

Appendix I
Drainage Proposal



Proposed Temporary Shop and Services and Public Vehicle Park (Excluding Container Vehicle) with Ancillary Facilities and Associated Filling of Land for a Period of 5 Years in “Village Type Development” Zone, Lot 354 in D.D. 112, Shui Lau Tin, Shek Kong, Yuen Long, New Territories

Drainage Proposal

Apr 2026



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1 Introduction

1.1 Background

- 1.1.1 The applicant seeks planning permission from the Town Planning Board (the Board) to use Lot 354 in D.D. 112, Shui Lau Tin, Shek Kong, Yuen Long, New Territories (the Site) for ‘Proposed Temporary Shop and Services and Public Vehicle Park (Excluding Container Vehicle) with Ancillary Facilities and Associated Filling of Land for a Period of 5 Years’.
- 1.1.2 This report aims to support the development in drainage aspect.

1.2 Application Site

- 1.2.1 The application site is located to the south of Shek Kong Airfield. It has an area of approx. 3,763 m². The site location is shown in **Figure 1**.
- 1.2.2 The existing site is mostly unpaved. Existing levels are various from approximately +18.7 to +19.2 mPD. The site would be paved not more than 200 mm for site formation of the proposed structures, and the provision of parking, loading/unloading (L/UL) and circulation space.
- 1.2.3 There is an approx. 12m width rectangular nullah by the north of the site. It would eventually discharge to Kam Tin River. **Figure 2** indicates the existing drainage system of the area.

2 Development Proposal

2.1 The Proposed Development

2.1.1 The total site area is approximately 3,763 m². The catchment plan is shown in **Figure 4**.

Proposed Development Area (Approx.)	
Total Site Area (m ²)	3,763
Paved Area after Development (m ²)	3,763

Table 1 – Site Development Area

3 Assessment Criteria

3.1.1 The Recommended Design Return Period based on Flood Level from SDM (Table 10) is adopted for this report. The recommendation is summarized in **Table 2** below.

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

Table 2– Design Return Periods under SDM

3.1.2 The proposed drainage system intended to collect runoff from internal site and external catchment. 1 in 50 years return period is adopted.

3.1.3 Stormwater drainage design will be carried out in accordance with the criteria set out in the Stormwater Drainage Manual published by DSD. The proposed design criteria to be adopted for design of this stormwater drainage system and factors which have been considered are summarised below.

1. Intensity-Duration-Frequency Relationship – The Recommended Intensity-Duration-Frequency relationship is used to estimate the intensity of rainfall. It can be expressed by the following algebraic equation.

$$i = \frac{a}{(t_d + b)^c}$$

The site is located within the HKO Zone. Therefore, for 50 years return period, the following values are adopted.

a	=	505.5
b	=	3.29
c	=	0.355

(Corrigendum No.1/2024)

The development is proposed for temporary use for a period of 5 years. 11.1% rainfall increase due to climate change is considered as per table 28 of corrigendum no.1/2022.

2. The peak runoff is calculated by the Rational Method
i.e. $Q_p = 0.278CiA$

where	Q_p	=	peak runoff in m^3/s
	C	=	runoff coefficient (dimensionless)
	i	=	rainfall intensity in mm/hr
	A	=	catchment area in km^2

3. The run-off coefficient (C) of surface runoff are taken as follows:

1. Paved Area: C = 0.95
2. Unpaved Area: C = 0.35

4. Manning’s Equation is used for calculation of velocity of flow inside the channels:

$$\text{Manning's Equation: } v = \frac{R^{\frac{1}{6}}}{n} R^{\frac{1}{2}} S_f^{\frac{1}{2}}$$

Where,

V = velocity of the pipe flow (m/s)

S_f = hydraulic gradient

n = manning’s coefficient

R = hydraulic radius (m)

5. Colebrook-White Equation is used for calculation of velocity of flow inside the pipes:

$$\text{Colebrook-White Equation: } \underline{v} = -\sqrt{32gRS} \log \log \left(\frac{k_s}{14.8R} + \frac{1.255v}{R\sqrt{32gRS_f}} \right)$$

where,

V = velocity of the pipe flow (m/s)

S_f = hydraulic gradient

k_r = roughness value (m)

v = kinematics viscosity of fluid

D = pipe diameter (m)

R = hydraulic radius (m)

4 Proposed Drainage System

4.1. Proposed Channels

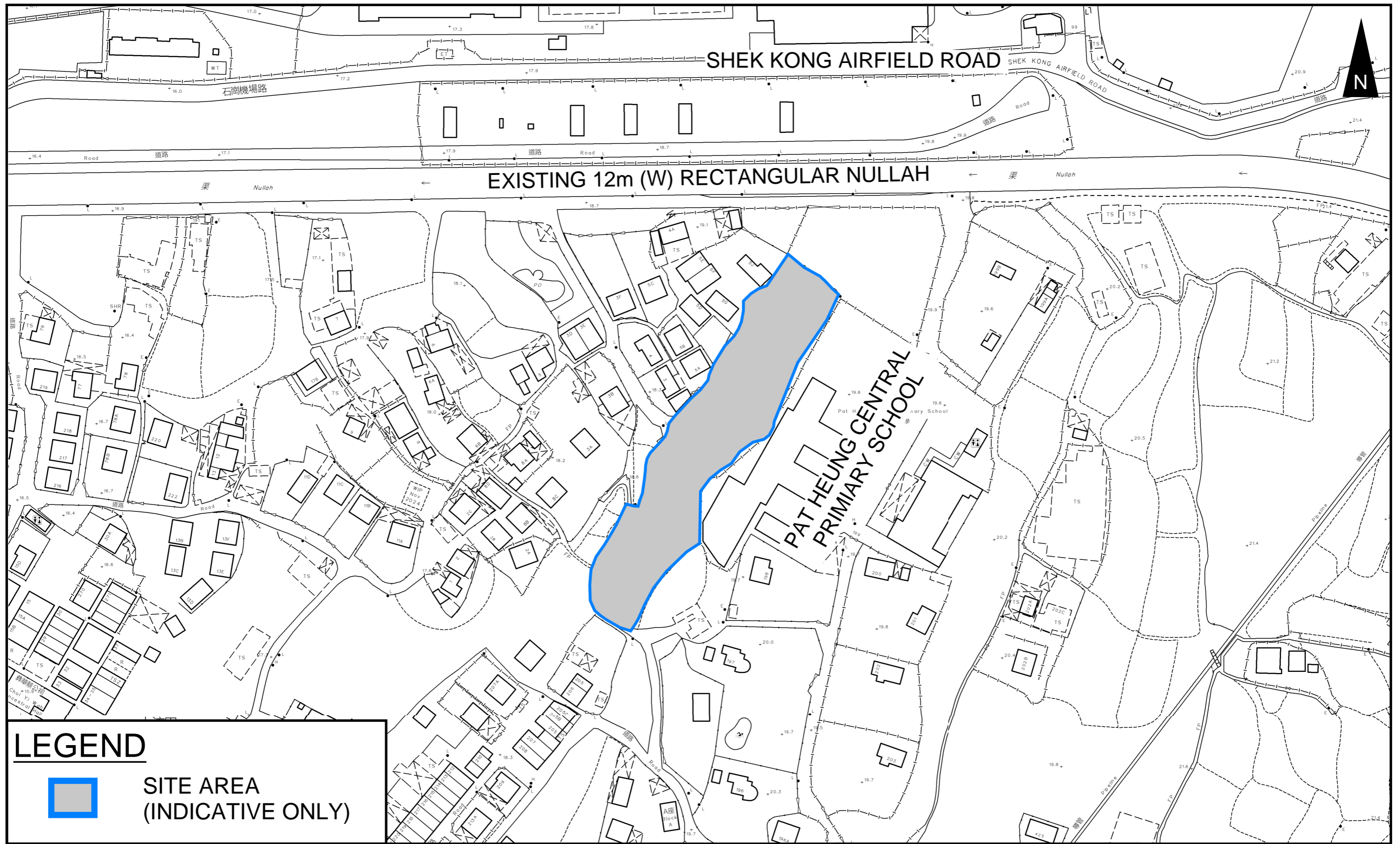
- 4.1.1 Proposed channels are designed for collection of runoff for application site. It is proposed to discharge to existing approx. 12m width rectangular nullah at the north. According to the checking of existing drains in **Appendix A**, they have enough capacity to carry the flow proposed development.
- 4.1.2 The design calculations of proposed drains are shown in **Appendix A**. Checking of utilization of existing approx. 12m width trapezoidal channel is also indicated in **Appendix A**. It is shown that the utilization is only about 0.07%.
- 4.1.3 The alignment, size, gradient and details of the proposed drains are shown in **Figure 3**. The catchment plan is shown in **Figure 4**.
- 4.1.5 Reference Drawings are shown in **Appendix C** for reference.

