舊有批准的渠務報告

Our Ref: 031/22/HC/hc
Your Ref: A/YL-PH/906

Date: 10th May, 2022

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

Dear Sir/ Madam,

Proposed Temporary Warehouse for Storage of Hydroelectric Engineering Construction Material for a Period of 3 Years
Lot 644 in D.D. 111, Pat Heung, Yuen Long
Drainage Proposal Submission

As per request, on behalf of the applicant, we submit herewith the Drainage System Proposal Report, one set with five copies, for your comment and approval.

Our drainage submission has considered the followings: -

1. Presently the storm-water runoff that induced in the proposed development lot is directly discharged into the existing stream course at downstream. Hence, we consider that the changing of land used from paved land to this temporary warehouse site will likely not cause overload to the existing local drainage system.
2. We confirm that our applicant will bear the costs of the construction of all the drainage works which inside the lot or outside the lot boundary. For works to be undertaken outside the lot boundary, our applicant will obtain prior consent and agreement from DLOYL and relevant lot owners.

Thank you for your attention.

Yours faithfully,

.....

Encl.

Drainage Assessment Report

For

The Workshop Application

At

Lot 644 in D. D. 111

Pat Heung,

Yuen Long, N.T.

Prepared by H. C. Cho (RPE$_{CVL}$)

10th May, 2022

Temporary Warehouse for Storage of Hydroelectric Engineering Construction Material

Site Stormwater Drainage Assessment Report for the Proposed Site

1.0 Introduction

It is proposed by the applicant, to change the land use to a temporary warehouse at the proposed lots at a local track branching off from Wang Toi Shan Shan Tsuen Road, Yuen Long, N. T. I have inspected the site and have taken the consideration of drainage and environmental aspects for the proposed development works.

2.0 Basis of Assessment

To assess the technical acceptability of the proposed development located at the site area as indicated in the topographic survey plan attached in appendix I, a number of analyses have been considered and they are presented below.

3.0 The Site

The site area presently is a paved flat fenced area with some location is occupied by some storage materials. The total catchment area of the whole development site is approximate 1340 m^2. Appendix III refers. In between the proposed lots and the existing stream course is with an existing 300mm U-channels.

