ISSUE 2

TEMPORARY DRAINAGE PROPOSAL (Final)

APPLICATION SITE OF PROPOSED TEMPORARY WAREHOUSE FOR STORAGE OF HARDWARE ACCESSORIES FOR A PERIOD OF 3 YEARS AT LOT 1965 IN D.D.129, LAU FAU SHAN, YUEN LONG, NEW TERRITORIES

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LIST OF TABLES

1 Introduction

1.1 Background

1.1.1 This report presents the Drainage Proposal for supporting the Proposed Temporary Warehouse for Storage of Hardware Accessories for a Period of 3 Years at Lot Lot 1965 in D.D.129, Lau Fau Shan, Yuen Long, New Territories.

1.2 Objectives of the Report

1.2.1 This report shall be prepared to include the following:

- Identify the potential drainage impact assessment from the proposed Application Site
- recommend and implement all necessary measures to mitigate adverse drainage impacts arising from the application site

1.3 Report Structure

1.3.1 The report contains the following sections:

- Section 1 on Introduction;
- Section 2 on Development Proposal;
- Section 3 on Assessment Criteria;
- Section 4 on Potential Drainage Impact; and
- Section 5 on Conclusion.

2 Development Proposal

2.1 Location of the Application Site

2.1.1 The application Site is located within the Kam Tin, Yuen Long, with an area of around 1,640m^2 and ground level varying between + 18.2mPD and + 18.6mPD. The layout plan is provided in **Appendix B.**

2.1.2 This application site is "Recreation" zoning, the type of application is the Temporary Use/Development in Rural Areas for a Period of 3 Years.

3 Assessment Criteria

3.1 Design Return Periods

3.1.1 The drainage system in the Application site is to collect surface flows and convey to downstream village drain. The recommended design return periods based on the flood levels for the various drainage systems depend on the drainage system, land use, hazard to public safety and community expectations. The recommended design return period is reproduced in Table 3-1 below:

Table 3-1 Recommended Design Return Periods based on Flood Levels

DESCRIPTION	DESIGN RETURN PERIODS
Intensively Used Agricultural Land	2 – 5 Years
Village Drainage including internal Drainage System under a polder Scheme	10 Years
Main Rural Catchment Drainage Channels	50 Years
Urban Drainage Trunk System	200 Years
Urban Drainage Branch System	50 Years

3.1.2 As per Storm Drainage Manuel (SDM) Section 6.6.2 Urban Drainage Branch and Urban Drainage Trunk Systems *"An 'Urban Drainage Branch System' is defined as a group or network of connecting drains collecting runoff from the urban area and conveying stormwater to a trunk drain, river or sea. For a simple definition, the largest pipe size or the equivalent diameter in case of a box culvert in a branch system will normally be less than 1.8m.*

3.1.3 *An 'Urban Drainage Trunk System' collects stormwater from branch drains and/or river inlets, and conveys the flow to outfalls in river or sea. Pipes with size or diameter equal to or larger than 1.8m are normally considered as trunk drains."*

3.1.4 As per SDM, since the proposed U-channels are sized smaller than 1.8m, the drainage system would be defined as an urban drainage branch with recommended design return period of 50 years.

3.1.5 The 50 years design return period will be considered to ensure adequacy of the stormwater drainage system.

3.2 Calculation Methodology for Runoff

3.2.1 Peak instantaneous runoff values before and after the development were calculated based on the Rational Method and with recommended physical parameters including runoff coefficient (C) and storm constants for different return periods referred to the SDM, based on the following equation:

$$\mathbf{Q_p = 0.278\ C\ i\ A}$$

where

Q_p	=	Peak Runoff, m^3/s
C	=	Runoff Coefficient
i	=	Rainfall Intensity, mm/hr
A	=	Catchment Area, km^2

3.2.2 The paved area of the site will account for 1,083 m^2. For conservative, the runoff coefficient of 1.0 is assumed, such that the all the run-off would be collected from the catchment area without any infiltration as the critical scenario.

3.2.3 Based on the storm constants for 50-year return period recommended in the SDM, the appropriate rainfall intensities (i) are calculated as detailed in **Appendix D**

3.3 Calculation Methodology for Pipe Capacity Checking

3.3.1 Because the catchment areas are less than 1ha, U-channels are recommended to be constructed to collect the stormwater runoff within the site. The collected stormwater should finally be diverted to the downstream via the proposed U-channel system.

3.3.2 For the worst-case scenario, bad condition of concrete pipe is assumed for the Manning's roughness coefficient (coefficient value is 0.016) for calculating capacities of concrete U-channel using Manning's Equation.

3.3.3 Manning's Equation for calculating the channel and pipe capacities is adopted.

4 Potential Drainage Impact

4.1 Existing Site Condition

4.1.1 The application Site is located within the Kam Tin, Yuen Long, with an area of around 1,083m^2 and ground level varying between + 18.2mPD and + 18.6mPD.

4.1.2 There is no specific drainage provision for the current site, the collected stormwater would be discharged as surface runoff and infiltration leading to the village drainage, natural stream or river.

4.2 Changes in Drainage Characteristics

4.2.1 Since the ground level of application site is generally higher than the adjacent ground surface. No external catchment shall be considered in the calculation.

4.2.2 The characteristics of the sub-catchment areas are altered due to the proposed application, which are changed from unpaved site area to paved area. The change in sub-catchment is summarized in Table 4-2.

Table 4-1 Change in sub-catchment within the site

	BEFORE	AFTER
Grassland (m^2)	1,083	0
Paved Area (m^2)	0	1,083
External Catchment Area	0	0
Total Catchment Area (m^2)	1,083	1,083

4.3 Potential Drainage Impact

4.3.1 The details of the proposed drainage works are illustrated in **Appendix C**.

4.3.2 To effectively convey stormwater away from the application site and minimize the potential impact to the drainage infrastructure of the village area, drainage works consists of U-channels, are proposed to convey the stormwater runoff to the terminate catchpit with sand trap (TCP).

4.3.3 The runoff from the Application site is collected by 300mm U-channels along the boundary and convey to the terminate catchpit with sand trap (TCP), before discharge to the village drainage discharge point at the north-south of the application site, and eventually discharge to the further downstream as indicated in the Appendix C.

4.3.4 The 300 mm U-channel receives stormwater from the surface. For Conservative, the critical scenario is considered for collecting all the flow leading to the 300mm U-channel. The design calculation of the proposed drainage is provided in **Appendix D**. The design calculation is summarized in Table 4-2.

Table 4-2 Design calculation of the proposed drainage work

DRAINAGE SYSTEM	ESTIMATED FLOW (M^3/S)	CAPACITY (M^3/S)	RESERVE CAPACITY
300mm UC	0.067	0.111	39%

Note:

[1] Rainfall increase due to climate change at the end of 21st century is considered according to stormwater drainage manual Table 28.

[2] The reserve capacity is calculated by assuming that the U-channel reach its full capacity.

4.3.5 The design runoff arise from the proposed Application Site is to be discharged into the proposed terminate catchpit with the runoff anticipated to be 0.067m^3/s, which is within the drainage capacity of the proposed 300mm u-channel of 0.111m^3/s with gradient 1:100, the reserve capacity is 39%.

4.3.6 It is considered that the drainage discharge from the Application Site will not cause adverse impact to the entire downstream drainage system.

4.3.7 All u-channels & catch pits will be constructed according to the CEDD's standard drawings, please refer to the **Appendix E.**

5 Construction Stage

5.1 Temporary Drainage Arrangements

5.1.1 Proper measures shall be taken to maintain the existing drainage characteristics of the catchment areas and to minimize drainage impacts associated with the construction works. The principal drainage impacts which are associated with construction of the works have been identified as follows:
(a) Erosion of ground materials;
(b) Sediment transportation to existing downstream drainage system; and
(c) Obstruction to drainage systems.

5.1.2 Regular inspections shall be carried out to ensure integrity of the works. These inspections shall cover works under construction as well as recently completed areas.

5.1.3 To ensure proper operation of the site drainage channels and desilting facilities, inspection of the perimeter drains shall be carried out on a weekly basis and the desilting facilities shall be cleaned on a daily basis.

5.1.4 If excavated materials are not possible to transport away the excavated material within the same day, the material should be covered by tarpaulin/impervious sheets. Stockpiles of construction materials (for examples aggregate, fill materials) of more than 50 m^3 in an open area shall also be covered with tarpaulin or similar fabric during rainstorms.

