2・現場環境照片

Records of Existing Stormwater Drains

The flowing path of an existing drainage.





圖片 1.	The inlet of the existing drain from the captioned feature.	
圖片 2.	An route of the drain with concrete covers. The dimensions of the covered drain: 300mm Width x 380mm Depth	
圖片 3.		

圖片 4.		

圖片 5.		

圖片 6.		

圖片 7.	The dimensions of the covered drain: 450mm Width x 45omm Depth	

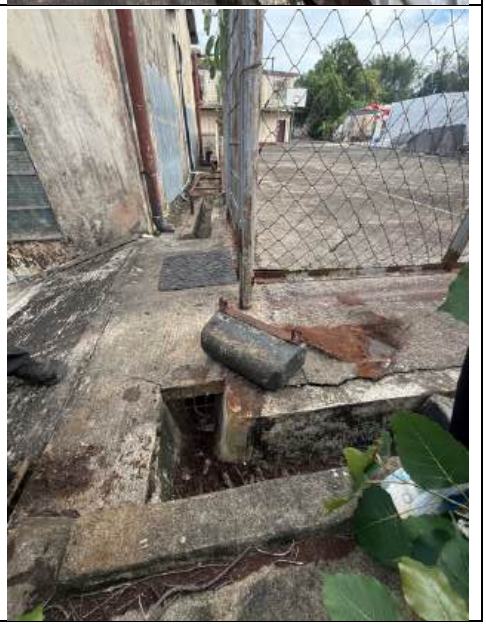
圖片 8.		
圖片 9.		

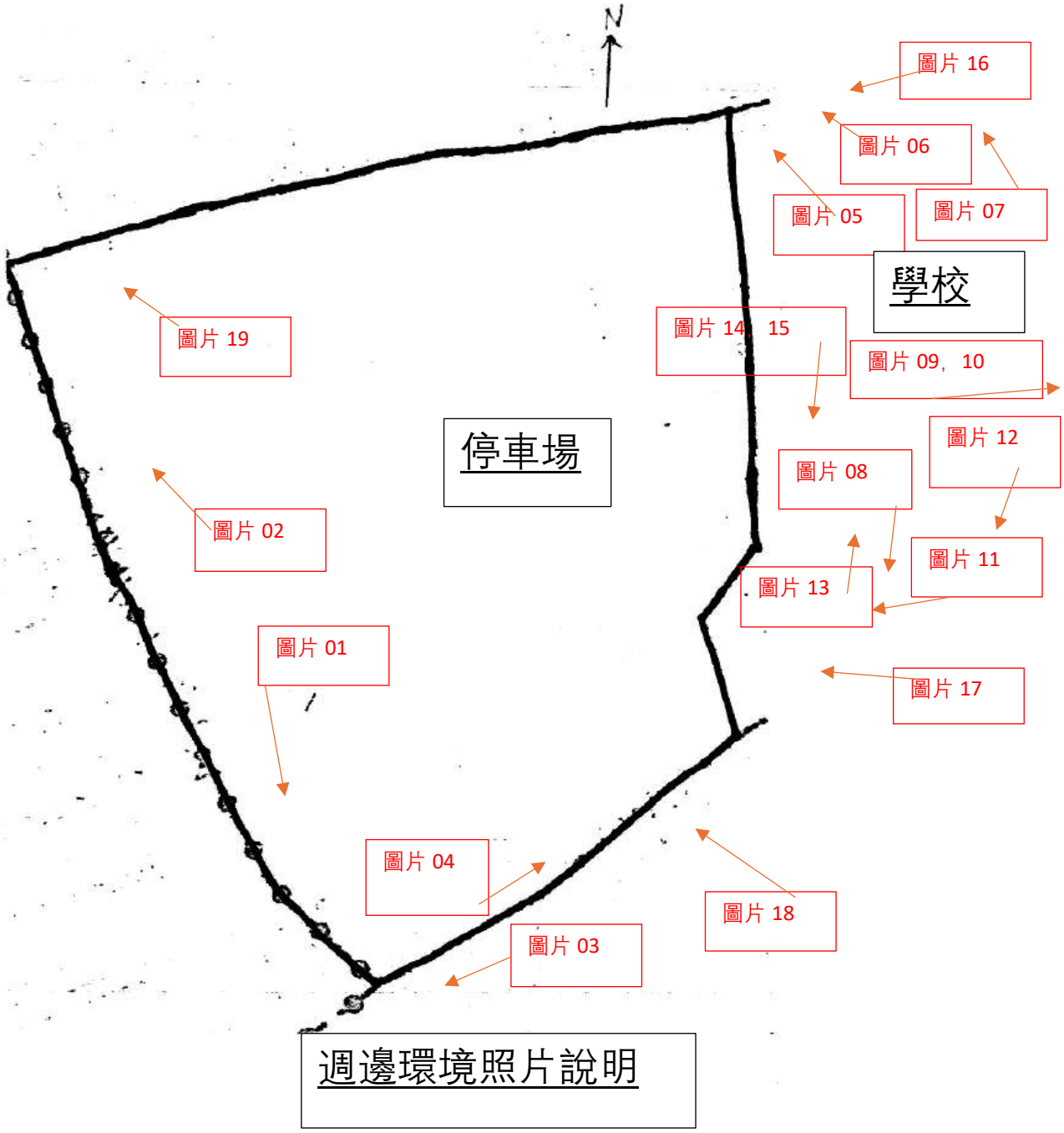
圖片 10.		

圖片 11.		
圖片 12.	DSD’ s drainage system adorned with a cover.	

圖片 13.		

圖片 14.	An outlet to connect with the main water drain in front of "THE WOODSVILLE" court. The dimensions of the covered drainage system are as follows: 500mm Width x 4oomm Depth	
圖片 15	Existing 225mm UC at the north of car park and school.	
圖片 16	Existing 225mm UC at the north of car park and school.	

圖片 17	Existing 225mm UC school section.	
圖片 18	The outlet of existing 225mm UC school section.	



