R-Riches
Property Consultants Ltd.

盈卓物業
顧問有限公司

Our Ref.: DD107 Lot 490 & VL
Your Ref.: TPB/A/YL-KTN/1032

The Secretary,
Town Planning Board,
15/F, North Point Government Offices,
333 Java Road,
North Point, Hong Kong

By Email

13 September 2024

Dear Sir,

1st Further Information

Proposed Temporary Warehouse (Excluding Dangerous Goods Godown) with Ancillary Facilities for a Period of 3 Years and Associated Filling of Land in "Agriculture" Zone, Various Lots in D.D. 107 and Adjoining Government Land, Fung Kat Heung, Kam Tin, Yuen Long, New Territories

(S.16 Planning Application No. A/YL-KTN/1032)

We write to submit a drainage impact assessment for the subject application to address departmental comments from the Drainage Services Department (**Appendix I**).

Should you require more information regarding the application, please contact our Mr. Louis TSE at or the undersigned at your convenience.
Thank you for your kind attention.

Yours faithfully,

For and on behalf of
R-riches Property Consultants Limited

Christian CHIM
Town Planner

cc DPO/FSYLE, PlanD (Attn.: Ms. Andrea YAN email: awyyan@pland.gov.hk)
(Attn.: Mr. David CHENG email: dcccheng@pland.gov.hk)
(Attn.: Ms. Olivia NG email: olyng@pland.gov.hk)

Proposed Temporary Warehouse (excluding Dangerous Goods Godown) with Ancillary Facilities for a Period of 3 Years and Associated Filling of Land in "Agriculture" Zone in Various Lots in D.D. 107 and Adjoining Government Land, Fung Kat Heung, Kam Tin, Yuen Long, New Territories

Drainage Impact Assessment

September 24

Prepared by:
Marvellous Construction & Design Company Limited
For Harvest Hill (Hong Kong) Limited

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 Lots in D.D. 107 and Adjoining Government Land (GL), Fung Kat Heung, Kam Tin, Yuen Long, New Territories (the Site) for 'Proposed Temporary Warehouse (excluding Dangerous Goods Godown) 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 near Fung Kat Heung. It has an area of approx. 14,061 m^2. The site location is shown in **Figure 1**.

1.2.2 A large portion of the site was the approved site under A/YL-KTN/939 by the same applicant, in which the site area is currently hard paved (in north of east of the site). The other area is mainly coved by vegetation.

1.2.3 The existing site levels are proposed to be raised to +5.6 mPD from +3.1~3.7 mPD in order to match with existing road level adjacent to the site.

1.2.4 There are an existing 1500mm pipes constructed under A/YL-KTN/939. One end of the pipes is in close proximity to the application site, the other end was connected to a branch channel to Kam Tin 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 14,061 m^2. A large portion of the site was the approved site under A/YL-KTN/939 by the same applicant, in which the site area is currently hard paved (in north of east of the site). The other area is mainly coved by vegetation.

2.1.2 After the development the site would be fully paved. The catchment plan is shown in **Figure 4**.

Proposed Development	
Total Site Area (m^2)	14,061
Paved Area after Development (m^2)	14,061

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

a	=	485
b	=	3.11
c	=	0.397

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: $v = \frac{R^{\frac{1}{6}}}{n} R^{\frac{1}{2}} S_f^{\frac{1}{2}}$

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:

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

where,

V	=	velocity of the pipe flow (m/s)
S_f	=	hydraulic gradient
k_f	=	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 internal and external catchment. They are proposed to connect to existing 1500mm drains which eventually discharge to Kam Tin River. The utilization of the existing 1500mm drains is not more than 40% according to **Appendix A**.

4.1.2 In addition, a channel starting from SP7 (UC10) collecting runoff from existing catchment is proposed to connect to existing drains at the east of the site. As the equivalent area to the drain is reduced after the development, there is no additional flow to the existing drain due to the development (please refer to **Appendix A** and **Figure 3-3**).

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 3-1 to Figure 3-3**. The catchment plan is shown in **Figure 4**.

