Appendix I

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From: [redacted]
Sent: 2025-09-04 星期四 12:12:59
To: [redacted]
Cc:
Subject: Re: Planning Application No. A/YL-PH/1069 - Departmental Comments
Attachment: LD-L741-SD01(R7).pdf

梁小姐,

請幫忙轉交有關部門負責人跟進,謝謝!

韋小堯
[redacted]

利安設計工程有限公司
LEON Design Engineering Limited

Stormwater Drainage Design

For

Propsed Temporary Private Vehicle Part Associated and Filling of Land for a Period of 3 Years of Land Lot 741 (Part) in D.D. 111 in "Village Type Development" Zone, Pat Heung, Yuen Long, N.T.

Report No.: **LD/L741/DS01**
Date: **10/10/2024**

1. Equations and Assumptions

1.1 Surface drainage design is in accordance with Geotechnical Manual for Slopes (2nd Edition, 1984).

1.2 Slope drainage is designed to a frequency of 1 in 200 rainfall return period.

1.3 Time of Concentration = time of entry + time of flow

i.e. $t_c = t_e + t_f$

1.4 Time of entry is calculated based on the modified form of Bransby-Williams Equation:

$$t_e = 0.14465 \times L / (H^{0.2} \times A^{0.1})$$ Eqn. 8.2 Geotechnical Manual for Slopes

where t_e = time of entry (min) ,

A = area of catchment (m^2) ,

H = average fall (m per 100m) from the summit of catchment to the point of design,

L = distance in metre measured on the line of natural flow between the design section and that point of catchment from which water would take the longest time to reach the design section (m)

1.5 Time of flow is calculated from the measured water flow length in channel divided by the assumed flow velocity.

i.e. $t_f = w / v$

where t_f = time of flow (min) ,

w = measured water flow length in channel (m) ,

v = assumed water flow velocity (m/s)

1.6 Runoff coefficient for the slope is assumed to be 1.0 for vegetated ground surface. Geotechnical Manual for Slopes (p. 96)

