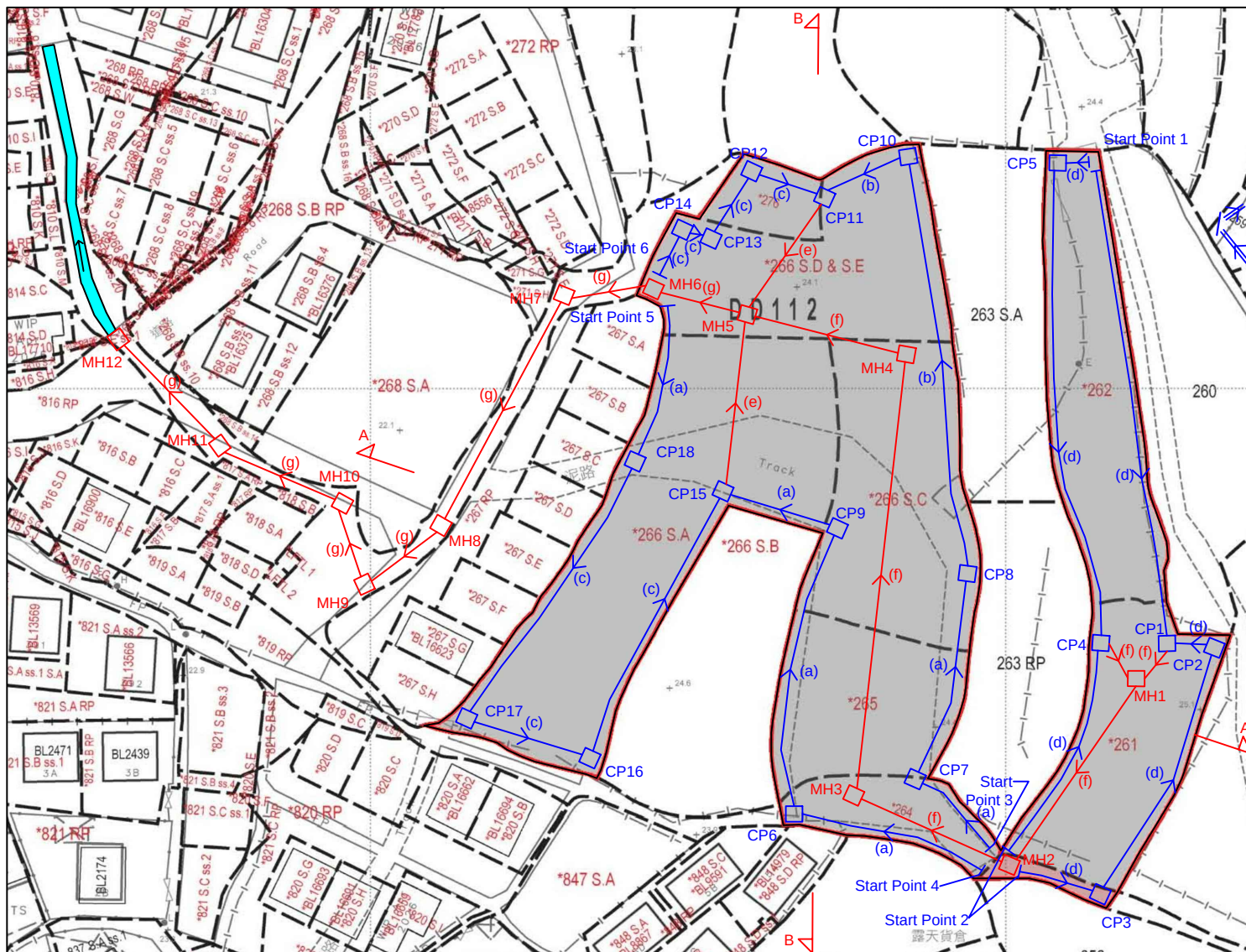


Appendix A

Drainage Proposal



LEGEND

Existing 1200mm dia. pipe

CP/MH
Proposed CatchPit/Manhole

Note:

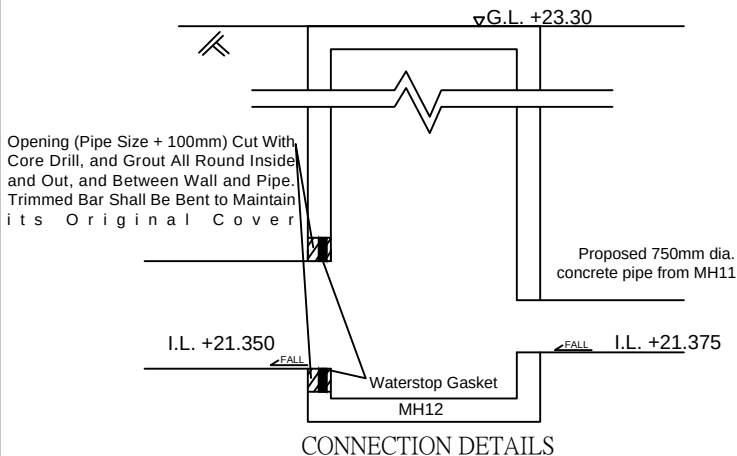
1. Trap facility provided in MH6 shall follow CEDD standard drawing No. C24061.

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

3. Fence Wall to be erected (if any) shall be Open-bottom type.

4. Max. 400mm filling for levelling the site..

- (a) Proposed 300UC (1:100) with Cast Iron Cover
- (b) Proposed 375UC (1:100) with Cast Iron Cover
- (c) Proposed 450UC (1:100) with Cast Iron Cover
- (d) Proposed 450UC (1:200) with Cast Iron Cover
- (e) Proposed 450mm dia. concrete pipe (1:100)
- (f) Proposed 450mm dia. concrete pipe (1:200)
- (g) Proposed 750mm dia. concrete pipe (1:200)



CONNECTION DETAILS

正宏工程顧問公司

CHING WAN ENGINEERING CONSULTANT COMPANY

Project:

PROPOSED TEMPORARY PUBLIC VEHICLE PARK (EXCLUDING CONTAINER VEHICLE) AND ASSOCIATED FILLING OF LAND FOR A PERIOD OF 5 YEARS at LOTS 261, 262, 264, 265, 266 S.A, 266 S.C, 266 S.D &S.E AND 276 IN D.D.112 AND ADJOINING GOVERNMENT LAND, SHEK KONG, YUEN LONG, NEW TERRITORIES

Title:

Drainage Proposal - LAYOUT

D01

Drawn by:

DM

Date:

21-9-2026

Check by:

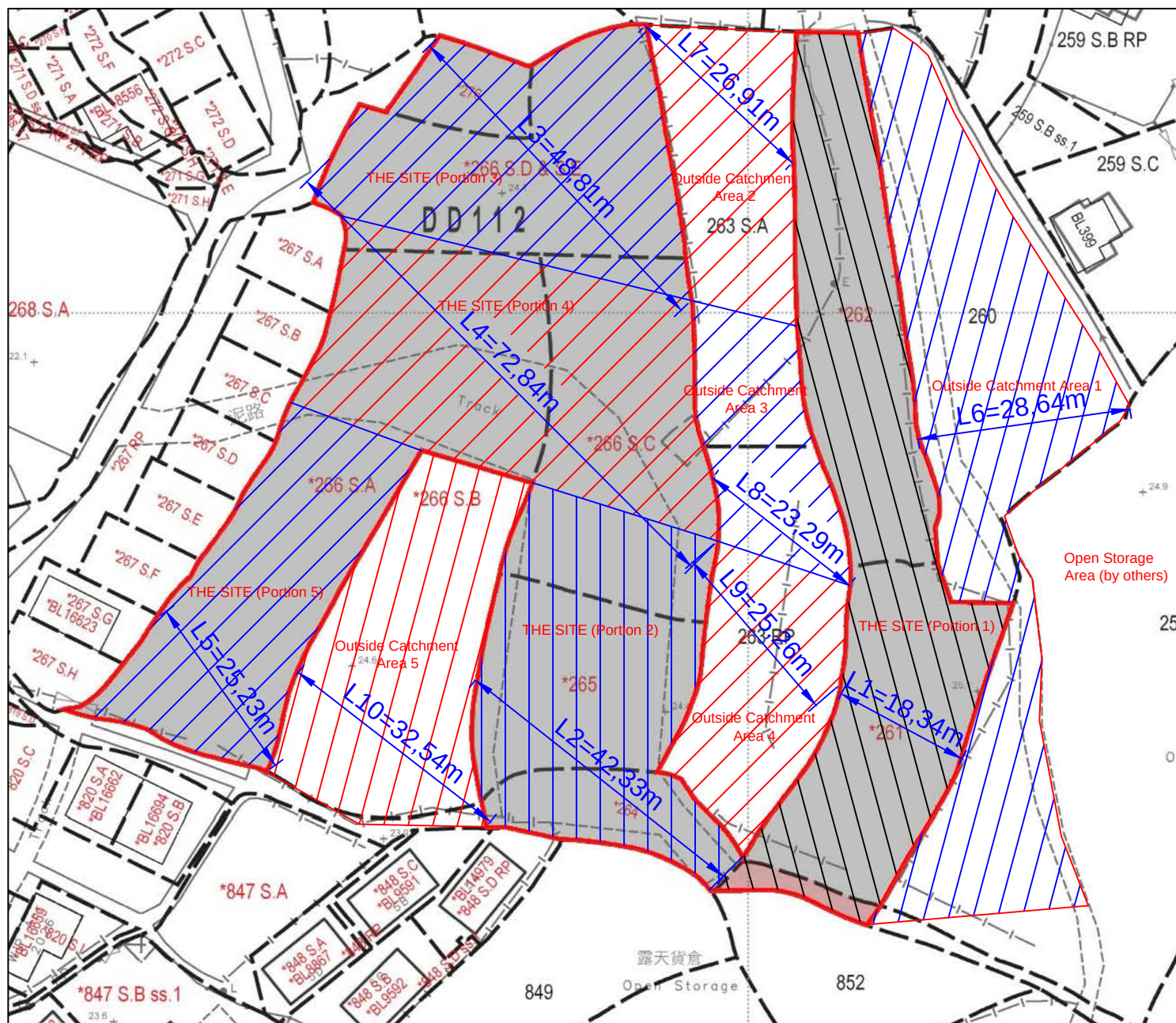
DM

Scale:

Manhole Schedule

	CL	IL
Start Point 1	25.00	24.500
Start Point 2	25.15	24.620
Start Point 3	25.15	24.500
Start Point 4	25.15	25.100
Start Point 5	24.4	24.350
Start Point 6	24.4	24.350
CP1 A1	25.20	24.129
CP1 A2	25.20	24.332
CP1 X1	25.20	23.850
CP2	25.20	24.356
CP3	25.30	24.560
CP4 A1	25.20	24.443
CP4 A2	25.20	24.110
CP4 X1	25.20	23.850
CP5	25.00	24.482
CP6	24.80	24.500
CP7	24.80	24.350
CP8	24.60	24.036
CP9 A1	24.60	24.058
CP9 X1	24.60	23.458
CP10	24.40	23.395
CP11 A1	24.40	23.614
CP11 A2	24.40	23.270
CP11 X1	24.40	23.248
CP12	24.40	23.710
CP13	24.40	23.811

	CL	IL	
CP14	24.40	23.832	
CP15 A1	24.60	23.294	
CP15 A2	24.60	22.721	
CP15 X1	24.60	22.721	
CP16	24.80	23.168	
CP17	24.80	23.346	
CP18	24.60	23.808	
MH1 A1	25.20	23.819	Type E1
MH1 A2	25.20	23.822	Type E1
MH X1	25.20	23.669	Type E1
MH2	25.15	23.503	Type E1
MH3	24.80	23.382	Type D1
MH4	24.40	23.043	Type D1
MH5 A1	24.40	23.050	Type D1
MH5 A2	24.40	22.927	Type D1
MH5 A3	24.40	22.463	Type E1
MH5 X1	24.40	22.463	Type E1
MH6 A1	24.40	22.399	Type E1
MH6 X1	24.40	21.959	Type E1
MH7	23.60	21.900	Type E1
MH8	23.40	21.706	Type E1
MH9	23.30	21.642	Type E1
MH10	23.30	21.586	Type E1
MH11	23.30	21.492	Type E1
MH12 A1	23.30	21.375	Type E1
MH12 X1	23.30	21.350	Type E1



	Area (sq.m)	C	L (m)	H (m)	
The Site (Portion 1)	1790	0.95	18.34	0.2	(1:500) Fall
The Site (Portion 2)	1294	0.95	42.33	0.2	(1:500) Fall
The Site (Portion 3)	1184	0.95	48.81	0.2	(1:500) Fall
The Site (Portion 4)	1479	0.95	72.84	0.2	(1:500) Fall
The Site (Portion 5)	948	0.95	25.23	0.2	(1:500) Fall
Outside Catchment Area 1	1852	0.25	28.64	0.698	$H=(25.5-25.3)*100/28.64=0.698m$
Outside Catchment Area 2	625	0.95	26.91	3.864	$H=(25.0-24.4)*100/26.91=2.230m$
Outside Catchment Area 3	511	0.95	23.29	1.979	$H=(25.3-24.6)*100/23.29=3.006m$
Outside Catchment Area 4	630	0.95	25.26	0.2	$H=(25.3-24.6)*100/25.26=2.771m$
Outside Catchment Area 5	1060	0.95	32.54	0.2	(1:500) Fall

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Title:

Drainage Proposal -
CATCHMENT AREA PLAN

D02

Drawn by:

DM

Date:

21-9-2026

Check by:

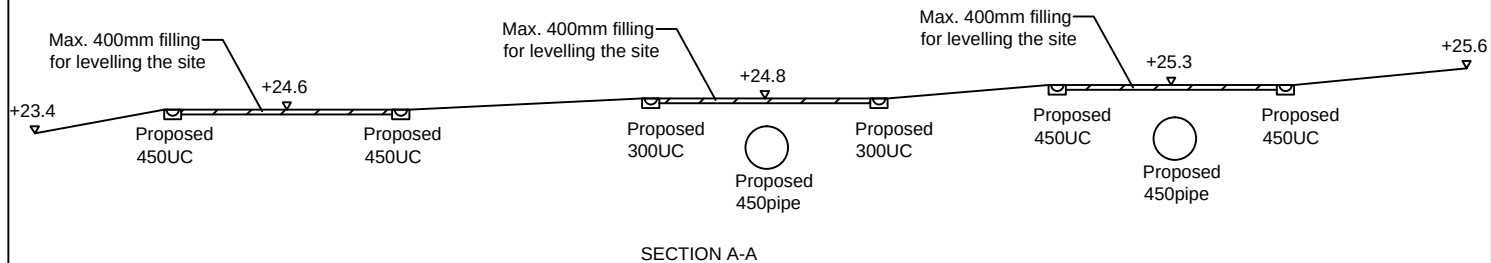
DM

Scale:

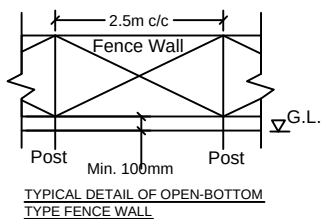
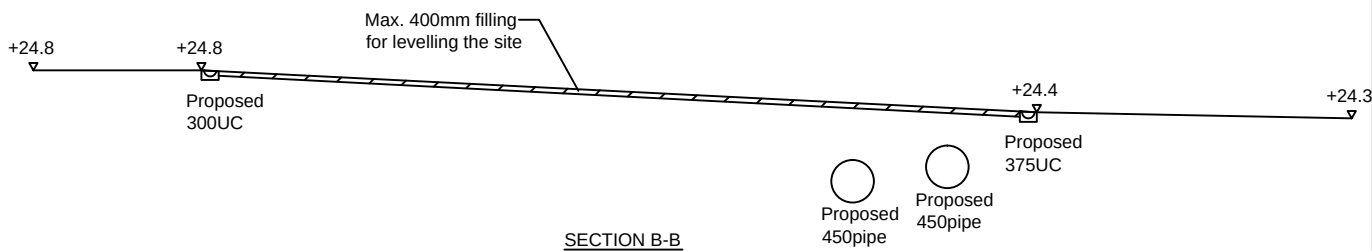
THE SITE

THE SITE

THE SITE



THS SITE



正宏工程顧問公司

CHING WAN ENGINEERING CONSULTANT COMPANY

Project
PROPOSED TEMPORARY PUBLIC VEHICLE PARK (EXCLUDING CONTAINER VEHICLE) AND ASSOCIATED FILLING OF LAND FOR A PERIOD OF 5 YEARS at LOTS 261, 262, 264, 265, 266 S.A, 266 S.C, 266 S.D &S.E AND 276 IN D.D.112 AND ADJOINING GOVERNMENT LAND, SHEK KONG, YUEN LONG, NEW TERRITORIES

Title:

Drainage Proposal -
SECTIONS

D03

Drawn by:

DM

Date:

21-9-2026

Check by:

DM

Scale:

For the design of drains inside the site

	Catchment ID	Area (A) km ²	Average Slope (H), m/100	Flow Path (L), m	Inlet time (t ₀), min	Storm constants			Runoff intensity (i), mm/hr	Runoff Coefficient (C)	Q=1.111*0.278C ₁ A, (m ³ /s), extra 11%
Q1	The Site (Portion 1)	0.00179	0.2	18.34	2.179	505.5	3.29	0.355	276.547	0.95	0.145
Q2	The Site (Portion 2)	0.001294	0.2	42.33	5.195	505.5	3.29	0.355	236.621	0.95	0.090
Q3	The Site (Portion 3)	0.001184	0.2	48.81	6.043	505.5	3.29	0.355	228.747	0.95	0.079
Q4	The Site (Portion 4)	0.001479	0.2	72.84	8.830	505.5	3.29	0.355	208.545	0.95	0.091
Q5	The Site (Portion 5)	0.000948	0.2	25.23	3.194	505.5	3.29	0.355	260.324	0.95	0.072
Q6	Outside Catchment Area 1	0.001852	0.698	28.64	2.641	505.5	3.29	0.355	268.701	0.25	0.038
Q7	Outside Catchment Area 2	0.000625	2.230	26.91	2.193	505.5	3.29	0.355	276.297	0.95	0.051
Q8	Outside Catchment Area 3	0.000511	3.006	22.29	1.824	505.5	3.29	0.355	283.209	0.95	0.042
Q9	Outside Catchment Area 4	0.00063	2.771	25.26	1.969	505.5	3.29	0.355	280.411	0.95	0.052
Q10	Outside Catchment Area 5	0.00106	0.2	32.54	4.074	505.5	3.29	0.355	248.828	0.95	0.077

Design Q from Start Point 1/Start Point 2 to CP1, Start Point 1/Start Point 2 to CP4 and CP4 to MH5, consider Q1+Q6

$$Q = 0.184 \text{ m}^3/\text{s}$$

Manning Equation

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

where

$$R = \frac{(\pi r^2 / 2 + 2r^2) / (\pi r + 2r)}{0.1563} \text{ m}$$

$$n = 0.016 \text{ s/m}^{1/3} \text{ (Talbe 13 of Stormwater Drainage Manual)}$$

$$S_f = 0.005 \text{ (1: 200)}$$

Therefore,

$$V = \frac{0.1563^{2/3} * 0.005^{0.5}}{0.016} = 1.282 \text{ m/sec}$$

Maximum Capacity (Q_{max})

$$= V * A = 0.232 \text{ m}^3/\text{sec}$$

$$> 0.184 \text{ m}^3/\text{sec}$$

% Utilization=

$$= 79\% < 90\%, \text{ OK}$$

Provide 450UC (1:200) is OK

Colebrook-White Equation

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

where :

V	=		mean velocity (m/s)	
g	=	9.81	m/s ²	gravitational acceleration (m/s ²)
D	=	0.45	m	internal pipe diameter (m)
ks	=	0.00006	m	hydraulic pipeline roughness (m)
v	=	1.14E-06	m ² /s	kinematic viscosity of fluid (m ² /s)
s	=	0.005		hydraulic gradient (1: 200)

