To: Binnies Hong Kong Limited Attn: Mr. Wilson Lam Chief Resident Engineer	**Contract No. 21/WSD/21** **Relocation of Diamond Hill Fresh Water and Salt Water Service Reservoirs to Caverns**	CHUN WO - SINOHYDRO JV

CONTRACTOR'S SUBMISSION FORM

Title of Submission	**: Landscape and Visual Mitigation Plan**	
Submission Number	: CWSJV/1076/CSF/0768-2024	**Date:** 29/04/2024
Specification & Drawing Reference	: NA	

Description of Contents

Pursuant to Condition 2.14 of Environmental Permit (EP) No. EP-602/2021, we herewith submit the Landscape and Visual Mitigation Plan Rev 3.1 for your review.

Purpose of Submission:

☑ For Review ☐ For Consent ☐ For Information ☑ For Record

From : **CHUN WO - SINOHYDRO JV**

Signature :

Name : PAUL YU CHI KUEN

Title : Project Director

Encl

PY/JL/RK/denzel chan

Distribution:

c.c. **Head Office**
WSD

UMWELT CONSULTING LIMITED

23/F, On Hong Commercial Building, 145 Hennessy Road, Wan Chai, Hong Kong

By Post

Our Ref : P221002-LVMP-R3.1-V
Date : 19th April 2024

Binnies Hong Kong Limited

43/F, AIA Kowloon Tower,

100 How Ming Street,

Kwun Tong, Kowloon, Hong Kong

Attn: Wilson CK Lam

Agreement No. DHSR/IEC/001

Consultancy Service of Independent Environmental Checker (IEC) for Relocation of Diamond Hill Fresh Water and Salt Water Service Reservoirs to Caverns under Contract No. 21/WSD/21

Landscape and Visual Mitigation Plan

Dear Sir,

Pursuant to Condition 2.14 of Environmental Permit (EP) No. EP-602/2021, please note the Landscape and Mitigation Plan Revision 3.1, dated 17 April 2024 submitted under the EP, certified by the Environmental Team Leader on 19 April 2024, had been reviewed and is hereby verified.

Should you have any query, please feel free to contact the undersigned at 3756 9590 or ivanting@umwelt.consulting .

Your faithfully,

For and on behalf of:

Umwelt Consulting Limited

Ting Po Chung Ivan

Independent Environmental Checker

Date: 19 April 2024
Your ref:
Our ref: PL-202404043

Binnies Hong Kong Limited
43/A, AIA Kowloon Tower
100 How Ming Street
Kwun Tong, Kowloon
Hong Kong

Attn.: Mr. Wilson C. K. Lam

Dear Mr. Lam,

Contract No. 21/WSD/21
Relocation of Demand Hill Fresh Water and Salt Water Service Reservoirs to Caverns
Certification of Landscape and Visual Mitigation Plan (Revision 3.1)

Reference is made to the Landscape and Visual Mitigation Plan (LVMP) (Revision 3.1) submitted by the Contractor on 17 April 2024. We are pleased to inform you that we have no adverse comment on the LVMP.

I hereby certify the LVMP for submission under condition 2.14 of Environmental Permit No. EP-602/2021.

Thank you.

Yours faithfully,
For and on behalf of
Acuity Sustainability Consulting Limited

F. C. Tsang
Environmental Team Leader

Encl.

cc.	Umwelt Consulting Limited	Mr. Ivan Ting (IEC)	via email
	Binnies Hong Kong Limited	Mr. Howie Ho (RE)	via email
	Chun Wo – Sinohydro JV	Mr. Elliott Ting (Site agent)	via email

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CHUN WO - SINOHYDRO JV

LANDSCAPE AND VISUAL MITIGATION PLAN (LVMP)

CONTRACT NO. 21/WSD/21

RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER RESERVOIRS TO CAVERNS

Approved by:

Revision : 3.1

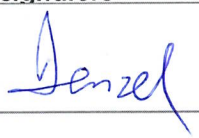
Date : 17 April 2024

Paul Yu
Authorized Representative

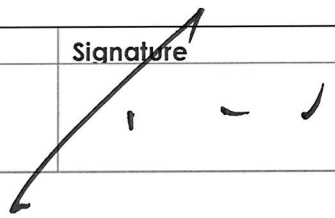
Landscape and Visual Mitigation Plan (LVMP)

Revision: 3.1
Date: 17 April 2024

Prepared by:

Position	Signature	Name	Date
Environmental Officer		Denzel Chan	17 April 2024

Endorsed by:

Position	Signature	Name	Date
Authorized Representative		Paul Yu	17 April 2024

CONTENTS

LIST OF APPENDICES

1 Introduction

1.1 PROJECT DESCRIPTION

Relocation of Diamond Hill Fresh Water and Salt Water Service Reservoirs to Caverns Environmental Impact Assessment Report (Register No.: AEIAR-232/2021) was approved without conditions by Environmental Protection Department (EPD) on 16 November 2021. An Environmental Permit (EP-602/2021) was issued on 14 December 2021.

Chun Wo – Sinohydro JV (CWSJV) was commissioned by Water Supplies Department as the appointed main contractor for Contract No. 21/WSD/21 Relocation of Diamond Hill Fresh Water and Salt Water Service Reservoirs to Caverns.

The Works to be executed under this Contract included, but not exclusively, the following items:

(i) Construction of the relocated Diamond Hill Fresh Water and Salt Water Service Reservoirs (DHSRs) and associated pumping stations and water main laying works;
(ii) Construction of tunnels, adits, ventilation system and caverns for accommodating the relocated DHSRs and the associated facilities; and
(iii) Construction of a 2-storey Portal Ancillary Building
(iv) Other associated works that are incidental to and necessary for the completion of the Project.

1.2 OBJECTIVE

This is the Landscape and Visual Mitigation Plan submission made in fulfillment of Clause 2.14 of Environmental Permit (EP) No.EP-602/2021.

As stated in Condition 2.14 in the EP No. EP-602/2021, the Permit Holder shall, no later than 1 month before the commencement of the construction of the Project or otherwise approved by the Director, deposit with the Director 4 hard copies and 1 electronic copy of Landscape and Visual Mitigation Plan (LVMP).

Condition 2.14 in the EP No. EP-602/2021 stated that The LVMP shall show the design details, including a compensatory planting proposal for the loss of trees within the Project site, and implementation schedule, maintenance and management schedules, and drawings in the scale of 1:1000 or other appropriate scale of the landscape and visual mitigation measures of the Project. The implementation schedule shall be in table form to clearly list out the mitigation measures to be implemented, and the implementation party, location, timing, and environmental performance required for implementation of the mitigation measures.

1.3 SCOPE OF THE SUBMISSION

This submission aims to demonstrate the landscape and visual mitigation measure adopted during the construction period of Relocation of Diamond Hill Fresh Water and Salt Water Service Reservoirs to Caverns. These Landscape and Visual Mitigation Measures for Construction Phase (CM) are developed in accordance with the approved EIA report and EM&A Manual. They include the following:

- Tree Preservation
- Tree Transplanting/ Compensatory Tree Planting
- Inspection of Tree Works
- Minimisation of Light Impact
- Erection of Decorative Site Hoarding
- Reinstatement of Temporarily Disturbed Areas

In accordance with DEVB TC(W) No.4/2020, Tree Survey Report will be prepared by qualified professional to determine the trees conditions and record the findings of topographical and horticultural characteristics of each individual tree (including Tree Survey Plan, Tree Survey Schedule and Tree Photographs) before the tree is to be felled for this project. A qualified professional will carry out bi-monthly tree inspection to all the preserved trees and prepare the tree monitoring report for submission. Quarterly reports with photographs showing the conditions of the transplanted trees/plants will be submitted to LCSD during the nursing and the subsequent establishment period.

Chun Wo – Sinohydro JV will minimise the number of trees to be felled and provide adequate tree protection and preservation measures to the retained trees through the construction period of this Contract as specified in Method Statements for tree felling and transplanting works at attached in ***Appendix A***.

The compensatory tree planting will be conducted as specified in Compensatory Planting Plans as attached in ***Appendix B***. The required numbers of compensatory trees will not be less than the numbers of trees to be felled in this Contract.

2 LANDSCAPE AND VISUAL MITIGATION MEASURES IN EIA & EM&A

2.1 LANDSCAPE DESIGN CONSIDERATIONS

2.1.1 The development will meet the following concerns in terms of the landscape design:

i) Exploration of massing and planning study to reduce the building's visual impact and respect the existing topographic character of the hill as described.

ii) Consider architectural detailing and façade strategy that can accommodate the functional

requirement of the portal building but at the same time allow for creation of atmosphere through consistent selection of materials and detailing that are conducive to the overall architectural quality of "integrating architecture into the hill".

iii) Use of soft landscaping and vertical greening to promote public friendly environment, reduce visual impact from surrounding residential neighbourhood.

iv) Landscape design responding to the adjacent park including the park entrance and the entrance to the popular hiking trail.

2.2 LANDSCAPE AND VISUAL MITIGATION MEASURES

In the Table 9.13 of the approved EIA report and Table A4.6 Implementation Schedule of Landscape and Visual Mitigation Measures of the EM&A Manual, various measures are proposed as landscape and visual mitigation measures during the construction and operation stage. These mitigation measures are considered and will be adopted as far as practicable. The portion of the project site where these mitigation measures have been applied are shown in ***Appendix D***.

Table A4.6 Landscape and Visual Mitigation Measures

EM&A Log Ref.	**Landscape and Visual Mitigation Measures**	**Implementation Details under this Plan**	**Implemented by**	**Implemented Period**
Landscape and Visual (Construction Phase)				
CM1	Careful Site Planning and Management • The site layout and works area including temporary access road(s), stockpiling area(s), temporary construction storage shall be carefully planned to preserve existing landscape resources and trees as far as practicable. • Good site practices shall be enforced to eliminate eyesores from unappealing stockpiling/ storage areas and/or construction activities.	The Contractor will provide unobtrusive sheeting to cover the large temporary stockpiles of excavated material, preventing dust and dirt spreading to adjacent landscape areas and vegetation, and creating a neat and tidy visual appearance. The Contractor will orderly and carefully store the construction plant and building material in order to create a neat and tidy visual appearance.	Chun Wo – Sinohydro JV (CWSJV)	Apr 2023 -Oct 2027
CM2	Careful Design of Slope Works • Slope stabilization methods (i.e., insertion of soil nails and establishment of grillage, etc.)	The Contractor will minimise tree removal and to create a slope surface better blending with the surrounding environment.	Chun Wo – Sinohydro JV (CWSJV)	Apr 2023 -Oct 2027

	shall be carefully formulated to minimise the loss of tree and landscape cover as far as practicable.			
CM3	Tree Preservation • In accordance with DEVB TC (W) No.4/2020 – Tree Preservation or its latest version, existing vegetation shall be retained on site as far as practicable. • Adequate tree protection measures shall be provided for the trees to be retained on site. Relevant guidelines on tree care and protection promulgated by Greening, Landscape and Tree Management Section of Development Bureau shall be observed and followed.	For CM3- Tree Preservation, treatment of existing trees is summarized below, and the tree treatment plan is presented in ***Appendix F.***	Chun Wo – Sinohydro JV (CWSJV)	Apr 2023 -Oct 2027
CM4	Tree Transplanting/ Compensatory Tree Planting • Trees unavoidably affected by the project shall be transplanted as far as practicable in accordance with DEVB TC (W) No.4/2020 – Tree Preservation or its latest version and the latest guidelines promulgated by Greening, Landscape and Tree Management Section of Development Bureau. • Affected trees that are not suitable for transplantation and to be felled shall be	Details of the proposed planting location for compensatory planting is provided in ***Appendix B***. Two areas are available for accommodating all the 263 compensatory trees.	Chun Wo – Sinohydro JV (CWSJV)	Apr 2023 -Oct 2027

	compensated in not less than 1:1 in quantity and in accordance with DEVB TC (W) No.4/2020 – Tree Preservation or its latest version. • Onsite compensation has been prioritised. However, due to land status issues, area of onsite compensatory planting locations are insufficient to compensate for the loss of trees and near site compensatory locations managed by WSD are adopted, as shown in Figure 9.9, Figure 9.10A, Figure 9.10B and Figure 9.11 of the EIA report. • Tree species selected shall be compatible with surrounding existing vegetation.			
CM5	Inspection of Tree Works • Regular site inspection shall be conducted by tree specialist.	We arrange qualified tree specialist to inspect all protected trees on site every month.	Chun Wo – Sinohydro JV (CWSJV)	Apr 2023 -Oct 2027
CM6	Minimisation of Light Impact • Lighting at construction sites shall be carefully controlled at night.	Any construction works conducted at night shall be monitored closely during the construction period to prevent light overspill to nearby VSRs and into the sky. The project will consider other security measures, such as the lights at the necessary entrances and exits will use lower power or try to illuminate the ground, which will minimise the visual impacts.	Chun Wo – Sinohydro JV (CWSJV)	Apr 2023 -Oct 2027
CM7	Erection of Decorative Site Hoarding	Decorative screen hoarding be erected to screen the public from	Chun Wo – Sinohydro JV (CWSJV)	Apr 2023 -Oct 2027

	• Decorative hoarding that is compatible with the surrounding environment shall be erected during construction.	the construction area. We also recommend hoarding graphic enhancement design for this project, completion expected in the fourth quarter of 2023. It will be designed to be compatible with the existing urban context. The Conceptual hoarding plan attached in ***Appendix E.***		
CM8	Reinstatement of Temporarily Disturbed Areas • Temporarily disturbed landscape areas shall be reinstated.	To reinstate the disturbed landscape areas shortly after the completion of works on site. See attached in ***Appendix D.***	Chun Wo – Sinohydro JV (CWSJV)	Apr 2023 -Oct 2027
Landscape and Visual (Operation Phase)				
OM1	Landscape Planting • Landscape planting shall be provided in accordance with DEVB TCW No.3/2012 – Site Coverage of Greenery for Government Building Projects or its latest version. • Planting species shall be compatible with the nearby existing vegetation cover as far as practicable. • Not less than 12-month establishment after completion shall be provided for the landscape planting.	The Landscape Planting design drawing is attached in ***Appendix C***.	WSD (Via Contractor)	Operation stage
OM2	Rooftop Greening Rooftop greening shall be implemented with reference to the references on skyrise greenery provided by the Greening, Landscape & Tree Management Section, Development Bureau.	The green roof garden will be provided to enhance the landscape quality of the structures and mitigate any potential visual impact on adjacent VSRs. The Rooftop design drawings is attached in ***Appendix C***.	WSD (Via Contractor)	Operation stage

OM3	Vertical Greening Vertical greening shall be provided.	The green wall and climbers will be provided to soften the proposed structure. The Vertical design drawings is attached in ***Appendix C***.	WSD (Via Contractor)	Operation stage
OM4	Careful Design of Ancillary Facilities • The orientation and location of the ancillary facilities shall be carefully designed. Its finish shall be non-reflective and dull in colour. • The ancillary facilities are unmanned structures that merely require minimal security services during daytime. There shall be nobody and no lighting illuminating from the buildings at night, except essential street lighting for the portal access road.	Our design drawing already considers the relevant circumstances. The detail design drawings are attached in ***Appendix C***.	WSD (Via Contractor)	Operation stage

2.3 TREE TREATMENT AND COMPENSATION

Below is the Summary of Tree Treatment for Landscape and Visual Mitigation Plan under this Contract,

- No. of trees to be transplanted: 4.
- No. of trees to be retained: 12.
- No. of trees to be fell: 263

2.4 METHOD STATEMENT FOR TREE PRESERVATION AND PROTECTION

For CM3- Tree Preservation, treatment of existing trees is summarized below, and the tree treatment plan is presented in ***Appendix F***.

RETAIN: A total of 12 trees are proposed to be retained in-situ. The trees located along the proposed ancillary building would not be affected and are proposed to be retained. The feasibility of the tree retaining is demonstrated in the section drawings (***Appendix G***).

To enhance the health and the appearance of the retained trees, Tree Protection Zone (TPZ) with advance tree protection works prior to any construction activity are proposed for tree ID Nos.A219, A249, A250, E13, E14, E15, E16, E24, E25, E26, E27 and E68. The method statement for tree preservation and protection within the TPZ is provided in ***Appendix H***. As some parts of the tree crown of tree ID Nos. E24, E25 and E68 fall within the proposed works area of tunnel and site formation area of ancillary building, the corresponding tree crown and branches are proposed to be pruned.

2.5 MAINTENANCE AND MANAGEMENT SCHEDULES

The schedule of maintenance and management for landscape works is shown in Table 2.1

Table 2.1 The schedule of maintenance and management for landscape works

	Month											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Watering *	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fertilizing			Y									
Fungicide / Insecticide			Y									
Weeding	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Securing			Y									
Repairing	As required											
Litter Removal	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Pruning Trees	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Mowing	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Tree Risk Assessment			Y									

*Exact frequency of watering shall be adjusted from time to time as required to suit site conditions

3 SUMMARY

This is the Landscape and Visual Mitigation Plan (LVMP) submission made in fulfillment of Clause 2.14 of Environmental Permit (EP) (No. EP-602/2021). Proposed landscape and visual mitigation measures during the construction phase are in accordance with the Table 9.13 of the approved EIA report and the Table A4.6 Implementation Schedule of Landscape and Visual Measures of the EM&A Manual.

All relevant design measures listed in the Table 9.13 of the approved EIA report and the Table A4.6 Implementation Schedule of Landscape and Visual Measures of the EM&A Manual have been considered in the construction stage. These measures have been incorporated in the landscape and visual mitigation plan as far as practicable.

Appendix A – Method Statements for Tree Felling and Transplanting Works

Contract No:

21/WSD/21

CHUN WO - SINOHYDRO JV

Project Title:

Relocation of Diamond Hill Fresh Water and Salt Water Service Reservoirs to Caverns

Method Statement –

Tree Felling Work

Document No:	CWSJV/1067/MSSF/00010
Revision:	0
Date:	10 February 2023

Method Statement –

Tree Felling Work

Revision History

Revision No.	Description	Revised By	Date
0	First Issue	Kevin TAM	10 February 2023

Method Statement – Tree Felling Work

Document No: CWSJV/1067/MSSF/00010

Revision: 0

Date: 10 February 2023

Prepared and checked:

Position	Signature	Name	Date
Engineer		Kevin Tam	10 February 2023
Assistant Project Manager		Felix Ho	10 February 2023
Environmental Officer		Gemini Lam	10 February 2023
Safety Officer		Eddie Chung	10 February 2023

Approved by:

Site Agent		Kenny Poon	10 February 2023

Table of Content

1 General

1.1 Objective

This method statement describes the sequence and method of tree felling under this contract.

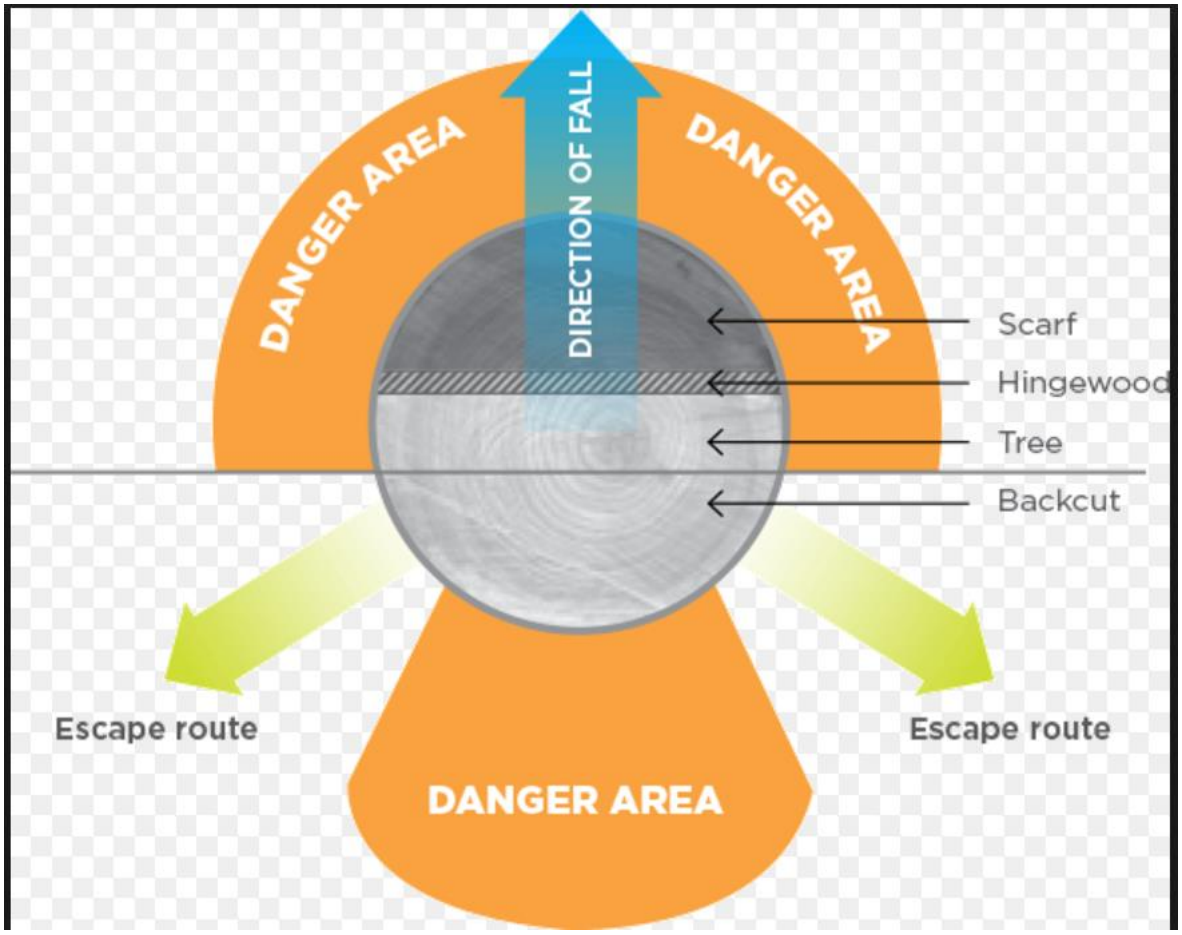
1.2 Scope of works

To conduct tree removal works under this contract as enclosed in **Appendix A**.

2 Methodology

2.1 Preparatory Work

1. Check with the tree tags and the size of tree trunk on site corresponding to the initial tree inspection report as well as the layout plan.
2. Review the condition of the site and tree and conduct work only if the venue is safe to conduct the work and the tree work operation can be conducted safety. Stop any work if condition is not safe.
3. Access slope with safe access such as fixed ladder provided when working on slope.
4. All safety equipment (Safety Helmet, Safety Glasses, Safety Shoes, Chaps, Glove, Ear Plug, Climbing Gear, Rigging Tools etc.) will be checked before use.
5. All equipment (Hand saw, Pole Saw, Chainsaw, Winch etc.) and machinery if necessary (Lifting Platform and Crane Lorry) certificates will be checked before use.
6. Set up traffic cone, warning sign & guarding for the working area to prevent public walking closely and against the hazards of the falling objects within 2 meters around the tree.
7. All works should be supervised by Tree Work Supervisor.
8. Take photo of tree prior to commencement of tree felling work.
9. Check if there is any overhead powerline or any infrastructure such as drainage pipes within the fall zone of the tree.
10. Conduct job briefing to brief the works to be carried out and to remind workers regarding the safety matter aroused from the work. Escape route should be prepared and briefed to each tree worker.



11. Cordon off the area with warning tape to prevent non tree workers entering the area.
12. Designate fall zone and warn workers the area should be entered when tree branches/trunk is prepared and falling into the zone. The area within the fall zone should be cleared and all workers from other trade should be cleared prior to work.

2.2 Branch and Trunk Removal

1. The cutting shall be started from the lowest branches and then to the highest branches in general.
2. Stumps and rootballs of the trees to be felled should also be completely removed by excavator subject to site condition.
3. Rigging gear, ropes, metal chain and winch should be used during the tree removal process.
4. Use pole saw to remove branches in first priority.
5. A safe zone 2m larger in diameter than flat land should be set up as the working environment has more constraints. No people should enter the safe zone when

chainsaw is in operation.

6. A certified Tree climber is necessary if the concerned tree cannot be approached by any vehicle. The climber should follow safety requirements stated in the ANSI Z133.1 and the PS of the Contract.
7. The tree climber will access to the tree by rope and cut branches piece by piece
8. The branches will be lifted with a winch to a designed drop zone on the top of the slope.
9. Heavy branches should be rigged by rigging ropes with certificate specified the work load limit.
10. The tree felling process should avoid any damage to adjacent plants to be retained, including damage to their root systems. The ground around the adjacent plants to be retained should also be reinstated.

2.3 Removal of Tree

1. The cut branches will be further segmented into pieces by ground man using chainsaw.
2. The segmented pieces will then be lifted to the top of the slope using a winch.
3. The cut materials will be removed or recycled off-site to temporary shredding facilities (Lot T7) or disposed to designated landfill (NENT).

3 Plant and Equipment

Safety fence	Hand saw
Chainsaw	Pole Saw
Winch	Grab lorry
Excavator	

4 Environment Concern

4.1 Noise Control

1. The normal daily working hours are 7:00 a.m. to 7:00 p.m. from Monday to Saturday. If necessary, extension of working hours after 7:00 p.m. for weekdays and on Sundays and public holidays will be implemented. All

requirements in Construction Noise Permit (CNP) if granted will be strictly followed.

2. Selection of quiet plant and working methods
3. Reducing the number of plants operating concurrently
4. Providing movable noise barriers/enclosures if necessary
5. Shutting down the plants when not in operating

4.2 Air Control

1. Using of B5 diesel for all plants and equipment.
2. Maintenance of plants periodically to ensure no black smoke emit.
3. Using Non-road Mobile Machinery (NRMM) with NRMM label on site.

4.3 Waste Control

1. The general refuse shall always be disposed to the designated refuse collection point and segregation of waste shall be maintained at all times.

4.4 Water Control

1. All muddy water produced by the works will be treated and delivered into the designed water treatment facilities (i.e. sedimentation tank) before being discharged into the public drainage system
2. Measures will be taken to minimise the muddy water generated from the temporary cut slope surface during rainfall time
3. Excavated area will be shielded with impermeable sheeting during rainfall time and after working hours.

5 SAFETY

5.1 Risk Assessment

Rules of manual handling should refer to the **Appendix B – Risk Assessment**. Ensure the load to be handled would not exceed the personal ability.

Otherwise, more manpower resources should be deployed. Adopt a right posture for carrying out manual handling.

5.2 General Site Safety

All workers must go through a briefing by the Supervisor/ Engineer before commencement of any works. All workers on site shall obtain an approved safety training certificate/ record. Pre-use inspection and maintenance checks shall be carried out on all mechanical equipment before commencement of works.

5.3 Working under Inclement Weather Conditions (Red/Black Storm Warning Signal, Thunderstorm Warning, etc.)

Avoid pruning works in rainy days and avoid outdoor activities when thunderstorm signal is hoisted.

5.4 Working under Hot Weather Conditions

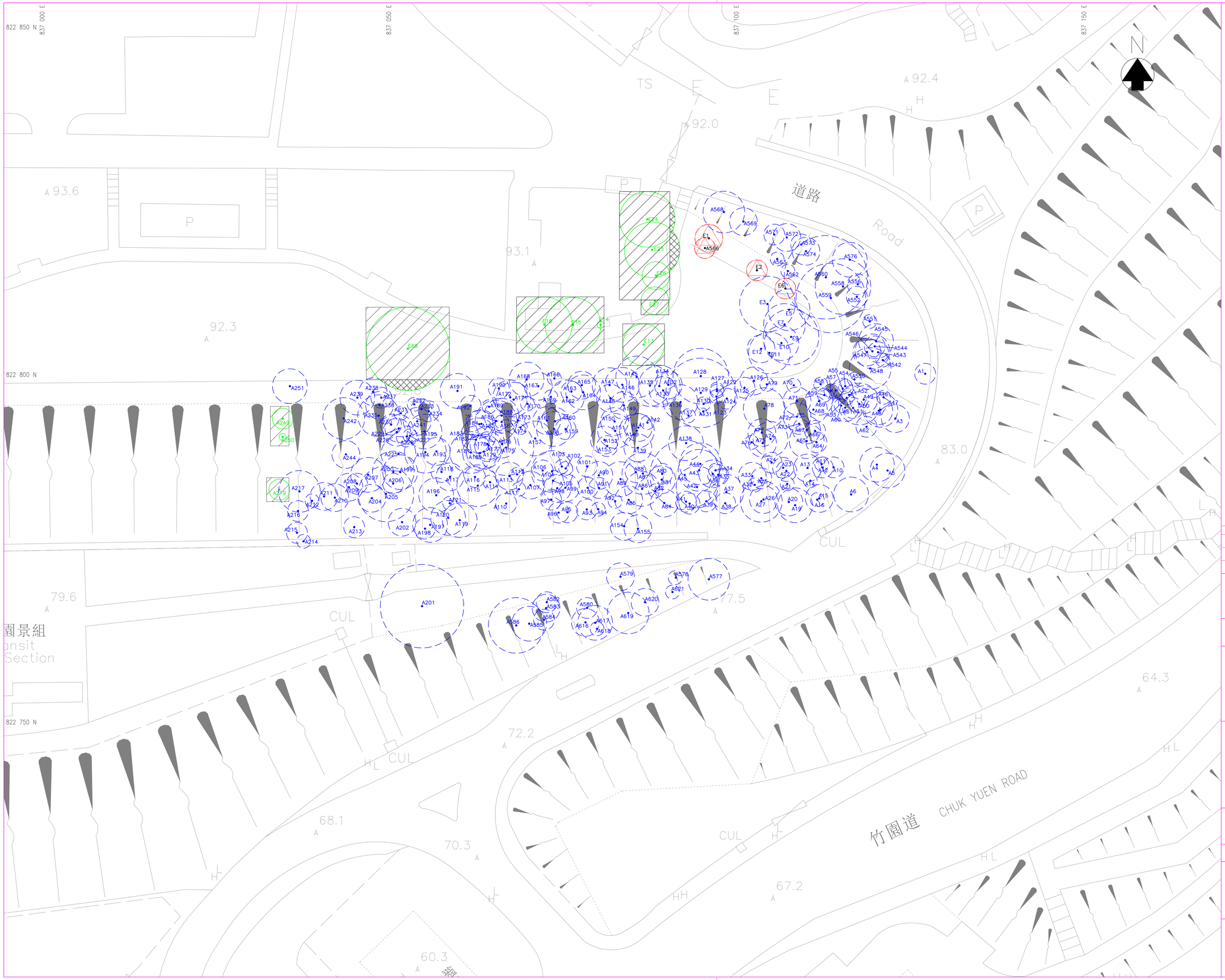
Worker should not work alone under extremely hot weather condition. In case the site personnel is suffering from heat stroke, the other co-worker can help in notifying the safety management staff and arrange proper emergency measures for the sufferer.

5.5 Personal Protective Equipment and Safety

Safety helmets, safety boots, vest and gloves need to be wore all the time. Safety harness need to be wore while working at height. Safety googles and hearing protectors need to be wore while using the machine which will produce noise or ducts. Warning signs and barriers will be erected where necessary.

Appendix A –

Relevant Drawings



LEGEND:

- PROPOSED TREE PROTECTION ZONE
- TREE TO BE RETAINED
- TREE TO BE REMOVED AND COMPENSATED
- TREES TO BE PRUNED
- TREES TO BE TRANSPLANTED

Revision	Date	Description			Initial
		Designed	Checked	Drawn	Checked
Initial					
Date					

Approved

Contract No.
21/WSD/21

Project Title
RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Drawing Title
TREE SURVEY PLAN

Drawing No.
1076/TR/001

Revision
A

Scale
A1 1 : 250
A3 1 : 500

水 務 署
Water Supplies Department

CHUN WO - SINOHYDRO JV

Appendix B –

Risk Assessment

Classification of risk

Likelihood rating:

	Level	Likelihood rating	Prob. Value	Description	Individual Failure Mode
Probability Levels	A	5	10^{-1}	Frequent	Likely to occur frequently
	B	4	10^{-2}	Probable	Will occur several times in the life
	C	3	10^{-3}	Occasional	Likely to occur sometimes in some year
	D	2	10^{-4}	Remote	Unlikely but possible to occur in life
	E	1	10^{-5}	Improbable	So unlikely that occurrence may not be experienced

Consequence:

	Category	Consequence	Degree	Description
Severity Categories	A	5	Catastrophic	Failure causes complete system lost control and/ or potential for fatalities
	B	4	Major	Major damage to system and/or amputation injury to personnel
	C	3	Moderate	Hospitalization for less than 15 days or damage in HK$100K
	D	2	Minor	Failure will probably occur without major damage to system or injury
	E	1	Insignificant	Functional failure of machine or process – no potential injury or damage to properties.

Risk Matrix:

Likelihood rate

5	M	M	H	H	H
4	L	M	M	H	H
3	L	M	M	M	H
2	L	L	M	M	M
1	L	L	L	L	M
	1	2	3	4	5

Consequence

Risk Factor Number (Degree of Risk) = Likelihood X Consequence

The higher the Risk Factor Number, the higher the risk and more safety precautions should be taken.

Degree of Risk and Action Priority:

High (H) – Degree of Risk within the range 15-25

1. Review the work procedure immediately;
2. Formulate safety measures to reduce the risk to "Low" level;
3. Supervision by competent person.

Medium (M) - Degree of Risk within the range 5-14

1. Review the work procedure within reasonable time.
2. Formulate safety measures to reduce the risk to "Low" level.

Low (L) - Degree of Risk within the range 1-4

1. Follow in-house safety rules and statutory requirements.

*If the control measures are unable to reduce the risk to "Low" level:

1. The method statement shall be reviewed by the engineer;
2. Re-assess the risk according to the revised method statement and procedures.

Item	Activities / Works	Hazard	Risk Level			Control Measures	Follow up by	Personal Protective Equipment	Training	Action Priority (H/M/L)	Residual Risk
			Likelihood	Consequence	Risk Factor						
1.	Preparation Work	Workers expose to the general site hazards	2	1	2	1. Safety helmets, safety boots and reflective vest should be mandatory and be wore at all times on site and as condition of entry. 2. Provision of good housekeeping 3. Site safety supervision should be monitored to the compliance of site.	F ASO	Safety Helmet Safety Boots Reflective Vest	Induction Training	L	1x1 L
2.	Remove existing debris around the tree be fallen	Struck by falling object	2	3	6	1. Provide safety training 2. Mechanical mean for lifting and transportation 3. Fenced off the area that tree might be fallen	F ENG ASO	Safety Helmet	Induction Training	L	2x1 L
3.	Workers access to tree	Fall of person	2	3	6	1. Provide a safe mean of access 2. Fix ladders securely prior to use on each location of work 3. Provide elevation work platform 4. Prohibit the ladders used for working more than 2 metres high activity 5. Use of safety harness and independent life line	F ENG ASO	Safety Harness	Working at Height	L	2x1 L

Item	Activities / Works	Hazard	Risk Level			Control Measures	Follow up by	Personal Protective Equipment	Training	Action Priority (H/M/L)	Residual Risk
			Likelihood	Consequence	Risk Factor						
4.	Lifting operation by Mobile Crane Lifting	Fall of heavy loading, jib collapse, (Machinery failure)	5	4	20	● Competent engineer to conduct details examination and issue Form 3, 5. Before obtaining the valid certificate, any operation is strictly prohibited. ● Check the crane everyday by crane operator before operation. ● Check the crane weekly by appointed operator complete and sign the statutory Form 1 ● Detail inspection conducted by mechanic monthly. ● All maintenance record and certificates to be filed and kept in site safety department. ● Safety officer shall check all certificate of the crane before operation.	F ENG ASO SO	Safety helmet Safety Shoes Hi-Vis Vest	Induction Training	H	2x1 L
		Fall of heavy loading (Human error)	4	3	12	● Crane operator should be trained by CITA or equivalent and obtained valid operator license. ● Competent signaler should be appointed. ● Crane operator, signaler & rigger should attend on-site safety operation training. ● Never let suspended heavy load unattended. ● Never over load the mobile crane. ● Display the safe working load of the crane ● Fence off the lifting operation zone, adopted permit to enter system, only trained workers is allowed to enter the zone.	F ENG ASO SO	Safety helmet Safety Shoes Hi-Vis Vest	Lifting Operation	H	2x1 L
		Lifting gear failure	5	4	20	● Riggers shall attached the lifting gear onto lifting point while lifting the limbs ● Riggers shall checked lifting gears before operation ● All lifting gear, shackle, lifting wires, webbing slings etc. shall be examined by RPE and obtained valid Form 6, 7. ● Safety officer to check all certificate of the lifting gear before use and maintain record in the safety department. ● Color code system of lifting gear shall be applied for easier monitoring.	F ENG ASO SO		Lifting operation	M	2x1 L

Item	Activities / Works	Hazard	Risk Level			Control Measures	Follow up by	Personal Protective Equipment	Training	Action Priority (H/M/L)	Residual Risk
			Likelihood	Consequence	Risk Factor						
		Turnover of mobile crane	2	3	6	● The outrigger must be fully extended. ● The mat or the timber blocks of at 3 times diameter of the outrigger and in sound condition shall be provided. ● Never overload the crane, overload cut off device is recommended to install. ● The movement of mobile crane must be guided by lifting supervisor or the signaler. ● Area foreman should arrange a safe access. ● Signaler should guide the mobile crane. ● If the ground surface is soft and uneven, use roller to compact the soil surface.	F ENG ASO SO		Lifting operation	M	2x1 L
		Suspended loading strike on object or nearby person.	2	3	6	• The spot of lifting operation should be fully fenced. • Warning sign should be displayed. • Appointed signaler should guide the operator in the whole lifting process. • No trespasser is allowed. • Sub-contractor supervisor should be station on spot to supervise the whole operation. • All workers should wear safety hamlet and hi-vis vest. • If any other heavy machinery is operating in the same time same place, signaler should also coordinate the machinery movement.	F ENG ASO SO	Hi-vis vest	Lifting operation	M	2x1 L
5.	Use of cherry picker	Fall of person	2	4	8	1. Provide safety training of cherry picker 2. Use of safety harness and independent life line 3. Ensure cherry picker with valid certificate 4. Not over the safety working load of cherry picker	F ENG SO	Safety Harness	Safe use of cherry picker	M	1x1 L

Item	Activities / Works	Hazard	Risk Level			Control Measures	Follow up by	Personal Protective Equipment	Training	Action Priority (H/M/L)	Residual Risk
			Likelihood	Consequence	Risk Factor						
6.	Use of electric hand tools and chainsaws to cut the wing and branches	Electric shock	2	4	8	1. The generator and power hand tools to be inspected by qualified electrician, recorded and labeled before use 2. Workers to visual inspect electric hand tools are in good condition on daily basis before use 3. Ensure electric hand tools are IP67 standard and 110V	F SO	Safety helmet Safety boots Reflective Vest	Electrical Safety	M	1x2 L
		Noise hazard	2	3	6	1. Noise Assessment 2. Hearing protection zone marked 3. People working in the hearing protection zone must wear ear protection equipment	F ASO	Hearing protector	Noise Protection	L	1x2 L
		Falling Object	2	2	4	1. To setup rigid barrier along working area and display warning	F ASO	Safety Helmet	Falling Object	L	1x1 L
		Body injury	2	2	4	1. Warning protective clothing and safety gloves	F ASO	Safety Gloves Protective Clothes	Proper use of PPE	L	1x1 L
		Manual handing	2	3	6	1. Provide safety training 2. To use mechanical mean for lifting and transportation	F ASO	Safety Gloves	Manual Handling	L	1x1 L

Item	Activities / Works	Hazard	Risk Level			Control Measures	Follow up by	Personal Protective Equipment	Training	Action Priority (H/M/L)	Residual Risk
			Likelihood	Consequence	Risk Factor						
7.	General works activities	Heatstroke	2	2	4	1. Allow workers to take regular breaks or rotate to other area within the shift to reduce exposure to the hot environment. 2. Make arrangements for workers to rest in a cool or shady place during very hot periods. 3. Provide cool portable water for workers during work and encourage them to take plenty of water to replenish the fluid lost through sweating. 4. Encourage them to wear light-colored clothing to minimize heat absorption and enhance heat dissipation. 5. Request supervisor to pay attention to any report of workers suffering from 6. Symptoms of heat stroke. 7. When temperature is higher than 40 ℃, no work shall be allowed. 8. Provide constant ventilation to reduce temperature inside.	ENG SO ASO	N/A	Heatstroke Prevention	L	1X2 L
		Lightning Warnings / Typhoon and Heavy Rainstorm Signal	4	3	12	1. Assign Site's responsible person to monitor weather conditions (such as Hong Kong Observatory – Lightning Location Information) 2. Suspension and resumption of outdoor activities shall be planned in advance. 3. Safe execution procedures shall be set up and let all employees familiar with safe precautions include but not limited to: (1) All construction materials must be properly protected against damage. (2) Booms and jibs of cranes and heavy mechanical equipment should be lowered to the ground and adequately secured. (3) Non-essential electricity supplies must be isolated.	ENG SO ASO	N/A	N/A	L	1X2 L

Appendix C –

Relevant training and qualifications

Muni Arborist

Staff Curriculum Vitae LI Tin Sum

Professional History

10/2016 – Present	**Foreman** Muni Arborist Limited
01/2015 – 10/2016	**Tree Climber** Dragon Tree and Landscape Contractor Ltd

Academic Training

Prof. Cert	Professional Certificate in Arboriculture and Tree Work Supervision	2018	IVE
Diploma	Arboriculture	2017	The Chinese University of Hong Kong

Professional Qualification

Certified Tree Worker	2018	International Society of Arboriculture (ISA)
Qualified Chainsaw and Pruning (Ground) Technician	2017	International Society of Arboriculture Hong Kong Chapter (ISAHK)
Supervision of Tree Works	2016	Construction Industry Council
Occupational Safety and Health in Arboriculture	2015	Occupational Safety and Health Council

IVE VTC

This is to certify that

LI Tin Sum

having completed a programme of study and passed the requisite assessments and satisfied all other requirements
is hereby awarded

Professional Certificate in Arboriculture and Tree Work Supervision (Pass)

by the Vocational Training Council, Hong Kong
Given this Second day of November, Two Thousand and Eighteen

茲證明

李天琛

修畢課程成績及格
職業訓練局依章授予

樹藝學及樹木工作監督專業證書
(合格)

二零一八年十一月二日

Dr. WONG Sin Ying, Lillian, Principal
Hong Kong Institute of Vocational Education (Sha Tin)
香港專業教育學院(沙田)院長
黃倩瑛博士

Mrs. Carrie Yau, Executive Director
Vocational Training Council
職業訓練局執行幹事尤曾家麗女士

Date of issue 發出日期: 2018.11.02

香港中文大學專業進修學院
School of Continuing and Professional Studies
The Chinese University of Hong Kong

茲證明
This is to certify that

李天琛
LI, Tin Sum

考試及格 照章授予
樹藝文憑

having passed the requisite examinations
has this day been awarded the
Diploma in Arboriculture

二零一七年七月四日
4 July 2017

大學擴展教育課程局主席
Chairman
University Extension Board

專業進修學院院長
Director
School of Continuing and
Professional Studies

職業安全健康局
OCCUPATIONAL SAFETY & HEALTH COUNCIL

茲 證 明

李天琛

於二零一五年八月八日至二零一五年八月十五日
完成一項由本局主辦之

樹藝工作安全健康

並授予乙張

培訓證書

This is to certify that

LI TIN SUM

has completed a training course
on 8 August 2015 to 15 August 2015
conducted by this Council on

Occupational Safety and Health in Arboriculture

and has been awarded a

Training Certificate

OCCUPATIONAL SAFETY & HEALTH COUNCIL
職業安全健康局

(ARB15ES0261075)

Bonnie YAU 游雯
Executive Director 總幹事
15 August 2015

CONSTRUCTION INDUSTRY COUNCIL
建 造 業 議 會

This is to certify that

LI, Tin Sum

has successfully completed

an 18-hour

SUPERVISION OF TREE WORKS COURSE

on 27 April 2016

茲證明

李 天 琛

於二零一六年四月二十七日修畢

十八小時

樹木工程監管課程

Issue Date : 27 April 2016

頒授日期 ：二零一六年四月二十七日

Serial No. 證書編號: M-STW-1602-00195

International Society of Arboriculture (ISA)
- Hong Kong Chapter
國際樹木學會香港分部

April 6, 2018

Dear Li Tin Sum 李天琛,
Flat H, 16/F, Blk 1, Melody Garden,
Tuen Mun

The certification valid period is extended to 5 years

We are pleased to inform you that the expiration date of your Certificate of Qualified Chainsaw and Pruning (Ground) Technician Assessment [QCPT] has been automatically extended from 30 Jul, 2020 to 30 Jul, 2022. The valid period of this certification has been changed from 3 years to 5 years which has been effective from 2018.

The updated certificate is attached. Thank you for your support to ISA Hong Kong Chapter.