1.7 Peak stormwater is determined by the "Rational Method" using the following formula:

$$Q = KiA/60$$ Eqn. 8.7 Geotechnical Manual for Slopes

where Q = maximum runoff (litres/min) ,

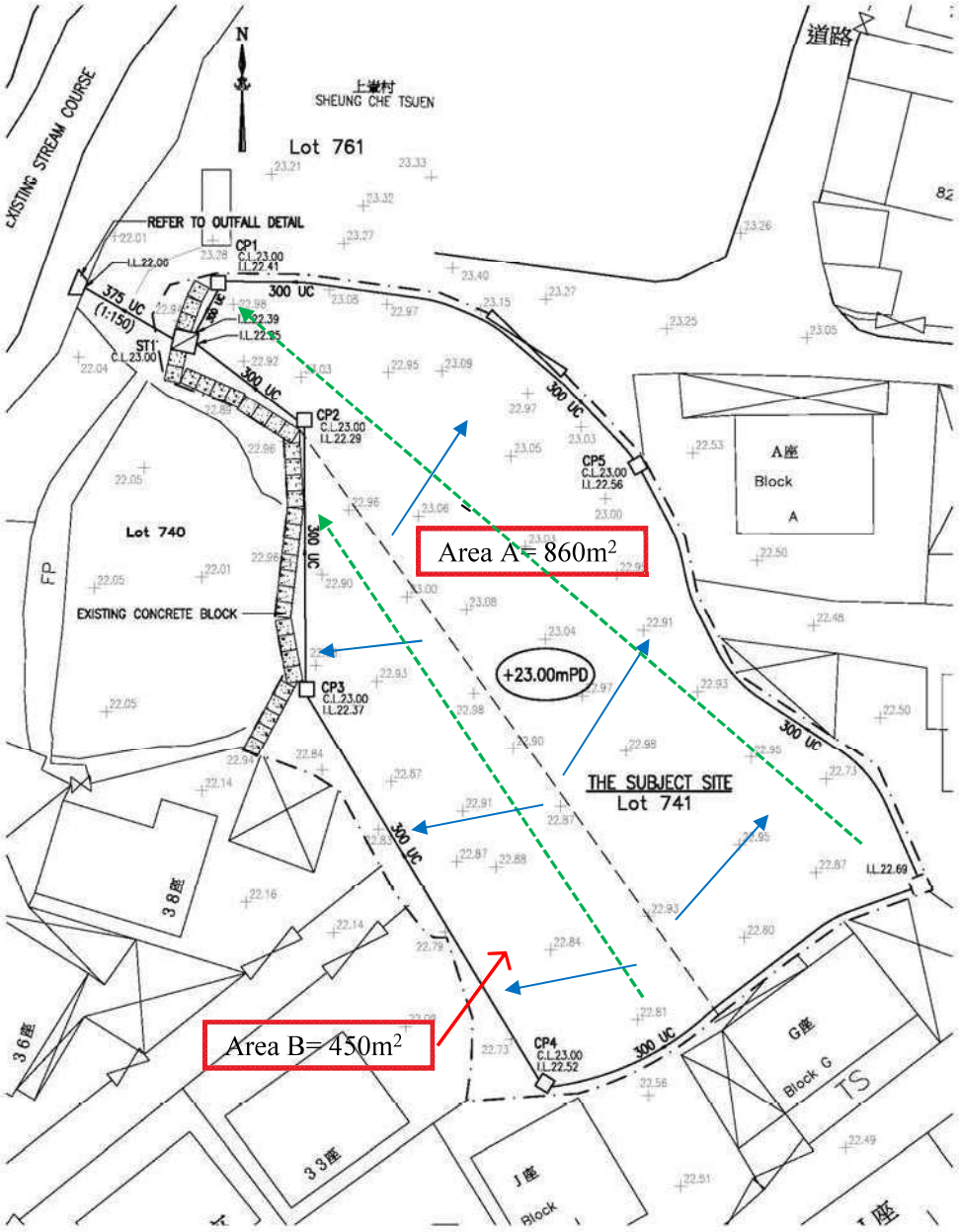
K = runoff coefficient (K = 1.0) ,

i = design mean intensity of rainfall (mm/hr) ,

A = area of catchment (m^2) .

2. Catchment Area

The catchment area for the design of surface channels is shown below :



Plan of Catchment Areas

NTS

3. Checking requirement width by rainwater through between CP5 to ST1

a. Catchment Area A to Proposed Drainage (300 UC)

Area A = 860 m^2
L = 55 m

δh = 23.08 - 22.91 = 0.17 m

H = 0.17 * 100 / 55 = 0.31 m (average fall per 100m run)

t_c = 0.14465 x 55/(0.31 $^{0.2}$ x 860 $^{0.1}$) = 5.116 min

For t_f, w = 14 m, v = 3 m/s (assumed)

t_{f1} = 14 / (3 x 60) = 0.078 min

t_1 = 5.116 + 0.078 = 5.194 min

From rainfall curve, use t = 5.2 min

i_{200} = 360 mm/hr — Fig. 1, TGN 30
K = 1

Flow for 200 years return periods,

Q_{200} = 1*360 x 860 / 60 = 5160 litres/min

Drop of channel = 22.690 - 22.390 = 0.30 m

Gradient = 0.3 / 14 = 1 in 47

Proposed channel size = 225 UC — Fig. 8.7 Geotechnical Manual for Slopes

Capacity = 10400 > Q200 OK

Read v_{max} = 2.5 m/s < 4 m/s OK

Therefore, used 300mm UC is adequate for catchment area of A.

4. Checking requirement width by rainwater through between CP4 to ST1

b Catchment Area B to Proposed Drainage (300 UC)

Total Area = 450 m^2
L = 43 m

δh = 23 - 22.87 = 0.13 m

H = 0.13 * 100 / 43 = 0.30 m (average fall per 100m run)

t_c = 0.14465 x 43/(0.3 $^{0.2}$ x 450 $^{0.1}$) = 4.296 min

For t_f, w = 12 m, v = 3 m/s (assumed)

t_{f1} = 12 / (3 x 60) = 0.067 min

t_1 = 4.296 + 0.067 = 4.363 min

From rainfall curve, use t = 4.4 min

i_{200} = 370 mm/hr — Fig. 1, TGN 30
K = 1

Flow for 200 years return periods,

Q_{200} = 1*370 x 450 / 60 = 2775 litres/min

Drop of channel = 22.520 - 22.290 = 0.23 m

Gradient = 0.23 / 12 = 1 in 53

Proposed channel size = 300 UC — Fig. 8.7 Geotechnical Manual for Slopes

Capacity = 10300 > Q200 OK

Read v_{max} = 2.4 m/s < 4 m/s OK

Therefore, used 300mm UC is adequate for catchment area of B.