Therefore, design V of pipe capacity

$$Q = VA = 0.279 \text{ m}^3/\text{s} \text{ (0.8 factor for sedimentation)}$$

$$> 0.184 \text{ m}^3/\text{s} \text{ Ok}$$

% of capacity utilization

$$= 66\% < 90\%, \text{ OK}$$

Provide 450mm dia. concrete pipe (1:200) is OK

Design Q from Start Point 3 to CP8, consider Q9

$$Q = 0.052 \text{ m}^3/\text{s}$$

Manning Equation

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

where

$$R = \frac{(\pi r^2 / 2 + 2r^2) / (\pi r + 2r)}{0.1042} \text{ m}$$

$$n = 0.016 \text{ s/m}^{1/3} \text{ (Talbe 13 of Stormwater Drainage Manual)}$$

$$S_f = 0.01 \text{ (1: 100)}$$

Therefore,

$$V = \frac{0.1042^{2/3} * 0.01^{0.5}}{0.016} = 1.384 \text{ m/sec}$$

Maximum Capacity (Q_{max})

$$= V * A = 0.111 \text{ m}^3/\text{sec}$$

$$> 0.052 \text{ m}^3/\text{sec}$$

% Utilization=

$$= 47\% < 90\%, \text{ OK}$$

Provide 300UC (1:100) is OK

Design Q from CP8 to CP11, consider Q7+Q8+Q9

$$Q = 0.145 \text{ m}^3/\text{s}$$

Manning Equation

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

where

$$R = \frac{(\pi r^2 / 2 + 2r^2) / (\pi r + 2r)}{0.1302} \text{ m}$$

$$n = 0.016 \text{ s/m}^{1/3} \text{ (Talbe 13 of Stormwater Drainage Manual)}$$

$$S_f = 0.01 \text{ (1: 100)}$$

Therefore,

$$V = \frac{0.1302^{2/3} * 0.01^{0.5}}{0.016} = 1.606 \text{ m/sec}$$

Maximum Capacity (Q_{max})

$$= V * A = 0.202 \text{ m}^3/\text{sec}$$

$$> 0.145 \text{ m}^3/\text{sec}$$

% Utilization=

$$= 72\% < 90\%, \text{ OK}$$

Provide 375UC (1:100) is OK

Design Q from CP15 to MH5, consider Q2+Q4+Q5+Q10Q = **0.330** m3/s**Colebrook-White Equation**

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

where :

V	=		mean velocity (m/s)
g	=	9.81	m/s ² gravitational acceleration (m/s ²)
D	=	0.45	m internal pipe diameter (m)
ks	=	0.00006	m hydraulic pipeline roughness (m)
v	=	1.14E-06	m ² /s kinematic viscosity of fluid (m ² /s)
s	=	0.010	hydraulic gradient (l: 100)

(Table14, from DSD SDM 2018, concrete pipe)

Therefore, design V of pipe capacity = 2.520 m/s

Q= V/A (0.8 factor for sedimentation)

= **0.401** m3/s> **0.330** m3/s% of capacity utilization = **82%** <90%, OK**Provide 450mm dia. concrete pipe (1:100) is OK****Design Q from MH5 to Final Outfall, consider All**Q = **0.738** m3/s**Colebrook-White Equation**

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

where :

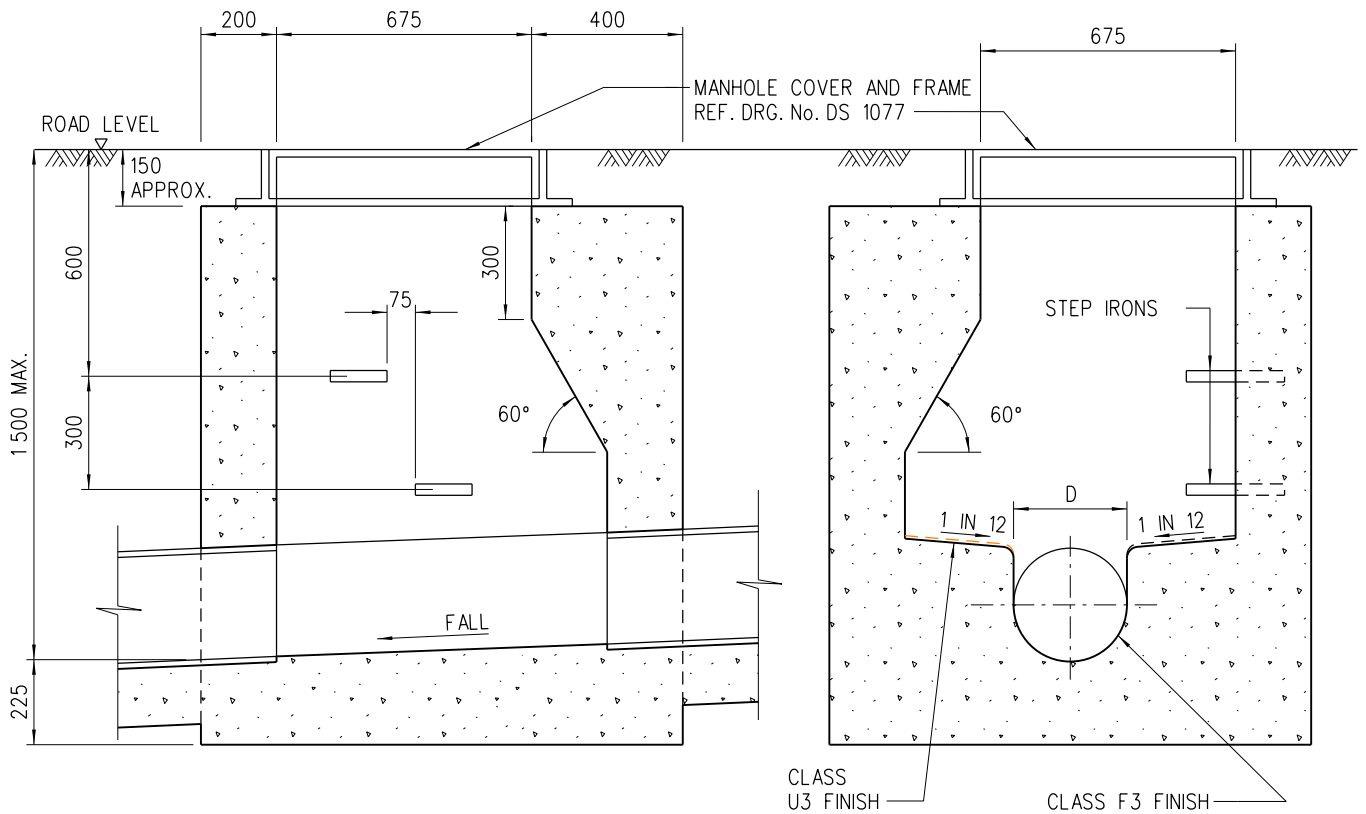
V	=		mean velocity (m/s)
g	=	9.81	m/s ² gravitational acceleration (m/s ²)
D	=	0.75	m internal pipe diameter (m)
ks	=	0.00006	m hydraulic pipeline roughness (m)
v	=	1.14E-06	m ² /s kinematic viscosity of fluid (m ² /s)
s	=	0.005	hydraulic gradient (l: 200)

(Table14, from DSD SDM 2018, concrete pipe)

