

規 劃 署

粉嶺、上水及元朗東規劃處
新界荃灣青山公路 388 號
中環大廈 22 樓 2202 室



Planning Department

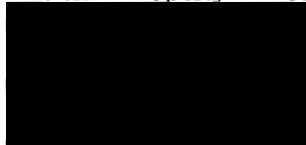
Fanling, Sheung Shui & Yuen Long East
District Planning Office
Unit 2202, 22/F, CDW Building,
388 Castle Peak Road, Tsuen Wan, N.T.

By Post & Fax (2323 3662)

來函編號 Your Reference :
本署編號 Our Reference : TPB/A/YL-PH/967
電話號碼 Tel. No. :
傳真號碼 Fax No. : [REDACTED]

31 December 2024

R-riches Property Consultants Limited



(Attn.: Matthew NG / Danny NG)

Dear Sir/Madam,

Proposed Temporary Warehouse (excluding Dangerous Goods Godown) with Ancillary Facilities for a Period of 3 Years and Filling of Land in "Residential (Group D)" Zone, Lots 14 S.B RP, 15 S.B RP, 16, 17, 18, 19 RP and 20 S.B RP (Part) in D.D. 111, Pat Heung, Yuen Long (Planning Application No. A/YL-PH/967)

Compliance with Approval Condition (e) - Submission of a Drainage Proposal

I refer to your submission via email dated 23.8.2024 for compliance with the captioned approval condition. Relevant department has been consulted on your submission. Your submission is considered:

- ☒ Acceptable. The captioned condition has been complied with. Please find detailed departmental comment(s) in **Appendix**.
- ☐ Acceptable. Since the captioned condition requires both the submission and implementation of the proposal, it has not been fully complied with. Please proceed to implement the accepted proposal for full compliance with the approval condition.
- ☐ Not acceptable. The captioned condition has not been complied with.

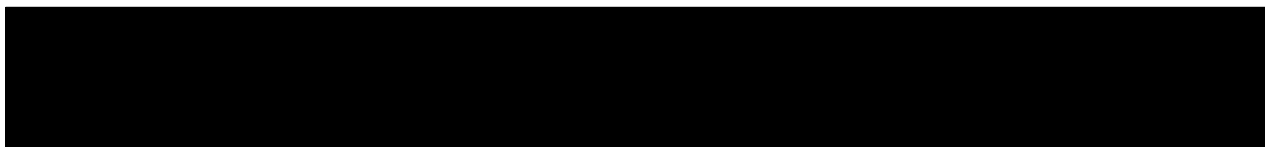
Should you have any enquiries, please contact [REDACTED] of the Drainage Services Department at [REDACTED]

Yours faithfully,

(Adrian TO)

for District Planning Officer/
Fanling, Sheung Shui and Yuen Long East
Planning Department

- 2 -



Appendix**Detailed Comments of the Chief Engineer/Mainland North, Drainage Services Department**

The applicant is reminded to implement the drainage facilities on the application site in accordance with the agreed drainage proposal. The applicant is required to maintain all the drainage facilities on site in good condition and ensure that the proposed development would neither obstruct overland flow nor adversely affect exiting natural streams, village drains, ditches and the adjacent areas etc. The applicant is also required to rectify the drainage system at their own expense to the satisfaction of government parties concerned if they are found to be inadequate or ineffective during operation.

Your Ref.: TPB/A/YL-PH/967

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

By Email

23 August 2024

Dear Sir,

Compliance with Approval Condition (e)

**Proposed Temporary Warehouse (excluding Dangerous Goods Godown) with Ancillary Facilities
for a Period of 3 Years and Associated Filling of Land in “Residential (Group D)” Zone,
Various Lots in D.D. 111, Pat Heung, Yuen Long, New Territories**

(S.16 Planning Application No. A/YL-PH/967)

We are writing to submit a response-to-comments table and a revised drainage proposal for compliance with approval condition (e) of the subject application, i.e. *the submission of a drainage proposal* (**Appendices I and II**).

Should you require more information regarding the application, please contact our [REDACTED] or the undersigned at your convenience. Thank you for your kind attention.

For and on behalf of
R-riches Property Consultants Limited



Matthew NG
Planning and Development Manager

Appendix I – Response to comments of the Chief Engineer/Mainland North, Drainage Services Department (CE/MN, DSD)

Comments of the CE/MN, DSD (Contact Person: Mr. Kenneth CHAN; Tel. No.: 2300 1259)		
(a)	The details of drainage schedule are not tally with the drainage details shown in figure 3.	Noted. The schedule and Figure 3 are updated (Appendix II).
(b)	CP1 .6 is missing from figure 3.	Please note the last catchpit before the discharge point should be CP2.8 instead of CP 1.6. The schedule and Figure 3 are updated accordingly (Appendix II).
(c)	Please confirm the last catchpit at the southern discharge point is CP1.6 or CP2.8 and rectify the details in figure 3 as necessary.	The schedule and Figure 3 are updated accordingly. Please note the last catchpit before the discharge point is CP2.8 (Appendix II).
(d)	The I.L. for CP2.6 in figure 3 is incorrect.	Noted. The typo is updated. IL of CP 2.6 is 39.77.
(e)	Please indicate the C.L. at discharge points in connection details A. Please also show the bottom level of the existing approx. 5m width channel at the proposed discharge points in connection details A.	Noted. Please refer to updated Figure 3 (Appendix II).
(f)	Please show the Manning coefficient (n) adopted for the design calculations.	Please note the manning coefficient $n = 0.016$ is adopted for the design calculation. The value is shown in Appendix A for reference (Appendix II).
(g)	Please take into account of the rainfall increase due to climate change as stipulated in Stormwater Drainage Manual Corrigendum No. 1/2022 for the design calculation.	Please kindly note the site is proposed for temporary warehouse for a period of 3 years. It is a long period away from the Mid 21th Century (years 2041 to 2060). It is considered that the rainfall use is the design calculation is suitable for the situation (Appendix II).

PROPOSED TEMPORARY WAREHOUSE (EXCLUDING DANGEROUS GOODS GODOWN) WITH ANCILLARY FACILITIES
FOR A PERIOD OF 3 YEARS AND FILLING OF LAND VARIOUS LOTS IN D.D. 111, PAT HEUNG, YUEN LONG

Drainage Appraisal

PROPOSED TEMPORARY WAREHOUSE (EXCLUDING
DANGEROUS GOODS GODOWN) WITH ANCILLARY
FACILITIES FOR A PERIOD OF 3 YEARS AND FILLING
OF LAND VARIOUS LOTS IN D.D. 111, PAT HEUNG,
YUEN LONG

DRAINAGE PROPOSAL
(FOR APPROVAL CONDITON (c) UNDER
PLANNING APPLICTION NO. A/YL-PH/967)

August 2024

Table of Content

1. Introduction	1
1.1 Background	1
1.2 The Site	1
2. Development Proposal.....	2
2.1 The Proposed Development	2
3. Assessment Criteria	2
4. Proposed Drainage System	5
5. Conclusion	5

List of Table

Table 1 - Key Development Parameters	2
Table 2– Design Return Periods under SDM	2

List of Figure

Figure 1 – Site Location Plan
Figure 2 - Existing Drainage Plan
Figure 3 – Proposed Drainage System
Figure 4 – Catchment Plan

List of Appendix

Appendix A – Design Calculation
Appendix B - Development Layout Plan
Appendix C – Reference Drawings for UChannel and Catchpit
Appendix D – Drainage Schedule

1. Introduction

1.1 Background

- 1.1.1 With reference to the approval on planning application of A/YL-PH/967, in which the application seeks planning permission for proposed temporary warehouse (excluding dangerous goods godown) with ancillary facilities for a period of 3 years and filling of land at the development site.
- 1.1.2 This Drainage Proposal aim to discharge/fulfil the planning approval condition (c) and to support the development in drainage aspect.

