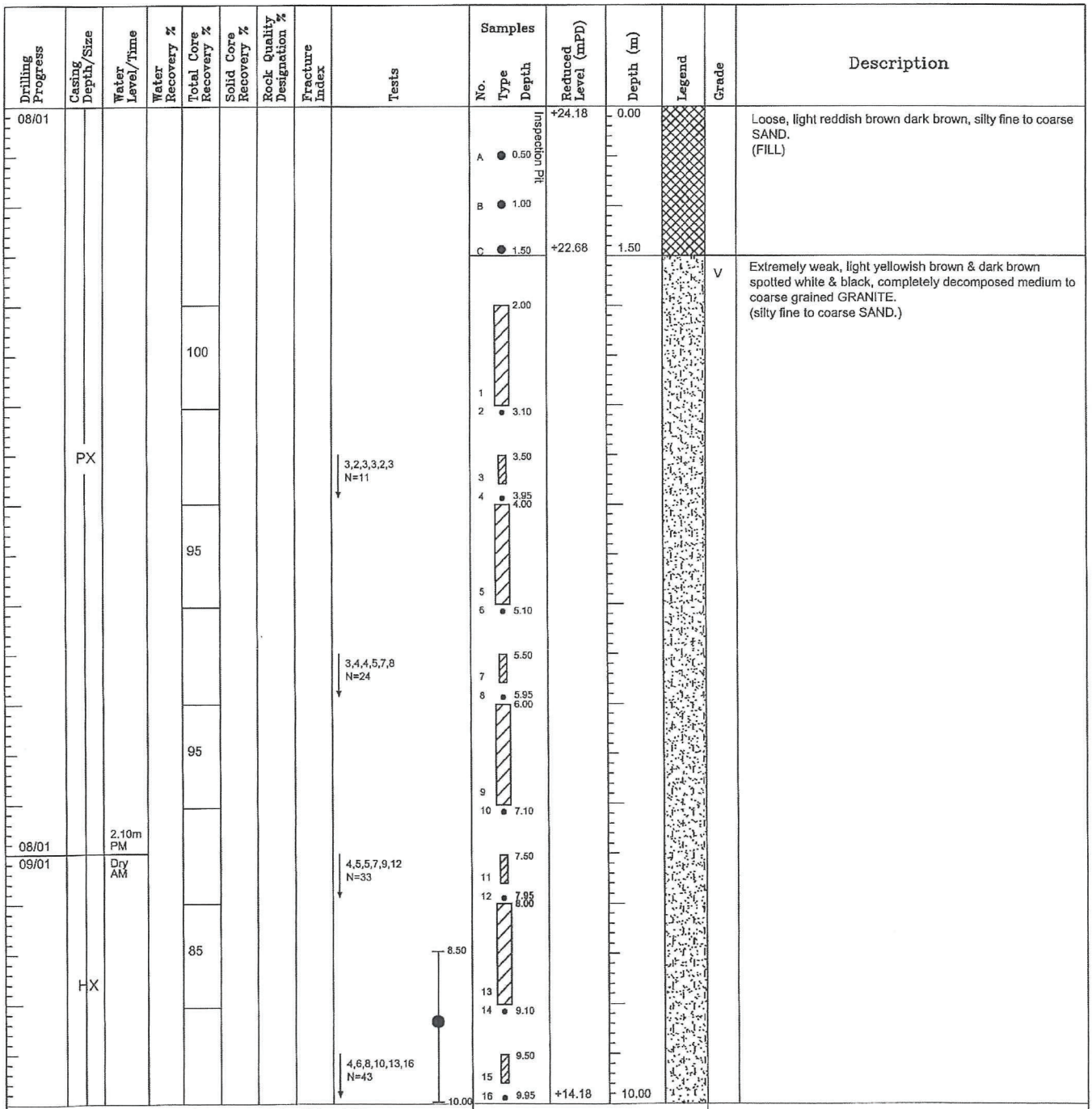
Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: DH5
Sheet: 1 of 3
Date: 08.01.2015 to 10.01.2015

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835537.88 N: 815156.19	Rock Corebit: T2-101
Machine Optr.: WAH		Hole Dia: PX/HX
Flushing Medium: WATER	Orientation: VERTICAL	Ground Level: +24.18 mPD



- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 12-01-2015
Checked by: LIU
Date: 13-01-2015

Remarks:

Constant head permeability test carried out at depth of 8.50m to 10.00m.
Standpipe installed at depth of 17.50m.
Acoustic borehole televiewer(ABT) test carried out at depth of 18.00m to 22.96m.

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: DH5
Sheet: 2 of 3
Date: 08.01.2015 to 10.01.2015

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835537.88 N: 815156.19	Rock Corebit: T2-101
Machine Optr.: WAH		Hole Dia: PX/HX
Flushing Medium: WATER	Orientation: VERTICAL	Ground Level: +24.18 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
											10.00	+14.18	10.00		V	See sheet 1 of 3 for details.
				90					17							
									18	●	11.10					
								4,8,10,13,16,19 N=58			11.50					
									19							
									20	●	11.85					
											12.00	+12.18	12.00		IV	Very weak, light yellowish brown spotted white & black, highly decomposed medium to coarse grained GRANITE. (sandy fine to coarse GRAVEL.)
				90												
									21							
									22	●	13.10					
											13.39	+10.79	13.39		III	Moderately strong, light brownish grey & grey spotted white & black, moderately decomposed medium to coarse grained GRANITE. Joints are medium to very closely spaced, extremely narrow to very narrow, rough planar, rough undulating, iron stained, kaolin coated, dipping at 10-20, 45-60 & subvertical. From 15.29m to 15.80m: very weak, dark grey spotted white, highly decomposed medium to coarse grained granite. (sandy fine to coarse gravel.)
	HX			100	96	47	10.0		T2-101							
											13.99					
				100	65	65	4.2		T2-101							
											15.29		15.29		IV	
								50/30mm,200/60mm N=200/60mm	23	●	15.40 15.50					
											15.80		15.80		III	
				61	55	40	9.5		T2-101			+7.75	16.43		IV	Very weak, dark brown spotted white & black, highly decomposed medium to coarse grained GRANITE. (sandy fine to coarse GRAVEL.)
							NR									
							>20				16.63		16.83		III	
				32	32	32	NR		T2-101				16.98		IV	From 16.43m to 16.83m, 16.98m to 17.30m & 17.84m to 17.98m: no recovery, assumed to be highly decomposed. From 16.83m to 16.98m: moderately strong, moderately decomposed.
											17.30		17.30			
								50/50mm,200/70mm N=200/70mm	24	●	17.40 17.52					
											17.74					
09/01		2.60m PM		42	21	0	NI		T2-101				17.84			
10/01		11.60m AM					NR				17.98	+6.20	17.98		IV	
				100	100	58	4.2		T2-101						III	Moderately strong to strong, light pinkish grey& grey spotted white & black, moderately decomposed medium to coarse grained GRANITE. Joints are medium to closely, occasional closely spaced, extremely narrow, rough planar, rough undulating, iron stained, chlorite coated dipping at 10-20, 45-60 & occasional subvertical. From 20.30m to 23.01m: strong, slightly decomposed.
											19.18					
				100	100	69	11.3		T2-101							
												+4.18	20.00			

- ● Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 12-01-2015
Checked by: LIU
Date: 13-01-2015

Remarks:

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: DH5
Sheet: 3 of 3
Date: 08.01.2015 to 10.01.2015

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835537.88 N: 815156.19	Rock Corebit: T2-101
Machine Optr.: WAH		Hole Dia: PX/HX
Flushing Medium: WATER	Orientation: VERTICAL	Ground Level: +24.18 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
									T2-101		20.21	+4.18	20.00		III	See sheet 2 of 3 for details.
													20.30		II	
				100	100	92	3.4		T2-101							
											21.53					
				100	100	100	4.7		T2-101							
10/01											23.01	+1.17	23.01			
																End of hole at depth of 23.01m.

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 12-01-2015
Checked by: LIU
Date: 13-01-2015

Remarks:

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: HC1
Sheet: 1 of 1
Date: 29.12.2014 to 29.12.2014

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835529.58 N: 815175.28	Rock Corebit: 4"
Machine Optr.: KO		Hole Dia: HX
Flushing Medium: WATER	Orientation: HORIZONTAL	Ground Level: +22.21 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
29/12	HX			100						4"	0.35	+22.21	0.00			Red, Brick fragments. (Brick Wall)
				92						4"		+21.86	0.35			From 0.00m to 0.06m: grey, concrete. (Brick wall surface)
									1	●	1.00 1.10	+21.21	1.00			Angular COBBLE & coarse gravel sized concrete & brick fragments. (FILL)
									2	●	1.50 1.60	+20.71	1.50			Loose, dark brown, clayey silty fine to coarse SAND with some angular fine to coarse gravel. (FILL)
29/12									3	●	2.00 2.10	+20.11	2.10			Loose, dark grey, very clayey fine to coarse SAND with some angular fine to coarse gravel. (FILL)
																End of hole at depth of 2.10m.

- ● Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 31-12-2014
Checked by: LIU
Date: 31-12-2014

Remarks:

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: HC2
Sheet: 1 of 1
Date: 30.12.2014 to 30.12.2014

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835532.96 N: 815171.88	Rock Corebit: 4"
Machine Optr.: KO		Hole Dia: HX
Flushing Medium: WATER	Orientation: HORIZONTAL	Ground Level: +22.14 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
30/12	HX			100						4"	0.40	+22.14	0.00			Red, Brick fragments. (Brick Wall)
				100							0.60	+21.74	0.40			From 0.00m to 0.06m: grey, concrete. (Brick wall surface)
				93						4"	1.10	+21.54	0.60			Grey, concrete. (Concrete wall?)
				91						3"	1.60					Angular COBBLE & coarse gravel sized concrete & brick fragments. (FILL)
									1		1.70					
				69						3"	2.00	+20.14	2.00			Loose, dark brown, clayey fine to coarse SAND with some angular fine to coarse gravel. (FILL)
29/12									2		2.10	+20.04	2.10			End of hole at depth of 2.10m.

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 31-12-2014
Checked by: LIU
Date: 31-12-2014

Remarks:

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: HC3
Sheet: 1 of 1
Date: 02.01.2015 to 02.01.2015

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835534.31 N: 815170.54	Rock Corebit: 4"
Machine Optr.: KO		Hole Dia: HX
Flushing Medium: WATER	Orientation: HORIZONTAL	Ground Level: +21.74 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
02/01	HX			94						4"	0.40	+21.74	0.00			Red, Brick fragments. (Brick Wall)
				42						4"	1.00	+21.34	0.40			From 0.00m to 0.06m: grey, concrete. (Brick wall surface)
				32						4"	1.50	+20.74	1.00			Angular COBBLE & coarse gravel sized concrete & brick fragments. (FILL)
									1		1.60	+20.24	1.50			Angular COBBLE & coarse gravel sized concrete, rock & refuse fragments. (FILL)
02/01									2		2.00 2.20	+19.54	2.20			Loose, dark greyish brown, silty gravelly fine to coarse SAND. (FILL)
																End of hole at depth of 5.20m.

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 05-01-2015
Checked by: LIU
Date: 06-01-2015

Remarks:

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: HC4
Sheet: 1 of 1
Date: 31.12.2014 to 31.12.2014

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835523.80 N: 815167.87	Rock Corebit: 4"
Machine Optr.: KO		Hole Dia: HX
Flushing Medium: WATER	Orientation: HORIZONTAL	Ground Level: +29.18 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
31/12	HX			100						4"	0.38	+29.18	0.00			Angular BOULDER sized moderately decomposed granite. (MASONRY WALL)
				79						4"	1.10	+28.08	1.10			Loose, dark brown, clayey silty fine to coarse SAND. (FILL)
									1	1.10 1.20						
									2	1.50 1.60						Extremely weak, light pinkish brown spotted white & black, completely decomposed medium to coarse grained GRANITE. (silty fine to coarse SAND.)
31/12											2.00	+27.18	2.00		V	
									3	2.20		+26.98	2.20			End of hole at depth of 2.20m.

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 05-01-2015
Checked by: LIU
Date: 06-01-2015

Remarks:

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: HC5
Sheet: 1 of 1
Date: 31.12.2014 to 31.12.2014

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835532.17 N: 815180.04	Rock Corebit: 4"
Machine Optr.: KO		Hole Dia: HX
Flushing Medium: WATER	Orientation: HORIZONTAL	Ground Level: +20.24 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
31/12	HX			100						4"	0.13	+20.24	0.00			Red, Brick fragments.
												+20.11	0.13		V	(Brick Wall)
									1	●	0.30 0.40					From 0.00m to 0.06m: grey, concrete. (Brick wall surface)
																Extremely weak, light yellowish brown spotted white & black, completely decomposed medium to coarse grained GRANITE.
31/12									2	●	0.90 1.08	+19.16	4.08			(silty fine to coarse SAND.)
																End of hole at depth of 1.80m.

- ● Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- V Vane shear test

Logged by: C.B. LEE
Date: 05-01-2015
Checked by: LIU
Date: 06-01-2015

Remarks:

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: ICH1
Sheet: 1 of 1
Date: 27.12.2014 to 27.11.2014

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835529.15 N: 815175.71	Rock Corebit: 4"
Machine Optr.: KO		Hole Dia: HX
Flushing Medium: WATER	Orientation: 45° DOWNWARD	Ground Level: +21.50 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
27/12				100						4"		+21.50	0.00			Red, Brick fragments. (Brick Wall)
									1	●	0.60 0.70	+20.90	0.60			From 0.00m to 0.06m: Grey, concrete. (Brick wall surface)
	HX								2	●	1.00 1.10	+20.50	1.00		V	Loose, dark greyish brown, silty fine to coarse SAND. (FILL)
									3	●	1.50 1.60					Extremely weak to very weak, light pinkish brown spotted white & black, completely decomposed medium grained GRANITE. (gravelly silty fine to coarse SAND.)
27/12									4	●	2.00 2.10	+19.50 +19.40	2.00 2.10		IV	Very weak, dark brownish grey spotted white & black, highly decomposed medium grained GRANITE. (Very sandy fine to coarse GRAVEL.)
																End of hole at depth of 2.10m.

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 26-12-2014
Checked by: LIU
Date: 27-12-2014

Remarks:

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: ICH2
Sheet: 1 of 1
Date: 29.12.2014 to 30.12.2014

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835532.54 N: 815172.31	Rock Corebit: 4"
Machine Optr.: KO		Hole Dia: HX
Flushing Medium: WATER	Orientation: 45° DOWNWARD	Ground Level: +21.48 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
29/12	HX			100						4"		+21.48	0.00			Red, Brick fragments. (Brick Wall)
											0.60	+20.88	0.60			From 0.00m to 0.06m: grey, concrete. (Brick wall surface)
									1	•	0.70				V	Extremely weak, light yellowish brown spotted white & black, completely decomposed medium grained GRANITE. (silty gravelly fine to coarse SAND.)
									2	•	1.00 1.10					
29/12									3	•	1.50 1.60					
30/12											1.72	+19.76	1.72			
30/12				100	100	82	8.6			4"	2.07	+19.41	2.07		III	Moderately strong, light grey spotted white & black, moderately decomposed medium grained GRANITE. Joints are medium to closely spaced, extremely narrow, rough planar, rough undulating, iron stained, dipping at 10-20, 35-60. (Corestone)
																End of hole at depth of 2.07m.

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 31-12-2014
Checked by: LIU
Date: 31-12-2014

Remarks:

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: ICH3
Sheet: 1 of 1
Date: 27.12.2014 to 27.12.2014

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835536.78 N: 815168.06	Rock Corebit: 4"
Machine Optr.: KO		Hole Dia: HX
Flushing Medium: WATER	Orientation: 45° DOWNWARD	Ground Level: +21.42 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
27/12				100						4"		+21.42	0.00			Red, Brick fragments. (Brick Wall)
											0.60	+20.82	0.60			From 0.00m to 0.60m: Grey, concrete. (Brick wall surface)
	HX								1	•	0.70 0.80				V	Extremely weak, light yellowish brown spotted white & black, completely decomposed medium grained GRANITE. (gravelly silty fine to coarse SAND.)
									2	•	1.00 1.10					
									3	•	1.50 1.60					
27/12									4	•	2.00 2.10	+19.32	2.10			End of hole at depth of 2.10m.

- ● Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 26-12-2014
Checked by: LIU
Date: 27-12-2014

Remarks:

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: ICH4
Sheet: 1 of 1
Date: 02.01.2015 to 02.01.2015

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835524.18 N: 815167.56	Rock Corebit: 4"
Machine Optr.: KO		Hole Dia: HX
Flushing Medium: WATER	Orientation: 45° DOWNWARD	Ground Level: +28.91 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
02/01	HX			100						4"	0.35	+28.91	0.00			BOULDER sized moderately decomposed granite. (MASONARY WALL)
				100						4"	0.75	+28.56	0.35			Grey, concrete. (Concrete Wall)
									1	●	1.00 1.10	+28.16	0.75			Loose, dark brown, clayey silty fine to coarse SAND with some angular fine to coarse gravel sized brick fragments & wooden fragments. (FILL)
									2	●	1.50 1.60					
02/01									3	●	2.00 2.10	+26.81	2.10			End of hole at depth of 2.10m.

- ● Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- Vane shear test

Logged by: C.B. LEE
Date: 05-01-2015
Checked by: LIU
Date: 06-01-2015

Remarks:

Terraform Engineering (International) Ltd.

DRILLHOLE RECORD

Contract No.: _____
Hole No.: ICH5
Sheet: 1 of 1
Date: 03.01.2015 to 03.01.2015

Project: Ground Investigation Works for Schooner Street Development at I.L.9048

Method: ROTARY	Co-ordinates: E: 835527.17 N: 815165.14	Rock Corebit: 4"
Machine Optr.: KO		Hole Dia: HX
Flushing Medium: WATER	Orientation: 45° DOWNWARD	Ground Level: +27.59 mPD

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	Rock Quality Designation %	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
03/01				100						4"		+27.59	0.00			BOULDER sized moderately decomposed granite. (MASONARY WALL)
											0.45	+27.14	0.45			
				100						4"						Grey, concrete. (Concrete Wall)
											0.82	+26.77	0.82			
	HX								1	•	1.00 1.10				V	Extremely weak, light pinkish brown spotted white & black, completely decomposed medium to coarse grained GRANITE. (silty fine to coarse SAND.)
									2	•	1.50 1.60					
03/01									3	•	2.10 2.30	+25.29	2.30			
																End of hole at depth of 2.30m.

- ● Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water table
- Standard Penetration Test
- Permeability test
- Piezometer tip
- Standpipe tip
- V Vane shear test

Logged by: C.B. LEE
Date: 05-01-2015
Checked by: LIU
Date: 06-01-2015

Remarks:

中國海外房屋工程有限公司
CHINA OVERSEAS BUILDING CONSTRUCTION LTD.

TECHNICAL SUBMISSION FORM

Project	Hopewell Centre II Stage of Site Formation & Foundation
Ref. No.	**COBC/BGZ/B5/2017/03935**
Date	**09 May 2017**
Previous Ref. No.	**N.A**
To / Attn	Hyder / Mr. Brian Ieong
Subject	**Submission of Preliminary Predrilling record for PD1 and PD2 at Nam Koo Terrace**
Anticipated date of response	**N.A.**

Received by WMKY

We would like to submit the following item/items

☐ For Approval ☑ For Record ☐ Others

For and on behalf of COBC Ltd.
Chris Tsang (Project Manager)

cc w/e

JPO	☐	☑	Mr. Bruce Chan / Mr. Jeffrey Kam / Mr. Vincent Chu
WMKY	☐	☑	Mr. Peter Mak
AECOM	☐	☑	Mr. Sammy Ng / Mr. Alan Yuen
Hyder	☐	☑	Ms. Deborah Lui, Mr. Ellis Lam
Site	☐	☑	____
H.O.	☑	☐	____
	☐	☐	____
	☐	☐	____

Material / Work Description *		**Predrilling**
Location		Nam Koo Terrace
Brand Name		N.A
Model / Reference No. *		N.A.
Country of Origin		N.A
Manufacturer / Supplier Name *		N.A
Others (Color / Pattern, etc.) *		N.A
Material / Work Reference *		N.A
Specification Reference		N.A
Related Dwg. / A.I. Ref. *		991051/RW001
Related BQ Reference		N.A
Submission Attachment		N.A
Sample	☐	N.A
Catalogue / Technical Data *	☑	Preliminary Drillhole Record
Test Report / Certificate *	☐	N.A.
Equipment Schedule	☐	N.A.
Method Statement	☐	N.A.
Installation Details	☐	N.A
Job Reference	☐	N.A

Remarks
-

Review Status / Comment

RESPONSE TO TECHNICAL SUBMISSION

Date

Comments

Replied by SE / Date

Replied by Architect / Date

Replied by / Date

For and on behalf of
Hyder

cc w/e

JPO	☐	☐	Mr. Bruce Chan / Mr. Jeffrey Kam / Mr. Vincent Chu
WMKY	☐	☐	____
AECOM	☐	☐	____
Hyder	☐	☐	____
Site	☐	☐	____
H.O	☐	☐	____
	☐	☐	____

Legend: A (No objection)
B (No objection, subject to comments as noted)
C (Amendment & resubmission required)
D (Rejected & resubmission required)

☐ w/e

CT/KW/hwc

WING SHING CAISSON & FOUNDATION LTD.

DRILLHOLE RECORD

JOB NO.:
HOLE NO.: PD1
SHEET: 1 OF 3
DATE : 27/4/17 TO 29/4/17

PROJECT: Hopewell Centre II Development Hong Kong (Nam Koo Terrace)

METHOD : ROTARY	CO-ORDINATES	ROCK COREBIT: T2-101
MACHINE & NO.: XY-2B	E 835531.256 N 815138.426	HOLE DIA.: PX/HX
FLUSHING MEDIUM : WATER	ORIENTATION : VERTICAL	GROUND LEVEL : +34.25 mPD.

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	R. Q. D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Zone	Description
27/4	Px									+34.25	0.00				Wash boring
	3.50 Px														
	Hx			96					T2-101 3.50 3.96	+30.75 +30.29	3.50 3.96				Light greyish brown and pink, angular BOULDER and COBBLE sized rock fragments. (FILL)
															Wash boring
	Hx										10				

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water table
- Standard penetration test
- Permeability test
- Piezometer tip
- Standpipe

LOGGED Poon Leung
DATE 4/5/17
CHECKED M. Law
DATE 5/5/17

REMARKS

WING SHING CAISSON & FOUNDATION LTD.

DRILLHOLE RECORD

JOB NO.:
HOLE NO.: PD1
SHEET: 2 OF 3
DATE: 27/4/17 TO 29/4/17

PROJECT: Hopewell Centre II Development Hong Kong (Nam Koo Terrace)

METHOD : ROTARY	CO-ORDINATES	ROCK COREBIT: T2-101
MACHINE & NO.: XY-2B	E 835531.256 N 815138.426	HOLE DIA.: PX/HX
FLUSHING MEDIUM: WATER	ORIENTATION: VERTICAL	GROUND LEVEL : +34.25 mPD.

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	R. Q. D.	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level	Depth (m)	Legend	Grade	Zone	Description
	Hx												10				Wash boring
	15.41 Hx										15.41	+18.84	15.41				
				100	100	100				T2-101	15.85						Strong, greyish pink, spotted with black, slightly decomposed coarse grained GRANITE with widely to very widely spaced, rough planar, very narrow to extremely narrow, iron stained joints, dipping at 0°f-10° & 10°-20°.
				100	100	100				T2-101							
				100	100	100	0.9			T2-101	17.22				II		
				100	100	100				T2-101	18.52						
				100	100	100				T2-101	19.67		20				

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water table
- Standard penetration test
- Permeability test
- Piezometer tip
- Standpipe

LOGGED Poon Leung
DATE 4/5/17
CHECKED M. Law
DATE 5/5/17

REMARKS

WING SHING CAISSON & FOUNDATION LTD.

DRILLHOLE RECORD

JOB NO.:
HOLE NO.: PD1
SHEET: 3 OF 3
DATE: 27/4/17 TO 29/4/17

PROJECT: Hopewell Centre II Development Hong Kong (Nam Koo Terrace)

METHOD : ROTARY	CO-ORDINATES E 835531.256 N 815138.426	ROCK COREBIT: T2-101
MACHINE & NO.: XY-2B		HOLE DIA.: PX/HX
FLUSHING MEDIUM: WATER	ORIENTATION: VERTICAL	GROUND LEVEL : +34.25 mPD.

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	R. Q. D.	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level	Depth (m)	Legend	Grade	Zone	Description
				100	100	100	0.9		T2-101		20.72	+13.53	20		II		As sheet 2 of 3
29/4													20.72				End of hole at 20.72m.

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water table
- Standard penetration test
- Permeability test
- Piezometer tip
- Standpipe

LOGGED Poon Leung
DATE 4/5/17
CHECKED M. Law
DATE 5/5/17

REMARKS

WING SHING CAISSON & FOUNDATION LTD.

DRILLHOLE RECORD

JOB NO.:
HOLE NO.: PD2
SHEET: 1 OF 3
DATE : 22/4/17 TO 25/4/17

PROJECT: Hopewell Centre II Development Hong Kong (Nam Koo Terrace)

METHOD : ROTARY	CO-ORDINATES	ROCK COREBIT: T2-101
MACHINE & NO.: XY-2B	E 835536.096 N 815138.085	HOLE DIA.: PX/HX
FLUSHING MEDIUM: WATER	ORIENTATION: VERTICAL	GROUND LEVEL : +33.55 mPD.

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	R. Q. D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Zone	Description
22/4	Px									+33.55	0.00				Wash boring
	4.00 Px / Hx														
	Hx										10				

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water table
- Standard penetration test
- Permeability test
- Piezometer tip
- Standpipe

LOGGED Poon Leung
DATE 4/5/17
CHECKED M. Law
DATE 5/5/17

REMARKS

WING SHING CAISSON & FOUNDATION LTD.

DRILLHOLE RECORD

JOB NO.:
HOLE NO.: PD2
SHEET: 2 OF 3
DATE: 22/4/17 TO 25/4/17

PROJECT: Hopewell Centre II Development Hong Kong (Nam Koo Terrace)

METHOD : ROTARY	CO-ORDINATES	ROCK COREBIT: T2-101
MACHINE & NO.: XY-2B	E 835536.096 N 815138.085	HOLE DIA.: PX/HX
FLUSHING MEDIUM: WATER	ORIENTATION: VERTICAL	GROUND LEVEL : +33.55 mPD.

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	R. Q. D.	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level	Depth (m)	Legend	Grade	Zone	Description
	Hx												10				Wash boring
	17.52 Hx			97	97	93	2.0			T2-101	17.52	+16.03	17.52		II		Strong, greyish pink, spotted with black, slightly decomposed coarse grained GRANITE with medium and widely spaced, rough planar, very narrow to extremely narrow, iron stained joints, dipping at 0°-10°, 20°-30° & 40°-50°.
				100	100	100				T2-101	19.07		20				

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water table
- Standard penetration test
- Permeability test
- Piezometer tip
- Standpipe

LOGGED Poon Leung
DATE 4/5/17
CHECKED M. Law
DATE 5/5/17

REMARKS

WING SHING CAISSON & FOUNDATION LTD.

DRILLHOLE RECORD

JOB NO.:
HOLE NO.: PD2
SHEET: 3 OF 3
DATE : 22/4/17 TO 25/4/17

PROJECT: Hopewell Centre II Development Hong Kong (Nam Koo Terrace)

METHOD : ROTARY	CO-ORDINATES	ROCK COREBIT: T2-101
MACHINE & NO.: XY-2B	E 835536.096 N 815138.085	HOLE DIA.: PX/HX
FLUSHING MEDIUM: WATER	ORIENTATION: VERTICAL	GROUND LEVEL : +33.55 mPD.

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	R. Q. D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Zone	Description
				100	100	100	2.0		T2-101		20				As sheet 2 of 3
				100	100	100	3.4		T2-101 20.57 20.79						
				100	92	92			T2-101				II		
									21.45						
25/4				100	100	100	1.4		T2-101						
									22.85	+10.70	22.85				End of hole at 22.85m.

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water table
- Standard penetration test
- Permeability test
- Piezometer tip
- Standpipe

LOGGED Poon Leung
DATE 4/5/17
CHECKED M. Law
DATE 5/5/17

REMARKS

JOB NO.	TFGS251/2000	**DRILLHOLE RECORD**	Terraform-FGS
HOLE NO.	BH1P		
SHEET	1 of 3		
DATE from	03/05/2000 to 06/05/2000		

PROJECT No. 55 Ship Street, Wanchai, I.L.2140

METHOD Rotary	CO-ORDINATES E 835,512.56 N 815,122.94	CONTRACT NO.
RIG NO. R-4		ROCK CORE BIT T2101
FLUSHING MEDIUM	ORIENTATION Vertical	GROUND-LEVEL +47.12 mP.D.

Drilling Progress	Casing size/ Depth (m)	Water Level/Time	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
03/05/2000	PX								INSPECTION PIT					Loose to medium dense, greyish brown, clayey SILT with occasional, subangular to subrounded, fine to medium gravel sized rock fragments. (FILL)
	PX 3.80 HX			85						43.32	3.80			Subangular to subrounded, COBBLE sized, occasionally gravel sized, fragments of moderately strong to strong, pinkish grey granite and concrete. (EXISTING WALL)
				0						42.57	4.55		V	Extremely weak, greyish brown spotted with black, completely decomposed medium-grained GRANITE. (Silty SAND with occasional, rock fragments)
				0						41.32	5.80			
				100	100	100	2.1			40.37	6.75		III/II	Moderately strong to strong, pinkish grey, moderately to slightly decomposed, medium-grained GRANITE. (CORESTONE) Joints are widely spaced, narrow to very narrow, rough undulating, dipping at 10° to 20° and 50° to 60°
		6.32m at 18:00 Dry at 08:00											V	Extremely weak, greyish to yellowish brown, spotted with black, completely decomposed medium-grained GRANITE. (Silty SAND with occasional rock fragments)
03/05/2000 04/05/2000				90										
				180										

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

LOGGED W.K. Ngan
DATE 08/05/2000
CHECKED C.P. Hamilton
DATE 16/05/2000

REMARKS

1. Inspection pit 1.50m deep.
2. Standpipe installed at depth 18.64m.

JOB NO.	TFGS251/2000	**DRILLHOLE RECORD**	Terraform-FGS
HOLE NO.	BH1P		
SHEET	2 of 3		
DATE from	03/05/2000 to 06/05/2000		

PROJECT No. 55 Ship Street, Wanchai, I.L.2140

METHOD Rotary	CO-ORDINATES E 835,512.56 N 815,122.94	CONTRACT NO.
RIG NO. R-4		ROCK CORE BIT T2101
FLUSHING MEDIUM	ORIENTATION Vertical	GROUND-LEVEL +47.12 mP.D.

Drilling Progress	Casing size/ Depth (m)	Water Level/Time	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
														SAME AS SHEET 1 OF 3.
				100	88	85	N.I. 2.1			34.92	12.20		III	Strong, pinkish grey, slightly decomposed medium-grained GRANITE. Joints are closely spaced, very narrow, rough undulating, iron stained, dipping at 10° to 20°. From 12.20m to 12.35m: Moderately decomposed.
										34.77	12.35		II	
		11.93m at 18:00 Dry at 08:00								33.82	13.30		V	Extremely weak, yellowish to pinkish brown, completely decomposed medium-grained GRANITE. (Silty SAND with fine to coarse gravel sized of rock fragment.)
	HX 19.14				93	85	3.4			27.98	19.14		III	Strong, pinkish grey, slightly decomposed medium-grained GRANITE. Joints are medium spaced, very narrow to extremely narrow, rough undulating, iron stained, dipping at 20° to
										27.58	19.54		II	

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U75 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Impression Packer Survey
- Standard Penetration Test
- Permeability Test
- Piezometer Tip
- Standpipe Tip
- In-situ Vane Shear Test

LOGGED W.K. Ngan
DATE 06/05/2000
CHECKED C.P. Hamilton
DATE 16/05/2000

REMARKS

JOB NO.	TFGS251/2000	**DRILLHOLE RECORD**	Terraform-FGS
HOLE NO.	BH1P		
SHEET	3 of 3		
DATE from	03/05/2000 to 06/05/2000		

PROJECT	No. 55 Ship Street, Wanchai, I.L.2140	
METHOD Rotary	CO-ORDINATES E 835,512.56 N 815,122.94	CONTRACT NO.
RIG NO. R-4		ROCK CORE BIT T2101
FLUSHING MEDIUM	ORIENTATION Vertical	GROUND-LEVEL +47.12 mP.D.

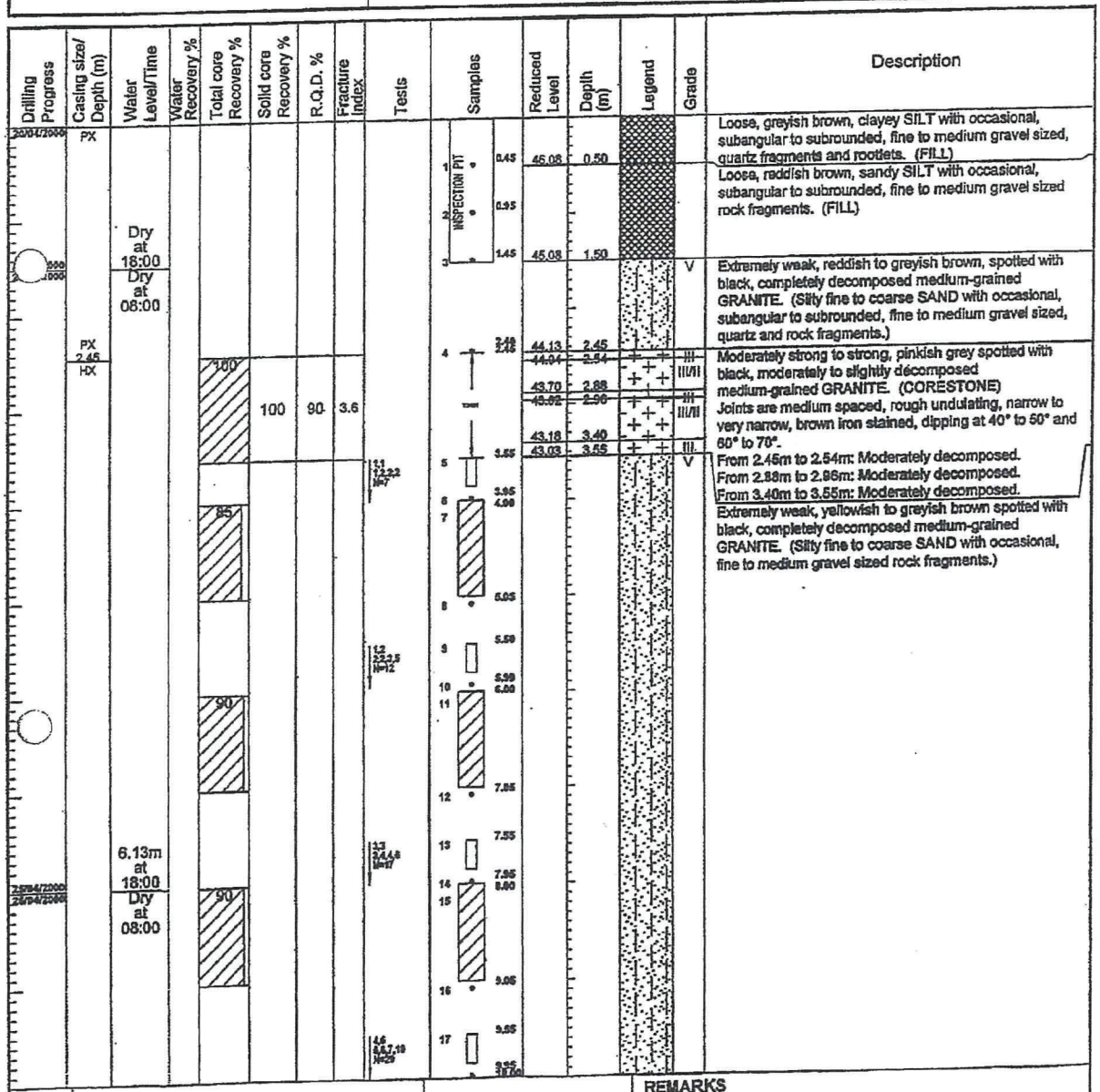
Drilling Progress	Casing size/ Depth (m)	Water Level/Time	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
				100	100	100	0.0		20.30					30° and 40° to 50°. From 19.14m to 19.54m: Moderately decomposed.
				100	100	89	2.9		21.80					From 22.59m to 24.18m: Fine-grained, occasionally medium-grained.
05/05/2000		16.10m at 18:00							23.20					
06/05/2000		14.77m at 08:00		100	100	83	5.1							From 23.88m to 23.95m: Pegmatitic.
06/05/2000		17.02m at 11:00							24.18	22.94	24.18			END OF DRILLHOLE AT 24.18m.

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

LOGGED W.K. Ngan
DATE 08/05/2000
CHECKED C.P. Hamilton
DATE 16/05/2000

REMARKS

JOB NO. TFGS251/2000	**DRILLHOLE RECORD**	Terraform-FGS	
HOLE NO. BH2P			
SHEET 1 of 3			
DATE from 20/04/2000 to 29/04/2000			
PROJECT No. 55 Ship Street, Wanchai, I.L.2140			
METHOD Rotary	CO-ORDINATES E 835,512.47 N 815,129.73	CONTRACT NO.	
RIG NO. R-4		ROCK CORE BIT T2101	
FLUSHING MEDIUM	ORIENTATION Vertical	GROUND-LEVEL +46.58 mP.D.	



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

LOGGED W.K. Ngan
DATE 08/05/2000
CHECKED C.P. Hamilton
DATE 16/05/2000

REMARKS

1. Inspection pit 1.50m deep.
2. Standpipe installed at depth 18.13m.

JOB NO.	TFGS251/2000	**DRILLHOLE RECORD**	Terraform-FGS
HOLE NO.	BH2P		
SHEET	2 of 3		
DATE from	20/04/2000 to 29/04/2000		

PROJECT	No. 55 Ship Street, Wanchai, I.L.2140	
METHOD Rotary	CO-ORDINATES E 835,512.47 N 815,129.73	CONTRACT NO.
RIG NO. R-4		ROCK CORE BIT T2101
FLUSHING MEDIUM	ORIENTATION Vertical	GROUND-LEVEL +46.58 mP.D.

Drilling Progress	Casing size/ Depth (m)	Water Level/Time	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
														SAME AS SHEET 1 OF 3.
				100						34.58	12.00		V	Extremely weak, greyish to pinkish brown, spotted with black, completely decomposed medium-grained GRANITE. (Silty fine to coarse SAND with occasional, fine to medium gravel sized rock fragments.)
26/04/2000		12.10m at 18:00		100										
27/04/2000		Dry at 08:00												
				90										
				100	87	75	7.5			28.45	18.13		II	Strong, pinkish grey, slightly decomposed medium-grained GRANITE. Joints are medium to closely spaced, rough undulating, very narrow to extremely narrow, iron stained and chlorite coated, dipping at 10° to 20°, 20° to 30° and 40° to 50°. From 18.33m to 19.85m: Fine-grained granite, occasionally medium-grained. From 19.06m to 19.44m: Pegmatitic.
				100	100	53	6.3							
27/04/2000	HX 19.85	15.60m at 18:00												
29/04/2000		16.40m												

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

LOGGED	W.K. Ngan
DATE	08/05/2000
CHECKED	C.P. Hamilton
DATE	16/05/2000

REMARKS

JOB NO. TFGS251/2000
HOLE NO. BH2P
SHEET 3 of 3
DATE from 20/04/2000 to 29/04/2000

DRILLHOLE RECORD

Terraform-FGS

PROJECT No. 55 Ship Street, Wanchai, I.L.2140

METHOD Rotary	CO-ORDINATES	CONTRACT NO.
RIG NO. R-4	E 835,512.47 N 815,129.73	ROCK CORE BIT T2101
FLUSHING MEDIUM	ORIENTATION Vertical	GROUND-LEVEL +46.58 mP.D.

Drilling Progress	Casing size/ Depth (m)	Water Level/Time	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
		08:00		100	100	100	1.4		T200 21.29					From 20.62m to 21.16m: Fine-grained granite, occasionally medium-grained.
				100	100	91	1.7		T200 22.48					From 22.21m to 22.70m: Fine-grained granite, occasionally medium-grained. From 22.48m to 22.86m: Fine-grained granite, occasionally medium-grained.
		13.10m at 18:00		100	100	100	0.0		T200 23.28	23.30	23.28			
29/04/2000														END OF DRILLHOLE AT 23.28m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U75 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Impression Packer Survey
- Standard Penetration Test
- Permeability Test
- Piezometer Tip
- Standpipe Tip
- In-situ Vane Shear Test

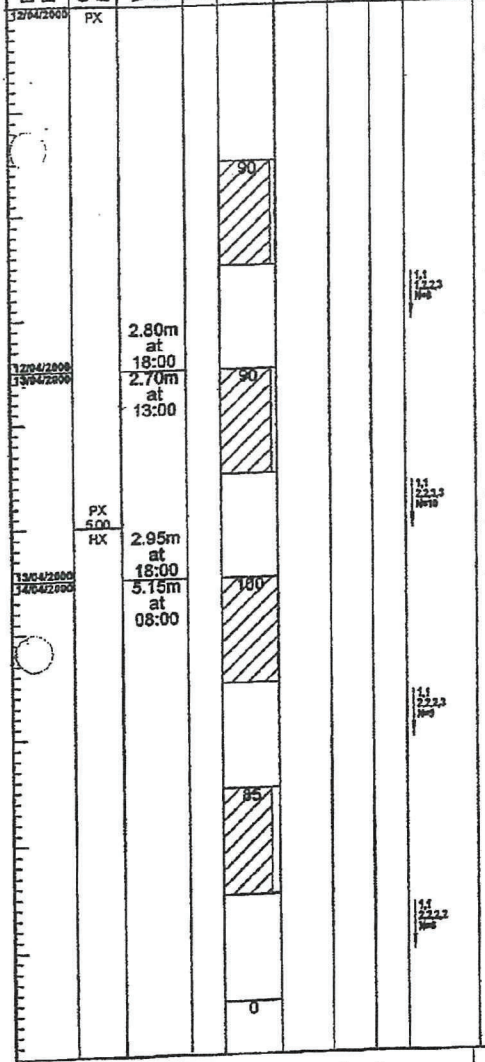
LOGGED W.K. Ngan
DATE 08/05/2000
CHECKED C.P. Hamilton
DATE 16/05/2000

REMARKS

JOB NO.	TFGS251/2000	**DRILLHOLE RECORD**	Terraform-FGS
HOLE NO.	BH3P		
SHEET	1 of 3		
DATE from	12/04/2000 to 18/04/2000		

PROJECT No. 55 Ship Street, Wanchai, I.L.2140

METHOD Rotary	CO-ORDINATES	CONTRACT NO.
RIG NO. R-4	E 835,536.54 N 815,136.25	ROCK CORE BIT T2101
FLUSHING MEDIUM	ORIENTATION Vertical	GROUND-LEVEL +33.61 mP.D.



Reduced Level	Depth (m)	Legend	Grade	Description
				Firm, dark greyish brown, slightly clayey, sandy SILT with occasional, rock fragments and dark brown to black, organic material. (FILL)
32.11	1.50			Loose, light greyish brown, slightly clayey silty SAND with occasional, fine to medium gravel sized, rock fragments and quartz. (FILL)

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

LOGGED	W.K. Ngan
DATE	20/04/2000
CHECKED	C.P. Hamilton
DATE	16/05/2000

REMARKS

1. Inspection pit 1.50m deep.
2. Standpipe installed at depth 17.92m.

DRILLHOLE RECORD

Terraform-FGS

JOB NO.	TFGS251/2000
HOLE NO.	BH3P
SHEET	2 of 3
DATE from	12/04/2000 to 18/04/2000

PROJECT No. 55 Ship Street, Wanchai, I.L.2140

METHOD Rotary	CO-ORDINATES	CONTRACT NO.
RIG NO. R-4	E 835,536.54 N 815,136.25	ROCK CORE BIT T2101
FLUSHING MEDIUM	ORIENTATION Vertical	GROUND-LEVEL +33.61 mP.D.

Drilling Progress	Casing size/ Depth (m)	Water Level/Time	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
														SAME AS SHEET 1 OF 3.
				100					20 (10.55–10.60), 21 (10.60–11.65)	23.01	10.60		V	Extremely weak, reddish brown to yellowish brown, mottled with white and spotted with black, completely decomposed medium-grained GRANITE. (Silty SAND with occasional, fine gravel sized quartz fragments.)
								5,9 15,18,23,30 N=86	22 (11.65–11.70), 23 (11.70–12.10), 24 (12.10)					
14/04/2000 15/04/2000		11.32m at 18:00 8.13m at 08:00		95					25 (12.60–13.65)					
								4,7 11,16,21,24 N=72	26 (13.65–13.70), 27 (13.70–14.10), 28 (14.10)					
				100					29 (14.60–15.65)					
								4,6 7,8,10,12 N=37	30 (15.65–15.70), 31 (15.70–16.10), 32 (16.10)					
				90					33 (16.60–17.65)					
	HX 17.92							100/70mm (100/70mm)	34 (17.65–17.72), 35 (17.72–17.92)	15.69	17.92		II	Strong, pinkish grey spotted with black, slightly decomposed medium-grained GRANITE. Joints are medium to widely spaced, rough undulating, extremely narrow to very narrow, brow iron stained and chlorite coated, dipping at 20° to 30°, 40° to 50° and 50° to 60°.
				100	100	100	2.3		17.92–18.80					
16/04/2000 17/04/2000		11.82m at 18:00 11.80m at		100	100	100	0.0		18.80–19.75					
				100	100	100			19.75	13.61	20.00			

● Small Disturbed Sample	▲ Water Sample
Large Disturbed Sample	Impression Packer Survey
SPT Liner Sample	Standard Penetration Test
U76 Undisturbed Sample	Permeability Test
U100 Undisturbed Sample	Piezometer Tip
Mazier Sample	Standpipe Tip
Piston Sample	In-situ Vane Shear Test

LOGGED	W.K. Ngan
DATE	20/04/2000
CHECKED	C.P. Hamilton
DATE	16/05/2000

REMARKS

JOB NO. TFGS251/2000
HOLE NO. BH3P
SHEET 3 of 3
DATE from 12/04/2000 to 18/04/2000

DRILLHOLE RECORD

Terraform-FGS

PROJECT No. 55 Ship Street, Wanchai, I.L.2140

METHOD Rotary	CO-ORDINATES E 835,536.54 N 815,136.25	CONTRACT NO.
RIG NO. R-4		ROCK CORE BIT T2101
FLUSHING MEDIUM	ORIENTATION Vertical	GROUND-LEVEL +33.61 mP.D.

Drilling Progress	Casing size/ Depth (m)	Water Level/Time	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
		08:00		100	100	100	4.3		20.06					From 21.23m: Pegmatitic granite.
		10.32m at 18:00							21.46					
2000/2000		11.86m at 08:00		100	100	100	0.0							
3/04/2000		10.95m at 12:00							22.92	10.69	22.92			END OF DRILLHOLE AT 22.92m.

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

LOGGED W.K. Ngan
DATE 20/04/2000
CHECKED C.P. Hamilton
DATE 16/05/2000

REMARKS

JOB NO.	TFGS251/2000	**DRILLHOLE RECORD**	Terraform-FGS
HOLE NO.	BH4		
SHEET	1 of 3		
DATE from	07/04/2000 to 11/04/2000		

PROJECT No. 55 Ship Street, Wanchai, I.L.2140

METHOD Rotary	CO-ORDINATES	CONTRACT NO.
RIG NO. R-4	E 835,537.74 N 815,138.16	ROCK CORE BIT T2101
FLUSHING MEDIUM	ORIENTATION Vertical	GROUND-LEVEL +33.50 mP.D.

Drilling Progress	Casing size/ Depth (m)	Water Level/Time	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
07/04/2000	PX			68					0.00					Light grey, CONCRETE. (CONCRETE FLOOR)
									1.00	32.50	1.00			Medium dense, yellowish brown to greyish brown, slightly silty fine to coarse SAND with occasional, fine gravel sized quartz and rock fragments. (FILL)
				90					1.45 1.50					
								11 12,23,33 N=67	2.55 2.60					
				80					3.00 3.50					
								11 12,23,33 N=68	4.55 4.60					
				90					5.00 5.50					
07/04/2000	PX 6.60	1.30m at 16:00						12 23,33 N=71	6.55 6.60					
08/04/2000	HX	5.40m at 08:00		0					7.00 7.50					
				0					8.55 8.60					
				180				19 blo	9.65 9.70					

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

LOGGED	W.K. Ngan
DATE	12/04/2000
CHECKED	C.P. Hamilton
DATE	16/05/2000

REMARKS

1. Inspection pit 1.50m deep.

JOB NO.	TFGS251/2000	**DRILLHOLE RECORD**	Terraform-FGS
HOLE NO.	BH4		
SHEET	2 of 3		
DATE from	07/04/2000 to 11/04/2000		

PROJECT No. 55 Ship Street, Wanchai, I.L.2140

METHOD Rotary	CO-ORDINATES E 835,537.74 N 815,138.16	CONTRACT NO.
RIG NO. R-4		ROCK CORE BIT T2101
FLUSHING MEDIUM	ORIENTATION Vertical	GROUND-LEVEL +33.50 mP.D.

Drilling Progress	Casing size/ Depth (m)	Water Level/Time	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
														SAME AS SHEET 1 OF 3.
										22.90	10.60		V	Extremely weak, light yellowish brown to reddish brown, mottled with white and spotted with black, completely decomposed medium-grained GRANITE. (Silty fine to coarse SAND with some, subangular to subrounded, fine to medium gravel sized, quartz and rock fragments.)
		12.60m at 18:00		0										
		4.90m at 08:00		100										
				90										
				90										
				0										
	HX 18.77			100	100	97	1.4			14.73 14.65	18.77 18.85		III II	Strong, pinkish grey to grey, spotted with black, slightly decomposed medium-grained GRANITE. Joints are medium to widely spaced, occasionally very closely spaced, rough undulating and smooth planar, extremely narrow to very narrow, brown iron stained and chlorite coated, dipping at 0° to 10°, 20° to 30° and 40° to
		9.50m at								13.50	20.00			

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

LOGGED	W.K. Ngan
DATE	12/04/2000
CHECKED	C.P. Hamilton
DATE	16/05/2000

REMARKS

JOB NO. TFGS251/2000
HOLE NO. BH4
SHEET 3 of 3
DATE from 07/04/2000 to 11/04/2000

DRILLHOLE RECORD

Terraform-FGS

PROJECT No. 55 Ship Street, Wanchai, I.L.2140

METHOD Rotary	CO-ORDINATES E 835,537.74 N 815,138.16	CONTRACT NO.
RIG NO. R-4		ROCK CORE BIT T2101
FLUSHING MEDIUM	ORIENTATION Vertical	GROUND-LEVEL +33.50 mP.D.

Drilling Progress	Casing size/ Depth (m)	Water Level/Time	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
10/04/2000		18:00		100					20.19				II	50°.
11/04/2000		11.19m at 08:00			100	89	4.8							From 18.77m to 18.85m: Moderately strong, moderately decomposed medium-grained granite.
				100					21.03					From 20.90m to 21.05m: Pegmatitic granite.
					100	91	6.3			11.87	21.63		III/II	From 21.63m to 21.70m: Moderately strong to strong, moderately to slightly decomposed medium-grained granite.
				100					22.44	11.80	21.70		II	
					100	100			22.85					
				100			0.0							
		12.60m at 18:00			100	100								
11/04/2000									23.77	9.73	23.77			END OF DRILLHOLE AT 23.77m.

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

LOGGED W.K. Ngan
DATE 12/04/2000
CHECKED C.P. Hamilton
DATE 16/05/2000

REMARKS

JOB NO. TFGS251/2000	**DRILLHOLE RECORD**	Terraform-FGS	
HOLE NO. BH5			
SHEET 1 of 3			
DATE from 01/04/2000 to 06/04/2000			
PROJECT No. 55 Ship Street, Wanchai, I.L.2140			
METHOD Rotary	CO-ORDINATES E 835,539.81 N 815,139.60	CONTRACT NO.	
RIG NO. R-4		ROCK CORE BIT T2101	
FLUSHING MEDIUM	ORIENTATION Vertical	GROUND-LEVEL +33.60 mP.D.	

Drilling Progress	Casing size/ Depth (m)	Water Level/Time	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
01/04/2000	PX			100					INSPECTION PIT 0.45 0.95 1.45 1.50	32.10	1.50			Firm, greyish brown, slightly sandy SILT with occasional, subangular to subrounded, fine gravel sized rock fragments. (FILL)
									2.15 2.28					Loose to medium dense, yellowish brown to greyish brown, slightly silty fine to coarse SAND with some, subangular to subrounded, medium gravel sized rock fragments and brick fragments. (FILL)
				100				+105/50mm (105/50mm)	3.50 4.55 4.60 5.00					
01/04/2000	PX 5.60	Dry at 18:00							5.50 5.60	28.00	5.60			Subangular to subrounded, COBBLE sized, fragments of moderately strong to strong, pinkish grey granite and brick fragments. (FILL)
03/04/2000	HX	Dry at 08:00		50					6.10	27.50	6.10			Subangular to subrounded, BOULDERS with occasional, cobble sized, fragments of moderately strong to strong, pinkish grey granite with brown, mortar and cement. (EXISTING FOOTING)
				100					7.30					
				100					8.73					

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U75 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Impression Packer Survey
- Standard Penetration Test
- Permeability Test
- Piezometer Tip
- Standpipe Tip
- In-situ Vane Shear Test

LOGGED W.K. Ngan
DATE 07/04/2000
CHECKED C.P. Hamilton
DATE 16/05/2000

REMARKS

1. Inspection pit 1.50m deep.

DRILLHOLE RECORD

Terraform-FGS

JOB NO.	TFGS251/2000
HOLE NO.	BH5
SHEET	2 of 3
DATE from	01/04/2000 to 06/04/2000

PROJECT No. 55 Ship Street, Wanchai, I.L.2140

METHOD Rotary	CO-ORDINATES	CONTRACT NO.
RIG NO. R-4	E 835,539.81 N 815,139.60	ROCK CORE BIT T2101
FLUSHING MEDIUM	ORIENTATION Vertical	GROUND-LEVEL +33.60 mP.D.

Drilling Progress	Casing size/ Depth (m)	Water Level/Time	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Grade	Description
				100					10.05 – 11.50				SAME AS SHEET 1 OF 3.
				100					11.50 – 12.21				
				100					12.21 – 12.96				
				100					12.96 – 13.76				
03/04/2000 05/04/2000		13.60m at 18:00 Dry at 08:00		90					12: 13.76 – 14.85	19.84	13.76	V	Extremely weak, reddish brown mottled with white and spotted with black, completely decomposed medium-granied GRANITE. (Slightly silty SAND with some, fine to coarse gravel sized quartz fragments.)
								2,3 5,5,7,12 N=29	13: 14.85; 14: 14.90; 15: 15.30				
				100					16: 15.85 – 16.85				
								6,8 8,8,9,10 N=35	17: 16.85; 18: 16.90; 19: 17.30				
				70					20: 17.80 – 18.85				
	HX 19.40							25,50 100/36mm (100/36mm)	21: 18.85; 22: 19.05	14.20	19.40		
				100			9.6		19.40	13.80	19.80	II	Strong, pinkish grey mottled with white and spotted with black, slightly decomposed medium-grained GRANITE. Joints are medium to widely spaced, locally closely
										13.60	20.00	III	

Symbol	Key	Symbol	Key
●	Small Disturbed Sample	▲	Water Sample
↕	Large Disturbed Sample		Impression Packer Survey
▯	SPT Liner Sample		Standard Penetration Test
▨	U76 Undisturbed Sample		Permeability Test
■	U100 Undisturbed Sample		Piezometer Tip
▨	Mazier Sample		Standpipe Tip
▤	Piston Sample	v	In-situ Vane Shear Test

LOGGED	W.K. Ngan
DATE	07/04/2000
CHECKED	C.P. Hamilton
DATE	16/05/2000

REMARKS

JOB NO. TFGS251/2000
HOLE NO. BH5
SHEET 3 of 3
DATE from 01/04/2000 to 06/04/2000

DRILLHOLE RECORD

Terraform-FGS

PROJECT No. 55 Ship Street, Wanchai, I.L.2140

METHOD Rotary	CO-ORDINATES	CONTRACT NO.
RIG NO. R-4	E 835,539.81 N 815,139.60	ROCK CORE BIT T2101
FLUSHING MEDIUM	ORIENTATION Vertical	GROUND-LEVEL +33.60 mP.D.

Drilling Progress	Casing size/ Depth (m)	Water Level/Time	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
					63	30	8.0			13.13	20.47		III II	spaced, smooth planar and rough undulating, extremely narrow, brown iron stained, dipping at 10° to 20°, 30° to 40° and 60° to 70°. From 19.8m to 20.47m: Moderately decomposed.
05/04/2000		Dry at 18:00												
05/04/2000		13.32m at 08:00		100	100	91	2.1							
				100	100	72	3.6							
06/04/2000		12.92m at 13:00		100	100	100	0.0			9.03	24.57			END OF DRILLHOLE AT 24.57m.

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

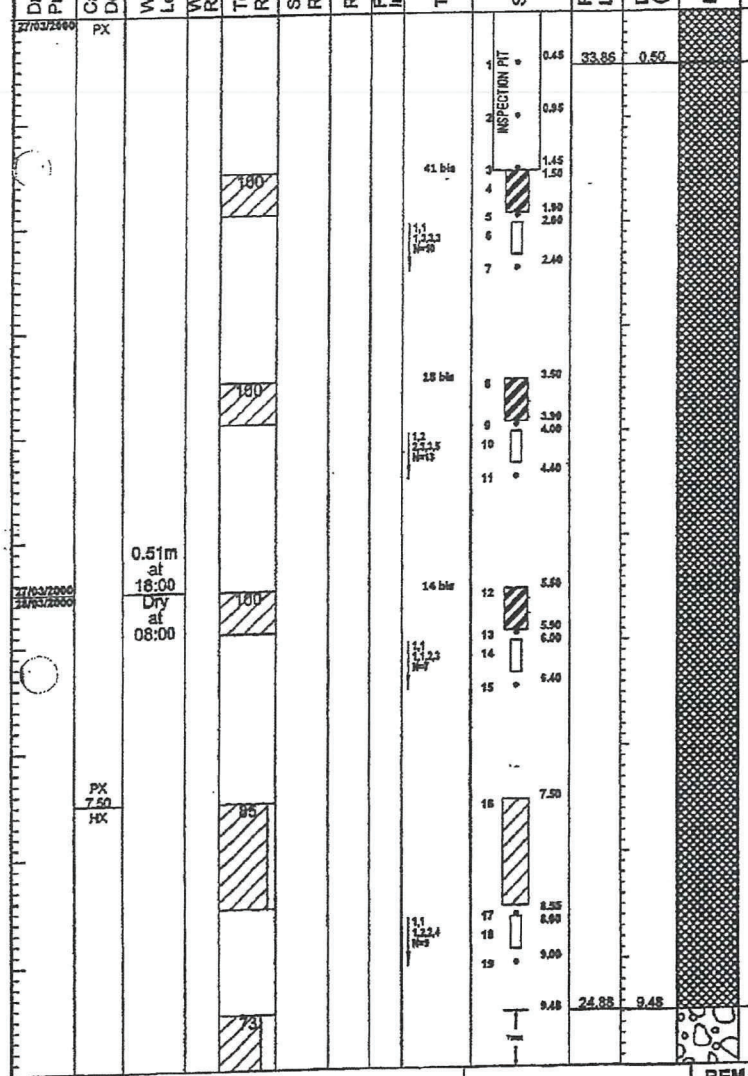
LOGGED W.K. Ngan
DATE 07/04/2000
CHECKED C.P. Hamilton
DATE 16/05/2000

REMARKS

JOB NO.	TFGS251/2000	**DRILLHOLE RECORD**	Terraform-FGS
HOLE NO.	BH6		
SHEET	1 of 3		
DATE from	27/03/2000 to 31/03/2000		

PROJECT No. 55 Ship Street, Wanchai, I.L.2140

METHOD Rotary	CO-ORDINATES E 835,536.02 N 815,142.28	CONTRACT NO.
RIG NO. R-4		ROCK CORE BIT T2101
FLUSHING MEDIUM	ORIENTATION Vertical	GROUND-LEVEL +34.36 mP.D.



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

LOGGED	W.K. Ngan
DATE	31/03/2000
CHECKED	C.P. Hamilton
DATE	16/05/2000

REMARKS

1. Inspection pit 1.50m deep.

JOB NO.	TFGS251/2000	**DRILLHOLE RECORD**	Terraform-FGS
HOLE NO.	BH6		
SHEET	2 of 3		
DATE from	27/03/2000 to 31/03/2000		

PROJECT No. 55 Ship Street, Wanchai, I.L.2140

METHOD Rotary	CO-ORDINATES E 835,536.02 N 815,142.28	CONTRACT NO.
RIG NO. R-4		ROCK CORE BIT T2101
FLUSHING MEDIUM	ORIENTATION Vertical	GROUND-LEVEL +34.36 mP.D.