Therefore, design V of pipe capacity = 2.413 m/s

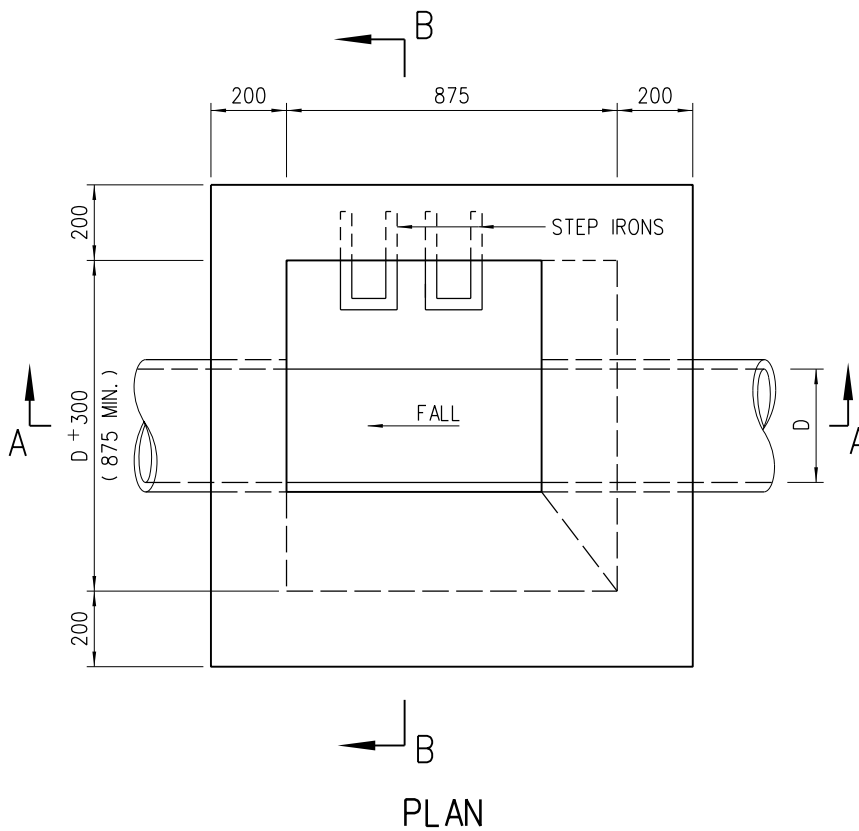
Q= V/A (0.8 factor for sedimentation)

= **1.066** m3/s> **0.738** m3/s% of capacity utilization = **69%** <90%, OK**Provide 750mm dia. concrete pipe (1:200) is OK**



SECTION A-A

SECTION B-B



PLAN

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. PIPE DIAMETER : 150 TO 675 mm
3. NORMAL RANGE : 1 000 TO 1 500 mm
OF DEPTH (FROM ROAD LEVEL TO LOWEST INVERT)
4. USED IN : STORMWATER DRAIN AND SEWER
5. JUNCTION : POSITION OF JUNCTION TO BE DETERMINED IN EACH INDIVIDUAL CASE. CHANNELS IMMEDIATELY UNDER ACCESS TO MANHOLE SHOULD BE AVOIDED.
6. TOP TREATMENT: SEE DRG. No. DS 1032
7. FOUNDATION : FOUNDATION OF MANHOLE VARIES WITH SITE CONDITION. THEREFORE, IT SHOULD BE DETERMINED ON SITE BY THE ENGINEER.
8. CONCRETE : GRADE 30/20
9. COVER AND FRAME NOT SHOWN ON PLAN FOR CLARITY.
10. RECESS WITH SQUARE STEEL ROD SHALL BE PROVIDED AT TOP OF MANHOLE CHAMBER FOR INSTALLING MONITORING DEVICE(S). DETAILS REFER TO DSD STANDARD DRAWING NO. DS 1099.

A	NOTE 10 ADDED	ORIGINAL SIGNED	2.8.2022
	NEW ISSUE	ORIGINAL SIGNED	15.8.2007
REV.	DESCRIPTION	SIGNATURE	DATE

STANDARD MANHOLE
TYPE D1

DRAINAGE SERVICES DEPARTMENT

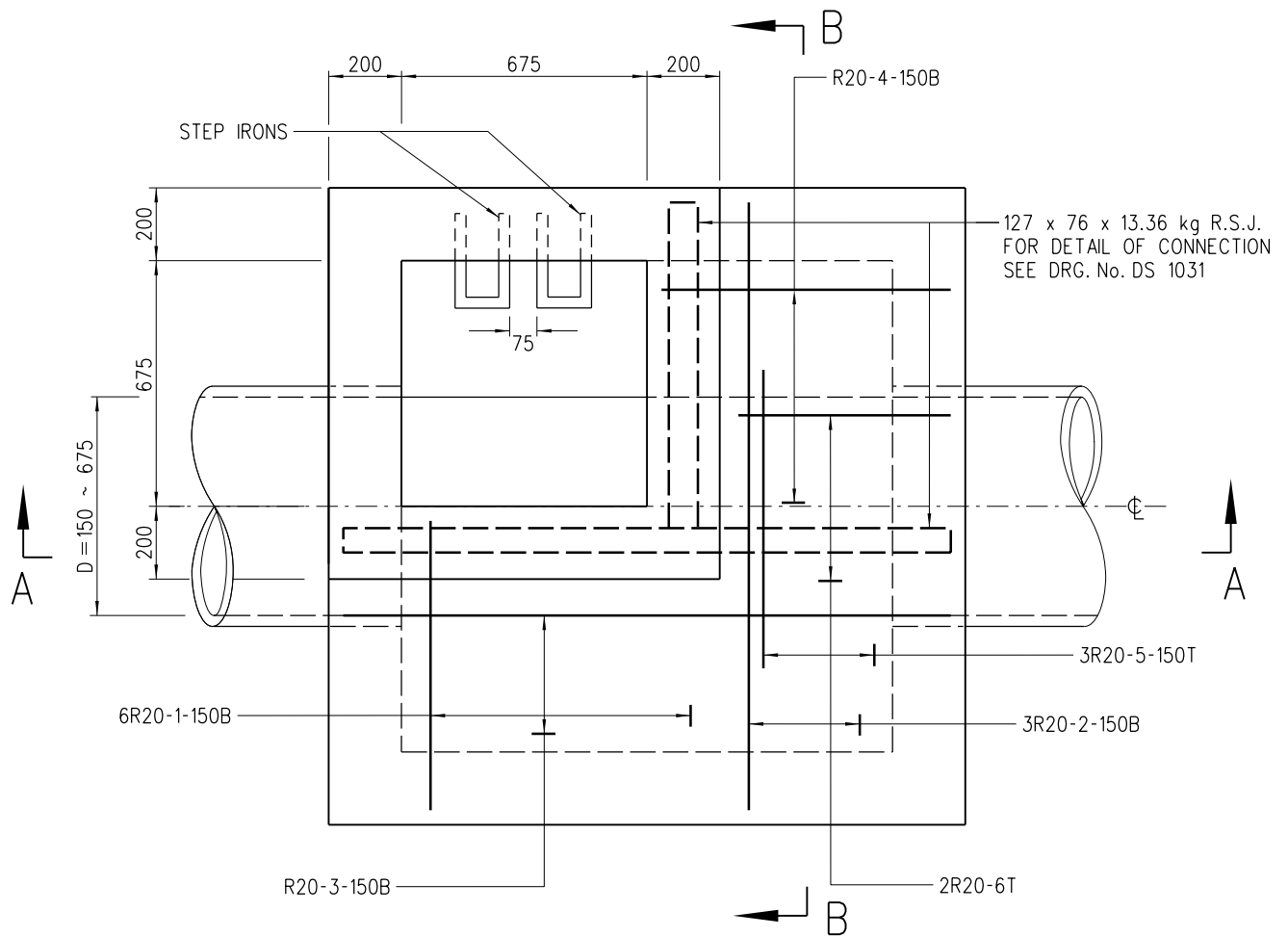
REFERENCE

DRAWING No.