1.2 The Site

- 1.2.1 The Development Site was situated beside Fan Kam Road. It has an area of about 3,510 m². The existing site is mostly paved. The site location plan is shown in **Figure 1**.
- 1.2.2 The existing ground level of the site is approx. +40.6 mPD. The site is proposed to be filled by concrete not more than 0.2m.
- 1.2.3 There is an existing approx. 5m width channel located between Fan Kam Road and the Development Site. Existing Drainage Plan and Site Photo of existing channel are shown in **Figure 2** for reference.
- 1.2.4 Proposed Development Layout plan is shown in **Appendix B** for reference.

2. Development Proposal

2.1 The Proposed Development

2.1.1 The total site area is approximately 3,510 m². The indicative development schedule is summarized in **Table 1** below for technical assessment purpose. The catchment plan is shown in **Figure 4**.

Proposed Development	
Total Site Area (m ²)	3,510
Paved Area (m ²)	3,510
Assume all proposed site area as paved area for assessment purpose	

Table 1 - Key Development Parameters

3. Assessment Criteria

3.1.1 The Recommended Design Return Period based on Flood Level from SDM (Table 10) is adopted for this DP. 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 village drainage system intended to collect runoff from the internal site and external catchment from the east. It is proposed discharge to existing approx. 5m width channel at the west of the site. 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 Headquarters Rainfall Zone. Therefore, for 10 years return period, the following values are adopted.

a	=	485
b	=	3.11
c	=	0.397

(Corrigendum No.1/2024)

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:

- Paved Area: C = 0.95
- 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 _f	=	roughness value (m)
v	=	kinematics viscosity of fluid
D	=	pipe diameter (m)
R	=	hydraulic radius (m)

6. The Brandsby William's Equation is used to determine the time of concentration.

$$t_o = \frac{0.1446L}{H^{0.2} A^{0.1}}$$

where	t _o	=	time of concentration of a natural catchment (min.)
	A	=	catchment area (m ²)
	H	=	average slope (m per 100 m), measured along the line of natural flow, from the summit of the catchment to the point under consideration
	L	=	distance (on plan) measured on the line of natural flow between the summit and the point under consideration (m)

4. Proposed Drainage System

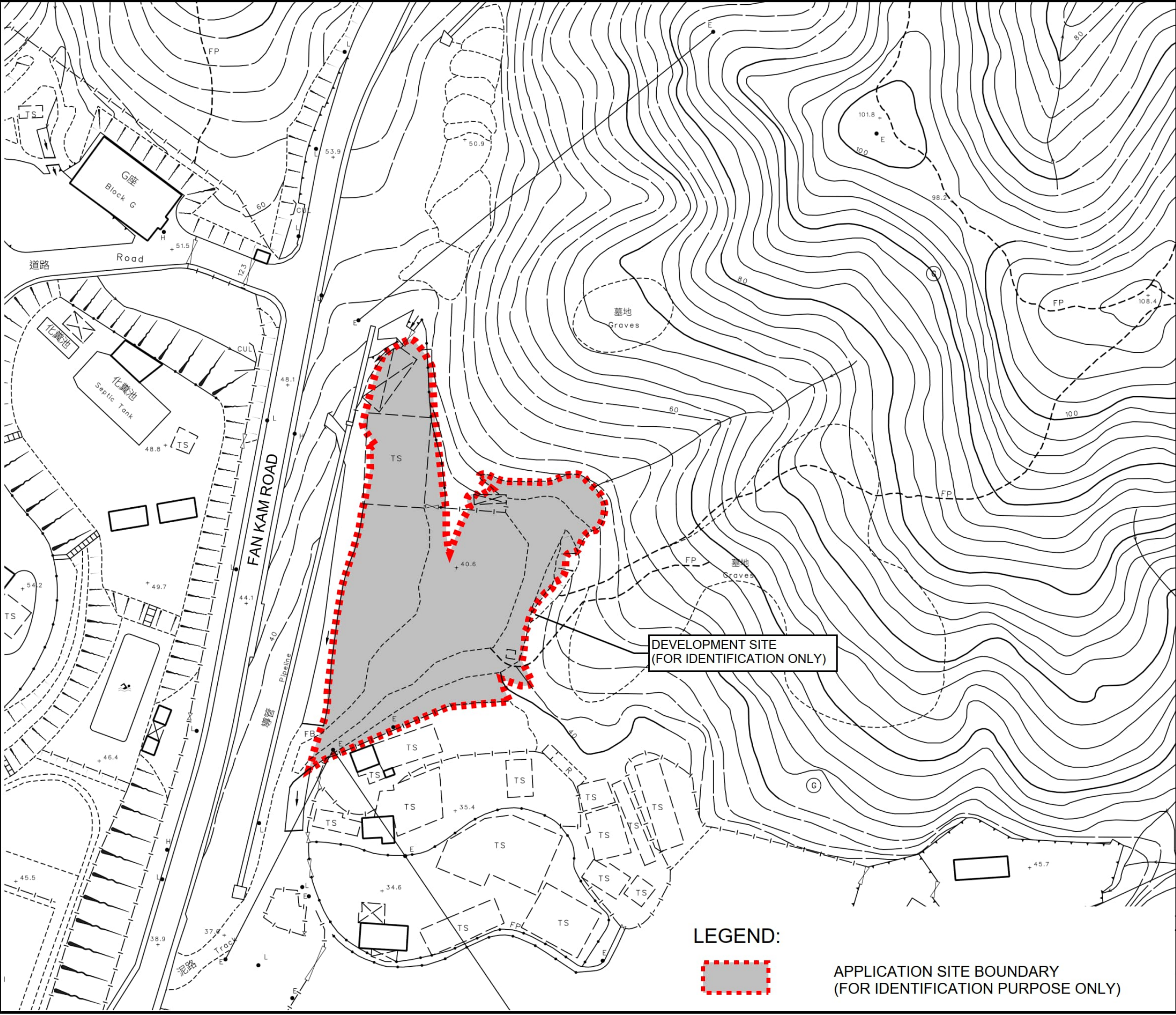
- 4.1.1 Proposed drainage system is designed for collection of runoff from the development site and external catchment in the east. It is proposed to discharge to existing approx. 5m width channel beside the site in the west. The alignment, size and gradient of the proposed drains are shown in **Figure 3**. The catchment plan is shown in **Figure 4**.
- 4.1.2 The design calculations of proposed drains are shown in **Appendix A**.
- 4.1.3 The reference standard drawings of drains are shown in **Appendix C**.

5. Conclusion

- 5.1.1 A drainage appraisal has been conducted for the Proposed Development. The surface runoff from the Application Site will be collected by the proposed drains and discharged to the existing channel beside Kam Sheung Road.
- 5.1.2 With the proposed drainage system, it is anticipated that there will be no significant drainage impact to the area after the implementation of the development.