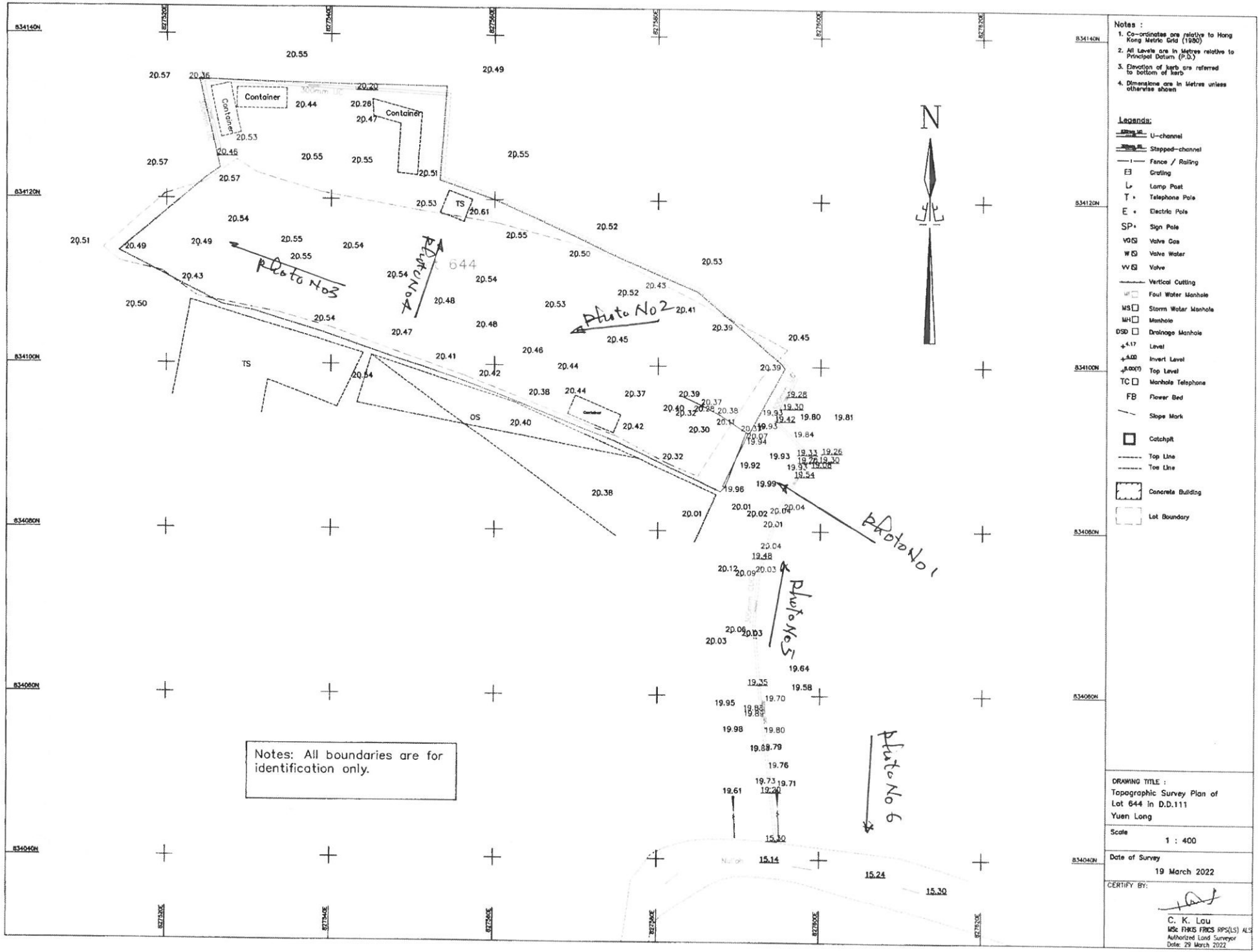
4.0 Observation

Presently, at south side of the proposed development site, is a fenced-out temporary storage area with shelters. It is with ground level +20.50 mPD to +20.01 mPD. Presently, the surface water of the proposed lot and adjacent lots is discharged via the existing 300mm U-channel at north and east bound to the existing 2.0 meters stream course at further south.

5.0 Consideration and Recommendation

As indicated in the drainage layout plan in appendix III, all the surface water induced in the site area and adjacent areas will discharge into the proposed 225mm U-channel around the perimeter of the proposed site. Then is further discharged to the existing 300mm U-channel at downstream. It then finally discharged to the 2.0 meters stream course at further south bound.

Appendix


Notes :
1. Co-ordinates are relative to Hong Kong Metric Grid (1980)
2. All Levels are in Metres relative to Principal Datum (P.D.)
3. Elevation of kerb are referred to bottom of kerb
4. Dimensions are in Metres unless otherwise shown
Legends:
U-channel
Stepped-channel
Fence / Railing
Grating
Lamp Post
Telephone Pole
Electric Pole
Sign Pole
Valve Gas
Valve Water
Valve
Vertical Cutting
Foul Water Manhole
Storm Water Manhole
Manhole
Drainage Manhole
Level
Invert Level
Top Level
Manhole Telephone
Flower Bed
Slope Mark
Catchpit
Top Line
Toe Line
Concrete Building
Lot Boundary
N
Container
TS
OS
Photo No1
Photo No2
Photo No3
Photo No4
Photo No5
Photo No 6
Notes: All boundaries are for identification only.
DRAWING TITLE :
Topographic Survey Plan of Lot 644 in D.D.111 Yuen Long
Scale
1 : 400
Date of Survey
19 March 2022
CERTIFY BY:
C. K. Lau
MSc FHKIS FRICS RPS(LS) ALS
Authorized Land Surveyor
Date: 29 March 2022

Appendix I

Temporary Warehouse for Storage of Hydroelectric Engineering Construction Material, Lot 644 in D.D. 111 Pat Heung, Yuen Long (Drainage Proposal)

