

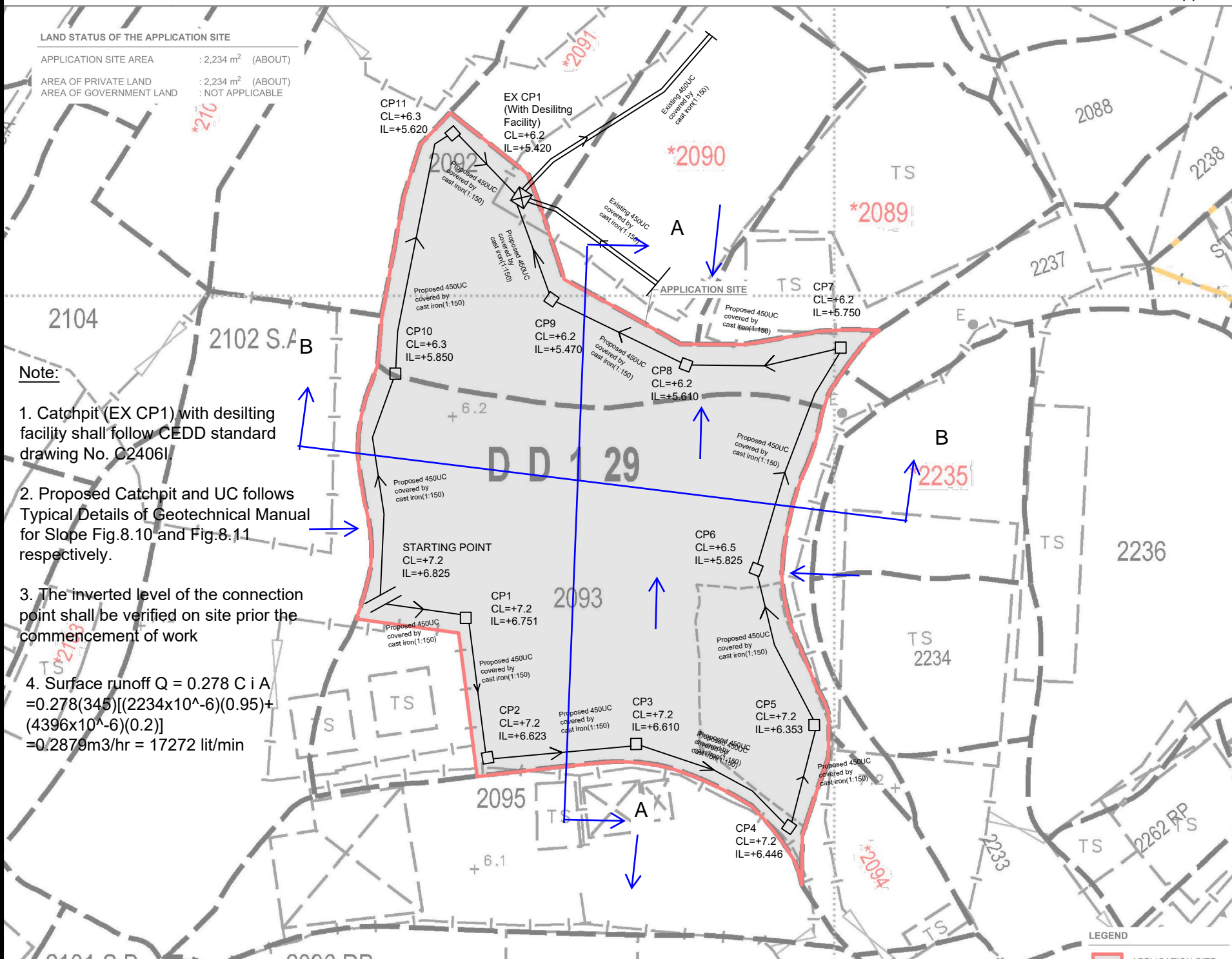
|                         |                                |
|-------------------------|--------------------------------|
| APPLICATION SITE AREA   | : 2,234 m <sup>2</sup> (ABOUT) |
| AREA OF PRIVATE LAND    | : 2,234 m <sup>2</sup> (ABOUT) |
| AREA OF GOVERNMENT LAND | : NOT APPLICABLE               |




1. Catchpit (EX CP1) with desilting facility shall follow CEDD standard drawing No. C2406I.

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

3. The inverted level of the connection point shall be verified on site prior the commencement of work

4. Surface runoff  $Q = 0.278 \text{ C i A}$   
 $= 0.278(345)[(2234 \times 10^{-6})(0.95) + (4396 \times 10^{-6})(0.2)]$   
 $= 0.2879 \text{ m}^3/\text{hr} = 17272 \text{ lit}/\text{min}$



 Proposed UC  
(Gradient) with cast  
iron cover  
 Existing Drain  
 Proposed Catchpit

Company:

Project:

Lots 2092 and 2093  
(Part) in D.D. 129, Lau  
Fau Shan, Yuen Long,  
New Territories  
(AYL-LFS/490)  
(Drainage Proposal)