5.1.5 All runoff discharged into the existing drainage system will be settled in a silt trap to ensure no sediment will be discharged into the channel. Silt traps will normally be provided along the site drainage immediately upstream of the proposed discharge point to the existing Site. The silt traps will be inspected daily and immediately after each rainstorm.

5.1.6 Liaison will be carried out with relevant parties regarding temporary drainage arrangements to ensure that the drainage system is functioning adequately.

6 Conclusions

6.1 Conclusion

6.1.1 The analysed catchment area of 1,083 m^2 consists of the site area of the proposed Application Site and the external catchment area from the natural slope at South direction.

6.1.2 U-channels are proposed to convey runoff from the application site for collection. The proposed U-channels are located along the site boundary which is subject to change to suit the building layout.

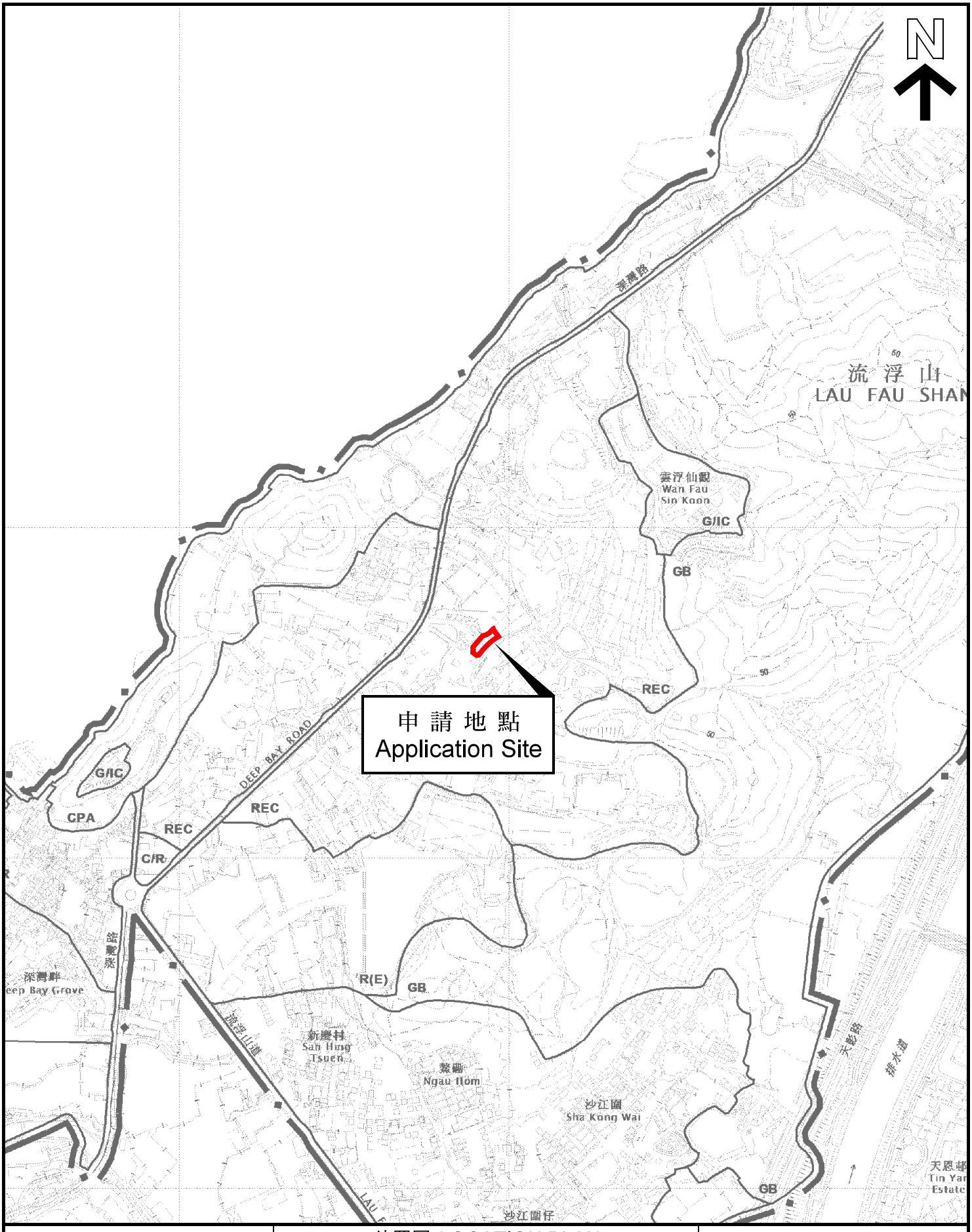
6.1.3 The assessment reviews the drainage pipe have the sufficient capacity to cater for the drainage flow from the Application Site.

6.1.4 Mitigation measures are proposed during the application site proposed Application Site and to ensure that the existing drainage system within the site will not be affected during the construction stage.

END OF TEXT

APPENDIX A

SITE LAYOUT PLAN



位置圖 LOCATION PLAN

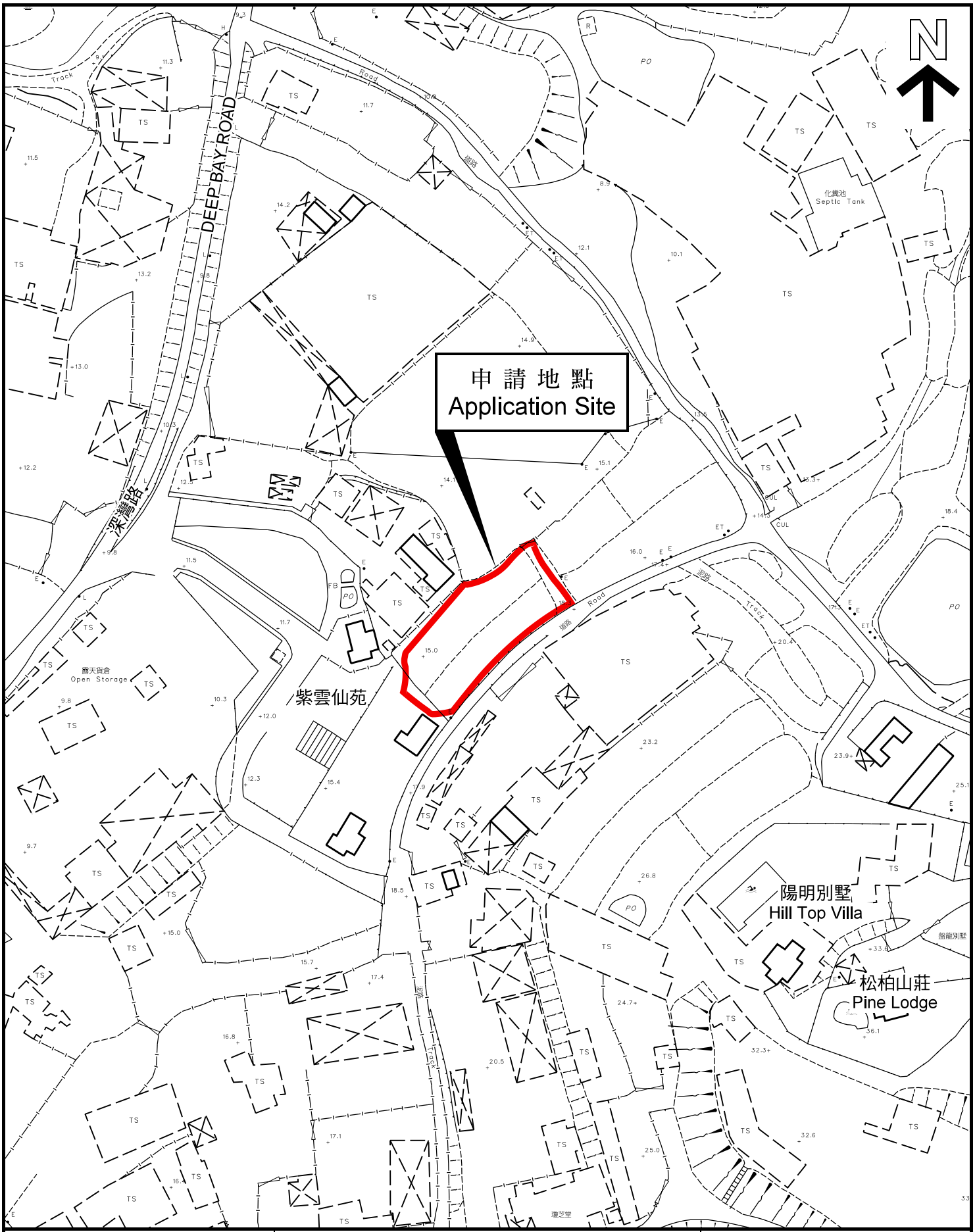
申請地點界線只作識別用
APPLICATION SITE BOUNDARY
FOR IDENTIFICATION PURPOSE ONLY