Drilling Progress	Casing size/ Depth (m)	Water Level/Time	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
														to strong, pinkish grey, granite with brown mortar. (EXISTING WALL FOOTING)
24/03/2000 25/03/2000		10.50m at 18:00 Dry at 08:00		98										
26/03/2000 30/03/2000		11.75m at 18:00 Dry at 08:00		75										
				93										
				100										
								24 S7,7,11 N=30						
				90										
	HX 17.00			95	95	92	5.4			20.26	14.10		V	Extremely weak, reddish brown mottled with white and spotted with black, completely decomposed medium-grained GRANITE. (Silty fine to coarse SAND with some, subangular to subrounded, fine to medium gravel sized quartz fragments.)
30/03/2000 31/03/2000		17.33m at 18:00 Dry at 08:00		100	100	100	3.0			17.36	17.00		II	Strong, pinkish grey mottled with white and spotted with black, slightly decomposed medium-grained GRANITE. Joints are medium spaced, locally very closely spaced, rough undulating and smooth planar, extremely narrow, brown iron stained, dipping at 20° to 30° and 40° to 50°.
				100	100	76								
				100										

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

LOGGED	W.K. Ngan
DATE	31/03/2000
CHECKED	C.P. Hamilton
DATE	16/05/2000

REMARKS

JOB NO.	TFGS251/2000	**DRILLHOLE RECORD**	Terraform-FGS
HOLE NO.	BH6		
SHEET	3 of 3		
DATE from	27/03/2000 to 31/03/2000		

PROJECT No. 55 Ship Street, Wanchai, I.L.2140

METHOD Rotary	CO-ORDINATES	CONTRACT NO.
RIG NO. R-4	E 835,536.02 N 815,142.28	ROCK CORE BIT T2101
FLUSHING MEDIUM	ORIENTATION Vertical	GROUND-LEVEL +34.36 mP.D.

Drilling Progress	Casing size/ Depth (m)	Water Level/Time	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
					100	100	0.0							SAME AS SHEET 2 OF 3.
				100	100	100	-		20.97					From 21.07m to 21.12m: Pegmatitic granite.
				100	100	100	0.9		21.46					
31/03/2000		21.94m at 18:00							22.53	11.83	22.53			END OF DRILLHOLE AT 22.53m.

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

LOGGED	W.K. Ngan
DATE	31/03/2000
CHECKED	C.P. Hamilton
DATE	16/05/2000

REMARKS

JOB NO.	TFGS251/2000	**DRILLHOLE RECORD**	Terraform-FGS
HOLE NO.	BH7P		
SHEET	1 of 3		
DATE from	09/05/2000 to 13/05/2000		

PROJECT No. 55 Ship Street, Wanchai, I.L.2140

METHOD Rotary	CO-ORDINATES E 835,530.05 N 815,123.75	CONTRACT NO.
RIG NO. R-4		ROCK CORE BIT T2101
FLUSHING MEDIUM	ORIENTATION Vertical	GROUND-LEVEL +34.45 mP.D.

Drilling Progress	Casing size/ Depth (m)	Water Level/Time	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
09/05/2000	PX								1 ● 0.45 (INSPECTION PIT)					Loose, dark greyish brown, slightly silty SAND with occasional, subangular to subrounded, rock and brick fragments. (FILL)
									2 ● 0.95 (INSPECTION PIT)					
									3 ● 1.45					
				95					4 1.50–2.55					
								1,1 / 1,2,2,3 / N=8	5, 6 2.55–2.60–3.00					
	PX 3.05 HX								7 ● 3.00					
				95					8 3.50–4.55					
								3,4 / 4,5,5,6 / N=20	9, 10 4.55–4.60–5.00					
									11 ● 5.00					
				90					12 5.50–6.55	28.95	5.50		V	Extremely weak, reddish brown to greyish brown, completely decomposed medium-grained GRANITE. (Dense to very dense, slightly silty SAND with occasional, subangular to subrounded, fine to medium gravel sized rock fragments.)
								4,7 / 12,15,18,18 / N=63	13, 14 6.55–6.60–7.00					
									15 ● 7.00					
				100					16 7.50–8.55					
								6,10 / 16,23,25,34 / N=98	17, 18 8.55–8.60–9.00					
									19 ● 9.00					
				85					20 9.50	24.45	10.00			

Symbol	Sample	Symbol	Test
●	Small Disturbed Sample	▲	Water Sample
↕	Large Disturbed Sample		Impression Packer Survey
▯	SPT Liner Sample		Standard Penetration Test
	U76 Undisturbed Sample		Permeability Test
■	U100 Undisturbed Sample		Piezometer Tip
	Mazier Sample		Standpipe Tip
	Piston Sample	▾	In-situ Vane Shear Test

LOGGED	W.K. Ngan
DATE	15/05/2000
CHECKED	C.P. Hamilton
DATE	16/05/2000

REMARKS

1. Inspecion pit 1.50m deep.
2. Standpipe installed at depth 16.32m.

DRILLHOLE RECORD

Terraform-FGS

JOB NO.	TFGS251/2000
HOLE NO.	BH7P
SHEET	2 of 3
DATE from	09/05/2000 to 13/05/2000

PROJECT: No. 55 Ship Street, Wanchai, I.L.2140

METHOD: Rotary	CO-ORDINATES	CONTRACT NO.
RIG NO.: R-4	E 835,530.05 N 815,123.75	ROCK CORE BIT: T2101
FLUSHING MEDIUM	ORIENTATION: Vertical	GROUND-LEVEL: +34.45 mP.D.

Drilling Progress	Casing size/ Depth (m)	Water Level/Time	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
09/05/2000 10/05/2000		6.32m at 18:00 Dry at 08:00						4,4 5,6,7,8 N=27	21, 22, 23 (10.55, 10.60, 11.00)				V	SAME AS SHEET 1 OF 3.
				90					24 (11.50)					
								8,12 18,25,33,45 N=113	25, 26, 27 (12.55, 12.60, 13.00)					
				85					28 (13.50)					
								50/50mm 100/50mm (100/50mm)	29, 30 (14.55, 14.65)					
				0					(15.50)					
[illegible]	HX 16.20	12.13m at 18:00							31 (16.18)	18.25	16.20		IV	Moderately strong, pinkish brown, moderately decomposed medium-grained GRANITE. Joints are closely spaced, narrow to very narrow, rough undulating, iron stained and kaolin infilled, dipping at 0° to 10° and 40° to 50°. From 16.20m to 16.42m: Highly decomposed.
[illegible]		15.30m at 08:00		100	42	0	N.I. >20			18.03	16.42		III	
				100	58	47	7.1		(16.82)	17.63	16.82		III	
										17.15	17.30		II	Strong, pinkish grey, slightly decomposed medium-grained GRANITE. Joints are widely spaced, locally closely spaced, extremely narrow to very narrow, rough undulating, iron stained and chlorite coated, dipping at 40° to 50° and 70° to 80°. From 16.82m to 17.30m: Moderately decomposed. At 17.95m: Pegmatitic. From 18.58m to 18.66m: Pegmatitic.
				100	100	100			(17.95)					
				100	100	100	0.0		(18.45)					
				100			0.82		(19.51)	14.45	20.00			

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

LOGGED	W.K. Ngan
DATE	15/05/2000
CHECKED	C.P. Hamilton
DATE	16/05/2000

REMARKS

JOB NO.	TFGS251/2000	**DRILLHOLE RECORD**	Terraform-FGS
HOLE NO.	BH7P		
SHEET	3 of 3		
DATE from	09/05/2000 to 13/05/2000		

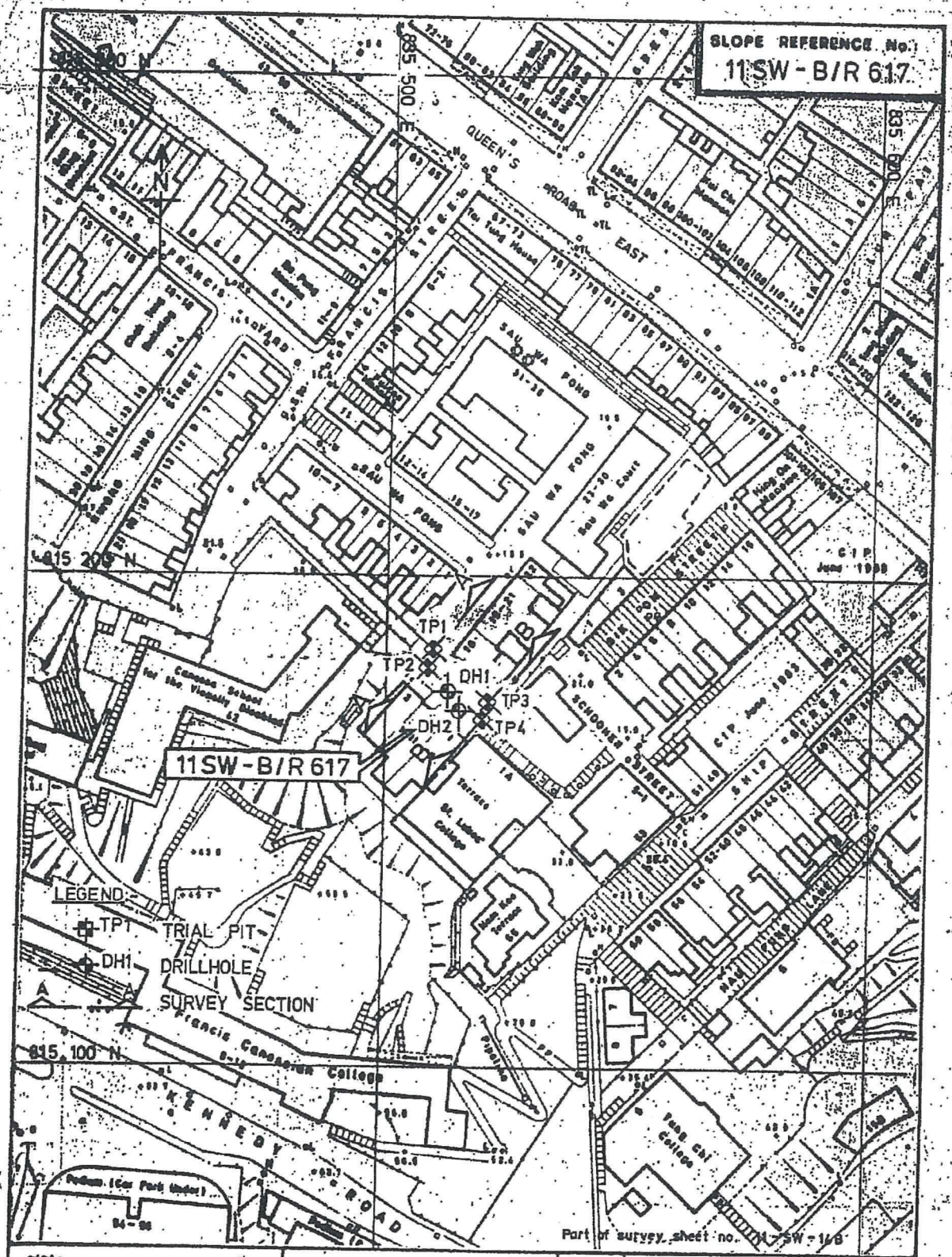
PROJECT	No. 55 Ship Street, Wanchai, I.L. 2140	
METHOD Rotary	CO-ORDINATES E 835,530.05 N 815,123.75	CONTRACT NO.
RIG NO. R-4		ROCK CORE BIT T2101
FLUSHING MEDIUM	ORIENTATION Vertical	GROUND-LEVEL +34.45 mP.D.

Drilling Progress	Casing size/ Depth (m)	Water Level/Time	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
					100	100							II	SAME AS SHEET 2 OF 3.
				100	100	100	0.0		20.33					
12/05/2000		10.27m at 18:00							21.26					
13/05/2000		15.36m at 08:00		100	100	100								
13/05/2000		10.10m at 10:00							21.86	12.59	21.86			END OF DRILLHOLE AT 21.86m.

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

LOGGED	W.K. Ngan
DATE	15/05/2000
CHECKED	C.P. Hamilton
DATE	16/05/2000

REMARKS



title: PROPOSED SITE INVESTIGATION AND SURVEY.	drawn by: W. K. YIU	date: DEC. 86	drawing no.: GCD 4194	scale: 1:1 000
	approved:	date:	CIVIL ENGINEERING SERVICES DEPARTMENT HONG KONG	
	office: DESIGN DIVISION GEOTECHNICAL CONTROL OFFICE			

pwd 126

A4 210 x 297

BACHY SOLETANCHE

BACHY SOLETANCHE GROUP
SOIL & FOUNDATIONS SPECIALISTS

LOCATION : HILLSIDE TERRACE
NO : PW7/2/19.4.

Page No.

Date

W = Pump Well
P = Piezometer
S = Standpipe
U = Upper Piezometer
L = Lower Piezometer

WATER LEVEL READING

HOLE NO. / DATE	DH 1A	DH 1B	DH 2					
20/6/87	DRY	DRY						
22/6/87	DRY	DRY						
23/6/87	DRY	DRY						
24/6/87	DRY	DRY	DRY					
25/6/87	DRY	DRY	DRY					
26/6/87	DRY	DRY	DRY					
27/6/87	DRY	DRY	DRY					
29/6/87			DRY					
30/6/87			DRY					
1/6/87			DRY					

IV. BOREHOLE LOG AND PHOTOGRAPHS

BACHY SOLETANCHE — BACHY SOLETANCHE GROUP — SOIL & FOUNDATIONS SPECIALISTS

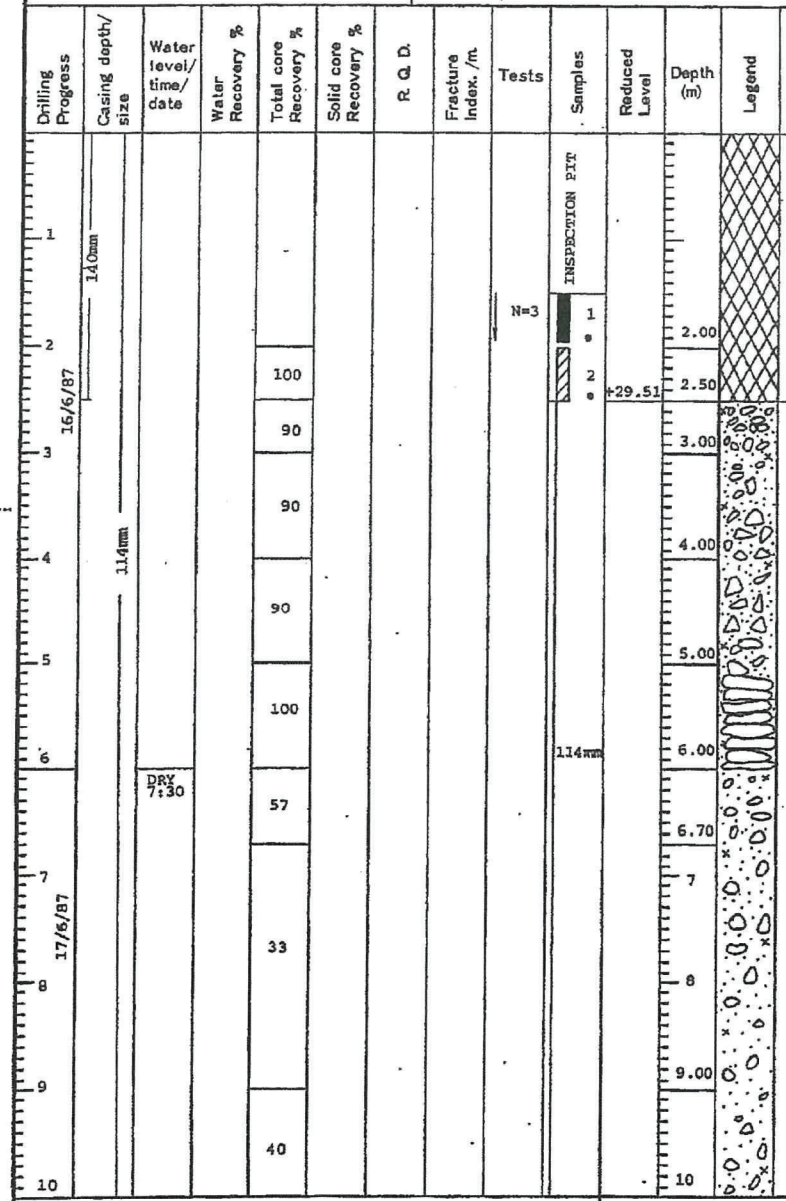
DRILLHOLE RECORD (LAND INVESTIGATION)

W. O. PW7/2/19.4
HOLE No. DH 1
CONTRACT GC/87/02 OF C.E.S.D. DATE from 16/6/87 to 18/6/87

PROJECT: LAND S.I. AT HILLSIDE TERRACE, RETAINING WALL NO.11SW-B/R617

SHEET 1 OF 2

METHOD	CO-ORDINATES	ROCK COREBIT
ROTARY	E 835512.19	T2-101
MACHINE & No.	N 815176.27	**HOLE DIA.** 0.00m - 2.50m 140mm; 2.50m - 11.00m 114mm
D2G 16		
FLUSHING MEDIUM	**ORIENTATION**	**GROUND-LEVEL**
AIR FOAM	VERTICAL	+32.01mPD



- SMALL DISTURBED SAMPLE
- BULK DISTURBED SAMPLE
- S.P.T. LINER SAMPLE
- U 100 UNDISTURBED SAMPLE
- MAZIER SAMPLE (76mm)
- WATER SAMPLE
- WATER LEVEL
- STANDARD PENETRATION TEST
- PERMEABILITY TEST

LOGGED C.H.CHOW DATE 22/6/87

CHECKED S.H.LAU DATE 7/7/87

REMARKS
Piezometers were installed at 10.50m & 14.60m respectively.
Impression packer test from 14.60m to 11.30m.
Pressurized water test from 11.50m to 15.10m.

BACHY SOLETANCHE — BACHY SOLETANCHE GROUP, SOIL & FOUNDATIONS SPECIALISTS

DRILLHOLE RECORD (LAND INVESTIGATION)

W. O. PW7/2/19.4
HOLE No. DH 1
CONTRACT GC/87/02 OF C.E.S.D. DATE from 16/6/87 to 18/6/87

PROJECT: LAND S.I. AT HILLSIDE TERRACE, RETAINING WALL NO.11SW-B/R617 — SHEET 2 OF 2

METHOD	CO-ORDINATES	ROCK COREBIT
ROTARY	E 835512.19	T2-101
MACHINE & No.	N 815176.27	**HOLE DIA** 0.00m - 2.50m 140mm; 2.50m - 11.00m 114mm
D2G 16		
FLUSHING MEDIUM	**ORIENTATION**	**GROUND-LEVEL**
AIR FOAM	VERTICAL	+32.01mPD

Drilling Progress	Casing depth/ size	Water level/ time/ date	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index /m	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Zone	Description
11	114mm			40				PZ AT 10.50m	HX		10.50				See sheet 1 of 2.
17/6/87				72							11.00				
				100					3		11.40		IV/V	B	Dark greyish brown, speckled brown, fine to coarse SAND. (C. TO H.D.G.)
12		8.60m 19:30		82	82	78	2				11.65				
		10.00m 7:35									12.35				
											12.56		III	D	Moderately strong, brownish pink & grey, moderately decomposed coarse grained GRANITE with closely spaced limonite & manganese stained rough & tight joints dip 15°-25°. Sub-vertical 11.60m to 11.98m, 13.06m to 13.14m, 13.36m to 13.54m
13									T2-101						
18/6/87				100	100	91	4				13.92				
14											14.45				Dip 70°-80° Highly decomposed zone from 14.45m to 15.10m & 12.35m to 12.56m. (M.D.G.)
15				90	90	0	N.I.	PZ AT 14.60m		+16.91	15.10		IV		
16															End of hole at 15.10m

- ● SMALL DISTURBED SAMPLE
- ↕ BULK DISTURBED SAMPLE
- ▮ S.P.T. LINER SAMPLE
- ▯ U100 UNDISTURBED SAMPLE
- ▨ MAZIER SAMPLE (76mm)
- ▲ WATER SAMPLE
- ▼ WATER LEVEL
- ⌇ STANDARD PENETRATION TEST
- I PERMEABILITY TEST

LOGGED C.H.CHOW DATE 22/6/87

CHECKED S.H.LAU DATE 7/7/87

REMARKS
Impression packer test from : 14.60m to 13.10m
13.60m to 12.10m
12.80m to 12.80m

BACHY SOLETANCHE — BACHY SOLETANCHE GROUP, SOIL & FOUNDATIONS SPECIALISTS

DRILLHOLE RECORD (LAND INVESTIGATION)

W. O. PW7/2/19.4

HOLE No. DH 2

CONTRACT GC/87/02 OF C.E.S.D. DATE from 19/6/87 to 22/6/87

PROJECT: LAND S.I. AT HILLSIDE TERRACE, RETAINING WALL NO.11SW-B/R517

SHEET 1 OF 2

METHOD	CO-ORDINATES	ROCK COREBIT
ROTARY	E 835514.48	/
MACHINE & No. D2G 16	N 815172.39	HOLE DIA. 0.00m – 3.00m 140mm; 3.00m – 12.00m 114mm
FLUSHING MEDIUM: AIR FOAM	ORIENTATION: VERTICAL	GROUND-LEVEL: +31.98mPD

Drilling Progress	Casing depth/ size	Water level/ time/ date	Water Recovery %	Total core Recovery %	Solid core Recovery %	R. Q. D.	Fracture Index. /m.	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Zone	Description
19/6/87	140mm								INSPECTION PIT	+30.48	1.50			FILL	Brown, speckled dark pink silty fine to coarse SAND. (FILL)
								N=2	1		2.00				Pinkish brown, mottled white & yellow, clayey silty fine to coarse SAND. (C.D.G.)
	114mm			100				N=4	2 3		3.00 3.50				Brown, mottled yellowish brown, speckled reddish pink & white silty fine to coarse SAND. (C.D.G.)
		DRY 7:30		85				N=8	4 5		4.50 5.00				
				90				N=8	6 7		6.00 6.50	V	B		Pinkish brown, mottled white & yellowish brown, silty fine to coarse SAND. (C.D.G.)
22/6/87				80				N=11	8 9		7.50 8.00				Yellowish brown, mottled white & speckled pink, silty fine to coarse SAND. (C.D.G.)
				85				N=16	10 11		9.00 9.50				Yellowish brown to brown, mottled white & reddish pink, silty fine to coarse SAND. (C.D.G.)
				100											

- SMALL DISTURBED SAMPLE
- BULK DISTURBED SAMPLE
- S. P. T. LINER SAMPLE
- U 100 UNDISTURBED SAMPLE
- MAZIER SAMPLE (76mm)
- WATER SAMPLE
- WATER LEVEL
- STANDARD PENETRATION TEST
- PERMEABILITY TEST

LOGGED C.H.CHOW DATE 24/6/87

CHECKED S.H.LAU DATE 7/7/87

REMARKS

Falling Head Permeability test at 6.00m & 10.50m respectively. Piezometer was installed at 11.50m.

BACHY SOLETANCHE

BACHY SOLETANCHE GROUP
SOIL & FOUNDATIONS SPECIALISTS

DRILLHOLE RECORD (LAND INVESTIGATION)

W. O. PW7/2/19.4
HOLE No. DH 2
CONTRACT GC/87/02 OF C.E.S.D. DATE from 19/6/87 to 22/6/87

PROJECT:
LAND S.I. AT HILLSIDE TERRACE, RETAINING WALL NO.11SW-B/R617

METHOD	CO-ORDINATES	ROCK COREBIT
ROTARY	E 835514.48	/
MACHINE & No. D2G 16	N 815172.39	HOLE DIA. 0.00m - 3.00m 140mm 3.00m - 12.00m 114mm
FLUSHING MEDIUM AIR FOAM	ORIENTATION VERTICAL	GROUND-LEVEL +31.98mPD

Drilling Progress	Casing depth/ size	Water level/ time/ date	Water Recovery %	Total core Recovery %	Solid core Recovery %	R. Q. D.	Fracture Index. /m.	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Zone	Description
11 22/6/87 12	114mm			85				N=35 PZ AT 11.50m	12 13 14	19.98	10.50 11.00 12.00		V	B	See sheet 1 of 2. Pinkish brown, mottled yellowish white, silty fine to coarse SAND. (C.D.G.)
13															End of hole at 12.00m

- SMALL DISTURBED SAMPLE
- BULK DISTURBED SAMPLE
- S. P. T. LINER SAMPLE
- U 100 UNDISTURBED SAMPLE
- MAZIER SAMPLE (76mm)
- WATER SAMPLE
- WATER LEVEL
- STANDARD PENETRATION TEST
- PERMEABILITY TEST

LOGGED C.H.CHOW DATE 24/6/87

CHECKED S.H.LAU DATE 7/7/87

REMARKS

V. TRIAL PIT LOGS AND PHOTOGRAPHS

CONTRACTOR: B.S.G.

WORKS ORDER NO.: PW7/2/19.4

SHORING NIL

LOGGED BY: CHOW DATE: 13/7/87

CO-ORDINATES: E 835509.90 N 815185.13

EXCAVATION DATES: 11/7/87

PIT NO.: TP 1

LOCATION: HILLSIDE TERRACE

TRIAL PIT RECORD

BACHY SOLETANCHE

BACHY SOLETANCHE GROUP
SOILS & FOUNDATIONS SPECIALISTS

Date 14/7/87

Page No. 1 of 1

SAMPLES & TESTS

DEPTH (m) DATUM = +19.54 m.P.D.

LEGEND	DESCRIPTION	GRADE
	Concrete slab.	FILL
	Brown, speckled white, silty fine to coarse SAND with bricks & boulders. (FILL)	
	Brownish grey, mottled yellowish white & black, fine to coarse SAND. (H.D.G.)	IV
	End of pit at 1.30m	

0 — water pipe — 0.5 — 1.0 — H.D.G. — 1.5 — 2.0 — 2.5 — 3.0 — 3.5 — 4.0 — 4.5 — 5.0 — 5.5

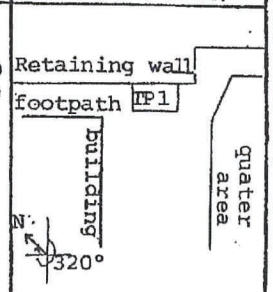
sewage pipe Ø 0.20m

A — water pipe — D — sewage pipe — B — C — 1.00m — 1.50m

FACE A: FACE B: FACE C: FACE D:

SYMBOL	SAMPLES/TESTS/WATER
•	Small dist. samples
◆	Large dist. samples
▮	Undist. sample hori. ( )
▮	Undist. sample vert. ( )
⊠	Block sample
⊥	Plate bearing test
▽	Insitu density test
m	Moisture content test
▲	water sample
↓	Seepages

PLAN (not to scale)



SHEET 1 OF 1

T.P. 1

CONTRACTOR: B.S.G.

WORKS ORDER NO.: PW7/2/19.4

SHORING: NIL

LOGGED BY: CHOW DATE: 13/7/87

CO-ORDINATES: E 835508.45 N 815181.11

EXCAVATION DATES: 11/7/87

PIT NO.: TP 2

LOCATION: HILLSIDE TERRACE

TRIAL PIT RECORD

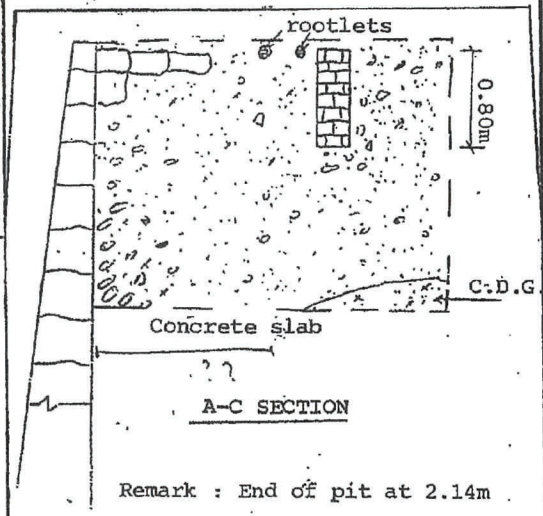
BACHY SOLETANCHE

BACHY SOLETANCHE GROUP
SOIL & FOUNDATIONS SPECIALISTS

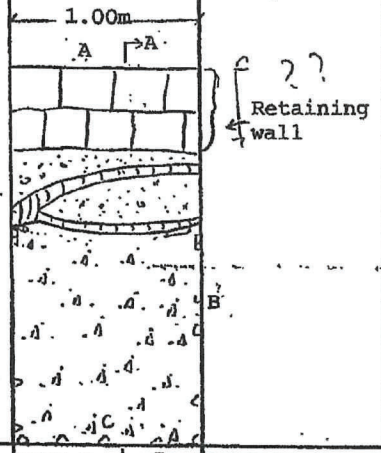
Date 14/7/87

Page No. 1 of 1

SAMPLES & TESTS	DEPTH (m)	DATUM = +32.34 m.P.D.	LEGEND	DESCRIPTION	GRADE
	0			Concrete slab	
U	0.5	rootlet		Brown, mottled grey, silty fine to coarse SAND with gravels & brick fragments. (FILL)	FILL
	1.0				
U	1.5				
	2.0	C.D.G.			
	2.5				
	3.0				
	3.5				
	4.0				
	4.5				
	5.0				
	5.5				



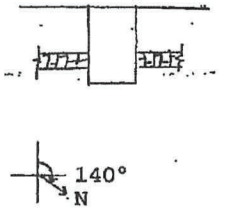
Remark : End of pit at 2.14m



FACE A: FACE B: → C FACE C: FACE D:

SYMBOL	SAMPLES/TESTS/WATER
•	Small dist. samples
◆	Large dist. samples
▬	Undist. sample hori. ( )
▮	Undist. sample vert. ( )
⊠	Block sample
⊥	Plate bearing test
γ	Insitu density test
m	Moisture content test
▲	Water sample
↓	Seepages

PLAN (not to scale)



SHEET 1 OF 1

T.P. 2

CONTRACTOR: .. B.S.G.

SHORING NIL

CO-ORDINATES: E 835520.79 N 815174.87

PIT NO.: TP 3

WORKS ORDER NO.: PW7/2/19.4

LOGGED BY: CHOW DATE: 13/7/87

EXCAVATION DATES: 11/7/87

LOCATION: HILLSIDE TERRACE

TRIAL PIT RECORD

BACHY SOLETANCHE

BACHY SOLETANCHE GROUP
SOIL & FOUNDATIONS SPECIALISTS

SAMPLES & TESTS	DEPTH (m)	DESCRIPTION	GRADE
	0	Concrete slab	
U	0.5	Dark grey brown, speckled white, silty fine to coarse SAND with gravels & brick fragments. (FILL)	FILL
	1.0	Yellowish brown, speckled white, fine to coarse SAND. (H.D.G.)	IV
	1.5		
	2.0		
	2.5		
	3.0		
	3.5		
	4.0		
	4.5		
	5.0		
	5.5		

DATUM= +19.68m.PD

H.D.G.

drainage pipe Ø 5mm

relict joint

H.D.G.

1.10m

A

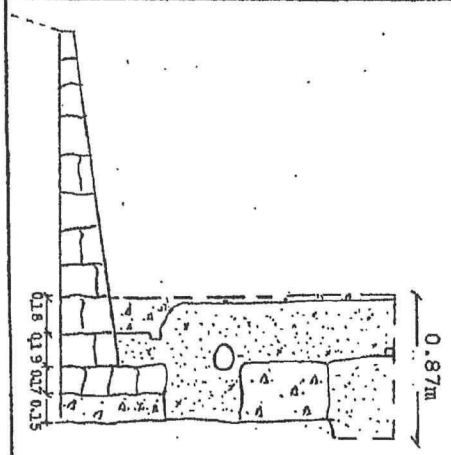
drainage pipe

1.50m

D

B

C

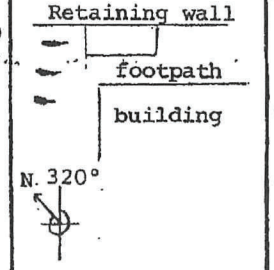


A-C SECTION

Remark : End of pit at 0.87m

SYMBOL	SAMPLES/TESTS/WATER
•	Small dist. samples
◆	Large dist. samples
	Undist. sample hori. ( )
	Undist. sample vert. ( )
B	Block sample
⊥	Plate bearing test
Y	Insitu density test
m	Moisture content test
▲	water sample
↓	Seepages

PLAN (not to scale)



FACE A:

FACE B:

FACE C:

FACE D:

SHEET 1 OF 1

T.P. 3

Date 14/7/87

Page No.1 of 1

CONTRACTOR: B.S.G.

WORKS ORDER NO.: PW7/2/19.4

SHORING : NIL

LOGGED BY: CHOW DATE: 14/7/87

CO-ORDINATES: E 835519.16 N 815171.40

EXCAVATION DATES: 11/7/87

PIT NO.: TP 4

LOCATION: HILLSIDE TERRACE

BACHY SOLETANCHE

BACHY SOLETANCHE GROUP
SOIL & FOUNDATIONS SPECIALISTS

TRIAL PIT RECORD

SAMPLES & TESTS | DEPTH (m) | DATUM = +32.03 m.P.D. | LEGEND | DESCRIPTION | GRADE

0 / 0.5 / 1.0 / 1.5 / 2.0 / 2.5 / 3.0 / 3.5 / 4.0 / 4.5 / 5.0 / 5.5

Lean mixed cement with brick fragments

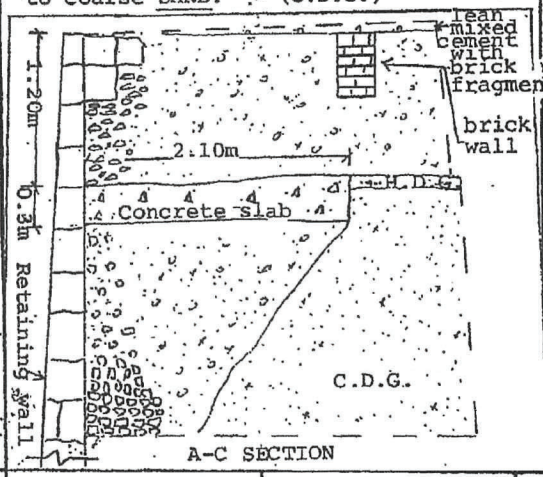
Gravels, cobbles & boulder of grade II/III granite & brick fragments in a brown silty SAND matrix.

(FILL)

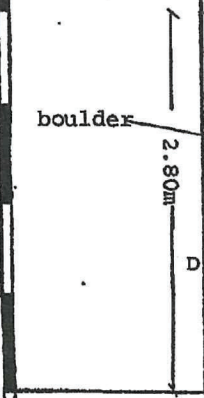
FILL

Brown, mottled yellowish white, speckled reddish pink, silty fine to coarse SAND. (C.D.G.)

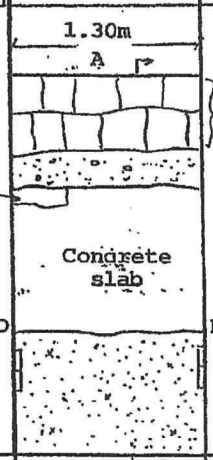
V



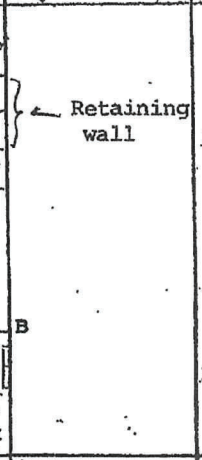
FACE A:



FACE B: → C



FACE C:

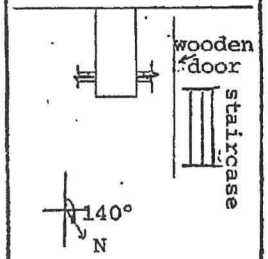


FACE D:

Remark:
End of pit at 3.20m

SYMBOL	SAMPLES/TESTS/WATER
•	Small dist. samples
◆	Large dist. samples
I	Undist. sample hori. ( )
▮	Undist. sample vert. ( )
⊟	Block sample
⊥	Plate bearing test
V	Insitu density test
m	Moisture content test
▲	Water sample
+	Seepages

PLAN (not to scale)



SHEET 1 OF 1

T.P. 4

Date 14/7/87

Page No. 1 of 1

Appendix B

Summary of Existing Registered Features

Appendix B – Summary of Existing Features

Feature No.	Maintenance Responsibility	Slope/Wall Dimension (Length x max. height)	Angle	Findings
11SW-B/CR252	IL1940 IL2140 Lands D	21m x 9m (slope) 21m x 5m (wall)	60° (slope) 90° (wall)	- Stage 2 stability study (S2R220/2003) was carried out in 2004. - Advisory letter and follow-up action were recommended to IL1940 and Lands D, respectively.
11SW-B/CR253	IL8102 & EXT IL1669 IL1564 IL2272 & EXT Lands D	18m x 8.5 (slope) 10m x 2m (wall)	70° (slope) 88° (wall)	
11SW-B/CR235	IL8102 & EXT	80m x 18m (slope) 36m x 5.5m (wall)	45° (slope) 85° (wall)	- Slope upgrading works were implemented by the responsible owner, and GEO advised BD on 28/9/2011 of no geotechnical objection to the acknowledgement of Form BA14.
11SW-B/CR349	IL2140 Lands D IL8102 & EXT	15m x 4m (slope) 15m x 8m (wall)	30° (slope) 80° (wall)	- DH0035/HK/11/C dated 30 March 2011 served to IL2140 and slope remedial works approved by BD on 23 June 2011. The slope remedial works were completed in November 2017. - Stage 3 study on government portion deferred in 1997. - Stage 3 study report (S3R 120/2011) on government portion completed in December 2011. Installation of soil nails was proposed to upgrade the feature to the current safety standards. The upgrading works were completed in September 2012.
11SW-B/C353	Lands D	5m x 4m	80°	
11SW-B/R617	IL199 RP	25m x 11.8m	80°	- GEO in-house Stage 2 study (S2R 4/88) completed in 1988; no action required. - GEO Stage 2 study (S2R 23/2012) completed in 2014. DH0038/HK/15/C dated 6 March 2015 served to IL199R.P.
11SW-B/R629	IL2140	45m x 10m	85°	- DH0035/HK/11/C dated 30 March 2011 served to IL2140 and slope remedial works approved by BD on 23 June 2011. The slope remedial works were completed in November 2017.
11SW-B/R963	IL8102 & EXT IL199 RP	8m x 5.5m	85°	
11SW-B/R1023	IL2140	5.6m x 12.2 m	90°	-New registration of Slope Feature, approved on 13 January 2023.

BASIC INFORMATION

Location:	1-6 SAU WAH FONG, WANCHAI, HK.
Registration Date:	16-03-1998
Ranking Score (NPRS):	43565 (Notional)
Date of Formation:	post-1977
Date of Construction/ Modification:	
Data Source:	EI
Approximate Coordinates:	Easting : 835489 Northing : 815199

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	School
Distance of Facility from Crest (m):	7
Facility at Toe:	Residential building
Distance of Facility from Toe (m):	2
Consequence-to-life Category:	1
Remarks:	N/A

SLOPE PART

N/A

WALL PART

(1) Max. Height (m): 8.3 Length (m): 26 Face Angle (deg): 83

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 1	Private Feature	Party: IL199B4	Agent: N/A	Land Cat.: 1	Reason Code: 1	MR Endorsement Date: 30-08-2005
(2) Sub Div.: 2	Private Feature	Party: IL199E3	Agent: N/A	Land Cat.: 1	Reason Code: 1	MR Endorsement Date: 30-08-2005
(3) Sub Div.: 3	Private Feature	Party: IL199CRP	Agent: N/A	Land Cat.: 1	Reason Code: 1	MR Endorsement Date: 30-08-2005
(4) Sub Div.: 4	Private Feature	Party: IL199D3	Agent: N/A	Land Cat.: 1	Reason Code: 1	MR Endorsement Date: 30-08-2005
(5) Sub Div.: 5	Private Feature	Party: IL199A6	Agent: N/A	Land Cat.: 1	Reason Code: 1	MR Endorsement Date: 30-08-2005
(6) Sub Div.: 6	Private Feature	Party: IL199RP	Agent: N/A	Land Cat.: 1	Reason Code: 1	MR Endorsement Date: 30-08-2005

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection:	01-09-1999
Data Source:	EI
Slope Part Drainage:	N/A
Wall Part Drainage:	(1) Position: Crest Size(mm): 275

SLOPE PART

N/A

WALL PART

Wall Part (1)
Type of Wall: Wall Material: Masonry Wall Location: Retaining wall with level platform
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): 65 Spacing (m): 2.2

SERVICES

N/A

CHECKING STATUS INFORMATION

N/A

BACKGROUND INFORMATION

GIU Cell Ref.:	11SW14B7
Map Sheet Reference (1:1000):	11SW-14B
Aerial Photos:	7054-5 (1963),
Nearest Rainguage Station (Station Number):	25 Borrett Road(H17)
Data Collected On:	01-09-1999
Date of Construction, Subsequent Modification and Demolition:	Modification: Constructed Before: 1963 After: N/A
Related Reports/Files or Documents:	File/Report: DB or DH Ref. No.: GCI3/4/DH239/95/HK, GCI3/4/DH483/79/HK File/Report: DB or DH Ref. No.: GCI3/4/DH239/95/HK, GCI3/4/DH483/79/HK File/Report: GCC Ref. No.: GCC paper No.355 File/Report: GCC Ref. No.: GCC paper No.355 File/Report: GEO Ref. No.: DH Order issued on 20/5/96 rpt ref: S2R 31/95 File/Report: GEO Ref. No.: DH Order issued on 20/5/96 rpt ref: S2R 31/95 File/Report: GEO Ref. No.: Stage 2 report S2R 31/95 File/Report: GEO Ref. No.: Stage 2 report S2R 31/95 File/Report: Pre-SIRST Ref. No.: Field Sheet File/Report: Pre-SIRST Ref. No.: Field Sheet
Remarks:	FILE GCI3/4/DH483/79/HK QUOTED ON THE DISTRICT OVERLAY DOES NOT RELATE TO THIS FEATURE.
Follow Up Actions:	N/A

DH-Order (To Be Confirmed with Buildings Department):	Date of Recommendation to BD: 23/11/1995 File Reference: DH/0239/95/HK Date Served by BD: 29/01/1997 Notice No.: DH027/HK/97/C Date of Recommendation to BD: 23/11/1995 File Reference: DH/0239/95/HK Date Served by BD: 29/01/1997 Notice No.: DH028/HK/97/C Date of Recommendation to BD: 23/11/1995 File Reference: DH/0239/95/HK Date Served by BD: 20/05/1996 Notice No.: DH051/HK/96/C
Advisory Letter (To Be Confirmed with Buildings Department):	None
LPMIS:	Agreement No.: CE33/93 Report No.: S2R 31/95

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 01/08/2024)

STAGE 1 STUDY REPORT

Inspected On:	
Weather:	
District:	I
Section No:	1-1
Height(m):	
Type of Toe Facility:	Residential building
Distance from Toe(m):	2
Type of Crest Facility:	School
Distance from Crest(m):	7
Consequence Category:	
Engineering Judgement:	
Section No:	2-2
Type of Toe Facility:	
Distance from Toe(m):	
Type of Crest Facility:	
Distance from Crest(m):	
Consequence Category:	
Engineering Judgement:	
Sign of Seepage:	
Criterion A satisfied:	
Sign of Distress:	
Criterion D satisfied:	
Non-routine maintenance required:	
Note:	
Masonry wall/Masonry facing:	
Note:	
Consequence category (for critical section):	

Observations: N/A
Emergency Action Required:
Action By: N/A

ACTION TO INITIATE PREVENTIVE WORKS

Criterion A/Criterion D: N/A
Action By: N/A
Further Study:
Action By: N/A

OTHER EXTERNAL ACTION

Check / repair Services:
Action By: N/A
Non-routine Maintenance:
Action By: N/A

eLPMIS

LPM/LPMit Details Report

LPM Study Feature No.:	11SW-B/R 616
Location:	{1-10 SAU WA FONG, WANCHAI}
District Council:	Wanchai
Maintenance Responsibility (At the Time of Selection):	Private
Responsible Party for Maintenance of Government Portion:	N/A
Private Lot No.:	NA

LPM/LPMit Study

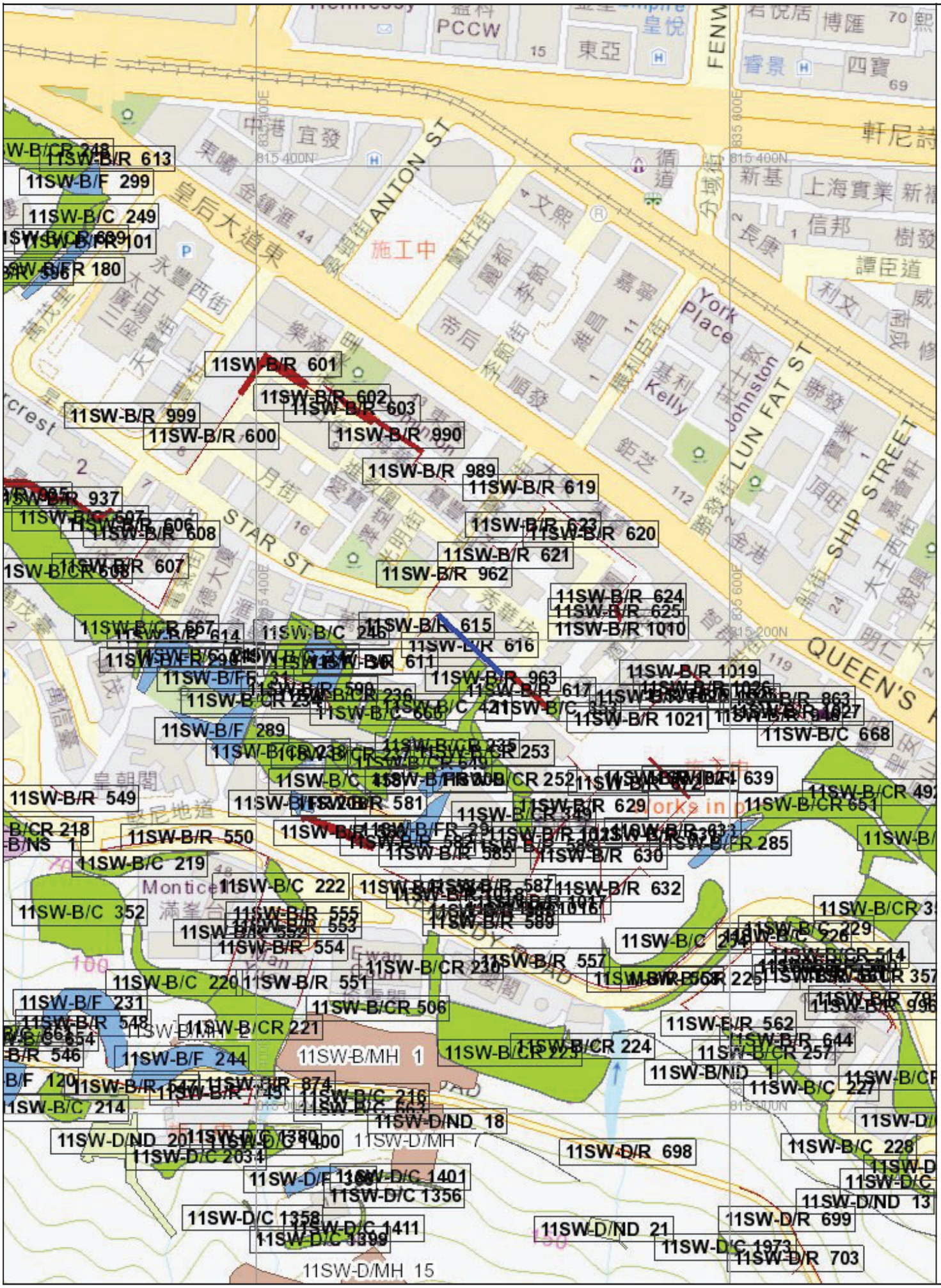
Agreement No.:	CE33/93
Study Type:	Stage 2 Study
Consultant:	Mott Connell Ltd.
GEO Managing Section / Engineer:	LPM3 / CM62
Study Status:	Study completed
Design Approach:	Otherwise
Option Assessment Accepted:	N/A
Study Report No.:	S2R 31/95
Programme / Actual Commencement:	01-06-1994
Programme / Actual Completion:	31-08-1998
Report Recommendation (For Stage 2 Study):	DH Order
District Check Status:	Checked
Checking Certificate No.:	N/A

GEO Engineer's Remarks:	N/A

LPM/LPMit Works

Works Contract No.:	N/A
GEO Managing Section / Engineer:	N/A / N/A
Contractor:	N/A
Progress Status:	N/A
Reason of Study Termination / Works Deletion (If Necessary):	N/A
Forecast Commencement Date:	N/A
Forecast Completion Date:	N/A
Completion Cert. Issued:	N/A
Site Handed Over to Maintenance Department on:	N/A
Estimated Cost for Upgrading (HK$M):	N/A
Maintenance Manual No.:	N/A
Actual Works:	N/A
No. of Tree Felled:	N/A
No. of Tree Planted (Incl. Transplant):	N/A
% Bare of Slope Surfacing:	N/A
% Vegetated of Slope Surfacing:	N/A
% Shotcrete of Slope Surfacing:	N/A
Other Hard Surface of Slope Surfacing:	N/A

PHOTO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11SW-B/R 644
11SW-B/R 546
11SW-B/F 244
11SW-B/CR 257
11SW-B/ND 1
11SW-B/C 227
11SW-B/C 214
11SW-D/ND 18
11SW-D/MH
11SW-D/ND 20
11SW-D/C 2034
11SW-D/R 698
11SW-B/C 228
11SW-D/C 1401
11SW-D/C 1356
11SW-D/ND 13
11SW-D/C 1358
11SW-D/R 699
11SW-D/C 1411
11SW-D/ND 21
11SW-D/C 1973
11SW-D/R 703
11SW-D/MH 15
STAR ST
SHIP STREET
LUN FAT ST
ANTON ST
QUEEN'S
皇后大道東
施工中
PCCW
York Place
Kelly
Johnston

BASIC INFORMATION

Location:	No. 18 Sau Wa Fong, Hong Kong - Lot No. I.L. 199 R.P.
Registration Date:	16-03-1998
Ranking Score (NPRS):	73 (LPMit)
Date of Formation:	post-1977
Date of Construction/ Modification:	24-07-2022
Data Source:	AP
Approximate Coordinates:	Easting : 835515 Northing : 815179

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Cottage, licensed and squatter area
Distance of Facility from Crest (m):	0
Facility at Toe:	Residential building
Distance of Facility from Toe (m):	0
Consequence-to-life Category:	1
Remarks:	N/A

SLOPE PART

N/A

WALL PART

(1) Max. Height (m): 11.8 Length (m): 25 Face Angle (deg): 85

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 0 Private Feature Party: IL199 RP Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 25-09-2013

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection:	28-08-2022
Data Source:	AP
Slope Part Drainage:	N/A
Wall Part Drainage:	(1) Position: Toe Size(mm): 300

SLOPE PART

N/A

WALL PART

Wall Part (1)
Type of Wall: Wall Material: Masonry Wall Location: Retaining wall with level platform
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): 90 Spacing (m): 1.2

SERVICES

(1) Utilities Type: Water Main Size(mm): 45 Location: On slope Remark: N/A

CHECKING STATUS INFORMATION

Tagmark: SCS_20036 Part: 0 Checking Status: Feature modified/upgraded to current standard Checking Certificate No.: N/A

BACKGROUND INFORMATION

GIU Cell Ref.:	11SW14B8
Map Sheet Reference (1:1000):	11SW-14B
Aerial Photos:	6122-3 (1949),
Nearest Rainguage Station (Station Number):	25 Borrett Road(H17)
Data Collected On:	28-08-2022
Date of Construction, Subsequent Modification and Demolition:	Modification: Constructed Before: 1949 After: N/A Modification: Substantially Modified Before: N/A After: 1981
Related Reports/Files or Documents:	File/Report: DB or DH Ref. No.: GCI3/4/DH32/82/HK File/Report: DB or DH Ref. No.: GCI3/4/DH32/82/HK File/Report: Development Ref. No.: GCI3/4/1152/78 File/Report: Development Ref. No.: GCI3/4/1152/78 File/Report: GEO Ref. No.: Stage 1 report by planning File/Report: GEO Ref. No.: Stage 1 report by planning File/Report: GEO Ref. No.: Stage 2 report 4/88, File closed. File/Report: GEO Ref. No.: Stage 2 report 4/88, File closed. File/Report: LRDC Ref. No.: D346/66/HK File/Report: LRDC Ref. No.: D346/66/HK File/Report: Pre-SIRST Ref. No.: Field Sheet File/Report: Pre-SIRST Ref. No.: Field Sheet File/Report: Previous Instability Ref. No.: 9/3/92 92/3/3 File/Report: Previous Instability Ref. No.: 9/3/92 92/3/3
Remarks:	N/A
Follow Up Actions:	N/A

DH-Order (To Be Confirmed with Buildings Department):	Date of Recommendation to BD: 13/08/2014 File Reference: DH/0032/80/HK Date Served by BD: 05/03/2021 Notice No.: DH0005/HK/21/C Date of Recommendation to BD: 13/08/2014 File Reference: DH/0032/80/HK Date Served by BD: 06/03/2015 Notice No.: DH0038/HK/15/C Date of Recommendation to BD: 13/08/2014 File Reference: DH/0032/80/HK Date Served by BD: 11/11/2020 Notice No.: DH0062/HK/20/C
Advisory Letter (To Be Confirmed with Buildings Department):	Date of Recommendation to BD: 16/03/1992 File Reference: DH032/80/HK Date Served by BD: 26/10/1992 Date of Recommendation to BD: 16/03/1992 File Reference: D 365/75/HK Date Served by BD: 25/01/1996 Date of Recommendation to BD: 14/02/2012 File Reference: DH032/80/HK Date Served by BD: 04/06/2012
LPMIS:	Agreement No.: CE58/2009 Report No.: S2R 23/2012 Agreement No.: In-house Design Report No.: S2R 4/88

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 01/08/2024)

STAGE 1 STUDY REPORT

Inspected On:	
Weather:	
District:	I
Section No:	1-1
Height(m):	
Type of Toe Facility:	Residential building
Distance from Toe(m):	0
Type of Crest Facility:	Cottage, licensed and squatter area
Distance from Crest(m):	0
Consequence Category:	
Engineering Judgement:	
Section No:	2-2
Type of Toe Facility:	
Distance from Toe(m):	
Type of Crest Facility:	
Distance from Crest(m):	
Consequence Category:	
Engineering Judgement:	
Sign of Seepage:	
Criterion A satisfied:	
Sign of Distress:	
Criterion D satisfied:	
Non-routine maintenance required:	
Note:	

Masonry wall/Masonry facing:

Note:

Consequence category (for critical section):

Observations: N/A

Emergency Action Required:

Action By: N/A

ACTION TO INITIATE PREVENTIVE WORKS

Criterion A/Criterion D: N/A

Action By: N/A

Further Study:

Action By: N/A

OTHER EXTERNAL ACTION

Check / repair Services:

Action By: N/A

Non-routine Maintenance:

Action By: N/A

eLPMIS

LPM/LPMit Details Report

LPM Study Feature No.:	11SW-B/R 617
Location:	SOUTH OF NO.18 SAN WAH FONG
District Council:	Wanchai
Maintenance Responsibility (At the Time of Selection):	Private
Responsible Party for Maintenance of Government Portion:	N/A
Private Lot No.:	IL199 RP

LPM/LPMit Study

Agreement No.:	CE58/2009
Study Type:	Stage 2 Study
Consultant:	Atkins China Ltd.
GEO Managing Section / Engineer:	SS / SS3
Study Status:	Study completed
Design Approach:	N/A
Option Assessment Accepted:	N/A
Study Report No.:	S2R 23/2012
Programme / Actual Commencement:	20-02-2012

Programme / Actual Completion:	27-10-2012
Report Recommendation (For Stage 2 Study):	DH Order
District Check Status:	Exempted from checking
Checking Certificate No.:	N/A
GEO Engineer's Remarks:	N/A

LPM/LPMit Works

Works Contract No.:	N/A
GEO Managing Section / Engineer:	N/A / N/A
Contractor:	N/A
Progress Status:	N/A
Reason of Study Termination / Works Deletion (If Necessary):	N/A
Forecast Commencement Date:	N/A
Forecast Completion Date:	N/A
Completion Cert. Issued:	N/A
Site Handed Over to Maintenance Department on:	N/A
Estimated Cost for Upgrading (HK$M):	N/A
Maintenance Manual No.:	N/A
Actual Works:	N/A
No. of Tree Felled:	N/A
No. of Tree Planted (Incl. Transplant):	N/A
% Bare of Slope Surfacing:	N/A
% Vegetated of Slope Surfacing:	N/A
% Shotcrete of Slope Surfacing:	N/A
Other Hard Surface of Slope Surfacing:	N/A

LPM/LPMit Details Report

LPM Study Feature No.:	11SW-B/R 617
Location:	SOUTH OF NO.18 SAN WAH FONG
District Council:	Wanchai
Maintenance Responsibility (At the Time of Selection):	Private
Responsible Party for Maintenance of Government Portion:	N/A
Private Lot No.:	NA

LPM/LPMit Study

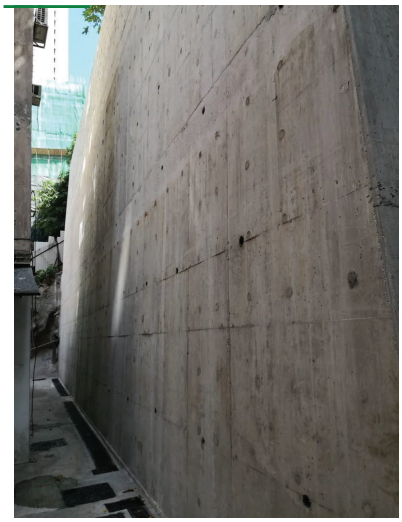
Agreement No.:	In-house Design
Study Type:	Stage 2 Study
Consultant:	N/A
GEO Managing Section / Engineer:	LPM2 / N/A
Study Status:	Study completed
Design Approach:	Conventional (GI + Analysis)
Option Assessment Accepted:	N/A
Study Report No.:	S2R 4/88
Programme / Actual Commencement:	N/A

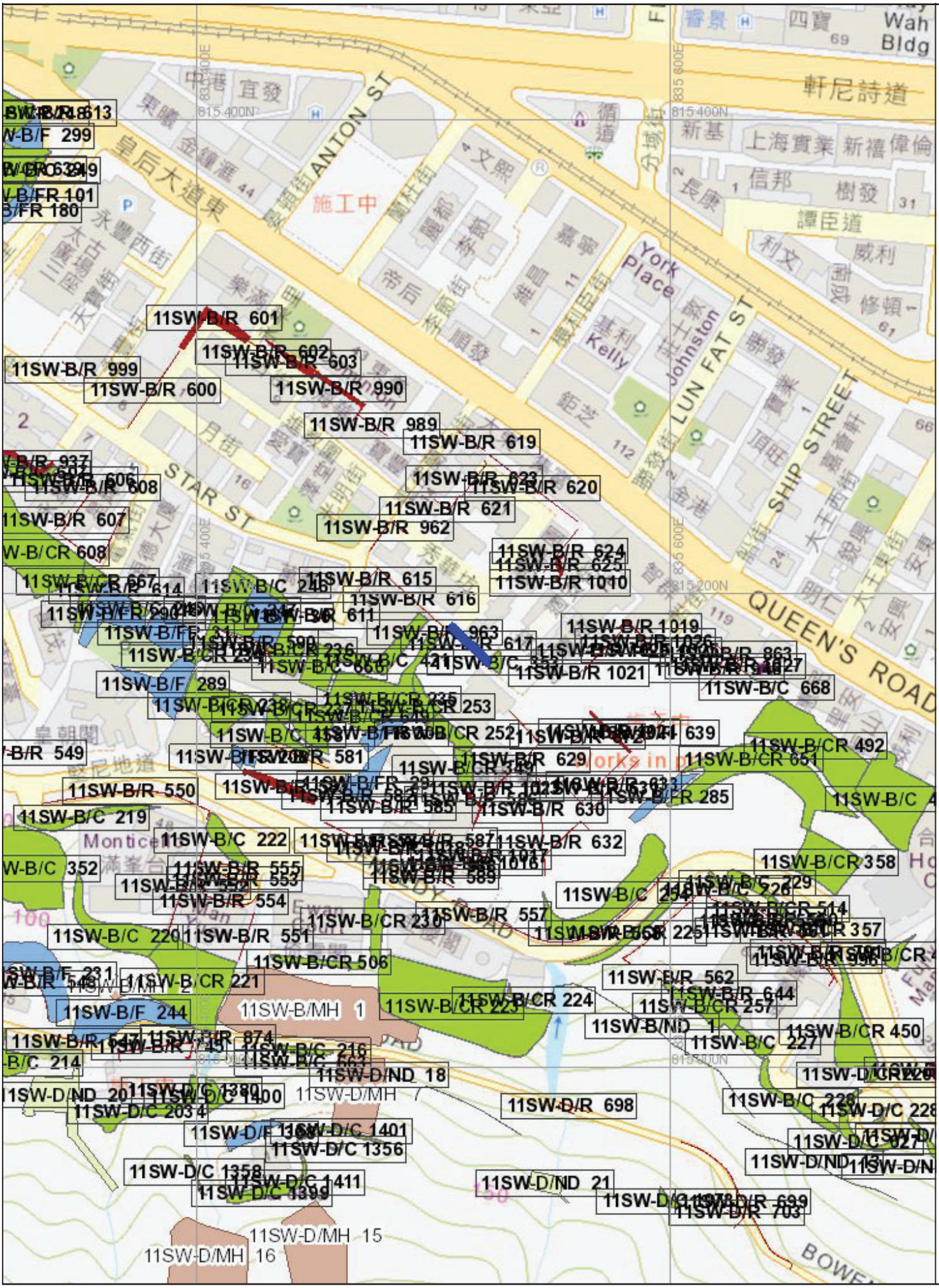
Programme / Actual Completion:	N/A
Report Recommendation (For Stage 2 Study):	No action required
District Check Status:	Not checked
Checking Certificate No.:	N/A
GEO Engineer's Remarks:	NO FURTHER ACTION