5. Checking requirement width by rainwater through between ST1 to existing channel

c Catchment Area A + B to Proposed Drainage (375 UC)

Area A = 860 m^2

Area B = 450 m^2

Total Area = 1310 m^2

t_{total} = 4.400 min

For t_f, w = 6.5 m, v = 3 m/s (assumed)

t_{f1} = 6.5 / (3 x 60) = 0.036 min

t_{total} = 4.4 + 0.036 = 4.436 min

From rainfall curve, use t = 4.4 min

i_{200} = 370 mm/hr — Fig. 1, TGN 30
K = 1

Flow for 200 years return periods,

Q_{200} = 1*370 x 1310 / 60 = 8078 litres/min

Drop of channel = 22.250 - 22.060 = 0.19 m

Gradient = 0.19 / 6.5 = 1 in 35

Proposed channel size = 375 UC — Fig. 8.7 Geotechnical Manual for Slopes

Capacity = 25000 > Q200 OK

Read v_{max} = 3.4 m/s < 4 m/s OK

Therefore, used 375mm UC is adequate for catchment area of the application site.

Geotechnical Engineering Office, Civil Engineering and Development Department
The Government of the Hong Kong Special Administrative Region

GEO Technical Guidance Note No. 30 (TGN 30)
New Intensity-Duration-Frequency Curves for Slope Drainage Design

