

**Proposed Temporary Logistics Warehouse for a Period of 3 Years  
Lot 189S.A, 189S.B, 189S.C, 189RP in DD 52  
& Adjoining Government Land  
Sheung Shui Wa Shan, Sheung Shui, New Territories**

**DRAINAGE IMPACT ASSESSMENT AND PROPOSAL**

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HYDRAULIC CALCULATION v25.01

PERPARED BY  
APT ARCHITECT LIMITED  
(v. 25.01)

Proposed Temporary Logistics Warehouse for a Period of 3 Years  
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**DRAINAGE IMPACT ASSESSMENT AND DRAINAGE PROPOSAL**

## 1.0 INTRODUCTION

- 1.1 This site is located at Lots 189 S.A, 189 S.B, 189 S.C, & Lot 189 RP in D.D. 52 and Adjoining Government Land, Sheung Shui Wa Shan, New Territories.

The **Site Area** is about **4,800 m<sup>2</sup>**, including some Government Land.

- 1.2 This Drainage Impact Assessment and Drainage Proposal is prepared for the applied Use / Development for Town Planning Ref:

proposed use of the site is **Temporary Logistics Warehouse for a Period of 3 Years.**

This Report is based on the **Drainage Design of the same warehouse and similar use**, with previous Town Planning Application Ref: A/NE-FTA/189 & A/NE-FTA/211,

where the Drainage Proposal has been accepted by Planning Department /DSD on 13 August 2021 (TP Ref: TPB/A/NE-FTA/189) and

The respective drainage works were constructed accordingly.

The following DRAINAGE IMPACT ASSESSMENT AND DRAINAGE PLAN is prepared based on the aforesaid Approved Drainage Plan, AS WELL AS the AS-BUILT DRAINAGE WORKS as found by us.

## 2.0 THE DRAINAGE PROPOSAL

Revised Drainage Plan no. D-01 rev C, and D-02 is prepared according to the said as-built condition. And updated Hydraulic Calculation to demonstrate as-constructed drains being adequate to handle runoff of Site.

- 2.1 Main access of Site - **Jockey Club Road / Man Kam To road.**

Material of Site - paved with concrete and sloped towards west and formed with ground level matching the levels of the slightly sloped peripheral lands.

Existing Temporary Warehouse occupies about 75% of the Site Area  
There is no change to fencing to the Site – north / north-east / north-west side separating from neighbour sites.

Metal fence erected will divide site from the northern village settlements. Minor openings at bottom of fence allow passage of overland rainwater from uphill and neighbour site.

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**DRAINAGE IMPACT ASSESSMENT AND DRAINAGE PROPOSAL**

2.2 Catchment Areas and Flow Pattern of Site and Surrounds are summarized as follows:

**Catchment Area 1 - the existing Warehouse**

the Main Steel Structure (the Warehouse) with metal roof, runoff collected at roof, discharges via **P1, P2, and P3 to D3**, a formed 400wx400d drain channel discharges westward and collected at **CP6 (the last Manhole) and discharge to downstream to D7 / DA.**

**Catchment Area 2**

– portion outside west / southwest of warehouse, minor runoff is collected by D3, and all discharge through CP6 (Last Manhole) to downstream drain DA.  
In summary **D3**, the 400 mm x 400 mm concrete channel is provided to handle the flow for the entire Catchment Areas 1 and 2.

**Catchment Area 5**

- adjoining hill at north of site, and part of this hill has flow pattern towards the Application Site.  
With the Site Warehouse in place, drainage D1A, the previously approved 500mm x 300mm concrete channel is provided to handle the runoff from this hill (CA 5). And the runoff is collected by CP1/CP2, and handle both by drainage pipe P3, and underground pipe D2, and collected to CP3A and to D4/D5 system downstream.

**Catchment Area 4**

– Located at east / north-east of Site, surrounded by slopes at 3 sides, and on the west is the Main Warehouse. The Catchment area is surfaced in concrete to fall towards west. Runoff is handled by D1 / D1A and collected to CP2 (50%) and CP3 /3A (50%), and downstream to underground pipe D4/D5 system.