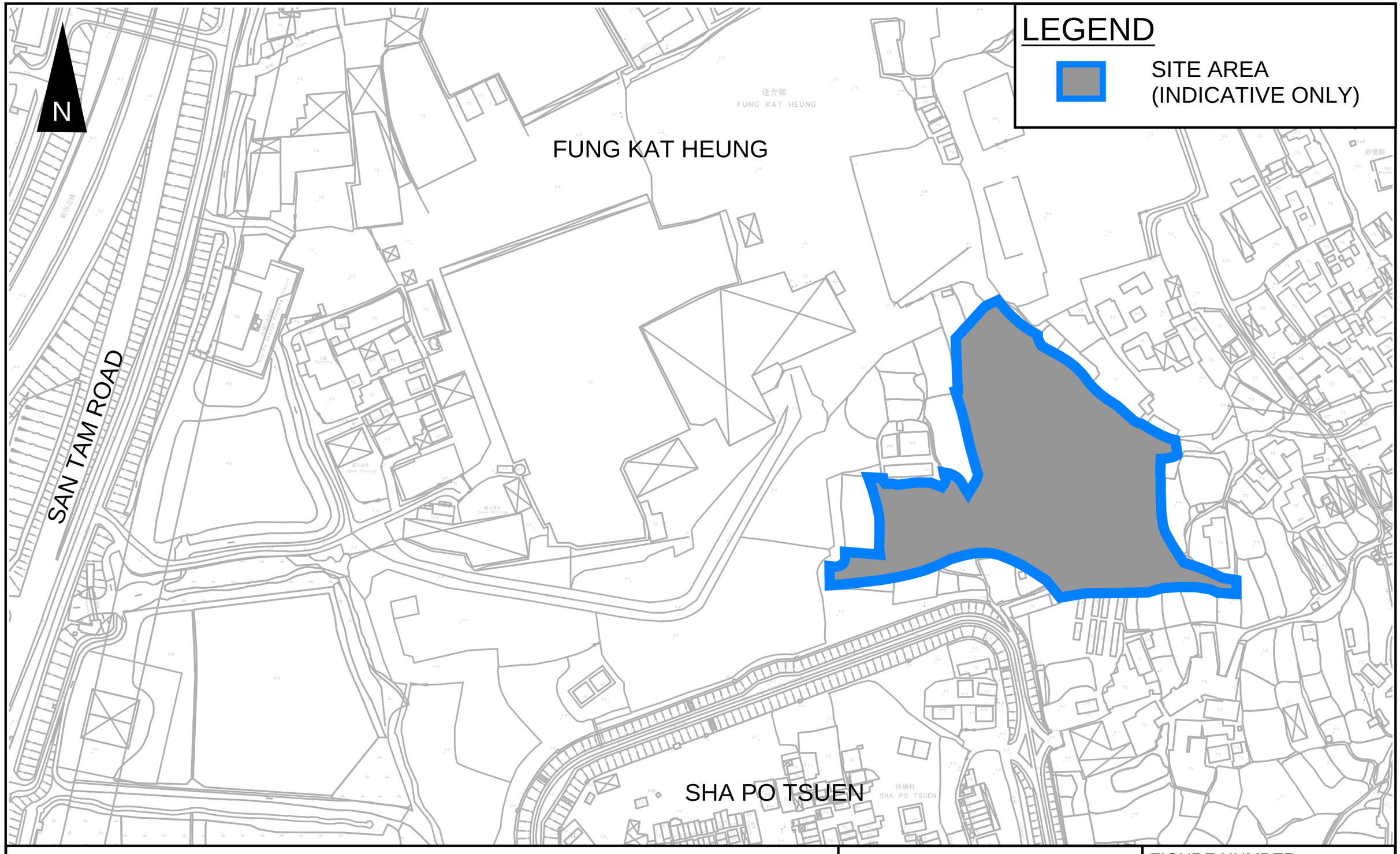
4.1.5 Reference Drawings are shown in **Appendix C** for reference.

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 drainage system. With implementation of the above drainage system, the no unacceptable drainage impact is anticipated.

- End of Text -

FIGURES



PROJECT:
Proposed Temporary Warehouse (excluding Dangerous Goods Godown) with Ancillary Facilities for a Period of 3 Years and Associated Filling of Land in “Agriculture” Zone

TITLE
SITE LOCATION PLAN

FIGURE NUMBER
FIGURE 1

LOCATION:
Various Lots in D.D. 107 and Adjoining Government Land, Fung Kat Heung, Kam Tin, Yuen Long, New Territories

MARVELLOUS
CONSTRUCTION & DESIGN COMPANY LIMITED

VER	DESCRIPTION	DATE

LEGEND

SITE AREA
(INDICATIVE ONLY)

EXISTING DRAIN
(DIVERTED UNDERGROUND UNDER A/YL-KTN/939, NO ADDITIONAL DIVERSION REQUIRED)

EXISTING 1500mm CONCRETE PIPE
(CONSTRUCTED UNDER PLANNING APPROVAL OF A/YL-KTN/939)

PHOTO DIRECTION

PHOTO: DISCHARGE POINT OF EXISTING 1500mm CONCRETE PIPE

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 Warehouse (excluding Dangerous Goods Godown) with Ancillary Facilities for a Period of 3 Years and Associated Filling of Land in “Agriculture” Zone

TITLE
EXISTING DRAINAGE PLAN

FIGURE NUMBER
FIGURE 2

LOCATION:
Various Lots in D.D. 107 and Adjoining Government Land, Fung Kat Heung, Kam Tin, Yuen Long, New Territories

MARVELLOUS
CONSTRUCTION & DESIGN COMPANY LIMITED

VER	DESCRIPTION	DATE

LEGEND:

- SITE AREA (INDICATIVE ONLY)
- PROPOSED CHANNEL AND CATCHPIT (INTERNAL)
- PROPOSED CHANNEL AND CATCHPIT (EXTERNAL)
- EXISTING 1500mm CONCRETE PIPE (CONSTRUCTED UNDER PLANNING APPROVAL OF A/YL-KTN/939)

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. DRAINAGE SCHEDULE SHALL REFER TO FIGURE 3-2.
4. LOCATION OF CATCHPITS ARE APPROX. ONLY.
5. SOLID COVER ARE TO BE PROVIDED FOR ALL CATCHPIT.

N

CP2.01
CP2.02
SP2
SP1
CP1.01
SP3
CP3.01
UC4
UC6
UC1
DISCHARGE TO EXISTING STREAM
CP2.07
CP2.05
SP5
CP5.01
CP5.02
CP5.03
UC8
CP2.03
UC4
CP2.04
CP2.06
UC5
CP2.09
CP2.10
CP2.08
UC9
UC2
UC3
CP1.05
CP1.02
CP7.03
UC10
CP7.02
SP4
CP1.03
CP1.04
UC7
CP7.01
SP7
SP6
CP1.07
CP1.06
CP6.02
CP6.01
CP4.01
EXISTING MANHOLE A
EXISTING MANHOLE B
EXISTING MANHOLE C
EXISTING MANHOLE D
EXISTING MANHOLE E
EXISTING DISCHARGE POINT
TO KAM TIN RIVER
沙埔村
SHA PO TSUEN