5 Conclusion


- 5.1.1 Drainage review has been conducted for the Proposed Development. The surface runoff will be collected by the proposed drains and discharged to existing 12m width nullah.
- 5.1.2 With implementation of the above drainage system, no unacceptable drainage impact is anticipated.

- End of Text -

FIGURES



LEGEND

 **SITE AREA (INDICATIVE ONLY)**

PROJECT:
 Proposed Temporary Shop and Services and Public Vehicle Park (Excluding Container Vehicle) with Ancillary Facilities and Associated Filling of Land for a Period of 5 Years in "Village Type Development" Zone

TITLE
SITE LOCATION PLAN

FIGURE NUMBER
FIGURE 1

LOCATION:
 Lot 354 in D.D. 112, Shui Lau Tin, Shek Kong, Yuen Long, New Territories

VER	DESCRIPTION	DATE

LEGEND

 SITE AREA
(INDICATIVE ONLY)



EXISTING 12m (W) RECTANGULAR NULLAH

石崗機場路

石崗機場路

嘉栢























翰林苑

鄉中心小學

彝華蔡公祠

富豪花園

LEGEND:

- | | | |
|--|--|--|
|  Combined Manhole |  Tapping Point (Sewer) |  Tapping Point (Storm) |
|  Overflow (Combined) |  Sewer Terminal Manhole |  Storm Water Terminal Manhole |
|  Pipe (Combined) |  Catchpit |  Tunnel Protection Zone (100m / 200m) |
|  Interface Valve Chamber |  Inlet |  Tunnel Protection Zone (General Range) |
|  Sewer Manhole |  Storm Water Manhole |  Tunnel / Box Culvert (Sewer) |
|  Oil / Petrol Interceptor |  Outlet |  Tunnel / Box Culvert (Storm) |
|  Overflow (Sewer) |  Pipe (Storm) | |
|  Pipe (Sewer) |  Sand Trap | |

PROJECT:

Proposed Temporary Shop and Services and Public Vehicle Park (Excluding Container Vehicle) with Ancillary Facilities and Associated Filling of Land for a Period of 5 Years in "Village Type Development" Zone

TITLE

EXISTING DRAINAGE PLAN

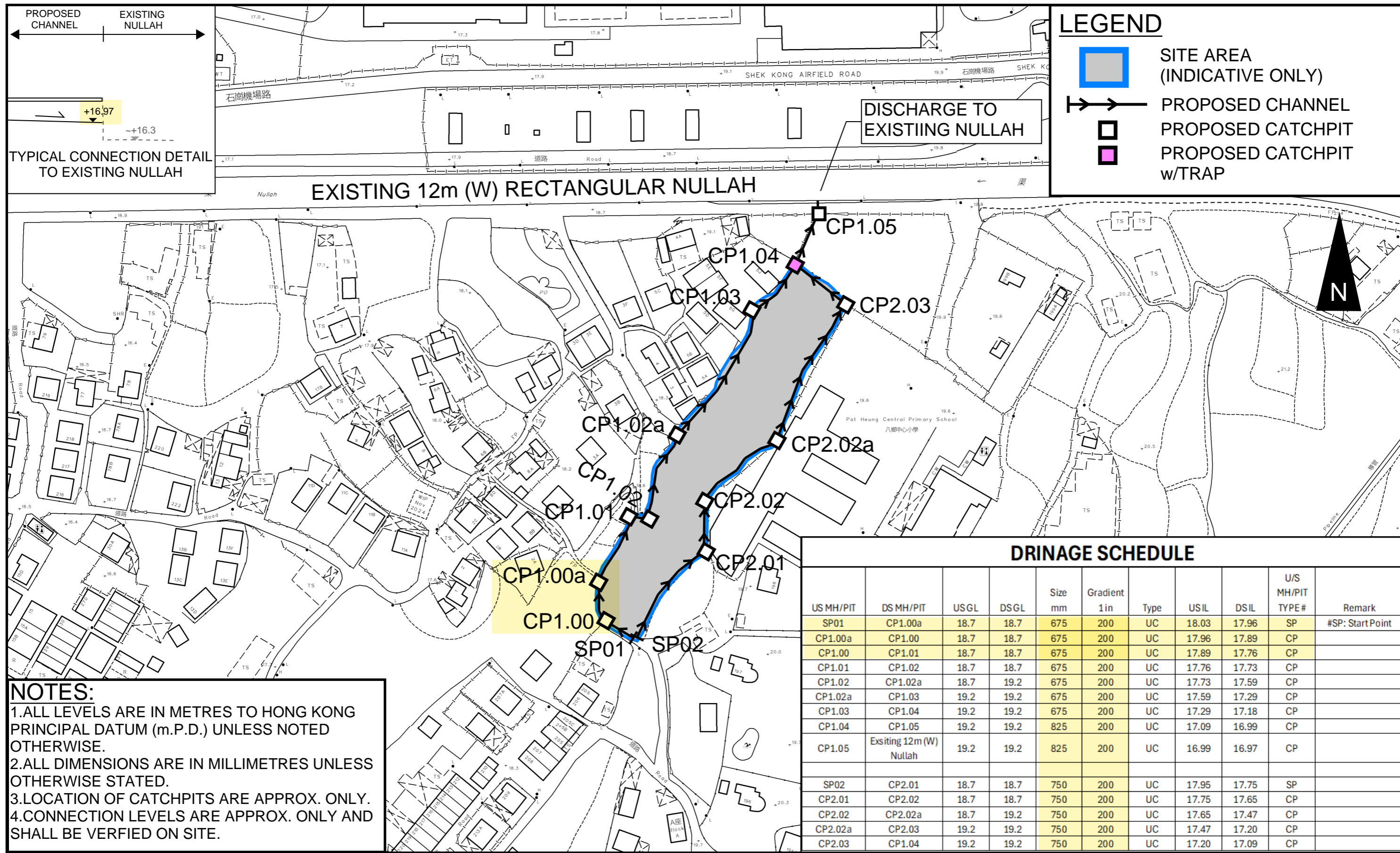
FIGURE NUMBER

FIGURE 2

LOCATION:

Lot 354 in D.D. 112, Shui Lau Tin, Shek Kong, Yuen Long, New Territories

VER	DESCRIPTION	DATE



NOTES:

- ALL LEVELS ARE IN METRES TO HONG KONG PRINCIPAL DATUM (m.P.D.) UNLESS NOTED OTHERWISE.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
- LOCATION OF CATCHPITS ARE APPROX. ONLY.
- CONNECTION LEVELS ARE APPROX. ONLY AND SHALL BE VERIFIED ON SITE.