LPM/LPMit Works

Works Contract No.:	N/A
GEO Managing Section / Engineer:	N/A / N/A
Contractor:	N/A
Progress Status:	N/A
Reason of Study Termination / Works Deletion (If Necessary):	N/A
Forecast Commencement Date:	N/A
Forecast Completion Date:	N/A
Completion Cert. Issued:	N/A
Site Handed Over to Maintenance Department on:	N/A
Estimated Cost for Upgrading (HK$M):	N/A
Maintenance Manual No.:	N/A
Actual Works:	N/A
No. of Tree Felled:	N/A
No. of Tree Planted (Incl. Transplant):	N/A
% Bare of Slope Surfacing:	N/A
% Vegetated of Slope Surfacing:	N/A
% Shotcrete of Slope Surfacing:	N/A
Other Hard Surface of Slope Surfacing:	N/A

PHOTO

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11SW-B/CR 221
11SW-B/R 562
11SW-B/R 644
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11SW-D/C 1401
11SW-D/C 1356
11SW-D/C 1358
11SW-D/C 1411
11SW-D/C 1399
11SW-D/ND 21
11SW-D/R 699
11SW-D/R 703
11SW-D/MH 15
11SW-D/MH 16
STAR ST
QUEEN'S ROAD
LUN FAT ST
SHIP STREET
York Place
Johnston
Kelly
皇后大道東
施工中
軒尼詩道
Wah Bldg

BASIC INFORMATION

Location:	66 Schooner Street, Wan Chai
Registration Date:	16-03-1998
Ranking Score (NPRS):	0 (EI)
Date of Formation:	pre-1977
Date of Construction/ Modification:	
Data Source:	EI(Lands D)
Approximate Coordinates:	Easting : 835527 Northing : 815168

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Residential building
Distance of Facility from Crest (m):	0
Facility at Toe:	Road/footpath with moderate traffic density
Distance of Facility from Toe (m):	0
Consequence-to-life Category:	1
Remarks:	N/A

SLOPE PART

(1) Max. Height (m): 4 Length (m): 5 Average Angle (deg): 80

WALL PART

N/A

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 1 Private Feature Party: IL 9048 Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 04-06-2018
(2) Sub Div.: 2 Private Feature Party: IL 199 RP Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 04-06-2018

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection:	11-11-2016
Data Source:	EI(Lands D)
Slope Part Drainage:	N/A
Wall Part Drainage:	N/A

SLOPE PART

Slope Part (1)
Surface Protection (%): Bare: 0 Vegetated: 0 Chunam: 100 Shotcrete: 0 Other Cover: 0
Material Description: Material type: Soil Geology: N/A
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): 50 Spacing (m): 1

WALL PART

N/A

SERVICES

N/A

CHECKING STATUS INFORMATION

N/A

BACKGROUND INFORMATION

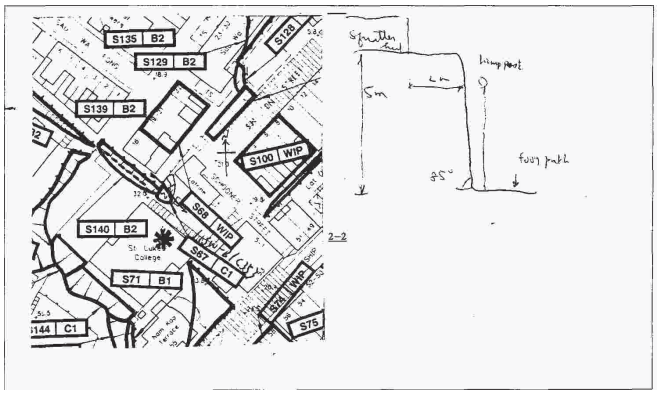
GIU Cell Ref.:	11SW14B8
Map Sheet Reference (1:1000):	11SW-14B
Aerial Photos:	N/A
Nearest Rainguage Station (Station Number):	25 Borrett Road(H17)
Data Collected On:	11-11-2016
Date of Construction, Subsequent Modification and Demolition:	N/A
Related Reports/Files or Documents:	N/A
Remarks:	FILE GCI 3/4/DH32/80/HK QUOTED ON THE DISTRICT OVERLAY RELATES ONLY TO ANOTHER FEATURE AT THE SAME PREMISES
Follow Up Actions:	N/A
DH-Order (To Be Confirmed with Buildings Department):	None
Advisory Letter (To Be Confirmed with Buildings Department):	None
LPMIS:	Agreement No.: CE79/95 Report No.: N/A

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 01/08/2024)

STAGE 1 STUDY REPORT

Inspected On:	23-04-1996
Weather:	Mainly Fine
District:	I



Section No:	1-1
Height(m):	H1 : 3 , H2 : 0
Type of Toe Facility:	Road/footpath with moderate traffic density
Distance from Toe(m):	0
Type of Crest Facility:	Residential building
Distance from Crest(m):	0
Consequence Category:	1
Engineering Judgement:	P
Section No:	2-2
Type of Toe Facility:	Licensed and squatter area
Distance from Toe(m):	0
Type of Crest Facility:	Road with very low traffic
Distance from Crest(m):	0
Consequence Category:	1
Engineering Judgement:	P
Sign of Seepage:	Slope : No signs of seepage Wall : N/A
Criterion A satisfied:	N
Sign of Distress:	Slope : Reasonable (near crest, mid-portion, at toe) Wall : N/A
Criterion D satisfied:	N
Non-routine maintenance required:	N
Note:	N/A
Masonry wall/Masonry facing:	N
Note:	N/A
Consequence category (for critical section):	1
Observations:	N/A
Emergency Action Required:	N
Action By:	N/A

ACTION TO INITIATE PREVENTIVE WORKS

Criterion A/Criterion D:	N/A
Action By:	N/A
Further Study:	Y
Action By:	Mixed

OTHER EXTERNAL ACTION

Check / repair Services:	N
Action By:	N/A
Non-routine Maintenance:	N
Action By:	N/A

eLPMIS

LPM/LPMit Details Report

LPM Study Feature No.:	11SW-B/C 251
Location:	SCHOONER STREET
District Council:	Wanchai
Maintenance Responsibility (At the Time of Selection):	Government
Responsible Party for Maintenance of Government Portion:	FEHD
Private Lot No.:	N/A

LPM/LPMit Study

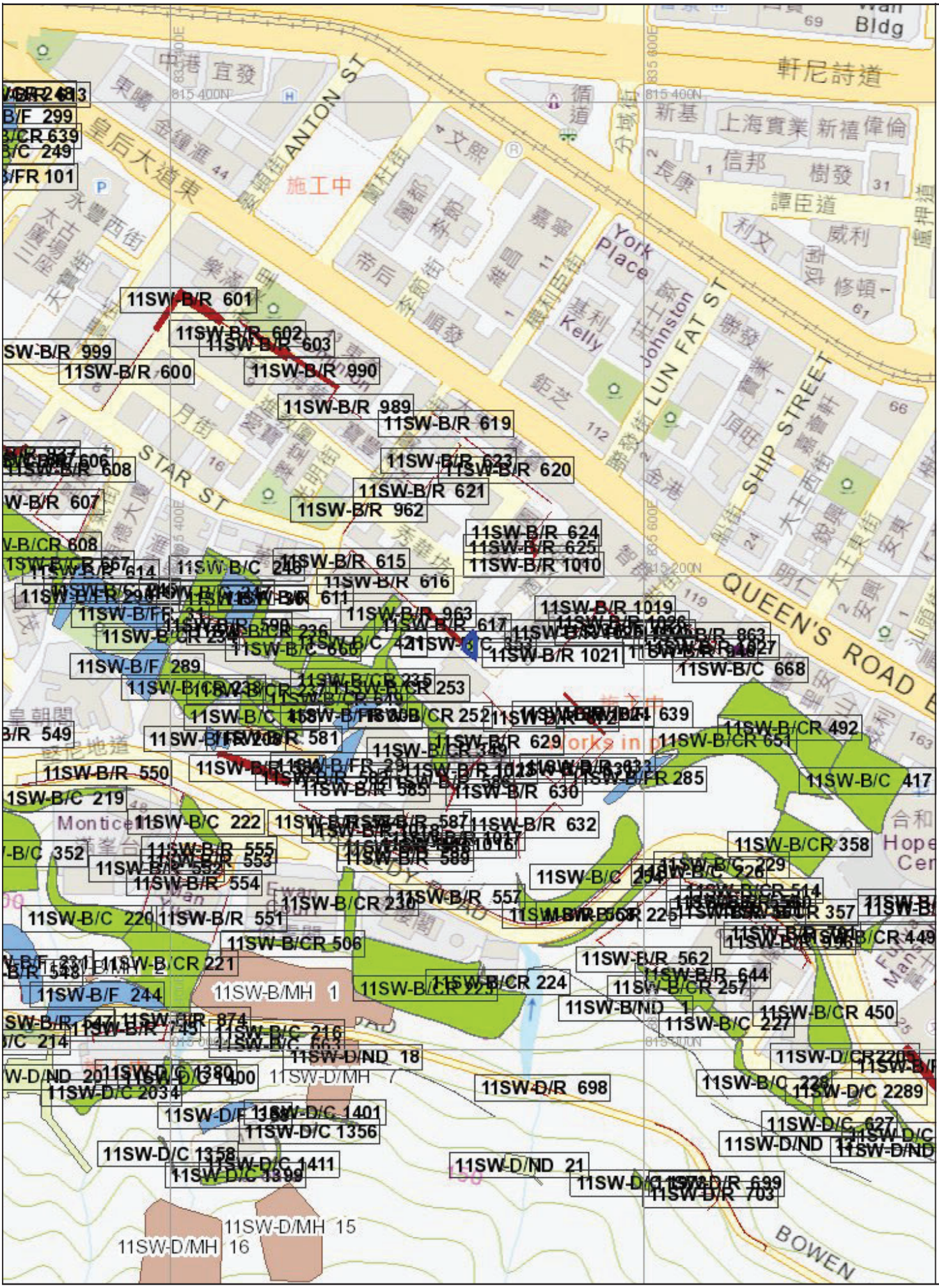
Agreement No.:	CE79/95
Study Type:	Stage 2 Study
Consultant:	Binnie Consultants Ltd.
GEO Managing Section / Engineer:	LPM1 / CM11
Study Status:	Stage 2 study suspended as MR found to rest with GOVERNMENT
Design Approach:	N/A
Option Assessment Accepted:	N/A
Study Report No.:	N/A
Programme / Actual Commencement:	N/A
Programme / Actual Completion:	N/A
Report Recommendation (For Stage 2 Study):	N/A
District Check Status:	N/A
Checking Certificate No.:	N/A
GEO Engineer's Remarks:	FEATURE IS NOT PRIVATE.

LPM/LPMit Works

Works Contract No.:	N/A
GEO Managing Section / Engineer:	N/A / N/A

Contractor:	N/A
Progress Status:	N/A
Reason of Study Termination / Works Deletion (If Necessary):	N/A
Forecast Commencement Date:	N/A
Forecast Completion Date:	N/A
Completion Cert. Issued:	N/A
Site Handed Over to Maintenance Department on:	N/A
Estimated Cost for Upgrading (HK$M):	N/A
Maintenance Manual No.:	N/A
Actual Works:	N/A
No. of Tree Felled:	N/A
No. of Tree Planted (Incl. Transplant):	N/A
% Bare of Slope Surfacing:	N/A
% Vegetated of Slope Surfacing:	N/A
% Shotcrete of Slope Surfacing:	N/A
Other Hard Surface of Slope Surfacing:	N/A

PHOTO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11SW-D/ND 13
11SW-D/C 1358
11SW-D/C 1411
11SW-D/C 1399
11SW-D/ND 21
11SW-D/R 699
11SW-D/R 703
11SW-D/MH 15
11SW-D/MH 16
施工中
STAR ST
LUN FAT ST
SHIP STREET
QUEEN'S ROAD E
BOWEN
York Place
Kelly
Johnston

BASIC INFORMATION

Location:	North East of No. 55 Ship Street, Wan Chai
Registration Date:	16-03-1998
Ranking Score (NPRS):	7 (Notional)
Date of Formation:	pre-1977
Date of Construction/ Modification:	20-11-2017
Data Source:	AP
Approximate Coordinates:	Easting : 835543 Northing : 815136

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Residential building
Distance of Facility from Crest (m):	2
Facility at Toe:	Residential building
Distance of Facility from Toe (m):	1
Consequence-to-life Category:	1
Remarks:	N/A

SLOPE PART

N/A

WALL PART

(1) Max. Height (m): 10 Length (m): 45 Face Angle (deg): 85

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 0 Private Feature Party: IL 2140 Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 02-06-1997

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection:	28-12-2018
Data Source:	AP
Slope Part Drainage:	N/A
Wall Part Drainage:	(1) Position: Crest Size(mm): 150 (2) Position: Downpipe Size(mm): 150

SLOPE PART

N/A

WALL PART

Wall Part (1)
Type of Wall: Wall Material: Masonry Wall Location: Retaining wall with level platform
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): 65 Spacing (m): 1.2

SERVICES

N/A

CHECKING STATUS INFORMATION

Tagmark: SCS_18107 Part: 0 Checking Status: Feature modified/upgraded to current standard Checking Certificate No.: N/A

BACKGROUND INFORMATION

GIU Cell Ref.:	11SW14B8
Map Sheet Reference (1:1000):	11SW-14B
Aerial Photos:	6122-3 (1949),
Nearest Rainguage Station (Station Number):	25 Borrett Road(H17)
Data Collected On:	28-12-2018
Date of Construction, Subsequent Modification and Demolition:	Modification: Constructed Before: 1949 After: N/A
Related Reports/Files or Documents:	File/Report: GCC Ref. No.: GCI4/1A/RA6E f(75,77A) File/Report: GCC Ref. No.: GCI4/1A/RA6E f(75,77A) File/Report: GEO Ref. No.: Stage 1 report by existing slope File/Report: GEO Ref. No.: Stage 1 report by existing slope File/Report: Pre-SIRST Ref. No.: Field Sheet File/Report: Pre-SIRST Ref. No.: Field Sheet
Remarks:	N/A
Follow Up Actions:	N/A
DH-Order (To Be Confirmed with Buildings Department):	Date of Recommendation to BD: 27/10/1997 File Reference: DH/020/84/HK Date Served by BD: 10/08/1998 Notice No.: DH161/HK/98/C Date of Recommendation to BD: 27/10/1997 File Reference: DH/020/84/HK Date Served by BD: 10/08/1998 Notice No.: DH161/HK/98/C Date of Recommendation to BD: 27/10/1997 File Reference: DH/020/84/HK Date Served by BD: 30/03/2011 Notice No.: DH0035/HK/11/C Date of Recommendation to BD: 27/10/1997 File Reference: DH/020/84/HK Date Served by BD: 10/08/1998 Notice No.: DH161/HK/98/C
Advisory Letter (To Be Confirmed with Buildings Department):	Date of Recommendation to BD: 12/01/1984 File Reference: DH020/84/HK Date Served by BD: 08/02/1984
LPMIS:	Agreement No.: CE33/93 Report No.: S2R 226/96

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 01/08/2024)

STAGE 1 STUDY REPORT

Inspected On:	
Weather:	
District:	I
Section No:	1-1
Height(m):	
Type of Toe Facility:	Residential building
Distance from Toe(m):	1
Type of Crest Facility:	Residential building
Distance from Crest(m):	2
Consequence Category:	
Engineering Judgement:	
Section No:	2-2
Type of Toe Facility:	
Distance from Toe(m):	
Type of Crest Facility:	
Distance from Crest(m):	
Consequence Category:	
Engineering Judgement:	
Sign of Seepage:	
Criterion A satisfied:	
Sign of Distress:	
Criterion D satisfied:	
Non-routine maintenance required:	
Note:	
Masonry wall/Masonry facing:	
Note:	
Consequence category (for critical section):	
Observations:	N/A
Emergency Action Required:	
Action By:	N/A

ACTION TO INITIATE PREVENTIVE WORKS

Criterion A/Criterion D:	N/A
Action By:	N/A

Further Study:
Action By: N/A

OTHER EXTERNAL ACTION

Check / repair Services:
Action By: N/A
Non-routine Maintenance:
Action By: N/A

eLPMIS

LPM/LPMit Details Report

LPM Study Feature No.:	11SW-B/R 629
Location:	{55 SHIP STREET, WAN CHAI}
District Council:	Wanchai
Maintenance Responsibility (At the Time of Selection):	Private
Responsible Party for Maintenance of Government Portion:	N/A
Private Lot No.:	NA

LPM/LPMit Study

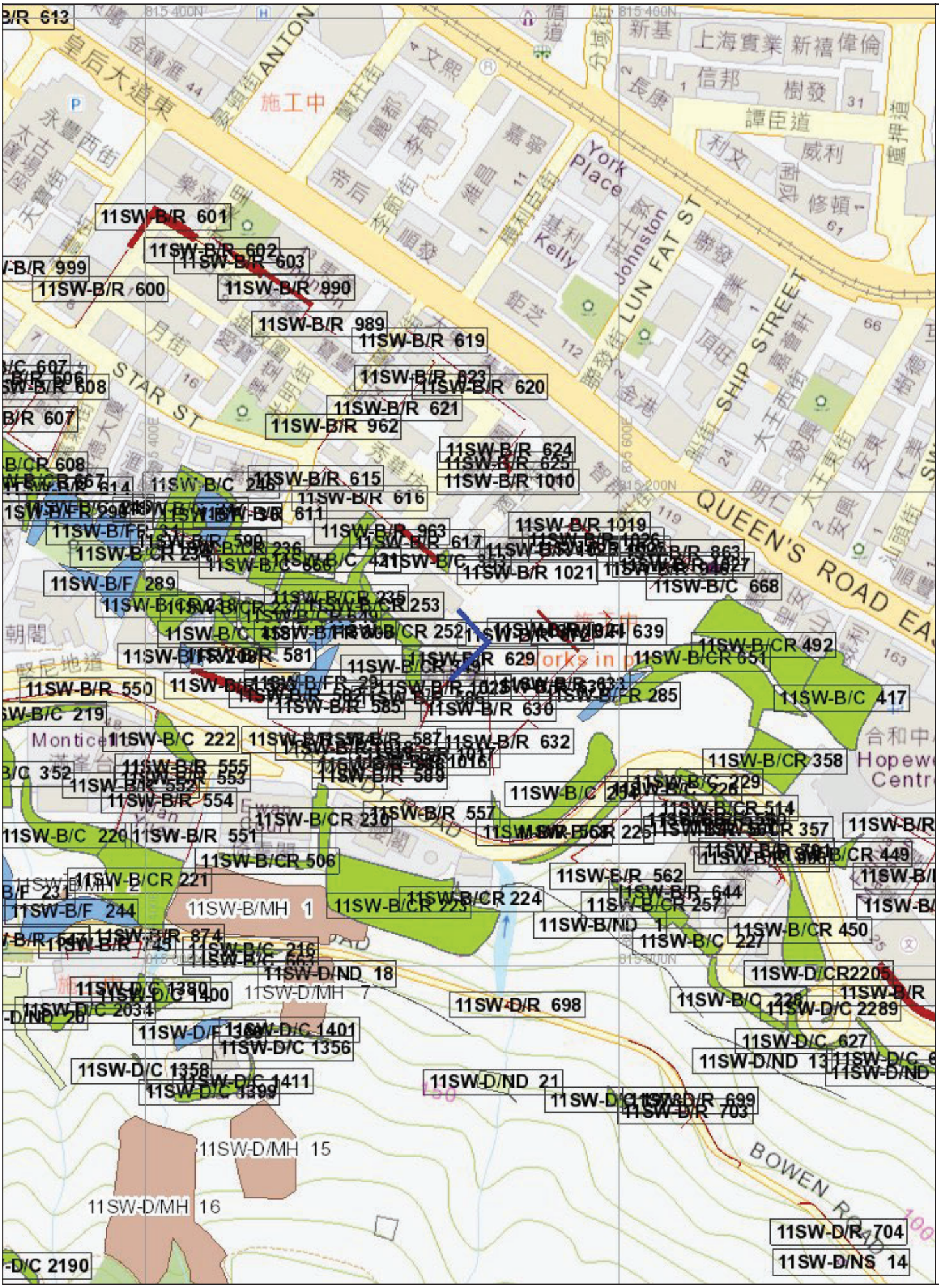
Agreement No.:	CE33/93
Study Type:	Stage 2 Study
Consultant:	Mott Connell Ltd.
GEO Managing Section / Engineer:	LPM3 / CM62
Study Status:	Study completed
Design Approach:	Otherwise
Option Assessment Accepted:	N/A
Study Report No.:	S2R 226/96
Programme / Actual Commencement:	01-05-1994
Programme / Actual Completion:	31-08-1998
Report Recommendation (For Stage 2 Study):	DH Order
District Check Status:	Checked
Checking Certificate No.:	N/A
GEO Engineer's Remarks:	N/A

LPM/LPMit Works

Works Contract No.:	N/A
GEO Managing Section / Engineer:	N/A / N/A
Contractor:	N/A
Progress Status:	N/A

Reason of Study Termination / Works Deletion (If Necessary):	N/A
Forecast Commencement Date:	N/A
Forecast Completion Date:	N/A
Completion Cert. Issued:	N/A
Site Handed Over to Maintenance Department on:	N/A
Estimated Cost for Upgrading (HK$M):	N/A
Maintenance Manual No.:	N/A
Actual Works:	N/A
No. of Tree Felled:	N/A
No. of Tree Planted (Incl. Transplant):	N/A
% Bare of Slope Surfacing:	N/A
% Vegetated of Slope Surfacing:	N/A
% Shotcrete of Slope Surfacing:	N/A
Other Hard Surface of Slope Surfacing:	N/A

PHOTO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11SW-D/R 699
11SW-D/R 703
11SW-D/MH 15
11SW-D/MH 16
11SW-D/R 704
11SW-D/NS 14
11SW-D/C 2190
YORK PLACE
LUN FAT ST
SHIP STREET
STAR ST
QUEEN'S ROAD EA
BOWEN ROAD

BASIC INFORMATION

Location:	No. 55, Ship Street, Wan Chai
Registration Date:	10-03-2023
Ranking Score (NPRS):	N/A (N/A)
Date of Formation:	N/A
Date of Construction/ Modification:	19-07-2021
Data Source:	Districts
Approximate Coordinates:	Easting : 835525 Northing : 815118

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Road/footpath with very low traffic density
Distance of Facility from Crest (m):	0
Facility at Toe:	Residential building
Distance of Facility from Toe (m):	0
Consequence-to-life Category:	1
Remarks:	N/A

SLOPE PART

N/A

WALL PART

(1) Max. Height (m): 5.6 Length (m): 12.2 Face Angle (deg): 90

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 0 Private Feature Party: IL 2140 Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 31-07-2023

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection:	13-12-2022
Data Source:	Districts
Slope Part Drainage:	N/A
Wall Part Drainage:	(1) Position: Toe Size(mm): 150

SLOPE PART

N/A

WALL PART

Wall Part (1)
Type of Wall: Wall Material: Concrete Wall Location: Wall at toe
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): N/A Spacing (m): N/A

SERVICES

N/A

CHECKING STATUS INFORMATION

N/A

BACKGROUND INFORMATION

GIU Cell Ref.:	
Map Sheet Reference (1:1000):	
Aerial Photos:	
Nearest Rainguage Station (Station Number):	()
Data Collected On:	13-12-2022
Date of Construction, Subsequent Modification and Demolition:	N/A
Related Reports/Files or Documents:	N/A
Remarks:	
Follow Up Actions:	
DH-Order (To Be Confirmed with Buildings Department):	None
Advisory Letter (To Be Confirmed with Buildings Department):	None
LPMIS:	None

ENHANCED MAINTENANCE INFORMATION

STAGE 1 STUDY REPORT

Inspected On:	
Weather:	
District:	
Section No:	1-1
Height(m):	
Type of Toe Facility:	Residential building
Distance from Toe(m):	0
Type of Crest Facility:	Road/footpath with very low traffic density
Distance from Crest(m):	0
Consequence Category:	
Engineering Judgement:	
Section No:	2-2
Type of Toe Facility:	
Distance from Toe(m):	
Type of Crest Facility:	
Distance from Crest(m):	
Consequence Category:	
Engineering Judgement:	
Sign of Seepage:	
Criterion A satisfied:	
Sign of Distress:	
Criterion D satisfied:	
Non-routine maintenance required:	
Note:	
Masonry wall/Masonry facing:	
Note:	
Consequence category (for critical section):	
Observations:	N/A
Emergency Action Required:	
Action By:	N/A

ACTION TO INITIATE PREVENTIVE WORKS

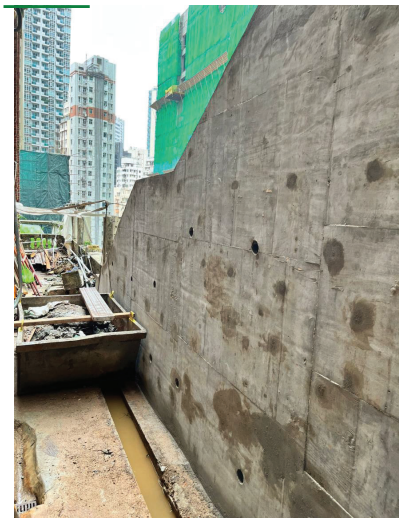
Criterion A/Criterion D:	N/A
Action By:	N/A
Further Study:	
Action By:	N/A

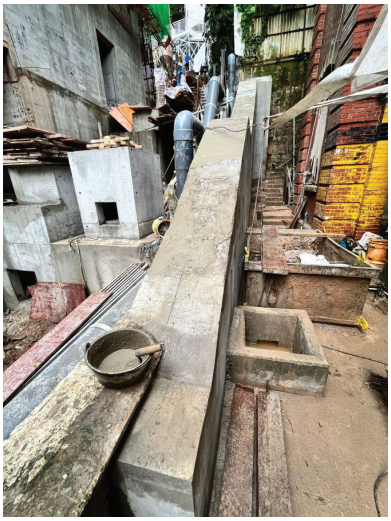
OTHER EXTERNAL ACTION

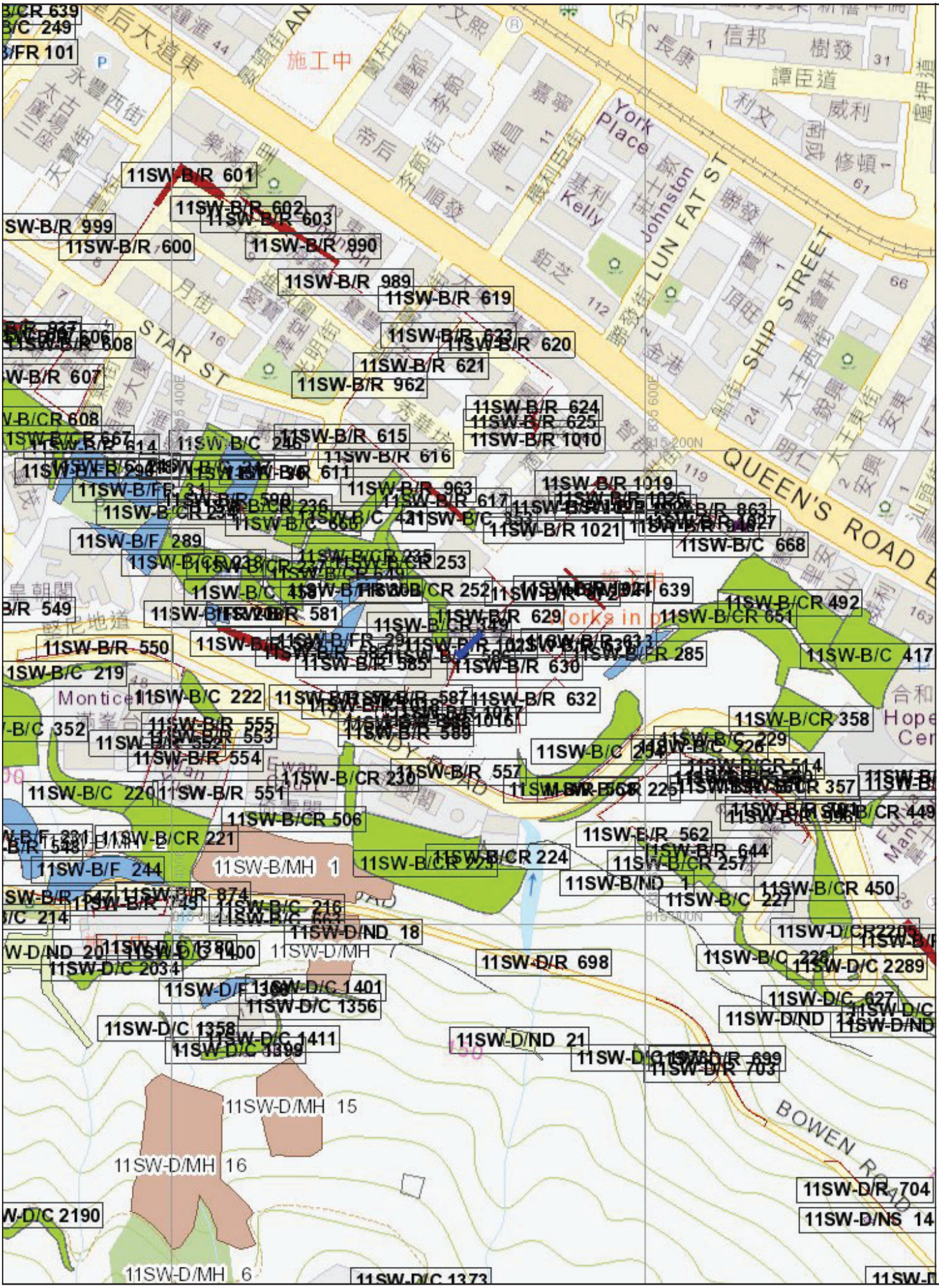
Check / repair Services:	
Action By:	N/A
Non-routine Maintenance:	

Action By: N/A

PHOTO



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11SW-B/R 1010
11SW-B/R 615
11SW-B/R 616
11SW-B/R 963
11SW-B/R 1019
11SW-B/R 1021
11SW-B/C 668
11SW-B/F 289
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11SW-B/R 554
11SW-B/C 220
11SW-B/R 551
11SW-B/CR 506
11SW-B/CR 221
11SW-B/F 244
11SW-B/MH 1
11SW-B/CR 224
11SW-B/R 562
11SW-B/R 644
11SW-B/CR 257
11SW-B/ND 1
11SW-B/C 227
11SW-B/CR 450
11SW-B/C 417
11SW-B/CR 358
11SW-B/C 229
11SW-B/C 214
11SW-D/ND 18
11SW-D/MH 7
11SW-D/R 698
11SW-D/C 2034
11SW-D/C 1401
11SW-D/C 1356
11SW-D/C 1358
11SW-D/C 1411
11SW-D/ND 21
11SW-D/R 699
11SW-D/R 703
11SW-D/MH 15
11SW-D/MH 16
11SW-D/C 2190
11SW-D/R 704
11SW-D/NS 14
11SW-D/MH 6
11SW-D/C 1373
STAR ST
QUEEN'S ROAD E
SHIP STREET
LUN FAT ST
York Place
Kelly
Johnston
BOWEN ROAD

BASIC INFORMATION

Location:	North East of ST. Francis Canossian College, Kennedy Road, Wan Chai
Registration Date:	23-04-1998
Ranking Score (NPRS):	0 (LPMit)
Date of Formation:	pre-1977
Date of Construction/ Modification:	
Data Source:	EI(Lands D)
Approximate Coordinates:	Easting : 835512 Northing : 815129

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Densely-used open area/facilities
Distance of Facility from Crest (m):	5
Facility at Toe:	Residential building
Distance of Facility from Toe (m):	3
Consequence-to-life Category:	1
Remarks:	N/A

SLOPE PART

(1) Max. Height (m): 4 Length (m): 15 Average Angle (deg): 30

WALL PART

(1) Max. Height (m): 8 Length (m): 15 Face Angle (deg): 80

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 1 Mixed Feature Party: IL2140 Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 11-11-2002
(2) Sub Div.: 2 Mixed Feature Party: Lands D Agent: Lands D Land Cat.: 5b(vi) Reason Code: 62 MR Endorsement Date: 11-11-2002
(3) Sub Div.: 3 Mixed Feature Party: IL8102&EXT Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 11-11-2002

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection:	18-10-2006
Data Source:	EI(Lands D)
Slope Part Drainage:	N/A
Wall Part Drainage:	N/A

SLOPE PART

Slope Part (1)
Surface Protection (%): Bare: 60 Vegetated: 40 Chunam: 0 Shotcrete: 0 Other Cover: 0
Material Description: Material type: Soil Geology: Decomposed granite
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): N/A Spacing (m): N/A

WALL PART

Wall Part (1)
Type of Wall: Wall Material: Masonry Wall Location: Wall at toe
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): 80 Spacing (m): 1

SERVICES

N/A

CHECKING STATUS INFORMATION

Tagmark: SCS_18108 Part: 1 Checking Status: Feature modified/upgraded to current standard Checking Certificate No.: N/A

BACKGROUND INFORMATION

GIU Cell Ref.:	11SW14B8
Map Sheet Reference (1:1000):	11SW-14B
Aerial Photos:	N/A
Nearest Rainguage Station (Station Number):	25 Borrett Road(H17)
Data Collected On:	18-10-2006
Date of Construction, Subsequent Modification and Demolition:	N/A
Related Reports/Files or Documents:	N/A
Remarks:	DH Order DH 161/HK/98 Issued is for the wall part of the feature.
Follow Up Actions:	N/A
DH-Order (To Be Confirmed with Buildings Department):	Date of Recommendation to BD: 27/10/1997 File Reference: DH/020/84/HK Date Served by BD: 30/03/2011 Notice No.: DH0035/HK/11/C Date of Recommendation to BD: 27/10/1997 File Reference: DH/020/84/HK Date Served by BD: 10/08/1998 Notice No.: DH161/HK/98/C
Advisory Letter (To Be Confirmed with Buildings Department):	None

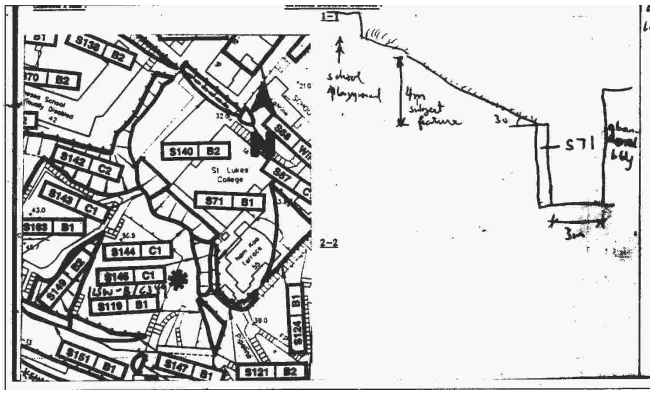
LPMIS: Agreement No.: CE15/2009 Report No.: S3R120/2011
Agreement No.: CE31/2005 Report No.: N/A
Agreement No.: CE33/93 Report No.: S2R 64/95

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 01/08/2024)

STAGE 1 STUDY REPORT

Inspected On: 03-12-1997
Weather: Mainly Fine
District: I



Section No: 1-1
Height(m): H1 : 12 , H2 : 8
Type of Toe Facility: Residential building
Distance from Toe(m): 3
Type of Crest Facility: Densely-used open area/facilities
Distance from Crest(m): 5
Consequence Category: 1
Engineering Judgement: P
Section No: 2-2
Type of Toe Facility: N/A
Distance from Toe(m): 0
Type of Crest Facility: N/A
Distance from Crest(m): 0
Consequence Category: 1
Engineering Judgement: P
Sign of Seepage: Slope : No signs of seepage
Wall : No sign of seepage
Criterion A satisfied: N
Sign of Distress: Slope : N/A
Wall : Moderate(near crest, mid-portion, at toe)
Criterion D satisfied: N
Non-routine maintenance required: N

Note:	N/A
Masonry wall/Masonry facing:	Y
Note:	Dressed block toe wall.
Consequence category (for critical section):	1
Observations:	N/A
Emergency Action Required:	N
Action By:	N/A

ACTION TO INITIATE PREVENTIVE WORKS

Criterion A/Criterion D:	N/A
Action By:	N/A
Further Study:	N
Action By:	N/A

OTHER EXTERNAL ACTION

Check / repair Services:	N
Action By:	N/A
Non-routine Maintenance:	N
Action By:	N/A

eLPMIS

LPM/LPMit Details Report

LPM Study Feature No.:	11SW-B/CR 349
Location:	North East of ST. Francis Canossian College, Kennedy Road, Wan Chai
District Council:	Wanchai
Maintenance Responsibility (At the Time of Selection):	Mixed
Responsible Party for Maintenance of Government Portion:	Lands D
Private Lot No.:	IL2140, IL8102 and EXT

LPM/LPMit Study

Agreement No.:	CE15/2009
Study Type:	Stage 3 Study Under Schedule of Rates Contract
Consultant:	AECOM Asia Co. Ltd.
GEO Managing Section / Engineer:	LPM3 / CM71
Study Status:	Study completed
Design Approach:	Prescriptive
Option Assessment Accepted:	Y
Study Report No.:	S3R120/2011

Programme / Actual Commencement:	21-12-2011
Programme / Actual Completion:	01-01-2012
Report Recommendation (For Stage 2 Study):	Upgrading Works
District Check Status:	N/A
Checking Certificate No.:	GEO/LPM155/2012
GEO Engineer's Remarks:	N/A

LPM/LPMit Works

Works Contract No.:	GE/2011/02
GEO Managing Section / Engineer:	LPM3 / CM71
Contractor:	Shun Yuen Construction Co Ltd
Progress Status:	Maintenance completed
Reason of Study Termination / Works Deletion (If Necessary):	N/A
Forecast Commencement Date:	16-02-2012
Forecast Completion Date:	01-09-2012
Completion Cert. Issued:	14-09-2012
Site Handed Over to Maintenance Department on:	28-10-2013
Estimated Cost for Upgrading (HK$M):	0.2587
Maintenance Manual No.:	MM155/2012
Actual Works:	Soil nail
No. of Tree Felled:	N/A
No. of Tree Planted (Incl. Transplant):	N/A
% Bare of Slope Surfacing:	N/A
% Vegetated of Slope Surfacing:	30
% Shotcrete of Slope Surfacing:	N/A
Other Hard Surface of Slope Surfacing:	70

LPM/LPMit Details Report

LPM Study Feature No.:	11SW-B/CR 349
Location:	North East of ST. Francis Canossian College, Kennedy Road, Wan Chai
District Council:	Wanchai
Maintenance Responsibility (At the Time of Selection):	Mixed
Responsible Party for Maintenance of Government Portion:	Lands D
Private Lot No.:	IL2140, IL8102 and Ext

LPM/LPMit Study

Agreement No.:	CE31/2005
Study Type:	Stage 3 Study Under Schedule of Rates Contract
Consultant:	C M Wong & Associates Ltd.
GEO Managing Section / Engineer:	LPM2 / CM43
Study Status:	Study deferred - To be considered in other LPM/LPMit Agreement
Design Approach:	N/A
Option Assessment Accepted:	N/A
Study Report No.:	N/A

Programme / Actual Commencement:	N/A
Programme / Actual Completion:	N/A
Report Recommendation (For Stage 2 Study):	N/A
District Check Status:	N/A
Checking Certificate No.:	N/A
GEO Engineer's Remarks:	It is anticipated that it will take a long time to resolve the access and works area issue with the owner and inclusion of this feature into the Batch B SoR Contract is undesirable. {Deferred in LPMP due to Access}

LPM/LPMit Works

Works Contract No.:	N/A
GEO Managing Section / Engineer:	N/A / N/A
Contractor:	N/A
Progress Status:	N/A
Reason of Study Termination / Works Deletion (If Necessary):	N/A
Forecast Commencement Date:	N/A
Forecast Completion Date:	N/A
Completion Cert. Issued:	N/A
Site Handed Over to Maintenance Department on:	N/A
Estimated Cost for Upgrading (HK$M):	N/A
Maintenance Manual No.:	N/A
Actual Works:	N/A
No. of Tree Felled:	N/A
No. of Tree Planted (Incl. Transplant):	N/A
% Bare of Slope Surfacing:	N/A
% Vegetated of Slope Surfacing:	N/A
% Shotcrete of Slope Surfacing:	N/A
Other Hard Surface of Slope Surfacing:	N/A

LPM/LPMit Details Report

LPM Study Feature No.:	11SW-B/R 628
Location:	{55 SHIP STREET, WANCHAI}
District Council:	Wanchai
Maintenance Responsibility (At the Time of Selection):	Private
Responsible Party for Maintenance of Government Portion:	N/A
Private Lot No.:	NA

LPM/LPMit Study

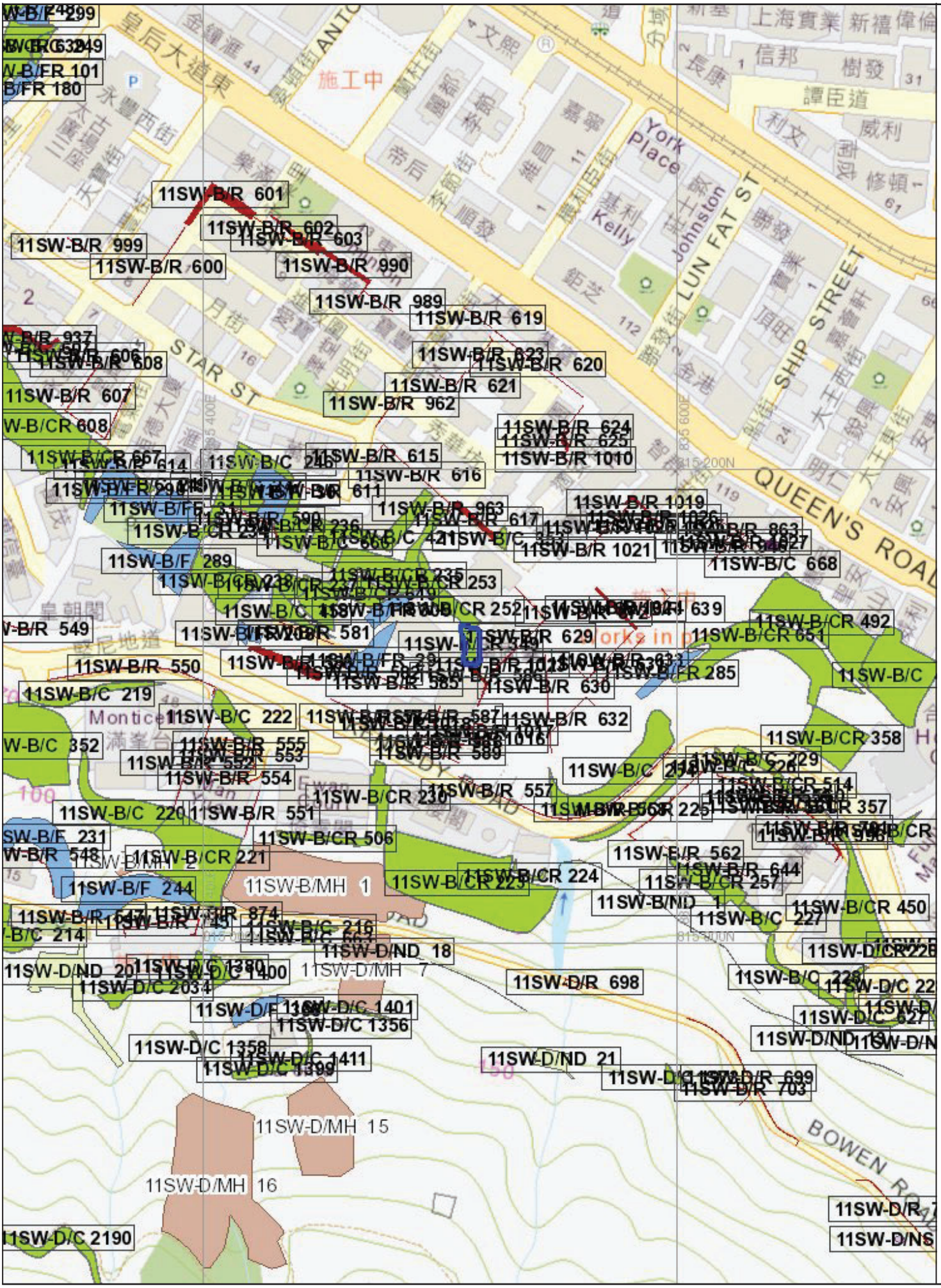
Agreement No.:	CE33/93
Study Type:	Stage 2 Study
Consultant:	Mott Connell Ltd.
GEO Managing Section / Engineer:	LPM3 / CM62
Study Status:	Study completed
Design Approach:	Otherwise
Option Assessment Accepted:	N/A

Study Report No.:	S2R 64/95
Programme / Actual Commencement:	01-06-1994
Programme / Actual Completion:	31-08-1998
Report Recommendation (For Stage 2 Study):	DH Order
District Check Status:	Checked
Checking Certificate No.:	N/A
GEO Engineer's Remarks:	N/A

LPM/LPMit Works

Works Contract No.:	N/A
GEO Managing Section / Engineer:	N/A / N/A
Contractor:	N/A
Progress Status:	N/A
Reason of Study Termination / Works Deletion (If Necessary):	N/A
Forecast Commencement Date:	N/A
Forecast Completion Date:	N/A
Completion Cert. Issued:	N/A
Site Handed Over to Maintenance Department on:	N/A
Estimated Cost for Upgrading (HK$M):	N/A
Maintenance Manual No.:	N/A
Actual Works:	N/A
No. of Tree Felled:	N/A
No. of Tree Planted (Incl. Transplant):	N/A
% Bare of Slope Surfacing:	N/A
% Vegetated of Slope Surfacing:	N/A
% Shotcrete of Slope Surfacing:	N/A
Other Hard Surface of Slope Surfacing:	N/A

PHOTO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11SW-B/R 617
11SW-B/R 1019
11SW-B/R 1021
11SW-B/C 668
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11SW-B/CR 252
11SW-B/R 629
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11SW-D/MH 7
11SW-D/R 698
11SW-D/C 1401
11SW-D/C 1356
11SW-D/C 1358
11SW-D/ND 21
11SW-D/R 699
11SW-D/R 703
11SW-D/MH 15
11SW-D/MH 16
11SW-D/C 2190
11SW-D/NS
STAR ST
QUEEN'S ROAD
LUN FAT ST
SHIP STREET
BOWEN ROAD
皇后大道東
施工中
York Place
Johnston
Kelly

BASIC INFORMATION

Location:	Behind 55 Ship Street, Wan Chai South, Hong Kong
Registration Date:	10-12-1999
Ranking Score (NPRS):	0 (LPMit)
Date of Formation:	pre-1977
Date of Construction/ Modification:	
Data Source:	LPM
Approximate Coordinates:	Easting : 835507 Northing : 815141

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	School
Distance of Facility from Crest (m):	5
Facility at Toe:	Remote area or abandoned facilities
Distance of Facility from Toe (m):	2
Consequence-to-life Category:	1
Remarks:	N/A

SLOPE PART

(1) Max. Height (m): 9 Length (m): 21 Average Angle (deg): 60

WALL PART

(1) Max. Height (m): 5 Length (m): 21 Face Angle (deg): 90

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 1 Mixed Feature Party: IL1940 Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 22-05-2000
(2) Sub Div.: 2 Mixed Feature Party: IL2140 Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 22-05-2000
(3) Sub Div.: 3 Mixed Feature Party: Lands D Agent: Lands D Land Cat.: 5b(vi) Reason Code: 62 MR Endorsement Date: 22-05-2000

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection:	01-08-2016
Data Source:	LPM
Slope Part Drainage:	(1) Position: Crest Size(mm): 200
Wall Part Drainage:	N/A

SLOPE PART

Slope Part (1)
Surface Protection (%): Bare: 10 Vegetated: 70 Chunam: 0 Shotcrete: 20 Other Cover: 0
Material Description: Material type: Soil Geology: N/A
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): N/A Spacing (m): N/A

WALL PART

Wall Part (1)
Type of Wall: Wall Material: Concrete Wall Location: Wall at toe
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): 50 Spacing (m): 1.8

SERVICES

N/A

CHECKING STATUS INFORMATION

N/A

BACKGROUND INFORMATION

GIU Cell Ref.:	11SW14B8
Map Sheet Reference (1:1000):	11SW-14B
Aerial Photos:	N/A
Nearest Rainguage Station (Station Number):	25 Borrett Road(H17)
Data Collected On:	01-08-2016
Date of Construction, Subsequent Modification and Demolition:	Modification: Constructed Before: 1978 After: N/A
Related Reports/Files or Documents:	File/Report: GEO Ref. No.: SIR097/86(9/86) File/Report: GEO Ref. No.: SIR097/86(9/86) File/Report: Pre-SIRST Ref. No.: Field Sheet File/Report: Pre-SIRST Ref. No.: Field Sheet
Remarks:	N/A
Follow Up Actions:	N/A

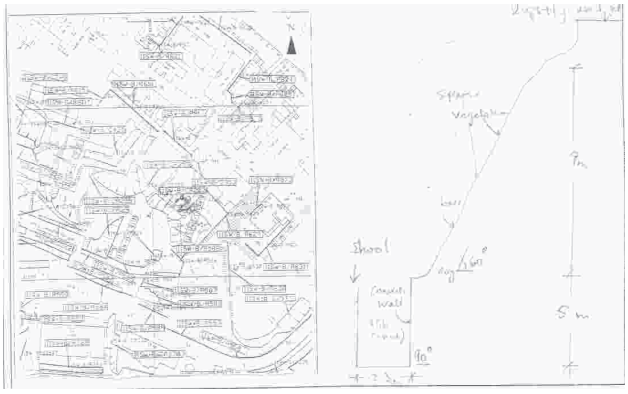
DH-Order (To Be Confirmed with Buildings Department):	Date of Recommendation to BD: 27/07/1983 File Reference: DH/0346/66/HK Date Served by BD: 16/02/1984 Notice No.: DH1/HK/84 Date of Recommendation to BD: 27/07/1983 File Reference: DH/0346/66/HK Date Served by BD: 06/04/1984 Notice No.: DH1A/HK/84 Date of Recommendation to BD: 27/07/1983 File Reference: DH/0002/84/HK Date Served by BD: 16/02/1984 Notice No.: DH2/HK/84
Advisory Letter (To Be Confirmed with Buildings Department):	Date of Recommendation to BD: N/A File Reference: N/A Date Served by BD: 21/05/2004
LPMIS:	Agreement No.: CE62/2001 Report No.: S2R220/2003

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 01/08/2024)

STAGE 1 STUDY REPORT

Inspected On:	22-02-2000
Weather:	Some Rain
District:	I



Section No:	1-1
Height(m):	H1 : 14 , H2 : 5
Type of Toe Facility:	Remote area or abandoned facilities
Distance from Toe(m):	2
Type of Crest Facility:	School
Distance from Crest(m):	5
Consequence Category:	1
Engineering Judgement:	HP
Section No:	2-2
Type of Toe Facility:	N/A
Distance from Toe(m):	0
Type of Crest Facility:	N/A
Distance from Crest(m):	0
Consequence Category:	1
Engineering Judgement:	HP

Sign of Seepage:	Slope : No signs of seepage Wall : No sign of seepage
Criterion A satisfied:	N
Sign of Distress:	Slope : N/A Wall : N/A
Criterion D satisfied:	N
Non-routine maintenance required:	N
Note:	N/A
Masonry wall/Masonry facing:	N
Note:	N/A
Consequence category (for critical section):	1
Observations:	N/A
Emergency Action Required:	N
Action By:	N/A

ACTION TO INITIATE PREVENTIVE WORKS

Criterion A/Criterion D:	N/A
Action By:	N/A
Further Study:	Y
Action By:	Private

OTHER EXTERNAL ACTION

Check / repair Services:	N
Action By:	N/A
Non-routine Maintenance:	N
Action By:	N/A

eLPMIS

LPM/LPMit Details Report

LPM Study Feature No.:	11SW-B/CR 252
Location:	BEHIND 55 SHIP STREET, WAN CHAI SOUTH
District Council:	Wanchai
Maintenance Responsibility (At the Time of Selection):	Mixed
Responsible Party for Maintenance of Government Portion:	Lands D
Private Lot No.:	IL1940, IL2140

LPM/LPMit Study

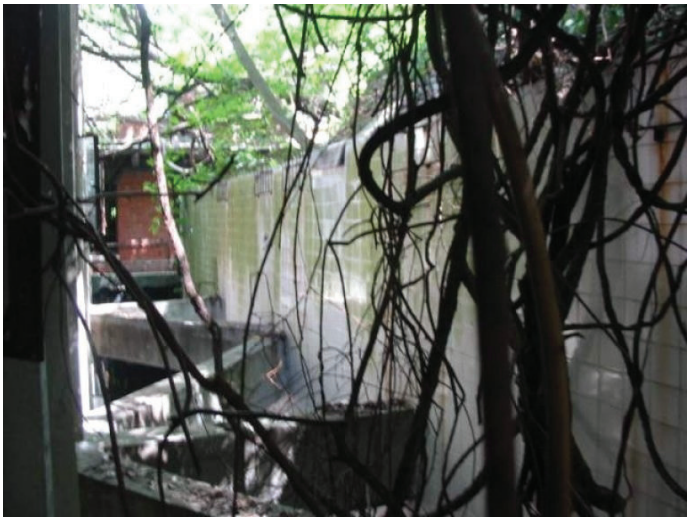
Agreement No.:	CE62/2001
Study Type:	Stage 2 Study

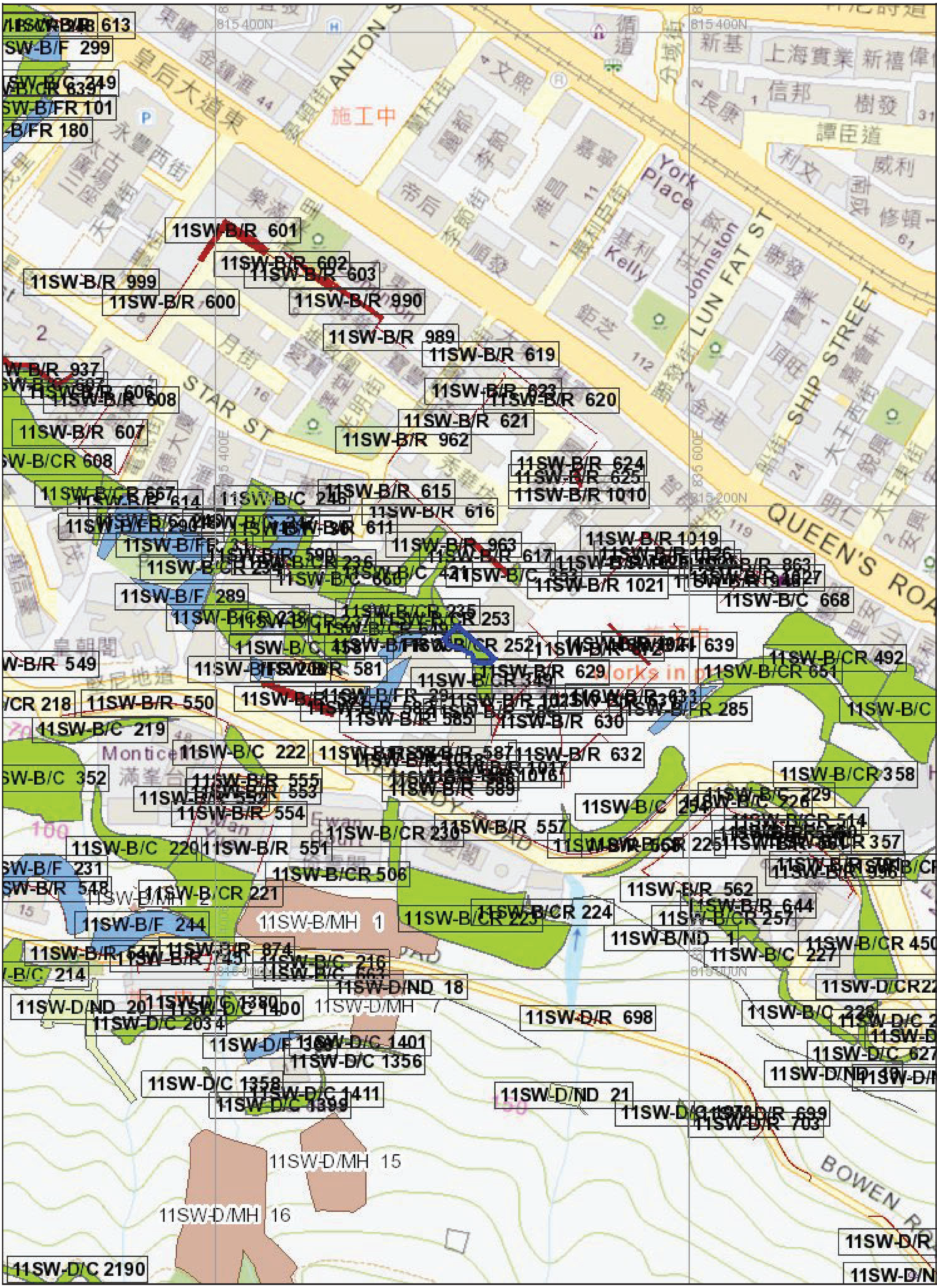
Consultant:	Maunsell Geotechnical Services Ltd.
GEO Managing Section / Engineer:	SS / SS3
Study Status:	Study completed
Design Approach:	N/A
Option Assessment Accepted:	N/A
Study Report No.:	S2R220/2003
Programme / Actual Commencement:	05-06-2003
Programme / Actual Completion:	06-03-2004
Report Recommendation (For Stage 2 Study):	Advisory Letter,No action required
District Check Status:	Checked
Checking Certificate No.:	N/A
GEO Engineer's Remarks:	N/A

LPM/LPMit Works

Works Contract No.:	N/A
GEO Managing Section / Engineer:	N/A / N/A
Contractor:	N/A
Progress Status:	N/A
Reason of Study Termination / Works Deletion (If Necessary):	N/A
Forecast Commencement Date:	N/A
Forecast Completion Date:	N/A
Completion Cert. Issued:	N/A
Site Handed Over to Maintenance Department on:	N/A
Estimated Cost for Upgrading (HK$M):	N/A
Maintenance Manual No.:	N/A
Actual Works:	N/A
No. of Tree Felled:	N/A
No. of Tree Planted (Incl. Transplant):	N/A
% Bare of Slope Surfacing:	N/A
% Vegetated of Slope Surfacing:	N/A
% Shotcrete of Slope Surfacing:	N/A
Other Hard Surface of Slope Surfacing:	N/A

PHOTO

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11SW-D/C 1358
11SW-D/ND 21
11SW-D/MH 15
11SW-D/MH 16
11SW-D/C 2190
QUEEN'S ROA
BOWEN
STAR ST
ANTON
LUN FAT ST
SHIP STREET
York Place
Kelly
Johnston
皇后大道東
施工中

BASIC INFORMATION

Location:	Below St.Franeis Canoossian College, 9-13 Kennedy Road
Registration Date:	10-12-1999
Ranking Score (NPRS):	0 (N/A)
Date of Formation:	post-1977
Date of Construction/ Modification:	
Data Source:	EI(Lands D)
Approximate Coordinates:	Easting : 835497 Northing : 815153

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Undeveloped green belt
Distance of Facility from Crest (m):	0
Facility at Toe:	Lightly-used open area/facilities
Distance of Facility from Toe (m):	0
Consequence-to-life Category:	3
Remarks:	N/A

SLOPE PART

(1) Max. Height (m): 8.5 Length (m): 18 Average Angle (deg): 70

WALL PART

(1) Max. Height (m): 2 Length (m): 10 Face Angle (deg): 88

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 1 Mixed Feature Party: IL8102 & EXT Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 22-05-2000
(2) Sub Div.: 2 Mixed Feature Party: IL1669 Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 22-05-2000
(3) Sub Div.: 3 Mixed Feature Party: IL1564 Agent: N/A Land Cat.: 1,5b(vi),7 Reason Code: 1 MR Endorsement Date: 22-05-2000
(4) Sub Div.: 4 Mixed Feature Party: IL2272 & EXT Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 22-05-2000
(5) Sub Div.: 5 Mixed Feature Party: Lands D Agent: Lands D Land Cat.: 5b(vi) Reason Code: 62 MR Endorsement Date: 22-05-2000

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection:	15-06-2006
Data Source:	EI(Lands D)
Slope Part Drainage:	(1) Position: On slope Size(mm): 150
Wall Part Drainage:	(1) Position: Downpipe Size(mm): 100

SLOPE PART

Slope Part (1)
Surface Protection (%): Bare: 0 Vegetated: 100 Chunam: 0 Shotcrete: 0 Other Cover: 0
Material Description: Material type: Soil Geology: N/A
Berm: No. of Berms: 1 Min. Berm Width (m): 2.8
Weepholes: Size (mm): N/A Spacing (m): N/A

WALL PART

Wall Part (1)
Type of Wall: Wall Material: Masonry Wall Location: Retaining wall with level platform
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): 50 Spacing (m): 1.8

SERVICES

(1) Utilities Type: Water Main Size(mm): 50 Location: On slope Remark: N/A

CHECKING STATUS INFORMATION

Tagmark: 7636_0_1 Part: 0 Checking Status: No checking records Checking Certificate No.: N/A

