

Reliability analysis of the structures with a dominant wind load

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SUMMARY

The reliability analysis of the structures with a dominant wind load, regarding its bearing capacity, i.e. with regard to the collapse of its bearing capacity, was performed employing a probabilistic procedure. The simulation of the wind-structure interaction was carried out using the modal analysis. According to the theory of stochastic vibrations it was possible to define the reaction of the structure (dynamic factor) on the wind action. All the relevant factors in the equation of the yield (limit) state of the bearing capacity, which define the mechanical properties of the material, cross sectional geometric characteristics of the structure, the intensity and the type of the wind load are represented by the two cumulative basic variables. The computation of the reliability index for the given steel structure with a longitudinal (turbulent) wind action as a dominant load, was performed using the Hasofer-Lind procedure.