元朗屏山大道村 Lot 444 RP in D.D 121



圖片 01
溱林圍牆



圖片 02
溱林圍牆



圖片 03
停車場出入口



圖片 04
停車場出入口



圖片 05
學校內



圖片 06
學校內，舊 225mm UC



圖片 07
學校內



圖片 08
學校內



圖片 09
學校內



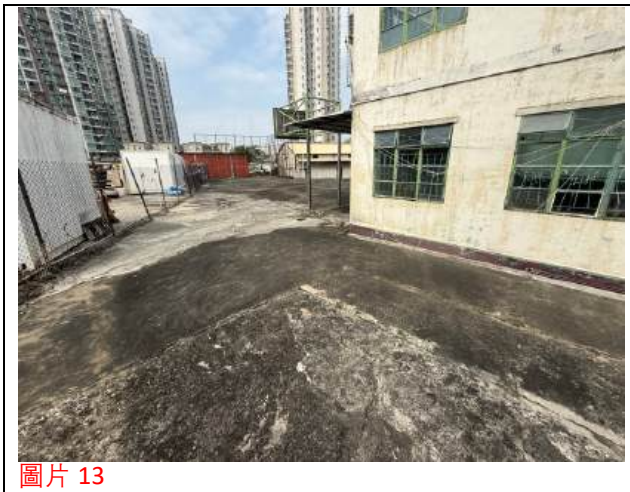
圖片 10
學校內



圖片 11
學校內



圖片 12
學校內



圖片 13
學校內



圖片 14
學校內



圖片 15
學校內



圖片 16
學校內



圖片 17
學校平台照片



圖片 18
行人路



圖片 19
尾井位

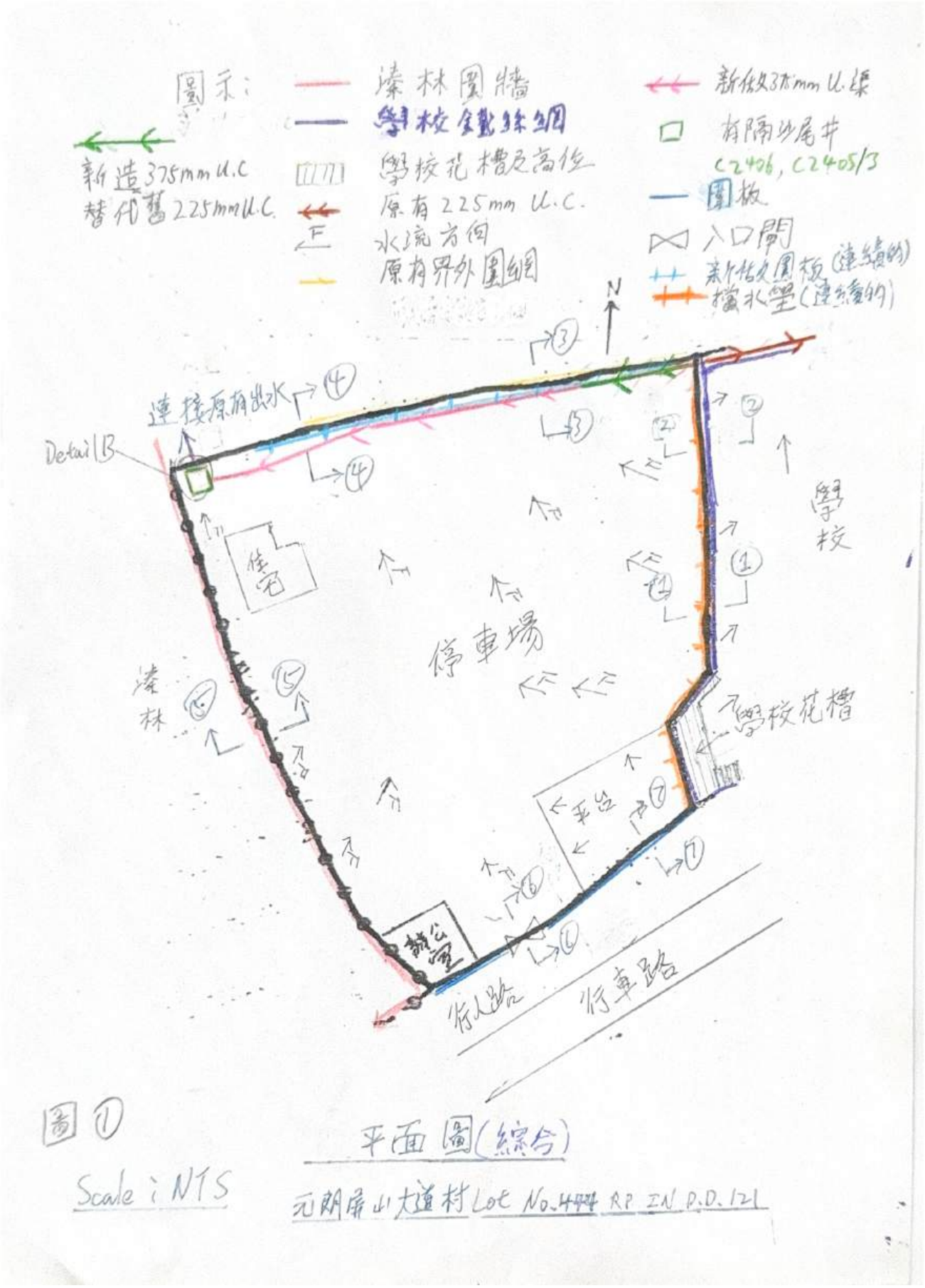
3．總覽圖

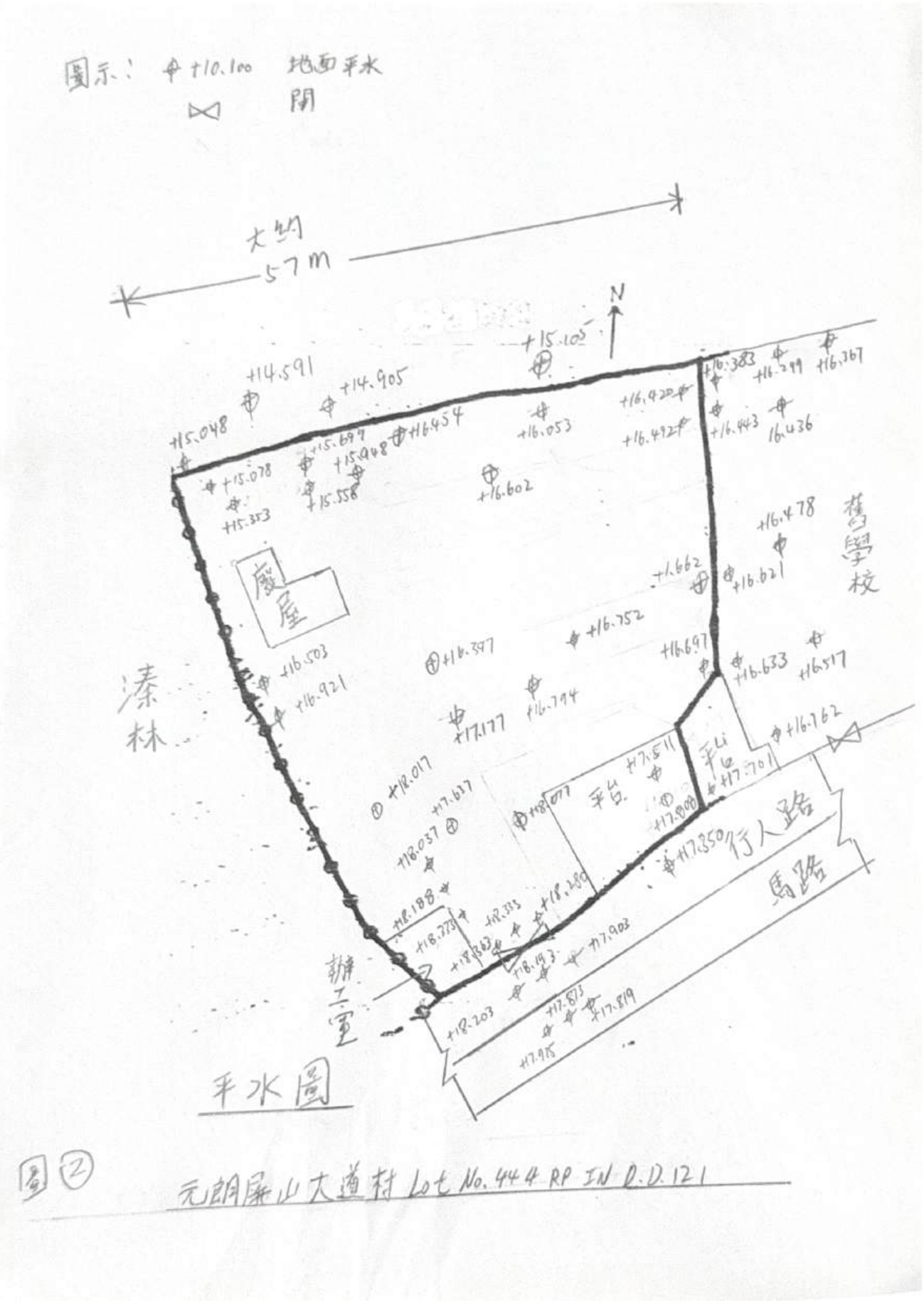
A plan of the catchment area＝2586m^2



4．建議的去水渠設計圖（ Propose Drainage Works）

- To erect a concrete curb (200mm Height) along the chain link fence on the eastern boundary.
- To erect one U-channels (300mm Width), will be done along the northern boundary.