證書有效期由三年改為五年

本學會分部現誠意通知您關於您的電油鋸及修剪(地上)技師證書之有效期將自動由二〇二〇年七月三十日延長至二〇二二年七月三十日。由二〇一八年起，所有該證書之有效期均由原本之三年改為五年。

現附上已更新之證書。感謝您對國際樹木學會香港分部的支持。

ISA Hong Kong chapter
國際樹木學會香港分部

二〇一八年四月六日

Address: PO Box 83282, Concorde Road Post Office, Kowloon.
Tel.: (852) 5228 5526
Website: www.isahongkong.org

INTERNATIONAL SOCIETY OF RBORICULTURE
HONG KONG CHAPTER

THIS CERTIFIES THAT

LI TIN SUM

has successfully completed the requirements established by the Board of ISA – Hong Kong Chapter, and is therefore recognized as

QUALIFIED CHAINSAW AND PRUNING (GROUND) TECHNICIAN (QCPT)

Certification Committee Chair,
ISA Hong Kong Chapter

QCPT-0027	30 Jul, 2017	30 Jul, 2022
Certificate No.	Certified Date	Expiration Date

INTERNATIONAL SOCIETY OF ARBORICULTURE

CERTIFIED TREE WORKER CLIMBER SPECIALIST™

Tin Sum Li

Having successfully completed the requirements set by the
International Society of Arboriculture, the above named
is hereby recognized as an ISA Certified Tree Worker Climber Specialist®

Kevin Martlage
Director of Credentialing
International Society of Arboriculture

Caitlyn Pollihan
Executive Director
International Society of Arboriculture

HK-1624T	22 Apr 2018	30 Jun 2021
Certification Number	Certified Since	Expiration Date

Muni Arborist

Staff Curriculum Vitae — Man Chun Ning

Professional History

9/2020 – Present

Project Coordinator
Muni Arborist Limited

Academic Training

Prof. Dip.	Professional Diploma in Horticulture and Landscape Management	2021	Technological and Higher Education Institute of Hong Kong (THEI)

Member of VTC Group
VTC 機構成員

Technological and Higher Education Institute of Hong Kong
TRANSCRIPT OF STUDY

Name : MAN Chun Ning **Student No. :** 174115460

Study Mode : Part-time **I.D. Card No. :** Y100518(7)

Programme : Professional Diploma in Horticulture and Landscape Management **Programme Code :** DS524101

Module		Completion Date	Contact Hours	Credit Point	Grade
Academic Years 2018/2019 and 2019/2020					
DHL41001	Plant Knowledge	12 November 2018	42	3	D
DHL41002	Plant Culture	12 December 2019	42	3	C+
DHL41003	Plant Protection and Tree Biomechanics	14 July 2020	42	3	B-
DHL41004	Plant Biology	9 November 2019	28	2	D+
DHL42001	Communication Skill	3 October 2018	28	2	C+
DHL42002	Landscape Construction	15 April 2019	28	2	B-
DHL42003	Tree Risk Assessment and Mitigation	29 July 2019	42	3	C-
DHL42004	Arboriculture and Landscape Management	9 September 2019	28	2	C

Cumulative Credit Points Attained : 20
Cumulative Credit Points Exempted : 0

Award : Pass in Professional Diploma in Horticulture and Landscape Management
[Award Date: 9 February 2021]

Technological and Higher Education Institute of Hong Kong
Registry
香港高等教育科技學院

Registrar

Date : 1 March 2021

Please read the notes on the last page.

Member of VTC Group
VTC 機構成員

Notes

Except for Modules which are assessed on a Pass/Fail (P/F) basis, student's performance in a module is expressed in Grades with A being the highest grade, D the minimum passing grade and F for fail.

Grade	Description of Standard#
A	Excellent
A-	
B+	Very Good
B	
B-	Good
C+	Satisfactory
C	
C-	Pass
D+	
D	
F	Fail

 # Not applicable to modules assessed on a P/F basis

SA : Supplementary Assessment

I : Incomplete

Z : Exempted from study with or without credit transfer

W : Withdrawal

WF : Withdrawal with Failure

@ : Module assessed on a P (Pass) / F (Fail) basis

PDHLM AY2017/18 Class B – ETSS Reimbursement

Faculty of Design and Environment, THEi <thei-fde@vtc.edu.hk>

週四 2020/7/30 下午 02:12

副本: LO YUK MING <rymlo@vtc.edu.hk>; Yelo Wong <yelow@vtc.edu.hk>

Dear Students,

Kindly note that the ETSS reimbursed / to reimburse the following modules for your information if you found successfully completed the module:-

April 2019

Module Code	Module Name	Credit Points
DHL42001	Communication Skill	2

October 2019

Module Code	Module Name	Credit Points
DHL41004	Plant Biology	2

August 2020

Module Code	Module Name	Credit Points
DHL41001	Plant Knowledge	3
DHL41002	Plant Culture	3
DHL41003	Plant Protection and Tree Biomechanics	3
DHL42002	Landscape Construction	2
DHL42003	Tree Risk Assessment and Mitigation	3
DHL42004	Arboriculture and Landscape Management	2

60% of tuition fee of the aforementioned modules will be reimbursed (Credit Points x $2,250 per credit point x 60%) to your bank account registered to ETSS. Depends on your bank registered to ETSS, some more time may be needed for handling transaction. Should you have enquiries on the ETSS scheme, please contact ETSS Enquiry Hotline at 2435 9423 or by email at vplus@vtc.edu.hk.

Best regards
Faculty of Design and Environment
Technological and Higher Education Institute of Hong Kong (THEi)

All information and opinions given therein are entirely those of the message sender(s) and are not necessarily endorsed by the Vocational Training Council.

Contract No:

21/WSD/21

CHUN WO - SINOHYDRO JV

Project Title:

Relocation of Diamond Hill Fresh Water and Salt Water Service Reservoirs to Caverns

Method Statement –

Tree Transplanting Work

Document No:	CWSJV/1067/MSSF/00011
Revision:	0
Date:	10 February 2023

Method Statement –

Tree Transplanting Work

Revision History

Revision No.	Description	Revised By	Date
0	First Issue	Kevin TAM	10 February 2023

Method Statement –

Tree Transplanting Work

Document No: CWSJV/1067/MSSF/00011

Revision: 0

Date: 10 February 2023

Prepared and checked:

Position	Signature	Name	Date
Engineer		Kevin Tam	10 February 2023
Assistant Project Manager		Felix Ho	10 February 2023
Environmental Officer		Gemini Lam	10 February 2023
Safety Officer		Eddie Chung	10 February 2023

Approved by:

Site Agent		Kenny Poon	10 February 2023

Table of Content

1 General

1.1 Objective

This method statement describes the sequence and method of tree transplanting under this contract.

1.2 Scope of works

To conduct tree transplanting work under this contract as attached in **Appendix A**. Justifications on the feasibility of transplanting are also listed in **Appendix B**.

2 Methodology

2.1 Preparatory Work

1. The tree species and tree tag should be checked to confirm it is the approved transplant tree.
2. Cables and nearby utilities detection as well as protection should be carried out by the competent person from main contractor in case of any underground utilities were laid within the area of root pruning and its vicinity prior to commencement of root pruning works.
3. All equipment and machinery certificates will be checked before use.
4. Lifting cables, chains, straps, and/or slings shall be inspected and used according to manufactures' instructions and specifications.
5. Digging and root pruning tools shall be sharp and clean in order to cut without breaking, crushing or tearing roots.
6. Safety precautions shall be taken to protect those engaged in operation as well as people and properties in the vicinity. A cordon off area which is 2 meters from the working area will be setup to avoid people walking closely and against the hazards of the falling objects.
7. Working area shall be restricted from outsiders.
8. On-site Tree Work Supervisor should supervise the transplant works, and give advice if necessary.

2.2 Site Preparation of Final Receptor Site

1. The final location will be graded with backhoe excavator with well surface drain, weeds will be removed.
2. Bamboo stake scaffolding or guy wires will be installed in order to secure the transplanted tree against strong wind.
3. The trees will be watered at least twice a week for the first month after transplant.
4. Upon arrival of the final location, all ties on branches will be removed.
5. All transplanted trees will be kept upright with guy wires or bamboo stake scaffolding with protection pad at all times within the final location.
6. Photographic record of the transplanted trees will be submitted in quarterly monitoring report.

2.3 Crown Pruning

1. Crown cleaning as well as thinning subject to tree species and health condition in order to remove unhealthy, damaged, diseased, dead branches so as to minimise susceptibility to pests and diseases and reduce water loss through transpiration.
2. Pruning should not over 25% of crown under normal situation.

2.4 Root-ball Preparation

1. A maximum size of root-ball (1m) will be maintained whereas practical and necessary to ensure the higher survival rate for transplant trees. Since many of the trees are confined in planter or restricted by concrete/facilities, size of the root-ball is subject to site condition.
2. The trench size of root ball should be at least 300mm wide and 1000mm deep if the site condition allows.
3. The depth of the root-ball should be not less than 600mm deep unless there is site constraint such as slope or planter.
4. The proposed circumference of the root-ball will be marked on ground and approved by the Supervisor.

5. Roots which are severed in the course of root pruning shall be cut cleanly.
6. Root activator shall be applied at regular intervals according to the manufacturer's instruction.
7. Before lifting, the outer edge of the previously dug trenches shall be loosened from the surrounding soil and the root ball will be undercut to allow the tree to be lifted free from the ground with the root ball intact.
8. Adequate support e.g. staking or guy wires will be provided for all transplant trees in all stages and will be checked regularly.
9. Damp hessians should cover the root ball throughout the time of uplifting until the tree is transplanted to receptor site.
10. Photographic record of all transplant stages will be provided.

2.5 Tree Lifting and Transportation

1. Proper access including piling of metal platforms above the concrete covers should be provided to facilitate the entry and parking for heavy crane/lorry.

2. The tree will be supported by crane lorry before the under cutting work.

3. During uplifting, the tree will be lifted by its root ball which is properly prepared and wrapped.

4. The trunk and branches should be padded with several thickness of burlap to prevent damages and injury during the transplanting operation. Avoid using self-tightening slings around trunk or branches in order not to bruise or rupture the bark.

5. The nylon straps will be used to secure the root ball during lifting.

6. Root ball will be undercut by hand saw or pruner to allow the tree to be lifted free from ground with the soil intact as far as practical. The base of the root-ball will be properly wrapped and protected during uplifting.

7. The cables for lifting will be wrapped with protective rubber sheaf to prevent damage.

8. The lifted trees will be placed lying flat on the truck platform or long trailer. The whole tree including the aerial parts shall be immediately covered with a tarpaulin to protect against excessive sunlight, wind and drought. Care shall be taken in packing to prevent over-heating with its resultant loss of foliage.

9. Trees shall be transplanted to the designated location within 2 hours after lifting.

10. When necessary, pruning will be conducted to facilitate passage and transport to receptor site.

11. Tree Work Supervisor will supervise the uplifting work.

12. Trees will be transplanted to the receptor site upon confirmation from the Supervisor.

2.6 Post-transplanting/ Establishment Work

1. Immediately after transplanting, transplanted trees shall be well watered, using enough water to thoroughly soak the root-ball.
2. Trees shall be treated with establishment works for 12 months. The following general maintenance works shall be carried out during the establishment period according to general specification:
   - Watering
   - Mulching
   - Firming up by guying/bamboo staking
   - Litter collection
   - Pruning
   - Root activator if instructed
   - Control of pest and disease
   - Post-planting fertilizing at least two applications
   - Quarterly inspection and provide quarterly photo record showing the condition of transplanted trees

4 Plant and Equipment

Safety fence	Backhoe excavator
Crane lorry	Guy wires
Pruner	Nylon straps
Shovels	Tarpaulins
Chainsaw	Hessian mat
Gasoline saw	Wire net
Round sling	Truck platform
Steel shackle	75tons RB

5 Environment Concern

5.1 Noise Control

1. The normal daily working hours are 7:00 a.m. to 7:00 p.m. from Monday to Saturday. If necessary, extension of working hours after 7:00 p.m. for weekdays and on Sundays and public holidays will be implemented. All requirements in Construction Noise Permit (CNP) if granted will be strictly followed.
2. Selection of quiet plant and working methods
3. Reducing the number of plants operating concurrently
4. Providing movable noise barriers/enclosures if necessary
5. Shutting down the plants when not in operating

5.2 Air Control

1. Using of B5 diesel for all plants and equipment.
2. Maintenance of plants periodically to ensure no black smoke emit.
3. Using Non-road Mobile Machinery (NRMM) with NRMM label on site.

5.3 Waste Control

1. The general refuse shall always be disposed to the designated refuse collection point and segregation of waste shall be maintained at all times.
2. Yard waste will be disposed to Y Park

5.4 Water Control

1. All muddy water produced by the works will be treated and delivered into the designed water treatment facilities (i.e. sedimentation tank) before being discharged into the public drainage system
2. Measures will be taken to minimise the muddy water generated from the temporary cut slope surface during rainfall time
3. Excavated area will be shielded with impermeable sheeting during rainfall time and after working hours.

6 SAFETY

6.1 Risk Assessment

Rules of manual handling should refer to the **Appendix B – Risk Assessment**. Ensure the load to be handled would not exceed the personal ability. Otherwise, more manpower resources should be deployed. Adopt a right posture for carrying out manual handling.

6.2 General Site Safety

All workers must go through a briefing by the Supervisor/ Engineer before commencement of any works. All workers on site shall obtain an approved safety training certificate/ record. Pre-use inspection and maintenance checks shall be carried out on all mechanical equipment before commencement of works.

6.3 Working under Inclement Weather Conditions (Red/Black Storm Warning Signal, Thunderstorm Warning, etc.)

Avoid pruning works in rainy days and avoid outdoor activities when thunderstorm signal is hoisted.

6.4 Working under Hot Weather Conditions

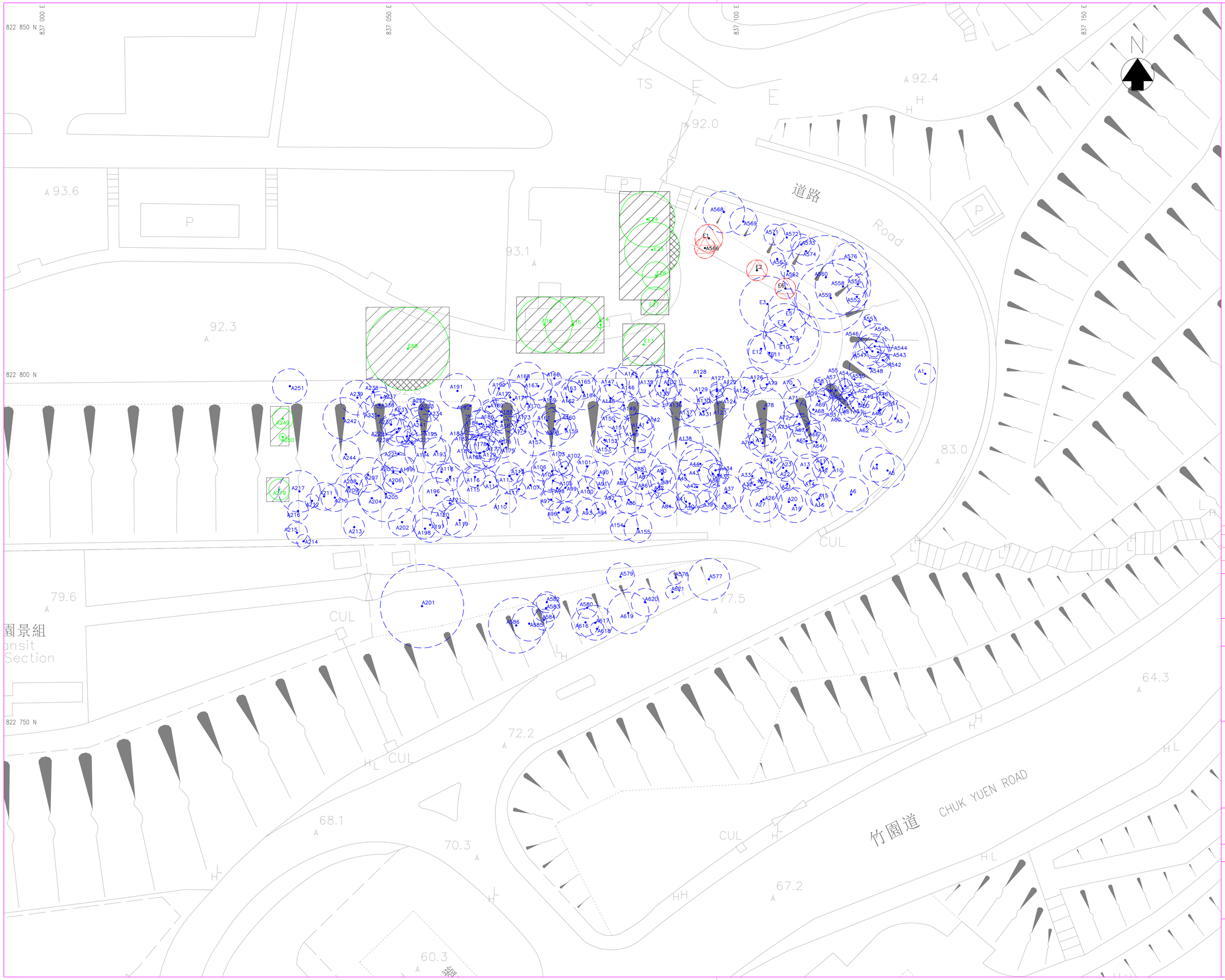
Worker should not work alone under extremely hot weather condition. In case the site personnel is suffering from heat stroke, the other co-worker can help in notifying the safety management staff and arrange proper emergency measures for the sufferer.

6.5 Personal Protective Equipment and Safety

Safety helmets, safety boots, vest and gloves need to be wore all the time. Safety harness need to be wore while working at height. Safety googles and hearing protectors need to be wore while using the machine which will produce noise or ducts. Warning signs and barriers will be erected where necessary.

Appendix A –

Relevant Drawings



LEGEND:

- PROPOSED TREE PROTECTION ZONE
- TREE TO BE RETAINED
- TREE TO BE REMOVED AND COMPENSATED
- TREES TO BE PRUNED
- TREES TO BE TRANSPLANTED

Revision	Date	Description			Initial
		Designed	Checked	Drawn	Checked
Initial					
Date					

Approved

Contract No.
21/WSD/21

Project Title
RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Drawing Title
TREE SURVEY PLAN

Drawing No.
1076/TR/001

Revision
A

Scale
A1 1 : 250
A3 1 : 500

水 務 署
Water Supplies Department

CHUN WO - SINOHYDRO JV

Appendix B –

Risk Assessment

Classification of risk

Likelihood rating:

	Level	Likelihood rating	Prob. Value	Description	Individual Failure Mode
Probability Levels	A	5	10^{-1}	Frequent	Likely to occur frequently
	B	4	10^{-2}	Probable	Will occur several times in the life
	C	3	10^{-3}	Occasional	Likely to occur sometimes in some year
	D	2	10^{-4}	Remote	Unlikely but possible to occur in life
	E	1	10^{-5}	Improbable	So unlikely that occurrence may not be experienced

Consequence:

	Category	Consequence	Degree	Description
Severity Categories	A	5	Catastrophic	Failure causes complete system lost control and/ or potential for fatalities
	B	4	Major	Major damage to system and/or amputation injury to personnel
	C	3	Moderate	Hospitalization for less than 15 days or damage in HK$100K
	D	2	Minor	Failure will probably occur without major damage to system or injury
	E	1	Insignificant	Functional failure of machine or process – no potential injury or damage to properties.

Risk Matrix:

Likelihood rate

5	**M**	**M**	**H**	**H**	**H**
4	**L**	**M**	**M**	**H**	**H**
3	**L**	**M**	**M**	**M**	**H**
2	**L**	**L**	**M**	**M**	**M**
1	**L**	**L**	**L**	**L**	**M**
	1	2	3	4	5

Consequence

Risk Factor Number (Degree of Risk) = Likelihood X Consequence

The higher the Risk Factor Number, the higher the risk and more safety precautions should be taken.

Degree of Risk and Action Priority:

High (H) – Degree of Risk within the range 15-25

1. Review the work procedure immediately;
2. Formulate safety measures to reduce the risk to “Low” level;
3. Supervision by competent person.

Medium (M) - Degree of Risk within the range 5-14

1. Review the work procedure within reasonable time.
2. Formulate safety measures to reduce the risk to “Low” level.

Low (L) - Degree of Risk within the range 1-4

1. Follow in-house safety rules and statutory requirements.

*If the control measures are unable to reduce the risk to “Low” level:

1. The method statement shall be reviewed by the engineer;
2. Re-assess the risk according to the revised method statement and procedures.

Item	Activities / Works	Hazard	Risk Level			Control Measures	Follow up by	Personal Protective Equipment	Training	Action Priority (H/M/L)	Residual Risk
			Likelihood	Consequence	Risk Factor						
1.	Preparation Work	Workers expose to the general site hazards	2	1	2	1. Safety helmets, safety boots and reflective vest should be mandatory and be wore at all times on site and as condition of entry. 2. Provision of good housekeeping 3. Site safety supervision should be monitored to the compliance of site.	F ASO	Safety Helmet Safety Boots Reflective Vest	Induction Training	L	1x1 L
2.	Workers access to tree	Fall of person	2	3	6	1. Provide a safe mean of access 2. Fix ladders securely prior to use on each location of work 3. Provide elevation work platform 4. Prohibit the ladders used for working more than 2 metres high activity 5. Use of safety harness and independent life line	F ENG ASO	Safety Harness	Working at Height	L	2x1 L
3.	Delivery of nos tree	Fall of Tree	2	5	10	1. Ensure the crane operator is holding a valid license. 2. Ensure all LA/LG holding a valid license before use. 3. Do not exceed the SWL and allowable lifting angle. 4. The SWL should be clearly shown 5. Appoint a banksman or rigger to conduct lifting operation.	SO F SuA ASO	Safety helmet Safety shoes Hi-Vis Vest Whistle	Lifting operation	H	1X4 L

Item	Activities / Works	Hazard	Risk Level			Control Measures	Follow up by	Personal Protective Equipment	Training	Action Priority (H/M/L)	Residual Risk
			Likelihood	Consequence	Risk Factor						
4.	Lifting operation by Mobile Crane Lifting	Fall of heavy loading, jib collapse, (Machinery failure)	5	4	20	1. Competent engineer to conduct details examination and issue Form 3, 5. Before obtaining the valid certificate, any operation is strictly prohibited. 2. Check the crane everyday by crane operator before operation. 3. Check the crane weekly by appointed operator complete and sign the statutory Form 1 4. Detail inspection conducted by mechanic monthly. 5. All maintenance record and certificates to be filed and kept in site safety department. 6. Safety officer shall check all certificate of the crane before operation.	F ENG ASO SO	Safety helmet Safety Shoes Hi-Vis Vest	Induction Training	H	2x1 L
		Fall of heavy loading (Human error)	4	3	12	1. Crane operator should be trained by CITA or equivalent and obtained valid operator license. 2. Competent signaler should be appointed. 3. Crane operator, signaler & rigger should attend on-site safety operation training. 4. Never let suspended heavy load unattended. 5. Never over load the mobile crane. 6. Display the safe working load of the crane 7. Fence off the lifting operation zone, adopted permit to enter system, only trained workers is allowed to enter the zone.	F ENG ASO SO	Safety helmet Safety Shoes Hi-Vis Vest	Lifting Operation	H	2x1 L

Item	Activities / Works	Hazard	Risk Level			Control Measures	Follow up by	Personal Protective Equipment	Training	Action Priority (H/M/L)	Residual Risk
			Likelihood	Consequence	Risk Factor						
		Lifting gear failure	5	4	20	● Riggers shall attached the lifting gear onto lifting point while lifting the limbs ● Riggers shall checked lifting gears before operation ● All lifting gear, shackle, lifting wires, webbing slings etc. shall be examined by RPE and obtained valid Form 6, 7. ● Safety officer to check all certificate of the lifting gear before use and maintain record in the safety department. ● Color code system of lifting gear shall be applied for easier monitoring.	F ENG ASO SO		Lifting operation	M	2x1 L
		Turnover of mobile crane	2	3	6	● The outrigger must be fully extended. ● The mat or the timber blocks of at 3 times diameter of the outrigger and in sound condition shall be provided. ● Never overload the crane, overload cut off device is recommended to install. ● The movement of mobile crane must be guided by lifting supervisor or the signaler. ● Area foreman should arrange a safe access. ● Signaler should guide the mobile crane. ● If the ground surface is soft and uneven, use roller to compact the soil surface.	F ENG ASO SO		Lifting operation	M	2x1 L
		Suspended loading strike on object or nearby person.	2	3	6	• The spot of lifting operation should be fully fenced. • Warning sign should be displayed. • Appointed signaler should guide the operator in the whole lifting process. • No trespasser is allowed. • Sub-contractor supervisor should be station on spot to supervise the whole operation. • All workers should wear safety hamlet and hi-vis vest. • If any other heavy machinery is operating in the same time same place, signaler should also coordinate the machinery movement.	F ENG ASO SO	Hi-vis vest	Lifting operation	M	2x1 L

Item	Activities / Works	Hazard	Risk Level			Control Measures	Follow up by	Personal Protective Equipment	Training	Action Priority (H/M/L)	Residual Risk
			Likelihood	Consequence	Risk Factor						
5.	Use of working platform / scissors platform / Cheery Picker	Fall of person	2	4	8	1. Ensure working platform provide double guardrails and toe board. 2. Ensure safe access to the working platform 3. Training for scissors platform or cherry picker should be provided.	F ENG SO	Safety Harness	Work at Height Scissors platform Cherry picker	M	1x1 L
		Fall of hand tools	2	3	6	1. Provide lanyard to the hand tools 2. Ensure toe board provided to the working platform	F SO ASO	Safety helmet	Safe use of Hand Tools	L	1x1 L
6.	Use of electric hand tools and chainsaws to cut the wing and branches	Electric shock	2	4	8	1. The generator and power hand tools to be inspected by qualified electrician, recorded and labeled before use 2. Workers to visual inspect electric hand tools are in good condition on daily basis before use 3. Ensure electric hand tools are IP67 standard and 110V	F SO	Safety helmet Safety boots Reflective Vest	Electrical Safety	M	1x2 L
		Noise hazard	2	3	6	1. Noise Assessment 2. Hearing protection zone marked 3. People working in the hearing protection zone must wear ear protection equipment	F ASO	Hearing protector	Noise Protection	L	1x2 L
		Falling Object	2	2	4	1. To setup rigid barrier along working area and display warning	F ASO	Safety Helmet	Falling Object	L	1x1 L
		Body injury	2	2	4	1. Warning protective clothing and safety gloves	F ASO	Safety Gloves Protective Clothes	Proper use of PPE	L	1x1 L
		Manual handing	2	3	6	1. Provide safety training 2. To use mechanical mean for lifting and transportation	F ASO	Safety Gloves	Manual Handling	L	1x1 L

Item	Activities / Works	Hazard	Risk Level			Control Measures	Follow up by	Personal Protective Equipment	Training	Action Priority (H/M/L)	Residual Risk
			Likelihood	Consequence	Risk Factor						
7.	Excavation	Manual Handling	2	2	4	1. Provide tool or support for shear wrench while tightening 2. Make use of tools or equipment to assist the delivery of materials. 3. Maintain good and proper gesture to mobilize materials. 4. Carry out manual handling risk assessment to the works if necessary.	SO F ENG	Safety Gloves	Manual Handling	M	1x2 L
		Fall to pit	2	3	6	1. Fenced off properly of pit	SO F ENG	Safety Helmet	Housekeeping	L	1x1 L
8.	General works activities	Heatstroke	2	2	4	1. Allow workers to take regular breaks or rotate to other area within the shift to reduce exposure to the hot environment. 2. Make arrangements for workers to rest in a cool or shady place during very hot periods. 3. Provide cool portable water for workers during work and encourage them to take plenty of water to replenish the fluid lost through sweating. 4. Encourage them to wear light-colored clothing to minimize heat absorption and enhance heat dissipation. 5. Request supervisor to pay attention to any report of workers suffering from 6. Symptoms of heat stroke. 7. When temperature is higher than 40℃, no work shall be allowed. 8. Provide constant ventilation to reduce temperature inside.	ENG SO ASO	N/A	Heatstroke Prevention	L	1X2 L

Item	Activities / Works	Hazard	Risk Level			Control Measures	Follow up by	Personal Protective Equipment	Training	Action Priority (H/M/L)	Residual Risk
			Likelihood	Consequence	Risk Factor						
		Lightning Warnings / Typhoon and Heavy Rainstorm Signal	4	3	12	1. Assign Site's responsible person to monitor weather conditions (such as Hong Kong Observatory – Lightning Location Information) 2. Suspension and resumption of outdoor activities shall be planned in advance. 3. Safe execution procedures shall be set up and let all employees familiar with safe precautions include but not limited to: (1) All construction materials must be properly protected against damage. (2) Booms and jibs of cranes and heavy mechanical equipment should be lowered to the ground and adequately secured. (3) Non-essential electricity supplies must be isolated.	ENG SO ASO	N/A	N/A	L	1X2 L

Appendix C –

Relevant Certificate for Chainsaw Operator and Transplant Supervisor

Muni Arborist

Staff Curriculum Vitae LI Tin Sum

Professional History

10/2016 – Present	**Foreman** Muni Arborist Limited
01/2015 – 10/2016	**Tree Climber** Dragon Tree and Landscape Contractor Ltd

Academic Training

Prof. Cert	Professional Certificate in Arboriculture and Tree Work Supervision	2018	IVE
Diploma	Arboriculture	2017	The Chinese University of Hong Kong

Professional Qualification

Certified Tree Worker	2018	International Society of Arboriculture (ISA)
Qualified Chainsaw and Pruning (Ground) Technician	2017	International Society of Arboriculture Hong Kong Chapter (ISAHK)
Supervision of Tree Works	2016	Construction Industry Council
Occupational Safety and Health in Arboriculture	2015	Occupational Safety and Health Council

IVE VTC

This is to certify that

LI Tin Sum

having completed a programme of study and passed the requisite assessments and satisfied all other requirements
is hereby awarded

Professional Certificate in Arboriculture and Tree Work Supervision (Pass)

by the Vocational Training Council, Hong Kong
Given this Second day of November, Two Thousand and Eighteen

茲證明

李天琛

修畢課程成績及格
職業訓練局依章授予

樹藝學及樹木工作監督專業證書
(合格)

二零一八年十一月二日

Dr. WONG Sin Ying, Lillian, Principal
Hong Kong Institute of Vocational Education (Sha Tin)
香港專業教育學院(沙田)院長
黃倩瑛博士

Mrs. Carrie Yau, Executive Director
Vocational Training Council
職業訓練局執行幹事尤曾家麗女士

Date of issue 發出日期: 2018.11.02

香港中文大學專業進修學院
School of Continuing and Professional Studies
The Chinese University of Hong Kong

茲證明
This is to certify that

李天琛
LI, Tin Sum

考試及格 照章授予
樹藝文憑

having passed the requisite examinations
has this day been awarded the
Diploma in Arboriculture

二零一七年七月四日
4 July 2017

大學擴展教育課程局主席
Chairman
University Extension Board

專業進修學院院長
Director
School of Continuing and
Professional Studies

職業安全健康局
OCCUPATIONAL SAFETY & HEALTH COUNCIL

茲 證 明

李天琛

於二零一五年八月八日至二零一五年八月十五日
完成一項由本局主辦之

樹藝工作安全健康

並授予乙張

培訓證書

This is to certify that

LI TIN SUM

has completed a training course
on 8 August 2015 to 15 August 2015
conducted by this Council on

Occupational Safety and Health in Arboriculture

and has been awarded a

Training Certificate

OCCUPATIONAL SAFETY & HEALTH COUNCIL
職業安全健康局

(ARB15ES0261075)

Bonnie YAU 游雯
Executive Director 總幹事
15 August 2015

CONSTRUCTION INDUSTRY COUNCIL
建 造 業 議 會

This is to certify that

LI, Tin Sum

has successfully completed

an 18-hour

SUPERVISION OF TREE WORKS COURSE

on 27 April 2016

茲證明

李 天 琛

於二零一六年四月二十七日修畢

十八小時

樹木工程監管課程

Issue Date : 27 April 2016

頒授日期 ：二零一六年四月二十七日

Serial No. 證書編號: M-STW-1602-00195

International Society of Arboriculture (ISA)
- Hong Kong Chapter
國際樹木學會香港分部

April 6, 2018

Dear Li Tin Sum 李天琛,
Flat H, 16/F, Blk 1, Melody Garden,
Tuen Mun

The certification valid period is extended to 5 years

We are pleased to inform you that the expiration date of your Certificate of Qualified Chainsaw and Pruning (Ground) Technician Assessment [QCPT] has been automatically extended from 30 Jul, 2020 to 30 Jul, 2022. The valid period of this certification has been changed from 3 years to 5 years which has been effective from 2018.

The updated certificate is attached. Thank you for your support to ISA Hong Kong Chapter.

證書有效期由三年改為五年

本學會分部現誠意通知您關於您的電油鋸及修剪(地上)技師證書之有效期將自動由二〇二〇年七月三十日延長至二〇二二年七月三十日。由二〇一八年起，所有該證書之有效期均由原本之三年改為五年。

現附上已更新之證書。感謝您對國際樹木學會香港分部的支持。

ISA Hong Kong chapter
國際樹木學會香港分部

二〇一八年四月六日

Address: PO Box 83282, Concorde Road Post Office, Kowloon.
Tel.: (852) 5228 5526
Website: www.isahongkong.org

INTERNATIONAL SOCIETY OF RBORICULTURE
HONG KONG CHAPTER

THIS CERTIFIES THAT

LI TIN SUM

has successfully completed the requirements established by the Board of ISA – Hong Kong Chapter, and is therefore recognized as

QUALIFIED CHAINSAW AND PRUNING (GROUND) TECHNICIAN (QCPT)

Certification Committee Chair,
ISA Hong Kong Chapter

QCPT-0027	30 Jul, 2017	30 Jul, 2022
Certificate No.	Certified Date	Expiration Date

INTERNATIONAL SOCIETY OF ARBORICULTURE

CERTIFIED TREE WORKER CLIMBER SPECIALIST™

Tin Sum Li

Having successfully completed the requirements set by the
International Society of Arboriculture, the above named
is hereby recognized as an ISA Certified Tree Worker Climber Specialist®

Kevin Martlage
Director of Credentialing
International Society of Arboriculture

Caitlyn Pollihan
Executive Director
International Society of Arboriculture

HK-1624T	22 Apr 2018	30 Jun 2021
Certification Number	Certified Since	Expiration Date

Muni Arborist

Staff Curriculum Vitae — Man Chun Ning

Professional History

9/2020 – Present

Project Coordinator
Muni Arborist Limited

Academic Training

Prof. Dip.	Professional Diploma in Horticulture and Landscape Management	2021	Technological and Higher Education Institute of Hong Kong (THEI)

Member of VTC Group
VTC 機構成員

Technological and Higher Education Institute of Hong Kong
TRANSCRIPT OF STUDY

Name : MAN Chun Ning **Student No. :** 174115460

Study Mode : Part-time **I.D. Card No. :** Y100518(7)

Programme : Professional Diploma in Horticulture and Landscape Management **Programme Code :** DS524101

Module		Completion Date	Contact Hours	Credit Point	Grade
Academic Years 2018/2019 and 2019/2020					
DHL41001	Plant Knowledge	12 November 2018	42	3	D
DHL41002	Plant Culture	12 December 2019	42	3	C+
DHL41003	Plant Protection and Tree Biomechanics	14 July 2020	42	3	B-
DHL41004	Plant Biology	9 November 2019	28	2	D+
DHL42001	Communication Skill	3 October 2018	28	2	C+
DHL42002	Landscape Construction	15 April 2019	28	2	B-
DHL42003	Tree Risk Assessment and Mitigation	29 July 2019	42	3	C-
DHL42004	Arboriculture and Landscape Management	9 September 2019	28	2	C

Cumulative Credit Points Attained : 20
Cumulative Credit Points Exempted : 0

Award : Pass in Professional Diploma in Horticulture and Landscape Management
[Award Date: 9 February 2021]

Technological and Higher Education Institute of Hong Kong
Registry
香港高等教育科技學院

Registrar

Date : 1 March 2021

Please read the notes on the last page.

Member of VTC Group
VTC 機構成員

Notes

Except for Modules which are assessed on a Pass/Fail (P/F) basis, student's performance in a module is expressed in Grades with A being the highest grade, D the minimum passing grade and F for fail.

Grade	Description of Standard#
A	Excellent
A-	
B+	Very Good
B	
B-	Good
C+	Satisfactory
C	
C-	Pass
D+	
D	
F	Fail

 # Not applicable to modules assessed on a P/F basis

SA : Supplementary Assessment

I : Incomplete

Z : Exempted from study with or without credit transfer

W : Withdrawal

WF : Withdrawal with Failure

@ : Module assessed on a P (Pass) / F (Fail) basis

PDHLM AY2017/18 Class B – ETSS Reimbursement

Faculty of Design and Environment, THEi <thei-fde@vtc.edu.hk>

週四 2020/7/30 下午 02:12

副本: LO YUK MING <rymlo@vtc.edu.hk>; Yelo Wong <yelow@vtc.edu.hk>

Dear Students,

Kindly note that the ETSS reimbursed / to reimburse the following modules for your information if you found successfully completed the module:-

April 2019

Module Code	Module Name	Credit Points
DHL42001	Communication Skill	2

October 2019

Module Code	Module Name	Credit Points
DHL41004	Plant Biology	2

August 2020

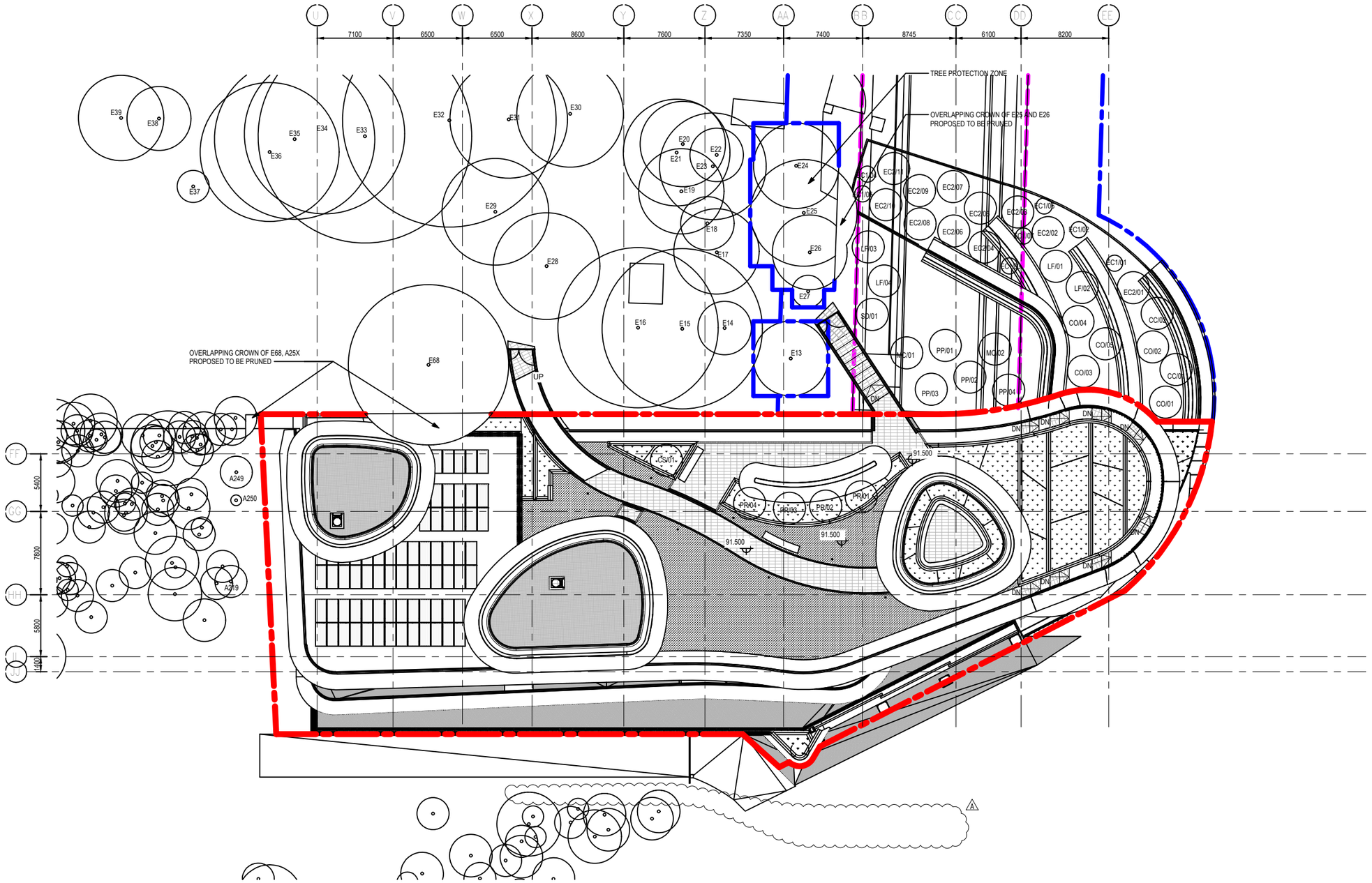
Module Code	Module Name	Credit Points
DHL41001	Plant Knowledge	3
DHL41002	Plant Culture	3
DHL41003	Plant Protection and Tree Biomechanics	3
DHL42002	Landscape Construction	2
DHL42003	Tree Risk Assessment and Mitigation	3
DHL42004	Arboriculture and Landscape Management	2

60% of tuition fee of the aforementioned modules will be reimbursed (Credit Points x $2,250 per credit point x 60%) to your bank account registered to ETSS. Depends on your bank registered to ETSS, some more time may be needed for handling transaction. Should you have enquiries on the ETSS scheme, please contact ETSS Enquiry Hotline at 2435 9423 or by email at vplus@vtc.edu.hk.

Best regards
Faculty of Design and Environment
Technological and Higher Education Institute of Hong Kong (THEi)

All information and opinions given therein are entirely those of the message sender(s) and are not necessarily endorsed by the Vocational Training Council.

Appendix B – Compensatory Planting Plans and Transplant Tree Planting Plan



ROOF TREE COMPENSATION PLAN

SCALE 1 : 200

PLANTING SCHEDULE				
CODE	BOTANICAL NAME	CHINESE NAME	SIZE	QUANTITY
EC1	Elaeocarpus chinensis	中華杜英	(1.2-1.5m H x 1m Spread)	7
EC2	Elaeocarpus chinensis	中華杜英	(5m H x 3m Spread)	11
LF	Liquidambar formosana	楓香	(5m H x 3m Spread)	4
SD	Sapium discolor	山烏桕	(5m H x 3m Spread)	1
PP	Pongamia pinnata	水黃皮	(5m H x 3m Spread)	4
MC	Machilus chekiangensis	浙江潤楠	(6m H x 3m Spread)	2
CO	Cratoxylum cochinchinense	黃牛木	(5m H x 3m Spread)	5
CC	Cinnamomum camphora	樟樹	(5m H x 3m Spread)	2
PR	Plumeria rubra	雞蛋花	(5m H x 3m Spread)	4
CS	Cassia surattensis	黃槐	(5m H x 3m Spread)	1

(TOTAL 41 NO. COMPENSATION TREES SHOWN)

NOTES:

1 FOR THE PROPOSED COMPENSATORY TREES, THE MINIMUM SPACING SHALL BE 1.5M C/C

2 THE MINIMUM SOIL DEPTH FOR THE PROPOSED COMPENSATORY TREES SHALL BE 1200mm

LEGEND:

PROPOSED WORKS BOUNDARY

Extent of Tunnel

AXXX EXX — TREES TO BE RETAINED

AXXX EXX — TREES TO BE PRUNED

XX/XX — COMPENSATION TREES

(mPD) PROPOSED GROUND LEVEL

Revision	Date	Description		
A	09/04/24	REVISED DRAWING		
–	10/11/23	REVISED DRAWING		
		Prepared	Checked	Approved
Initial	–	SC	KFL	WL

Contract No.
21/WSD/21

Contract Title
RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Sketch Title
TREE COMPENSATION PLAN

Related Reference
401049/B&V/AR/101404

Sketch No.
21/WSD/21/SK/0069

Revision
A

Issue Date
10 NOV 2023

Scale
A1 1 : 200
A3 1 : 400

水務署
Water Supplies Department

BINNIES HONG KONG LIMITED
賓尼斯工程顧問有限公司

FOR CONSTRUCTION/INFORMATION

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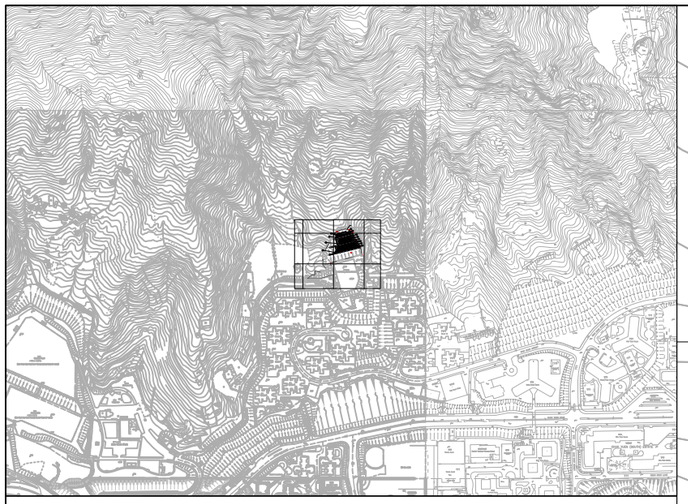

KEY PLAN
SCALE A1 1:5000
A3 1:10000

PLANTING SCHEDULE

CODE	BOTANICAL NAME	CHINESE NAME	SIZE	SPACING	QUANTITY
SD	SAPIUM DISCOLOR	山烏桕	1.2–1.5m H, 0.08m DBH	1.75m c/c	74
MP	MALLOTUS PANISCULATUS	白楸	1.2–1.5m H, 0.08m DBH	1.75m c/c	74
PA	POLYSPORA AXILLARIS	大頭茶	1.2–1.5m H, 0.08m DBH	1.75m c/c	74
				TOTAL	222

837 350 E
837 400 E
837 300 E
823 150 N

SLOPE FEATURE NO.
11NW-B/C239

Tree Area
Tree Area

MP 2
SD 16
PA 10
SD 23
MP 5
MP 21
PA 25
SD 34
SD 1
MP 40
MP 6
PA 39

BERM
BERM
BERM

T60 T79 T77 T70 T76 T84 T134 T133 T132 T125 T126 T129 T136 T128 T116 T123 T122 T65

CUL
126.2
129.3
129.3
121.5
121.4
34.7

馬仔坑配水庫
Ma Chai Hang Service Reservoir

N 1

LEGEND:

1200mm SOIL DEPTH (MIN.)