PROJECT:
 Proposed Temporary Shop and Services and Public Vehicle Park (Excluding Container Vehicle) with Ancillary Facilities and Associated Filling of Land for a Period of 5 Years in "Village Type Development" Zone

TITLE
PROPOSED DRAINAGE SYSTEM

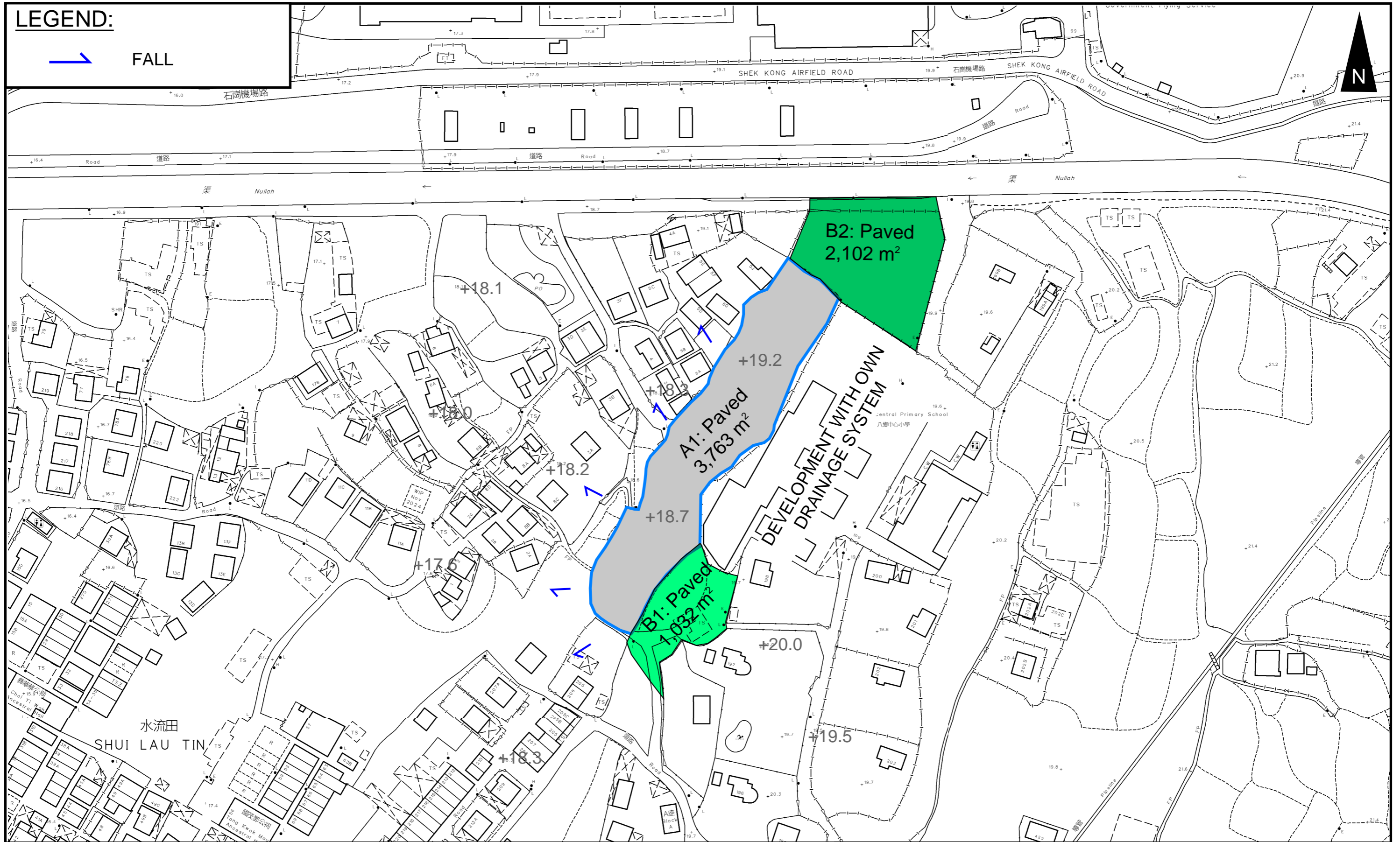
FIGURE NUMBER
FIGURE 3

LOCATION:
 Lot 354 in D.D. 112, Shui Lau Tin, Shek Kong, Yuen Long, New Territories

VER	DESCRIPTION	DATE

LEGEND:

 FALL



PROJECT:

Proposed Temporary Shop and Services and Public Vehicle Park (Excluding Container Vehicle) with Ancillary Facilities and Associated Filling of Land for a Period of 5 Years in "Village Type Development" Zone