|    |        |
|----|--------|
| PE | Title: |
|----|--------|

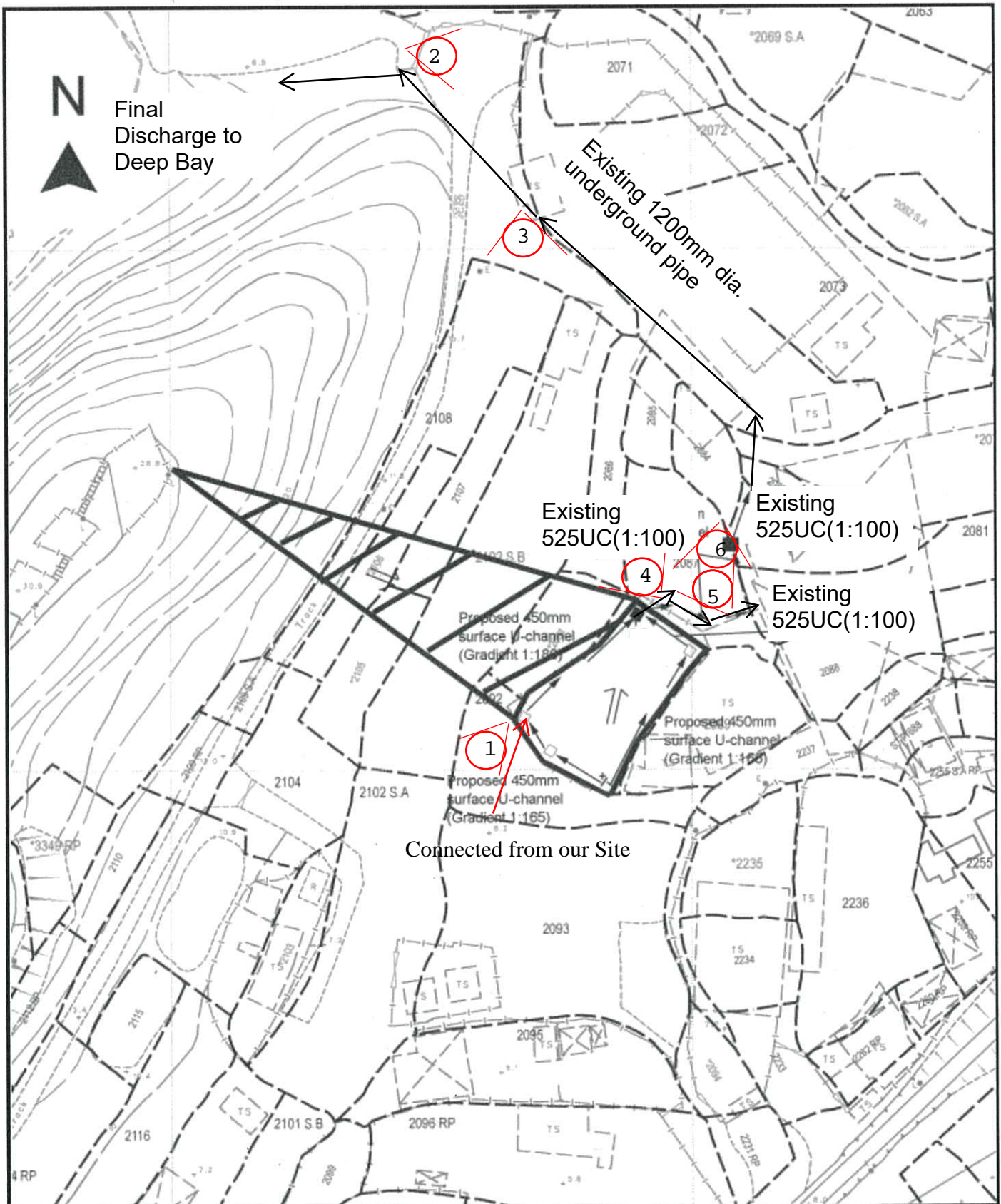
## Drainage layout

Dwg No:

File:

Fig.1

Date:  
24 March  
2025



Project 項目名稱:

Temporary Open Storage of Construction Materials for a Period of 3 Years at Lots 2090 (Part), 2091 (Part) & 2092 (Part) in D.D. 129, Lau Fau Shan, Yuen Long, N.T.

Drawing Title 圖目:

Drainage Plan

Drawing No. 圖號:

Figure 4

Remarks 備註:

□ Proposed catchpit

■ catchpit with sandtrap

+9.0 Level (mPD)

⇐ Flow of Surface Runoff

▨ External catchment

Scale 比例:

1:1000





Table 3a – Storm Constants for Different Return Periods of HKO Headquarters

| Return Period<br>T (years) | 2     | 5     | 10    | 20    | 50    | 100   | 200   | 500   | 1000  |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| a                          | 446.1 | 470.5 | 485.0 | 496.0 | 505.5 | 508.6 | 508.8 | 504.6 | 498.7 |
| b                          | 3.38  | 3.11  | 3.11  | 3.17  | 3.29  | 3.38  | 3.46  | 3.53  | 3.55  |
| c                          | 0.463 | 0.419 | 0.397 | 0.377 | 0.355 | 0.338 | 0.322 | 0.302 | 0.286 |

Assume Return Periods = 50 years,

According Table 3a,

a = 505.5, b = 3.29, c = 0.355

*Time of concentration:*

$$t = 0.14465 (L / (H^{0.2} A^{0.1}))$$

where t = time of concentration (min)

A = area of catchment (m<sup>2</sup>)

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

L = Length which water takes the longest time to reach the design section

t<sub>d</sub> = 1.20 mins      A = 6631 m<sup>2</sup>, H = 1m per 100m,  
L = 20m

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

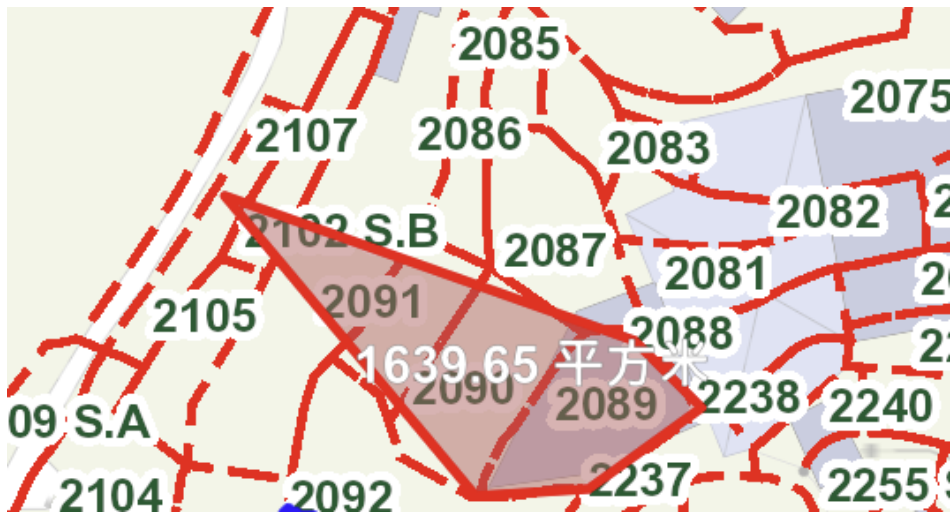
i = 297 mm/hr

Due to climate change, increase of rainfall shall be 16%

i = 297 x (1+16%) = 345mm/hr



Check existing 450UC at Lot 2089



Hard-paved Area = 639 m<sup>2</sup> (C=0.95)

