收件者:	tpbpd/PLAND
副本:	Jet Sze Jet CHEUNG/PLAND; Yen PY LEUNG/PLAND
主旨:	Fw: S. 16 Planning Application No. A/YL-KTN/1155 - Departmental Comments
附件:	AYL-KTN 1155 DS 20250917.pdf

From: Tang Lok San [redacted]
Sent: Tuesday, September 23, 2025 12:18 PM

To whom may concern,

Please see the attachment for the updated Proposed Drainage Proposal. Please contact Mr. Tang via email [redacted] if you have any questions regarding to the captioned application.

Yours faithfully,
Mr. Tang

渠務署及城市規劃委員會:

A/YL-KTN/1155 的擬議渠務建議詳細

申請地點範圍有約 3,444.1 平方米，位於錦田北的鄉郊範圍。目前為空置。

申請地點附近有大量的草地。水平為約+9.3 mPD (此水平已完成填土及平整)。

有一條渠道位於申請地點的西南面，並計劃將場內水流引導到該渠道。

申請地點的擬議佈局平面圖請參考 Appendix 2。

擬議發展	
申請地點範圍 (約 m^2)，以泥土作地面材質	2,728.4
申請地點範圍 (約 m^2)，以混凝土作地面材質	715.7
申請地點範圍外 (約 m^2)，泥土作地面材質	2,255.5

R to C:

	渠務署意見	申請人回覆
A(i)	*The ground to the north and east of the application site is generally higher. According to the topography around the subject site, external catchment area shall be greater than the one adopted in the submitted hydraulic calculation. The applicant should update hydraulic calculation.*	The catchment area has been updated. Please see Appendix 7.2.
A(ii)	*Cross sections showing the proposed drainage facilities and existing and proposed ground levels of the captioned site with respect to the adjacent areas should be given.*	The appendix has been changed according to the comment, please see appendix 7 for the changes.
B(i)	*The proposal should indicate how the runoff (the flow direction) within the site and from the adjacent areas would be discharged to the proposed drainage system.*	The appendix has been changed according to the comment, please see appendix 7 for the changes.
B(ii)	*Since filling of land was proposed for subject development, proper surface channel(s) should be provided at the lower platform and wall toe to collect the overland flow to/from adjacent lands.*	Noted.
B(iii)	*The applicant should clearly indicate the full alignment of the discharge path from the application site all the way down to the ultimate discharge point (e.g. a well-established stream course/public drainage system)*	The photos of the existing channel and the ultimate discharge point, please see appendix 7.3 and 7.4.
B(iv)	*The applicant should demonstrate with hydraulic calculation that the proposed drainage facilities are adequate to collect, convey and discharge the surface runoff accrued on the application site and the*	Please see calculations for the changes. Hydraulic calculation checking the proposed 375UC and 375pipe is provided.

	overland flow intercepted from the adjacent lands.	
B (v)	*The applicant should clearly indicate the existing drainage facilities on the proposed drainage plan. Since there is no record of the said discharge path, site photos of existing drainage facilities including the discharge point (e.g. existing 1.5m (W) x 0.7m (D) channel shown on the submitted drawing (No.: 7-01) and its downstream drainage facilities and existing 1.6m (W) x 1m (D) channel shown on the submitted drawing (No.: 7.2-1) should be provided in order to demonstrate the presence and reflect condition of the existing drainage system.*	The photos of the existing channel, please see appendix 7.3 and 7.4.
B (v i)	*The applicant should demonstrate the existing facilities to be discharged to have sufficient capacity to cater for any additional flow generated due to the subject application.*	Please see calculations for the changes. Hydraulic calculation checking the existing 1.4m (W) x 0.7m (D) open channel is provided.
B (v i i)	*The applicant should clarify flow velocity of the proposed surface channels. The flow velocity is suggested to be within a range, i.e. 0.75 m/s to 3.0 m/s.*	The design flow velocity is presented in the calculation, and all are within the range 0.75 m/s to 3.0 m/s.
B (v i i i)	*The applicant should clarify unit of kinematic viscosity and type and gradient of the proposed drainage facilities in the submitted hydraulic calculation.*	Please see calculations for the changes.
B (i x)	*The proposed development should neither obstruct overland flow nor adversely affect any existing natural streams, village drains, ditches and the adjacent areas, etc.*	Noted. The minor filling works that aims at levelling the site would not obstruct any overland flow.
B (x)	*The applicant(s) shall resolve any conflict/disagreement with relevant lot owner(s) and seek LandsD's permission for laying new drains/channels and/or*	Noted.

	modifying/upgrading existing ones in other private lots or on Government land (where required) outside the application site(s).	
C (i)	*The existing drainage facilities, to which the applicant proposed to discharge the stormwater from the application site was not maintained by this office. The applicant should identify the owner of the existing drainage facilities and seek agreement from the owner prior to commencement of the proposed works. In the case that it is a local village drains, DO/YL should be consulted.*	Noted.
C (i i)	*The applicant is required to rectify the drainage system if they are found to be inadequate or ineffective during operation. The applicant shall also be liable for and shall indemnify claims and demands arising out of damage or nuisance caused by a failure of the drainage system.*	Noted.
C (i i i)	*The applicant should consult DLO/YL and seek consent from the relevant owners for any drainage works to be carried out outside his lot boundary before commencement of the drainage works.*	Noted.
D (i)	*Sand trap or provision alike should be clearly indicated on the proposed drainage plan and provided before the collected runoff is discharged to the public drainage facilities.*	Noted. CP2 will be build with desilting facility.
D (i i)	*For the construction details of the proposed drainage facilities, reference should be made to current CEDD's standard drawings. Drawing (No.: C2406/2) was not up-to-date.*	Noted. The Drawing has been updated.
D (i i i)	*Connection of the proposed and existing drainage facilities shall be designed and constructed such that there is no water leakage at the proposed connection.*	Noted.

D (i v)	*Gradient of the proposed stormwater pipe should be shown on the drainage plan.*	
D (v)	*Catchpit should be provided at where a proposed surface channel changes direction.*	Noted.
D (v i)	*Consideration should be given to provide grating for the surface channels.*	Grating cover is provided on all surface channels.
D (v i i)	*Connection to existing drainage facilities should be discharged and constructed to prevent back flows at the drainage outlet when water level at the existing drainage facilities is high.*	Noted.

根據 STORMWATER DRAINAGE MANUAL (SDM) - Table 10 – Recommended Design Return Periods based on Flood Levels

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 Systems	200 years
Urban Drainage Branch Systems	50 years

本報告將使用 Main Rural Catchment Drainage Channels, 1 in 50 years return period 作評估。

本渠道設計將參考由　貴署所編寫的 SDM 作基礎，以下為所採用的數據及計算方法。

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 50 years return period, the following values are adopted. (The latest figures are provided in Corrigendum No.1 2024 Stormwater Drainage Manual)

a = 505.5

b = 3.29

c = 0.355

2. The peak runoff is calculated by the Rational Method.

$$Q_p = 0.278\ C\ i\ A$$

where V = peak runoff in m^3/s

C = runoff coefficient (dimensionless)

i = rainfall intensity in mm/hr

A = catchment area in km^2

3. According to Section 7.5.2(b) of the Stormwater Drainage Manual (SDM), Fifth Edition January 2018

Surface Characteristics	Runoff coefficient, C
Asphalt	0.70-0.95
Concrete	0.80-0.95
Brick	0.70-0.85
Grassland (heavy soil)	
Flat	0.13-0.25
Steep	0.25-0.35
Grassland (sandy soil)	
Flat	0.05-0.15
Steep	0.15-0.20

The run-off coefficient (C) of surface runoff area taken as follows:

- Concrete Area C = 0.95
- Grassland (heavy soil) with flat surface C = 0.25

4. Manning's Equation is used for calculation of velocity of flow inside the channels. It can be expressed by the following algebraic equation.

$$V = \frac{R^{1/6}}{n}\sqrt{RS_f}$$

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. It can be expressed by the following algebraic equation.

$$\bar{V} = -\sqrt{8gDS} \quad \log\left(\frac{k_s}{3.7D} + \frac{2.51v}{D\sqrt{2gDS}}\right)$$

where V = Velocity of the pipe flow (m/s)

g = gravitational acceleration (m/s^2)

k_s = hydraulic pipeline roughness (m)

v = kinematics viscosity of fluid (m^2/s)

D = internal pipe diameter (m)

s = hydraulic gradient (energy loss per unit length due to friction)

申請範圍主要平坦，並緩緩斜向東北面，渠道設計請參考 Appendix 5。

渠道容量計算請參考 Appendix – Calculation。

根據本報告，本臨時發展不會對附近的渠道有重大影響。

Check The Capacity of Existing 1.4m (W) x 0.7 (D) Open Channel

Manning Equation is used in hydraulic design and analysis. The cross-sectional mean velocity is given in the following expression:

$$V = \frac{R^{1/6}}{n}\sqrt{RS_f}$$

Where R = hydraulic radius (m)
N = Manning coefficient (s/m1/3), refer Table 13 of SDM
Sf = friction gradient (dimensionless)

Using Manning's Equation

$V = R^{2/3} * S_f^{0.5}/n$

Where R = A/P = 0.35 m A = 0.98 m^2
P = 2.8 m
n = 0.05 $s/m^{1/3}$ (Table 13 of Stormwater Drainage Manual)
S_f = 0.01

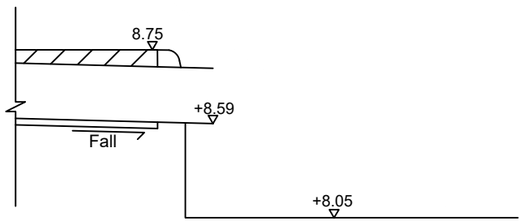
Therefor V = $0.35^{2/3} * 0.01^{0.5}/0.05$
= 0.99 m/sec

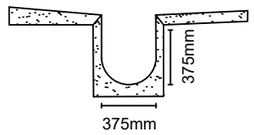
Maximum Capacity (Qmax)
= 0.8V*A
= 0.795 m^3/sec
= 0.795*60000
= 47,700 lit/min
> Q_{total}

The Existing Drainage has enough capacity.