BACKGROUND INFORMATION

GIU Cell Ref.:	11SW14B7
Map Sheet Reference (1:1000):	11SW-14B
Aerial Photos:	23882-97 (1978),
Nearest Rainguage Station (Station Number):	25 Borrett Road(H17)
Data Collected On:	15-06-2006
Date of Construction, Subsequent Modification and Demolition:	Modification: Constructed Before: 1978 After: N/A
Related Reports/Files or Documents:	File/Report: DB or DH Ref. No.: DH 2/HK/184 File/Report: DB or DH Ref. No.: DH 2/HK/184 File/Report: DB or DH Ref. No.: DH1/HK/184 File/Report: DB or DH Ref. No.: DH1/HK/184 File/Report: GEO Ref. No.: STAGE 1 (1991/09/20) (NFA) File/Report: GEO Ref. No.: STAGE 1 (1991/09/20) (NFA) File/Report: Previous Instability Ref. No.: 18/6/83 File/Report: Previous Instability Ref. No.: 18/6/83
Remarks:	N/A
Follow Up Actions:	N/A

DH-Order (To Be Confirmed with Buildings Department):	None
Advisory Letter (To Be Confirmed with Buildings Department):	None
LPMIS:	None

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 01/08/2024)

STAGE 1 STUDY REPORT

Inspected On:	
Weather:	
District:	I
Section No:	1-1
Height(m):	
Type of Toe Facility:	Lightly-used open area/facilities
Distance from Toe(m):	0
Type of Crest Facility:	Undeveloped green belt
Distance from Crest(m):	0
Consequence Category:	
Engineering Judgement:	
Section No:	2-2
Type of Toe Facility:	
Distance from Toe(m):	
Type of Crest Facility:	
Distance from Crest(m):	
Consequence Category:	
Engineering Judgement:	
Sign of Seepage:	
Criterion A satisfied:	
Sign of Distress:	
Criterion D satisfied:	
Non-routine maintenance required:	
Note:	
Masonry wall/Masonry facing:	
Note:	
Consequence category (for critical section):	
Observations:	N/A
Emergency Action Required:	
Action By:	N/A

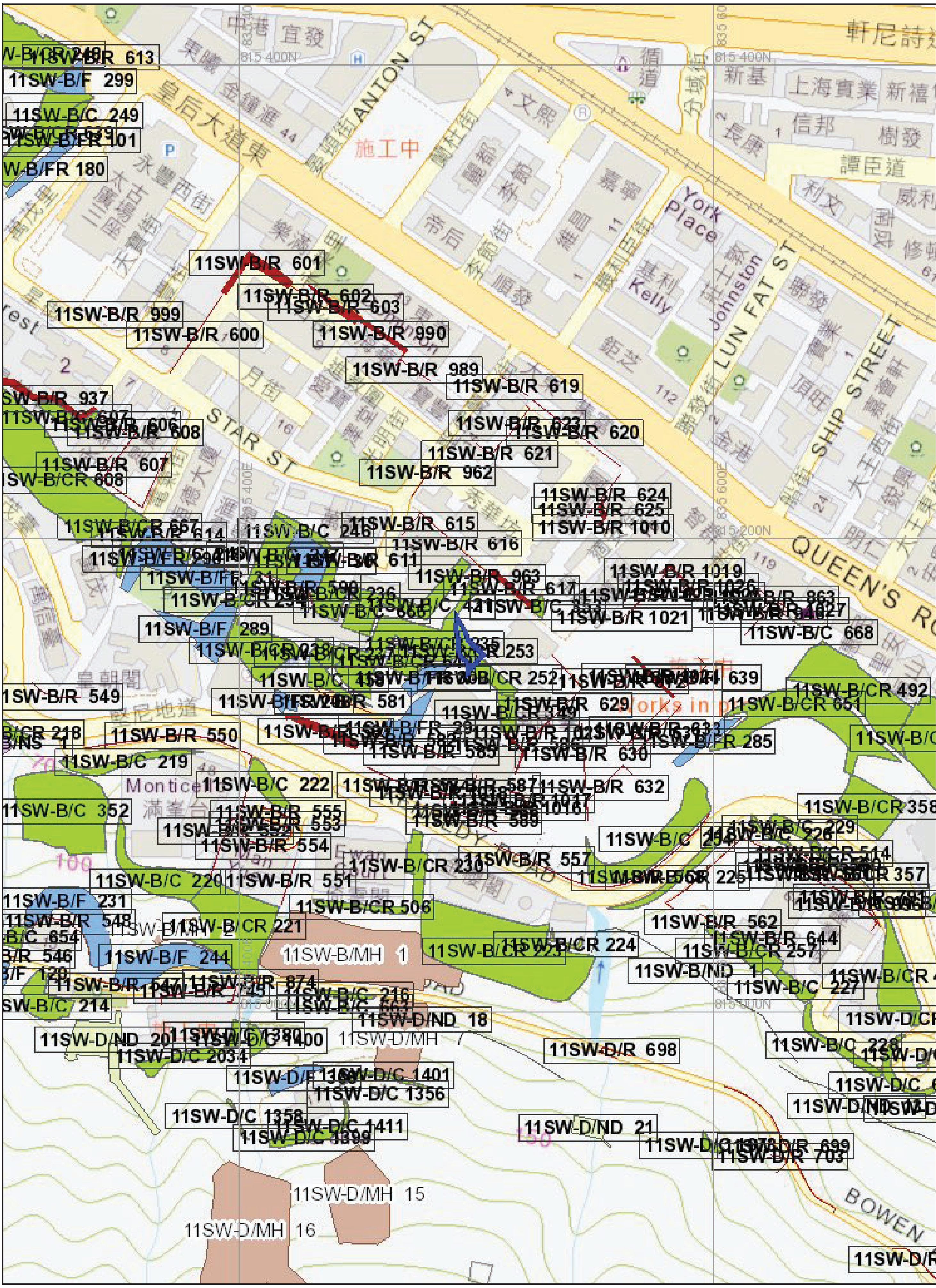
ACTION TO INITIATE PREVENTIVE WORKS

Criterion A/Criterion D: N/A
Action By: N/A
Further Study:
Action By: N/A

OTHER EXTERNAL ACTION

Check / repair Services:
Action By: N/A
Non-routine Maintenance:
Action By: N/A

PHOTO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11SW-B/CR 230
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11SW-B/R 551
11SW-B/F 231
11SW-B/CR 506
11SW-B/R 562
11SW-B/F 244
11SW-B/MH 1
11SW-B/ND 1
11SW-B/C 227
11SW-D/ND 18
11SW-D/MH 7
11SW-D/R 698
11SW-D/C 1356
11SW-D/ND 21
11SW-D/MH 15
11SW-D/MH 16
ANTON ST
STAR ST
LUN FAT ST
SHIP STREET
QUEEN'S R
BOWEN
York Place
Kelly
Johnston
皇后大道東
施工中

BASIC INFORMATION

Location:	ST. FRANCIS CANOSSIAN SCHOOL, ST. FRANCIS STREET, WAN CHAI
Registration Date:	16-03-1998
Ranking Score (NPRS):	608 (Notional)
Date of Formation:	post-1977
Date of Construction/ Modification:	18-03-2011
Data Source:	AP
Approximate Coordinates:	Easting : 835462 Northing : 815162

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Road/footpath with low traffic density
Distance of Facility from Crest (m):	1
Facility at Toe:	School
Distance of Facility from Toe (m):	3
Consequence-to-life Category:	1
Remarks:	N/A

SLOPE PART

(1) Max. Height (m): 18 Length (m): 80 Average Angle (deg): 45

WALL PART

(1) Max. Height (m): 5.5 Length (m): 36 Face Angle (deg): 90

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 0 Private Feature Party: IL8102 & EXT Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 22-07-2005

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection:	27-02-2012
Data Source:	AP
Slope Part Drainage:	(1) Position: Crest Size(mm): 260 (2) Position: Downpipe Size(mm): 150 (3) Position: Downpipe Size(mm): 600 (4) Position: On slope Size(mm): 400 (5) Position: On slope Size(mm): 300 (6) Position: On slope Size(mm): 225 (7) Position: Toe Size(mm): 800 (8) Position: Toe Size(mm): 300

Wall Part Drainage:
(1) Position: Crest Size(mm): 225
(2) Position: Crest Size(mm): 300
(3) Position: Downpipe Size(mm): 275
(4) Position: Toe Size(mm): 150
(5) Position: Toe Size(mm): 300

SLOPE PART

Slope Part (1)
Surface Protection (%): Bare: 0 Vegetated: 30 Chunam: 0 Shotcrete: 0 Other Cover: 70
Material Description: Material type: Soil Geology: N/A
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): 65 Spacing (m): 1.2

WALL PART

Wall Part (1)
Type of Wall: Wall Material: Concrete Wall Location: Wall at toe
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): 95 Spacing (m): 1.2

SERVICES

N/A

CHECKING STATUS INFORMATION

Tagmark: SCS_13923 Part: 0 Checking Status: Feature modified/upgraded to current standard Checking Certificate No.: N/A

BACKGROUND INFORMATION

GIU Cell Ref.:	11SW14B7
Map Sheet Reference (1:1000):	11SW-14B
Aerial Photos:	23897 (1978), 23882 (1978)
Nearest Rainguage Station (Station Number):	25 Borrett Road(H17)
Data Collected On:	27-02-2012
Date of Construction, Subsequent Modification and Demolition:	Modification: Constructed Before: 1978 After: 1978

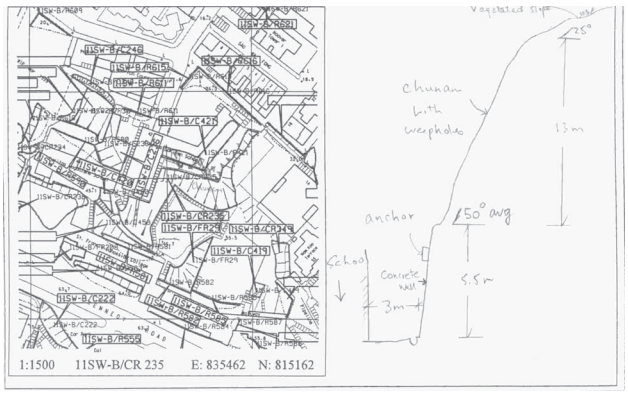
Related Reports/Files or Documents:	File/Report: Development Ref. No.: GCI3/4/1152/78, 1077/82, 2140/72, 1259/29 File/Report: Development Ref. No.: GCI3/4/1152/78, 1077/82, 2140/72, 1259/29 File/Report: GEO Ref. No.: Stage 1 report by design 04/93 File/Report: GEO Ref. No.: Stage 1 report by design 04/93 File/Report: Ground Anchors Ref. No.: No.24 1/2140/74 File/Report: Ground Anchors Ref. No.: No.24 1/2140/74 File/Report: LRDC Ref. No.: D346/66/HK File/Report: LRDC Ref. No.: D346/66/HK File/Report: LSR Ref. No.: LSR 6/2001 (HK2000/08/021) File/Report: LSR Ref. No.: LSR 6/2001 (HK2000/08/021) File/Report: Other Ref. No.: SIRST Field Sheet File/Report: Other Ref. No.: SIRST Field Sheet File/Report: Pre-SIRST Ref. No.: Field Sheet File/Report: Pre-SIRST Ref. No.: Field Sheet
Remarks:	N/A
Follow Up Actions:	N/A
DH-Order (To Be Confirmed with Buildings Department):	Date of Recommendation to BD: 05/10/2007 File Reference: N/A Date Served by BD: N/A Notice No.: N/A
Advisory Letter (To Be Confirmed with Buildings Department):	Date of Recommendation to BD: N/A File Reference: N/A Date Served by BD: 20/06/2007
LPMIS:	None

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 01/08/2024)

STAGE 1 STUDY REPORT

Inspected On:	11-01-2000
Weather:	Mainly Fine
District:	I



Section No:	1-1
Height(m):	H1 : 19 , H2 : 6
Type of Toe Facility:	School
Distance from Toe(m):	3
Type of Crest Facility:	Road/footpath with low traffic density
Distance from Crest(m):	1

Consequence Category:	1
Engineering Judgement:	P
Section No:	2-2
Type of Toe Facility:	N/A
Distance from Toe(m):	0
Type of Crest Facility:	N/A
Distance from Crest(m):	0
Consequence Category:	1
Engineering Judgement:	P
Sign of Seepage:	Slope : No signs of seepage Wall : No sign of seepage
Criterion A satisfied:	N
Sign of Distress:	Slope : N/A Wall : N/A
Criterion D satisfied:	N
Non-routine maintenance required:	N
Note:	N/A
Masonry wall/Masonry facing:	N
Note:	N/A
Consequence category (for critical section):	1
Observations:	N/A
Emergency Action Required:	N
Action By:	N/A

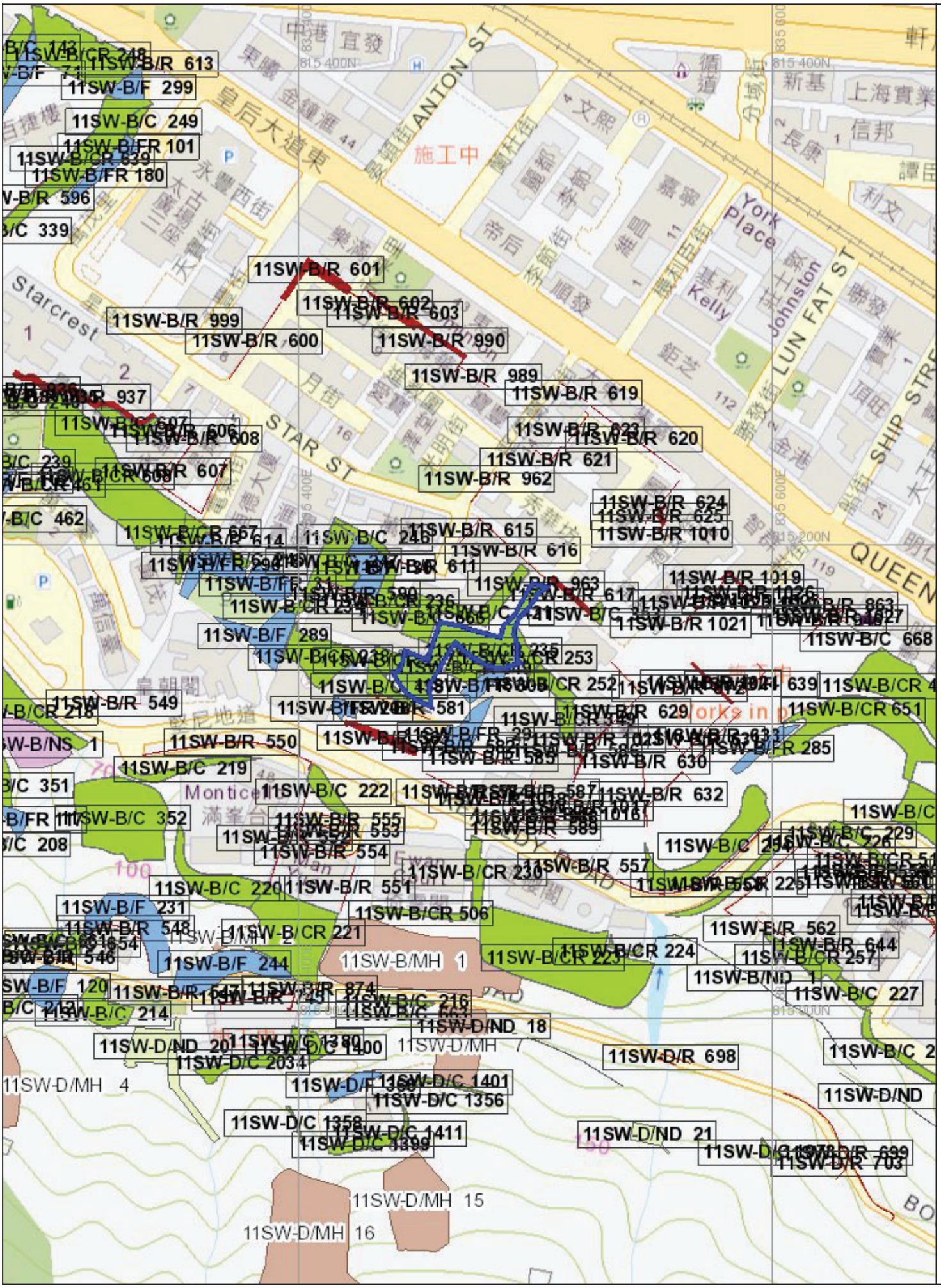
ACTION TO INITIATE PREVENTIVE WORKS

Criterion A/Criterion D:	N/A
Action By:	N/A
Further Study:	Y
Action By:	Private

OTHER EXTERNAL ACTION

Check / repair Services:	N
Action By:	N/A
Non-routine Maintenance:	N
Action By:	N/A

PHOTO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11SW-D/ND
11SW-D/C 1358
11SW-D/C 1411
11SW-D/ND 21
11SW-D/R 699
11SW-D/R 703
11SW-D/MH 15
11SW-D/MH 16
施工中
ANTON ST
STAR ST
LUN FAT ST
QUEEN
York Place
Kelly
Johnston
Starcrest
Montice

BASIC INFORMATION

Location:	No. 18 Sau Wa Fong, Hong Kong - Lot No. I.L. 199 R.P.
Registration Date:	16-03-1998
Ranking Score (NPRS):	73 (LPMit)
Date of Formation:	post-1977
Date of Construction/ Modification:	24-07-2022
Data Source:	AP
Approximate Coordinates:	Easting : 835515 Northing : 815179

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Cottage, licensed and squatter area
Distance of Facility from Crest (m):	0
Facility at Toe:	Residential building
Distance of Facility from Toe (m):	0
Consequence-to-life Category:	1
Remarks:	N/A

SLOPE PART

N/A

WALL PART

(1) Max. Height (m): 11.8 Length (m): 25 Face Angle (deg): 85

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 0 Private Feature Party: IL199 RP Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 25-09-2013

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection:	28-08-2022
Data Source:	AP
Slope Part Drainage:	N/A
Wall Part Drainage:	(1) Position: Toe Size(mm): 300

SLOPE PART

N/A

WALL PART

Wall Part (1)
Type of Wall: Wall Material: Masonry Wall Location: Retaining wall with level platform
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): 90 Spacing (m): 1.2

SERVICES

(1) Utilities Type: Water Main Size(mm): 45 Location: On slope Remark: N/A

CHECKING STATUS INFORMATION

Tagmark: SCS_20036 Part: 0 Checking Status: Feature modified/upgraded to current standard Checking Certificate No.: N/A

BACKGROUND INFORMATION

GIU Cell Ref.:	11SW14B8
Map Sheet Reference (1:1000):	11SW-14B
Aerial Photos:	6122-3 (1949),
Nearest Rainguage Station (Station Number):	25 Borrett Road(H17)
Data Collected On:	28-08-2022
Date of Construction, Subsequent Modification and Demolition:	Modification: Constructed Before: 1949 After: N/A Modification: Substantially Modified Before: N/A After: 1981
Related Reports/Files or Documents:	File/Report: DB or DH Ref. No.: GCI3/4/DH32/82/HK File/Report: DB or DH Ref. No.: GCI3/4/DH32/82/HK File/Report: Development Ref. No.: GCI3/4/1152/78 File/Report: Development Ref. No.: GCI3/4/1152/78 File/Report: GEO Ref. No.: Stage 1 report by planning File/Report: GEO Ref. No.: Stage 1 report by planning File/Report: GEO Ref. No.: Stage 2 report 4/88, File closed. File/Report: GEO Ref. No.: Stage 2 report 4/88, File closed. File/Report: LRDC Ref. No.: D346/66/HK File/Report: LRDC Ref. No.: D346/66/HK File/Report: Pre-SIRST Ref. No.: Field Sheet File/Report: Pre-SIRST Ref. No.: Field Sheet File/Report: Previous Instability Ref. No.: 9/3/92 92/3/3 File/Report: Previous Instability Ref. No.: 9/3/92 92/3/3
Remarks:	N/A
Follow Up Actions:	N/A

DH-Order (To Be Confirmed with Buildings Department):	Date of Recommendation to BD: 13/08/2014 File Reference: DH/0032/80/HK Date Served by BD: 05/03/2021 Notice No.: DH0005/HK/21/C Date of Recommendation to BD: 13/08/2014 File Reference: DH/0032/80/HK Date Served by BD: 06/03/2015 Notice No.: DH0038/HK/15/C Date of Recommendation to BD: 13/08/2014 File Reference: DH/0032/80/HK Date Served by BD: 11/11/2020 Notice No.: DH0062/HK/20/C
Advisory Letter (To Be Confirmed with Buildings Department):	Date of Recommendation to BD: 16/03/1992 File Reference: DH032/80/HK Date Served by BD: 26/10/1992 Date of Recommendation to BD: 16/03/1992 File Reference: D 365/75/HK Date Served by BD: 25/01/1996 Date of Recommendation to BD: 14/02/2012 File Reference: DH032/80/HK Date Served by BD: 04/06/2012
LPMIS:	Agreement No.: CE58/2009 Report No.: S2R 23/2012 Agreement No.: In-house Design Report No.: S2R 4/88

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 01/08/2024)

STAGE 1 STUDY REPORT

Inspected On:	
Weather:	
District:	I
Section No:	1-1
Height(m):	
Type of Toe Facility:	Residential building
Distance from Toe(m):	0
Type of Crest Facility:	Cottage, licensed and squatter area
Distance from Crest(m):	0
Consequence Category:	
Engineering Judgement:	
Section No:	2-2
Type of Toe Facility:	
Distance from Toe(m):	
Type of Crest Facility:	
Distance from Crest(m):	
Consequence Category:	
Engineering Judgement:	
Sign of Seepage:	
Criterion A satisfied:	
Sign of Distress:	
Criterion D satisfied:	
Non-routine maintenance required:	
Note:	

Masonry wall/Masonry facing:

Note:

Consequence category (for critical section):

Observations: N/A

Emergency Action Required:

Action By: N/A

ACTION TO INITIATE PREVENTIVE WORKS

Criterion A/Criterion D: N/A

Action By: N/A

Further Study:

Action By: N/A

OTHER EXTERNAL ACTION

Check / repair Services:

Action By: N/A

Non-routine Maintenance:

Action By: N/A

eLPMIS

LPM/LPMit Details Report

LPM Study Feature No.:	11SW-B/R 617
Location:	SOUTH OF NO.18 SAN WAH FONG
District Council:	Wanchai
Maintenance Responsibility (At the Time of Selection):	Private
Responsible Party for Maintenance of Government Portion:	N/A
Private Lot No.:	IL199 RP

LPM/LPMit Study

Agreement No.:	CE58/2009
Study Type:	Stage 2 Study
Consultant:	Atkins China Ltd.
GEO Managing Section / Engineer:	SS / SS3
Study Status:	Study completed
Design Approach:	N/A
Option Assessment Accepted:	N/A
Study Report No.:	S2R 23/2012
Programme / Actual Commencement:	20-02-2012

Programme / Actual Completion:	27-10-2012
Report Recommendation (For Stage 2 Study):	DH Order
District Check Status:	Exempted from checking
Checking Certificate No.:	N/A
GEO Engineer's Remarks:	N/A

LPM/LPMit Works

Works Contract No.:	N/A
GEO Managing Section / Engineer:	N/A / N/A
Contractor:	N/A
Progress Status:	N/A
Reason of Study Termination / Works Deletion (If Necessary):	N/A
Forecast Commencement Date:	N/A
Forecast Completion Date:	N/A
Completion Cert. Issued:	N/A
Site Handed Over to Maintenance Department on:	N/A
Estimated Cost for Upgrading (HK$M):	N/A
Maintenance Manual No.:	N/A
Actual Works:	N/A
No. of Tree Felled:	N/A
No. of Tree Planted (Incl. Transplant):	N/A
% Bare of Slope Surfacing:	N/A
% Vegetated of Slope Surfacing:	N/A
% Shotcrete of Slope Surfacing:	N/A
Other Hard Surface of Slope Surfacing:	N/A

LPM/LPMit Details Report

LPM Study Feature No.:	11SW-B/R 617
Location:	SOUTH OF NO.18 SAN WAH FONG
District Council:	Wanchai
Maintenance Responsibility (At the Time of Selection):	Private
Responsible Party for Maintenance of Government Portion:	N/A
Private Lot No.:	NA

LPM/LPMit Study

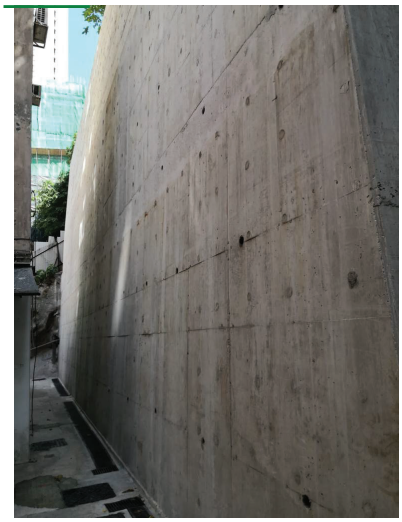
Agreement No.:	In-house Design
Study Type:	Stage 2 Study
Consultant:	N/A
GEO Managing Section / Engineer:	LPM2 / N/A
Study Status:	Study completed
Design Approach:	Conventional (GI + Analysis)
Option Assessment Accepted:	N/A
Study Report No.:	S2R 4/88
Programme / Actual Commencement:	N/A

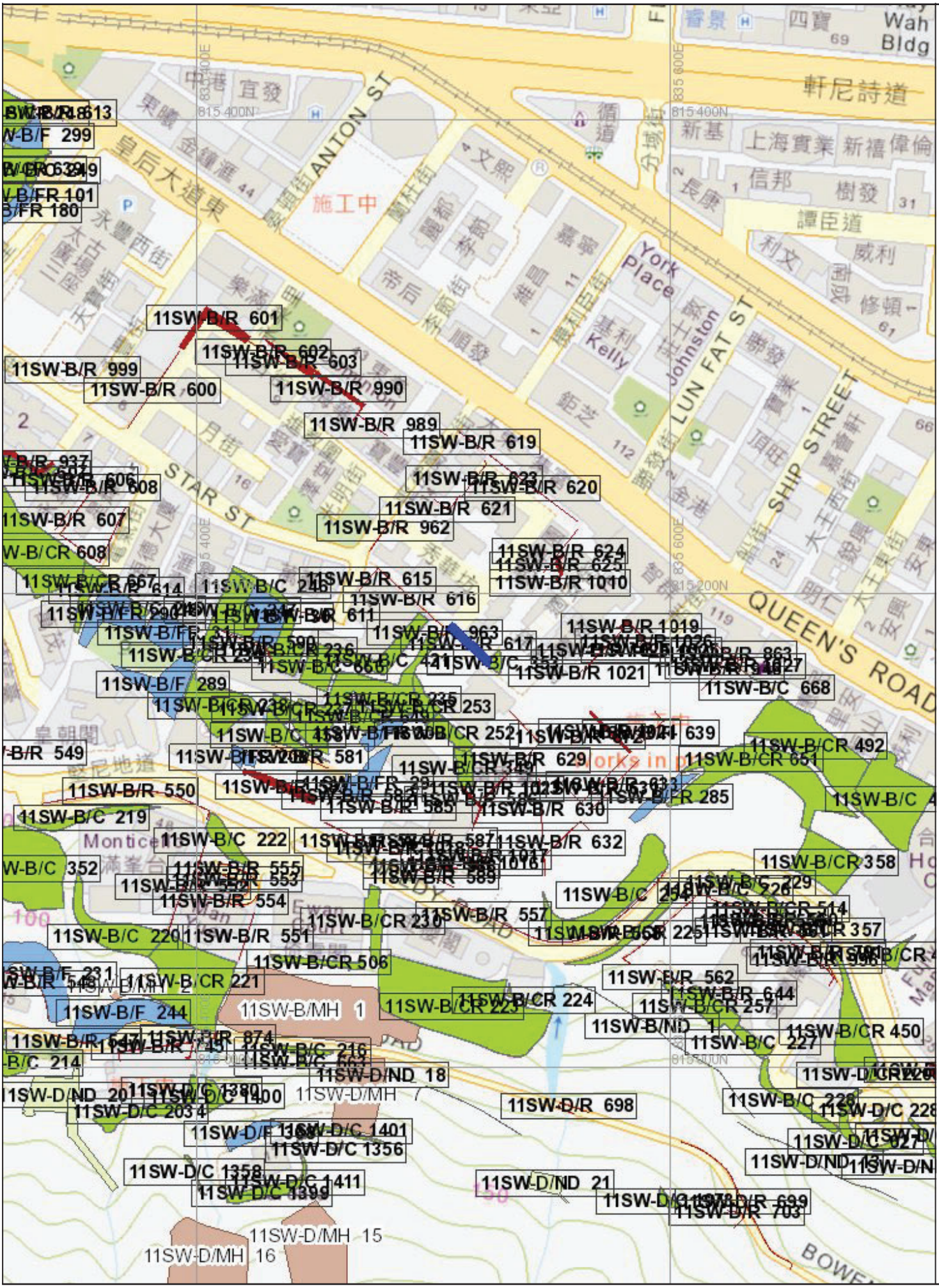
Programme / Actual Completion:	N/A
Report Recommendation (For Stage 2 Study):	No action required
District Check Status:	Not checked
Checking Certificate No.:	N/A
GEO Engineer's Remarks:	NO FURTHER ACTION

LPM/LPMit Works

Works Contract No.:	N/A
GEO Managing Section / Engineer:	N/A / N/A
Contractor:	N/A
Progress Status:	N/A
Reason of Study Termination / Works Deletion (If Necessary):	N/A
Forecast Commencement Date:	N/A
Forecast Completion Date:	N/A
Completion Cert. Issued:	N/A
Site Handed Over to Maintenance Department on:	N/A
Estimated Cost for Upgrading (HK$M):	N/A
Maintenance Manual No.:	N/A
Actual Works:	N/A
No. of Tree Felled:	N/A
No. of Tree Planted (Incl. Transplant):	N/A
% Bare of Slope Surfacing:	N/A
% Vegetated of Slope Surfacing:	N/A
% Shotcrete of Slope Surfacing:	N/A
Other Hard Surface of Slope Surfacing:	N/A

PHOTO

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11SW-B/CR 358
11SW-B/R 554
11SW-B/R 557
11SW-B/CR 230
11SW-B/C 220
11SW-B/R 551
11SW-B/CR 506
11SW-B/CR 221
11SW-B/F 244
11SW-B/MH 1
11SW-B/CR 224
11SW-B/R 562
11SW-B/R 644
11SW-B/CR 257
11SW-B/ND 1
11SW-B/C 227
11SW-B/CR 450
11SW-B/C 214
11SW-D/ND 18
11SW-D/MH 7
11SW-D/R 698
11SW-D/C 1401
11SW-D/C 1356
11SW-D/C 1358
11SW-D/C 1411
11SW-D/C 1399
11SW-D/ND 21
11SW-D/R 699
11SW-D/R 703
11SW-D/MH 15
11SW-D/MH 16
QUEEN'S ROAD
STAR ST
LUN FAT ST
SHIP STREET
York Place
Johnston
Kelly
施工中

Appendix C

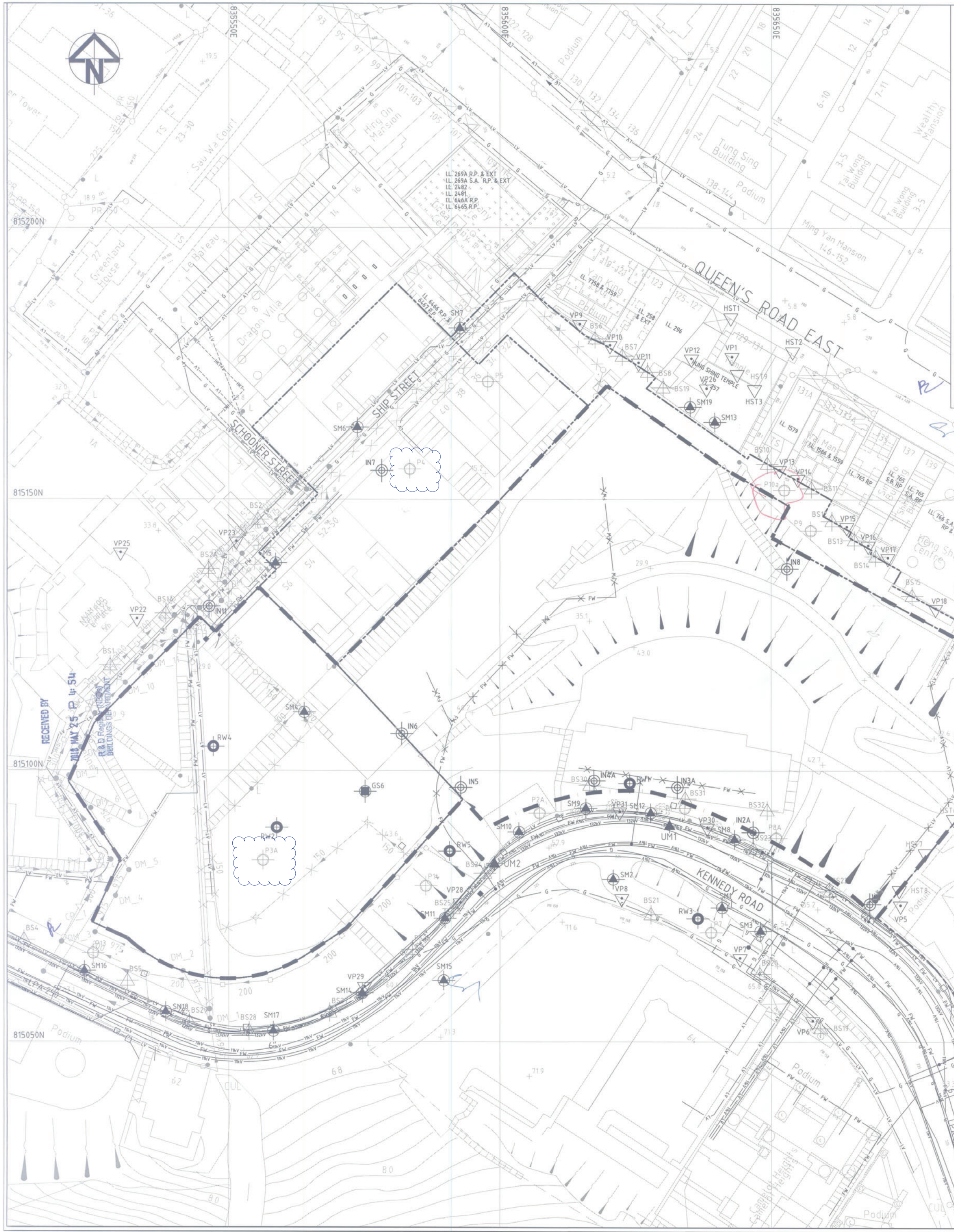
Architectural Plans of

Indicative Development Scheme

(Please refer to Appendix 1 of the SPS)

Appendix D

Layout of Piezometre P3a and P4



NOTES :

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. EA1425/G/B/TSF/002 TO 067.

2. THE LAYOUT OF THE EXISTING UTILITIES IS SHOWN FOR INFORMATION ONLY AND IS NOT EXHAUSTIVE. THE CONTRACTOR SHALL INVESTIGATE ON SITE THE LAYOUT OF EXISTING UTILITIES. NEITHER THE EMPLOYER FOR THE ENGINEER ACCEPT ANY RESPONSIBILITY WHATSOEVER FOR THE ACCURACY OF SUFFICIENCY OF THE INFORMATION PROVIDED.

3. BEFORE CONSTRUCTION COMMENCES, THE CONTRACTOR SHALL CONSULT THE VARIOUS SERVICES AND UTILITY AUTHORITIES TO DETERMINE ACCEPTANCE METHODS OF PROTECTION OF ALL SERVICES AND UTILITIES AFFECTED BY THE WORKS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORKS NECESSARY FOR THE PROTECTION AND/OR RELOCATION OF SERVICES AND UTILITIES ALSO.

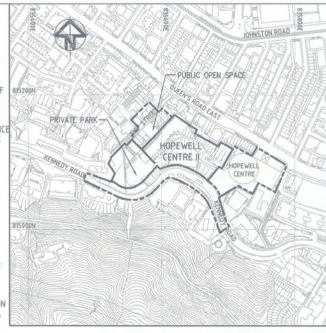
4. ALL EXISTING UNDERGROUND UTILITIES WITHIN THE SITE BOUNDARY SHALL BE IDENTIFIED AND SHALL BE DIVERTED, IF NECESSARY, PRIOR TO COMMENCEMENT OF ANY EXCAVATION.

5. ALL EXISTING SERVICES SHALL BE MAINTAINED IN GOOD CONDITION DURING CONSTRUCTION.

6. IF THE READING OF PIEZOMETERS CONSISTENTLY HIGHER THAN THE ACTUAL LEVEL, THE DESIGN SHALL BE REVIEWED AND SUBMITTED TO BD FOR APPROVAL IF NECESSARY.

7. STAGE 1 MONITORING WORKS: IN1, IN3 TO IN5.
STAGE 2 MONITORING WORKS: IN2A & P8A (LOCATED WITHIN TREE PROTECTION ZONE), IN2A & P8A SHALL BE INSTALLED BEFORE COMMENCEMENT OF 355 DIA. PIPE PILES (P11-P25A) WITHIN THE TREE PROTECTION ZONE.
STAGE 3 MONITORING WORKS: IN8 & P9, P10 SHALL BE INSTALLED BEFORE COMMENCEMENT OF PIPE PILE (P218-P275).

PIEZONETER	WALL TYPE	TIP LEVEL (mPD)	HIGHEST MEASURED WATER LEVEL (mPD)
P1	E	+16.925	+34.761
P2A	E	+16.200	+33.991
P3A	J	+26.990	+35.998
P4	I	+5.235	+12.308
P5	I	-3.462	+7.042
P7	C1	+34.889	+45.920
P8A	C1	+38.775	+40.350
P9	IV	-3.960	-
~~P10~~	V	~~+1.000~~	~~-~~
P10a	-	-4.020	-



LOCATION PLAN

SCALE 1 : 4000

SCHEDULE OF MONITORING INSTRUMENTS

MONITORING INSTRUMENTS		STAGE 1	STAGE 2	STAGE 3
BUILDING SETTLEMENT CHECKPOINTS	HST	HST1 - 10	-	-
PIEZOMETERS	P	P1 - 5, P7	P8A	P9, P10a
SETTLEMENT CHECKPOINTS	SM	SM1 - 18	-	-
GROUND SETTLEMENT MARKERS	GS	GS6	-	-
BUILDING MOVEMENT CHECKPOINTS	BS	BS1-2, BS4-8, BS10-32	-	-
VIBRATION CHECKPOINTS	VP	VP1 - 31	-	-
UTILITY SETTLEMENT CHECKPOINTS	UM	UM1 - 2	-	-
RECHARGE WELLS	RW	RW1 - 4	-	-
INCLINOMETERS	IN	IN1, 3, 4, 5, 6, 7	IN2A	IN8

B.D. (B) REF. NO. : BD 6/3051/88

F.S.D. REF. NO. :

D.L.O. REF. NO. :

Symbol	Description
P	PROPOSED PIEZOMETER / STANDPIPE
SM	PROPOSED SETTLEMENT CHECK POINT
GS	PROPOSED GROUND SETTLEMENT MARKER
BS	PROPOSED BUILDING MOVEMENT POINT
VP	PROPOSED VIBRATION POINT
UM	PROPOSED SETTLEMENT CHECKPOINT ON UTILITIES
RW	PROPOSED RECHARGE WELL
IN	PROPOSED INCLINOMETER
	EXISTING SEWERAGE MANHOLE AND PIPE TO BE REMOVED PRIOR TO COMMENCEMENT OF TEMPORARY SITE FORMATION WORKS
11kV	EXISTING 11kV / 22kV CABLE / DUCT
LV	EXISTING LV CABLE / DUCT
LV	EXISTING LV CABLE / DUCT TO BE REMOVED PRIOR TO COMMENCEMENT OF TEMPORARY SITE FORMATION WORKS
132kV	EXISTING 275kV / 132kV / 66kV CABLE
G	EXISTING GAS MAIN AND VALVE
	EXISTING FIRE HYDRANT (FRESH WATER)
FW	EXISTING WATER MAINS AND VALVE (FRESH WATER)
SW	EXISTING WATER MAINS (SALT WATER)
FW	EXISTING WATER MAINS TO BE REMOVED PRIOR TO COMMENCEMENT OF TEMPORARY SITE FORMATION WORKS
150	EXISTING SEWERAGE MANHOLE AND PIPE
HST	PROPOSED BUILDING SETTLEMENT CHECK POINT
	SITE BOUNDARY LINE
	WORKING LIMIT

REV.	DATE	DESCRIPTION	CHKD.	APPD.
G	MAY 2018	BD AMENDMENT	TK	RL
-	JUL 2017	BD APPROVED ON 29-06-2017	-	-
F	MAR 2017	BD AMENDMENT	KK	BI
E	OCT 2015	BD AMENDMENT	PL	BI
D	JAN 2015	BD AMENDMENT	RK	BI
C	NOV 2013	BD AMENDMENT	T. LUK	RL
B	APR 2012	GEO & BD COMMENTS	M. LUI	RL
A	JAN 2012	BD RESUBMISSION	M. LUI	RL
-	AUG 2011	FIRST ISSUE	M. LUI	RL

REVISION

DESIGNED	J. WONG	CHECKED	M. LUI
DRAWN	T. WONG	CHECKED	M. LUI
APPROVED	R. LEUNG	© Copyright Reserved	
DATE	15-06-2011	All dimensions are in mm unless shown otherwise.	
SCALE	1 : 400 (A1)	No measurement should be taken from drawing directly.	
CAD REF.	EA01425-G-B-TSF-040_G		

PROJECT TITLE

HOPEWELL CENTRE II DEVELOPMENT HONG KONG

CLIENT

HH HOPEWELL CONSTRUCTION COMPANY LIMITED

ARCHITECT

WMKY LTD 雲麥郭楊建築師工程師 ARCHITECTS·ENGINEERS

3308-10 Hopewell Centre, 183 Queen's Road East Hong Kong.Tel : 25284993

CIVIL & GEOTECHNICAL CONSULTANT

ARCADIS Design & Consultancy for natural and built assets

DRAWING TITLE

TEMPORARY SITE FORMATION INSTRUMENTATION LAYOUT PLAN

DRAWING NO. EA1425/G/B/TSF/040 REV. G

Note: This plan has been processed on a curtailed check basis under the centralized processing system as promulgated in PNAP ADM-19. The duties of the authorized person, registered structural engineer and/or registered geotechnical engineer concerned as specified under section 4(3)(b) and the provision of section 14(2)(c) of the Buildings Ordinance are of particular relevance in this regard.

Plan Approved
TSUI Ka-kim
Senior Building Surveyor
for BUILDING AUTHORITY
22 JUN 2018

AECOM Asia Company Limited
Ng Tim-yeung
Registered Structural Engineer RSE 80/02

MAK CHI CHEUNG, PETER
BArch., BAAS, FHKIA, RIBA, ARAIA
REGISTERED ARCHITECT, AP(List 1)

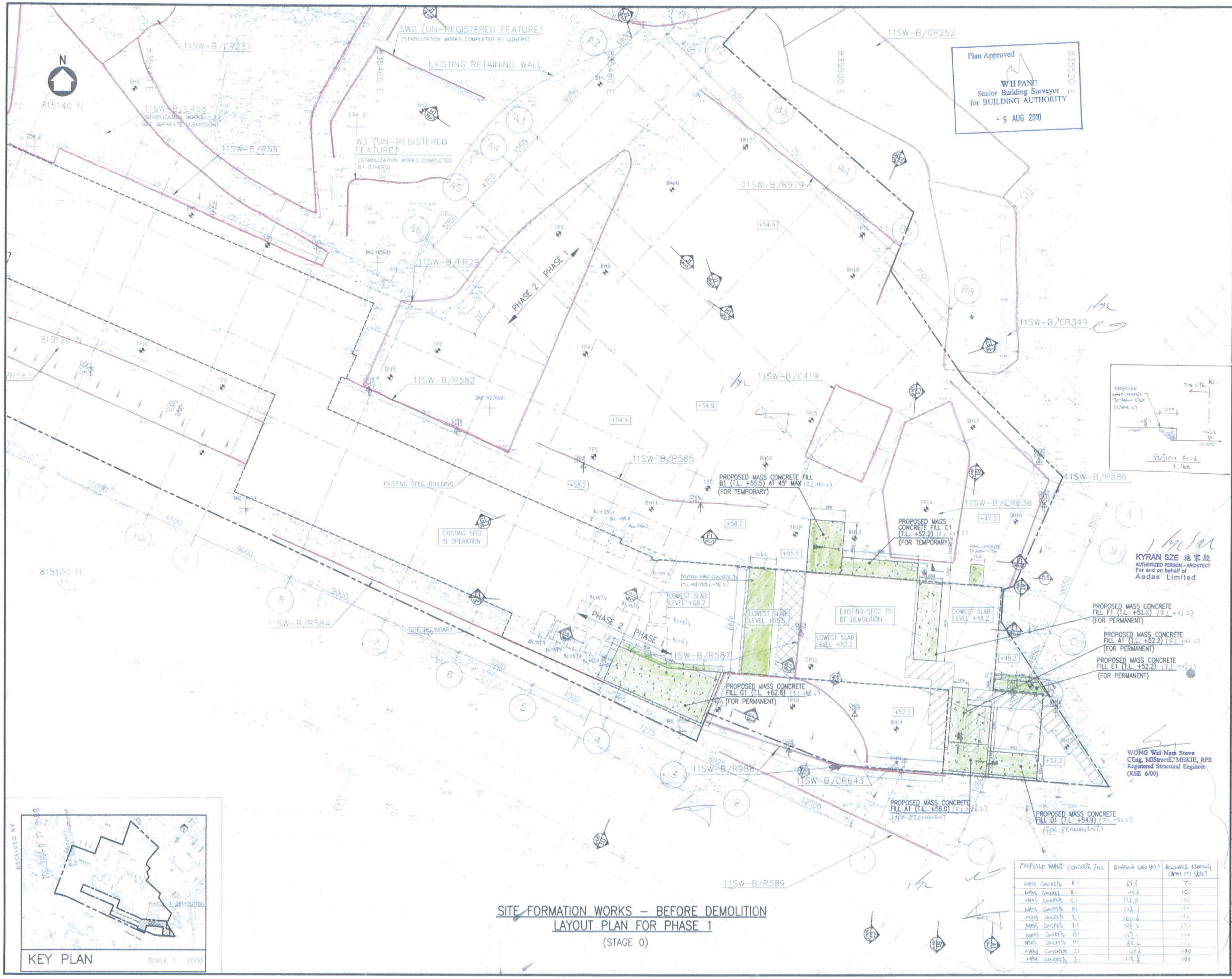
LEUNG Kwok-Yiu
BSc(Eng) Dip Ing CEng MICE
MIStructE FHKIE RPE(C.G.S)
Registered Geotechnical Engineer

5cm ON ORIGINAL

K:\EA01425 HOPEWELL MEGA HOTEL\E-OurDrawings\GC-EA01425\Current\Main Site\Temporary Site Formation\2018-05-23 BD Amendment (Bulk Ecavation)\EA01425-G-B-TSF-040_G.dwg

Appendix E

Record Plan of St. Francis' Canossian College



SITE FORMATION WORKS – BEFORE DEMOLITION
LAYOUT PLAN FOR PHASE 1
(STAGE 0)

PROPOSED MASS CONCRETE FILL	BEARING LOAD (kPa)	ALLOWABLE BEARING CAPACITY (kPa)
MASS CONCRETE A1	69.8	70
MASS CONCRETE B1	[illegible]	150
MASS CONCRETE C1	122.0	130
MASS CONCRETE D1	128.1	130
MASS CONCRETE E1	100.6	130
MASS CONCRETE F1	108.2	130
MASS CONCRETE G1	127.1	130
MASS CONCRETE H1	63.2	130
MASS CONCRETE I1	129.6	130
MASS CONCRETE J1	115.8	125

B.D. REF No. BD /3036/09

NOTES :

1. ALL LOWEST GROUND FLOOR SLAB IS TO BE RETAINED AFTER DEMOLITION

LEGEND

- SITE BOUNDARY
- EXISTING FEATURE
- EXISTING RETAINING
- PROPOSED MASS CONCRETE FILL
- PROPOSED 45° MAX MASS CONCRETE FILL
- EXISTING SCREEN WALL TO BE RETAINED
- EXISTING RETAINING WALL INSIDE EXISTING BUILDING TO BE RETAINED
- PROPOSED CATCH PIT
- DEVELOPED ELEVATION
- SECTION MARK
- EXISTING GROUND LEVEL
- EXISTING FRESH WATER MAIN
- EXISTING GAS MAIN
- EXISTING DRAINAGE
- EXISTING LIGHTING CABLE
- EXISTING HGC DUCT
- EXISTING FIBRE OPTIC/PILOT CABLE (HKE)
- EXISTING HKE CABLE
- SITE SPECIFIC COREHOLE
- SITE SPECIFIC BOREHOLE
- SITE SPECIFIC TRIAL PIT
- EXISTING BOREHOLE
- EXISTING FOOTING (FOUNDING ON +57.4mPD)

SIU Koon Hoi, Carmine (邵冠開)
~~Authorised Person - AP(E) 98/82~~
~~Registered Structural Engineer - RSE 98/82~~
Registered Geotechnical Engineer - RGE 98/82

REVISIONS TO DRAWING	No	DATE	BY
BD SUBMISSION	-	JUNE 2010	

IMPORTANT: DO NOT SCALE THIS DRAWING
ALL DIMENSIONS SHOULD BE CHECKED ON SITE

PROJECT
PROPOSED REDEVELOPMENT OF ST. FRANCIS CANOSSIAN COLLEGE

CLIENT
The Mother Superioress of the Daughters of Charity of the Canossian Institute (Hong Kong)

TITLE
PROPOSED SITE FORMATION WORKS
LAYOUT PLAN FOR PHASE 1
(STAGE 0)

PROJECT NO	DRG. NO	DATE	REV
CS1278	1278-SF111	MAY 2010	-

SCALE	DESIGNED	DRAWN	CHECKED	APPROVED
1:150	YKT	CL	BC	PY

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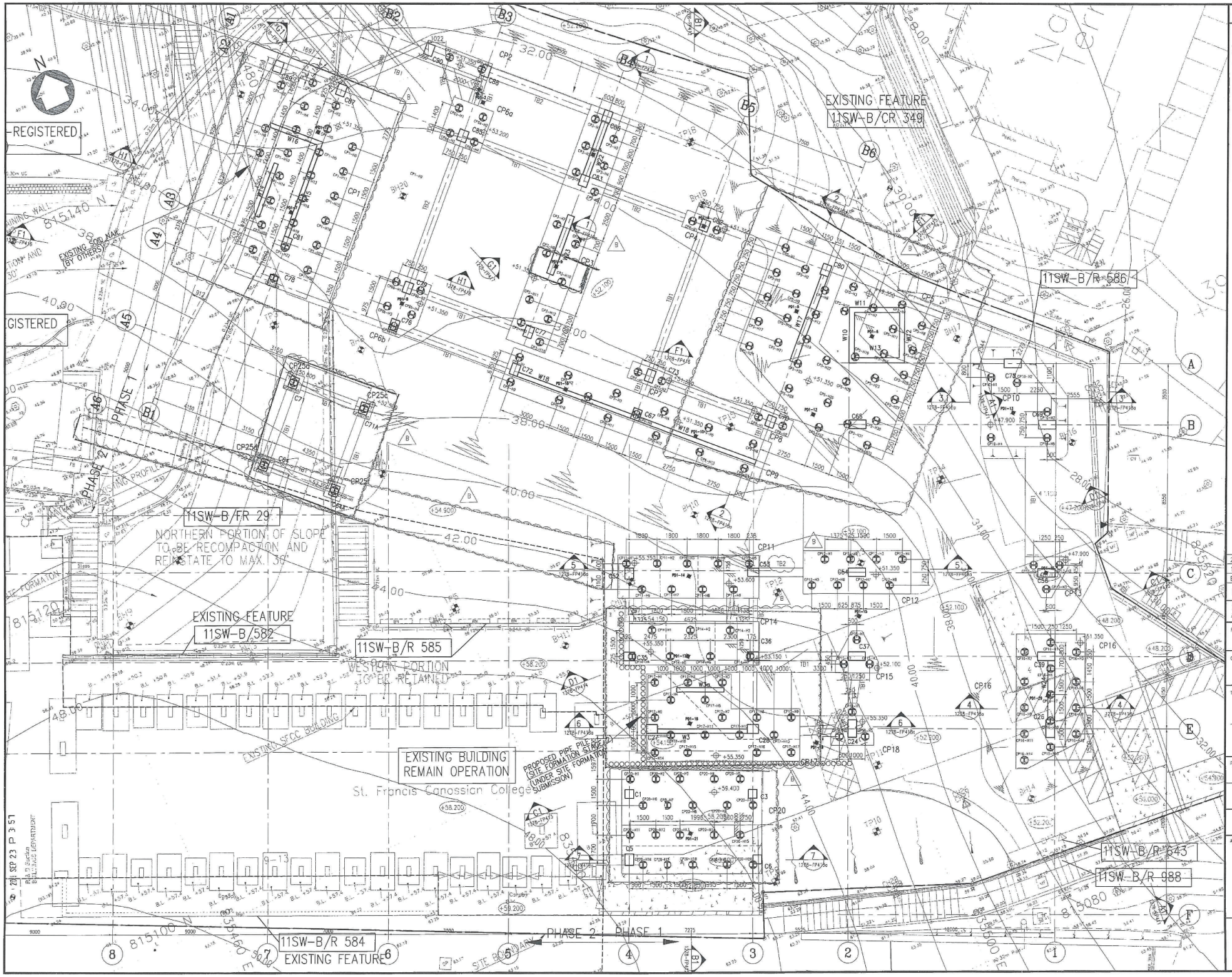

B.D. REF. No. BD 3/3036/09

LEGEND

- SITE BOUNDARY
- EXISTING FEATURE
- EXISTING RETAINING
- PROPOSED MASS CONCRETE FILL
- BH1 EXISTING BOREHOLE
- TP1 EXISTING TRIAL PIT
- CP1–H1 303x305x180 kg/m PREBORED SOCKET H–PILE
- PD1–1 PROPOSED PREDRILLING
- +51.35 PILE CAP TOP LEVEL
- F1 SECTION MARK
- EXISTING FOOTING (FOUNDING ON +57.4mPD)
- PROPOSED PIPE PILE WALL (UNDER SITE FORMATION SUBMISSION)

Plan Approved
TAM A Ray
Senior Structural Engineer
for BUILDING AUTHORITY
20 OCT 2011

W. Lee
LEE Wan Cheung
Registered Structural Engineer
(RSE 101/99)

2ND AMENDMENT	B	SEP 2011	
1ST AMENDMENT	A	JAN 2011	
BD SUBMISSION	–	AUG 2010	
REVISIONS TO DRAWING	No.	DATE	BY

IMPORTANT: DO NOT SCALE THIS DRAWING
ALL DIMENSIONS SHOULD BE CHECKED ON SITE

PROJECT
PROPOSED DEVELOPMENT OF ST. FRANCIS CANOSSIAN COLLEGE

CLIENT
The Mother Superioress of the Daughters of Charity of the Canossian Institute (Hong Kong)

TITLE
PROPOSED FOUNDATION WORKS PILING LAYOUT PLAN FOR PHASE 1

PROJECT NO.	ORG. NO.	DATE	REV.
CS1278	1278–FP111	08/10	B

SCALE	DESIGNED	DRAWN	CHECKED	APPROVED
1:100	YKT	CL	PY	BC

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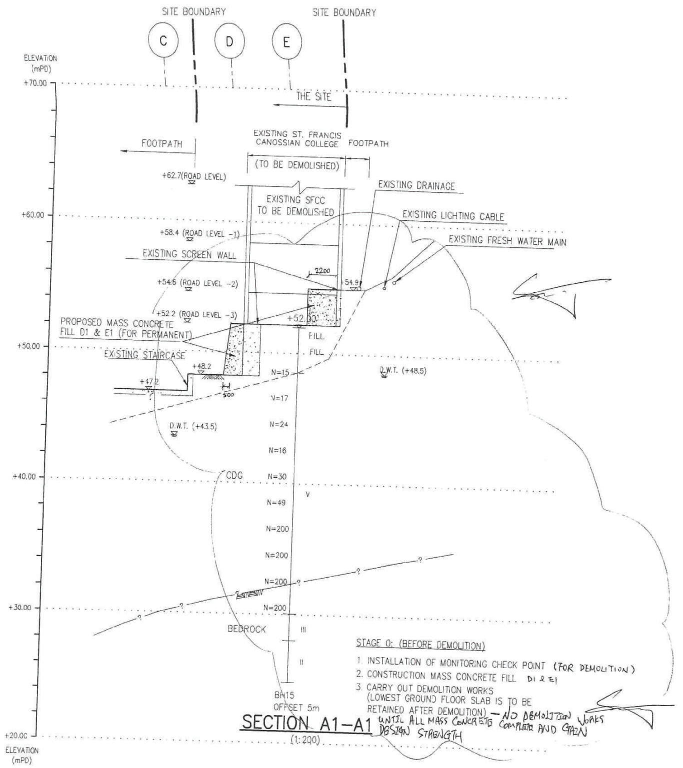

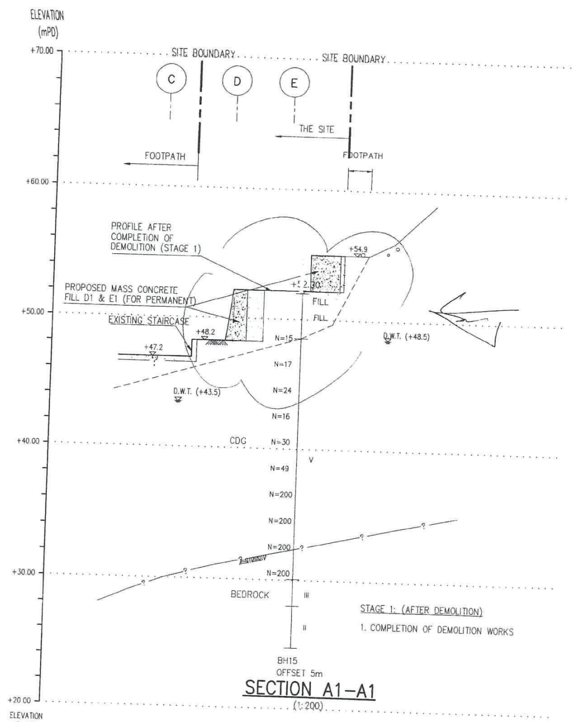

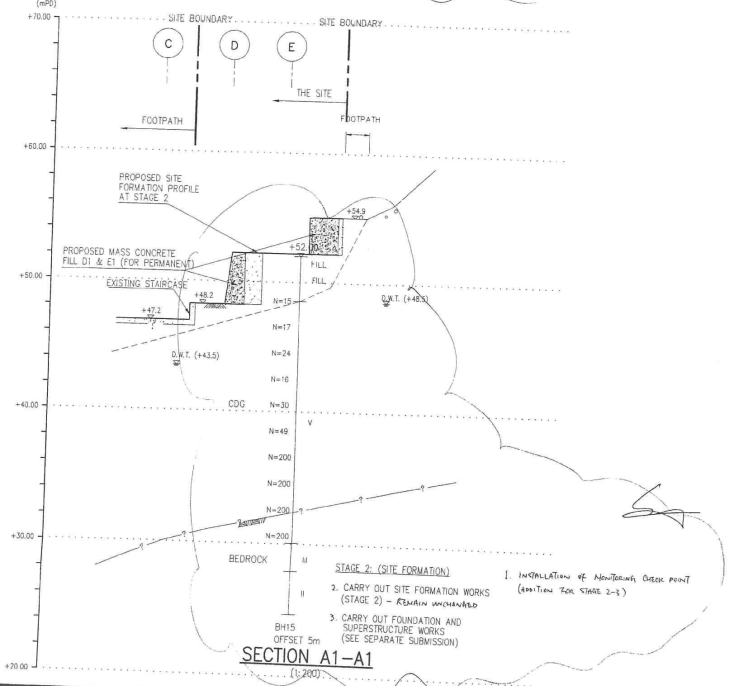

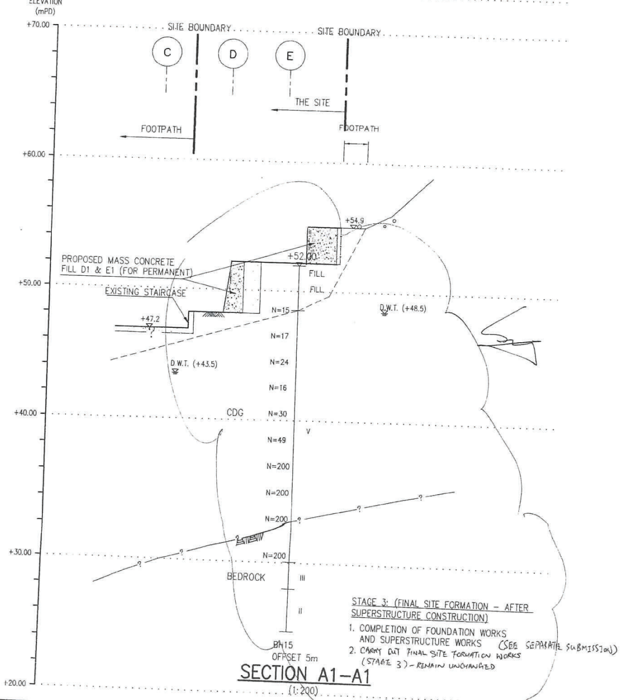

B.D. REF. No. BD /3036/09

LEGEND

- PROPOSED MASS CONCRETE FILL
- EXISTING SCREEN WALL OR RETAINING WALL
- D.W.T. (+53.5) DESIGN GROUND WATER LEVEL
- ○ EXISTING UNTILITIES