Issue No.: 1	Revision: -	Date: 21.3.2011	Page: 3 of 4

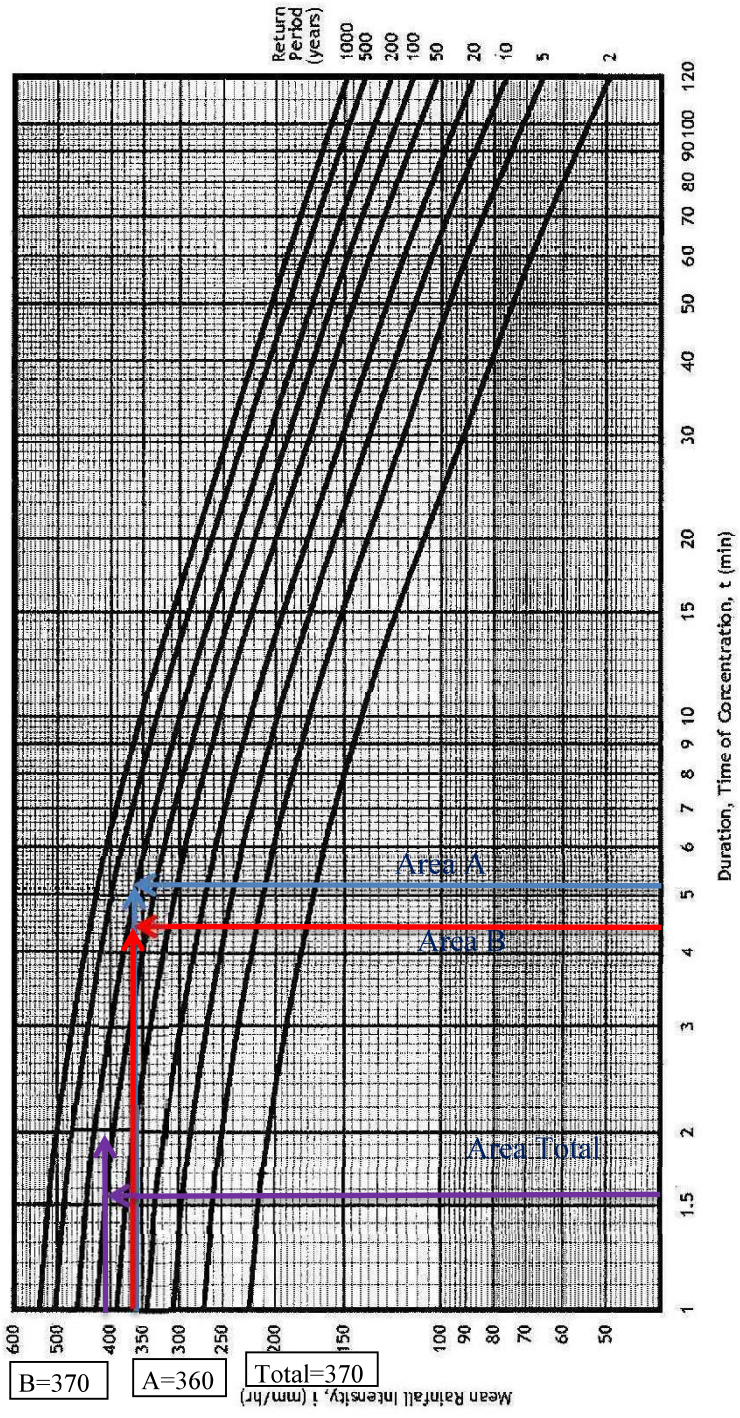


Figure 1 – New Intensity-Duration-Frequency (IDF) Curves (Tang & Cheung, 2011)

Note: These IDF curves are to supersede those given in Figure 8.2 of the Geotechnical Manual for Slopes (GCO, 1984).

ANNEX TGN 30 A1 (1/2)

Geotechnical Engineering Office, Civil Engineering and Development Department
The Government of the Hong Kong Special Administrative Region

GEO Technical Guidance Note No. 43 (TGN 43)
Guidelines on Hydraulic Design of U-shaped and Half-round Channels on Slopes

