

**Annex 3**  
Drainage Impact Assessment

Proposed Temporary Place of Recreation, Sports or Culture (Horse Riding Centre and Barbecue Site) and Holiday Camp with Ancillary Facilities for a Period of 3 Years in "Agriculture" Zone and Associated Filling of Land, Various Lot in D.D. 76 and Adjoining Government Land, Hok Tau, Fanling, New Territories

## Drainage Impact Assessment

DEC 24



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Marvellous Construction & Design Company Limited



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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 Various Lot in D.D. 76 and Adjoining Government Land (GL), Hok Tau, Fanling, New Territories (the Site) for 'Proposed Temporary Place of Recreation, Sports or Culture (Horse Riding Centre and Barbecue Site) and Holiday Camp with Ancillary Facilities for a Period of 3 Years and Associated Filling of Land'.
- 1.1.2 This report aims to support the development in drainage aspect.

## 1.2 Application Site

- 1.2.1 The application site is situated beside Hok Tau Road. It has an area of approx. 19,227 m<sup>2</sup>. The site location is shown in **Figure 1**.
- 1.2.2 The existing site is partially hard paved with level various from approx. +24.5mPD to + 28.5mPD.
- 1.2.3 There is an existing stream at the southwest of the application site, which would eventually discharge to Shan Pui River. **Figure 2** indicate the existing drainage system of the area.

## 2 Development Proposal

### 2.1 The Proposed Development

2.1.1 The total site area is approximately 19,227 m<sup>2</sup>. The Proposed Site would be used for recreation, sports and cultural activities. Part of the site would be paved with concrete not more than 0.2m for site formation of structures and circulation space. The existing pavement area and proposed catchment plan are shown in **Figure 4-1** and **Figure 4-2** respectively.

2.1.2 After the proposed development the paved area would be reduced from 5,896 m<sup>2</sup> to 5095 m<sup>2</sup>.

	Before Development	After Development
Total Site Area (m <sup>2</sup> )	19,227	19,227
Paved Area (m <sup>2</sup> )	5,896	5,095

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 10 years return period is adopted for the drainage design.

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 North District Zone. Therefore, for 10 years return period, the following values are adopted.

a	=	454.9
b	=	3.44
c	=	0.412

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:

Manning's Equation:  $v = \frac{R^{2/3}}{n} S_f^{1/2}$

Where,

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

S<sub>f</sub> = 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:

Colebrook-White Equation:  $\frac{1}{\sqrt{f}} = -\sqrt{32gRS} \log \log \left( \frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS}} \right)$

where,

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

S<sub>f</sub> = hydraulic gradient

k<sub>r</sub> = roughness value (m)

ν = kinematics viscosity of fluid

D = pipe diameter (m)

R = hydraulic radius (m)

## 4 Proposed Drainage System

### 4.1. Proposed Channels

- 4.1.1 As the paved area is reduced from 5,896 m<sup>2</sup> to 5095 m<sup>2</sup> after the development, there is no additional runoff due to the proposed development.
- 4.1.2 Proposed channels are designed for collection of runoff for internal and external catchment. They are proposed to connect to existing stream adjacent to the application site.
- 4.1.3 The design calculations of proposed UChannel are shown in **Appendix A**.
- 4.1.4 The alignment, size, gradient and details of the proposed drains are shown in **Figure 3**. The catchment plan is shown in **Figure 4-1** and **Figure 4-2**.
- 4.1.5 Reference Drawings are shown in **Appendix C** for reference.

## 5 Conclusion

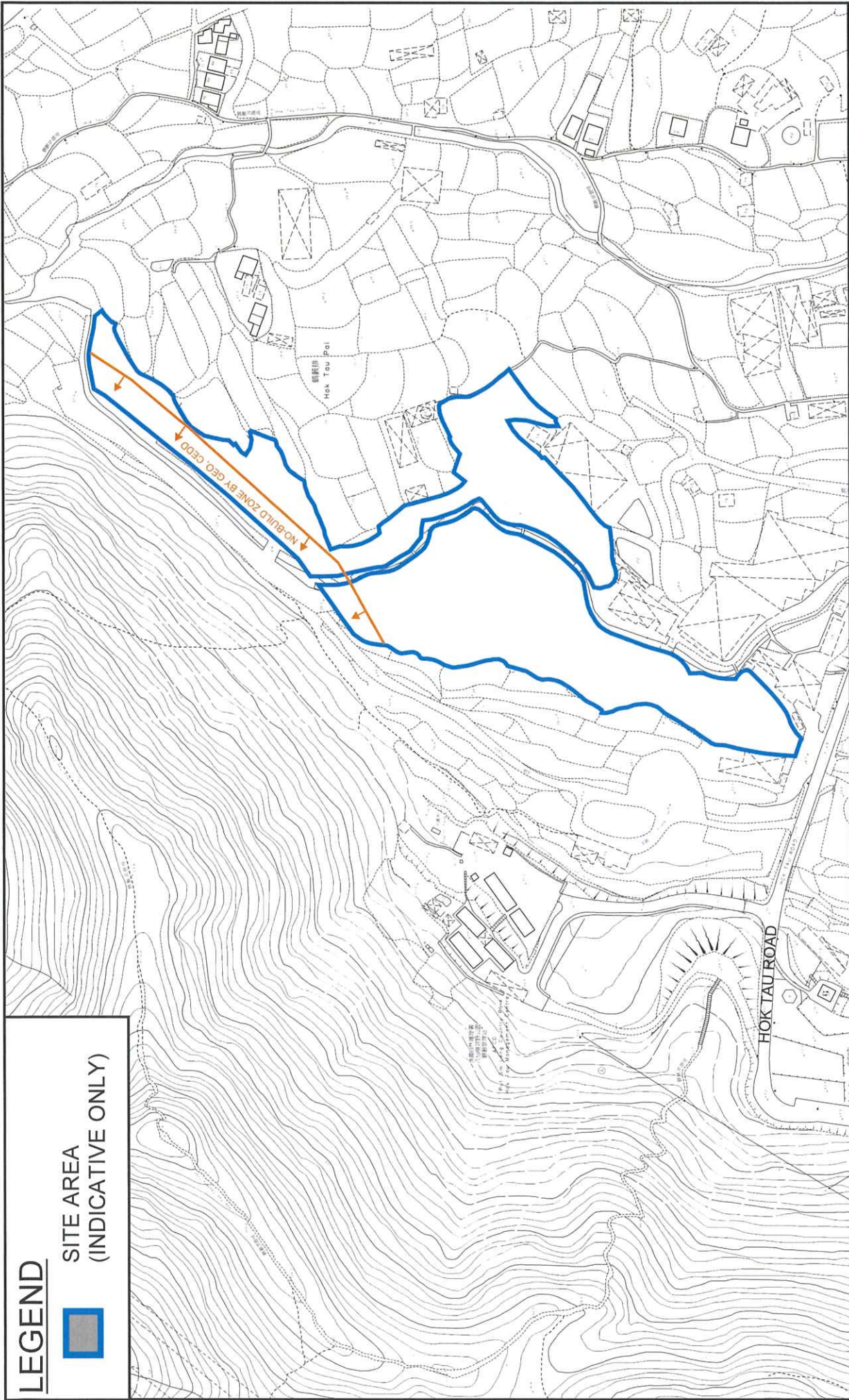
- 5.1.1 Drainage review has been conducted for the Proposed Development. U Channels are proposed to collect the runoff from the catchments. As the paved area is reduced after the development, there is no additional runoff due to the proposed development.
- 5.1.2 With implementation of the above drainage system, the no unacceptable drainage impact is anticipated.