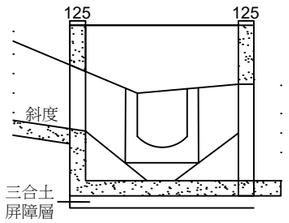
Connection Detail

Proposed 375mm Concrete Pipe | Existing 1.4m (W) x 0.7m (D) Open Channel

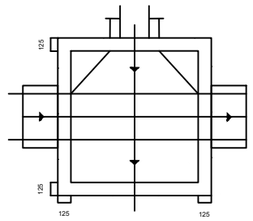




U型明渠切面圖

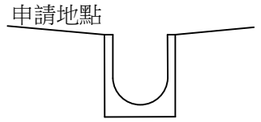


沙井切面圖

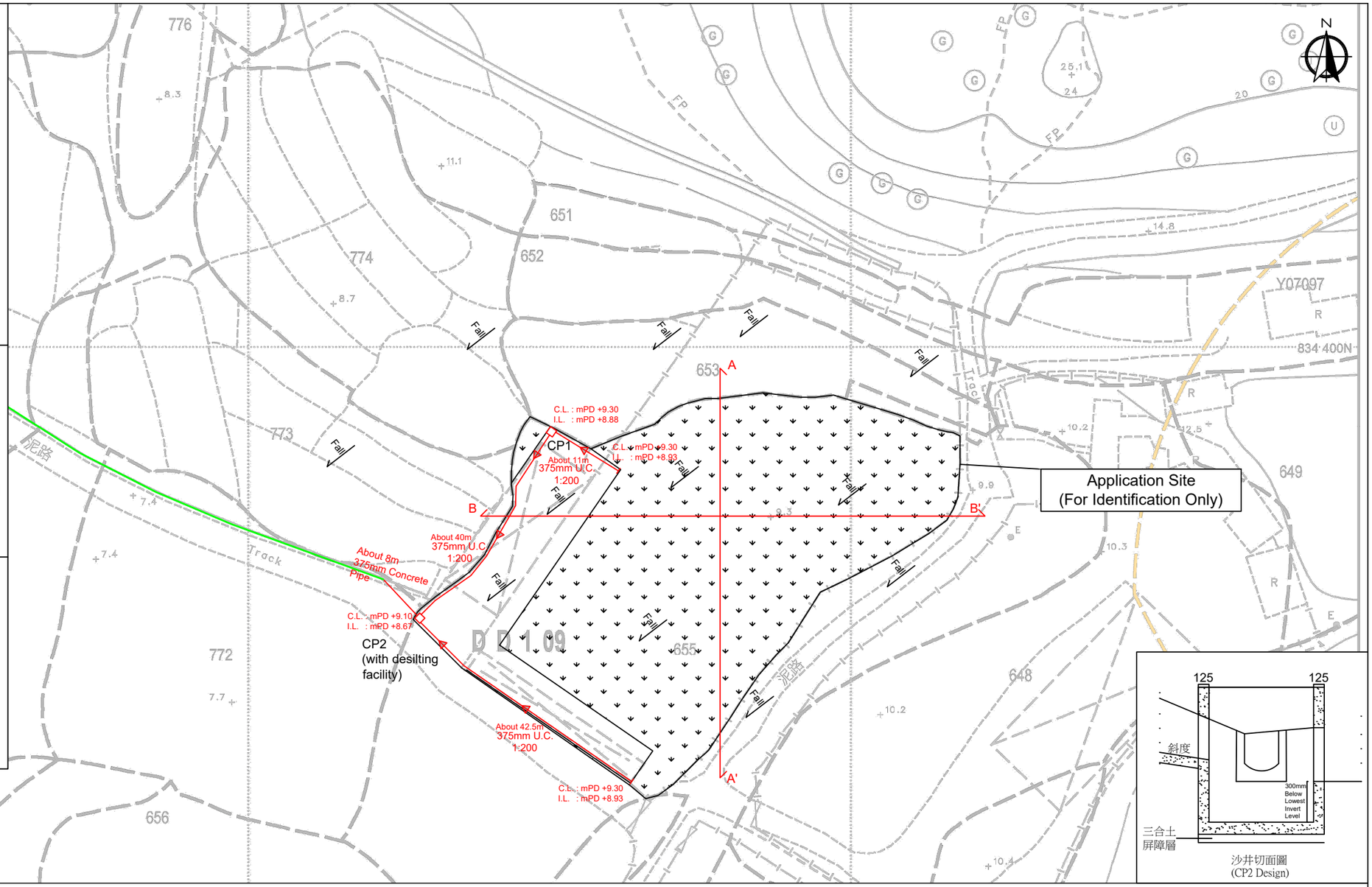


沙井俯視圖

申請地點



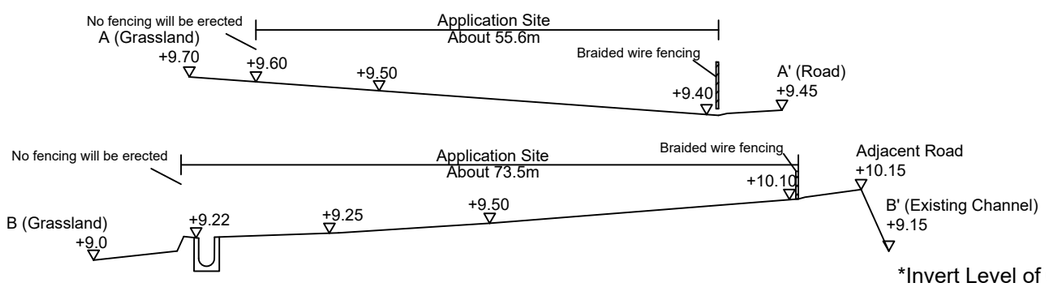
U型明渠切面略圖



沙井切面圖
(CP2 Design)

Note:

1. Adequate opening will be provided around the application site.
2. Catchpit design shall follow CEDD standard drawing No. C2405/1.
3. Catchpit with desilting facility shall follow CEDD standard drawing No. C2406/1.
4. All proposed U-channel and Catchpit must maintain in good shape (i.e. Inspection and maintenance regularly).
5. Grating Cover is provided on all proposed surface channel.

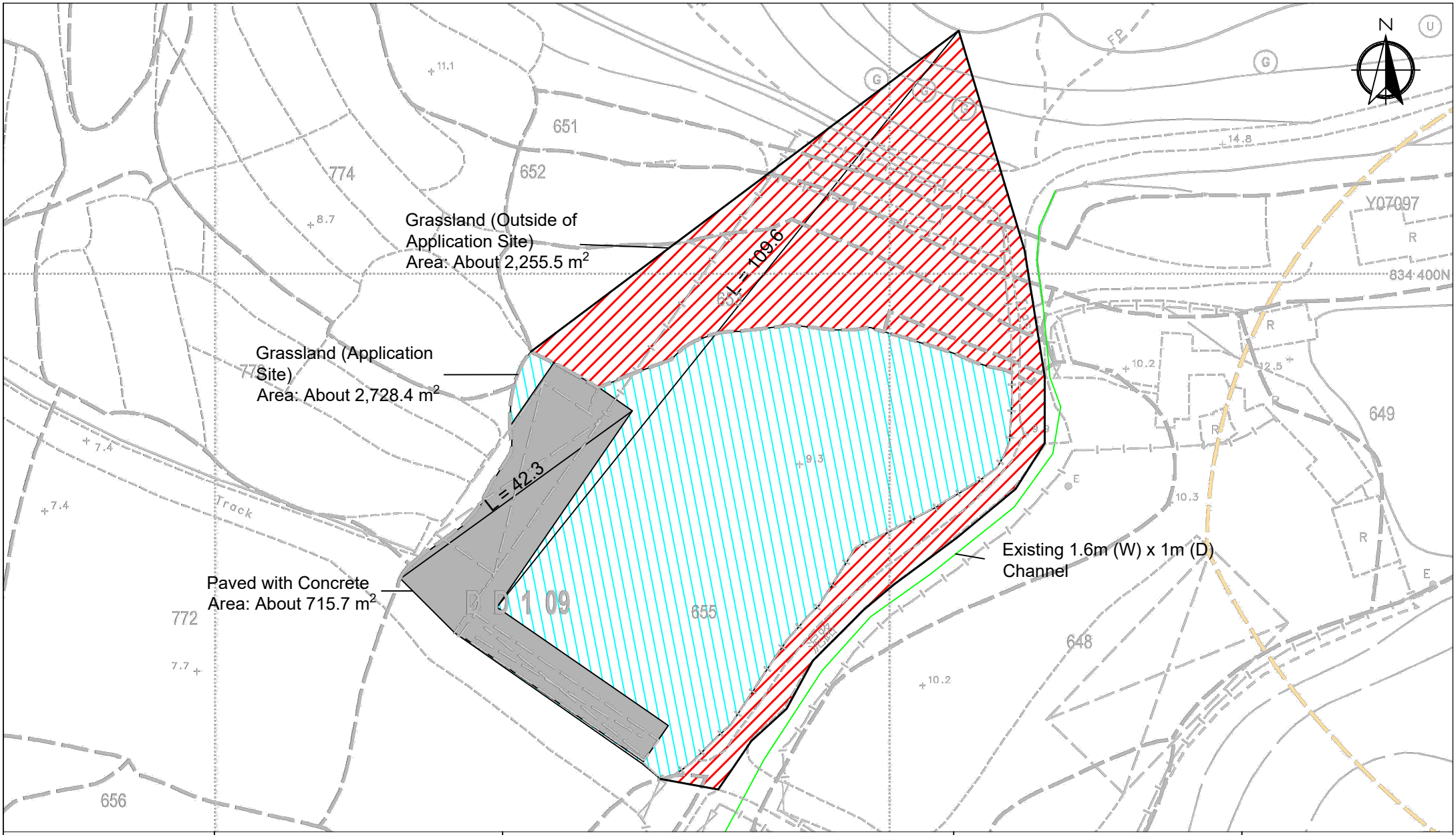


Legend:

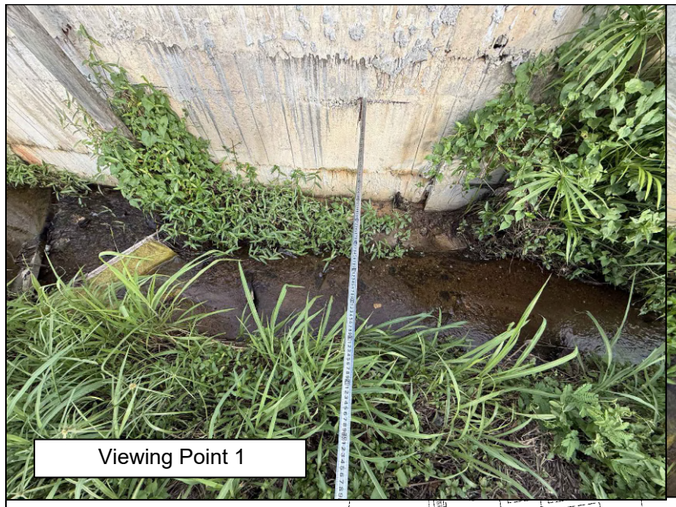
- Proposed Catchpit
- Proposed U-Channel
- Water Flow
- Existing Channel

*Invert Level of Connection Point Should Be Verified On Site Before Construction.
*Cover Level Are Indicative Only Which Should Be Verified On Site.