Issue No.: 1	Revision: -	Date: 05.06.2014	Page: 3 of 3

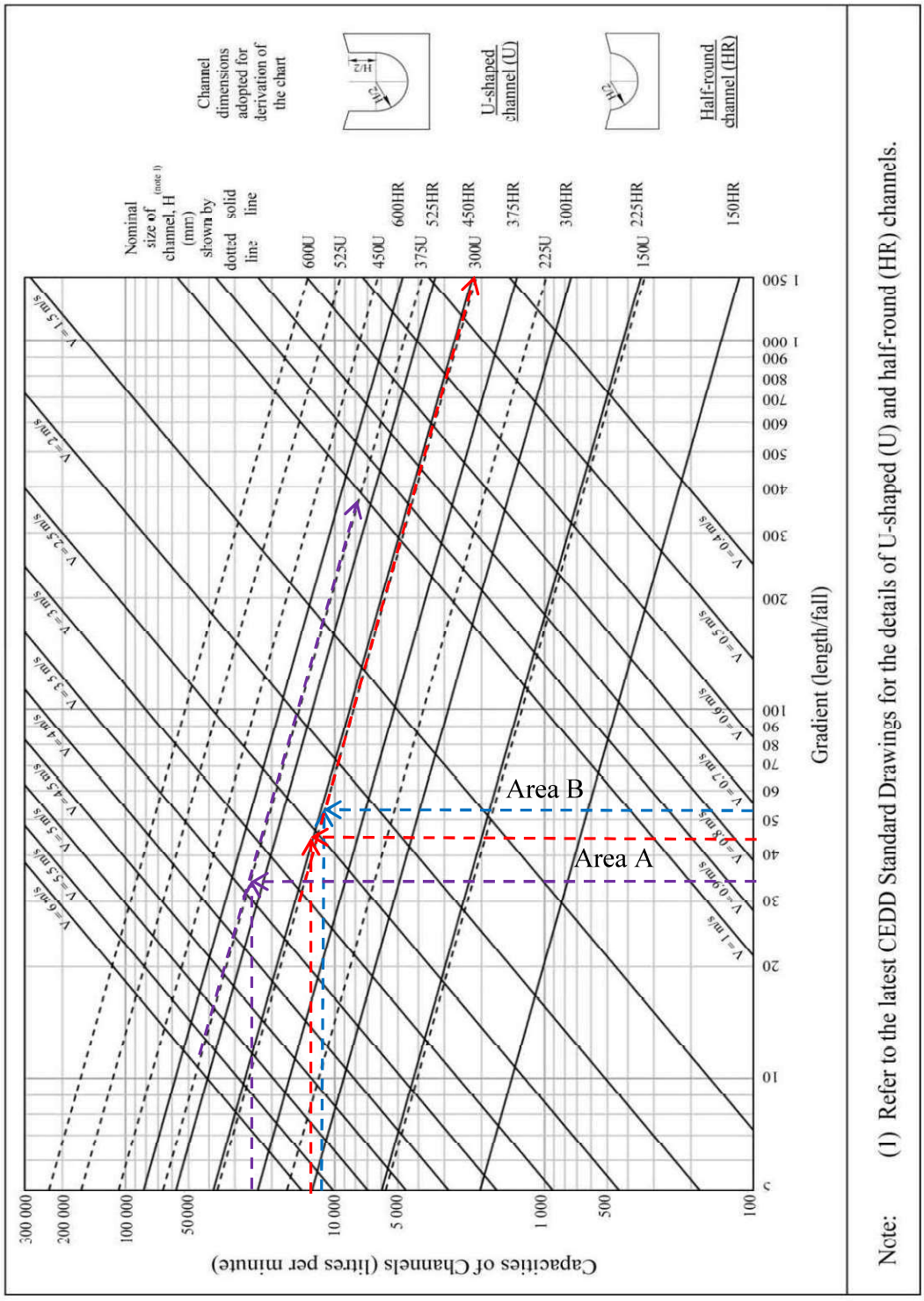


Figure 1 - Chart for the rapid design of U-shaped and half-round channels up to 600 mm

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

ANNEX TGN 43 A1

Responses to Comments for Drainage Services Department

(a) Colour photos to indicate the current conditions of the existing drainage facilities should be included in the submission. The photo taken location and angle should be shown on the layout plan.	See attachment
(b) 300 UC with gradient of 1:200 are proposed by the applicant. Please 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 to the overland flow intercepted from the adjacent lands. Please also indicate the gradient of the proposed 375 UC and showing its C.L. and I.L. at outfall detail.	See attachment
(c) Cross sections showing the existing and proposed ground levels of the captioned site with respect to the adjacent areas should be given.	See attachment
(d) The proposed finished G.L. of the subject site is 22.3 which is about 0.6m higher than the existing G.L. of 21.7. Please demonstrate the proposed site formation works will not affect the overland flow from the adjacent lands.	See attachment
(e) The development should neither obstruct overland flow nor adversely affect existing natural streams, village drains, ditches and the adjacent areas, etc.	Noted
(f) Where walls or hoarding are erected or laid along the site boundary, adequate opening should be provided to intercept the existing overland flow passing through the site.	Noted
(g) The existing watercourse, to which the stormwater of the development from the subject site would discharge, are not maintained by this office. The applicant should identify the owner of the existing drainage facilities to which the proposed connection will be made. In the case that it is a local village drains, District Office / Yuen Long should be consulted.	Noted
(h) The applicant shall resolve any conflict / disagreement with relevant lot owner(s) and seek Lands Department's permission for laying new drains / channels and/or modifying / upgrading existing ones in other private lots or on Government land outside the application site.	Noted

Responses to Comments for Drainage Services Department
Planning Application No. TPB/A/YL-PH/1069

1.	The applicant is advised to response to his comments given on 5 June 2025.	1. The existing Manhole was constructed beside the fence wall, please see appendix -1
2.	The applicant revised the I.L.s. at the channels start points near Lot no. 743 S.D in D.D. 111, proposed catchpit CP5 and catchpit CP1. However, the I.L.s. of the proposed catchpits CP4, CP3, CP2 and ST1 are not tally with the I.L. of the channel starting point i.e. +22.21mPD. please check and revise.	2. See attachment drawing
3.	He supposes the proposed drainage system will intercept the drains discharged from the adjacent area. Please provide connection details including all C.L., I.L. and B.L. for the drains, and all other drains affected by the proposed development, as shown in the attached photos for our consideration.	3. The adjacent area was collected by existing manhole (see appendix-1)
4.	Please note that the above comments are provided from drainage point of view. Since the site formation levels and any associated works proposed by the applicant may affect adjacent land and cause other impacts and/or other issues to public, please consider to require the applicant to submit technical assessment(s) in other aspect(s) and seek comment from relevant departments as necessary.	4. Adjacent land may not be affected during the existing pipes to be connected the adjacent area and carried water away