PROJECT: Proposed Temporary Warehouse (excluding Dangerous Goods Godown) with Ancillary Facilities for a Period of 3 Years and Associated Filling of Land in “Agriculture” Zone	TITLE PROPOSED DRAINAGE PLAN	FIGURE NUMBER FIGURE 3-1
LOCATION: Various Lots in D.D. 107 and Adjoining Government Land, Fung Kat Heung, Kam Tin, Yuen Long, New Territories	MARVELLOUS CONSTRUCTION & DESIGN COMPANY LIMITED	VER / DESCRIPTION / DATE

PIT SCHEDULE

PIT #	GROUND LEVEL	INVERT LEVEL
Internal Catchment		
SP1	5.60	5.00
CP1.01	5.60	4.82
CP1.02	5.60	4.77
CP1.03	5.60	4.48
CP1.04	5.60	4.42
CP1.05	5.60	4.11
CP1.06	5.60	3.47
CP1.07	5.60	3.44
SP2	5.60	5.00
CP2.01	5.60	4.64
CP2.02	5.60	4.51
CP2.03	5.60	4.16
CP2.04	5.60	4.09
CP2.05	5.60	4.02
CP2.06	5.60	3.97
CP2.07	5.60	3.80
CP2.08	5.60	3.61
CP2.09	5.60	3.52
CP2.10	5.60	3.49
SP3	5.60	5.08
CP3.01	5.60	5.03
SP4	5.60	5.08
CP4.01	5.60	5.04
External Catchment		
SP5	3.50	3.13
CP5.01	3.50	2.96
CP5.02	3.10	2.73
CP5.03	3.10	2.68
SP6	5.00	4.63
CP6.01	5.00	4.21
CP6.02	3.60	3.23
SP7	5.00	4.55
CP7.01	5.00	4.49
CP7.02	5.00	3.95
CP7.03	5.00	3.89

PROPOSED CHANNEL

Uchannel (Internal)
Proposed Channel UC1, 600 mm, 1 in 200
Proposed Channel UC2, 600 mm, 1 in 200
Proposed Channel UC3, 750 mm, 1 in 200
Proposed Channel UC4, 600 mm, 1 in 200
Proposed Channel UC5, 600 mm, 1 in 200
Proposed Channel UC6, 525 mm, 1 in 150
Proposed Channel UC7, 525 mm, 1 in 200
Uchannel (External)
Proposed Channel UC8, 375 mm, 1 in 330
Proposed Channel UC9, 375 mm, 1 in 200
Proposed Channel UC10, 450 mm, 1 in 150

Channel Alignment refer to Figure 3-1

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.THIS DRAWING SHALL BE READ IN CONJUNCTION WITH FIGURE 3-1.
4.COVER LEVELS ARE APPROX. ONLY.

PROJECT:
Proposed Temporary Warehouse (excluding Dangerous Goods Godown) with Ancillary Facilities for a Period of 3 Years and Associated Filling of Land in “Agriculture” Zone

TITLE
DRAINAGE SCHEDULE

FIGURE NUMBER
FIGURE 3-2

LOCATION:
Various Lots in D.D. 107 and Adjoining Government Land, Fung Kat Heung, Kam Tin, Yuen Long, New Territories

MARVELLOUS
CONSTRUCTION & DESIGN COMPANY LIMITED

VER	DESCRIPTION	DATE

N

LEGEND

SITE AREA
(INDICATIVE ONLY)

REDUCTED CATCHMENT OF
EXISTING STREAM DUE TO
THE DEVELOPMENT

5,609 m²

ADDTIIONAL CATCHMENT
OF EXISTING STREAM DUE
TO THE DEVELOPMENT

2,116 m²

沙埔村
SHA PO TSUEN

PROJECT:

Proposed Temporary Warehouse (excluding Dangerous Goods Godown) with Ancillary Facilities for a Period of 3 Years and Associated Filling of Land in “Agriculture” Zone

LOCATION:
Various Lots in D.D. 107 and Adjoining Government Land, Fung Kat Heung, Kam Tin, Yuen Long, New Territories

TITLE
EXISTING STREAM - CHANGE OF CATCHMENT

FIGURE NUMBER
FIGURE 3-3

MARVELLOUS
CONSTRUCTION & DESIGN COMPANY LIMITED

VER	DESCRIPTION	DATE

LEGEND:

FALL

+5.7 EXISTING LEVEL

+5.6 PROPOSED LEVEL

EXISTING DEVELOPMENT WITH OWN DRAINS

EXISTING DEVELOPMENT WITH OWN DRAINS

B5: 1,759 m²
ASSUME 90% PAVED

B4: 1,469 m²
ASSUME
100% PAVED

B3: 4,114 m²
ASSUME
50% PAVED

B1: 2,791 m²
ASSUME
10% PAVED

A1: 2,136 m²

A2: 2,028 m²

A3: 4,441 m²

A4: 5,456 m²

B2:3,288 m²
ASSUME
10% PAVED

EXISTING DEVELOPMENT WITH OWN DRAINS

EXISTING DEVELOPMENT WITH OWN DRAINS

+5.7 +5.6 +3.7 +6.1 +6.0 +5.7 +5.6 +3.7 +5.4 +3.1 +5.6 +3.6 +5.6 +5.2 +4.6

N

SHA PO TSUEN

PROJECT:
Proposed Temporary Warehouse (excluding Dangerous Goods Godown) with Ancillary Facilities for a Period of 3 Years and Associated Filling of Land in “Agriculture” Zone

TITLE
CATCHMENT PLAN

FIGURE NUMBER
FIGURE 4

LOCATION:
Various Lots in D.D. 107 and Adjoining Government Land, Fung Kat Heung, Kam Tin, Yuen Long, New Territories