- End of Text -

FIGURES



PROJECT:
PROPOSED TEMPORARY
WAREHOUSE (EXCLUDING
DANGEROUS GOODS
GODOWN) WITH
ANCILLARY FACILITIES
FOR A PERIOD OF 3 YEARS
AND FILLING OF LAND
VARIOUS LOTS IN D.D. 111,
PAT HEUNG, YUEN LONG

REV	DESCRIPTION	DATE
-----	-------------	------

DRAWING TITLE
SITE LOCATION PLAN

DRAWING NUMBER
FIGURE 1



SITE PHOTO



PROJECT:
PROPOSED TEMPORARY
WAREHOUSE (EXCLUDING
DANGEROUS GOODS
GODOWN) WITH
ANCILLARY FACILITIES
FOR A PERIOD OF 3 YEARS
AND FILLING OF LAND
VARIOUS LOTS IN D.D. 111,
PAT HEUNG, YUEN LONG

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		
			EXISTING CHANNEL		

REV	DESCRIPTION	DATE
-----	-------------	------

DRAWING TITLE
EXISTING DRAINAGE
PLAN

DRAWING NUMBER
FIGURE 2

UCHANNEL TYPE
UCHANNEL 1 (UC1) - 375mm, MIN. 1 IN 200
UCHANNEL 2 (UC2) - 600mm, MIN. 1 IN 200
UCHANNEL 3 (UC3) - 600mm, MIN. 1 IN 200
UCHANNEL 4 (UC4) - 525mm, MIN. 1 IN 200

LEGEND:

APPLICATION SITE BOUNDARY
(FOR IDENTIFICATION PURPOSE ONLY)

EXISTING CHANNEL

PROPOSED SANDTRAP

PROPOSED CATCHPIT W/TRAP

PROPOSED UCHANNEL

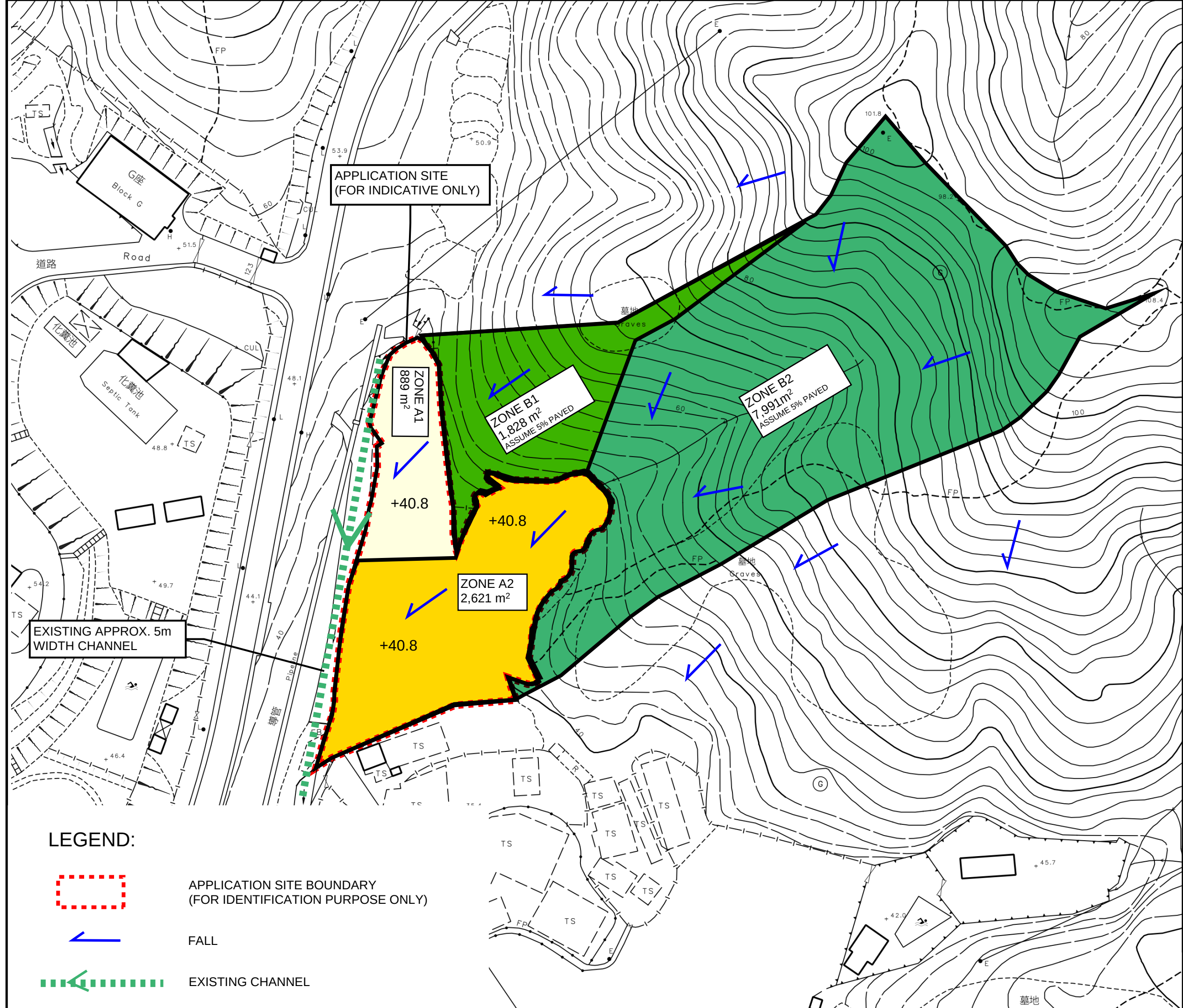
PROJECT:
PROPOSED TEMPORARY
WAREHOUSE (EXCLUDING
DANGEROUS GOODS
GODOWN) WITH
ANCILLARY FACILITIES
FOR A PERIOD OF 3 YEARS
AND FILLING OF LAND
VARIOUS LOTS IN D.D. 111,
PAT HEUNG, YUEN LONG

The main site plan illustrates the proposed drainage system layout. It includes numerous catchpits (CP) and manholes (P) with their respective invert (IL), centerline (CL), and proposed uchannel (UC) details. Key features include: Block G, Road, Septic Tank, Graves, and various contour lines. The plan shows the integration of existing and proposed infrastructure, with specific callouts for 'CONNECTION DETAIL A' and 'CONNECTION DETAIL B'. The area is divided into sections by dashed lines, and various labels like 'TS' (Top of Soil) and 'FP' (Filling Point) are present.

NOTES:
1. INVERT LEVEL OF CONNECTION POINT SHOULD
BE VERIFIED ON SITE BEFORE CONSTRUCTION.

Two detailed cross-section diagrams, labeled 'CONNECTION DETAIL A' and 'CONNECTION DETAIL B', show the proposed uchannel (UC) connecting to an existing channel. Both diagrams indicate a 'FALL' direction and provide specific elevation data for the connection points. Detail A shows a connection to an existing channel with a width of approximately 5m, with elevations ranging from +40.8 to +38.0. Detail B shows a similar connection with elevations ranging from +36.9 to +35.7.

REV	DESCRIPTION	DATE
DRAWING TITLE PROPOSED DRAINAGE SYSTEM		
DRAWING NUMBER FIGURE 3		



PROJECT:
PROPOSED TEMPORARY
WAREHOUSE (EXCLUDING
DANGEROUS GOODS
GODOWN) WITH
ANCILLARY FACILITIES
FOR A PERIOD OF 3 YEARS
AND FILLING OF LAND
VARIOUS LOTS IN D.D. 111,
PAT HEUNG, YUEN LONG

REV	DESCRIPTION	DATE
-----	-------------	------

DRAWING TITLE
CATCHMENT PLAN

DRAWING NUMBER
FIGURE 4

APPENDIX

Appendix A - Design Calculation

(n =0.016)

U Channel 1 (Zone A1 + B1)

Runoff Estimation			
Design Return Period		1 in	10 years
Paved Area	889 + 1828 x 0.05 =		980 (m2)
Unpaved Area	1828 x 0.95 =		1737 (m2)
Total Equivalent Area	980 x 0.95 + 1737 x 0.35 =		1539 (m2)
Time of Concentration			3.93 min
Rainfall Intensity, I *			223 mm/hr
Design Discharge Rate, Q	0.278 x 1539 x 223 / 1000000 =		0.096 m3/s

