Drainage Proposal

Planning Application No. A/YL-TT/747

for Proposed Temporary Eating Place (Outside Seating Accommodation (OSA) of a Restaurant) for a Period of 3 Years at Lots 1187 S.N (Part) and 1187 RP (Part) in D.D. 117, Tai Tong Shan Road, Tai Tong, Yuen Long, N.T.

(HT23145)

18 November 2025

Drainage Consultant:

何田顧問工程師有限公司
HO TIN & ASSOCIATES
CONSULTING ENGINEERS LIMITED
[redacted]

Checked & approved by	K C LEE *RPE(Civil)*	

1. Background

1.1 A Drainage Proposal in compliance with the planning approval condition (a) of the Planning Application No. A/YL-TT/606 for proposed temporary eating place (outside seating accommodation (OSA) of a restaurant) for a period of 3 years at Lots 1187 S.N (Part) and 1187 RP (Part) in D.D. 117, Tai Tong Shan Road, Tai Tong, Yuen Long, New Territories (the 'subject site') was accepted by Planning Department ('PlanD') on 5 March 2025. Copies of the afore-mentioned PlanD's acceptance letter and the Figure D3 – 'Stormwater Discharge Route of the Subject Site' contained in the accepted Drainage Proposal are enclosed in **Appendix A** of this report for reference.

1.2 Implementation of the accepted drainage proposal would require excavation for laying drain at the junction of Kiu Hing Road and Tai Tong Shan Road which is a busy road junction especially during holidays. In order to minimize disturbance to the public, it is therefore proposed to amend the accepted drainage proposal in this report such that no excavation at the junction of Kiu Hing Road and Tai Tong Shan Road would be required.

2. Scope of this Submission

2.1 Rainwater may cause flooding if it is not properly collected, conveyed and discharged. This Drainage Proposal is to demonstrate how the rainwater falling on or flowing to the subject site will be collected, conveyed and discharged without causing any adverse drainage impacts on the subject site and its surroundings.

3. The Subject Site and Development

3.1 The subject site comprises of Lots 1187 S.N (Part) and 1187 RP (Part) in D.D. 117, Tai Tong Shan Road, Tai Tong, Yuen Long, New Territories. It encroaches upon Tai Tong Shan Road with a total site area of about 181m^2. A Site Location Plan is shown in **Figure D1**.

3.2 The subject site mainly comprises eight 4m single-storey shelters for OSA of an existing restaurant on the ground floor of two NTEHs at Lots 1187 S.N and 1187 S.L in D.D.117. The Town Planning Board approved layout plan is shown in **Figure D2**.

4. Existing Drainage Conditions of the Site

4.1 The subject site is now mainly occupied by eight 4m single-storey shelters (with a total floor area of about 104m^2) with the remaining site area hard paved with floor tiles. It

is bounded by Tai Tong Shan Road on the northeast side and adjoining paved areas of adjacent developments on the remaining three sides.

4.2 At present, there is a 750mm diameter stormwater drain running under Tai Tong Shan Road to carry the flows received from the area and discharge the flows into an existing nullah at Kiu Hing Road to the west.

4.3 To the east of the subject site is another site under Planning Application No. A/YL-TT/596 under which a drainage proposal had been approved by and implemented to the satisfaction of relevant Government departments. Stormwater collected by the drainage system of the afore-mentioned site is discharged via a 525 to 600mm diameter underground drain into an existing manhole (SMH1031162) at Tai Tong Shan Road. There is no significant change in the drainage conditions of the subject area since the acceptance of the Drainage Proposal under Planning Application No. A/YL-TT/596 of which a copy is enclosed in **Appendix B** of this report for reference.

4.4 Besides, there are also existing surface channels collecting surface runoff in the adjacent developments on the western side of the subject site. Layout of the existing surface channels in the adjacent developments on the eastern and western side of the subject site is shown in **Figure D3R**.

4.5 Current conditions of the subject site and its surrounding are shown in the following photos (photo taking locations are shown in **Figure D3R**):

Photo 1 – Front elevation of the subject site taken on Tai Tong Shan Road

Photo 2 – View toward the eastern corner of the subject site

	
Photo 3 – View along the entrances of the single-storey shelters (1)	Photo 4 – View along the entrances of the single-storey shelters (2)
	
Photo 5 – Existing 375mm surface channel running along the northwest subject site boundary	Photo 6 – View to corridor between the subject site and the adjacent site under previously approved Planning Application No. A/YL-TT/596 from Tai Tong Shan Road
	
Photo 7 – View from the corridor between the subject site and the adjacent site under previously approved Planning Application No. A/YL-TT/596 toward Tai Tong Shan Road	Photo 8 – View of the adjacent site under previously approved Planning Application No. A/YL-TT/596 along Tai Tong Shan Road

	
Photo 9 – Existing Catchpit CP7 of the adjacent site under previously approved Planning Application No. A/YL-TT/596	Photo 10 – Existing 525HR surface channel connecting between the existing Catchpit CP7 and the existing terminal manhole of the adjacent site under previously approved Planning Application No. A/YL-TT/596
	
Photo 11 – Existing terminal manhole and connection manhole of the adjacent site under previously approved Planning Application No. A/YL-TT/596	Photo 12 – View of the location of the existing terminal manhole and connection manhole of the adjacent site under previously approved Planning Application No. A/YL-TT/596 and the existing stormwater manhole (SMH1031162) at Tai Tong Shan Road

5. Proposed Drainage Works

5.1 The existing ground level of the subject site will be maintained, and no site formation works nor ground levelling works will be carried out.

5.2 No fence wall/hoarding will be constructed along the subject site boundary. Gutter will be installed at the edge of the roof to collect rainwater of the subject development at which peripheral channels cannot be provided due to insufficient space between the structure and the subject site boundary. The gutters will discharge into the internal drainage system of the subject development, hence, no rainwater would flow outside the subject site boundary.

5.3 Surface U channels are proposed to collect all surface runoff at the subject site. All the surface water collected from the subject site will be conveyed via a proposed catchpit with trap into an existing catchpit, i.e. CP7, of the adjacent site to the east completed under Planning Application No. A/YL-TT/596.

5.4 There is overlapping among the catchment areas of the subject site, its adjacent western development and the adjacent eastern development under the approved Planning Application No. A/YL-TT/596 as shown in **Figure D4R**. It has been taken into consideration in the hydraulic assessment contained in this report.

5.5 In order to enhance management of the drainage system of the subject site, it is proposed to divert the section of the existing 375 U-channel along the western boundary of the subject site such that the flows inside it would be discharged into the internal drainage system of the subject site instead of flowing away separately to the west.

5.6 A Proposed Drainage Arrangement of the subject development is shown in **Figure D5R** and **D6R**, and site cross sections are shown in **Figure D7R**. Details of the proposed catchpit with trap are shown in **CEDD Standard Drawing No. C2406/1**.

6. Drainage Calculations

6.1 Assessment criteria is based on the recommendation set out in the Stormwater Drainage Manual (Fifth edition, Jan 2018) (SDM) and its Corrigendum Nos. 1/2022, 1/2024 and 2/2024 issued by DSD. Design Return Period of 50 years (recommended for 'Village Drainage' in SDM) is being adopted.

6.2 The corresponding runoffs under rainfall intensity for specific return period are worked out with reference to Rational Method. Brandy-Williams method is used in calculation of the time of concentration. A uniformly distributed rainfall with an intensity is determined by the Intensity-Duration-Frequency. With referenced to

Table 3a - Storm Constants for different return periods of HKO Headquarters from SDM, the rainfall profiles are derived based on the following equation:

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

where i = extreme mean intensity in mm/hr,
t_d = duration in minutes ($t_d \leq 240$), and
a,b,c = storm constants given in the table below

Return Period (years)	50
a	505.5
b	3.29
c	0.355

A 16.0% rainfall increase is adopted in the hydraulic calculation to cater for effects due to climate change in accordance with the table 28 with projection to End of 21st Century (it is very conservative, as the subject application is only for 3 years) as stipulated in the item (e) and (k) of the SDM - Corrigendum No. 1/2022. Besides, taking into consideration of design allowance in End of 21st Century, a further 12.1% rainfall increase is incorporated into the hydraulic assessment.

6.3 Hydraulic assessment is enclosed in the **Appendix C**. 10% reduction in flow area has been incorporated to cater for potential deposition of sediment in stormwater channels and pipes as recommended in the SDM. The proposed channels and underground drainage were designed to cater for the estimated runoff under the designed rainstorms. With respect to the calculation, the proposed stormwater drainage system is capable to cater for the surface runoff without causing any adverse drainage impacts on the subject site and its surroundings.

6.4 However, with reference to the hydraulic assessment in the **Appendix C**, the existing 525HR channel at 1 in 150 gradient of the adjacent site at which the stormwater would be discharged into might not have sufficient capacity to receive the discharge. It is therefore proposed to upgrade the subject 525HR channel to 600UC at 1 in 150 gradient.

6.5 Since all channels/pipes would have sufficient spare capacity, no water backup will occur at the upstream under rainstorms of 50-year (or lower) return periods.

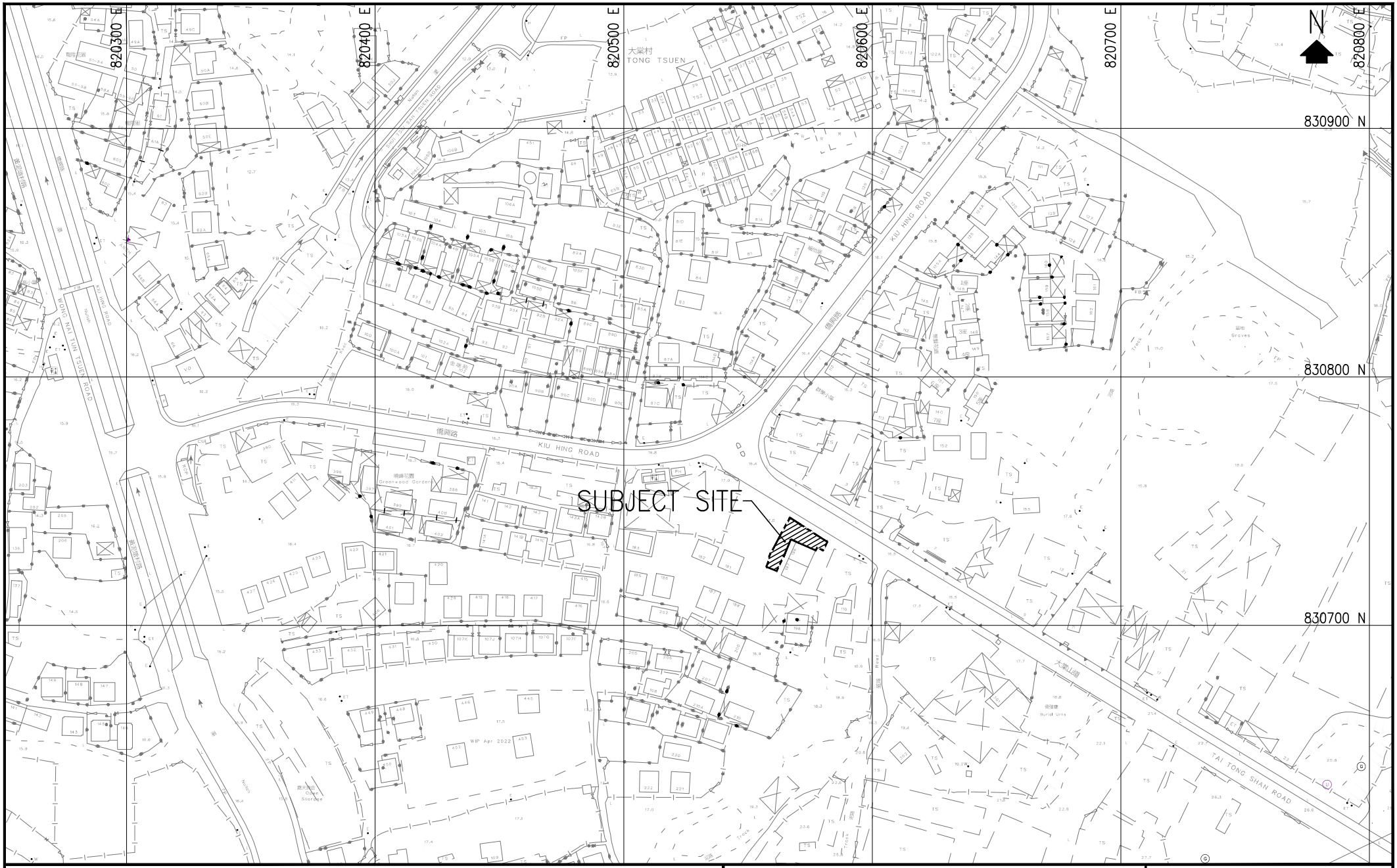
7. Conclusions

7.1 The subject development will be for temporary Eating Place (Outside Seating Accommodation (OSA) of a Restaurant) for a period of three years. No site formation nor ground levelling works is required at the subject site. No fence wall/hoarding along the subject site boundary will be constructed. There would be no significant changes in its drainage conditions except the section of the existing 375 U-channel along the western subject site boundary is proposed to be diverted such that the flows inside it would flow into the internal drainage system of the subject site instead of flowing separately to the west.

7.2 Proposed U channels would satisfactorily collect and convey surface runoff of the subject site to the discharge point at the eastern corner and from which discharges into the existing Catchpit CP7 and then into the upgraded 600mm UC of the adjacent site under Planning Application No. A/YL-TT/596 via a terminal catchpit with trap.

7.3 The flow collected from the subject development together with those collected from the adjacent site under Planning Application No. A/YL-TT/596 will be discharged via the existing 525 to 600mm diameter underground drain into the existing 750mm diameter drain at Tai Tong Shan Road. The 750mm diameter drain would carry the flow to an existing nullah at Kiu Hing Road to the further west.

7.5 In conclusion, the subject development would not alter the existing drainage conditions and pattern of the area. The proposed U channels will manage the stormwater flow of the subject site properly. A section of the existing 525HR channel of the adjacent site under Planning Application No. A/YL-TT/596 should be upgraded to 600UC at 1 in 150 gradient. In conclusion, the proposed drainage amendment is acceptable and its implementation would minimize disturbance to the public. The subject development would not cause any adverse drainage impact onto the area.



LEGEND

SUBJECT SITE BOUNDARY

TITLE

SITE LOCATION PLAN

何田顧問工程師有限公司
HO TIN & ASSOCIATES
CONSULTING ENGINEERS LIMITED

SCALE
1 : 2000 – A4

DRAWING No.
FIGURE D1

H:\23145_TaiTongShanRoad\DRAWING\23145_Figure_D1 D2 D3 & D4.dwg, 1/3/2024 14:40:06, DWG To PDF.pc3