MARVELLOUS
CONSTRUCTION & DESIGN COMPANY LIMITED

VER	DESCRIPTION	DATE

APPENDIX

Appendix A: Design Calculation

Zone

HKO

Return Period	1 in	10	years

n	0.014
Ks	0.15
Viscosity	0.000001

Storm Constant		
	HKO a	485
	HKO b	3.11
	HKO c	0.397

Catchment Area Table (Area in m^2)

Catchment	A1	A2	A3	A4	B1	B2	B3	B4	B5	Total Site Area		REDUCED CATCHMENT OF EXISTING STREAM DUE TO THE DEVELOPMENT *	ADDTIIONAL CATCHMENT OF EXISTING STREAM DUE TO THE DEVELOPMENT (from SP7) *	
Total Area	2136	2028	4441	5456	2791	3288	4114	1469	1759	14061		5609	2116	
Hard Paved Area	2136	2028	4441	5456	837.3	328.8	2057	1469	1583.1	14061.00		560.90	1058.00	
Unpaved Area	0	0	0	0	1953.7	2959.2	2057	0	175.9	0.00		5048.10	1058.00	
Equival. Area	2029.2	1926.6	4218.95	5183.2	1479.23	1348.08	2674.1	1395.55	1565.51	13357.95		2299.69	1375.40	

Pavement Type	Hard Paved	Green
Runoff Coefficient	0.95	0.35

For channel from SP7 (UC10) to existing stream

*As Equival. Area is reduced (2299.69 > 1375.4), the total flow to existing stream is reduced.

Area refer to Figure 3-3

DRAINAGE DESIGN

Item	Total Equivalent Area m2 (1)	ToC min	Intensity mm/hr (2)	Total Discharge m3/s (3)		Size mm	Gradient 1 in	V m/s (4)	Capacity m3/s (5)	Utilitization (6)	Remark
Design of Channel UC1 for Catchment, A4,B4	6579	5.00	211.28	0.39		600	200	1.78	0.57	68%	
Design of Channel UC2 for Catchment, A2,A4,B4	8505	6.67	196.17	0.46		600	200	1.78	0.57	81%	
Design of Channel UC3 for Catchment, Total Site Area,B4,B5	16319	7.94	186.89	0.85		750	200	2.06	1.03	82%	From CP1.07 to Existing Manhole A
Design of Channel UC4 for Catchment, A3,B5	5784	5.00	211.28	0.34		600	200	1.78	0.57	60%	
Design of Channel UC5 for Catchment, A1,A3,B5	7814	6.71	195.83	0.43		600	200	1.78	0.57	75%	
Design of Channel UC6 for Catchment, A4,B4	6579	5.00	211.28	0.39		525	150	1.88	0.46	84%	
Design of Channel UC7 for Catchment, A4	5183	5.00	211.28	0.30		525	200	1.62	0.40	76%	
Review of Existing MH A to B, Catchment: Total Site Area,B1,B2,B4,B5	19146	7.94	186.89	0.99		1500	1142	1.42	2.51	40%	Existing 1500mm Drains
Review of Existing MH B to C, Catchment: Total Site Area,B1,B2,B4,B5	19146	9.01	180.15	0.96		1500	1087	1.46	2.58	37%	Existing 1500mm Drains
Review of Existing MH C to D, Catchment: Total Site Area,B1,B2,B4,B5	19146	9.88	175.26	0.93		1500	772	1.74	3.07	30%	Existing 1500mm Drains
Review of Existing MH D to E, Catchment: Total Site Area,B1,B2,B4,B5	19146	10.40	172.55	0.92		1500	1300	1.33	2.35	39%	Existing 1500mm Drains
Review of Existing MH E to Outlet, Catchment: Total Site Area,B1,B2,B4,B5	19146	11.21	168.59	0.90		1500	267	2.99	5.28	17%	Existing 1500mm Drains
Design of Channel UC8 for Catchment, B1	1479	5.00	211.28	0.09		375	330	1.01	0.13	69%	
Design of Channel UC9 for Catchment, B2	1348	5.00	211.28	0.08		375	200	1.30	0.16	49%	
Design of Channel UC10 for Catchment, B3	2674	5.00	211.28	0.16		450	150	1.69	0.31	51%	