SCALE 1 : 7 500 比例尺

米 METRES 100 0 100 200 300 米 METRES

APPENDIX B

LAYOUT PLAN



平面圖 SITE PLAN

申請地點界線只作識別用
APPLICATION SITE BOUNDARY
FOR IDENTIFICATION PURPOSE ONLY

APPENDIX C

PROPOSED DRAINAGE PLAN

Existing Village Discharge Point

Proposed Catchpit with Sand Trap (Refer Drawing No.C2406/1)

Proposed Terminate Catchpit with Sand Trap (Refer Drawing No.C2406/1)

Proposed 300mm Surface U-channel (Refer CEDD Standard drawing No. C2412)

Proposed 300mm Surface U-channel with grating (Refer CEDD Standard drawing No. C2412E)

Site Area of the application Site = 1.083 sq m

No External Catchment with were identified

Electric Room

CP1 C.L.= +18.5 mPD I.L.= +18.1 mPD

CP2 C.L.= +18.4 mPD I.L.= +18.0 mPD

CP3 C.L.= +18.5 mPD I.L.= +18.0 mPD

CP4 C.L.= +18.5 mPD I.L.= +17.9 mPD

TCP C.L.= +18.2 mPD I.L.= +17.7 mPD

C.L.= +18.3 mPD I.L.= +17.8 mPD

C.L.= +18.6 mPD I.L.= +18.2 mPD

Cross-fall 1:100

300mm UC

22.90 m

49.60 m

Legend

- Proposed 300mm U-channel with Gradient =1:100
- Proposed Catchpit with sandtrap (Refer Drawing No.C2406/1)
- Proposed 200mm Downpipe
- Existing Village drainage by others

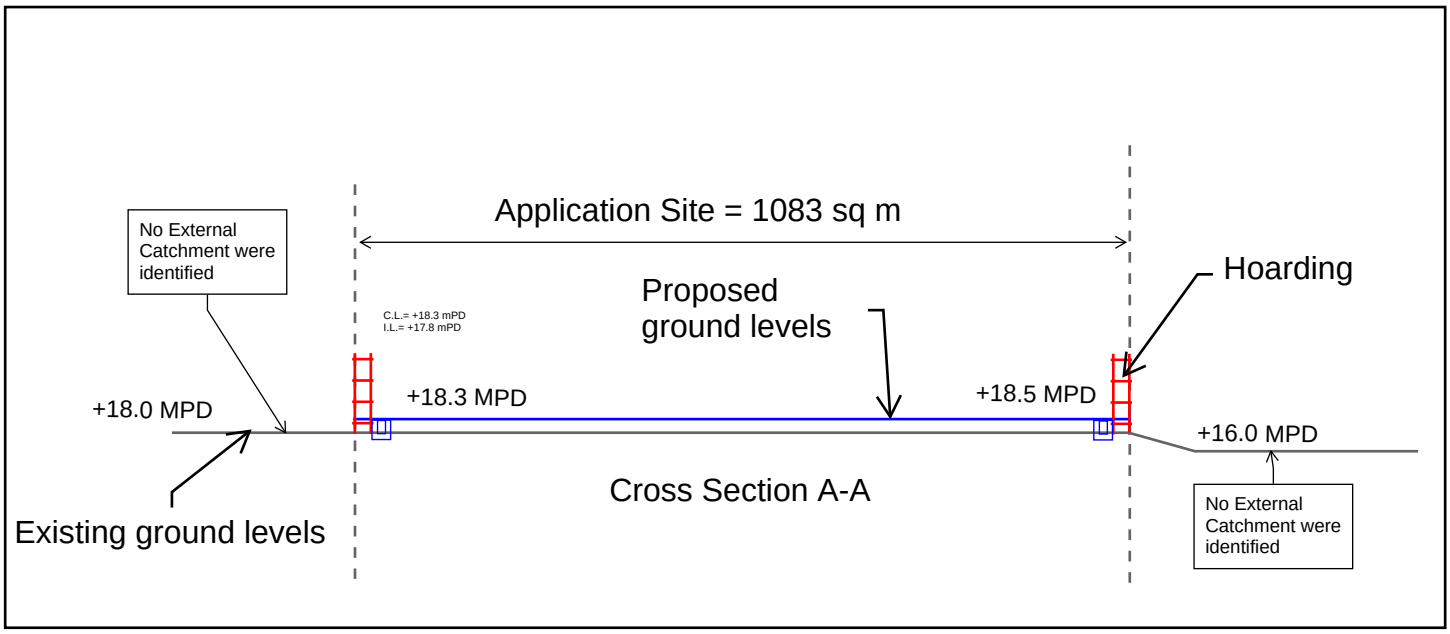
本摘要圖於2021年9月7日擬備，
所根據的資料為測量圖編號
2-SW-22A
EXTRACT PLAN PREPARED ON 7.9.2021
BASED ON SURVEY SHEET No.
2-SW-22A