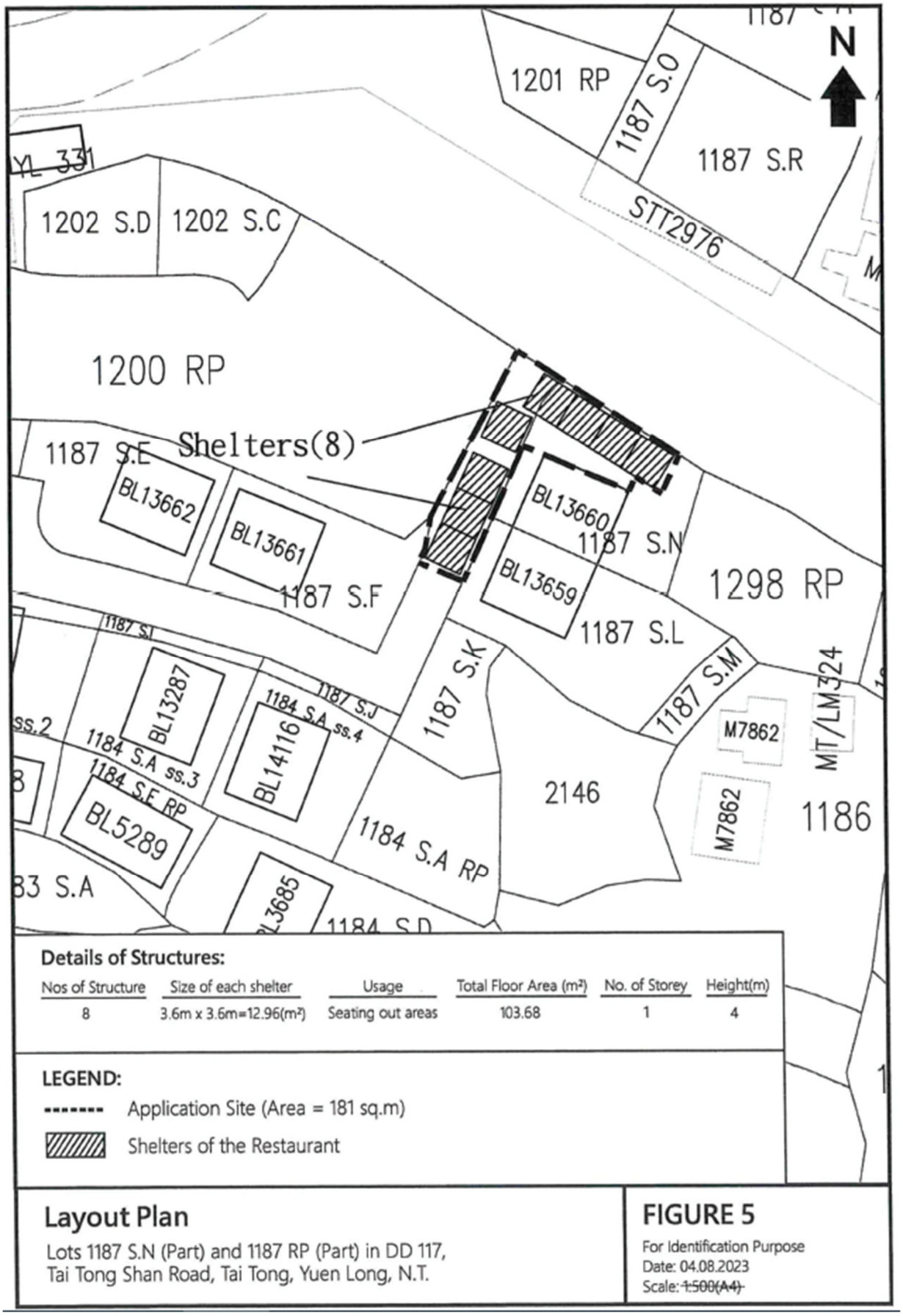
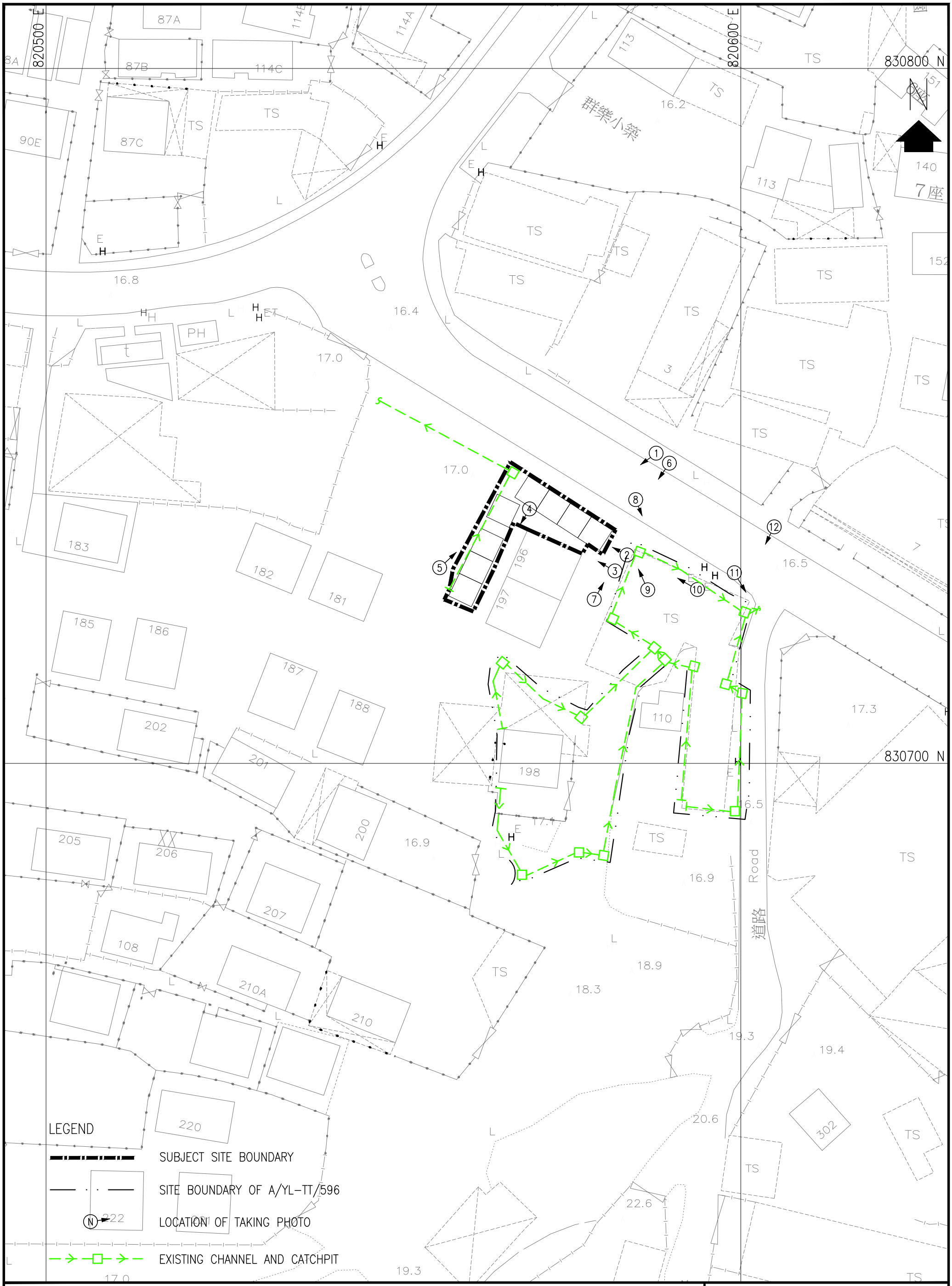
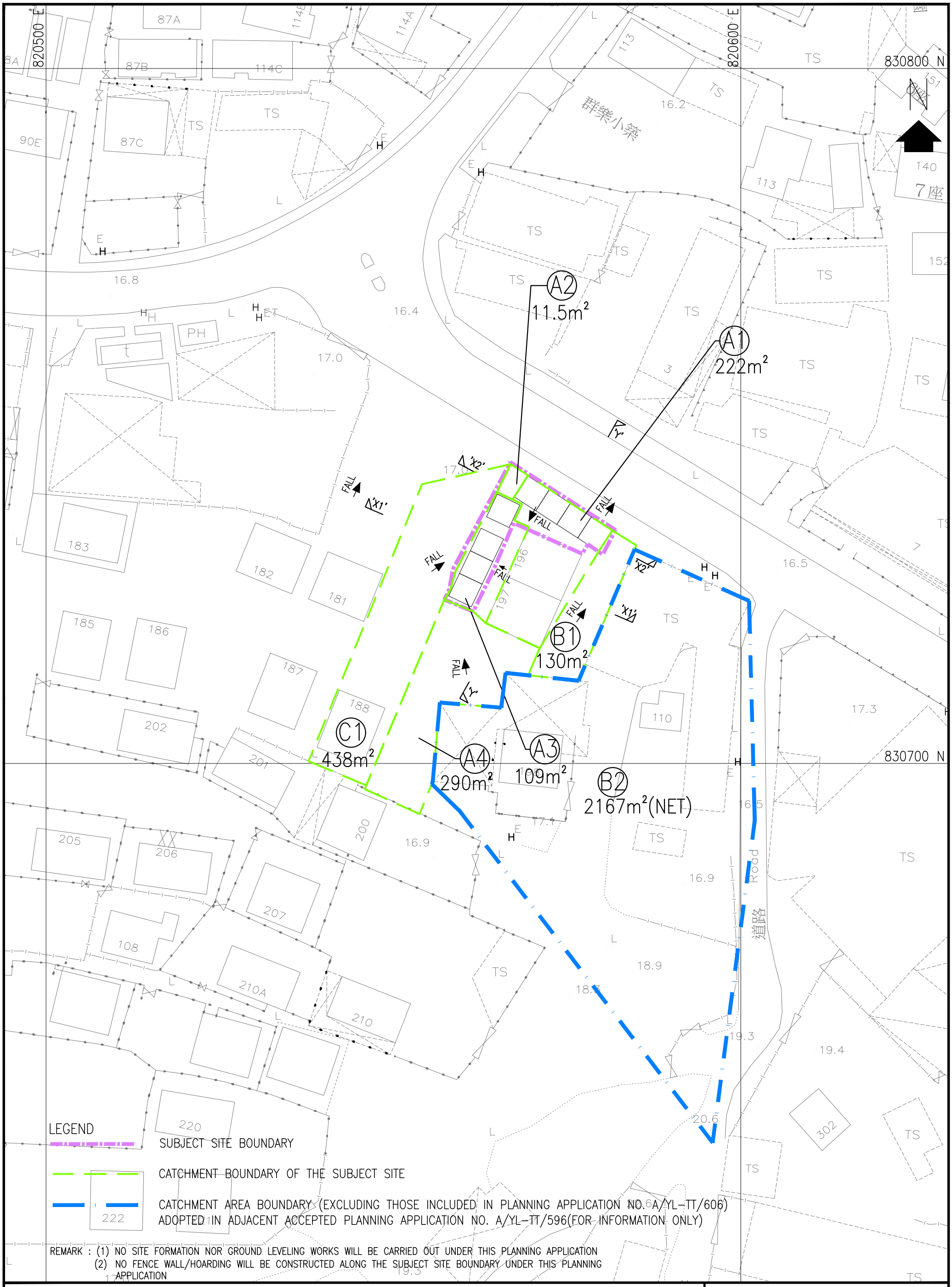


Figure D2 - The Town Planning Board Approved Layout Plan



PROJECT	何田顧問工程師有限公司 HO TIN & ASSOCIATES CONSULTING ENGINEERS LIMITED
TITLE: EXISTING CHANNELS OF THE ADJACENT DEVELOPMENTS OF THE SUBJECT SITE & LOCATIONS OF TAKING PHOTO	SCALE: 1 : 500 – A3 / DRAWING No.: FIGURE D3R



PROJECT

何田顧問工程師有限公司
HO TIN & ASSOCIATES
CONSULTING ENGINEERS LIMITED

TITLE

STORMWATER CATCHMENT AREAS OF THE SUBJECT SITE AND THE ADJACENT WESTERN DEVELOPMENT OVERLAPPING WITH THAT ADOPTED IN THE ADJACENT ACCEPTED PLANNING APPLICATION NO. A/YL-TT/596

SCALE 1 : 500 – A3

DRAWING No. FIGURE D4R

H:\23145_TaiTongShanRoad\DRAWING\23145_Figure_D1 D2 D3R_01 D4R_02 D5R_02 D6R & D7R_01.dwg, 30/4/2025 17:12:25

820550 E

830750 N

830700 N

SMH1031164
CL 16.65
A1 13.97-750
X1 13.95-750

SMH1031163
CL 16.53
A1 14.06-750
X1 14.03-750

SMH1031162
CL 16.26
A1 14.26-750
X1 14.22-750

150UC@
1 IN 100

STARTING
POINT A
C.L.17.00
I.L.16.85

TM1-PROPOSED
CATCHPIT
WITH TRAP
C.L. 17.00
A1 16.28-300UC
X1 16.28-300UC

300UC@1 IN 50

EXISTING CP7
OF A/YL-TT/596
CL 16.90
A1 16.16-525HR
A2 16.20-300UC
X1 16.16-600UC(UPGRADED)

BLOCKING
INFLOW FROM
UPSTREAM
CHANNEL WITH
CONCRETE

EXISTING 375UC(TO BE
MODIFIED BY THE
APPLICANT)@1 IN 250

CP1A
C.L. 17.00
I.L. 16.83

225UC
@1 IN 80

CP2A
C.L. 17.00
A1 16.81-375UC
A2 16.61-375UC
X1 16.61-225UC

CP3A
C.L. 17.00
I.L. 16.58

CP4A
C.L. 17.00
A1 16.62-225UC
A2 16.51-225UC
X1 16.51-300UC

300UC@
1 IN 70

225UC@1 IN 100

225UC
@1 IN 40

EXISTING 525HR TO BE
UPGRADED TO 600UC
@1 IN 150 BY THE APPLICANT

STARTING
POINT C
C.L. 17.00
I.L. 16.63

EXISTING
375UC
@1 IN 250

STARTING
POINT B
C.L.17.00
I.L.16.78

225UC@1 IN 150

CP7A
C.L. 17.00
I.L. 16.33

CP8A
C.L. 17.00
I.L. 16.76

CP6A
C.L. 17.00
I.L. 16.36

CP5A
C.L. 17.00
I.L. 16.37

EXISTING 600ø@
1 IN 100

EXISTING
CONNECTION
MANHOLE
OF A/YL-TT/596
CL 16.65
A1 15.88-525ø
X1 15.60-600ø

EXISTING
525ø@
1 IN 100

EXISTING
TERMINAL
MANHOLE OF
OF A/YL-TT/596
A1 16.05-300HR
A2 16.05-600UC(UPGRADED)
X1 16.05-525ø
DTI 15.90-525ø

FALL

LEGEND

- SUBJECT SITE BOUNDARY
- PROPOSED CATCHPIT WITH TRAP
- PROPOSED CATCHPIT WITH COVERS
- PROPOSED U-CHANNEL
- EXISTING STORM WATER
- EXISTING SURFACE CHANNEL
- EXISTING STORM MANHOLE
- +16.9 EXISTING GROUND LEVEL
- SITE BOUNDARY OF A/YL-TT/596

REMARK : (1) NO SITE FORMATION NOR GROUND LEVELING WORKS WILL BE CARRIED OUT UNDER THIS PLANNING APPLICATION
(2) NO FENCE WALL/HOARDING WILL BE CONSTRUCTED ALONG THE SUBJECT SITE BOUNDARY UNDER THIS PLANNING APPLICATION

PROJECT

何田顧問工程師有限公司
HO TIN & ASSOCIATES
CONSULTING ENGINEERS LIMITED

TITLE

STOMWATER DISCHARGE ROUTE OF THE SUBJECT SITE

SCALE

1 : 300 – A3

DRAWING No.

FIGURE D5R

H:\23145_TaiTongShanRoad\DRAWING\23145_Figure_D1 D2 D3R_01 D4R_02 D5R_02 D6R & D7R_01.dwg, 12/5/2025 9:01:24

820550 E

830750 N

TS

SMH1031164
CL 16.65
A1 13.97-750
X1 13.95-750

SMH1031163
CL 16.53
A1 14.06-750
X1 14.03-750

SMH1031162
CL 16.26
A1 14.26-750
X1 14.22-750

EXISTING 600ø@
1 IN 100

16.4

17.0

16.5

750

CP2A

FALL

TM1

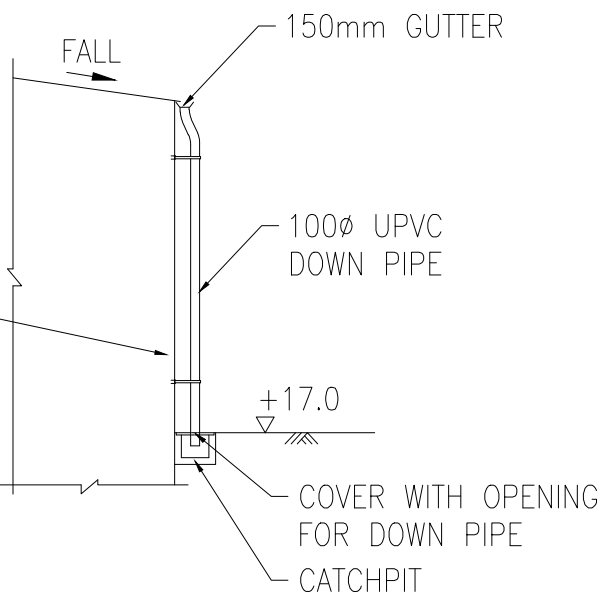
196

197

181

110

PROPOSED GUTTER INSTALLED AT THE EDGE OF THE SHELTERS DISCHARGING INTO THE NEAREST CATCHPIT VIA 100mm DIA. DOWNPIPE (FOR INFORMATION ONLY AND NOT FOR DSD'S APPROVAL UNDER THIS PLANNING APPLICATION)



DETAILS OF GUTTER WITH DOWN PIPE FROM ROOF OF SHELTER (FOR INFORMATION ONLY, AND NOT FOR DSD'S APPROVAL UNDER THIS PLANNING APPLICATION) N.T.S.

