Proposed Temporary Warehouse for Storage of Food Provisions for a Period of 3 Years and Filling of Land
at
Lots 478 S.A RP, 482 (Part), 484 & 487 (Part) in D.D.90, Lin Ma Hang Road, Ta Kwu Ling, N.T.

Annex 1 Drainage Proposal

1.1 Existing Situation

A. Site particulars

1.1.1 The application site occupied an area of about 2,950m^2. It is proposed to fill the site with 200mm concrete for the warehouse use.

1.1.2 The area adjacent to the proposed development is mainly rural in nature. It is surrounded by temporary structures to the north and west. To the south is Lin Ma Hang Road. Vacant land is found to the east of the site.

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

1.1.3 It is sloping from south to north from about +13.2mPD to +10.6mPD.

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

1.1.4 According to **Figure 3**, it is noted that the level of the application site is comparatively higher than the adjoining land except the land to the southeast. As such, an external catchment has been identified in **Figure 3**.

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

1.1.5 As shown in **Figure 3,** a culvert is found to the southwest of the application site and it is about +9.9mPD.

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 entire catchment is approximately 5,100m^2;
ii. For conservative reason, it is assumed that the value of run-off co-efficient (k) is taken as 1.

Difference in Land Datum $\quad$ = $\quad$ 13.2m – 10.6m $\quad$ = 2.6m

$\qquad$ L $\qquad$ = $\quad$ 88m

$\qquad$ ∴ $\quad$ Average fall $\qquad$ = $\quad$ 2.6m in 88m $\quad$ or $\quad$ 1m in 33.85m

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

$\qquad$ Time of Concentration (t_c) $\qquad$ $= 0.14465 \, [\, L/(H^{0.2} \times A^{0.1})\,]$

$\qquad\qquad$ t_c $\qquad$ $= 0.14465 \, [\, 88/(2.95^{0.2} \times 5{,}100^{0.1})\,]$

$\qquad\qquad$ t_c $\qquad$ $= 4.36$ 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 290 mm/hr

By Rational Method, $\qquad$ Q_1 $\qquad$ $= 1 \times 290 \times 5{,}100 \, / \, 3{,}600$

$\qquad\qquad$ ∴Q_1 $\qquad$ $= 41.83$ l/s $= 24{,}650$ l/min

In accordance with the Chart or the Rapid Design of Channels in "Geotechnical Manual for Slopes", for an approximate gradient of about 1:40 and 1:100 in order to follow the gradient of the application site, <u>525mm surface U-channel is considered adequate to dissipate all the stormwater accrued by the application site.</u>

1.3 <u>Proposed Drainage Facilities</u>

1.3.1 Subject to the calculations in 1.2 above, it is determined that proposed 525mm surface U-channel along the site periphery is adequate to intercept storm water passing through and generated at the application site (**Figure 3**).

1.3.2 Catchpits will be provided at the turning point of the surface U-channel.

1.3.3 The collected stormwater will then be dissipate to the culvert to the southwest of application site. The culvert is now receiving the stormwater from the application site and it is deemed adequate to receive the stormwater from the application site.

1.3.4 All the proposed drainage facilities will be provided and maintained at the applicant's own expense.

1.3.5 The provision of the proposed surface channel will follow the gradient of the application site.

1.3.6 Prior to the commencement of drainage works, the applicant will seek the consent of the District Lands Office/North and relevant registered land owner for works outside the application site or outside the jurisdiction of the applicant.

1.3.7 All proposed works at the site periphery would not obstruct the flow of surface runoff from the adjacent areas, the provision of trees and surface channel at site boundary is detailed hereunder:

(a) Soil excavation at site periphery, although at minimal scale, is inevitably for the provision of surface channel. In the reason that the accumulation of excavated soil at the site periphery would obstruct the free flow of the surface runoff from the surroundings, the soil will be cleared at the soonest possible after the completion of the excavation process.

(b) In view of that soil excavation may be continued for several working days, surface channel will be dug in short sections and all soil excavated will be cleared before the excavation of another short section.

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

N

N

T11

502

492 S.G

497

496

492 S.F

9.5

492 S.E

TS

TS

TS

TS

493

491

486

492 S.A

467 RP

465 RP

465 S.B

*466 RP

+13.1

+13.3

+12.4

465 RP

Proposed 525mm
surface U-channel
(Garadient 1:100)

Proposed 525mm
surface U-channel
(Garadient 1:100)

Proposed 525mm
surface U-channel
(Garadient 1:100)

Proposed 525mm
surface U-channel
(Garadient 1:100)

467 S.A

木湖瓦窰
Muk Wu Nga Yiu

468

+13.4

+14.2

492 S.C

844 400N

*504

506

E

489

10.6

*468 RP

Proposed 525mm
surface U-channel
(Garadient 1:100)

Proposed 525mm
surface U-channel
(Garadient 1:100)

470 S.B

471 S.A RP

844 400N

D D 86

505

507

508

E

D D 90

Dischgarge path
Proposed 525mm
surface U-channel
(Garadient 1:45)

Proposed 525mm
surface U-channel
(Garadient 1:40)

470 RP

13.4

Proposed 525mm
surface U-channel
(Garadient 1:100)

Proposed 525mm
surface U-channel
(Garadient 1:100)

512

CUL

509

511

+9.0

Proposed 525mm
surface U-channel
(Garadient 1:40)

472 RP

+14.2

475 RP

+15.4

*477 S.A RP

+14.4

513

FP

533

510

+8.2

13.2

Proposed 525mm
surface U-channel
(Garadient 1:100)

476 S.A RP

+16.0

*515 RP

GLA-TDN 3609

*474

524 S.B

TS

518

+15.5

531

525 S.B

*524 S.A RP

Remarks

+12.5 Level (in mPD)

□   Proposed catchpit

⇐   Flow of surface runoff

■   Catchpit with sand trap

⧄   External catchment