Record Photos of Present site condition **Date: 08-05-2022**

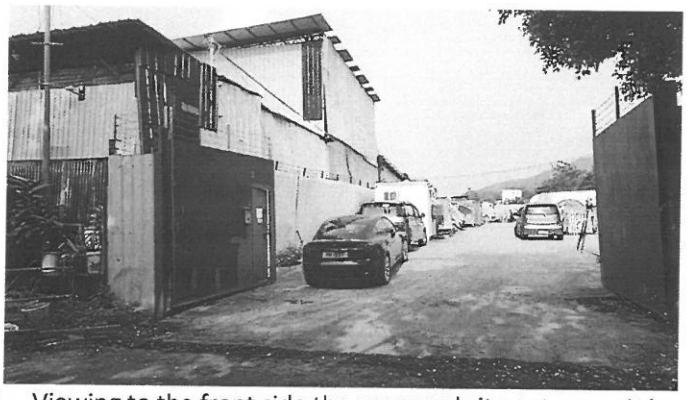


Photo No. 1 Viewing to the front side the proposed site entrance. It is an existing 300mm U-channel crossing. The site is a paved area around +20.5 mPD. Other four sides outside the site boundary are also in a flat area, similar ground level in comparing to the proposed site.

Photo No. 2 Viewing to the south side, along the boundary is the metal fence. Beyond is sheltered temporary warehouses with ground level at +20.50mPD to +20.01 mPD.

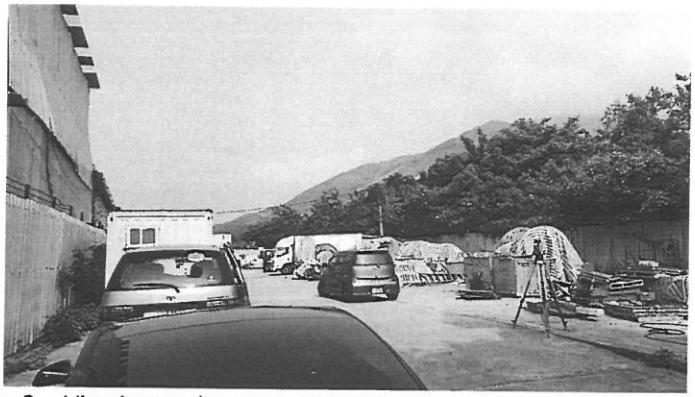


Photo no. 3 Viewing to the west end of the proposed warehouse site is also fenced-out of another warehouses lot..

Temporary Warehouse for Storage of Hydroelectric Engineering Construction Material, Lot 644 in D.D. 111 Pat Heung, Yuen Long (Drainage Proposal)