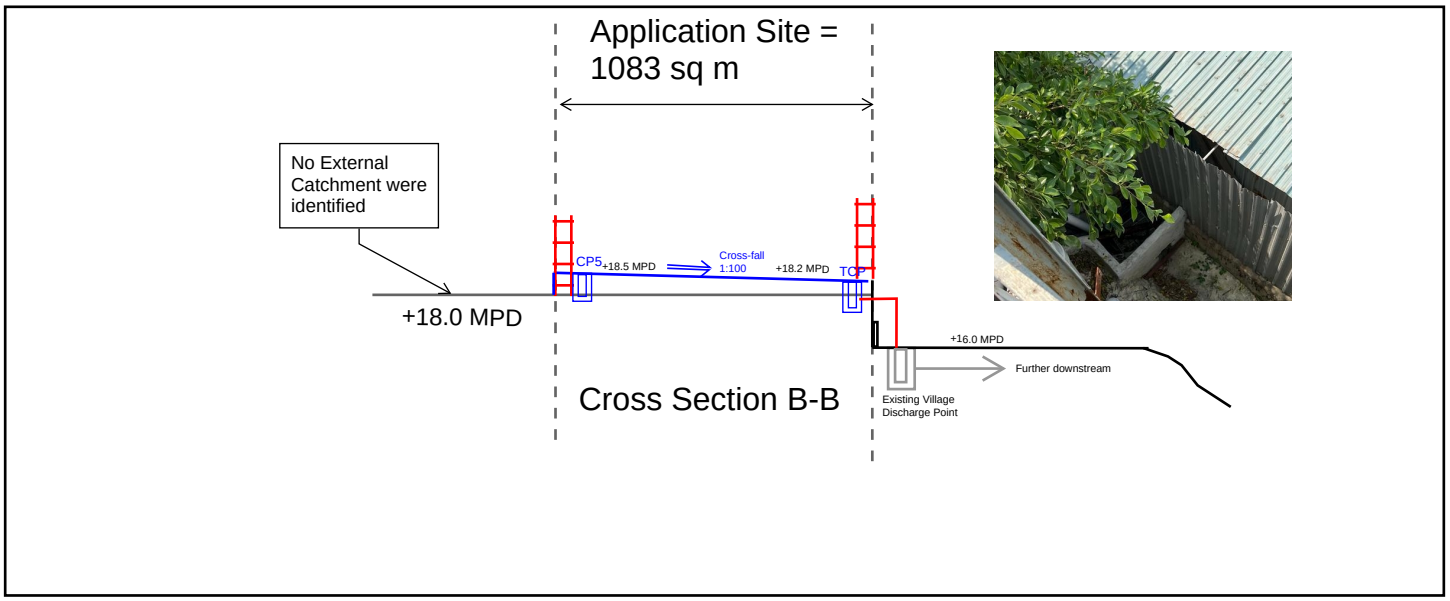
平面圖 SITE PLAN

Appendix C -
Proposed Drainage Plan

申請地點界線只作識別用
APPLICATION SITE BOUNDARY
FOR IDENTIFICATION PURPOSE ONLY

參考編號
REFERENCE No.
A/YL-LFS/482





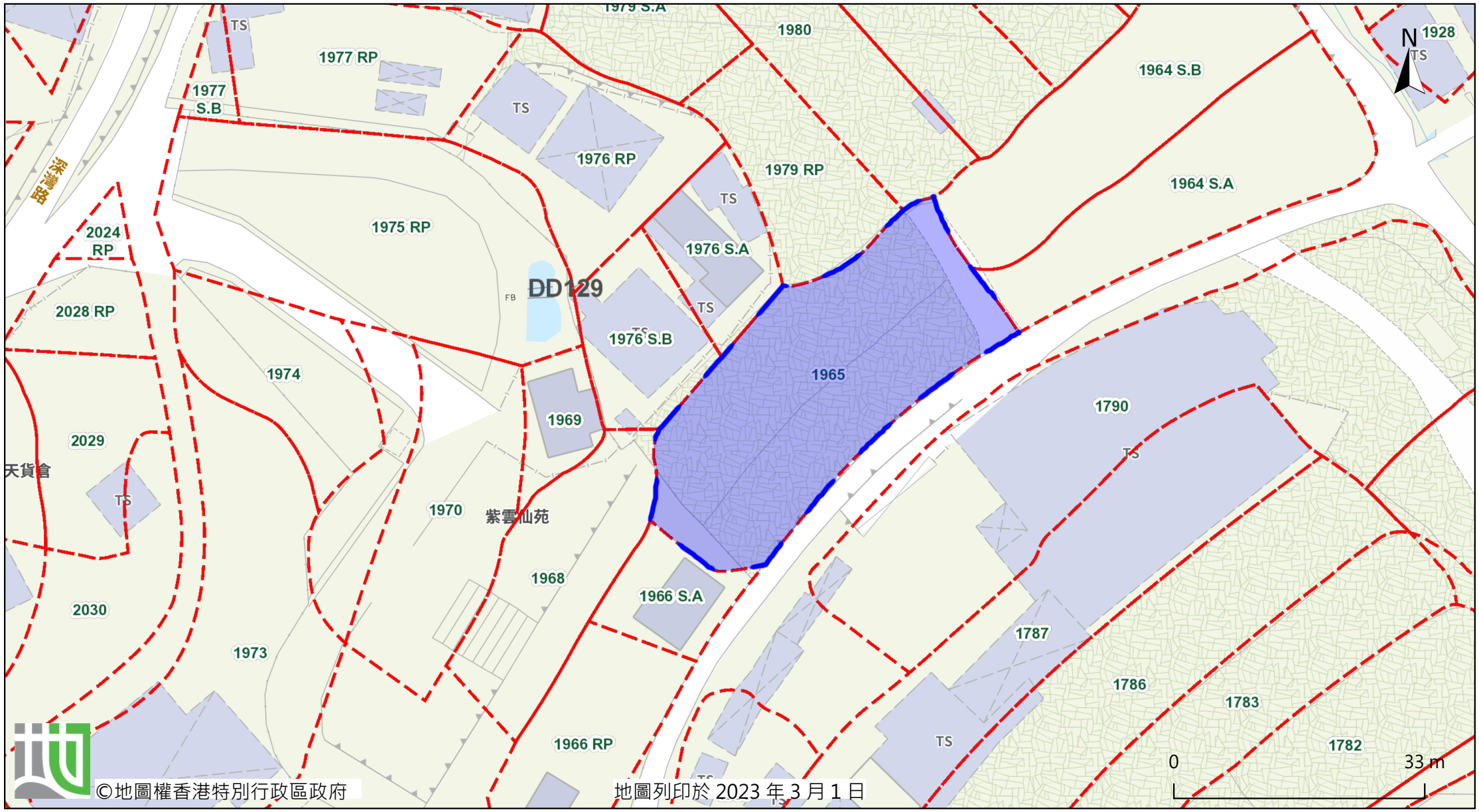
Site Photo 1 for Electric Room

Site Photo 2 for Electric Room

Please be advised that the electric room would not clash with the proposed u-channel, you may refer to the site photos for the clarification

GEOINFO MAP
地理資訊地圖

前往地圖: https://www.map.gov.hk/gm/geo:22.4708,113.9890?z=564



由「地理資訊地圖」網站提供: https://www.map.gov.hk

APPENDIX D

DESIGN CALCULATION OF THE PROPOSED DRAINAGE

Project

Subject Application Site

Design Data

1. Design follows the Rational Method in accordance with Stormwater Drainage Manual 2018 (DSD)
2. For conservative, Runoff coefficient for paved / unpaved land is 1.
3. Design return period is 50 years.
4. For manning's equation coeffient n is 0.016.

Check for Hydraulic Capacity:

Catchment	K	Area (A)
Application Site Area	1.00	1083.0
External Catchment Area	1.00	0.0 m^2
Total Catchment Area	1.00	1083.0 m^2

Runoff estimation

	Average slope, H		=	1	/100m	
	Catchment area, A		=	1083	m^2	
	Distance between summit and point under consideration, L		=	30	m	
SDM 7.5.2	Time of concentration of natural catchment, t_o		=	$0.14465 \times L / (H^{0.2} \times A^{0.1})$		
			=	2.16	min.	
	Length of drain, L_j		=	100	m	
	Velocity, V_j		=	1.384	m/s	
SDM 7.5.2	Flow time, t_f		=	$\Sigma (L_j / V_j)$		
			=	1.20447082	min.	
	Time of concentration, t_c		=	$t_o + t_f$		
			=	3.36	min.	
SDM Table 3	Storm constants for 200-year return period:	a	=	451.3		
		b	=	2.46		
		c	=	0.337		
SDM 4.3.2	Extreme mean intensity, i_{200yr}		=	$a / (t_d + b)^c$		
			=	224.127589	mm/hr	
GMS Fig 8.2			<	405.000	mm/hr	
SDM 7.5.2	Design flow, Q		=	0.278 i Σ K A		
			=	0.067	m^3/s	

300mm u-channel capacity

Diameter		=	300	mm	
Cross-sectional area of 300mm U-channel		=	. 0.0803	m^2	
Gradient		=	0.01		
Manning's Eq. flow velocity		=	1.384	m/s	
Design Capacity		=	0.111	m^3/s	
		>	0.067	m^3/s	OK
Reserve capacity		=	39%		

For conservative, all the U-channel along the site boundary shall be 300mm.

200mm downpipe u-channel capacity by others

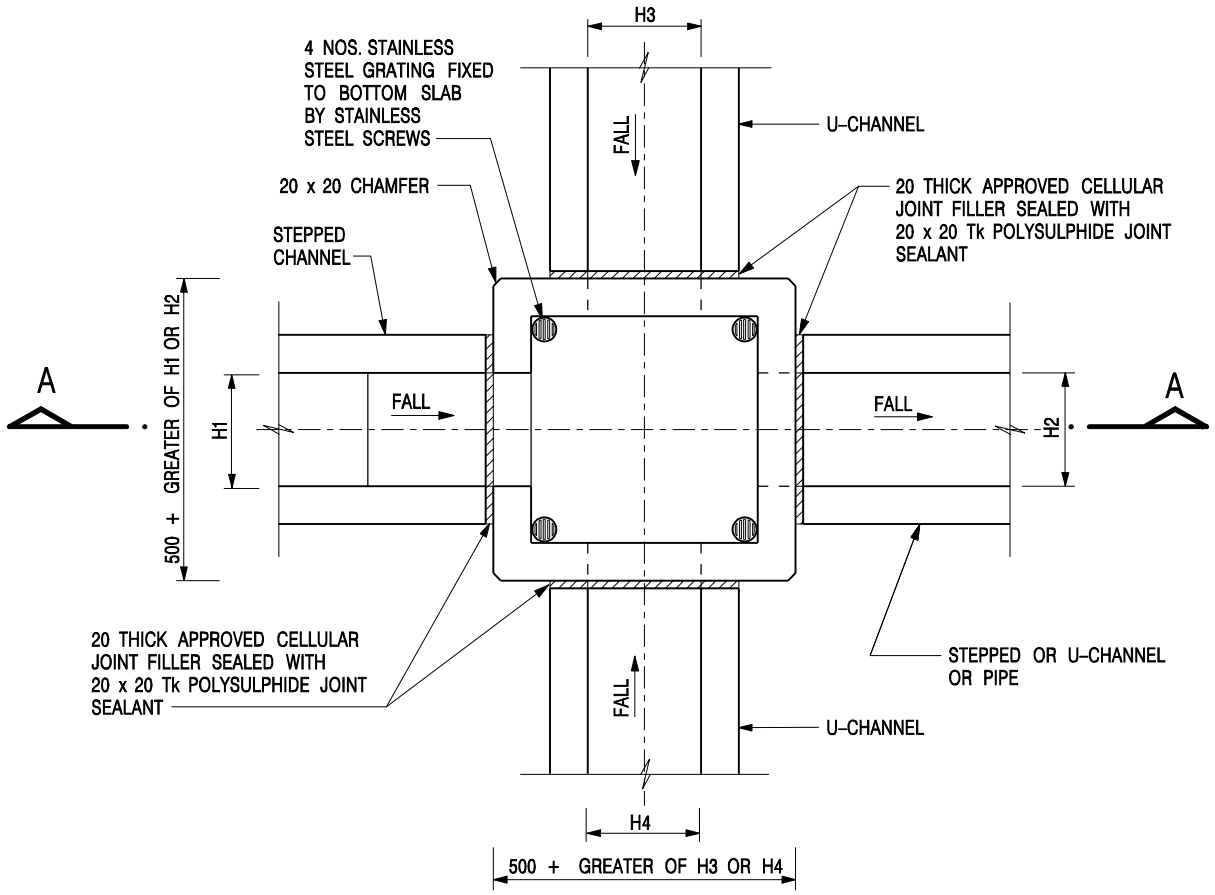
Diameter	=	200	mm	
Cross-sectional area of pipe	=	0.0314		
Restricted flow velocity under sedimentation	=	4.000	m/s	
Design Capacity	=	0.126	m^3/s	
Design flow, Q	>	0.067	m^3/s	OK
Reserve Capacity		46%		