Outside Catchment Area = 1000m<sup>2</sup> ( C=0.4 )

Surface runoff from Lot 2089

$$Q_p = 0.278 C i A$$

$$= 0.278 \times 0.95 \times 345 \times (639 \times 10^{-6}) + 0.278 \times 0.4 \times 345 \times (1000 \times 10^{-6})$$

$$= 0.0966 \text{ m}^3/\text{s}$$

$$= 5797 \text{ lit/min}$$

Due to proposed development,  
overall surface runoff

$$= 0.0966 + 0.2879$$

$$= 0.3845 \text{ m/s}$$

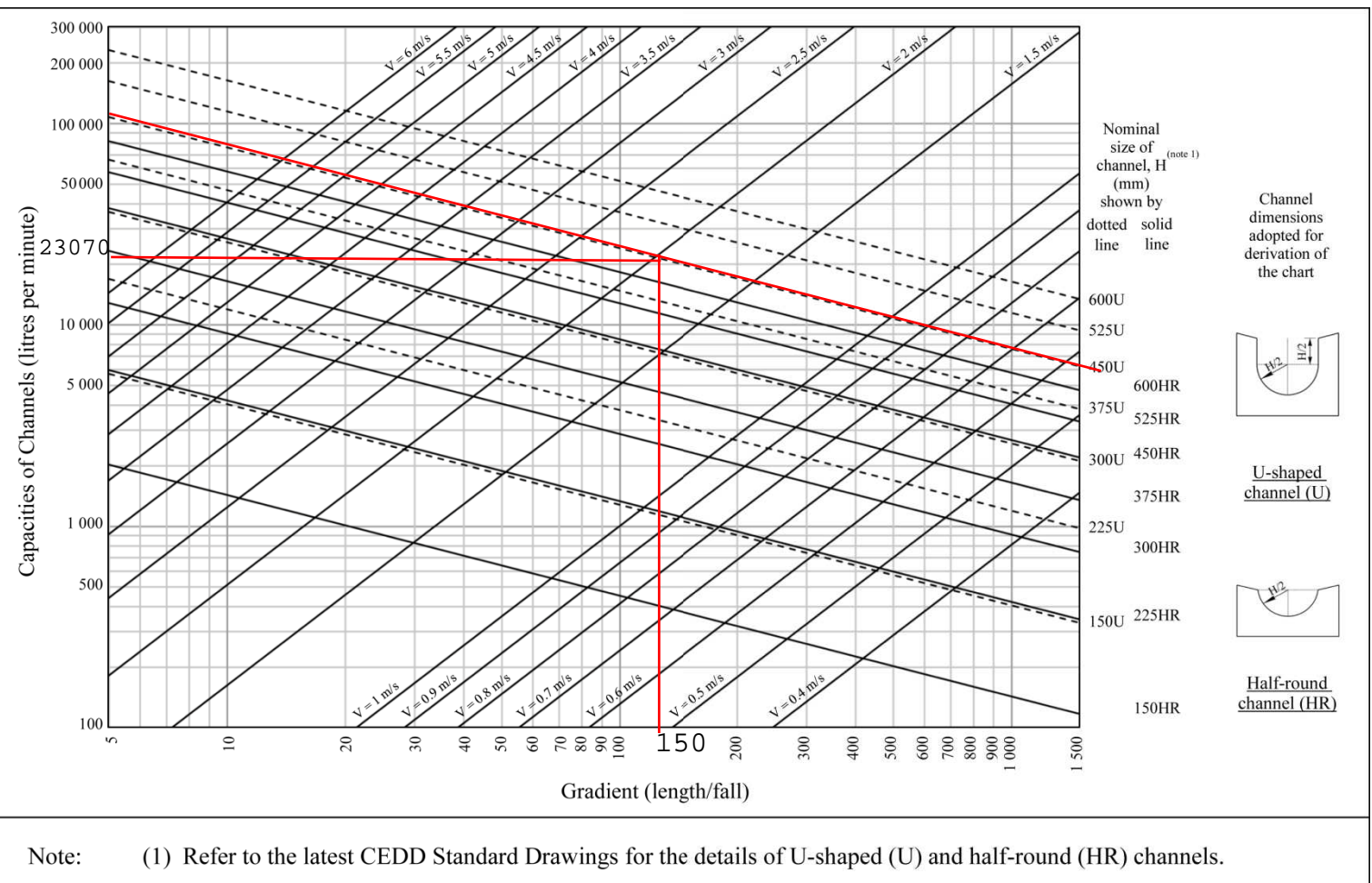
$$= 23070 \text{ Lit/min}$$

As a result, existing 450UC can cater the surface runoff due to proposed development

