

5.17 Refer to Figure 5.22.  $I_z = 0.1$  at  $z = 0$ ;  $I_z = 0.5$  at  $z = 1.05$  m;  $I_z = 0$  at  $z = 4.2$  m

Depth (m)	$\Delta z$ (m)	$E_s$ (kN/m <sup>2</sup> )	$I_z$	$\frac{I_z}{E_s}(\Delta z)$
0-1.05	1.05	16,000	0.3	$0.196 \times 10^{-4}$
1.05-4.2	3.15	16,000	0.25	$0.492 \times 10^{-4}$
				$\Sigma 0.688 \times 10^{-4}$

$$q = \gamma D_f = (18.1)(1.5) = 27.15 \text{ kN/m}^2; q_o = 230 \text{ kN/m}^2$$

$$C_1 = 1 - 0.5 \left( \frac{27.15}{230} \right) = 0.941; C_2 = 1 + 0.2 \log \left( \frac{5}{0.1} \right) = 1.4$$

$$S_e = (0.941)(1.4)(230)(0.688 \times 10^{-4}) = 208.5 \times 10^{-4} \text{ m} = 20.85 \text{ mm}$$