TITLE

CATCHMENT PLAN

FIGURE NUMBER

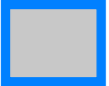
FIGURE 4

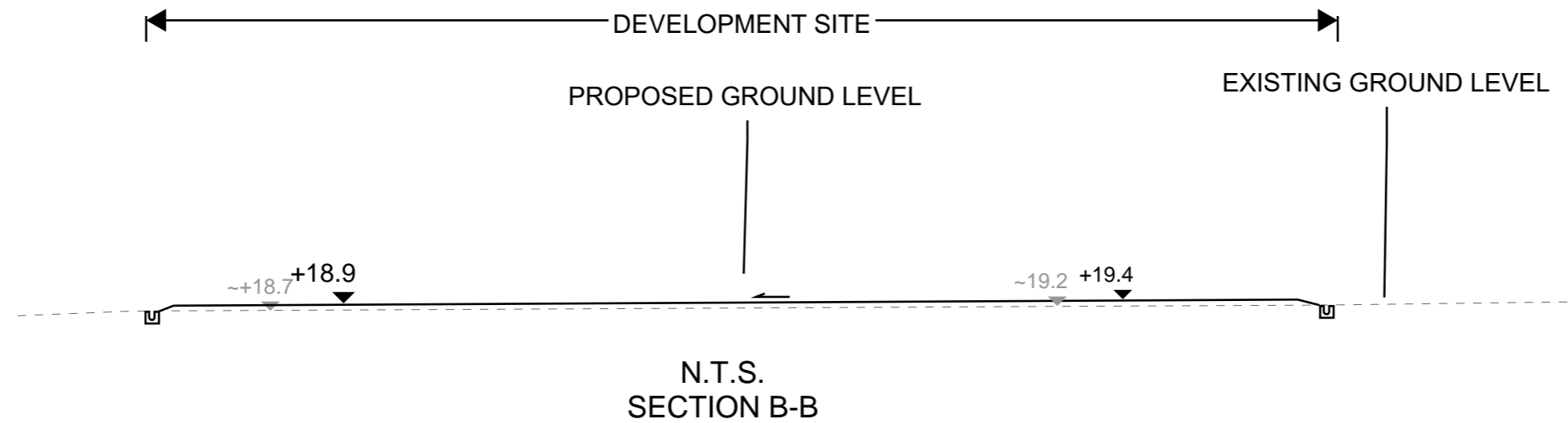
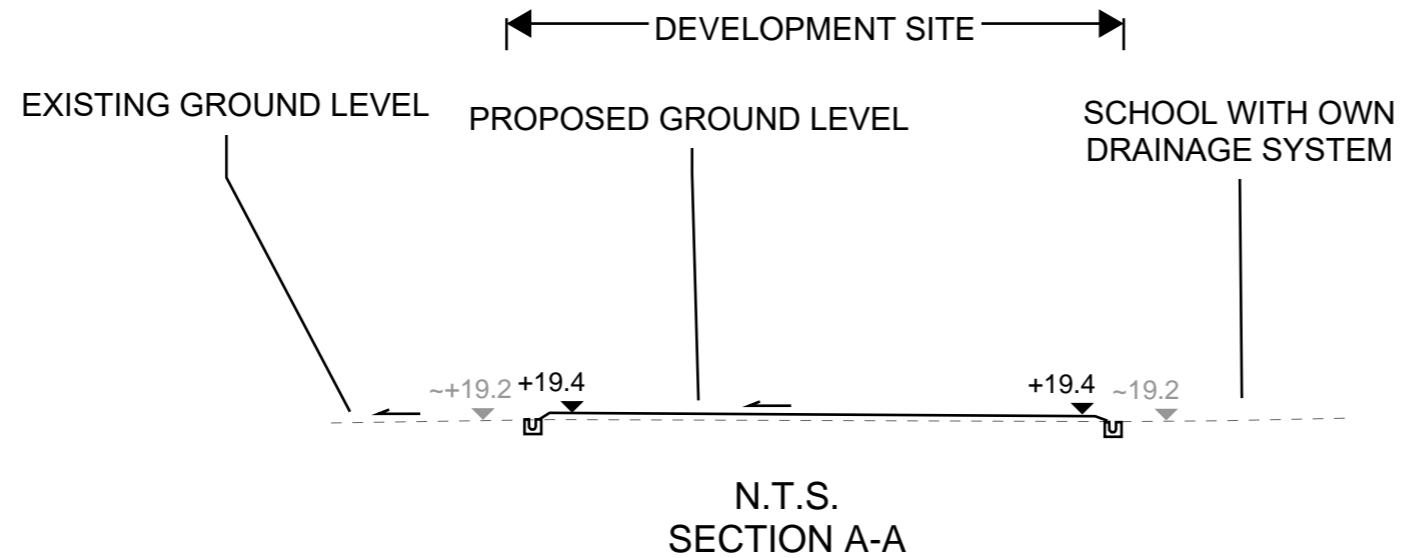
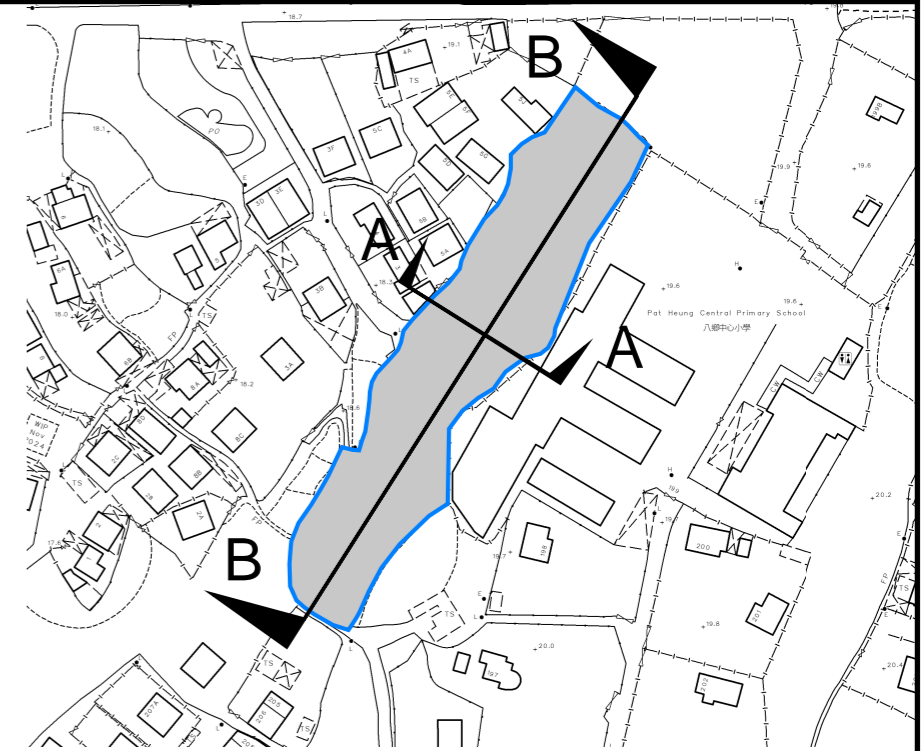
LOCATION:

Lot 354 in D.D. 112, Shui Lau Tin, Shek Kong, Yuen Long, New Territories

VER	DESCRIPTION	DATE

LEGEND

 SITE AREA (INDICATIVE ONLY)



PROJECT:
 Proposed Temporary Shop and Services and Public Vehicle Park (Excluding Container Vehicle) with Ancillary Facilities and Associated Filling of Land for a Period of 5 Years in "Village Type Development" Zone

TITLE
SECTIONS

FIGURE NUMBER
FIGURE 5

LOCATION:
 Lot 354 in D.D. 112, Shui Lau Tin, Shek Kong, Yuen Long, New Territories

VER	DESCRIPTION	DATE

APPENDIX

Appendix A: Design Calculation

Zone

HKO

Return Period	1 in	50	years
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n	0.014
Ks	0.15
Viscosity	0.000001

Storm Constant	HKO a	505.5
	HKO b	3.29
	HKO c	0.355

Catchment Area Table (Area in m²)

Catchment	A1	B1	B2															
Total Area	3763	1032	2102															
Hard Paved Area	3763	1032	2102															
Unpaved Area	0	0	0															
Equival. Area	3574.85	980.4	1996.9															

Pavement Type	Hard Paved	Unpaved
Runoff Coefficient	0.95	0.35

Calculation Table of Drainage System

US MH/PIT	DS MH/PIT	US GL	DS GL	Size mm	Gradient 1 in	Type	US IL	DS IL	U/S MH/PIT TYPE #	Length m	V m/s	Capacity m ³ /s	Catchments	Total Equivalent Area m ²	ToC min	Intensity mm/hr #	Total Discharge m ³ /s	Utilizatio n	Remark
SP01	CP1.00a	18.70	18.70	675	200	UC	18.03	17.96	SP	12.6	1.92	0.78	A1	3574.85	2.30	305	0.30	38.8%	
CP1.00a	CP1.00	18.70	18.70	675	200	UC	17.96	17.89	CP	14.8	1.92	0.78	A1	3574.85	2.41	303	0.30	38.5%	
CP1.00	CP1.01	18.70	18.70	675	200	UC	17.89	17.76	CP	26.3	1.92	0.78	A1	3574.85	2.54	300	0.30	38.2%	
CP1.01	CP1.02	18.70	18.70	675	200	UC	17.76	17.73	CP	4.9	1.92	0.78	A1	3574.85	2.77	296	0.29	37.7%	
CP1.02	CP1.02a	18.70	19.20	675	200	UC	17.73	17.59	CP	29.4	1.92	0.78	A1	3574.85	2.81	296	0.29	37.6%	
CP1.02a	CP1.03	19.20	19.20	675	200	UC	17.59	17.29	CP	58.3	1.92	0.78	A1	3574.85	3.06	291	0.29	37.1%	
CP1.03	CP1.04	19.20	19.20	675	200	UC	17.29	17.18	CP	22.8	1.92	0.78	A1	3574.85	3.57	283	0.28	36.1%	
CP1.04	CP1.05	19.20	19.20	825	200	UC	17.09	16.99	CP	20.2	2.19	1.33	A1,B1,B2	6552.15	3.77	281	0.51	38.3%	
CP1.05	Exsiting 12m (W) Nullah	19.20	19.20	825	200	UC	16.99	16.97	CP	4.6	2.19	1.33	A1,B1,B2	6552.15	3.92	279	0.51	38.0%	
SP02	CP2.01	18.70	18.70	750	200	UC	17.95	17.75	SP	40.4	2.06	1.03	A1,B1	4555.25	2.30	305	0.39	37.3%	
CP2.01	CP2.02	18.70	18.70	750	200	UC	17.75	17.65	CP	18.9	2.06	1.03	A1,B1	4555.25	2.63	299	0.38	36.6%	
CP2.02	CP2.02a	18.70	19.20	750	200	UC	17.65	17.47	CP	36.3	2.06	1.03	A1,B1	4555.25	2.78	296	0.37	36.3%	
CP2.02a	CP2.03	19.20	19.20	750	200	UC	17.47	17.20	CP	54	2.06	1.03	A1,B1	4555.25	3.07	291	0.37	35.6%	
CP2.03	CP1.04	19.20	19.20	750	200	UC	17.20	17.09	CP	22.1	2.06	1.03	A1,B1	4555.25	3.51	284	0.36	34.8%	
													A1	3574.85	3.92	279	0.28		

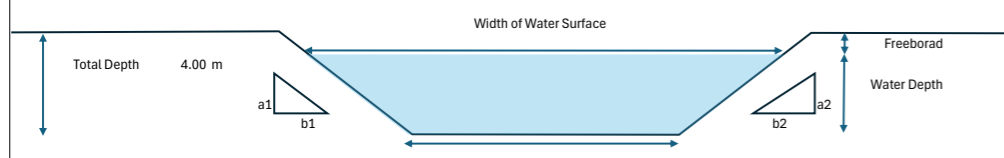
Flow From Proposed Development

#SP: Start Point
: With 11.1% rainfall increase as per Table 28 of SDM Corrigendum No. 1/2022.