COMPENSATION TREE
PROPOSED TO BE MAINTAINED BY WSD

EXISTING TREE

Revision	Date	Description
–	14/12/23	REVISED DRAWING

	Prepared	Checked	Approved
Initial –	SC	KFL	WL

Contract No.
21/WSD/21

Contract Title
RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Sketch Title
COMPENSATORY PLANTING PLAN

Related Reference
401049/B&V/AR/101405

Sketch No.
21/WSD/21/SK/00073

Revision
–

Issue Date
14 DECEMBER 2023

Scale
A1 1 : 200
A3 1 : 400

水 務 署
Water Supplies Department

BINNIES HONG KONG LIMITED
賓尼斯工程顧問有限公司

FOR CONSTRUCTION/INFORMATION

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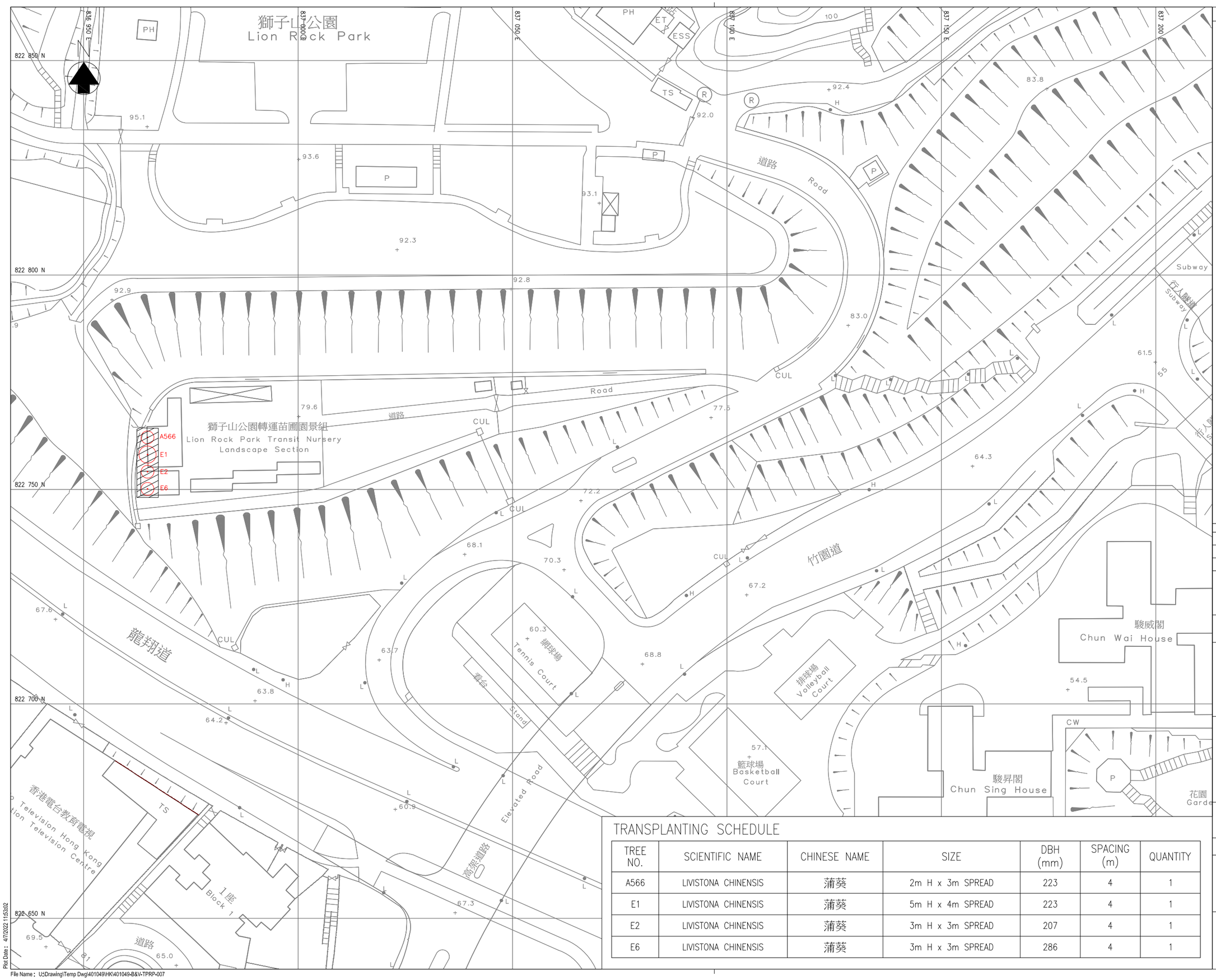

NOTE:

1. THE PROPOSED TRANSPLANTED TREES (TREE NO. A566, E1, E2 AND E6) SHALL BE RELOCATED TO THE LION ROCK PARK TRANSIT NURSERY LANDSCAPE SECTION PRIOR TO THE CONSTRUCTION WORKS.
2. THE PROPOSED TRANSPLANTED TREES SHALL BE MAINTAINED AND MANAGED BY LEISURE AND CULTURAL SERVICES DEPARTMENT (LCSD).
3. THE SPACING FOR THE TRANSPLANTING TREES SHALL BE AT MINIMUM 4m c/c.

LEGEND:

TREE TO BE TRANSPLANTED

MINIMUM SOIL DEPTH FOR THE TEMPORARY TRANSPLANTED TREES SHALL BE 1200mm

TRANSPLANTING SCHEDULE

TREE NO.	SCIENTIFIC NAME	CHINESE NAME	SIZE	DBH (mm)	SPACING (m)	QUANTITY
A566	LIVISTONA CHINENSIS	蒲葵	2m H x 3m SPREAD	223	4	1
E1	LIVISTONA CHINENSIS	蒲葵	5m H x 4m SPREAD	223	4	1
E2	LIVISTONA CHINENSIS	蒲葵	3m H x 3m SPREAD	207	4	1
E6	LIVISTONA CHINENSIS	蒲葵	3m H x 3m SPREAD	286	4	1

Revision	Date	Description			Initial
	Designed	Checked	Drawn	Checked	
Initial	EC	WL	SZ	TL	
Date	01/22	01/22	01/22	01/22	

Approved

Agreement No.
CE 15/2018 (WS)

Project Title
RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Drawing Title
TRANSPLANT TREE PLANTING PLAN

Drawing No.
401049/B&V/TPRP/007

Revision
–

Scale
A1 1 : 400
A3 1 : 800

水務署
Water Supplies Department

BINNIES HONG KONG LIMITED
賓尼斯工程顧問有限公司

Plot Date : 4/7/2022 11:53:02

File Name : U:\Drawing\Temp Dwg\401049\HK\401049-B&V-TPRP-007

Appendix C – Preliminary Design Drawings

ROOM SCHEDULE

Number	Name	Area	Perimeter	Level
RG01	BUILDING FS PUMP ROOM	22.06 m²	19.67 m	GROUND FLOOR
RG02	36m³ FS TANK	10.10 m²	11.95 m	GROUND FLOOR
RG03	36m3 FS TANK	9.34 m²	11.46 m	GROUND FLOOR
RG04	TUNNEL FS PUMP ROOM	30.71 m²	23.87 m	GROUND FLOOR
RG05	FS CONTROL ROOM	21.13 m²	19.04 m	GROUND FLOOR
RG06	SUPPLY AIR CONCRETE DUCT F/A	12.41 m²	14.55 m	GROUND FLOOR
RG07	SUPPLY AIR CONCRETE DUCT	110.22 m²	51.31 m	GROUND FLOOR
RG08	-	10.19 m²	16.98 m	GROUND FLOOR
RG09	TUNNEL VENTILATION FAN ROOM 1	270.24 m²	66.37 m	GROUND FLOOR
RG10	SUPPLY AIR CONCRETE DUCT	197.55 m²	95.19 m	GROUND FLOOR
RG11	WATER METER ROOM	7.54 m²	13.30 m	GROUND FLOOR
RG12	CAPACITOR ROOM	10.22 m²	12.96 m	GROUND FLOOR
RG13	BATTERY ROOM	10.56 m²	13.08 m	GROUND FLOOR
RG14	-	26.79 m²	25.76 m	GROUND FLOOR
RG15	-	10.11 m²	12.74 m	GROUND FLOOR
RG16	LV SWITCH ROOM	13.06 m²	15.27 m	GROUND FLOOR
RG17	CLP TX ROOM 1	59.03 m²	32.48 m	GROUND FLOOR
RG18	CLP TX ROOM 2	59.05 m²	32.46 m	GROUND FLOOR
R101	PLENUM	10.34 m²	14.66 m	FIRST FLOOR
R102	-	10.15 m²	12.96 m	FIRST FLOOR
R103	PRESSURIZATION FAN ROOM	13.17 m²	20.49 m	FIRST FLOOR
R104	SUPPLY AIR CONCRETE DUCT T/B	14.25 m²	16.25 m	FIRST FLOOR
R105	-	8.06 m²	11.81 m	FIRST FLOOR
R106	SUPPLY AIR CONCRETE DUCT	13.21 m²	15.69 m	FIRST FLOOR
R107	PRESSURIZATION FAN MCC ROOM	16.29 m²	17.21 m	FIRST FLOOR
R108	PUMPING ROOM	45.01 m²	27.58 m	FIRST FLOOR
R109	SUPPLY AIR CONCRETE DUCT F/B	14.55 m²	16.15 m	FIRST FLOOR
R110	EXHAUST CONCRETE DUCT	123.71 m²	75.68 m	FIRST FLOOR
R111	TUNNEL VENTILATION FAN ROOM 2	257.34 m²	65.49 m	FIRST FLOOR
R112	EXHAUST AIR CONCRETE DUCT	77.77 m²	42.15 m	FIRST FLOOR
R113	CORRIDOR	85.61 m²	73.77 m	FIRST FLOOR
R114	STORE ROOM	31.20 m²	22.57 m	FIRST FLOOR
R115	TOILET	10.87 m²	13.77 m	FIRST FLOOR
R116	CONTROL ROOM	40.21 m²	27.15 m	FIRST FLOOR
R117	FAN ROOM	46.69 m²	32.09 m	FIRST FLOOR
R118	SUPPLY AIR PLENUM	45.80 m²	29.04 m	FIRST FLOOR
R119	PLC ROOM	71.79 m²	35.91 m	FIRST FLOOR
R120	GENSET ROOM	61.82 m²	33.71 m	FIRST FLOOR
R121	TBE ROOM	13.42 m²	14.59 m	FIRST FLOOR
RR01	SUPPLY AIR PLENUM	44.83 m²	27.35 m	ROOF
RR02	EXHAUST AIR CONCRETE DUCT	45.40 m²	27.60 m	ROOF
RR03	SOLAR PANELS	438.37 m²	92.10 m	ROOF
Grand total: 42		2550.52 m²	1286.58 m	

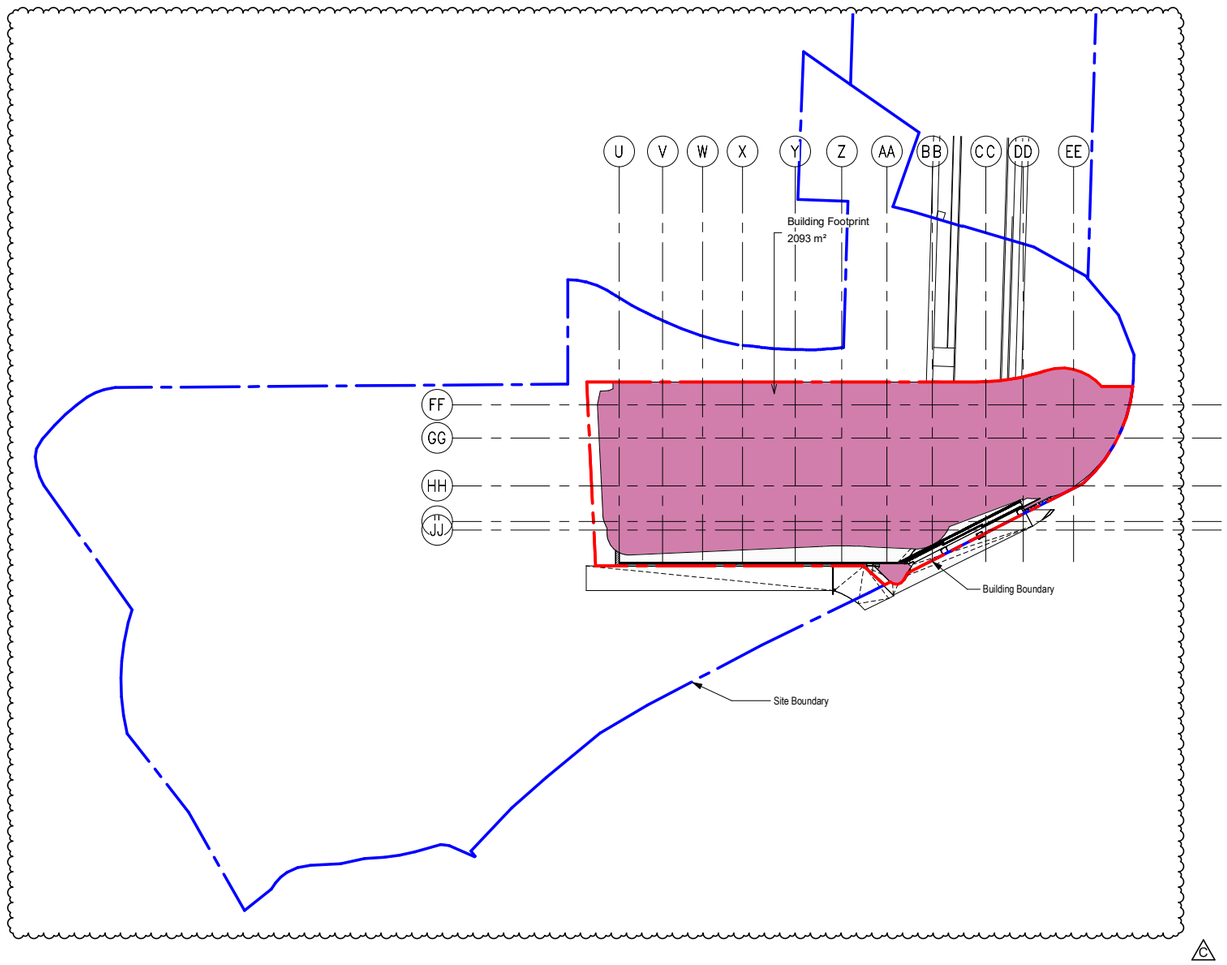

DIAGRAM SITE AREA
SCALE 1 : 500

GREENERY AREA SCHEDULE

LOCATION	GREENING FEATURE	GREENERY AREA	GREENERY AREA PROVIDED S.M.
GF	GREEN WALL WITH CLIMBER (Not counted)	G1	12 m²
GF	SHRUBS / HANGING PLANTS	G2	4 m²
1F	GROUNDCOVER	L1	31 m²
ROOF	SHRUBS / GROUNDCOVER	R1	563 m²
ROOF CANOPY	SHRUBS / GROUNDCOVER	R2	30 m²

GREENERY COVERAGE REQUIRED UNDER PNAP-152 = 20%
GREENERY COVERAGE PROVIDED = (G2+L1+R1+R2) / BuildingFootprint = (4+31+563+30) / 2093 = 30.0%

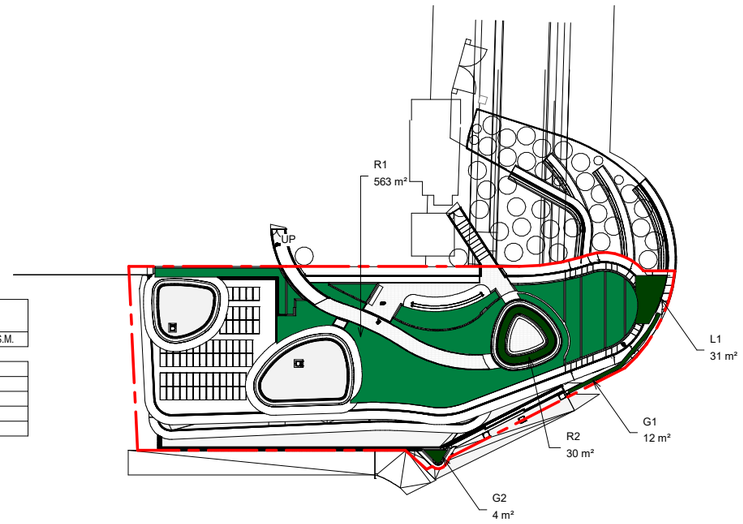

DIAGRAM GREENERY CALCULATION
SCALE 1 : 500

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B	03/22	TENDER ADDENDUM NO. 4		SKYY
A	01/22	1ST ISSUE OF TENDER		SKYY
	Designed	Checked	Drawn	Checked
Initial	SKYY	YY	SKYY	TL
Date	01/22	01/22	01/22	01/22

Approved

Contract No.
21 / WSD / 21

Contract Title
RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Drawing Title
AREA ANALYSIS

Drawing No.
401049/B&V/AR/100070

Revision
C

Scale
A1 1 : 500

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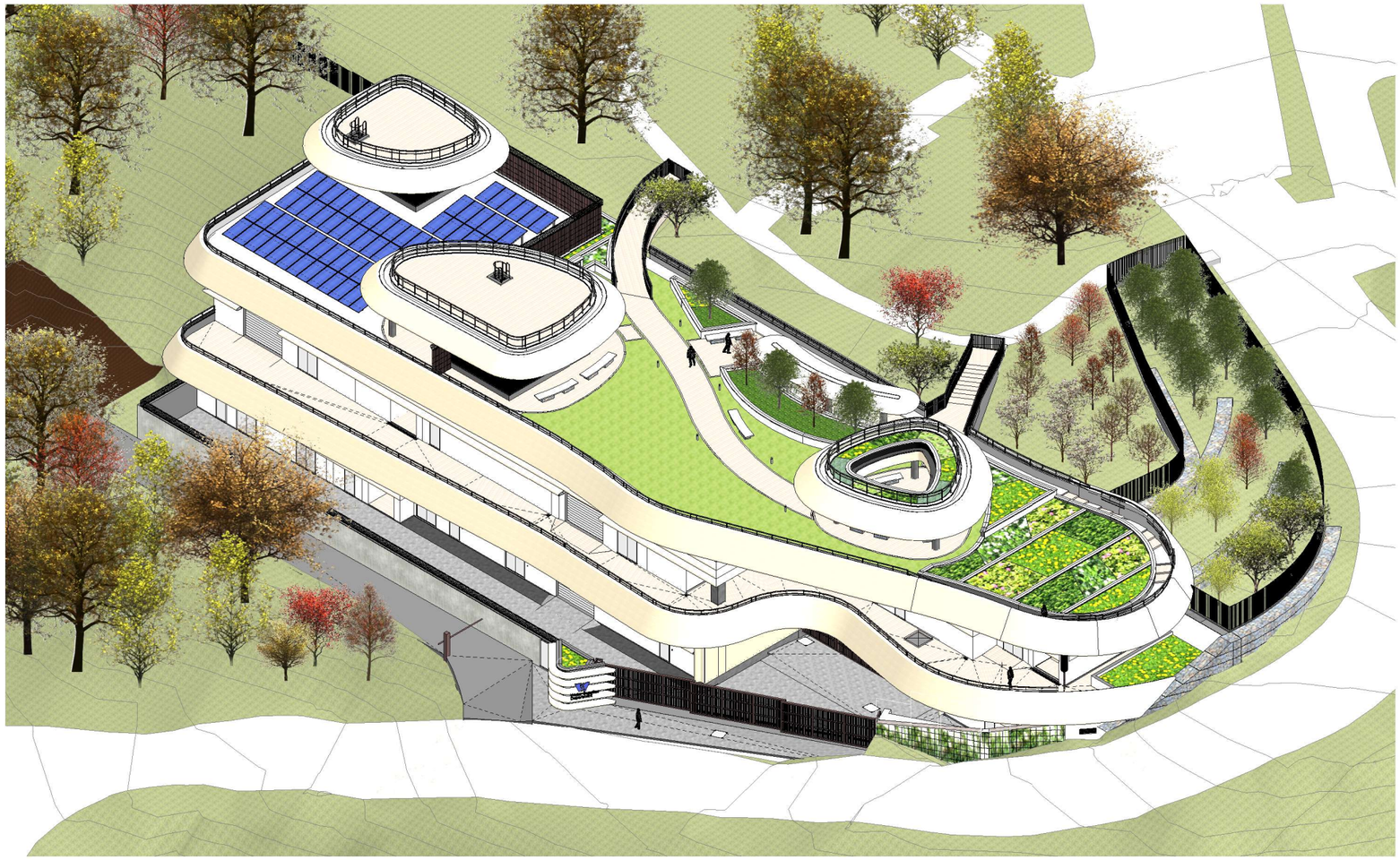

Axonometric View
SCALE

NOTES :

1. THE ARCHITECTURAL AND LANDSCAPE DESIGN OUTSIDE THE SITE BOUNDARY OF PAB IS VISUALISED FOR REFERENCE ONLY ON CONNECTIVITY OF THE SITE

A	01/27	1ST ISSUE OF TENDER		SKYY
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Initial	SKYY	YY	SKYY	TL
Date	01/22	01/22	01/22	01/22

Approved

Contract No.
21 / WSD / 21

Contract Title
RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Drawing Title
FIGURES, AXONOMETRIC

Drawing No.
401049/B&V/AR/100030

Revision
A

Scale
A1 1 : 100

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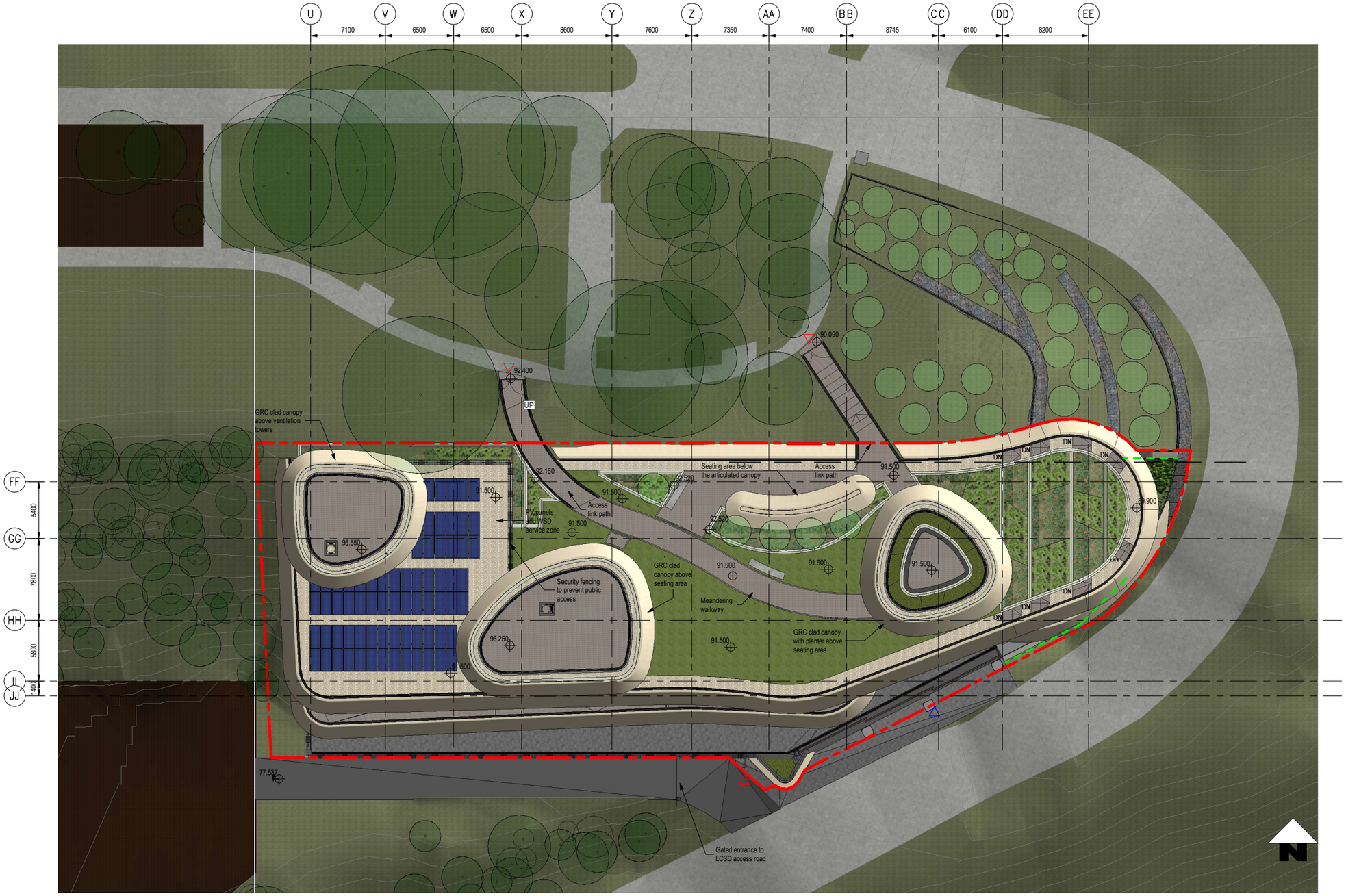

ROOF LANDSCAPE

SCALE 1 : 200

LANDSCAPE MATERIAL SCHEDULE LEGENDS - PLANTS

Image		Mark	Name
		SL-09	GROUNDCOVER, Stipa grandis
		SL-10	SHRUBS, Bougainvillea spectabilis
		SL-11	SHRUBS, Tarenaya hassleriana
		SL-12	SHRUBS, Asclepias curassavica

LANDSCAPE MATERIAL SCHEDULE LEGENDS - PLANTS

Image		Mark	Name
		SL-13	SHRUBS, Fatsia japonica
		SL-14	SHRUBS, Ficus macrocarpa var.crassifolia

LANDSCAPE MATERIAL SCHEDULE LEGENDS - OTHERS

Image		Mark	Name
		ST-01	Artificial Granite Floor Tile (AGT) Type-1
		ST-07	Pebble Flooring
		ST-08	Homogenous Artificial Granite Tile (AGT)

NOTES :

1. THE ARCHITECTURAL AND LANDSCAPE DESIGN OUTSIDE THE SITE BOUNDARY OF PAB IS VISUALISED FOR REFERENCE ONLY ON CONNECTIVITY OF THE SITE

LEGEND:

- Vehicular Entrance / Exit
- Gated Service Access
- Vertical Green Wall Climber Plant Type, at level GF and 1F

	Designed	Checked	Drawn	Checked
Initial	LC	SC	CW	KL
Date	11/23	11/23	11/23	11/23

Approved

Contract No.

21 / WSD / 21

Contract Title

RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Drawing Title

ARCHITECTURAL LAYOUT PLAN, COLOURED LANDSCAPE PLAN

Drawing No.

21/WSD/21/SK0070

Revision

-

Scale

A1 As indicated

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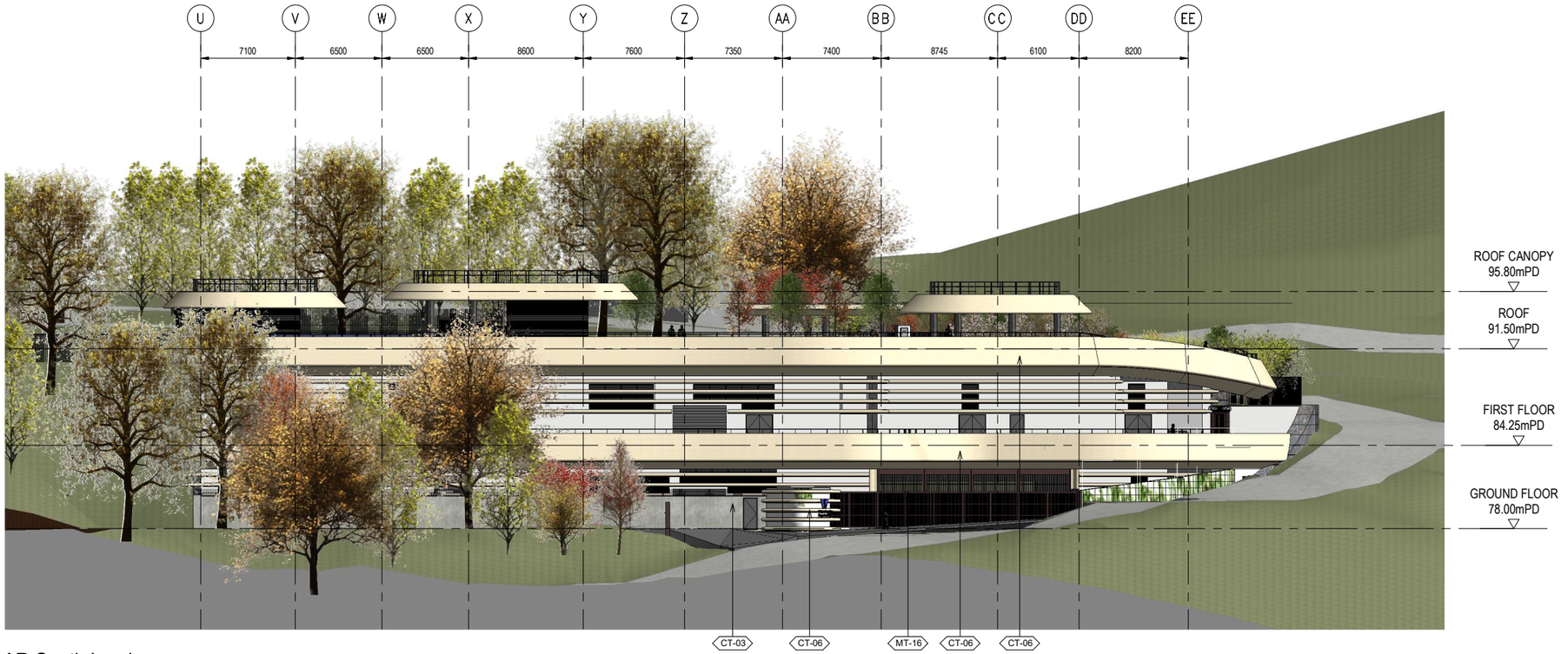
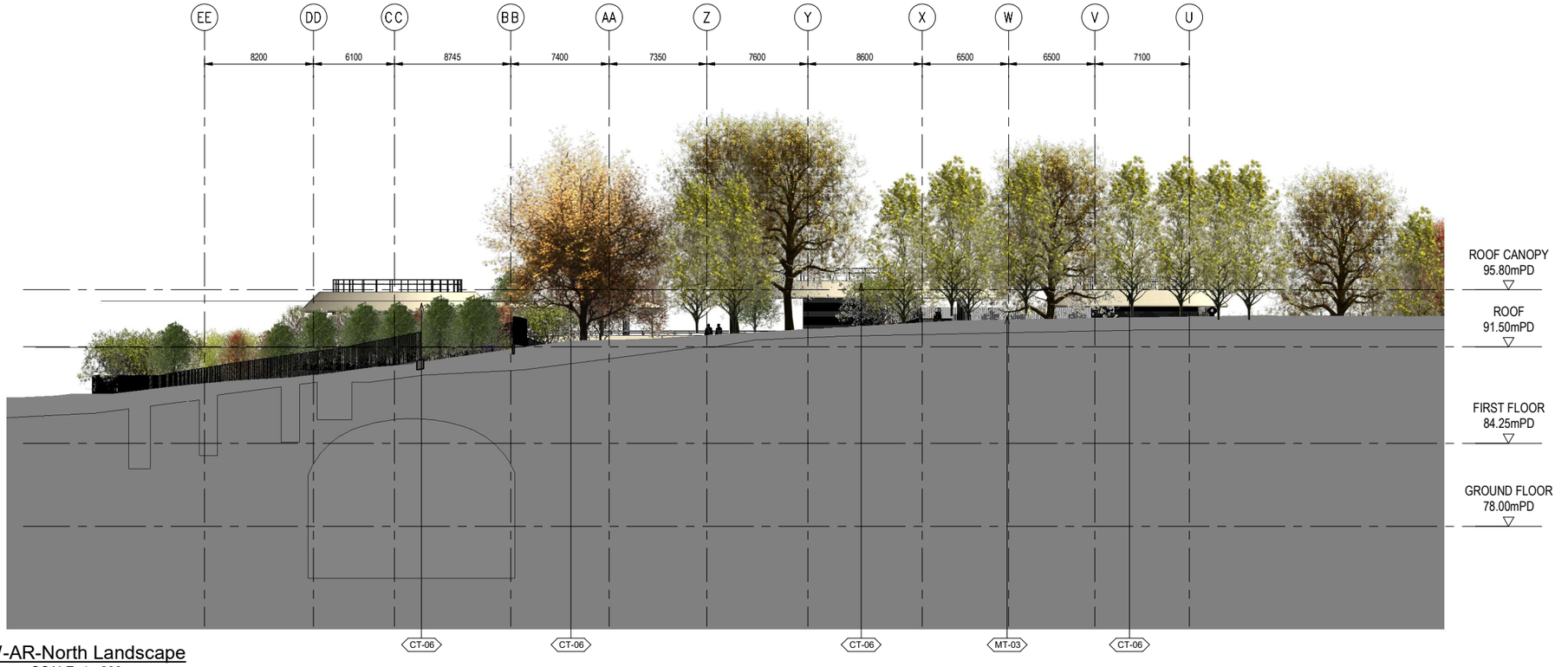


DW-AR-South Landscape

SCALE 1 : 200



DW-AR-North Landscape

SCALE 1 : 200

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ABBREVIATIONS :

S.R.L.	STRUCTURAL ROOF LEVEL
S.F.L.	STRUCTURAL FLOOR LEVEL
S.B.L.	STRUCTURAL BASEMENT LEVEL
R.G.L.	RAISED GROUND LEVEL
F.G.L.	FINISHED GROUND LEVEL
F.W.	FRESH WATER
DN, dn	NOMINAL DIAMETER
D.I.	DUCTILE IRON
C.I.	CAST IRON
PA	PLANTER AREA

NOTES :

1. THE ARCHITECTURAL AND LANDSCAPE DESIGN OUTSIDE THE SITE BOUNDARY OF PAB IS VISUALISED FOR REFERENCE ONLY ON CONNECTIVITY OF THE SITE

MATERIAL LEGEND :

CT-01	PRE-CAST CONCRETE MODULE	PT-01	MATTE FINISH EMULSION PAINT (EXTERNAL)
CT-02	COPING STONE	PT-02	EPOXY PAINT FINISH
CT-03	CONCRETE WALL (BOARD MARKED)	PT-03	PAINT FINISH ON CONCRETE STRUCTURE
CT-04	(CONCRETE WALL (FAIR FACED)	PV-01	PHOTOVOLTAIC PANELS
CT-06	GLASSFIBRE REINFORCED CONCRETE (GRC) PANELS	ST-01	ARTIFICIAL GRANITE FLOOR TILE (AGT) TYPE-1
MT-01	STEEL HANDRAIL WALL MOUNTED	ST-02	ARTIFICIAL GRANITE FLOOR TILE (AGT) TYPE-2
MT-02	STEEL HANDRAIL AND BALUSTRADE	ST-03	ARTIFICIAL GRANITE WALL TILE TYPE-1
MT-03	LANDSCAPE FENCING	ST-04	ARTIFICIAL GRANITE WALL TILE TYPE-2
MT-04	S/S DOOR SYSTEM	ST-05	PERMEABLE PAVER
MT-05	SECURITY ROLLER SHUTTER	ST-06	GABION WALL SYSTEM
MT-06	VENTILATION LOUVRES	ST-07	PEBBLE FLOORING
MT-07	VERTICAL GREEN CABLE GRID SYSTEM	ST-08	HOMOGENOUS ARTIFICIAL GRANITE TILE (AGT)
MT-08	CAST IRON DRAINAGE COVER	ST-09	GLAZED FULL BODY PORCELAIN TILES
MT-09	ALUMINUM METAL CEILING PROFILE	WP-01	LIQUID APPLIED WATERPROOF MEMBRANE
MT-12	SECURITY FENCING CONCERTINA CROWN RAZOR CIRCULAR WIRE	WP-02	WATERPROOF MEMBRANE (SHEET TYPE)
MT-14	STEEL CLADDING AND CAPPING DETAIL		
MT-15	MANHOLE COVER		
MT-16	TELESCOPIC SLIDING GATE		
MT-17	BIFOLDING TRACKED GATE		
MT-18	STAINLESS STEEL CAT LADDER		

A	01/27	1ST ISSUE OF TENDER		SKYY
	Designed	Checked	Drawn	Checked
Initial	SKYY	YY	SKYY	TL
Date	01/22	01/22	01/22	01/22

Approved

Contract No.

21 / WSD / 21

Contract Title

RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Drawing Title

ARCHITECTURAL COLOURED ELEVATIONS (Sheet 1 of 2)

Drawing No.	Revision
401049/B&V/AR/102100	A

Scale: A1 As indicated

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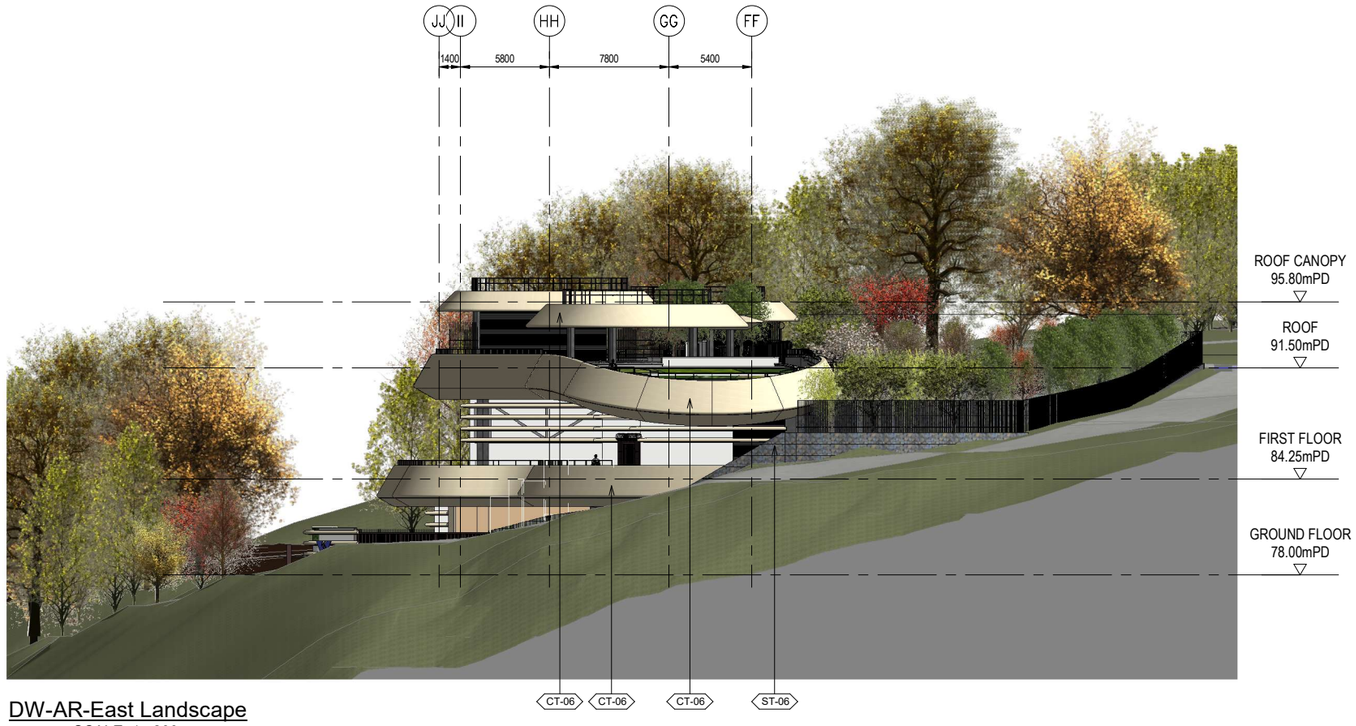
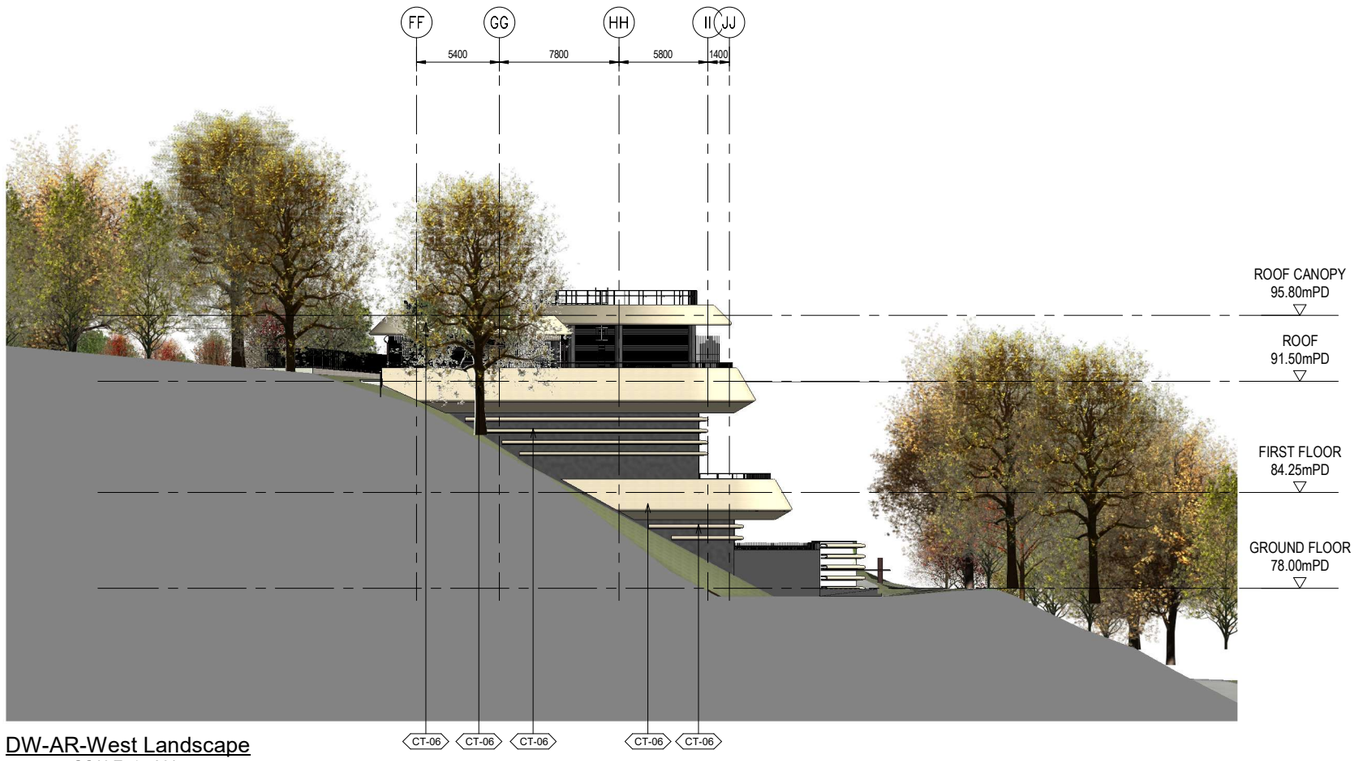


DW-AR-East Landscape
SCALE 1 : 200



DW-AR-West Landscape
SCALE 1 : 200

ABBREVIATIONS :

S.R.L.	STRUCTURAL ROOF LEVEL
S.F.L.	STRUCTURAL FLOOR LEVEL
S.B.L.	STRUCTURAL BASEMENT LEVEL
R.G.L.	RAISED GROUND LEVEL
F.G.L.	FINISHED GROUND LEVEL
F.W.	FRESH WATER
DN, dn	NOMINAL DIAMETER
D.I.	DUCTILE IRON
C.I.	CAST IRON
PA	PLANTER AREA

NOTES :

1. THE ARCHITECTURAL AND LANDSCAPE DESIGN OUTSIDE THE SITE BOUNDARY OF PAB IS VISUALISED FOR REFERENCE ONLY ON CONNECTIVITY OF THE SITE

MATERIAL LEGEND :

CT-01	PRE-CAST CONCRETE MODULE	PT-01	MATTE FINISH EMULSION PAINT (EXTERNAL)
CT-02	COPING STONE	PT-02	EPOXY PAINT FINISH
CT-03	CONCRETE WALL (BOARD MARKED)	PT-03	PAINT FINISH ON CONCRETE STRUCTURE
CT-04	(CONCRETE WALL (FAIR FACED)	PV-01	PHOTOVOLTAIC PANELS
CT-06	GLASSFIBRE REINFORCED CONCRETE (GRC) PANELS	ST-01	ARTIFICIAL GRANITE FLOOR TILE (AGT) TYPE-1
MT-01	STEEL HANDRAIL WALL MOUNTED	ST-02	ARTIFICIAL GRANITE FLOOR TILE (AGT) TYPE-2
MT-02	STEEL HANDRAIL AND BALUSTRADE	ST-03	ARTIFICIAL GRANITE WALL TILE TYPE-1
MT-03	LANDSCAPE FENCING	ST-04	ARTIFICIAL GRANITE WALL TILE TYPE-2
MT-04	S/S DOOR SYSTEM	ST-05	PERMEABLE PAVER
MT-05	SECURITY ROLLER SHUTTER	ST-06	GABION WALL SYSTEM
MT-06	VENTILATION LOUVRES	ST-07	PEBBLE FLOORING
MT-07	VERTICAL GREEN CABLE GRID SYSTEM	ST-08	HOMOGENOUS ARTIFICIAL GRANITE TILE (AGT)
MT-08	CAST IRON DRAINAGE COVER	ST-09	GLAZED FULL BODY PORCELAIN TILES
MT-09	ALUMINUM METAL CEILING PROFILE	WP-01	LIQUID APPLIED WATERPROOF MEMBRANE
MT-12	SECURITY FENCING CONCERTINA CROWN RAZOR CIRCULAR WIRE	WP-02	WATERPROOF MEMBRANE (SHEET TYPE)
MT-14	STEEL CLADDING AND CAPPING DETAIL		
MT-15	MANHOLE COVER		
MT-16	TELESCOPIC SLIDING GATE		
MT-17	BIFOLDING TRACKED GATE		
MT-18	STAINLESS STEEL CAT LADDER		