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

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

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



$$Q_p = 0.278 \text{ C i A}$$

Due to proposed development,

$$= 0.0966 + 0.2879 + 0.322$$

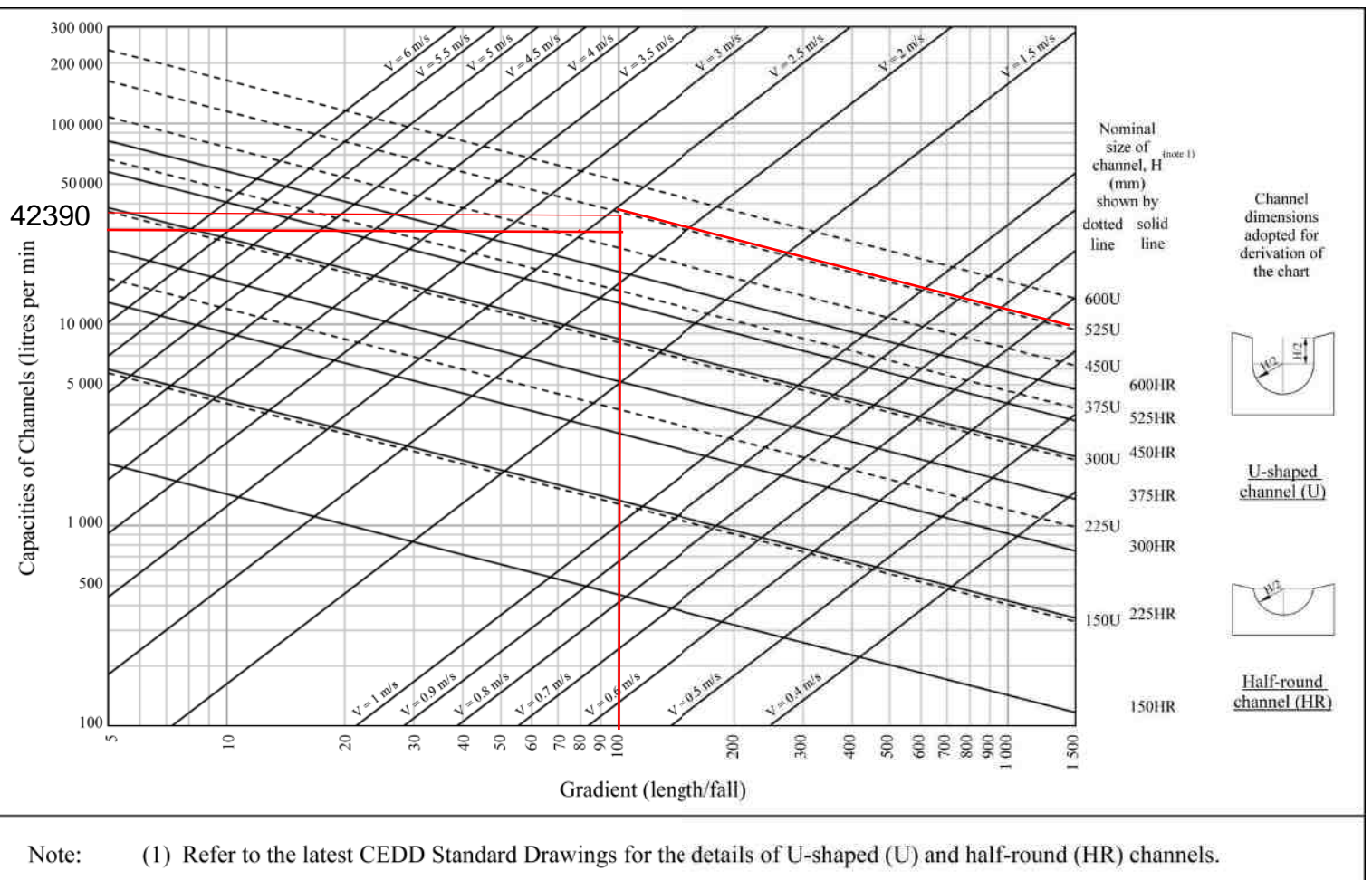
=42390Lit/min

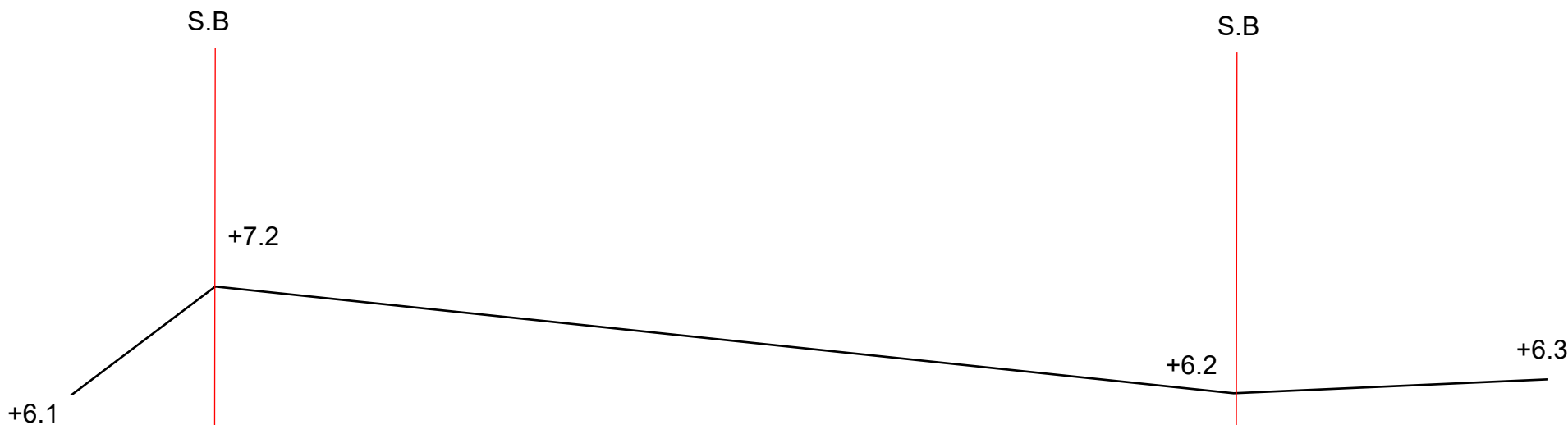
As a result, existing 525UC can cater the surface runoff due to proposed development