- End of Text -



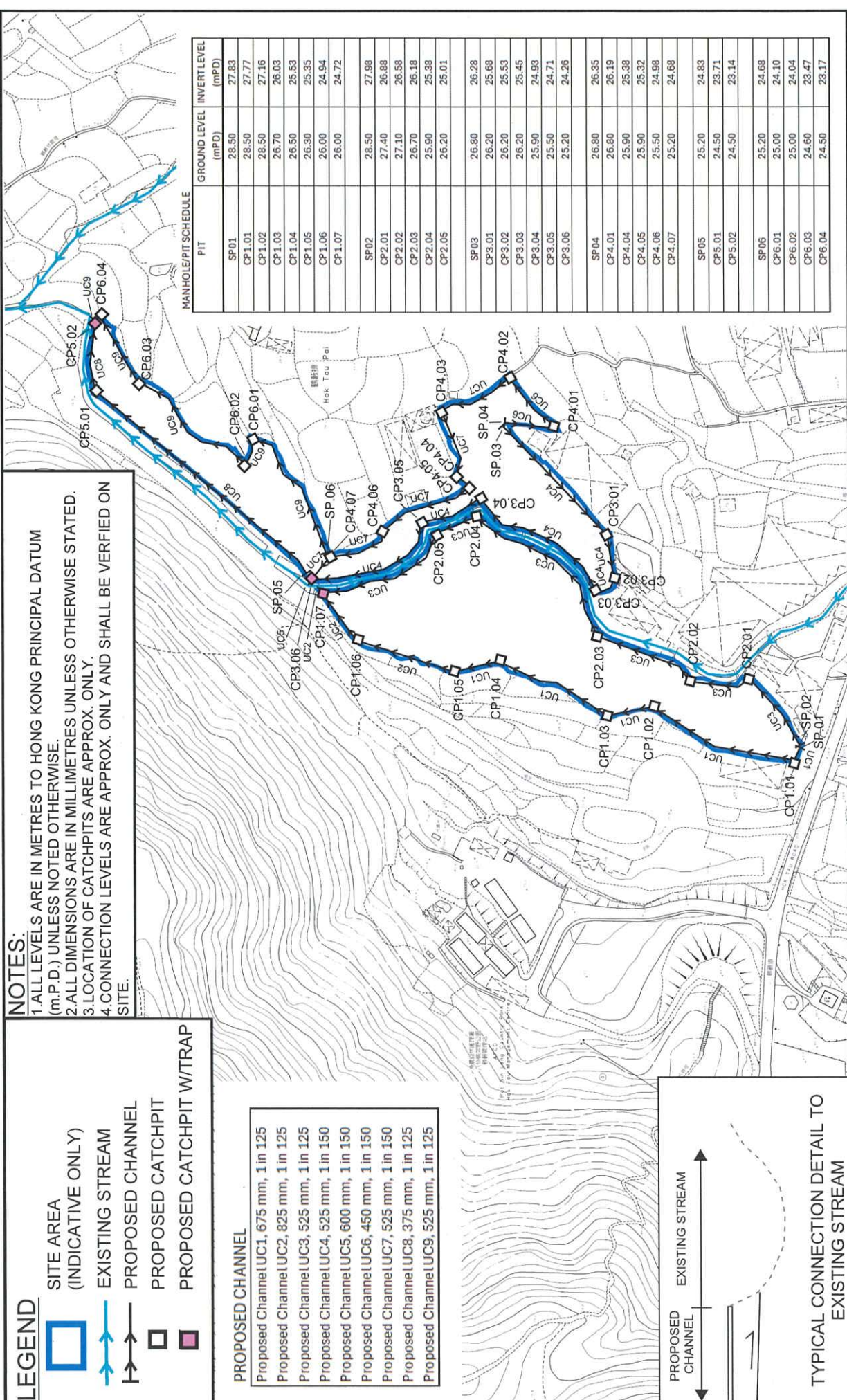
# FIGURES

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<p><b>FIGURE NUMBER</b> FIGURE 1</p>	<p><b>TITLE</b> SITE LOCATION PLAN</p>	<p><b>PROJECT:</b> Proposed Temporary Place of Recreation, Sports or Culture (Horse Riding Centre and Barbecue Site) and Holiday Camp with Ancillary Facilities for a Period of 3 Years in "Agriculture" Zone and Associated Filling of Land</p> <p><b>LOCATION:</b> Various Lot in D.D. 76 and Adjoining Government Land, Hok Tau, Fanling, New Territories</p>
	<p>VER</p> <p>DESCRIPTION</p>	<p>DATE</p>