APPENDIX - 1

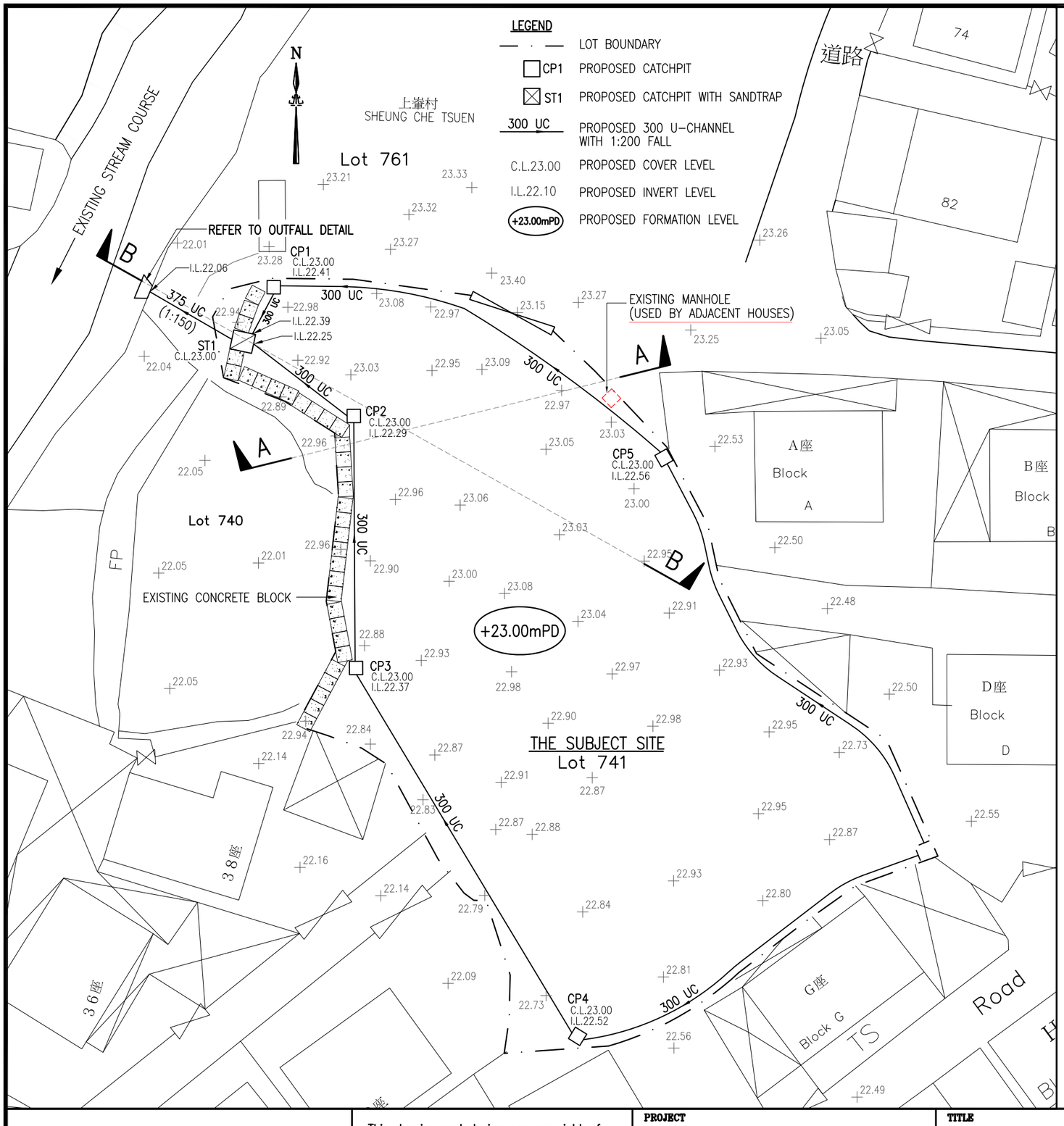
LOCATION OF THE EXISTING MANHOLE

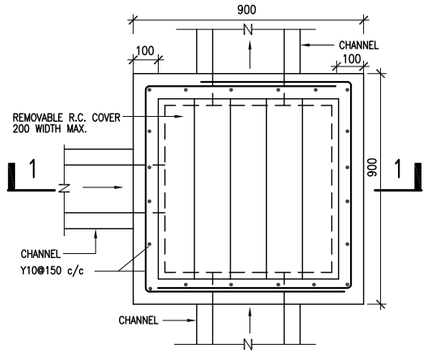
APPENDIX - 1(Con't)