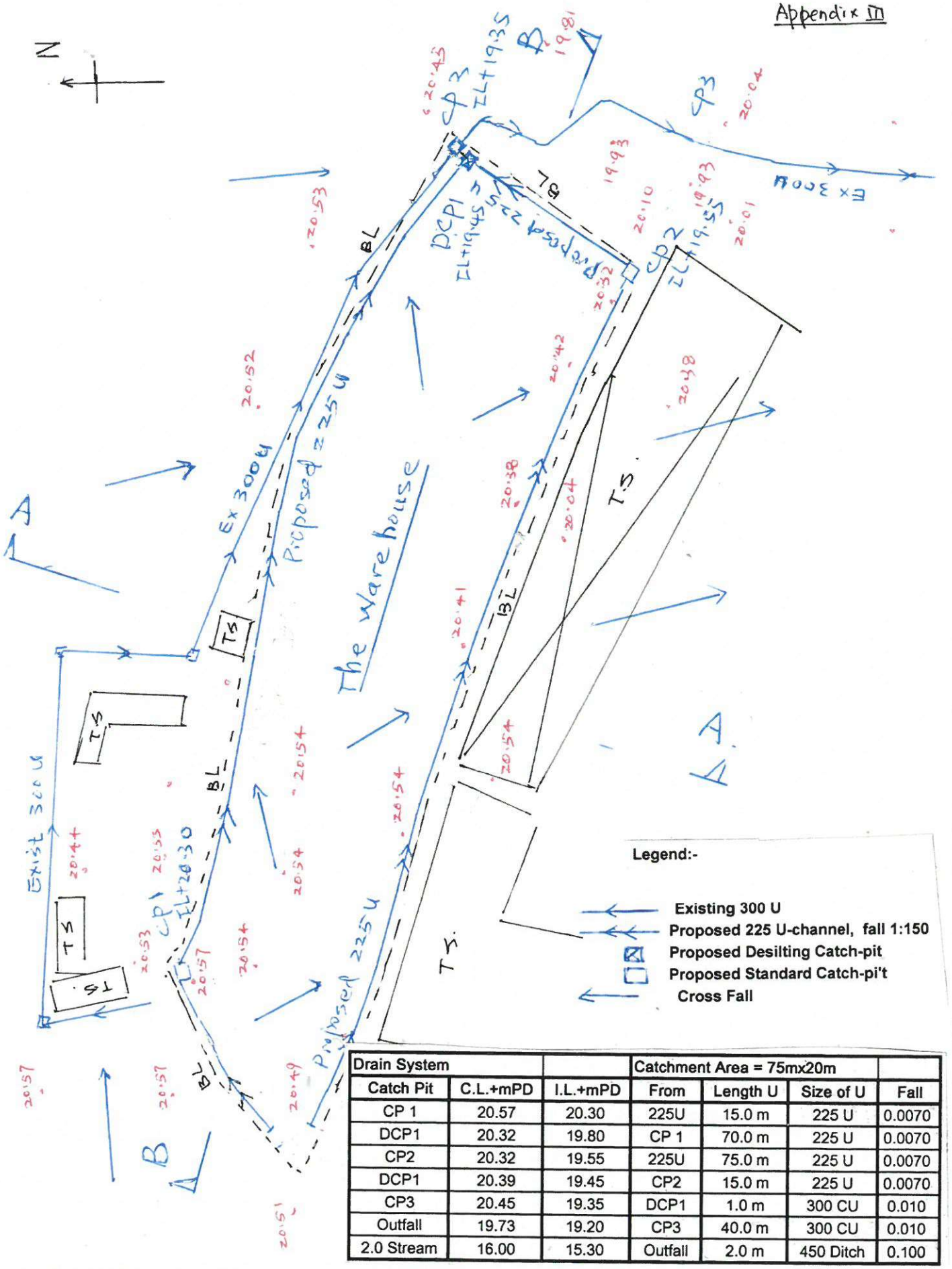
Record Photos of Present site condition **Date: 08-05-2022**

Photo No. 4 At the north side of metal fence of the proposed warehouse site, is overgrown with trees, at ground level +20.55mPD to +20.45 mPD.

Photo No. 5 At the north bound and east bound of the proposed warehouse site is an existing 300mm U-channel running along.

Photo No. 6 The downstream condition of the 2.0 meters stream course at further south end, consists with vegetation at both banks.