Appendix 7	Location: DD 109 Lot 655 (Part) OZP: S/YL-KTN/11 District: Kam Tin North Zoning: Agriculture	Project: Proposed Temporary Holiday Camp with Ancillary Facilities and Associated Filling of Land For a Period of 3 Years	Proposed Drainage Plan and Cross Section	Scale: 1:750 @A3	Drawing No. 7-01 For Identification Only Date: 16 September 2025



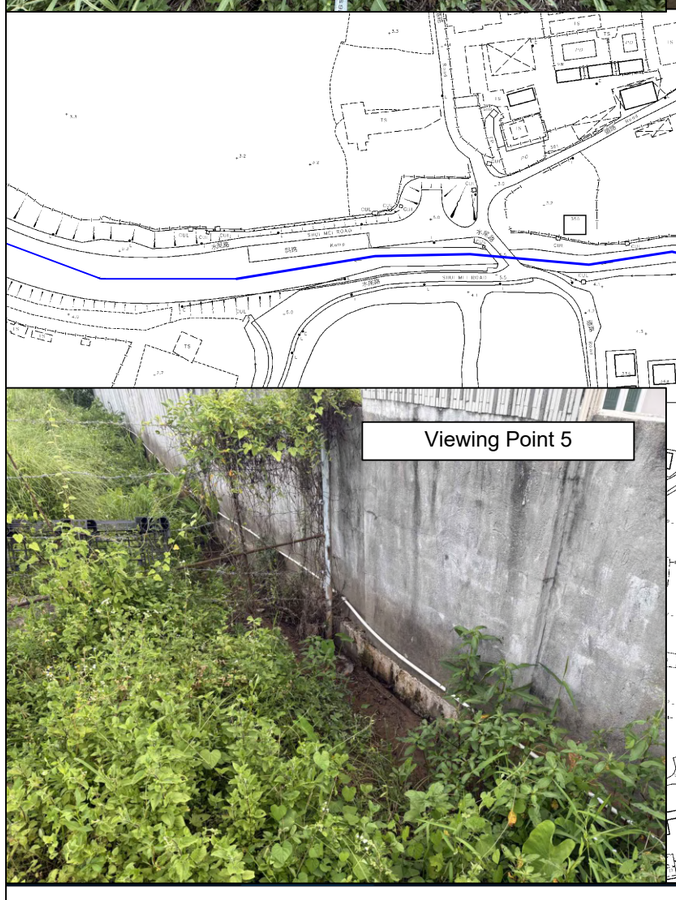
Appendix 7.2 Catchment Area (Application Site)	Location: D.D. 109 Lot 655 (Part) OZP: S/YL-KTN/11 District: Kam Tin North Zoning: Agriculture	Project: Proposed Temporary Holiday Camp with Ancillary Facilities and Associated Filling of Land For a Period of 3 Years	Around 5,699.6 m² Scale: 1:750 @A4	Drawing No.: 7.2-1 For Identification Only Date: 15/07/2025


Viewing Point 1


Viewing Point 2


Viewing Point 3


Viewing Point 4


Viewing Point 5

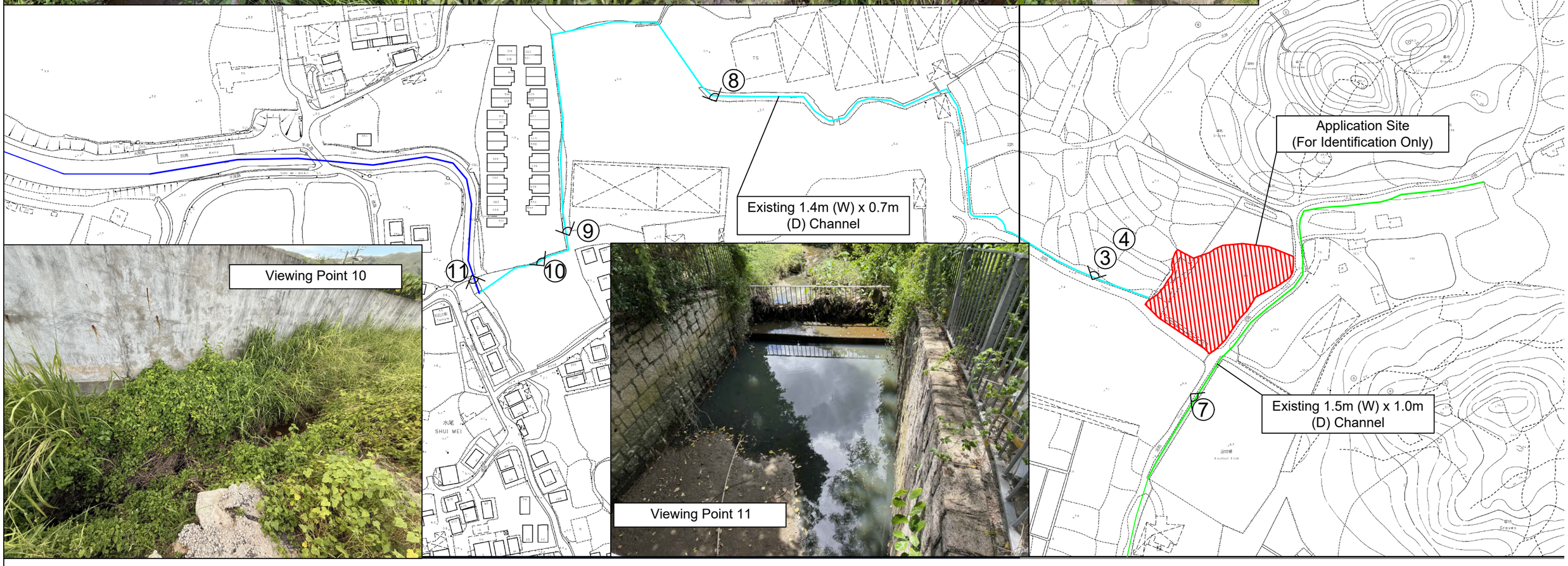

Viewing Point 6

Legend:

- Existing 1.5m (W) x 1.0m (D) Channel
- Existing 1.4m (W) x 0.7m (D) Channel
- Application Site

Captured from hkmapservices iB1000 6-NE-7A and iB1000 6-NE-7B on 16th September 2025

Appendix 7.3	Location: DD 109 Lot 655 (Part) OZP: S/YL-KTN/11 District: Kam Tin North Zoning: Agriculture	Project: Proposed Temporary Holiday Camp with Ancillary Facilities and Associated Filling of Land For a Period of 3 Years	Existing Drainage Channel Plan and Ultimate Discharge Point	Scale: Undefined @A4	Drawing No. 7.3-1 For Identification Only Date: 16 September 2025



Legend:

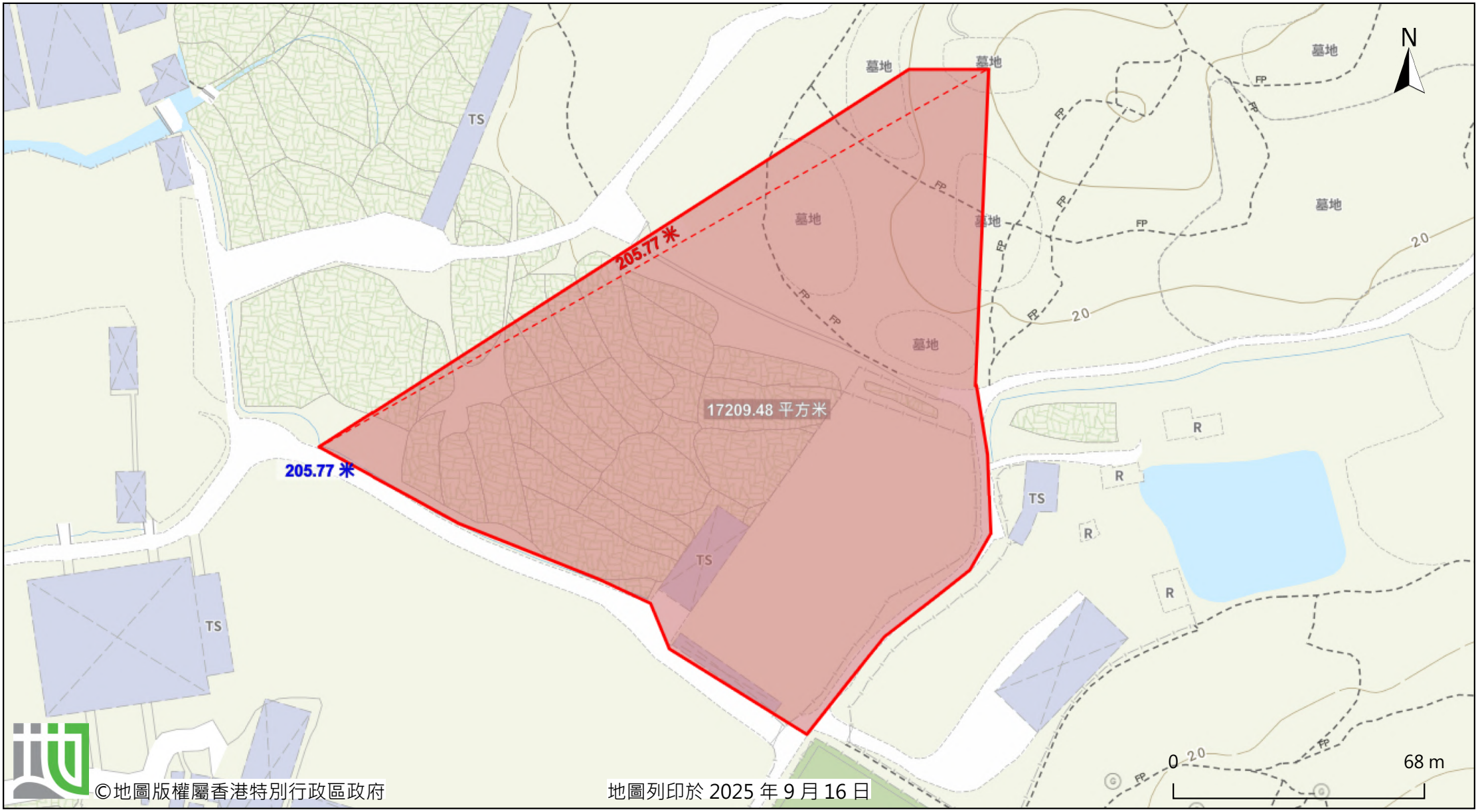
- Existing 1.5m (W) x 1.0m (D) Channel
- Existing 1.4m (W) x 0.7m (D) Channel
- Application Site

Captured from hkmapservices iB1000 6-NE-7A and iB1000 6-NE-7B on 16th September 2025

Appendix 7.4	Location: DD 109 Lot 655 (Part) OZP: S/YL-KTN/11 District: Kam Tin North Zoning: Agriculture	Project: Proposed Temporary Holiday Camp with Ancillary Facilities and Associated Filling of Land For a Period of 3 Years	Existing Drainage Channel Plan and Site Photos	Scale: Undefined @A4	Drawing No. 7.3-1 For Identification Only Date: 16 September 2025

GEOINFO MAP
地理資訊地圖

前往地圖: https://www.map.gov.hk/gm/geo:22.4490,114.0660?z=1128



地圖列印於 2025 年 9 月 16 日

由「地理資訊地圖」網站提供: https://www.map.gov.hk

Outside Catchment Area (A)	=	2,255.5 m^2	(About)	C:	0.25 (Covered with Grassland (heavy soil)
	=	2,255.5 m^2	(About)		
The Application Site (B)	=	715.7 m^2	(About)	C:	0.95 (Covered with Concrete)
	=	2728.4 m^2	(About)	C:	0.25 (Covered with Grassland (heavy soil)
	=	3444.1 m^2	(About)		

Calculation of Desgin Runoff of the Proposed Development,
For the design of drains inside the site, For Concrete

$Q_p = 0.278C\ I\ A$

A	=	715.7	m^2	
	=	715.7	m^2	
	=	0.0007157	km^2	
t	=	$0.14465L/H^{0.2}A^{0.1}$		
	=	$0.14465*42.3/0.5^{0.2}*715.7^{0.1}$		
	=	3.536	min	
i	=	$1.16*a/(t+b)^c$		(50 years return period, Table 3a,
	=	$1.16*505.5/(3.536+3.29)^{0.355}$		Corrigendum 2024, SDM) and
	=	296.51888		(16% increase due to climate change)
Q	=	0.278*0.95*297*715.7/1000000		
	=	0.0560469	m^3/sec	
	=	3363	lit/min	

