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A Unified Practical Approach for Estimating the Effects of Rare Dynamic Loading on Structures

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ABSTRACT

Rare dynamic loading on a structure can be caused by an earthquake, impact by a vehicle or fallen boulder, accidental dropping of a heavy object or blast pressure generated by an explosion. Codes of practices for designing for seismic actions have been put in place for the calculation of the inertia forces generated by earthquake ground shaking. However, few guidelines are available for designing for other types of transient and dynamic actions. Engineers would often be required to rely on computer simulations employing specialist software to inform decision making in design. Difficulties in checking the computations and in verifying the simulated results are cause for concern. This paper presents overarching fundamental principles governing the behaviour of different forms of dynamic actions. Analytical techniques that have been extended for solving wider forms of transient Loading will also be presented**.**

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