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

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

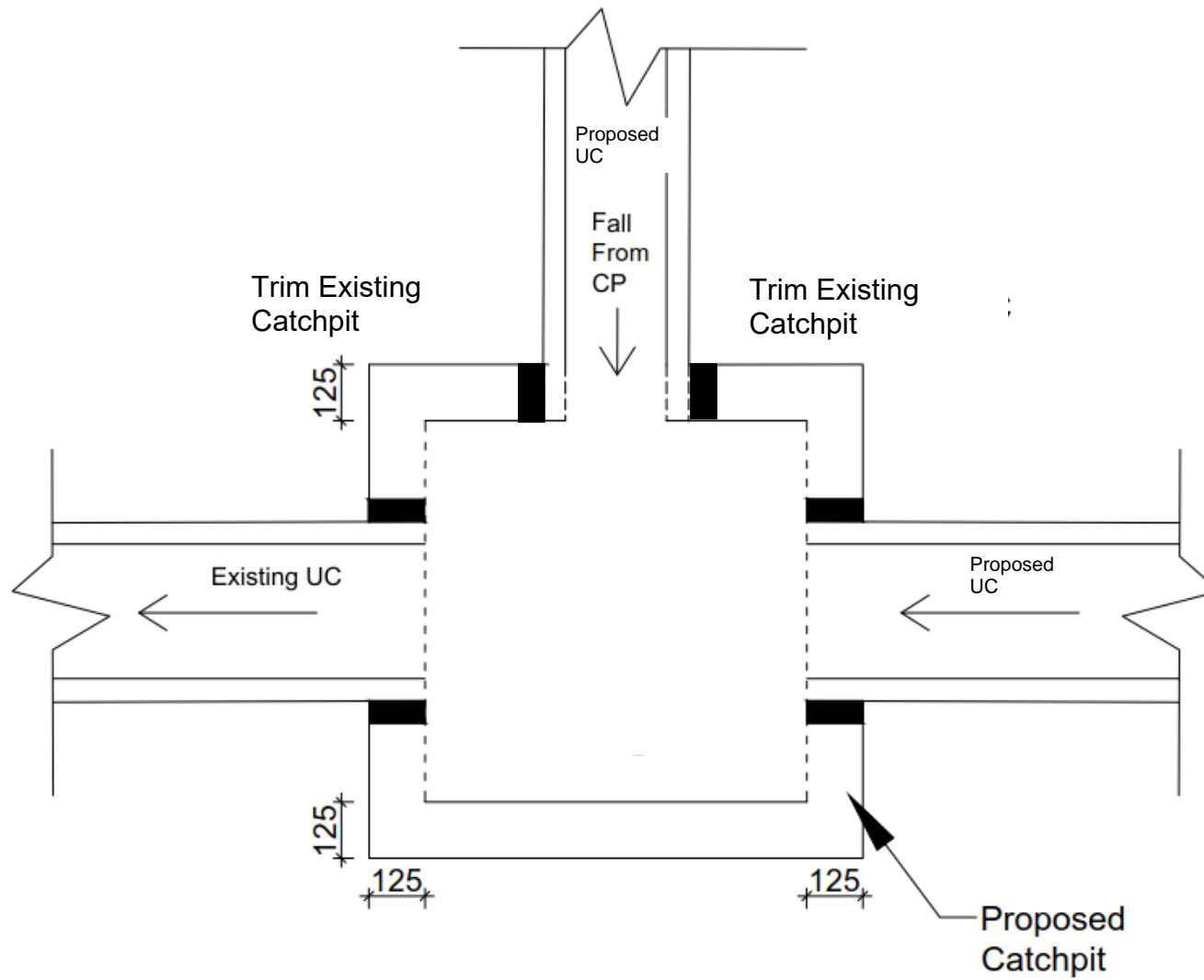




SECTION A-A (N.T.S.)



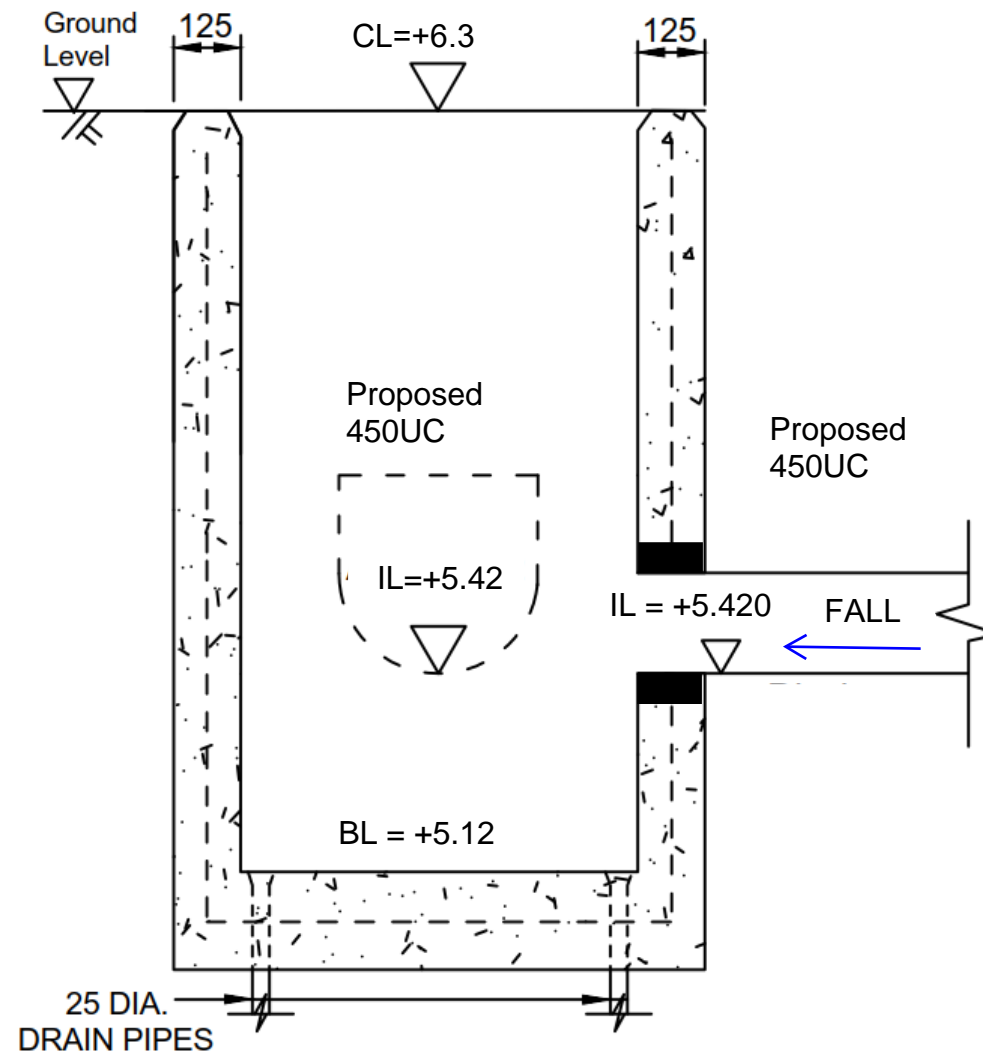
SECTION B-B (N.T.S.)



