The size and the shape of the structural section are critical factors influencing the vortex shedding and galloping. Structural sections that have significant afterbodies after the separation points of vortices, and no flow reattachment are particularly susceptible.

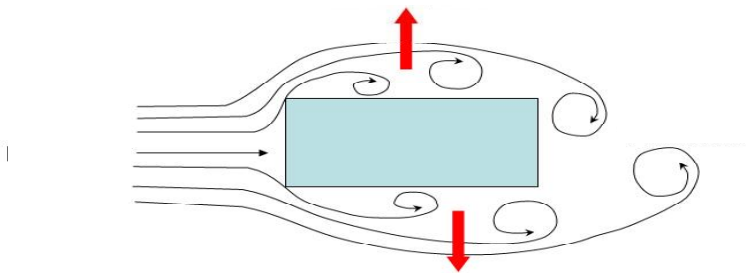

Figure 7.1. Development of vortex shedding forces.

Vortex induced vibratons of the building can be neglected if the following conditions are satisfied:

$$\begin{aligned} h / b_{\min} &< 6 \\ V_{\mathrm{cr}} &> 1.25 V_{\mathrm{m}}(h) \end{aligned} \tag{7.1}$$

where

h : Height of the building.

$b_{\min}$: The smallest width of the building in the across-wind direction.

$V_m(h)$: Average wind velocity at the top of the building m / s.

V_{cr} : Critical wind velocityin m / s.

The critical wind velocity, V_{cr}, is defined by the following equation:

$$V_{\mathrm{cr}} = \frac{b\, f_{\mathrm{oy}}}{S_{\mathrm{t}}} \tag{7.2}$$