LEGEND

- SUBJECT SITE BOUNDARY
- PROPOSED GUTTER
- PROPOSED U-CHANNEL
- PROPOSED CATCHPIT WITH COVERS
- PROPOSED CATCHPIT WITH TRAP
- EXISTING STORM WATER
- EXISTING STORM MANHOLE

道路 Road

PROJECT	何田顧問工程師有限公司 HO TIN & ASSOCIATES CONSULTING ENGINEERS LIMITED
TITLE ROOF DRAINAGE ARRANGEMENT PLAN (FOR INFORMATION ONLY AND NOT FOR DSD'S APPROVAL UNDER THIS PLANNING APPLICATION)	SCALE 1 : 300 – A3
	DRAWING No. FIGURE D6R

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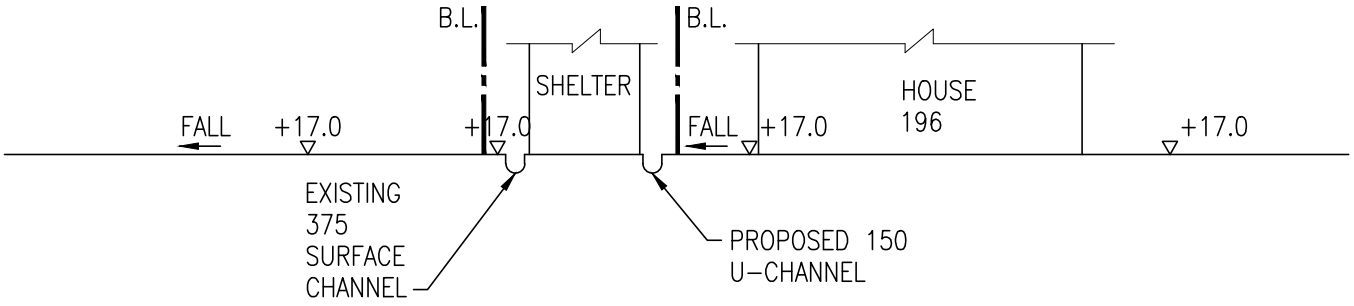
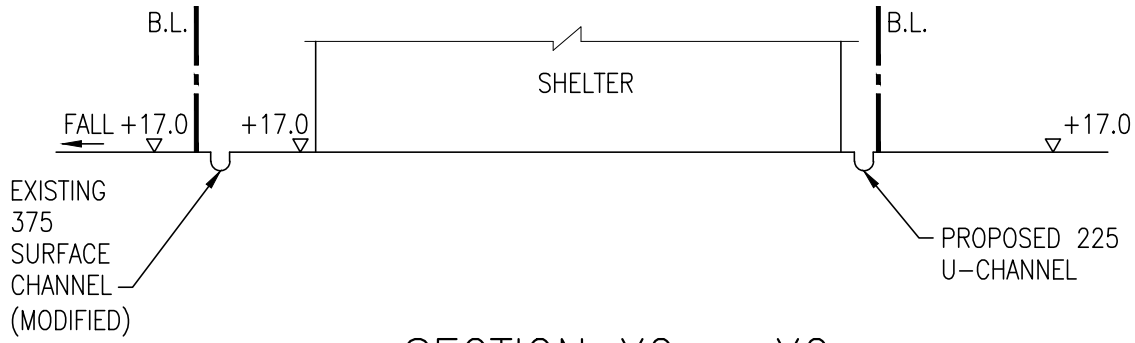
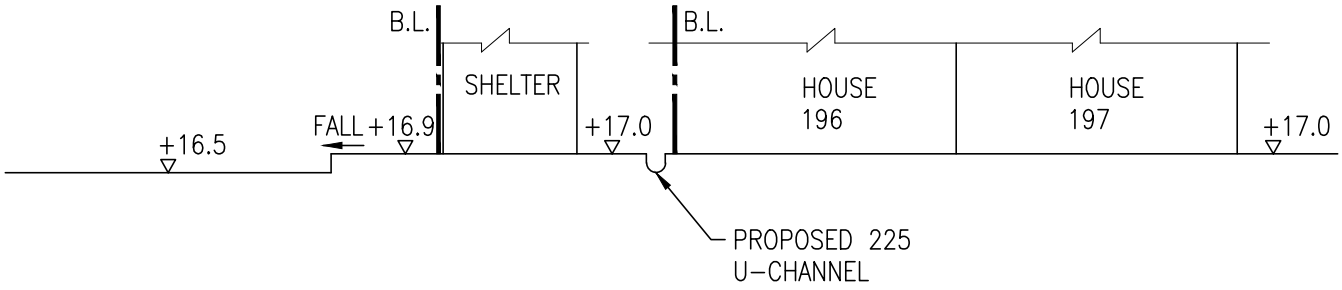


SECTION X1 – X1



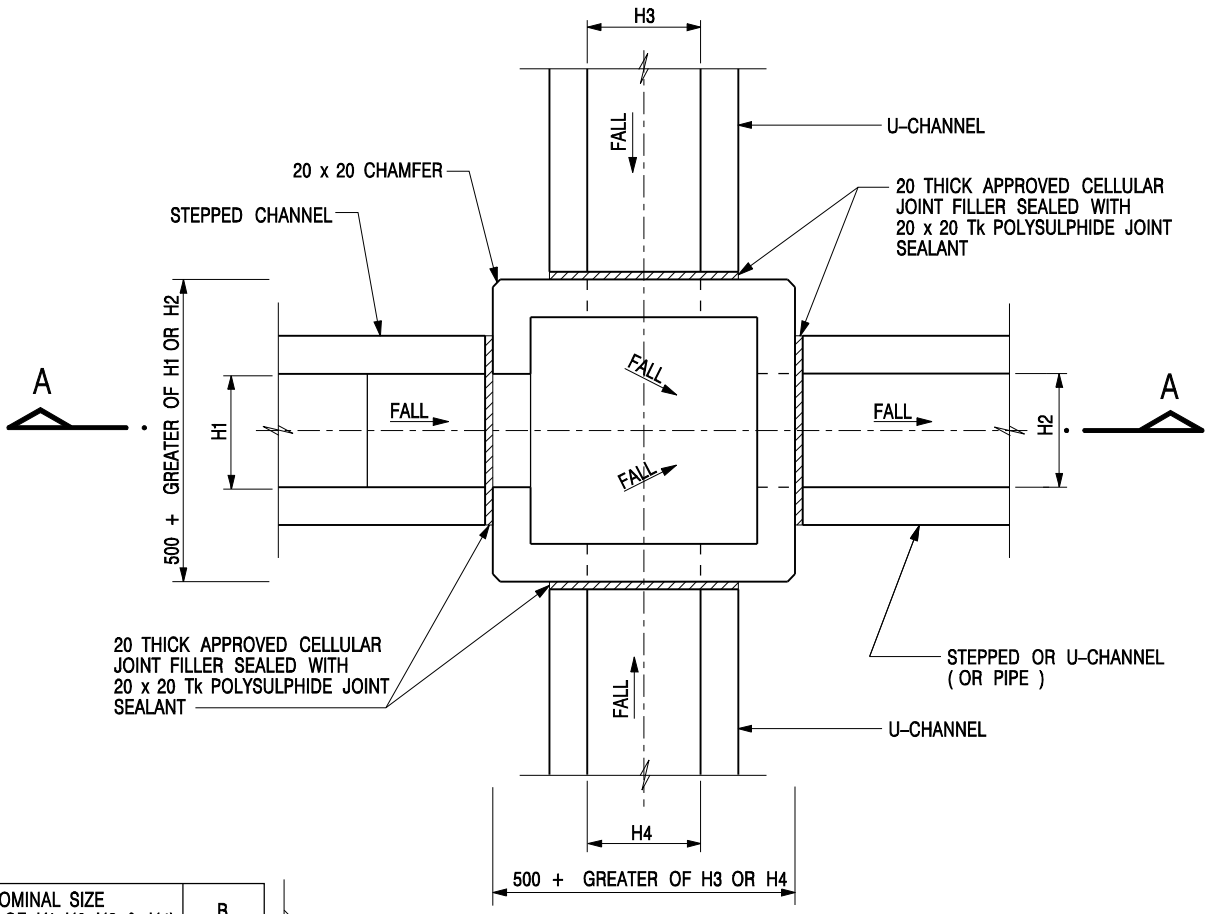
SECTION X2 – X2



SECTION Y – Y

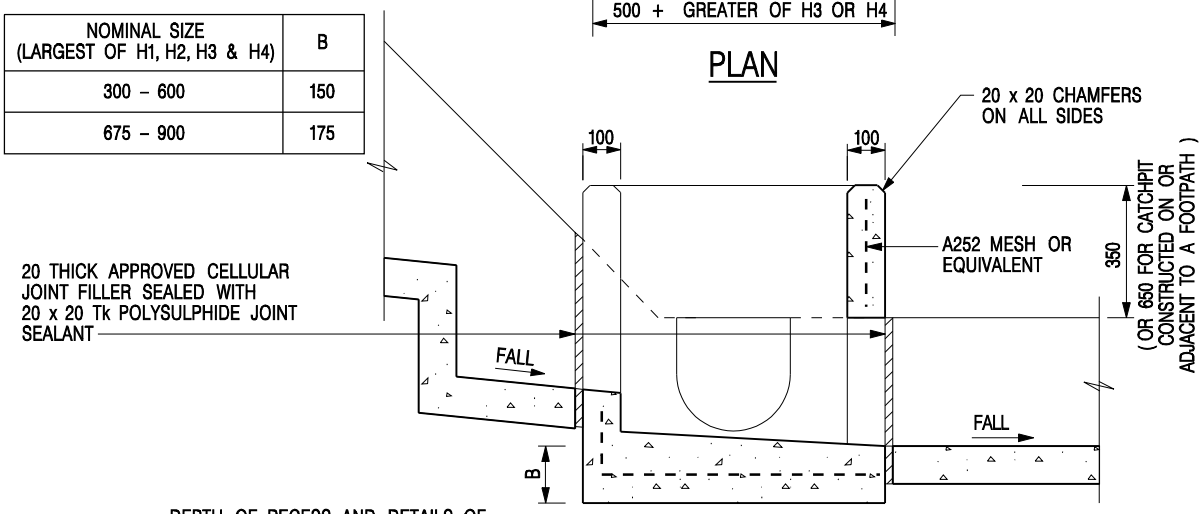
REMARK : (1) NO SITE FORMATION NOR GROUND LEVELING WORKS WILL BE CARRIED OUT UNDER THIS PLANNING APPLICATION
(2) NO FENCE WALL/HOARDING WILL BE CONSTRUCTED ALONG THE SUBJECT SITE BOUNDARY UNDER THIS PLANNING APPLICATION

LEGEND — SUBJECT SITE BOUNDARY	何田顧問工程師有限公司 HO TIN & ASSOCIATES CONSULTING ENGINEERS LIMITED
TITLE SITE CROSS SECTIONS	SCALE 1 : 200 – A4
	DRAWING No. FIGURE D7R

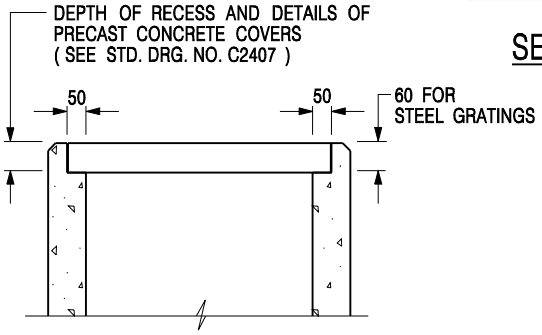


PLAN

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

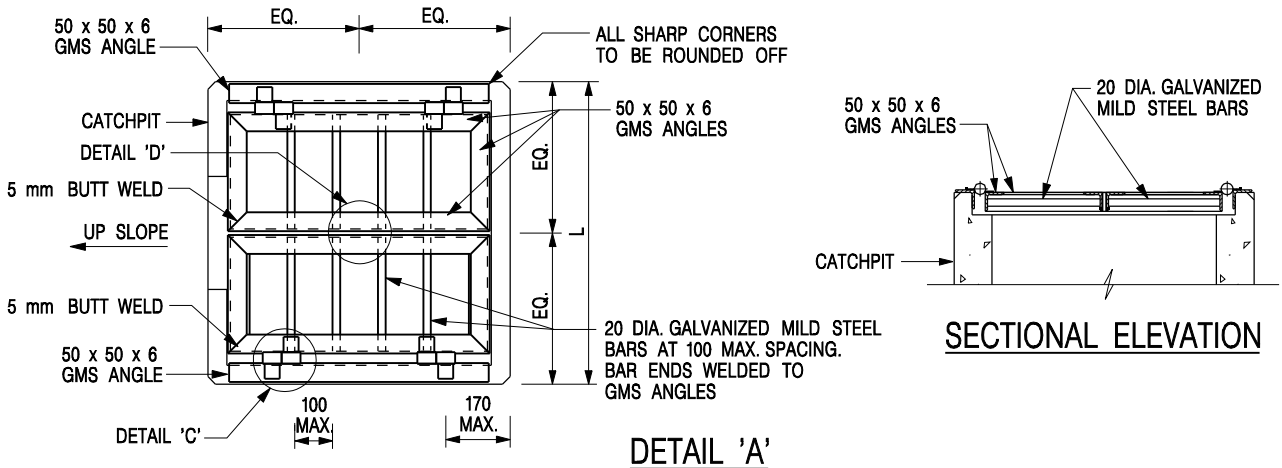
(SHEET 1 OF 5)

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

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

卓越工程 建設香港

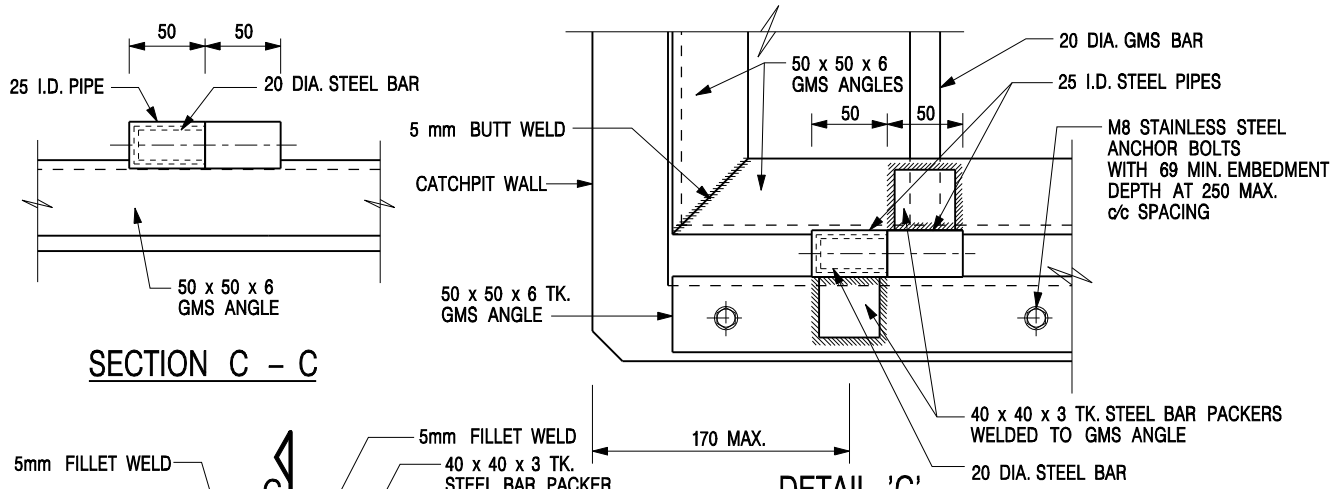
We Engineer Hong Kong's Development



DETAIL 'A'

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

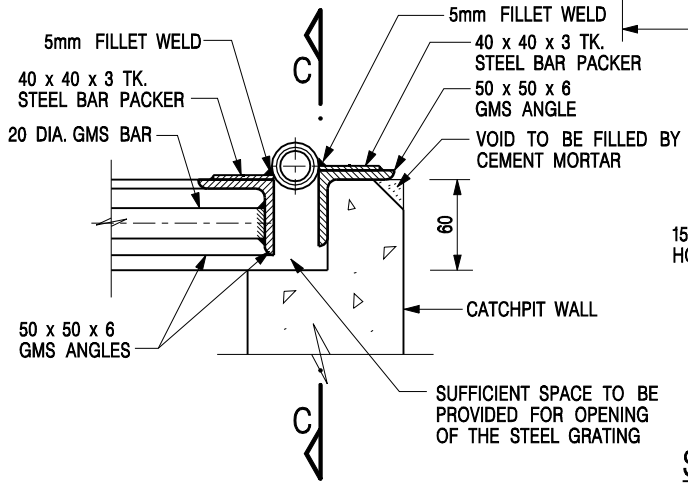
SCALE 1 : 20



DETAIL 'C'

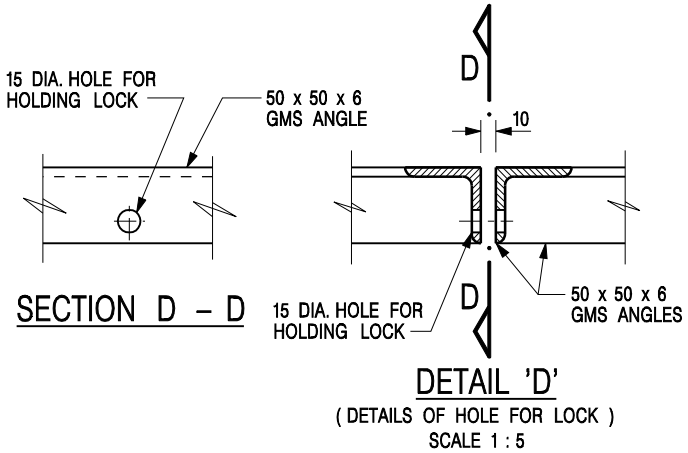
(DETAILS OF HINGE)

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

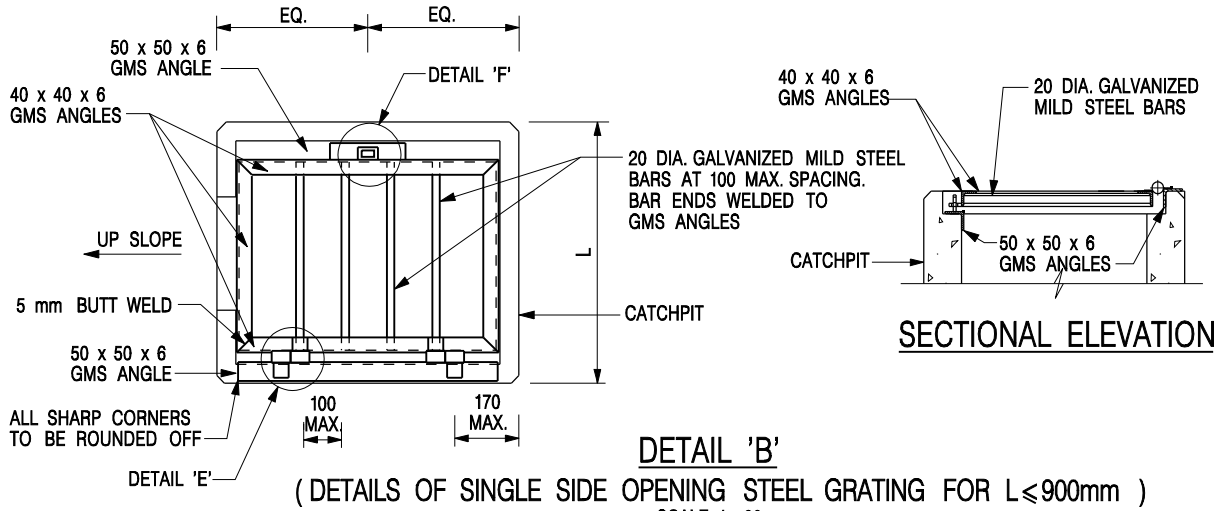
(SHEET 2 OF 5)