- To erect a catch-pit at the lowest position of north-west site boundary.




圖示：
+10.100 地面平水
閘
大約
57m
N
+15.105
+14.591
+14.905
+15.048
+15.078
+15.353
+15.699
+15.948
+15.558
+16.454
+16.053
+16.602
+16.420
+16.492
+16.383
+16.299
+16.367
+16.443
16.436
+16.478
舊學校
+16.621
+16.662
+16.752
+16.697
+16.633
+16.517
+16.762
+16.503
+16.921
+16.397
+16.794
+17.177
+18.017
+17.637
+18.037
+18.188
+18.373
+18.335
+18.289
+18.203
+17.903
+17.873
+17.819
+17.975
+17.511
+17.800
+17.701
+17.350
屋
漆林
斜坡
平台
行人路
馬路
平水圖
圖(2)
元朗屏山大道村 Lot No. 444 RP IN D.D. 121

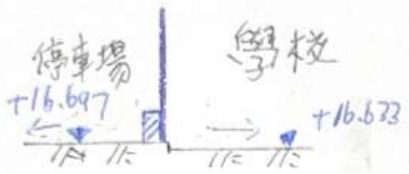


雨水渠及水流

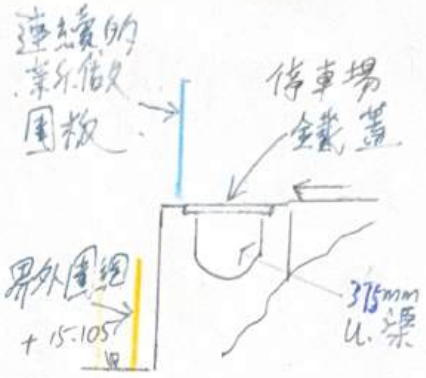
圖 3

元朗屏山大道村 Lot No. 444 RP IN D.D. 121

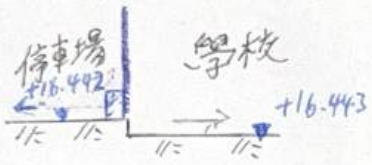
圖示：擋水壆(200mm高×150mm厚)