1) Sum of Area in Catchment Table

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

3) 0.278 x Intensity x Equivalent Area

4) Channel: Manning Equation, Pipe Colebrook-White Equation

5) Q = A x V

6) Less than 90%, for 10% allowance for siltation

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

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

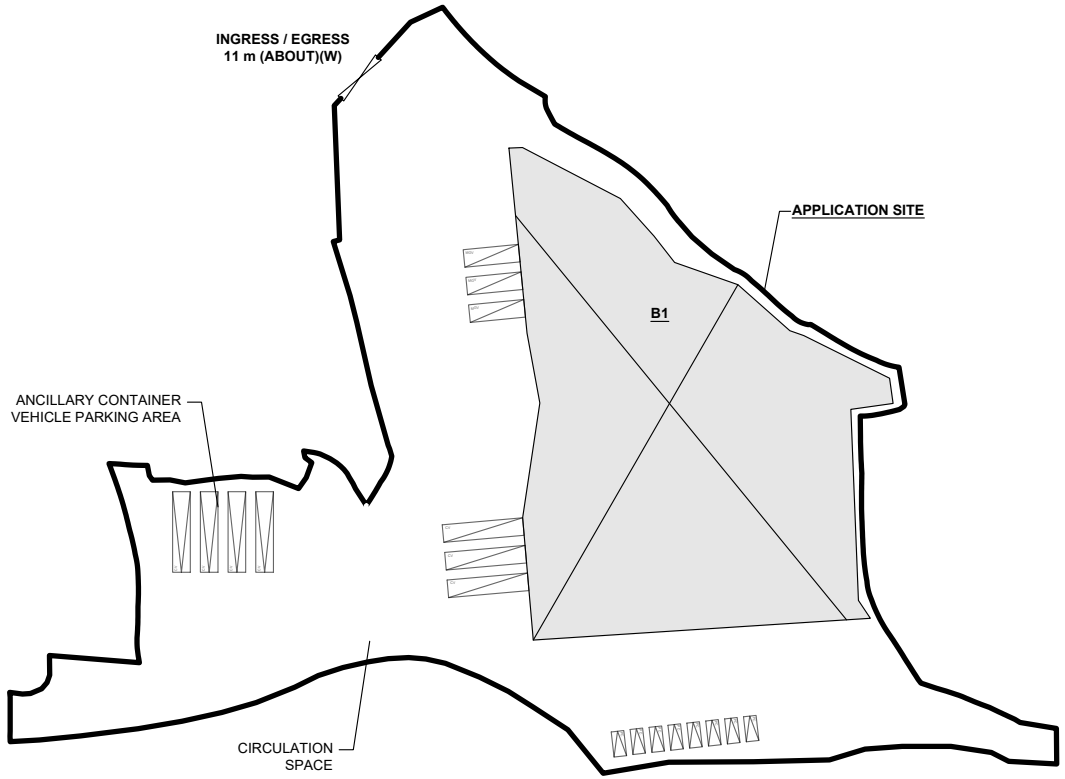
APPENDIX B - PROPOSED SITE LAYOUT PLAN

DEVELOPMENT PARAMETERS

APPLICATION SITE AREA	: 14,061 m^2	(ABOUT)
COVERED AREA	: 4,912 m^2	(ABOUT)
UNCOVERED AREA	: 9,149 m^2	(ABOUT)
PLOT RATIO	: 0.70	(ABOUT)
SITE COVERAGE	: 35 %	(ABOUT)
NO. OF STRUCTURE	: 1	
DOMESTIC GFA	: NOT APPLICABLE	
NON-DOMESTIC GFA	: 9,824 m^2	(ABOUT)
TOTAL GFA	: 9,824 m^2	(ABOUT)
BUILDING HEIGHT	: 16.5 m	(ABOUT)
NO. OF STOREY	: 2	

		AREA		HEIGHT
B1	WAREHOUSE (EXCLUDING D.G.G.), SITE OFFICE, WASHROOM	4,912 m^2 (ABOUT)	9,824 m^2 (ABOUT)	16.5 m (ABOUT)(2-STOREY)
	TOTAL	**4,912 m^2 (ABOUT)**	**9,824 m^2 (ABOUT)**	

**D.G.G. - DANGEROUS GOODS GODOWN*



PARKING AND LOADING / UNLOADING PROVISIONS

NO. OF PRIVATE CAR PARKING SPACE	: 8
DIMENSION OF PARKING SPACE	: 5 m (L) x 2.5 m (W)
NO. OF CONTAINER VEHICLEPARKING SPACE	: 4
DIMENSION OF PARKING SPACE	: 16 m (L) x 3.5 m (W)
NO. OF L/UL SPACE FOR MEDIUM GOODS VEHICLE	: 3
DIMENSION OF L/UL SPACE	: 11 m (L) x 3.5 m (W)
NO. OF L/UL SPACE FOR CONTAINER VEHICLE	: 3
DIMENSION OF L/UL SPACE	: 16 m (L) x 3.5 m (W)

LEGEND

- APPLICATION SITE
- STRUCTURE
- PARKING SPACE (PC)
- LOADING / UNLOADING SPACE (MGV)
- LOADING / UNLOADING SPACE (CV)
- INGRESS / EGRESS

W — E, S

PLANNING CONSULTANT

R-Riches Property Consultants Ltd.

PROJECT

PROPOSED TEMPORARY WAREHOUSE (EXCLUDING DANGEROUS GOODS GODOWN) WITH ANCILLARY FACILITIES FOR A PERIOD OF 3 YEARS AND ASSOCIATED FILLING OF LAND