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE AS SHOWN

DATE JAN 1991

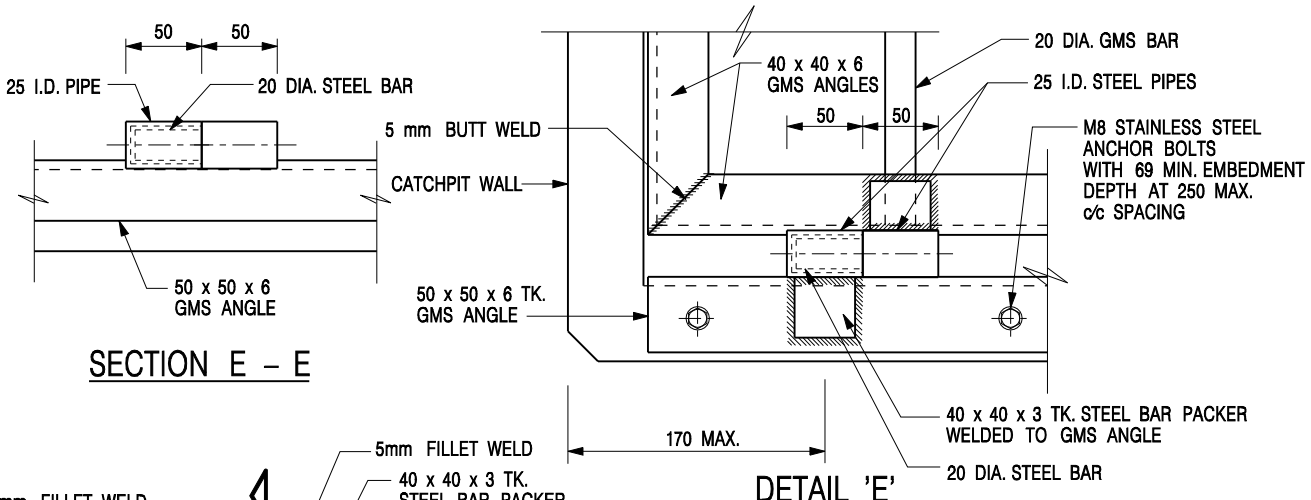
DRAWING NO. C2405 /2



DETAIL 'B'

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

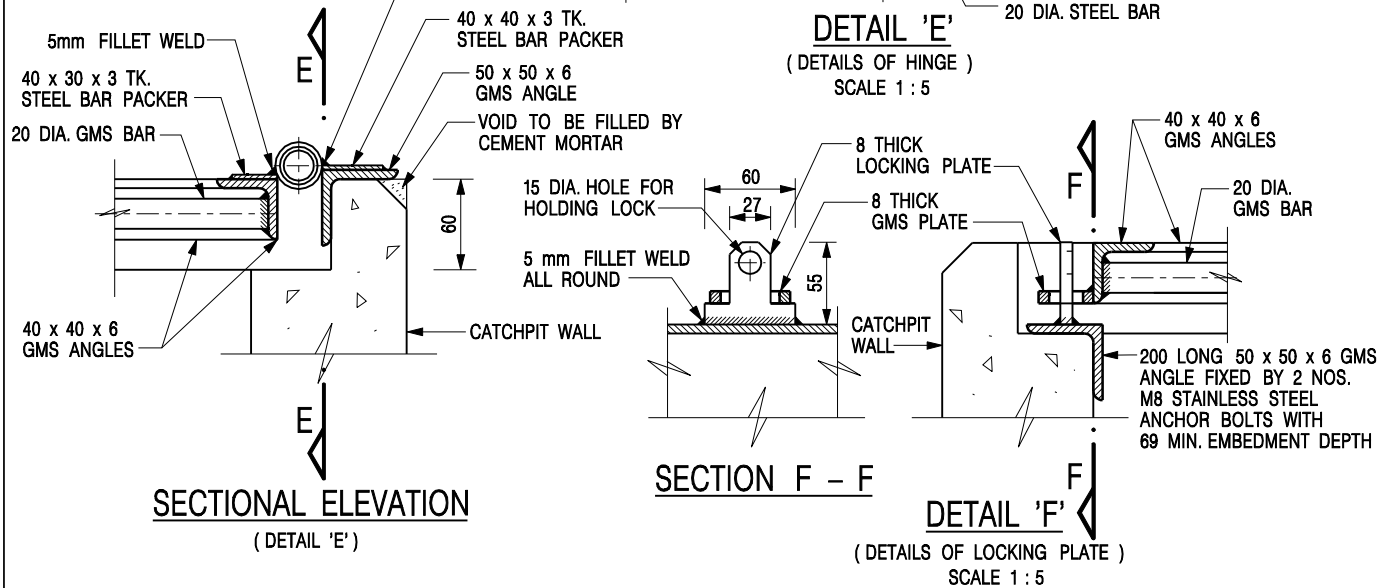
SCALE 1 : 20



DETAIL 'E'

(DETAILS OF HINGE)

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

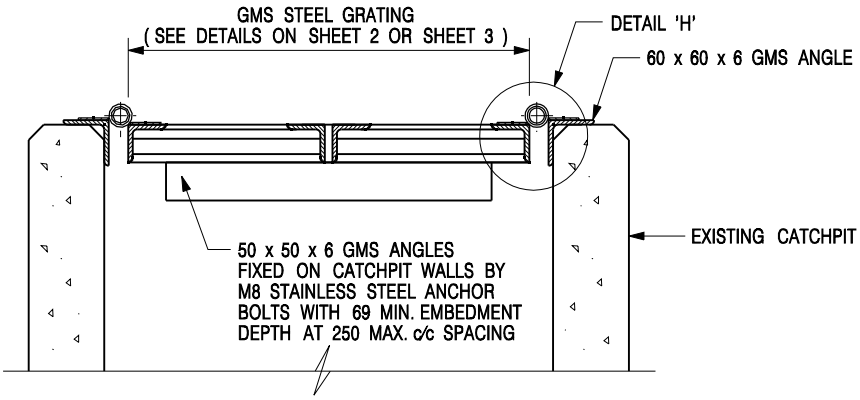
(SHEET 3 OF 5)

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE AS SHOWN

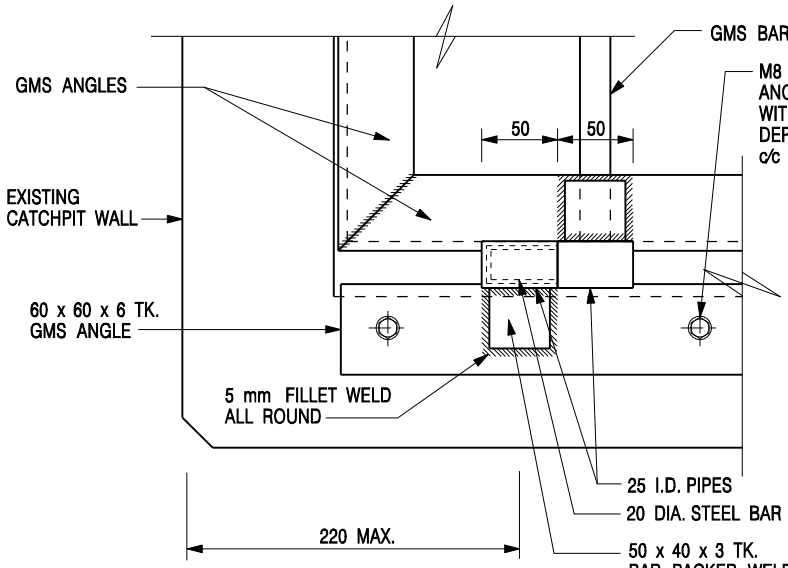
DATE JAN 1991

DRAWING NO. C2405 /3



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

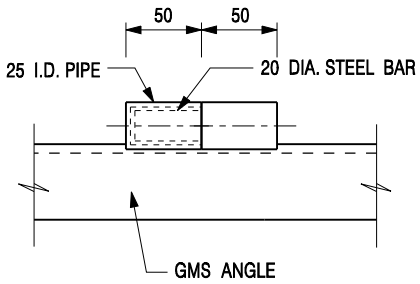
SCALE 1 : 10



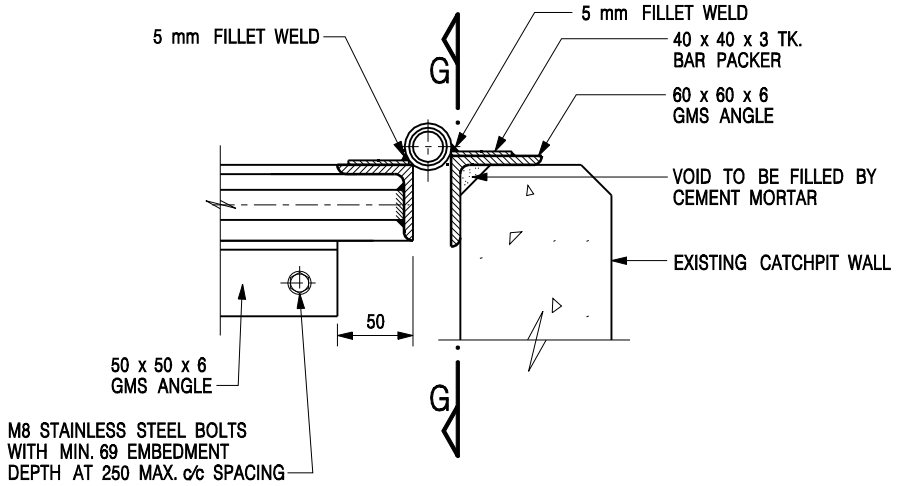
DETAIL 'H'

(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.

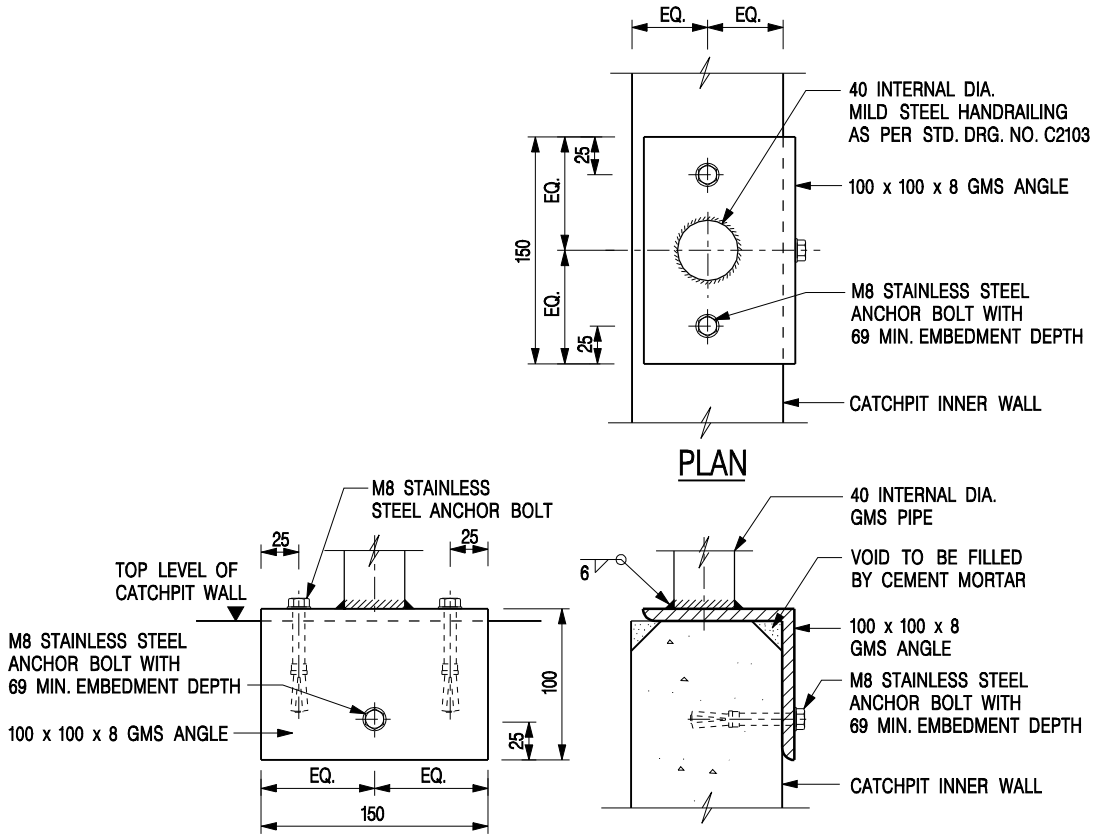
REF.	REVISION	SIGNATURE	DATE
–	FORMER DRG. NO. C2405J.	Original Signed	03.2015

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

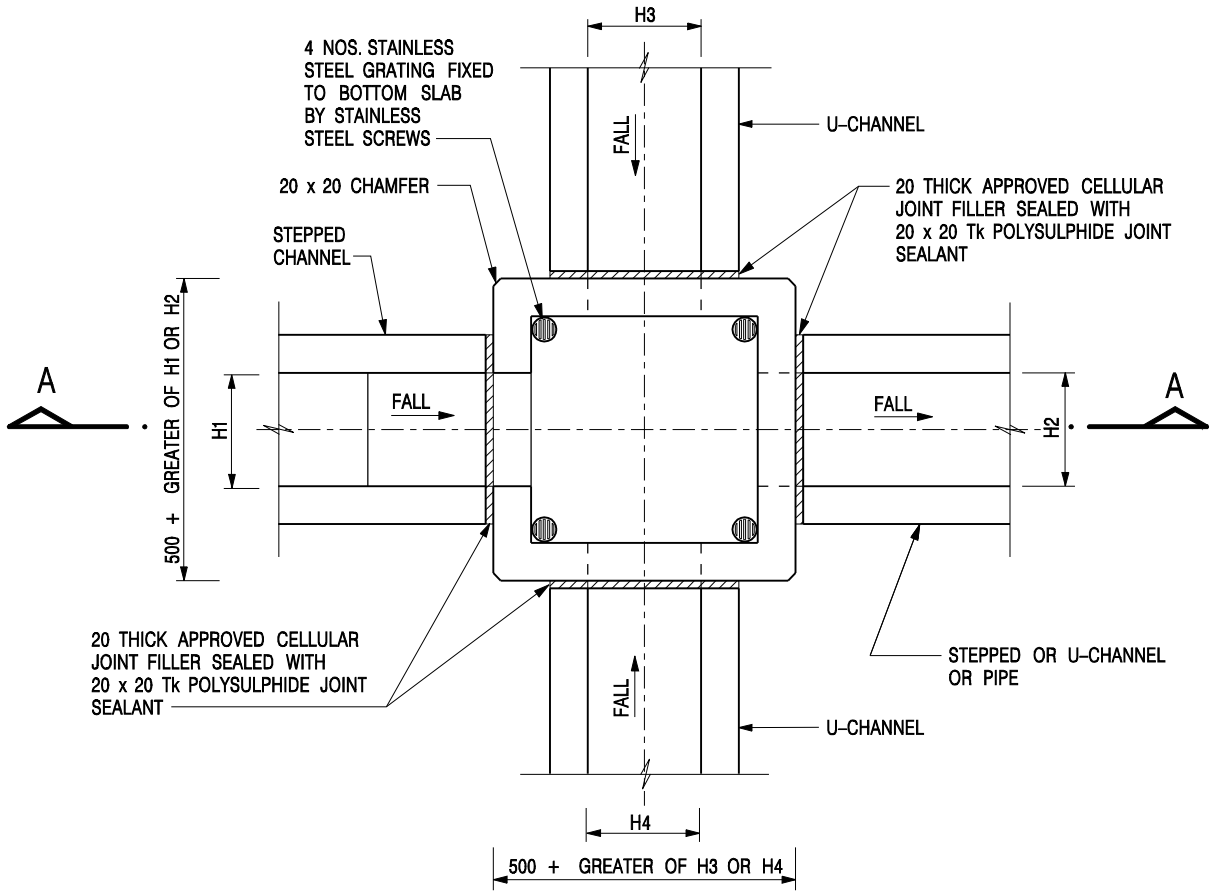
(SHEET 5 OF 5)