A	01/27	1ST ISSUE OF TENDER		SKYY
	Designed	Checked	Drawn	Checked
Initial	SKYY	YY	SKYY	TL
Date	01/22	01/22	01/22	01/22

Approved

Contract No.
21 / WSD / 21

Contract Title
RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Drawing Title
ARCHITECTURAL COLOURED ELEVATIONS (Sheet 2 of 2)

Drawing No.	Revision
401049/B&V/AR/102101	A

Scale: A1 As indicated

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Water Supplies Department

BINNIES HONG KONG LIMITED
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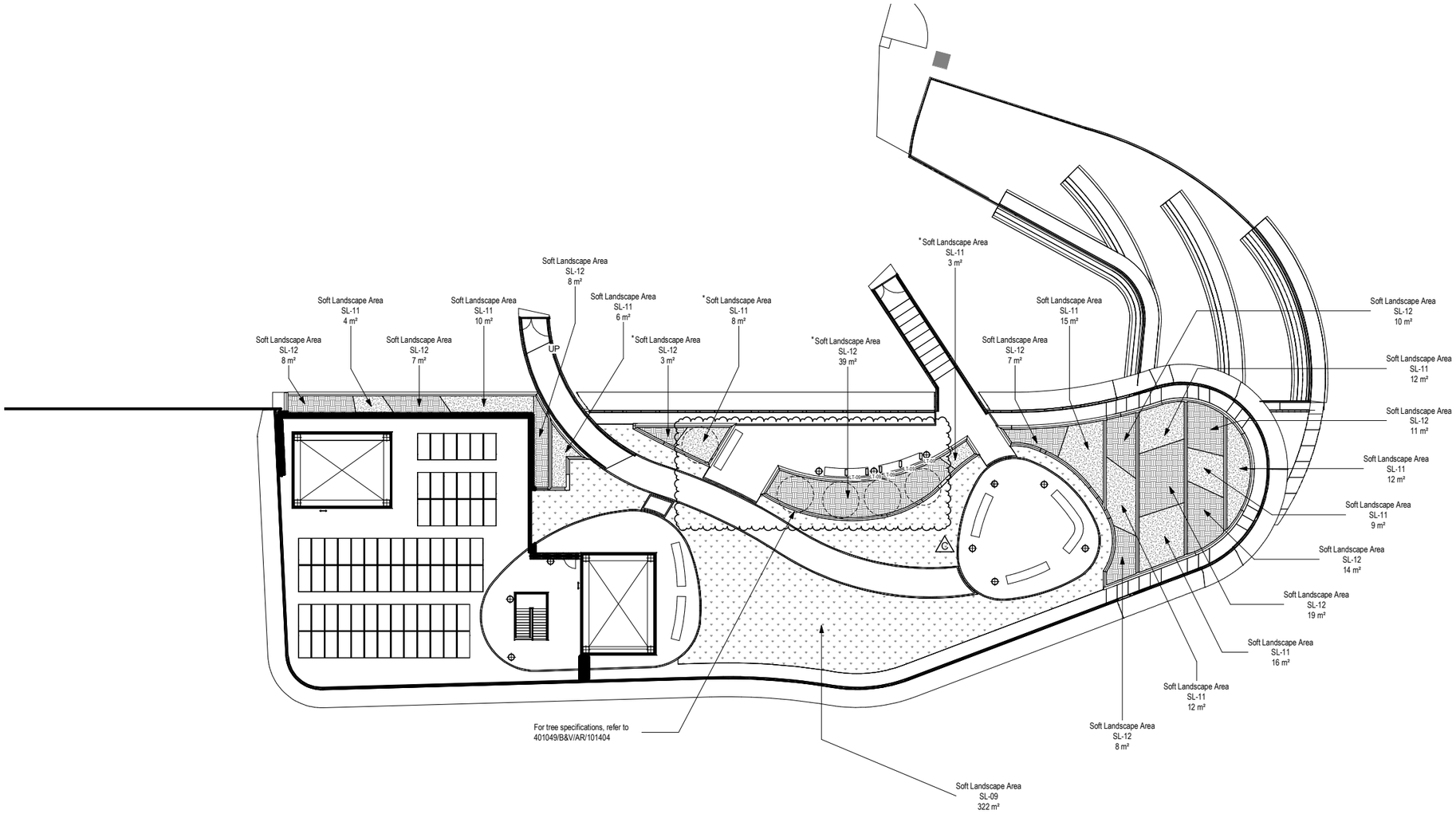
ABBREVIATIONS :

S.R.L.	STRUCTURAL ROOF LEVEL
S.F.L.	STRUCTURAL FLOOR LEVEL
S.B.L.	STRUCTURAL BASEMENT LEVEL
R.G.L.	RAISED GROUND LEVEL
F.G.L.	FINISHED GROUND LEVEL
F.W.	FRESH WATER
DN, dn	NOMINAL DIAMETER
D.I.	DUCTILE IRON
C.I.	CAST IRON
PA	PLANTER AREA

NOTES :

1. ALL LEVELS ARE IN REFERENCE TO METRES ABOVE THE HONG KONG PRINCIPAL DATUM (mPD) UNLESS OTHERWISE STATED.
2. FOR GENERAL NOTES AND LEGENDS, PLEASE REFER TO DRAWING NO. 401049/B&V/AR/000001
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
4. THE ARCHITECTURAL AND LANDSCAPE DESIGN OUTSIDE THE SITE BOUNDARY OF PAB IS VISUALISED FOR REFERENCE ONLY ON CONNECTIVITY OF THE SITE
5. THE FULL AUTOMATIC IRRIGATION POINTS AND SYSTEM TO BE DESIGNED AND PROPOSED BY THE CONTRACTOR FOR PROJECT MANAGER'S APPROVAL. (This is option only for irrigation plan)



SOFT LANDSCAPE SCHEDULE ROOF

SCALE 1 : 200

GROUNDCOVER							
MARK	SCIENTIFIC NAME	CHINESE NAME	SIZE (mm)	SPACING (mm)	AREA	QUANTITY (No.)	SOIL DEPTH REQUIRED (mm)
SL-09	Stipa grandis	蔓花生	100 x 100	100	322 m²	36620	300
SHRUB							
MARK	SCIENTIFIC NAME	CHINESE NAME	SIZE (mm)	SPACING (mm)	AREA	QUANTITY (No.)	SOIL DEPTH REQUIRED (mm)
SL-11	Tarenaya hassleriana	醉蝶花	500 x 450	500	108 m²	540	600
SL-12	Asclepias curassavica	馬利筋	500 x 450	500	133.5 m²	670	600

* Planter area with a required soil depth of 1200mm

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B	03/22	TENDER ADDENDUM NO. 4	SKYY
A	01/22	1ST ISSUE OF TENDER	SKYY

	Designed	Checked	Drawn	Checked
Initial	SKYY	YY	SKYY	TL
Date	01/22	01/22	01/22	01/22

Approved

Contract No.
21 / WSD / 21

Contract Title
RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Drawing Title
SOFT LANDSCAPE SCHEDULE, ROOF

Drawing No.
401049/B&V/AR/106001

Revision
C

Scale
A1 As indicated

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Water Supplies Department

BINNIES HONG KONG LIMITED
賓尼斯工程顧問有限公司

Plot Date: 13/04/2022 16:48:11

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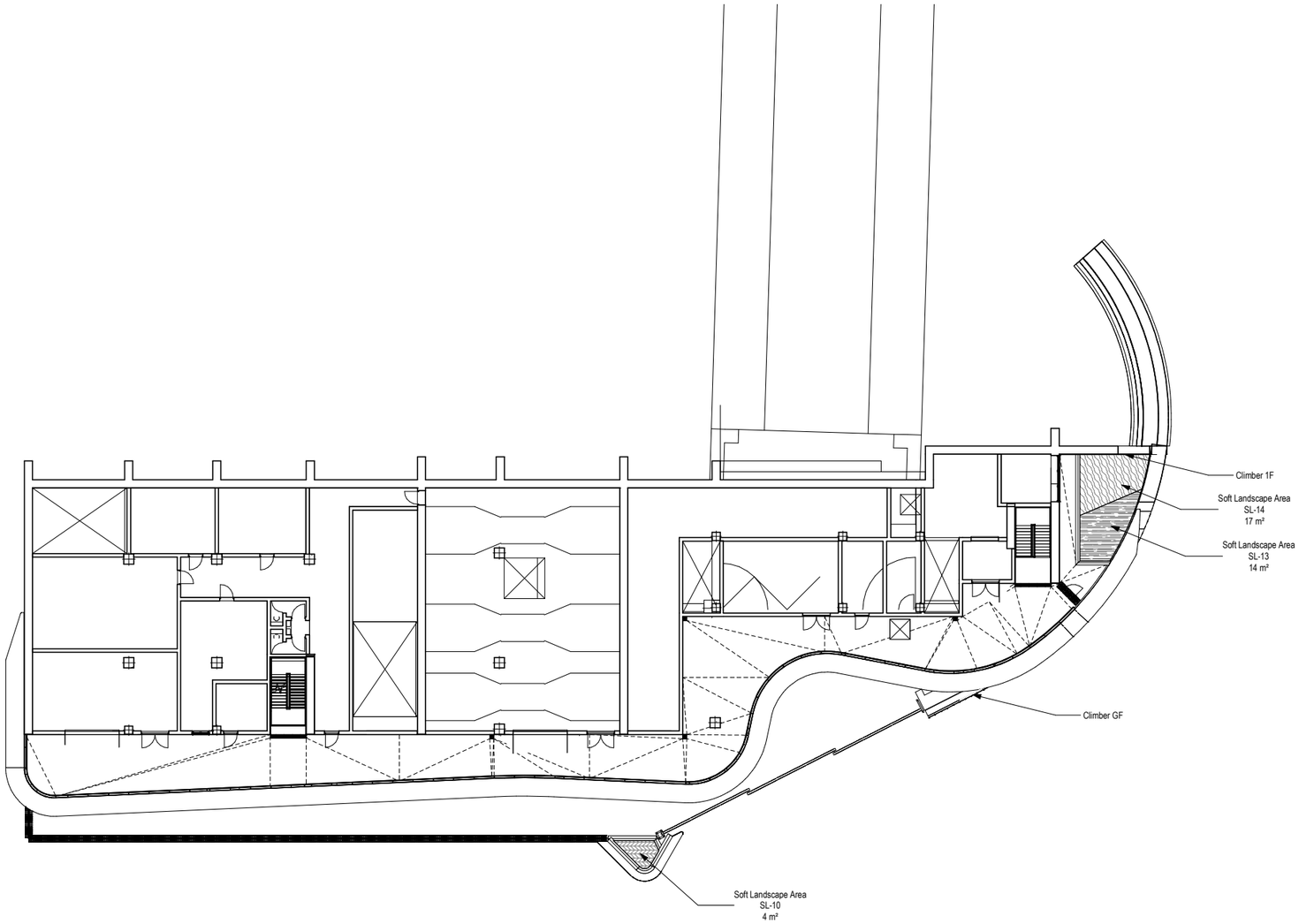

SOFT LANDSCAPE SCHEDULE GF+1F

SCALE 1 : 200

SHRUBS							
MARK	SCIENTIFIC NAME	CHINESE NAME	SIZE (mm)	SPACING (mm)	AREA	QUANTITY (No.)	SOIL DEPTH REQUIRED (mm)
SL-10	Bougainvillea spectabilis	簕杜鵑	800 x 800	800	4.2 m²	10	600
SL-13	Fatsia japonica	八角金盤	900 x 600	500	14.2 m²	30	600
SL-14	Ficus macrocarpa var.crassifolia	火山榕	1200 x 1000	1000	17 m²	20	600
CLIMBER							
LOCATION	SCIENTIFIC NAME	CHINESE NAME	SIZE (mm)	SPACING (mm)	AREA	QUANTITY (No.)	SOIL DEPTH REQUIRED (mm)
GF CLIMBER	Lonicera japonica	忍冬 (金銀花)	1000 x 450	450	52 m²	120	-
1F CLIMBER	Epiprenum aureum	綠蘿	600 x 350	400	13 m²	60	-

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ABBREVIATIONS :

S.R.L.	STRUCTURAL ROOF LEVEL
S.F.L.	STRUCTURAL FLOOR LEVEL
S.B.L.	STRUCTURAL BASEMENT LEVEL
R.G.L.	RAISED GROUND LEVEL
F.G.L.	FINISHED GROUND LEVEL
F.W.	FRESH WATER
DN, dn	NOMINAL DIAMETER
D.I.	DUCTILE IRON
C.I.	CAST IRON
PA	PLANTER AREA

NOTES :

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3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.

4. THE ARCHITECTURAL AND LANDSCAPE DESIGN OUTSIDE THE SITE BOUNDARY OF PAB IS VISUALISED FOR REFERENCE ONLY ON CONNECTIVITY OF THE SITE

5. THE FULL AUTOMATIC IRRIGATION POINTS AND SYSTEM TO BE DESIGNED AND PROPOSED BY THE CONTRACTOR FOR PROJECT MANAGER'S APPROVAL. (This is option only for irrigation plan)

C	04/22	TENDER ADDENDUM NO. 5		SKYY
B	03/22	TENDER ADDENDUM NO. 4		SKYY
A	01/22	1ST ISSUE OF TENDER		SKYY
	Designed	Checked	Drawn	Checked
Initial	SKYY	YY	SKYY	TL
Date	01/22	01/22	01/22	01/22

Approved

Contract No.

21 / WSD / 21

Contract Title

RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Drawing Title

SOFT LANDSCAPE SCHEDULE, GF+1F

Drawing No.

401049/B&V/AR/106000

Revision

C

Scale

A1 As indicated

水 務 署
Water Supplies Department

BINNIES HONG KONG LIMITED
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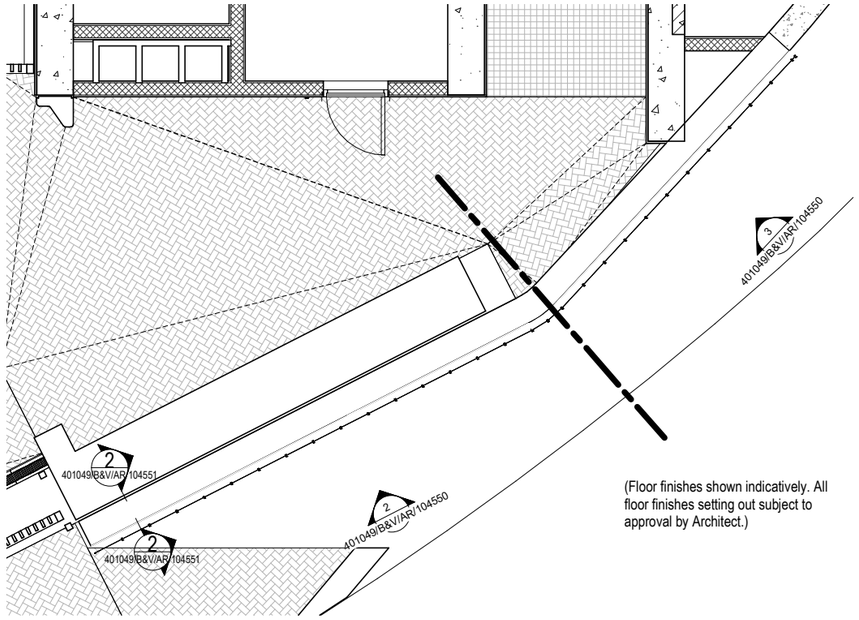
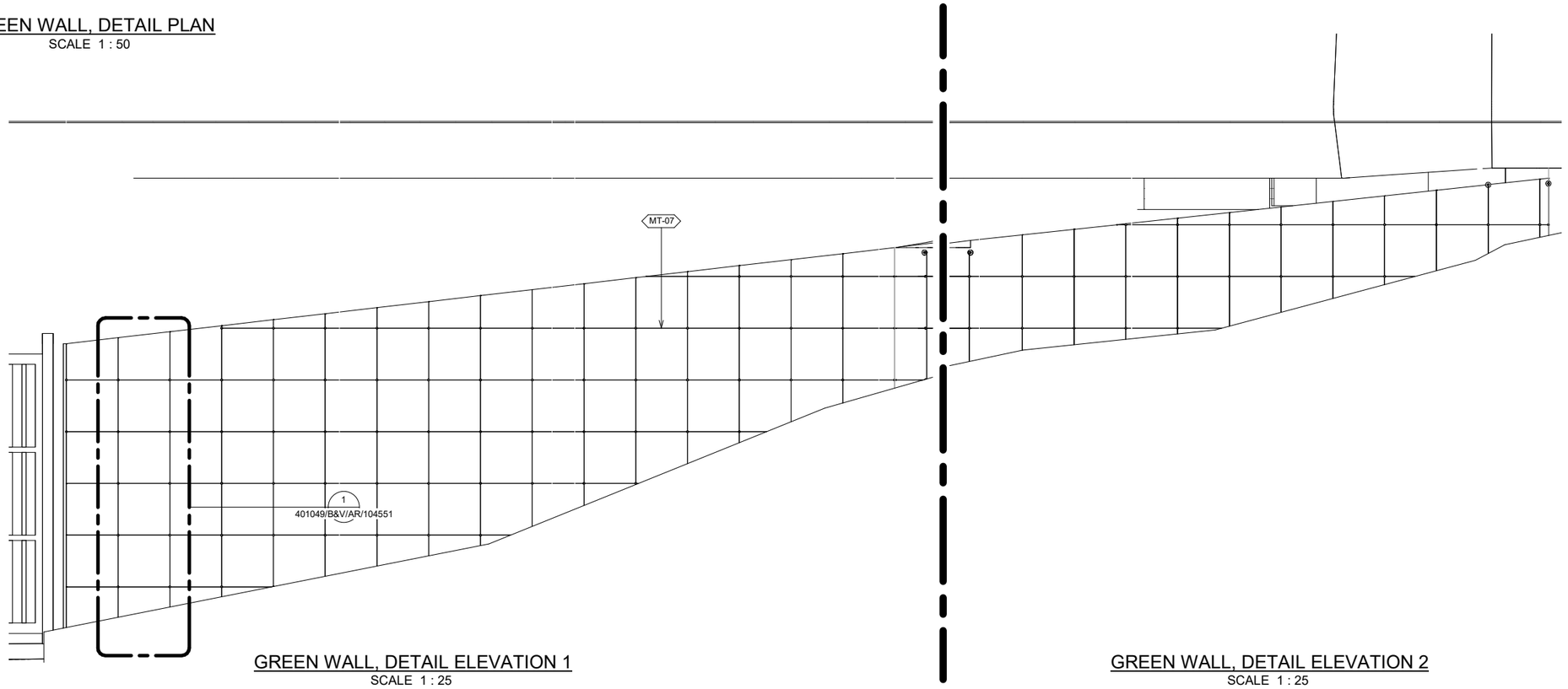
Plot Date: 13/04/2022 16:47:59

File Name: C:\Users\yyano\SKY YUTAKA LTD\319 WSD Building at Diamond Hill - Documents\02 CAD\01_AR\10_3D\BV-401049-PAB-AR-W.rvt



(Floor finishes shown indicatively. All floor finishes setting out subject to approval by Architect.)

GREEN WALL, DETAIL PLAN
SCALE 1 : 50



GREEN WALL, DETAIL ELEVATION 1
SCALE 1 : 25

GREEN WALL, DETAIL ELEVATION 2
SCALE 1 : 25

THIS DRAWING IS GENERATED FROM REVIT MODEL

ABBREVIATIONS :

S.R.L.	STRUCTURAL ROOF LEVEL
S.F.L.	STRUCTURAL FLOOR LEVEL
S.B.L.	STRUCTURAL BASEMENT LEVEL
R.G.L.	RAISED GROUND LEVEL
F.G.L.	FINISHED GROUND LEVEL
F.W.	FRESH WATER
DN, dn	NOMINAL DIAMETER
D.I.	DUCTILE IRON
C.I.	CAST IRON
PA	PLANTER AREA

NOTES :

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2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING SERIES NO. 401049/B&V/AR/101500-101600s'.

MATERIAL LEGEND :

CT-01	PRE-CAST CONCRETE MODULE	PT-01	MATTE FINISH EMULSION PAINT (EXTERNAL)
CT-02	COPING STONE	PT-02	EPOXY PAINT FINISH
CT-03	CONCRETE WALL (BOARD MARKED)	PT-03	PAINT FINISH ON CONCRETE STRUCTURE
CT-04	(CONCRETE WALL (FAIR FACED)	PV-01	PHOTOVOLTAIC PANELS
CT-05	GLASSFIBRE REINFORCED CONCRETE (GRC) PANELS	ST-01	ARTIFICIAL GRANITE FLOOR TILE (AGT) TYPE-1
MT-01	STEEL HANDRAIL WALL MOUNTED	ST-02	ARTIFICIAL GRANITE FLOOR TILE (AGT) TYPE-2
MT-02	STEEL HANDRAIL AND BALUSTRADE	ST-03	ARTIFICIAL GRANITE WALL TILE TYPE-1
MT-03	LANDSCAPE FENCING	ST-04	ARTIFICIAL GRANITE WALL TILE TYPE-2
MT-04	S/S DOOR SYSTEM	ST-05	PERMEABLE PAVER
MT-05	SECURITY ROLLER SHUTTER	ST-06	GABION WALL SYSTEM
MT-06	VENTILATION LOUVRES	ST-07	PEBBLE FLOORING
MT-07	VERTICAL GREEN CABLE GRID SYSTEM	ST-08	HOMOGENOUS ARTIFICIAL GRANITE TILE (AGT)
MT-08	CAST IRON DRAINAGE COVER	ST-09	GLAZED FULL BODY PORCELAIN TILES
MT-09	ALUMINIUM METAL CEILING PROFILE	WP-01	LIQUID APPLIED WATERPROOF MEMBRANE
MT-12	SECURITY FENCING CONCERTINA CROSS RAZOR CIRCULAR WIRE	WP-02	WATERPROOF MEMBRANE (SHEET TYPE)
MT-14	STEEL CLADDING AND CAPPING DETAIL		
MT-15	MANHOLE COVER		
MT-16	TELESCOPIC SLIDING GATE		
MT-17	BI-FOLDING TRACKED GATE		
MT-18	STAINLESS STEEL CAT LADDER		

B	03/22	TENDER ADDENDUM NO. 4		SKYY
A	01/22	1ST ISSUE OF TENDER		SKYY
	Designed	Checked	Drawn	Checked
Initial	SKYY	YY	SKYY	TL
Date	03/22	03/22	03/22	03/22

Approved

Contract No.
21 / WSD / 21

Contract Title
RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Drawing Title
ARCHITECTURAL DETAIL, CLIMBER GREEN WALL (Sheet 1 of 2)

Drawing No.
401049/B&V/AR/104550

Revision
B

Scale
A1 As indicated

水 務 署
Water Supplies Department

BINNIES HONG KONG LIMITED
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Plot Date: 24/03/2022 10:09:31

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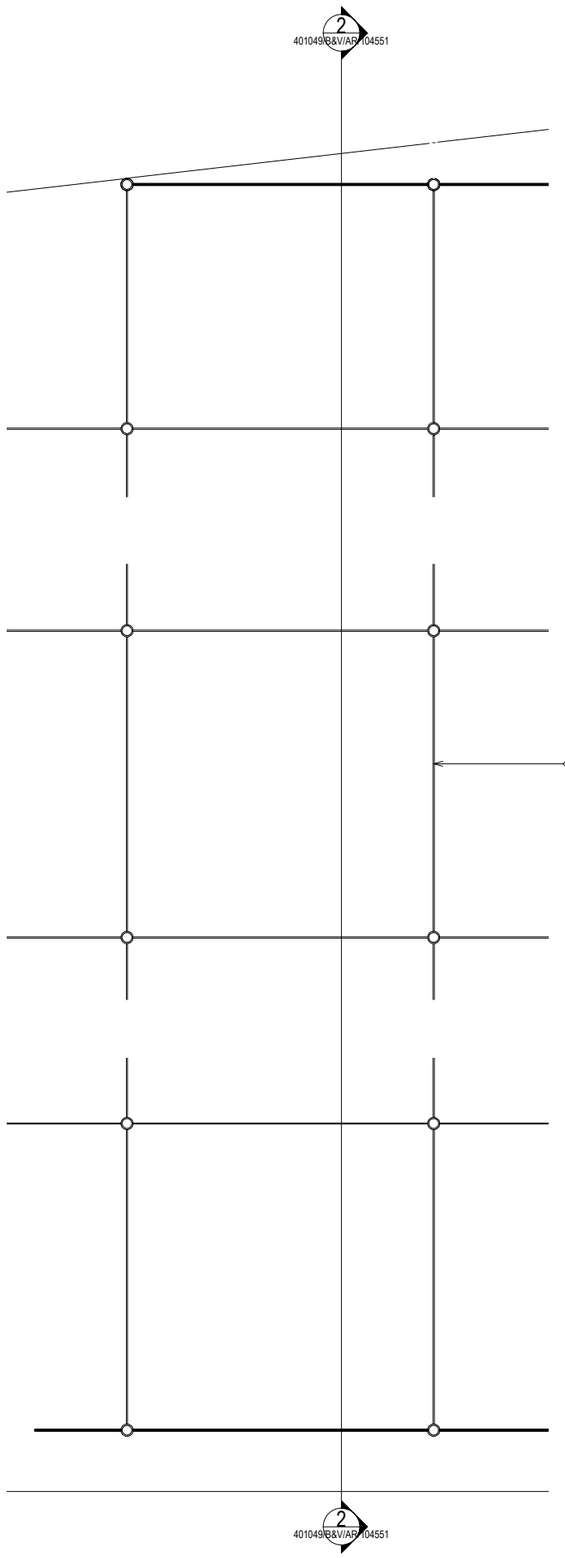
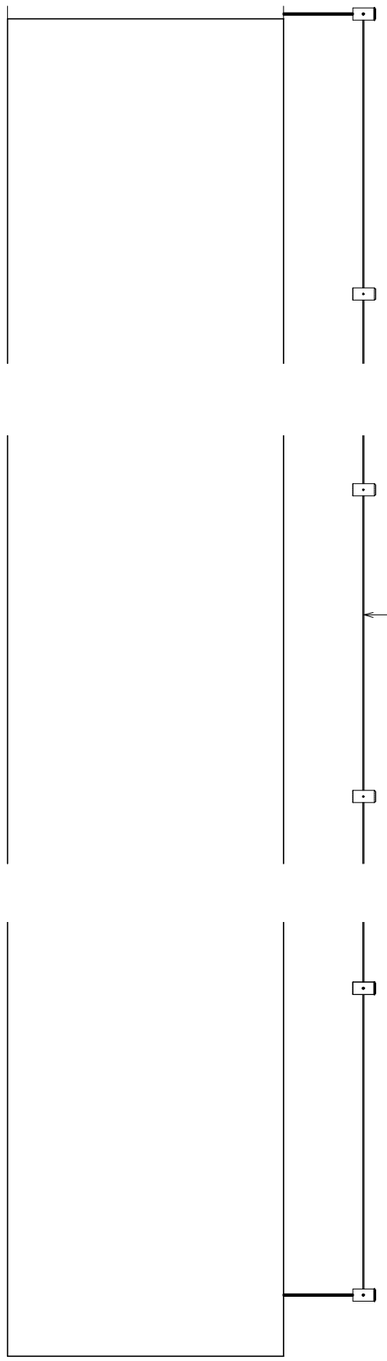
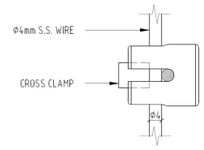


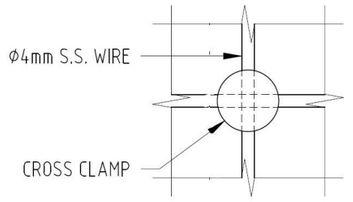
GREEN WALL, DETAIL ELEVATION
SCALE 1 : 5



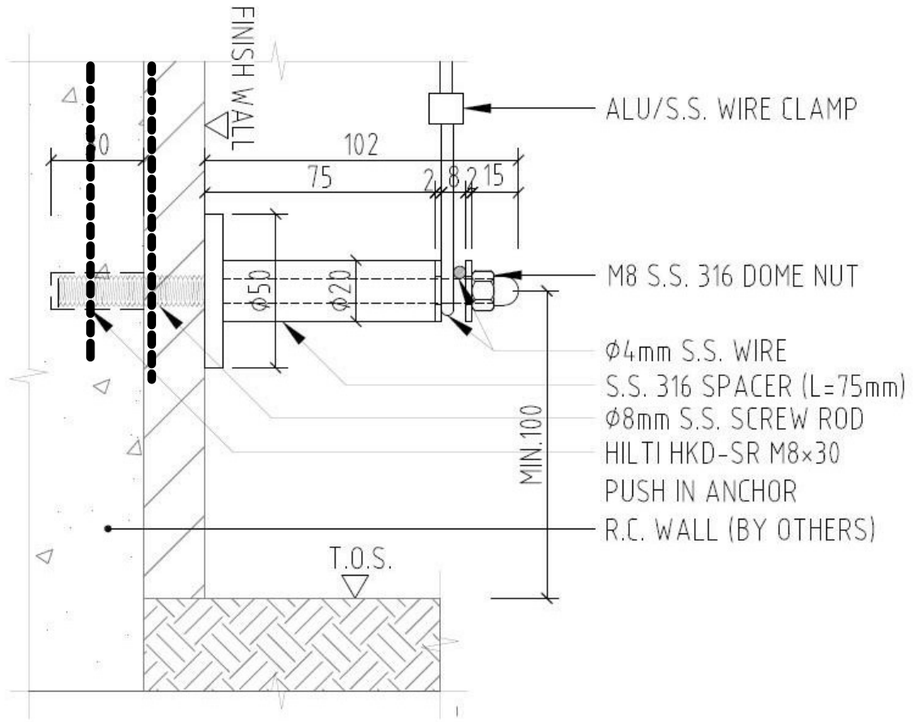
GREEN WALL, DETAIL SECTION
SCALE 1 : 5



TYPICAL DETAIL, CROSS CLAMP SIDE
SCALE 1 : 1



TYPICAL DETAIL, CROSS CLAMP FRONT
SCALE 1 : 2



TYPICAL DETAIL, SPACER
SCALE 1 : 3

THIS DRAWING IS GENERATED FROM REVIT MODEL

ABBREVIATIONS :

S.R.L.	STRUCTURAL ROOF LEVEL
S.F.L.	STRUCTURAL FLOOR LEVEL
S.B.L.	STRUCTURAL BASEMENT LEVEL
R.G.L.	RAISED GROUND LEVEL
F.G.L.	FINISHED GROUND LEVEL
F.W.	FRESH WATER
DN, dn	NOMINAL DIAMETER
D.I.	DUCTILE IRON
C.I.	CAST IRON
PA	PLANTER AREA

NOTES :

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B

MATERIAL LEGEND :

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MT-01	STEEL HANDRAIL WALL MOUNTED	ST-02	ARTIFICIAL GRANITE FLOOR TILE (AGT) TYPE-2
MT-02	STEEL HANDRAIL AND BALUSTRADE	ST-03	ARTIFICIAL GRANITE WALL TILE TYPE-1
MT-03	LANDSCAPE FENCING	ST-04	ARTIFICIAL GRANITE WALL TILE TYPE-2
MT-04	S/S DOOR SYSTEM	ST-05	PERMEABLE PAVER
MT-05	SECURITY ROLLER SHUTTER	ST-06	GABION WALL SYSTEM
MT-06	VENTILATION LOUVRES	ST-07	PEBBLE FLOORING
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	Designed	Checked	Drawn	Checked
Initial	SKYY	YY	SKYY	TL
Date	03/22	03/22	03/22	03/22

Approved

Contract No.
21 / WSD / 21

Contract Title
RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Drawing Title
ARCHITECTURAL DETAIL, CLIMBER GREEN WALL (Sheet 2 of 2)

Drawing No.
401049/B&V/AR/104551

Revision
B

Scale
A1 As indicated

水 務 署
Water Supplies Department

BINNIES HONG KONG LIMITED
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Plot Date: 24/03/2022 10:09:39

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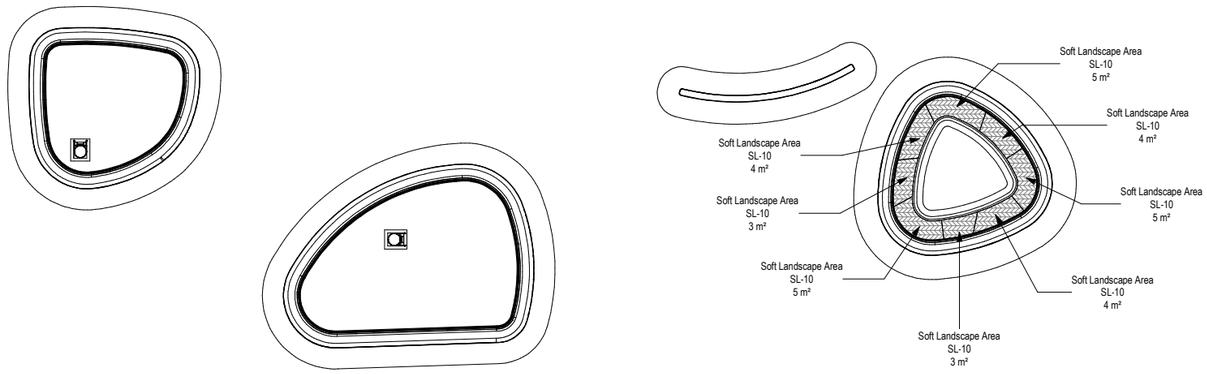

SOFT LANDSCAPE SCHEDULE ROOF CANOPY

SCALE 1 : 200

SHRUBS							
MARK	SCIENTIFIC NAME	CHINESE NAME	SIZE (mm)	SPACING (mm)	AREA	QUANTITY (No.)	SOIL DEPTH REQUIRED (mm)
SL-10	Bougainvillea spectabilis	叻杜鵑	800 x 800	800	31.8 m²	60	300

C

THIS DRAWING IS GENERATED FROM REVIT MODEL

ABBREVIATIONS :

S.R.L.	STRUCTURAL ROOF LEVEL
S.F.L.	STRUCTURAL FLOOR LEVEL
S.B.L.	STRUCTURAL BASEMENT LEVEL
R.G.L.	RAISED GROUND LEVEL
F.G.L.	FINISHED GROUND LEVEL
F.W.	FRESH WATER
DN, dn	NOMINAL DIAMETER
D.I.	DUCTILE IRON
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PA	PLANTER AREA

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	Designed	Checked	Drawn	Checked
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Date	01/22	01/22	01/22	01/22

Approved

Contract No.
21 / WSD / 21

Contract Title
RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Drawing Title
SOFT LANDSCAPE SCHEDULE, ROOF CANOPY

Drawing No.
401049/B&V/AR/106002

Revision
C

Scale
A1 As indicated

水 務 署
Water Supplies Department

BINNIES HONG KONG LIMITED
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Plot Date: 13/04/2022 16:48:21

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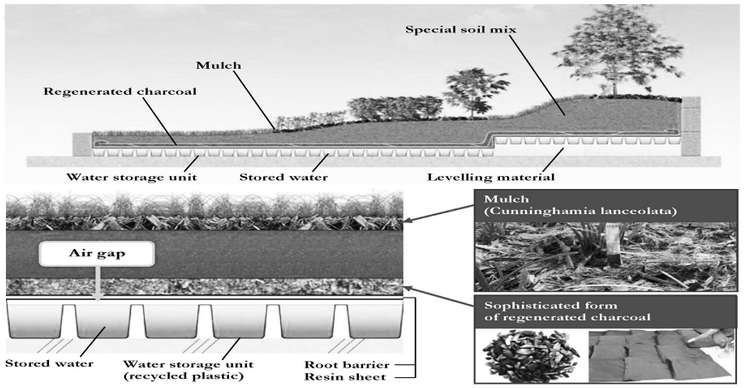

Water Storage Unit Types

		Grass	Groundcover	Groundcover	Shrubs (small)	Shrubs (large)	Mid-sized trees
		Slim type	Standard type	100~500mm	600mm or less	900mm~1,200mm	1,500mm~2,500mm
Vegetation installation examples							
Plant spacing		Complete coverage	Complete coverage	200mm intervals	400mm intervals	600mm intervals	1,000mm intervals
Mulch	mm	-	-	50	50	50	50

SL - Green Roof System

Specification for Design, Supply and Installation of Green Roof System

Soft landscape contractor to propose system design with following general requirement for architect and client approval:

- Saves costs by using dramatically less water than conventional greening systems
- Reduces temperatures of concrete decks by over 30°C
- Decreases the thermal load of the local environment by transferring heat to vegetation
- Removes more CO2 from the atmosphere through photosynthesis
- Offers flexibility around loading constraints by tailoring soil depth, as required

The Lightweight proprietary green roof system shall comprise:
(1) Drainage composite for drainage and water retention;
(2) Water Storage unit to retain water;
(3) Root barrier to prevent roots from penetrating to the waterproofing membrane system;
(4) Protection layer to protect the waterproofing membrane;

Contractor to observe and comply with the following codes and relevant standards including: BS 8616:2019 (Specification for performance parameters and test methods for green roof substrates); BS6229:2018 Flat roofs with continuously supported flexible waterproof covering; relevant structural design criteria, as per BS EN 1990:2002 'Eurocode - Basis of Structural Design'; Dead and imposed loads to be calculated in accordance with BS EN 1991-1-1, BS EN 1991-1-3 and BS EN 1991-1-4; Densities, self-weight, imposed loads for buildings (BS EN 1991-1-1:2002) and ASTM codes; CE-marked and BS EN 13252 and current Hong Kong standards.

The Green Roof System shall consist of the following requirements:

Water storage units (drainage composite)
A lightweight and high strength water retention and drainage tray manufactured from fully recycled and recyclable plastics using injection moulding process. The trays shall be locked and interlinked. The configuration of each reservoir tray to ensure that it fills evenly throughout and that any excess water overflowing from a single tray shall be cut on-site to match the rooftop design's requirements.

- Water storage volume: Standard type = 34L/m2
- Melt flow: 5-60g/10min
- Relative density: 0.89 – 0.95
- Modulus of elongation: 600 – 2,000MPa
- Tensile yield point stress: 10-45mPa
- Charpy impact strength (23deg): 1-20kJ/m2
- Compressive load test: greater than 450kN/m2

Regenerated Charcoal
Charcoal layer to be installed above the water storage units and below the soil to absorb water vapour from the air gap and to feed water steadily to the roots above.

- Unused wooden material (ie. driftwood, thinned forest wood, formwork) is used
- Surface area: above 370m2/g.
- Minimum spontaneous combustion temperature of 400deg.
- All charcoal to be sealed within individual bags

Root Barrier (protection layer 1)
The root barrier to be positioned directly above the high strength reservoir trays thus ensuring that the roots of the vegetation will not come into direct contact with and thus damage the waterproofing layer/concrete screed.

- Material; high-density polyester
- Allow water to enter and exit the system but roots cannot penetrate through to the reach reservoir trays
- Strength shall not decrease when immersed in water or soil
- Thickness: 0.1mm
- Tensile strength: vertical 648 x horizontal 585N/5cm
- Degree of elongation: 29 x 29%
- Tear strength: 18 x 18N
- Coefficient of permeability: 4.8x 10-4 cm/sec

Resin Net
Resin net to be installed above the water storage units together with the root barrier layer.

- Material: high density polyethylene
- Melt flow: 0.1 – 1.0g/10min
- Relative density: 0.94 – 0.96
- Estimated usable temperature: -060deg to 100degC
- Number of threads: 260 / 100cm
- Shielding ratio: 42%
- Yield point strength: greater than 2,740N/m
- Loop strength: greater than 196N/thread

Hechimaron

- *Porous medium made from polypropylene resin.*
- *Thickness: 2mm*
- *Strain rate: 22% (representative value) under 300kPa (30tf/m2) compressive load.*
- *Surface aperture rate: 80% - 97%. Hechimaron has a large area for water-absorption due to its high rate of surface aperture with a wide space for water conduction (porosity rate: 80% - 97%) inside its body thus ensuring that the water catchment and drainage performance levels are high).*
- *The produce to be heat-sealed and no adhesive agents are used.*

Waterproofing
Refer to specification for PT-03.

Special notes:
If any irrigation system is adopted, it should be placed directly above the charcoal layer (ie. within the soil base). This positioning will help ensure that the upper surface remains dry within fine weather thus enabling more effective rooftop accessibility)

In the unlikely event that irrigation is required, one (1) hose should be able to manually cover a surface area of approximately 200m2 whilst one (1) water gauge would generally be required every 100m2 for observation purposes. In case of installation, contractor to allow for rain sensor and solar powered automatic water timer.