**Catchment Area 3** (Peak Runoff 0.0155 m<sup>3</sup>/s)

– South of the warehouse, parking / lorry manoeuvre space for the Site.

Runoff of Catchment Area 3 is taken by existing concrete channel of 300mm x 300mm D8 / D8A/D8B at all 3 sides to contain runoff of Catchment Area 3 within Site.  
Such channels can handle also minor runoff of Catchment Area 6 (the village road facing the Site).

**Catchment Area 6**

- outside site boundary, but partial runoff is handled by downstream system shared with the Site, including D7, DA.

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**DRAINAGE IMPACT ASSESSMENT AND DRAINAGE PROPOSAL**

**3.0 MAINTENANCE OF THE PROPOSED STORMWATER DRAINAGE SYSTEMS**

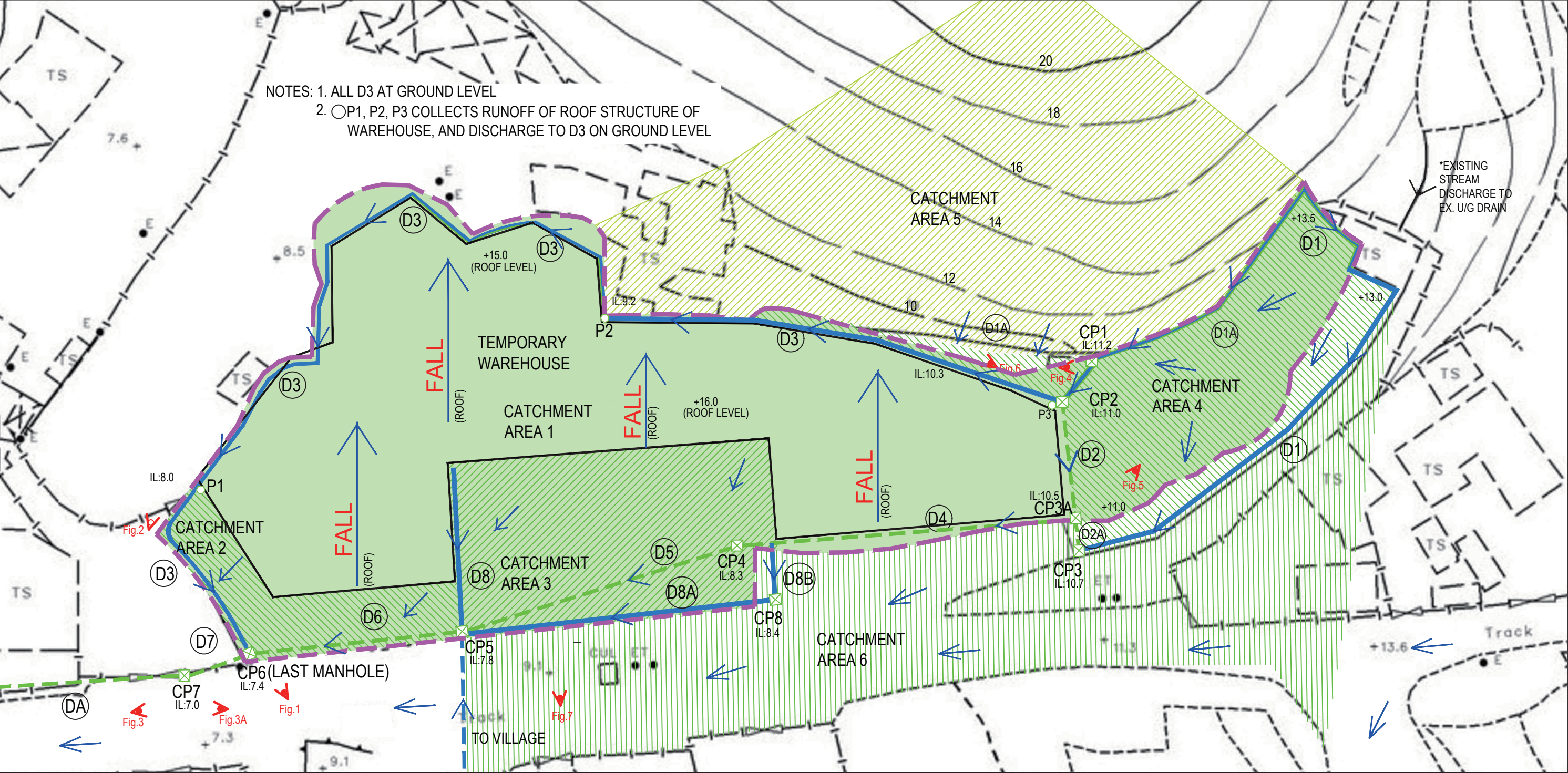
- 3.1 The applicant will construct all drainage proposed at his own costs. Where the drainage is outside boundary, DLO and appropriate land owner's consent will be obtained before the works.
- 3.2 The applicant of the Application Site will undertake the maintenance works for the proposed drainage system at his own costs.
- 3.3 Inspection, cleansing and desilting will be carried out regularly and before / after the rainy season each year to ensure the drainage facilities function efficiently. Since the system is designated to operate under gravity, the maintenance will be straightforward.