Outside Catchment Area (A)	=	2,255.5 m^2	(About)	C:	0.25 (Covered with Grassland (heavy soil)
	=	2,255.5 m^2	(About)		
The Application Site (B)	=	715.7 m^2	(About)	C:	0.95 (Covered with Concrete)
	=	2728.4 m^2	(About)	C:	0.25 (Covered with Grassland (heavy soil)
	=	3444.1 m^2	(About)		

<u>Calculation of Desgin Runoff of the Proposed Development,</u>
<u>For the design of drains inside the site, For Grassland (Heavy Soil)</u>

$Q_p = 0.278C\ I\ A$

$A = 2{,}255.5 + 2728.4\ m^2$
$= 4{,}983.9\ m^2$
$= 0.0049839\ km^2$

$t = 0.14465L/H^{0.2}A^{0.1}$
$= 0.14465*109.6/9.76^{0.2}*4983.9^{0.1}$
$= 7.545$ min

$i = 1.16*a/(t+b)^c$
$= 1.16*505.5/(7.545+3.29)^{0.355}$
$= 251.6565$

(50 years return period, Table 3a, Corrigendum 2024, SDM) and (16% increase due to climate change)

$Q = 0.278*0.25*252*4983.9/1000000$
$= 0.087169\ m^3/sec$
$= 5230$ lit/min

Total Rainfall lit/min	=	3221	+ 5230	lit/min
Catchment	=	8451		lit/min

Provide 375UC (1:200) has enough capacity to accomend the runoff of the Catchment area

Check 375mm dia. Pipes by Colebrook-White Equation

By Colebrook White Equation

$$V = -\sqrt{(8gDs)}\log\left(\frac{k_s}{3.7D} + \frac{2.51v}{D\sqrt{(2gDs)}}\right)$$

where:

V	=	mean velocity (m/s)		
g	=	gravitational acceleration (m/s^2)		
D	=	internal pipe diameter (m)		
k_s	=	hydraulic pipeline roughness (m)	(Table 14, from DSD SDM 2018, concrete pipe)	
v	=	kinematic viscosity of fluid (m^2/s)	(Transitional flow and water at 15 degree celcius)	
s	=	hydraulic gradient (energy loss per unit length due to friction)		

g	=	9.81	m/s^2
D	=	0.375	m
k_s	=	0.00015	m
v	=	1.14E-06	m/s^2
s	=	0.01	

Therefore, design V of pipe capacit = 2.097119 m/s

Q	=	0.8VA	(0.8 factor for sedimentation)
	=	0.210611	m^3/s
	=	12636.65	lit/min
	>	8451	lit/min

Provide 375UC (1:200) has enough capacity to accomend the runoff of the proposed development

Calculation of Existing 1.4m (W) x 0.7m (D) Open Channel

For the Existing Open Channel

$Q_p = 0.278C\ I\ A$

$A = 17{,}209.5\ m^2$
$= 17{,}209.5\ m^2$
$= 0.0172095\ km^2$

$t = 0.14465L/H^{0.2}A^{0.1}$
$= 0.14465*205.8/11.9^{0.2}*17209.5^{0.1}$
$= 12.517$ min

$i = 1.16*a/(t+b)^c$
$= 1.16*505.5/(12.517+3.29)^{0.355}$
$= 220.08339$

(50 years return period, Table 3a, Corrigendum 2024, SDM) and (16% increase due to climate change)

$Q = 0.278*0.25*220*17209.5/1000000$
$= 0.263233\ m^3/sec$
$= 15794$ lit/min

Qmax (Open Channel) $= 0.795\ m^3/sec$
$= 47700$ lit/min
> 15794 lit/min

Provide the existing open channel has enough capacity to accomend the runoff of the proposed development

Flow velocity (v), 1.5<v<2m/s

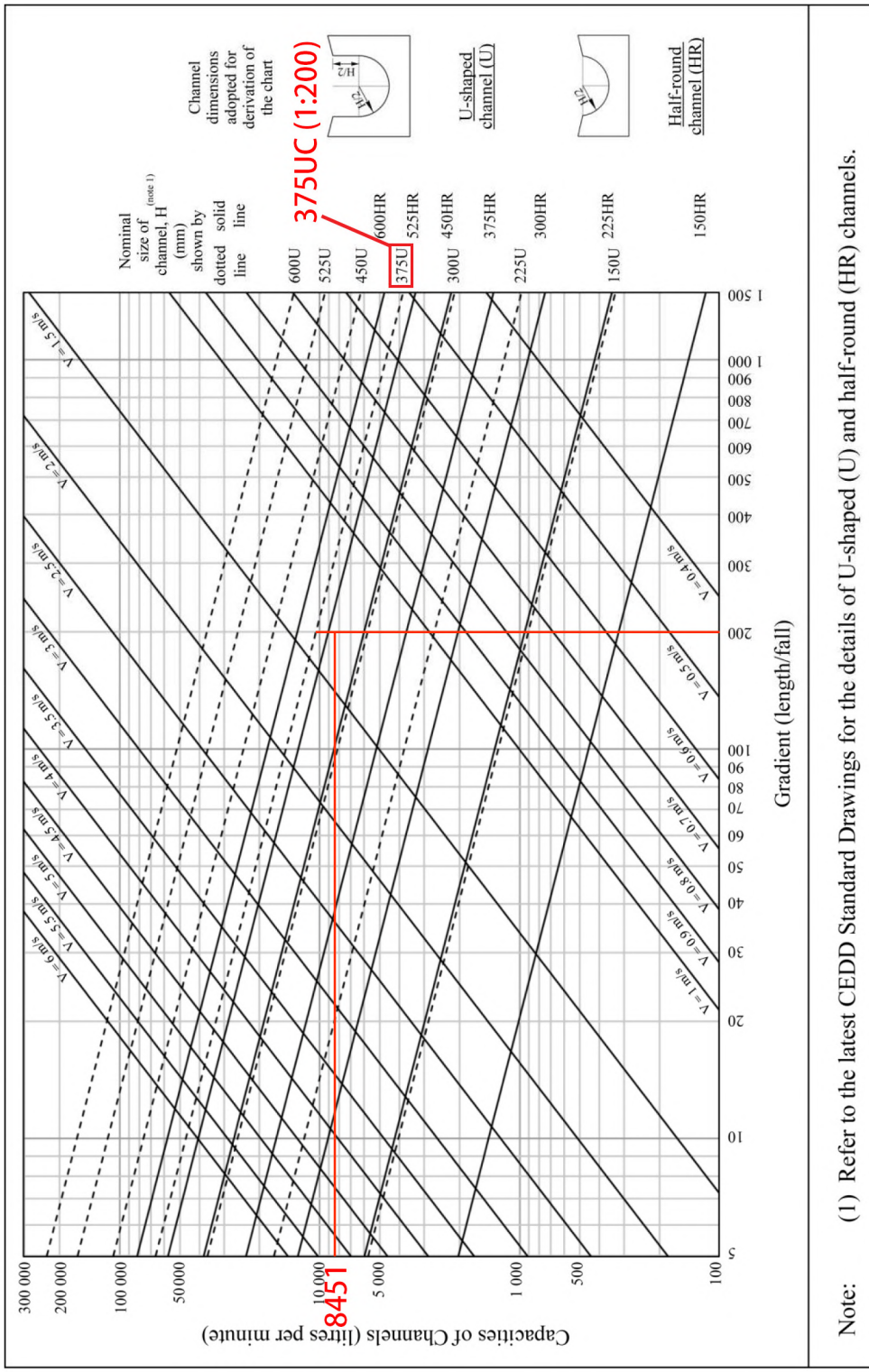
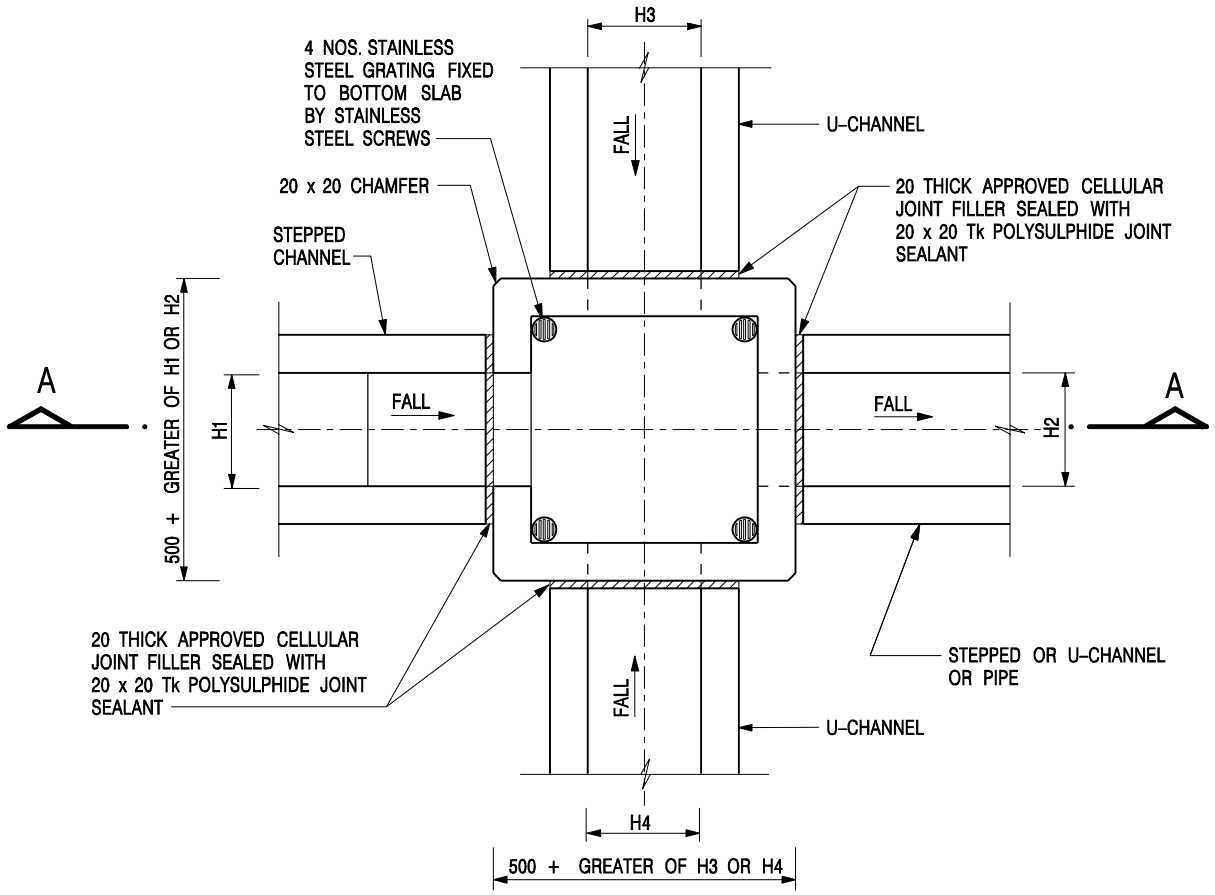