## Connection Details

OF EX CP1





Section of EX CP1



VIEW 1 EXISTING 450UC



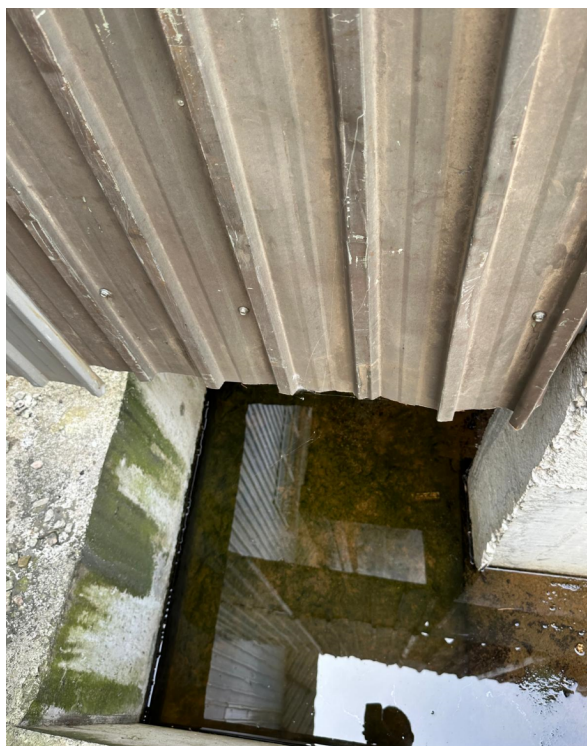
VIEW 2 FINAL DISCHARGE TO  
EXISTING STREAM AND DEEP





Underground  
pipe

VIEW 3 EXISTING UNDERGROUND  
1200mm dia. pipe



VIEW4 EXISTING 525UC

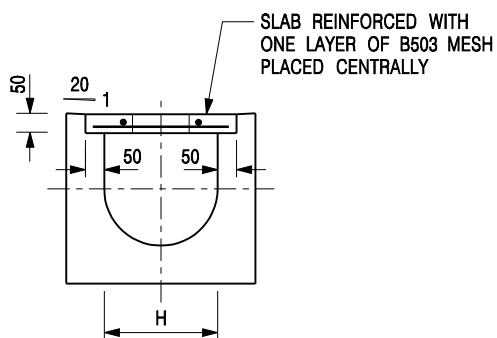




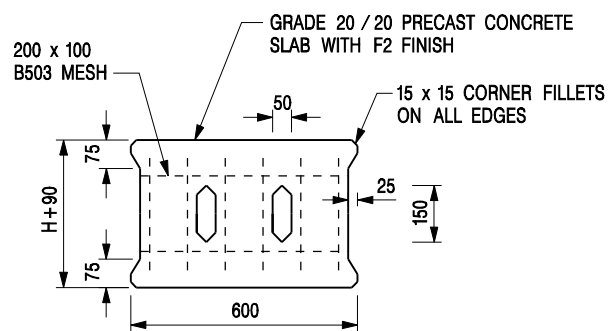
VIEW5 EXISTING 525UC



VIEW6 EXISTING 525UC



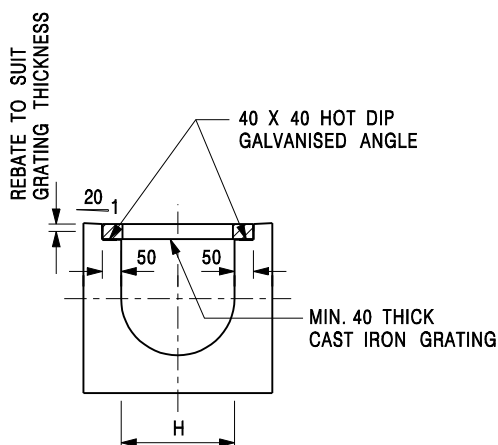
**TYPICAL SECTION**



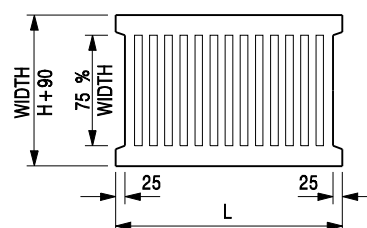
**PLAN OF SLAB**

## 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:

- ALL DIMENSIONS ARE IN MILLIMETRES.
- H=NOMINAL CHANNEL SIZE.
- ALL CAST IRON FOR GRATINGS SHALL BE GRADE EN-GJL-150 COMPLYING WITH BS EN 1561.
- 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.

| 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 |
| REF. | REVISION                       | SIGNATURE       | DATE    |