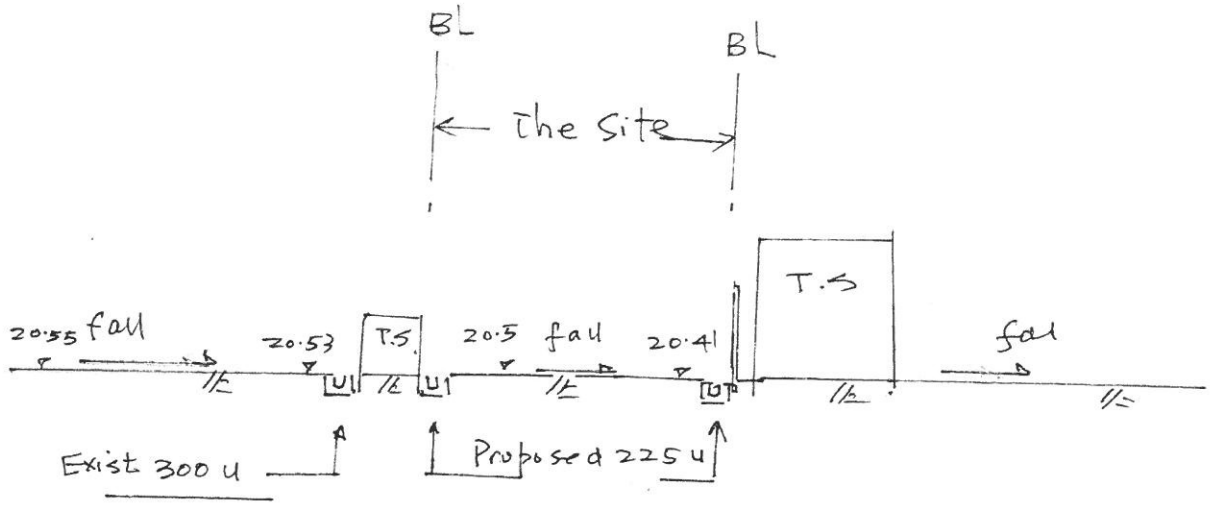
Appendix III



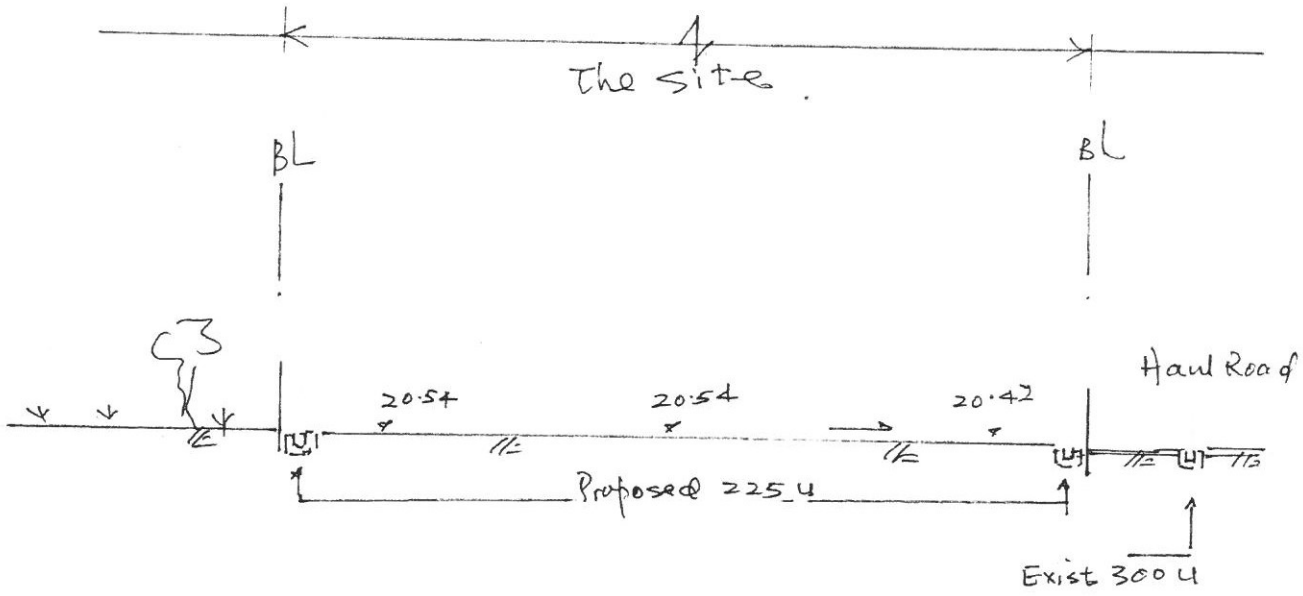
Drain System			Catchment Area = 75mx20m			
Catch Pit	C.L.+mPD	I.L.+mPD	From	Length U	Size of U	Fall
CP 1	20.57	20.30	225U	15.0 m	225 U	0.0070
DCP1	20.32	19.80	CP 1	70.0 m	225 U	0.0070
CP2	20.32	19.55	225U	75.0 m	225 U	0.0070
DCP1	20.39	19.45	CP2	15.0 m	225 U	0.0070
CP3	20.45	19.35	DCP1	1.0 m	300 CU	0.010
Outfall	19.73	19.20	CP3	40.0 m	300 CU	0.010
2.0 Stream	16.00	15.30	Outfall	2.0 m	450 Ditch	0.100

A Proposed Warehouse at Lot 644 in D.D. 111 Yuen Long	Scale: 1:400	Date: 08-05-2022
Proposed Drainage Layout Plan	Drawn by: Cho	Drawing No. SWDP-01