SCALE

1 : 20

DS 1079A



PLAN

NOTES:

- ALL DIMENSIONS ARE IN MILLIMETRES.
- NOTATION OF REINFORCEMENT : THE SEQUENCE OF DESCRIPTION OF IDENTIFICATION MARKS ON DRAWINGS FOR STEEL REINFORCING BARS FOR CONCRETE WORK IS AS FOLLOWS (NUMBER, TYPE, SIZE, MARK, SPACING, LOCATION OR COMMENT)
- B DENOTES GRADE 500B RIBBED REINFORCEMENT.
- R DENOTES GRADE 250 PLAIN REINFORCEMENT.
- PIPE DIAMETER : 150 TO 675 mm
- NORMAL RANGE OF DEPTH : 1500 TO 3 000 mm (MEASURED FROM ROAD LEVEL TO LOWEST INVERT)
- USED IN : STORMWATER DRAIN AND SEWER
- JUNCTION : POSITION OF JUNCTION TO BE DETERMINED IN EACH INDIVIDUAL CASE. CHANNELS IMMEDIATELY UNDER ACCESS TO MANHOLE SHOULD BE AVOIDED.
- TOP TREATMENT : SEE DRG. No. DS 1032
- FOUNDATION : FOUNDATION OF MANHOLE VARIES WITH SITE CONDITION. THEREFORE, IT SHOULD BE DETERMINED ON SITE BY THE ENGINEER.
- CONCRETE : GRADE 30/20
- ALL BAR MARKS APPEARED HEREON ARE USED FOR REFERENCE IN THIS DRAWING ONLY.
- MINIMUM COVER AT END OF BARS 40 mm
- COVER AND FRAME NOT SHOWN ON PLAN FOR CLARITY.
- RECESS WITH SQUARE STEEL ROD SHALL BE PROVIDED AT TOP OF MANHOLE CHAMBER FOR INSTALLING MONITORING DEVICE(S). DETAILS REFER TO DSD STANDARD DRAWING NO. DS 1099.

C	NOTE 15 ADDED	ORIGINAL SIGNED	2.8.2022
B	NOTE 11 DELETED NOTES 2, 3 & 4 ADDED	ORIGINAL SIGNED	29.4.2015
A	NOTE 11 REVISED	ORIGINAL SIGNED	24.11.2014
	NEW ISSUE	ORIGINAL SIGNED	15.8.2007
REV.	DESCRIPTION	SIGNATURE	DATE

STANDARD MANHOLE
TYPE E1

DRAINAGE SERVICES DEPARTMENT

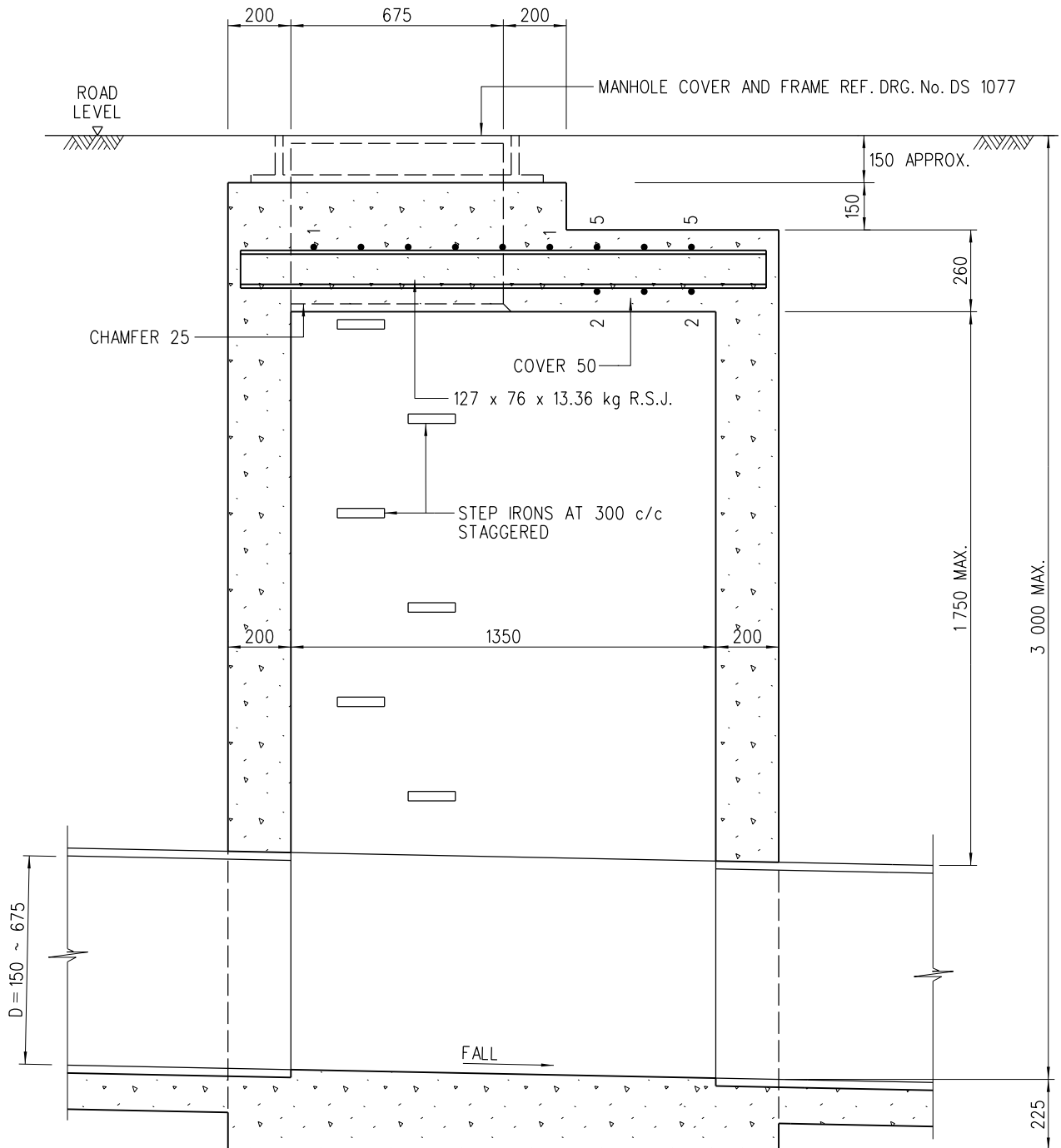
REFERENCE

DRAWING No.

