
BAPE-15.2

Référence:

15. Les séismes et la géologie

Demande ou Question:

- 15.2 Expliquez la notion de spectre de réponse en fonction de la fréquence (Response spectrum (PSA(f)) pour exprimer l'accélération maximale du sol et expliquer en quoi consiste la pseudo-accélération tamponnée de 5 % (5 % damped pseudo-acceleration).

Réponse:

An acceleration response spectrum is a plot of the peak accelerations of a series of single degree of freedom oscillators of different natural periods of vibration that are excited by the same motion, e.g. earthquake motion, at the base. A typical structure has many modes of vibration with corresponding periods. The response spectrum is used in a modal analysis to determine the total accelerations experienced by a structure in an earthquake, accounting for the contributions from the different modes of vibration.

A response spectrum can be determined for any specific level of damping (energy absorption or dissipation capability) within the structural system. Higher damping results in lower accelerations. A 5% damping level is often used for response spectra because it is the expected level of damping in typical buildings when subjected to the ground motion of the design earthquake. For specific structures, a more accurate estimate of the damping level can be determined.