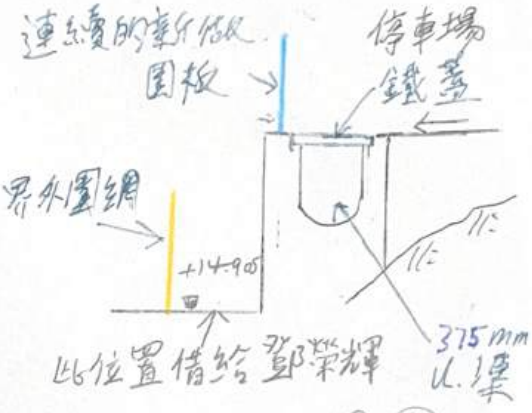
Section ①-①



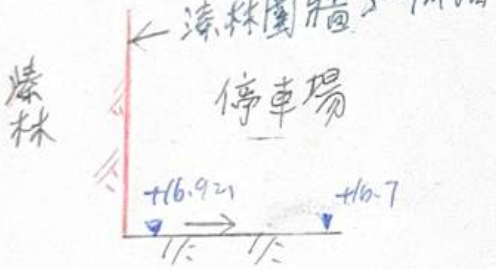
Section ③-③



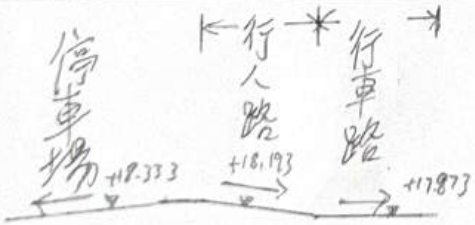
Section ②-②



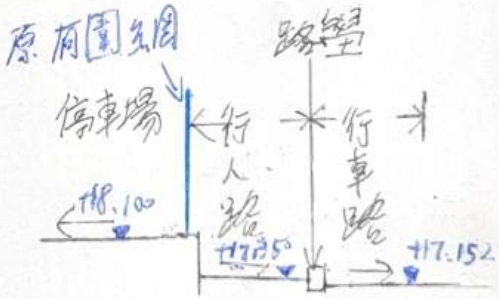
Section ④-④



Section ⑤-⑤



Section ⑥-⑥



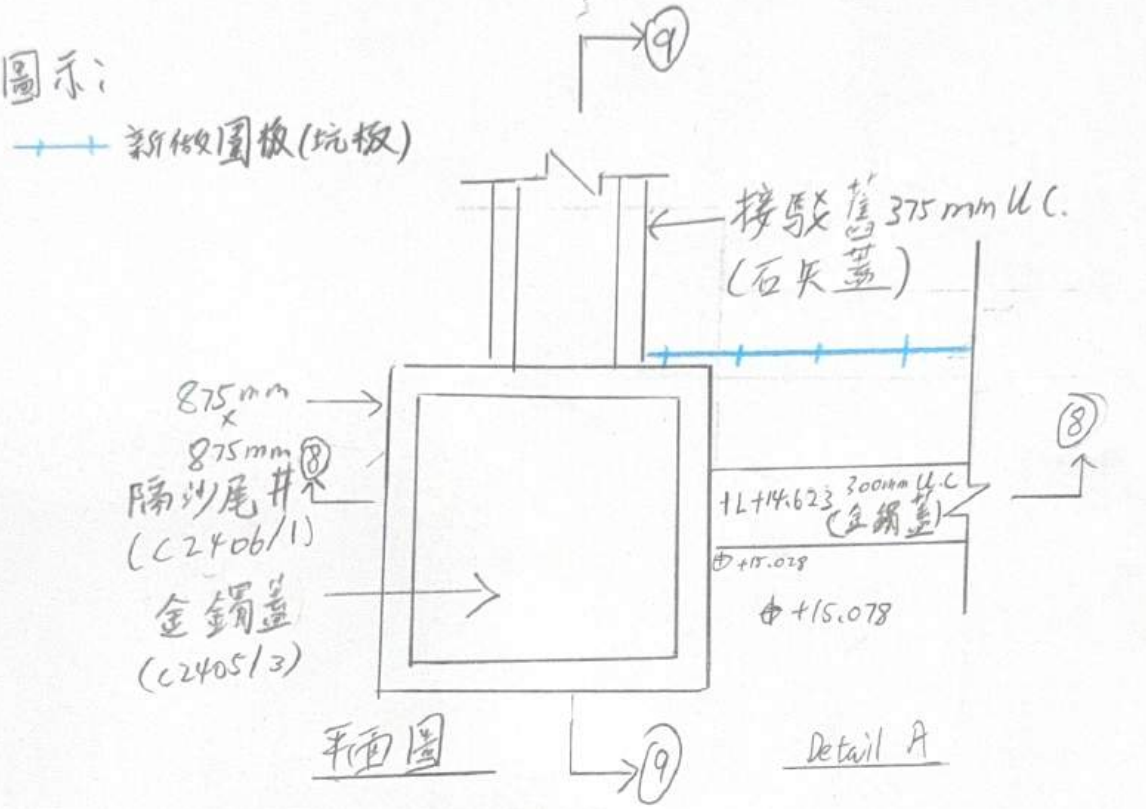
Section ⑦-⑦

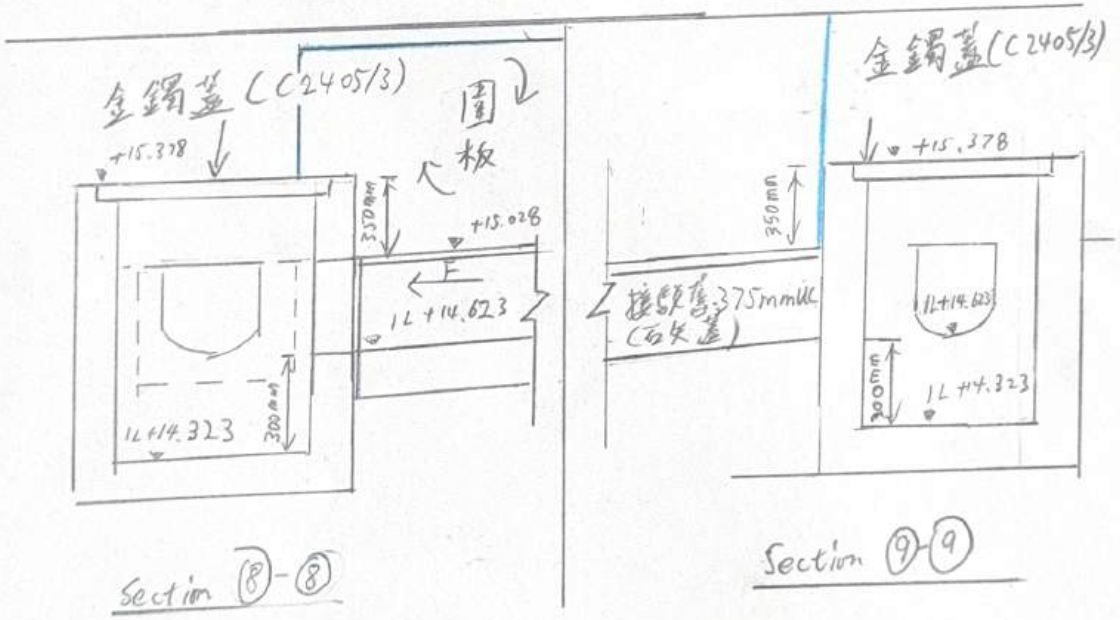
圖④

Scale: NTS

圖示：

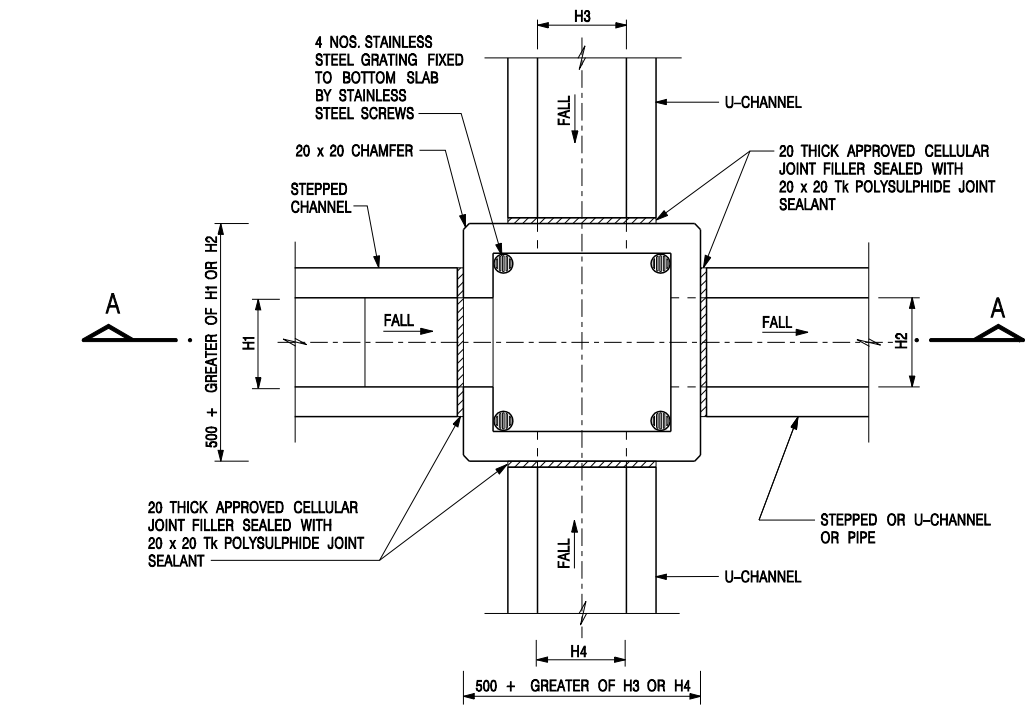
新做圓板(坑板)





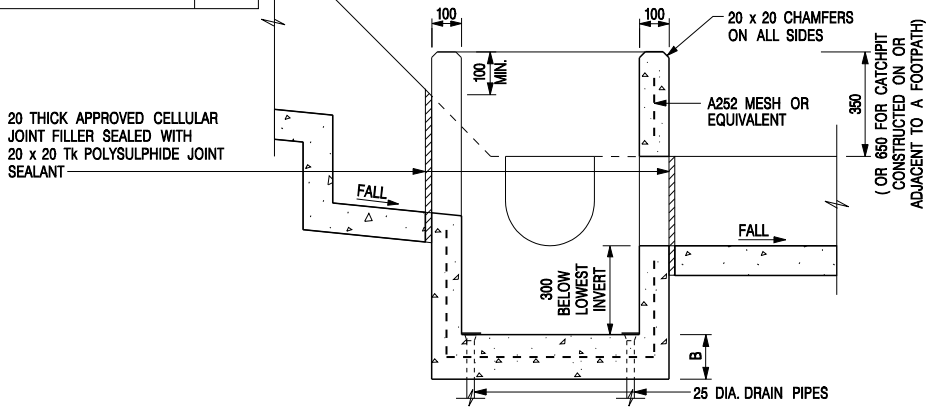
圖⑤

元朗屏山大道村 Lot No. 444 RP IN. D.D. 121



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)