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

U Channel			
Channel Size			375 (mm)
Gradient		1 in	200
Area	$\pi \times 0.38^2 / 8 + 0.38 \times 0.38 / 2 =$		0.126 (m ²)
Wetted Perimeter	$\pi \times 0.38 / 2 + 0.38 / 2 \times 2 =$		0.964 (m)
R	0.126 / 0.964 =		0.130 (m)
Velocity	$v = \frac{R^{\frac{1}{6}}}{n} R^{\frac{1}{2}} S_f^{\frac{1}{2}}$		1.14 m/s
Capacity			0.143 m3/s

Utilization 0.096 / 0.143 = 67.09 % OK (less than 90%, for 10% siltation allowance)

U Channel 2 (Zone A2 + B2)

Runoff Estimation			
Design Return Period		1 in	10 years
Paved Area	2621 + 7991 x 0.05 =		3021 (m2)
Unpaved Area	7991 x 0.95 =		7591 (m2)
Total Equivalent Area	3021 x 0.95 + 7591 x 0.35 =		5527 (m2)
Time of Concentration			3.93 min
Rainfall Intensity, I *			223 mm/hr
Design Discharge Rate, Q	0.278 x 7591 x 223 / 1000000 =		0.343 m3/s

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

U Channel			
Channel Size			600 (mm)
Gradient		1 in	200
Area	$\pi \times 0.6^2 / 8 + 0.6 \times 0.6 / 2 =$		0.321 (m ²)
Wetted Perimeter	$\pi \times 0.6 / 2 + 0.6 / 2 \times 2 =$		1.542 (m)
R	0.321 / 1.542 =		0.208 (m)
Velocity	$v = \frac{R^{\frac{1}{6}}}{n} R^{\frac{1}{2}} S_f^{\frac{1}{2}}$		1.55 m/s
Capacity			0.499 m3/s

Utilization 0.343 / 0.499 = 68.79 % OK (less than 90%, for 10% siltation allowance)

U Channel 3 (Combined: [A1 + B1] + [A2 + B2])

Runoff Estimation			
Design Return Period		1 in	10 years
Paved Area	980 + 3021 =		4001 (m2)
Unpaved Area	7591 + 1737 =		9328 (m2)
Total Equivalent Area	4001 x 0.95 + 9328 x 0.35 =		7066 (m2)
Time of Concentration			3.93 min
Rainfall Intensity, I *			223 mm/hr
Design Discharge Rate, Q	0.278 x 7066 x 223 / 1000000 =		0.439 m3/s

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

U Channel			
Channel Size			600 (mm)
Gradient		1 in	200
Area	$\pi \times 0.6^2 / 8 + 0.6 \times 0.6 / 2 =$		0.321 (m ²)
Wetted Perimeter	$\pi \times 0.6 / 2 + 0.6 / 2 \times 2 =$		1.542 (m)
R	0.321 / 1.542 =		0.208 (m)
Velocity	$v = \frac{R^{\frac{1}{6}}}{n} R^{\frac{1}{2}} S_f^{\frac{1}{2}}$		1.55 m/s
Capacity			0.499 m3/s

Utilization 0.439 / 0.499 = 87.95 % OK (less than 90%, for 10% siltation allowance)

U Channel 4 (Zone A3 + B2)

Runoff Estimation

Design Return Period		1 in	10	years
Paved Area	889 + 2621 + 1828 x 0.05=		3601	(m2)
Unpaved Area	1828 x 0.95=		1737	(m2)
Total Equivalent Area	3601 x 0.95 + 1737 x 0.35 =		4029	(m2)
Rainfall Intensity, I *			223	mm/hr
Design Discharge Rate, Q	0.278 x 4029 x 223 / 1000000 =		0.250	m3/s

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

U Channel

Channel Size		1 in	525	(mm)
Gradient			200	
Area	$\pi \times 0.53^2 / 8 + 0.53 \times 0.53 / 2 =$		0.246	(m ²)
Wetted Perimeter	$\pi \times 0.53 / 2 + 0.53 / 2 \times 2 =$		1.350	(m)
R	$0.246 / 1.35 =$		0.182	(m)
Velocity	$v = \frac{R^{2/3}}{n} S_f^{1/2}$		1.42	m/s
Capacity			0.350	m3/s

Utilization 0.25 / 0.35 = 71.60 % OK (less than 90%, for 10% siltation allowance)

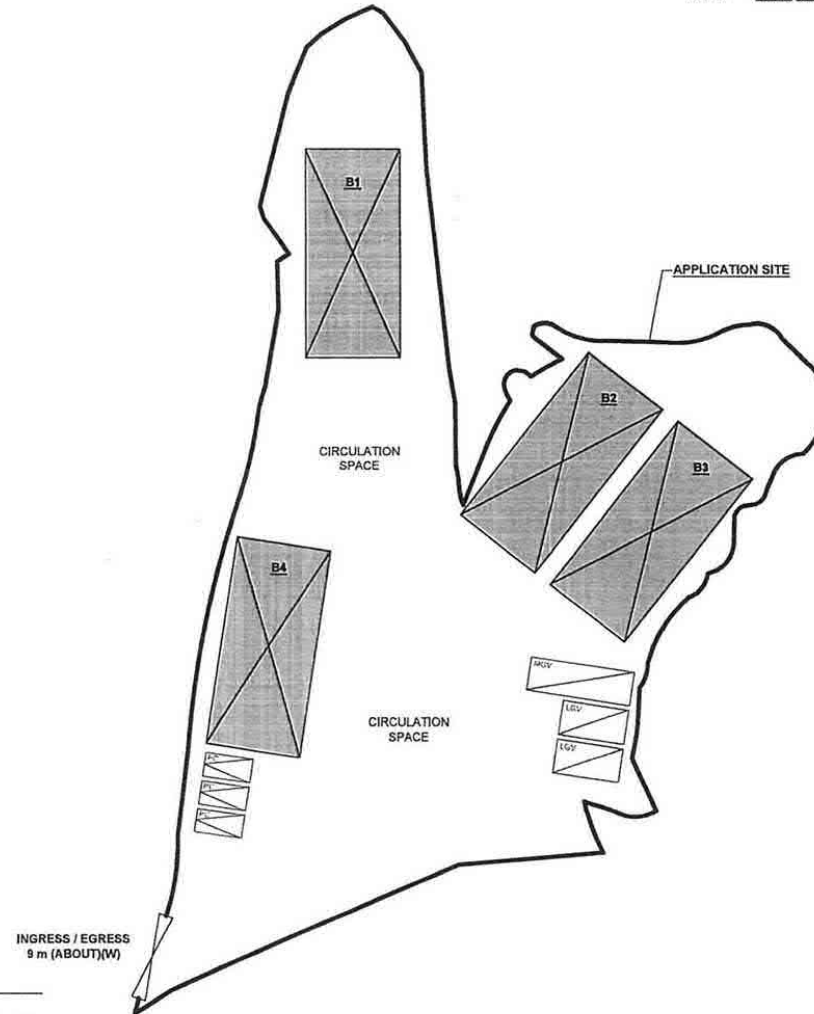
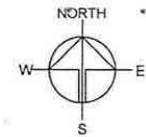
Time of Concentration for Upstream External Catchement

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			H		
(m2)	(m)	(mPD)	(mPD)		(min)	(min)
7991	144	108.4	40.8	46.944	3.93	3.93