**COVER SLAB AND CAST IRON  
GRATING FOR CHANNELS**

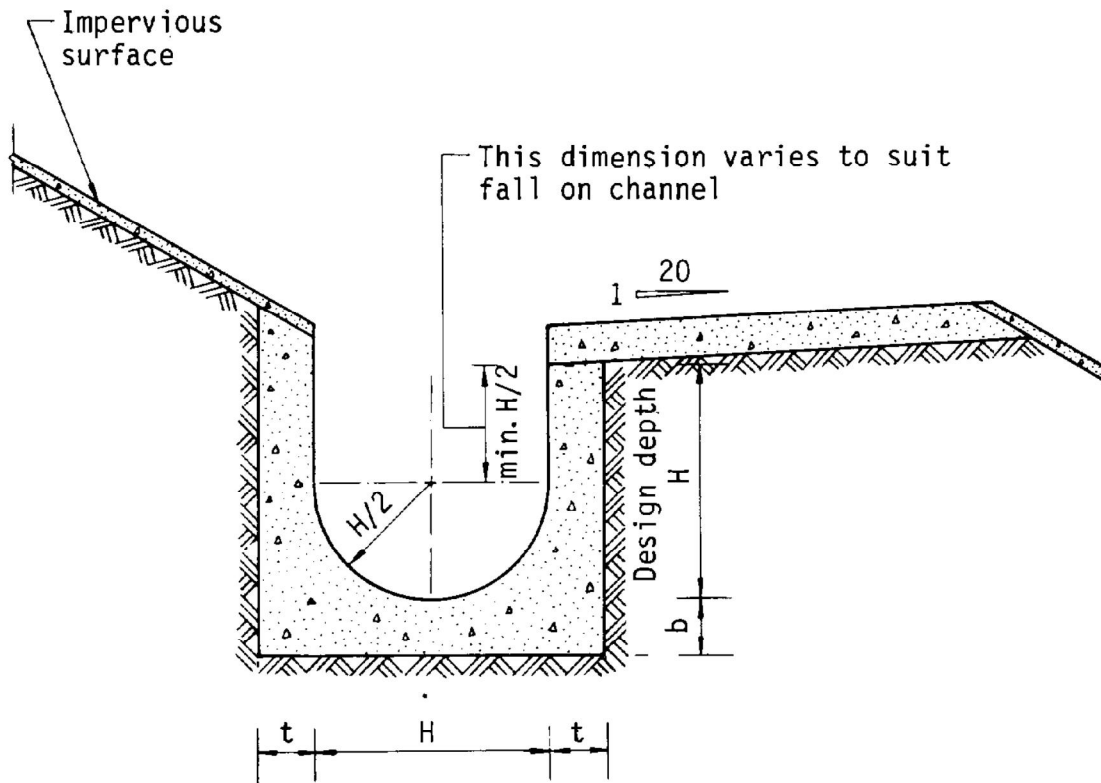


**CIVIL ENGINEERING AND  
DEVELOPMENT DEPARTMENT**

**SCALE** 1 : 20

**DATE** JAN 1991

**DRAWING NO.**  
**C2412E**



Dimensions of U - channel

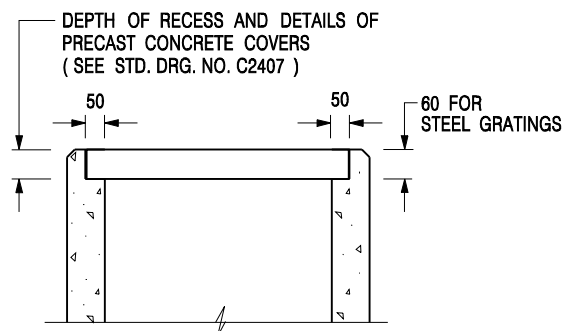
| Nominal size of channel H (mm) | Thickness t (mm) | Thickness b (mm) |
|--------------------------------|------------------|------------------|
| 225 to 600                     | 150              | 150              |
| 675 to 1200                    | 175              | 225              |

Figure 8.11 - Typical U-channel Details





Figure 8.10 - Typical Details of Catchpits



### 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.

|             |                         |                  |             |
|-------------|-------------------------|------------------|-------------|
| -           | FORMER DRG. NO. C2406J. | Original Signed  | 03.2015     |
| <b>REF.</b> | <b>REVISION</b>         | <b>SIGNATURE</b> | <b>DATE</b> |