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B	03/22	TENDER ADDENDUM NO. 4			SKYY
A	01/22	1ST ISSUE OF TENDER			SKYY
	Designed		Checked	Drawn	Checked
Initial	SKYY		YY	SKYY	TL
Date	03/22		03/22	03/22	03/22

Approved

Contract No.
21 / WSD / 21

Contract Title
RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Drawing Title
GREEN ROOF SYSTEM SPECIFICATION

Drawing No.
401049/B&V/AR/106100

Revision
B

Scale
A1 1 : 100

水務署
Water Supplies Department

BINNIES HONG KONG LIMITED
賓尼斯工程顧問有限公司

Plot Date: 24/03/2022 10:18:28

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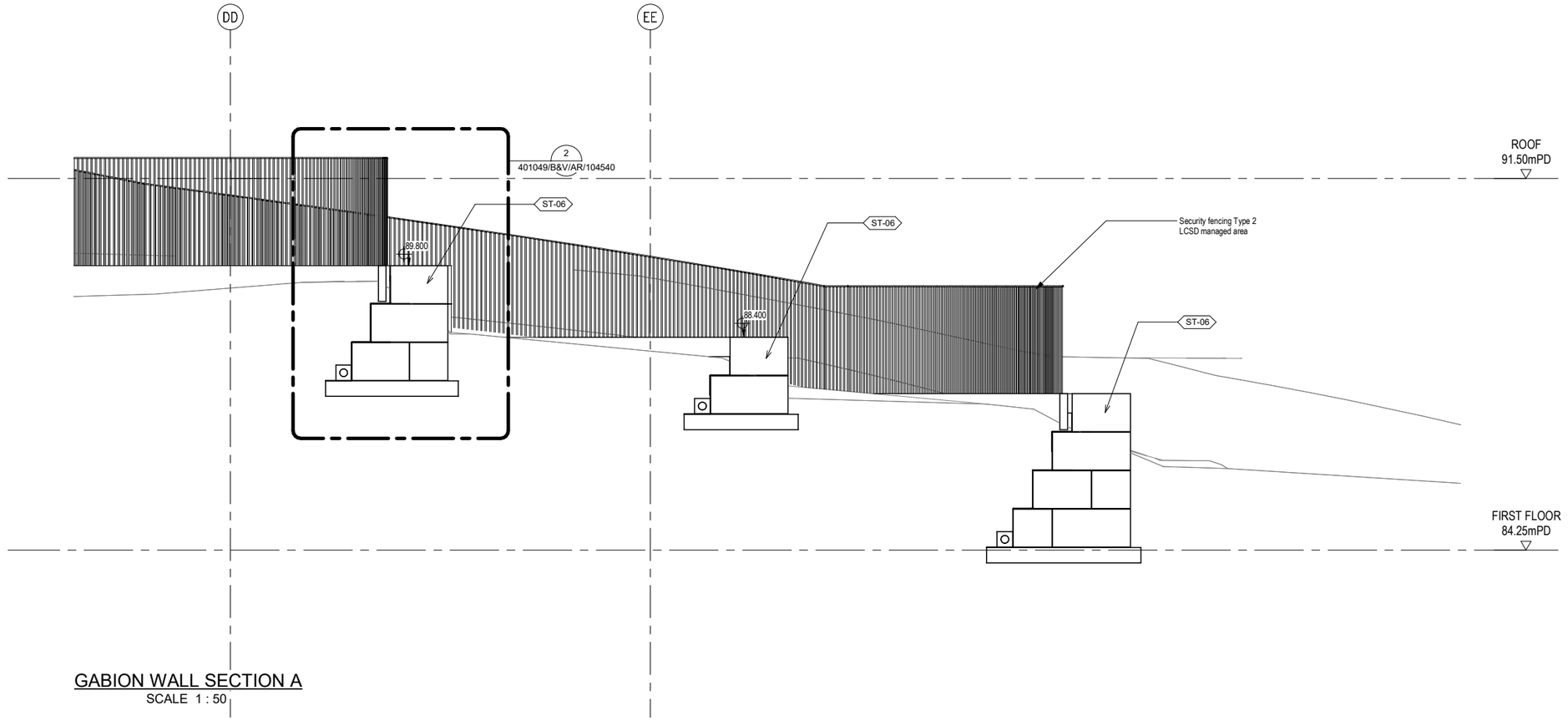
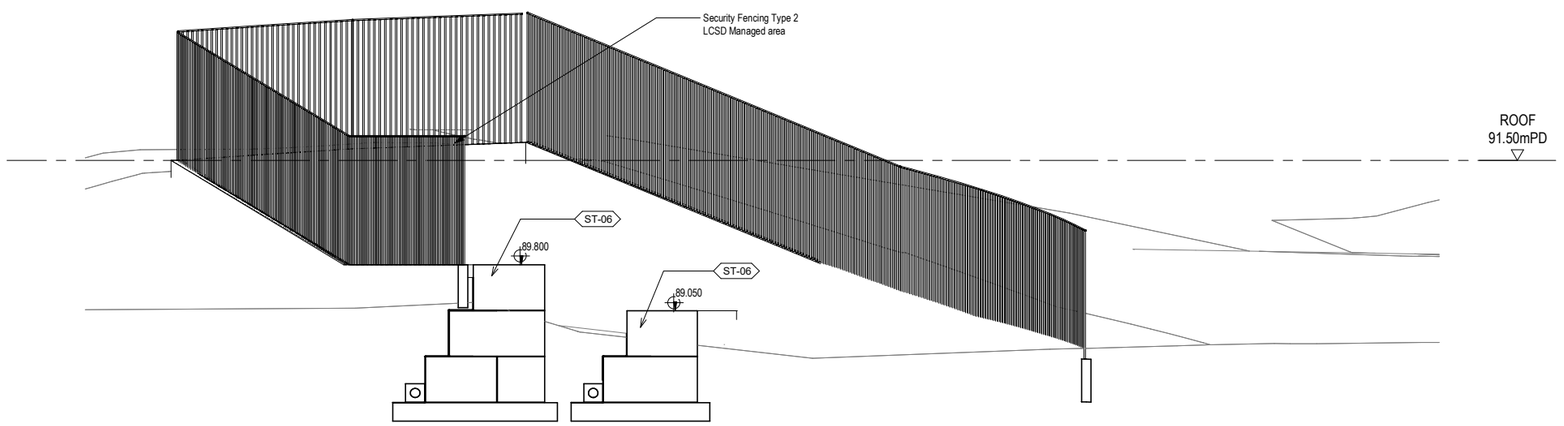


GABION WALL SECTION A
SCALE 1 : 50



GABION WALL SECTION B
SCALE 1 : 50

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ABBREVIATIONS :

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S.F.L.	STRUCTURAL FLOOR LEVEL
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3. ALL SOFTSCAPE ARE INDICATIVE ONLY, CONTRACTOR SHALL REFER TO SOFT LANDSCAPE DRAWINGS SERIES NO. 401049/B&V/AR/106000s'
4. ALL HARDSCAPE DESIGN TO BE READ IN CONJUNCTION WITHIN HARD LANDSCAPE DRAWINGS SERIES NO. 401049/B&V/AR/104000s'
5. ALL DOORS, LOUVERS AND LIGHTING REFER TO SCHEDULE DRAWINGS SERIES NO. 401049/B&V/AR/105000s'

B

MATERIAL LEGEND :

CT-01	PRE-CAST CONCRETE MODULE	PT-01	MATTE FINISH EMULSION PAINT (EXTERNAL)
CT-02	COPING STONE	PT-02	EPOXY PAINT FINISH
CT-03	CONCRETE WALL (BOARD MARKED)	PT-03	PAINT FINISH ON CONCRETE STRUCTURE
CT-04	(CONCRETE WALL (FAIR FACED)	PV-01	PHOTOVOLTAIC PANELS
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MT-01	STEEL HANDRAIL WALL MOUNTED	ST-02	ARTIFICIAL GRANITE FLOOR TILE (AGT) TYPE-2
MT-02	STEEL HANDRAIL AND BALUSTRADE	ST-03	ARTIFICIAL GRANITE WALL TILE TYPE-1
MT-03	LANDSCAPE FENCING	ST-04	ARTIFICIAL GRANITE WALL TILE TYPE-2
MT-04	S/S DOOR SYSTEM	ST-05	PERMEABLE PAVER
MT-05	SECURITY ROLLER SHUTTER	ST-06	GABION WALL SYSTEM
MT-06	VENTILATION LOUVRES	ST-07	PEBBLE FLOORING
MT-07	VERTICAL GREEN CABLE GRID SYSTEM	ST-08	HOMOGENOUS ARTIFICIAL GRANITE TILE (AGT)
MT-08	CAST IRON DRAINAGE COVER	ST-09	GLAZED FULL BODY PORCELAIN TILES
MT-09	ALUMINIUM METAL CEILING PROFILE	WP-01	LIQUID APPLIED WATERPROOF MEMBRANE
MT-12	SECURITY FENCING CONCERTINA CROSS RAZOR CIRCULAR WIRE	WP-02	WATERPROOF MEMBRANE (SHEET TYPE)
MT-14	STEEL CLADDING AND CAPPING DETAIL		
MT-15	MANHOLE COVER		
MT-16	TELESCOPIC SLIDING GATE		
MT-17	BI-FOLDING TRACKED GATE		
MT-18	STAINLESS STEEL CAT LADDER		

B	03/22	TENDER ADDENDUM NO. 4	SKYY
A	01/22	1ST ISSUE OF TENDER	SKYY

	Designed	Checked	Drawn	Checked
Initial	SKYY	YY	SKYY	TL
Date	03/22	03/22	03/22	03/22

Approved

Contract No.
21 / WSD / 21

Contract Title
RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Drawing Title
ARCHITECTURAL SECTIONS, GABION WALL

Drawing No.
401049/B&V/AR/103100

Revision
B

Scale
A1 As indicated

水 務 署
Water Supplies Department

BINNIES HONG KONG LIMITED
賓 尼 斯 工 程 顧 問 有 限 公 司

Plot Date: 24/03/2022 09:58:18

File Name: C:\Users\yyano\SKY YUTAKA LTD\319 WSD Building at Diamond Hill - Documents\02 CAD\01_AR\10_3D\BV-401049-PAB-AR-W.rvt

Appendix D – Landscape and Visual Mitigation Plan

Aerial Perspective
SCALE

A	03/22	FOR INFORMATION		SKYY
	Designed	Checked	Drawn	Checked
Initial	SKYY	YY	SKYY	TL
Date				

Approved

Contract No.
21 / WSD / 21

Contract Title
RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Drawing Title
FIGURES, AERIAL PERSPECTIVE

Drawing No.	Revision
401049/B&V/AR/100034	A

Scale A1

水 務 署
Water Supplies Department

BINNIES HONG KONG LIMITED
賓尼斯工程顧問有限公司

THIS DRAWING IS GENERATED FROM REVIT MODEL

Plot Date: 02/03/2022 8:30:17

File Name: C:\Users\yyano\SKY YUTAKA LTD\319 WSD Building at Diamond Hill - Documents\02 CAD\01_AR\10_3D\BV-401049-PAB-AR-W.rvt

Appendix E – Conceptual Hoarding Plan

836950 E
837000 E
837050 E
837100 E
837150 E
822850 N
822800 N
822750 N
822700 N

Proposed 5m wide entrance

Suggested Hoarding layout

Conforming Hoarding layout

Existing chainlink fence

Interface with existing chainlink fence

Proposed 5m wide entrance

PROPOSED ACCESS TUNNEL

TEMPORARY HAUL ROAD GATE TO BE DESIGNED BY THE CONTRACTOR

獅子山公園
Lion Rock Park

獅子山公園轉運苗圃園景組
Lion Rock Park Transit Nursery Landscape Section

Entrance of Nursery

Nursery (No.50-55)

Nursery (No.56-60)

Tennis Court

Volleyball Court

Basketball Court

Stand

Elevated Road

Chun Sing House

CHUK YUEN ROAD

竹園道

龍翔道

Road

NOTES:

1. THE LOCATION AND WIDTH OF GATE SHOWN ARE INDICATIVE ONLY AND SHALL BE PROPOSED BY THE CONTRACTOR AND ACCEPTED BY THE PROJECT MANAGER.
2. EXACT LOCATION AND EXTENTS OF HOARDING TO BE ACCEPTED BY THE PROJECT MANAGER.
3. REFER TO WATER SUPPLIER DEPARTMENT STANDARD DRAWING NO. WSD 7.34G FOR DETAILS OF HOARDING.
4. 6m HEIGHT GANTRY GATE INCLUDING FOUNDATION SYSTEM OR EQUIVALENT TO BE DESIGNED AND CONSTRUCTED BY THE CONTRACTOR. THE DETAILS AND EXACT LOCATION TO BE PROPOSED BY THE CONTRACTOR AND ACCEPTED BY THE PROJECT MANAGER.

LEGENDS:

- SITE BOUNDARY
- WSD HOADRING (REFER TO WSD STANDARD DRAWING NO. WSD7.34G)
- GATE (CONTRACTOR'S DESIGN)
- GATE (REFER TO WSD STANDARD DRAWING NO. WSD6.3G OR OTHERWISE AGREED BY THE PROJECT MANAGER)

Revision	Date	Description	Initial
B	05/22	TENDER ADDENDUM NO.2	EC
A	02/22	TENDER ADDENDUM NO.2	EC

Designed	Checked	Drawn	Checked
EC	WL	SZ	TL
02/22	02/22	02/22	02/22

Approved

Agreement No.: 21/WSD/21

Project Title: RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Drawing Title: HOARDING PLAN

Drawing No.: 401049/B&V/GN/004001

Revision: B

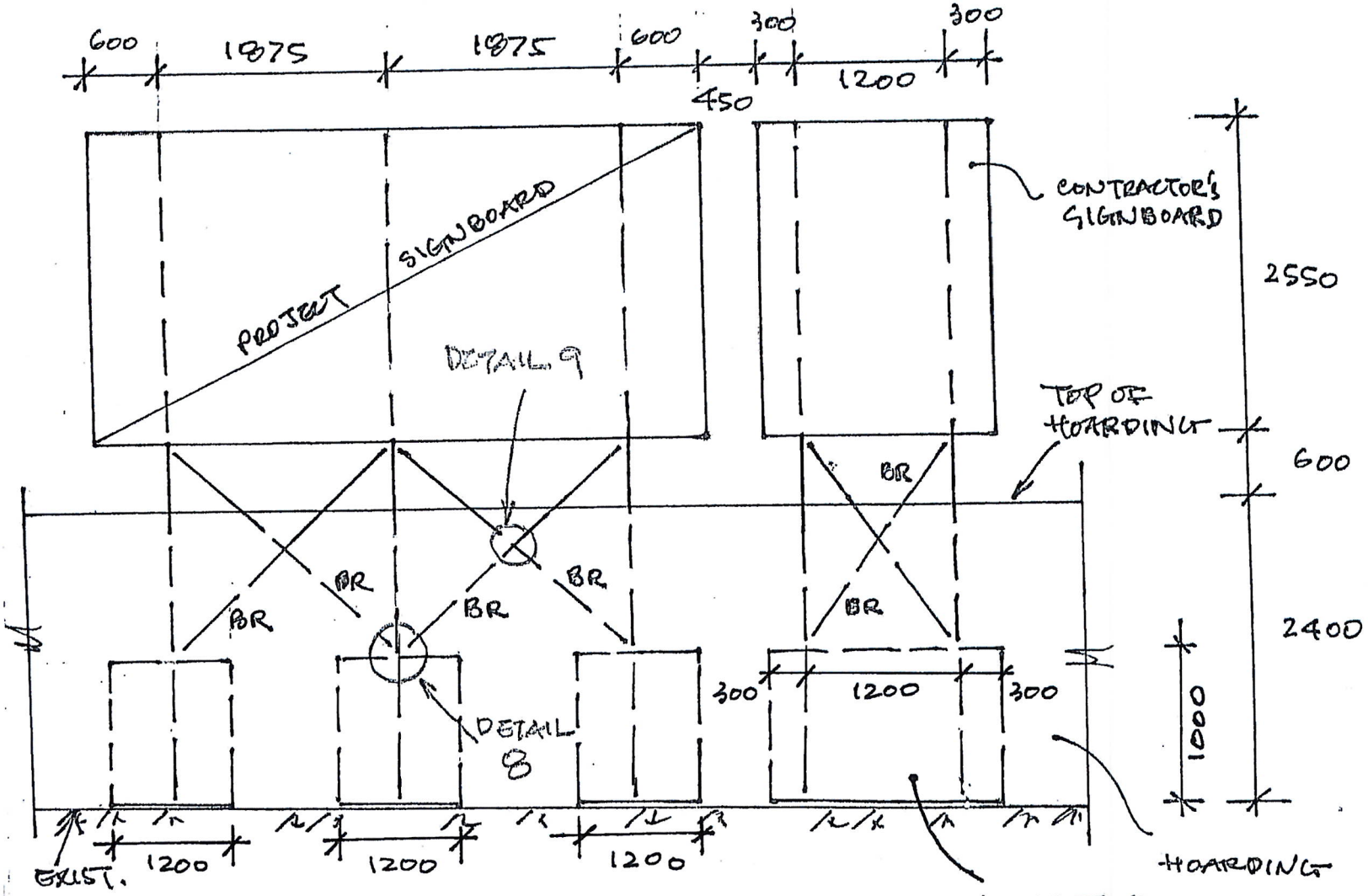
Scale: ~~A1 1 : 400~~ ~~A3 1 : 800~~

水務署 Water Supplies Department

BINNIES HONG KONG LIMITED 賓尼斯工程顧問有限公司

Plot Date : 2022/5/5 上午 11:56:59

File Name : Z:\TO Team\STO-3 Steven Tong\Diamond Hill\From Esther\401049-B&V-GN-004001_B



TYPICAL SIGNBOARD / CONTRACTOR SIGNBOARD ELEVATION
N.T.S.

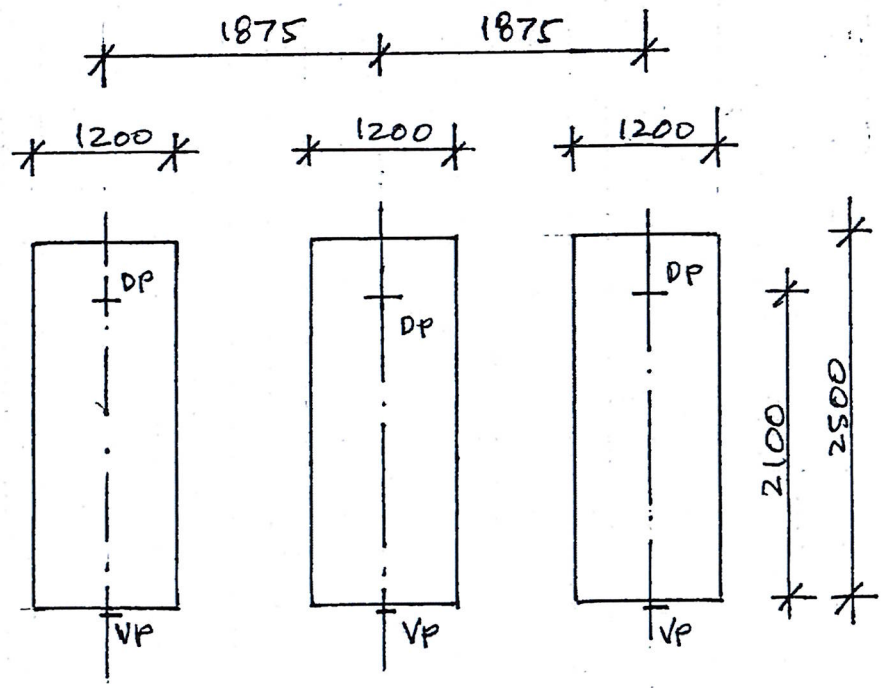
SK1

BR : 40 x 40 x 5 EA (TYP.)

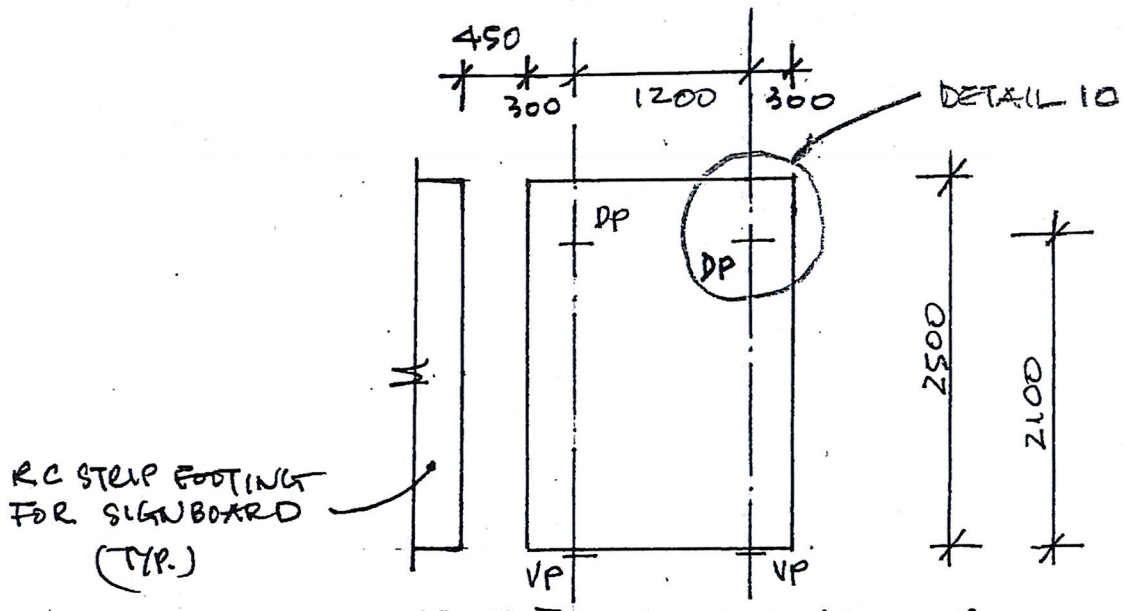
READ THIS SKETCH IN CONJUNCTION WITH WSD STANDARD DRAWINGS No.: WSD 7.30C, WSD 7.32C AND WSD 7.34G, U.N.O.

CALCULATIONS
By
Check
Subject:
Job No.
Ref. Drg. No.:
Date
Page No.:

	CALCULATIONS	Job No.	Page No.: 1
	By	Ref. Drg. No.:	Date 10 May 2023
	Check	Subject: RC STRIP FOOTING DETAILS	



STRIP FOOTING LAYOUT PLAN - SIGNBOARD
N.T.S.



STRIP FOOTING OF CONTRACTOR'S SIGNBOARD
N.T.S.

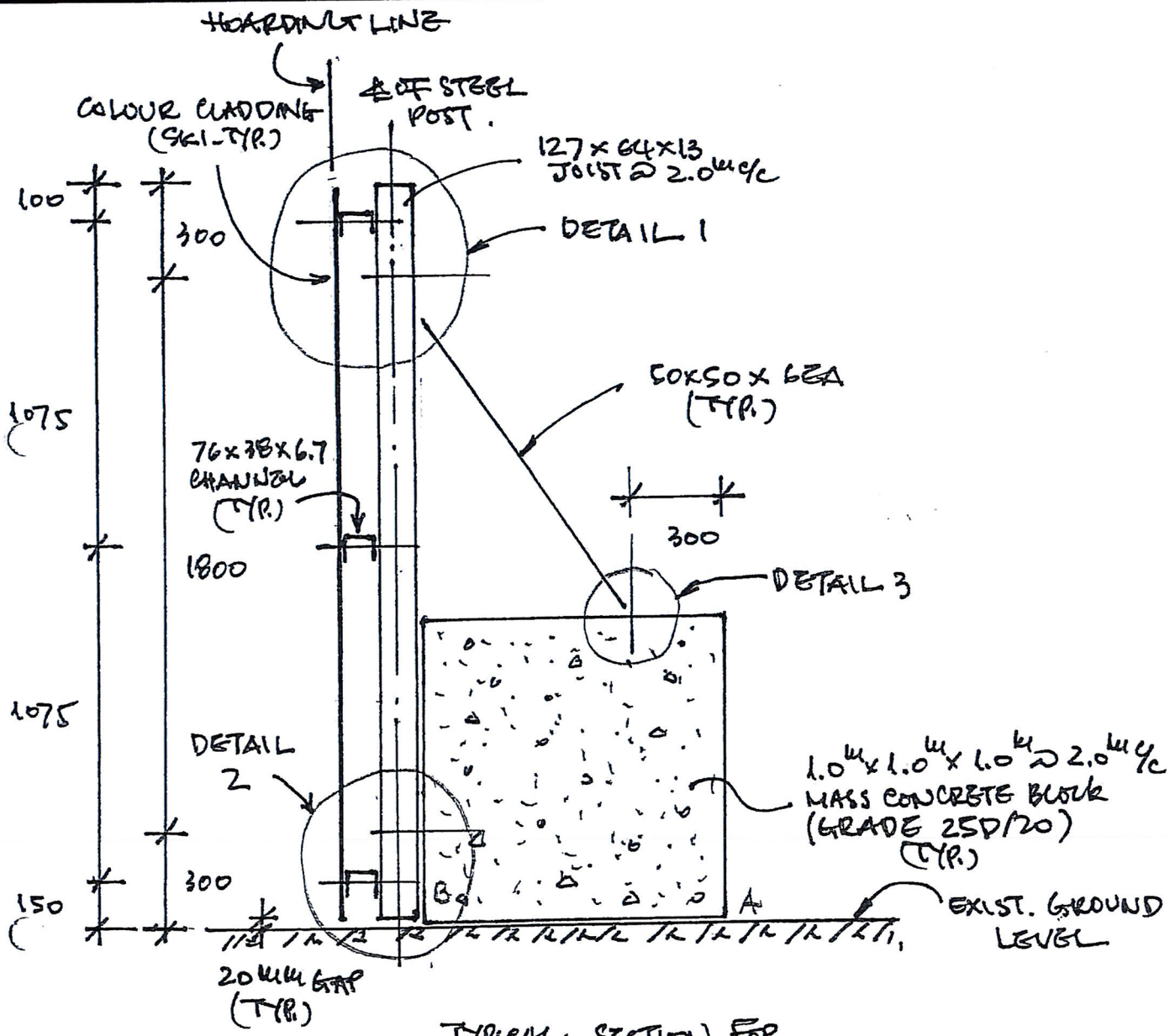
MEMBER SCHEDULE:

- VP: VERTICAL POST
  127x76x13.0 CHANNEL
- DP: DIAGONAL PROP
  127x76x13.0 CHANNEL.
- CONCRETE GRADE: 30D/20
- REINFORCEMENT GRADE: 500B

SK 2

THE FIXING OF STEEL COLUMNS AND DIAGONAL PROPS ARE NOT SHOWN FOR CLARITY.

CALCULATIONS	Job No.	Page No.:
By	Ref. Drg. No.:	Date
Check	Subject:	



TYPICAL SECTION FOR 2.40M HOARDING N.T.S.

SK 3

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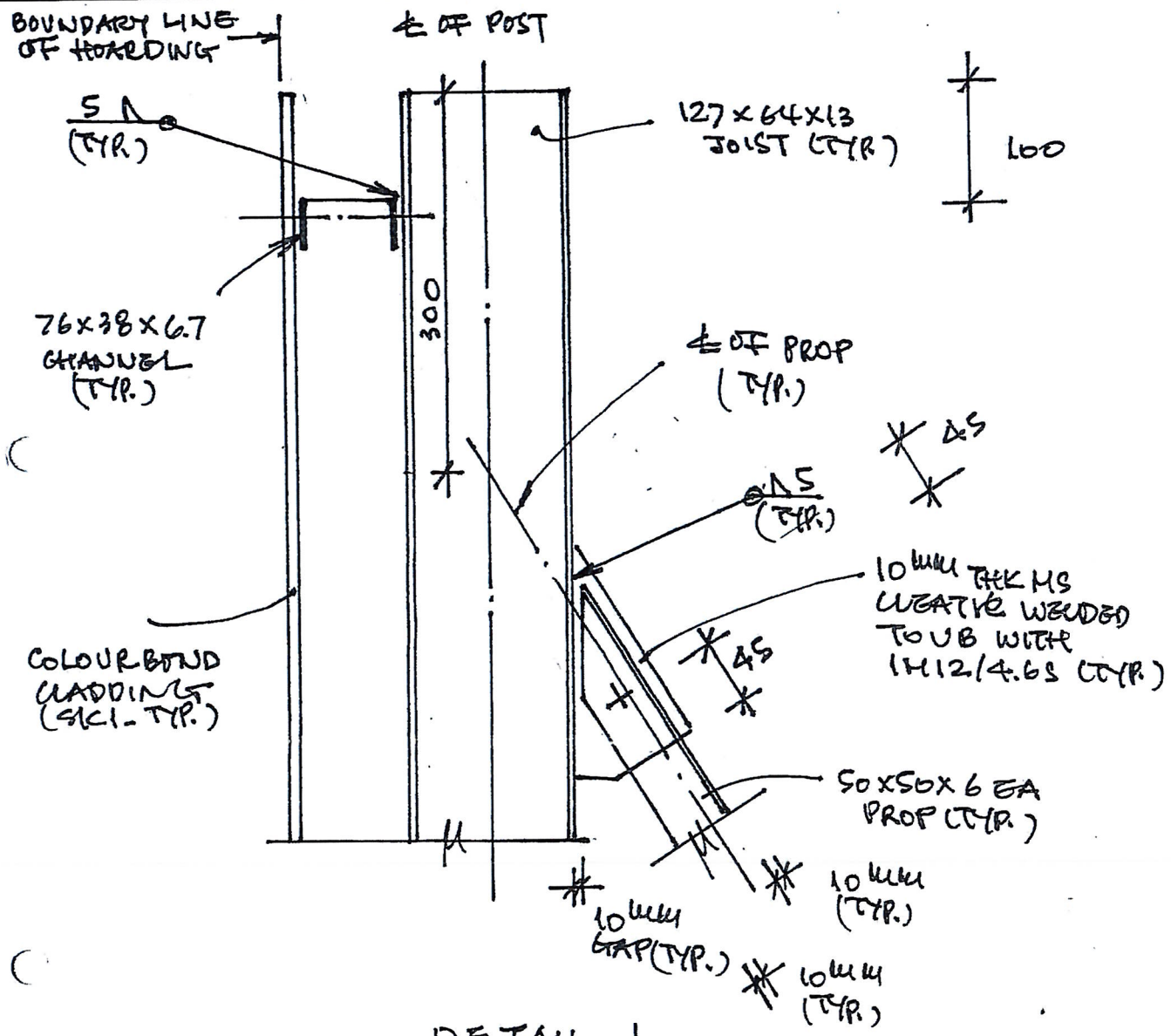
	By	Ref. Drg. No.:	Date
	Check	Subject:	



DETAIL 1
N.T.S.

SK4

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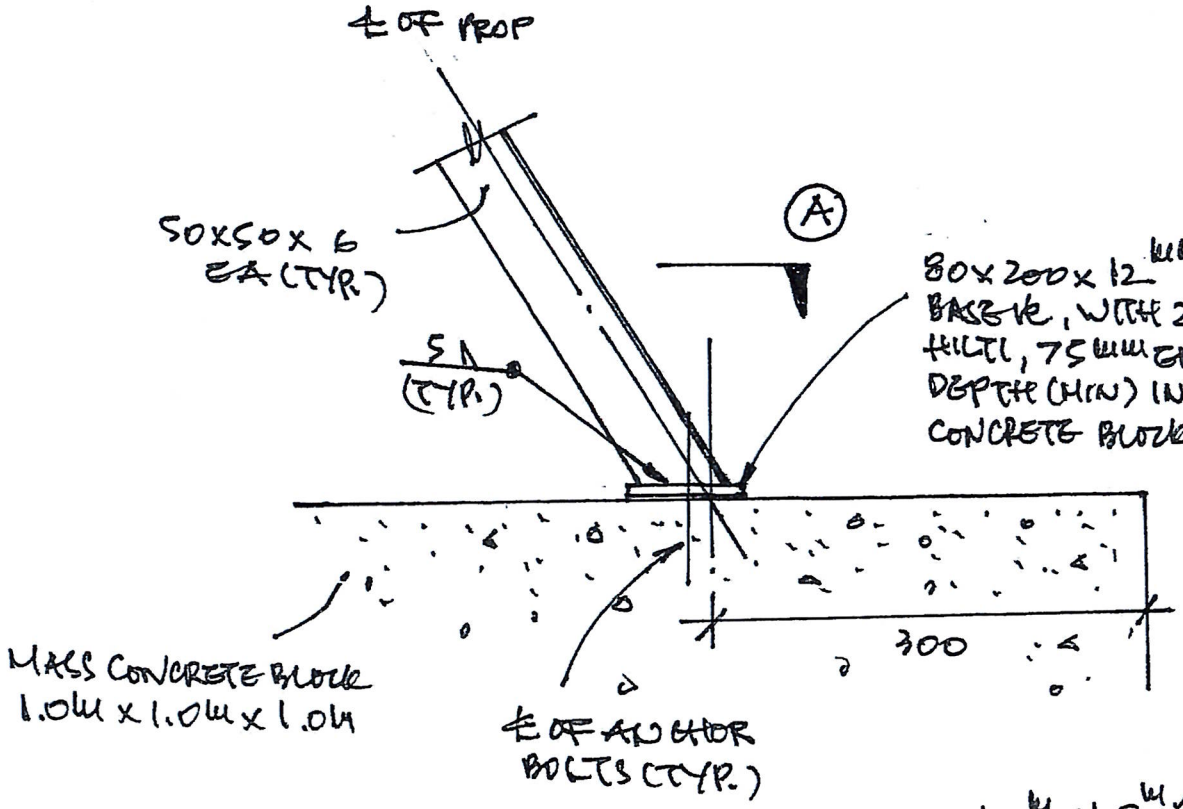

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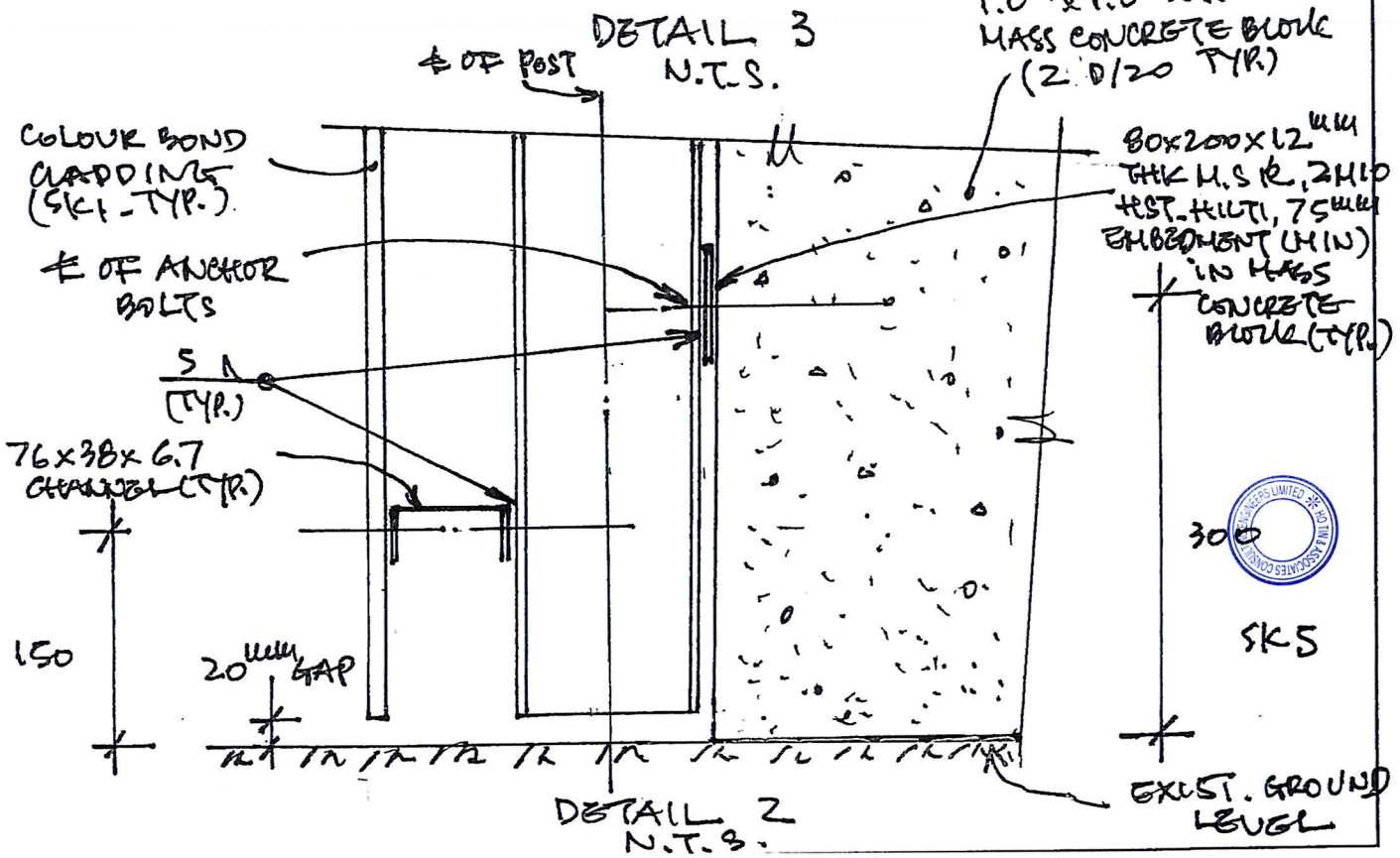

DETAIL 2
N.T.S.

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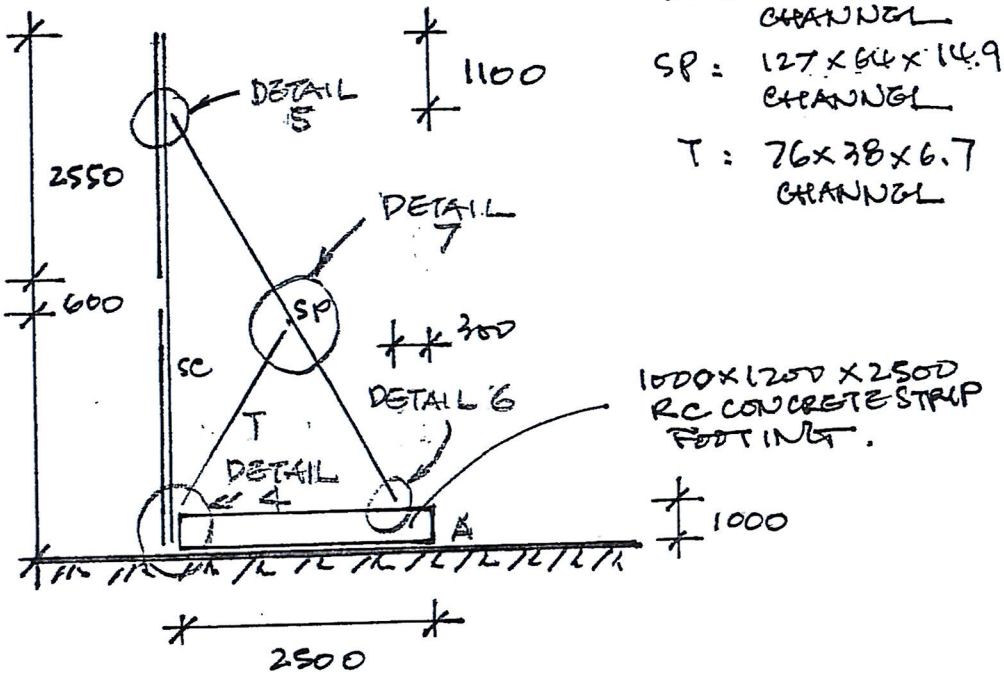
	By	Ref. Drg. No.:	Date
	Check	Subject:	

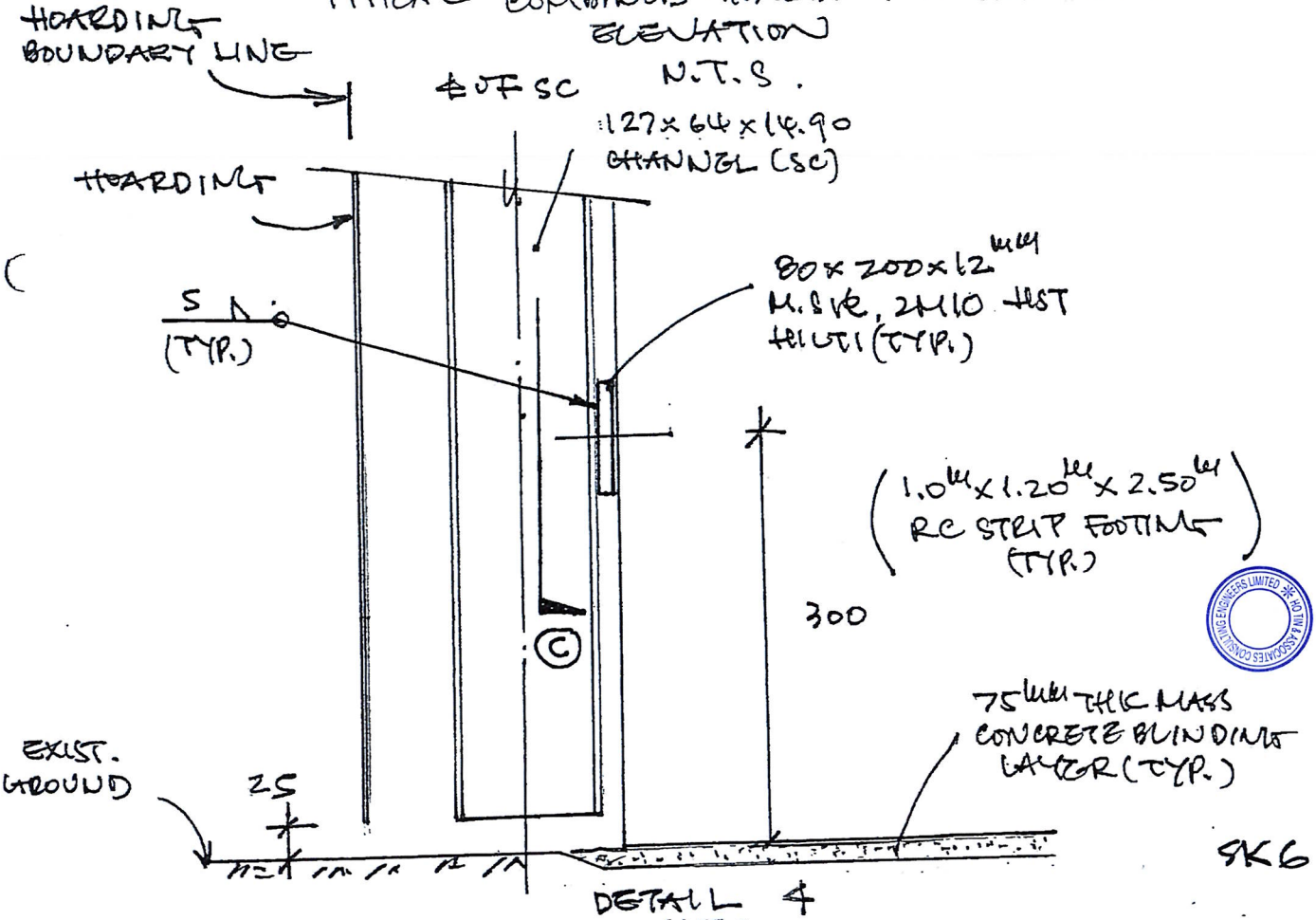
SC : 127x64x14.9 CHANNEL

SP : 127x64x14.9 CHANNEL

T : 76x38x6.7 CHANNEL



TYPICAL COMBINED HOARDING & SIGNBOARD ELEVATION N.T.S.



DETAIL 4
N.T.S.

SK6

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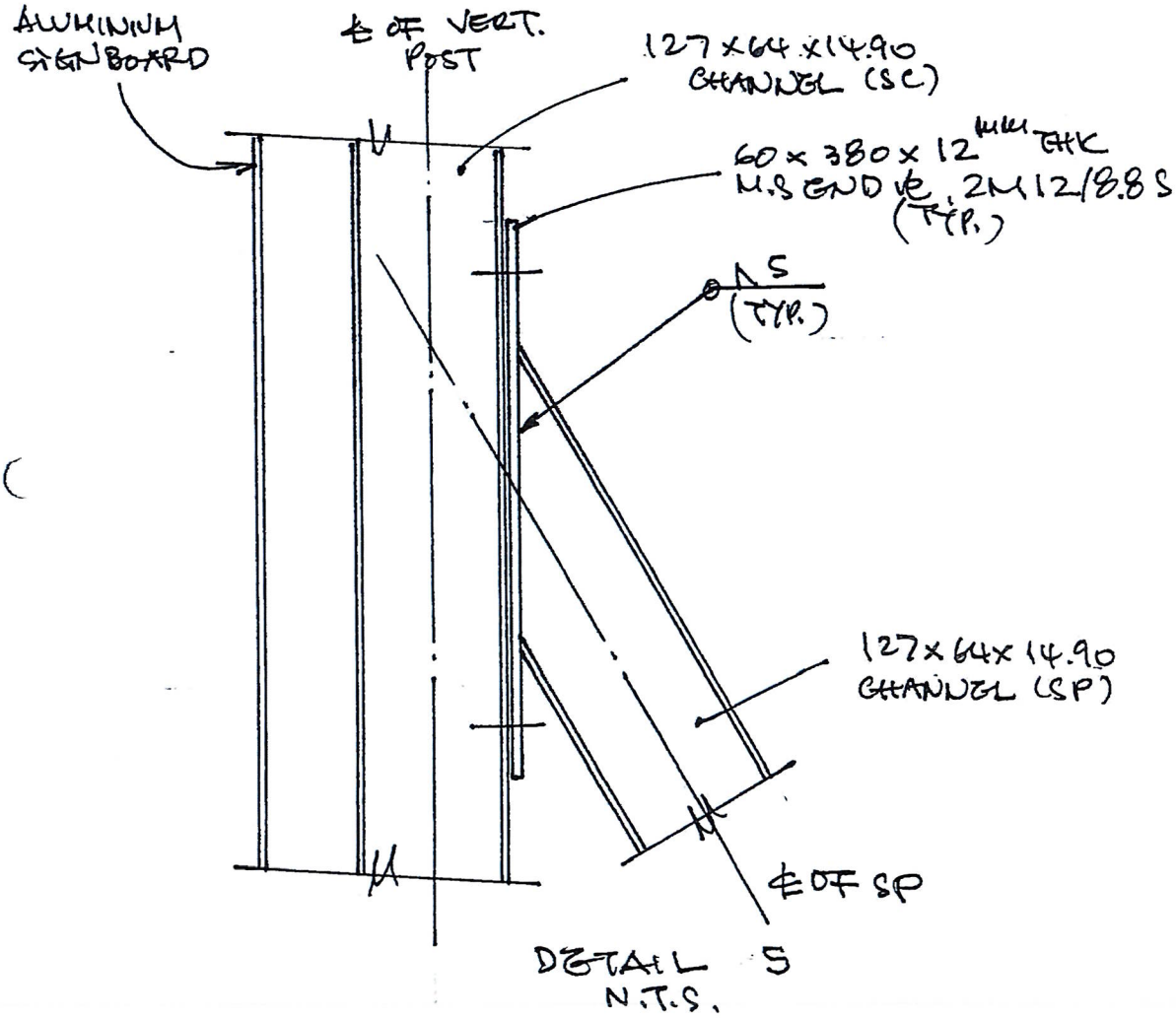

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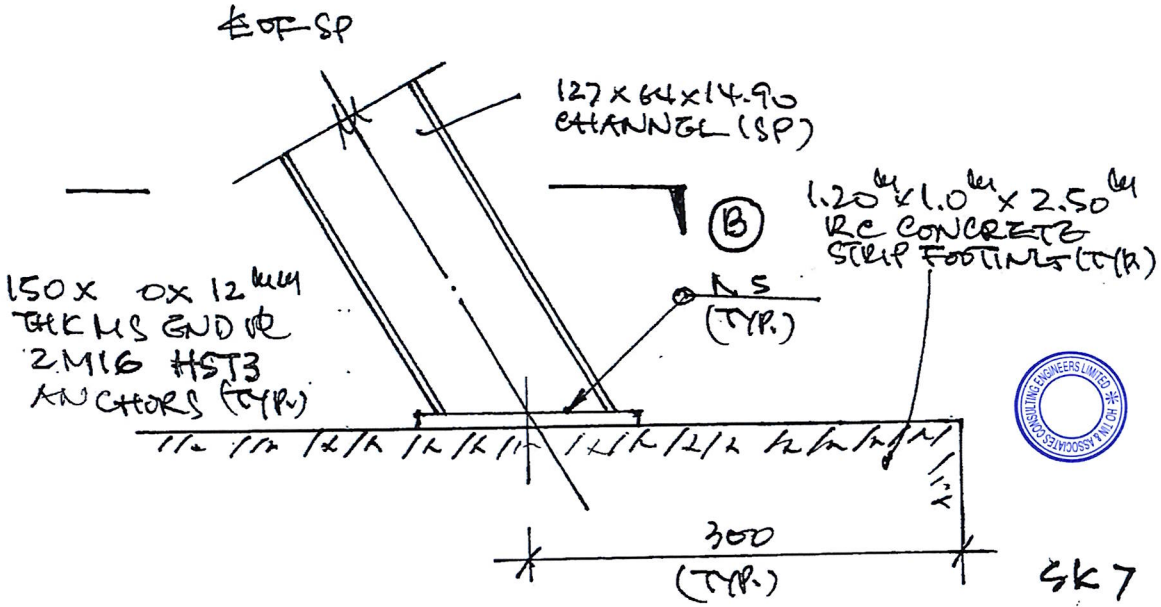

SK 7

DETAIL 6
N.T.S.