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

**LEGEND**

- SITE AREA (INDICATIVE ONLY)
- EXISTING STREAM
- PROPOSED CHANNEL
- PROPOSED CATCHPIT
- PROPOSED CATCHPIT W/TRAP

**PROPOSED CHANNEL**

- Proposed Channel UC1, 675 mm, 1 in 125
- Proposed Channel UC2, 825 mm, 1 in 125
- Proposed Channel UC3, 525 mm, 1 in 125
- Proposed Channel UC4, 525 mm, 1 in 150
- Proposed Channel UC5, 600 mm, 1 in 150
- Proposed Channel UC6, 450 mm, 1 in 150
- Proposed Channel UC7, 525 mm, 1 in 150
- Proposed Channel UC8, 375 mm, 1 in 125
- Proposed Channel UC9, 525 mm, 1 in 125

**TYPICAL CONNECTION DETAIL TO EXISTING STREAM**

**FIGURE NUMBER**  
 FIGURE 3

**TITLE**  
 PROPOSED DRAINAGE SYSTEM

**PROJECT:**  
 Proposed Temporary Place of Recreation, Sports or Culture (Horse Riding Centre and Barbecue Site) and Holiday Camp with Ancillary Facilities for a Period of 3 Years in "Agriculture" Zone and Associated Filling of Land

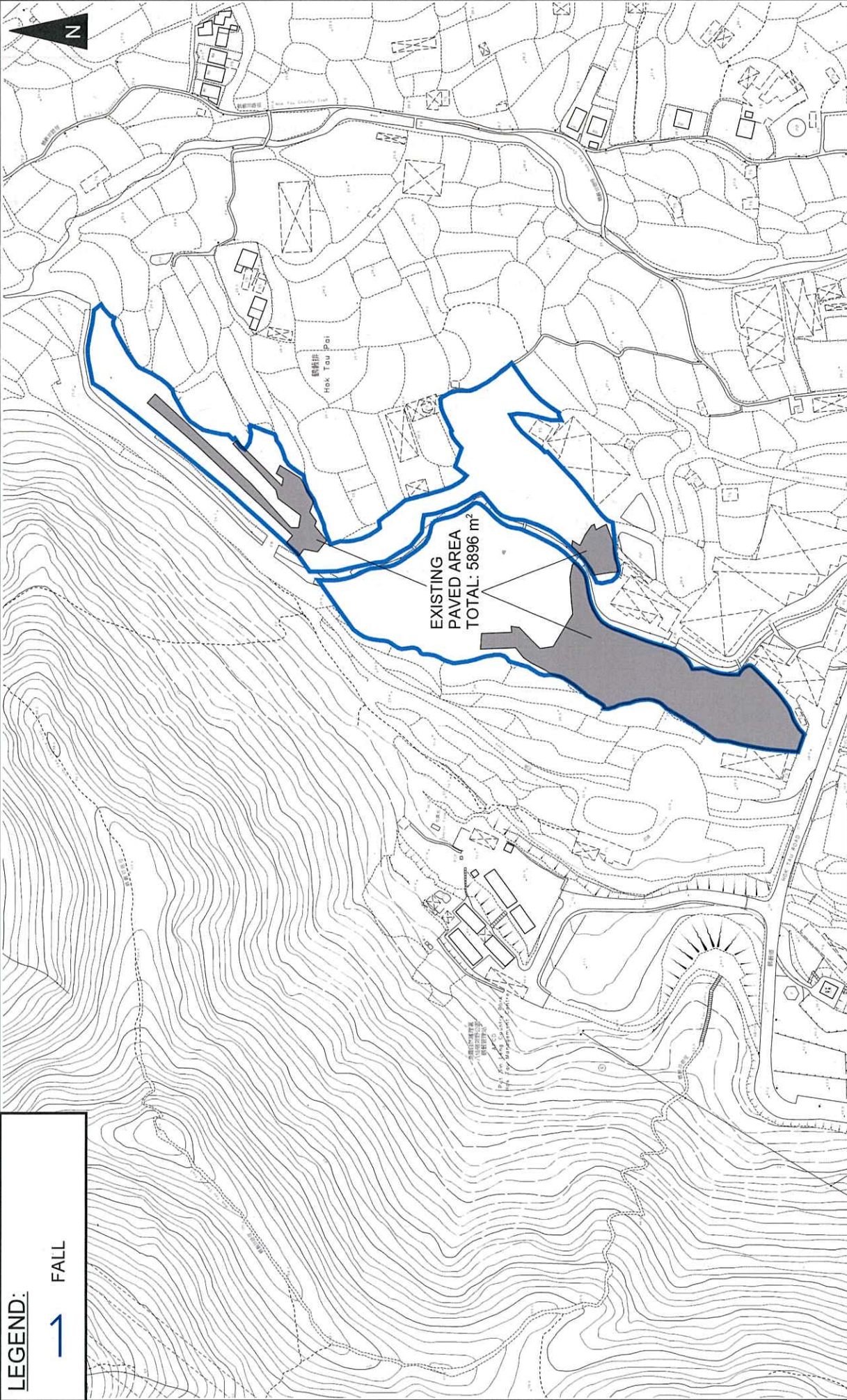
**LOCATION:**  
 Various Lot in D.D. 76 and Adjoining Government Land, Hok Tau, Fanling, New Territories

**MARVELLOUS**

VER	DESCRIPTION	DATE

**LEGEND:**

— FALL



**PROJECT:**

Proposed Temporary Place of Recreation, Sports or Culture (Horse Riding Centre and Barbecue Site) and Holiday Camp with Ancillary Facilities for a Period of 3 Years in "Agriculture" Zone and Associated Filling of Land

