Proposed Temporary Open Storage and Warehouse for Storage of Construction Machinery and Construction Materials for a Period of 3 Years
at
Lot 1560 (Part) in D.D. 107, Kam Tin, Yuen Long, New Territories

Annex 1   Drainage Proposal

1.1   Existing Situation

A.   Site particulars

1.1.1   The application site occupies an area of about 9,000m^2.

1.1.2   The site is serviced by a vehicular access leading from Shui Mei Road.   The area adjacent to the proposed development is mainly rural in nature and some residential developments were found to the north and west.

B.   Level and gradient of the subject site & proposed surface channel

1.1.3   It has a gradient sloping from northeast to southwest from about +6.8mPD to +4.8mPD. (**Figure 4**)

C.   Catchment area of the proposed drainage provision at the subject site

1.1.4   The land to the south, east, west and north is lower than the application site.   As such, no external catchment is identified.

D.   Particulars of the existing drainage facilities to accept the surface runoff collected at the application site

1.1.5   As shown in **Figure 4,** an open drain is found to the south of the application site. The stormwater intercepted by the proposed surface channel at the application site will be dissipated to the said open drain via the existing culvert.

1.2 Runoff Estimation

1.2.1 Rational method is adopted for estimating the designed run-off

$$Q = k \times i \times A/3{,}600$$

Assuming that:

i. The area of the catchment and external catchment is approximately 9,000m^2; (**Figure 4**)

ii. It is assumed that the value of run-off co-efficient (k) is taken as 1 for conservative reason.

$$\text{Difference in Land Datum} \quad = \quad 6.8\text{m} - 4.8\text{m} \quad = 2\text{m}$$

$$L \quad = \quad 155\text{m}$$

$$\therefore \quad \text{Average fall} \quad = \quad 2\text{m in } 155\text{m} = 1\text{m in } 77.5\text{m}$$

According to the Brandsby-Williams Equation adopted from the "Stormwater Drainage Manual – Planning, Design and Management" published by the Drainage Services Department (DSD),

$$\text{Time of Concentration } (t_c) \quad = 0.14465 \left[L/(H^{0.2} \times A^{0.1}) \right]$$

$$t_c \quad = 0.14465 \left[155/ 1.29^{0.2} \times 9{,}000^{0.1}) \right]$$

$$t_c \quad = 8.57 \text{ minutes}$$

With reference to the Intensity-Duration-Frequency Curves provided in the abovementioned manual, the mean rainfall intensity (i) for 1 in 50 recurrent flooding period is found to be 235 mm/hr

By Rational Method,

$$Q_1 \quad = 1 \ \times \ 235 \ \times \ 9{,}000 \ / \ 3{,}600$$

$$\therefore Q_1 \quad = 587.5 \text{ l/s} = 35{,}250 \text{ l/min}$$
$$= 0.59 \text{m}^3/\text{s}$$

In accordance with the Chart or the Rapid Design of Channels in "Geotechnical Manual for Slopes", for an approximate gradient of about 1:125 & 1:160 in order to follow the gradient of the application site, <u>600mm surface channel along the site periphery is considered adequate to dissipate all the stormwater accrued by the application site and adjacent land.</u>

1.3   Proposed Drainage Facilities

1.3.1   Subject to the calculations in 1.2 above, it is determined that proposed 600mm concrete surface channel along the site periphery is adequate to intercept storm water passing through and generated at the application site (**Figure 4**).

1.3.2   The collected stormwater will then be discharged directly to the open drain to the south of the application site as shown in **Figure 4** via the existing culvert.

1.3.3   All the proposed drainage facilities will be provided and maintained at the applicant's own expense.   Also, sand trap and surface U-channel will be cleaned at regular interval to avoid the accumulation of rubbish/debris which would affect the dissipation of storm water.

1.3.4   The provision of the proposed surface channel will follow the gradient of the application site.   <u>All the proposed drainage facilities will be constructed and maintained at the expense of the applicant.</u>

1.3.5   Prior to the commencement of the drainage works, the applicant will seek consent from District Lands Office/Yuen Long and relevant land owners for the provision of drainage facilities outside the application site.

1.3.6   The proposed development would not affect the existing ditches, drains and obstruct the flow of the flow of surface runoff.

1.3.7   100mm gap will be provided at the toe of site hoarding to allow unobstructed flow of surface runoff.