**4.0 CONCLUSION**

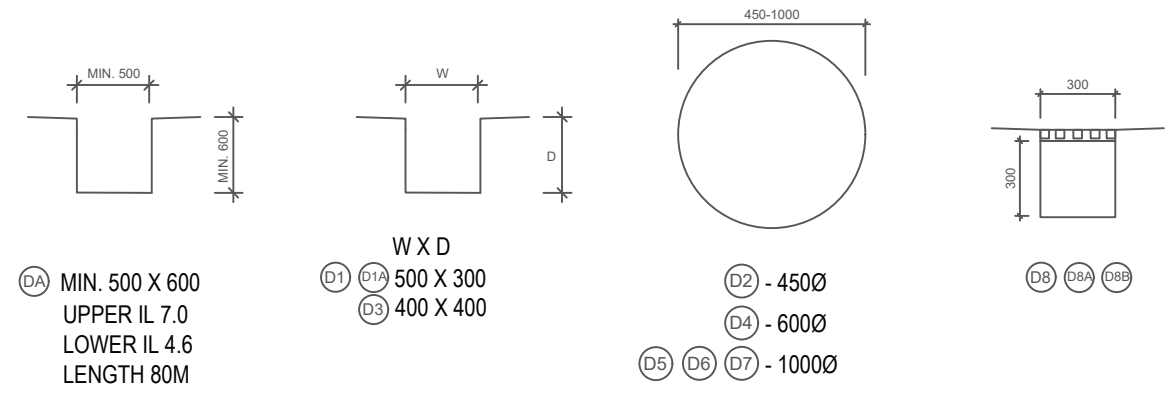
- 4.1 This drainage impact assessment is primarily based on site condition and peripheral existing drainage system near to the site. The stormwater drainage system is in a simple manner (basically surrounding the site). The neighboring runoff is partially handled by new drainage system of site. And northern neighbour has their own drainage system and therefore not affected by the development. The development is also along an inclined plane and therefore no accumulation of stormwater will be formed on site or the adjacent areas.

All proposed drain are of adequate size to handle runoff from site, and very good margin to handle runoff also from the northern neighbours.