SCALE

1 : 20

DS 1080C
(SHEET 1 OF 3)



SECTION A-A

BAR MARKS	SHAPE CODE ○
1 & 4	(99)
2, 3 & 6	(35)
5	(20)

C	NOTE 15 ADDED	ORIGINAL SIGNED	2.8.2022
B	NOTE 11 DELETED NOTES 2, 3 & 4 ADDED	ORIGINAL SIGNED	29.4.2015
A	NOTE 11 REVISED	ORIGINAL SIGNED	24.11.2014
	NEW ISSUE	ORIGINAL SIGNED	15.8.2007
REV.	DESCRIPTION	SIGNATURE	DATE

STANDARD MANHOLE
TYPE E1

DRAINAGE SERVICES DEPARTMENT

REFERENCE

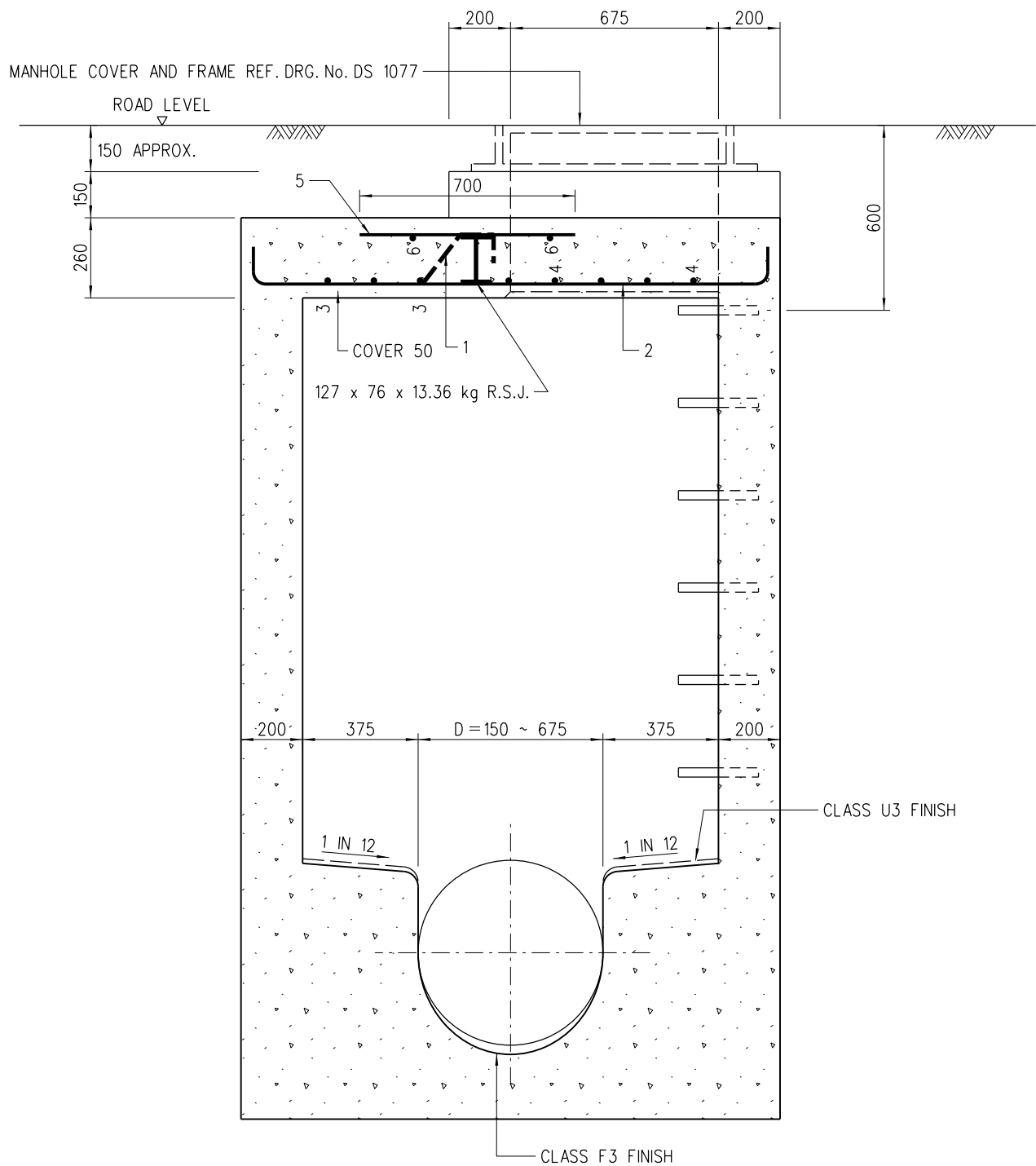
DRAWING No.

SCALE

1 : 20

DS 1080C

(SHEET 2 OF 3)



C	NOTE 15 ADDED	ORIGINAL SIGNED	2.8.2022
B	NOTE 11 DELETED NOTES 2, 3 & 4 ADDED	ORIGINAL SIGNED	29.4.2015
A	NOTE 11 REVISED	ORIGINAL SIGNED	24.11.2014
	NEW ISSUE	ORIGINAL SIGNED	15.8.2007
REV.	DESCRIPTION	SIGNATURE	DATE

STANDARD MANHOLE
TYPE E1

DRAINAGE SERVICES DEPARTMENT

REFERENCE

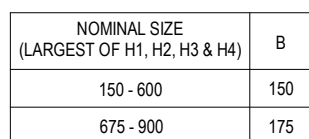
DRAWING No.

SCALE

1 : 20

DS 1080C

(SHEET 3 OF 3)

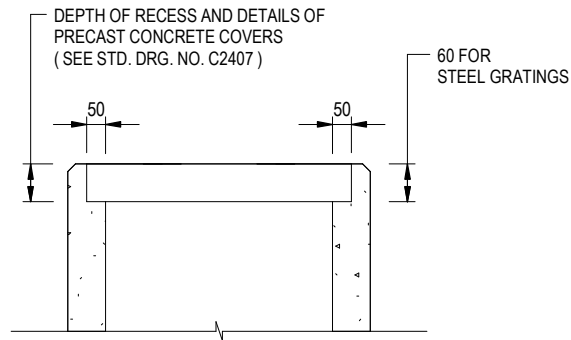


- SECTION A - A

A	BIM OBJECT REVISION.	Original Signed	12.2025
—	FORMER DRG. NO. C2406J.	Original Signed	03.2015
REF.	REVISION	SIGNATURE	DATE

CATCHPIT WITH TRAP (SHEET 1 OF 2)

 CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT	
SCALE 1 : 20	DRAWING NO. C2406 /1A
DATE JAN 1991	



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 1000 mm MIN. MEASURED FROM THE ADJACENT GROUND LEVEL.
10. MINIMUM INTERNAL CATCHPIT WIDTH SHALL BE 1000 mm FOR CATCHPITS WITH A HEIGHT EXCEEDING 1000 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.

