

ELASTIC RESPONSE SPECTRUM OF WIND FORCE

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Abstract: This paper presents the elastic response spectra of a single-degree-of-freedom system (SDOF), which is obtained from the measured data of the force caused by a wind named Bora. All the data of the wind force are obtained by measurements on a SDOF oscillator. The time resolution varies from 0.01 to 0.00001 second.

The spectra are constructed for different intensities of the dynamic wind force, i.e., for a wind with different average velocities. After presenting the spectra in a non-dimensional form, their reciprocal similarity can be observed irrespective of the intensity of the wind force.

It can be observed from the presented results that the ordinate of elastic response spectra increases with decreasing natural period of the SDOF. The paper also presents a practical method for determining the elastic response spectrum for a particular SDOF and a newly specified location, based on the known data of the average wind velocity.

Key Words: Elastic response spectra; Wind force; Natural period; Wind velocity.



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