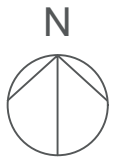
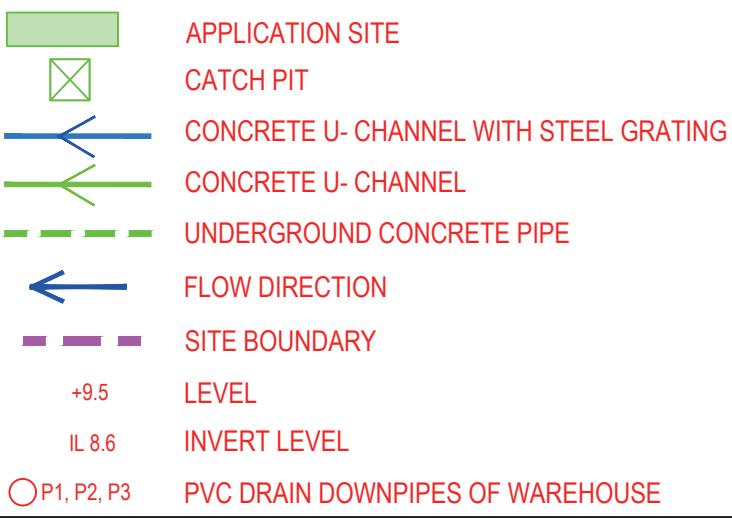
- 4.2 From this assessment, it can be concluded that the proposed drainage will have no adverse impacts to the site and surrounding areas.



