Documentation of Wave Overtopping Calculations

1 EurOtop (2018)

Positive Freeboard (Levee)

Mean Value Approach:

$$q = \sqrt{gH_{m0}^3}\frac{0.023}{\tan\alpha}\gamma_b\xi_{m-1,0}\exp\left[-\left(2.7\frac{R_c}{\xi_{m-1,0}H_{m0}\gamma_b\gamma_f\gamma_\beta\gamma_v}\right)^{1.3}\right] \tag{1.1}$$

with maximum

$$q = 0.09\sqrt{gH_{m0}^3}\exp\left[-\left(1.5\frac{R_c}{H_{m0}\gamma_f\gamma_\beta\gamma^*}\right)^{1.3}\right] \tag{1.2}$$

Design & Assessment:

$$q = \sqrt{gH_{m0}^3}\frac{0.026}{\tan\alpha}\gamma_b\xi_{m-1,0}\exp\left[-\left(2.5\frac{R_c}{\xi_{m-1,0}H_{m0}\gamma_b\gamma_f\gamma_\beta\gamma_v}\right)^{1.3}\right] \tag{1.3}$$

with maximum

$$q = 0.1035\sqrt{gH_{m0}^3}\exp\left[-\left(1.35\frac{R_c}{H_{m0}\gamma_f\gamma_\beta\gamma^*}\right)^{1.3}\right] \tag{1.4}$$

Positive Freeboard (Vertical Wall)

Mean Value Approach:

$$q = 0.047\sqrt{gH_{m0}^3}\exp\left[-\left(2.35\frac{R_c}{H_{m0}\gamma_f\gamma_\beta}\right)^{1.3}\right] \tag{1.5}$$

Positive Freeboard *Broad-crested weir*

$$q = 1.5\sqrt{g\left|-R_c^3\right|} \tag{1.6}$$

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REFERENCES

EurOtop, 2018. Manual on wave overtopping of sea defences and related structures. An overtopping manual largely based on European research, but for worldwide application. Van der Meer, J.W., Allsop, N.W.H., Bruce, T., De Rouck, J., Kortenhaus, A., Pullen, T., Schüttrumpf, H., Troch, P. and Zanuttigh, B., `www.overtopping-manual.com`.