DEVELOPMENT PARAMETERS

APPLICATION SITE AREA	: 3,510 m ²	(ABOUT)
COVERED AREA	: 880 m ²	(ABOUT)
UNCOVERED AREA	: 2,630 m ²	(ABOUT)
PLOT RATIO	: 0.25	(ABOUT)
SITE COVERAGE	: 25 %	(ABOUT)
NO. OF STRUCTURE	: 4	
DOMESTIC GFA	: NOT APPLICABLE	
NON-DOMESTIC GFA	: 880 m ²	(ABOUT)
TOTAL GFA	: 880 m ²	(ABOUT)
BUILDING HEIGHT	: 8.23 m	(ABOUT)
NO. OF STOREY	: 1	

STRUCTURE	USE	COVERED AREA	GFA	BUILDING HEIGHT
B1	WAREHOUSE (EXCLUDING D.G.G.)	220 m ² (ABOUT)	220 m ² (ABOUT)	8.23 m (ABOUT)(1-STOREY)
B2	WAREHOUSE (EXCLUDING D.G.G.)	220 m ² (ABOUT)	220 m ² (ABOUT)	8.23 m (ABOUT)(1-STOREY)
B3	WAREHOUSE (EXCLUDING D.G.G.)	220 m ² (ABOUT)	220 m ² (ABOUT)	8.23 m (ABOUT)(1-STOREY)
B4	WAREHOUSE (EXCLUDING D.G.G.) WASHROOM, SITE OFFICE	220 m ² (ABOUT)	220 m ² (ABOUT)	8.23 m (ABOUT)(1-STOREY)
TOTAL		880 m ² (ABOUT)	880 m ² (ABOUT)	



PARKING AND LOADING / UNLOADING PROVISIONS

NO. OF PRIVATE CAR PARKING SPACE	: 3
DIMENSION OF PARKING SPACE	: 5 m (L) x 2.5 m (W)
NO. OF LUL SPACE FOR LIGHT GOODS VEHICLE	: 2
DIMENSION OF LUL SPACE	: 7 m (L) x 3.5 m (W)
NO. OF LUL SPACE FOR MEDIUM GOODS VEHICLE	: 1
DIMENSION OF LUL SPACE	: 11 m (L) x 3.5 m (W)

LEGEND

	APPLICATION SITE
	STRUCTURE
	PARKING SPACE (PRIVATE CAR)
	LUL SPACE (LIGHT GOODS VEHICLE)
	LUL SPACE (MEDIUM GOODS VEHICLE)
	INGRESS / EGRESS

PLANNING CONSULTANT



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. 111, PAT
HEUNG, YUEN LONG, NEW
TERRITORIES

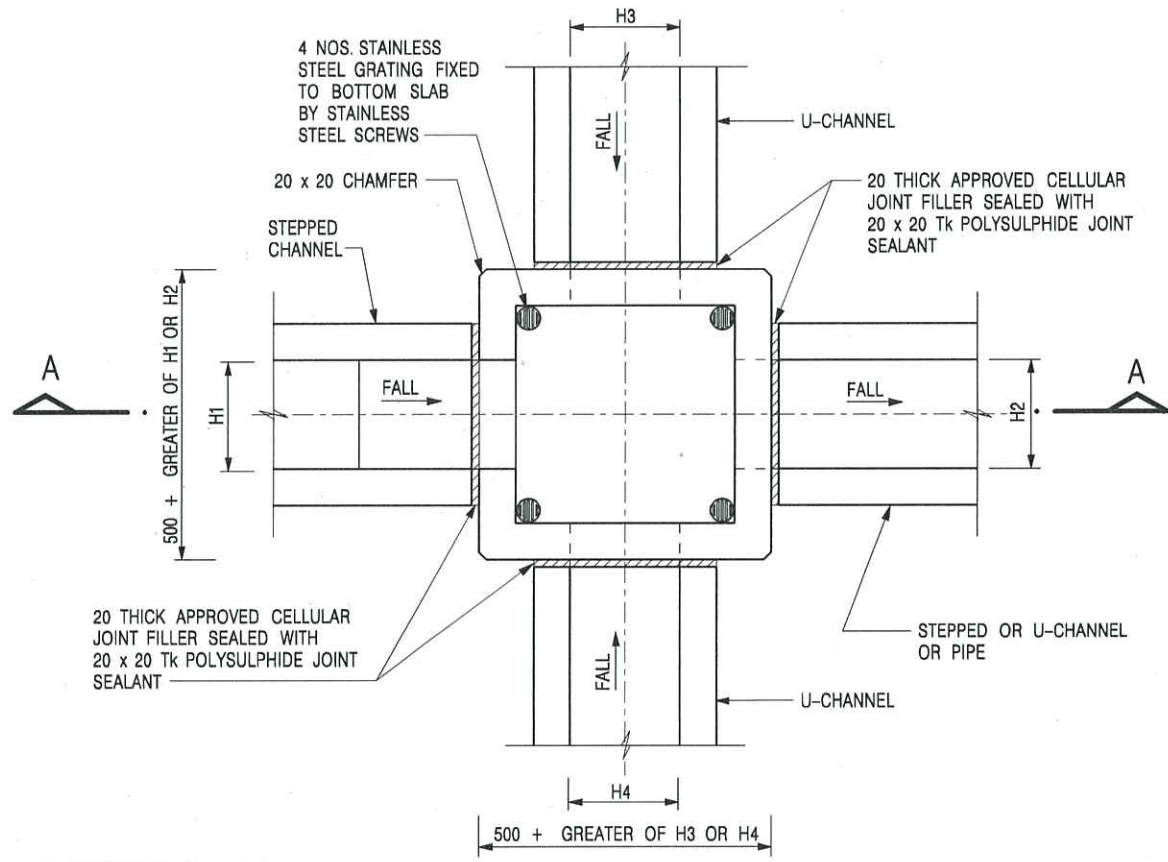
SCALE

1:700 @ 1/4"

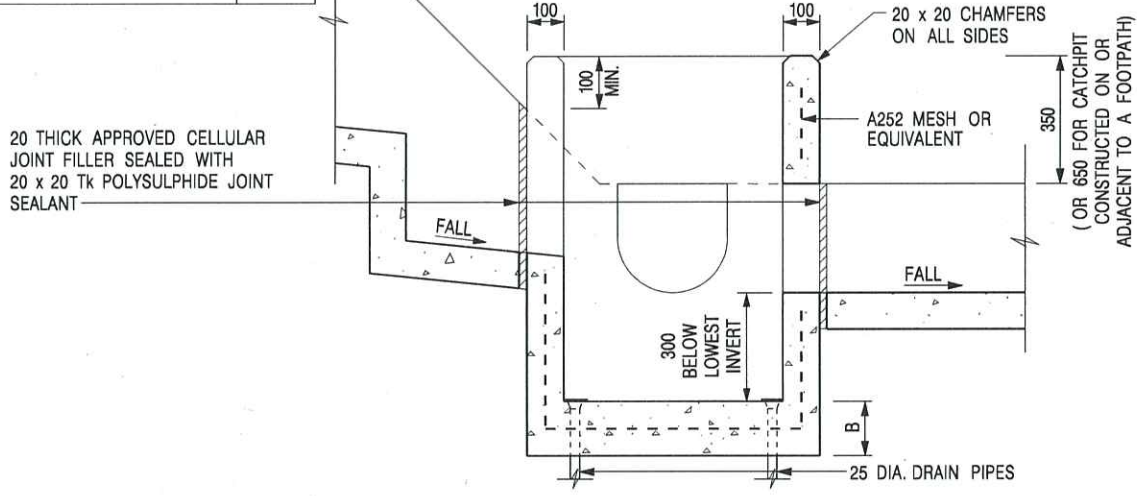
DRAWN BY	DATE
MN	24.7.2023
REVIEWED BY	DATE
APPROVED BY	DATE
DWG. TITLE	
LAYOUT PLAN	
DWG NO.	VER.
PLAN 4	001