**DRAINAGE SCHEDULE**



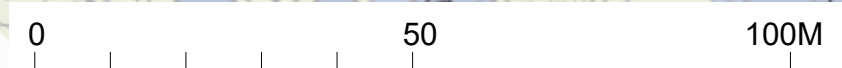
**LEGEND**



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DATE: JAN 2025

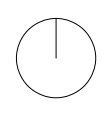
DRAINAGE - LAYOUT PLAN  
NO. D-01 REV C

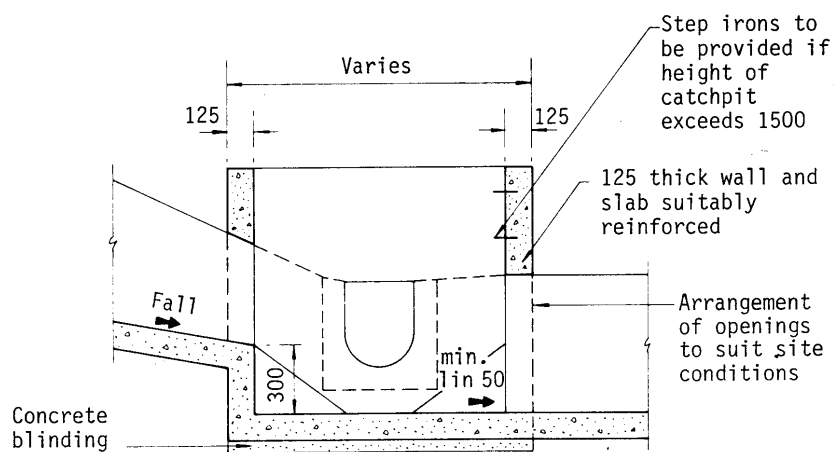




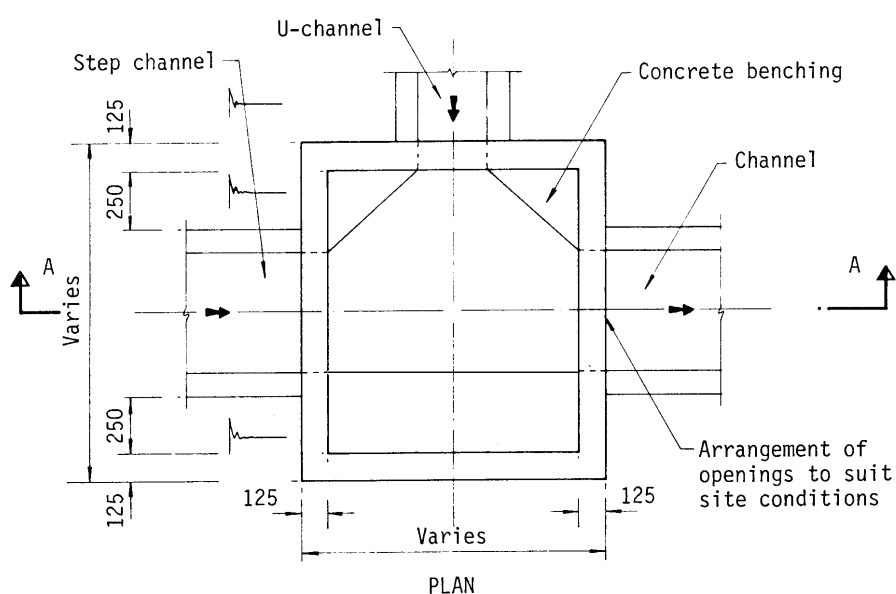
D-02  
DRAINAGE CATCHMENT PLAN

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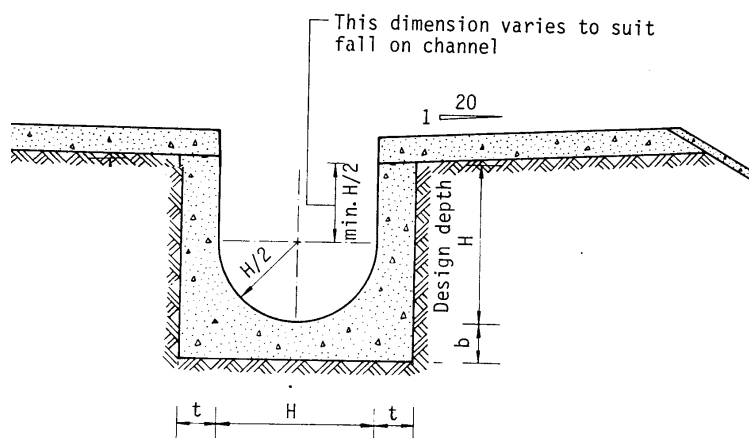




SECTION A-A




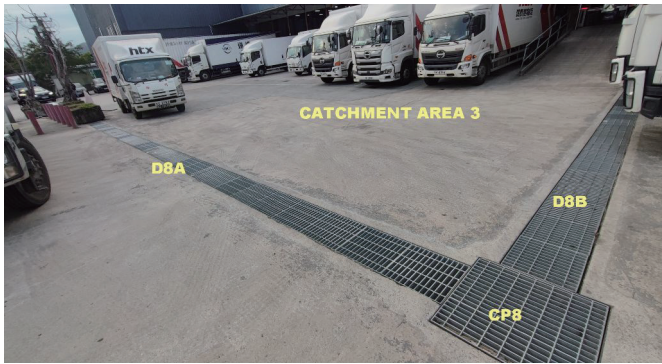

TYPICAL DETAILS OF CATCHPIT



TYPICAL DETAILS OF U CHANNEL





SITE PHOTO

		<p>PHOTO 1</p> <p>D2A, CP3, CATCHMENT AREA 4</p>
		<p>PHOTO 2</p> <p>D8A, D8B OUTSIDE VEHICLE AREA OF SITE - CATCHMENT AREA 3</p>
		<p>PHOTO 3</p> <p>TERMINAL MANHOLE (CATCHPIT WITH SANDTRAP) CP6, UNDERGROUND DRAIN PIPE D7 FLOW DOWNSTREAM TO CP 7 AND TO DA</p>



SITE PHOTO

		<p>PHOTO 4</p> <p>DA OF DOWNSTREAM AND CP10 (ABOUT 80m FROM SITE TERMINAL MANHOLE;</p>
		<p>PHOTO 5</p> <p>LOWEST PORTION OF DA AND CP10 - DISCHARGE TO GOVERNMENT SYSTEM AS SHOWN IN PLAN D-02</p>

WAH SHAN, SHEUNG SHUI

HYDRAULIC CALCULATION

(v 24.12)

Runoff Coefficient		Manning Coefficient	
crush stone and asphalt	0.7	Conc/cement	0.013
grassland	0.25	Steel	0.011
concrete	1	dredged	0.03