SITE LOCATION

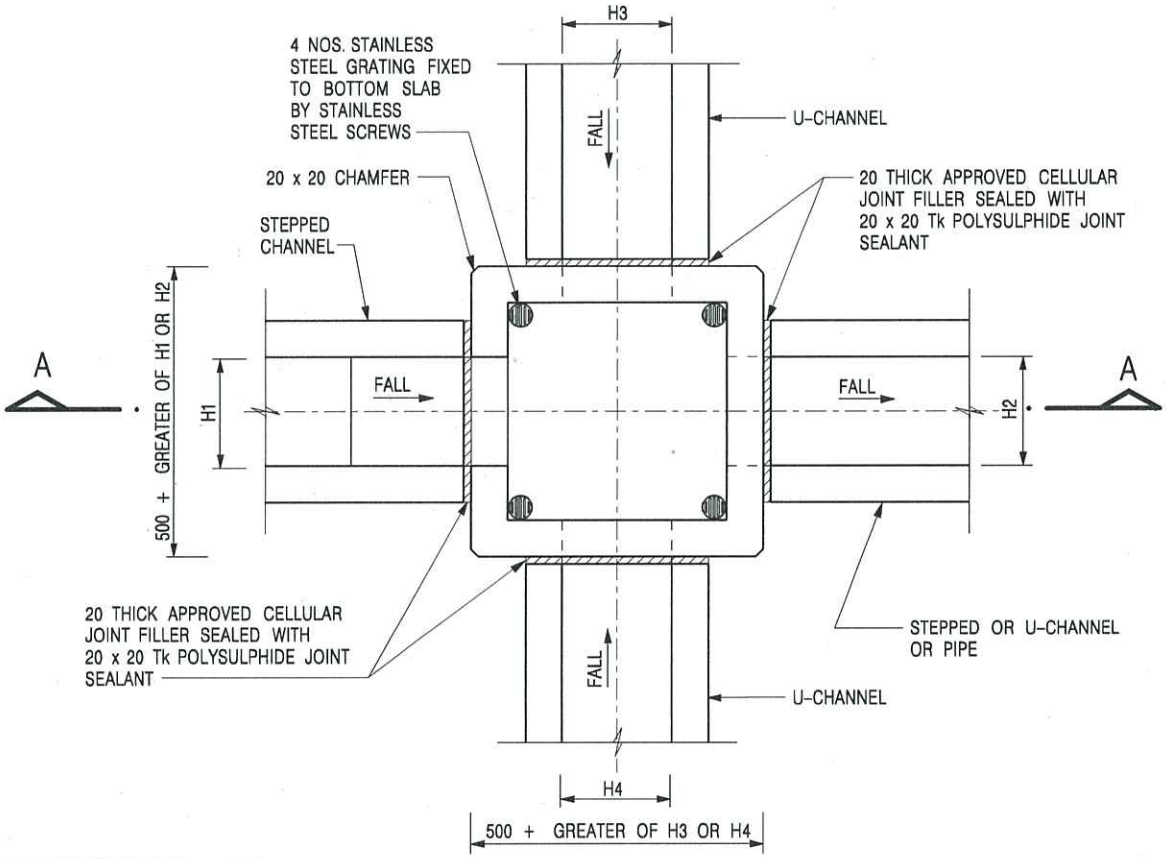
VARIOUS LOTS IN D.D. 107 AND ADJOINING GOVERNMENT LAND, KAM TIN, YUEN LONG, NEW TERRITORIES

SCALE: 1 : 1500 @ A4

DRAWN BY	DATE
MN	6.6.2024
REVISED BY	DATE
APPROVED BY	DATE

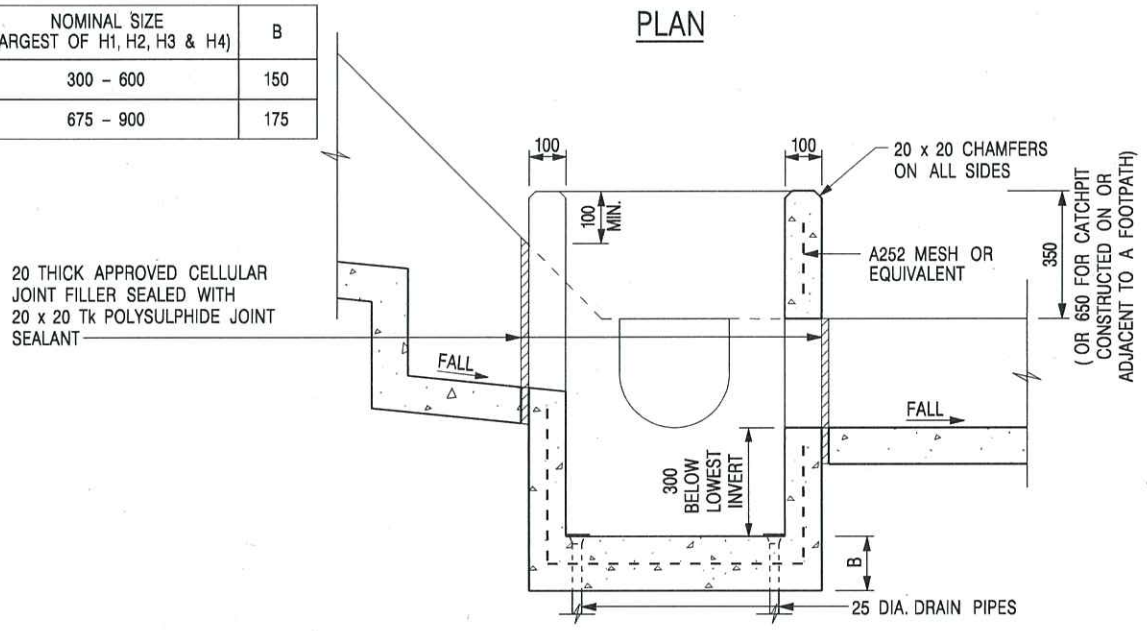
DWG. TITLE: LAYOUT PLAN

DWG NO.	VER.
PLAN 4	001



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)

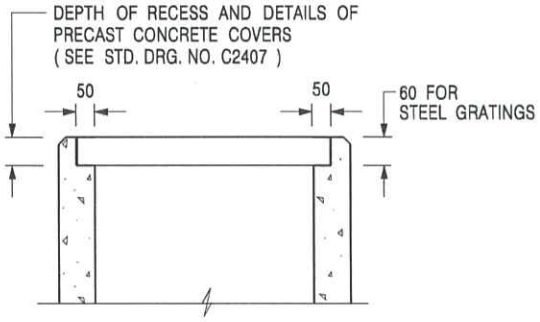
CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