0.000

APPENDIX E

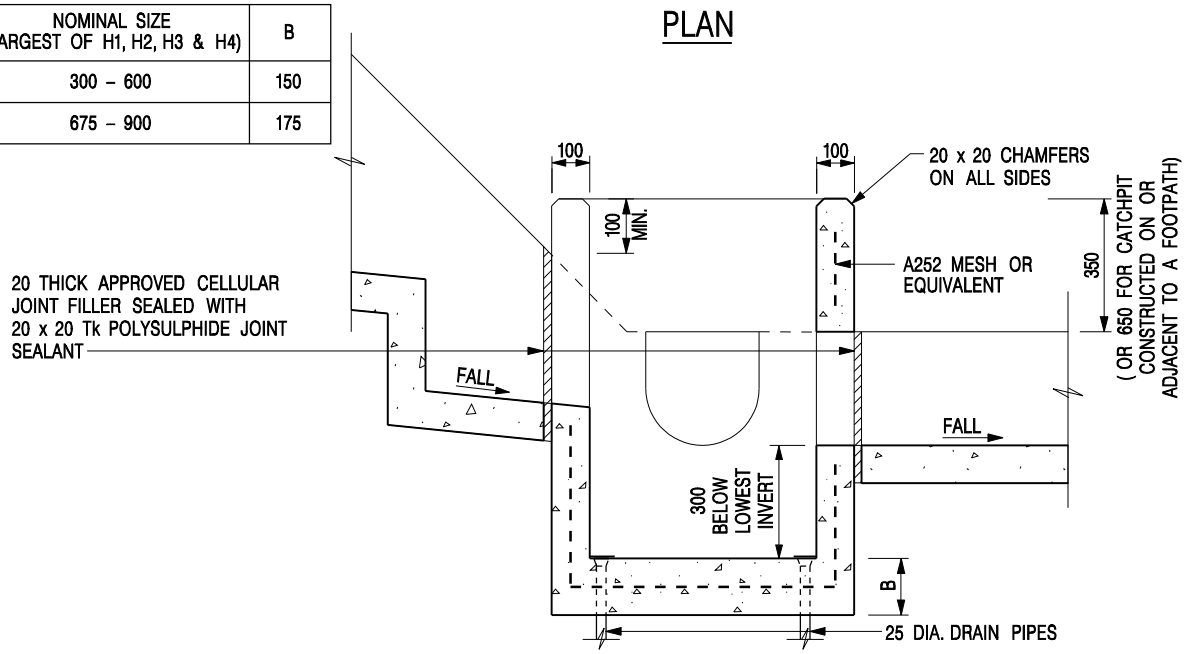
TYPICAL STANDARD DRAWINGS OF U-CHANNEL AND CATCHPIT

(EXTRACTED FROM CEDD, FOR REFERNCE ONLY)



PLAN

NOMINAL SIZE (LARGEST OF H1, H2, H3 & H4)	B
300 – 600	150
675 – 900	175



SECTION A – A

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. REFER TO SHEET 2 FOR OTHER NOTES.

REF.	REVISION	SIGNATURE	DATE
–	FORMER DRG. NO. C2406J.	Original Signed	03.2015

CATCHPIT WITH TRAP

(SHEET 1 OF 2)

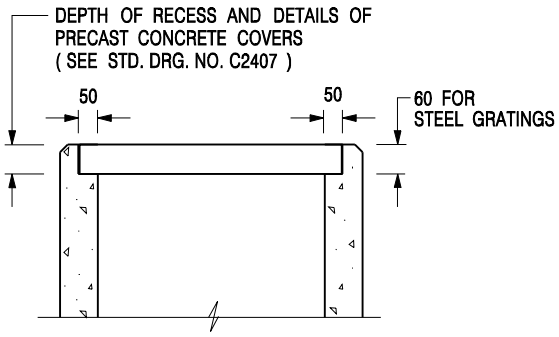
CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE 1 : 20

DATE JAN 1991

DRAWING NO. C2406 /1

卓越工程 建設香港 We Engineer Hong Kong's Development



ALTERNATIVE TOP SECTION
FOR PRECAST CONCRETE COVERS / GRATINGS

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. ALL CONCRETE SHALL BE GRADE 20 /20.
3. CONCRETE SURFACE FINISH SHALL BE CLASS U2 OR F2 AS APPROPRIATE.
4. FOR DETAILS OF JOINT, REFER TO STD. DRG. NO. C2413.
5. CONCRETE TO BE COLOURED AS SPECIFIED.
6. UNLESS REQUESTED BY THE MAINTENANCE PARTY AND AS DIRECTED BY THE ENGINEER, CATCHPIT WITH TRAP IS NORMALLY NOT PREFERRED DUE TO PONDING PROBLEM.
7. UPON THE REQUEST FROM MAINTENANCE PARTY, DRAIN PIPES AT CATCHPIT BASE CAN BE USED BUT THIS IS FOR CATCHPITS LOCATED AT SLOPE TOE ONLY AND AS DIRECTED BY THE ENGINEER.
8. FOR CATCHPITS CONSTRUCTED ON OR ADJACENT TO A FOOTPATH, STEEL GRATINGS (SEE DETAIL 'A' ON STD. DRG. NO. C2405 /2) OR CONCRETE COVERS (SEE STD. DRG. NO. C2407) SHALL BE PROVIDED AS DIRECTED BY THE ENGINEER.
9. IF INSTRUCTED BY THE ENGINEER, HANDRAILING (SEE DETAIL 'J' ON STD. DRG. NO. C2405 /5; EXCEPT ON THE UPSLOPE SIDE) IN LIEU OF STEEL GRATINGS OR CONCRETE COVERS CAN BE ACCEPTED AS AN ALTERNATIVE SAFETY MEASURE FOR CATCHPITS NOT ON A FOOTPATH NOR ADJACENT TO IT. TOP OF THE HANDRAILING SHALL BE 1 000 mm MIN. MEASURED FROM THE ADJACENT GROUND LEVEL.
10. MINIMUM INTERNAL CATCHPIT WIDTH SHALL BE 1 000 mm FOR CATCHPITS WITH A HEIGHT EXCEEDING 1 000 mm MEASURED FROM THE INVERT LEVEL TO THE ADJACENT GROUND LEVEL. AND, STEP IRONS (SEE DSD STD. DRG. NO. DS1043) AT 300 c/c STAGGERED SHALL BE PROVIDED. THICKNESS OF CATCHPIT WALL FOR INSTALLATION OF STEP IRONS SHALL BE INCREASED TO 150 mm.
11. FOR RETROFITTING AN EXISTING CATCHPIT WITH STEEL GRATING, SEE DETAIL 'G' ON STD. DRG. NO. C2405 /4.
12. SUBJECT TO THE APPROVAL OF THE ENGINEER, OTHER MATERIALS CAN ALSO BE USED AS COVERS / GRATINGS.