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE AS SHOWN

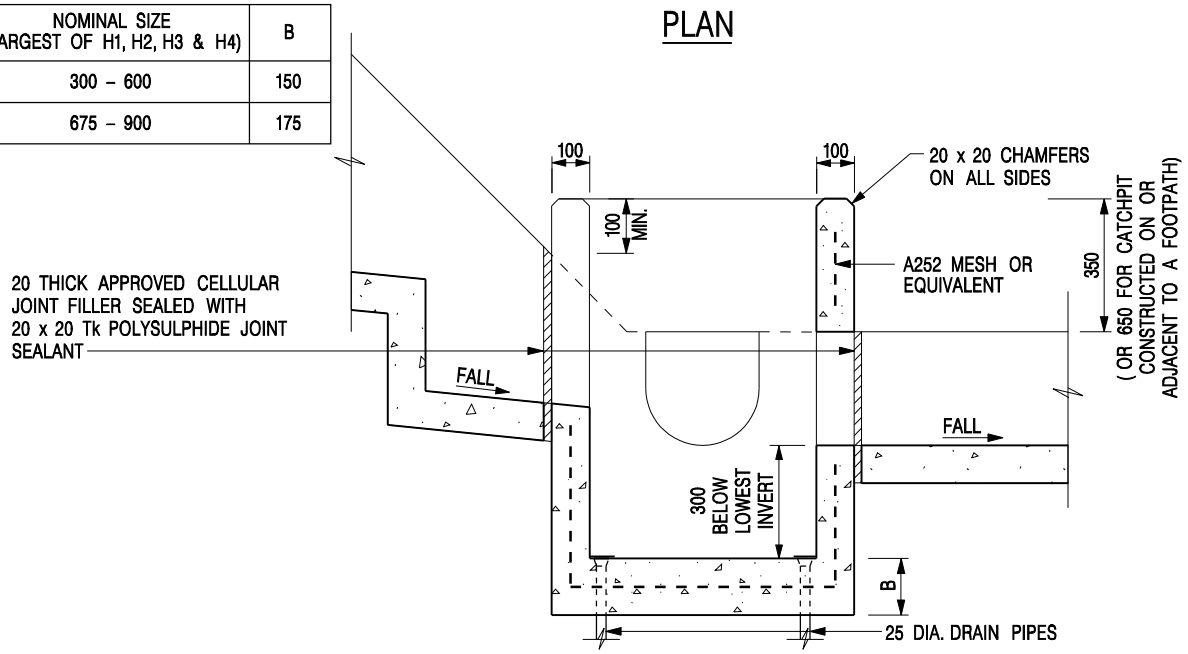
DATE JAN 1991

DRAWING NO. C2405 /5



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

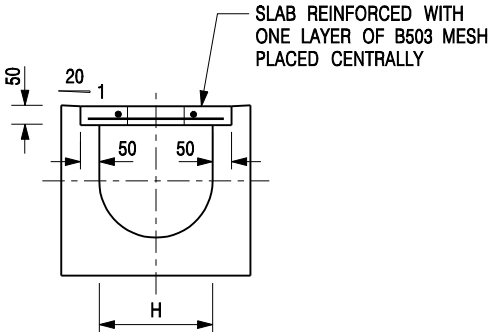
(SHEET 1 OF 2)

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

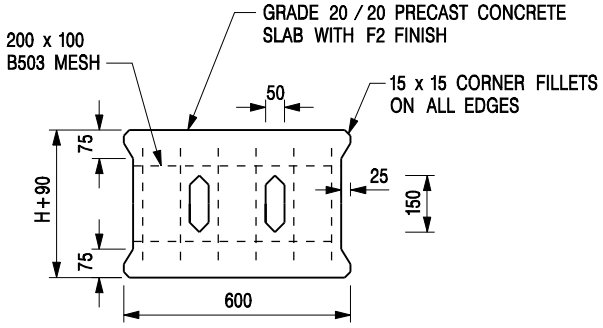
SCALE 1 : 20

DATE JAN 1991

DRAWING NO. C2406 /1



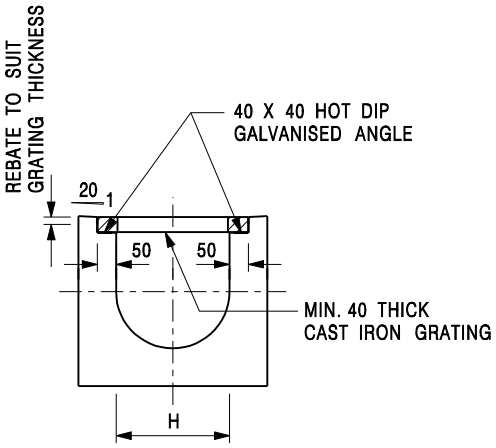
TYPICAL SECTION



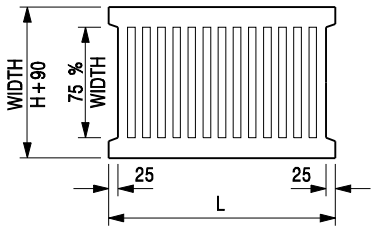
PLAN OF SLAB

U-CHANNELS WITH PRECAST CONCRETE SLABS

(UP TO H OF 525)



TYPICAL SECTION



L = 600mm FOR H ≤ 375mm
L = 400mm FOR H > 375mm

CAST IRON GRATING

(DIMENSIONS ARE FOR GUIDANCE ONLY, CONTRACTOR MAY SUBMIT EQUIVALENT TYPE)

U-CHANNEL WITH CAST IRON GRATING

(UP TO H OF 525)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. H = NOMINAL CHANNEL SIZE.
3. ALL CAST IRON FOR GRATINGS SHALL BE GRADE EN-GJL-150 COMPLYING WITH BS EN 1561.
4. FOR COVERED CHANNELS TO BE HANDED OVER TO HIGHWAYS DEPARTMENT FOR MAINTENANCE, THE GRATING DETAILS SHALL FOLLOW THOSE AS SHOWN ON HyD STD. DRG. NO. H3156.

REF.	REVISION	SIGNATURE	DATE
E	NOTES 3 & 4 AMENDED.	Original Signed	12.2014
D	NOTE 4 ADDED.	Original Signed	06.2008
C	MINOR AMENDMENT. NOTE 3 ADDED.	Original Signed	12.2005
B	NAME OF DEPARTMENT AMENDED.	Original Signed	01.2005
A	CAST IRON GRATING AMENDED.	Original Signed	12.2002

COVER SLAB AND CAST IRON GRATING FOR CHANNELS

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE 1 : 20

DATE JAN 1991

DRAWING NO. C2412E

Appendix A – Copies of Relevant Documents of the Originally Approved Drainage Proposal under Planning Application No. A/YL-TT/606

SMH1031164
CL 16.65
A1 13.97–750
A2 15.26–450 (PROPOSED)
X1 13.95–750

TM2–PROPOSED
CATCHPIT
WITH TRAP
C.L. 16.90
A1 15.28–450ø
X1 15.28–450ø

PROPOSED
450ø@1 IN 150
(TO BE MAINTAINED
BY THE APPLICANT)

CP5
C.L. 17.00
A1 16.28–375UC
X1 15.30–450ø

TM1–PROPOSED
CATCHPIT
WITH TRAP
C.L. 17.00
A1 16.66–225UC
A2 16.55–375 UC
X1 16.55–375 UC

SMH1031163
CL 16.53
A1 14.06–750
X1 14.03–750

PROPOSED
450ø@1 IN 150

EXISTING 375
SURFACE CHANNEL
@1 IN 80

CP2
C.L. 17.00
I.L. 16.67

CP1
C.L. 17.00
I.L. 16.69

225UC@
1 IN 150

225UC@
1 IN 200

150UC@1 IN 100

CP3A
C.L. 17.00
I.L. 16.70

CP3
C.L. 17.00
I.L. 16.72

150UC@
1 IN 100

STARTING
POINT A
C.L.17.00
I.L.16.85

CP1A
C.L. 17.00
I.L. 16.81

CP1B
C.L. 17.00
I.L. 16.78

CP1C
C.L. 17.00
I.L. 16.77

EXISTING 375
SURFACE CHANNEL
@1 IN 250

CP4
C.L. 17.00
A1 16.82–150UC
X1 16.63–375UC

150UC@1 IN 100

STARTING
POINT B
C.L.17.00
I.L.16.85

STARTING
POINT C
C.L.17.00
I.L.16.85

A1 234m²
A2 106m²
A3 1318m²
A4 138m²

LEGEND
- SUBJECT SITE BOUNDARY
- PROPOSED CATCHPIT WITH TRAP
- PROPOSED PIPE
- PROPOSED CATCHPIT WITH COVERS
- PROPOSED U–CHANNEL
- EXISTING SURFACE CHANNEL
- EXISTING STORM WATER
- EXISTING STORM MANHOLE
- CATCHMENT BOUNDARY
- +16.9 EXISTING GROUND LEVEL
- LOCATION OF PHOTO NO. N TAKEN

REMARK : (1) NO SITE FORMATION NOR GROUND LEVELING WORKS WILL BE CARRIED OUT UNDER THIS PLANNING APPLICATION
(2) NO FENCE WALL/HOARDING WILL BE CONSTRUCTED ALONG THE SUBJECT SITE BOUNDARY UNDER THIS PLANNING APPLICATION

PROJECT

何田顧問工程師有限公司
HO TIN & ASSOCIATES
CONSULTING ENGINEERS LIMITED

TITLE
STORMWATER DISCHARGE ROUTE
OF THE SUBJECT SITE

SCALE
1 : 300 – A3

DRAWING No.
FIGURE D3

By Post

規 劃 署

屯門及元朗西規劃處
香港新界沙田上禾輋路一號
沙田政府合署 14 樓

Planning Department

Tuen Mun and Yuen Long West
District Planning Office
14/F., Sha Tin Government Offices,
1 Sheung Wo Che Road, Sha Tin , N.T.
Hong Kong

來函檔號	Your Reference	
本署檔號	Our Reference	( ) in TPB/A/YL-TT/606
電話號碼	Tel. No. :	2158 6286
傳真機號碼	Fax No. :	2489 9711

5 March 2025

Leung Tsz Lan
[redacted]

Dear Sir/Madam,

Compliance with Approval Condition (a)
Planning Application No. A/YL-TT/606

I refer to your submission dated 3.3.2025 for compliance with the captioned approval condition (a) on the submission of a drainage proposal. The Drainage Services Department (DSD) has been consulted on your submission. Your submission is considered:

☑ Acceptable. The captioned condition **has been complied** with. Please find detailed comments at **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 queries on the departmental comments, please contact Mr. Jeff TSE (Tel: 2300 1627) of DSD or the undersigned.

Yours faithfully,

(Ms. Eva TAM)
for District Planning Officer/
Tuen Mun and Yuen Long West
Planning Department

c.c.
CE/MN of DSD (Attn.: Mr. Jeff TSE)

Internal
CTP/TPB (2)
ET/MC/mc

APPENDIX

Comments of the Chief Engineer/Mainland North of Drainage Services Department (CE/MN of DSD)

i) The applicant should implement the drainage facilities on site in accordance with the agreed drainage proposal.

ii) 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.

iii) The existing 375mm u-channel, to which the applicant proposed to discharge the stormwater from the subject site was not maintained by this office. The applicant(s) shall resolve any conflict/disagreement arisen for discharging the runoff from the application site(s) to the proposed discharge point(s). In the case that it is a local village drains, DO/YL should be consulted. Moreover, the applicant(s) should ensure that this drainage system and the existing downstream drains/channels/streams have adequate capacity to convey the additional runoff from the application site(s). Regular maintenance should be carried out by the applicant(s) to avoid blockage of the system.

iv) The proposed development would neither obstruct overland flow nor adversely affected any existing natural streams, village drains, ditches and the adjacent areas.

v) The applicant should resolve any conflict /disagreement with relevant lot owner(s) and seek permission from DLO/YL for laying new drains/channels and/or modifying/upgrading existing ones in other private lots or on Government Land, where required, outside the application site(s).

vi) It is noted that a section of the new proposed 450mm pipe will be located within private land (CP5 to TM2 as indicated in Figure D3). Please be reminded that DSD shall not maintain all such drains and manholes proposed to be laid within private lots adjacent to the development. The applicant has to confirm the future maintenance responsibilities of such drains and manholes.

vii) The applicant shall submit a duly completed Form HBP1 with a cross cheque covering the technical audit fee and a plan showing the details of the proposed drainage connection works to this Division for formal application for the required connection(s). Upon my acceptance of the connection application, the applicant shall carry out the proposed connection works in accordance with DSD Standard Drawings at the resources of the applicant. The connection

pipe outside the private lot boundaries shall be handed over to DSD for maintenance after satisfactory technical audit by DSD.

Appendix B – Copies of the Previously Approved Drainage Proposal under Planning Application No. A/YL-TT/596

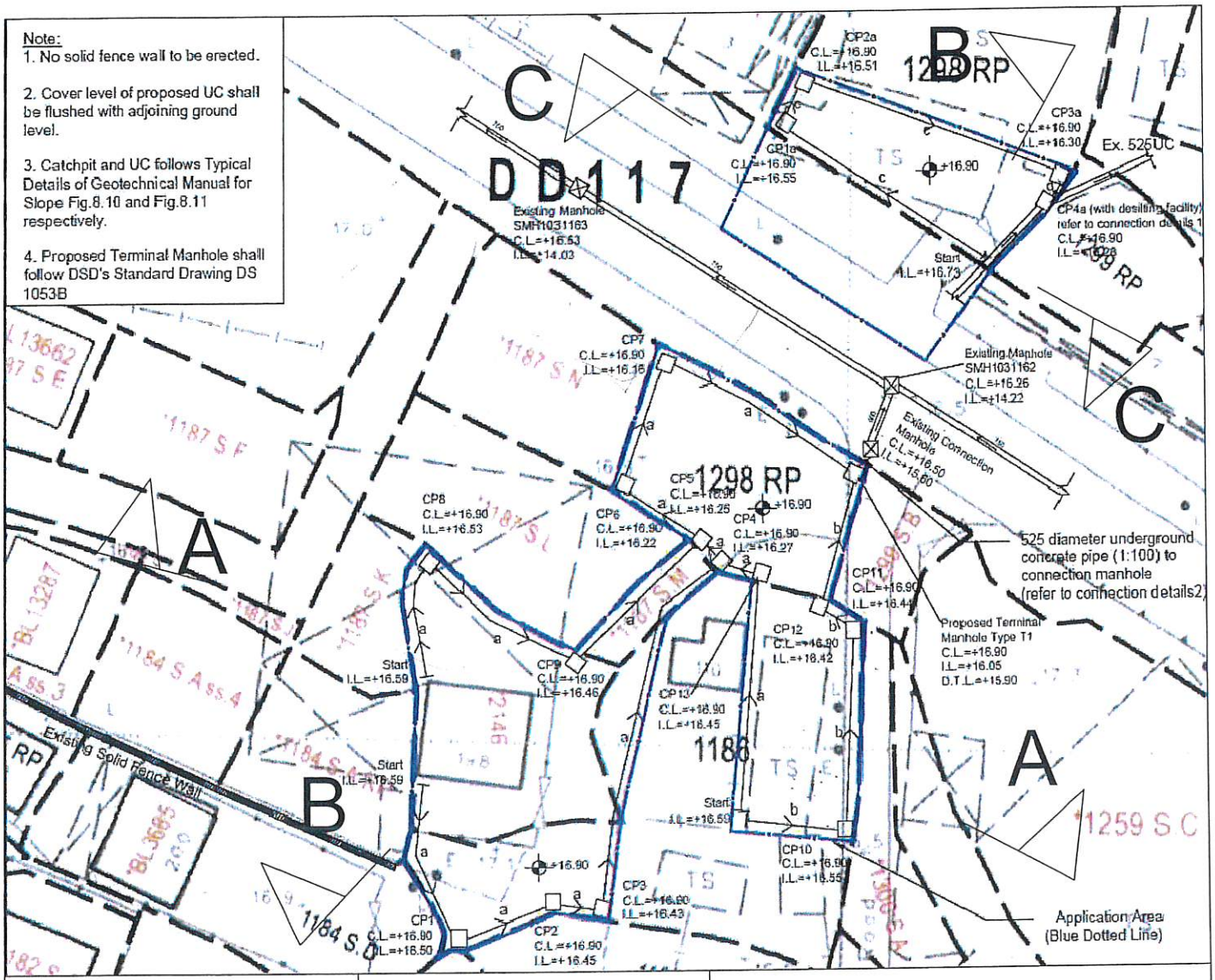
30 AUG 2017

Note:
1. No solid fence wall to be erected.

2. Cover level of proposed UC shall be flushed with adjoining ground level.

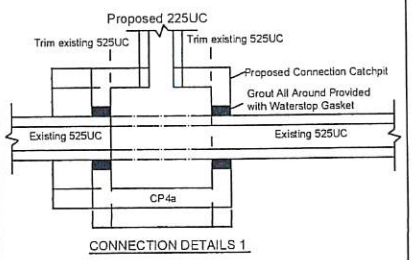
3. Catchpit and UC follows Typical Details of Geotechnical Manual for Slope Fig.8.10 and Fig.8.11 respectively.