DETAILS OF THE EXISTING MANHOLE (OUTSIDE)

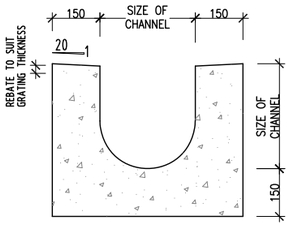
APPENDIX - 1(Con't)

DETAILS OF THE EXISTING MANHOLE (INSIDE)

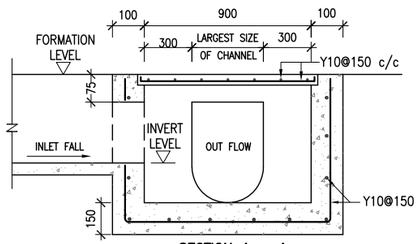




PLAN OF CATCH-PIT

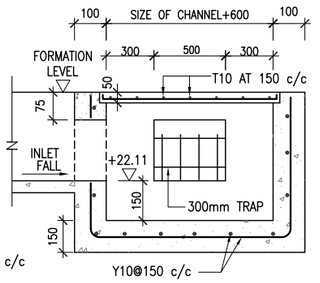


U-CHANNEL
N. T. S.

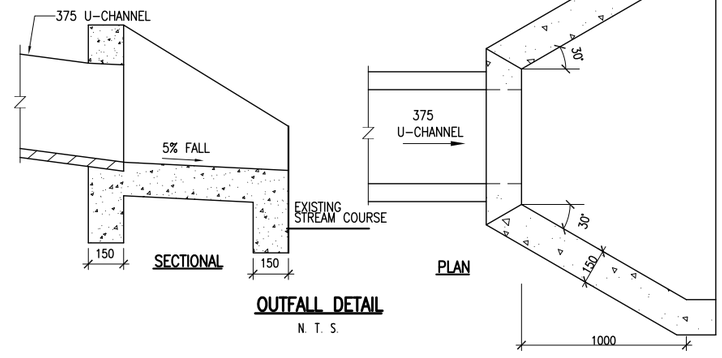


SECTION 1 – 1

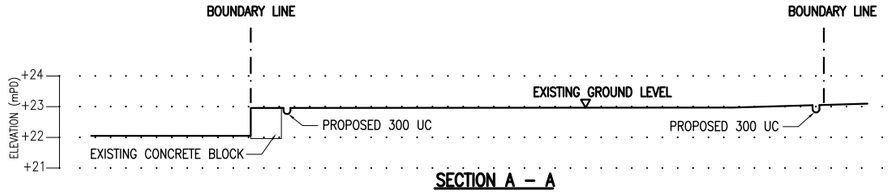
DETAILS OF CATCH-PIT
N. T. S.



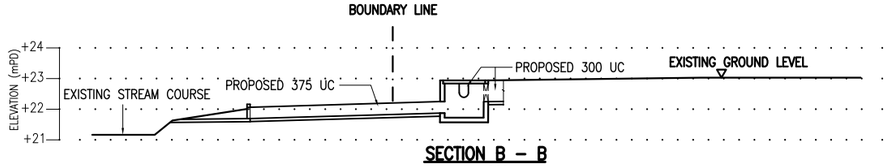
CATCHPIT WITH SANDTRAP (ST1)
N. T. S.



OUTFALL DETAIL
N. T. S.



SECTION A – A
1 : 200



SECTION B – B
1 : 200

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PROJECT

LOT 741 IN D.D. 111,
SHEUNG CHE TSUEN, NORTH, N.T.

TITLE

PROPOSED DRAINAGE PLAN

DRAWN BY	CHECKED BY	DATE
PT	PT	Sept. 2025
SCALE: 1 : 300	JOB NO.: LD/ –	
CAD / FILE: LD–L741–D01(E)	DWG NO.: LD/L741/D01(E)	