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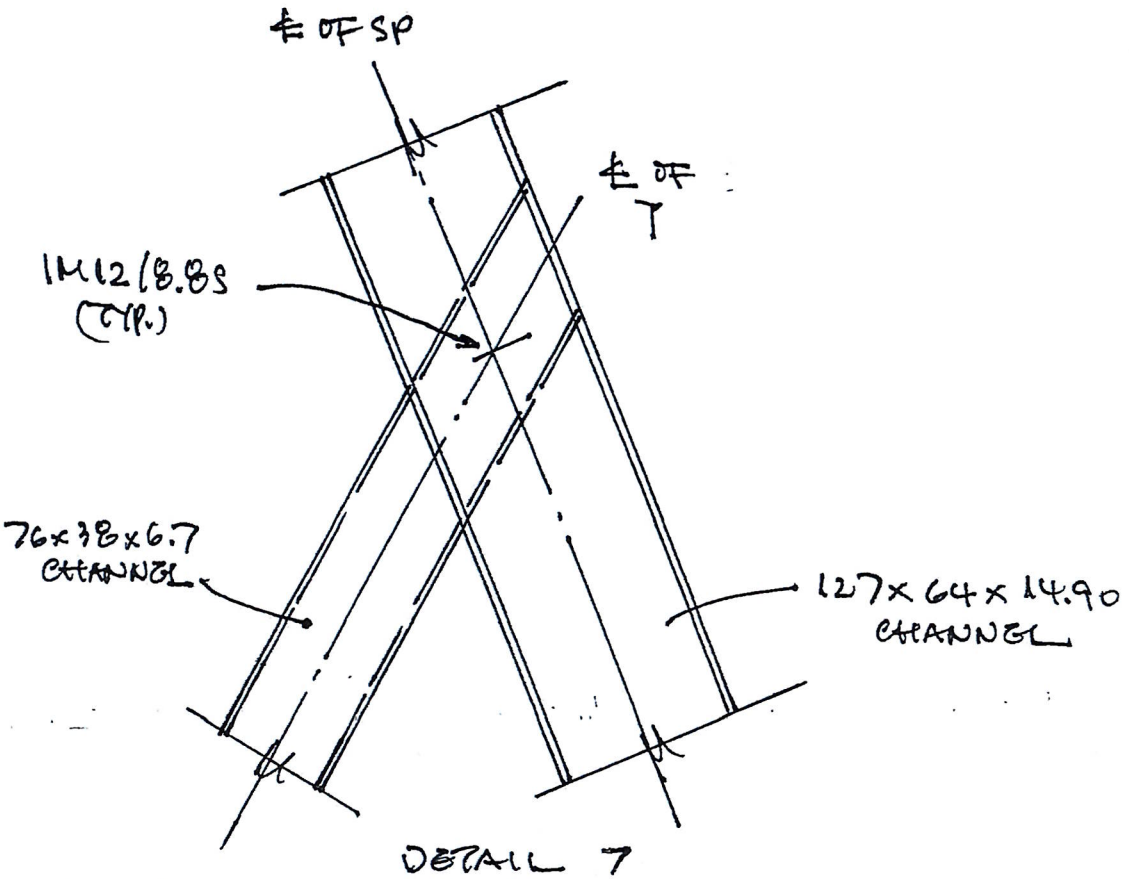

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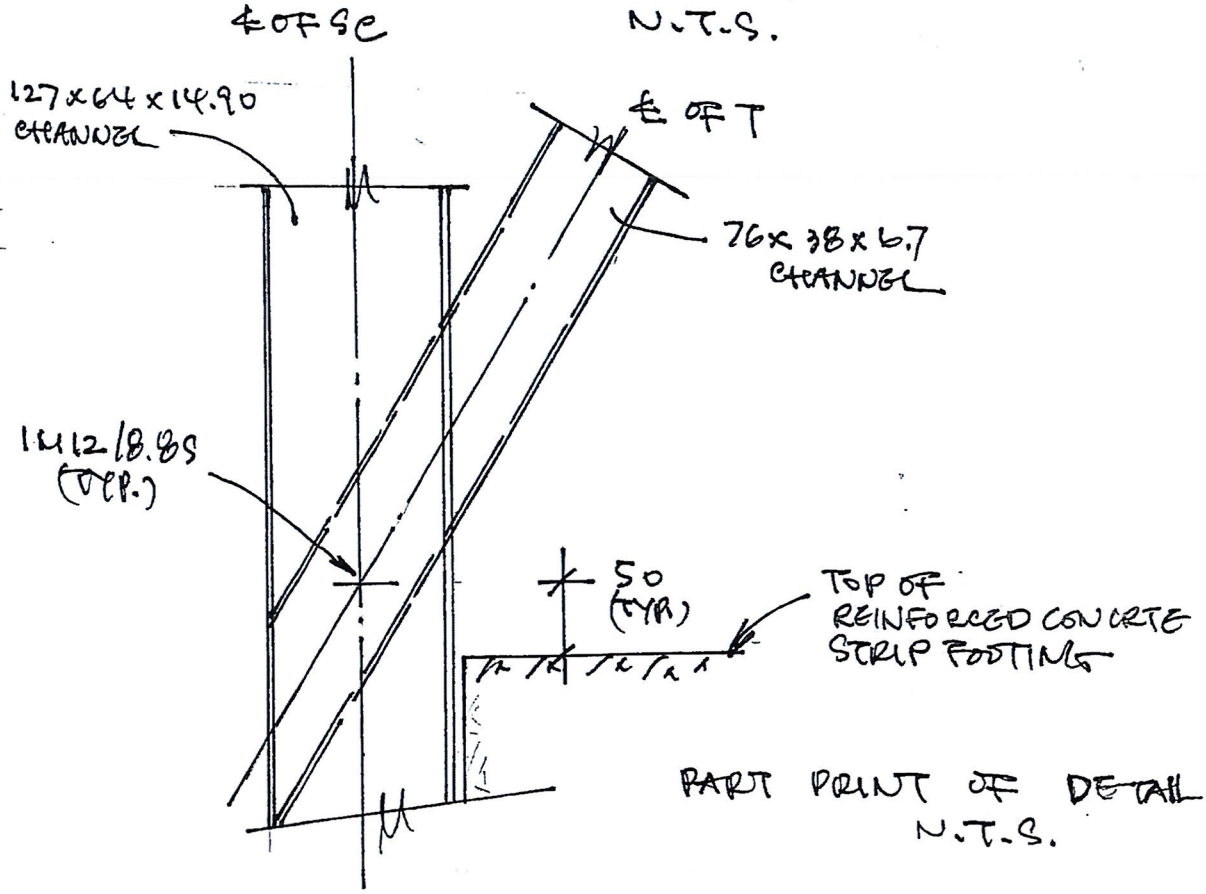

PART PRINT OF DETAIL 4
N.T.S.

GK8

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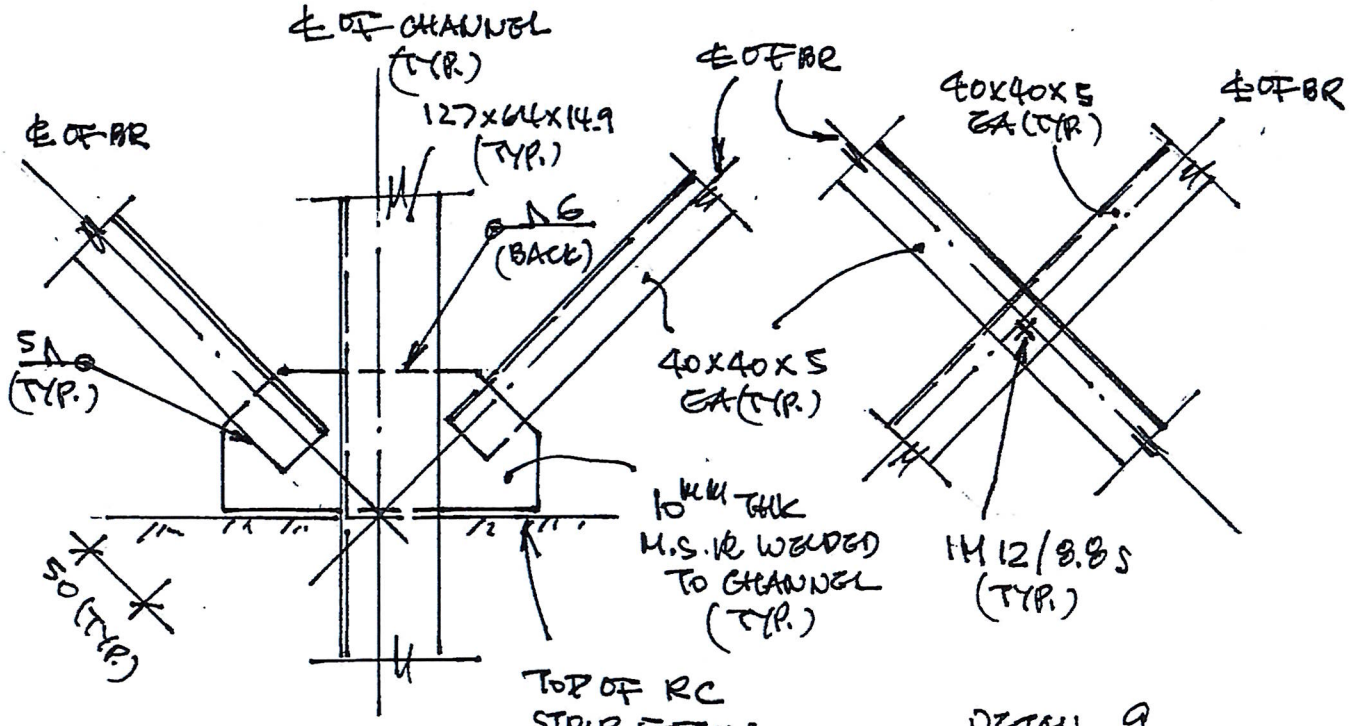

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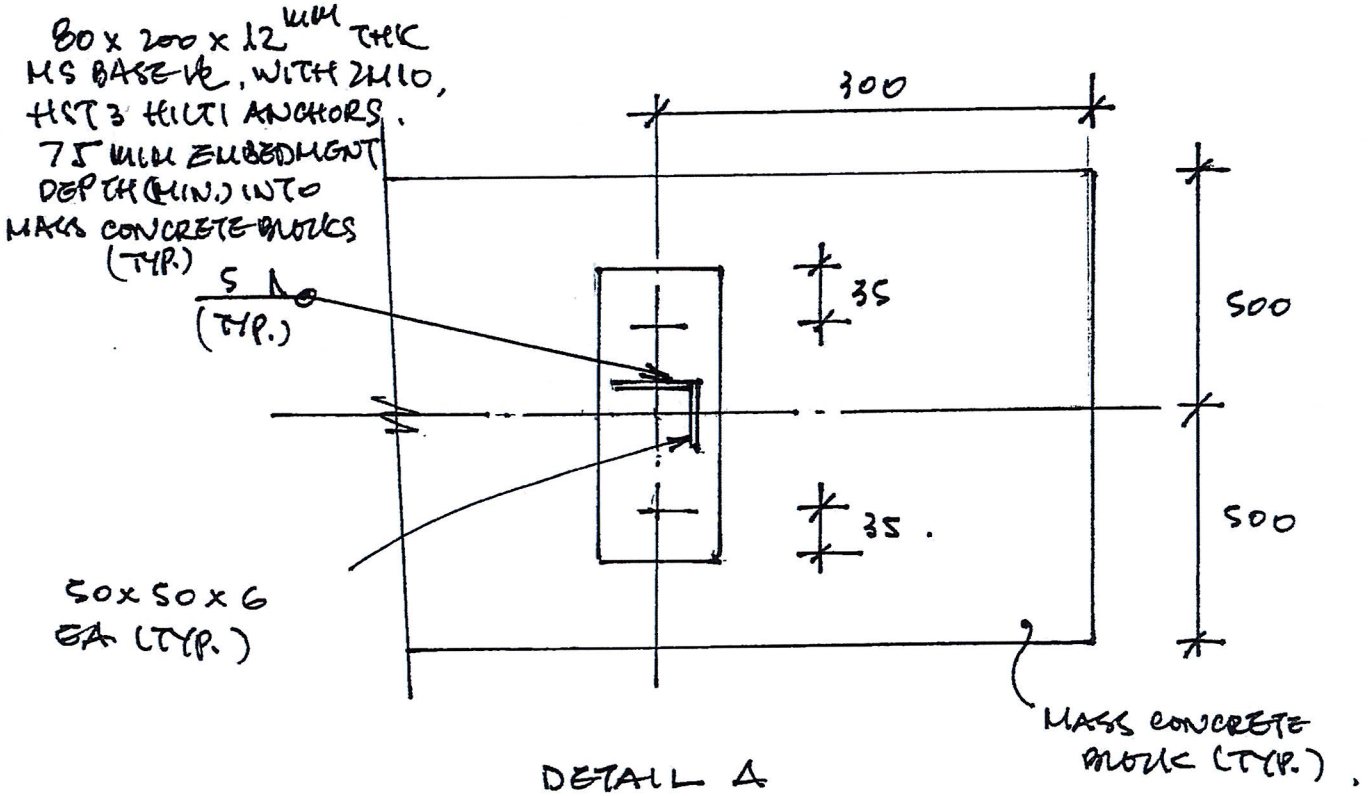

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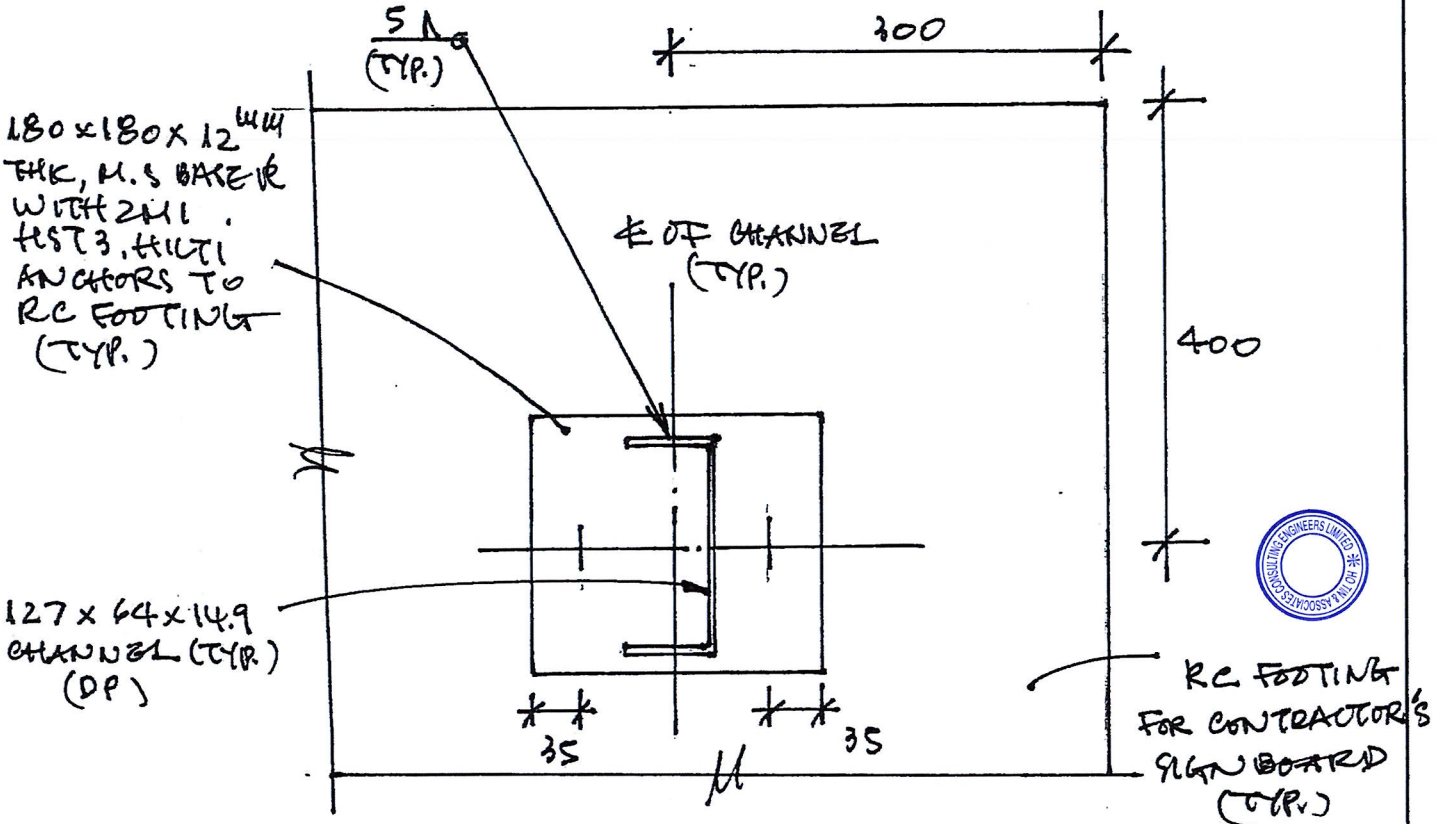

DETAIL 10
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SK 10

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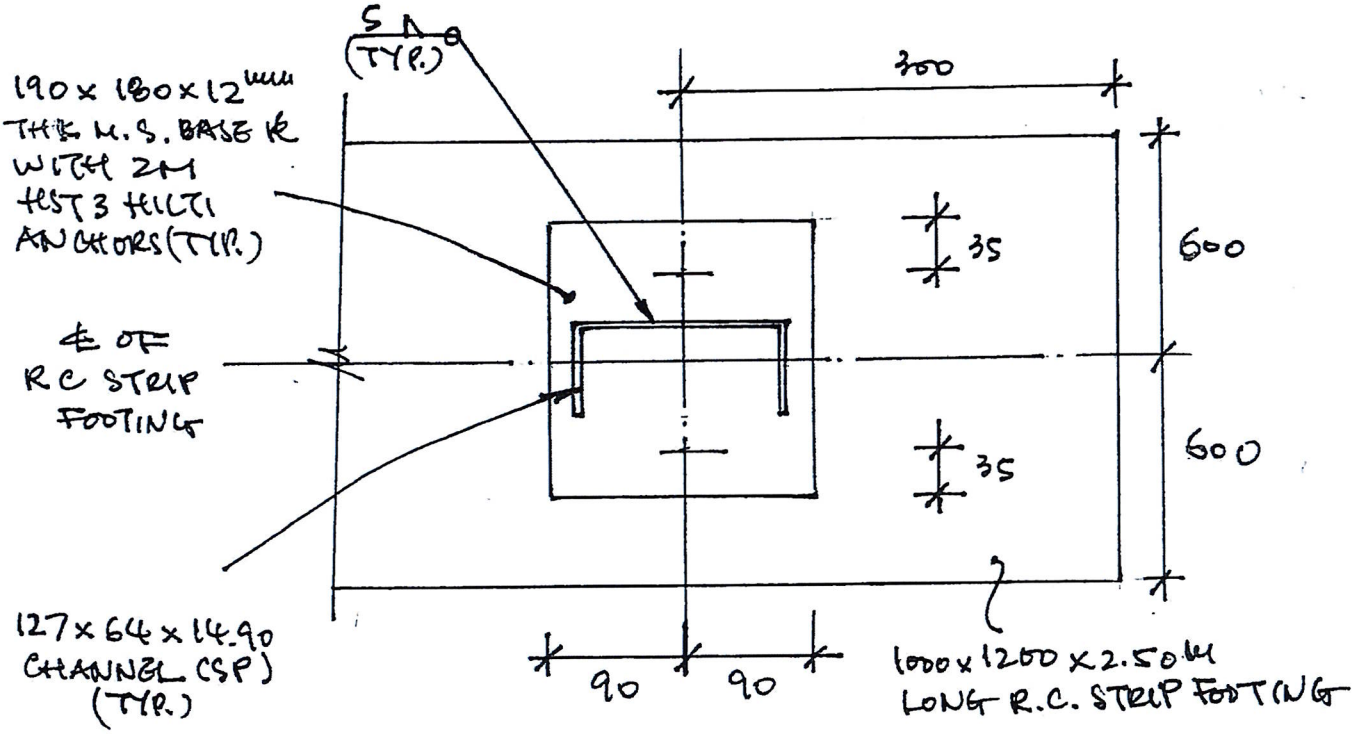

SECTION B
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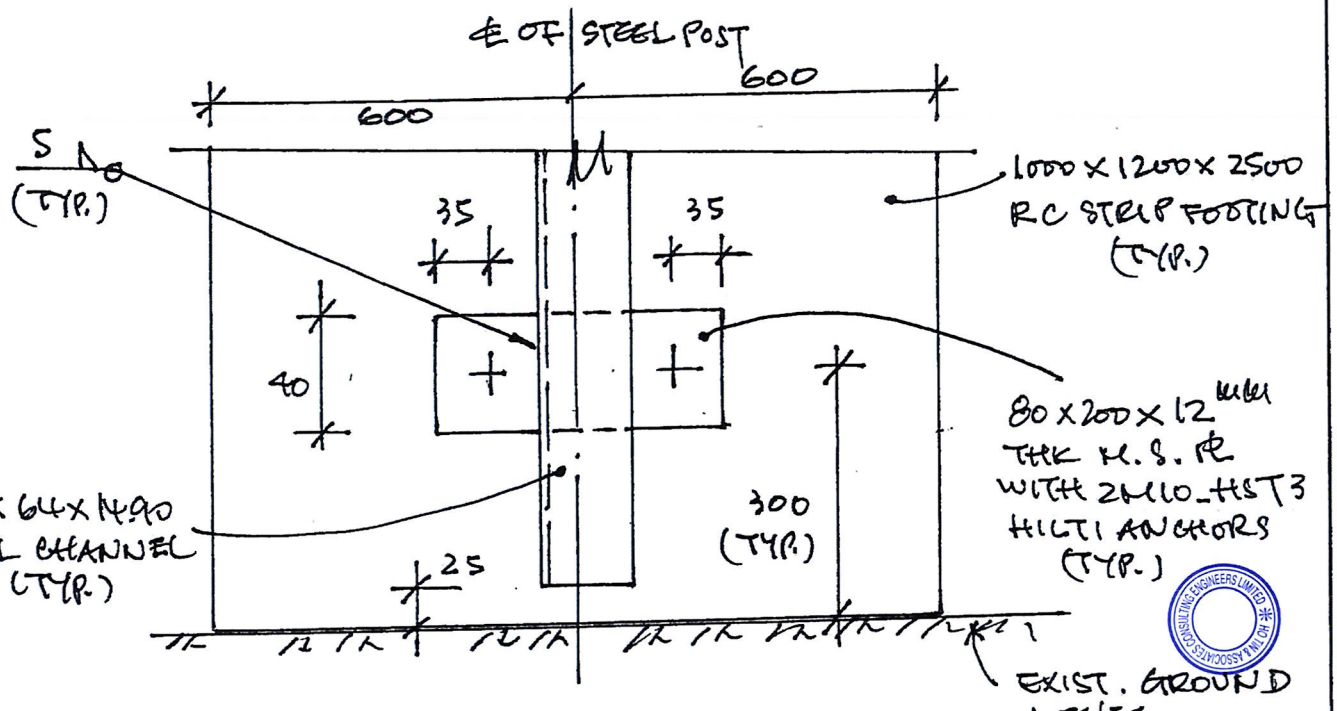
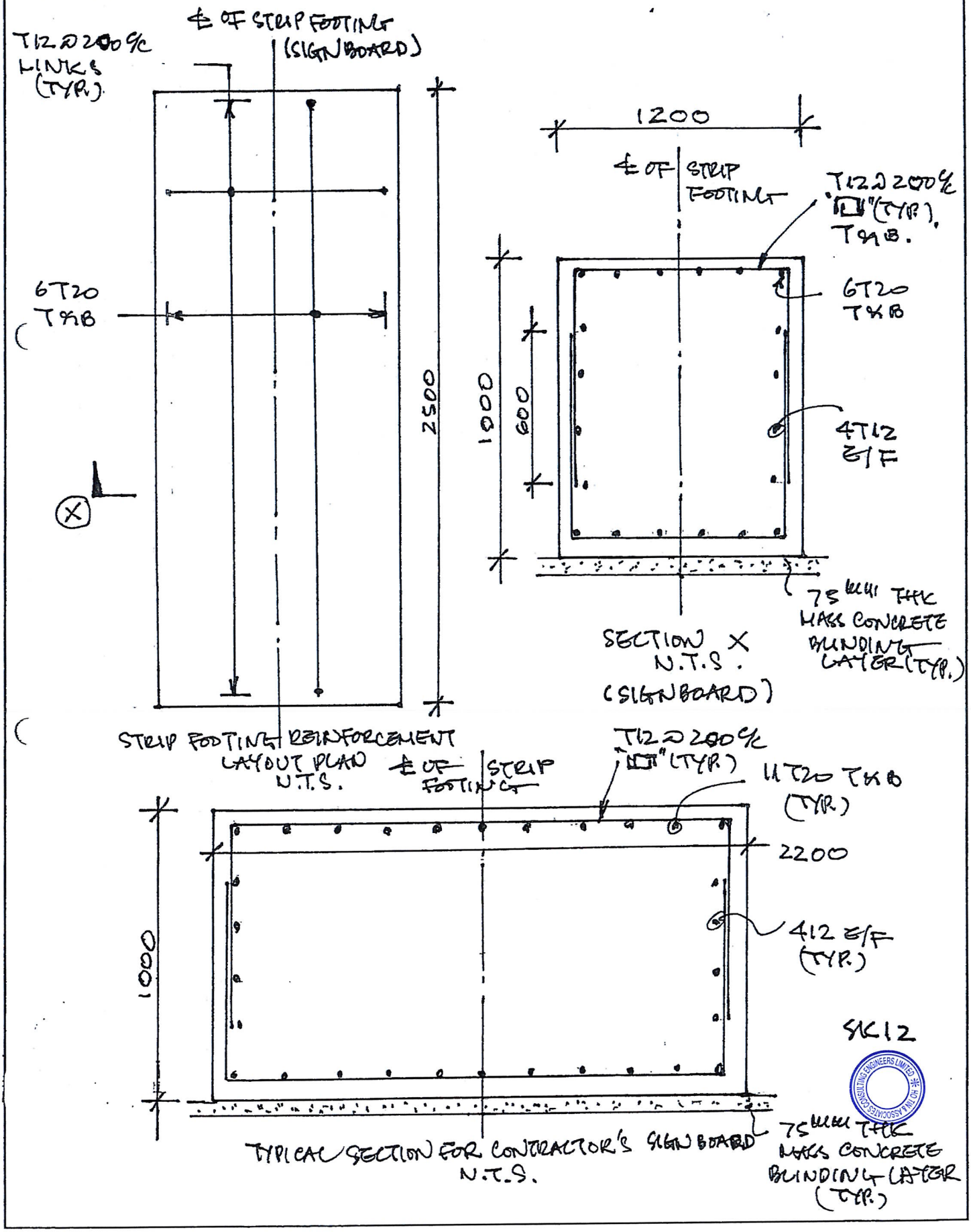


SECTION C
N.T.S.

GK 11

CALCULATIONS	Job No.	Page No.: 2
By	Ref. Drg. No.:	Date 10 May 2023
Check	Subject: R.C STRIP FOOTING DETAIL	



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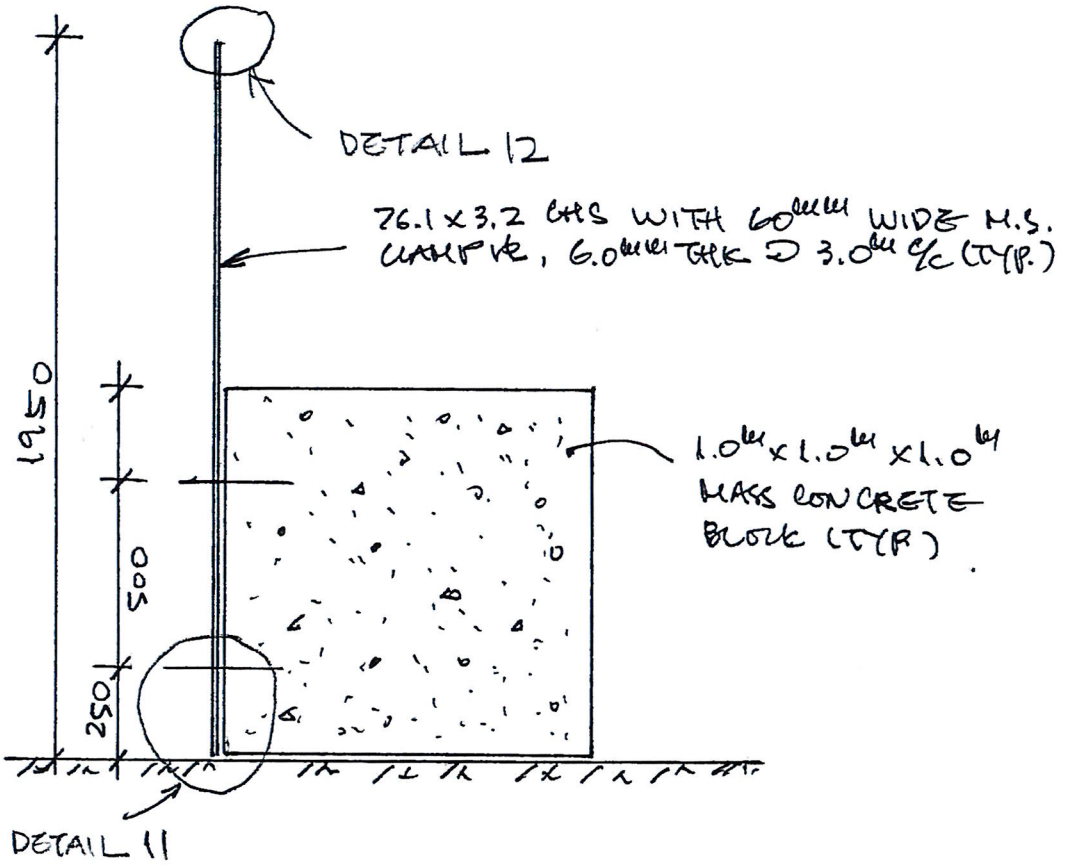
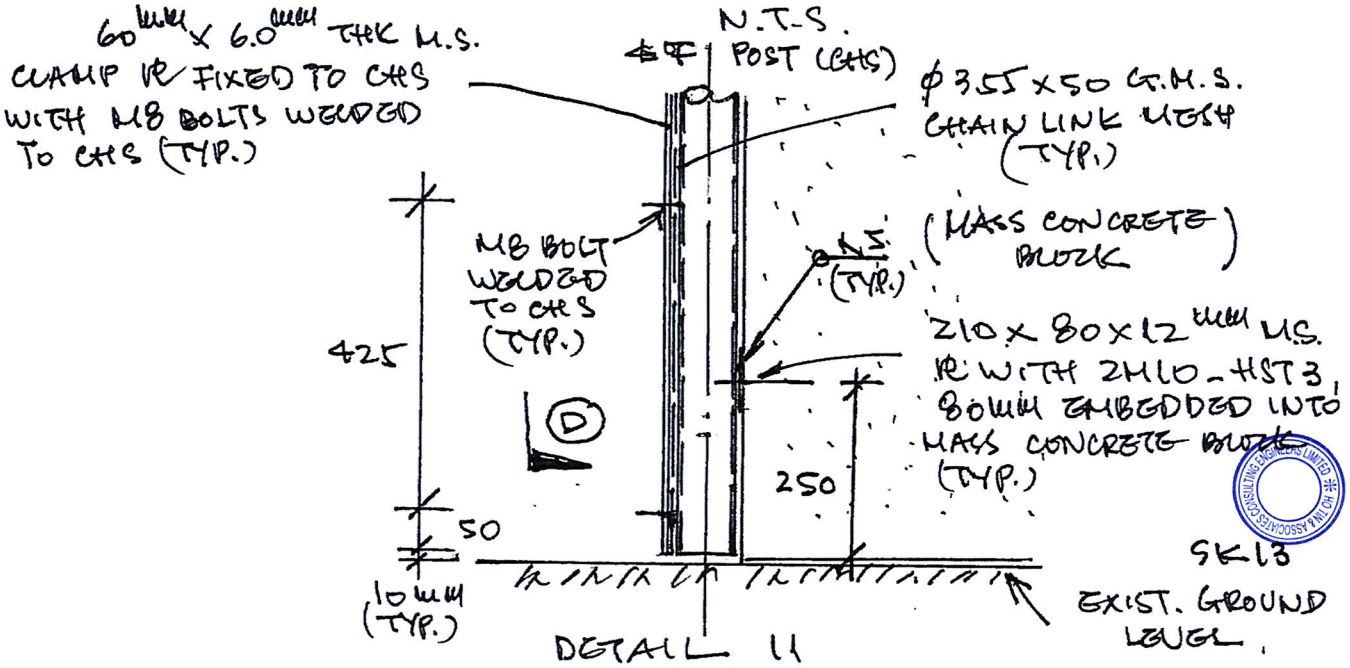


TYPICAL CHAIN LINK FENCE ELEVATION
N.T.S.



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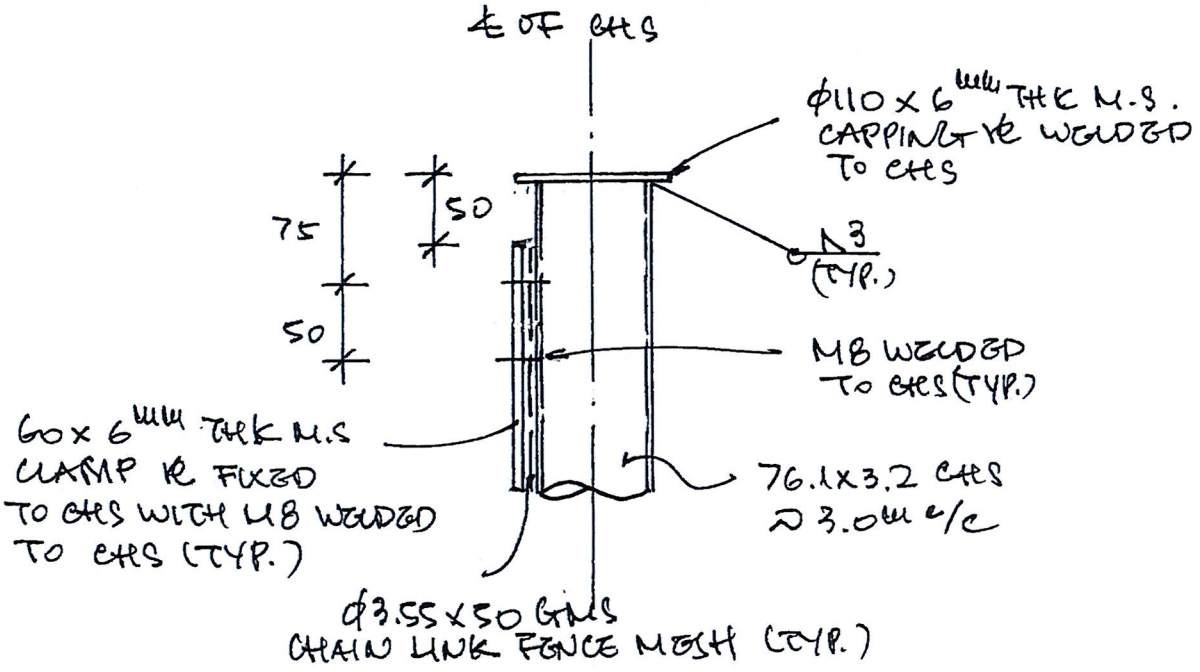

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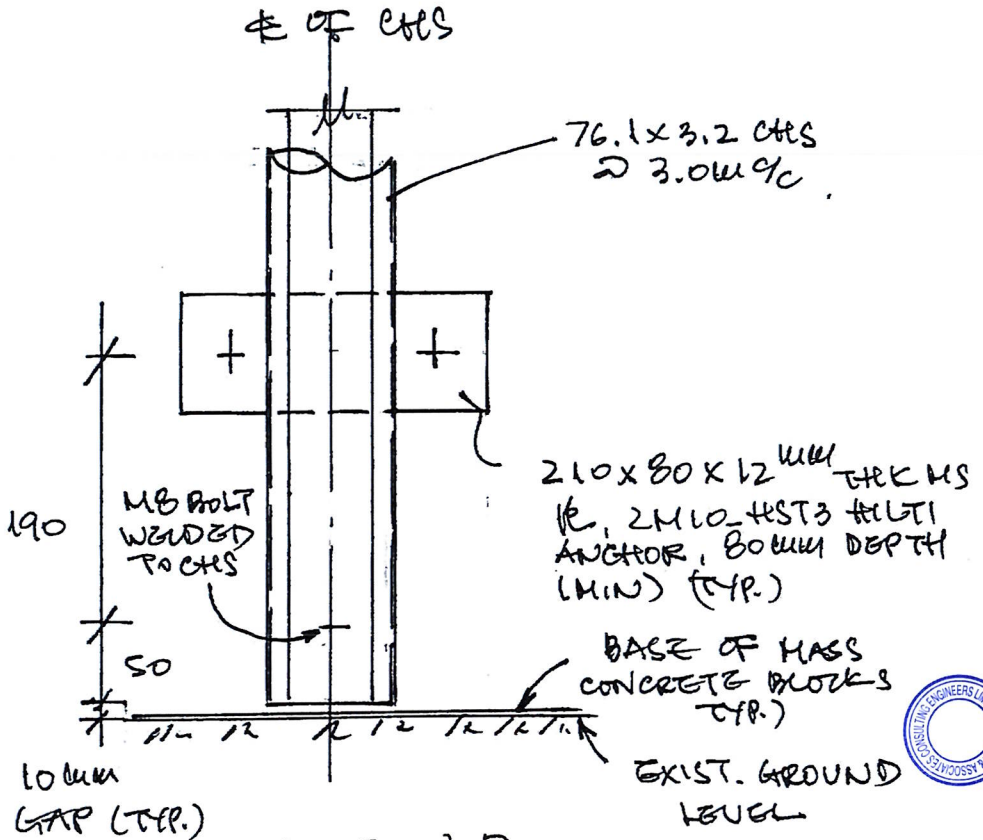


φ3.55x50 GMS CHAIN LINK MESH IS NOT SHOWN FOR CLARITY

SECTION D
N.T.S.

SK14

GENERAL NOTES

1. ALL SETTING OUT AND LEVELS SHALL BE VERIFIED ON SITE, U.N.O.

2. ALL STRUCTURAL STEEL MEMBERS AND PLATES SHALL BE GRADE S275 OR HIGHER.

3. ALL REINFORCEMENT SHALL BE GRADE 500B WITH p_{sY} = 500.0MPa MINIMUM, U.N.O.

4. CONCRETE COVER SHALL BE 75mm FOR BOTTOM REINFORCEMENT AND 45mm TO TOP AND SIDE FACES REINFORCEMENT LAYER

5. ALL STRUCTURAL STEEL MEMBERS AND PLATES SHALL BE PAINTED WITH RUSTED PROOF PIANT SYSTEM, U.N.O.

6. ALL CLEAT PLATES, BASE PLATES SHALL BE 12.0mm THICK, U.N.O.

7. ALL STRUCTURAL BOLTS SHALL BE M12/8.8S, GALVANISED, U.N.O.

8. ALL HOLDING DOWN BOLTS SHALL BE M10 – HST3-R, GALVANISED, HILTI WITH MIN EMBEDMENT DEPTH OF 75mm INTO EXISTING CONCRETE BLOCKS, U.N.O.

9. ALL WELDINGS SHALL BE 5.0mm CONTINUOUS FILLET WELD, ALL ROUNDS WITH MAX. DESIGN SHEAR STRESS OF 220.0MPa, U.N.O.

10. PROVIDE PACKERS TO SUIT BETWEEN END PLATES AND EXISTING STRUCTURAL RC ELEMENTS.

11. CONCRETE GRADE SHALL BE GRADE 30D/20 ADOPTED FOR THOSE EXISTING STRUCTURAL R.C. ELEMENTS, U.N.O.

12. ALL METAL CLADDING SHALL BE COLOUR BOND TYPE WITH THE MINIMUM THICKNESS OF 0.5mm, FIXED TO THOSE STEEL CHANNELS WITH SELF TAPPING SCREWS OR APPROVED EQUIVALENT.

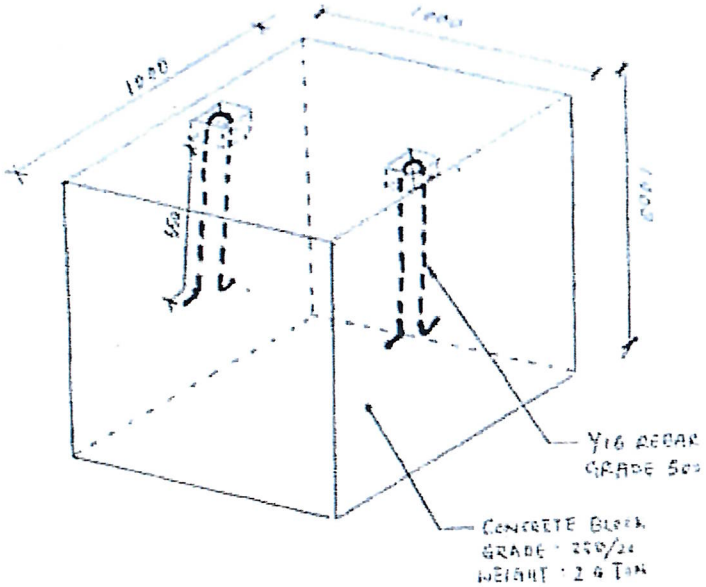
13. DESIGN DATA

    a. MAX DESIGN WIND LOADS FOR THE DEISIGN OF THE STEEL SUPPORTING FRAME ARE; 1.59 kPa FOR HOARDING AND CHAIN LINK FENCE, AND 1.85kPa FOR COMBINED SIGNBOARD WITH HOARDING, U.N.O.
    b. DESIGN LOADS FOR REINFORCEDCONCRETE STRIP FOOTING WAS BASED ON THE MAX. ALLOWABLE GROUND BEARING PRESSURE OF 75.0kPa, U.N.O
    c. THE MAX DESIGN CRACK WIDTH OF 0.3mm
    d. ALL BOLTS SHALL BE GRADE M12/8.8S, U.N.O.
    e. MIN ALLOWABLE SHEAR STRESS FOR FILLET WELD IS q_v = 220.0 MPa
    f. MAX ALLOWABLE BEARING STRESS q = 125kPa, U.N.O.