WONG Wai Nam Steve
CEng, MIStructE, MHKIE, RPE
Registered Structural Engineer
(RSE 6/00)

SIU Koon Hoi, Carmine (邵冠開)
~~Authorised Person – AP(E) 98/82~~
~~Registered Structural Engineer – RSE 98/82~~
Registered Geotechnical Engineer - RGE 98/82

BD SUBMISSION	–	JUNE 2010	
REVISIONS TO DRAWING	No.	DATE	BY

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PROJECT
PROPOSED REDEVELOPMENT OF ST. FRANCIS CANOSSIAN COLLEGE

CLIENT
The Mother Superioress of the Daughters of Charity of the Canossian Institute (Hong Kong)

TITLE
PROPOSED SITE FORMATION WORKS
SECTION A1 – A1
FOR PHASE 1

PROJECT NO.	DRG. NO.	DATE	REV.
CS1278	1278-SF211	MAY 2010	–

SCALE	DESIGNED	DRAWN	CHECKED	APPROVED
1:200	YKT	CL	BC	PY

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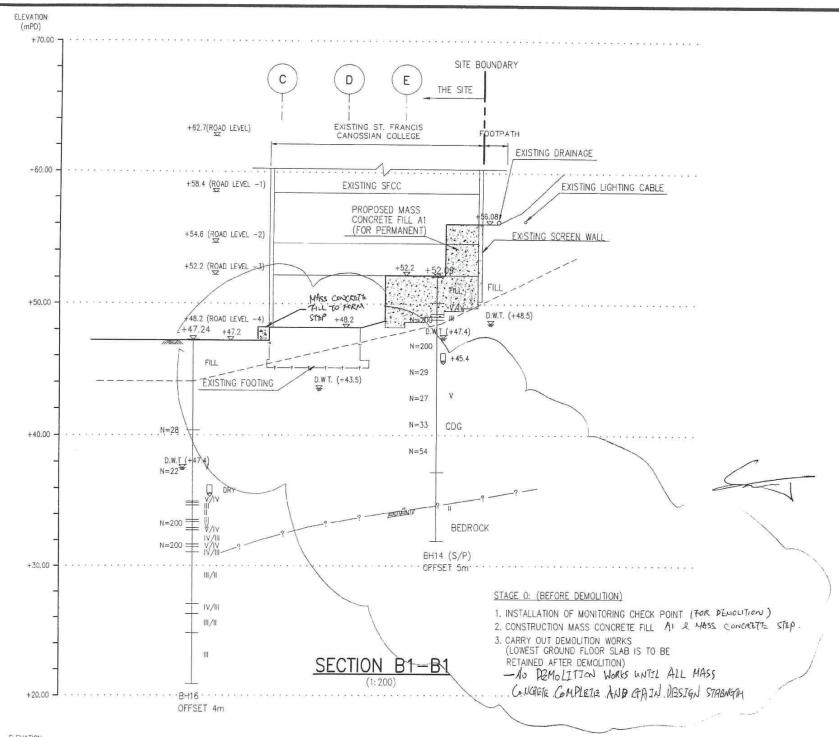

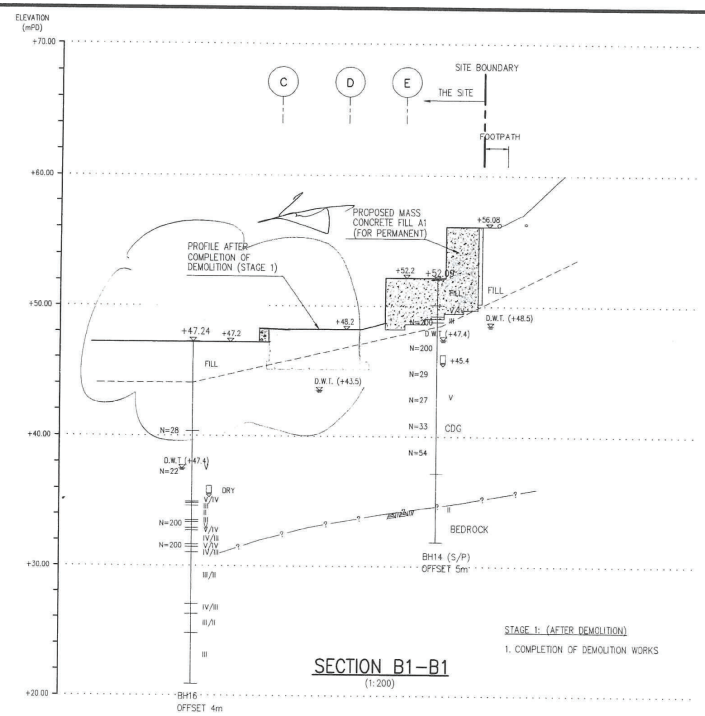

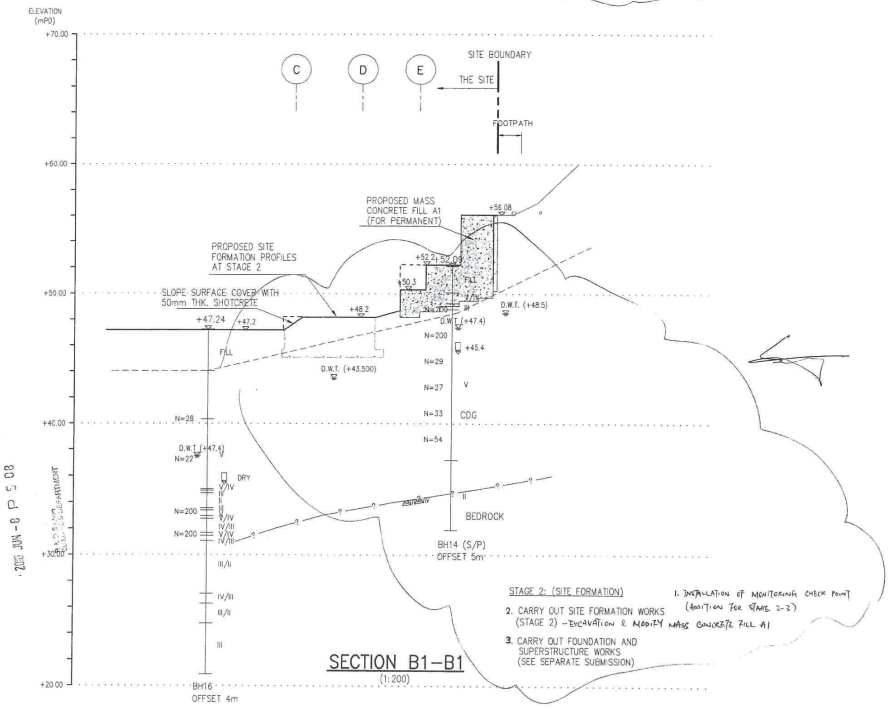

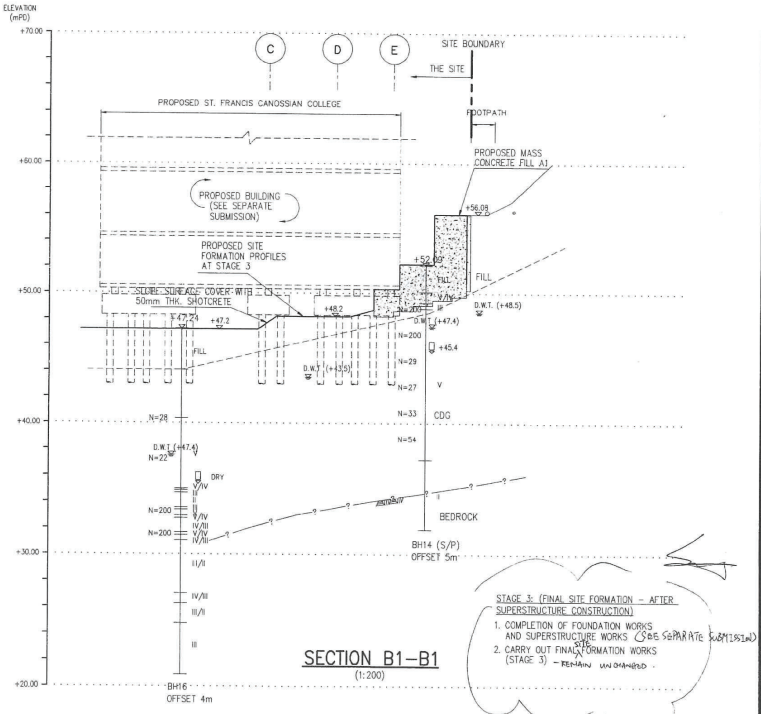

B.D. REF. No. BD /3036/09

LEGEND

- PROPOSED MASS CONCRETE FILL
- EXISTING SCREEN WALL OR RETAINING WALL
- PROPOSED WELL COMPACTED BACKFILL
- D.W.T. (+53.5) DESIGN GROUND WATER LEVEL
- EXISTING UNTILITIES

WONG Wai-Nam Steve
CEng, MIStructE, MHKIE, RPE
Registered Structural Engineer
(RSE 6/00)

SIU Koon Hoi, Carmine (邵冠開)
~~Authorised Person - AP(S) 98/02~~
~~Registered Structural Engineer - RSE 98/02~~
Registered Geotechnical Engineer - RGE 98/02

BD SUBMISSION	–	JUNE 2010	
REVISIONS TO DRAWING	No.	DATE	BY

IMPORTANT: DO NOT SCALE THIS DRAWING
ALL DIMENSIONS SHOULD BE CHECKED ON SITE

PROJECT: **PROPOSED REDEVELOPMENT OF ST. FRANCIS CANOSSIAN COLLEGE**

CLIENT: **The Mother Superioress of the Daughters of Charity of the Canossian Institute (Hong Kong)**

TITLE: PROPOSED SITE FORMATION WORKS SECTION B1 – B1 FOR PHASE 1

PROJECT NO.	DRG. NO.	DATE	REV.
CS1278	1278-SF212	MAY 2010	–

SCALE	DESIGNED	DRAWN	CHECKED	APPROVED
1:200	YKT	CL	BC	PY

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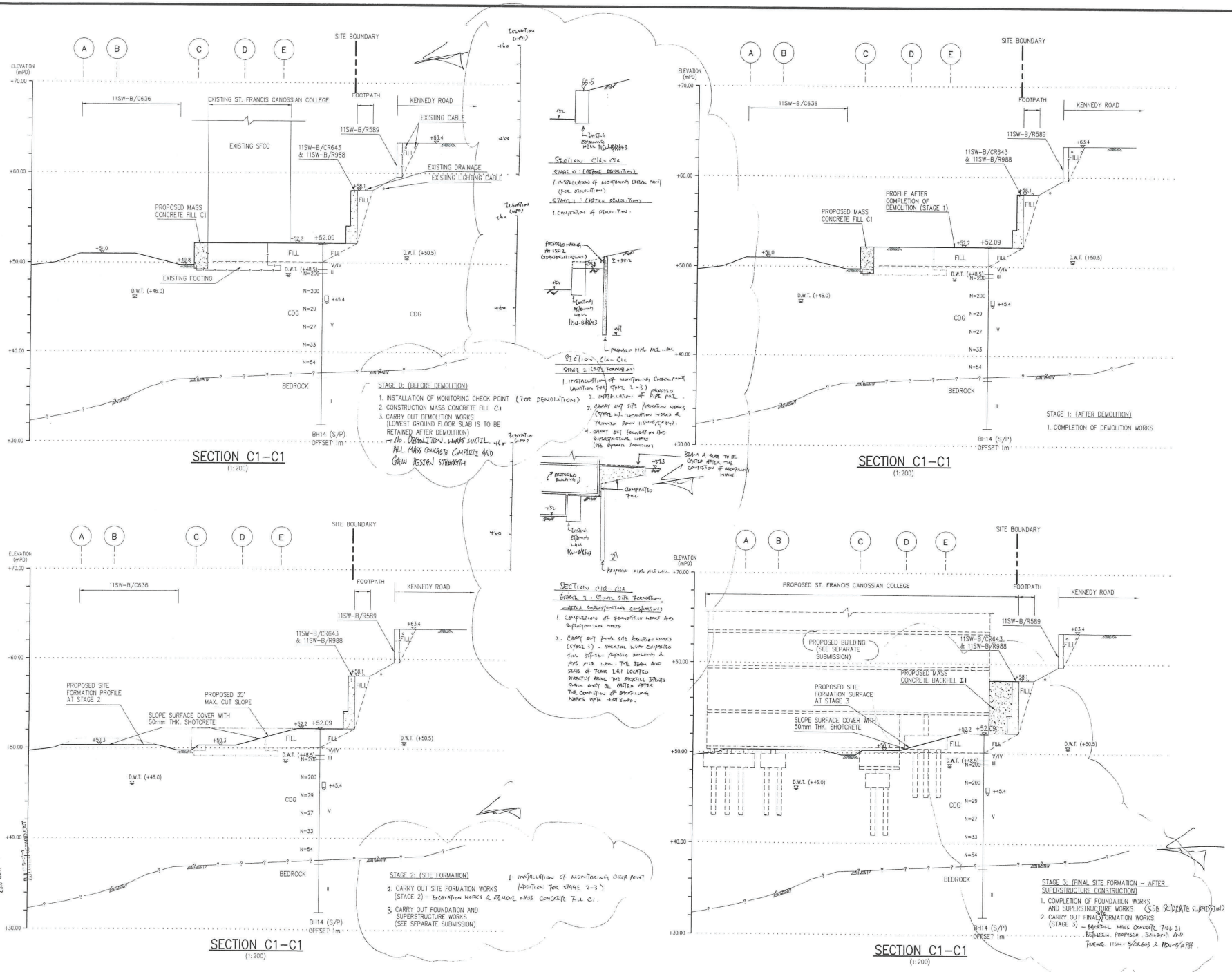

B.D. REF. No. BD /3036/09

LEGEND

- PROPOSED MASS CONCRETE FILL
- EXISTING SCREEN WALL OR RETAINING WALL
- PROPOSED WELL COMPACTED BACKFILL
- D.W.T. (+53.5) DESIGN GROUND WATER LEVEL
- EXISTING UNTILITIES

WONG Wai Nim, Steve
CEng, MIStructE, MHKIE, RPE
Registered Structural Engineer
(RSE 6/00)

SIU Koon Hoi, Carmine (蕭冠開)
~~Authorised Person - AP(E) 98/82~~
~~Registered Structural Engineer - RSE 98/82~~
Registered Geotechnical Engineer - RGE 98/82

BD SUBMISSION	-	JUNE 2010	
REVISIONS TO DRAWING	No.	DATE	BY

IMPORTANT: DO NOT SCALE THIS DRAWING
ALL DIMENSIONS SHOULD BE CHECKED ON SITE

PROJECT
PROPOSED REDEVELOPMENT OF ST. FRANCIS CANOSSIAN COLLEGE

CLIENT
The Mother Superioress of the Daughters of Charity of the Canossian Institute (Hong Kong)

TITLE
PROPOSED SITE FORMATION WORKS SECTION C1 – C1 FOR PHASE 1

PROJECT NO.	DRG. NO.	DATE	REV.
CS1278	1278-SF213	MAY 2010	-

SCALE	DESIGNED	DRAWN	CHECKED	APPROVED
1:200	YKT	CL	BC	PY

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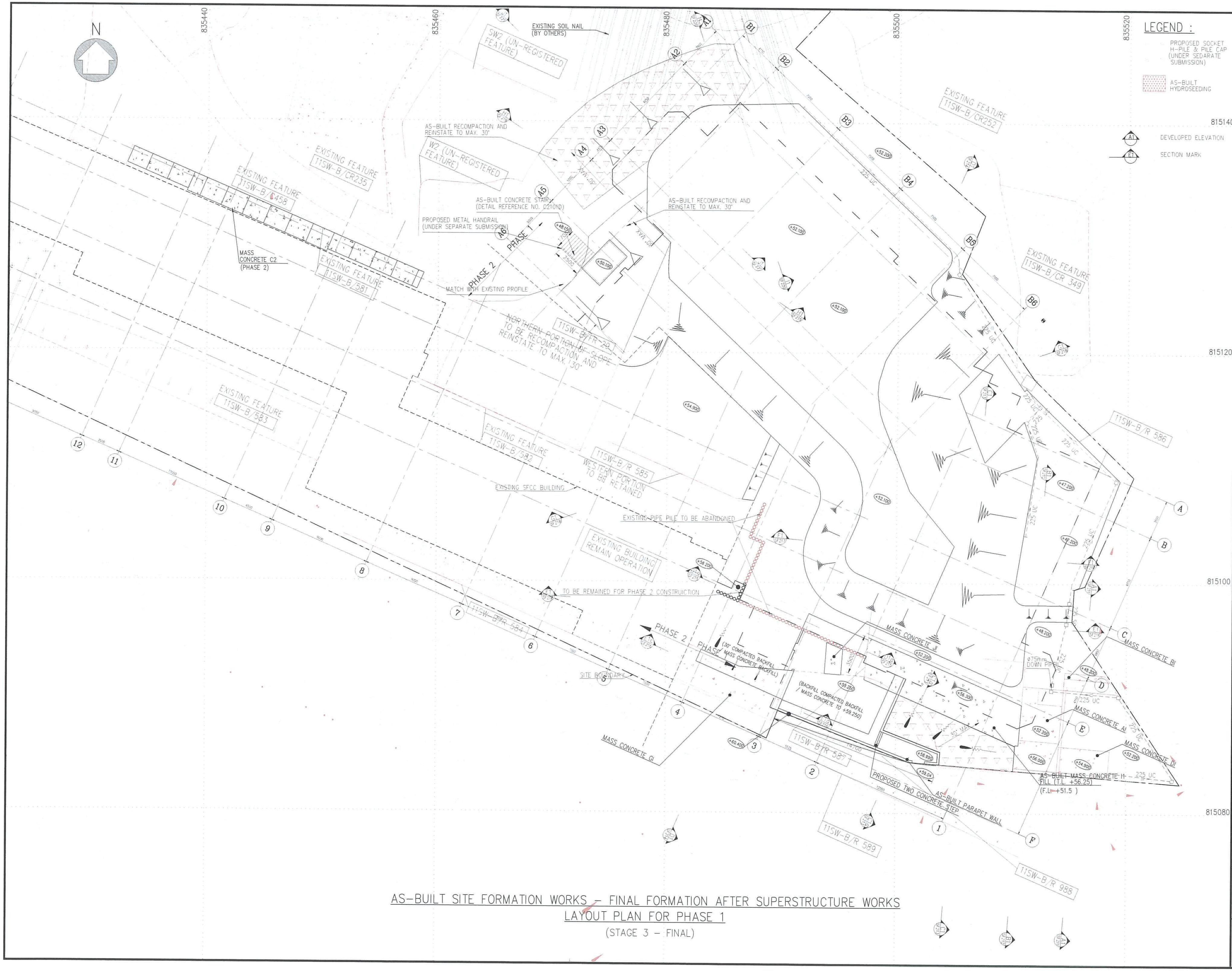

AS-BUILT SITE FORMATION WORKS – FINAL FORMATION AFTER SUPERSTRUCTURE WORKS LAYOUT PLAN FOR PHASE 1

(STAGE 3 – FINAL)

B.D. REF No. BD /3036/09

LEGEND

- AS-BUILT 35° OPEN CUT SLOPE WITH 50mm THK. SHOTCRETE
- AS-BUILT 30° MAX WELL COMPACTED BACKFILL WITH 50mm THK. SHOTCRETE
- AS-BUILT RECOMPACTION AND REINSTATE TO MAX. 30° SLOPE WITH 50mm THK. SHOTCRETE
- (+48.200) EXCAVATION LEVEL
- EXISTING CATCH PIT
- SITE BOUNDARY
- EXISTING SOIL NAIL
- MASS CONCRETE FILL CONSTRUCTED BEFORE DEMOLITION
- AS-BUILT WELL COMPACTED BACKFILL
- 45° MAX MASS CONCRETE FILL CONSTRUCTED BEFORE DEMOLITION
- EXISTING SCREEN WALL TO BE RETAINED
- EXISTING RETAINING WALL INSIDE EXISTING BUILDING TO BE RETAINED
- AS-BUILT RECOMPACTION OF EXISTING FILL
- AS-BUILT HYDRO SEEDING
- AS-BUILT CATCH PIT
- 225UC AS-BUILT U-CHANNEL
- 225SC AS-BUILT STEPPED-CHANNEL
- EXISTING FRESH WATER MAIN
- EXISTING GAS MAIN
- EXISTING DRAINAGE
- EXISTING LIGHTING CABLE
- EXISTING HGC DUCT
- EXISTING FIBRE OPTIC/PILOT CABLE (HKE)
- EXISTING HKE CABLE
- PROPOSED BUILDING OUTLINE
- EXISTING FEATURE
- EXISTING RETAINING WALL

REVISIONS TO DRAWING	No.	DATE	BY

IMPORTANT: DO NOT SCALE THIS DRAWING. ALL DIMENSIONS SHOULD BE CHECKED ON SITE

PROJECT: **PROPOSED REDEVELOPMENT OF ST. FRANCIS CANOSSIAN COLLEGE**

CLIENT: **The Mother Superioress of the Daughters of Charity of the Canossian Institute (Hong Kong)**

TITLE: AS-BUILT SITE FORMATION WORKS LAYOUT PLAN FOR PHASE 1 (STAGE 3)

PROJECT NO.	DRG. NO.	DATE	REV.
CS1278	1278-SF114		

SCALE	DESIGNED	DRAWN	CHECKED	APPROVED
1:150				

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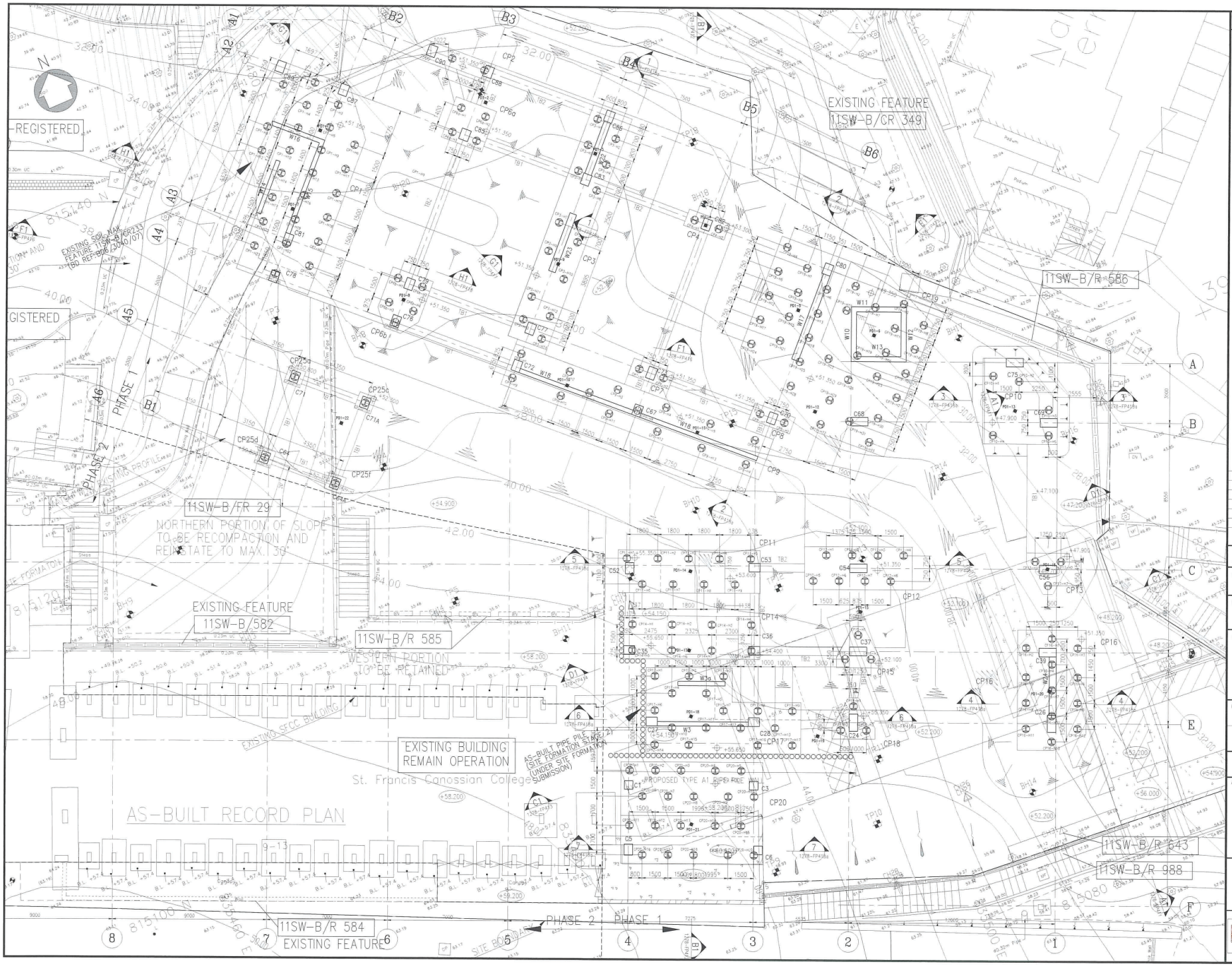

B.D. REF. No. BD 3/3036/09

LEGEND

- SITE BOUNDARY
- EXISTING FEATURE
- EXISTING RETAINING
- AS-BUILT MASS CONCRETE FILL
- BH1 EXISTING BOREHOLE
- TP1 EXISTING TRIAL PIT
- CP1-H1 303x305x180 kg/m PREBORED SOCKET H-PILE
- PD1-1 AS-BUILT PREDRILLING
- +51.35 PILE CAP TOP LEVEL
- F1 SECTION MARK
- EXISTING FOOTING (FOUNDING ON +57.4mPD)
- AS-BUILT PIPE PILE WALL (UNDER SITE FORMATION SUBMISSION)

REVISIONS TO DRAWING	No.	DATE	BY

IMPORTANT: DO NOT SCALE THIS DRAWING ALL DIMENSIONS SHOULD BE CHECKED ON SITE

PROJECT
PROPOSED DEVELOPMENT OF ST. FRANCIS CANOSSIAN COLLEGE

CLIENT
The Mother Superioress of the Daughters of Charity of the Canossian Institute (Hong Kong)

TITLE
AS-BUILT FOUNDATION WORKS PILING LAYOUT PLAN FOR PHASE 1

PROJECT NO.	DRG. NO.		DATE	REV.
CS1278	1278-FP111 (AB)			
SCALE 1:100	DESIGNED	DRAWN	CHECKED	APPROVED

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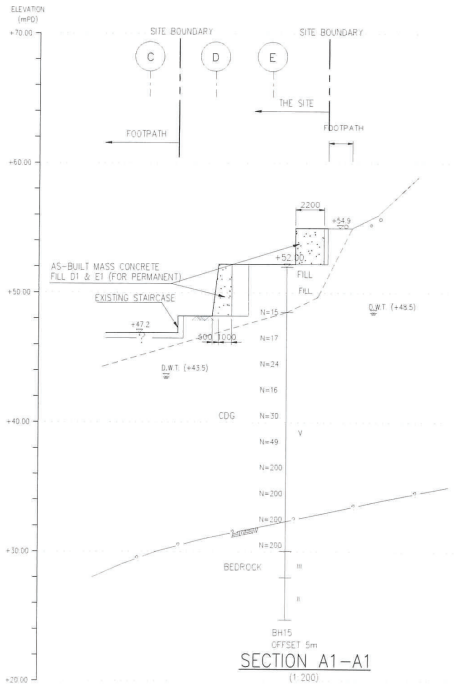

SECTION A1–A1

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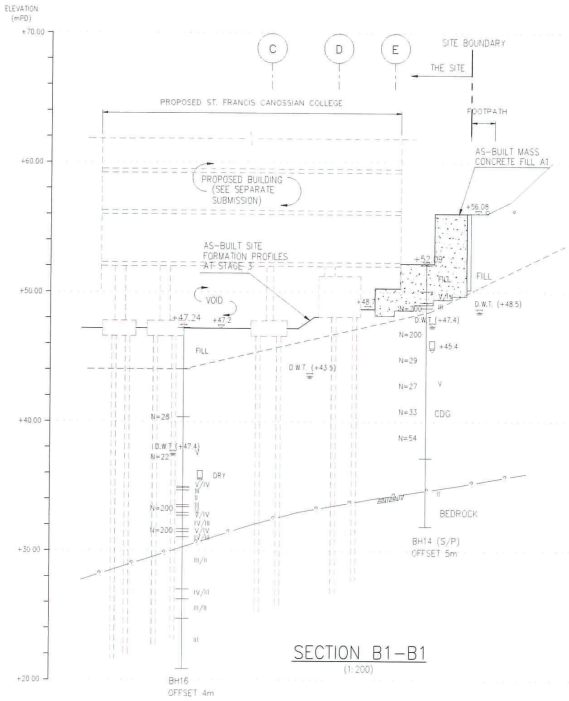

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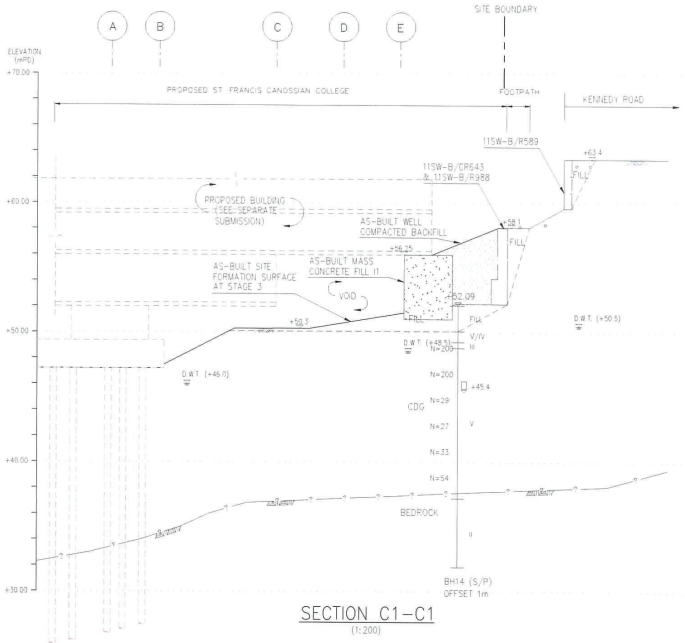

SECTION C1–C1

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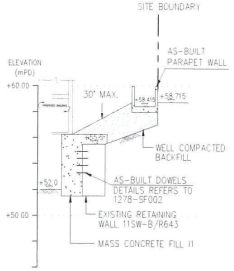

SECTION C1a–C1a

(1:200)

B.D. REF. No. BD /3036/09

LEGEND

- AS-BUILT MASS CONCRETE FILL
- EXISTING SCREEN WALL OR RETAINING WALL
- AS-BUILT WELL COMPACTED BACKFILL
- D.W.T. (+53.5) DESIGN GROUND WATER LEVEL
- EXISTING UNTILITIES

REVISIONS TO DRAWING	No.	DATE	BY

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PROJECT
PROPOSED REDEVELOPMENT OF ST. FRANCIS CANOSSIAN COLLEGE

CLIENT
The Mother Superioress of the Daughters of Charity of the Canossian Institute (Hong Kong)

TITLE
AS-BUILT SITE FORMATION WORKS SECTIONS FOR PHASE 1 (SHEET 1 OF 3)

PROJECT NO.	DRG. NO.	DATE	REV.
CS1278	1278-SF211 (AB)		

SCALE	DESIGNED	DRAWN	CHECKED	APPROVED
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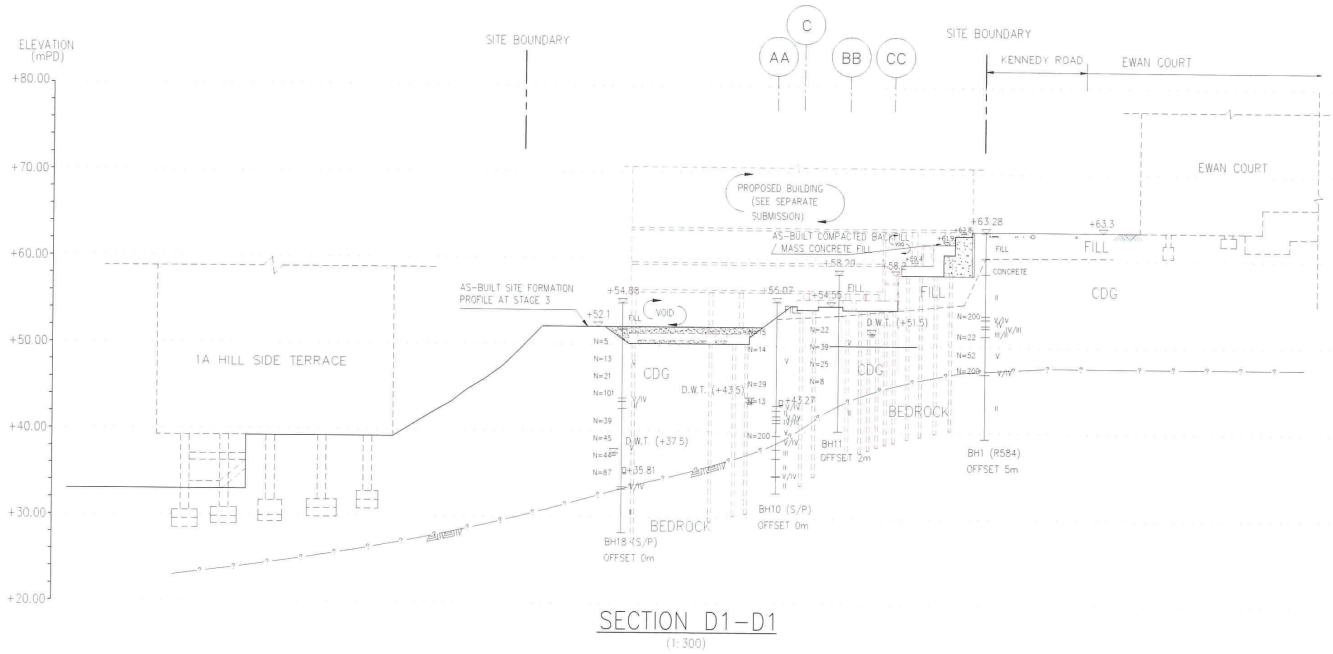

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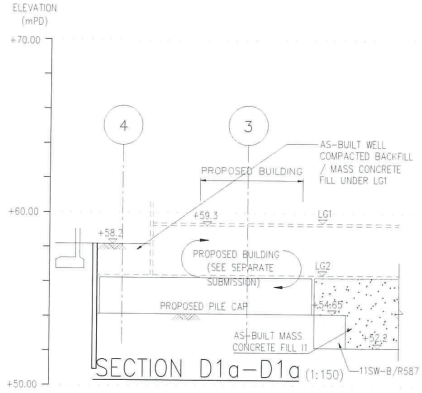

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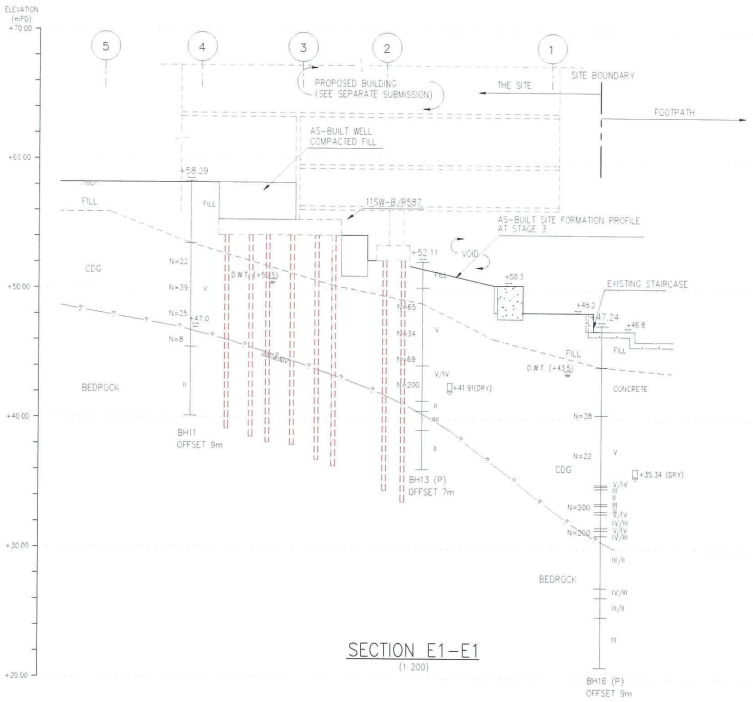

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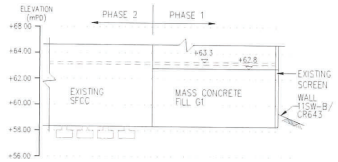

SECTION E1a–E1a
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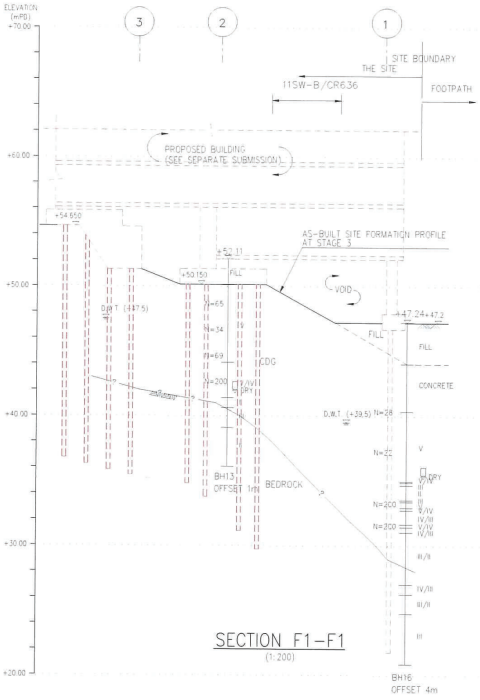

SECTION F1–F1
(1:200)

B.D. REF. No. BD /3036/09

LEGEND

- AS-BUILT MASS CONCRETE FILL
- EXISTING SCREEN WALL OR RETAINING WALL
- AS-BUILT WELL COMPACTED BACKFILL
- D.W.T. (+53.5) DESIGN GROUND WATER LEVEL
- EXISTING UNTILITIES

REVISIONS TO DRAWING	No.	DATE	BY

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PROJECT
PROPOSED REDEVELOPMENT OF ST. FRANCIS CANOSSIAN COLLEGE

CLIENT
The Mother Superioress of the Daughters of Charity of the Canossian Institute (Hong Kong)

TITLE
AS-BUILT SITE FORMATION WORKS SECTIONS FOR PHASE 1 (SHEET 2 OF 3)

PROJECT NO.	DRG. NO.	DATE	REV.
CS1278	1278–SF212 (AB)		

SCALE	DESIGNED	DRAWN	CHECKED	APPROVED
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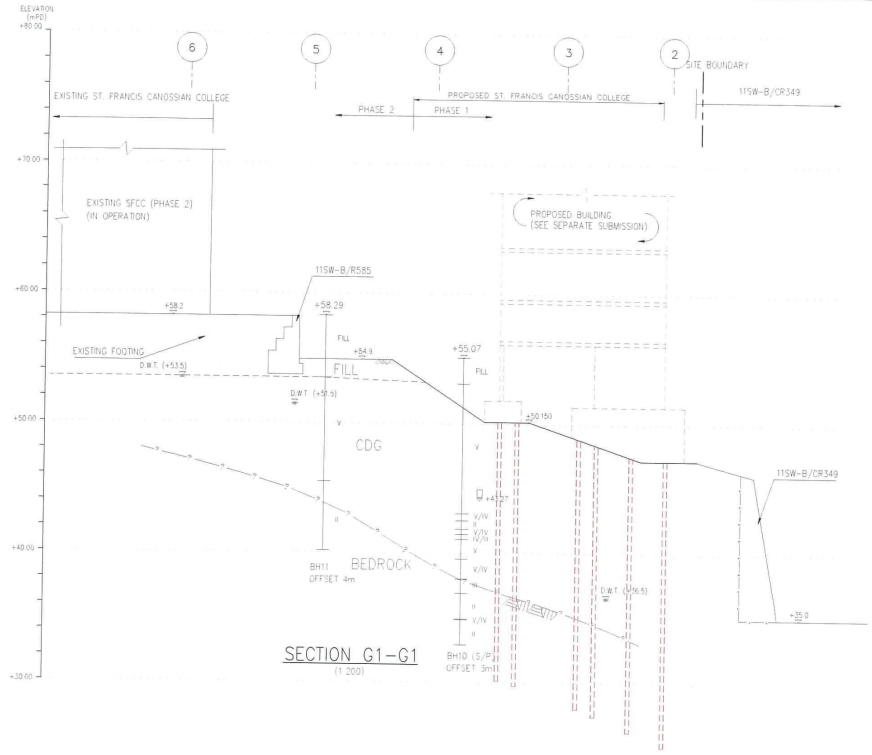

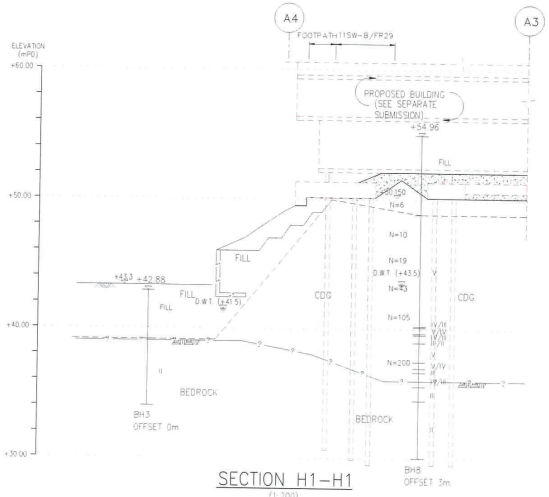

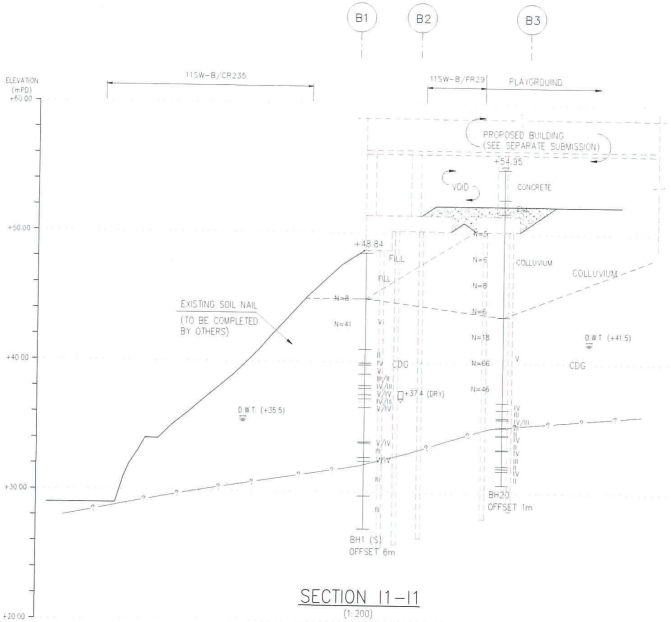

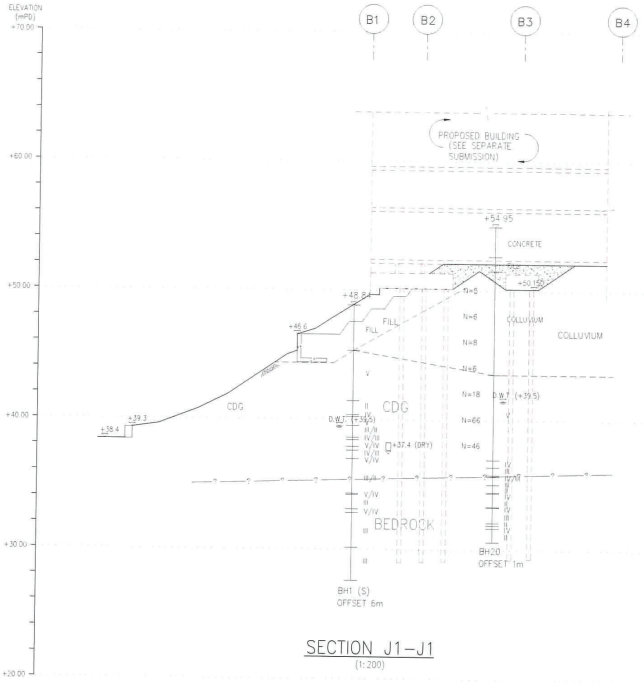

B.D. REF. No. BD /3036/09

LEGEND

- AS-BUILT MASS CONCRETE FILL
- EXISTING SCREEN WALL OR RETAINING WALL
- AS-BUILT WELL COMPACTED BACKFILL
- D.W.T. (+53.5) DESIGN GROUND WATER LEVEL
- EXISTING UNTILITIES

REVISIONS TO DRAWING	No.	DATE	BY

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PROJECT
PROPOSED REDEVELOPMENT OF ST. FRANCIS CANOSSIAN COLLEGE

CLIENT
The Mother Superioress of the Daughters of Charity of the Canossian Institute (Hong Kong)

TITLE
AS-BUILT SITE FORMATION WORKS SECTIONS FOR PHASE 1 (SHEET 3 OF 3)

PROJECT NO.	DRG. NO.	DATE	REV.
CS1278	1278-SF213 (AB)		

SCALE	DESIGNED	DRAWN	CHECKED	APPROVED
AS SHOWN				

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A. GENERAL NOTES

1. SCALE OF DRAWINGS IS AS SHOWN.
2. ALL LEVELS ARE IN METRES ABOVE PRINCIPAL DATUM (mPD).
3. ALL DIMENSIONS SHOWN ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
4. NAM KOO TERRACE IS A GRADE 1 HISTORICAL BUILDING AND THE CONTRACTOR SHALL EXERCISE EXTRA CARE IN CARRYING OUT THE WORKS.
5. THE CONTRACTOR SHALL CARRY OUT A DETAILED CONDITION / DEFECT SURVEY BY A QUALIFIED REGISTERED SURVEYOR WITH PHOTOGRAPHIC EVIDENCE, OF NAM KOO TERRACE PRIOR TO THE REMEDIAL WORKS. A SURVEY SHALL ALSO BE CARRIED OUT AFTER COMPLETION OF THE REMEDIAL WORKS TO CONFIRM THAT THE CONTRACTOR'S WORKS HAVE NOT RESULTED IN ANY DAMAGE.
6. THE CONTRACTOR SHALL PROPOSE ANY ADDITIONAL MITIGATION MEASURES WHICH MAY BE NECESSARY TO ENSURE THAT THE REMEDIAL WORKS WILL NOT AFFECT THE BUILDING. THESE SHOULD BE APPROVED BY THE ENGINEER PRIOR TO IMPLEMENTATION.
7. THE CONTRACTOR SHALL UNDERTAKE MEASURES TO ENSURE THAT ENTRY INTO NAM KOO TERRACE IS PROHIBITED AT ALL TIMES. WORKERS WILL BE PROHIBITED FROM ENTERING NAM KOO TERRACE AND THE BUILDING SHALL NOT BE USED FOR STORAGE OR OTHER PURPOSES. ACCESS TO THE BUILDING SHALL ONLY BE FOR MONITORING PURPOSES.
8. PRIOR TO THE COMMENCEMENT OF THE REMEDIAL WORKS, THE EXISTING FEATURES SUCH AS THE CONCRETE PERGOLA, FOUNTAIN AND CONCRETE GARDEN SHALL BE REMOVED TEMPORARLY AND STORED WITHOUT DAMAGING THEM. THESE FEATURES ARE TO BE REINSTATED TO THEIR EXISTING LOCATIONS AFTER COMPLETION OF THE REMEDIAL WORKS.
9. THE LOCATIONS OF THE PROPOSED WALL IMPROVEMENT WORKS SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS SHALL BE CONFIRMED BY THE ENGINEER ON SITE.
10. FOLLOWING SETTING OUT OF THE REMEDIAL WORK LOCATIONS, THE CONTRACTOR SHALL CARRY OUT A DETAILED SURVEY TO ENSURE THAT THERE IS NOT CLASH WITH EXISTING BURIED SERVICES, UTILITIES STRUCTURES, DRAINAGE, ETC.
11. ALL DRAWINGS HAVE BEEN CHECKED TO BE IN COMPLIANCE WITH CURRENT DESIGN STANDARD.

C. CONCRETE AND STRUCTURAL STEEL

1. ~~ALL STRUCTURAL STEEL SECTIONS TO BE GRADE 43A (BS4360) UNLESS OTHERWISE SPECIFIED.~~
2. ~~ALL TEMPORARY PIPE PILES ARE 219.1ø x 10 x 51.8 kg/m CHS AT 350 c/c~~
   ~~ALL TEMPORARY WALERS ARE 254 x 254 x 107 kg/m UC~~
   ~~ALL TEMPORARY STRUTS ARE 254 x 254 x 73 kg/m UC~~
3. ~~ALL WELDING ARE 8mm FILLET WELD ALL ROUND UNLESS OTHERWISE SPECIFIED.~~
4. ALL METAL ARC-WELDING SHALL CONFORM WITH BS5135 ELECTRODES FOR METAL ARC-WELDING SHALL BE CONFORM WITH BS639.
5. CONCRETE FOR MASS CONCRETE WALL SHALL BE GRADE 30D/20 WITH STRENGTH 30 MPa AT AT 28 DAYS.
6. ALL HIGH YIELD STEEL BARS (T) TO COMPLY WITH CS2:1995 WITH A 460 N/mm MINIMUM YIELD STRESS.
7. THE REACTIVE ALKAI OF CONCRETE EXPRESSED AS THE EQUIVALENT SODIUM OXIDE PER CUBIC METRE OF CONCRETE SHOULD NOT EXCEED 3.0kg WHEN DETERMINED IN ACCORDANCE WITH PNAP 180, APPENDIX A.
8. INFILL GROUT WITHIN PIPE PILES – PLAIN CEMENT GROUT WITH CUBE STRENGTH OF 30 MPa AT 28 DAYS.

C. HEAVY RAINFALL PRECAUTIONS

THE FOLLOWING MINIMUM MEASURES WILL BE EMPLOYED TO SAFEGUARD WORKS AGAINST HEAVY RAINFALL :

1. SURFACE WATER FLOWING INTO THE SITE FROM UPHILL SHALL BE INTERCEPTED AND CONDUCTED FROM THE SITE TO AN INDICATED SAFE DISCHARGE POINT. TEMPORARY CHANNELS SHALL BE PLASTER OR CONCRETE WHILST PERMANENT CHANNELS SHALL BE CONCRETE. AT EACH INTERSECTION AND ABRUPT CHANGE IN DIRECTION OF THE SURFACE DRAINAGE CHANNELS AN ACCESSIBLE CATCHPIT SHALL BE PROVIDED. ALL DRAINAGE WORKS SHALL BE KEPT CLEAR OF DEBRIS. WHERE POSSIBLE EXISTING DRAINAGE CHANNELS WILL BE MAINTAINED AND UTILIZED DURING THE WORKS.
2. WHERE PARTIALLY COMPLETED DRAINAGE WORKS DISCHARGE WITHIN THE SITE A TEMPORARY CONDUIT SHALL BE PROVIDED TO THE DISCHARGE POINT.
3. ALL EARTHWORKS SHALL BE GRADED AND SEALED TO ENSURE RUN-OFF AND TO AVOID PONDING.
4. A METHOD OF WORKING SHALL BE ADOPTED IN WHICH THE MINIMUM OF BARE SOIL IS EXPOSED AT ANY TIME. EARTHWORK TO FORM THE FINAL FACE SHALL BE FOLLOWED UP IMMEDIATELY WITH SURFACE PROTECTION AND DRAINAGE WORKS AND THE FACE PANEL SIZE SHALL BE SMALL ENOUGH TO PERMIT THIS.
5. WHERE TEMPORARY BARE EARTH SLOPE FACES ARE UNAVOIDABLE THEY SHALL BE PROTECTED WITH SHEETING WELL-SECURED AGAINST THE WIND. WHERE SLOPE FACES ARE TO BE BARE, SURFACING SHALL BE PROVIDED AND TEMPORARY DRAINS SHALL BE INSTALLED.
6. EXCAVATION SHALL NOT BE LEFT OPEN ON OR ADJACENT TO A SLOPE.
7. IF TRENCHES ON OR ADJACENT TO SLOPES HAVE TO BE EXCAVATED DURING THE WET SEASON THEY SHALL BE EXCAVATED WITH EXTREME CARE IN SHORT SECTIONS AT A TIME. PRECAUTIONS SHALL ALWAYS BE TAKEN TO PREVENT WATER FROM ENTERING AND COLLECTING IN THE TRENCH.
8. EXCAVATION ABOVE SLOPES SHOULD NOT BE OPENED UP DURING RAINY DAYS. FOR TRENCH EXCAVATION PROVISION SHALL BE MADE TO PROTECT THE TRENCH AGAINST INGRESS OF RUN-OFF FROM THE SURFACE IN WHICH THE TRENCH IS EXCAVATED BY MEANS OF SAND BAGS, CONCRETE KERBS OR SMALL COMPACTED EARTH FILL BUNDS ALONG EACH SIDE OF THE TRENCH. PUMPS SHOULD BE PROVIDED TO MAINTAIN THE BOTTOM OF TRENCH ALWAYS IN A DRY STATE.

C1. DRAINAGE

1. CONCRETE FOR NAIL HEADS AND SKIN WALLS SHALL COMPLY WITH CS1: 2010 EXCEPT SECTION 7.1.

1. CONCRETE SHALL BE GRADE 30D.
2. REINFORCEMENTTO COMPLY WITH CS2 : 1995.
3. CONCRETE COVER TO BE 50mm.
4. CATCHPITS TO BE AS PER CED STANDARD DRAWING C2405C.

D. FILL MATERIAL

1. FILL MATERIAL
1.1 FILL MATERIAL SHALL NOT CONTAIN ANY OF THE FOLLOWING :
   1.1.1 MATERIAL SUSCEPTIBLE TO VOLUME CHANGE, INCLUDING MARINE MUD, SOIL WITH A LIQUID LIMIT EXCEEDING 65% OR A PLASTICITY INDEX EXCEEDING 35%, SWELLING CLAYS AND COLLAPSIBLE SOILS.
   1.1.2 PEAT, VEGETATION, TIMBER, ORGANIC, SOLUBLE OR PERISHABLE MATERIAL.
   1.1.3 DANGEROUS OR TOXIC MATERIAL OR MATERIAL SUSCEPTIBLE TO COMBUSTION.
   1.1.4 METAL, RUBBER, PLASTIC OR SYNTHETIC MATERIAL.
   1.1.5 SOLUBLE SULPHATE CONTENT EXCEEDING 1.9 GRAMS OF SULPHATE, EXPRESSED AS SO3 PER LITRE.
   1.1.6 TOTAL SULPHATE CONTENT, EXPRESSED AS SO3 EXCEEDING 0.5% BY MASS.
1.2 FILL MATERIAL IS TO HAVE A NOMINAL MAXIMUM SIZE OF 100mm AND A MINIMUM OF 75% PASSING A 75 mm BS TEST SIEVE.
2. DEPOSITION OF FILL MATERIAL
2.1 SURFACES ON WHICH FILL MATERIAL IS TO BE DEPOSITED SHALL BE PREPARED IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS :
   2.1.1 TOPSOIL, GRASS, AND OTHER ORGANIC MATTER SHALL BE REMOVED.
   2.1.2 SOFT SPOTS, BOULDERS AND OTHER MATERIALS WHICH IN THE OPINION OF THE ENGINEER ARE UNSTUITABLE OR UNSTABLE SHALL BE REMOVED.
   2.1.3 SURFACES OTHER THAN ROCK SHALL BE SCARIFIED TO A DEPTH OF 200mm AND COMPACTED TO THE SAME STANDARD AS THE FILL MATERIAL WHICH IS TO BE DEPOSITED.
2.2 THE PERMISSION OF THE ENGINEER SHALL BE OBTAINED BEFORE DEPOSITION OF FILL MATERIAL STARTS IN ANY AREA OF FILL.
2.3 FILL MATERIAL SHALL BE DEPOSITED IN LAYERS OF A THICKNESS APPROPRIATE TO THE COMPACTION METHOD TO BE USED AND SHALL NOT EXCEED 300mm THICK.
2.4 LAYERS OF FILL MATERIAL SHALL BE HORIZONTAL, EXCEPT FOR ANY GRADIENT REQUIRED AND THE THICKNESS OF EACH LAYER SHALL BE UNIFORM OVER THE AREA TO BE FILLED.
2.5 IF THE DIFFERENCE IN LEVEL BETWEEN ADJACENT AREAS TO BE FILLED EXCEEDS 1m THE EDGE OF THE HIGHER AREA SHALL BE BENCHED BEFORE FILL MATERIAL IS PLACED AGAINST IT.
2.6 FILL MATERIAL SHALL NOT BE DEPOSITED BY END-TIPPING, BY PUSHING LOOSE MATERIAL DOWN SLOPE FACES OR BY OTHER METHODS WHICH MAY RESULTS IN SEGREGATION OR INADEQUATE COMPACTION OF THE FILL MATERIAL.
2.7 EARTHWORKS FINAL SURFACES SLOPING AT A GRADIENT EXCEEDING 1 VERTICAL TO 3 HORIZONTAL SHALL BE FORMED BY OVERFILLING AND CUTTING BACK AFTER COMPACTION. OVER-FILLING SHALL EXTEND BEYOND THE EARTHWORKS FINAL SURFACE BY A HORIZONTAL DISTANCE OF 0.5 m OR THREE TIMES THE THICKNESS OF THE COMPACTED LAYERS, WHICHEVER IS GREATER.
3. COMPACTION OF FILL MATERIAL
3.1 FILL MATERIAL SHALL BE COMPACTED IN LAYERS TO A STABLE CONDITION AS SOON AS PRACTICABLE AFTER DEPOSITION AND IN A MANNER APPROPRIATE TO THE LOCATION AND TO THE MATERIAL TO BE COMPACTED.
3.2 FILL MATERIAL SHALL BE COMPACTED TO OBTAIN A RELATIVE COMPACTION OF AT LEAST 95% THROUGHOUT UNLESS OTHERWISE STATED. (TO THE REQUIREMENT OF PNAP55 ALSO)
3.3 FILL MATERIAL SHALL BE AT OPTIMUM MOISTURE CONTENT DURING COMPACTION. THE TOLERANCE ON THE OPTIMUM MOISTURE CONTENT PERCENTAGE SHALL BE ±3%, PROVIDED THAT THE FILL MATERIAL IS STILL CAPABLE OF BEING COMPACTED IN ACCORDANCE WITH THE SPECIFIED REQUIREMENTS TO FORM STABLE AREAS OF FILL. ALL NECESSARY MEASURES SHALL BE TAKEN TO ACHIEVE AND MAINTAIN THE SPECIFIED MOISTURE CONTENT.
3.4 FILL MATERIAL SHALL BE COMPACTED IN SUCH A MANNER THAT STRUCTURES OR UTILITIES ARE NOT DISTURBED OR DAMAGED.
3.5 FILL MATERIAL AROUND WATER, SEWAGE AND DRAINAGE PIPES SHALL BE COMPACTED BY HAND -REAMERS OR MANUALLY OPERATED POWER EQUIPMENT. FILL MATERIAL WITHIN 300 mm ABOVE THE TOP OF SEWAGE AND DRAINAGE PIPES SHALL BE COMPACTED TO OBTAIN A RELATIVE COMPACTION OF AT LEAST 85% THROUGHOUT.
3.6 ALL FILLING WORKS SHALL BE TESTED ACCORDING TO TABLE 1, APPENDIX A, APP 15. DURING CONSTRUCTION, MONTHLY REPORTS ON THE RECORDS OF TEST ON COMPACTION OF FILL TOGETHER WITH A COVERING ASSESSMENT ON THE ADEQUACY OF COMPACTION SHALL BE SUBMITTED TO BD. THE REPORTS SHALL BE SIGNED BY THE RGE.
4. COMPLETION OF EARTHWORKS SURFACES
4.1 FINAL SURFACES SHALL BE COMPLETED TO A STABLE CONDITION AS SOON AS PRACTICABLE AFTER DEPOSITION AND COMPACTION OF FILL MATERIAL HAS BEEN COMPLETED. THE FINAL LANDSCAPING SHALL BE CARRIED OUT TO THE ARCHITECT'S SATISFACTION AS SOON AS PRACTICABLE AFTER THE EARTHWORKS FINAL SURFACE HAS BEEN COMPLETED.
4.2 EARTHWORKS FINAL SURFACES SHALL BE COMPLETED TO SMOOTH ALIGNMENTS WITHOUT ABRUPT IRREGULARITIES.
4.3 EARTHWORKS FINAL SURFACES AND FORMATIONS SHALL BE MAINTAINED IN A STABLE CONDITION AND SHALL BE PROTECTED FROM DAMAGE DUE TO WATER OR OTHER CAUSES AND FROM EXPOSURE TO CONDITIONS WHICH MAY ADVERSELY AFFECT THE SURFACE.
4.4 SLOPE PROTECTION SYSTEM – GRASSCRETE OR HYDROSEEDING IS TO BE PROVIDED ON THE CUT AND FILL SLOPES.
5. LABORATORY TESTING
5.1 SAMPLES SELECTED BY THE ENGINEER ARE TO BE TESTED FOR PARTICLE SIZE DISTRIBUTION, SULPHATE CONTENT, OPTIMUM MOISTURE CONTENT MAXIMUM DRY DENSITY, LIQUID LIMIT AND PLASTICITY INDEX AS DIRECTED BY THE ENGINEER.
5.2 ALL LABORATORY TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH THE STANDARDS SET OUT IN REPORT NO. 36 (1994).
5.3 IF THE RESULT OF ANY TEST DOES NOT COMPLY WITH THE REQUIREMENTS OR IS UNACCEPTABLE IN THE OPINION OF THE ENGINEER AN ADDITIONAL NUMBER OF SAMPLES SHALL BE TESTED AS INSTRUCTED BY THE ENGINEER. REMEDIAL WORKS ARE TO BE CONDUCTED IF NECESSARY.
6. IN-SITU TESTING
6.1 TO THE REQUIREMENT IN APP-64.
6.2 TWO SAMPLES ARE TO BE TESTED AT EACH LEVEL OF 31.8 mPD AND 27.8 mPD FOR THE BACKFILL BEHIND WALL B OF 11SW-B/R629 TO DETERMINE THE MOISTURE CONTENT AND IN-SITU DENSITY. THE LOCATIONS ARE TO BE SELECTED BY THE ENGINEER.
6.3 MOISTURE CONTENT AND IN-SITU DENSITY ARE TO BE DETERMINED IN ACCORDANCE WITH THE STANDARDS SET OUT IN GEO REPORT NO. 36 (1994).
6.4 IF THE RESULT OF ANY TEST FAILS TO COMPLY WITH THE REQUIREMENTS, OR IS UNACCEPTABLE IN THE OPINION OF THE ENGINEER, ADDITIONAL TESTS ARE TO BE CONDUCTED AS INSTRUCTED BY THE ENGINEER. REMEDIAL WORKS ARE TO BE CONDUCTED IF NECESSARY.
7. RECORDS
7.1 RECORDS OF ALL TESTING CARRIED OUT SHALL BE SUBMITTED TO THE ENGINEER ON A FORTNIGHTLY BASIS AND COPIES KEPT ON SITE FOR INSPECTION.
7.2 RECORDS SHALL BE KEPT SHOWING SOIL TYPE, PLAN LOCATION AND ELEVATION FOR EACH TEST CARRIED OUT TOGETHER WITH MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT RECORDS AS WELL AS RELEVANT LABORATORY RECORDS TEST RESULTS.
7.3 A COMPLETE RECORD OF ALL "AS-BUILT" PLANS AND SECTIONS TOGETHER WITH ALL IN-SITU AND LABORATORY RECORDS SHALL BE SUBMITTED TO BD PRIOR TO SUBMITTING THE CERTIFICATE OF COMPLETION FOR THE WORKS.