Appendix IV



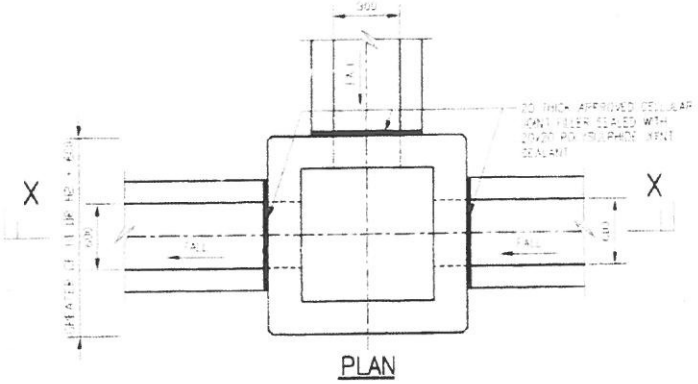
Section A-A



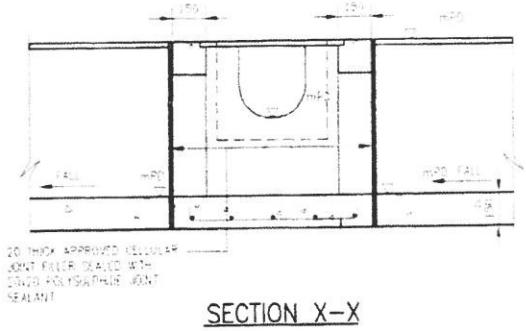
Section B-B

A Proposed Warehouse at Lot 644 in D.D. 111 Yuen Long	Scale: As Shown	Date: 08-05-2022
Proposed Stormwater Drainage Detailed Plan	Drawn by: Cho	Drawing No. SWDP-02

Appendix V

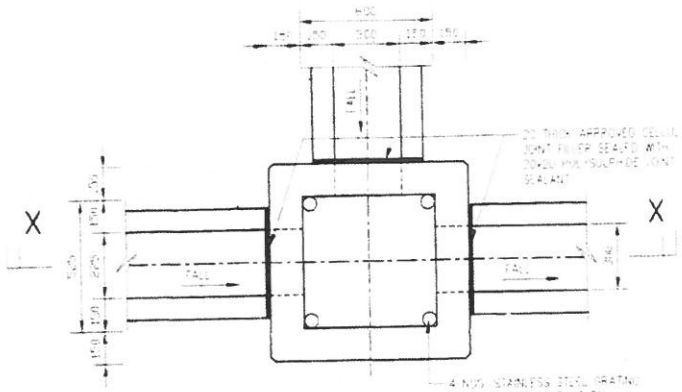


PLAN

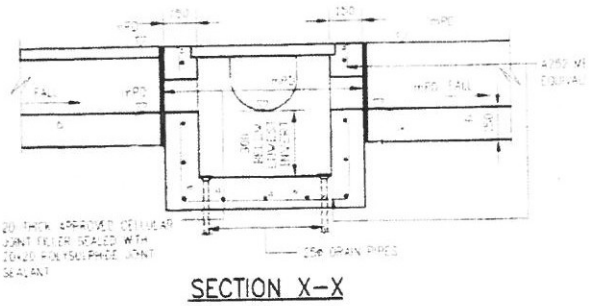


SECTION X–X

STANDARD DETAIL OF CATCHPIT

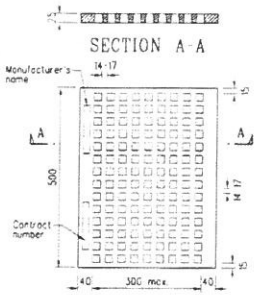


PLAN



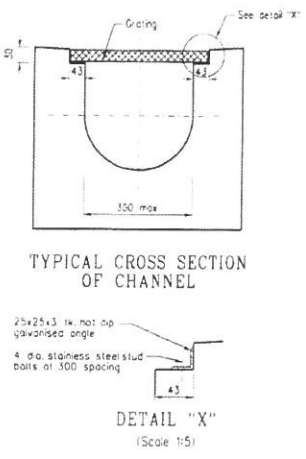
SECTION X–X

CTACHPIT WITH TRAP DETAILS



GRATING - SQUARE HOLES PATTERN

(All holes are 20x20 in size and all ribs are of equal width. Exact no. of holes and ribs to be adjusted to suit channel width)