4. Proposed Terminal Manhole shall follow DSD's Standard Drawing DS 1053B

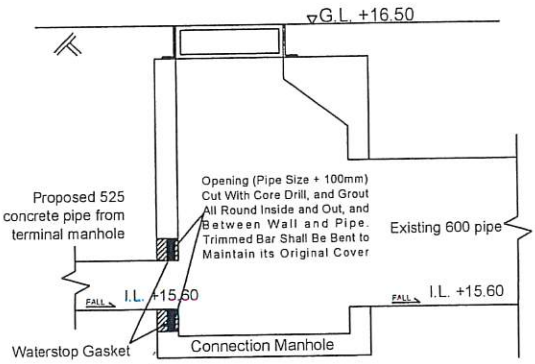


LEGEND

- CP — Proposed CatchPit
- TM — Proposed Terminal Manhole Type T1
- Proposed a:525HR(1:150) b:300HR(1:150) c:225UC(1:100) with Cast Iron Cover
- Existing Manhole
- Existing Underground Pipe



CONNECTION DETAILS 1



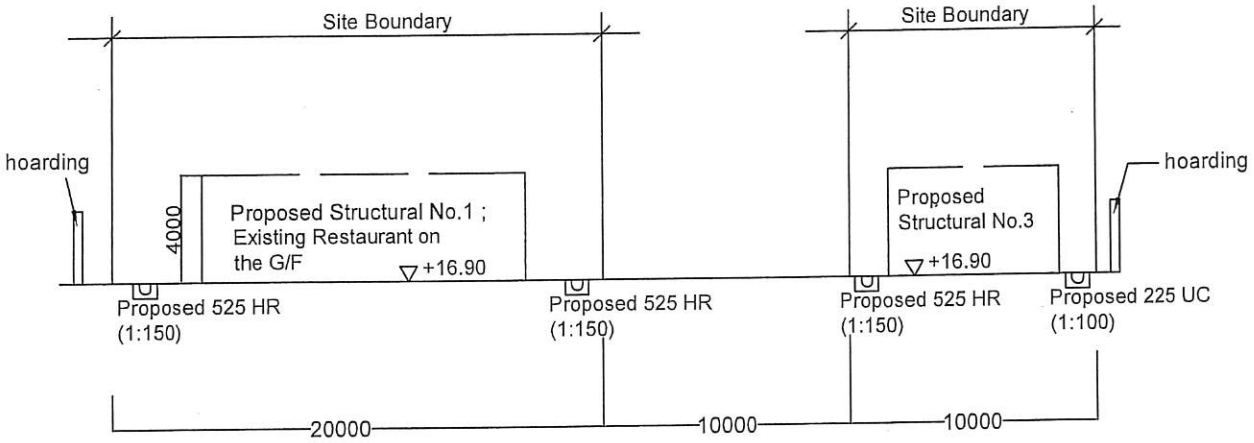
CONNECTION DETAILS 2

正宏工程顧問公司
CHING WAN ENGINEERING CONSULTANTS CO.

Title: Drainage Proposal

Project:
Proposed Temporary Eating Placce for a Period of 3 Years at Lots 1186(part), 1187S.M., 1298RP(part), 2146 in DD117 and adjoining Government Land, Tai Tong, Yuen Long, N.T.

Drawn by:	Date:
DM	8 Mar 2017
Check by: DM	Scale: ----



Section A-A

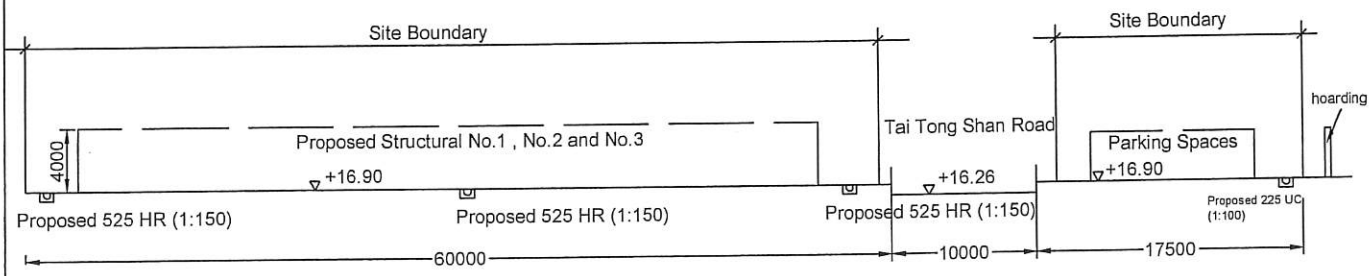
LEGEND

- CP — Proposed CatchPit
- TM — Proposed Terminal Manhole Type T1
- Proposed 300UC(1:100)/ 450HR(1:150) with Cast Iron Cover
- Existing Manhole
- (Size) — Existing Underground Pipe

Note:

1. Cover level of proposed UC shall be flushed with adjoining ground level.
2. Catchpit and UC follows Typical Details of Geotechnical Manual for Slope Fig.8.10 and Fig.8.11 respectively.
3. Proposed Terminal Manhole shall follow DSD's Standard Drawing DS 1053B

正宏工程顧問公司 CHING WAN ENGINEERING CONSULTANTS CO.	Title: Drainage Proposal	DD117–TT366
Project: **Proposed Temporary Eating Placce for a Period of 3 Years at Lots 1184S.A.ss.4 (part), 1184S.A.RP(part), 1186(part), 1187S.F.(par), 1187S.J.~S.N., 1187RP(part), 1200RP(part), 1298RP(part), 2146 in DD117 and adjoining Government Land, Tai Tong, Yuen Long, N.T. (A/YL-TT/366)**	Drawn by: DM	Date: 21 Feb 2016
	Check by: DM	Scale: ----



Section B-B

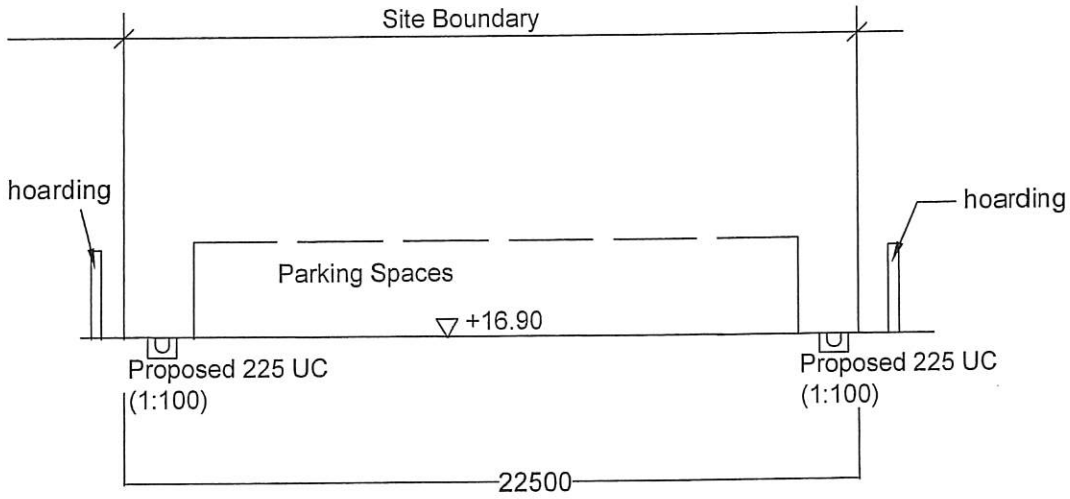
LEGEND

- CP — Proposed CatchPit
- TM — Proposed Terminal Manhole Type T1
- Proposed 300UC(1:100)/ 450HR(1:150) with Cast Iron Cover
- Existing Manhole
- (Size) — Existing Underground Pipe

Note:

1. Cover level of proposed UC shall be flushed with adjoining ground level.
2. Catchpit and UC follows Typical Details of Geotechnical Manual for Slope Fig.8.10 and Fig.8.11 respectively.
3. Proposed Terminal Manhole shall follow DSD's Standard Drawing DS 1053B

正宏工程顧問公司 CHING WAN ENGINEERING CONSULTANTS CO.	Title: Drainage Proposal	DD117–TT366
Project: **Proposed Temporary Eating Placce for a Period of 3 Years at Lots 1184S.A.ss.4 (part), 1184S.A.RP(part), 1186(part), 1187S.F.(par), 1187S.J.~S.N., 1187RP(part), 1200RP(part), 1298RP(part), 2146 in DD117 and adjoining Government Land, Tai Tong, Yuen Long, N.T. (A/YL-TT/366)**	Drawn by: DM	Date: 21 Feb 2016
	Check by: DM	Scale: ----



Section C-C

LEGEND

CP	Proposed CatchPit
TM	Proposed Terminal Manhole Type T1
→	Proposed 300UC(1:100)/ 450HR(1:150) with Cast Iron Cover
⊠	Existing Manhole
(Size)	Existing Underground Pipe

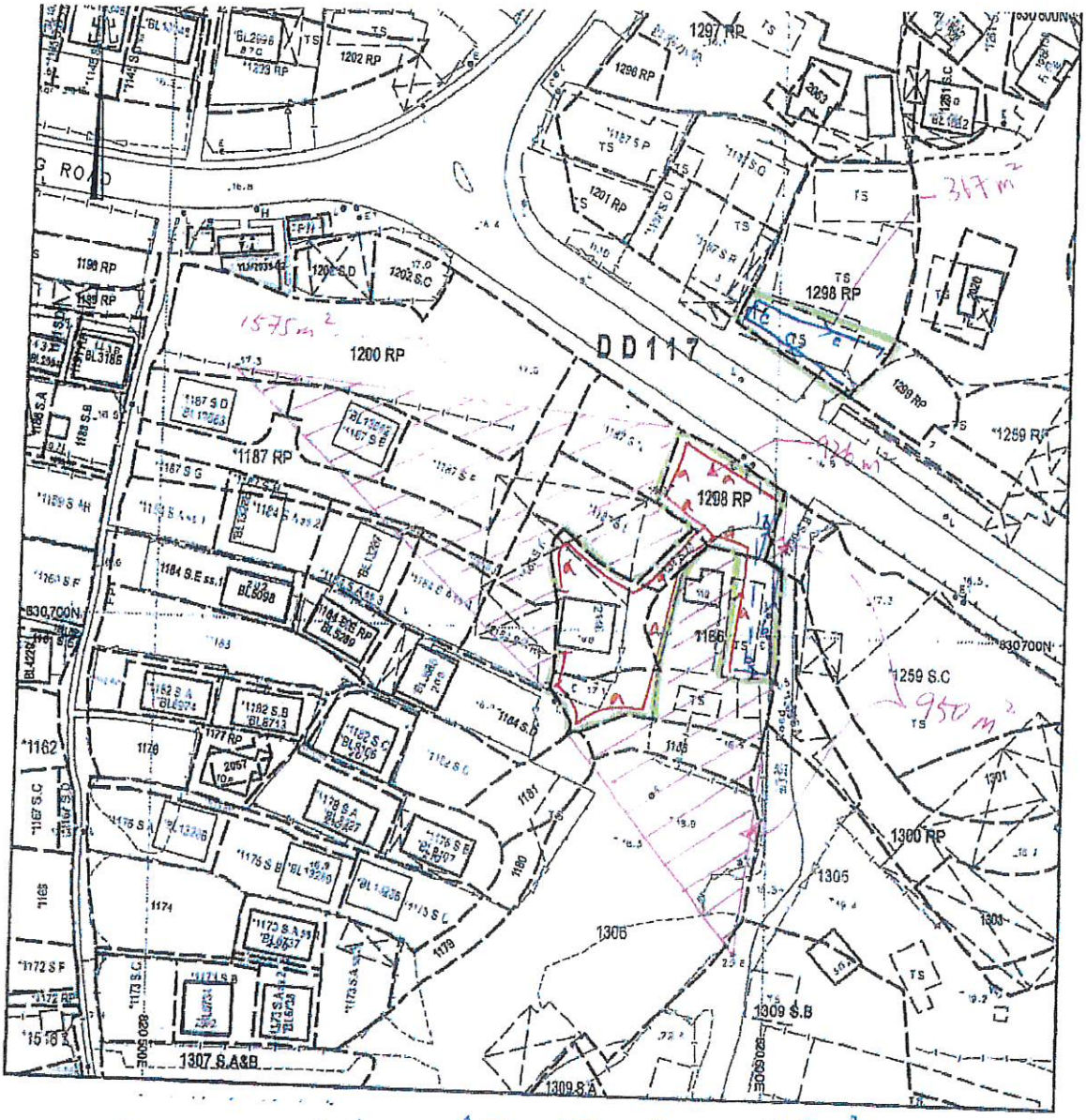
Note:

1. Cover level of proposed UC shall be flushed with adjoining ground level.

2. Catchpit and UC follows Typical Details of Geotechnical Manual for Slope Fig.8.10 and Fig.8.11 respectively.

3. Proposed Terminal Manhole shall follow DSD's Standard Drawing DS 1053B

正宏工程顧問公司 CHING WAN ENGINEERING CONSULTANTS CO.	Title: Drainage Proposal	DD117–TT366
Project: **Proposed Temporary Eating Placce for a Period of 3 Years at Lots 1184S.A.ss.4 (part), 1184S.A.RP(part), 1186(part), 1187S.F.(par), 1187S.J.~S.N., 1187RP(part), 1200RP(part), 1298RP(part), 2146 in DD117 and adjoining Government Land, Tai Tong, Yuen Long, N.T. (A/YL-TT/366)**	Drawn by: DM	Date: 21 Feb 2016
	Check by: DM	Scale: ----



— Drain a : Catchment Area = 1575 + 950 = 2525 m²

$Q = 0.278 C \cdot I A$

$= 0.278 \times 0.95 \times 250 \times 2525 \times 10^{-6}$

$= 0.167 \text{ m}^3/\text{sec} = 10003 \text{ lt/min}$

⇒ 325 HR (1:150)

— Drain b : Catchment Area = 250 m²

$Q = 0.278 C I A$

$= 0.278 \times 0.95 \times 250 \times 250 \times 10^{-6}$

$= 0.0165 \text{ m}^3/\text{sec} = 990 \text{ lt/min}$

⇒ 200 HR (1:150)

— Drain C : Catchment Area = 317 m²

$Q = 0.278 C \cdot I A$

$= 0.278 \times 0.95 \times 250 \times 317 \times 10^{-6}$

$= 0.0242 \text{ m}^3/\text{sec} = 1454 \text{ lt/min}$

⇒ 225 UC (1:100)

