Appendix 2

Drainage Proposal

Drainage Design for the site near Ping Yuen River

DSD - STORMWATER DRAINAGE MANUAL

7.5.2 Rational Method

$$Qp = 0.278CiA$$

where Qp = peak runoff in m^3/s

C = runoff coefficient (dimensionless)

i = rainfall intensity in mm/hr

A = catchment area in km^2

In Hong Kong, a value of C = 1.0 is commonly used in developed urban areas. In less developed areas, appropriate C values in order to ensure that the design would be fully cost-effective.

Surface Characteristics	Runoff coefficient, C*
Asphalt	0.70 - 0.95
Concrete	0.80 - 0.95
Brick	0.70 - 0.85
Grassland (heavy soil**)	
Flat	0.13 - 0.25
Steep	0.25 - 0.35
Grassland (sandy soil)	
Flat	0.05 - 0.15
Steep	0.15 - 0.20

The surface of the site will be covered by Asphalt, the C should be 0.85 (Mid value)

6.6.1 Village Drainage and Main Rural Catchment Drainage Channels

'Village Drainage' refers to the local stormwater drainage system within a village. A stormwater drain conveying stormwater runoff from an upstream catchment but happens to pass through a village may need to be considered as either a 'Main Rural Catchment Drainage Channel' or 'Village Drainage', depending on the nature and size of the upstream catchment. In any case, the impact of a 50-year event should be assessed in the planning and design of village drainage system to check whether a higher standard than 10 years is justified. **50 Years is used.**

Table 2d – Intensity-Duration-Frequency (IDF) Relationship of North District Area for durations not exceeding 240 minutes

Duration (min)	Extreme Intensity x (mm/h) for various Return Periods T(year)						
	2	5	10	20	50	100	200
240	28.5	37.7	43.4	48.6	54.9	59.4	63.6
120	42.2	54.7	62.5	69.6	78.4	84.7	90.8
60	61.0	75.7	84.3	92.0	101	108	114
30	84.0	100	110	118	128	135	142
15	106	127	139	150	163	173	182
10	119	141	155	168	184	196	208
5	138	161	177	193	216	234	254

i (rainfall intensity) = 101mm/hr (Duration of 60min is used)

$Qp = 0.278CiA$

C = 0.85 (Asphalt)(mid value) (Application Site)

C = 0.15 (Grass Land (Sandy Soil) (Adjacent Area)

i = 101 mm/hr

A = 1,415m^2 (0.00142km^2) (Application Site)

+ 2,500m^2 (0.00100km^2) (Adjacent Area)

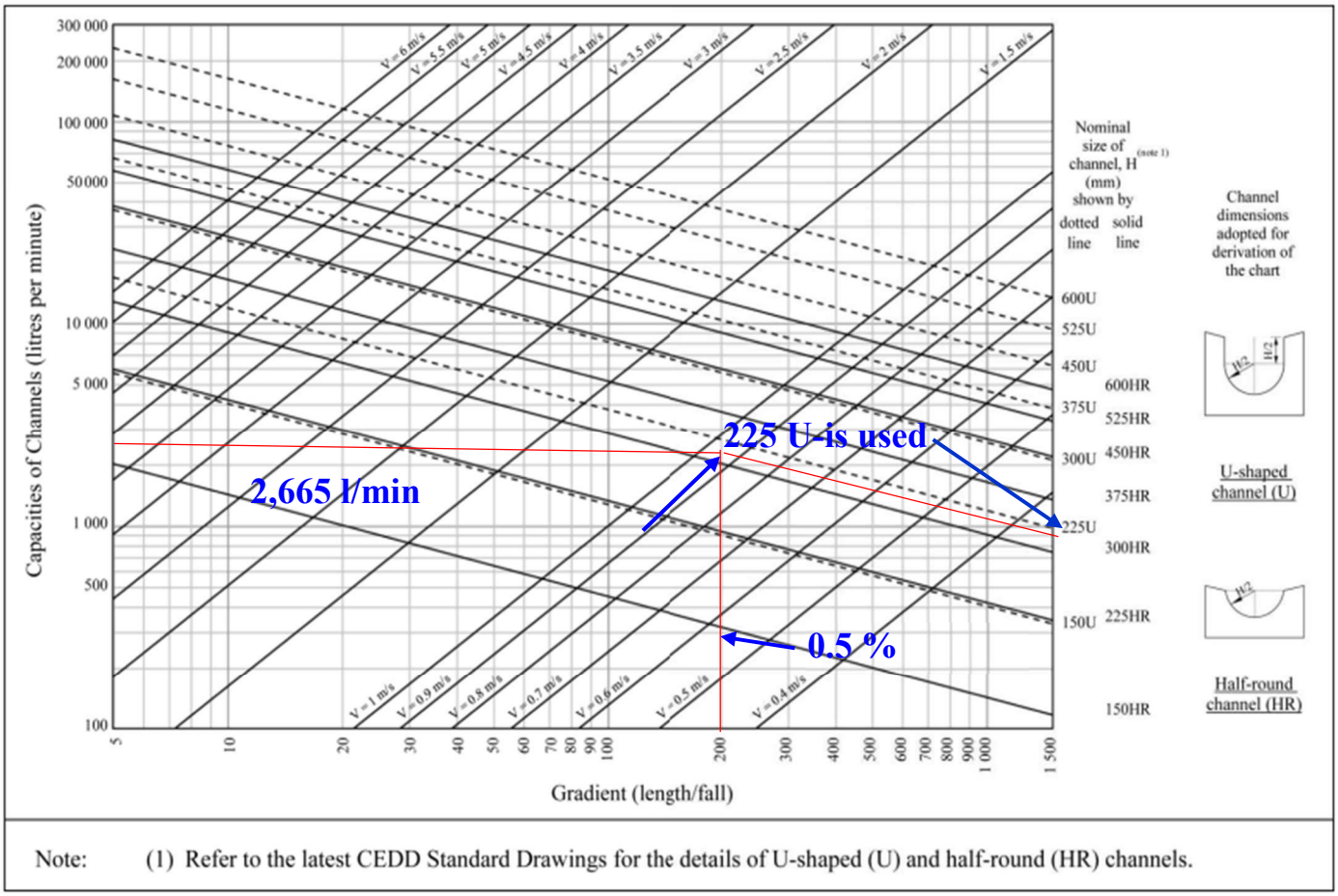
Qp = 0.278 x **101** x ((0.85 x 0.00142) +(0.15 x 0.00250))