E. NOTES ON SOIL NAILS

1. THE MINIMUM DIAMETER OF THE DRILLHOLES FOR SOIL NAIL INSTALLATION SHALL BE 120mm UNLESS OTHERWISE STATED. AIR OR FOAM FLUSH MEDIUM MUST BE USED DURING DRILLING, WATER SHALL NOT BE USED FOR FLUSHING.
2. THE SOIL NAILS SHALL BE INSTALLED WITHIN 24 HOURS OF COMPLETION OF THE DRILLING UNLESS OTHERWISE AGREED BY THE ENGINEER'S REPRESENTATIVE. DRILLHOLES SHALL BE CLEARED OF ALL DEBRIS IMMEDIATELY BEFORE GROUTING.
3. STEEL BAR FOR SOIL NAILS IS TO BE HIGH TENSILE STEEL BAR TO CS2 : 1995 WITH A WORKING STRESS OF 230 N/mm^2. ULTIMATE TENSILE STRESS SHALL BE 460 N/mm . REINFORCEMENT TO COMPLY WITH CS2:1995.
4. CENTRALISERS SHALL BE PROVIDED AT 1000 mm SPACING ALONG THE STEEL BAR TO ENSURE A MINIMUM GROUT COVER OF 30mm ALL AROUND TO THE STEEL BAR.
5. CEMENT GROUT SHALL BE A DESIGN MIX HAVING A 28 DAY CUBE STRENGTH OF 30 N/mm^2 AND THE WATER CEMENT RATIO SHALL NOT EXCEED 0.42.
6. GROUT IS TO BE INJECTED UNDER MINIMUM PRESSURE TO LIMIT POTENTIAL DISTURBANCE AT THE SITE (MINIMUM PRESSURE IS TAKEN TO BE THE AVERAGE CONFINING PRESSURE AT THE SOIL NAIL LEVEL PLUS 10%).
7. CEMENT GROUT SHALL BE DISCHARGED FROM THE BOTTOM OF DRILLHOLE BY MEANS OF A GROUT PIPE. GROUTING SHALL PROCEED AT A SLOW STEADY RATE AND SHALL CONTINUE UNTIL INJECTED GROUT OF THE SAME COMPOSITION AND CONSISTENCY AS THAT MIXED HAS BEEN EMERGING FROM THE OUTLET FOR AT LEAST ONE MINUTE. TEMPORARY STEEL CASING SHALL BE EXTRACTED OUT FROM THE DRILLED HOLES DURING GROUTING OPERATION.
8. ALL NAILS AND OTHER STEEL COMPONENTS ARE TO BE HOT DIP GALVANIZED TO BS 729. THE THICKNESS OF ZINC COATING SHALL BE A MINIMUM OF 85um.
9. THE EXACT LOCATION OF ALL SOIL NAILS SHALL BE AGREED WITH THE ENGINEER PRIOR TO WORK COMMENCING.
10. DETAILS OF SOIL NAIL INSTALLATION SHALL BE IN ACCORDADNCE WITH "TYPICAL SECTION FOR SOIL NAIL" AND THE SOIL NAIL HEAD DETAILS SHOWN ON DRAWING 991051/RW003.
11. FOR ALL SOIL NAILS ~~SOIL NAIL NOS. A1 TO A8, B1 TO B6~~, NO TWO HOLES WITH SPACING LESS THAN 3600mm SHALL BE DRILLED AT THE SAME TIME. SOIL NAILS SHALL BE INSTALLED AND GROUTED AS SOON AS POSSIBLE AFTER DRILLING.
12. FOR SOIL NAILS REQUIRING LOCAL TRIMMING OF THE EXISTING STAIRCASE, THE METHOD STATEMENT OF THE TRIMMING WORKS SHALL BE SUBMITTED TO THE ENGINEER AND TO THE ENGINEER'S STAISFACTION PRICOR TO THE COMMENCEMENT OF TRIMMING WORKS.

F. NOTES ON PULL OUT TEST FOR SOIL NAILS

1. PULL OUT TEST ON ALL THE TEST NAILS SHALL BE CARRIED OUT AT LOCATIONS AS SPECIFIED IN THE DRAWINGS OR AS DIRECTED BY THE ENGINEER ON SITE AND SHALL BE CARRIED OUT BY THE CONTRACTOR PRIOR TO INSTALLATION OF THE WORKING NAILS.
2. THE SOIL NAIL FOR PULL OUT TEST SHALL BE GROUTED TO THE SPECIFIED BOND LENGTH IN ACCORDANCE WITH THE SCHEDULE OF TEST NAILS SHOWN ON THIS DRAWING.
3. THE PULL OUT TEST SHALL NOT BE CARRIED OUT UNTIL THE GROUT HAS REACHED A MINIMUM CUBE STRENGTH OF 30MPa.
4. THE TEST LOAD (TP) SHALL BE 2 TIMES THE WORKING LOAD AS SPECIFIED ON THIS DRAWING.
5. THE INITIAL LOAD (TA) EQUAL TO 5% OF TP SHALL BE APPLIED. THE RANGE BETWEEN TA AND TP SHALL BE DIVIDED INTO THREE EQUAL STEPS OF MAGNITUDE T.
6. A PROGRAMME OF THREE LOADING AND UNLOADING CYCLES SHALL BE CARRIED OUT. THE LOAD SHALL BE INCREASED FROM TA IN SUCCESSIVE CYCLES BY T, 2T UP TO TP. AFTER THE PEAK LOADING IN EACH CYCLE IS REACHED, MEASUREMENTS OF THE DEFORMATION INCREASE WITH THE LOAD HELD CONSTANT SHALL BE TAKEN FOR 60 MINUTES. WHEN REQUIRED THE LOAD SHALL BE HELD LONGER AS DIRECTED BY THE ENGINEER. AFTER THE ABOVE MEASUREMENTS HAVE BEEN TAKEN FOR EACH CYCLE, THE LOAD SHALL BE REDUCED TO TA AND THE EXTENSION SHALL BE RECORDED.
7. THE ACCEPTANCE CRITERIA FOR THE PULL-OUT TEST SHALL BE AS FOLLOWS:

$\Delta T - \delta fl < 0.25\%\ BL$

WHERE ΔT = TOTAL ELONGATION MEASURED FROM TEST LOAD
δfl = CALCULATED ELASTIC ELONGATION OF THE FREE LENGTH OF STEEL BAR
BL = BOND LENGTH OF TEST

$$\delta fl = \frac{T_p FL}{EA}$$

WHERE T_p = TEST LOAD
FL = FREE LENGTH
E = YOUNG'S MODULUS OF STEEL
A = CROSS-SECTIONAL AREA OF STEEL BAR

8. THE WHOLE TEST SOIL NAIL SHALL BE PULLED OUT FROM THE DRILLHOLE FOR THE ENGINEER'S INSPECTION. UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER, THE DRILLHOLE SHALL BE FILLED BY GROUTING.
9. IF THE SOIL NAIL CANNOT BE PULLED OUT WITHOUT EXCEEDING THE MAXIMUM ALLOWABLE TEST LOAD AS SPECIFIED IN (10), THEN THE BAR SHALL BE CUT OFF AND THE REMAINING PART OF THE DRILLHOLE SHALL BE GROUTED.
10. THE MAXIMUM ALLOWABLE TEST LOAD SHALL NOT EXCEED 80% OF THE ULTIMATE TENSILE STRENGTH OF THE STEEL BAR FORMING THE SOIL NAIL. UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER, ANY PROTRUSIONS FROM THE DRILLHOLE SHALL BE CUT OFF AND DRILLHOLE SHALL THEN BE FILLED BY GROUTING.
11. THROUGHOUT THE TEST, THE SOIL NAIL MOVEMENT AGAINST THE APPLIED LOAD SHALL BE MEASURED AND PLOTTED ON A GRAPH. ALL THE RESULTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN 3 DAYS AFTER COMPLETION OF THE TESTS. THE RESULTS SHALL BE THEN SUBMITTED TO THE BUILDING AUTHORITY PRIOR TO THE INSTALLATION OF THE WORKING NAILS.
12. TEST NAILS SHALL ONLY BE GROUTED FOR THE BOND LENGTH AS SPECIFIED IN SCHEDULE OF TEST NAILS. THE FREE LENGTH WHICH IS ALSO SPECIFIED IN THE SCHEDULE OF TEST NAILS SHALL REMAIN UNGROUTED.
13. THE APPARATUS FOR MEASURING LOADS AND DEFORMATION SHALL HAVE AN ACCURACY OF 2kN AND 0.05mm RESPECTIVELY, AND A CALIBRATION CERTIFICATE SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO THE TESTS.
14. ALL DIAL GAUGES FOR PULL OUT TESTS SHALL BE SUPPORTED INDEPENDENTLY FROM THE PULL OUT TEST EQUIPMENT.
15. INTERPRETATION REPORT TOGETHER WITH PULL-OUT TEST RESULTS SHALL BE SUBMITTED TOGETHER WITH FORM BA14 UPON COMPLETION OF WORKS TO THE SATISFACTION OF B.D.

G. SOIL NAIL PULL OUT TEST SCHEDULE

TILL No.	ELEVATION (mPD)	LENGTH (m)	FREE LENGTH (m)	GROUTED LENGTH FOR TEST (m)	DESIGN WORKING LOAD (kN)	TEST LOAD Tp (kN)	BAR DIA. (mm)	HOLE DIA. (mm)	INCLINATION OF SOIL NAIL (DEGREE)
T	30.80	12	4	8.0	63	126	32	120	25
T	~~27.80~~	~~10~~	~~4~~	~~6.0~~	~~56~~	~~112~~	~~32~~	~~120~~	~~25~~
T	25.50	19	14.4	4.5	218	436	50	150	45
T	24.30	17	12.4	4.5	218	436	50	150	45

H. MONITORING

1. MONITORING SHALL CONSIST OF THE DAILY MEASUREMENT OF SETTLEMENT MARKERS (SS1 TO SS6). DAILY MEASUREMENT OF GROUNDWATER AT STANDPIPES (P1 AND P2) AND DAILY MEASUREMENT OF BUILDING SETTLEMENT MARKERS (BS1 TO BS4), DAILY MEASUREMENT OF TILTING MARKER (TT1 TO TT3) AND VIBROGRAPH (VB1 TO VB3).
2. INITIAL READINGS OF SETTLEMENT SHALL BE TAKEN BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER AND BUILDINGS DEPARTMENT FOR RECORD.
3. WORKS SHALL CEASE AND THE ENGINEER AND BUILDINGS DEPARTMENT NOTIFIED IF ANY UNDUE GROUND MOVEMENT OR GROUNDWATER DRAWDOWN IS RECORDED. REMEDIAL MEASURES TO BE AGREED AND COMPLETED PRIOR TO RE-COMMENCEMENT OF WORKS.
4. DAMAGED MONITORING STATIONS ARE TO BE REINSTATED.
5. READINGS ARE TO BE SUBMITTED TO THE ENGINEER ON A DAILY BASIS. GRAPHICAL PRESENTATION IS ALSO TO BE SUBMITTED ON A FORTNIGHTLY BASIS.
6. VIBRATION IS TO BE MEASURED DURING INSTALLATION OF PIPE PILES, DRILLING FOR SOIL NAILING AND DRILLING OF DOWELS, THE MAXIMUM ALLOWABLE PEAK PARTICLE VELOCITY IS 4m m/s AND A FREQUENCY OF 50HZ.

I. GENERAL WORK SEQUENCE FOR REMEDIAL WORKS

1. CONDITION SURVEY TO BE CONDUCTED.
2. ESTABLISH ALL MONITORING STATIONS.
3. REMOVE AND STORE AWAY FEATURES SUCH AS THE CONCRETE PERGOLA, FOUNTAIN AND CONCRETE GARDEN ETC. WITHOUT DAMAGING THEM.
4. ~~REMEDIAL WORKS ON WALL B OF 11SW-B/R629 AND 11SW-B/CR349 (WALL PORTION OF SUB-DIVISION NO. 1)~~
5. REMEDIAL WORKS ON WALL A OF 11SW-B/R629. HOWEVER THOSE SOIL NAILS WHICH WILL INTERFERE WITH THE REMEDIAL WORKS ON WALL B OF 11SW-B/R629 ARE TO BE CARRIED OUT AFTER COMPLETION OF REMEDIAL WORKS ON WALL B OF 11SW-B/R629. FOR SOIL NAILS CONFLICTING WITH THE EXISTING STAIRCASE, LOCAL TRIMMING OF THE EXISTING STAIRCASE SHALL BE CARRIED OUT TO FACILITATE THE SOIL NAILING WORKS. THE EXISTING STAIRCASE SHALL THEN BE REINSTATED TO ITS ORIGINAL CONDITION AFTER THE SOIL NAILING WORKS.
6. REINSTATE ALL FEATURES TO EXISTING LOCATIONS.
7. CONSTRUCT U-CHANNELS, CATCHPITS AND DOWNPIPES.
8. FINAL CONDITION SURVEY TO BE CONDUCTED.
9. MODIFICATION WORKS OF EXISTING STAIRCASE BY OTHER PARTY.

J. WORK SEQUENCE FOR TEMPORARY EXCAVATION WALL B OF 11SW-B/R629

1. EXCAVATE TRIAL PIT TO EXPOSE THE TIER OF THE RETAINING WALL ALONG ST. LUKE'S COLLEGE, TO DETERMINE THE EXTENT OF SHORING REQUIRED REFER TO SECTION F-F ON DRAWING 991051/RW003.
2. THE SETTING OUT OF PIPES IS TO BE AGREED WITH THE ENGINEER PRIOR TO INSTALLATION.
3. INSTALL PIPE PILES BY DIRECT ROTARY INSTALLATION (ODEX METHOD) TO THE REQUIRED LEVEL.
4. THE DRILL BIT WILL BE REMOVED AND THE PIPE BACKFILLED WITH TREMIE GROUT.
5. EXCAVATE TO 500mm BELOW THE FIRST LAYER OF WALER AND STRUT.
6. CONSTRUCT MASS CONCRETE M1 (REFER TO SECTION C-C ON DRAWING 991051/RW002).
7. INSTALL FIRST LAYER OF WALER AND STRUT. *(STRUTS CAN ONLY BE INSTALLED ONTO MASS CONCRETE M1 3 DAYS AFTER CONCRETING).
8. EXCAVATION TO 500mm BELOW THE SECOND LAYER OF WALER AND STRUT.
9. CONSTRUCT MASS CONCRETE M2.
10. INSTALL SECOND LAYER OF WALER AND STRUT. *(STRUTS CAN ONLY BE INSTALLED ONTO MASS CONCRETE M2 3 DAYS AFTER CONCRETING).
11. EXCAVATE TO 500mm BELOW THE THIRD LAYER OF WALER AND STRUT.
12. CONSTRUCT MASS CONCRETE M3.
13. INSTALL THIRD LAYER OF WALER AND STRUT. *(STRUTS CAN ONLY BE INSTALLED ONTO MASS CONCRETE M3 3 DAYS AFTER CONCRETING).
14. EXCAVATION TO 500mm BELOW THE FOURTH LAYER OF WALER AND STRUT.
15. INSTALL FOURTH LAYER OF WALER AND STRUT.
16. EXCAVATE TO 500mm BELOW THE FIFTH LAYER OF WALER AND STRUT.
17. INSTALL FIFTH LAYER OF WALER AND STRUT.
18. CONSTRUCT MASS CONCRETE M4.
19. EXCAVATE TO 500mm BELOW THE SIXTH LAYER OF WALER AND STRUT.
20. INSTALL SIXTH LAYER OF WALER AND STRUT.
21. EXCAVATE TO DREDGE LEVEL.
22. CONSTRUCT MASS CONCRETE M5.
23. BACKFILL FROM DREDGE LEVEL TO 500mm BELOW THE SIXTH LAYER OF WALER AND STRUT.
24. REMOVE THE SIXTH LAYER OF WALER AND STRUT.
25. REPEAT 23 AND 24 UNTIL EXISTING GROUND LEVEL IS REACHED.
26. CUT A SMALL OPENING IN THE PIPE PILES DURING BACKFILLING TO ALLOW FOR INSTALLATION OF SOIL NAILS FOR WALL A OF 11SW-B/R629, REFER TO SECTION D-D DRAWING 991051/RW003.
27. PIPE PILES ARE TO REMAIN.

DELETED

K. NOTES ON PROTECTION OF EXISTING FOUNDATION

1. SHOULD ANY OBSTRUCTION BE ENCOUNTERED DURING THE DRILLING FOR SOIL NAIL INSTALLATION. THE CONTRACTOR SHOULD CEASE DRILLING, INVESTIGATE AND REPORT ON THE RETURN OF THE OBSTRUCTION.
2. THE DRILLHOLE IS TO BE BACKFILLED WITH GROUT AND DRILLING RELOCATED WHERE NECESSARY.
3. DRILLING SHOULD BE RESUMED ONLY ON THE APPROVAL BY THE ENGINNER.

M. RECORD PLANS AND MAINTENANCE

1. UPDATED RECORD INFORMATON IN COMPLIANCE WITH PNAP 168 IS TO BE SUBMITTED UPON COMPLETION OF THE WORKS.
2. ~~ANY NEWLY CONSTRUCTED BURIED SERVICES OR EXISTING BURIED SERVICES ENCOUNTERED SHALL BE PROPERLY SURVEYED BY THE CONTRACTOR AND DETAILS SHALL BE INCORPORATED ON THE AS-BUILT RECORD PLANS AND INCLUDED IN THE RECORD INFORMATION REFERRED TO IN~~ Nov 8
3. A MAINTENANCE MANUAL SHALL BE PREPARED DURING THE WORKS AND SUBMITTED IN DUPLICATE TOGETHER WITH THE UPDATED RECORD INFORMATION (AS PER APP 79).

N. NOTES FOR TCP T5 SITE SUPERVISION

1. THE TCP T5 SITE SUPERVISION PERSONNEL UNDER THE RGE'S STREAM SHALL SUBMIT REGULAR REPORTS OF HER/HIS/THEIR FINDINGS AND RECOMMENDATIONS TO THE RGE. THE RGE SHALL FORMALLY SUBMIT THESE REPORTS TO THE BD AND PROVIDED A COPY TO THE GEO AT MONTHLY INTERIALS OR MORE FREQUENTLY AS NECESSARY.
2. TYPICAL CONTENTS OF REGULAR REFERS PREPARED BY THE TCP T5 SITE SUPERVISION PERSONNEL SHOULD INCLUDE THE FOLLOWING :
   i) PROGRESS OF THE WORKS
   ii) RESOLTS OF MONITORING DURING CONSTRUCTION
   iii) SITE OBSERVATIONS
   iv) INSPECTION RECORDS
   v) REVIEW

O. ALERT ALARM AND ACTION LEVEL FOR MONITORING WORKS

	SETTLEMENT			TILTING (1mm)			VIBRATION		
	ALERT (mm)	ALARM (mm)	ACTION (mm)	ALERT (mm)	ALARM (mm)	ACTION (mm)	ALERT (mm/s)	ALARM (mm/s)	ACTION (mm/s)
GROUND	6	8	10	–	–	–	–	–	–
STRUCTURE	6	8	10	2000	1500	1000	3	4	5

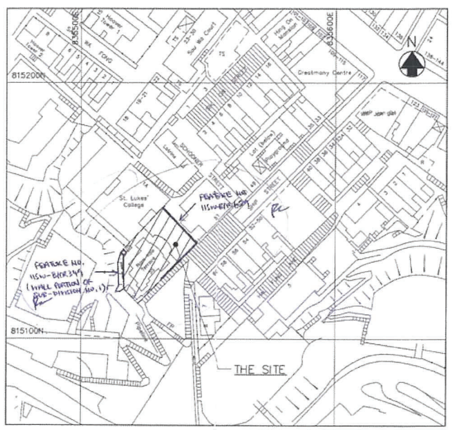
1. IF THE ALERT OR ALARM LEVEL IS REACHED, THE CONTRACTOR SHALL INFORM THE RGE/RSE IMMEDIATELY. THE MONITORING CHECK POINTS SHALL BE INCREASED AT THE AFFECTED AREA FOR MORE COMPREHENSIVE MONITORING. THE RGE/RSE SHALL REVIEW THE DESIGN TO CHECK WHETHER THE DESIGN OF PROPOSED WORKS NEED TO BE REVISED.
2. IF THE ACTION LEVEL IS REACHED, THE CONTRACTOR SHALL CEASE THE WORKS. THE WORKS SHALL NOT RECOMMENCE UNTIL REMEDIAL PROPOSALS TO THE SATISFACTION OF THE ENGINEER AND BUILDING AUTHORITY HAS BEEN IMPLEMENTED.

P. NON-DESTRUCTIVE TESTING – TIME DOMAIN REFLECTOMETRY (TDR) METHOD

1. NON-DESTRUCTIVE TESTING SHALL COMPLY WITH APP-135.
2. FOR ALL COMPLETED SOIL NAILING WORKS. KEY RECORDS ON SUPERVISION OF SOIL NAILING WORKS (APPENDIX A OF APP-135) CERTIFIED BY THE CATEGORY III QUALIFIED SUPERVISION SHALL BE SUBMITTED TO BD BY AP.
3. THE TDR METHOD FOR CHECKING THE LENGTH OF INSTALLED SOIL NAIL SHALL ADOPT AND COMPLY WITH GEO REPORT NO.133.
4. NON-DESTRUCTIVE TESTING SHALL BE CARRIED OUT AT LEAST 1% OF SOIL NAILS WITH A MINIMUM OF 2 NAILS PER SLOPE TO VERIFY THE LENGTH OF THE INSTALLED SOIL NAILS.
5. SOIL NAILS FOR NON-DESTRUCTIVE TEST SHALL BE INSTALLED AND CARRIED OUT BY REGISTERED LABORATORY.
6. LOCATIONS OF THE TEST WILL BE DETERMINED BY THE ENGINEER ON SITE.
7. TEST SOIL NAILS SHALL FORM PART OF THE PERMANENT WORKS.
8. THE TESTING ARRANGEMENTS AND THE EQUIPMENT FOR THE TEST SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER. THE TESTING EQUIPMENT SHALL HAVE BEEN CALIBRATED WITHIN SIX MONTHS BEFORE USE. THE EQUIPMENT FOR MEASURING THE LENGTH OF A STEEL NAIL SHALL HAVE AN ACCURACY OF ±0.1m.
9. THE FOLLOWING TESTING PROCEDURE FOR TDR METHODSHALL BE APPROVED :
   a) SELECT AT LEAST ONE SOIL NAIL OF KNOWN LENGTHS FOR CALIBRATION OF PULSE PROPAGATION VELOCITY.
   b) THE HEAD OF THE STEEL SOIL NAIL SHALL ELECTRICALLY BE ACCESSIBLE ALL CLOSE MATERIALS SHALL BE REMOVED FROM THE BAR HEAD.
   c) CONNECT THE TDR INSTRUMENT TO THE STEEL SOIL NAIL HEAD AND THE ELECTRIC WIRE.
   d) SEND A SHORT PLUSE INTO THE STEEL SOIL NAIL AND RECORD THE TIME OF REFLECTION (IF THE WIRE IS ELECTRICALLY IN CONTACT WITH THE STEEL SOIL NAIL END. THE RETURN SIGNAL FROM THE NAIL END SHOULD GO DOWN AND VICE VERSA).
   e) SEND A LONG PULSE INTO THE STEEL SOIL NAIL AND RECORD THE TIME OF REFLECTION (IF THE WIRE IS ELECTRICALLY IN CONTACT WITH THE STEEL SOIL NAIL END. THE RETURN SIGNAL FROM THE NAIL END SHOULD GO DOWN AND VICE VERSA).
   f) DETERMINE THE AVERAGE PROPAGATION VELOCITY OF THE RESULTS OBTAINED IN STEPS (d) AND (e).
   g) REPEAT STEPS (b) TO (e) FOR STEEL SOIL NAILS TO BE TESTED AND ESTIMATE ITS LENGTHS BY USING THE CALIBRATED PROPAGATION VELOCITY.
10. ACCEPTANCE CRITERIA FOR TDR METHOD SHALL BE : THE DIFFERENCE IN LENGTH 15 WITHIN 5% OF THE TOTAL LENGTH.
11. TEST RESULTS AND ASSESSMENTS REPORT SHALL BE SUBMITTED TO BUILDING DEPARTMENT.

Q. TREE FELLING WORKS

1. TREE FELLING PROPOSAL WILL BE SUBMITTED TO LANDS DEPARTMENT SEPARATELY.
2. NO TREE FELLING SHALL BE CARRIED OUT UNTIL APPROVAL FROM LANDS DEPARTMENT HAS BEEN SOUGTH.

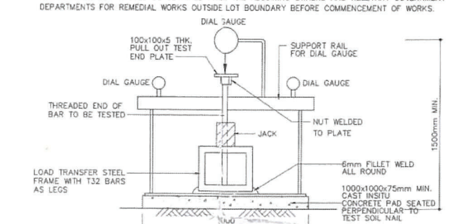


BLOCK PLAN

1 : 1000

NOTES :

PRIOR AGREEMENT SHOULD BE OBTAINED FROM THE ADJOINING OWNERS AND RELEVANT GOVERNMENT DEPARTMENTS FOR REMEDIAL WORKS OUTSIDE LOT BOUNDARY BEFORE COMMENCEMENT OF WORKS.



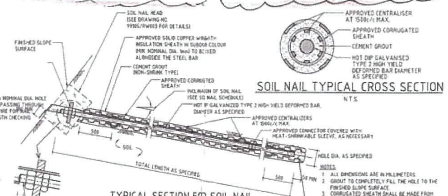
SOIL NAIL PULL-OUT TEST ARRANGEMENT

NTS

NOTE: EXACT DETAILS ARE TO BE PROVIDED BY THE CONTRACTOR, SUBJECTED TO THE APPROVAL OF THE ENGINEER.

R. NOTES ON PREDRILLING

1. THE SPECIFICATION TO BE READ IN CONJUNCTION WITH THE FOLLOWING DOCUMENTS:
   (I) GEOGUIDE 2, GUIDE TO SITE INVESTIGATION (1987), GEO, HONG KONG GOVERNMENT.
   (II) GEOGUIDE 3, GUIDE TO SOIL AND ROCK DESRIPTION (1988), GEO, HONG KONG GOVERNMENT.
   (III) SECTION 7, PART 2 – GEOTECHNICAL INVESIGATION, GENERAL SPECIFICATION FOR CIVIL ENGINEERING WORKS (1992) HONG KONG GOVERNMENT.
   (IV) GUIDANCE NOTES NO.2 ISSUED BY DRAINAGE SERVICES DEPARTMENT.
2. METHOD OF DRILLING
   DRILLING THROUGH COMMON GROUND WAS CARRED OUT BY ADVANCING P OR H-SIZE CASING USING WATER FLUSH. IF OBSTRUCTIONS, BOULDERS, CORESTONIS OR BEDROCK ARE ENCOUNTERED, ROTARY CORE DRILLING WERE BE CARRIED OUT TO OBTAIN ROCK CORES OF NOT LESS THAN 54mm DIAMETER.
3. THE LOCATION OF PREDRILLING HOLES ARE SHOWN IN DWG. NO. 991051/RW002. THE FINAL LOCATION SHALL BE CONFIRMED BY THE ENGINEER ON SITE.
4. EXISTING STRUCTURES AND SERVICES
   THE CONTRACTOR TO BE RESPONSIBLE FOR ANYDAMAGE TO SERVICES OR OTHER STRUCTURES AS A RESULT OF THE EXECUTION OF THE CONTRACT. HE CONTRACTOR TO BE RESPONSIBLE TO OBTAIN INFORMATION AND LOCATE THE SERVICES AND SRUCTURES THAT MAY BE AFFECTED BY THE PREDRILLING WORKS AND TAKE THE NECESSARY PRECAUTIONRY MEASURES TO AVOID CAUSING ANY DAMAGE TO THEM. INSPECTION PIT SHALL BE EXCAVATED WITH MINMUM 1.5m DEPTH.
5. INSITU TEST & SAMPLING
   POINT LOAD TESTS OR UNIAXIAL COMPRESSION ESTS SHALL BE CARRIED OUT ON EACH DRILLHOLE TO VERIFY THE ROCK STRENGTH ASSUMPTION.
6. THE CONTRACTOR SHALL PROVIDE COMPETENT PERSON TO LOG THE SAMPLES WHO SHALL SATISFY THE RELEVANT REQUIREMENTS AS ON CP (LOGGING) OR GROUND INVESTIGATION FIELDWORK IN ACCORDANCE WITH THE COP FOR SITE SUPERVISION 2009.
7. CASING FOR DRILLHOLES SHALL NOT BE WITHDRAWN WITHOUT THE APPROVAL OF THE ENGINEER. AFTER COMPLETION, ALL DRILLHOLES, EXCEPT THOSE WERE PIEZOMETERS ARE INSTALLED, SHALL BE BACKFILLED WITH CEMENT GROUT.
8. U76 OR U100 MAZIER SAMPLES SHALL BE OBTAINED AS INSTRUCTED BY THE ENGINEER.
9. THE EXACT LOCATION ARE INDICATIVE ONLY.
10. DEPTHS OF PREDRILLING HOLES
    ALL DRILLHOLES SHALL PENETRATE A MINIMUM OF 5m INTO BEDROCK OR THE DESIGNED ROCK SOCKET LENGTH FOR SOIL NAIL, WHICHEVER IS GREATER.BEDROCK SHALL BE GRADE III OR BETTER ROCK WITH TOTAL CORE RECOVERY NOT LESS THAN 85% ULESS OTHERWISE INSTRUCTED BY THE ENGINEER. THE TERMINATION DEPTH FOR ALL DRILLHOLES ARE TO BE DETERMINED BY THE ENGINEER ON SITE. NO DRILLHOLE TO BE TERMINATED WITHOUT THE PRIOR CONSENT OF THE ENGINEER.
11. SHOULD THE ROCKHEAD LEVELS AND GEOLOGICAL PROFILE BE DEVIATED FROM THE DESIGN LIMIT, A DESIGN AMENDMENT SHALL BE SUBMITTED TO THE BD BY INCORPORATION THE UPDATED ROCKHEAD INFORMATION.



SOIL NAIL TYPICAL CROSS SECTION

N.T.S.

TYPICAL SECTION FOR SOIL NAIL

N.T.S.

Government Reference No. : BD DH20/84/HK

NOTES:

1. THIS DRAWING IS SUBMITTED IN COMPLIANCE WITH DANGEROUS HILLSIDE ORDER NO. DH0035/HK/11/C FOR FEATURE NOS. 11SW-B/CR349 (WALL PORTION OF SUB-DIVISION NO. 1) AND 11SW-B/R629.

LEGEND:

— — — LOT BOUNDARY
——— FEATURE BOUNDARY

MAK CHI CHEUNG, PETER
BArch., BAAS, FHKIA, RIBA, ARAIA
REGISTERED ARCHITECT, AP(List 1)
WMKY LIMITED ARCHITECTS AND ENGINEERS HONG KONG

LEUNG Kwok-Yiu
Registered Geotechnical Engineer

Fan Siu Kay
Registered Structural Engineer

Plan Approved
(CHONG Wing-hong)
Chief Building Surveyor
for BUILDING AUTHORITY
11 MAR 2013

10 JAN 2013

Rev.	Stat.	Description	Date	By	Chk.	Ver'd
D	–	MINOR AMENDMENT	19.12.12	JL	BI	RL
C	–	MINOR AMENDMENT	10.03.11	KL	ML	RL
–	AD	BD APPROVED	20.06.03	LM	ESY	JC
B	IFS	DRAINAGE NOTES ADDED	26.02.03	LM	ESY	JC
A	AD	BD APPROVED UPDATE BD COMMENT	19.11.01	EK	LM	JT

Revisions

Hyder

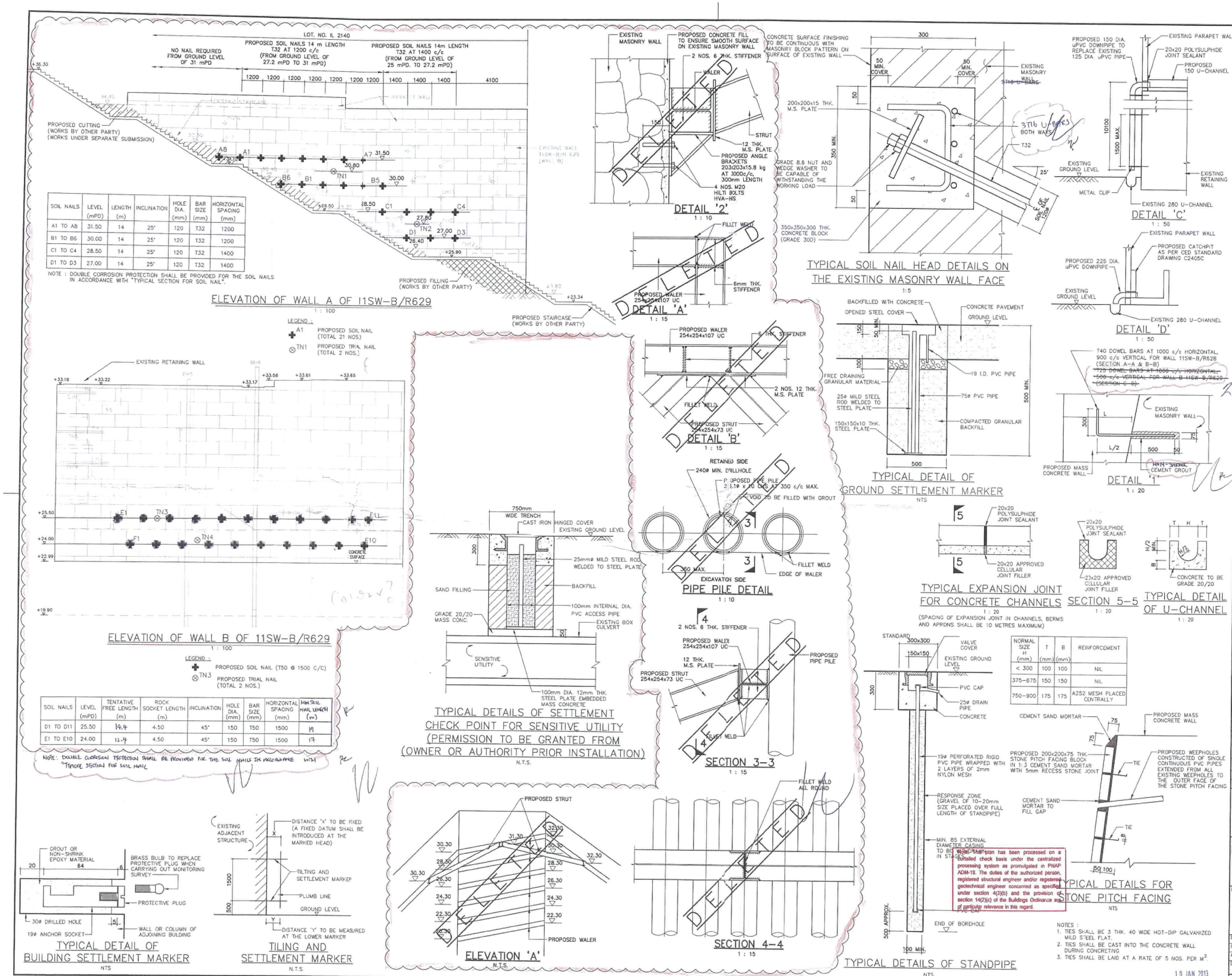
Project : FEATURES NOS. 11SW-B/CR349 (WALL PORTION OF SUB-DIVISION NO.1) AND 11SW-B/R629 55 SHIP STREET, WANCHAI

Drawing Title : RETAINING WALL REMEDIAL WORKS GENERAL NOTES & BLOCK PLAN

Drawn :	LM	Date :	16.07.01	Job No. :	991051
Checked :	AL	Date :	16.07.01	Cad File :	1051RW1
Approved :	DL	Date :	16.07.01	Scale :	AS SHOWN
Drawing No. :	991051/RW001			Rev.	D

Note: This plan has been processed [illegible] curtailed check basis under the centralized processing system as promulgated in PNAP ADM-19. The duties of the authorized person, registered structural engineer and/or registered geotechnical engineer concerned as specified under section [illegible] of the Buildings Ordinance are of particular relevance in this regard.

K:\EA01425 HOPEWELL MEGA HOT[illegible]\2011-03-22 DH ORDER(161)\Approved BD Drawings (from ESA)\Updated Drawings\1051RW1D.dwg



SOIL NAILS	LEVEL (mPD)	LENGTH (m)	INCLINATION	HOLE DIA. (mm)	BAR SIZE (mm)	HORIZONTAL SPACING (mm)
A1 TO A8	31.50	14	25°	120	T32	1200
B1 TO B6	30.00	14	25°	120	T32	1200
C1 TO C4	28.50	14	25°	120	T32	1400
D1 TO D3	27.00	14	25°	120	T32	1400

NOTE : DOUBLE CORROSION PROTECTION SHALL BE PROVIDED FOR THE SOIL NAILS IN ACCORDANCE WITH "TYPICAL SECTION FOR SOIL NAIL".

SOIL NAILS	LEVEL (mPD)	TENTATIVE FREE LENGTH (m)	ROCK SOCKET LENGTH (m)	INCLINATION	HOLE DIA. (mm)	BAR SIZE (mm)	HORIZONTAL SPACING (mm)	Min Soil Nail Length (m)
D1 TO D11	25.50	14.4	4.50	45°	150	T50	1500	19
E1 TO E10	24.00	12.4	4.50	45°	150	T50	1500	17

NOTE: DOUBLE CORROSION PROTECTION SHALL BE PROVIDED FOR THE SOIL NAILS IN ACCORDANCE WITH "TYPICAL SECTION FOR SOIL NAIL

NORMAL SIZE H (mm)	T (mm)	B (mm)	REINFORCEMENT
< 300	100	100	NIL
375-675	150	150	NIL
750-900	175	175	A252 MESH PLACED CENTRALLY

Government Reference No. : BD DH20/84/HK

NOTE :

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING 991051/RW001 & RW002.
2. THIS DRAWING IS SUBMITTED IN COMPLIANCE WITH DANGEROUS HIUSIDE ORDER NO. DH0035/HK/11C FOR FEATURE NOS. 11SW-B/CR349 (WALL PORTION OF SUB-DIVSION NO. 1) AND 11SW-B/R629.

LEGEND:

— — — LOT BOUNDARY

MAK CHI CHEUNG, PETER
REGISTERED ARCHITECT

WMKY LIMITED HONG KONG

LEUNG Kwok-Yiu
Registered Geotechnical Engineer

Fan Siu Kay
Registered Structural Engineer
(Reg. No. R105/87)

Plan Approved
(CHONG Wing-hong)
Chief Building Surveyor
for BUILDING AUTHORITY

Rev.	Stat.	Description	Date	By	Chk.	Ver'd
E	-	MINOR AMENDMENT	19.12.12	JL	BI	RL
D	-	MINOR AMENDMENT	10.03.11	KL	ML	RL
C	AD	BD APPROVED UPDATE BD COMMENT	20.06.03	PL	LM	JC
B	IFS	DRAINAGE DETAILS ADDED, DETAILS 'C' & DETAILS 'D'	26.02.03	LM	ESY	JC
A	AD	BD APPROVED UPDATE BD COMMENT	19.11.01	EK	LM	JT

Revisions

Hyder

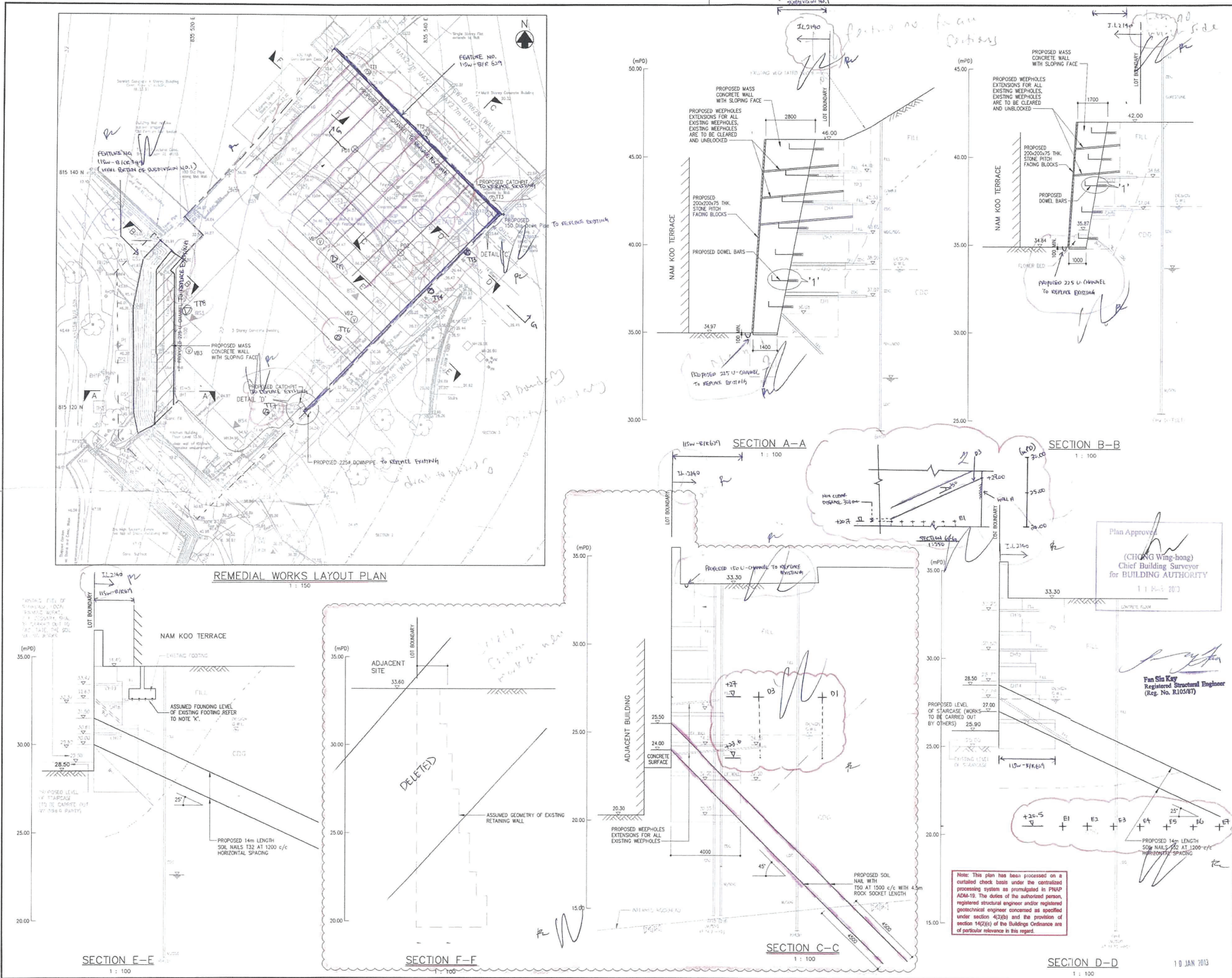
Project :
FEATURES NOS. 11SW-B/CR349 (WALL PORTION OF SUB-DIVISION NO. 1) AND 11SW-B/R629 55 SHIP STREET, WANCHAI

Drawing Title :
RETAINING WALL REMEDIAL WORKS ELEVATION AND DETAILS

Drawn :	EK	Date :	16.07.01	Job No. :	991051
Checked :	AL	Date :	16.07.01	Cad File :	1051RW3
Approved :	DL	Date :	16.07.01	Scale :	AS SHOWN

Drawing No. : 991051/RW003 Rev. E

10 JAN 2013



Government Reference No. :

BD DH20/84/HK

NOTES:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS 991051/RW001 & RW003.
2. THIS DRAWING IS SUBMITTED IN COMPLIANCE WITH DANGEROUS HILLSIDE ORDER NO. DH0035/HK/11C FOR FEATURE NOS. 11SW-B/CR349 (WALL PORTION OF SUB-DIVISION NO.1) AND 11SW-B/R629.

LEGEND :

- PP1 PROPOSED PIPE PILE (TOTAL 75 NOS.) — DELETED
- PROPOSED SOIL NAIL
- PROPOSED DOWEL BAR
- PROPOSED WALER & STRUT
- PROPOSED WEEPHOLE
- PTP1 PROPOSED TRIAL PIT (TOTAL 1 NO.)
- GS6 EXISTING GROUND SETTLEMENT MARKERS (TOTAL 6 NOS.)
- BS4 EXISTING BUILDING SETTLEMENT MARKERS (TOTAL 4 NOS.)
- P1 EXISTING STAND PIPES (TOTAL 2 NOS.)
- BH1P EXISTING BOREHOLES WITH STANDPIPES (TOTAL 4 NOS.)
- BH6 EXISTING VERTICAL BOREHOLES (TOTAL 3 NOS.)
- CH1 EXISTING HORIZONTAL COREHOLE (TOTAL 19 NOS.)
- IH1 EXISTING INCLINED COREHOLES (TOTAL 6 NOS.)
- TP6 EXSITING TRIAL PITS (TOTAL 7 NOS.)
- IP1 EXISTING UTILITIES INSPECTION PIT (TOTAL 5 NOS.)
- PROPOSED U-CHANNEL
- PROPOSED CATCHPIT
- PROPOSED DOWNPIPE
- TT1 PROPOSED TILTING MARKERS (TOTAL 9 NOS.)
- VB1 PROPOSED VIBROGRAPH LOCATIONS (TOTAL 3 NOS.)
- PD1 PROPOSED PREDRILL BOREHOLE LOCATIONS (TOTAL 2 NOS.)
- LOT BOUNDARY
- FEATURE BOUNDARY
- INFERRED GRADE III OR BETTER ROCKHEAD PROFILE, MODERATELY DECOMPOSED GRANITE OR BETTER WITH TOTAL CORE RECOVERY > 85% AND MINIMUM UCS > 25MPa.

LEUNG Kwok-Yiu
BSc(Eng) Dip Ing CEng MICE MIStructE MHKIE RPE(C,G,S)
Registered Geotechnical Engineer

MAK CHI CHEUNG, PETER
BArch., BAAS, FHKIA, RIBA, ...
REGISTERED ARCHITECT, AP(...)

Rev.	Stat.	Description	Date	By	Chk.	Ver'd
E	–	MINOR AMENDMENT	19.12.12	JL	BI	RL
D	–	MINOR AMENDMENT	13.06.11	KL	ML	RL
C	–	MINOR AMENDMENT	10.03.11	KL	ML	RL
–	AD	BD APPROVED	20.06.03	LM	ESY	JC
B	IFS	GENERAL REVISION	26.02.03			
A	AD	BD APPROVED UPDATE BD COMMENT	19.11.01	EK	LM	JT

Revisions

Hyder

Project :

FEATURES NOS. 11SW–B/R628 AND 11SW–B/R629 55 SHIP STREET, WANCHAI

Drawing Title :

RETAINING WALL REMEDIAL WORKS LAYOUT PLAN & SECTIONS

Drawn :	EK	Date :	16.07.01	Job No. :	991051
Checked :	AL	Date :	16.07.01	Cad File :	1051RW2
Approved :	DL	Date :	16.07.01	Scale :	AS SHOWN
Drawing No. :	991051/RW002			Rev.	E

屋宇署
BUILDINGS DEPARTMENT

YOUR REF 來函檔號：
OUR REF 本(23)號m BD DH20/84/HK(III)
FAX 圖文傳真： 2136 8200
TEL 電話： 2135 2453
www.info.gov.hk/bd

Mr. MAK Chi Cheung, Peter
c/o WMKY Limited
Room 3308, 33/F,
Hopewell Centre,
183 Queen's Road East,
Wanchai, Hong Kong

11 March 2013

39

15 MAR 2013 3/K

DATE		ANS TO		ANS BY		FILE	
PM	AM	SL	JF	HL	SW	FT	
INF							
ACTION							

Dear Sir,

DHO No. DH0035/HK/11/C dated 30 March 2011
Feature Nos. 11SW-B/CR349 (Wall Portion of Sub-division No. 1) & 11SW-B/R629
Proposed Wall Remedial Works at
No.55 Ship Street, Hong Kong – I.L. 2140

I refer to your application dated 10 January 2013 and received on **11 January 2013** for approval of proposals in respect of **Wall Remedial Works (Major Revision)**.

2. Your submission of plans has been checked under the curtailed check system announced in Practice Notes for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers ADM-19. On this basis, I am satisfied that your submission is fundamentally acceptable and may be approved.

3. You are reminded that the curtailed check system covers only the fundamental issues of a building proposal. Although non-fundamental issues will not be raised as reasons for disapproving a submission, I expect that all contravention of the Buildings Ordinance and its subsidiary legislation are rectified as and when they are discovered and in any event, before completion of the works is certified. In this connection, I ask you to note that the Building Authority attaches great importance to the proper assumption of duties and responsibilities by authorized persons, registered structural engineers and registered geotechnical engineers.

4. In accordance with the provisions of regulation 30(1) of the Building (Administration) Regulations, this is to notify that the above - mentioned plans submitted with your application received on 11 January 2013 are hereby approved. One set of the said plans, on which I have signified my approval, is enclosed. Your client has been sent a copy of this letter but I would request that you ensure that the contents are understood by him.

5. This approval should not be deemed to confer any title to land or to act as a waiver of any term in any lease or licence. This approval does **NOT** authorize the commencement or the carrying out of any works shown in the approved plans. Section 14(2) of the Buildings Ordinance refers.

/...2

6. As conditions of this approval under Section 17(1) of the Buildings Ordinance, the following are required:-

(a) Qualified site supervision requirement, sampling and testing of soil nail works as stipulated in Appendix A.

(b) Qualified site supervision requirement, sampling and testing of reinforced concrete works as stipulated in Appendix B.

(c) Qualified site supervision requirement of retaining wall works as stipulated in Appendix C.

To ensure full compliance of the Buildings Ordinance, it is prudent for the authorized person who acts as the co-ordinator of the building works, to inform the registered contractor all the imposed conditions attached to this approval.

7. The checking of submission has been substantially curtailed and greater emphasis is placed on the integrity and competence of the authorized persons. You are expected to comply with the requirement of Buildings Ordinance section 4(3)(b) in respect of any contravention of the regulations.

8. Chief Geotechnical Engineer/Island of the Geotechnical Engineering Office, Civil and Engineering Development Department (Contact Person: Mr. Roy K. C. HUNG on Tel. No. 2762 5282) has the following comments:

(a) Prior to consent application for commencement of the works, a report on condition survey of the adjacent existing building/structure, including the Graded historic building Nam Koo Terrace, shall be submitted and acknowledged by the Buildings Department.

(b) In addition to the TCP T3 and T5 site supervision personnel under the RGE's stream, a Directorate Site Supervisor (DSS) shall be provided for the proposed retaining wall remedial works. He/she shall carry out inspections at the critical stages of the works at least monthly, or more frequently as necessary. The name of the DSS shall also be given in the site supervision plan.

(c) The AP/RSE/RGE are advised that the extent of supervision to be provided for different stages of the soil nailing works is given in the Code of Practice for Site Supervision 2009.

(d) The AP/RSE/RGE are advised that the TCP T3 shall carry out site inspection of the works and prepare and certify the key records on supervision of soil nailing works in accordance with the Code of Practice for Site Supervision 2009.

(e) The AP/RSE/RGE are advised that the following shall be submitted and accepted by the BA prior to submission for the Form BA14 for the slope/retaining wall remedial works:

/...3

(i) Pull-out test report, records of installation and non-destructive test report (if any) for the soil nails;

(ii) Results of the confirmatory ground investigation fieldworks for pre-drilled holes PD1 and PD2 as shown in Drawing No. 991051/RW002(Rev.E) and an assessment report of the ground condition interpreted from the ground investigation fieldworks results in comparison with the relevant design assumptions.

(f) It is noted that construction of the proposed retaining wall remedial works for Feature No. 11SW0B/R629 will inevitably require working space outside the lot boundary of the subject private lot. The AP is reminded to seek permission from the relevant parties for temporary occupation of the required working space for execution of the proposed works.

9. Chief Highway Engineer/Hong Kong, Highways Department (Contact Person: Mr. C M CHONG on Tel. No. 2231 5722) has the following comments:

(a) You are required to advise whether any existing slope / features / retaining wall maintained by this Office would be affected by the proposed works.

(b) You are required to advise whether the proposed works, including any slope reinforcing works and proposed drainage, would be constructed at Government land and would be handed over to this Office for maintenance.

(c) You are required to seek DSD's comments for any proposed connection of drains / channels to public drainage system.

It is noted that you have made reply on the above comments via email dated 7 March 2013 and HyD has no further comment on your proposal.

10. The Antiquities and Monuments Office (AMO) of the Leisure and Cultural Services Department (Contact Person: Ms. Rammy LAI on Tel. no. 2721 2673) has the following comments:-

(a) The subject works site is located very close to the Grade 1 historic building Nam Koo Terrace. The AP/RSE/RGE shall ascertain the potential impacts on this graded building and recommend appropriate precautionary measures so as to ensure that the structural integrity and fabrics of the graded building will not be damaged by the proposed slope works.

(b) It is noted that no movement or tilting monitoring point locations are proposed at the captioned historic building. Therefore, the AP/RSE/RGE should propose locations for vibration, settlement and tilting check points for the Grade 1 historic building and the following monitoring table for AAA levels shall be followed as attached:

/...4

	Alert level	Alarm level	Action level
Vibration check point	3mm/s	4mm/s	5mm/s
Settlement check point	6mm	8mm	10mm
Tilting check point	1/2000	1/1500	1/1000

(c) It is recommended that for all building settlement and tilting markers shown on Drawing No. 991051/RW003 are replaced by glued fixing with a disc and with measurement by means of an electronic tilt meter to avoid drill damage to the captioned graded building.

(d) No adverse impact to be posed on the masonry walls should be taken into account of the works design. It is recommended that the soil nail heads shown on Drawing no. 991051/RW003 for upgrading works of other retaining walls be recessed further into the masonry wall and be made good with stone blocks in front of the soil nail head.

(e) It is suggested that the existing stone faced retaining wall shall not be covered by mass concrete at Section AA and BB in order to preserve the historic setting. Consideration shall be given to add mass concrete behind the existing retaining wall for the upgrading work should the adjoining site also own by the same owner.

(f) It is stated in item 8 of the General Notes that features at the forecourt, such as pavilion, fountain, planters and garden feature, etc. will be temporarily removed and shall be reinstated after completion of work. Destructive removal method to the historic features at forecourt is not recommended, AP/RSE/RGE are required to consider less destructive method, if any. The AP/RSE/RGE should adopt appropriate protective measures to the said features in the course of removal and reinstatement works. Backfilling works in the course of reinstatement shall match with the existing floor finish.

(g) The AP/RSE/RGE is required to clarify if there will be any demolition / alteration to the existing featured boundary wall above the masonry walls requiring remedy. Appropriate protective measures to the existing features on the boundary wall such as arch doorway, column heads, etc. should be necessary.

(h) To conclude, the AP/RSE/RGE are reminded that no disturbance should be made to the building and features in the site in the course of works, and mitigation measures should be carried out, if necessary, in consultation with this Office. Please note that any protective/ precaution measure should avoid direct fixing to the buildings and features, if required please consider using reversible fixing method as far as possible to minimize the disturbance to the fabric.

/...5

11. Commissioner for Transport, Traffic Engineering (HK) Division, Transport Department (Contact Person: Ms. TAM Kwai-fan, Irene on Tel. No. 2294 2600) has the following comments:-

(a) If public road will be occupied by the proposed works, temporary traffic management scheme shall be submitted in advance.

12. Comments, if any, from the District Lands Officer/Hong Kong West & South of Lands Department, will be conveyed to you once available.

13. Please be reminded of the following:

(a) To provide adequate precautionary measures prior to and during the carrying out of the retaining wall remedial works for the safety of the public, the workers and the adjoining properties. An Application for a hoarding permit is required if a hoarding is to be erected under Buildings (Planning) Regulation 64. In this connection, your attention is drawn to PNAP APP-23;

(b) To lodge a supervision plan (2 copies) for the works prior to your consent application. Your attention is drawn to Section 16(3)(bc) of the Buildings Ordinance;

(c) To promptly report all significant signs of distress and/or notable landslides during the construction works to the Buildings Department and the Geotechnical Engineering Office.

(d) To give prior notice to the GEO of the date of commencement of site trials for soil nailing works and non-destructive tests for installed soil nails shown on the plans in order to facilitate GEO staff to carry out site inspection and field checks.

14. You are required, under Building (Administration) Regulation 10, to submit the following:

(a) Initial readings of all monitoring stations for record prior to the commencement of the retaining wall remedial works;

(b) Together with Form BA14 to certify completion of the works, you are required to submit the following:

(i) Two sets of record plans.

(ii) The Information including a soft copy of the basic data requested in PNAP ADV-8 for registration of slopes and retaining walls for which the owners have maintenance responsibility;

(iii) Two copies of the Maintenance Manual, as requested in PNAP APP-79;

/...6

15. It is noted that you made amendments on the plans on 28 February 2013, 8 & 11 March 2012.

16. Please provide a copy of the approved plans to GEO direct.

17. It appears that trees in or around your site may be affected by your slope stabilization works proposal. You are advised to liaise with the District Lands Office in this regard prior to commencement of works.

18. Please be reminded that due consideration should be given to incorporate landscape measures to improve the visual appearance of the feature. Landscape treatment should be provided, wherever possible, to all newly formed or newly upgraded slopes and the use of shotcrete or chunam on slopes should only be considered as a last resort. (PNAP ADV-23 refers) Please also refer to the "Layman's Guide to Landscape Treatment of Slopes" produced by the Geotechnical Engineering Office, which can be viewed/downloaded from the Civil Engineering and Development Department Website (http://www.cedd.gov.hk/eng/publications/geo/index.htm) through the Internet.

Yours faithfully,

(CHONG Wing-hong)
Chief Building Surveyor/Slope Safety
for Building Authority

c.c. **YUBA Company Limited**
(fax: 2865 6276)

RSE - Mr. Fan Siu Kay
(fax no. 2529 1834)

RGE - Mr. Leung Kwok Yiu
(fax no. 2805 5028)

CGE/I, GEO, CEDD
DLO/HK W&S
CHE/HK, HyD
AC for T, TD
AMO, LCSD

Ref : BD DH20/84/HK(III)

Address : No.55 Ship Street, Hong Kong - I.L. 2140

Appendix A to approval dated 11.03.2013

Soil Nail/~~Rock Dowel~~ Works

In giving this approval of plans, I hereby impose the following conditions under item 6 in section 17(1) of the Buildings Ordinance.

(a) Sampling and testing of steel reinforcing bars used in the soil nail/~~rock dowel~~ works should be carried out in accordance with Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers (PNAP) APP-45 (previously known as PNAP 122). Testing should be carried out by a laboratory# accredited under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for the particular test concerned. Test results should be reported on a HOKLAS Endorsed Certificate and submitted within 60 days of the delivery of the steel reinforcing bars to the site. The test reports should be appended with a statement signed by the Authorized Person/Registered Structural Engineer to confirm the following:

(i) All steel reinforcing bars used in the soil nail/~~rock dowel~~ works and the test specimens covered by the test reports are in accordance with the types and grades of steel shown in the approved plans.

(ii) Sampling and testing of steel reinforcing bars used have been carried out in accordance with the current PNAP APP-45 (previously known as PNAP 122).

(iii) The acceptance criteria appropriate to each type and grade of steel reinforcing bars used have been complied with.