Time of Concentration Checking

Catchment	Flow Distance	Highest Level	Lowest Level	Gradient (per 100m) = (H1-H2)/L x 100	to (min) = 0.14465L / (H ^{0.2} A ^{0.1})	tc = to + tf
A	L	H1	H2		(min)	(min)
1032	26.2	19	18.9	0.382	2.3	2.3

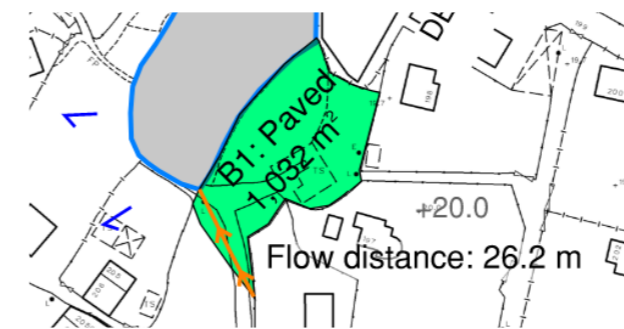
Capacity Checking of Existing 12m (W) Rectangular Channel for flow from Proposed Development Area



a1	1	
b1	0.0	
a2	1	
b2	0.0	
Total Depth	4.00	m
Base Width	12.00	m
Assumed Water Depth	3.70	m
Freeboard	0.30	m

Assumed Water Depth	Freeboard	Base Width	Width of Water Surface	Flow Area	Wetted Perimeter	Hydraulic Radius	Manning's Roughness	Gradient	Velocity	Capacity
m	m	m	m	m ²	m	m		1 in	m/s	m ³ /s
3.70	0.30	12.00	12.00	44.40	19.40	2.29	0.014	200	8.77	389.46

Total Flow due to the application = 0.28 m³/s
 Utilization Rate = 0.07%
 Total flow due to the Application Site only occupy 0.07% of the existing Channel/ Watercourse.



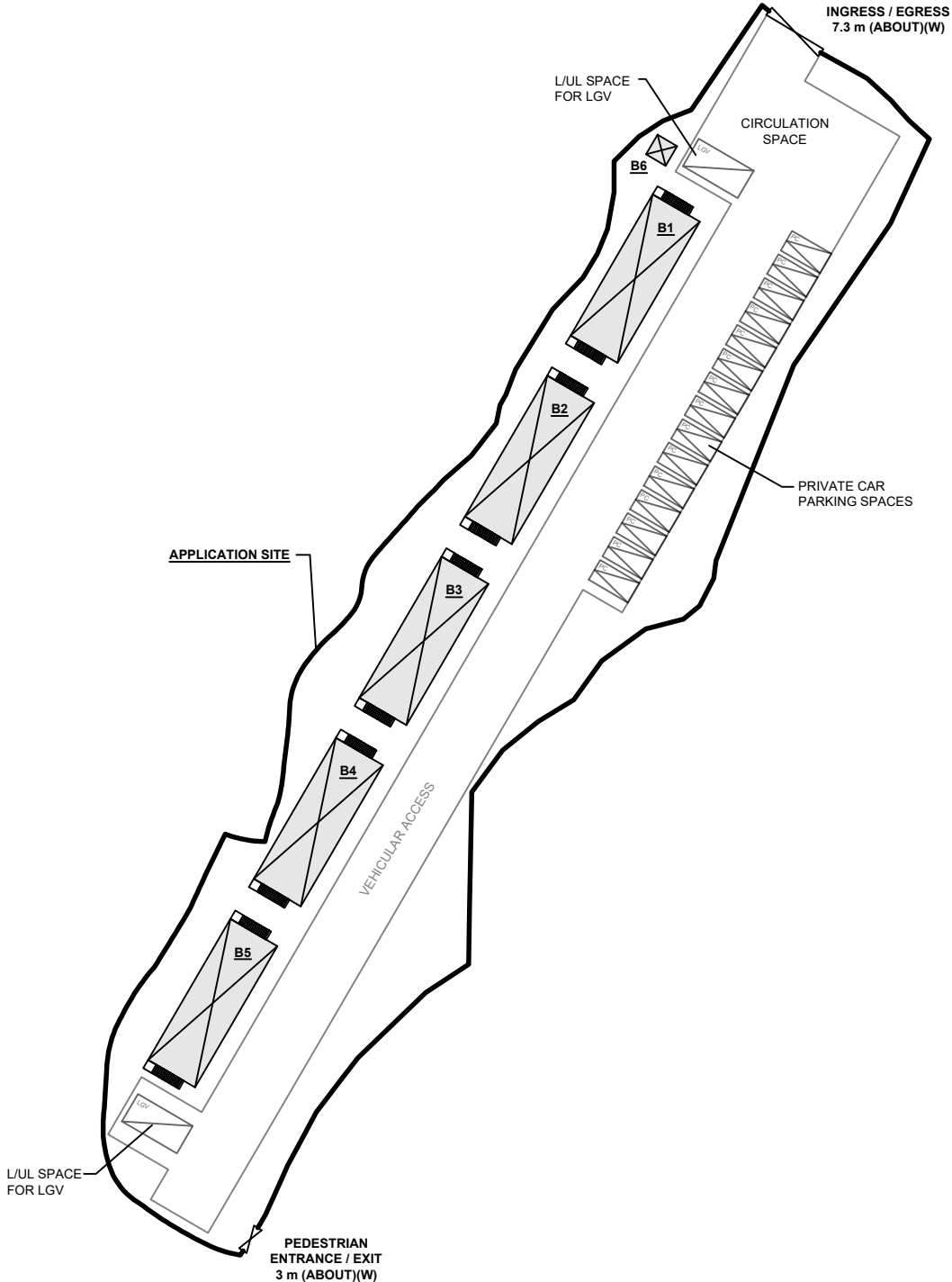
APPENDIX B - PROPOSED SITE LAYOUT PLAN

DEVELOPMENT PARAMETERS

APPLICATION SITE AREA	: 3,763 m ²	(ABOUT)
COVERED AREA	: 597 m ²	(ABOUT)
UNCOVERED AREA	: 3,166 m ²	(ABOUT)
PLOT RATIO	: 0.3	(ABOUT)
SITE COVERAGE	: 16 %	(ABOUT)
NO. OF STRUCTURE	: 6	
DOMESTIC GFA	: NOT APPLICABLE	
NON-DOMESTIC GFA	: 1,137 m ²	(ABOUT)
TOTAL GFA	: 1,137 m ²	(ABOUT)
BUILDING HEIGHT	: 3 m - 8 m	(ABOUT)
NO. OF STOREY	: 1 - 2	

