

SIMPLIFIED METHOD FOR THE INELASTIC SEISMIC ANALYSIS OF REINFORCED CONCRETE VIADUCTS

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Abstract: Simplified method N2 (Nonlinear; 2 models) for the inelastic seismic analysis of reasonably regular structures oscillating predominantly in a single mode, which has been recently adopted by the Eurocode 8, is discussed. N2 was originally developed for buildings. Some modifications of the method, needed to address special features of typical viaduct structures, are proposed and discussed. The accuracy of the single mode N2 method depends on the ratio of the stiffness of the superstructure to that of the bents, the relative stiffness and strength of columns, and the type of the constraints above the abutments. When the superstructure is stiff comparing to bents and the response is influenced by one predominant mode, which does not considerably change, the N2 method can estimate the response very well.

In general N2 would perform well, if the effective mass of the predominant mode is equal or more than 80%.

Key words: RC viaducts, seismic analysis, simplified inelastic methodologies, pushover methods, N2 method, higher modes effect.



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