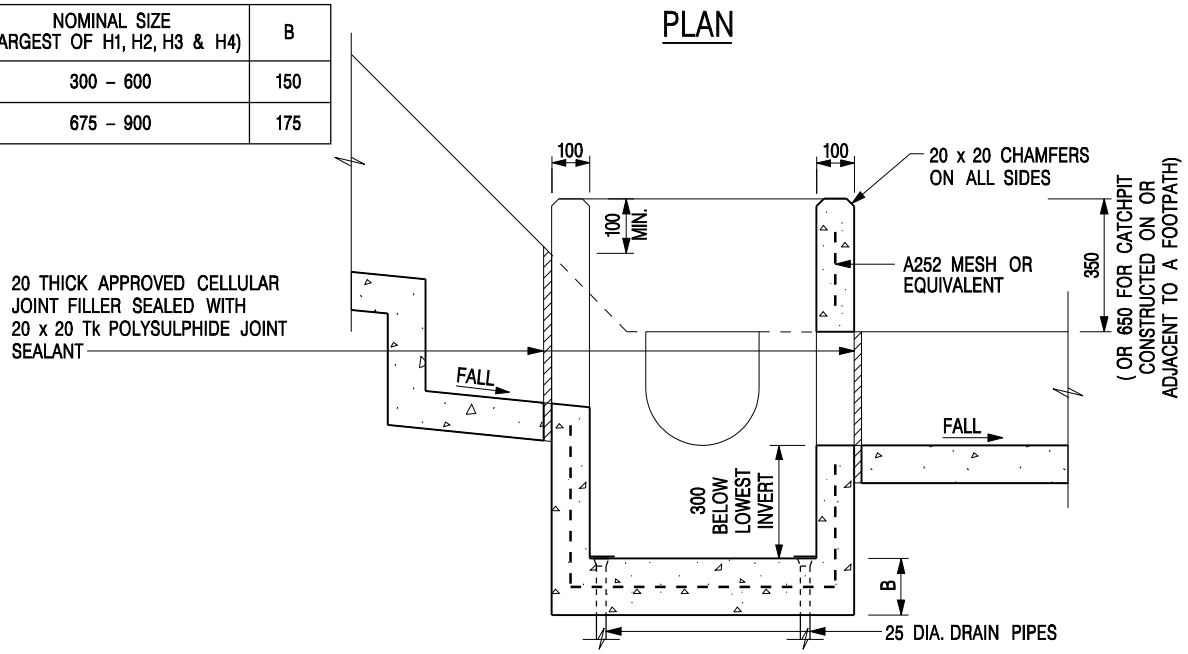
Figure 1 - Chart for the rapid design of U-shaped and half-round channels up to 600 mm

Note: (1) Refer to the latest CEDD Standard Drawings for the details of U-shaped (U) and half-round (HR) channels.



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

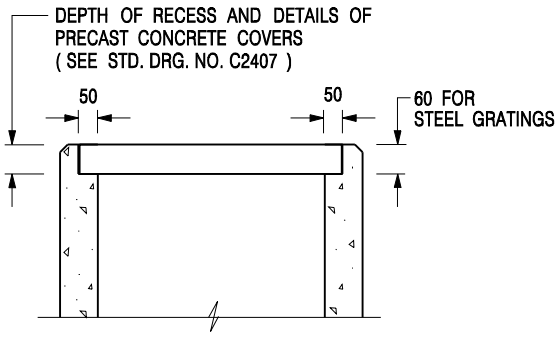
(SHEET 1 OF 2)

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE 1 : 20

DATE JAN 1991

DRAWING NO. C2406 /1



ALTERNATIVE TOP SECTION
FOR PRECAST CONCRETE COVERS / GRATINGS

NOTES:

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

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

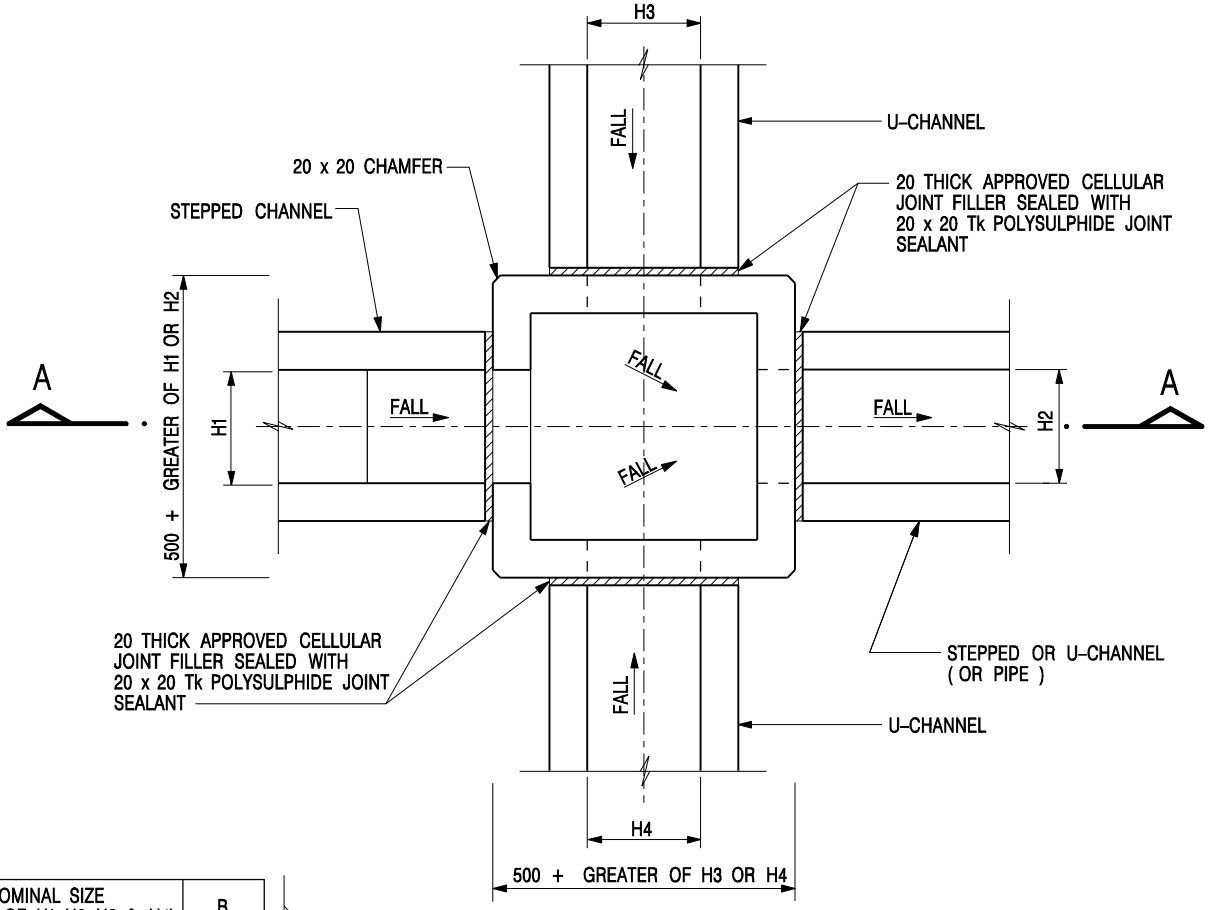
CATCHPIT WITH TRAP
(SHEET 2 OF 2)

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE 1 : 20

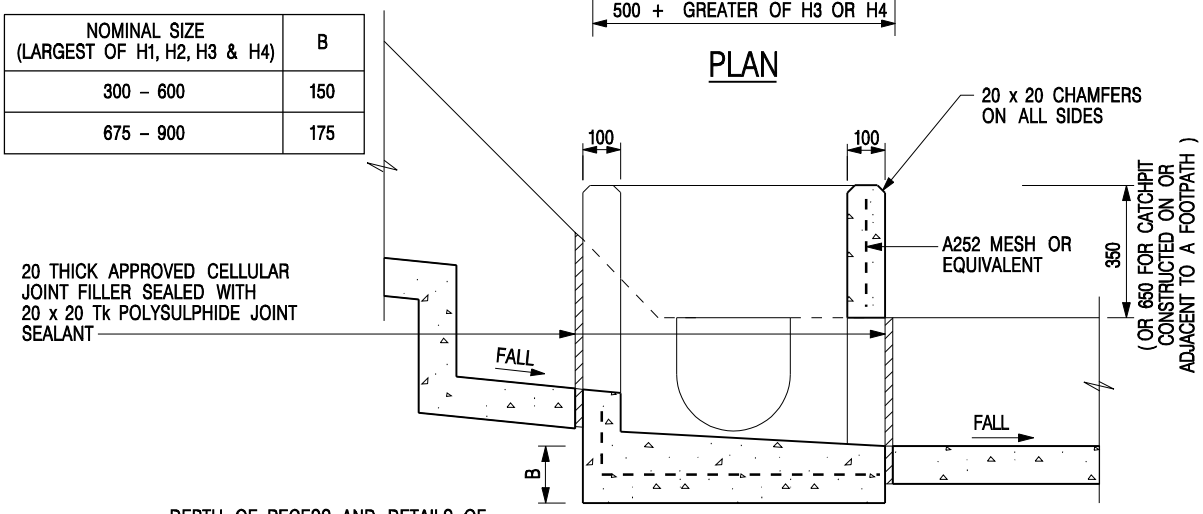
DATE JAN 1991

DRAWING NO. C2406 /2A

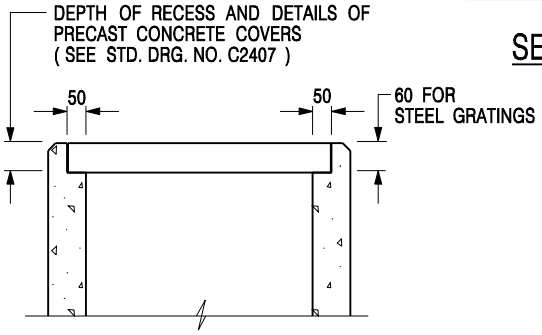


PLAN

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 5 FOR OTHER NOTES.