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



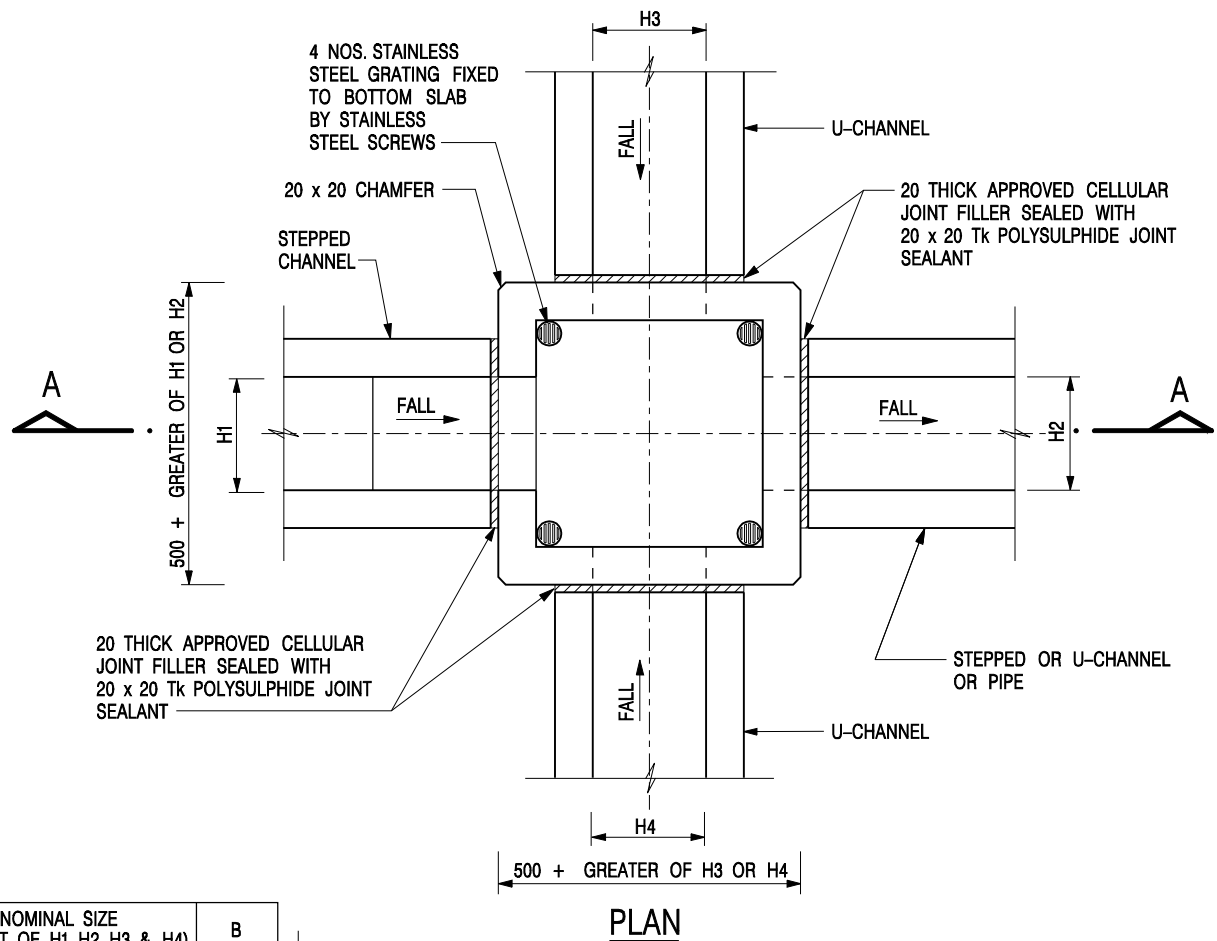
**CIVIL ENGINEERING AND  
DEVELOPMENT DEPARTMENT**

**SCALE** 1 : 20

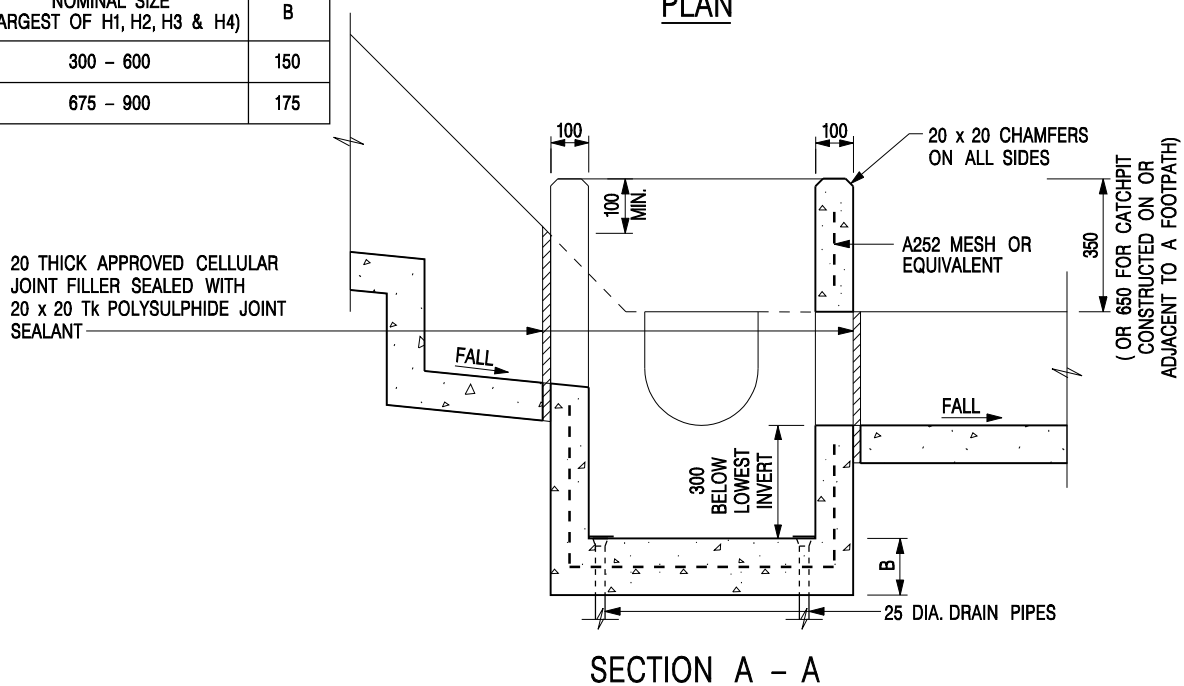
**DATE** JAN 1991

**DRAWING NO.**

**C2406 /2**




| NOMINAL SIZE<br>(LARGEST OF H1, H2, H3 & H4) | B   |
|--|-----|
| 300 - 600                                    | 150 |
| 675 - 900                                    | 175 |



**NOTES:**

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. REFER TO SHEET 2 FOR OTHER NOTES.

**CATCHPIT WITH TRAP**  
(SHEET 1 OF 2)

|   |                         |                                |         |
|---|-------------------------|--------------------------------|---------|
| -   | FORMER DRG. NO. C2406J. | Original Signed                | 03.2015 |
| REF.  | REVISION                | SIGNATURE                      | DATE    |
|  <b>CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT</b> |                         | <b>SCALE</b> 1 : 20            |         |
|   |                         | <b>DATE</b> JAN 1991           |         |
|   |                         | <b>DRAWING NO.</b><br>C2406 /1 |         |