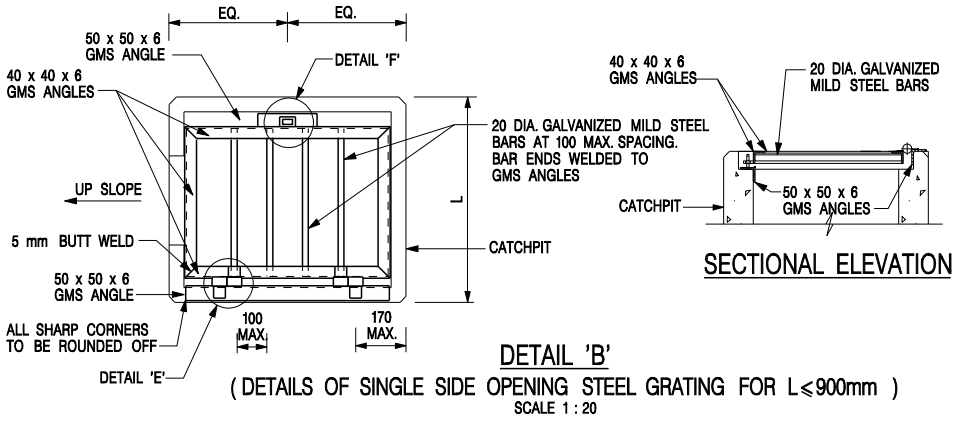
CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE 1 : 20

DATE JAN 1991

DRAWING NO. C2406 /1

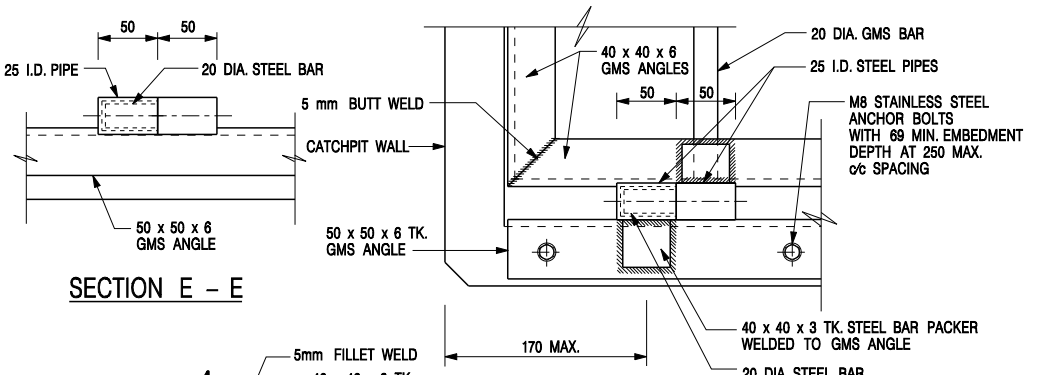
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DETAIL 'B'

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

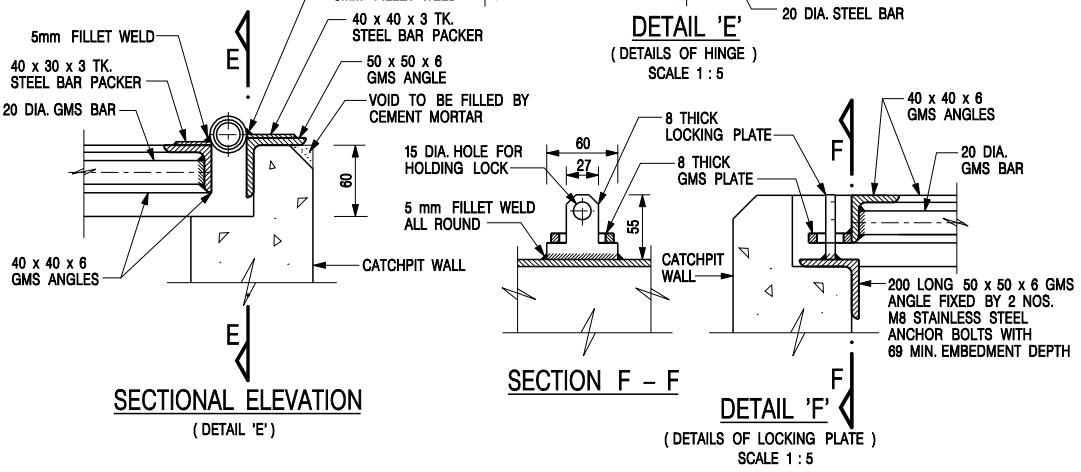
SCALE 1 : 20



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

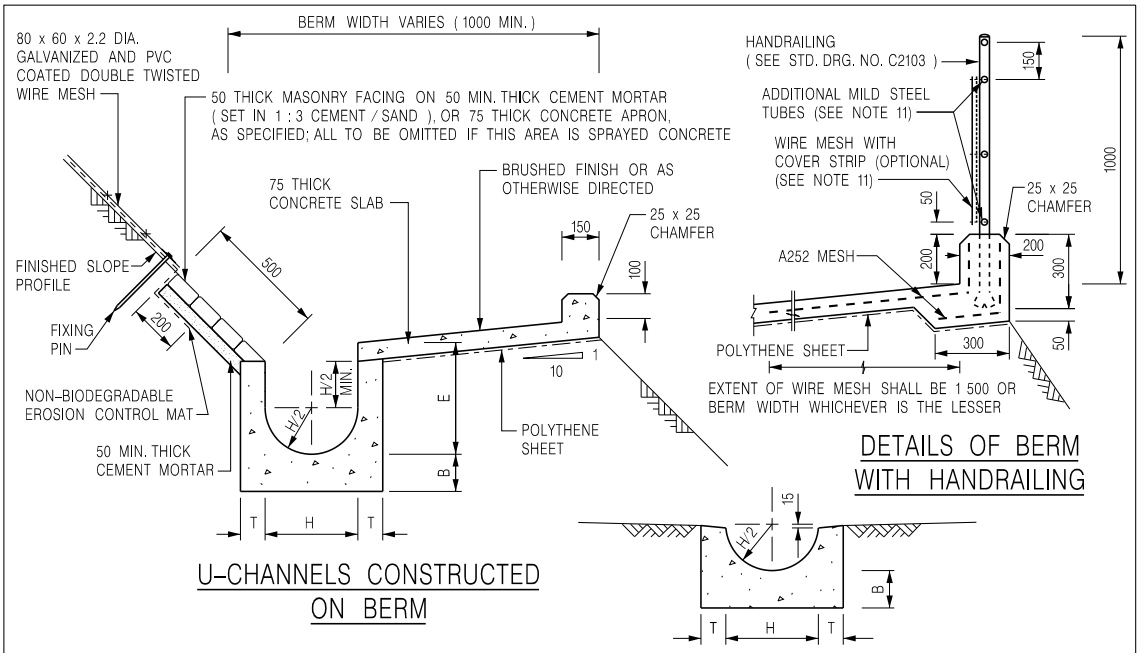
STANDARD CATCHPIT DETAILS

(SHEET 3 OF 5)