ALTERNATIVE TOP SECTION FOR PRECAST CONCRETE COVERS / GRATINGS

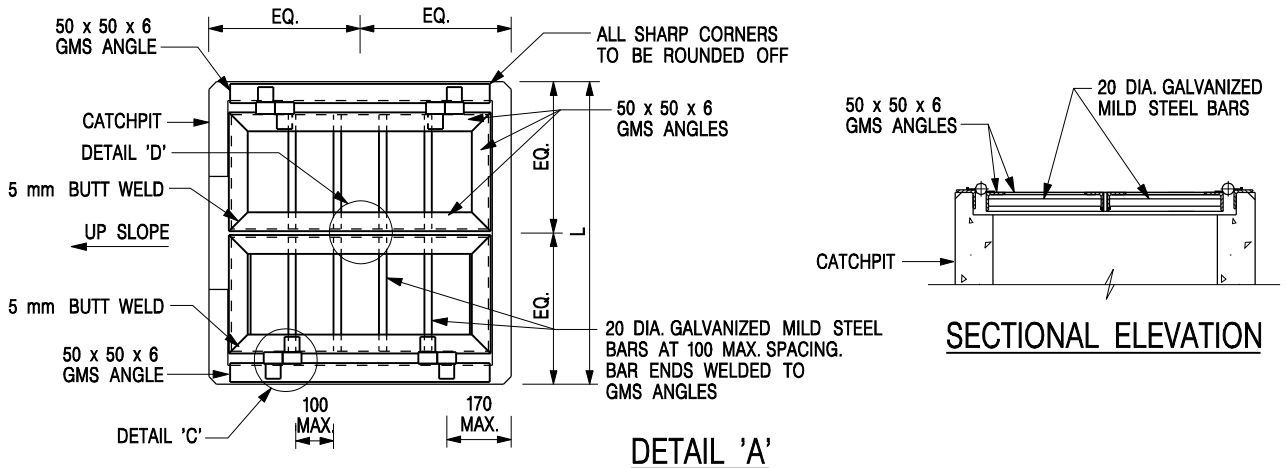
REF.	REVISION	SIGNATURE	DATE
–	FORMER DRG. NO. C2405J.	Original Signed	03.2015

STANDARD CATCHPIT DETAILS

(SHEET 1 OF 5)

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

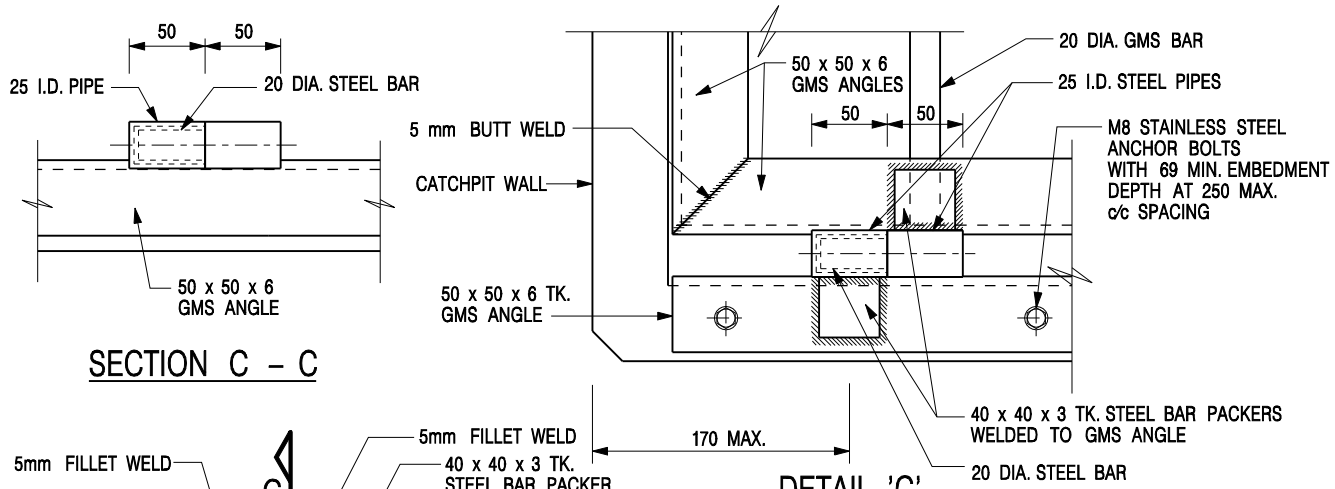
SCALE	1 : 20	DRAWING NO.
DATE	JAN 1991	C2405 /1



DETAIL 'A'

(DETAILS OF DOUBLE SIDE OPENING STEEL GRATING FOR L>900mm)

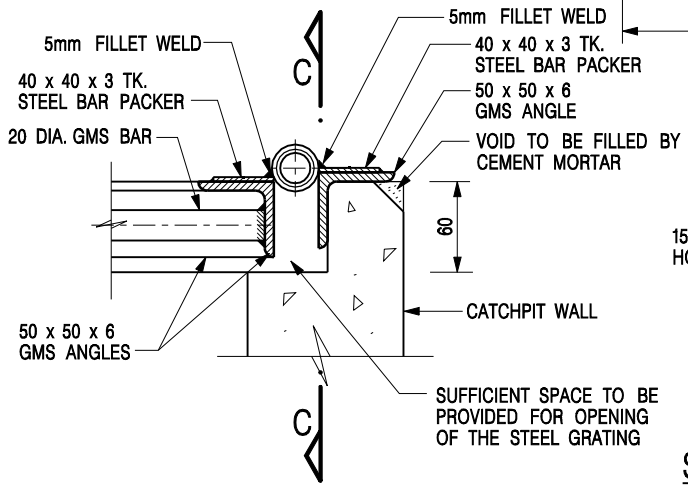
SCALE 1 : 20



DETAIL 'C'

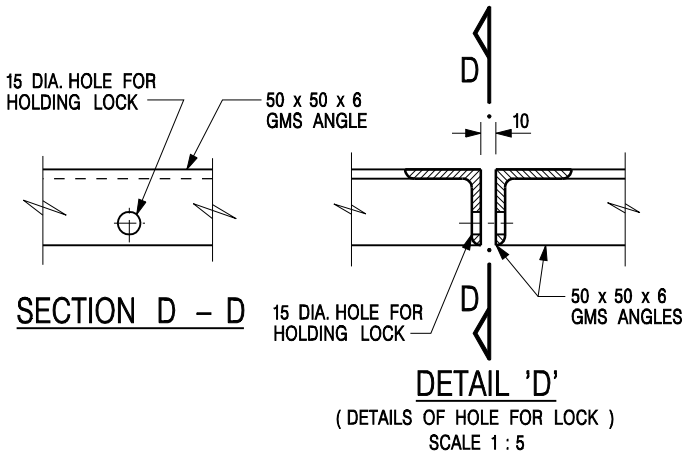
(DETAILS OF HINGE)

SCALE 1 : 5



SECTIONAL ELEVATION

(DETAIL 'C')



DETAIL 'D'

(DETAILS OF HOLE FOR LOCK)

SCALE 1 : 5

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. REFER TO SHEET 5 FOR OTHER NOTES.

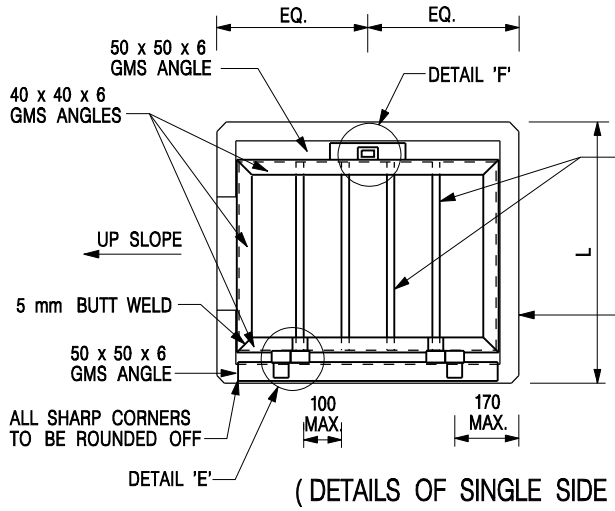
REF.	REVISION	SIGNATURE	DATE
–	FORMER DRG. NO. C2405J.	Original Signed	03.2015

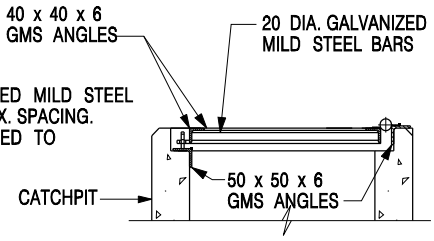
STANDARD CATCHPIT DETAILS

(SHEET 2 OF 5)

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE	AS SHOWN	DRAWING NO.
DATE	JAN 1991	C2405 /2



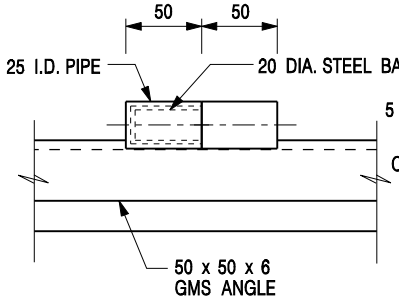


SECTIONAL ELEVATION

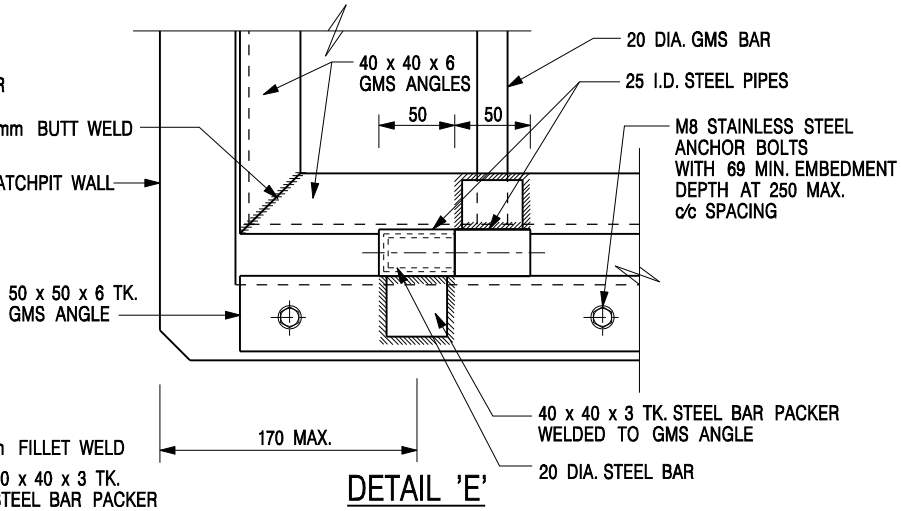
DETAIL 'B'

(DETAILS OF SINGLE SIDE OPENING STEEL GRATING FOR L≤900mm)

SCALE 1 : 20



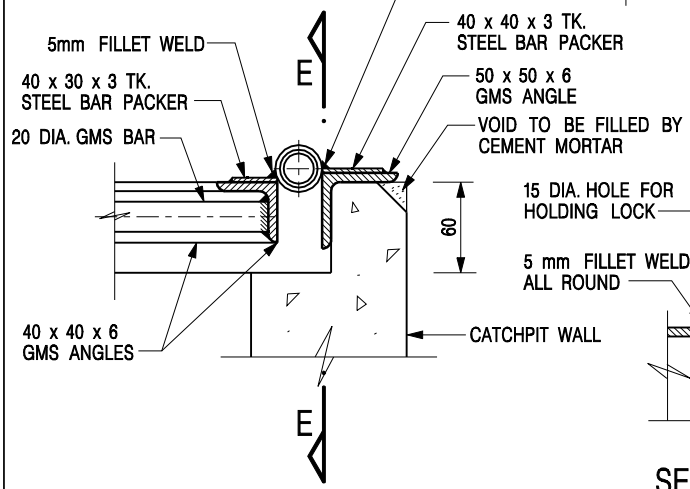
SECTION E – E



DETAIL 'E'

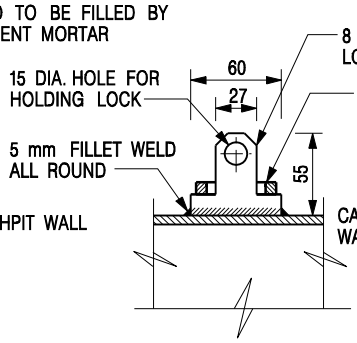
(DETAILS OF HINGE)

SCALE 1 : 5

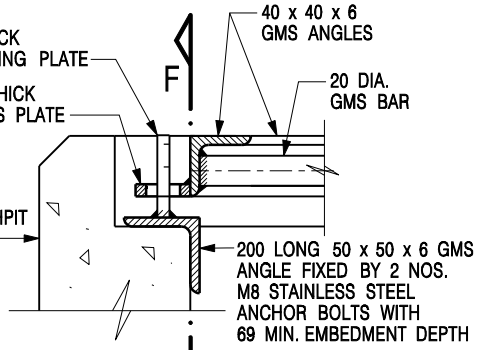


SECTIONAL ELEVATION

(DETAIL 'E')



SECTION F – F



DETAIL 'F'

(DETAILS OF LOCKING PLATE)

SCALE 1 : 5

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. REFER TO SHEET 5 FOR OTHER NOTES.