**TITLE**

**EXISTING PAVEMENT PLAN**

**FIGURE NUMBER**

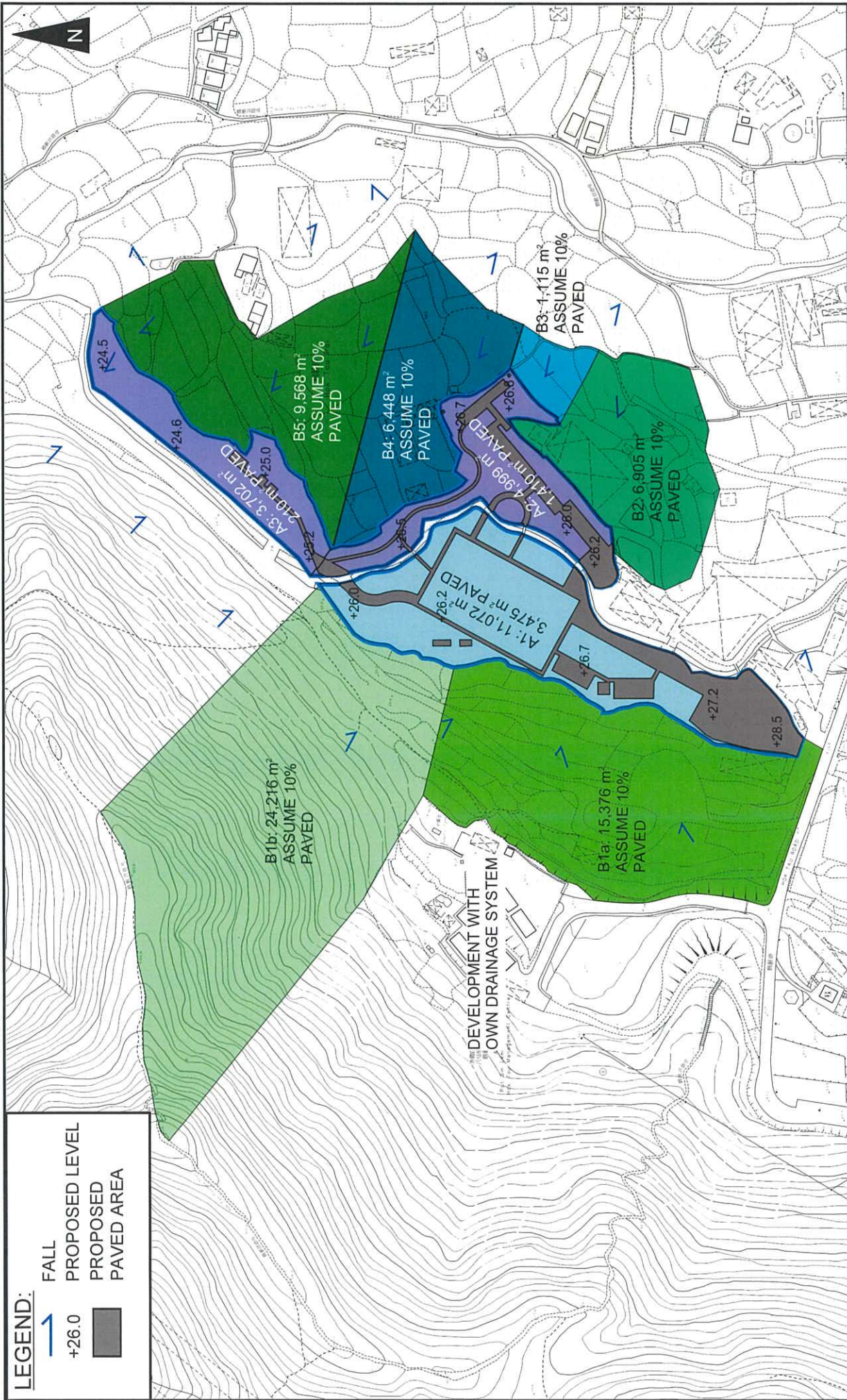
**FIGURE 4-1**


**LOCATION:**

Various Lot in D.D. 76 and Adjoining Government Land, Hok Tau, Fanling, New Territories



VER	DESCRIPTION	DATE



<p><b>PROJECT:</b> Proposed Temporary Place of Recreation, Sports or Culture (Horse Riding Centre and Barbecue Site) and Holiday Camp with Ancillary Facilities for a Period of 3 Years in "Agriculture" Zone and Associated Filling of Land</p>	<p><b>TITLE:</b> CATCHMENT PLAN</p>	<p><b>FIGURE NUMBER:</b> FIGURE 4-2</p>
<p><b>LOCATION:</b> Various Lot in D.D. 76 and Adjoining Government Land, Hok Tau, Fanling, New Territories</p>		
	<p>VER</p>	<p>DESCRIPTION</p>
		<p>DATE</p>

# APPENDIX

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# Appendix A: Design Calculation

**Zone** North District

Return Period 1 in 10 years

**n** 0.014

**Ks** 0.15

**Viscosity** 0.000001

**Storm Constant**

North District a	454.9
North District b	3.44
North District c	0.412

**Time of Concentration Checking**

Catchment	Flow Distance (m)	Highest Level (mPD)	Lowest Level (mPD)	Gradient (per 100m)	10 min's (m/s)	15 min's (m/s)
A	75	36.7	28.5	10.033	2.6	2.6

**Catchment Area Table (Area in m<sup>2</sup>)**

Catchment	A1	A2	A3	B1a	B1b	B2	B3	B4	B5	Total Site Area (After Development)	Total Site Area (Before Development)
Total Area	11,071	4,909	3,702	15,376	24,216	6,905	1,115	6,446	5968	13772	10772
Hard Paved Area	3,475	1,410	710	1,536	2,422	891	112	645	566.8	5055.00	3906.00
Unpaved Area	7,596	3,499	3,032	13,839	21,794	6,014	1,003	5,801	329.2	10,717.00	11,876.00
Equivalent Area	5,980	2,596	2,422	6,304	9,929	2,931	497	2,644	3022.88	9077.20	10457.00

Pavement Type	Hard Paved	Unpaved
Runoff Coefficient	0.85	0.25

## DRAINAGE DESIGN

Item	Total Equivalent Area (m <sup>2</sup> ) (1)	ToC (min) (2)	Intensity (mm/hr) (3)	Total Discharge (m <sup>3</sup> /s) (4)	V (m/s) (5)	Capacity (m <sup>3</sup> /s) (6)	Utilization (%) (7)	Remark
Design of Channel LUC1 for Catchment, A1,B1a	1284	2.60	216.83	0.74	2.43	0.99	74.8%	
Design of Channel LUC2 for Catchment, A1,B1a,B1b	22193	2.60	216.83	1.34	2.78	1.69	71.1%	
Design of Channel LUC3 for Catchment, A1	5960	2.60	216.83	0.36	2.05	0.51	70.9%	
Design of Channel LUC4 for Catchment, A2,B2	5427	2.60	216.83	0.33	1.88	0.46	70.9%	
Design of Channel LUC5 for Catchment, A2,B2,B3,B4	8528	2.60	216.83	0.51	2.05	0.66	60.2%	
Design of Channel LUC6 for Catchment, A2,B3	3053	2.60	216.83	0.18	1.69	0.31	74.4%	
Design of Channel LUC7 for Catchment, A2,B3,B4	5696	2.60	216.83	0.34	1.86	0.46	41.6%	
Design of Channel LUC8 for Catchment, A3	1422	2.60	216.83	0.09	1.64	0.21	63.7%	
Design of Channel LUC9 for Catchment, A3,B5	5345	2.60	216.83	0.32	2.05	0.51		

