$$R_h(\eta_h)=\frac{1}{\eta_h}-\frac{1}{2\eta_h^2}\left(1-e^{-2\eta_h}\right) \quad ; \quad \eta_h=\frac{4.6\,h}{L(z_r)}f_L(z_r,f_o)\ ; \quad \text{and if} \quad \eta_h=0 \quad R_h=1$$
$$R_b(\eta_b)=\frac{1}{\eta_b}-\frac{1}{2\eta_b^2}\left(1-e^{-2\eta_b}\right) \quad ; \quad \eta_b=\frac{4.6\,b}{L(z_r)}f_L(z_r,f_o)\ ; \quad \text{and if} \quad \eta_b=0 \quad R_b=1 \tag{5.6}$$

where

b : Width of the building in meters in the direction perpendicular to wind flow.
h : Height of the building.
z_r : Reference height ($z_r = 0.6h$).
f_0 : First mode frequency (in *Hz*).
$f_L(z_r, f_0)$: Normalized frequency at z_r, f_0 (see Eq. 3.10).
$L(z_r)$: Turbulance length at height z_r (see Eq. 3.9).

5.2. WIND LOADS ON BUILDINGS WITH CIRCULAR CROSS-SECTIONS

Wind loads on buildings with circular cross-sections are calculated similar to those with rectangular cross-sections by using Eq. 5.1. The main difference is the pressure coefficient C_p. For circular cross-sections, C_p depends on the Reynolds number, R_e , which is defined as

$$R_e=\frac{D\cdot V_{\max}(h)}{\nu} \tag{5.7}$$

where

D : Diameter of the circular cross-section
$V_{\max}(h)$: Maximum wind speed at the top of the building
$\nu = 15\cdot 10^{-6}\, m^2/s$: kinematic viscocity of the air

However, for most circular buildings and wind storms: $R_e \geq 10^7$.

The pressure coefficient, C_p , is calculated from the following equation

$$C_p = C_{p,0}\cdot \psi_\alpha \tag{5.8}$$

where