STRUCTURE	USE	COVERED AREA	GROSS FLOOR AREA	BUILDING HEIGHT
B1	S&S, OFFICE AND WASHROOM	118 m ² (ABOUT)*	226 m ² (ABOUT)#	8 m (ABOUT)(2-STOREY)
B2	S&S, OFFICE AND WASHROOM	118 m ² (ABOUT)*	226 m ² (ABOUT)#	8 m (ABOUT)(2-STOREY)
B3	S&S, OFFICE AND WASHROOM	118 m ² (ABOUT)*	226 m ² (ABOUT)#	8 m (ABOUT)(2-STOREY)
B4	S&S, OFFICE AND WASHROOM	118 m ² (ABOUT)*	226 m ² (ABOUT)#	8 m (ABOUT)(2-STOREY)
B5	S&S, OFFICE AND WASHROOM	118 m ² (ABOUT)*	226 m ² (ABOUT)#	8 m (ABOUT)(2-STOREY)
B6	METER ROOM	7 m ² (ABOUT)	7 m ² (ABOUT)#	3 m (ABOUT)(1-STOREY)
TOTAL		597 m² (ABOUT)	1,137 m² (ABOUT)	

* COVERED AREA OF STRUCTURE: 108 m²(ENCLOSED) + 10 m² (STAIRCASES) = 118 m² (ABOUT)
 # GFA OF STRUCTURE: 108 m² (G/F) + 108 m² (1/F) + 10 m² (STAIRCASES) = 226 m² (ABOUT)
 S&S SHOP AND SERVICES



PARKING PROVISIONS

NO. OF PRIVATE CAR PARKING SPACE	: 15
DIMENSION OF PARKING SPACE	: 5 m (L) X 2.5 m (W)
NO. OF L/U/L SPACE FOR LIGHT GOODS VEHICLE	: 2
DIMENSION OF PARKING SPACE	: 7 m (L) X 3.5 m (W)

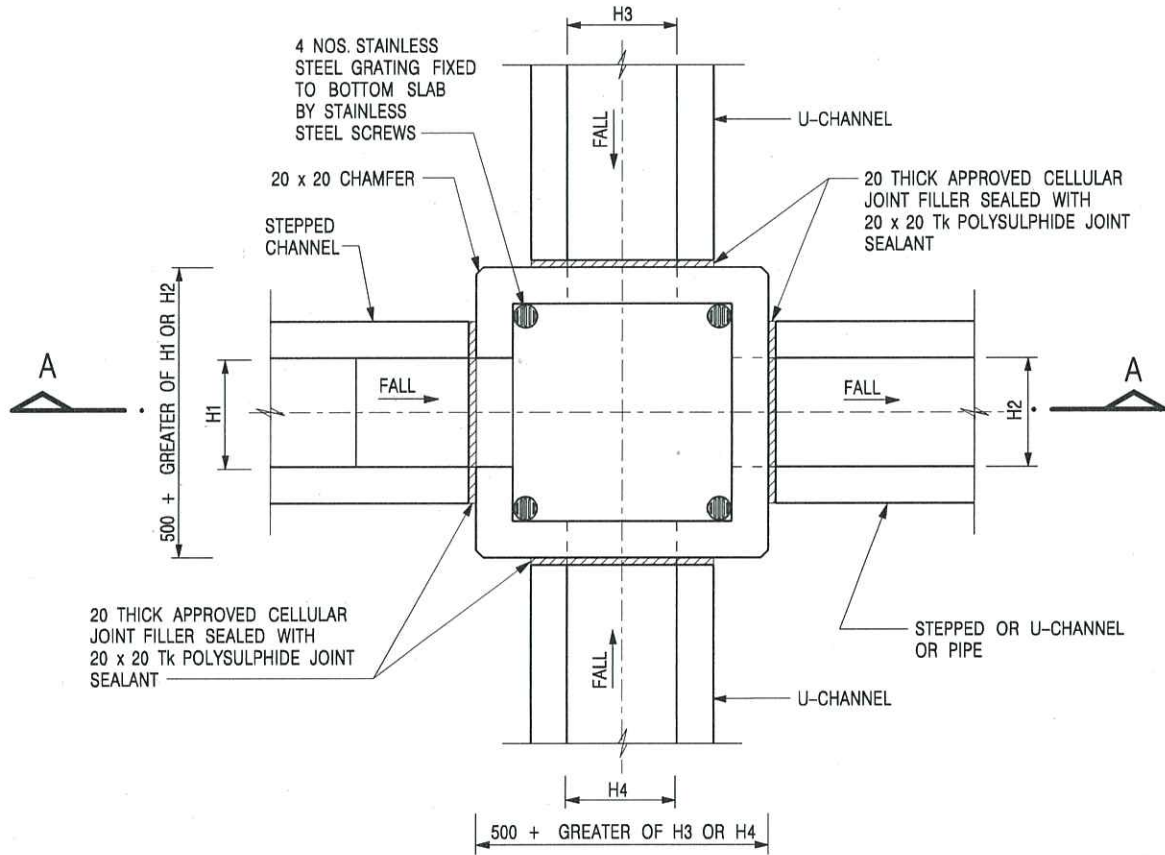
LEGEND

	APPLICATION SITE
	STRUCTURE
	PARKING SPACE (PC)
	L/U/L SPACE (LGV)
	INGRESS / EGRESS

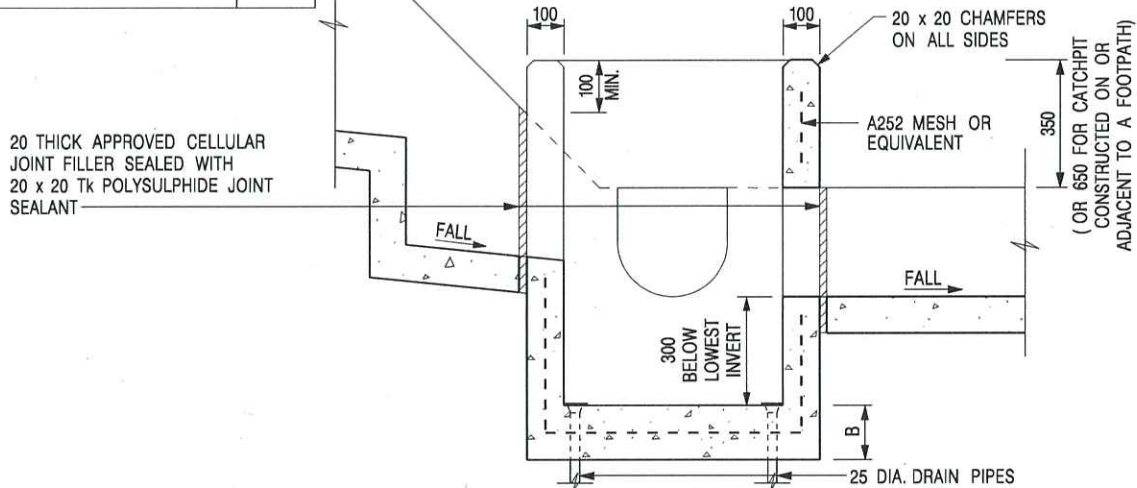
PLANNING CONSULTANT 	PROJECT PROPOSED TEMPORARY SHOP AND SERVICES AND PUBLIC VEHICLE PARK (EXCLUDING CONTAINER VEHICLE) WITH ANCILLARY FACILITIES AND ASSOCIATED FILLING OF LAND FOR A PERIOD OF 5 YEARS	ADDRESS LOT 354 IN D.D. 112, SHUI LAU TIN, SHEK KONG, YUEN LONG, NEW TERRITORIES	SCALE 1 : 750 @ A4		TITLE LAYOUT PLAN	
			DRAWN BY MN	DATE 18.8.2025	DWG NO. PLAN 4	VER. 001



Appendix C - Reference Drawings



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



NOTES:

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

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

CATCHPIT WITH TRAP
(SHEET 1 OF 2)



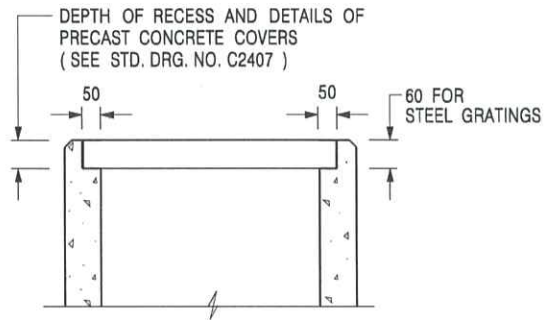
CIVIL ENGINEERING AND
DEVELOPMENT DEPARTMENT

SCALE 1 : 20

DRAWING NO.