REF.	REVISION	SIGNATURE	DATE
A	MINOR AMENDMENT.	Original Signed	04.2016
–	FORMER DRG. NO. C2406J.	Original Signed	03.2015

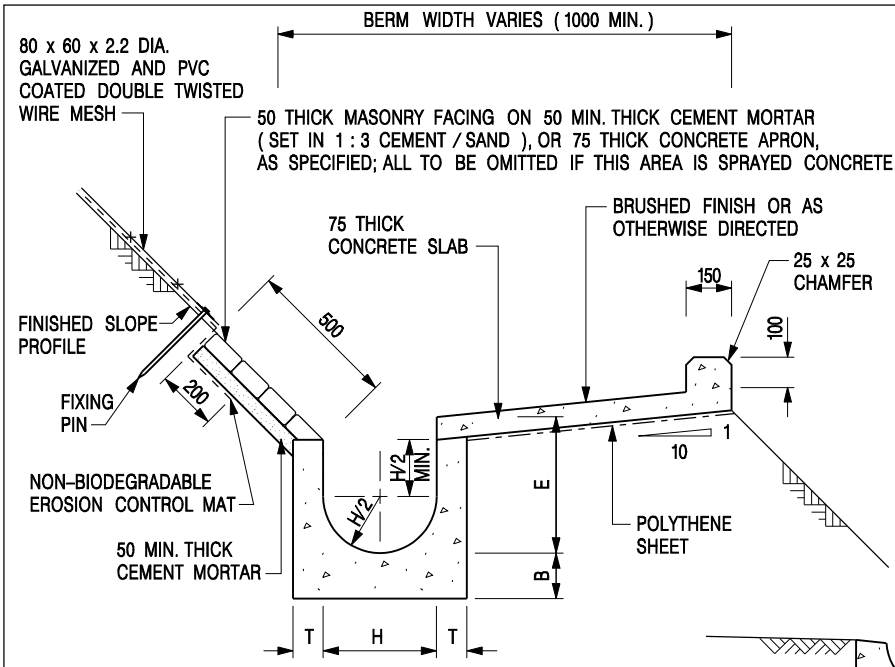
CATCHPIT WITH TRAP
(SHEET 2 OF 2)

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

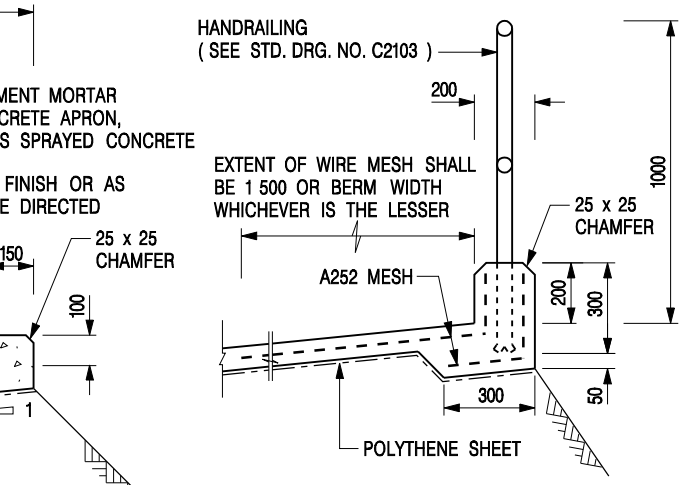
SCALE 1 : 20

DATE JAN 1991

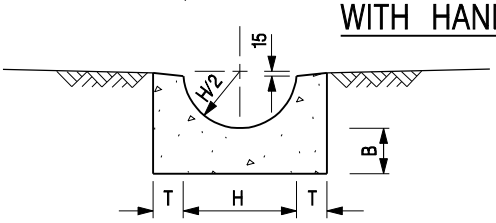
DRAWING NO. C2406 /2A



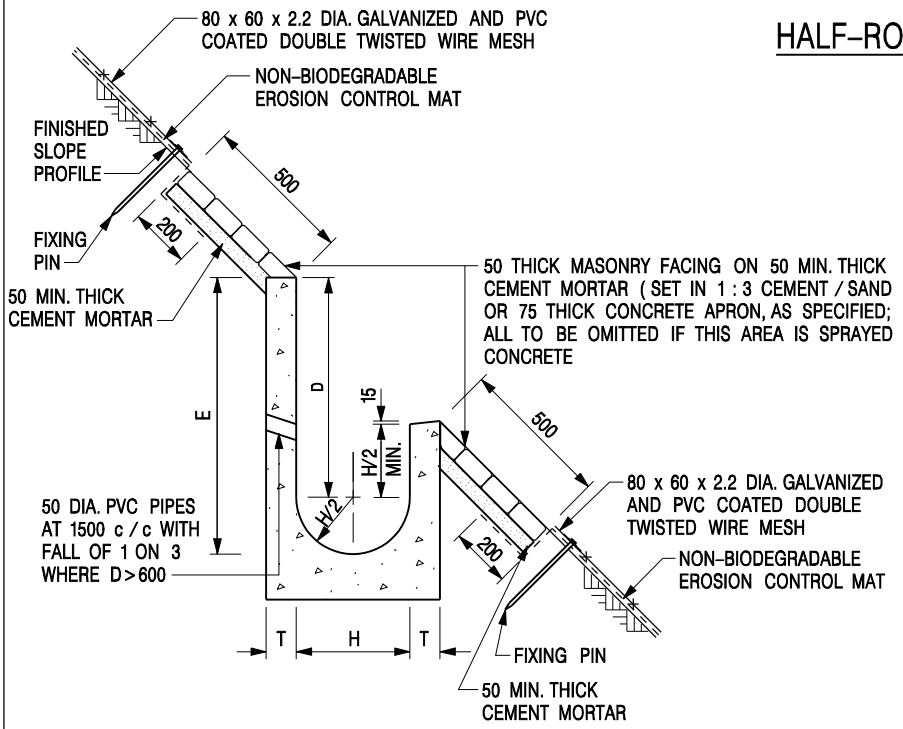
U-CHANNELS CONSTRUCTED ON BERM



DETAILS OF BERM WITH HANDRAILING



HALF-ROUND CHANNEL



U-CHANNELS NOT CONSTRUCTED ON BERM

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. ALL CONCRETE TO BE GRADE 20 / 20.
3. CONCRETE SURFACE FINISH SHALL BE CLASS U2, F2 OR BRUSHED FINISH AS DIRECTED.
4. SPACING OF EXPANSION JOINT IN CHANNELS, BERM SLABS AND APRONS TO BE 10 METRES MAXIMUM, SEE STD. DRG. NO. C2413 FOR DETAILS.
5. JOINTS FOR CHANNELS, BERM SLABS, APRONS AND WALLS, ETC. TO BE ON THE SAME ALIGNMENT.
6. FOR DIMENSIONS T, H, & B, SEE TABLE BELOW.
7. BIODEGRADABLE EROSION CONTROL MAT IF REQUIRED, SEE STD. DRG. NO. C2511/1E.
8. CONCRETE TO BE COLOURED AS SPECIFIED.
9. CONCRETE U-CHANNEL CAN BE CAST IN-SITU OR PRECAST CONCRETE SUBJECT TO THE ENGINEER'S AGREEMENT ON THE DETAILS.
10. DETAILS OF EROSION CONTROL MAT AND WESH MESH ON BERM. (SEE STD DRG. NO. C2511/1E)

NOMINAL SIZE H	T	B	REINFORCEMENT
300	80	100	A252 MESH PLACED CENTRALLY AND T=100 WHEN E>650
375 – 600	100	150	
675 – 900	125	175	A252 MESH PLACED CENTRALLY

REF.	REVISION	SIGNATURE	DATE
I	MINOR AMENDMENT.	Original Signed	07.2018
H	THICKNESS OF MASONRY FACING AMENDED.	Original Signed	01.2005
G	MINOR AMENDMENT.	Original Signed	01.2004
F	GENERAL REVISION.	Original Signed	12.2002
E	DRAWING TITLE AMENDED.	Original Signed	11.2001
D	MINOR AMENDMENT.	Original Signed	08.2001
C	150 x 100 UPSTAND ADDED AT BERM.	Original Signed	6.99
B	MINOR AMENDMENTS.	Original Signed	3.94

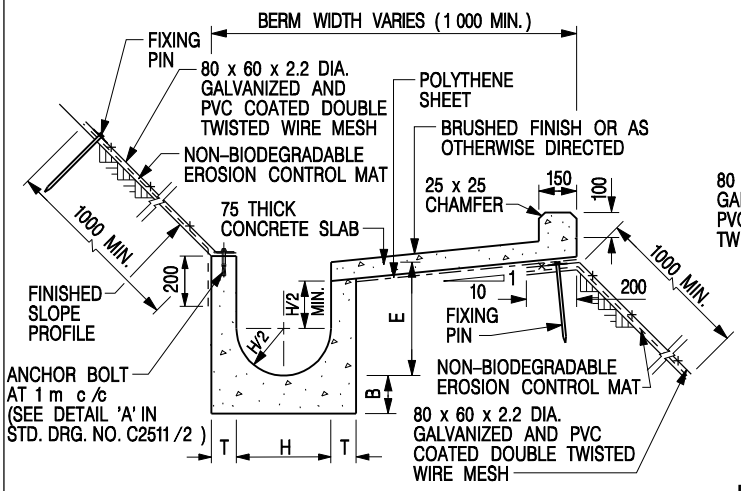
DETAILS OF HALF-ROUND AND U-CHANNELS (TYPE A - WITH MASONRY APRON)