Appendix B - Proposed Development Layout Plan

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

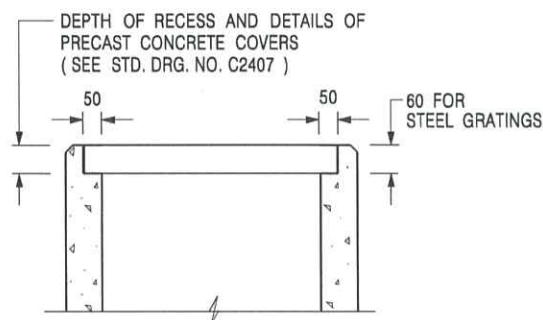
CATCHPIT WITH TRAP
(SHEET 1 OF 2)



**CIVIL ENGINEERING AND
DEVELOPMENT DEPARTMENT**

SCALE 1 : 20
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)



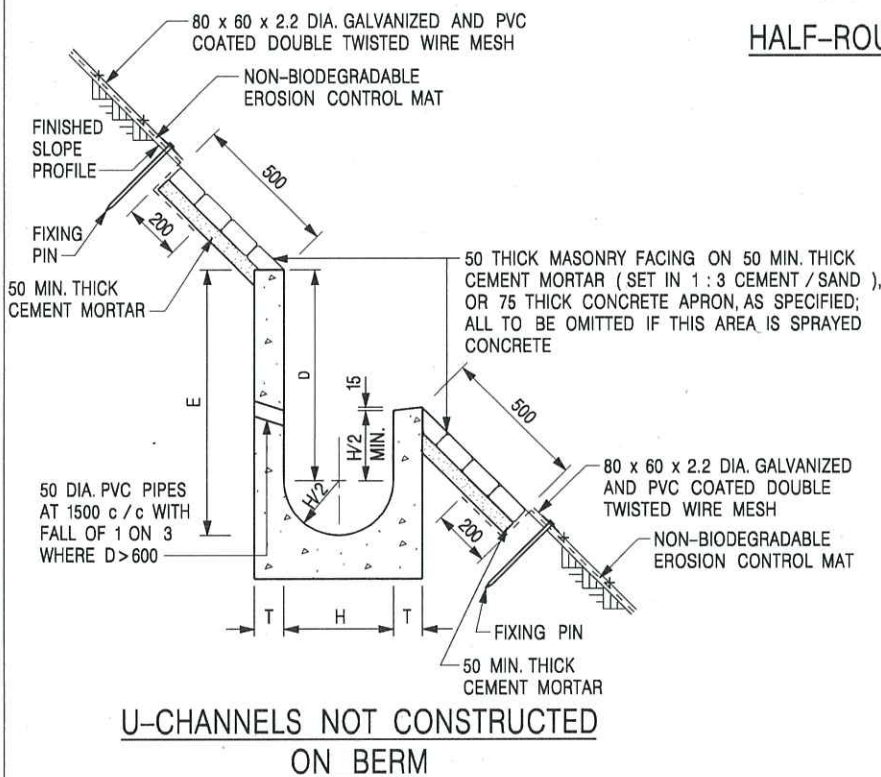
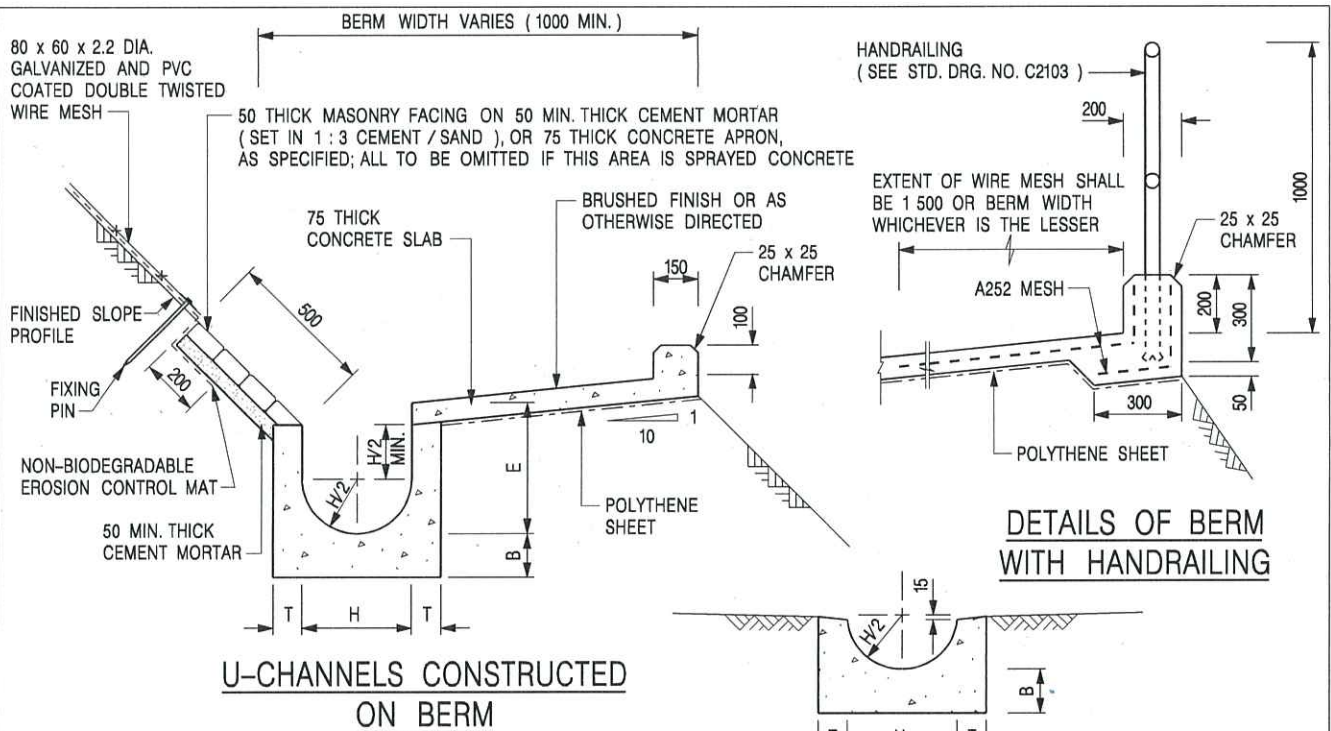
**CIVIL ENGINEERING AND
DEVELOPMENT DEPARTMENT**

SCALE 1 : 20

DATE JAN 1991

DRAWING NO.

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)



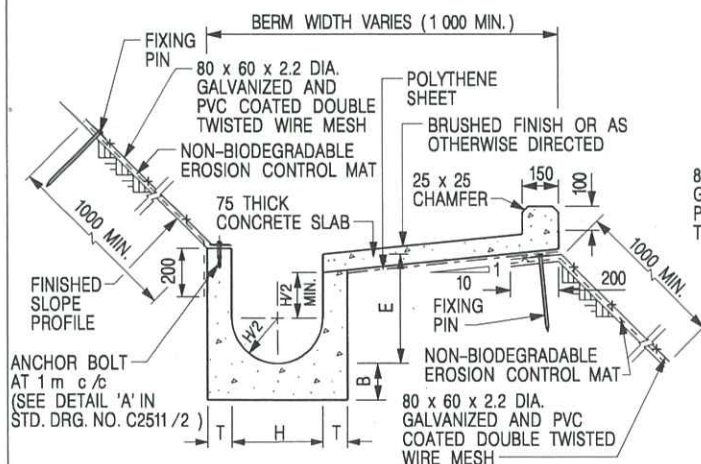
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE 1 : 25

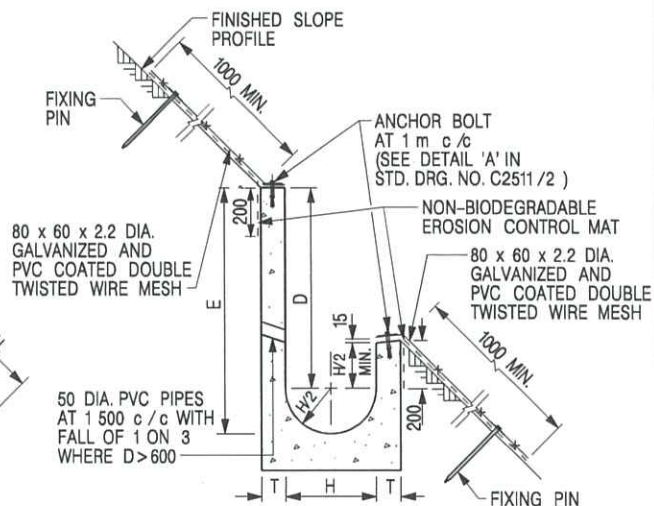
DRAWING NO.