(iv) Testing of steel reinforcing bars has been carried out by a laboratory# accredited under HOKLAS.

(b) The requirements of sampling and testing of grout are as follows:

(i) For each grout mix one sample of grout shall be provided from each 10 batches of grout, or every 10 m^3 from the amount of grout produced in a day, whichever is the lesser, to determine the crushing strength of the grout. Samples shall be provided not more than 1 hour after the grout has been mixed and shall be protected from weather before test cubes are made.

/(ii)....

(ii) Compression testing of grout test cubes should be carried out in accordance with the methods specified in CS1:1990/ CS1:2010* using 100mm size cubes. Testing should be carried out by a laboratory# accredited under HOKLAS for the particular test concerned. Test results should be reported on a HOKLAS Endorsed Certificate and appended with a statement signed by the Authorized Person/Registered Structural Engineer to confirm that the acceptance criteria set out in the Building (Construction) Regulation 59 have been complied with, and should be submitted within 21 days after testing.

(c) Qualified site supervision of the sampling of cement grout and making and curing of test cubes by an experienced and competent person should be provided to ensure that the works are carried out in accordance with the plans approved and that the required standards are complied with.

2. Your attention is drawn to the following conditions:

(a) Site supervision of the soil nail works by a team of supervisors shall be provided each by the Authorized Person, Registered Geotechnical Engineer and Registered Specialist Contractor in accordance with the Technical Memorandum for Supervision Plans and the Code of Practice for Site Supervision to ensure that the quality of the works is up to standard and that the works are carried out in accordance with the plans approved and in such a manner as not to render inadequate the margin of safety of, or impair the stability of, or cause danger to any building, structure, land, street or services. The extent of supervision to be provided for different stages of the soil nailing works is provided in the Code of Practice for Site Supervision.

(b)* In addition to the Technically Competent Persons (TCPs) T3 and T5 under the Registered Geotechnical Engineer's (RGE's) stream, a Directorate Site Supervisor (DSS) shall be provided for the works. The name of the DSS shall also be given in the site supervision plan.

(c)* The TCP T5 *and/~~or~~ the DSS under the RGE's stream shall submit regular reports of his/her findings and recommendations to the RGE. The RGE shall formally submit these reports to the Buildings Department and copy them to the Geotechnical Engineering Office (GEO) at monthly intervals or more frequently.

3. In connection with paragraph 2(a) above, details of site supervision of the works and of the quality of the soil nail works shall be included in the supervision plan and submitted prior to or at the time of application for consent to the commencement of the works.

4.* ~~A report containing results of the site trials with clear statements on buildability and whether special methods of construction need to be adopted (and if so the details) should be submitted to the Buildings Department prior to the commencement of construction of the working soil nails.~~

/5. ....

5.* The pull-out test report, records of installation and non-destructive test report (if

any) for the soil nails should be submitted to and found satisfactory by the Building Authority prior to the submission of Form BA 14 for the proposed works.

6.* The TCP T3 shall carry out site inspection of the works and prepare and certify the key records on supervision of soil nailing works in accordance with the Code of Practice for Site Supervision.

7. Prior notice should be given to the GEO of the date of commencement of site trials for soil nailing works/non-destructive tests for installed soil nails in order to facilitate GEO to carry out site inspection and field checks.

8. All significant signs of distress and/or notable landslides during the construction works should be reported promptly to the Buildings Department and the Geotechnical Engineering Office.

A Directory of Accredited Laboratories in Hong Kong is obtainable from the Hong Kong Accreditation Service (HKAS) Executive, Innovation and Technology Commission.

Up-to-date information on accredited laboratories and their scopes of accreditation are available on the internet at the HKAS website at http://www.info.gov.hk/itc/hkas/.

A laboratory's accreditation for an individual test or calibration may be granted, modified or withdrawn at any time. To ensure that the test that you commission the laboratory to conduct is within its scope of accreditation, please always insist on test results be reported on a HOKLAS Endorsed Certificate.

* Delete wherever inapplicable

Ref : BD DH 20/84/HK(III)

Address : No.55 Ship Street, Hong Kong – I.L. 2140

Appendix B to approval dated 11.03.2013

Reinforced Concrete Works

In giving this approval of plans, I hereby impose the following conditions under item 6 in section 17(1) of the Buildings Ordinance:

(a) Sampling and testing of steel reinforcing bars should be carried out in accordance with Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers (PNAP) APP-45 current at the date of this approval. Testing should be carried out by a laboratory* accredited under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for the particular test concerned. Test results@ should be submitted within 60 days of the delivery of the steel reinforcing bars to the site. The test reports should be appended with a statement signed by the Registered Structural Engineer to confirm the following:

(i) All steel reinforcing bars used for the construction and the test specimens covered by the test reports are in accordance with the types and grades of steel shown in the approved plans.

(ii) Sampling and testing of steel reinforcing bars used have been carried out in accordance with the current PNAP APP-45.

(iii) The acceptance criteria appropriate to each type and grade of steel reinforcing bars used have been complied with.

(iv) All steel reinforcing bars tests have been carried out by a laboratory* accredited under the HOKLAS.

(b) Sampling of concrete and compression testing of concrete test cubes should be carried out in accordance with the methods specified in CS1:2010. Testing should be carried out by a laboratory* accredited under the HOKLAS for the particular test concerned. Test results@ should be submitted within 21 days after testing. The test reports should be appended with a summary which contains information on locations of concerned structural elements, concrete grades and dates of cast. The summary should also include previous summary information of concrete cube test reports in chronological order. The test reports should also be appended with a statement signed by the Registered Structural Engineer to confirm the following:

(i) All concrete used for the construction and concrete cubes covered by the test reports are in accordance with the concrete grades shown in the approved plans.

(ii) Concrete cube sizes, rates of sampling fresh concrete for testing and acceptance criteria for compressive strength set out in Building (Construction) Regulations have been complied with.

(iii) All concrete cube tests have been carried out by a laboratory* accredited under the HOKLAS and in accordance with the methods specified in CS1:2010.

2. The following conditions in respect of qualified supervision of works are imposed under item 6 in section 17(1) of the Buildings Ordinances:

(a) Qualified site supervision of the reinforced concrete works, including sampling of concrete and steel reinforcing bars and making and curing of test cubes, by experienced and competent persons as defined in (b) and (c), should be provided to ensure that the works are carried out in accordance with the plans approved and that the required standards are complied with.

(b) The Registered Structural Engineer should assign a quality control supervisor to supervise the works, determine the necessary frequency of inspection by the quality control supervisor which should not be less than once a week, and devise inspection check lists. The minimum qualifications and experience of the quality control supervisor is to be the same as the Technically Competent Person of grade T3, as stipulated in the Code of Practice for Site Supervision 2009.

(c) The Registered General Building Contractor/Registered Specialist Contractor should assign a quality control co-ordinator to provide full time on site supervision of the works and devise inspection check lists. The minimum qualifications and experience of the quality control co-ordinator is to be the same as the Technically Competent Person of grade T1, as stipulated in the Code of Practice for Site Supervision 2009.

(d) The names and qualifications of the supervisory personnel representing the Registered Structural Engineer and the Registered General Building Contractor/Registered Specialist Contractor respectively should be recorded in an inspection log book. The date, time, items inspected and inspection results should be clearly recorded in the log book. The log book should be kept on site for inspection by representatives of the Buildings Department.

* A Directory of Accredited Laboratories in Hong Kong is obtainable from the Hong Kong Accreditation Service (HKAS) Executive, Innovation and Technology Commission.

A laboratory's accreditation for an individual test or calibration may be granted, modified or withdrawn at any time. Up-to-date information on accredited laboratories and their scopes of accreditation are available on the internet at the HKAS website at http://www.info.gov.hk/itc/hkas/.

@ The test carried out by an accredited laboratory should be within its scope of accreditation. To ensure this, test results should be reported on a HOKLAS Endorsed Certificate or equivalent Certificate/Report issued from other laboratory accreditation bodies which have reached mutual recognition agreements/arrangements with the HOKLAS.

Ref : BD DH 20/84/HK(III)

Address : No.55 Ship Street, Hong Kong – I.L.2140

Appendix C to approval dated 11.03.2013

Retaining Wall Works

In giving this approval of plans, I hereby impose the following condition under item 7 in section 17(1) of the Buildings Ordinance:

Adequate precautionary measures and suitable working procedures should be adopted in the carrying out of the above works to safeguard the stability of any building, structure, land, street or services. #~~In this connection, two sets of excavation and lateral support plans are required to be submitted.~~

2. Also, under Building (Administration) Regulation 10, two sets of retaining wall record plans showing the characteristic features of the site and the identification, location, size, depth and level of each retaining wall as constructed are required to be submitted.

#3. You are reminded that site supervision of the retaining wall works by a team of supervisors shall be provided each by the Authorized Person, Registered Structural Engineer, #Registered Geotechnical Engineer and Registered General Building Contractor/Registered Specialist Contractor in accordance with the Technical Memorandum for Supervision Plans and the Code of Practice for Site Supervision 2009 to ensure that the works are carried out in accordance with the approved plans and in such a manner as not to render inadequate the margin of safety of, or impair the stability of, or cause danger to any building, structure, land, street or services.

#4. In connection with paragraph 3 above, details of site supervision of the retaining wall works shall be included in the supervision plan and submitted prior to or at the time of application for consent to the commencement of the retaining wall works.

#5. ~~Consent to the commencement and carrying out of the above works will not be given until the excavation and lateral support plans specified in paragraph 1 above have been submitted and found satisfactory/approved.~~

Delete wherever inapplicable

Appendix F

Record Plan of Nam Koo Terrace

A. GENERAL NOTES

1. SCALE OF DRAWINGS IS AS SHOWN.
2. ALL LEVELS ARE IN METRES ABOVE PRINCIPAL DATUM (mPD).
3. ALL DIMENSIONS SHOWN ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
4. NAM KOO TERRACE IS A GRADE 1 HISTORICAL BUILDING AND THE CONTRACTOR SHALL EXERCISE EXTRA CARE IN CARRYING OUT THE WORKS.
5. THE CONTRACTOR SHALL CARRY OUT A DETAILED CONDITION / DEFECT SURVEY BY A QUALIFIED REGISTERED SURVEYOR WITH PHOTOGRAPHIC EVIDENCE, OF NAM KOO TERRACE PRIOR TO THE REMEDIAL WORKS. A SURVEY SHALL ALSO BE CARRIED OUT AFTER COMPLETION OF THE REMEDIAL WORKS TO CONFIRM THAT THE CONTRACTOR'S WORKS HAVE NOT RESULTED IN ANY DAMAGE.
6. THE CONTRACTOR SHALL PROPOSE ANY ADDITIONAL MITIGATION MEASURES WHICH MAY BE NECESSARY TO ENSURE THAT THE REMEDIAL WORKS WILL NOT AFFECT THE BUILDING. THESE SHOULD BE APPROVED BY THE ENGINEER PRIOR TO IMPLEMENTATION.
7. THE CONTRACTOR SHALL UNDERTAKE MEASURES TO ENSURE THAT ENTRY INTO NAM KOO TERRACE IS PROHIBITED AT ALL TIMES. WORKERS WILL BE PROHIBITED FROM ENTERING NAM KOO TERRACE AND THE BUILDING SHALL NOT BE USED FOR STORAGE OR OTHER PURPOSES. ACCESS TO THE BUILDING SHALL ONLY BE FOR MONITORING PURPOSES.
8. PRIOR TO THE COMMENCEMENT OF THE REMEDIAL WORKS, THE EXISTING FEATURES SUCH AS THE CONCRETE PERGOLA, FOUNTAIN AND CONCRETE GARDEN SHALL BE REMOVED TEMPORARLY AND STORED WITHOUT DAMAGING THEM. THESE FEATURES ARE TO BE REINSTATED TO THEIR EXISTING LOCATIONS AFTER COMPLETION OF THE REMEDIAL WORKS.
9. THE LOCATIONS OF THE PROPOSED WALL IMPROVEMENT WORKS SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS SHALL BE CONFIRMED BY THE ENGINEER ON SITE.
10. FOLLOWING SETTING OUT OF THE REMEDIAL WORK LOCATIONS, THE CONTRACTOR SHALL CARRY OUT A DETAILED SURVEY TO ENSURE THAT THERE IS NOT CLASH WITH EXISTING BURIED SERVICES, UTILITIES STRUCTURES, DRAINAGE, ETC.
11. ALL DRAWINGS HAVE BEEN CHECKED TO BE IN COMPLIANCE WITH CURRENT DESIGN STANDARD.

C. CONCRETE AND STRUCTURAL STEEL

1. ~~ALL STRUCTURAL STEEL SECTIONS TO BE GRADE 43A (BS4360) UNLESS OTHERWISE SPECIFIED.~~
2. ~~ALL TEMPORARY PIPE PILES ARE 219.1ø x 10 x 51.8 kg/m CHS AT 350 c/c~~
   ~~ALL TEMPORARY WALERS ARE 254 x 254 x 107 kg/m UC~~
   ~~ALL TEMPORARY STRUTS ARE 254 x 254 x 73 kg/m UC~~
3. ALL WELDING ARE 8mm FILLET WELD ALL ROUND UNLESS OTHERWISE SPECIFIED.
4. ALL METAL ARC-WELDING SHALL CONFORM WITH BS5135 ELECTRODES FOR METAL ARC-WELDING SHALL BE CONFORM WITH BS639.
5. CONCRETE FOR MASS CONCRETE WALL SHALL BE GRADE 300/20 WITH STRENGTH 30 MPa AT AT 28 DAYS.
6. ALL HIGH YIELD STEEL BARS (T) TO COMPLY WITH CS2:1995 WITH A 460 N/mm^2 MINIMUM YIELD STRESS.
7. THE REACTIVE ALKAI OF CONCRETE EXPRESSED AS THE EQUIVALENT SODIUM OXIDE PER CUBIC METRE OF CONCRETE SHOULD NOT EXCEED 3.0kg WHEN DETERMINED IN ACCORDANCE WITH PNAP 180, APPENDIX A.
8. INFILL GROUT WITHIN PIPE PILES – PLAIN CEMENT GROUT WITH CUBE STRENGTH OF 30 MPa AT 28 DAYS.

C. HEAVY RAINFALL PRECAUTIONS

THE FOLLOWING MINIMUM MEASURES WILL BE EMPLOYED TO SAFEGUARD WORKS AGAINST HEAVY RAINFALL :

1. SURFACE WATER FLOWING INTO THE SITE FROM UPHILL SHALL BE INTERCEPTED AND CONDUCTED FROM THE SITE TO AN INDICATED SAFE DISCHARGE POINT. TEMPORARY CHANNELS SHALL BE PLASTER OR CONCRETE WHILST PERMANENT CHANNELS SHALL BE CONCRETE. AT EACH INTERSECTION AND ABRUPT CHANGE IN DIRECTION OF THE SURFACE DRAINAGE CHANNELS AN ACCESSIBLE CATCHPIT SHALL BE PROVIDED. ALL DRAINAGE WORKS SHALL BE KEPT CLEAR OF DEBRIS. WHERE POSSIBLE EXISTING DRAINAGE CHANNELS WILL BE MAINTAINED AND UTILIZED DURING THE WORKS.
2. WHERE PARTIALLY COMPLETED DRAINAGE WORKS DISCHARGE WITHIN THE SITE A TEMPORARY CONDUIT SHALL BE PROVIDED TO THE DISCHARGE POINT.
3. ALL EARTHWORKS SHALL BE GRADED AND SEALED TO ENSURE RUN-OFF AND TO AVOID PONDING.
4. A METHOD OF WORKING SHALL BE ADOPTED IN WHICH THE MINIMUM OF BARE SOIL IS EXPOSED AT ANY TIME. EARTHWORK TO FORM THE FINAL FACE SHALL BE FOLLOWED UP IMMEDIATELY WITH SURFACE PROTECTION AND DRAINAGE WORKS AND THE FACE PANEL SIZE SHALL BE SMALL ENOUGH TO PERMIT THIS.
5. WHERE TEMPORARY BARE EARTH SLOPE FACES ARE UNAVOIDABLE THEY SHALL BE PROTECTED WITH SHEETING WELL-SECURED AGAINST THE WIND. WHERE SLOPE FACES ARE TO BE BARE, SURFACING SHALL BE PROVIDED AND TEMPORARY DRAINS SHALL BE INSTALLED.
6. EXCAVATION SHALL NOT BE LEFT OPEN ON OR ADJACENT TO A SLOPE.
7. IF TRENCHES ON OR ADJACENT TO SLOPES HAVE TO BE EXCAVATED DURING THE WET SEASON THEY SHALL BE EXCAVATED WITH EXTREME CARE IN SHORT SECTIONS AT A TIME. PRECAUTIONS SHALL ALWAYS BE TAKEN TO PREVENT WATER FROM ENTERING AND COLLECTING IN THE TRENCH.
8. EXCAVATION ABOVE SLOPES SHOULD NOT BE OPENED UP DURING RAINY DAYS. FOR TRENCH EXCAVATION PROVISION SHALL BE MADE TO PROTECT THE TRENCH AGAINST INGRESS OF RUN-OFF FROM THE SURFACE IN WHICH THE TRENCH IS EXCAVATED BY MEANS OF SAND BAGS, CONCRETE KERBS OR SMALL COMPACTED EARTH FILL BUNDS ALONG EACH SIDE OF THE TRENCH. PUMPS SHOULD BE PROVIDED TO MAINTAIN THE BOTTOM OF TRENCH ALWAYS IN A DRY STATE.

C1. DRAINAGE

1. CONCRETE FOR NAIL HEADS AND SKIN WALL SHALL COMPLY WITH CS1: 2010 EXCEPT SECTION 7.1.

1. CONCRETE SHALL BE GRADE 30D.
2. REINFORCEMENTTO COMPLY WITH CS2 : 1995.
3. CONCRETE COVER TO BE 50mm.
4. CATCHPITS TO BE AS PER CED STANDARD DRAWING C2405C.

D. FILL MATERIAL

1. FILL MATERIAL
1.1 FILL MATERIAL SHALL NOT CONTAIN ANY OF THE FOLLOWING :
   1.1.1 MATERIAL SUSCEPTIBLE TO VOLUME CHANGE, INCLUDING MARINE MUD, SOIL WITH A LIQUID LIMIT EXCEEDING 65% OR A PLASTICITY INDEX EXCEEDING 35%, SWELLING CLAYS AND COLLAPSIBLE SOILS.
   1.1.2 PEAT, VEGETATION, TIMBER, ORGANIC, SOLUBLE OR PERISHABLE MATERIAL.
   1.1.3 DANGEROUS OR TOXIC MATERIAL OR MATERIAL SUSCEPTIBLE TO COMBUSTION.
   1.1.4 METAL, RUBBER, PLASTIC OR SYNTHETIC MATERIAL.
   1.1.5 SOLUBLE SULPHATE CONTENT EXCEEDING 1.9 GRAMS OF SULPHATE, EXPRESSED AS SO3 PER LITRE.
   1.1.6 TOTAL SULPHATE CONTENT, EXPRESSED AS SO3 EXCEEDING 0.5% BY MASS.
1.2 FILL MATERIAL IS TO HAVE A NOMINAL MAXIMUM SIZE OF 100mm AND A MINIMUM OF 75% PASSING A 75 mm BS TEST SIEVE.
2. DEPOSITION OF FILL MATERIAL
2.1 SURFACES ON WHICH FILL MATERIAL IS TO BE DEPOSITED SHALL BE PREPARED IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS :
   2.1.1 TOPSOIL, GRASS, AND OTHER ORGANIC MATTER SHALL BE REMOVED.
   2.1.2 SOFT SPOTS, BOULDERS AND OTHER MATERIALS WHICH IN THE OPINION OF THE ENGINEER ARE UNSTUITABLE OR UNSTABLE SHALL BE REMOVED.
   2.1.3 SURFACES OTHER THAN ROCK SHALL BE SCARIFIED TO A DEPTH OF 200mm AND COMPACTED TO THE SAME STANDARD AS THE FILL MATERIAL WHICH IS TO BE DEPOSITED.
2.2 THE PERMISSION OF THE ENGINEER SHALL BE OBTAINED BEFORE DEPOSITION OF FILL MATERIAL STARTS IN ANY AREA OF FILL.
2.3 FILL MATERIAL SHALL BE DEPOSITED IN LAYERS OF A THICKNESS APPROPRIATE TO THE COMPACTION METHOD TO BE USED AND SHALL NOT EXCEED 300mm THICK.
2.4 LAYERS OF FILL MATERIAL SHALL BE HORIZONTAL, EXCEPT FOR ANY GRADIENT REQUIRED AND THE THICKNESS OF EACH LAYER SHALL BE UNIFORM OVER THE AREA TO BE FILLED.
2.5 IF THE DIFFERENCE IN LEVEL BETWEEN ADJACENT AREAS TO BE FILLED EXCEEDS 1m THE EDGE OF THE HIGHER AREA SHALL BE BENCHED BEFORE FILL MATERIAL IS PLACED AGAINST IT.
2.6 FILL MATERIAL SHALL NOT BE DEPOSITED BY END-TIPPING, BY PUSHING LOOSE MATERIAL DOWN SLOPE FACES OR BY OTHER METHODS WHICH MAY RESULTS IN SEGREGATION OR INADEQUATE COMPACTION OF THE FILL MATERIAL.
2.7 EARTHWORKS FINAL SURFACES SLOPING AT A GRADIENT EXCEEDING 1 VERTICAL TO 3 HORIZONTAL SHALL BE FORMED BY OVERFILLING AND CUTTING BACK AFTER COMPACTION. OVER-FILLING SHALL EXTEND BEYOND THE EARTHWORKS FINAL SURFACE BY A HORIZONTAL DISTANCE OF 0.5 m OR THREE TIMES THE THICKNESS OF THE COMPACTED LAYERS, WHICHEVER IS GREATER.
3. COMPACTION OF FILL MATERIAL
3.1 FILL MATERIAL SHALL BE COMPACTED IN LAYERS TO A STABLE CONDITION AS SOON AS PRACTICABLE AFTER DEPOSITION AND IN A MANNER APPROPRIATE TO THE LOCATION AND TO THE MATERIAL TO BE COMPACTED.
3.2 FILL MATERIAL SHALL BE COMPACTED TO OBTAIN A RELATIVE COMPACTION OF AT LEAST 95% THROUGHOUT UNLESS OTHERWISE STATED. (TO THE REQUIREMENT OF PNAP55 ALSO)
3.3 FILL MATERIAL SHALL BE AT OPTIMUM MOISTURE CONTENT DURING COMPACTION. THE TOLERANCE ON THE OPTIMUM MOISTURE CONTENT PERCENTAGE SHALL BE ±3%, PROVIDED THAT THE FILL MATERIAL IS STILL CAPABLE OF BEING COMPACTED IN ACCORDANCE WITH THE SPECIFIED REQUIREMENTS TO FORM STABLE AREAS OF FILL. ALL NECESSARY MEASURES SHALL BE TAKEN TO ACHIEVE AND MAINTAIN THE SPECIFIED MOISTURE CONTENT.
3.4 FILL MATERIAL SHALL BE COMPACTED IN SUCH A MANNER THAT STRUCTURES OR UTILITIES ARE NOT DISTURBED OR DAMAGED.
3.5 FILL MATERIAL AROUND WATER, SEWAGE AND DRAINAGE PIPES SHALL BE COMPACTED BY HAND -REAMERS OR MANUALLY OPERATED POWER EQUIPMENT. FILL MATERIAL WITHIN 300 mm ABOVE THE TOP OF SEWAGE AND DRAINAGE PIPES SHALL BE COMPACTED TO OBTAIN A RELATIVE COMPACTION OF AT LEAST 85% THROUGHOUT.
3.6 ALL FILLING WORKS SHALL BE TESTED ACCORDING TO TABLE 1, APPENDIX A, APP 15. DURING CONSTRUCTION, MONTHLY REPORTS ON THE RECORDS OF TEST ON COMPACTION OF FILL TOGETHER WITH A COVERING ASSESSMENT ON THE ADEQUACY OF COMPACTION SHALL BE SUBMITTED TO BD. THE REPORTS SHALL BE SIGNED BY THE RGE.
4. COMPLETION OF EARTHWORKS SURFACES
4.1 FINAL SURFACES SHALL BE COMPLETED TO A STABLE CONDITION AS SOON AS PRACTICABLE AFTER DEPOSITION AND COMPACTION OF FILL MATERIAL HAS BEEN COMPLETED. THE FINAL LANDSCAPING SHALL BE CARRIED OUT TO THE ARCHITECT'S SATISFACTION AS SOON AS PRACTICABLE AFTER THE EARTHWORKS FINAL SURFACE HAS BEEN COMPLETED.
4.2 EARTHWORKS FINAL SURFACES SHALL BE COMPLETED TO SMOOTH ALIGNMENTS WITHOUT ABRUPT IRREGULARITIES.
4.3 EARTHWORKS FINAL SURFACES AND FORMATIONS SHALL BE MAINTAINED IN A STABLE CONDITION AND SHALL BE PROTECTED FROM DAMAGE DUE TO WATER OR OTHER CAUSES AND FROM EXPOSURE TO CONDITIONS WHICH MAY ADVERSELY AFFECT THE SURFACE.
4.4 SLOPE PROTECTION SYSTEM – GRASSCRETE OR HYDROSEEDING IS TO BE PROVIDED ON THE CUT AND FILL SLOPES.
5. LABORATORY TESTING
5.1 SAMPLES SELECTED BY THE ENGINEER ARE TO BE TESTED FOR PARTICLE SIZE DISTRIBUTION, SULPHATE CONTENT, OPTIMUM MOISTURE CONTENT MAXIMUM DRY DENSITY, LIQUID LIMIT AND PLASTICITY INDEX AS DIRECTED BY THE ENGINEER.
5.2 ALL LABORATORY TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH THE STANDARDS SET OUT IN REPORT NO. 36 (1994).
5.3 IF THE RESULT OF ANY TEST DOES NOT COMPLY WITH THE REQUIREMENTS OR IS UNACCEPTABLE IN THE OPINION OF THE ENGINEER AN ADDITIONAL NUMBER OF SAMPLES SHALL BE TESTED AS INSTRUCTED BY THE ENGINEER. REMEDIAL WORKS ARE TO BE CONDUCTED IF NECESSARY.
6. IN-SITU TESTING
6.1 TO THE REQUIREMENT IN APP-64.
6.2 TWO SAMPLES ARE TO BE TESTED AT EACH LEVEL OF 31.8 mPD AND 27.8 mPD FOR THE BACKFILL BEHIND WALL B OF 11SW-B/R629 TO DETERMINE THE MOISTURE CONTENT AND IN-SITU DENSITY. THE LOCATIONS ARE TO BE SELECTED BY THE ENGINEER.
6.3 MOISTURE CONTENT AND IN-SITU DENSITY ARE TO BE DETERMINED IN ACCORDANCE WITH THE STANDARDS SET OUT IN GEO REPORT NO. 36 (1994).
6.4 IF THE RESULT OF ANY TEST FAILS TO COMPLY WITH THE REQUIREMENTS, OR IS UNACCEPTABLE IN THE OPINION OF THE ENGINEER, ADDITIONAL TESTS ARE TO BE CONDUCTED AS INSTRUCTED BY THE ENGINEER. REMEDIAL WORKS ARE TO BE CONDUCTED IF NECESSARY.
7. RECORDS
7.1 RECORDS OF ALL TESTING CARRIED OUT SHALL BE SUBMITTED TO THE ENGINEER ON A FORTNIGHTLY BASIS AND COPIES KEPT ON SITE FOR INSPECTION.
7.2 RECORDS SHALL BE KEPT SHOWING SOIL TYPE, PLAN LOCATION AND ELEVATION FOR EACH TEST CARRIED OUT TOGETHER WITH MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT RECORDS AS WELL AS RELEVANT LABORATORY RECORDS TEST RESULTS.
7.3 A COMPLETE RECORD OF ALL "AS-BUILT" PLANS AND SECTIONS TOGETHER WITH ALL IN-SITU AND LABORATORY RECORDS SHALL BE SUBMITTED TO BD PRIOR TO SUBMITTING THE CERTIFICATE OF COMPLETION FOR THE WORKS.

E. NOTES ON SOIL NAILS

1. THE MINIMUM DIAMETER OF THE DRILLHOLES FOR SOIL NAIL INSTALLATION SHALL BE 120mm UNLESS OTHERWISE STATED. AIR OR FOAM FLUSH MEDIUM MUST BE USED DURING DRILLING, WATER SHALL NOT BE USED FOR FLUSHING.
2. THE SOIL NAILS SHALL BE INSTALLED WITHIN 24 HOURS OF COMPLETION OF THE DRILLING UNLESS OTHERWISE AGREED BY THE ENGINEER'S REPRESENTATIVE. DRILLHOLES SHALL BE CLEARED OF ALL DEBRIS IMMEDIATELY BEFORE GROUTING.
3. STEEL BAR FOR SOIL NAILS IS TO BE HIGH TENSILE STEEL BAR TO CS2 : 1995 WITH A WORKING STRESS OF 230 N/mm^2. ULTIMATE TENSILE STRESS SHALL BE 460 N/mm . REINFORCEMENT TO COMPLY WITH CS2:1995.
4. CENTRALISERS SHALL BE PROVIDED AT 1000 mm SPACING ALONG THE STEEL BAR TO ENSURE A MINIMUM GROUT COVER OF 30mm ALL AROUND TO THE STEEL BAR.
5. CEMENT GROUT SHALL BE A DESIGN MIX HAVING A 28 DAY CUBE STRENGTH OF 30 N/mm^2 AND THE WATER CEMENT RATIO SHALL NOT EXCEED 0.42.
6. GROUT IS TO BE INJECTED UNDER MINIMUM PRESSURE TO LIMIT POTENTIAL DISTURBANCE AT THE SITE (MINIMUM PRESSURE IS TAKEN TO BE THE AVERAGE CONFINING PRESSURE AT THE SOIL NAIL LEVEL PLUS 10%).
7. CEMENT GROUT SHALL BE DISCHARGED FROM THE BOTTOM OF DRILLHOLE BY MEANS OF A GROUT PIPE. GROUTING SHALL PROCEED AT A SLOW STEADY RATE AND SHALL CONTINUE UNTIL INJECTED GROUT OF THE SAME COMPOSITION AND CONSISTENCY AS THAT MIXED HAS BEEN EMERGING FROM THE OUTLET FOR AT LEAST ONE MINUTE. TEMPORARY STEEL CASING SHALL BE EXTRACTED OUT FROM THE DRILLED HOLES DURING GROUTING OPERATION.
8. ALL NAILS AND OTHER STEEL COMPONENTS ARE TO BE HOT DIP GALVANIZED TO BS 729. THE THICKNESS OF ZINC COATING SHALL BE A MINIMUM OF 85um.
9. THE EXACT LOCATION OF ALL SOIL NAILS SHALL BE AGREED WITH THE ENGINEER PRIOR TO WORK COMMENCING.
10. DETAILS OF SOIL NAIL INSTALLATION SHALL BE IN ACCORDADNCE WITH "TYPICAL SECTION FOR SOIL NAIL" AND THE SOIL NAIL HEAD DETAILS SHOWN ON DRAWING 991051/RW003.
11. FOR ~~SOIL NAIL NOS. A1 TO A8, B1 TO B6~~ ALL SOIL NAILS, NO TWO HOLES WITH SPACING LESS THAN 3600mm SHALL BE DRILLED AT THE SAME TIME. SOIL NAILS SHALL BE INSTALLED AND GROUTED AS SOON AS POSSIBLE AFTER DRILLING.
12. FOR SOIL NAILS REQUIRING LOCAL TRIMMING OF THE EXISTING STAIRCASE, THE METHOD STATEMENT OF THE TRIMMING WORKS SHALL BE SUBMITTED TO THE ENGINEER AND TO THE ENGINEER'S STAISFACTION PRICOR TO THE COMMENCEMENT OF TRIMMING WORKS.

F. NOTES ON PULL OUT TEST FOR SOIL NAILS

1. PULL OUT TEST ON ALL THE TEST NAILS SHALL BE CARRIED OUT AT LOCATIONS AS SPECIFIED IN THE DRAWINGS OR AS DIRECTED BY THE ENGINEER ON SITE AND SHALL BE CARRIED OUT BY THE CONTRACTOR PRIOR TO INSTALLATION OF THE WORKING NAILS.
2. THE SOIL NAIL FOR PULL OUT TEST SHALL BE GROUTED TO THE SPECIFIED BOND LENGTH IN ACCORDANCE WITH THE SCHEDULE OF TEST NAILS SHOWN ON THIS DRAWING.
3. THE PULL OUT TEST SHALL NOT BE CARRIED OUT UNTIL THE GROUT HAS REACHED A MINIMUM CUBE STRENGTH OF 30MPa.
4. THE TEST LOAD (TP) SHALL BE 2 TIMES THE WORKING LOAD AS SPECIFIED ON THIS DRAWING.
5. THE INITIAL LOAD (TA) EQUAL TO 5% OF TP SHALL BE APPLIED. THE RANGE BETWEEN TA AND TP SHALL BE DIVIDED INTO THREE EQUAL STEPS OF MAGNITUDE T.
6. A PROGRAMME OF THREE LOADING AND UNLOADING CYCLES SHALL BE CARRIED OUT. THE LOAD SHALL BE INCREASED FROM TA IN SUCCESSIVE CYCLES BY T, 2T UP TO TP. AFTER THE PEAK LOADING IN EACH CYCLE IS REACHED, MEASUREMENTS OF THE DEFORMATION INCREASE WITH THE LOAD HELD CONSTANT SHALL BE TAKEN FOR 60 MINUTES. WHEN REQUIRED THE LOAD SHALL BE HELD LONGER AS DIRECTED BY THE ENGINEER. AFTER THE ABOVE MEASUREMENTS HAVE BEEN TAKEN FOR EACH CYCLE, THE LOAD SHALL BE REDUCED TO TA AND THE EXTENSION SHALL BE RECORDED.
7. THE ACCEPTANCE CRITERIA FOR THE PULL-OUT TEST SHALL BE AS FOLLOWS:

$\Delta T - \delta fl < 0.25\%\ BL$

WHERE ΔT = TOTAL ELONGATION MEASURED FROM TEST LOAD
δfl = CALCULATED ELASTIC ELONGATION OF THE FREE LENGTH OF STEEL BAR
BL = BOND LENGTH OF TEST

$\delta fl = \frac{Tp \cdot FL}{EA}$

WHERE Tp = TEST LOAD
FL = FREE LENGTH
E = YOUNG'S MODULUS OF STEEL
A = CROSS-SECTIONAL AREA OF STEEL BAR

8. THE WHOLE TEST SOIL NAIL SHALL BE PULLED OUT FROM THE DRILLHOLE FOR THE ENGINEER'S INSPECTION. UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER, THE DRILLHOLE SHALL BE FILLED BY GROUTING.
9. IF THE SOIL NAIL CANNOT BE PULLED OUT WITHOUT EXCEEDING THE MAXIMUM ALLOWABLE TEST LOAD AS SPECIFIED IN (10), THEN THE BAR SHALL BE CUT OFF AND THE REMAINING PART OF THE DRILLHOLE SHALL BE GROUTED.
10. THE MAXIMUM ALLOWABLE TEST LOAD SHALL NOT EXCEED 80% OF THE ULTIMATE TENSILE STRENGTH OF THE STEEL BAR FORMING THE SOIL NAIL. UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER, ANY PROTRUSIONS FROM THE DRILLHOLE SHALL BE CUT OFF AND DRILLHOLE SHALL THEN BE FILLED BY GROUTING.
11. THROUGHOUT THE TEST, THE SOIL NAIL MOVEMENT AGAINST THE APPLIED LOAD SHALL BE MEASURED AND PLOTTED ON A GRAPH. ALL THE RESULTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN 3 DAYS AFTER COMPLETION OF THE TESTS. THE RESULTS SHALL BE THEN SUBMITTED TO THE BUILDING AUTHORITY PRIOR TO THE INSTALLATION OF THE WORKING NAILS.
12. TEST NAILS SHALL ONLY BE GROUTED FOR THE BOND LENGTH AS SPECIFIED IN SCHEDULE OF TEST NAILS. THE FREE LENGTH WHICH IS ALSO SPECIFIED IN THE SCHEDULE OF TEST NAILS SHALL REMAIN UNGROUTED.
13. THE APPARATUS FOR MEASURING LOADS AND DEFORMATION SHALL HAVE AN ACCURACY OF 2kN AND 0.05mm RESPECTIVELY, AND A CALIBRATION CERTIFICATE SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO THE TESTS.
14. ALL DIAL GAUGES FOR PULL OUT TESTS SHALL BE SUPPORTED INDEPENDENTLY FROM THE PULL OUT TEST EQUIPMENT.
15. INTERPRETATION REPORT TOGETHER WITH PULL-OUT TEST RESULTS SHALL BE SUBMITTED TOGETHER WITH FORM BA14 UPON COMPLETION OF WORKS TO THE SATISFACTION OF B.D.

G. SOIL NAIL PULL OUT TEST SCHEDULE

TILL No.	ELEVATION (mPD)	LENGTH (m)	FREE LENGTH (m)	GROUTED LENGTH FOR TEST (m)	DESIGN WORKING LOAD (kN)	TEST LOAD Tp (kN)	BAR DIA. (mm)	HOLE DIA. (mm)	INCLINATION OF SOIL NAIL (DEGREE)
T	30.80	12	4	8.0	63	126	32	120	25
~~T~~	~~27.80~~	~~10~~	~~4~~	~~6.0~~	~~56~~	~~112~~	~~32~~	~~120~~	~~25~~
T	25.50	19	14.4	4.5	218	436	50	150	45
T	24.30	17	12.4	4.5	218	436	50	150	45

H. MONITORING

1. MONITORING SHALL CONSIST OF THE DAILY MEASUREMENT OF SETTLEMENT MARKERS (S1 TO S6). DAILY MEASUREMENT OF GROUNDWATER AT STANDPIPES (P1 AND P2) AND DAILY MEASUREMENT OF BUILDING SETTLEMENT MARKERS (BS1 TO BS4), DAILY MEASUREMENT OF TILTING MARKER (TT1 TO TT3) AND VIBROGRAPH (VB1 TO VB3).
2. INITIAL READINGS OF SETTLEMENT SHALL BE TAKEN BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER AND BUILDINGS DEPARTMENT FOR RECORD.
3. WORKS SHALL CEASE AND THE ENGINEER AND BUILDINGS DEPARTMENT NOTIFIED IF ANY UNDUE GROUND MOVEMENT OR GROUNDWATER DRAWDOWN IS RECORDED. REMEDIAL MEASURES TO BE AGREED AND COMPLETED PRIOR TO RE-COMMENCEMENT OF WORKS.
4. DAMAGED MONITORING STATIONS ARE TO BE REINSTATED.
5. READINGS ARE TO BE SUBMITTED TO THE ENGINEER ON A DAILY BASIS. GRAPHICAL PRESENTATION IS ALSO TO BE SUBMITTED ON A FORTNIGHTLY BASIS.
6. VIBRATION IS TO BE MEASURED DURING INSTALLATION OF PIPE PILES, DRILLING FOR SOIL NAILING AND DRILLING OF DOWELS, THE MAXIMUM ALLOWABLE PEAK PARTICLE VELOCITY IS 4m m/s AND A FREQUENCY OF 50HZ.

I. GENERAL WORK SEQUENCE FOR REMEDIAL WORKS

1. CONDITION SURVEY TO BE CONDUCTED.
2. ESTABLISH ALL MONITORING STATIONS.
3. REMOVE AND STORE AWAY FEATURES SUCH AS THE CONCRETE PERGOLA, FOUNTAIN AND CONCRETE GARDEN ETC. WITHOUT DAMAGING THEM.
4. ~~REMEDIAL WORKS ON WALL B OF 11SW-B/R629 AND 11SW-B/CR349 (WALL PORTION OF SUB-DIVISION NO. 1)~~
5. REMEDIAL WORKS ON WALL A OF 11SW-B/R629. HOWEVER THOSE SOIL NAILS WHICH WILL INTERFERE WITH THE REMEDIAL WORKS ON WALL B OF 11SW-B/R629 ARE TO BE CARRIED OUT AFTER COMPLETION OF REMEDIAL WORKS ON WALL B OF 11SW-B/R629. FOR SOIL NAILS CONFLICTING WITH THE EXISTING STAIRCASE, LOCAL TRIMMING OF THE EXISTING STAIRCASE SHALL BE CARRIED OUT TO FACILITATE THE SOIL NAILING WORKS. THE EXISTING STAIRCASE SHALL THEN BE REINSTATED TO ITS ORIGINAL CONDITION AFTER THE SOIL NAILING WORKS.
6. REINSTATE ALL FEATURES TO EXISTING LOCATIONS.
7. CONSTRUCT U-CHANNELS, CATCHPITS AND DOWNPIPES.
8. FINAL CONDITION SURVEY TO BE CONDUCTED.
9. MODIFICATION WORKS OF EXISTING STAIRCASE BY OTHER PARTY.

J. WORK SEQUENCE FOR TEMPORARY EXCAVATION WALL B OF 11SW-B/R629

(marked across: DELETED)

1. EXCAVATE TRIAL PIT TO EXPOSE THE TIER OF THE RETAINING WALL ALONG ST. LUKE'S COLLEGE, TO DETERMINE THE EXTENT OF SHORING REQUIRED REFER TO SECTION F-F ON DRAWING 991051/RW003.
2. THE SETTING OUT OF PIPES IS TO BE AGREED WITH THE ENGINEER PRIOR TO INSTALLATION.
3. INSTALL PIPE PILES BY DIRECT ROTARY INSTALLATION (ODEX METHOD) TO THE REQUIRED LEVEL.
4. THE DRILL BIT WILL BE REMOVED AND THE PIPE BACKFILLED WITH TREMIE GROUT.
5. EXCAVATE TO 500mm BELOW THE FIRST LAYER OF WALER AND STRUT.
6. CONSTRUCT MASS CONCRETE M1 (REFER TO SECTION C-C ON DRAWING 991051/RW002).
7. INSTALL FIRST LAYER OF WALER AND STRUT. *(STRUTS CAN ONLY BE INSTALLED ONTO MASS CONCRETE M1 3 DAYS AFTER CONCRETING).
8. EXCAVATION TO 500mm BELOW THE SECOND LAYER OF WALER AND STRUT.
9. CONSTRUCT MASS CONCRETE M2.
10. INSTALL SECOND LAYER OF WALER AND STRUT. *(STRUTS CAN ONLY BE INSTALLED ONTO MASS CONCRETE M2 3 DAYS AFTER CONCRETING).
11. EXCAVATE TO 500mm BELOW THE THIRD LAYER OF WALER AND STRUT.
12. CONSTRUCT MASS CONCRETE M3.
13. INSTALL THIRD LAYER OF WALER AND STRUT. *(STRUTS CAN ONLY BE INSTALLED ONTO MASS CONCRETE M3 3 DAYS AFTER CONCRETING).
14. EXCAVATION TO 500mm BELOW THE FOURTH LAYER OF WALER AND STRUT.
15. INSTALL FOURTH LAYER OF WALER AND STRUT.
16. EXCAVATE TO 500mm BELOW THE FIFTH LAYER OF WALER AND STRUT.
17. INSTALL FIFTH LAYER OF WALER AND STRUT.
18. CONSTRUCT MASS CONCRETE M4.
19. EXCAVATE TO 500mm BELOW THE SIXTH LAYER OF WALER AND STRUT.
20. INSTALL SIXTH LAYER OF WALER AND STRUT.
21. EXCAVATE TO DREDGE LEVEL.
22. CONSTRUCT MASS CONCRETE M5.
23. BACKFILL FROM DREDGE LEVEL TO 500mm BELOW THE SIXTH LAYER OF WALER AND STRUT.
24. REMOVE THE SIXTH LAYER OF WALER AND STRUT.
25. REPEAT 23 AND 24 UNTIL EXISTING GROUND LEVEL IS REACHED.
26. CUT A SMALL OPENING IN THE PIPE PILES DURING BACKFILLING TO ALLOW FOR INSTALLATION OF SOIL NAILS FOR WALL A OF 11SW-B/R629, REFER TO SECTION D-D DRAWING 991051/RW003.
27. PIPE PILES ARE TO REMAIN.

K. NOTES ON PROTECTION OF EXISTING FOUNDATION

1. SHOULD ANY OBSTRUCTION BE ENCOUNTERED DURING THE DRILLING FOR SOIL NAIL INSTALLATION. THE CONTRACTOR SHOULD CEASE DRILLING, INVESTIGATE AND REPORT ON THE RETURN OF THE OBSTRUCTION.
2. THE DRILLHOLE IS TO BE BACKFILLED WITH GROUT AND DRILLING RELOCATED WHERE NECESSARY.
3. DRILLING SHOULD BE RESUMED ONLY ON THE APPROVAL BY THE ENGINNER.

M. RECORD PLANS AND MAINTENANCE

1. UPDATED RECORD INFORMATON IN COMPLIANCE WITH PNAP 168 IS TO BE SUBMITTED UPON COMPLETION OF THE WORKS.
2. ~~ANY NEWLY CONSTRUCTED BURIED SERVICES OR EXISTING BURIED SERVICES ENCOUNTERED SHALL BE PROPERLY SURVEYED BY THE CONTRACTOR AND DETAILS SHALL BE INCORPORATED ON THE AS-BUILT RECORD PLANS AND INCLUDED IN THE RECORD INFORMATION REFERRED TO IN NOTE 8~~
3. A MAINTENANCE MANUAL SHALL BE PREPARED DURING THE WORKS AND SUBMITTED IN DUPLICATE TOGETHER WITH THE UPDATED RECORD INFORMATION (AS PER APP 79).

N. NOTES FOR TCP T5 SITE SUPERVISION

1. THE TCP T5 SITE SUPERVISION PERSONNEL UNDER THE RGE'S STREAM SHALL SUBMIT REGULAR REPORTS OF HER/HIS/THEIR FINDINGS AND RECOMMENDATIONS TO THE RGE. THE RGE SHALL FORMALLY SUBMIT THESE REPORTS TO THE BD AND PROVIDED A COPY TO THE GEO AT MONTHLY INTERIALS OR MORE FREQUENTLY AS NECESSARY.
2. TYPICAL CONTENTS OF REGULAR REFERS PREPARED BY THE TCP T5 SITE SUPERVISION PERSONNEL SHOULD INCLUDE THE FOLLOWING :
   i) PROGRESS OF THE WORKS
   ii) RESOLTS OF MONITORING DURING CONSTRUCTION
   iii) SITE OBSERVATIONS
   iv) INSPECTION RECORDS
   v) REVIEW

O. ALERT ALARM AND ACTION LEVEL FOR MONITORING WORKS

	SETTLEMENT			TILTING (1 mm)			VIBRATION		
	ALERT (mm)	ALARM (mm)	ACTION (mm)	ALERT (mm)	ALARM (mm)	ACTION (mm)	ALERT (mm/s)	ALARM (mm/s)	ACTION (mm/s)
GROUND	6	8	10	–	–	–	–	–	–
STRUCTURE	6	8	10	2000	1500	1000	3	4	5

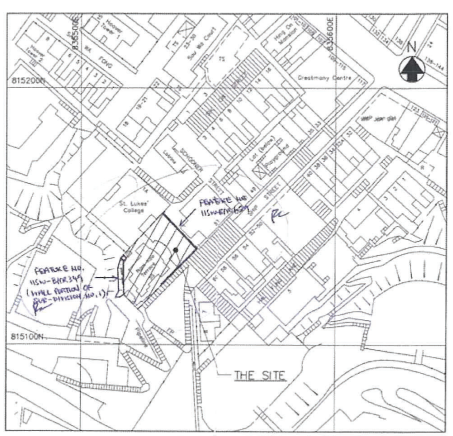
1. IF THE ALERT OR ALARM LEVEL IS REACHED, THE CONTRACTOR SHALL INFORM THE RGE/RSE IMMEDIATELY. THE MONITORING CHECK POINTS SHALL BE INCREASED AT THE AFFECTED AREA FOR MORE COMPREHENSIVE MONITORING. THE RGE/RSE SHALL REVIEW THE DESIGN TO CHECK WHETHER THE DESIGN OF PROPOSED WORKS NEED TO BE REVISED.
2. IF THE ACTION LEVEL IS REACHED, THE CONTRACTOR SHALL CEASE THE WORKS. THE WORKS SHALL NOT RECOMMENCE UNTIL REMEDIAL PROPOSALS TO THE SATISFACTION OF THE ENGINEER AND BUILDING AUTHORITY HAS BEEN IMPLEMENTED.

P. NON-DESTRUCTIVE TESTING – TIME DOMAIN REFLECTOMETRY (TDR) METHOD

1. NON-DESTRUCTIVE TESTING SHALL COMPLY WITH APP-135.
2. FOR ALL COMPLETED SOIL NAILING WORKS. KEY RECORDS ON SUPERVISION OF SOIL NAILING WORKS (APPENDIX A OF APP-135) CERTIFIED BY THE CATEGORY III QUALIFIED SUPERVISION SHALL BE SUBMITTED TO BD BY AP.
3. THE TDR METHOD FOR CHECKING THE LENGTH OF INSTALLED SOIL NAIL SHALL ADOPT AND COMPLY WITH GEO REPORT NO.133.
4. NON-DESTRUCTIVE TESTING SHALL BE CARRIED OUT AT LEAST 1% OF SOIL NAILS WITH A MINIMUM OF 2 NAILS PER SLOPE TO VERIFY THE LENGTH OF THE INSTALLED SOIL NAILS.
5. SOIL NAILS FOR NON-DESTRUCTIVE TEST SHALL BE INSTALLED AND CARRIED OUT BY REGISTERED LABORATORY.
6. LOCATIONS OF THE TEST WILL BE DETERMINED BY THE ENGINEER ON SITE.
7. TEST SOIL NAILS SHALL FORM PART OF THE PERMANENT WORKS.
8. THE TESTING ARRANGEMENTS AND THE EQUIPMENT FOR THE TEST SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER. THE TESTING EQUIPMENT SHALL HAVE BEEN CALIBRATED WITHIN SIX MONTHS BEFORE USE. THE EQUIPMENT FOR MEASURING THE LENGTH OF A STEEL NAIL SHALL HAVE AN ACCURACY OF ±0.1m.
9. THE FOLLOWING TESTING PROCEDURE FOR TDR METHODSHALL BE APPROVED :
   a) SELECT AT LEAST ONE SOIL NAIL OF KNOWN LENGTHS FOR CALIBRATION OF PULSE PROPAGATION VELOCITY.
   b) THE HEAD OF THE STEEL SOIL NAIL SHALL ELECTRICALLY BE ACCESSIBLE ALL CLOSE MATERIALS SHALL BE REMOVED FROM THE BAR HEAD.
   c) CONNECT THE TDR INSTRUMENT TO THE STEEL SOIL NAIL HEAD AND THE ELECTRIC WIRE.
   d) SEND A SHORT PLUSE INTO THE STEEL SOIL NAIL AND RECORD THE TIME OF REFLECTION (IF THE WIRE IS ELECTRICALLY IN CONTACT WITH THE STEEL SOIL NAIL END. THE RETURN SIGNAL FROM THE NAIL END SHOULD GO DOWN AND VICE VERSA).
   e) SEND A LONG PULSE INTO THE STEEL SOIL NAIL AND RECORD THE TIME OF REFLECTION (IF THE WIRE IS ELECTRICALLY IN CONTACT WITH THE STEEL SOIL NAIL END. THE RETURN SIGNAL FROM THE NAIL END SHOULD GO DOWN AND VICE VERSA).
   f) DETERMINE THE AVERAGE PROPAGATION VELOCITY OF THE RESULTS OBTAINED IN STEPS (d) AND (e).
   g) REPEAT STEPS (b) TO (e) FOR STEEL SOIL NAILS TO BE TESTED AND ESTIMATE ITS LENGTHS BY USING THE CALIBRATED PROPAGATION VELOCITY.
10. ACCEPTANCE CRITERIA FOR TDR METHOD SHALL BE : THE DIFFERENCE IN LENGTH 15 WITHIN 5% OF THE TOTAL LENGTH.
11. TEST RESULTS AND ASSESSMENTS REPORT SHALL BE SUBMITTED TO BUILDING DEPARTMENT.

Q. TREE FELLING WORKS

1. TREE FELLING PROPOSAL WILL BE SUBMITTED TO LANDS DEPARTMENT SEPARATELY.
2. NO TREE FELLING SHALL BE CARRIED OUT UNTIL APPROVAL FROM LANDS DEPARTMENT HAS BEEN SOUGTH.

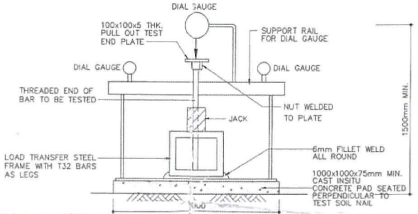


BLOCK PLAN

1 : 1000

NOTES :

PRIOR AGREEMENT SHOULD BE OBTAINED FROM THE ADJOINING OWNERS AND RELEVANT GOVERNMENT DEPARTMENTS FOR REMEDIAL WORKS OUTSIDE LOT BOUNDARY BEFORE COMMENCEMENT OF WORKS.



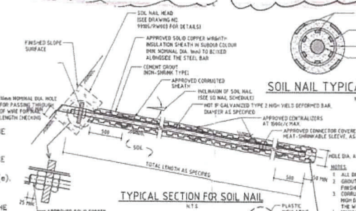
SOIL NAIL PULL-OUT TEST ARRANGEMENT

NTS

NOTE: EXACT DETAILS ARE TO BE PROVIDED BY THE CONTRACTOR, SUBJECTED TO THE APPROVAL OF THE ENGINEER.

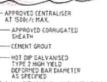
R. NOTES ON PREDRILLING

1. THE SPECIFICATION TO BE READ IN CONJUNCTION WITH THE FOLLOWING DOCUMENTS:
   (I) GEOGUIDE 2, GUIDE TO SITE INVESTIGATION (1987), GEO, HONG KONG GOVERNMENT.
   (II) GEOGUIDE 3, GUIDE TO SOIL AND ROCK DESRIPTION (1988), GEO, HONG KONG GOVERNMENT.
   (III) SECTION 7, PART 2 – GEOTECHNICAL INVESTIGATION, GENERAL SPECIFICATION FOR CIVIL ENGINEERING WORKS (1992) HONG KONG GOVERNMENT.
   (IV) GUIDANCE NOTES NO.2 ISSUED BY DRAINAGE SERVICES DEPARTMENT.
2. METHOD OF DRILLING
   DRILLING THROUGH COMMON GROUND WAS CARRED OUT BY ADVANCING P OR H-SIZE CASING USING WATER FLUSH. IF OBSTRUCTIONS, BOULDERS, CORESTONES OR BEDROCK ARE ENCOUNTERED, ROTARY CORE DRILLING WERE BE CARRIED OUT TO OBTAIN ROCK CORES OF NOT LESS THAN 54mm DIAMETER.
3. THE LOCATION OF PREDRILLING HOLES ARE SHOWN IN DWG. NO. 991051/RW002. THE FINAL LOCATION SHALL BE CONFIRMED BY THE ENGINEER ON SITE.
4. EXISTING STRUCTURES AND SERVICES
   THE CONTRACTOR TO BE RESPONSIBLE FOR ANYDAMAGE TO SERVICES OR OTHER STRUCTURES AS A RESULT OF THE EXECUTION OF THE CONTRACT. HE CONTRACTOR TO BE RESPONSIBLE TO OBTAIN INFORMATION AND LOCATE THE SERVICES AND STRUCTURES THAT MAY BE AFFECTED BY THE PREDRILLING WORKS AND TAKE THE NECESSARY PRECAUTIONARY MEASURES TO AVOID CAUSING ANY DAMAGE TO THEM. INSPECTION PIT SHALL BE EXCAVATED WITH MINIMUM 1.5m DEPTH.
5. INSITU TEST & SAMPLING
   POINT LOAD TESTS OR UNIAXIAL COMPRESSION TESTS SHALL BE CARRIED OUT ON EACH DRILLHOLE TO VERIFY THE ROCK STRENGTH ASSUMPTION.
6. THE CONTRACTOR SHALL PROVIDE COMPETENT PERSON TO LOG THE SAMPLES WHO SHALL SATISFY THE RELEVANT REQUIREMENTS AS ON CP (LOGGING) OR GROUND INVESTIGATION FIELDWORK IN ACCORDANCE WITH THE COP FOR SITE SUPERVISION 2009.
7. CASING FOR DRILLHOLES SHALL NOT BE WITHDRAWN WITHOUT THE APPROVAL OF THE ENGINEER. AFTER COMPLETION, ALL DRILLHOLES, EXCEPT THOSE WERE PIEZOMETERS ARE INSTALLED, SHALL BE BACKFILLED WITH CEMENT GROUT.
8. U76 OR U100 MAZIER SAMPLES SHALL BE OBTAINED AS INSTRUCTED BY THE ENGINEER.
9. THE EXACT LOCATION ARE INDICATIVE ONLY.
10. DEPTHS OF PREDRILLING HOLES
   ALL DRILLHOLES SHALL PENETRATE A MINIMUM OF 5m INTO BEDROCK OR THE DESIGNED ROCK SOCKET LENGTH FOR SOIL NAIL, WHICHEVER IS GREATER.BEDROCK SHALL BE GRADE III OR BETTER ROCK WITH TOTAL CORE RECOVERY NOT LESS THAN 85% ULESS OTHERWISE INSTRUCTED BY THE ENGINEER. THE TERMINATION DEPTH FOR ALL DRILLHOLES ARE TO BE DETERMINED BY THE ENGINEER ON SITE. NO DRILLHOLE TO BE TERMINATED WITHOUT THE PRIOR CONSENT OF THE ENGINEER.
11. SHOULD THE ROCKHEAD LEVELS AND GEOLOGICAL PROFILE BE DEVIATED FROM THE DESIGN LIMIT, A DESIGN AMENDMENT SHALL BE SUBMITTED TO THE BD BY INCORPORATION THE UPDATED ROCKHEAD INFORMATION.



TYPICAL SECTION FOR SOIL NAIL

N.T.S.



SOIL NAIL TYPICAL CROSS SECTION

N.T.S.

Note: This plan has been processed on a curtailed check basis under the centralized processing system as promulgated in PNAP ADM-19. The duties of the authorized person, registered structural engineer and/or registered geotechnical engineer concerned as specified under section 4(1)(c) ... section 14(2)(c) of the Buildings Ordinance are of particular relevance in this regard.

10 JAN 2013

Government Reference No. : BD DH20/84/HK

NOTES:

1. THIS DRAWING IS SUBMITTED IN COMPLIANCE WITH DANGEROUS HILLSIDE ORDER NO. DH0035/HK/11/C FOR FEATURE NOS. 11SW-B/CR349 (WALL PORTION OF SUB-DIVISION NO. 1) AND 11SW-B/R629.