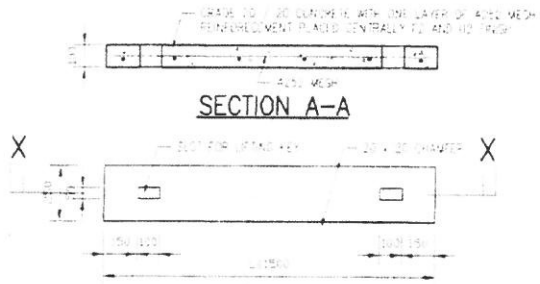


TYPICAL CROSS SECTION OF CHANNEL

DETAIL "X"

(Scale 1:5)

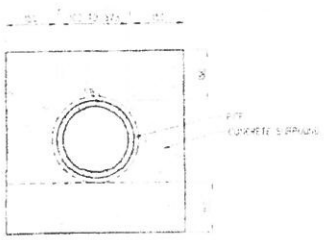
U-CHANNEL WITH CAST IRON GRATING



SECTION A–A

PLAN

PRECAST CONCRETE COVER FOR CATCHPIT AND SAND TRAP



TYPE I

BEDDING AND SURROUNDS

Notes:

1. All level shown in meter and refer to the principle Datum.
2. The exact location of Catch Pits should be agreed with the Engineer (RPE) on site.
3. All concrete used should be D30/20
4. U-channel details should refer to CEDD Drawing No.C2409H
5. DCP1 etc details should refer to CEDD Drawing No.2406I
6. CP1 etc details should refer to CEDD Drawing No.2405I
7. U-channel cover should refer to HyD Standard Drawing H 3156A.
8. Catch pit concrete cover should refer to CEDD Drawing no.C2407B
9. All Proposed U-channel and Catch pit constructed in Gov. L. should gain consent from DLO

A Proposed Warehouse at Lot 644 in D.D. 111 Yuen Long	Scale: As Shown	Date: 08-05-2022
Proposed Stormwater Drainage Detailed Plan	Drawn by: Cho	Drawing No. SWDP-03

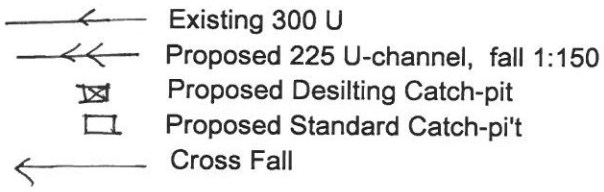
Appendix VI

Notes:

1. **All level shown in meter and refer to the principal Datum.**
2. **The exact location of Catch Pits should be agreed with the Engineer (RPE) on site.**
3. **All concrete used should be D30/20**
4. **U-channel details should refer to CEDD Drawing No.C2409H**
5. **CP 1 details should refer to CEDD Drawing No.2406I**
6. **U-channel cover should refer to HyD Standard Drawing H 3156A.**
7. **Catch pit concrete cover should refer to CEDD Drawing no.C2407B**
8. **All Proposed drain pipe, U-channel and Catch pit constructed in Gov. L. should gain consent from DLOYL**

Drain System			Catchment Area = 75mx20m			
Catch Pit	C.L.+mPD	I.L.+mPD	From	Length U	Size of U	Fall
CP 1	20.49	20.24	225U	15.0 m	225 U	0.0070
DCP1	20.32	19.74	CP 1	75.0 m	225 U	0.0070
CP2	20.39	19.90	225U	70.0 m	225 U	0.0070
DCP1	20.32	19.80	CP2	15.0 m	225 U	0.0070
CP3	20.04	19.63	DCP1	10.0 m	300 CU	0.007
Outfall	19.73	19.20	CP3	40.0 m	300 CU	0.010
2.0 Stream	16.00	15.30	Outfall	2.0 m	450 Ditch	0.100