14 REFERENCES:
ALL DESIGN SHALL BE BASED AND COMPILED WITH THE CURRENT BUILDING REGULATIONS AS LISTED FOLLOWS;

    a. CODE OF PRACTICE FOR THE STRUCTURAL USE OF STEEL 2011
    b. CODE OF PRACTICE FOR THE STRUCTURAL USE OF CONCRETE 2013
    c. CODE OF PRACTICE ON WIND EFFECTS IN HONG KONG 2019
    d. Geoguide 1 – 2020 by GEOTECHNICAL ENGINEERING OFFICE, CEDD, HKSAR

SKIS



LI KOK KEUNG
MEng MICE MIStructE
MHKIE CEng RPE

水　務　署

WATER SUPPLIES DEPARTMENT

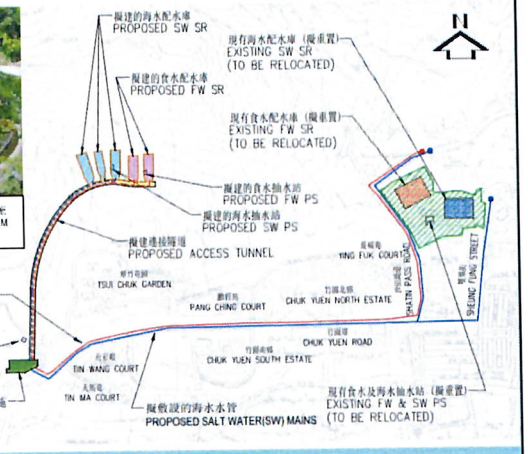
搬遷鑽石山食水及海水配水庫往岩洞

RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

合約編號：21/WSD/21

CONTRACT NO.: 21/WSD/21

擬建於進理隧道入口的通風設施及其他相關機電設施
PROPOSED VENTILATION AND OTHER ASSOCIATED E&M FACILITIES AT ACCESS TUNNEL PORTAL AREA



預定竣工日期：二零二七年十二月三十一日

ANTICIPATED COMPLETION DATE：31-DEC-2027

工程顧問 CONSULTANT：binnies 賓尼斯工程顧問有限公司 BINNIES HONG KONG LIMITED

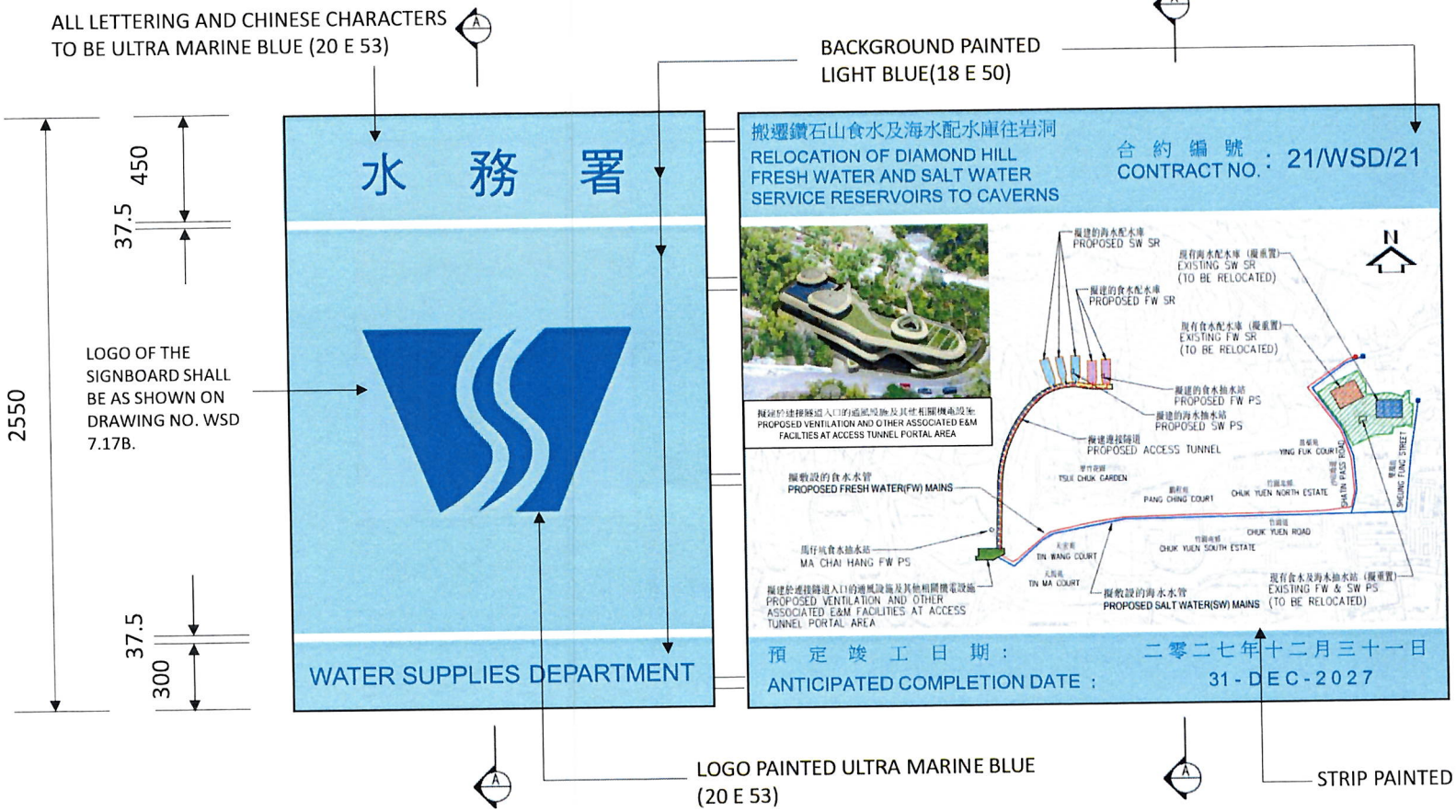
承建商 CONTRACTOR：俊和-中國水電聯營 CHUN WO – SINOHYDRO JV

熱線 HOTLINE：9233-9816

1800 | 150 | 3000 | 450 | 1800

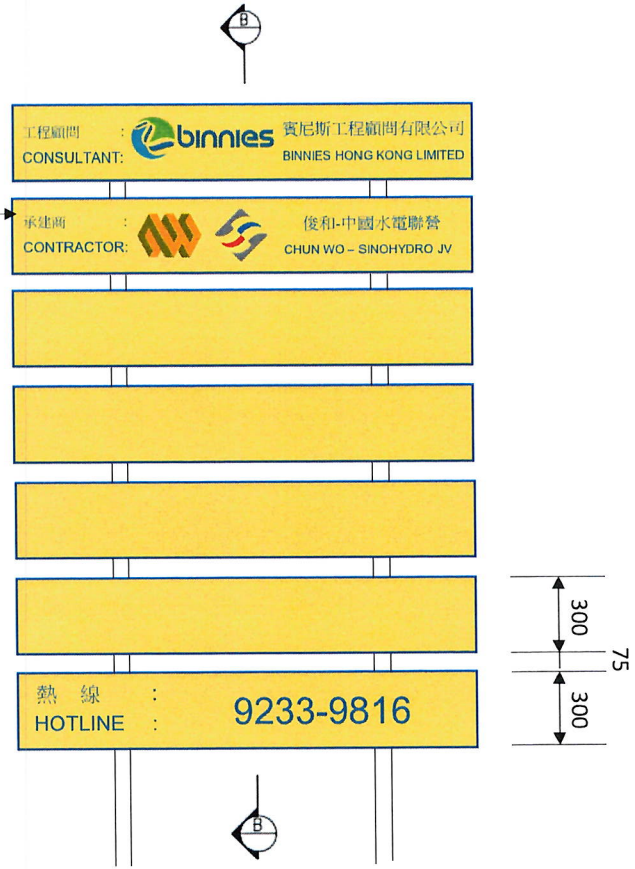
4950

Contractor	Drawing Title: 21/WSD/21-RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS MAJOR PROJECT SIGNBOARD	DATE: 2023/1/31	DRAWING NO: Signboard 001
		SCALE: N.T.S	REV: /



Contractor	Drawing Title: 21/WSD/21-RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS PROJECT SIGNBOARD	DATE: 2023/1/31	DRAWING NO: Signboard 002
		SCALE: N.T.S	REV: /

HO YUEN ASSOCIATES CONSULTING ENGINEERS LIMITED



ALL LETTERING TO BE ULTRA MARINE BLUE
(20 E 53)ON LIGHT YELLOW(10 E 50)BACKGROUND,
IN BOTH ENGLISH AND CHINESE

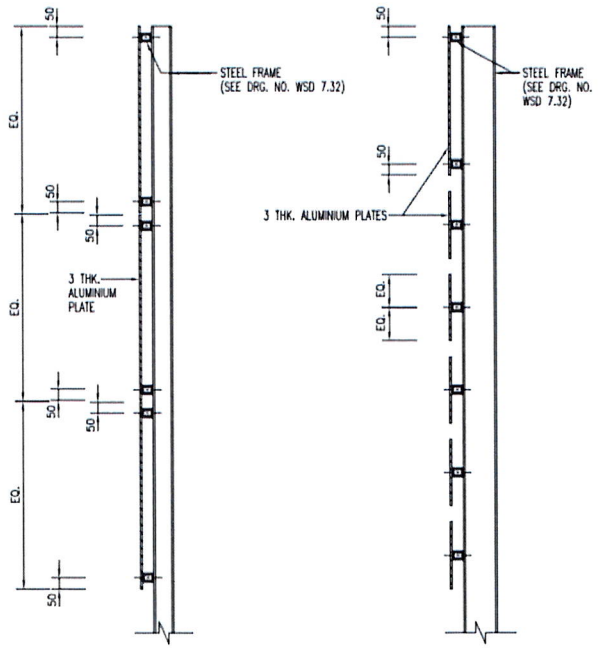
Contractor	Drawing Title: 21/WSD/21-RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS CONSULTANTS FIRM'S/CONTRACTORS' SIGNBOARD	DATE: 2023/1/31 SCALE: N.T.S	DRAWING NO: Signboard 003 REV: /

HO TIN & ASSOCIATES CONSULTING ENGINEERS LIMITED 何天

Notes:

1. ALL DIMENSIONS ARE IN MILLMETERS.
2. COLOUR CODES SHOWN ARE REFERRED TO BS 5252.
3. STRUCTURAL STEEL FRAME OF THE SIGNBOARD SHALL BE AS SHOWN ON DRAWING NO. WSD 7.32C.
4. SIZE B IS REQUESTED BY CONTRACT.

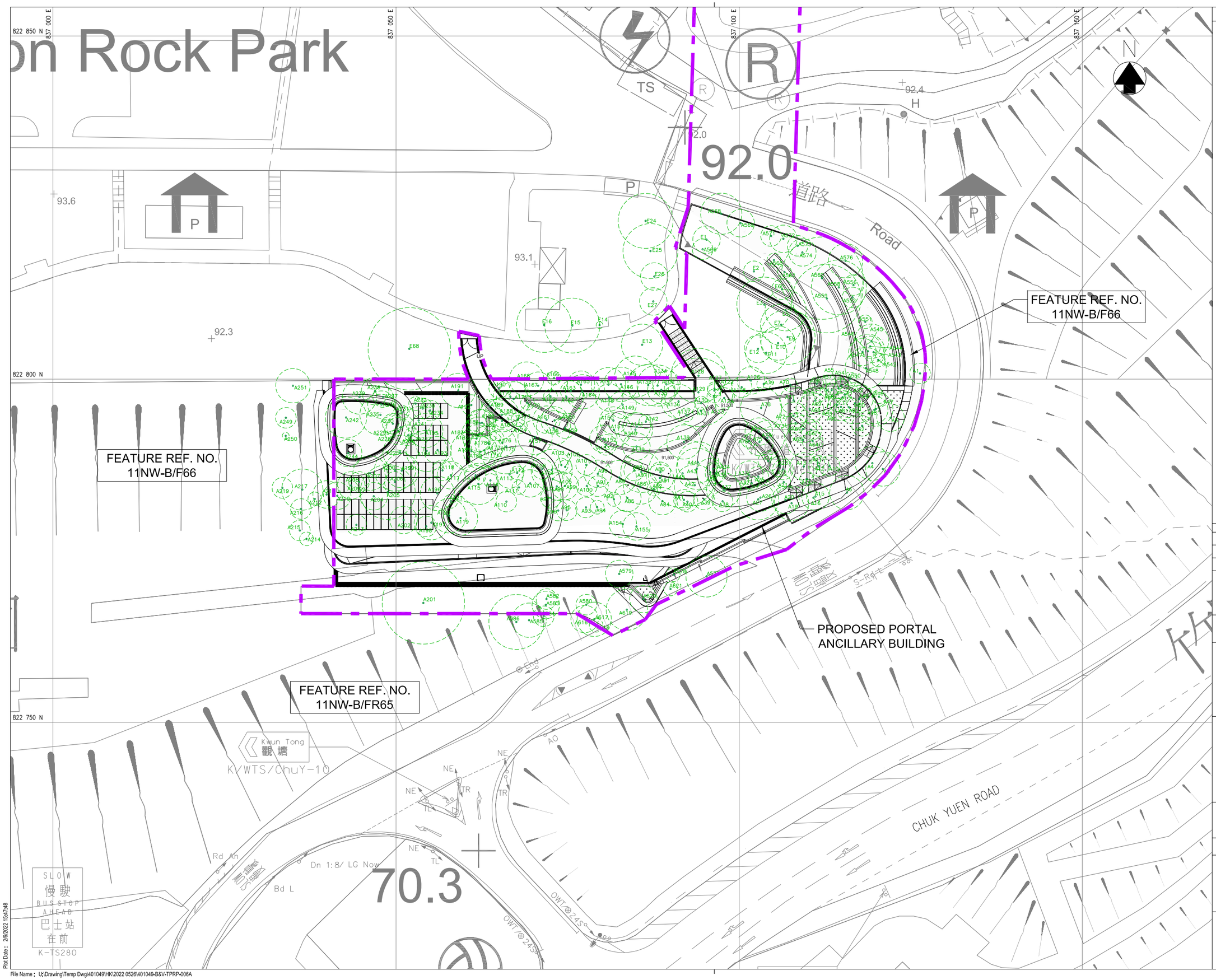
SIZE	H x L	x	y	z	w	t	u
A	3400 x 6600	2400	200	4000	600	400	100
B	2550 x 4950	1800	150	3000	450	300	75



SECTION A – A SECTION B – B

Contractor	Drawing Title: 21/WSD/21-RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS GENERAL NOTES	DATE: 2023/1/31	DRAWING NO: Signboard 004
		SCALE: N.T.S	REV: /

Appendix F – Tree Treatment Plans and Tree Assessment Schedule



LEGEND:

ACTUAL WORKS EXTEND

EXISTING TREE AND TREE CROWN

Revision	Date	Description		Initial
	Designed	Checked	Drawn	Checked
Initial	CTAM	WL	SZ	WL
Date	04/21	04/21	04/21	04/21

Approved

Agreement No.
CE 15/2018 (WS)

Project Title
RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Drawing Title
PLAN FOR EXISTING TREES WITH ACTUAL WORKS EXTEND

Drawing No.
401049/B&V/TPRP/006A

Revision
–

Scale
A1 1 : 250
A3 1 : 500

水務署
Water Supplies Department

BINNIES HONG KONG LIMITED
賓尼斯工程顧問有限公司

Plot Date : 2/8/2022 15:47:48
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Contract No. 21/WSD/21 Relocation of Diamond Hill Fresh Water and Salt Water Service Reservoirs to Caverns

Tree Assessment Schedule

Date of Tree Survey : 16 February 2023 Surveyed by : Mr Ng Sze Yuen, Jason

Tree Tag No.	Level at Base (mPD)	Coordinates (Northing, Easting)		Species		Tree Size			Amenity value (Good, Fair, Poor)	Form (Good, Fair, Poor)	Health condition (Good, fair, Poor)	Structural condition (Good, Fair, Poor)	Suitability for transplanting		Conservation status** (OVT/ Common Species/ Scheduled under Cap 96/ Protected under Cap 58/ Rare & Precious Plants/ IUCN Red List of Threatened Species/	Recommendation (Transplant/ Retain/ Fell)	Remarks
				Scientific Name	Chinese Name	Overall Height (m)	Trunk Diameter (mm)	Average Crown Spread (m)					High/ Medium/ Low	Remarks*			
A1	85.46	822800.835	837126.351	*Acacia confusa*	台灣相思	7	223	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; co-dominant branches; decay at trunk base
A3	85.64	822794.394	837122.060	*Acacia confusa*	台灣相思	7	223	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; decay & wound at trunk; restricted root
A4	83.71	822787.753	837119.403	*Mallotus paniculatus*	白楸	6	159	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees; co-dominant branches; exposed root
A5	82.84	822786.909	837120.934	*Sterculia lanceolata*	假蘋婆	4	143	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	co-dominant branches
A6	82.16	822783.469	837115.698	*Sterculia lanceolata*	假蘋婆	4	159	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees; co-dominant trunk
A10	84.60	822787.369	837113.171	*Acacia confusa*	台灣相思	7	255	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; co-dominant trunk; cavity at branches; exposed root
A11	85.09	822787.838	837111.461	*Acacia confusa*	台灣相思	7	111	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 25 degrees; cavity at branches; cross branches with A12
A12	84.83	822787.356	837111.608	*Acacia confusa*	台灣相思	8	223	3	Fair	Fair	Poor	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; abnormal bark crack at trunk
A13	84.83	822787.281	837109.426	*Acacia confusa*	台灣相思	6	127	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; abrupt trunk
A14	83.85	822785.440	837109.827	*Acacia confusa*	台灣相思	7	95	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; dead branches
A15	82.33	822782.895	837111.122	*Acacia confusa*	台灣相思	10	223	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; co-dominant branches; termites at branches
A16	82.17	822782.726	837110.820	*Acacia confusa*	台灣相思	7	95	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A19	81.83	822781.918	837107.637	*Acacia confusa*	台灣相思	10	239	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees
A20	82.21	822782.389	837106.740	*Acacia confusa*	台灣相思	10	191	4.0	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees; cross branches with A26
A21	83.49	822784.995	837106.505	*Acacia confusa*	台灣相思	6	159	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees
A22	84.68	822786.847	837106.385	*Sterculia lanceolata*	假蘋婆	4	95	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	
A23	84.90	822787.310	837105.914	*Acacia confusa*	台灣相思	7	143	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; cross trunk
A24	85.23	822788.047	837104.253	*Acacia confusa*	台灣相思	8	223	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; termite track
A25	84.05	822785.800	837102.777	*Acacia confusa*	台灣相思	6	95	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees
A26	82.54	822782.741	837103.099	*Acacia confusa*	台灣相思	7	191	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; co-dominant branches
A27	82.43	822782.490	837102.775	*Acacia confusa*	台灣相思	8	255	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; cross branches with A32; dead branches
A32	83.40	822784.836	837101.829	*Acacia confusa*	台灣相思	7	191	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; cross branches with A27
A33	84.34	822786.081	837101.472	*Acacia confusa*	台灣相思	7	223	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	co-dominant branches
A34	84.81	822786.937	837096.189	*Acacia confusa*	台灣相思	6	111	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; exposed root
A35	84.54	822786.285	837096.555	*Acacia confusa*	台灣相思	6	175	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; co-dominant trunk
A36	84.75	822786.433	837095.790	*Acacia confusa*	台灣相思	8	223	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A37	83.06	822783.841	837097.753	*Sterculia lanceolata*	假蘋婆	7	143	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	multi-branches
A38	82.05	822782.201	837097.584	*Acacia confusa*	台灣相思	7	127	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	cross branches
A39	82.21	822782.472	837094.877	*Acacia confusa*	台灣相思	8	159	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; co-dominant branches
A40	82.24	822782.150	837092.460	*Acacia confusa*	台灣相思	7	95	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees
A41	82.30	822782.427	837091.949	*Acacia confusa*	台灣相思	8	207	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; co-dominant branches
A42	83.28	822784.547	837093.538	*Sterculia lanceolata*	假蘋婆	4	111	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	
A43	84.89	822786.944	837093.829	*Acacia confusa*	台灣相思	4	111	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A44	85.15	822787.866	837093.999	*Sterculia lanceolata*	假蘋婆	4	111	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	multi-branches
A45	84.73	822786.274	837091.753	*Acacia confusa*	台灣相思	12	286	10	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A46	86.68	822797.445	837120.366	*Acacia confusa*	台灣相思	5	95	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; wound at trunk; decay at branches
A47	86.33	822795.644	837119.912	*Sterculia lanceolata*	假蘋婆	4	127	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	
A48	86.40	822795.525	837119.685	*Acacia confusa*	台灣相思	6	143	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees
A49	87.79	822797.110	837117.512	*Acacia confusa*	台灣相思	4	143	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A50	87.96	822796.485	837116.883	*Acacia confusa*	台灣相思	8	191	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees
A51	87.95	822795.907	837115.982	*Acacia confusa*	台灣相思	4	95	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; co-dominant branches; exposed root
A52	88.87	822797.789	837115.388	*Acacia confusa*	台灣相思	5	127	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 25 degrees
A53	88.66	822797.354	837115.061	*Acacia confusa*	台灣相思	8	111	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A54	89.73	822799.044	837114.855	*Acacia confusa*	台灣相思	7	95	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A55	89.69	822798.690	837114.491	*Acacia confusa*	台灣相思	8	143	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A56	89.74	822798.427	837113.482	*Acacia confusa*	台灣相思	7	191	2	Poor	Poor	Poor	Poor	Low	Low survival rate after transplant	Common Species	Fell	Leaning 30 degrees; cross trunk with A58; uproot; exposed root
A57	89.94	822798.380	837112.795	*Acacia confusa*	台灣相思	7	143	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees
A58	90.78	822799.336	837111.309	*Acacia confusa*	台灣相思	7	191	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	cross trunk with A56
A59	89.96	822797.760	837111.843	*Acacia confusa*	台灣相思	5	127	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees
A60	88.49	822796.255	837114.266	*Acacia confusa*	台灣相思	5	143	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A61	88.15	822795.955	837114.839	*Acacia confusa*	台灣相思	6	127	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A62	85.97	822793.205	837117.906	*Sterculia lanceolata*	假蘋婆	5	127	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees
A64	85.82	822790.972	837110.709	*Acacia confusa*	台灣相思	7	191	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees

Contract No. 21/WSD/21 Relocation of Diamond Hill Fresh Water and Salt Water Service Reservoirs to Caverns

Tree Assessment Schedule

Date of Tree Survey : 16 February 2023 Surveyed by : Mr Ng Sze Yuen, Jason

Tree Tag No.	Level at Base (mPD)	Coordinates (Northing, Easting)		Species		Tree Size			Amenity value (Good, Fair, Poor)	Form (Good, Fair, Poor)	Health condition (Good, fair, Poor)	Structural condition (Good, Fair, Poor)	Suitability for transplanting		Conservation status** (OVT/ Common Species/ Scheduled under Cap 96/ Protected under Cap 58/ Rare & Precious Plants/ IUCN Red List of Threatened Species/	Recommendation (Transplant/ Retain/ Fell)	Remarks
				Scientific Name	Chinese Name	Overall Height (m)	Trunk Diameter (mm)	Average Crown Spread (m)					High/ Medium/ Low	Remarks*			
A65	86.11	822791.141	837109.309	Dead tree	死樹	7	255	5	Poor	Poor	Poor	Poor	Low	Low survival rate after transplant	Common Species	Fell	Leaning 25 degrees; abnromal bark crack ; decay; exposed dead wood; uproot
A66	87.00	822792.612	837110.506	*Acacia confusa*	台灣相思	7	191	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees
A67	86.94	822792.747	837109.297	*Acacia confusa*	台灣相思	8	239	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; co-dominant branches
A68	88.78	822795.675	837110.276	*Acacia confusa*	台灣相思	10	239	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees
A69	89.44	822796.873	837111.064	*Acacia confusa*	台灣相思	10	239	4	Poor	Poor	Poor	Poor	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; uproot; exposed root
A70	91.20	822799.167	837107.455	*Acacia confusa*	台灣相思	8	191	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; decay & wound at trunk
A71	89.91	822796.917	837107.924	*Acacia confusa*	台灣相思	6	127	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; co-dominant branches
A72	88.44	822794.666	837107.920	*Acacia confusa*	台灣相思	5	191	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; cross branches
A73	87.57	822793.625	837108.224	*Acacia confusa*	台灣相思	7	159	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A74	86.31	822791.459	837104.104	*Sterculia lanceolata*	假蘋婆	4	111	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	
A75	86.05	822790.843	837102.959	*Acacia confusa*	台灣相思	10	255	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 30 degrees; decay at trunk base; dead branches
A76	86.15	822790.970	837101.403	*Acacia confusa*	台灣相思	8	127	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; co-dominant branches; decay at trunk
A77	87.09	822792.358	837102.854	*Acacia confusa*	台灣相思	10	255	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; co-dominant branches
A78	88.87	822795.814	837103.205	*Sterculia lanceolata*	假蘋婆	5	127	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	
A79	91.61	822799.307	837103.580	*Acacia confusa*	台灣相思	7	143	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; dead branches
A80	84.68	822786.432	837088.515	*Acacia confusa*	台灣相思	7	95	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees
A81	84.30	822785.600	837088.448	*Acacia confusa*	台灣相思	8	175	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A82	83.46	822783.981	837087.557	*Acacia confusa*	台灣相思	5	95	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	wound at trunk
A84	82.34	822782.229	837088.819	*Acacia confusa*	台灣相思	10	223	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; minor wound at trunk
A85	82.61	822782.691	837083.702	*Acacia confusa*	台灣相思	8	191	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; co-dominant trunk; minor wound at trunk
A86	83.52	822784.274	837085.635	*Sterculia lanceolata*	假蘋婆	5	143	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	
A87	84.80	822786.487	837085.744	*Acacia confusa*	台灣相思	6	239	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A88	84.98	822786.691	837084.708	*Acacia confusa*	台灣相思	7	159	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A89	84.60	822785.673	837082.523	*Acacia confusa*	台灣相思	8	286	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; co-dominant branches
A90	84.97	822786.208	837079.407	*Acacia confusa*	台灣相思	8	315	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; co-dominant branches
A91	83.89	822784.402	837079.428	*Acacia confusa*	台灣相思	8	175	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; co-dominant branches
A92	82.61	822782.484	837081.757	*Bridelia tomentosa*	土蜜樹	6	95	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; co-dominant branches; cross branches; exposed root
A93	82.15	822781.310	837077.674	*Acacia confusa*	台灣相思	7	175	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 25 degrees; cross branches; exposed root
A94	82.04	822781.338	837079.317	*Dead tree*	死樹	6	95	2	Poor	Poor	Poor	Poor	Low	Low survival rate after transplant	Common Species	Fell	Dead tree; dead branches
A95	81.85	822780.903	837074.882	*Acacia confusa*	台灣相思	7	191	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees
A96	81.89	822780.856	837073.635	*Acacia confusa*	台灣相思	7	191	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; co-dominant branches
A97	82.90	822782.721	837072.552	*Acacia confusa*	台灣相思	8	203	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees
A98	83.91	822784.365	837073.427	*Acacia confusa*	台灣相思	8	223	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees; co-dominant branches; cross branches with A105
A99	83.90	822784.435	837074.601	*Acacia confusa*	台灣相思	8	223	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A100	83.83	822784.432	837077.797	*Acacia confusa*	台灣相思	8	159	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	
A101	85.41	822787.515	837077.709	*Acacia confusa*	台灣相思	7	159	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; exposed root
A102	85.38	822787.209	837074.640	*Acacia confusa*	台灣相思	6	127	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A103	85.44	822787.482	837074.088	*Acacia confusa*	台灣相思	6	121	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A104	85.35	822786.771	837072.677	*Acacia confusa*	台灣相思	10	286	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees; co-dominant trunks; co-dominant branches; wound at branches
A105	84.54	822785.443	837072.819	*Acacia confusa*	台灣相思	8	143	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; cross branches with A98
A106	85.38	822786.922	837071.322	*Acacia confusa*	台灣相思	8	180	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; co-dominant trunk; dead branches
A107	84.14	822784.813	837069.548	*Acacia confusa*	台灣相思	4	111	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	dead stub
A110	82.78	822782.161	837066.083	*Acacia confusa*	台灣相思	10	223	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; co-dominant trunk; v-shaped
A111	83.57	822784.225	837067.909	*Acacia confusa*	台灣相思	8	159	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A112	84.85	822786.347	837067.653	*Acacia confusa*	台灣相思	5	95	2	Poor	Poor	Poor	Poor	Low	Low survival rate after transplant	Common Species	Fell	Leaning 30 degrees; uproot
A113	85.02	822786.121	837066.544	*Acacia confusa*	台灣相思	7	175	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; cross branches with A115
A114	84.39	822785.240	837063.755	*Acacia confusa*	台灣相思	7	143	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees
A115	84.24	822784.729	837061.996	*Acacia confusa*	台灣相思	10	255	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; co-dominant branches; cross branches with A116
A116	85.08	822785.985	837061.598	*Acacia confusa*	台灣相思	6	223	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 25 degrees; co-dominant branches; cross branches with A115
A117	85.30	822785.999	837057.987	*Acacia confusa*	台灣相思	10	223	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 25 degrees; co-dominant branches; wound at branches
A118	85.34	822786.710	837056.774	*Acacia confusa*	台灣相思	5	95	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 30 degrees
A119	82.12	822779.763	837059.398	*Sterculia lanceolata*	假蘋婆	4	135	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	
A120	82.16	822780.098	837057.731	*Acacia confusa*	台灣相思	6	143	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees

Contract No. 21/WSD/21 Relocation of Diamond Hill Fresh Water and Salt Water Service Reservoirs to Caverns

Tree Assessment Schedule

Date of Tree Survey : 16 February 2023 Surveyed by : Mr Ng Sze Yuen, Jason

Tree Tag No.	Level at Base (mPD)	Coordinates (Northing, Easting)		Species		Tree Size			Amenity value (Good, Fair, Poor)	Form (Good, Fair, Poor)	Health condition (Good, fair, Poor)	Structural condition (Good, Fair, Poor)	Suitability for transplanting		Conservation status** (OVT/ Common Species/ Scheduled under Cap 96/ Protected under Cap 58/ Rare & Precious Plants/ IUCN Red List of Threatened Species/	Recommendation (Transplant/ Retain/ Fell)	Remarks
				Scientific Name	Chinese Name	Overall Height (m)	Trunk Diameter (mm)	Average Crown Spread (m)					High/ Medium/ Low	Remarks*			
A121	82.68	822782.197	837057.963	*Acacia confusa*	台灣相思	8	191	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; wound at trunk
A122	91.03	822798.331	837096.388	*Acacia confusa*	台灣相思	8	159	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees
A123	90.40	822797.542	837096.319	*Acacia confusa*	台灣相思	8	95	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A124	90.43	822797.254	837097.816	*Acacia confusa*	台灣相思	7	95	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	wound at branches; wound at branches
A125	91.41	822798.829	837100.363	*Acacia confusa*	台灣相思	4	95	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A126	92.00	822799.809	837101.724	*Acacia confusa*	台灣相思	8	191	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A127	91.20	822798.606	837096.396	*Acacia confusa*	台灣相思	7	95	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees
A128	92.14	822800.496	837094.071	*Acacia confusa*	台灣相思	10	360	8	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees
A129	91.02	822798.089	837094.061	*Acacia confusa*	台灣相思	10	286	10	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; co-dominant branches; crack at trunk
A130	89.71	822796.496	837094.476	*Acacia confusa*	台灣相思	8	191	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees
A131	88.98	822795.405	837094.421	*Acacia confusa*	台灣相思	6	95	1	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; wound at branches
A132	91.78	822799.236	837089.405	*Acacia confusa*	台灣相思	5	111	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; co-dominant branches; wound at branches
A133	91.41	822798.433	837088.656	*Acacia confusa*	台灣相思	6	111	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A134	91.73	822799.063	837088.108	*Acacia confusa*	台灣相思	5	159	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; co-dominant branches; cross branches
A135	91.87	822799.144	837086.750	*Acacia confusa*	台灣相思	5	207	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	co-dominant branches
A136	90.35	822796.760	837091.161	*Acacia confusa*	台灣相思	12	318	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A137	88.79	822794.804	837092.304	*Acacia confusa*	台灣相思	8	127	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; wound at trunk
A138	86.26	822790.849	837091.953	*Acacia confusa*	台灣相思	10	286	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; exposed root
A139	86.01	822790.180	837085.028	*Acacia confusa*	台灣相思	8	159	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees
A140	87.41	822792.637	837084.881	*Acacia confusa*	台灣相思	12	286	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; co-dominant branches; wound at trunk
A141	87.85	822793.089	837085.092	*Acacia confusa*	台灣相思	6	159	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A142	88.16	822793.805	837086.403	*Acacia confusa*	台灣相思	10	143	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	
A145	92.05	822800.376	837084.855	*Acacia confusa*	台灣相思	6	175	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; co-dominant branches
A146	92.00	822799.251	837082.780	*Acacia confusa*	台灣相思	5	191	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees
A147	91.96	822799.195	837080.953	*Acacia confusa*	台灣相思	5	191	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees
A148	91.03	822797.318	837081.063	*Acacia confusa*	台灣相思	10	255	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; co-dominant branches; cross branches
A149	89.91	822796.279	837083.008	*Acacia confusa*	台灣相思	10	191	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A150	88.58	822793.967	837081.673	*Acacia confusa*	台灣相思	8	255	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees
A151	87.59	822792.607	837081.755	*Acacia confusa*	台灣相思	10	191	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees
A152	86.93	822791.305	837080.215	*Acacia confusa*	台灣相思	10	350	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; wound at branches; dead branches
A153	86.18	822790.431	837080.611	*Acacia confusa*	台灣相思	6	111	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; co-dominant branches
A154	80.65	822778.892	837083.049	*Macaranga tanarius*	血桐	6	111	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; co-dominant branches
A155	80.27	822778.536	837085.031	*Ficus hispida*	對葉榕	6	127	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees; co-dominant branches
A157	86.82	822791.524	837070.252	*Acacia confusa*	台灣相思	7	255	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 30 degrees
A158	87.83	822792.897	837072.945	*Acacia confusa*	台灣相思	12	223	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; co-dominant branches; wound at trunk
A159	87.76	822792.877	837074.619	*Acacia confusa*	台灣相思	8	127	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; wound & decay at branches
A160	88.63	822793.984	837073.095	*Acacia confusa*	台灣相思	10	159	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees
A161	88.66	822794.096	837071.935	*Acacia confusa*	台灣相思	8	180	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; co-dominant branches; wound at branches
A162	90.92	822797.443	837074.812	*Acacia confusa*	台灣相思	4	111	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; cross branches
A163	91.53	822798.260	837075.470	*Acacia confusa*	台灣相思	8	191	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	
A164	91.41	822798.158	837077.154	*Acacia confusa*	台灣相思	3	95	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A165	92.07	822799.192	837076.947	*Acacia confusa*	台灣相思	7	207	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A166	92.02	822800.166	837073.008	*Acacia confusa*	台灣相思	4	191	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 25 degrees
A167	91.93	822799.045	837070.696	*Acacia confusa*	台灣相思	8	191	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 25 degrees; co-dominant trunk; wound at trunk; cross branches
A168	92.14	822800.008	837069.022	*Acacia confusa*	台灣相思	8	286	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; wound at trunk
A169	90.96	822797.511	837072.503	*Acacia confusa*	台灣相思	6	135	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A170	90.26	822796.506	837069.145	*Acacia confusa*	台灣相思	7	111	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A171	90.54	822797.123	837067.138	*Acacia confusa*	台灣相思	4	159	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; co-dominant branches
A172	90.89	822797.439	837066.655	*Acacia confusa*	台灣相思	10	255	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees
A173	88.59	822794.115	837067.776	*Mallotus paniculatus*	白楸	4	95	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; co-dominant branches; wound at trunk
A174	87.93	822793.095	837068.134	*Mallotus paniculatus*	白楸	7	111	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees
A175	86.34	822790.209	837066.059	*Acacia confusa*	台灣相思	6	159	8	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 40 degrees; cross branches; exposed root
A176	86.59	822790.722	837065.486	*Bridelia tomentosa*	土蜜樹	6	111	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; Abrupt trunk

Contract No. 21/WSD/21 Relocation of Diamond Hill Fresh Water and Salt Water Service Reservoirs to Caverns

Tree Assessment Schedule

Date of Tree Survey : 16 February 2023 Surveyed by : Mr Ng Sze Yuen, Jason

Tree Tag No.	Level at Base (mPD)	Coordinates (Northing, Easting)		Species		Tree Size			Amenity value (Good, Fair, Poor)	Form (Good, Fair, Poor)	Health condition (Good, fair, Poor)	Structural condition (Good, Fair, Poor)	Suitability for transplanting		Conservation status** (OVT/ Common Species/ Scheduled under Cap 96/ Protected under Cap 58/ Rare & Precious Plants/ IUCN Red List of Threatened Species/	Recommendation (Transplant/ Retain/ Fell)	Remarks
				Scientific Name	Chinese Name	Overall Height (m)	Trunk Diameter (mm)	Average Crown Spread (m)					High/ Medium/ Low	Remarks*			
A177	86.27	822790.511	837063.549	*Acacia confusa*	台灣相思	7	191	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees
A178	86.57	822790.725	837063.378	*Sterculia lanceolata*	假蘋婆	6	127	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	
A179	85.89	822789.629	837062.862	*Sterculia lanceolata*	假蘋婆	5	95	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	
A180	85.77	822789.424	837062.321	*Acacia confusa*	台灣相思	4	111	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A181	86.01	822789.509	837060.977	*Acacia confusa*	台灣相思	5	191	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; co-dominant branches
A182	86.86	822791.342	837061.737	*Mallotus paniculatus*	白楸	5	95	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees; crack at branches
A183	87.21	822791.979	837062.090	*Acacia confusa*	台灣相思	7	191	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees; co-dominant branches; cross branches
A184	88.37	822793.578	837062.209	*Acacia confusa*	台灣相思	6	159	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; dead branches
A185	88.47	822793.631	837062.523	*Acacia confusa*	台灣相思	6	191	4	Poor	Poor	Poor	Poor	Low	Low survival rate after transplant	Common Species	Fell	Leaning 25 degrees; uproot; exposed root
A186	88.46	822794.035	837064.635	*Acacia confusa*	台灣相思	6	175	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A187	88.39	822793.908	837065.440	*Sterculia lanceolata*	假蘋婆	6	111	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	
A188	89.11	822794.809	837065.413	*Acacia confusa*	台灣相思	6	127	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees
A189	89.90	822796.095	837063.612	*Acacia confusa*	台灣相思	5	95	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 30 degrees
A190	90.96	822798.728	837065.027	*Mallotus paniculatus*	白楸	4	127	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Crack; split at branches
A191	91.74	822798.364	837059.075	*Ficus hispida*	對葉榕	4	111	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	multi-branches
A192	90.11	822796.232	837060.969	*Acacia confusa*	台灣相思	6	95	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 30 degrees
A193	86.19	822789.656	837056.051	*Acacia confusa*	台灣相思	3	111	4	Poor	Poor	Poor	Poor	Low	Low survival rate after transplant	Common Species	Fell	Leaning 25 degrees; broken trunk
A194	86.12	822789.554	837054.456	*Acacia confusa*	台灣相思	3	159	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 35 degrees
A195	87.88	822792.524	837054.328	*Acacia confusa*	台灣相思	8	223	5	Poor	Poor	Poor	Poor	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; uproot; exposed root
A196	83.56	822783.355	837056.017	*Acacia confusa*	台灣相思	10	191	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A197	81.58	822779.092	837055.141	*Acacia confusa*	台灣相思	12	255	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; co-dominant branches
A198	80.77	822778.548	837054.396	*Acacia confusa*	台灣相思	10	191	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; wound and decay at branches
A199	85.53	822786.676	837050.836	*Acacia confusa*	台灣相思	4	159	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 30 degrees; cavity with decay at trunk
A200	85.58	822786.706	837049.844	*Acacia confusa*	台灣相思	6	255	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10degrees
A201	79.63	822767.395	837053.979	*Acacia confusa*	台灣相思	10	573	12	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 35 degrees; abrupt trunk; co-dominant branches
A202	81.54	822779.482	837051.101	*Acacia confusa*	台灣相思	7	223	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; cross branches
A204	83.29	822782.930	837046.752	*Sterculia lanceolata*	假蘋婆	5	111	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	co-dominant branches
A205	83.87	822783.553	837048.792	*Acacia confusa*	台灣相思	10	350	8	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 30 degrees; co-dominant branches; cross branches
A206	84.57	822785.029	837049.820	*Acacia confusa*	台灣相思	10	223	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; co-dominant branches
A207	85.34	822786.298	837046.213	*Sterculia lanceolata*	假蘋婆	4	143	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	co-dominant branches
A208	84.63	822785.022	837044.617	*Acacia confusa*	台灣相思	8	223	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; co-dominant branches
A209	84.53	822784.513	837043.461	*Acacia confusa*	台灣相思	6	270	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; co-dominant trunk
A210	83.51	822783.009	837041.433	*Acacia confusa*	台灣相思	8	191	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees
A211	83.54	822783.193	837039.880	*Acacia confusa*	台灣相思	8	191	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A212	83.34	822782.548	837038.155	*Acacia confusa*	台灣相思	6	159	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A213	81.24	822778.766	837044.220	*Sterculia lanceolata*	假蘋婆	4	127	3	Poor	Poor	Poor	Poor	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; co-dominant branches; uproot and exposed root
A214	79.96	822776.728	837036.951	*Broussonetia papyrifera*	構樹	6	95	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A215	80.69	822777.951	837035.984	*Ficus hispida*	對葉榕	5	95	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; co-dominant trunk; co-dominant branches
A216	82.43	822781.087	837036.136	*Acacia confusa*	台灣相思	8	255	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; co-dominant branches; cross branches
A217	84.57	822783.910	837036.345	*Acacia confusa*	台灣相思	4	286	6	Poor	Poor	Poor	Poor	Low	Low survival rate after transplant	Common Species	Fell	Leaning 30 degrees; cross branches; uproot; exposed root
A219	84.32	822784.155	837033.439	*Acacia confusa*	台灣相思	10	271	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Retain	
A225	86.21	822789.324	837050.589	*Acacia confusa*	台灣相思	12	286	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees
A226	87.36	822791.816	837051.760	*Acacia confusa*	台灣相思	7	159	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees
A227	87.38	822791.903	837052.239	*Acacia confusa*	台灣相思	4	135	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees; co-dominant trunk
A228	87.94	822792.443	837050.342	*Acacia confusa*	台灣相思	6	159	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees; dead branches
A229	88.15	822792.973	837050.640	*Acacia confusa*	台灣相思	7	207	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A230	88.61	822793.514	837049.532	*Acacia confusa*	台灣相思	6	127	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; co-dominant trunk
A231	89.45	822795.151	837050.925	*Acacia confusa*	台灣相思	7	95	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; abrupt trunk
A232	90.22	822796.438	837052.853	*Sterculia lanceolata*	假蘋婆	4	95	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees
A233	90.04	822795.727	837053.884	*Acacia confusa*	台灣相思	7	111	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 30 degrees
A234	89.91	822795.430	837054.959	*Acacia confusa*	台灣相思	8	159	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A235	89.42	822794.804	837047.730	*Acacia confusa*	台灣相思	10	414	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	co-dominant branches
A236	90.33	822796.287	837047.870	*Acacia confusa*	台灣相思	8	255	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	co-dominant branches

Contract No. 21/WSD/21 Relocation of Diamond Hill Fresh Water and Salt Water Service Reservoirs to Caverns

Tree Assessment Schedule

Date of Tree Survey : 16 February 2023 Surveyed by : Mr Ng Sze Yuen, Jason

Tree Tag No.	Level at Base (mPD)	Coordinates (Northing, Easting)		Species		Tree Size			Amenity value (Good, Fair, Poor)	Form (Good, Fair, Poor)	Health condition (Good, fair, Poor)	Structural condition (Good, Fair, Poor)	Suitability for transplanting		Conservation status** (OVT/ Common Species/ Scheduled under Cap 96/ Protected under Cap 58/ Rare & Precious Plants/ IUCN Red List of Threatened Species/	Recommendation (Transplant/ Retain/ Fell)	Remarks
				Scientific Name	Chinese Name	Overall Height (m)	Trunk Diameter (mm)	Average Crown Spread (m)					High/ Medium/ Low	Remarks*			
A237	90.96	822797.395	837048.116	*Acacia confusa*	台灣相思	8	191	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	co-dominant branches
A238	91.33	822798.256	837046.939	*Acacia confusa*	台灣相思	8	223	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	dead branches
A239	91.08	822797.401	837044.675	*Acacia confusa*	台灣相思	4	127	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 40 degrees
A241	89.02	822793.986	837053.290	*Acacia confusa*	台灣相思	10	255	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A242	89.43	822794.410	837042.716	*Mallotus paniculatus*	白楸	6	223	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; cavity at trunk
A244	86.19	822789.230	837043.026	*Acacia confusa*	台灣相思	8	286	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	co-dominant trunk; v-shaped; wound at trunk
A249	89.81	822794.374	837033.943	*Acacia confusa*	台灣相思	10	223	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Retain	dead branches
A250	87.40	822791.741	837033.925	*Acacia confusa*	台灣相思	6	127	1	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Retain	dead branches; wound at branches
A251	92.38	822799.044	837034.970	*Acacia confusa*	台灣相思	6	334	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; co-dominant branches
A542	88.27	822802.806	837120.255	*Acacia confusa*	台灣相思	4	111	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; cavity at branches
A543	88.95	822803.930	837119.578	*Acacia confusa*	台灣相思	7	143	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A544	89.35	822804.776	837119.087	*Acacia confusa*	台灣相思	6	111	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A545	89.67	822805.529	837119.274	*Acacia confusa*	台灣相思	8	239	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning30 degrees; co-dominant branches; exposed root
A546	89.46	822804.061	837118.761	*Acacia confusa*	台灣相思	8	271	5	Fair	Fair	Fair	Poor	Low	Low survival rate after transplant	Common Species	Fell	Leaning 40 degrees
A547	89.78	822803.971	837117.965	*Acacia confusa*	台灣相思	10	191	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees
A548	88.98	822801.596	837118.443	*Acacia confusa*	台灣相思	10	255	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 30 degrees
A550	89.50	822800.026	837116.165	*Acacia confusa*	台灣相思	6	95	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	
A551	90.11	822808.361	837118.377	*Acacia confusa*	台灣相思	4	111	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	
A552	90.39	822811.910	837116.524	*Mallotus paniculatus*	白楸	4	127	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; exposed root
A556	90.00	822813.704	837116.655	*Acacia confusa*	台灣相思	7	223	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; dead branches
A558	90.99	822813.378	837114.527	*Acacia confusa*	台灣相思	10	405	8	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; co-dominant trunk; cavity at trunk; cross branches
A559	92.04	822811.744	837112.781	*Acacia confusa*	台灣相思	8	540	10	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	
A560	91.70	822814.715	837112.066	*Acacia confusa*	台灣相思	10	630	12	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; co-dominant trunk; co-dominant branches; wound at branches; cross branches
A562	92.34	822815.606	837106.607	*Livistona chinensis*	蒲葵	2	223	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	
A563	92.31	822817.351	837105.061	*Livistona chinensis*	蒲葵	2	223	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	
A566	93.21	822818.920	837094.672	*Livistona chinensis*	蒲葵	2	223	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Transplant	
A568	92.01	822824.107	837097.392	*Mallotus paniculatus*	白楸	5	286	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 5 degrees; co-dominant branches
A569	91.31	822822.723	837100.212	*Mallotus paniculatus*	白楸	5	239	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 30 degrees
A571	90.47	822820.864	837104.645	*Microcos nervosa*	布渣葉	4	111	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A572	90.39	822820.448	837106.439	*Acacia confusa*	台灣相思	7	207	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; co-dominant branches
A573	90.39	822819.434	837108.518	*Aporusa dioica*	銀柴	5	143	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	co-dominant branches
A574	90.83	822818.462	837109.210	*Acacia confusa*	台灣相思	8	382	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; co-dominant branches; wound at branches
A576	89.01	822817.252	837115.498	*Mallotus paniculatus*	白楸	6	159	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; co-dominant branches
A577	78.17	822771.259	837095.241	*Ficus hispida*	對葉榕	7	315	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; co-dominant trunk; co-dominant branches
A578	79.57	822771.494	837090.390	*Ficus hispida*	對葉榕	5	111	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; multi-branches
A579	79.72	822771.628	837082.522	*Mallotus paniculatus*	白楸	6	111	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A580	78.70	822767.140	837077.722	*Macaranga tanarius*	血桐	7	175	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A582	79.49	822767.965	837071.924	*Mallotus paniculatus*	白楸	5	143	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A583	79.32	822767.109	837071.822	*Mallotus paniculatus*	白楸	6	127	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A584	78.21	822765.451	837071.524	*Celtis sinensis*	朴樹	5	127	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A585	78.40	822764.874	837069.384	*Syzygium jambos*	蒲桃	6	191	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A586	78.66	822764.626	837067.526	*Bauhinia variegata*	宮粉羊蹄甲	10	540	8	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; co-dominant trunk; v-shaped
A616	77.19	822765.061	837077.484	*Ficus hispida*	對葉榕	6	127	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees
A617	76.87	822765.004	837078.884	*Microcos nervosa*	布渣葉	6	111	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; multi-trunks
A618	76.37	822764.139	837079.154	*Microcos nervosa*	布渣葉	5	95	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees
A619	77.22	822766.411	837083.628	*Mallotus paniculatus*	白楸	5	223	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; co-dominant branches; cavity and decay at trunk base
A620	77.76	822767.960	837086.053	*Microcos nervosa*	布渣葉	5	111	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 10 degrees; co-dominant branches
A621	77.93	822769.430	837089.997	*Bridelia tomentosa*	土蜜樹	5	95	2	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; co-dominant branches
E1	92.61	822820.332	837095.239	*Livistona chinensis*	蒲葵	5	223	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Transplant	
E2	92.34	822815.715	837102.146	*Livistona chinensis*	蒲葵	3	207	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Transplant	
E3	92.18	822810.872	837103.658	*Acacia confusa*	台灣相思	7	302	8	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; abrupt trunk;wound at trunk; wound at branches; cross branches; broken branches; exposed root
E5	92.03	822810.043	837106.772	*Acacia confusa*	台灣相思	4	350	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 25 degrees; abrupt trunk; ; co-dominant branches; abnormal bark crack at trunk & branches