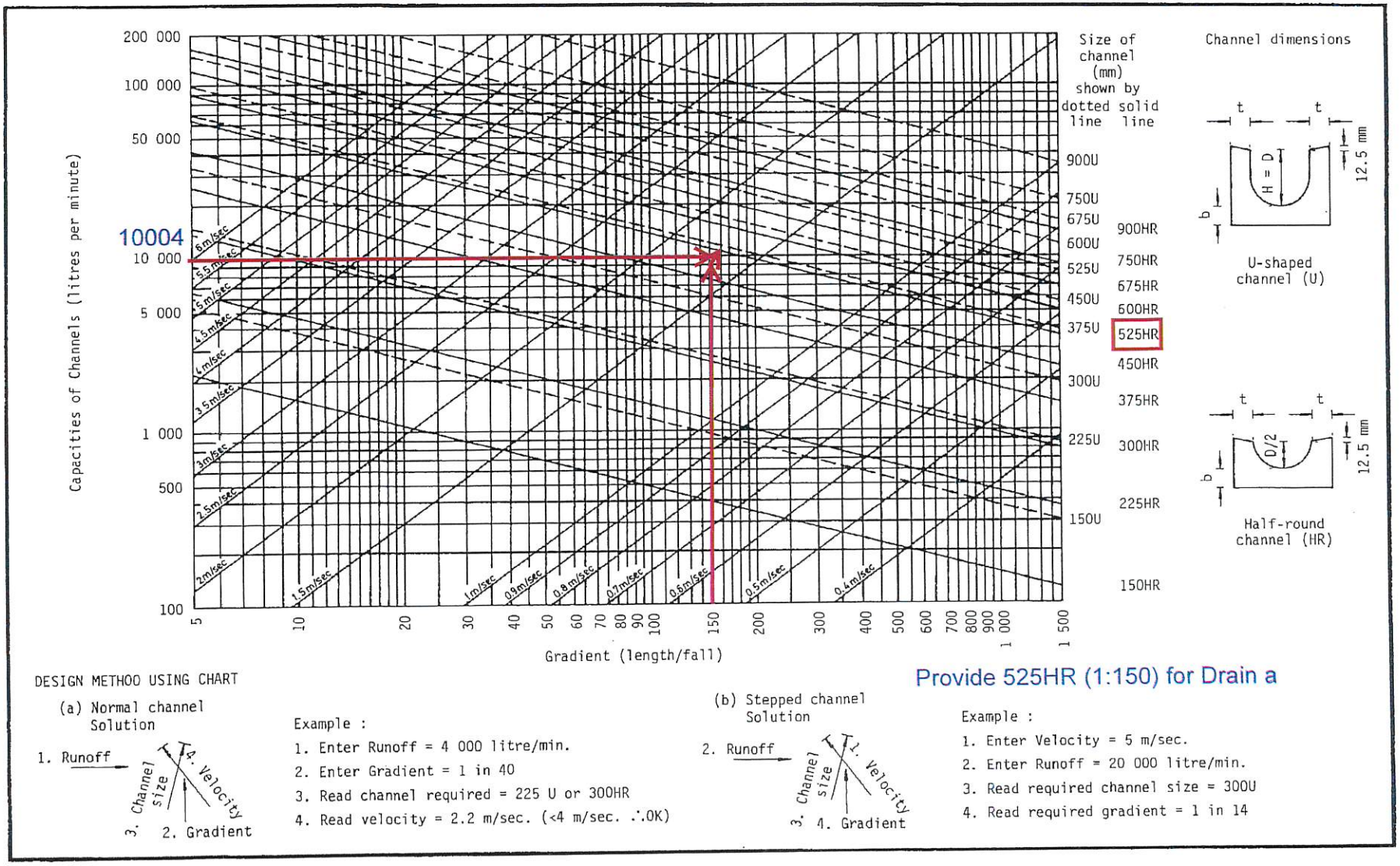


Figure 8.7 - Chart for the Rapid Design of Channels

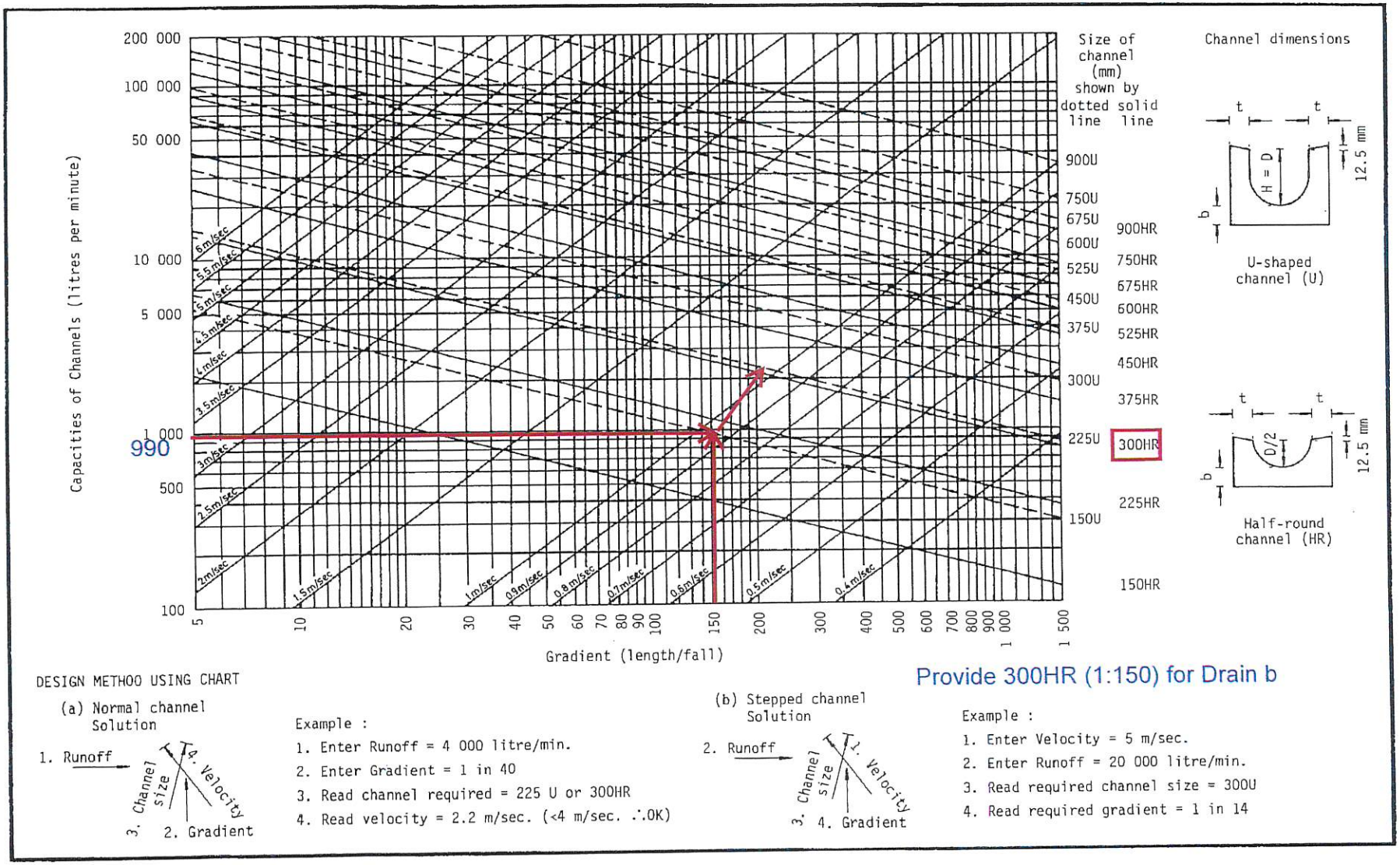


Figure 8.7 - Chart for the Rapid Design of Channels

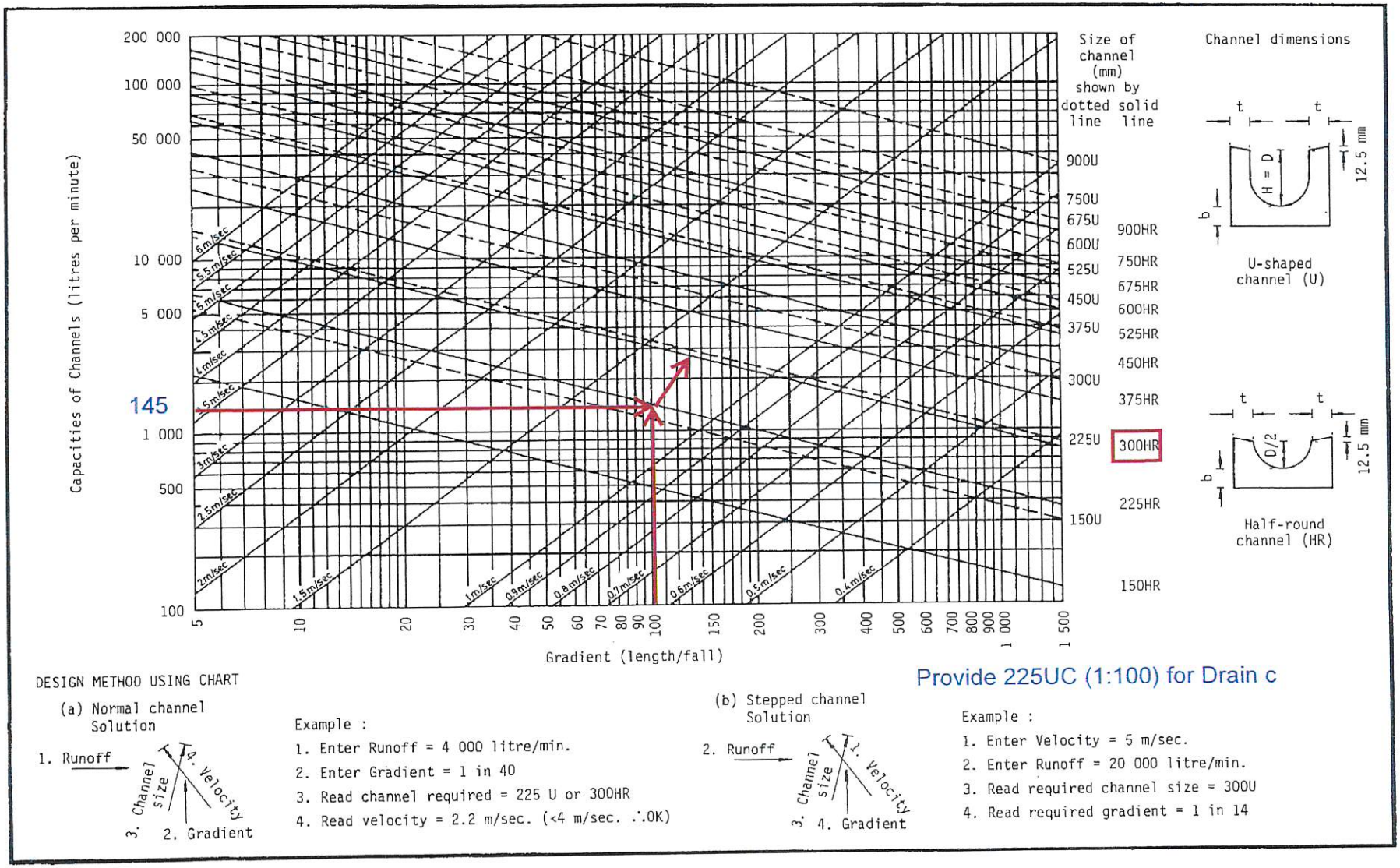
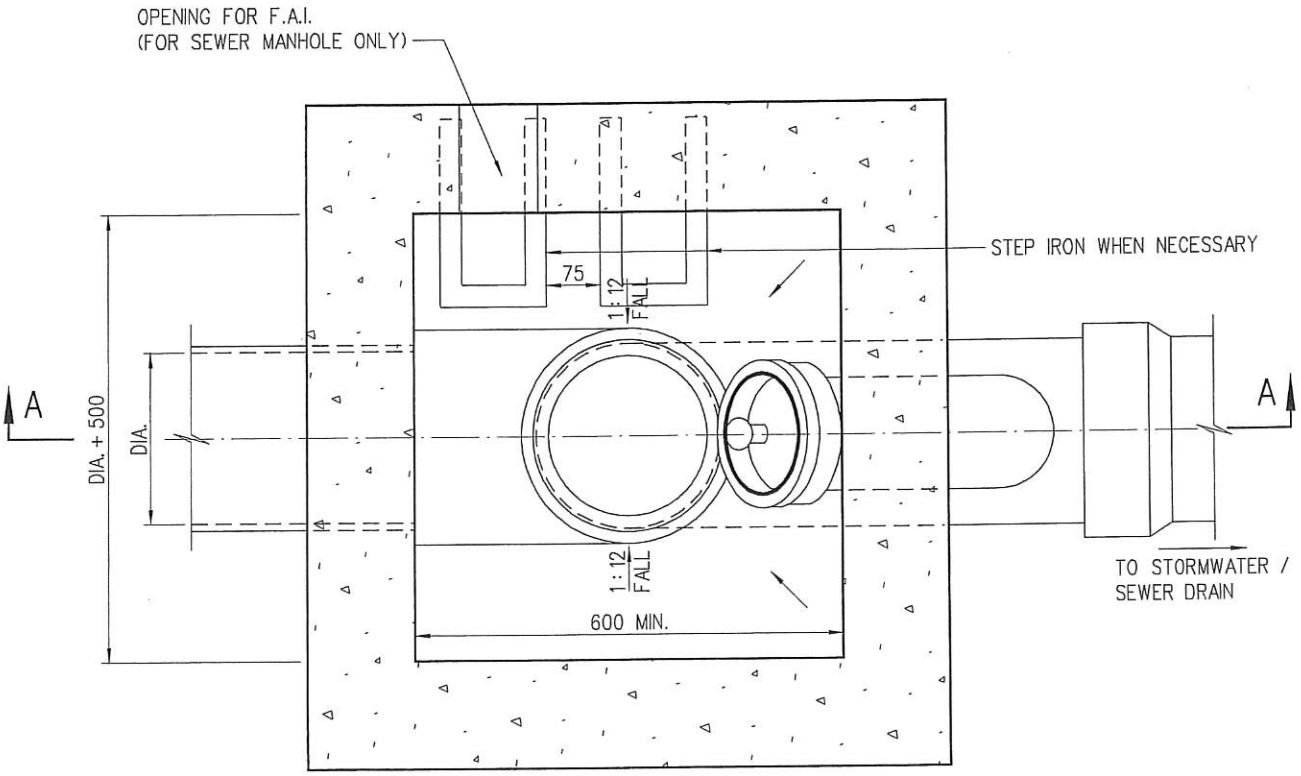


Figure 8.7 - Chart for the Rapid Design of Channels



SECTIONAL PLAN

NOTES:

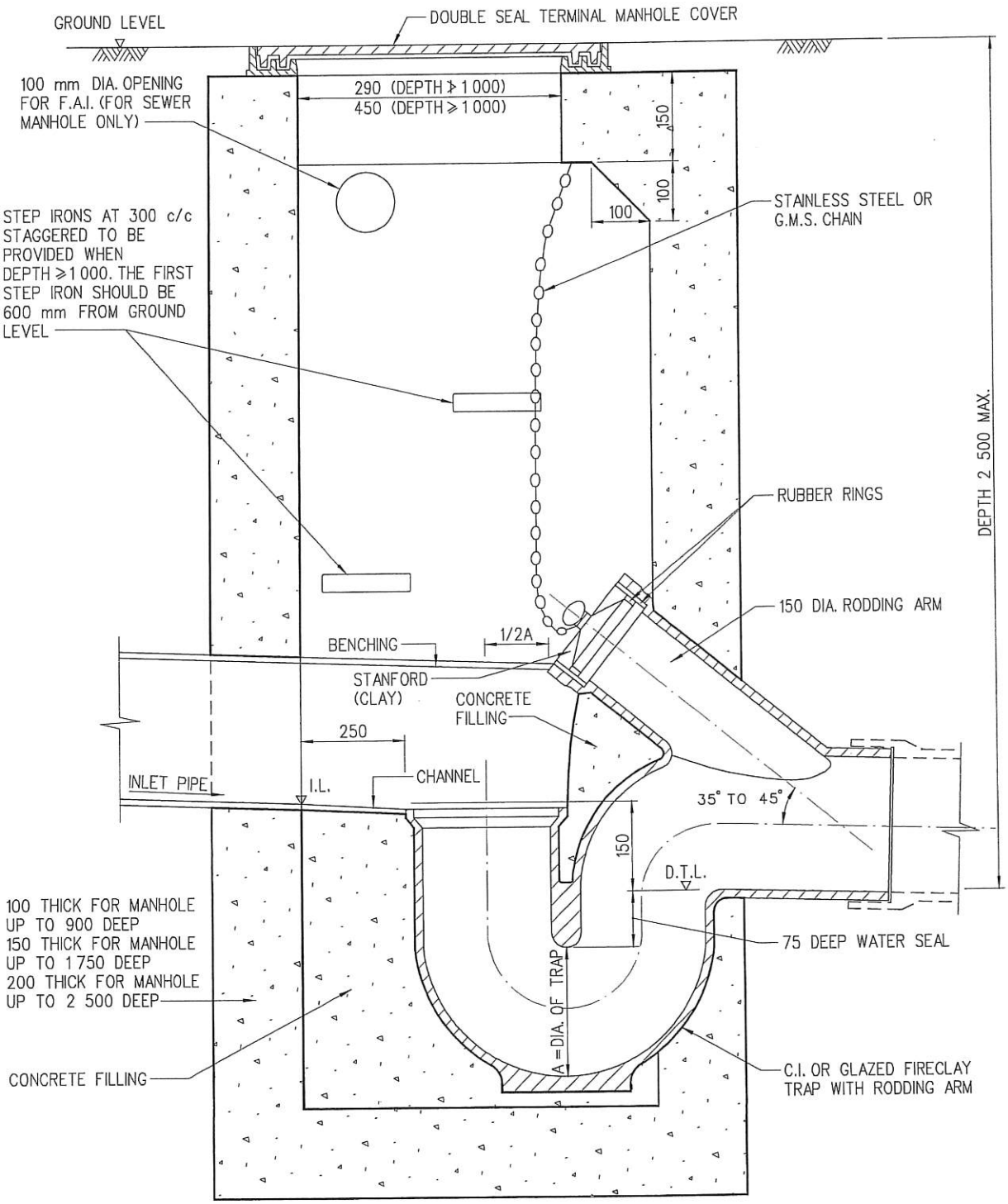
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. CONCRETE IS TO BE GRADE 30/20.
3. PIPE DIAMETER OF PIPE TO BE LESS THAN OR EQUAL TO 450 mm.