REF.	REVISION	SIGNATURE	DATE
–	FORMER DRG. NO. C2405J.	Original Signed	03.2015

STANDARD CATCHPIT DETAILS

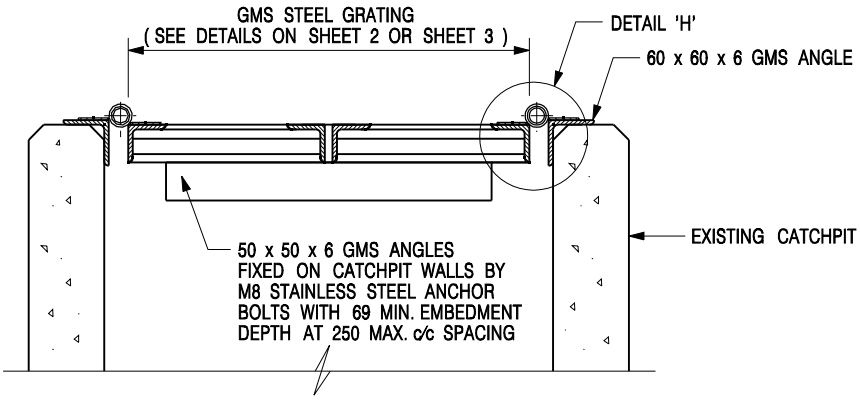
(SHEET 3 OF 5)

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE AS SHOWN

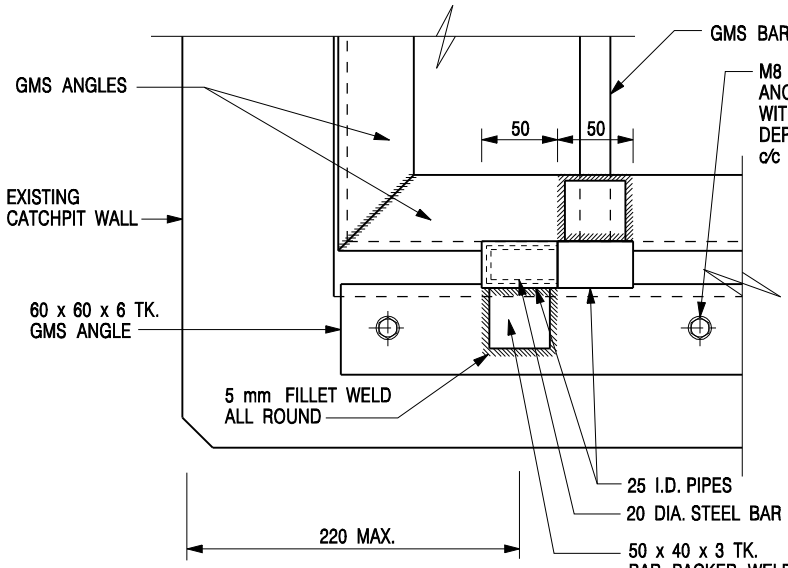
DATE JAN 1991

DRAWING NO. C2405 /3



DETAIL 'G' – DETAILS OF STEEL GRATING CONSTRUCTED ON EXISTING CATCHPIT

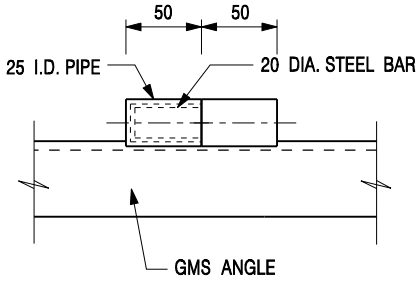
SCALE 1 : 10



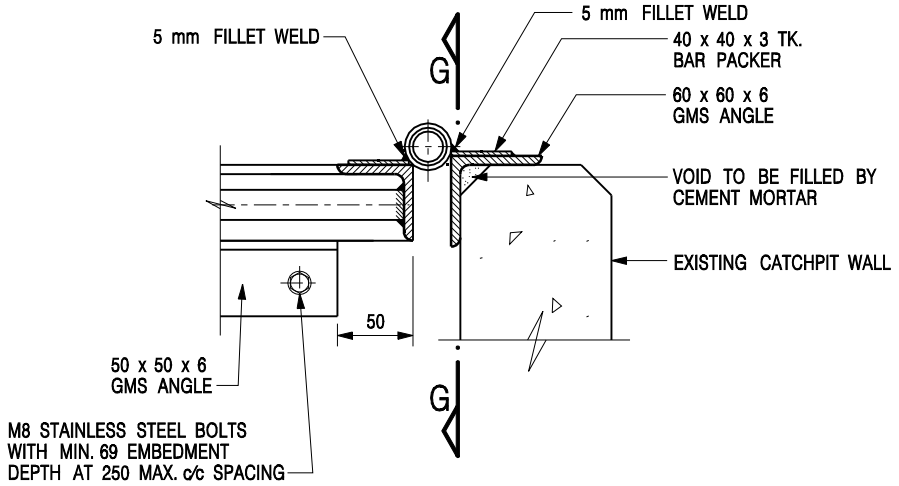
DETAIL 'H'

(DETAILS OF HINGE)

SCALE 1 : 5



SECTION G – G



SECTIONAL ELEVATION

(DETAIL 'H')

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. REFER TO SHEET 5 FOR OTHER NOTES.

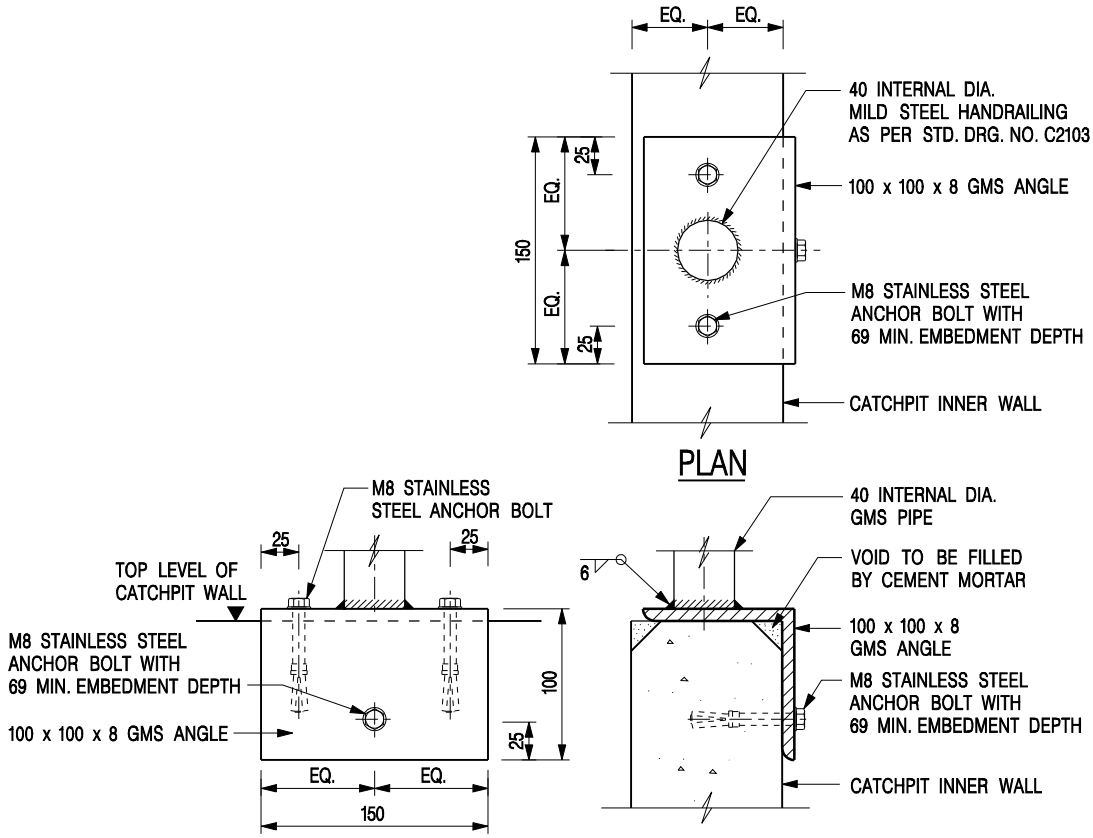
REF.	REVISION	SIGNATURE	DATE
–	FORMER DRG. NO. C2405J.	Original Signed	03.2015

STANDARD CATCHPIT DETAILS

(SHEET 4 OF 5)

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE	AS SHOWN	DRAWING NO.
DATE	JAN 1991	C2405 /4



DETAIL 'J' – FIXING DETAILS FOR HANDRAILING ON TOP OF CATCHPIT WALL

SCALE 1 : 5

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. FOR CATCHPITS CONSTRUCTED ON OR ADJACENT TO A FOOTPATH, STEEL GRATINGS (SEE DETAILS ON SHEET 2 OR SHEET 3) OR CONCRETE COVERS (SEE STD. DRG. NO. C2407) SHALL BE PROVIDED AS DIRECTED BY THE ENGINEER.
7. IF INSTRUCTED BY THE ENGINEER, HANDRAILING (SEE DETAIL 'J' ON SHEET 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.
8. 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 mm c/c STAGGERED SHALL BE PROVIDED. THICKNESS OF CATCHPIT WALL FOR INSTALLATION OF STEP IRONS SHALL BE INCREASED TO 150 mm.
9. FOR RETROFITTING AN EXISTING CATCHPIT WITH STEEL GRATING, SEE DETAIL 'G' ON SHEET 4.
10. ALL STEEL ANGLES SHALL COMPLY WITH BS EN 10025 AND BS EN 10056.
11. UNLESS OTHERWISE SPECIFIED, ALL WELDS SHALL BE 5 mm CONTINUOUS FILLET WELDS.
12. ALL WELDS SHALL BE CHIPPED, GROUND SMOOTH, BRUSHED TO REMOVE SLAG PRIOR TO HOT-DIP GALVANIZATION.
13. ALL STEELWORK SHALL BE HOT-DIP GALVANIZED TO BS EN ISO 1461. ALL EXPOSED STEELWORK SURFACES SHALL BE TREATED AND PAINTED IN ACCORDANCE WITH THE GENERAL SPECIFICATION.
14. SUBJECT TO THE APPROVAL OF THE ENGINEER, OTHER MATERIALS CAN ALSO BE USED AS COVERS / GRATINGS.