Contract No. 21/WSD/21 Relocation of Diamond Hill Fresh Water and Salt Water Service Reservoirs to Caverns

Tree Assessment Schedule

Date of Tree Survey : 16 February 2023 Surveyed by : Mr Ng Sze Yuen, Jason

Tree Tag No.	Level at Base (mPD)	Coordinates (Northing, Easting)		Species		Tree Size			Amenity value (Good, Fair, Poor)	Form (Good, Fair, Poor)	Health condition (Good, fair, Poor)	Structural condition (Good, Fair, Poor)	Suitability for transplanting		Conservation status** (OVT/ Common Species/ Scheduled under Cap 96/ Protected under Cap 58/ Rare & Precious Plants/ IUCN Red List of Threatened Species/	Recommendation (Transplant/ Retain/ Fell)	Remarks
				Scientific Name	Chinese Name	Overall Height (m)	Trunk Diameter (mm)	Average Crown Spread (m)					High/ Medium/ Low	Remarks*			
E6	92.19	822813.102	837106.246	*Livistona chinensis*	蒲葵	3	286	3	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Transplant	
E7	92.21	822807.928	837106.115	*Acacia confusa*	台灣相思	6	223	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 25 degrees; abrupt trunk; ; co-dominant branches; wound and decay at trunk; exposed root
E9	92.18	822806.134	837107.058	*Acacia confusa*	台灣相思	6	350	8	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; co-dominant branches; cross branches; exposed root
E10	92.19	822805.253	837105.674	*Acacia confusa*	台灣相思	7	207	5	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; abrupt trunk; cavity at trunk; exposed root
E11	92.18	822803.837	837103.947	*Acacia confusa*	台灣相思	4	255	6	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 20 degrees; abrupt trunk; ; co-dominant branches; cavity at branches
E12	92.20	822804.424	837102.744	*Acacia confusa*	台灣相思	7	414	4	Fair	Fair	Fair	Fair	Low	Low survival rate after transplant	Common Species	Fell	Leaning 15 degrees; dead stub; exposed root
E13	92.31	822805.017	837085.855	*Ficus microcarpa*	細葉榕	12	891	6	Poor	Poor	Poor	Poor	Low	Low survival rate after transplant	Common Species	Retain	Leaning 10 degrees; multi-branches; co-dominant branches; dead stub; fungal fruting bodies; exposed root
E14	92.36	822807.873	837079.658	*Ficus microcarpa*	細葉榕	5	796	1	Poor	Poor	Poor	Poor	Low	Low survival rate after transplant	Common Species	Retain	Leaning 15 degrees;abnormal bark crack; pruning wound; decay; exposed root; decay root
E15	92.45	822807.811	837075.688	*Ficus microcarpa*	細葉榕	14	828	8	Poor	Poor	Poor	Poor	Low	Low survival rate after transplant	Common Species	Retain	Leaning 20 degrees; ; co-dominant branches; pruning wound; wound & decay at branches; exposed root
E16	92.79	822807.900	837071.562	*Ficus microcarpa*	細葉榕	14	923	8	Poor	Poor	Poor	Poor	Low	Low survival rate after transplant	Common Species	Retain	Leaning 20 degrees; co-dominant branches;wound at branches exposed root; decay at root
E24	92.78	822823.062	837086.365	*Ficus microcarpa*	細葉榕	10	700	8	Poor	Poor	Poor	Poor	Low	Low survival rate after transplant	Common Species	Retain	Leaning 10 degrees; co-dominant branches; decay and wound at branches; cross branches; exposed root
E25	92.66	822818.664	837087.074	*Ficus microcarpa*	細葉榕	10	796	8	Poor	Poor	Poor	Poor	Low	Low survival rate after transplant	Common Species	Retain	Leaning 20 degrees
E26	92.59	822814.954	837087.633	*Ficus microcarpa*	細葉榕	8	573	4	Poor	Poor	Poor	Poor	Low	Low survival rate after transplant	Common Species	Retain	Leaning 10 degrees; co-dominant branches; cavity with decay at branches; dead stub; exposed root
E27	92.45	822811.319	837087.482	*Ficus microcarpa*	細葉榕	8	462	4	Poor	Poor	Poor	Poor	Low	Low survival rate after transplant	Common Species	Retain	Leaning 10 degrees; dead stub; wound at trunk; decay at branches; exposed root; decay at root
E68	92.47	822804.422	837051.930	*Ficus microcarpa*	細葉榕	18	1019	12	Poor	Poor	Poor	Poor	Low	Low survival rate after transplant	Common Species	Retain	Leaning 15degrees; co-dominant branches; wound at trunk; exposed root

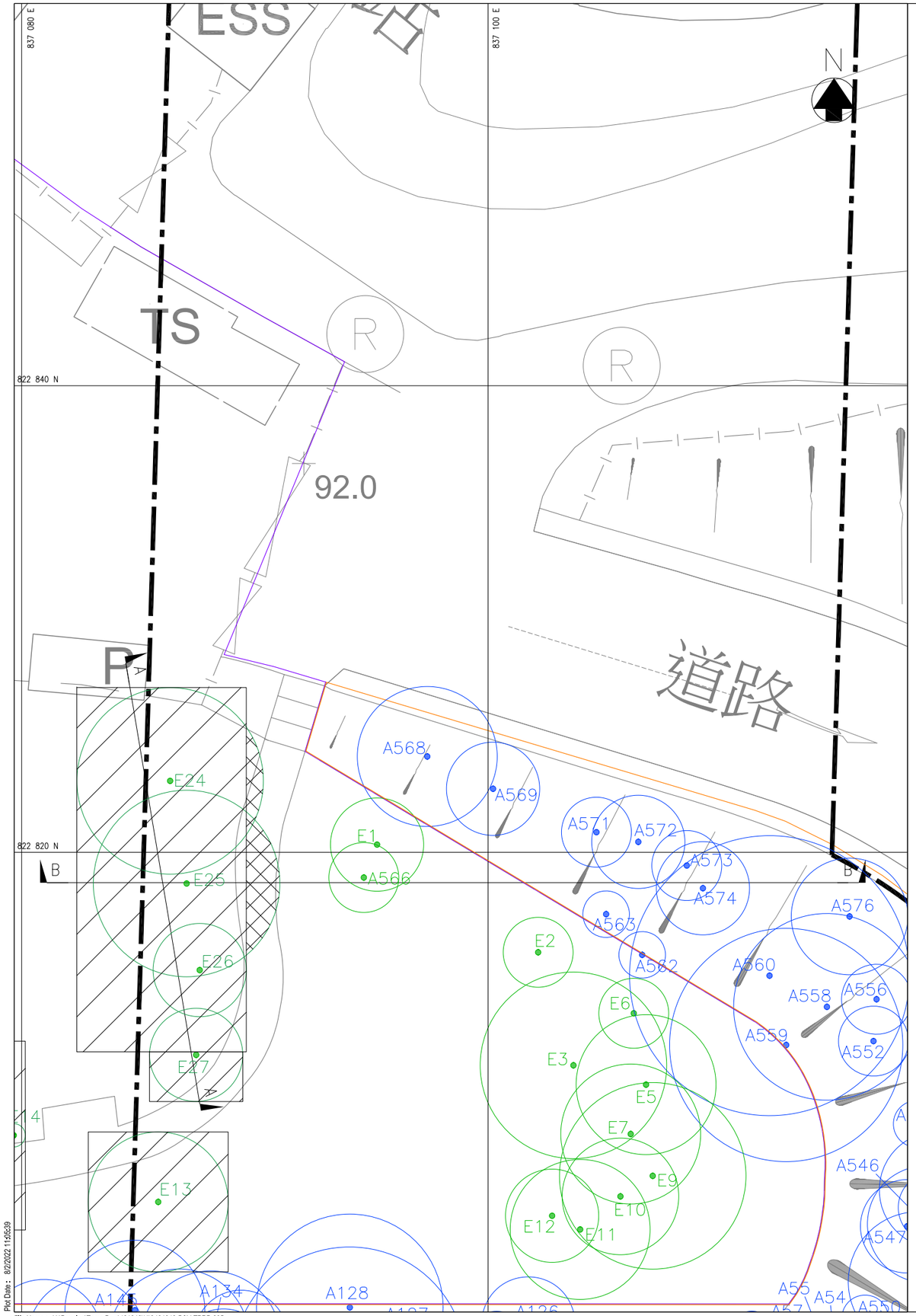
* Assessment shall take into account conditions of an individual tree at the time of survey (including health, structure, age and root conditions), site conditions (including topography and accessibility), and intrinsic characters of tree species (survival rate after transplanting).

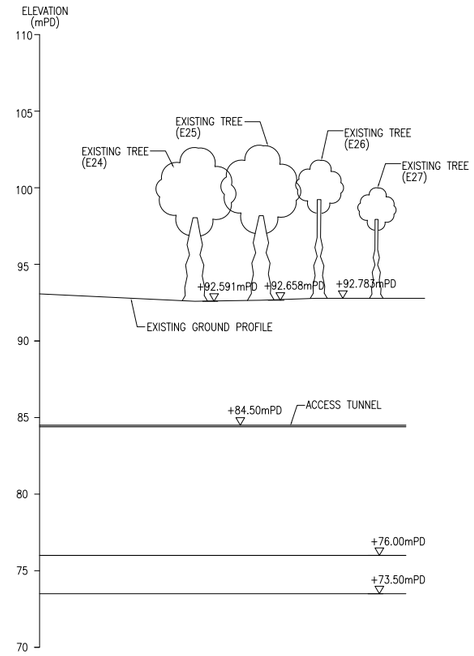
* Conservation status (indicates rarity and protection status under relevant ordinances of a species in Hong Kong. References such as Rare and Precious Plants of Hong Kong [2]; the IUCN Red List of Threatened Species [3] and the Forests and Countryside Ordinance (Cap. 96) may be used.)

[2] Agriculture, Fisheries and Conservation Department, Rare and Precious Plants of Hong Kong (Hong Kong: AFCD, the Government of the Hong Kong Special Administrative Region, 2003).

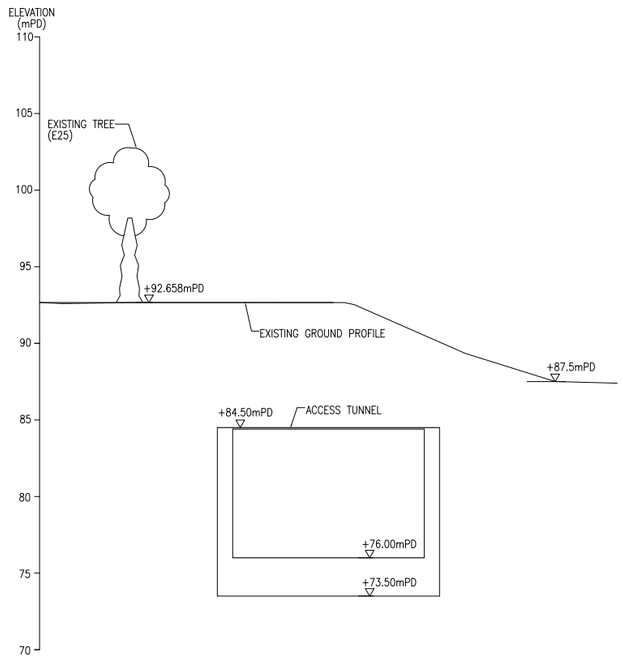
[3] IUCN Red List of Threatened Species. The latest version can be accessed at www.iucnredlist.org.

Appendix G - Typical Cross Section of Retaining Tree





SECTION A–A



SECTION B–B

LEGEND:

- PROPOSED WORKS BOUNDARY
- TYPICAL TREE PROTECTION ZONE FOR RETAINED TREE
- ArchSD MAINTAINED SLOPE
- LCSD MAINTAINED AREA
- PROPOSED GROUND LEVEL (mPD)
- TREE MAINTAINED BY LCSD
- TREE MAINTAINED BY ArchSD
- TREES TO BE PRUNED
- PROPOSED TREE PROTECTION ZONE

Revision	Date	Description			Initial
	Designed	Checked	Drawn	Checked	
Initial	CTAM	WL	SZ	WL	
Date	04/21	04/21	04/21	04/21	

Approved

Agreement No.
CE 15/2018 (WS)

Project Title
RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

Drawing Title
TYPICAL CROSS SECTION OF TREES RETAINED

Drawing No.	Revision
401049/B&V/TPRP/005	–

Scale
A1 1 : 200
A3 1 : 400

水 務 署
Water Supplies Department

BINNIES HONG KONG LIMITED
賓尼斯工程顧問有限公司

Plot Date : 8/2/2022 11:05:39
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Appendix H – Method Statement for Tree Preservation and Protection

METHOD STATEMENT FOR TREE PRESERVATION AND PROTECTION

1. Introduction

A specialist landscape contractor from the "List of Approved Suppliers of Materials and Specialist Contractors for Public Works - Landscaping: Class I - General Landscape Work" shall be engaged to carry out the works relating to trees that shall include but not be limited to tree protection, tree surgery work, control of pests and diseases and transplanting.

The contractor shall assign tree protection issues to a suitably qualified and experienced full-time member of the site staff This member of staff shall be responsible for monitoring and reporting on all tree related issues. All tree survey work shall be supervised by a qualified Arborist or Registered Landscape Architect.

To protect the trees to be retained, the Contractor shall ensure the following for the whole duration of the Contract:

- No unnecessary intrusions such as passage or parking into tree protection areas of existing trees are to be made;
- no access routes will be allowed to pass through existing tree stands;
- the limits of site clearance are to be agreed with the Landscape Architect/Engineer on site before site clearance commences;
- no nails or other fixings shall be driven into trees;
- no soil, materials, equipment or machinery shall be stockpiled or stored within tree protection areas;
- no fencing or signs shall be attached to trees;
- no materials or machinery shall be stored under or against trees;
- no workshop, canteens, or similar shall be installed beneath trees, nor shall equipment maintenance etc. be carried out under trees;
- no trees shall be used as anchors for ropes or chains used in guying, pulling and the like;
- any flammable material or other materials likely to be injurious to the trees shall be kept away from the tree protection areas;
- no fires shall be lit inside or within 5m of the tree protection zone;
- no unauthorized stripping of surface vegetation within tree protection areas;
- no concrete mixing or use or washing out of chemicals shall take place within the tree protection zone;
- excessive water shall be drained away from the tree protection area;
- adjacent felling of trees is done so as not to damage or affect the health of retained trees;
- no unauthorized use of herbicides shall be permitted within the tree protection zone;
- Any equipment shall be carefully operated to avoid causing damage to the trees;
- alkaline fills or paving shall not be applied within the tree protection zone;

To enhance the health and the appearance of the retained trees, advance tree surgery works may be required prior to any construction activity. The following tree surgery work may be required.

2. Crown Thinning

Generally, no crown thinning should be necessary on the retained trees except where preparation works for root pruning are required or as per item i and ii above.

i. Removal of broken, damaged and diseased branches;
ii. Removal of weak or crossing branches to ensure a well-balanced crown.
iii. Protection by fencing;
iv. Securing of trees with cables throughout the construction period.

3. Root Pruning

Generally, no root pruning shall be permitted on the retained trees except where permission for pruning has been obtained in the Approved Tree Removal Application or for trees identified for transplanting. The contractor shall submit method statements for the proposed pruning works to the Landscape Architect/Engineer prior to commencing root pruning works.

4. Securing and Staking Retained Trees

During construction work and for the duration of the contract, should the site conditions require (e.g. local excavations in the vicinity of tree roots or removal of adjacent trees thus exposing retained trees to risk of wind blow), existing trees should be provided with adequate physical support including securing and tying to temporary supports. The contractor shall be liable for the cost of reinstatement of any tree that dies or is damaged due to lack of support and protection. The area of trunk guyed above ground shall be wrapped with pads of hessian or rubber to prevent the tie from chafing the trunk or branches. Retained trees shall be secured with 3 no. cables from the trunk attached to metal stakes 1000mm long driven 700mm into the ground.

5. Pruning works

Damaged branches or branches that must be removed shall be carefully pruned using a sharp clean implement to give a single flat sloping face cut and wounds shall be left open to the air to self-heal. All pruning works are to be supervised by a qualified arborist and are to be in accordance with recognized best practice including the Development Bureau's guidelines on pruning works.

6. Pests & Fungal Growth

The site shall be regularly checked for any insect or termite attack or fungus infestation particularly during known periods of activity. Remedial measures shall be carried out. All pesticides, fungicides or chemicals shall be propriety products registered in Hong Kong. Use of sprayed insecticide/fungicides shall only be permitted in strict accordance with the manufacturer's instructions. Use of such materials shall be undertaken with due care and have regard to the safety, environmentally friendly and convenience of the general public and is to be carefully controlled to

avoid unnecessary dispersion. In the case of termite attack, specialists shall be employed by the contractor to provide proposals to eliminate the termites and shall submit monthly monitoring reports throughout the contract and the Establishment Period.

7. Maintenance/Establishment Works

Retained trees shall be maintained from site possession until the completion of the project by the contractor who shall engage staff suitably trained and experienced in arboricultural and tree surgery works to undertake the task. The maintenance works shall include all measures necessary to establish and maintain the trees in an acceptable, vigorous and healthy growing condition.

8. Creation and Protection of the Cordon Zone by protective fencing

Tree protective chain link fence shall be erected before other works commence. Protective fencing (minimum 1.5m high) should be erected beyond the crown spread/drip line or the designed protection zone of all existing trees. The protective chain link fence with cover strip to be installed on a concrete base. The protective fence shall be restricted only to workers directly involved in tree work. No construction worker shall enter the cordon zone (CZ). No construction equipment or materials shall breach the CZ. No fires shall be lit in or near the CZ and hoisted materials shall not encroach into the CZ. Where there is a risk of the entry of contaminated construction water and other effluent into the CZ, the base of the protective fence shall be sealed by sand bags at least 200 mm tall if necessary or instructed by the Landscape Architect/Engineer.

9. Monitoring System

The performance of the retained trees shall be monitored throughout the project construction period on a monthly basis by the submission of Tree Protection Reports. Tree growth conditions with reference to trunk, branches, foliage, soil and root, any arboricultural problems and associated remedial measures shall be recorded. Any construction activities that may impact the trees negatively shall be reported well in advance by the Contractor to the Landscape Architect/Engineer for planning of preventive tree work to avoid possible damages

The contractor shall report to the management office the day's establishment work on the retained trees and a countersigned record log book of the work carried out shall be kept at the site office and made available for inspection. All non-routine tree problems are to be promptly reported to the Landscape Architect/Engineer.

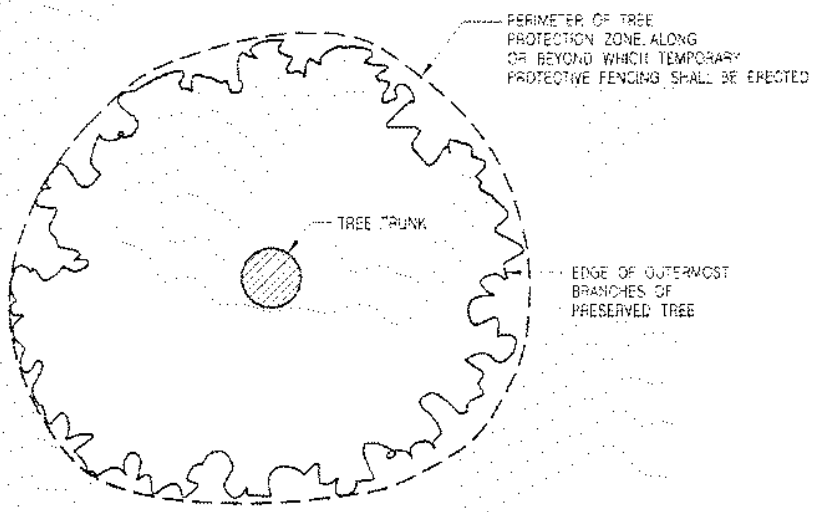
Photographs shall be taken at the following key stages of the tree works:

i. Before commencement of construction;
ii. Monthly, throughout the construction and establishment period.

Monthly progress reports with progress photographs on the status of the retained trees including statements on their health should be prepared by the contractor's tree specialist or arborist for the Landscape Architect/Engineer's review and a complete copy provided at the stage of Certificate of Completion.

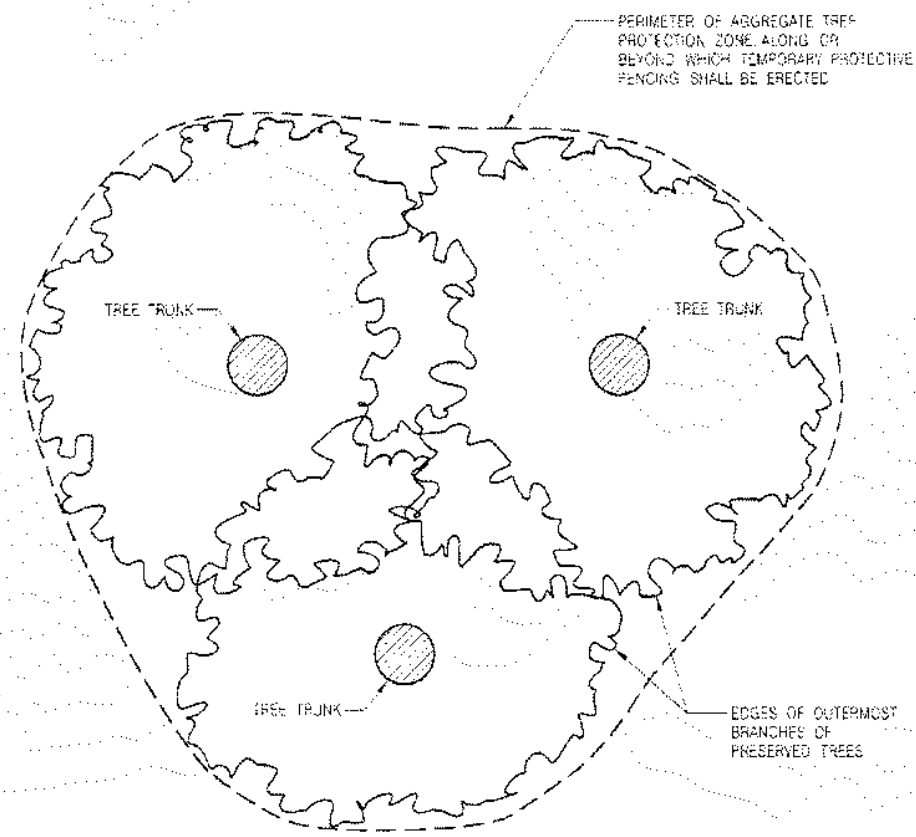
Drawings for Tree Protection Works

- TP1 – Temporary Protective Fencing to Preserved Tree
- TP2 – Temporary Protective Armouring to Preserved Tree
- TP3 – Temporary Protective Mulching to Preserved Tree



PLAN - INDIVIDUAL TREE

(DIAGRAMMATIC)

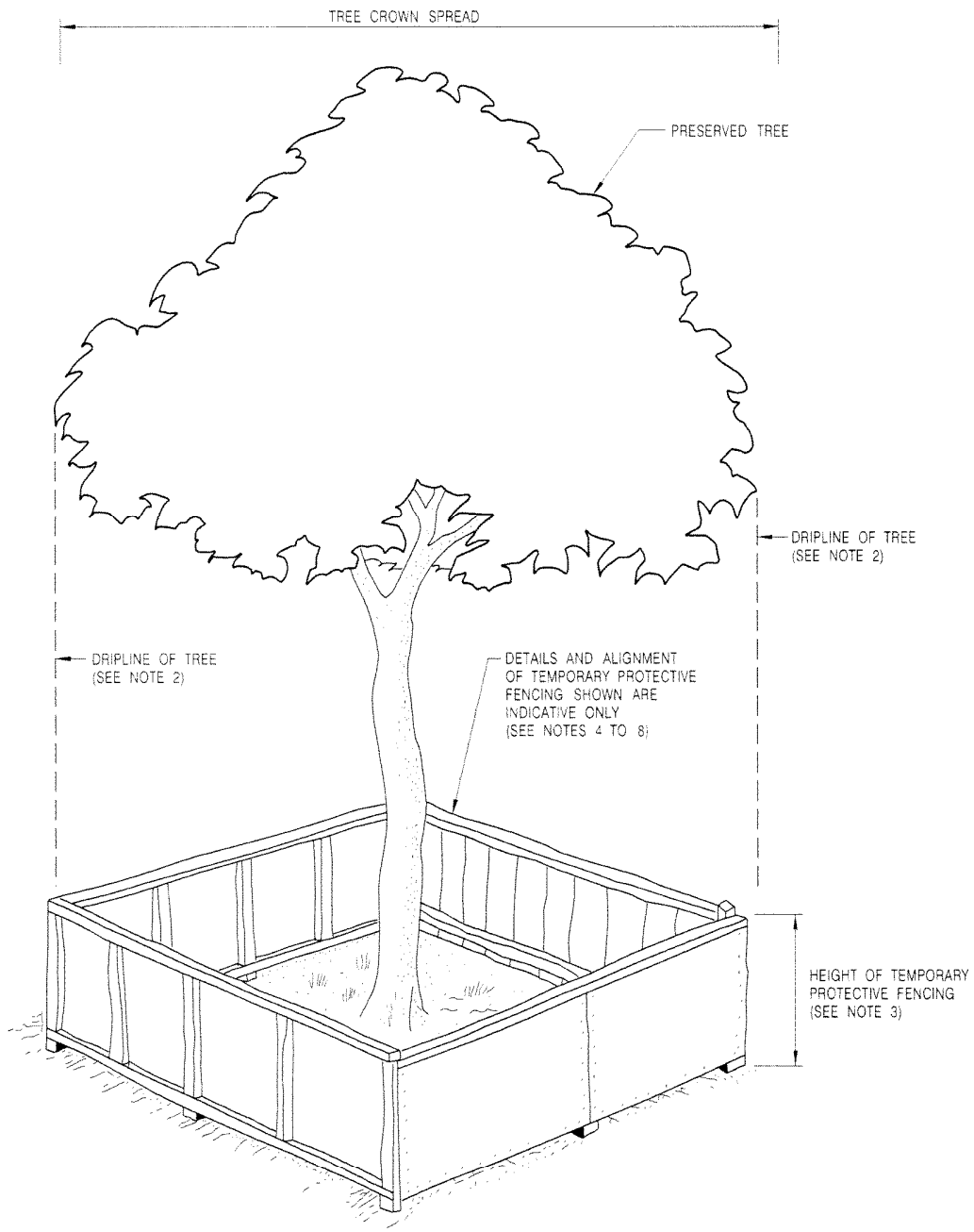


PLAN - GROUP OF TREES

(DIAGRAMMATIC)

TEMPORARY PROTECTIVE FENCING TO PRESERVED TREE

DRAWING NO.
TP1 (SHEET 1 OF 4)

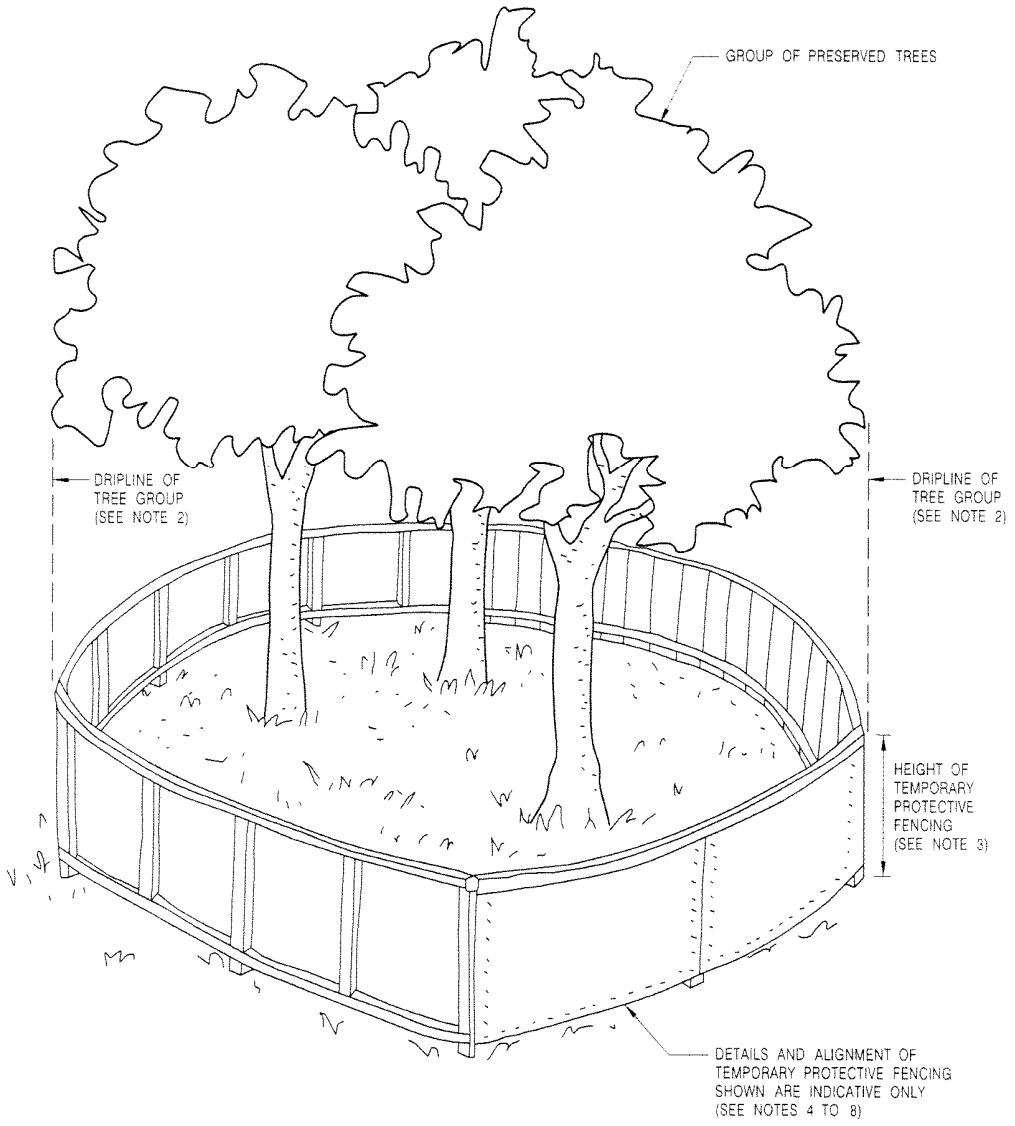


PERSPECTIVE - INDIVIDUAL TREE

(DIAGRAMMATIC)

TEMPORARY PROTECTIVE FENCING TO PRESERVED TREE

DRAWING NO.
TP1 (SHEET 2 OF 4)



PERSPECTIVE - GROUP OF TREES

(DIAGRAMMATIC)

TEMPORARY PROTECTIVE FENCING TO PRESERVED TREE	**DRAWING NO.** TP1 (SHEET 3 OF 4)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

2. DRIPLINE OF *TREE / TREE GROUP EXTENDS TO THE OUTERMOST BRANCHES OF THE *TREE / TREE GROUP, DEFINING THE PERIMETER OF THE *TREE PROTECTION ZONE / AGGREGATE TREE PROTECTION ZONE.

3. HEIGHT OF TEMPORARY PROTECTIVE FENCING SHALL BE 1500 MINIMUM, BUT THE REQUIRED HEIGHT SHALL BE DETERMINED BY THE *ARCHITECT / ENGINEER / SUPERVISING OFFICER WHEN APPROVING THE CONSTRUCTION DETAILS OF THE FENCING AS REFERRED TO IN NOTE 8.

4. TEMPORARY PROTECTIVE FENCING SHALL BE STRONG AND APPROPRIATE FOR RESISTING THE IMPACTS OF CONSTRUCTION ACTIVITIES ON THE SITE. IT SHALL BE MADE OF ROBUST MATERIALS AND SHALL COMPRISE A VERTICAL AND HORIZONTAL SCAFFOLDING FRAMEWORK, WELL BRACED AND SUPPORTING **CHAIN LINK FENCING / STEEL SHEET FENCING, OR OTHER FENCING AS APPROVED BY THE *ARCHITECT / ENGINEER / SUPERVISING OFFICER. ONLY IN EXCEPTIONAL CIRCUMSTANCES SHALL PLASTIC WEBBING BE CONSIDERED.

5. THE ALIGNMENT OF TEMPORARY PROTECTIVE FENCING CAN BE IN CIRCULAR, SQUARE, RECTANGULAR OR ANY OTHER SHAPE SO LONG AS THE FENCING INCLUDING ITS FOUNDATIONS DOES NOT ENCROACH INTO THE TREE PROTECTION ZONE.

6. A LOCKABLE GATE SHALL BE PROVIDED TO THE TEMPORARY PROTECTIVE FENCING TO ALLOW ENTRY FOR CARRYING OUT THE NECESSARY ARBORICULTURAL WORKS OR MAINTENANCE WORKS TO THE TREE OR ANY OTHER APPROVED WORKS WITHIN THE TREE PROTECTION ZONE.

7. WARNING NOTICE GUARDING AGAINST UNAUTHORISED OPERATIONS WITHIN FENCED AREA SHALL BE ERECTED ON THE TEMPORARY PROTECTIVE FENCING.

8. THE CONTRACTOR SHALL SUBMIT THE CONSTRUCTION DETAILS OF THE TEMPORARY PROTECTIVE FENCING TO THE *ARCHITECT / ENGINEER / SUPERVISING OFFICER FOR APPROVAL PRIOR TO ERECTION OF THE FENCING.

* DELETE WHICHEVER IS INAPPROPRIATE.

** DELETE WHICHEVER IS INAPPROPRIATE. STEEL SHEET FENCING SHALL BE USED IN CIRCUMSTANCES WHERE THE CONCENTRATION OF CONSTRUCTION ACTIVITY IS PARTICULARLY INTENSE OR THE PRESERVED TREE IS EITHER PARTICULARLY VALUABLE OR PARTICULARLY VULNERABLE.

TEMPORARY PROTECTIVE FENCING TO PRESERVED TREE

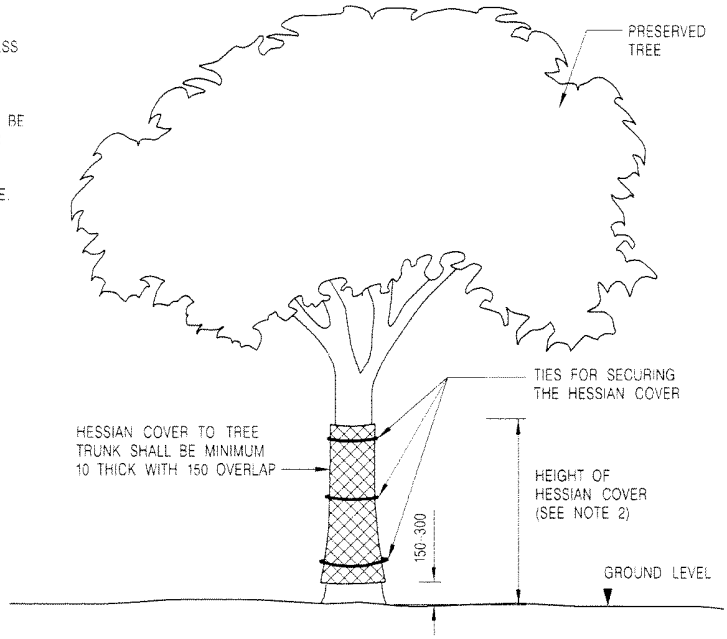
DRAWING NO.
TP1 (SHEET 4 OF 4)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

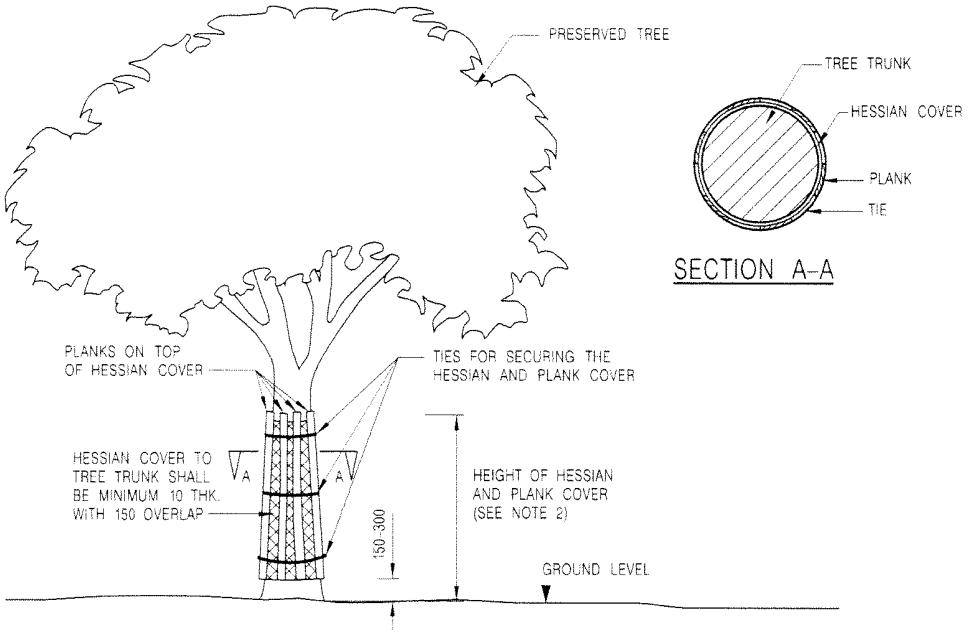
2. HEIGHT OF *HESSIAN COVER / HESSIAN AND PLANK COVER TO THE TRUNK SHALL BE 1500 MIN., BUT THE REQUIRED HEIGHT FOR DIFFERENT INDIVIDUAL TREES SHALL BE DETERMINED BY THE *ARCHITECT / ENGINEER / SUPERVISING OFFICER ON SITE.

* DELETE WHICHEVER IS INAPPROPRIATE



TEMPORARY PROTECTIVE HESSIAN ARMOURING TO PRESERVED TREE

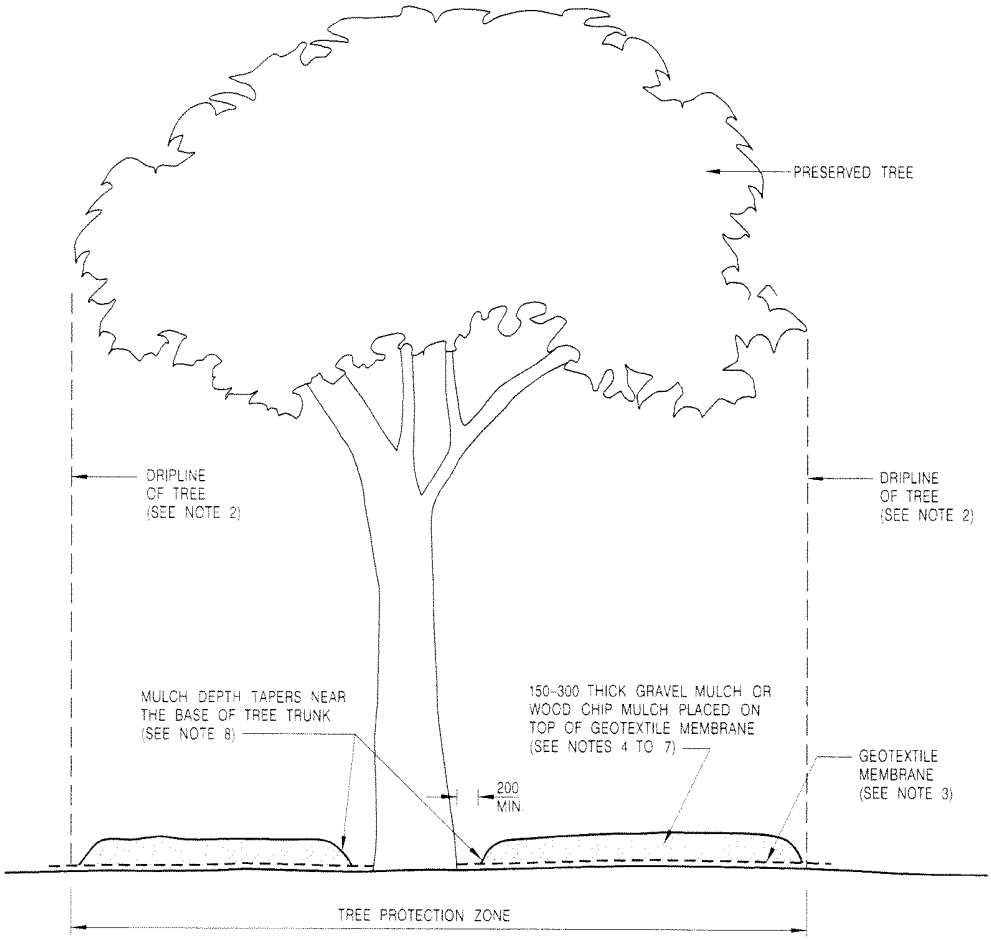
(DIAGRAMMATIC)



TEMPORARY PROTECTIVE HESSIAN AND PLANK ARMOURING TO PRESERVED TREE

(DIAGRAMMATIC)

TEMPORARY PROTECTIVE ARMOURING TO PRESERVED TREE	**DRAWING NO.** TP2



TEMPORARY PROTECTIVE MULCHING TO PRESERVED TREE

(DIAGRAMMATIC)

TEMPORARY PROTECTIVE MULCHING TO PRESERVED TREE	**DRAWING NO.** TP3 (SHEET 1 OF 2)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

2. DRIPLINE OF TREE EXTENDS TO THE OUTERMOST BRANCHES OF THE TREE, DEFINING THE PERIMETER OF THE TREE PROTECTION ZONE.

3. THE GROUND BENEATH THE GEOTEXTILE MEMBRANE WITHIN THE TREE PROTECTION ZONE SHALL BE LEFT UNDISTURBED. BUT THE DEBRIS AND THE EXISTING UNDERGROWTH ON THE GROUND SHALL BE CLEARED PRIOR TO APPLYING THE GEOTEXTILE MEMBRANE. THE *ARCHITECT / ENGINEER / SUPERVISING OFFICER'S AGREEMENT SHALL BE OBTAINED PRIOR TO CLEARANCE OF THE EXISTING UNDERGROWTH.

4. WHERE GRAVEL MULCH IS USED, THE NOMINAL SIZE OF GRAVEL SHALL BE OF 20 DIAMETER AND THE GRAVEL SHALL BE OF INERT, LIME-FREE MATERIALS WITH NO FINES.

5. WHERE WOOD CHIP MULCH IS USED, THE NOMINAL PARTICLE SIZE SHALL BE IN THE RANGE 2mm TO 20mm AND THE WOOD CHIPS SHALL BE FREE FROM PERNICIOUS WEEDS, CHEMICAL CONTAMINATION, RUBBISH AND OTHER DELETERIOUS MATERIAL.

6. TEMPORARY PROTECTIVE MULCHING SHALL BE INSPECTED AT MONTHLY INTERVALS AND, IF NECESSARY, SHALL BE REPLENISHED TO THE SPECIFIED THICKNESS.

7. WHERE, IN ADDITION TO PEDESTRIAN LOADS, THE PASSAGE OR PARKING OF VEHICLES OR THE OPERATION OF EQUIPMENT OR MACHINERY WITHIN THE TREE PROTECTION ZONE HAS BEEN AGREED BY THE *ARCHITECT / ENGINEER / SUPERVISING OFFICER, DOUBLE, OVERLAPPING THICK METAL SHEET COVERINGS, OR OTHER MATERIALS OF EQUIVALENT STRENGTH AS AGREED BY THE *ARCHITECT / ENGINEER / SUPERVISING OFFICER, SHALL BE LAID ON TOP OF THE TEMPORARY PROTECTIVE MULCHING TO PROVIDE ADDITIONAL PROTECTION FROM SOIL COMPACTION.

8. MULCH SHALL BE KEPT AWAY FROM THE BASE OF TREE TRUNK TO PREVENT ROOT COLLAR ROT.

9. WHERE THE PRESERVED TREE IS ON SLOPING GROUND, 300 HIGH TIMBER EDGE SHALL BE PEGGED ON DOWNSLOPE SIDE OF THE TREE PROTECTION ZONE TO HOLD THE MULCH.

* DELETE WHICHEVER IS INAPPROPRIATE.

TEMPORARY PROTECTIVE MULCHING TO PRESERVED TREE

DRAWING NO.
TP3 (SHEET 2 OF 2)