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

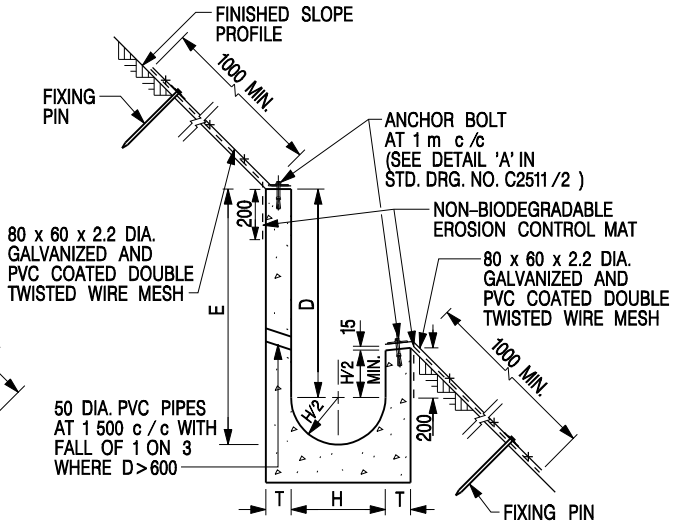
SCALE 1 : 25

DATE JAN 1991

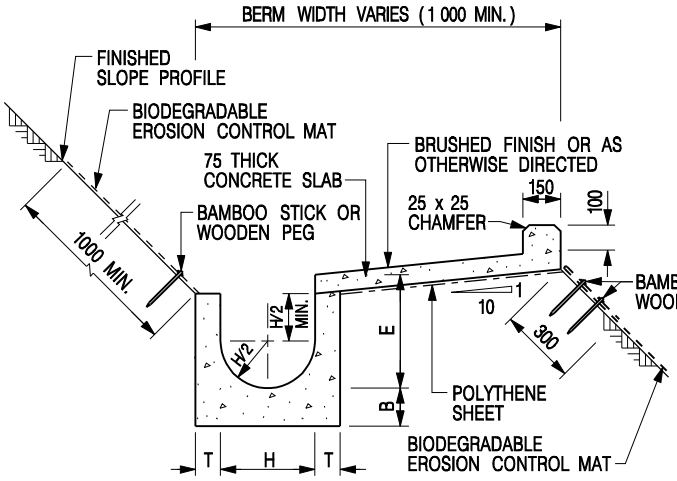
DRAWING NO. C2409I



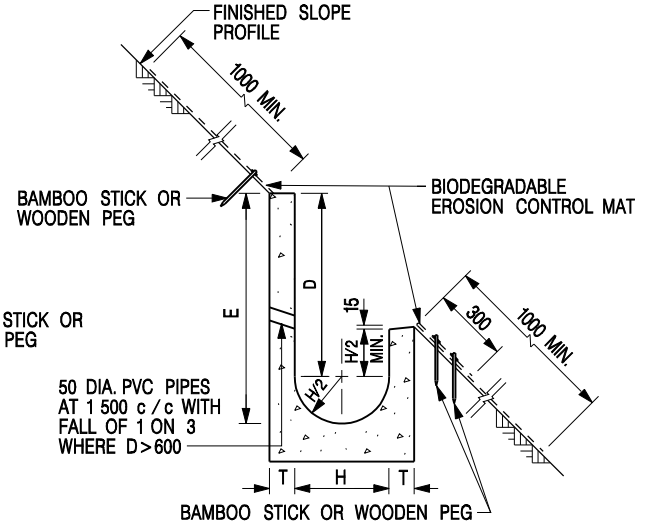
U-CHANNELS CONSTRUCTED ON BERM WITH NON-BIODEGRADABLE EROSION CONTROL MAT



U-CHANNELS NOT CONSTRUCTED ON BERM WITH NON-BIODEGRADABLE EROSION CONTROL MAT



U-CHANNELS CONSTRUCTED ON BERM WITH BIODEGRADABLE EROSION CONTROL MAT



U-CHANNELS NOT CONSTRUCTED ON BERM WITH BIODEGRADABLE EROSION CONTROL MAT

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. ALL CONCRETE TO BE GRADE 20/20.
3. CONCRETE SURFACE FINISH SHALL BE CLASS U2, F2 OR BRUSHED FINISH AS DIRECTED.
4. SPACING OF EXPANSION JOINT IN CHANNELS, BERM SLABS AND APRONS TO BE 10 METRES MAXIMUM, SEE STD. DRG. NO. C2413 FOR DETAILS.
5. JOINTS FOR CHANNELS, BERM SLABS, APRONS AND WALLS, ETC. TO BE ON THE SAME ALIGNMENT.
6. FOR DIMENSIONS T, H, & B, SEE TABLE BELOW.
7. FOR TYPICAL FIXING PIN DETAILS, SEE STD. DRG. NO. C2511/2.
8. MINIMUM SIZE OF 25 x 50 x 300mm SHALL BE PROVIDED FOR WOODEN PEG.
9. MINIMUM SIZE OF 10mm DIAMETER WITH 200mm LONG SHALL BE PROVIDED FOR BAMBOO STICK.
10. THE FIXING DETAILS OF NON-BIODEGRADABLE AND BIODEGRADABLE EROSION CONTROL MATS ON EXISTING BERM SHALL REFER TO STD. DRG. NO. C2511/1.

NOMINAL SIZE H	T	B	REINFORCEMENT
300	80	100	A252 MESH PLACED CENTRALLY AND T=100 WHEN E>650
375 - 600	100	150	
675 - 900	125	175	A252 MESH PLACED CENTRALLY

REF.	REVISION	SIGNATURE	DATE
I	MINOR AMENDMENT.	Original Signed	07.2018
H	FIXING DETAILS OF BIODEGRADABLE EROSION CONTROL MAT ADDED.	Original Signed	12.2017
G	DIMENSION TABLE AMENDED.	Original Signed	01.2005
F	MINOR AMENDMENT.	Original Signed	01.2004
E	GENERAL REVISION.	Original Signed	12.2002
D	MINOR AMENDMENT.	Original Signed	08.2001
C	150 x 100 UPSTAND ADDED AT BERM.	Original Signed	6.99
B	MINOR AMENDMENT.	Original Signed	3.94
A	MINOR AMENDMENT.	Original Signed	10.92

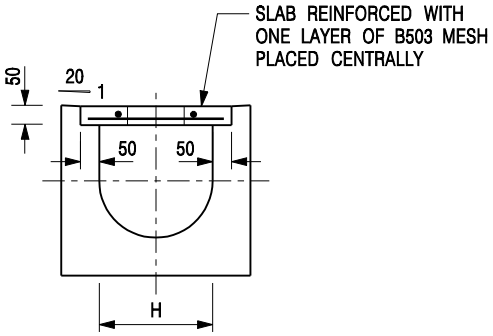
DETAILS OF HALF-ROUND AND U-CHANNELS (TYPE B - WITH EROSION CONTROL MAT APRON)

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

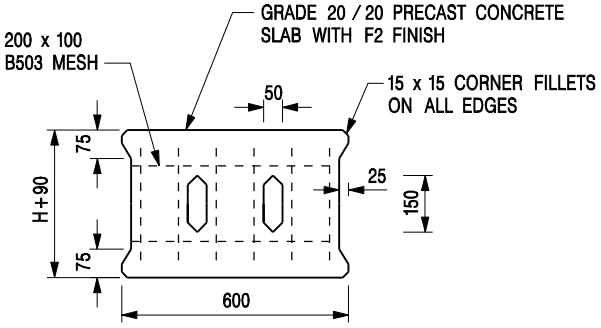
SCALE DIAGRAMMATIC

DATE JAN 1991

DRAWING NO. C2410I



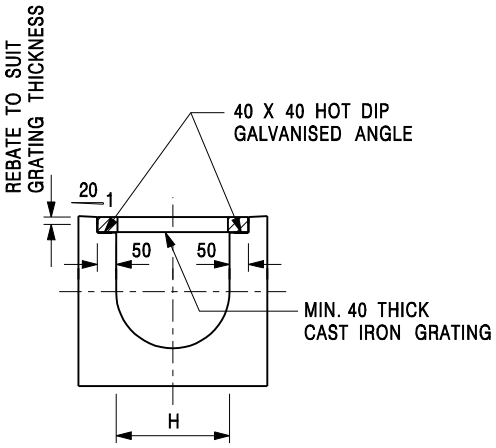
TYPICAL SECTION



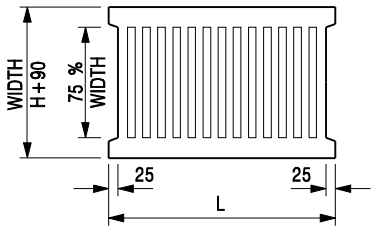
PLAN OF SLAB

U-CHANNELS WITH PRECAST CONCRETE SLABS

(UP TO H OF 525)