REF.	REVISION	SIGNATURE	DATE
–	FORMER DRG. NO. C2405J.	Original Signed	03.2015

STANDARD CATCHPIT DETAILS

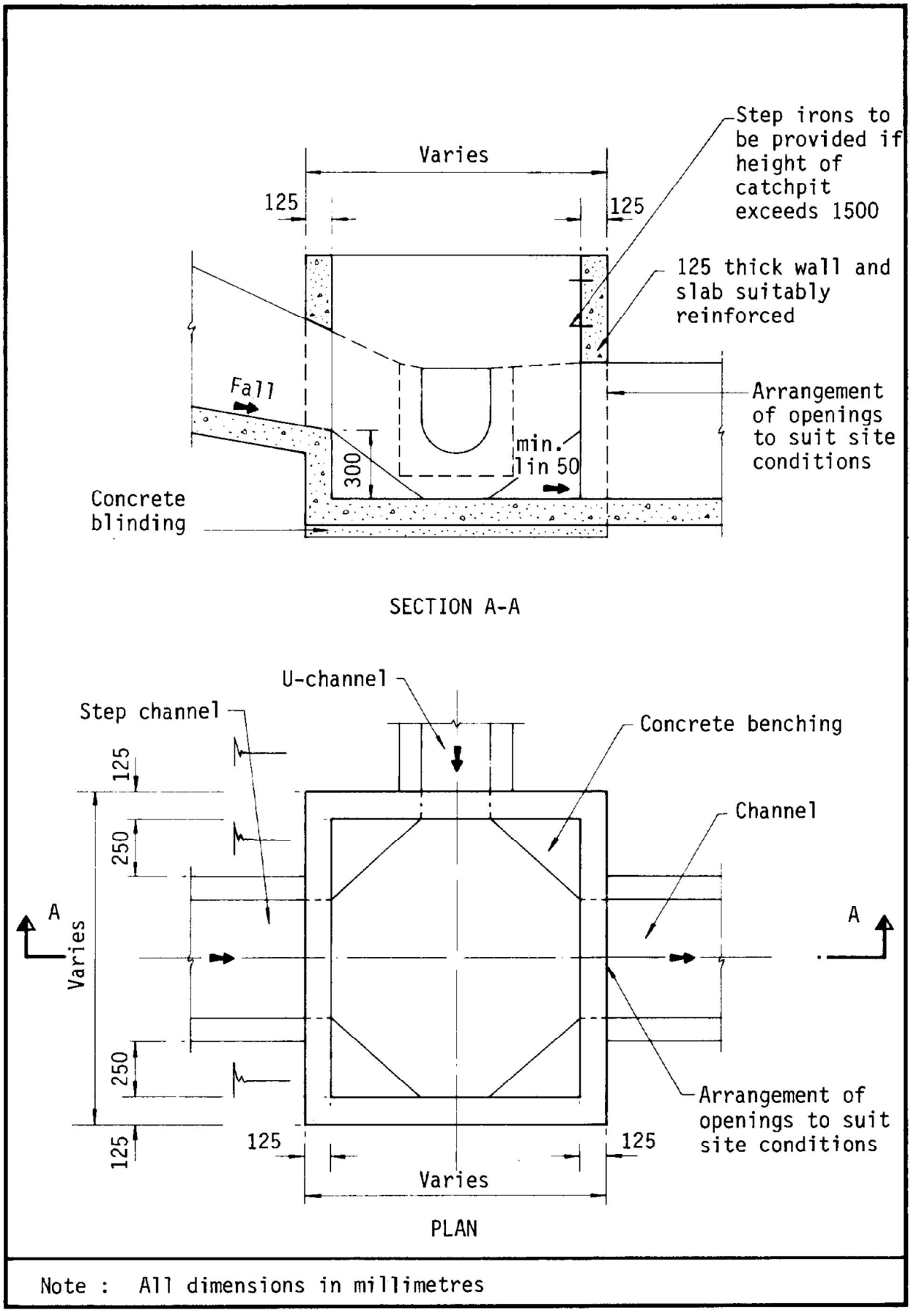
(SHEET 5 OF 5)

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE AS SHOWN

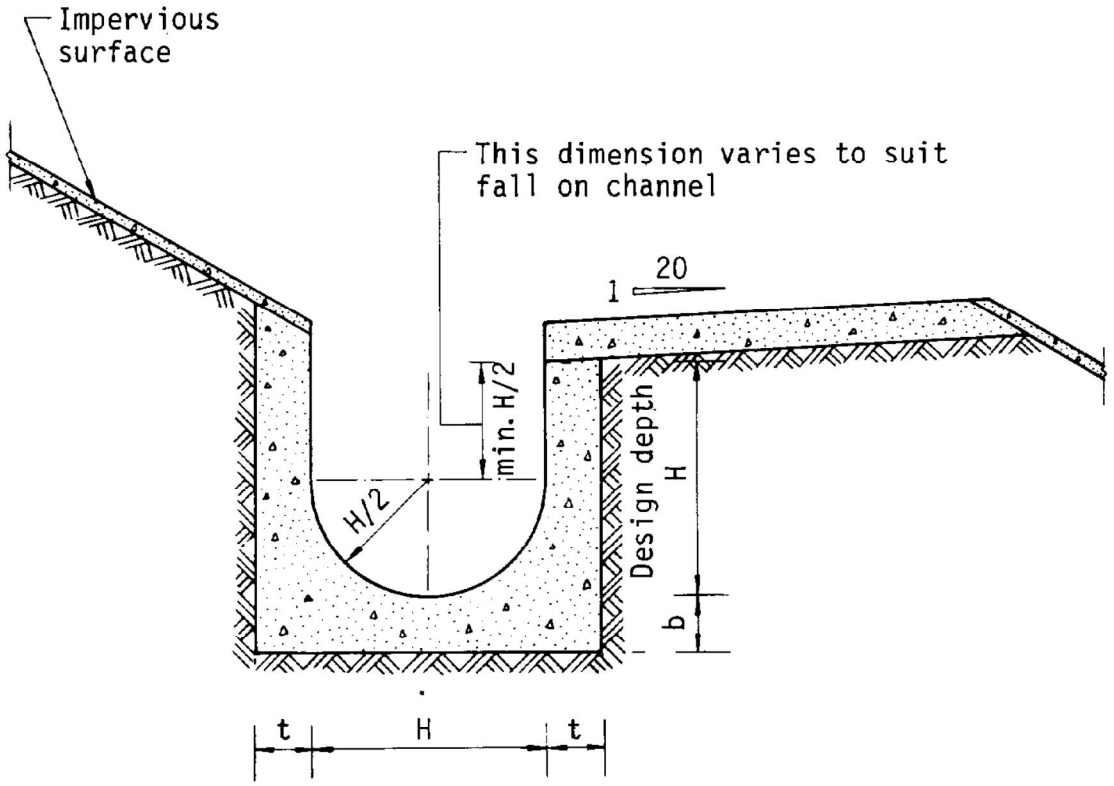
DATE JAN 1991

DRAWING NO. C2405 /5



Note : All dimensions in millimetres

Figure 8.10 - Typical Details of Catchpits



Dimensions of U - channel		
Nominal size of channel H (mm)	Thickness t (mm)	Thickness b (mm)
225 to 600	150	150
675 to 1200	175	225

Figure 8.11 - Typical U-channel Details

Table 3a – Storm Constants for Different Return Periods of HKO Headquarters

Return Period T (years)	2	5	10	20	50	100	200	500	1000
a	446.1	470.5	485.0	496.0	505.5	508.6	508.8	504.6	498.7
b	3.38	3.11	3.11	3.17	3.29	3.38	3.46	3.53	3.55
c	0.463	0.419	0.397	0.377	0.355	0.338	0.322	0.302	0.286

Table 3d – Storm Constants for Different Return Periods of North District Area

Return Period T (years)	2	5	10	20	50	100	200
a	439.1	448.1	454.9	462.3	474.6	486.6	501.4
b	4.10	3.67	3.44	3.21	2.90	2.67	2.45
c	0.484	0.437	0.412	0.392	0.371	0.358	0.348

Table 13 - Values of n to be used with the Manning equation

Source: Brater, E.F. & King, H.W. (1976)

Surface	**Best**	**Good**	**Fair**	**Bad**
Uncoated cast-iron pipe	0.012	0.013	0.014	0.015
Coated cast-iron pipe	0.011	0.012*	0.013*	
Commercial wrought-iron pipe, black	0.012	0.013	0.014	0.015
Commercial wrought-iron pipe, galvanized	0.013	0.014	0.015	0.017
Smooth brass and glass pipe	0.009	0.010	0.011	0.013
Smooth lockbar and welded “OD” pipe	0.010	0.011*	0.013*	
Riveted and spiral steel pipe	0.013	0.015*	0.017*	
Vitrified sewer pipe	0.010	0.013*	0.015	0.017
Common clay drainage tile	0.011	0.012*	0.014*	0.017
Glazed brickwork	0.011	0.012	0.013*	0.015
Brick in cement mortar; brick sewers	0.012	0.013	0.015*	0.017
Neat cement surfaces	0.010	0.011	0.012	0.013
Cement mortar surfaces	0.011	0.012	0.013*	0.015
Concrete pipe	0.012	0.013	0.015*	0.016
Wood stave pipe	0.010	0.011	0.012	0.013
Plank flumes - Planed	0.010	0.012*	0.013	0.014
- Unplaned	0.011	0.013*	0.014	0.015
- With battens	0.012	0.015*	0.016	
Concrete-lined channels	0.012	0.014*	0.016*	0.018
Cement-rubble surface	0.017	0.020	0.025	0.030
Dry-rubble surface	0.025	0.030	0.033	0.035
Dressed-ashlar surface	0.013	0.014	0.015	0.017
Semicircular metal flumes, smooth	0.011	0.012	0.013	0.015
Semicircular metal flumes, corrugated	0.0225	0.025	0.0275	0.030
Canals and ditches				
1. Earth, straight and uniform	0.017	0.020	0.0225*	0.025
2. Rock cuts, smooth and uniform	0.025	0.030	0.033*	0.035
3. Rock cuts, jagged and irregular	0.035	0.040	0.045	
4. Winding sluggish canals	0.0225	0.025*	0.0275	0.030
5. Dredged-earth channels	0.025	0.0275*	0.030	0.033
6. Canals with rough stony beds, weeds on earth banks	0.025	0.030	0.035*	0.040
7. Earth bottom, rubble sides	0.028	0.030*	0.033*	0.035
Natural-stream channels				
1. Clean, straight bank, full stage, no rifts or deep pools	0.025	0.0275	0.030	0.033
2. Same as (1) but some weeds and stones	0.030	0.033	0.035	0.040
3. Winding some pools and shoals, clean	0.033	0.035	0.040	0.045
4. Same as (3), lower stages, more ineffective slope and sections	0.040	0.045	0.050	0.055

Table 13 (Cont'd)

Surface	Best	Good	Fair	Bad
5. Same as (3) some weeds and stones	0.035	0.040	0.045	0.050
6. Same as (4) stony sections	0.045	0.050	0.055	0.060
7. Sluggish river reach, rather weedy or with very deep pools	0.050	0.060	0.070	0.080
8. Very weedy reaches	0.075	0.100	0.125	0.150

Notes: *Values commonly used for design.