B	BIM OBJECT REVISION.	Original Signed	12.2025
A	MINOR AMENDMENT.	Original Signed	04.2016
—	FORMER DRG. NO. C2406J.	Original Signed	03.2015
REF.	REVISION	SIGNATURE	DATE

**CATCHPIT WITH TRAP
(SHEET 2 OF 2)**



**CIVIL ENGINEERING AND
DEVELOPMENT DEPARTMENT**

SCALE 1 : 20

DATE JAN 1991

DRAWING NO.

C2406 /2B

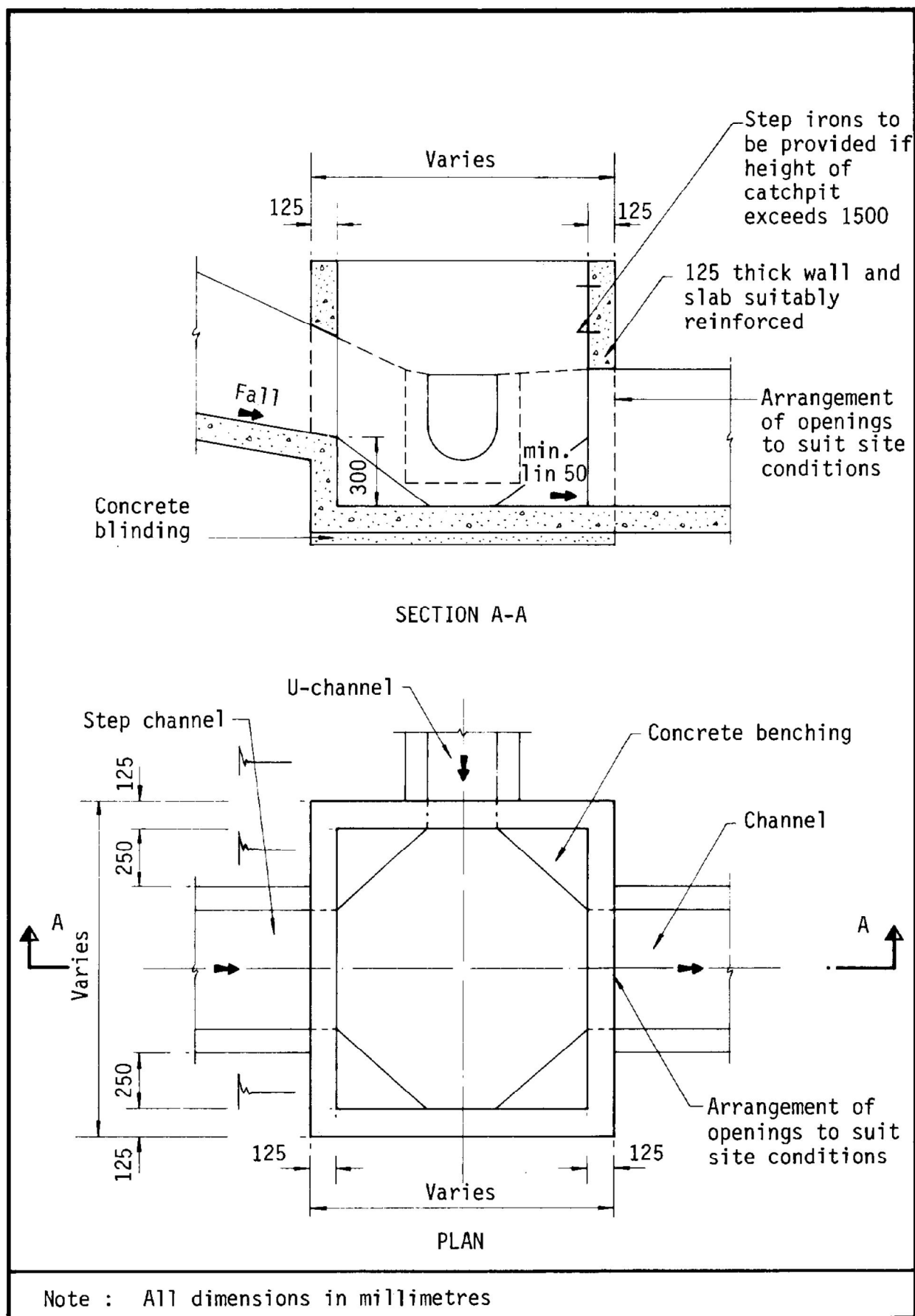
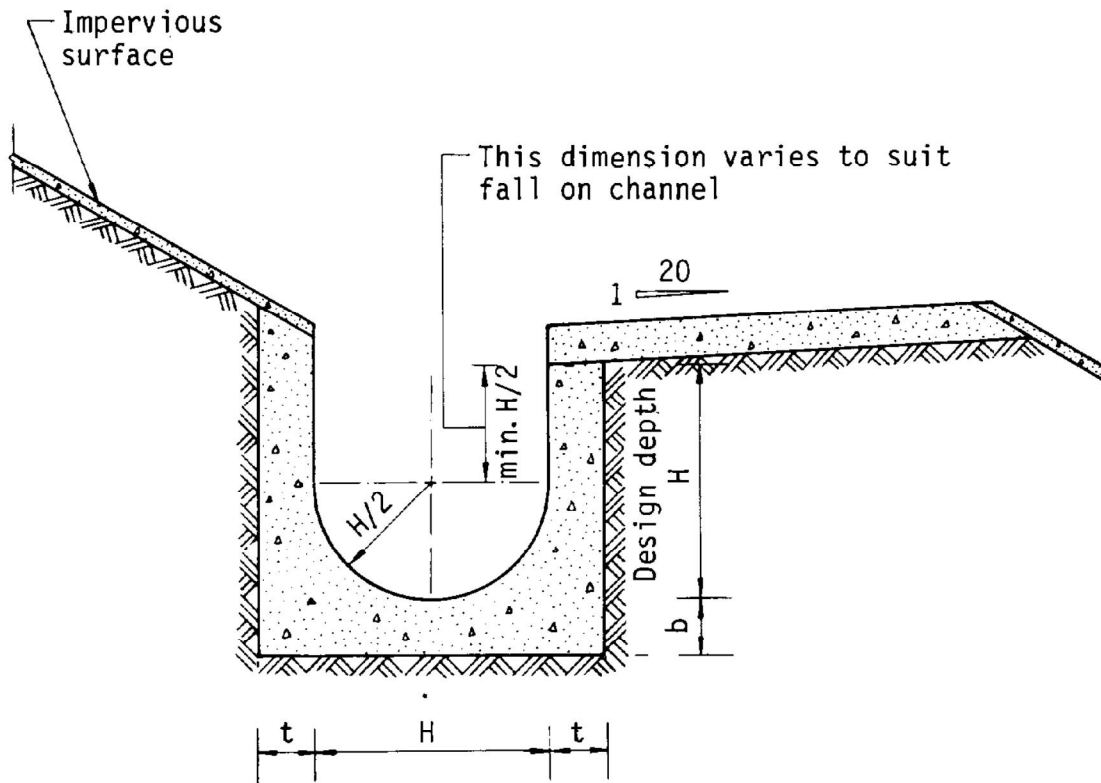


Figure 8.10 - Typical Details of Catchpits



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