

Exercice 5

$$1) \quad H = RPS \quad \begin{cases} R = L \sin\left(\frac{\alpha}{2}\right) = L \sin\left(\frac{22,5}{2}\right) = 0,39 \\ P = 15 \text{ bar} = 15 \times 10^5 \text{ Pa} \\ S = \frac{\pi d^2}{4} = 0,126 \end{cases}$$
$$= 73720 \text{ N}$$

$$2) \quad P = \frac{F}{\text{tg } \phi} \quad \begin{cases} F = 73720 \text{ N} = H \\ \text{tg } \phi = 0,4 \rightarrow \text{Frottement Sol/Béton} \end{cases}$$
$$= 184275 \text{ N}$$

$$3) \quad V = \frac{F}{\rho_B g \text{tg } \phi} \quad \begin{cases} F = H = 73720 \text{ N} \\ \rho_B = 2200 \text{ kg m}^{-3} \\ g = 9,81 \text{ m s}^{-2} \\ \text{tg } \phi = 0,4 \end{cases}$$
$$= 8,54 \text{ m}^3$$