

風荷重例題解答 設計製図課題木造建物

地表面区分

場所 広島

$$H = 3.2 + 0.6 = 3.8\text{m} < 5\text{m}$$

$$E_r = 1.7 \times (5/350)^{0.15} = 0.899$$

$$G_f = 2.2$$

$$E = E_r^2 \times G_f = 0.808 \times 2.2 = 1.78$$

$$q = 0.6 \times 1.78 \times 3.4^2 = 1234.6 \text{ N/m}^2$$

風上屋根面の  $C_{pe}$

$$\tan^{-1} 3/10 = 16.7^\circ \quad 1 / \cos = 1.044$$

$$a = 16.7/20 \times 0.7 + 0.3 = 0.88$$

$$b = 16.7/20 \times 0.2 = 0.17$$

$$\text{したがって } C_{pe} = 0.88 - 0.17 = 0.71$$

$$\text{風上壁面 } C_{pe} = 0.8$$

$$\text{風下壁面 } C_{pe} = 0.4$$

$$\text{風下屋根面 } C_{pe} = 0.5$$

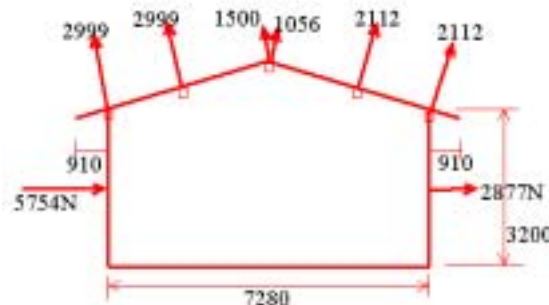
一構面当たりの風圧力

$$\text{風上壁面 } w = 0.8 \times 1235 \times 1.82 = 1798 \text{ N/m} \quad W = 1798 \times 3.2 = 5754\text{N}$$

$$\text{風上屋根面 } w = W = 0.71 \times 1235 \times 1.82 = 1596 \quad W = 1596 \times 4.5 \times 1.044 = 7498\text{N}$$

$$\text{風下屋根面 } w = 0.5 \times 1235 \times 1.82 = 1124 \quad W = 1124 \times 4.5 \times 1.044 = 5281\text{N}$$

$$\text{風下壁面 } w = 0.4 \times 1235 \times 1.82 = 899 \quad W = 899 \times 3.2 = 2877\text{N}$$



$$L_1 = 9000 - 910 - 4500/2 = 5480$$

$$L = 4500/2 - 910 = 1340$$

$$H = (2754 + 2877 - 7498 \times \sin 16.8 + 5281 \times \sin 16.8) / 2 = 4026$$

$$V_a = ((5754 + 2877) \times 1.6 + 7498 \cos 16.8 \times 5.84 + 5281 \cos 16.8 + 1.34$$

$$+ (-7498 \sin 16.8 + 5281 \sin 16.8) \times 3.8) / 7.28 = 8251$$

$$V_b = 7498 \cos 16.8 + 5281 \cos 16.8 - 8251 = 3983$$

トラス解法用外力