1) Sum of Area in Catchment Table

2)  $t = (L + b)^2$

3)  $1.487 S^{0.785}$  Kennedy's Equation Area

4) Channel Manning Equation, Pipe Colebrook-White Equation

5)  $1.487 S^{0.785}$

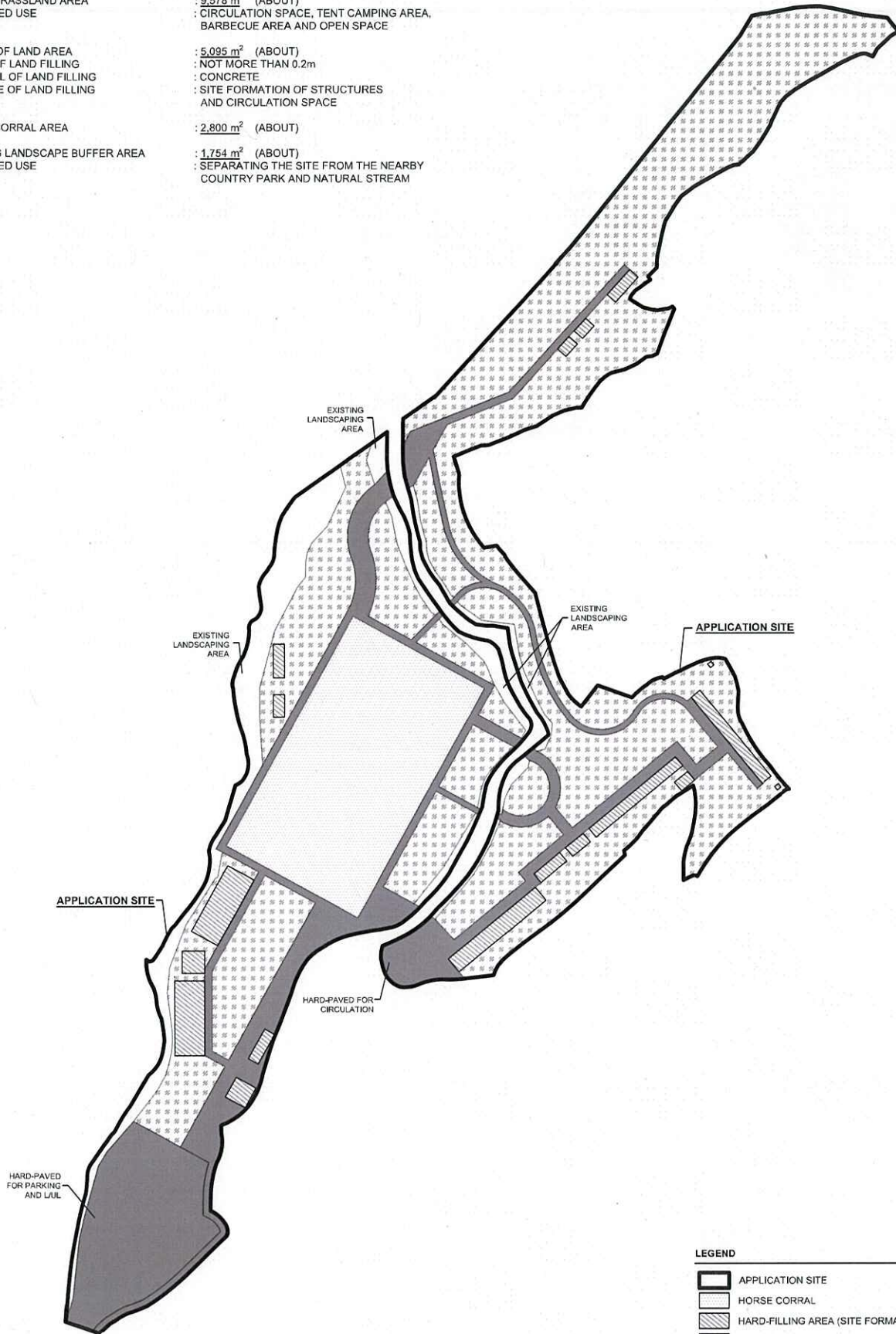
6) Less than 99% for 10% allowance for siltation



# APPENDIX B - PROPOSED SITE LAYOUT PLAN

**PAVED RATIO OF THE APPLICATION SITE**

APPLICATION SITE AREA	: 19,227 m <sup>2</sup> (ABOUT)
LAWN / GRASSLAND AREA PROPOSED USE	: 9,578 m <sup>2</sup> (ABOUT) : CIRCULATION SPACE, TENT CAMPING AREA, BARBECUE AREA AND OPEN SPACE
FILLING OF LAND AREA DEPTH OF LAND FILLING MATERIAL OF LAND FILLING PURPOSE OF LAND FILLING	: 5,095 m <sup>2</sup> (ABOUT) : NOT MORE THAN 0.2m : CONCRETE : SITE FORMATION OF STRUCTURES AND CIRCULATION SPACE
HORSE CORRAL AREA	: 2,800 m <sup>2</sup> (ABOUT)
EXISTING LANDSCAPE BUFFER AREA PROPOSED USE	: 1,754 m <sup>2</sup> (ABOUT) : SEPARATING THE SITE FROM THE NEARBY COUNTRY PARK AND NATURAL STREAM



**LEGEND**

	APPLICATION SITE
	HORSE CORRAL
	HARD-FILLING AREA (SITE FORMATION OF STRUCTURE)
	HARD-FILLING AREA (CIRCULATION SPACE)
	LAWN AREA
	EXISTING LANDSCAPE BUFFER AREA

PLANNING CONSULTANT



PROJECT

PROPOSED TEMPORARY PLACE OF RECREATION, SPORTS OR CULTURE (HORSE RIDING CENTRE AND BARBECUE SITE) AND HOLIDAY CAMP WITH ANCILLARY FACILITIES FOR A PERIOD OF 3 YEARS AND ASSOCIATED FILLING OF LAND

ADDRESS

VARIOUS LOTS IN D.D. 76 AND ADJOINING GOVERNMENT LAND, HOK TAU, FANLING, NEW TERRITORIES

SCALE

1 : 1500 @ A4

DRAWN BY

MN

DATE

31.7.2024

REVISED BY

DATE

TITLE

FILLING OF LAND

DWG NO.