LEGEND:

- – – – LOT BOUNDARY
- ——— FEATURE BOUNDARY

MAK CHI CHEUNG, PETER
BArch, BAAS, FHKIA, RIBA, ARAIA
REGISTERED ARCHITECT, AP(List 1)

WMKY LIMITED ARCHITECTS AND ENGINEERS HONG KONG

LEUNG Kwok-Yiu
BSc(Eng) Dip Ing CEng MICE MIStructE MHKIE RPE(C,G,S)
Registered Geotechnical Engineer

Fan Siu Kay
Registered Structural Engineer
(Reg No R105/87)

Plan Approved
(CHONG Wing-hong)
Chief Building Surveyor
for BUILDING AUTHORITY
11 MAR 2013

Rev.	Stat.	Description	Date	By	Chk.	Ver'd
D	–	MINOR AMENDMENT	19.12.12	JL	BI	RL
C	–	MINOR AMENDMENT	10.03.11	KL	ML	RL
–	AD	BD APPROVED	20.06.03	LM	ESY	JC
B	IFS	DRAINAGE NOTES ADDED	26.02.03	LM	ESY	JC
A	AD	BD APPROVED UPDATE BD COMMENT	19.11.01	EK	LM	JT

Revisions

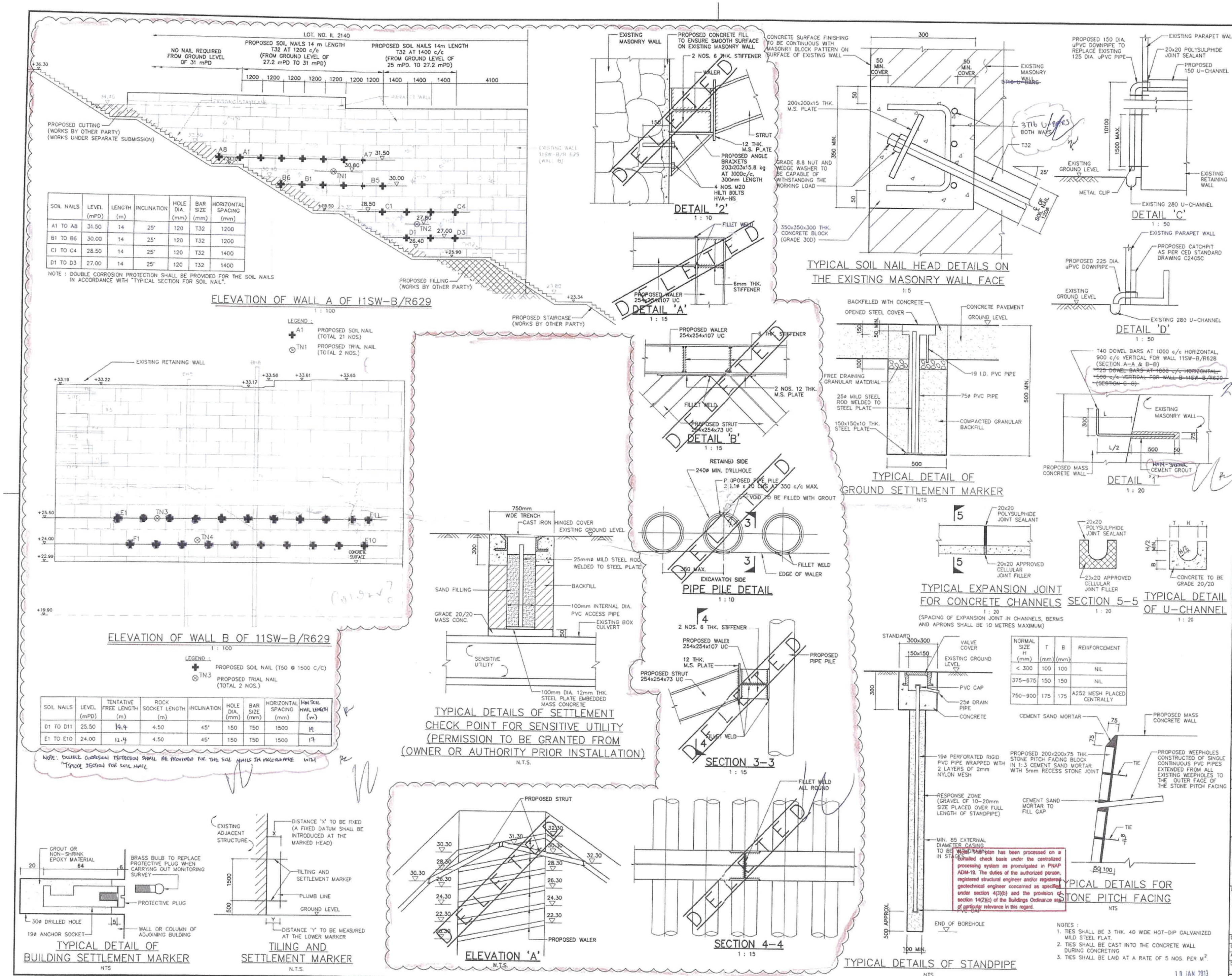
Hyder

Project : FEATURES NOS. 11SW-B/CR349 (WALL PORTION OF SUB-DIVISION NO.1) AND 11SW-B/R629 55 SHIP STREET, WANCHAI

Drawing Title : RETAINING WALL REMEDIAL WORKS GENERAL NOTES & BLOCK PLAN

Drawn :	LM	Date :	16.07.01	Job No. :	991051
Checked :	AL	Date	16.07.01	Cad File :	1051RW1
Approved :	DL	Date	16.07.01	Scale :	AS SHOWN
Drawing No. :	991051/RW001			Rev	D

K:\EA01425 HOPEWELL MEGA HOTEL\...\2011-03-22 DH ORDER(161)\Approved BD Drawings (from ESA)\Updated Drawings\1051RW1D.dwg



SOIL NAILS	LEVEL (mPD)	LENGTH (m)	INCLINATION	HOLE DIA. (mm)	BAR SIZE (mm)	HORIZONTAL SPACING (mm)
A1 TO A8	31.50	14	25°	120	T32	1200
B1 TO B6	30.00	14	25°	120	T32	1200
C1 TO C4	28.50	14	25°	120	T32	1400
D1 TO D3	27.00	14	25°	120	T32	1400

NOTE : DOUBLE CORROSION PROTECTION SHALL BE PROVIDED FOR THE SOIL NAILS IN ACCORDANCE WITH "TYPICAL SECTION FOR SOIL NAIL".

SOIL NAILS	LEVEL (mPD)	TENTATIVE FREE LENGTH (m)	ROCK SOCKET LENGTH (m)	INCLINATION	HOLE DIA. (mm)	BAR SIZE (mm)	HORIZONTAL SPACING (mm)	MIN SOIL NAIL LENGTH (m)
D1 TO D11	25.50	14.4	4.50	45°	150	T50	1500	19
E1 TO E10	24.00	12.4	4.50	45°	150	T50	1500	17

NOTE: DOUBLE CORROSION PROTECTION SHALL BE PROVIDED FOR THE SOIL NAILS IN ACCORDANCE WITH "TYPICAL SECTION FOR SOIL NAIL

NORMAL SIZE H (mm)	T (mm)	B (mm)	REINFORCEMENT
< 300	100	100	NIL
375-675	150	150	NIL
750-900	175	175	A252 MESH PLACED CENTRALLY

NOTES :
1. TIES SHALL BE 3 THK. 40 WIDE HOT-DIP GALVANIZED MILD STEEL PLAT.
2. TIES SHALL BE CAST INTO THE CONCRETE WALL DURING CONCRETING
3. TIES SHALL BE LAID AT A RATE OF 5 NOS. PER M^2

The plan has been processed on a curtailed check basis under the centralized processing system as promulgated in PNAP ADM-19. The duties of the authorized person, registered structural engineer and/or registered geotechnical engineer concerned as specified under section 4(3)(b) and the provision of section 14(2)(c) of the Buildings Ordinance are of particular relevance in this regard.

Government Reference No. : BD DH20/84/HK

NOTE :
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING 991051/RW001 & RW002.
2. THIS DRAWING IS SUBMITTED IN COMPLIANCE WITH DANGEROUS HILLSIDE ORDER NO. DH0035/HK/11C FOR FEATURE NOS. 11SW-B/CR349 (WALL PORTION OF SUB-DIVISION NO. 1) AND 11SW-B/R629.

LEGEND:
— — — LOT BOUNDARY

MAK CHI CHEUNG, PETER
REGISTERED ARCHITECT, AP

LEUNG Kwok-Yiu
Registered Geotechnical Engineer

Fan Siu Kay
Registered Structural Engineer
(Reg. No. R105/87)

Plan Approved
(CHONG Wing-hong)
Chief Building Surveyor
for BUILDING AUTHORITY
1 1 MAR 2013

Rev.	Stat.	Description	Date	By	Chk.	Ver'd
E	-	MINOR AMENDMENT	19.12.12	JL	BI	RL
D	-	MINOR AMENDMENT	10.03.11	KL	ML	RL
C	AD	BD APPROVED UPDATE BD COMMENT	20.06.03	PL	LM	JC
B	IFS	DRAINAGE DETAILS ADDED, DETAILS 'C' & DETAILS 'D'	26.02.03	LM	ESY	JC
A	AD	BD APPROVED UPDATE BD COMMENT	19.11.01	EK	LM	JT

Revisions

Hyder

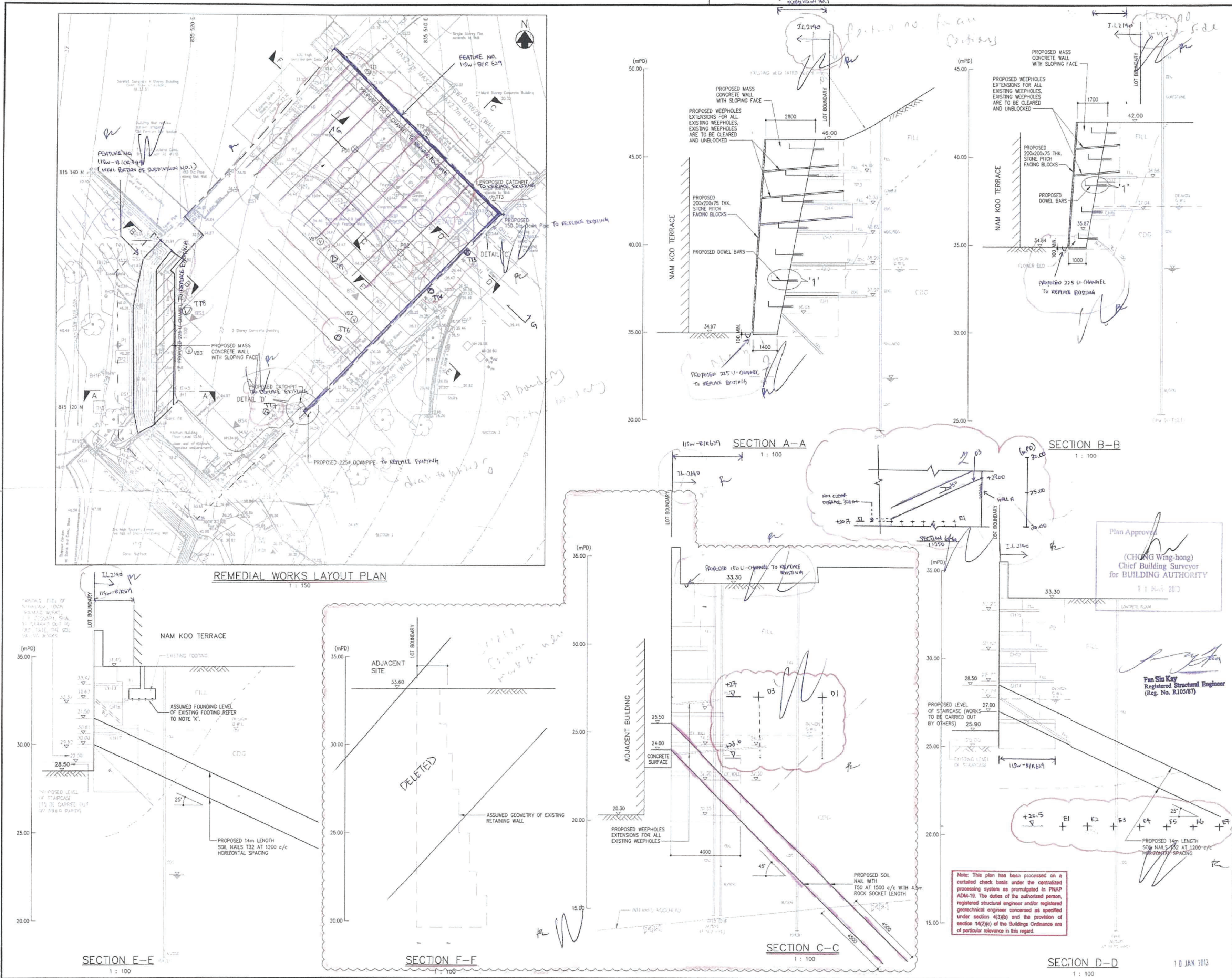
Project :
FEATURES NOS. 11SW-B/CR349 (WALL PORTION OF SUB-DIVISION NO. 1) AND 11SW-B/R629
55 SHIP STREET, WANCHAI

Drawing Title :
RETAINING WALL REMEDIAL WORKS
ELEVATION AND DETAILS

Drawn :	EK	Date :	16.07.01	Job No. :	991051
Checked :	AL	Date :	16.07.01	Cad File :	1051RW3
Approved :	DL	Date :	16.07.01	Scale :	AS SHOWN

Drawing No. : 991051/RW003 Rev. E

10 JAN 2013



Government Reference No. :

BD DH20/84/HK

NOTES:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS 991051/RW001 & RW003.
2. THIS DRAWING IS SUBMITTED IN COMPLIANCE WITH DANGEROUS HILLSIDE ORDER NO. DH0035/HK/11C FOR FEATURE NOS. 11SW-B/CR349 (WALL PORTION OF SUB-DIVISION NO.1) AND 11SW-B/R629.

LEGEND :

- PP1 — PROPOSED PIPE PILE (TOTAL 75 NOS.) — DELETED
- PROPOSED SOIL NAIL
- PROPOSED DOWEL BAR
- PROPOSED WALER & STRUT
- PROPOSED WEEPHOLE
- PTP1 — PROPOSED TRIAL PIT (TOTAL 1 NO.)
- GS6 — EXISTING GROUND SETTLEMENT MARKERS (TOTAL 6 NOS.)
- BS4 — EXISTING BUILDING SETTLEMENT MARKERS (TOTAL 4 NOS.)
- P1 — EXISTING STAND PIPES (TOTAL 2 NOS.)
- BH1P — EXISTING BOREHOLES WITH STANDPIPES (TOTAL 4 NOS.)
- BH6 — EXISTING VERTICAL BOREHOLES (TOTAL 3 NOS.)
- CH1 — EXISTING HORIZONTAL COREHOLE (TOTAL 19 NOS.)
- IH1 — EXISTING INCLINED COREHOLES (TOTAL 6 NOS.)
- TP6 — EXISTING TRIAL PITS (TOTAL 7 NOS.)
- IP1 — EXISTING UTILITIES INSPECTION PIT (TOTAL 5 NOS.)
- PROPOSED U-CHANNEL
- PROPOSED CATCHPIT
- PROPOSED DOWNPIPE
- TT1 — PROPOSED TILTING MARKERS (TOTAL 9 NOS.)
- VB1 — PROPOSED VIBROGRAPH LOCATIONS (TOTAL 3 NOS.)
- PD1 — PROPOSED PREDRILL BOREHOLE LOCATIONS (TOTAL 2 NOS.)
- LOT BOUNDARY
- FEATURE BOUNDARY
- INFERRED GRADE III OR BETTER ROCKHEAD PROFILE, MODERATELY DECOMPOSED GRANITE OR BETTER WITH TOTAL CORE RECOVERY > 85% AND MINIMUM UCS > 25MPa

Rev.	Stat.	Description	Date	By	Chk.	Ver'd
E	–	MINOR AMENDMENT	19.12.12	JL	BI	RL
D	–	MINOR AMENDMENT	13.06.11	KL	ML	RL
C	–	MINOR AMENDMENT	10.03.11	KL	ML	RL
–	AD	BD APPROVED	20.06.03	LM	ESY	JC
B	IFS	GENERAL REVISION	26.02.03			
A	AD	BD APPROVED UPDATE BD COMMENT	19.11.01	EK	LM	JT

Revisions

Hyder

Project :

FEATURES NOS. 11SW-B/R628 AND 11SW-B/R629
55 SHIP STREET, WANCHAI

Drawing Title :

RETAINING WALL REMEDIAL WORKS LAYOUT PLAN & SECTIONS

Drawn : EK	Date : 16.07.01	Job No. : 991051
Checked : AL	Date : 16.07.01	Cad File : 1051RW2
Approved : DL	Date : 16.07.01	Scale : AS SHOWN

Drawing No. : 991051/RW002 Rev. E

屋宇署
BUILDINGS DEPARTMENT

YOUR REF 來函檔號：
OUR REF 本(23)號m BD DH20/84/HK(III)
FAX 圖文傳真： 2136 8200
TEL 電話： 2135 2453
www.info.gov.hk/bd

Mr. MAK Chi Cheung, Peter
c/o WMKY Limited
Room 3308, 33/F,
Hopewell Centre,
183 Queen's Road East,
Wanchai, Hong Kong

11 March 2013

39

15 MAR 2013 3/K

DATE		ANS TO		ANS BY		FILE	
PM	AM	SL	JF	HL	SW	FT	
INF							
ACTION							

Dear Sir,

DHO No. DH0035/HK/11/C dated 30 March 2011
Feature Nos. 11SW-B/CR349 (Wall Portion of Sub-division No. 1) & 11SW-B/R629
Proposed Wall Remedial Works at
No.55 Ship Street, Hong Kong – I.L. 2140

I refer to your application dated 10 January 2013 and received on **11 January 2013** for approval of proposals in respect of **Wall Remedial Works (Major Revision)**.

2. Your submission of plans has been checked under the curtailed check system announced in Practice Notes for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers ADM-19. On this basis, I am satisfied that your submission is fundamentally acceptable and may be approved.

3. You are reminded that the curtailed check system covers only the fundamental issues of a building proposal. Although non-fundamental issues will not be raised as reasons for disapproving a submission, I expect that all contravention of the Buildings Ordinance and its subsidiary legislation are rectified as and when they are discovered and in any event, before completion of the works is certified. In this connection, I ask you to note that the Building Authority attaches great importance to the proper assumption of duties and responsibilities by authorized persons, registered structural engineers and registered geotechnical engineers.

4. In accordance with the provisions of regulation 30(1) of the Building (Administration) Regulations, this is to notify that the above - mentioned plans submitted with your application received on 11 January 2013 are hereby approved. One set of the said plans, on which I have signified my approval, is enclosed. Your client has been sent a copy of this letter but I would request that you ensure that the contents are understood by him.

5. This approval should not be deemed to confer any title to land or to act as a waiver of any term in any lease or licence. This approval does **NOT** authorize the commencement or the carrying out of any works shown in the approved plans. Section 14(2) of the Buildings Ordinance refers.

/...2

6. As conditions of this approval under Section 17(1) of the Buildings Ordinance, the following are required:-

(a) Qualified site supervision requirement, sampling and testing of soil nail works as stipulated in Appendix A.

(b) Qualified site supervision requirement, sampling and testing of reinforced concrete works as stipulated in Appendix B.

(c) Qualified site supervision requirement of retaining wall works as stipulated in Appendix C.

To ensure full compliance of the Buildings Ordinance, it is prudent for the authorized person who acts as the co-ordinator of the building works, to inform the registered contractor all the imposed conditions attached to this approval.

7. The checking of submission has been substantially curtailed and greater emphasis is placed on the integrity and competence of the authorized persons. You are expected to comply with the requirement of Buildings Ordinance section 4(3)(b) in respect of any contravention of the regulations.

8. Chief Geotechnical Engineer/Island of the Geotechnical Engineering Office, Civil and Engineering Development Department (Contact Person: Mr. Roy K. C. HUNG on Tel. No. 2762 5282) has the following comments:

(a) Prior to consent application for commencement of the works, a report on condition survey of the adjacent existing building/structure, including the Graded historic building Nam Koo Terrace, shall be submitted and acknowledged by the Buildings Department.

(b) In addition to the TCP T3 and T5 site supervision personnel under the RGE's stream, a Directorate Site Supervisor (DSS) shall be provided for the proposed retaining wall remedial works. He/she shall carry out inspections at the critical stages of the works at least monthly, or more frequently as necessary. The name of the DSS shall also be given in the site supervision plan.

(c) The AP/RSE/RGE are advised that the extent of supervision to be provided for different stages of the soil nailing works is given in the Code of Practice for Site Supervision 2009.

(d) The AP/RSE/RGE are advised that the TCP T3 shall carry out site inspection of the works and prepare and certify the key records on supervision of soil nailing works in accordance with the Code of Practice for Site Supervision 2009.

(e) The AP/RSE/RGE are advised that the following shall be submitted and accepted by the BA prior to submission for the Form BA14 for the slope/retaining wall remedial works:

/...3

(i) Pull-out test report, records of installation and non-destructive test report (if any) for the soil nails;

(ii) Results of the confirmatory ground investigation fieldworks for pre-drilled holes PD1 and PD2 as shown in Drawing No. 991051/RW002(Rev.E) and an assessment report of the ground condition interpreted from the ground investigation fieldworks results in comparison with the relevant design assumptions.

(f) It is noted that construction of the proposed retaining wall remedial works for Feature No. 11SW0B/R629 will inevitably require working space outside the lot boundary of the subject private lot. The AP is reminded to seek permission from the relevant parties for temporary occupation of the required working space for execution of the proposed works.

9. Chief Highway Engineer/Hong Kong, Highways Department (Contact Person: Mr. C M CHONG on Tel. No. 2231 5722) has the following comments:

(a) You are required to advise whether any existing slope / features / retaining wall maintained by this Office would be affected by the proposed works.

(b) You are required to advise whether the proposed works, including any slope reinforcing works and proposed drainage, would be constructed at Government land and would be handed over to this Office for maintenance.

(c) You are required to seek DSD's comments for any proposed connection of drains / channels to public drainage system.

It is noted that you have made reply on the above comments via email dated 7 March 2013 and HyD has no further comment on your proposal.

10. The Antiquities and Monuments Office (AMO) of the Leisure and Cultural Services Department (Contact Person: Ms. Rammy LAI on Tel. no. 2721 2673) has the following comments:-

(a) The subject works site is located very close to the Grade 1 historic building Nam Koo Terrace. The AP/RSE/RGE shall ascertain the potential impacts on this graded building and recommend appropriate precautionary measures so as to ensure that the structural integrity and fabrics of the graded building will not be damaged by the proposed slope works.

(b) It is noted that no movement or tilting monitoring point locations are proposed at the captioned historic building. Therefore, the AP/RSE/RGE should propose locations for vibration, settlement and tilting check points for the Grade 1 historic building and the following monitoring table for AAA levels shall be followed as attached:

/...4

	Alert level	Alarm level	Action level
Vibration check point	3mm/s	4mm/s	5mm/s
Settlement check point	6mm	8mm	10mm
Tilting check point	1/2000	1/1500	1/1000

(c) It is recommended that for all building settlement and tilting markers shown on Drawing No. 991051/RW003 are replaced by glued fixing with a disc and with measurement by means of an electronic tilt meter to avoid drill damage to the captioned graded building.

(d) No adverse impact to be posed on the masonry walls should be taken into account of the works design. It is recommended that the soil nail heads shown on Drawing no. 991051/RW003 for upgrading works of other retaining walls be recessed further into the masonry wall and be made good with stone blocks in front of the soil nail head.

(e) It is suggested that the existing stone faced retaining wall shall not be covered by mass concrete at Section AA and BB in order to preserve the historic setting. Consideration shall be given to add mass concrete behind the existing retaining wall for the upgrading work should the adjoining site also own by the same owner.

(f) It is stated in item 8 of the General Notes that features at the forecourt, such as pavilion, fountain, planters and garden feature, etc. will be temporarily removed and shall be reinstated after completion of work. Destructive removal method to the historic features at forecourt is not recommended, AP/RSE/RGE are required to consider less destructive method, if any. The AP/RSE/RGE should adopt appropriate protective measures to the said features in the course of removal and reinstatement works. Backfilling works in the course of reinstatement shall match with the existing floor finish.

(g) The AP/RSE/RGE is required to clarify if there will be any demolition / alteration to the existing featured boundary wall above the masonry walls requiring remedy. Appropriate protective measures to the existing features on the boundary wall such as arch doorway, column heads, etc. should be necessary.

(h) To conclude, the AP/RSE/RGE are reminded that no disturbance should be made to the building and features in the site in the course of works, and mitigation measures should be carried out, if necessary, in consultation with this Office. Please note that any protective/ precaution measure should avoid direct fixing to the buildings and features, if required please consider using reversible fixing method as far as possible to minimize the disturbance to the fabric.

/...5

11. Commissioner for Transport, Traffic Engineering (HK) Division, Transport Department (Contact Person: Ms. TAM Kwai-fan, Irene on Tel. No. 2294 2600) has the following comments:-

(a) If public road will be occupied by the proposed works, temporary traffic management scheme shall be submitted in advance.

12. Comments, if any, from the District Lands Officer/Hong Kong West & South of Lands Department, will be conveyed to you once available.

13. Please be reminded of the following:

(a) To provide adequate precautionary measures prior to and during the carrying out of the retaining wall remedial works for the safety of the public, the workers and the adjoining properties. An Application for a hoarding permit is required if a hoarding is to be erected under Buildings (Planning) Regulation 64. In this connection, your attention is drawn to PNAP APP-23;

(b) To lodge a supervision plan (2 copies) for the works prior to your consent application. Your attention is drawn to Section 16(3)(bc) of the Buildings Ordinance;

(c) To promptly report all significant signs of distress and/or notable landslides during the construction works to the Buildings Department and the Geotechnical Engineering Office.

(d) To give prior notice to the GEO of the date of commencement of site trials for soil nailing works and non-destructive tests for installed soil nails shown on the plans in order to facilitate GEO staff to carry out site inspection and field checks.

14. You are required, under Building (Administration) Regulation 10, to submit the following:

(a) Initial readings of all monitoring stations for record prior to the commencement of the retaining wall remedial works;

(b) Together with Form BA14 to certify completion of the works, you are required to submit the following:

(i) Two sets of record plans.

(ii) The Information including a soft copy of the basic data requested in PNAP ADV-8 for registration of slopes and retaining walls for which the owners have maintenance responsibility;

(iii) Two copies of the Maintenance Manual, as requested in PNAP APP-79;

/...6

15. It is noted that you made amendments on the plans on 28 February 2013, 8 & 11 March 2012.

16. Please provide a copy of the approved plans to GEO direct.

17. It appears that trees in or around your site may be affected by your slope stabilization works proposal. You are advised to liaise with the District Lands Office in this regard prior to commencement of works.

18. Please be reminded that due consideration should be given to incorporate landscape measures to improve the visual appearance of the feature. Landscape treatment should be provided, wherever possible, to all newly formed or newly upgraded slopes and the use of shotcrete or chunam on slopes should only be considered as a last resort. (PNAP ADV-23 refers) Please also refer to the "Layman's Guide to Landscape Treatment of Slopes" produced by the Geotechnical Engineering Office, which can be viewed/downloaded from the Civil Engineering and Development Department Website (http://www.cedd.gov.hk/eng/publications/geo/index.htm) through the Internet.

Yours faithfully,

(CHONG Wing-hong)
Chief Building Surveyor/Slope Safety
for Building Authority

c.c. **YUBA Company Limited**
(fax: 2865 6276)

RSE - Mr. Fan Siu Kay
(fax no. 2529 1834)

RGE - Mr. Leung Kwok Yiu
(fax no. 2805 5028)

CGE/I, GEO, CEDD
DLO/HK W&S
CHE/HK, HyD
AC for T, TD
AMO, LCSD

Ref : BD DH20/84/HK(III)

Address : No.55 Ship Street, Hong Kong - I.L. 2140

Appendix A to approval dated 11.03.2013

Soil Nail/~~Rock Dowel~~ Works

In giving this approval of plans, I hereby impose the following conditions under item 6 in section 17(1) of the Buildings Ordinance.

(a) Sampling and testing of steel reinforcing bars used in the soil nail/~~rock dowel~~ works should be carried out in accordance with Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers (PNAP) APP-45 (previously known as PNAP 122). Testing should be carried out by a laboratory# accredited under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for the particular test concerned. Test results should be reported on a HOKLAS Endorsed Certificate and submitted within 60 days of the delivery of the steel reinforcing bars to the site. The test reports should be appended with a statement signed by the Authorized Person/Registered Structural Engineer to confirm the following:

(i) All steel reinforcing bars used in the soil nail/~~rock dowel~~ works and the test specimens covered by the test reports are in accordance with the types and grades of steel shown in the approved plans.

(ii) Sampling and testing of steel reinforcing bars used have been carried out in accordance with the current PNAP APP-45 (previously known as PNAP 122).

(iii) The acceptance criteria appropriate to each type and grade of steel reinforcing bars used have been complied with.

(iv) Testing of steel reinforcing bars has been carried out by a laboratory# accredited under HOKLAS.

(b) The requirements of sampling and testing of grout are as follows:

(i) For each grout mix one sample of grout shall be provided from each 10 batches of grout, or every 10 m^3 from the amount of grout produced in a day, whichever is the lesser, to determine the crushing strength of the grout. Samples shall be provided not more than 1 hour after the grout has been mixed and shall be protected from weather before test cubes are made.

/(ii)....

(ii) Compression testing of grout test cubes should be carried out in accordance with the methods specified in CS1:1990/ CS1:2010* using 100mm size cubes. Testing should be carried out by a laboratory# accredited under HOKLAS for the particular test concerned. Test results should be reported on a HOKLAS Endorsed Certificate and appended with a statement signed by the Authorized Person/Registered Structural Engineer to confirm that the acceptance criteria set out in the Building (Construction) Regulation 59 have been complied with, and should be submitted within 21 days after testing.

(c) Qualified site supervision of the sampling of cement grout and making and curing of test cubes by an experienced and competent person should be provided to ensure that the works are carried out in accordance with the plans approved and that the required standards are complied with.

2. Your attention is drawn to the following conditions:

(a) Site supervision of the soil nail works by a team of supervisors shall be provided each by the Authorized Person, Registered Geotechnical Engineer and Registered Specialist Contractor in accordance with the Technical Memorandum for Supervision Plans and the Code of Practice for Site Supervision to ensure that the quality of the works is up to standard and that the works are carried out in accordance with the plans approved and in such a manner as not to render inadequate the margin of safety of, or impair the stability of, or cause danger to any building, structure, land, street or services. The extent of supervision to be provided for different stages of the soil nailing works is provided in the Code of Practice for Site Supervision.

(b)* In addition to the Technically Competent Persons (TCPs) T3 and T5 under the Registered Geotechnical Engineer's (RGE's) stream, a Directorate Site Supervisor (DSS) shall be provided for the works. The name of the DSS shall also be given in the site supervision plan.

(c)* The TCP T5 *and/~~or~~ the DSS under the RGE's stream shall submit regular reports of his/her findings and recommendations to the RGE. The RGE shall formally submit these reports to the Buildings Department and copy them to the Geotechnical Engineering Office (GEO) at monthly intervals or more frequently.

3. In connection with paragraph 2(a) above, details of site supervision of the works and of the quality of the soil nail works shall be included in the supervision plan and submitted prior to or at the time of application for consent to the commencement of the works.

4.* ~~A report containing results of the site trials with clear statements on buildability and whether special methods of construction need to be adopted (and if so the details) should be submitted to the Buildings Department prior to the commencement of construction of the working soil nails.~~

/5. ....

5.* The pull-out test report, records of installation and non-destructive test report (if

any) for the soil nails should be submitted to and found satisfactory by the Building Authority prior to the submission of Form BA 14 for the proposed works.

6.* The TCP T3 shall carry out site inspection of the works and prepare and certify the key records on supervision of soil nailing works in accordance with the Code of Practice for Site Supervision.

7. Prior notice should be given to the GEO of the date of commencement of site trials for soil nailing works/non-destructive tests for installed soil nails in order to facilitate GEO to carry out site inspection and field checks.

8. All significant signs of distress and/or notable landslides during the construction works should be reported promptly to the Buildings Department and the Geotechnical Engineering Office.

A Directory of Accredited Laboratories in Hong Kong is obtainable from the Hong Kong Accreditation Service (HKAS) Executive, Innovation and Technology Commission.

Up-to-date information on accredited laboratories and their scopes of accreditation are available on the internet at the HKAS website at http://www.info.gov.hk/itc/hkas/.

A laboratory's accreditation for an individual test or calibration may be granted, modified or withdrawn at any time. To ensure that the test that you commission the laboratory to conduct is within its scope of accreditation, please always insist on test results be reported on a HOKLAS Endorsed Certificate.

* Delete wherever inapplicable

Ref : BD DH 20/84/HK(III)

Address : No.55 Ship Street, Hong Kong – I.L. 2140

Appendix B to approval dated 11.03.2013

Reinforced Concrete Works

In giving this approval of plans, I hereby impose the following conditions under item 6 in section 17(1) of the Buildings Ordinance:

(a) Sampling and testing of steel reinforcing bars should be carried out in accordance with Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers (PNAP) APP-45 current at the date of this approval. Testing should be carried out by a laboratory* accredited under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for the particular test concerned. Test results@ should be submitted within 60 days of the delivery of the steel reinforcing bars to the site. The test reports should be appended with a statement signed by the Registered Structural Engineer to confirm the following:

(i) All steel reinforcing bars used for the construction and the test specimens covered by the test reports are in accordance with the types and grades of steel shown in the approved plans.

(ii) Sampling and testing of steel reinforcing bars used have been carried out in accordance with the current PNAP APP-45.

(iii) The acceptance criteria appropriate to each type and grade of steel reinforcing bars used have been complied with.

(iv) All steel reinforcing bars tests have been carried out by a laboratory* accredited under the HOKLAS.

(b) Sampling of concrete and compression testing of concrete test cubes should be carried out in accordance with the methods specified in CS1:2010. Testing should be carried out by a laboratory* accredited under the HOKLAS for the particular test concerned. Test results@ should be submitted within 21 days after testing. The test reports should be appended with a summary which contains information on locations of concerned structural elements, concrete grades and dates of cast. The summary should also include previous summary information of concrete cube test reports in chronological order. The test reports should also be appended with a statement signed by the Registered Structural Engineer to confirm the following:

(i) All concrete used for the construction and concrete cubes covered by the test reports are in accordance with the concrete grades shown in the approved plans.

(ii) Concrete cube sizes, rates of sampling fresh concrete for testing and acceptance criteria for compressive strength set out in Building (Construction) Regulations have been complied with.

(iii) All concrete cube tests have been carried out by a laboratory* accredited under the HOKLAS and in accordance with the methods specified in CS1:2010.

2. The following conditions in respect of qualified supervision of works are imposed under item 6 in section 17(1) of the Buildings Ordinances:

(a) Qualified site supervision of the reinforced concrete works, including sampling of concrete and steel reinforcing bars and making and curing of test cubes, by experienced and competent persons as defined in (b) and (c), should be provided to ensure that the works are carried out in accordance with the plans approved and that the required standards are complied with.

(b) The Registered Structural Engineer should assign a quality control supervisor to supervise the works, determine the necessary frequency of inspection by the quality control supervisor which should not be less than once a week, and devise inspection check lists. The minimum qualifications and experience of the quality control supervisor is to be the same as the Technically Competent Person of grade T3, as stipulated in the Code of Practice for Site Supervision 2009.

(c) The Registered General Building Contractor/Registered Specialist Contractor should assign a quality control co-ordinator to provide full time on site supervision of the works and devise inspection check lists. The minimum qualifications and experience of the quality control co-ordinator is to be the same as the Technically Competent Person of grade T1, as stipulated in the Code of Practice for Site Supervision 2009.

(d) The names and qualifications of the supervisory personnel representing the Registered Structural Engineer and the Registered General Building Contractor/Registered Specialist Contractor respectively should be recorded in an inspection log book. The date, time, items inspected and inspection results should be clearly recorded in the log book. The log book should be kept on site for inspection by representatives of the Buildings Department.

* A Directory of Accredited Laboratories in Hong Kong is obtainable from the Hong Kong Accreditation Service (HKAS) Executive, Innovation and Technology Commission.

A laboratory's accreditation for an individual test or calibration may be granted, modified or withdrawn at any time. Up-to-date information on accredited laboratories and their scopes of accreditation are available on the internet at the HKAS website at http://www.info.gov.hk/itc/hkas/.

@ The test carried out by an accredited laboratory should be within its scope of accreditation. To ensure this, test results should be reported on a HOKLAS Endorsed Certificate or equivalent Certificate/Report issued from other laboratory accreditation bodies which have reached mutual recognition agreements/arrangements with the HOKLAS.

Ref : BD DH 20/84/HK(III)

Address : No.55 Ship Street, Hong Kong – I.L.2140

Appendix C to approval dated 11.03.2013

Retaining Wall Works

In giving this approval of plans, I hereby impose the following condition under item 7 in section 17(1) of the Buildings Ordinance:

Adequate precautionary measures and suitable working procedures should be adopted in the carrying out of the above works to safeguard the stability of any building, structure, land, street or services. #~~In this connection, two sets of excavation and lateral support plans are required to be submitted.~~

2. Also, under Building (Administration) Regulation 10, two sets of retaining wall record plans showing the characteristic features of the site and the identification, location, size, depth and level of each retaining wall as constructed are required to be submitted.

#3. You are reminded that site supervision of the retaining wall works by a team of supervisors shall be provided each by the Authorized Person, Registered Structural Engineer, #Registered Geotechnical Engineer and Registered General Building Contractor/Registered Specialist Contractor in accordance with the Technical Memorandum for Supervision Plans and the Code of Practice for Site Supervision 2009 to ensure that the works are carried out in accordance with the approved plans and in such a manner as not to render inadequate the margin of safety of, or impair the stability of, or cause danger to any building, structure, land, street or services.

#4. In connection with paragraph 3 above, details of site supervision of the retaining wall works shall be included in the supervision plan and submitted prior to or at the time of application for consent to the commencement of the retaining wall works.

#5. ~~Consent to the commencement and carrying out of the above works will not be given until the excavation and lateral support plans specified in paragraph 1 above have been submitted and found satisfactory/approved.~~

Delete wherever inapplicable

Appendix G

Record Plan of Dragon Villa

12 Caisson excavation shall be carried out in alternative manner.
13 Ground water level shall be monitored at adjacent caisson before and after pumping for excavation works. If pumping cause water level in adjacent caisson dropped more than 1 m. Then pumping in the caisson should stopped and then grouting shall be carried out around the caisson before excavation works in the caisson is resumed.

GENERAL NOTES

1. All dimensions are in mm and all levels are in mPD
2. Building height from ground floor to upper roof to be 40.9m
3. Ground floor level is to be 20.505mPD
4. Top level of cap is to be stated
5. All caissons shall be rested on rock of grade III or better with total core recovery greater than 85%.
6. All concrete shall be grade 30D/20
7. All steel reinforcement shall be complied with BS4449 1978 with Y denotes high yield steel bars and R denotes mild steel bars. Cover to steel reinforcement shall be 75mm
8. Detail of pile caps is to be submitted separately
9. All design and works shall comply with Hong Kong Building Construction Regulation 1990 edition
10. Grout curtain shall be install around the site (see grout detail) and caissons CN1, CN3, CN7, CN11, CN12 & CN13 before commencement of caisson excavation.
11. Pumping test proposal shall be submitted to Building Authority's satisfaction to justify effectiveness of grout curtain prior to application of consent for caisson excavation.

MONITORING

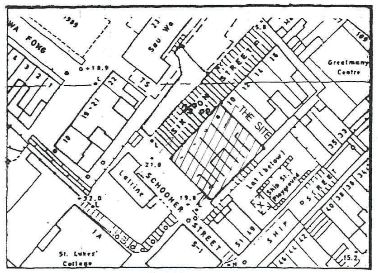
1. Stand pipe's S10 to S15 and Settlement check points CK1 to CK10 shall be installed along the perimeter of site as shown on plan
2. Take initial record and submit them to the RSE and Building Authority before commencement of caisson works
3. The check points shall be surveyed and reading taken once daily throughout the period of caisson works. If 25mm movement at those points or any signs of distress of the adjacent ground and structure are observed, the RSE and Building Authority shall be notified immediately. The above set of records shall be submitted to the RSE once every two weeks until the caisson works has completed
4. The water level in stand pipes (S1 to S15) and BH1 & BH4 shall be taken once daily throughout the period of caisson works. The records shall be submitted to RSE biweekly until the caisson works has completed.
5. Record of check points, stand pipes and existing piezometer in BH1 & BH4 shall be available on site for inspection by representative of the RSE.

ALLOWABLE BEARING CAPACITY OF CAISSONS

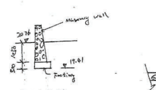
Caisson shaft diameter mm	Concrete grade 30D/20		bell out diameter mm	Rock capacity 5000kPa	
	without wind kN	with wind kN		without wind kN	with wind kN
1000	5890	7363	1000	3927	4908
1300	9955	12444	1500	8836	11045

FOUNDING LEVEL

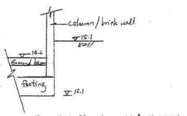
Bore hole	BH1	BH2	BH3	BH4
Bedrock Level mPD	-0.72	+4.87	-3.19	-2.31
Bore hole	DH1	DH2	DH3	
Bedrock Level mPD	-4.53	-4.45	-1.09	



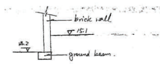
BLOCK PLAN 1:500



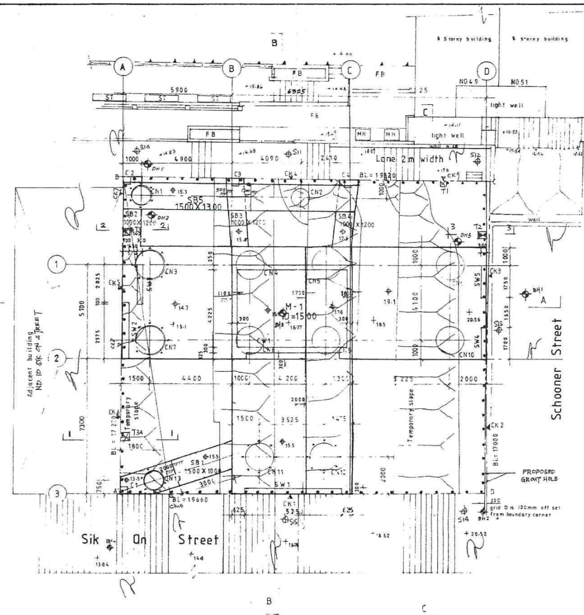
Sec 3-3 (based on trial pit T2)



Sec 1-1 (based on trial pit T3A)



Sec 2-2 (based on trial pit T5)



Caisson layout plan
Scale 1/100

Legend:

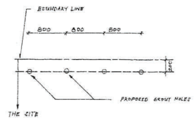
- Check point on structure
- Check point on pavement or lane
- \+ Existing level
- Cap top level
- BH Bore hole with piezometer
- Sleeved caisson
- Masonry wall
- additional check point on structure
- S1 stand pipe no 1
- Trial pit

Loading Schedule

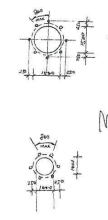
Mark	Size (mm)	DL Axial (kN)	DL Mx (kNm)	DL My (kNm)	D+L Axial (kN)	D+L Mx (kNm)	D+L My (kNm)	Wind along X-X Axial (kN)	SxWx (kN)	MxWx (kNm)	SyWx (kN)	MyWx (kNm)	MWx (kNm)
C1	400x400	495			790								
C2	400x400	585			1030								
C3	400x400	520			1120								
C4	400x400	360			730								
SW1	as shown	5020	-450		6760	-560			±625	±1590			
SW2	as shown	3150		850	4970		1590				±265	∓1150	
SW3	as shown	1467		948	2335		1580				±5	±270	
SW4	as shown	2226		-410	3400		-610	±630			±50	±370	
SW5	as shown	2330		505	3520		730	∓630			±70	±430	
CW1	as shown	36060	1416	-2620	49720	1960	-3520		±1100	∓24500	[illegible]	∓1430	±1950

Mark	Size (mm)	Wind along Y-Y Axial (kN)	SxWy (kN)	MxWy (kNm)	SyWy (kN)	MyWy (kNm)	MWy (kNm)	Soil Along Both Direction Axial (kN)	SxSy (kN)	MxSy (kNm)	SySy (kN)	MySy (kNm)	MSy (kNm)
C1	400x400												
C2	400x400												
C3	400x400							38					
C4	400x400							-36					
SW1	as shown		±120	∓1880					-250	-370			
SW2	as shown				±400	±5990							
SW3	as shown				±163	±1890							
SW4	as shown	±3160			±225	±1410							
SW5	as shown	∓3160			±250	±1600							
CW1	as shown		∓120	∓2730	±1440	±49010	±490		-750	-1135			

remarks MtWx - Torsional moment due to wind along X-X
SxWx - Wind shear along X-X due to wind along X-X
MxSxy - Soil moment along X-X direction
MxWx - Wind moment along X-X due to wind along X-X



GROUT DETAIL
N.T.S.



Grout detail for caissons
NTS

METHOD STATEMENT OF GROUTING

1. Groutholes shall be drilled by use of Atlas copco crawler drill model ROC 601 with a portable pressure air compressor of the same brand (silenced version) or other methods approved by the Engineer.
2. Groutholes to be single layer of boreholes at 800mm c/c around the SITE unless otherwise specified.
3. After setting up the drill rig at the grouthole location, drill a 100mm diameter from existing ground level down to 1m into bedrock with temporary casing
4. Upon drilling to the required depth, install a "Tube-A-Manchette" pvc grout pipe to the full depth of pre-drilled hole.
5. Grouting will be carried out in 2 stages. First stage to be bentonite/cement grout and the second stage to be chemical grout
6. For the first stage grouting (from ground level down to 1m into bedrock), carry out bentonite/cement grout by tremie method and subsequently extract back the temporary steel casing.

   The grout mix for this stage to be as follows:-

Cement :	35 kg.
Bentonite :	35 kg
Water :	Balance
Total Vol :	1000 lit

7. For the second stage grouting (from level 1.5m below ground to 1m into bedrock), insert a grouting injection pipe incorporating a double packer system inside the Tube-A-Manchette grout pipe and inject chemical grout into the grout hole by use of power operated chemical grout pump.
8. The mix proportions of chemical grout to be as follows:-

MIXTURE A	MIXTURE B
450 KG. CEMEMT 25 KG. BENTONITE WATER = 1000 L	240 KG SODIUM SILICATE 25 KG REAGENT water = 1000 L

   Gel time = 60 - 100 Sec but adjustable by the Engineer on site

   Actual Quantity of water are controlled by gel time on site

   The content of grout should be composed of 34% mixture A & 66% Mixture B.

9. Grouting shall be stopped while
   a) Volume of grout attains 300 lit/meter of grout pipe or
   b) Grouting pressure exceeding overburden pressure plus 0.2 bar, and maintained for 5 minutes without further grout intake.

   The minimum grout pressure should be 1/2 overburden pressure. The overburden pressure is defined as 0.2 bar per meter depth. If minimum grout pressure could not be attained, grout should be thickened and repeat grouting again.

10. When grouting is stopped, raise the injection pipe up to 1 m higher and grout again. Repeat step 8 to complete the hole.
11. After the completion of grouting, the grout pipe will be flushed clean to prevent any blockage and to enable subsequent further grouting, if required
12. Repeat step 7 to step 10 to complete the grout hole and subsequently to all grout holes.

Plan Approved
C. S. SIN
Chief Structural Engineer
for BUILDING AUTHORITY
28 FEB 1995

COPY
YIP Kwong-chi Daniel
A public officer authorized by the Building Authority in writing for the purpose of Section 36(1) of the Building Ordinance

WONG CHAK YAN, GREG
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Registered Structural Engineer

REVISION	DESCRIPTION	INITIAL	DATE
	RESUBMIT B.D.		30/1/95
	GENERAL REVISION		25/1/95
	B D DISAPPROVED		7/10/94
A	Bore holes DH1 to DH3 included	SS	25/1/95
	SUBMIT BD	M.L	18-8-94

Greg Wong & Associates
Consulting Engineers & Project Managers

CLIENT MULTIWIN ASIA LTD
ARCHITECT SPENCE ROBINSON LTD
PROJECT TITLE 2-8 SIK ON STREET, WANCHAI, HONG KONG

DRAWING TITLE
CAISSON LAYOUT PLAN

SCALE	AS SHOWN	
DRAWN	So	8/94
DESIGNED	So	8/94
CHECKED	M.L	8/94
APPROVED	G.W	8/94

DRAWING NO P1310 / D / 51 A
B.O.D. REF. NO BD 3/3105/92

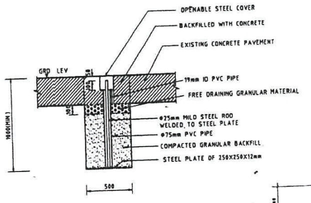
Procedure in construction of caissons

1. Excavate by hand tools in stages to depth from 600mm to 1000mm depend on ground conditions. After excavation, the concrete lining must be cast immediately on the same day.
2. Any underground cavities encountered during excavation should be filled up with concrete.
3. If unstable layer of soil is encountered they should be stabilized by cement grouting (low pressure) prior to further excavation in order to prevent disturbances to the adjoining ground.
4. Pre-fabricated circular formwork should be in lengths of 600mm to 1000mm and should be in segments to facilitate erection and removal.
5. When excavation is down to the required level then carry out inspection to justify the strength of the rock.
6. Steel reinforcement bars shall be fixed in position.
7. Place concrete to caisson core in dry condition and care must be taken to prevent any segregation. In that case, shaft concrete should be placed to the bottom via a chute and properly compacted by vibrators.
8. During all works inside caissons, fresh air must be continuous pumped into the caisson so as to provide adequate ventilation to the workers inside the caissons.

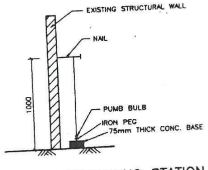
CAISSON SCHEDULE

Caisson Cap	Caisson	diameter in mm	Bell-out diameter mm	Cut Off level mPD	Tentative bottom level mPD	Loading on Caisson DL	D+L	D+L+Wx	D+L+Wy	2/3 D-W	Steel reinforcement	Link
SB 5	CN1 *	1000	1000	14.075	-4.75	2116	3388	--		--	13Y25	R10-300
	CN2	1000	1000	16.275	-3.0	2060	3385	--	--	--	13Y25	R10-300
M-1	CN3 *	1500	1500	13.275	-4.5	6294	8661	878-	10044	2812	29Y25	R10-300
	CN4	1500	1500	13.275	-3.8	6338	8662	8659	9958	2928	29Y25	R10-300
	CN5	1500	1500	14.375	-2.8	6372	8663	8823	9891	3020	29Y25	R10-300
	CN6	1500	1500	17.675	-1.51	6425	8664	9016	9786	3161	29Y25	R10-300
	CN7 *	1500	1500	13.275	-3.9	6030	8191	8429	8190	3782	29Y25	R10-300
	CN8	1500	1500	13.275	-3.3	6074	8192	8272	8280	3961	29Y25	R10-300
	CN9	1500	1500	14.375	-2.3	6108	8193	8236	8349	3916	29Y25	R10-300
	CN10	1500	1500	17.675	-0.3	6161	8194	8429	8456	3845	29Y25	R10-300
	CN11	1500	1500	13.275	-2.0	5672	7467	7713	9699	1549	29Y25	R10-300
	CN12	1500	1500	14.375	0	5700	7467	7610	9756	1511	29Y25	R10-300
SB1	CS13 *	1000	1000	12.575	-2.8	1001	1434		-	--	13Y25	R10-300

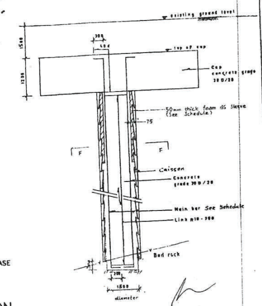
* sleeved to 5.3mPD



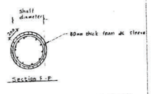
SETTLEMENT MONITORING STATION ON PAVEMENT
1:20



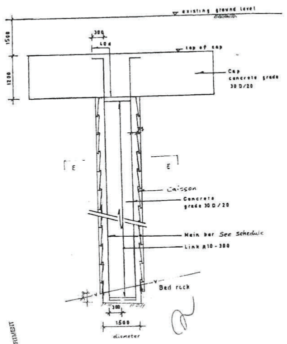
SETTLEMENT MONITORING STATION ON STRUCTURE 1:20



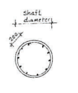
Detail of caisson (With sleeving)
N.T.S.



Section F-F



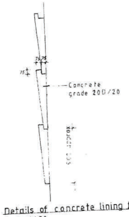
Detail of caisson (without sleeving)
N.T.S



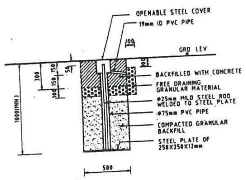
Section E-E
N.T.S

NOTES ON CONSTRUCTION OF HAND-DUG CAISSONS

1. All construction procedures shall refer to 'GUIDANCE NOTES ON HAND-DUG CAISSONS' published by the Hong Kong Institution of Engineers.
2. All construction works and equipment shall comply with the construction site (safety) regulations.
3. Air inside the caissons shall be tested in accordance with HS5573:1978 before allowing workmen to go in.
4. Fresh air shall be supplied by mechanical means at all times to the workmen working inside the caissons.
5. during the construction of the caissons. All shaft openings shall be properly protected, and covered when work is not in progress. Adequate fencing, planking etc shall be provided. All open caissons shall be protected from entry of surface water.
6. excavation shall be carried out in stages of 0.5m to 1.0m deep depending on ground conditions. A pilot hole of about 0.46m diameter and 0.61m deep shall be formed in advance of the main excavation for the purpose of dewatering.
7. The entire length of caisson shafts shall be properly lined so as to form an reasonable watertight seal and to prevent collapse of soil. The lining shall be cast on the same day as the excavation is carried out and shall be completed at 150mm above the ground level. Any voids and cavities which may arise outside the caisson lining shall be grouted with same concrete as the caisson lining.
8. All caissons shall be kept free from water by pumping, bailing or other means at all times while workmen working inside.
9. Curtain grouting shall be employed around the caissons when there should be excessive amount of water infiltration and design shall be submitted to Building Authority.
10. Blasting is not allowed.



Details of concrete lining for caissons
Scale 1/30



SETTLEMENT MONITORING STATION ON SOIL GROUND
1:20

Plan Approved
C. S. ...
Chief Structural Engineer
for BUILDING AUTHORITY
28 FEB 1995

RECEIVED BY
Feb 3 10 06 AM '95
B.O. DIVISION
BUILDINGS DEPARTMENT

COPY
YIP Kwong ... Daniel
2 6 FEB 2010
A public officer authorised by the Building Authority in writing for the purpose of Section 36(1) of the Buildings Ordinance

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Registered Structural Engineer

REVISION	DESCRIPTION	INITIAL	DATE
	RESUBMIT BD		30/1/95
A	GENERAL REVISION		26/1/95
	BD DISAPPROVED		10/10/94
	Submit to BD	ML	15/8/94

Greg Wong & Associates Ltd.
Consulting Engineers & Project Managers

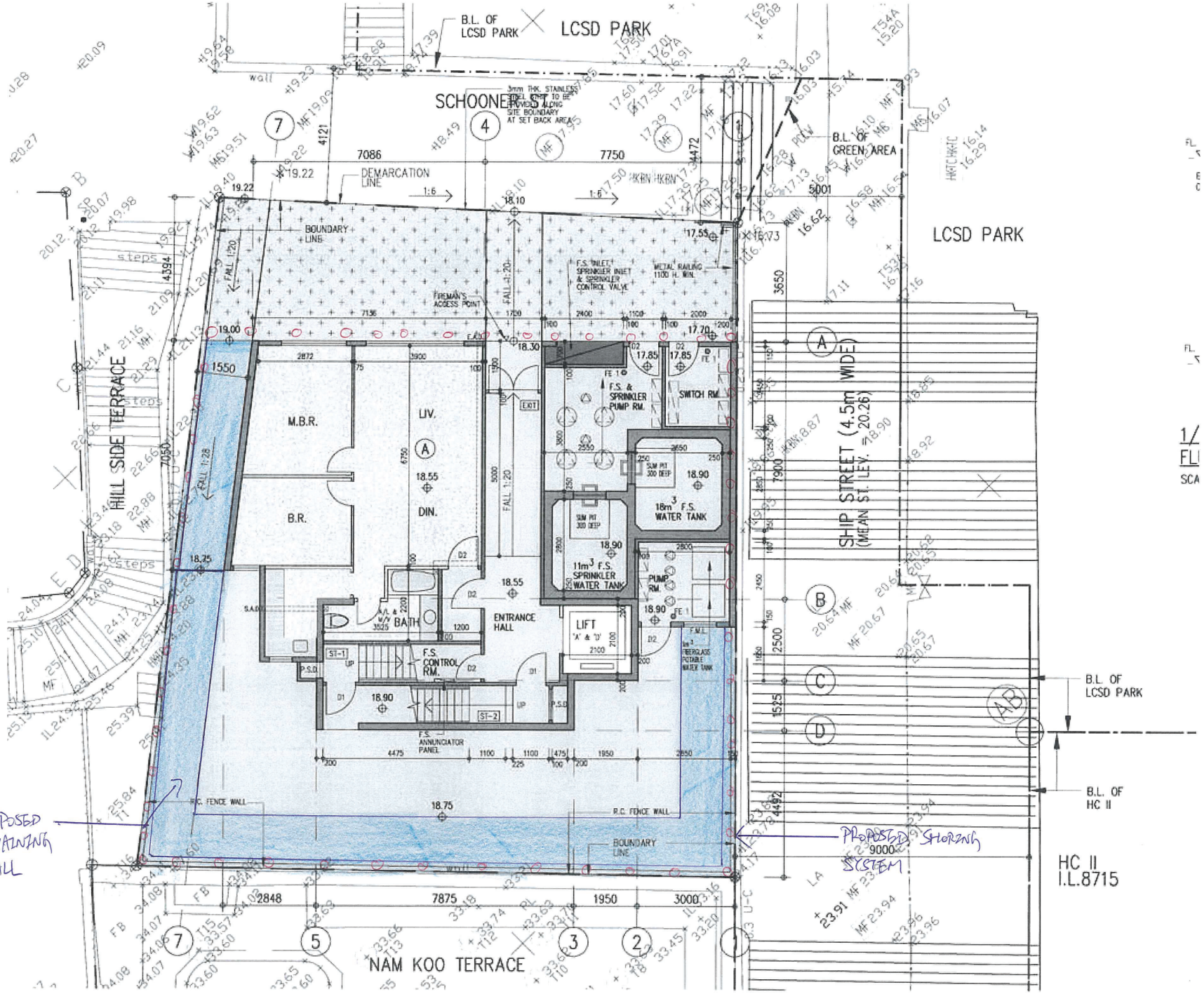
CLIENT: MULTIWIN ASIA LTD
ARCHITECT: SPENCE ROBINSON LTD
PROJECT TITLE: 2-8 SIK ON STREET, WANCHAI, HONG KONG

DRAWING TITLE: CAISSON CONSTRUCTION PROCEDURE AND CAISSON SCHEDULE

SCALE	AS SHOWN		DRAWING NO
DRAWN	So	8/94	P1310/D/53 A
DESIGNED	So	8/94	
CHECKED	ML	8/94	
APPROVED	GW	8/94	BD FILE NO BD 3/3105/92

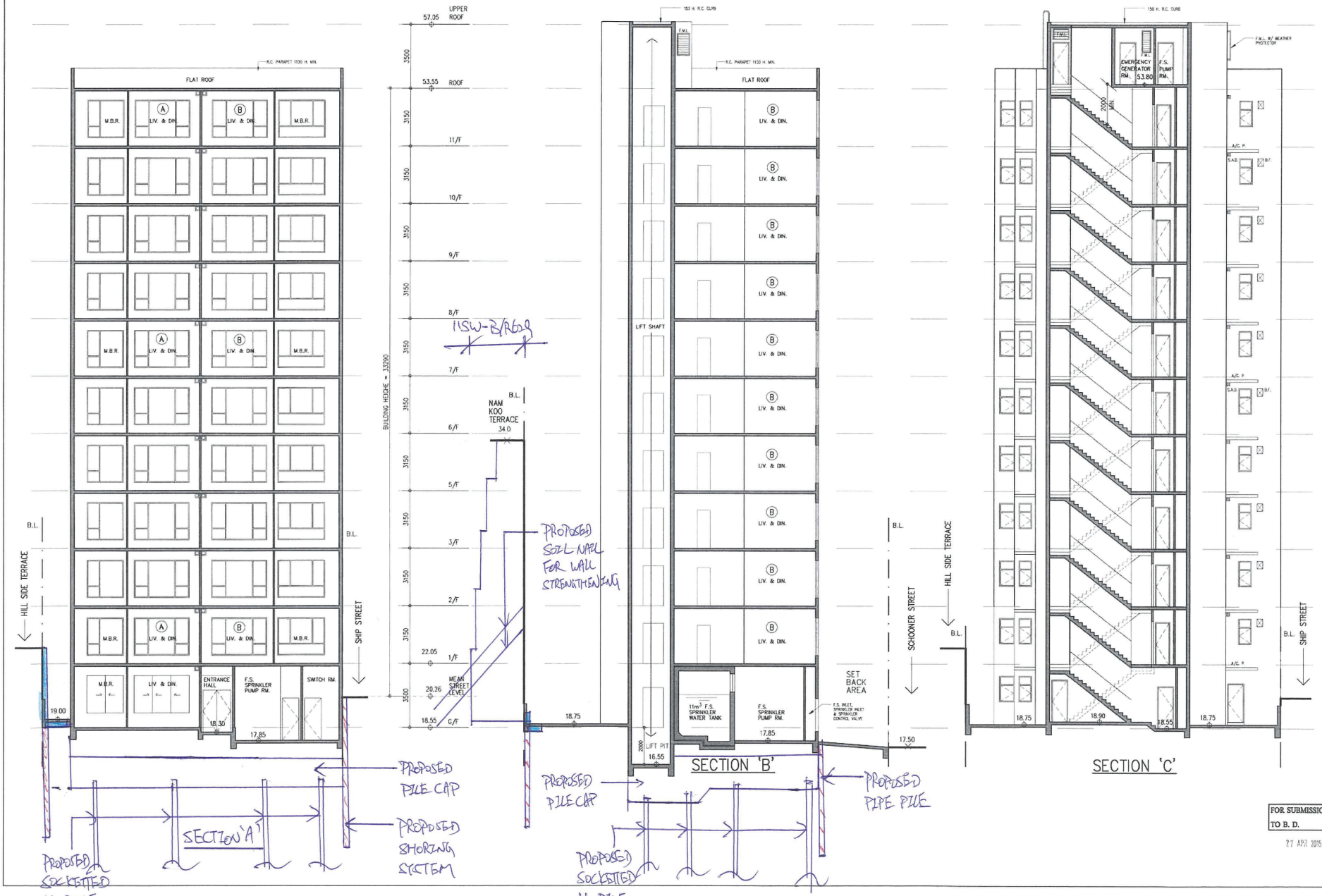
Appendix H

Schematic Sections



GROUND FLOOR PLAN

GEND



A1					
A	RESUBMISSION	27/04/2015			
NO.	ITEMS	DRAWN BY DATE	CHECKED BY	F.S.D. APP. DATE	B.D. APP. DATE
	AMENDMENTS				

FOR SUBMISSION TO B. D.
27 APR 2015

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Ir. Prof. FAN SIU KAY
(B.Sc.(Mech.Eng.), D.Eng., FIStructE, FHKIE, RPE(Struct), REGISTERED STRUCTURAL ENGINEER, RSE195/97)

PROJECT :
PROPOSED RESIDENTIAL DEVELOPMENT ON I.L. 2093 R.P. & I.L. 2093 S.A. R.P. NO. 53 SHIP STREET WANCHAI, HONG KONG

TITLE :
SECTION 'A' & 'B' & 'C'

DESIGNED BY	PM	JOB NO.	1645
DRAWN BY	CWN	B.D. APP. DATE	
CHECKED BY	SYC	F.S.D. APP. DATE	
SCALE	1:100	CAD FILE :	
DATE	02/02/15	DRAWING NO.	
REF. NO.	6/6	1645GP006 A	

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F.S.D. REF. NO. FDS 8/ 7918