

## Gust Effect Factor (NBCC05)

last revised: 130114

## Building Properties

$$H := 183 \text{ m}$$

$$w := 30.5 \text{ m}$$

$$d := 30.5 \text{ m}$$

$$f_{nD} := 0.2 \text{ Hz}$$

$$\beta := 0.015$$

$$Y := 27.4 \frac{\text{m}}{\text{sec}}$$

## Step 1: Calculate Required Parameters

$$C_{eH} := 1.9$$

$$V_H := Y \cdot \sqrt{C_{eH}}$$

$$V_H = 37.7683 \frac{\text{m}}{\text{s}}$$

$$\frac{w}{H} = 0.1667$$

$$\frac{f_{nD}}{V_H} = 0.0053 \cdot \frac{1}{\text{m}}$$

$$f_{nD} \cdot \frac{H}{V_H} = 0.9691$$

Step 2: Calculate  $\sigma/\mu$  using Equation 12

$$K := 0.10$$

$$B := 0.62$$

$$s := 0.11$$

$$F := 0.28$$

$$\beta = 0.015$$

$$\sigma_{Div\mu} := \sqrt{\frac{K}{C_{eH}} \cdot \left( B + \frac{s \cdot F}{\beta} \right)}$$

$$\sigma_{Div\mu} = 0.3751$$

Step 3: Calculate  $v$  using Equation 15

$$f_{nD} = 0.2 \cdot \frac{1}{S}$$

$$v := f_{nD} \sqrt{\frac{S \cdot F}{S \cdot F + \beta \cdot B}} \quad v = 0.1753 \cdot \frac{1}{S}$$

Step 4: Obtain Peak Factor from Figure I-21

$$g_p := 3.75$$

Step 5: Calculate Gust Factor using Equation 11

$$C_g := 1 + g_p \cdot \sigma_{Divu}$$

$$C_g = 2.4066$$