

What are a structure's important dynamic properties?

The dynamic properties of a structure are its natural frequencies, ω_n , and its corresponding periods, T_n . The natural frequencies are the frequencies at which the structure will vibrate if it is disturbed from its equilibrium position. The periods are the time intervals between successive peaks of the vibration.

What is an acceleration response spectrum?

An acceleration response spectrum (ARS) is a plot of the maximum acceleration response of a structure as a function of its natural period, T . The ARS is used to determine the seismic response of a structure. The ARS is typically plotted on a log-log scale. The horizontal axis represents the natural period, T , and the vertical axis represents the maximum acceleration response, a . The ARS is used to determine the seismic response of a structure by comparing the structure's natural period to the ARS.

What is inelastic response?

Inelastic response is the response of a structure to seismic loading that is beyond its elastic limit. Inelastic response is characterized by permanent deformation and energy dissipation. Inelastic response is typically modeled using nonlinear analysis techniques. Inelastic response is used to determine the seismic response of a structure that is expected to undergo significant inelastic deformation. Inelastic response is typically plotted on a log-log scale. The horizontal axis represents the natural period, T , and the vertical axis represents the maximum acceleration response, a . The inelastic response is used to determine the seismic response of a structure by comparing the structure's natural period to the inelastic response.

$$1940 \text{ C.F.T.R.}, 180_2 \text{ m} \quad 1940 \text{ C.F.T.R.}, 5\% \text{ m} \quad 1940 \text{ C.F.T.R.}, 5\% \text{ m}$$

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