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE	AS SHOWN	DRAWING NO.
DATE	JAN 1991	C2405 /3

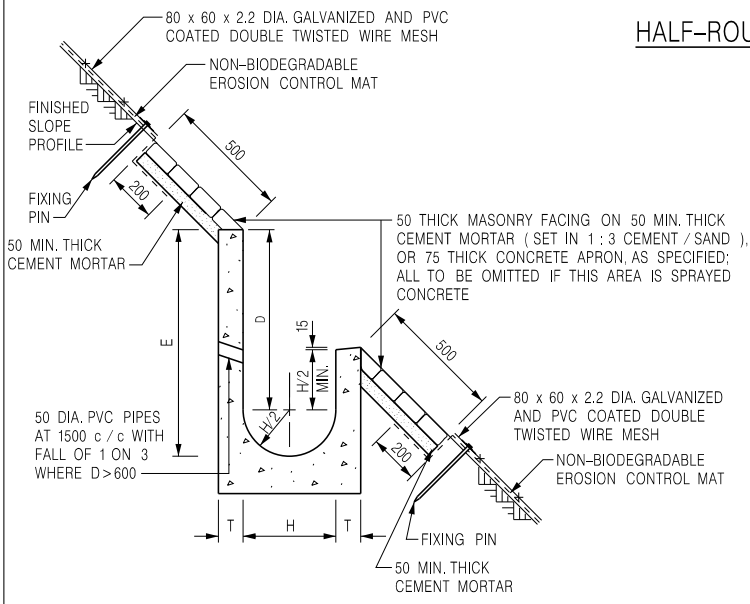
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U-CHANNELS CONSTRUCTED ON BERM

DETAILS OF BERM WITH HANDRAILING

HALF-ROUND CHANNEL



U-CHANNELS NOT CONSTRUCTED ON BERM

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. ALL CONCRETE TO BE GRADE 20 / 20.
3. CONCRETE SURFACE FINISH SHALL BE CLASS U2, F2 OR BRUSHED FINISH AS DIRECTED.
4. SPACING OF EXPANSION JOINT IN CHANNELS, BERM SLABS AND APRONS TO BE 10 METRES MAXIMUM, SEE STD. DRG. NO. C2413 FOR DETAILS.
5. JOINTS FOR CHANNELS, BERM SLABS, APRONS AND WALLS, ETC. TO BE ON THE SAME ALIGNMENT.
6. FOR DIMENSIONS T, H, & B, SEE TABLE BELOW.
7. BIODEGRADABLE EROSION CONTROL MAT IF REQUIRED, SEE STD. DRG. NO. C2511/1E.
8. CONCRETE TO BE COLOURED AS SPECIFIED.
9. CONCRETE U-CHANNEL CAN BE CAST IN-SITU OR PRECAST CONCRETE SUBJECT TO THE ENGINEER'S AGREEMENT ON THE DETAILS.
10. DETAILS OF EROSION CONTROL MAT AND WESH MESH ON BERM. (SEE STD DRG. NO. C2511/1E)
11. THE WIRE MESH ON HANDRAILING IS OPTIONAL. THE COVER STRIP AND ADDITIONAL MILD STEEL TUBES ARE NEEDED ONLY IF WIRE MESH IS PROVIDED. (SEE STD. DRG. NO. C2103)

NOMINAL SIZE H	T	B	REINFORCEMENT
300	80	100	A252 MESH PLACED CENTRALLY AND T=100 WHEN E>650
375 – 600	100	150	
675 – 900	125	175	A252 MESH PLACED CENTRALLY

REF.	REVISION	SIGNATURE	DATE
J	DETAILS OF HANDRAILING AMENDED.	Original Signed	08.2024
I	MINOR AMENDMENT.	Original Signed	07.2018
H	THICKNESS OF MASONRY FACING AMENDED.	Original Signed	01.2005
G	MINOR AMENDMENT.	Original Signed	01.2004
F	GENERAL REVISION.	Original Signed	12.2002

DETAILS OF HALF-ROUND AND U-CHANNELS (TYPE A – WITH MASONRY APRON)

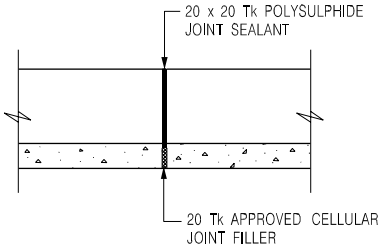
CEDD **CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT**

SCALE 1 : 25

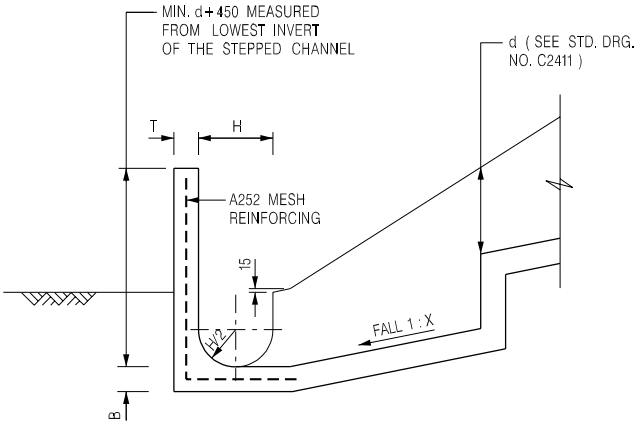
DATE JAN 1991

DRAWING NO. C2409J

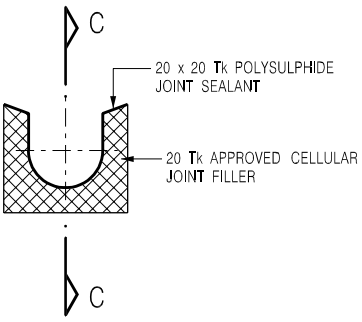
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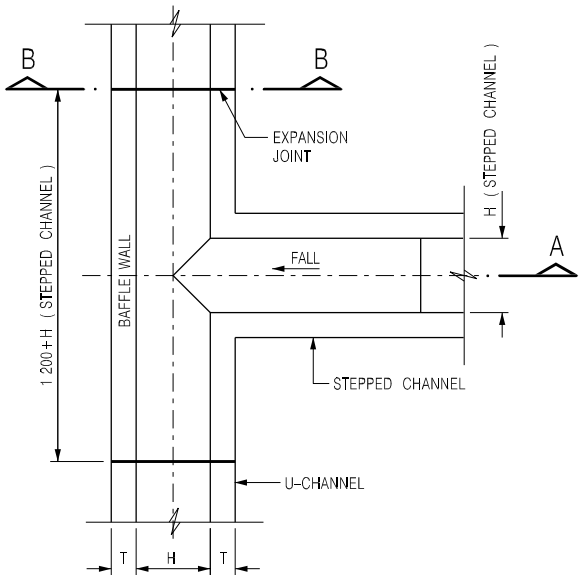
SECTION C – C