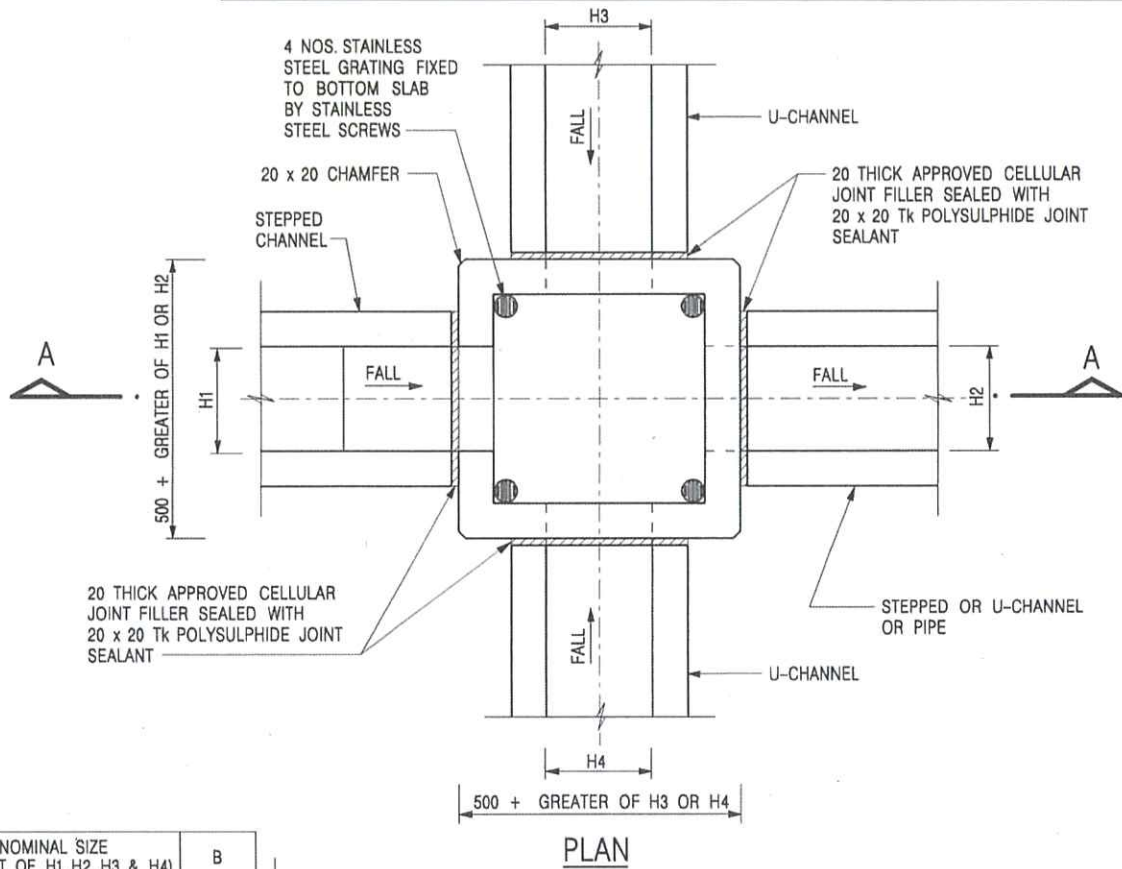
PLAN 6

VER.

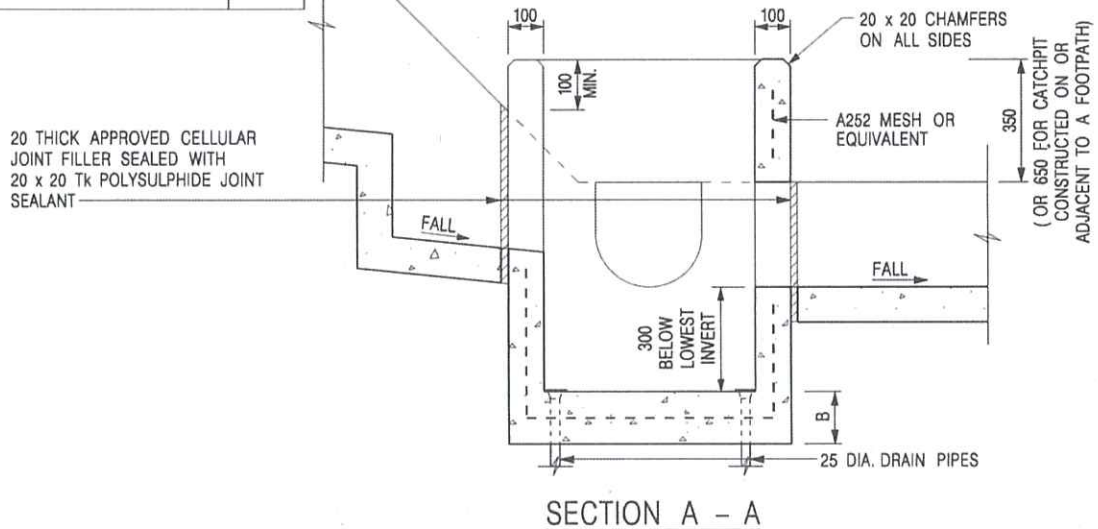
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# Appendix C - Reference Drawings



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.