DATE JAN 1991

C2406 /1



**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.

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

**CATCHPIT WITH TRAP
(SHEET 2 OF 2)**



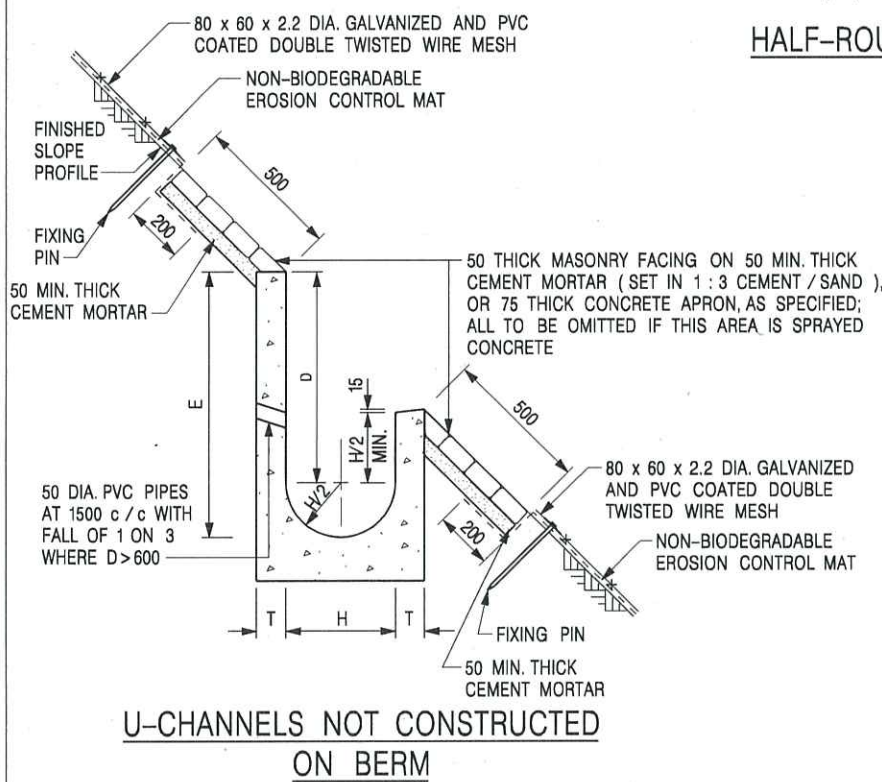
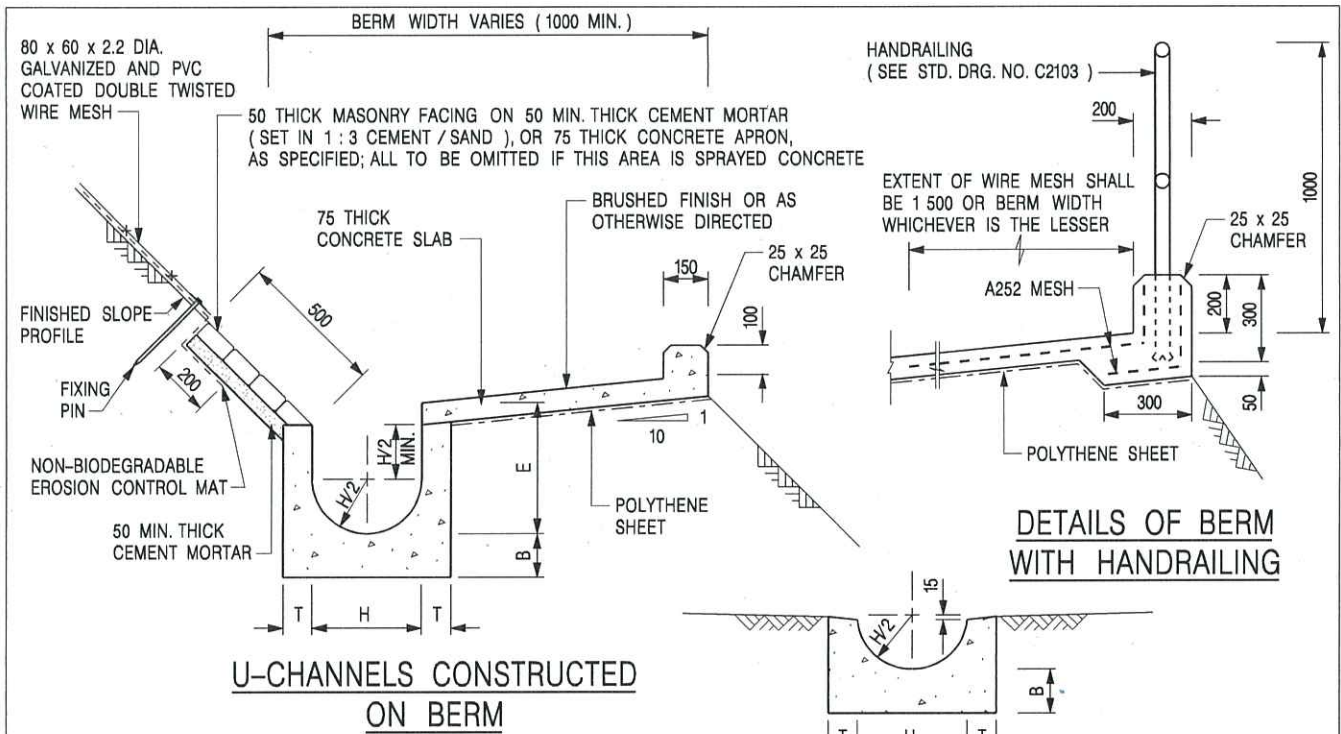
**CIVIL ENGINEERING AND
DEVELOPMENT DEPARTMENT**

SCALE 1 : 20

DRAWING NO.

DATE JAN 1991

C2406 /2A



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/E.
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/E)

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

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
REF.	REVISION	SIGNATURE	DATE

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



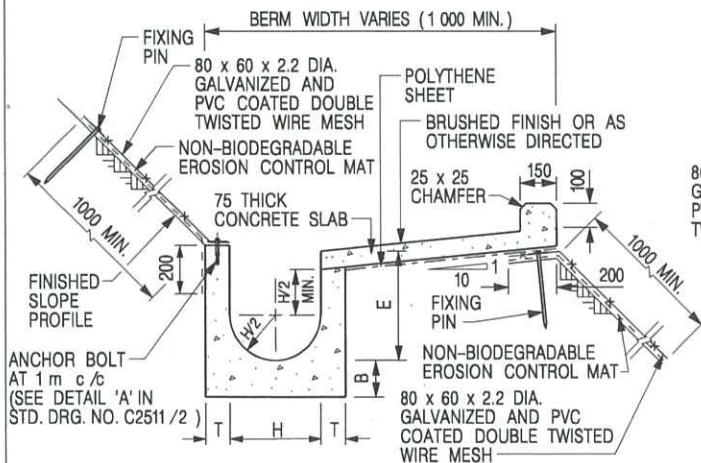
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE 1 : 25

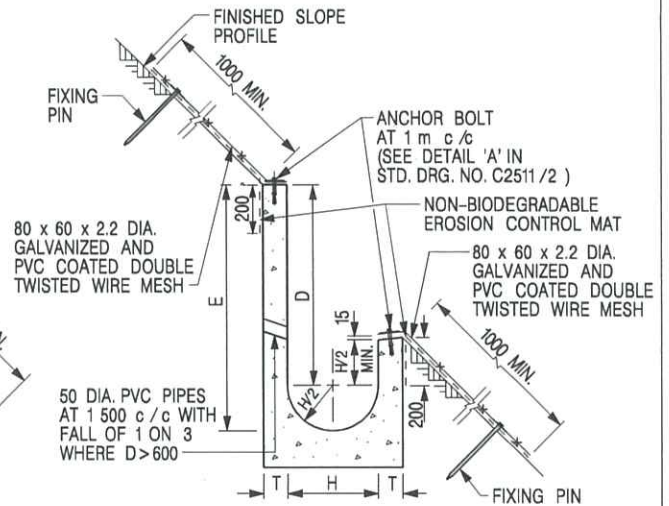
DRAWING NO.