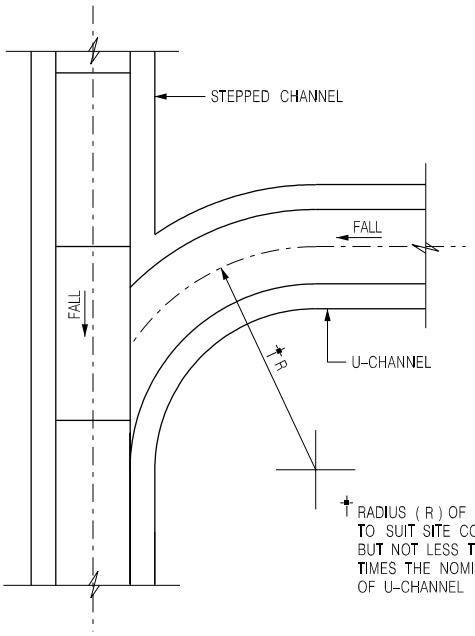


SECTION A – A



SECTION B – B
(DETAILS OF EXPANSION JOINT)





† RADIUS (R) OF BEND VARIES TO SUIT SITE CONDITIONS BUT NOT LESS THAN THREE TIMES THE NOMINAL SIZE (H) OF U-CHANNEL

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. EXPANSION JOINTS SHALL BE PROVIDED AT A MAXIMUM INTERVAL OF 10 METRES.
3. CONCRETE SURFACE SHALL BE CLASS U2 OR F2 AS APPROPRIATE.
4. FOR DIMENSIONS B, T, H AND d, REFER TO RELEVANT CHANNEL DETAIL DRAWINGS.
5. $20 \leqslant X \leqslant 50$ UNLESS OTHERWISE SPECIFIED.
6. CONCRETE TO BE COLOURED AS SPECIFIED.

REF.	REVISION	SIGNATURE	DATE
D	NAME OF DEPARTMENT AMENDED.	Original Signed	01.2005
C	MINOR AMENDMENT.	Original Signed	08.2001
B	MINOR AMENDMENT.	Original Signed	3.94
A	MINOR AMENDMENT.	Original Signed	11.92

JUNCTION OF STEPPED AND U-CHANNELS

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

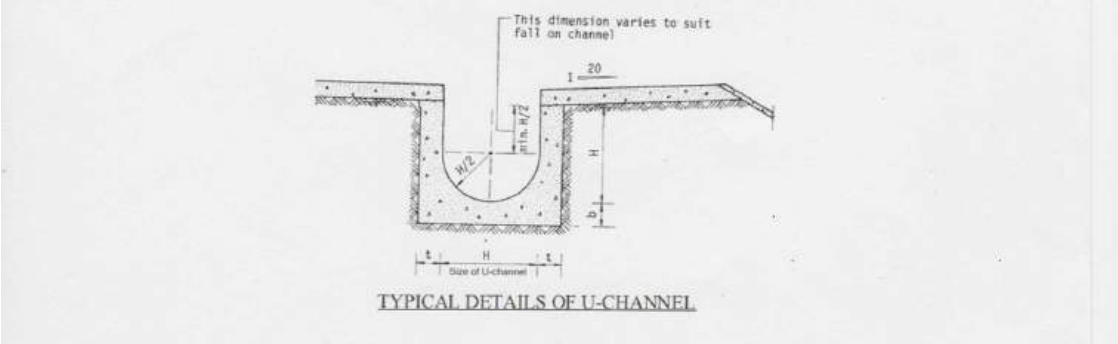
SCALE 1 : 25

DATE JAN 1991

DRAWING NO. C2413D

興土木 利民生 齊拓展 創明天

We bring the best engineering to life

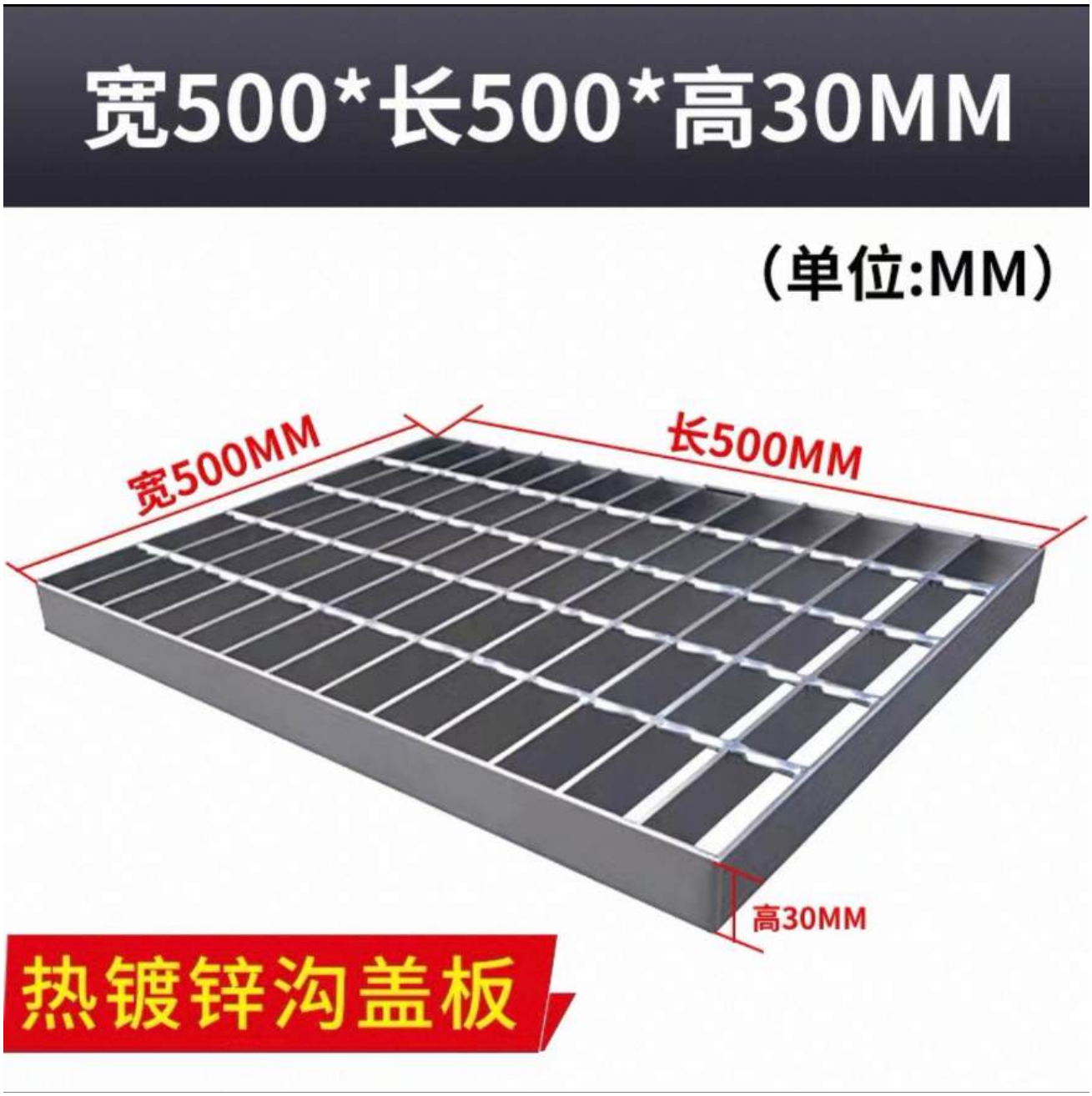


TYPICAL DETAILS OF U-CHANNEL

A sketch of 300mm width U-channel



渠蓋（長）



渠盖（短）

1.0 Equations and Assumptions

1.1 Design of surface drainage 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 is calculated based on the modified form of Bransby-Williams Equation:

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

where t_c = time of concentration (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)

Note : Time of concentration is also dependent on time of flow

Therefore, Time of Concentration = time of concentration + time of flow (from Bransby-Williams)

i.e. $t = t_c + t_f$

1.4 Runoff coefficient for the paved ground is assumed to be 0.95 TGN 39 and Geotechnical Manual for Slopes (p. 96)

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

$$Q = K i A / 60$$ Eqn. 8.7 Geotechnical Manual for Slopes

where Q = maximum runoff (litres/min)

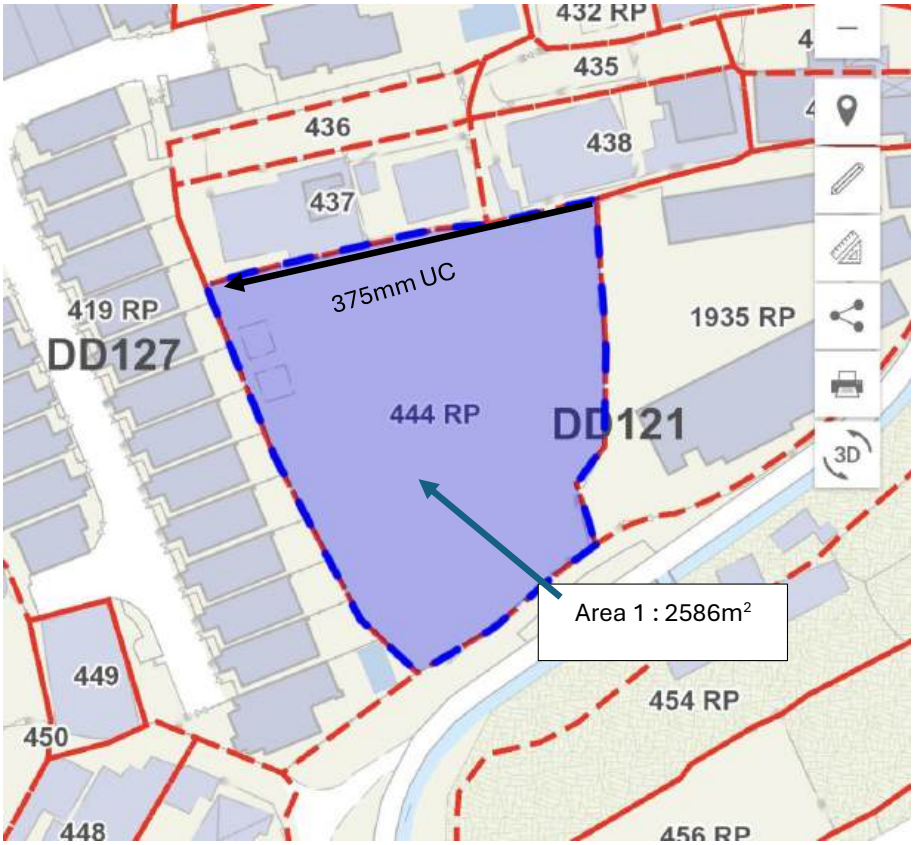
K = runoff coefficient (K = 1.0 / 0.35)

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

A = area of catchment (m^2)

[File : 2. Surface Drainage Design \Assump]

2,0 Catchment Area



Plan of Catchment Area

Area A1 = 2586m²

3.0 DESIGN OF SURFACE CHANNELS

New 300 U-channel UC1
Catchment Area A1 to Existing UC (375UC1)

A = 2586 m^2 ; L = 57 m

δh = 17.5 - 16.6
= 0.9 m

H = 1.6 m (average fall per 100 m run) (assumed 2m)

t_c = 0.14465 x 57 / (1.6 $^{0.2}$ x 2586 $^{0.1}$)
= 3.421 min

For t_f
w = 61 m , v 3 m/s (assumed)

t_f = 61 / (3 X 60)
t_f = 0.339 min

t = 3.421 + 0.339
t = **3.76 min**

From Mathematical Formulae of Intensity-Duration-Frequency

i_{200} = 400 mm/hr — Table 1 of TGN30

The rainfall intensity increased by 28.1% for incorporating climate change effects

$i_{200\ (increased)}$ = 400.0 x 1.281 = 513 mm/hr

Flow for 200 year return period,

$Q_{200\ (increased)}$ = 513 x 2586 x 0.95 / 60 = 21005 litres/min

New 375 U-channel UC1

Existing gradient 1 in 50 — Figure 2 of TGN30

Capacity = 22000 litres/min > Q_{200} O.K.

vmax = 2.7 m/sec < 4 m/s O.K.

[File : 2. Surface Drainage Design \Culvert-1]

Appendix C

Checklist for Content of a Drainage Proposal for Simple Sites

	Items	Included?		
		Yes	No	NA
1.	**Basic Information of the Site**			
	● Location of the site	✓		
	● Area (in m^2) of the site	✓		
2.	**Record of Existing Stormwater Drainage System**			
	● Information of existing stormwater drains e.g. peripheral u-channel, ditch, streamcouse, etc. within and around the application site	✓		
	● Records e.g. photos and plans showing satisfactory condition of the existing stormwater drains, if applicant make use of these existing stormwater drains as part of his proposed drainage network	✓		
3.	**Proposed Drainage Works**			
	● Layout plan and cross-section showing –			
	➢ Topography and fall direction of the site and areas in the vicinity	✓		
	➢ Proposed paving and formation level	✓		
	➢ Position of buildings and structure	✓		
	➢ Size, alignment, flow direction, invert levels, gradient and materials of existing and proposed drains	✓		
	➢ Typical details of drainage works e.g. channel, catchpit, connections to existing drainage system, etc.	✓		
	➢ Location of discharge point	✓		
	● A surface channel at the periphery of the site has been provided to intercept all such rainwater falling onto the site and where relevant also from areas outside the site if the proposed drainage systems will also collect rainwater from other areas	✓		
	● Where structures (e.g. buildings, walls or hoarding or the like) are erected, adequate opening or drainage facilities has been provided to allow existing overland flow passing through the site or to be intercepted by the drainage system of the concerned development	✓		
	● The concerned development has not adversely affected existing natural streams, drains, ditches and the adjacent area	✓		
	● Sand trap, terminal manhole or provision alike has been provided before the collected runoff is discharged to the public drainage facilities	✓		
4.	**Calculations**			
	● Calculations according to the latest version of DSD Stormwater Drainage Manual showing the adequacy of the proposed drainage systems	✓		
	● The hydraulic performance of the existing drainage facilities is not adversely affected by the concerned development	✓		