Legend:-



A Proposed Warehouse at Lot No.644 in D.D. 111 Yuen Long	Scale : N T S	Date: 08-05-2022
Stormwater General Notes	Drawn by: Cho	Drawing No. SWDP-04

(A) Analysis of the Proposed Surface Drainage Channels Appendix VII

(1) Proposed Surface Channel (U1) for 225 U-channel

(2) Existing Surface Channel (U2) for 300 U-channel

FLU- Formation Level (Upstream) FLD- Formation Level (Downstream)

USIL- Upstream Invert Level DSIL- Downstream Invert Level

Lu- Channel Length S- Channel Gradient

Type	From	To	FLU	USIL	FLD	DSIL	Lu(m)	S	n
U(U1)	CP1	DCP1	20.490	20.240	20.320	19.740	75.00	0.0067	0.014
U(U2)	CP3	Outfall	20.040	19.630	19.730	19.200	40.00	0.0100	0.014

Manning Equation

Q = Af*(V=(R^0.667)*(s^0.5)/n)

Channel	Width(mm)	A1(m^2)	A2(m^2)	Af	Pw	R	S	Q	V
U(U1)	225	0.0199	0.0996	0.1194	1.2384	0.0964	0.0067	0.1457	1.22
U(U2)	300	0.0353	0.1065	0.1418	1.1812	0.1201	0.0100	0.2449	1.73

A1= Area of the circular section (m^2)

A2= Area of the rectangular section (m^2)

Af= (A1+A2) area of Channel (m^2)

Pw= Perimeter of wetted Area (m^2)

R= Hydraulic Radius (m)

S= Gradien of Channel

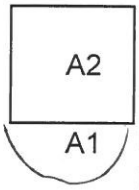
n= Nanning coefficient of Roughness

Q= Flow Capacity of the Channel (m^3/s)

V= Cross-sectional Average Velocity (m/s)

d1 (mm) = 225

d2 (mm) = 300



U1(mm)= 442.50 (minus 25mm)

U2(mm)= 355.00 (minus 25mm)

U1(mm)= 112.50

U2(mm)= 150.00

(3) Runoff Estimation

(i) Time of Concentration

Tc= to + tf

Inlet time

Brandsby William's Equation

to= 0.14465*L*(H^-0.2)*(A^-0.1)

where to= inlet time(min)

A= Catchment Area (m^2)

H= Average slope (m/100m), 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)

Consider Average Gradient (m) per 100 meters

H11=mPD	20.540	H12=mPD	20.320
H21=mPD	20.040	H22=mPD	19.730

Platform	L(m)	H(m)	A(m^2)	to	Lu	V	Q
P(U1)	75.00	0.29	1500.0	6.6726	75.00	1.22	0.1457
P(U2)	40.00	0.77	3000.0	2.7340	40.00	1.73	0.2449

Channel Traveling Time

tf= Lu/60*V

where Lu= Length of Channel Traveled

V= Cross-section average velocity (m/s)

tf= Flow time (minutes)

Extreme Mean Rainfall Intensity

i= a/(td+b)^c

1 in t years

t	a	b	c
50	687	4.2	0.42

i= extreme man intensity in mm/hr.

td= duration in minutes (td < 240), and

a, b, c= storm constents given in Table 3 of SWM.

Type	From	To	Lu	V	tf	to	Tc= td	i(mm/hr)
U(U1)	CP1	DCP1	60.00	1.22	1.5251	6.6726	8.1977	238.65
U(U2)	CP3	Outfall	80.00	1.73	1.1509	2.7340	3.8849	285.58

(4) Rational Method

Qp= 0.278*C*i*A

where Qp= Peak runoff in m^3/s

C= runoff coefficient (dimensionless)

i=rainfall intensity in mm/hr.

A= catchment area in km^2

Value of Runoff Coefficient C for use in the Rationa Method = 0.9

Type	i(mm/hr)		C	A(m^2)	Qp(m^3)	Q(m^3)	Spare	
U(U1)	238.65	0.278	0.9	1500.0	0.0896	0.1457	0.0562	Qp<Q, OK
U(U2)	285.58	0.278	0.9	3000.0	0.2144	0.2449	0.0305	Qp<Q, OK