CATCHPIT WITH TRAP  
(SHEET 1 OF 2)

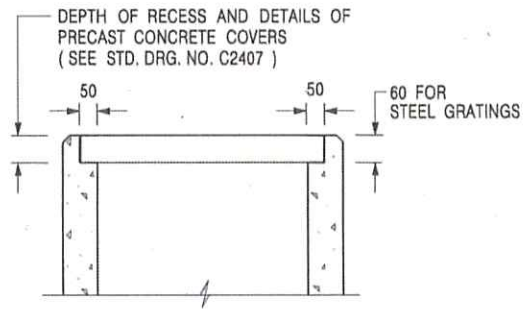
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REF.	REVISION	SIGNATURE	DATE



CIVIL ENGINEERING AND  
DEVELOPMENT DEPARTMENT

SCALE 1 : 20  
DATE JAN 1991

DRAWING NO.  
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)**



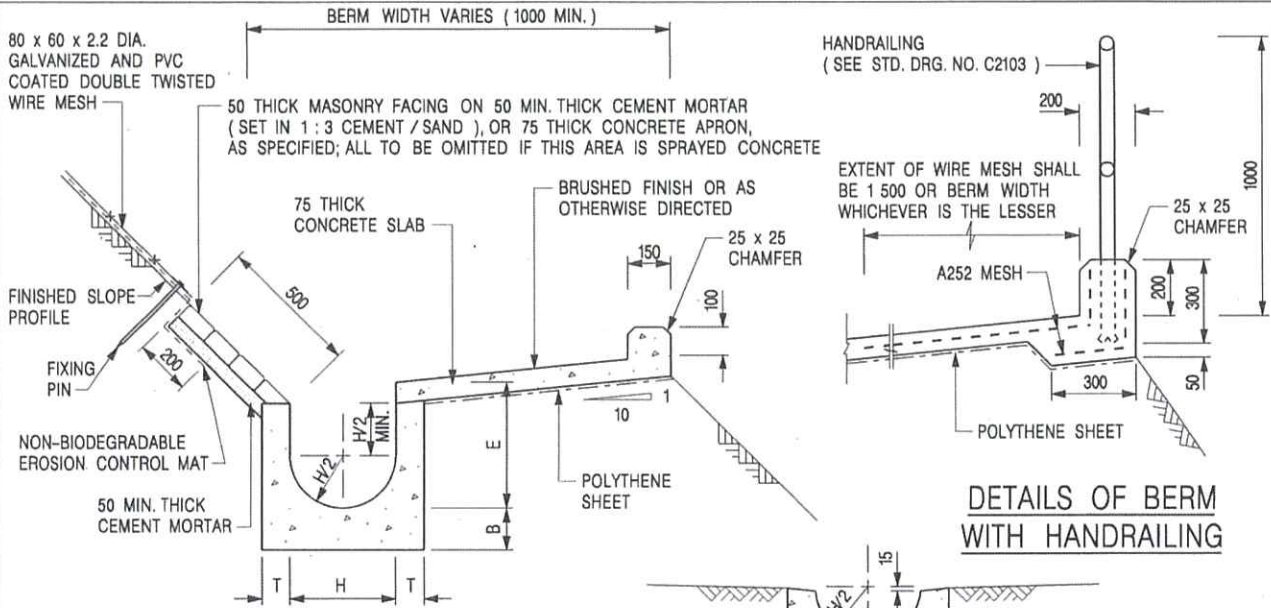
**CIVIL ENGINEERING AND  
DEVELOPMENT DEPARTMENT**