DATE JAN 1991

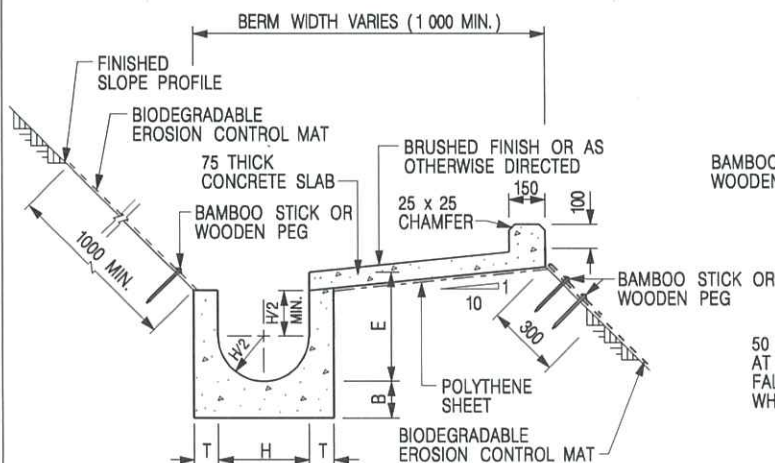
C2409I



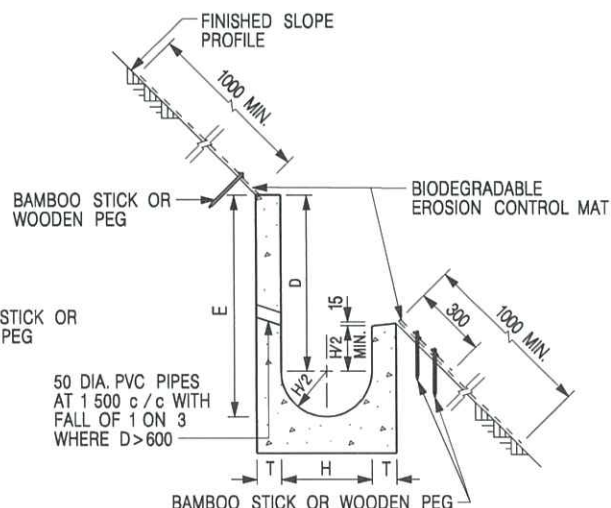
**U-CHANNELS CONSTRUCTED ON BERM
WITH NON-BIODEGRADABLE
EROSION CONTROL MAT**



**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:

- 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)**



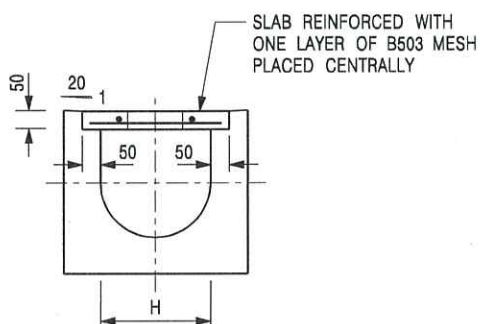
**CIVIL ENGINEERING AND
DEVELOPMENT DEPARTMENT**

SCALE DIAGRAMMATIC

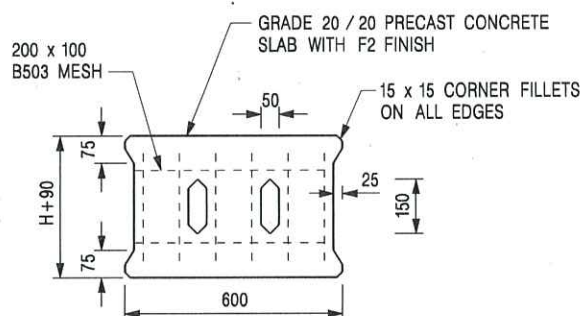
DRAWING NO.

DATE JAN 1991

C24101



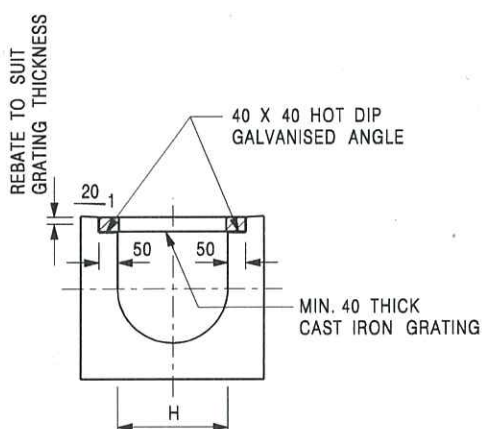
TYPICAL SECTION



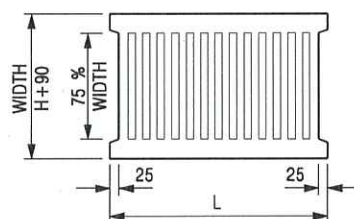
PLAN OF SLAB

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



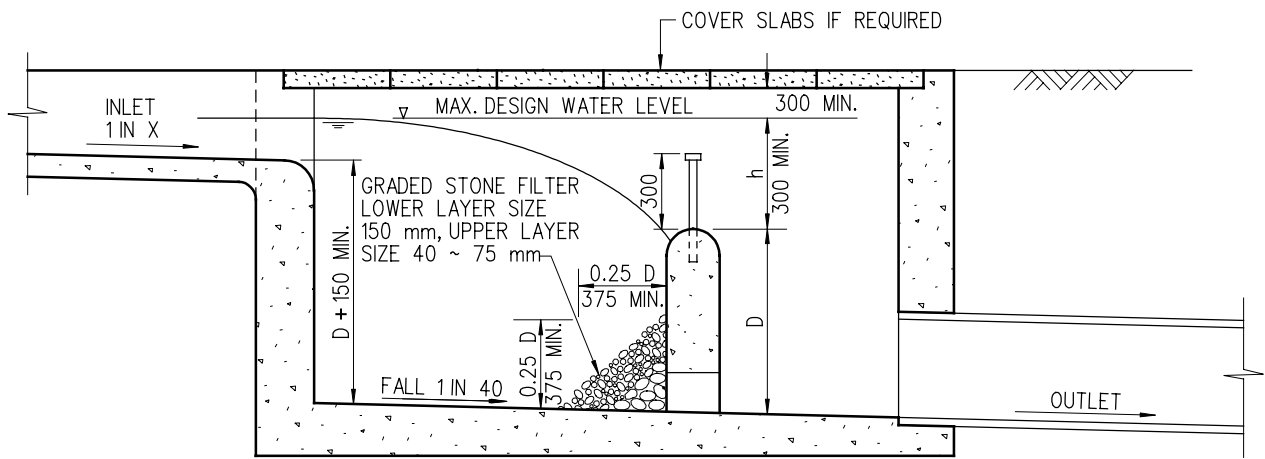
**CIVIL ENGINEERING AND
DEVELOPMENT DEPARTMENT**