TYPICAL SECTION



L = 600mm FOR H ≤ 375mm
L = 400mm FOR H > 375mm

CAST IRON GRATING

(DIMENSIONS ARE FOR GUIDANCE ONLY, CONTRACTOR MAY SUBMIT EQUIVALENT TYPE)

U-CHANNEL WITH CAST IRON GRATING

(UP TO H OF 525)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. H = NOMINAL CHANNEL SIZE.
3. ALL CAST IRON FOR GRATINGS SHALL BE GRADE EN-GJL-150 COMPLYING WITH BS EN 1561.
4. FOR COVERED CHANNELS TO BE HANDED OVER TO HIGHWAYS DEPARTMENT FOR MAINTENANCE, THE GRATING DETAILS SHALL FOLLOW THOSE AS SHOWN ON HyD STD. DRG. NO. H3156.

REF.	REVISION	SIGNATURE	DATE
E	NOTES 3 & 4 AMENDED.	Original Signed	12.2014
D	NOTE 4 ADDED.	Original Signed	06.2008
C	MINOR AMENDMENT. NOTE 3 ADDED.	Original Signed	12.2005
B	NAME OF DEPARTMENT AMENDED.	Original Signed	01.2005
A	CAST IRON GRATING AMENDED.	Original Signed	12.2002

COVER SLAB AND CAST IRON GRATING FOR CHANNELS

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE 1 : 20

DATE JAN 1991

DRAWING NO. C2412E

APPENDIX F

RESPONSE TO COMMENTS

Response to Comments on Temporary Drainage Proposal (Issue 1)

1. Comments from DSD/MN

No.	Comments	Response
1.	Peripheral surface channels shall be provided along the site boundary to collect the surface runoff accrued on the application site and to intercept the overland flow from the adjacent lands.	U-channels with 300mm dia. would be provided along the boundary to collect the surface runoff. Please refer to the Appendix C – Proposed Drainage Works.
2.	The proposal should indicate how the runoff (the flow direction) within the site and from the adjacent areas would be discharged to the proposed drainage system	Please refer to the Appendix C – Proposed Drainage Works.
3.	The applicant should clearly indicate the full alignment of the discharge path from the application site all the way down to the ultimate discharge point (e.g. a well-established stream course/public drainage system).	Please refer section 4 of the captioned report. The Proposed Drainage Works is shown in Appendix C.
4.	Site photos of existing drainage facilities including the discharge point (e.g. existing local village drain mentioned in the proposal and its downstream drainage facilities) should be provided in order to demonstrate the presence and reflect condition of the existing drainage system.	Noted and provided. The site photo showing the existing discharge point is shown in Appendix C.
5.	The applicant should demonstrate the existing facilities to be discharged to have sufficient capacity to cater for the additional flow generated due to the subject application.	Please be advised that there is additional flow to be generated due to the subjected application.
6.	The existing nullah/channel/watercourse, to which the applicant proposed to discharge the stormwater from the application site was not maintained by this office. The applicant should identify the owner of the existing drainage facilities and obtain consent from the owner prior to commencement of the proposed works. In the case that it is a local village drains, District Officer/Yuen Long should be consulted.	Noted with thanks. District officer / Yuen Long will be consulted separately.
7.	The applicant should demonstrate with hydraulic calculation that the proposed drainage facilities are adequate to collect, convey and discharge the surface runoff accrued on the application site and the overland flow intercepted from the adjacent lands.	The design calculation of the proposed drainage is provided in Appendix D. The design runoff arise from the proposed Application Site is to be discharged into the proposed terminate catchpit with the runoff anticipated to be 0.067m3/s, which is within the drainage capacity of the proposed 300mm u-channel of 0.111m3/s with gradient 1:100, the reserve capacity is 39%.
8.	The ground to the north, east and south of the application site is generally/significantly higher. Since the overland flow from the adjacent lands shall be probably intercepted, external catchment shall be considered in the	Based on the site record, since the ground level of application site is generally higher than the adjacent ground surface. No external catchment shall be considered in

No.	Comments	Response
	calculation.	the calculation. Please refer to the Appendix C – Proposed drainage works.
9.	Cross sections showing the existing ground levels of the captioned site with respect to the adjacent areas should be given.	The existing ground levels of the captioned site with respect to the adjacent areas are provided in Appendix C.
10.	Sand trap or provision alike should be clearly indicated on the proposed drainage plan and provided before the collected runoff is discharged to the public drainage facilities.	Noted and agreed. Please note that catchpit with Sand Trap (Refer Drawing No.C2406/1) are indicated in the Appendix C.
11.	Standard details should be provided to indicate the sectional details of the proposed u-channds and the catchpits/sand traps.	Standard details should be provided in Appendix E.
12.	The cover levels and invert levels of the proposed u-channel, catchpits/sand traps should be shown on the drainage plan.	Cover levels and invert levels are provided in the proposed drainage works as shown in Appendix C.
13.	Consideration should be given to provide grating tor the surface channels.	Noted with thanks. Cast iron grating would be provided underlaid the main entrance as specified in Appendix C refer to CEDD's standard drawings C2412E.
14.	Where walls or hoarding are erected arc laid along the site boundary, adequate openings should be provided to intercept the existing overland flow passing through the site.	Please be clarified that the ground level of application site is generally higher than the adjacent ground surface, no external catchment shall be considered in the calculation. Thus, there should be no overland flow passing through the site.
15.	The proposed development should neither obstruct overland flow nor adversely affect any existing natural streams, village drains, ditches and the adjacent areas.	Please refer the captioned report and the drainage calculation in Appendix D. It is considered that the drainage discharge from the Application Site will not cause adverse impact to the entire downstream drainage system.
16.	The applicant is required to rectify the drainage system if they are found to be inadequate or ineffective during operation. The applicant shall also be liable for and shall indemnify claims and demands arising out of damage or nuisance caused by a failure of the drainage system.	Noted and agreed.
17	The applicant should submit form HBP1 to this Division for application of technical audit for any proposed connection to Drainage Services Departments drainage facilities.	Noted. Please note that form HBP1 shall be submitted separately if any connection to Drainage Services Departments drainage facilities are feasible to be carried out.
18	The applicant should consult District Lands Officer/Yuen Long and seek consent from the relevant private lot owners for any drainage works to be carried out outside his lot boundary before commencement of the drainage works.	Noted with thanks. District officer / Yuen Long and relevant stakeholders will be consulted separately.

No.	Comments	Response
19	Environmental Protection Department should be consulted as regards the sewage disposal aspects (if any).	Noted.
	Besides, please note that the photos submitted by the applicant demonstrating the implementation of drainage proposal is not acceptable due to the following reasons.	
1	Satisfaction of implementation of drainage proposal is subject to the acceptance of drainage proposal.	Noted and provided, the proposed drainage arrangement is within submitted.
2	Applicant should demonstrate that the size, including width and depth, of U-channels and catchpits /sand traps complied with the drainage proposal.	Cover levels and invert levels are provided in the proposed drainage works as shown in Appendix C.
3	Site photos of existing drainage facilities including the discharge point (e.g. existing local village drain mentioned in the proposal and its downstream drainage facilities) should be provided in order to demonstrate the presence and reflect condition of the existing drainage system.	Noted and provided. The site photo showing the existing discharge point is shown in Appendix C.
4	Insufficient openings on hoarding for drainage purpose.	Please be clarified that the ground level of application site is generally higher than the adjacent ground surface, no external catchment shall be considered in the calculation. Thus, there should be no overland flow passing through the site.
5	Drainage channel is blocked by steel materials and debris.	Noted, proper drainage system would be maintained.

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