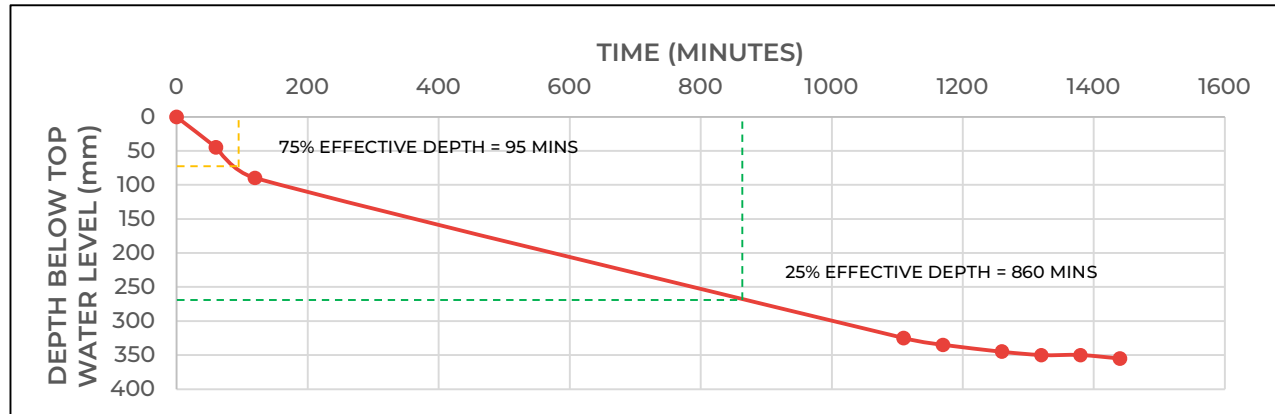


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Project: Haywards Heath RFC	Date: 04.11.24	Project No: 7507	Sheet: 1	By: DM	Chk: AF



WHERE:

V_{p75-2}

= THE EFFECTIVE STORAGE VOLUME OF WATER IN THE TRIAL PIT BETWEEN 75% AND 25% EFFECTIVE DEPTH;

a_{p50}

= THE INTERNAL SURFACE AREA OF THE TRIAL PIT UP TO 50% EFFECTIVE DEPTH AND INCLUDING THE BASE AREA;

t_{p75-25}

= THE TIME FOR THE WATER LEVEL TO FALL FROM 75% TO 25% EFFECTIVE DEPTH.

MAXIMUM DEPTH OF WATER = 730mm

DETERMINE,

V_{p75-2}

ANALYSIS OF THE TOPOGRAPHICAL SURVEY PROVIDED BY MITCHELL DESIGN AND CONSTRUCTION LTD HAS IDENTIFIED THAT:

$$V_{p75} = 21.9m^3$$

$$V_{p25} = 12.5m^3$$

$$\therefore V_{p75-2} = 9.4m^3$$

TIME (MINS)	WATER LEVEL (mm)
0	0
60	45
120	90
1110	325
1170	335
1260	345
1320	350
1380	350
1440	355

DETERMINE,

a_{p5}

WHERE:

A

= BOTTOM AREA

$$= 7.7m^2;$$

R

= BOTTOM RADIUS

$$= \sqrt{\left(\frac{7.7m^2}{\pi}\right)} = 1.56m;$$

a

= TOP AREA

$$= 62.7m^2;$$

r

= TOP RADIUS

$$= \sqrt{\left(\frac{62.7m^2}{\pi}\right)} = 4.47m;$$

s

= SLANT HEIGHT

$$= \sqrt{((R - r)^2 + h^2)} = \sqrt{((1.56m - 4.47m)^2 + 0.355^2)} = 2.932m$$

TOTAL LATERAL AREA INCLUDING THE BASE

$$= a_p = (\pi \times (R + r) \times s) + (\pi \times R^2) = 63.19m^2$$

$$a_{p50} = \frac{63.19m^2}{2} = 31.595m^2$$

DETERMINE,

t_{p75-25}

TIME TO FALL FROM 75% TO 25% EFFECTIVE DEPTH = 765 MINUTES

SOIL INFILTRATION RATE, $f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$

$$f = \frac{9.4m^3}{31.595m^2 \times 765 \text{ minutes} \times 60} = 6.48181 \times 10^{-6} m/s = 0.02333 m/hr$$