Catchment Area	CA1 (TS)	CA2	CA3	CA4	CA5	CA6
pave material	metal roof	concrete	concrete	concrete	soil/grassland	concrete
C = Runoff Coefficient	1	1	1	1	0.25	1
Area (m2)	3710	280	380	620	2000	2240
A = Area (km2)	0.00371	0.00028	0.00038	0.00062	0.002	0.00224
L = site length (m)	40	18	93	15	45	105
Top Level	16.5	8.8	9.4	13.8	22	13.6
Low Level	15.0	8.0	9.0	13.0	10.0	9.0
H = Average slope (m per 100m)	3.75	4.44	0.43	5.33	28.67	4.38
to = Time of Conc (min.)	7.774	4.378	35.003	3.249	6.284	20.805
i (mm/h)	242.158	278.565	147.151	295.578	256.057	177.740
Qp Peak Run off (m3/s)	0.2498	0.0217	0.0155	0.0509	0.0356	0.1107
Qp Peak Run off (L/min)	14985	1301	933	3057	2136	6641

(Manning Equation)	D1	D1A	D2	D3	D4	D5	D6	D6A	D8	D8A	D7	DA
Shape	Rectangular	Rectangular	Circle	Rectangular	Circle	Circle	Circle	Rectangular	Rectangular	Rectangular	Circle	Rectangular
Material	cement	cement	concrete	cement	concrete	concrete	concrete	cement	cement	cement	concrete	cement
Mann Coeff	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
width	0.5	0.5	0.45	0.4	0.60	1.00	1.00	0.4	0.3	0.3	1.00	0.8
depth	0.3	0.3	(diameter)	0.4	(diameter)	(diameter)	(diameter)	0.3	0.3	0.3	(diameter)	0.8
Length	50	40	12	165	12	12	30	18	10	10	8	80
Top Level (start)	12.7	12.7	11.0	11.0	10.5	8.3	7.8	8.2	8.7	8.4	7.4	7.0
Low Level (end)	10.7	11.0	10.5	7.4	8.3	7.8	7.4	7.8	7.8	7.8	7.0	5.5
Invert Level Difference	2.00	1.70	0.50	3.60	2.20	0.50	0.40	0.40	0.90	0.60	0.40	1.50
Sf, Slope =	0.040	0.042	0.042	0.022	0.183	0.042	0.013	0.022	0.090	0.060	0.050	0.019
Slope (1 to ?)	25.0	23.5	24.0	45.8	5.5	24.0	75.0	45.0	11.1	16.7	20.0	53.3
A, Area =	0.1500	0.1500	0.1590	0.1600	0.2827	0.7854	0.7854	0.1200	0.0900	0.0900	0.7854	0.6400
P, perimeter =	1.1000	1.1000	0.1309	1.2000	0.1746	0.2910	0.2910	1.0000	0.9000	0.9000	0.2910	2.4000
R = A/P =	0.1364	0.1364	0.1125	0.1333	0.1500	0.2500	0.2500	0.1200	0.1000	0.1000	0.2500	0.2667
V, Velocity = R1/6/ (n((RSf)1/2))	4.0759	4.2013	4.0491	2.9655	10.2890	6.8952	3.9005	2.7898	4.9718	4.0594	7.5533	4.3639
capacity =AV (m3/s)	0.611	0.630	0.644	0.474	2.909	5.415	3.063	0.335	0.447	0.365	5.932	2.793
Runoff to Handle:	50% CA4	70% CA5	70% CA5 + 100% CA4	100% CA1 + 100% CA2+ 30% CA5	all of D2	all of D4 + 10% CA3	100% CA3+ 80% CA6	80% CA6	40% CA3	50% CA3 + 20% CA6	CA1+CA2+CA3+C A4+CA5+CA6	D7
m3/s	0.025	0.025	0.076	0.276	0.076	0.077	0.104	0.089	0.020	0.048	0.484	0.484
COMMENTS:	0.025 < 0.611	0.025 < 0.630	0.076 < 0.644	0.276 < 0.454	0.076 < 2.909	0.077 < 5.415	0.115<3.063	0.089 < 0.335	0.02 < 0.447	0.048 < 0.365	0.484 < 5.932	0.484 < 2.793