SCALE 1 : 20

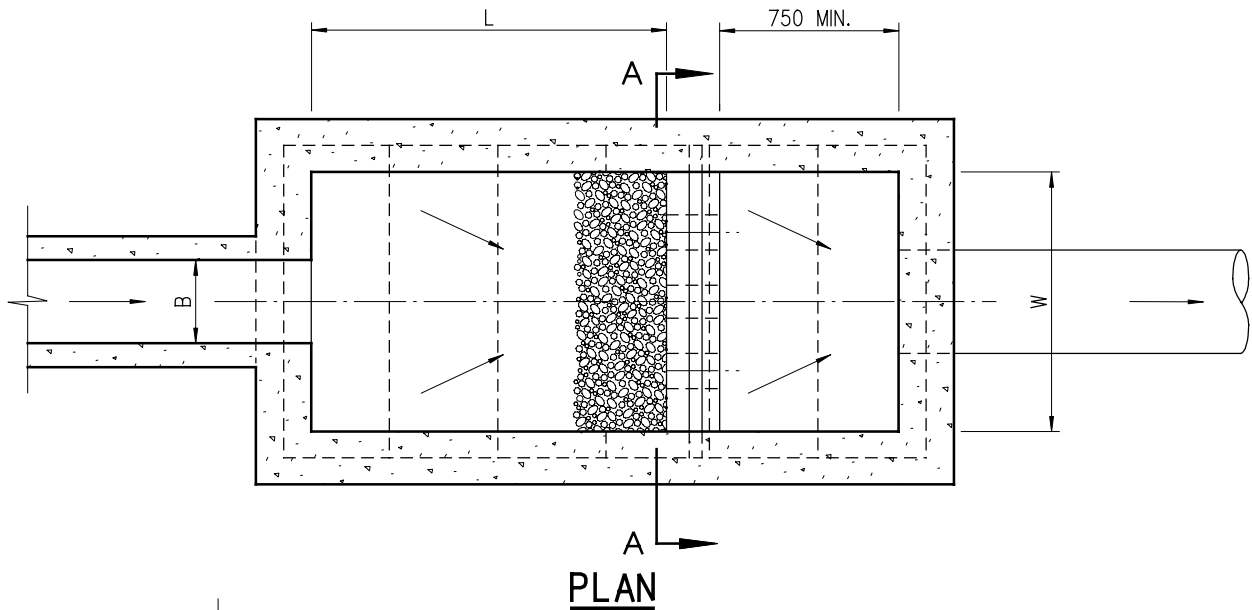
DATE JAN 1991

DRAWING NO.

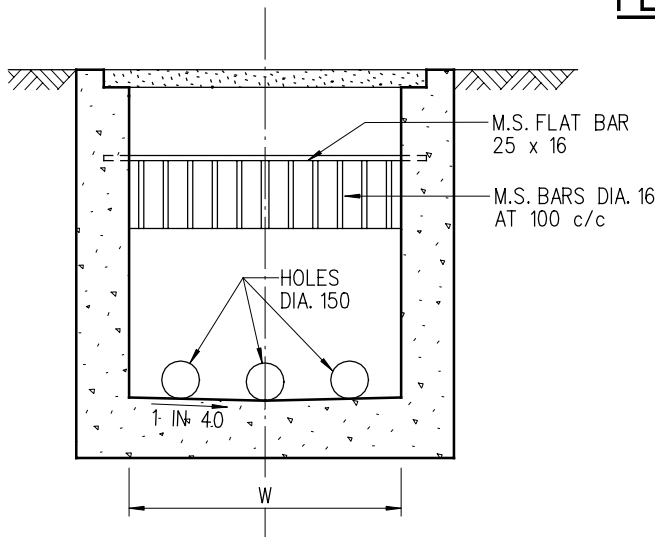
C2412E



LONGITUDINAL SECTION



PLAN



SECTION A-A

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. NORMALLY FOR DRAINS OF 900 mm DIA. AND BELOW. FOR BIGGER DRAINS AND STEEP TERRAIN, SAND TRAP SHOULD BE SPECIALLY DESIGNED.
3. SIZE
DEPTH : $D \leq 750$
WIDTH : $W \geq 3B$
LENGTH : $4.8D^{0.67} h^{0.5} X^{0.5} \geq 4B$
4. GRADED STONE FILTER SHALL BE CRUSHER RUN GRANITE AGGREGATE.
5. CAPACITY D W L TO BE ACCORDING TO SIZE AND NATURE OF CATCHMENT, PROVIDING DETENTION TIME NOT LESS THAN 5 MINUTES FOR MAX. DESIGN FLOW OF INLET.

B	REDRAWN BY CAD	ORIGINAL SIGNED	8.8.2001
A	GENERAL REVIEW	ORIGINAL SIGNED	2.2.2001
REV.	DESCRIPTION	SIGNATURE	DATE

SAND TRAP

DRAINAGE SERVICES DEPARTMENT

REFERENCE

DRAWING No.

SCALE

DIAGRAMMATIC

DS 1025B

Appendix D - Drainage Schedule

MANHOLE/ PIT NUMBER		CHANNEL						
		GROUND LEVEL		INVERT LEVEL		GRAD.	SIZE	LENGTH
U/S	D/S	U/S	D/S	U/S	D/S	1 IN	mm	m
(a)	(b)	(c)	(d)	(e)	(f) = (e) - (i)/(g)	(g)	(h)	(i)
P1	CP1.1	40.80	40.80	40.35	40.26	200	375	18.9
CP1.1	CP1.2	40.80	40.80	40.26	40.21	200	375	8.8
CP1.2	CP1.3	40.80	40.80	40.21	40.15	200	375	12.5
CP1.3	CP1.4	40.80	40.80	40.08	39.97	200	375	23.1
CP1.4	CP1.5	40.80	37.50	39.97	36.90	200	525	42.8
CP1.5	CP2.8	37.50	36.90	36.90	36.30	200	525	11.2
P3	CP3.1	40.80	40.80	40.35	40.31	200	375	7.9
CP3.1	CP1.3	40.80	40.80	40.31	40.08	200	375	46.0
P4	CP4.1	40.80	40.80	40.35	40.31	200	375	7.5
CP4.1	CP4.2	40.80	40.80	40.31	40.23	200	375	17.2
CP4.2	DISCHARGE POINT	40.80	40.80	40.23	40.22	200	375	2.0
P5	CP5.1	40.80	40.80	40.35	40.28	200	375	13.8
CP5.1	CP4.2	40.80	40.80	40.28	40.25	200	375	6.2
P6	CP1.4	40.80	40.80	40.35	40.29	200	375	12.5
P2	CP2.1	40.80	40.80	40.13	40.09	200	600	7.2
CP2.1	CP2.2	40.80	40.80	40.09	39.93	200	600	32.7
CP2.2	CP2.3	40.80	40.80	39.93	39.86	200	600	12.3
CP2.3	CP2.4	40.80	40.80	39.86	39.83	200	600	6.1
CP2.4	CP2.5	40.80	40.80	39.83	39.80	200	600	7.4
CP2.5	CP2.6	40.80	40.80	39.80	39.77	200	600	5.8
CP2.6	CP2.7	40.80	39.20	39.77	38.53	200	600	15.2
CP2.7	CP2.8	38.80	36.90	38.53	36.23	200	600	36.3
CP2.8	DISCHARGE POINT	36.90	36.90	36.23	36.22	200	600	2.0