DATE JAN 1991

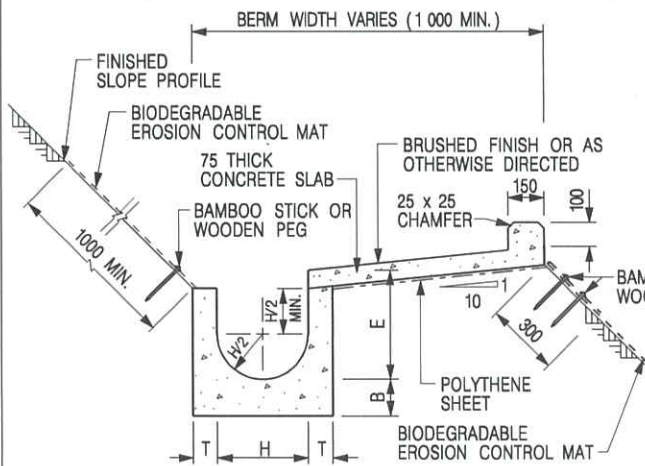
C24091



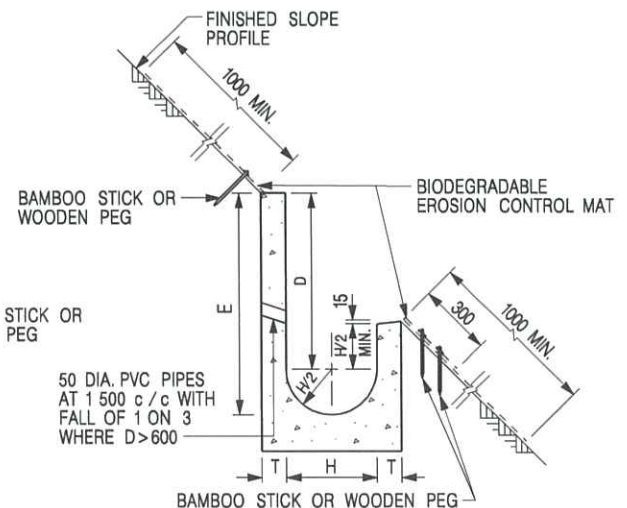
U-CHANNELS CONSTRUCTED ON BERM WITH NON-BIODEGRADABLE EROSION CONTROL MAT



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:

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



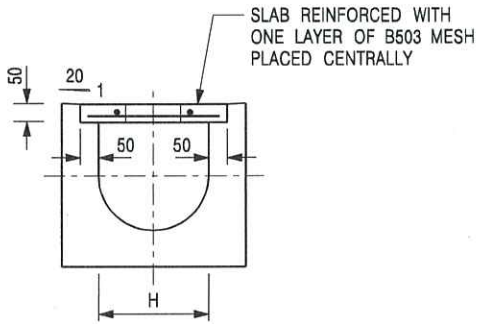
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE DIAGRAMMATIC

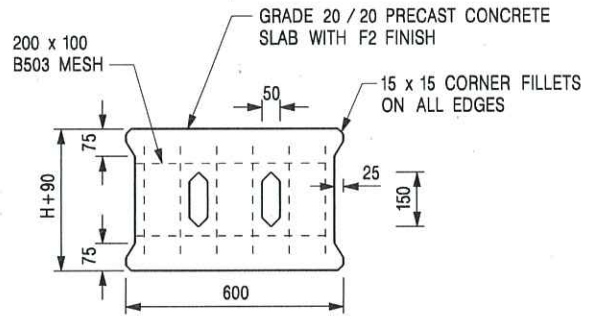
DRAWING NO.

DATE JAN 1991

C24101



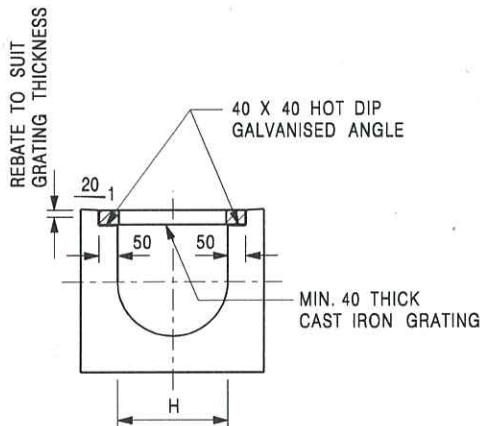
TYPICAL SECTION



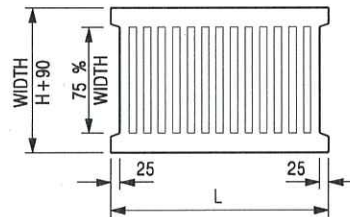
PLAN OF SLAB

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.

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
REF.	REVISION	SIGNATURE	DATE

COVER SLAB AND CAST IRON
GRATING FOR CHANNELS



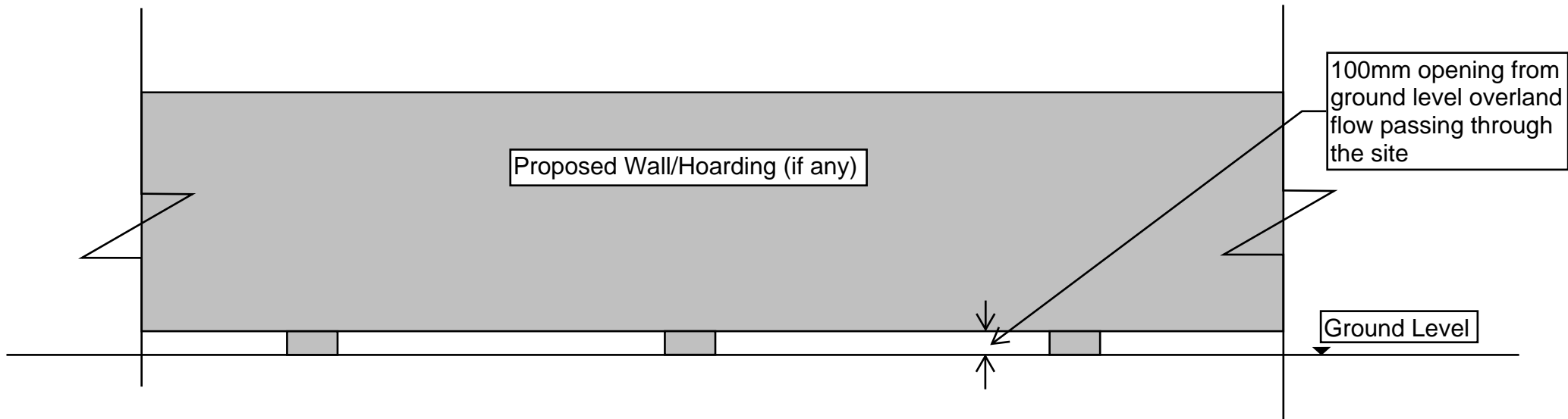
CIVIL ENGINEERING AND
DEVELOPMENT DEPARTMENT

SCALE 1 : 20

DRAWING NO.

DATE JAN 1991

C2412E



Typical Details for Opening from Ground Level