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

TERMINAL MANHOLE TYPE T1

DRAINAGE SERVICES DEPARTMENT

REFERENCE	DRAWING No.
SCALE 1 : 10	DS 1053B (SHEET 1 OF 2)



SECTION A-A

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

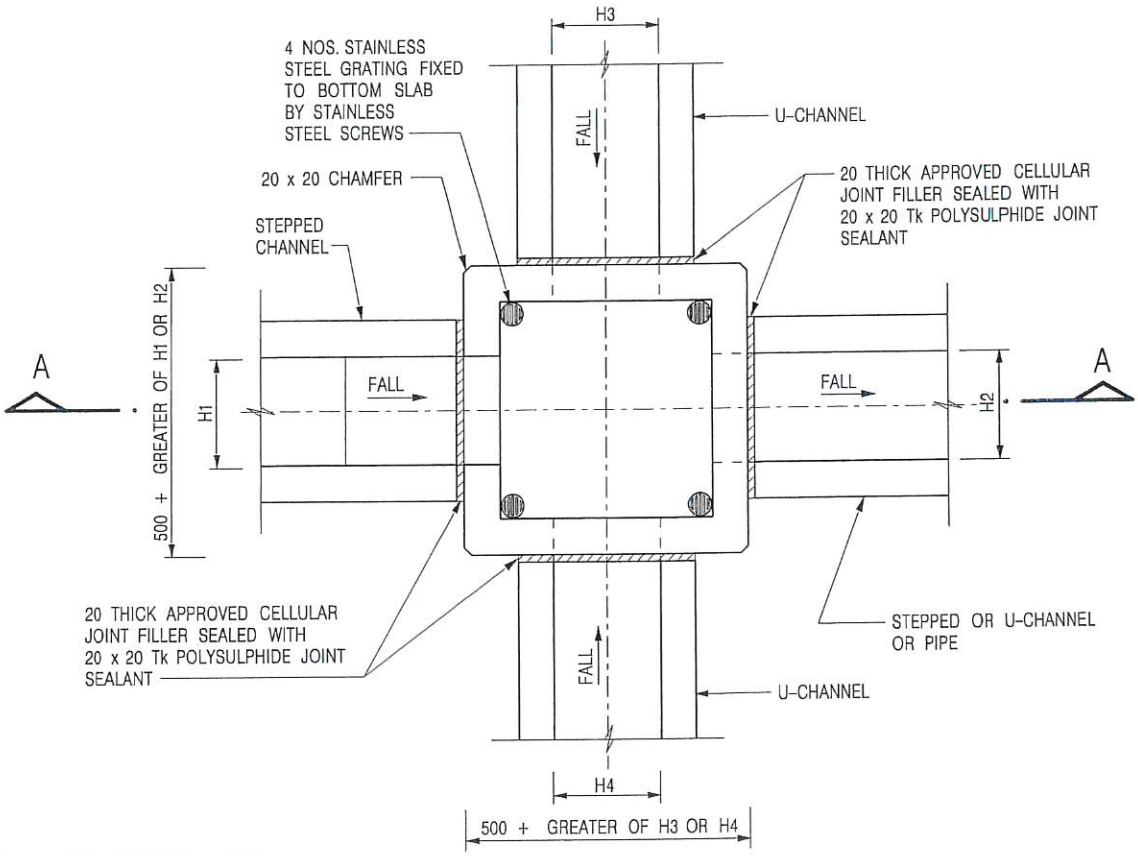
TERMINAL MANHOLE TYPE T1

DRAINAGE SERVICES DEPARTMENT

REFERENCE

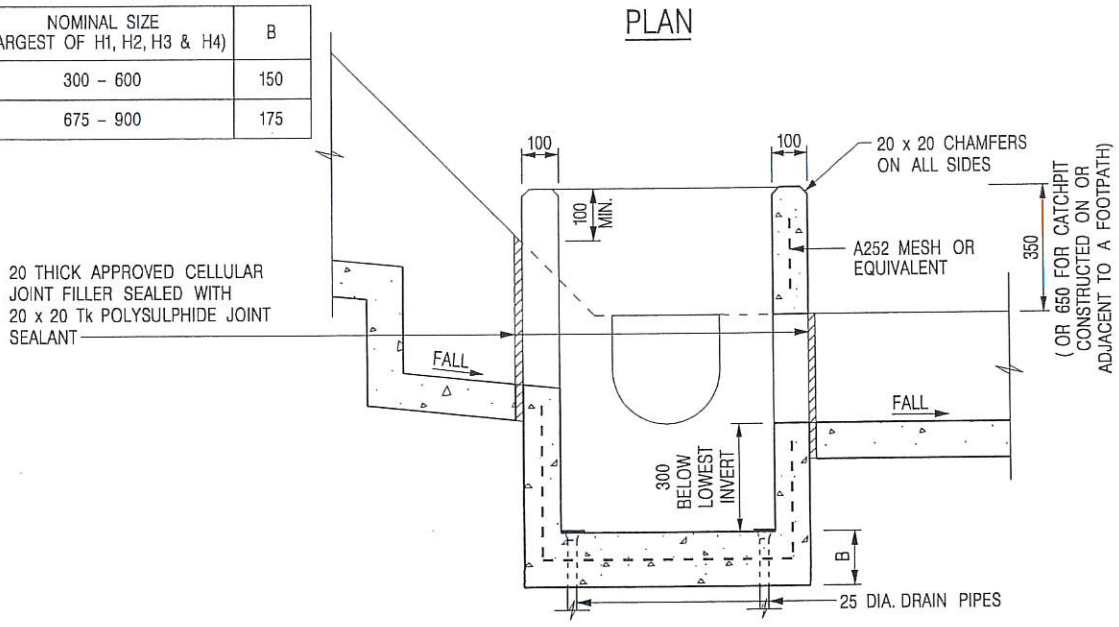
SCALE 1 : 10

DRAWING No. DS 1053B (SHEET 2 OF 2)



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

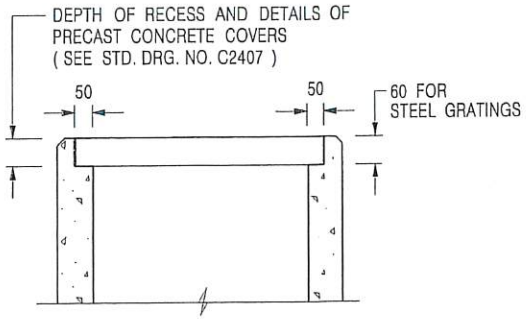
(SHEET 1 OF 2)

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) 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 'G' ON STD. DRG. NO. C2405; 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 'F' ON STD. DRG. NO. C2405.
12. SUBJECT TO THE APPROVAL OF THE ENGINEER, OTHER MATERIALS CAN ALSO BE USED AS COVERS / GRATINGS.

REF.	REVISION	SIGNATURE	DATE
–	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 /2

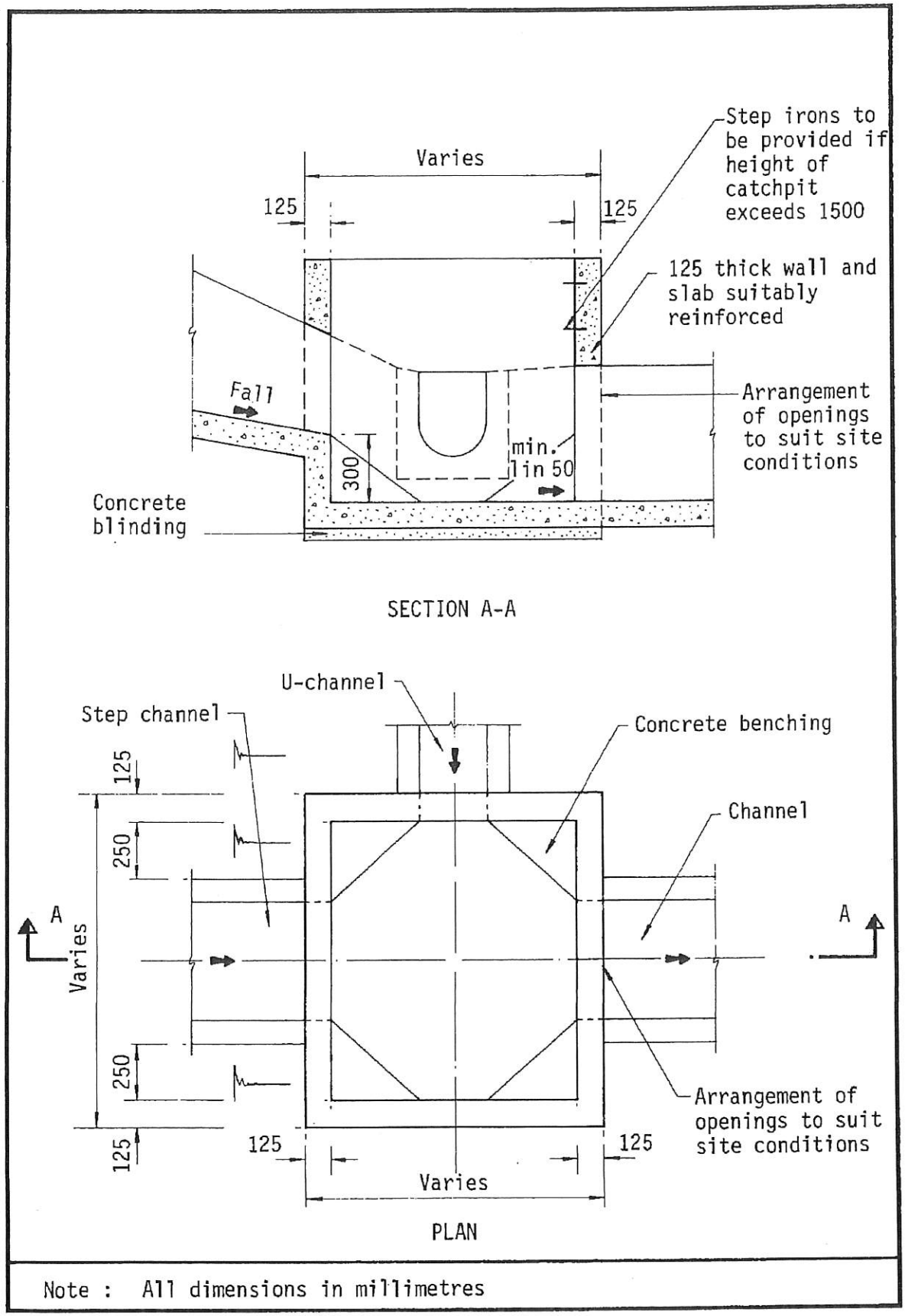


Figure 8.10 - Typical Details of Catchpits

Appendix C – Hydraulic Assessment

Assessment of Hydraulic Capacities of the Drainage System for 1 in 50 year design return period

Using Rational Method
Design Flow = 0.278CiA m^3/s for grassland (heavy soil) - steep, C = 0.35
for concrete/hard paved surface, C = 0.95

Using Manning Equation
Design Mean Velocity = $R^{1/6}/n(RS_f)^{1/2}$ and n= 0.015 for concrete pipe with fair surface

Using Gumbel Solution in frequency analysis
Rainfall intensity = $a / (t_d+b)^c$ where a= 505.5 , b= 3.29 and c= 0.355 in 50 year design return period
referenced from Table 3a in SDM Corrigendun No. 1/2024 - Storm Constants for Different Return Periods of HKO Headquarters

Using Bransby William's Equation (for channel flow)
Inlet time t_d = $0.14465L/(H^{0.2}A^{0.1})$ or 2 when the distance is too short

Using Colebrook's White Equation (for pipe flow)
V = - Sqt (8gDs) x log [(k_s / 3.7D) + (2.51v / D x Sqt (2gDs))]

Parameters Input
k_s (mm) = 0.6 k_s (m) = 0.0006
v (m^2/s) = 1.00E-06
g (m^2/s) = 9.81

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	
USCP/USMH	DSCP/DSMH	RELEVANT CATCHMENT	USGL (mPD)	DSGL (mPD)	USIL (mPD)	DSIL (mPD)	INVERT DIFF. (m)	LENGTH L (m)	SLOPE s	SLOPE 1 IN	INLET TIME t_d (min)	TIME OF FLOW INSIDE CHANNEL/ DRAIN t_f (min) = L/V (i.e. Column (9) ÷ Column (25) ÷ 60)	TIME OF CONCENTRATION t_c (min)	RAINFALL INTENSITY i (mm/hr)	RAINFALL INTENSITY INCLUDING EFFECT OF CLIMATE CHANGE (+16.0%) (mm/hr) [refer to item (e) and (k) in SDM Corrigendum No. 1/2022]	ADOPTED RAINFALL INTENSITY INCLUDING EFFECT OF CLIMATE CHANGE (+16.0%) & DESIGN ALLOWANCE (12.1%) (mm/hr) [refer to item (e), (k) and (n) in SDM Corrigendum No. 1/2022]	RUNOFF COEF. C	SUB-CATCHMENT AREA (m^2) (refer to Figure D4R)	EFF. AREA (m^2)	CUM. EFF. AREA (m^2)	DESIGN FLOW (m^3/s)	SIZE (mm)	CHANNEL TYPE	VELOCITY (m/s)	FLOW CAPACITY (m^3/s)	90% FLOW CAPACITY (m^3/s)	SPARE CAPACITY (m^3/s)	Occupancy of the Proposed Pipe / Channel	
Start Point B	CP8A	A4	17.00	17.00	16.78	16.76	0.02	3.00	0.007	150	2.00	0.05	2.05	278.89	323.52	362.66	0.95	290	276	276	0.028	225	UC	0.99	0.04	0.040	0.013	68.6%	OK!
CP8A	CP4A	A4 + A3	17.00	17.00	16.76	16.62	0.14	13.50	0.010	100	2.05	0.18	2.23	275.55	319.63	358.31	0.95	109	104	379	0.038	225	UC	1.22	0.06	0.050	0.012	76.2%	OK!
Start Point C	CP2A	C1	17.00	17.00	16.63	16.61	0.01	3.00	0.004	250	2.00	0.05	2.05	278.97	323.60	362.76	0.95	438	416	416	0.042	375	UC	1.08	0.14	0.122	0.080	34.3%	OK!
Start Point A	CP1A	A2	17.00	17.00	16.85	16.83	0.02	2.00	0.010	100	2.00	0.04	2.04	279.16	323.83	363.01	0.95	12	11	11	0.001	150	UC	0.93	0.02	0.017	0.016	6.6%	OK!
CP1A	CP2A	ditto	17.00	17.00	16.63	16.61	0.01	3.00	0.004	250	2.04	0.05	2.08	278.31	322.84	361.90	0.95	0	0	11	0.001	375	UC	1.08	0.14	0.122	0.121	0.9%	OK!
CP2A	CP3A	A2 + C1	17.00	17.00	16.61	16.58	0.04	3.00	0.013	80	2.08	0.04	2.12	277.63	322.06	361.02	0.95	0	0	427	0.043	225	UC	1.36	0.06	0.055	0.013	77.4%	OK!
CP3A	CP4A	A2 + C1 + A1	17.00	17.00	16.58	16.51	0.06	2.50	0.025	40	2.12	0.02	2.14	277.24	321.60	360.51	0.95	222	211	638	0.064	225	UC	1.93	0.09	0.078	0.014	81.6%	OK!
CP4A	CP5A	A1 + A2 + A3 + A4 + C1	17.00	17.00	16.51	16.37	0.14	10.00	0.014	70	2.14	0.09	2.23	275.55	319.64	358.31	0.95	0	0	1,017	0.101	300	UC	1.76	0.14	0.128	0.026	79.4%	OK!
CP5A	CP6A	ditto	17.00	17.00	16.37	16.36	0.01	1.00	0.014	70	2.23	0.01	2.24	275.38	319.44	358.10	0.95	0	0	1,017	0.101	300	UC	1.76	0.14	0.128	0.026	79.4%	OK!
CP6A	CP7A	ditto	17.00	17.00	16.36	16.33	0.03	2.00	0.014	70	2.24	0.02	2.26	275.05	319.06	357.66	0.95	0	0	1,017	0.101	300	UC	1.76	0.14	0.128	0.026	79.3%	OK!
CP7A	TM1 - Terminal Catchpit with trap	ditto	17.00	17.00	16.33	16.28	0.04	3.00	0.014	70	2.26	0.03	2.29	274.55	318.48	357.02	0.95	0	0	1,017	0.101	300	UC	1.76	0.14	0.128	0.027	79.1%	OK!
TM1 - Terminal Catchpit with trap	CP7 (Planning Application No. A/YL-TT/596)	A1 + A2 + A3 + A4 + B1 + C1	17.00	16.90	16.28	16.20	0.08	4.00	0.020	50	2.29	0.03	2.32	274.00	317.84	356.29	0.95	130	124	1,140	0.113	300	UC	2.09	0.17	0.151	0.038	74.8%	OK!
CP7 (Planning Application No. A/YL-TT/596)	Terminal Manhole (Planning Application No. A/YL-TT/596)	A1 + A2 + A3 + A4 + B1 + C1 + B2	16.90	16.90	16.16	16.05	0.11	17.00	0.007	150	2.32	0.20	2.52	270.59	313.88	351.86	0.95	2,523	2,397	3,537	0.346	525	HR	1.41	0.15	0.137	-0.209	252.7%	Not OK! Need to be upgraded
Terminal Manhole (Planning Application No. A/YL-TT/596)	Connection Manhole (Planning Application No. A/YL-TT/596)	ditto	16.90	16.65	15.90	15.88	0.02	2.00	0.010	100	2.52	0.01	2.54	270.34	313.60	351.54	0.95	0	0	3,537	0.346	525	pipe	2.24	0.48	0.436	0.091	79.2%	OK!
Connection Manhole (Planning Application No. A/YL-TT/596)	SMH1031162	ditto	16.65	16.26	15.60	14.76	0.04	4.00	0.010	100	2.54	0.03	2.57	269.89	313.07	350.96	0.95	0	0	3,537	0.345	600	pipe	2.44	0.69	0.620	0.275	55.7%	OK!
Upgrading Scheme																													
TM1 - Terminal Catchpit with trap	CP7 (Planning Application No. A/YL-TT/596)	A1 + A2 + A3 + A4 + B1 + C1	17.00	16.90	16.28	16.20	0.08	4.00	0.020	50	2.29	0.03	2.32	274.00	317.84	356.29	0.95	130	124	1,140	0.113	300	UC	2.09	0.17	0.151	0.038	74.8%	OK!
CP7 (Planning Application No. A/YL-TT/596)	Terminal Manhole (Planning Application No. A/YL-TT/596)	A1 + A2 + A3 + A4 + B1 + C1 + B2	16.90	16.90	16.16	16.05	0.11	17.00	0.007	150	2.32	0.15	2.47	271.47	314.91	353.02	0.95	2,523	2,397	3,537	0.347	600	UC	1.91	0.61	0.553	0.206	62.7%	OK!
Terminal Manhole (Planning Application No. A/YL-TT/596)	Connection Manhole (Planning Application No. A/YL-TT/596)	ditto	16.90	16.65	15.90	15.88	0.02	2.00	0.010	100	2.47	0.01	2.49	271.23	314.62	352.69	0.95	0	0	3,537	0.347	525	pipe	2.24	0.48	0.436	0.090	79.5%	OK!
Connection Manhole (Planning Application No. A/YL-TT/596)	SMH1031162	ditto	16.65	16.26	15.60	14.76	0.04	4.00	0.010	100	2.49	0.03	2.51	270.77	314.10	352.10	0.95	0	0	3,537	0.346	600	pipe	2.44	0.69	0.620	0.273	55.9%	OK!

A1 = 222
A2 = 11.5
A3 = 109
A4 = 290
Total = 632.5 600.88

B1 = 130
B2 [A/YL-TT/596 (net)] = 2523

C1 = 438