**SCALE** 1 : 20

**DRAWING NO.**

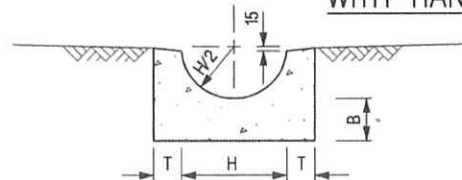
**DATE** JAN 1991

**C2406 /2A**

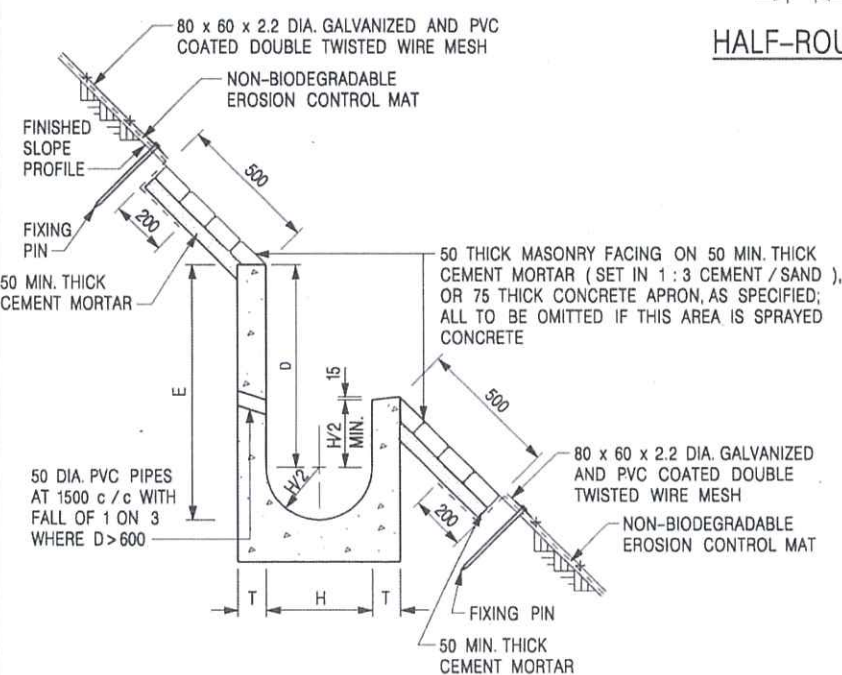


**DETAILS OF BERM WITH HANDRAILING**

**U-CHANNELS CONSTRUCTED ON BERM**



**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/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

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

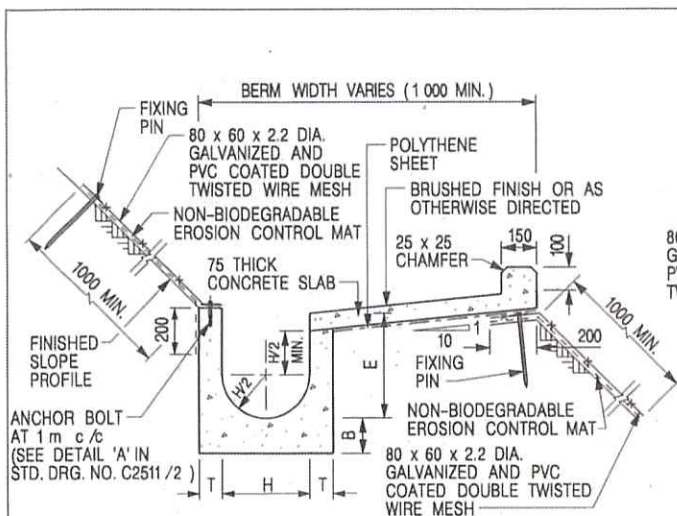
**DETAILS OF HALF-ROUND AND U-CHANNELS (TYPE A - WITH MASONRY APRON)**



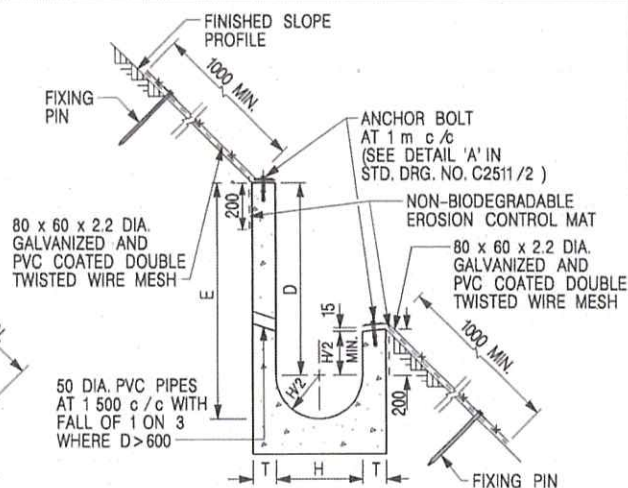
**CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT**

**SCALE** 1 : 25  
**DATE** JAN 1991

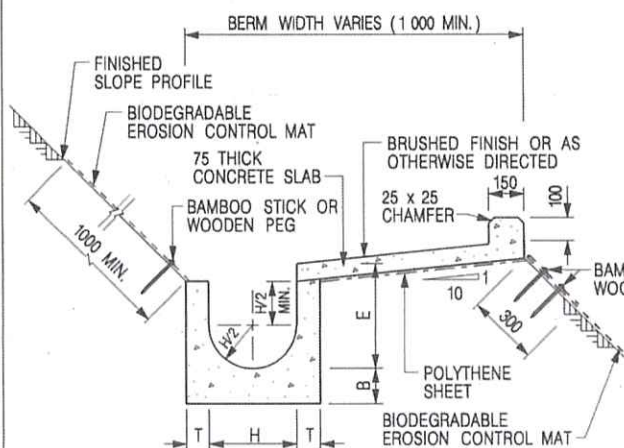
**DRAWING NO.**  
**C24091**



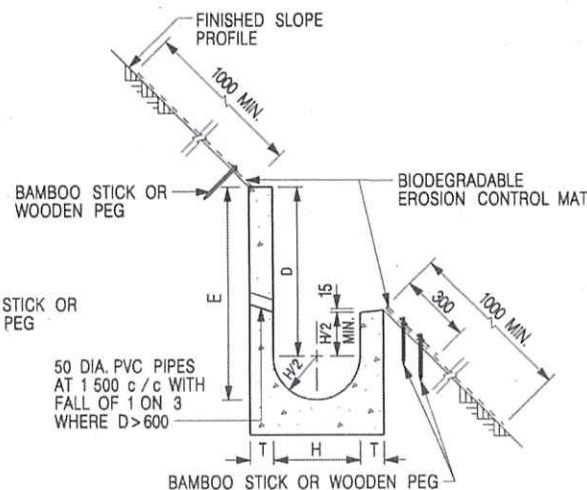
**U-CHANNELS CONSTRUCTED ON BERM WITH NON-BIODEGRADABLE EROSION CONTROL MAT**



**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
375 - 600	100	150	WHEN E > 650
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

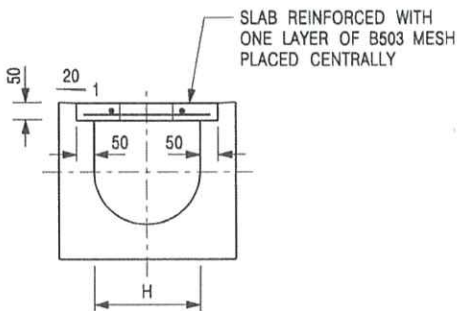
**DETAILS OF HALF-ROUND AND U-CHANNELS (TYPE B - WITH EROSION CONTROL MAT APRON)**



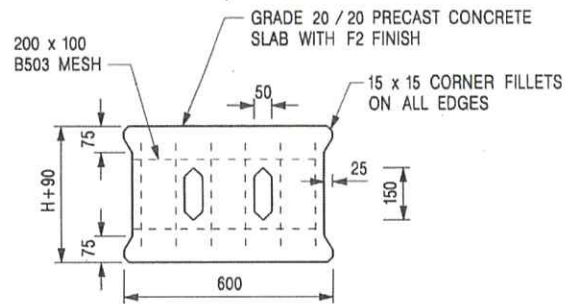
**CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT**

**SCALE** DIAGMATIC  
**DATE** JAN 1991

**DRAWING NO.**  
**C24101**



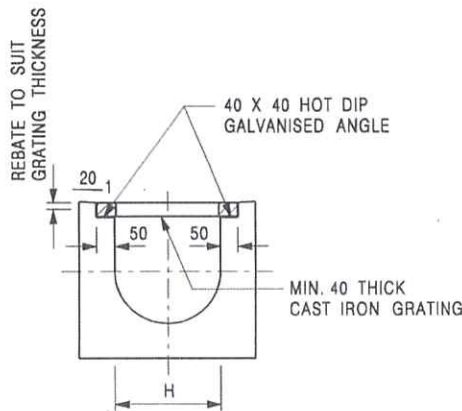
TYPICAL SECTION



PLAN OF SLAB

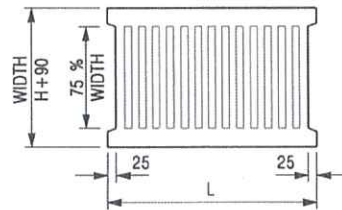
U-CHANNELS WITH PRECAST CONCRETE SLABS

(UP TO H. OF 525)



TYPICAL SECTION

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



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

CAST IRON GRATING

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



CIVIL ENGINEERING AND  
DEVELOPMENT DEPARTMENT

SCALE 1 : 20

DRAWING NO.

DATE JAN 1991

C2412E