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

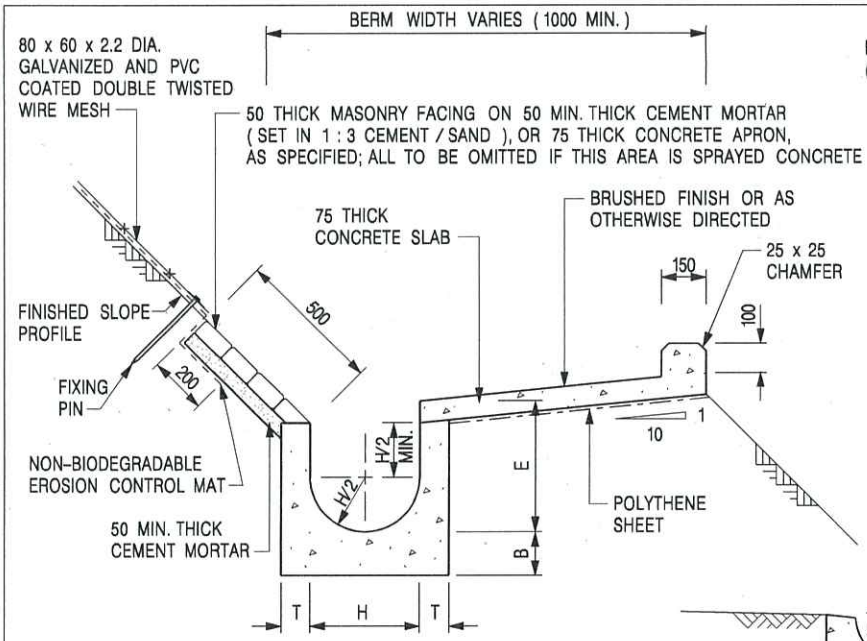
CATCHPIT WITH TRAP
(SHEET 2 OF 2)

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

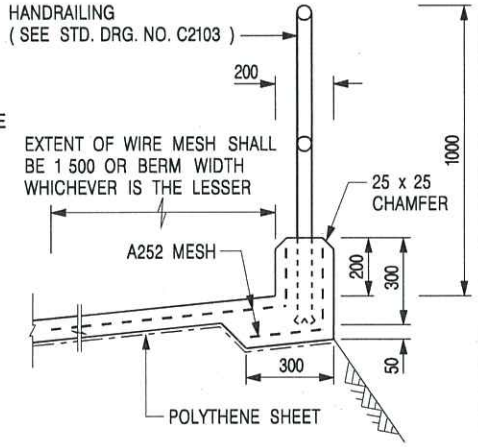
SCALE 1 : 20

DATE JAN 1991

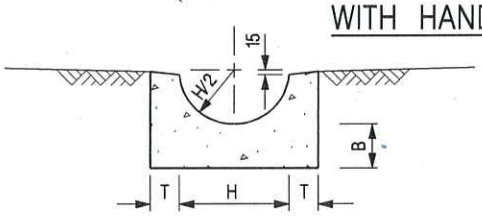
DRAWING NO. C2406 /2A



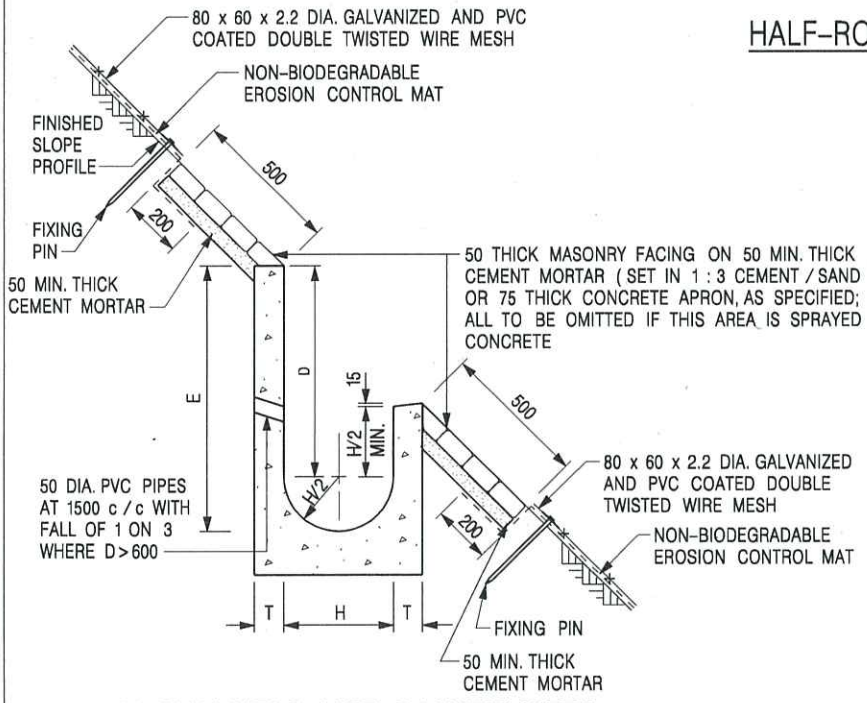
U-CHANNELS CONSTRUCTED ON BERM



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)

