STORMWATER DRAIN

[A] INPUT DATA:

(a) Site data:

(i) Max. rainfall intensity, I = 152.4 mm/hr

(ii) Area to be drained, A = 10000 sq.m

(iii) Site surface type: 5. Clay (0.60) => Run-off coeff., C = 0.6

(b) Drain details:

(i) Shape: Trapezoidal

(ii) Surface type: 5. Monolithic concrete (0.0145) => Manning's coeff., N = 0.0145

(iii) Slope: 1 in 250

(iv) Free board, FB = 150 mm

(v) Base width, b1 = 300 mm

(vi) Trench depth, D = 600 mm

(vii) Trench side slope, V:H = 2:1

(viii) Depth of water, d = D - FB = 600 - 150 = 450 mm

(ix) Top width, b2 = 300 + 2 x 1 x 450/ 2 = 750 mm

[B] CALCULATIONS:

Calculated discharge, Qact = C.I.A = 0.6 x 152.4 x 10000/ (1000 x 60 x 60) = 0.254 cu.m/s

Area of c/s of flow, a = (d/ 2).(b1 + b2) = 0.236 sq.m

Wetted perimeter, P = 1.31 m

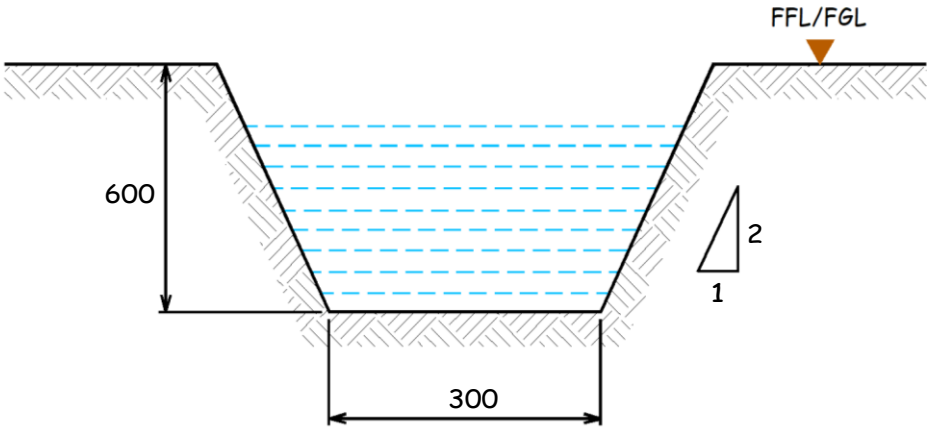
Hydraulic radius, R = a/ P = 0.18 m

Velocity (Manning's formula), V = (1/ N) x R^(2/ 3) x s^(1/ 2)

=> V = (1/ 0.0145) x 0.18^(2/ 3) x (1/ 250)^(1/ 2) = 1.39 m/s

Discharge, Qcap = a x V

=> Qcap = 0.236 x 1.39 = 0.328 cu.m/s > Qact (= 0.254 cu.m/s), Hence OK



DRAIN C/S (DIM IN MM)
(Scale: NTS)

epicenter Consulting Engineers Pvt. Ltd.		Client : EPICENTER CONSULTING ENGINEERS					Element: 11A
		Project:	1001	Doc. No.:	1001-CAL-ST-11		Location/ 1A
		Rev.	Ppd. by	Date	Chd. by	Date	
Project:	Infra_SWD	2					Designation: 11A
Structure:	Infra_SWD	1					
Type:	SWD	0	-	5/01/2026	-	5/01/2026	Sht. 1 of 1