Qp =0.0444m^3/s or 2,665 l/min

For conservative calculations, all catchment areas are combined for calculation of all U-Channels.

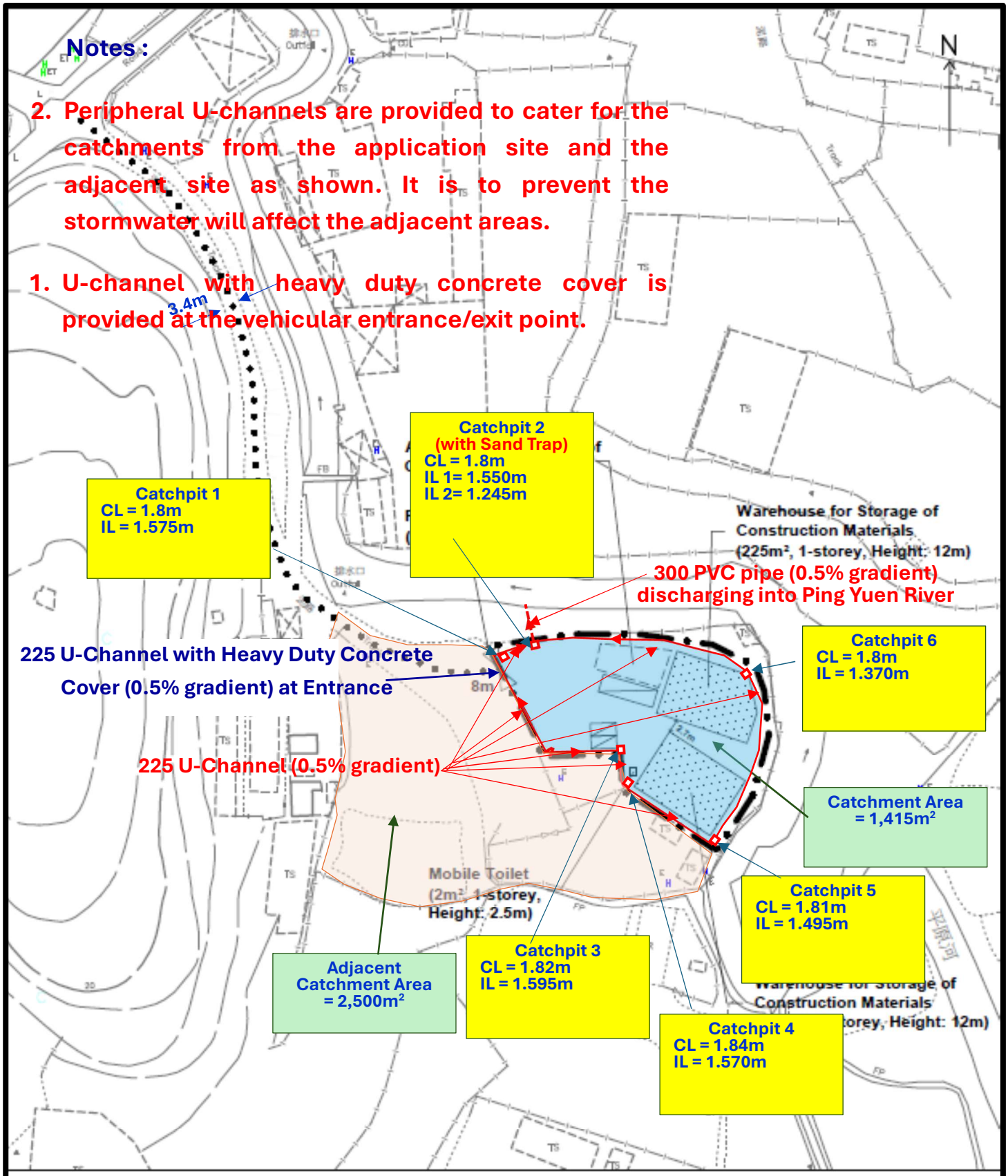
GEO Technical Guidance Note No. 43 (TGN 43) Guidelines on Hydraulic Design of U-shaped

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



Note: (1) Refer to the latest CEDD Standard Drawings for the details of U-shaped (U) and half-round (HR) channels.

For 2,665 l/min, 225 U-channel is used.



Drainage Plan	Drawing No. D - 001