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SCALE 1 : 25

DATE JAN 1991

DRAWING NO. C2409I

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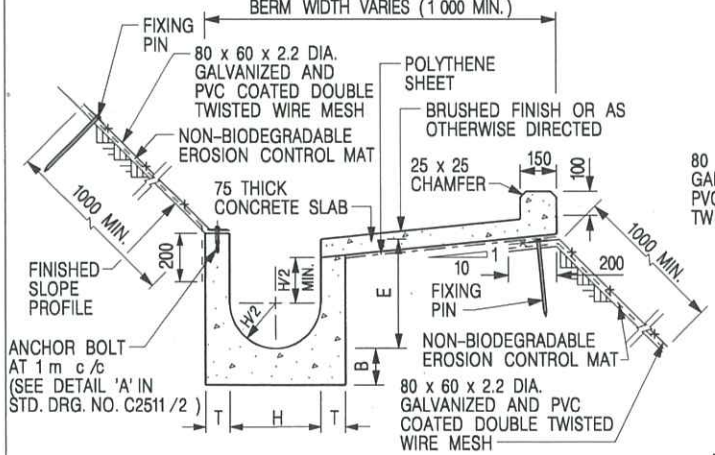
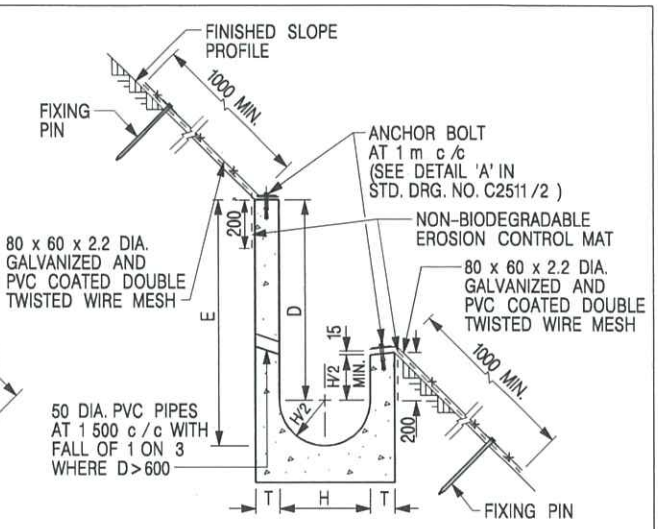
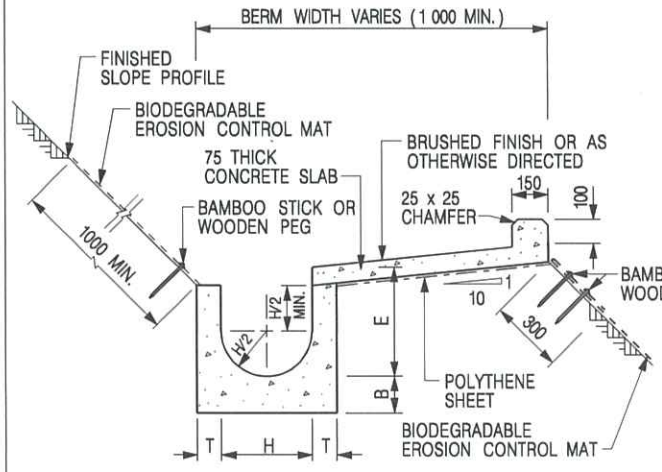


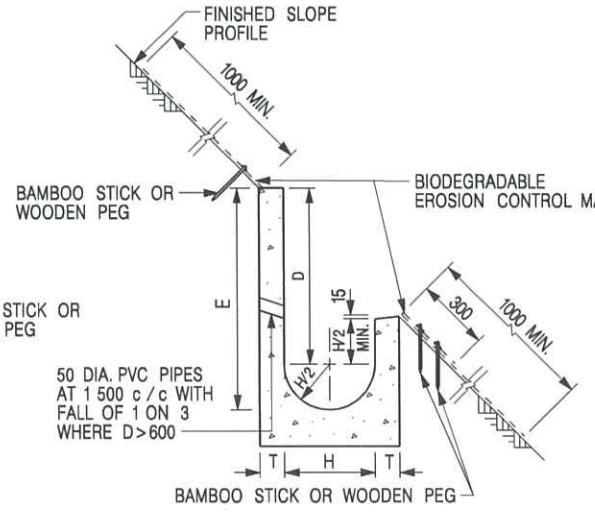
U-CHANNELS CONSTRUCTED ON BERM WITH NON-BIODEGRADABLE EROSION CONTROL MAT



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

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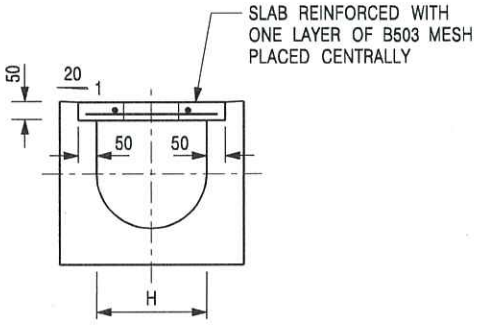
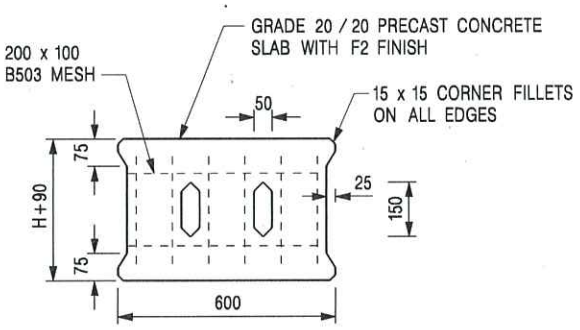


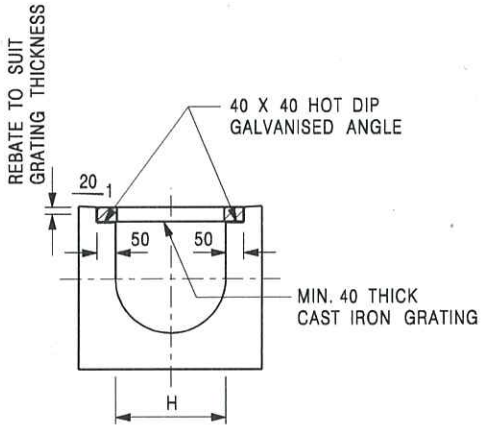
TYPICAL SECTION



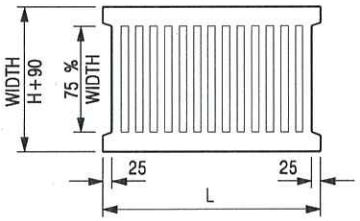
PLAN OF SLAB

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