

## 5. Development of the System for Seismic Design of Reinforced Concrete Structures

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Firstly, this paper presents the system for seismic design of reinforced concrete structure based on nonlinear analysis of soil-foundation-superstructure subjected to earthquakes. This system shares with the results of the analysis by each application for seismic design. So, costs and times for design work are reduced remarkably.

Secondly, two case studies are introduced. In the first case, the results derived from ductility design of elevated bridge are compared with the ones derived from nonlinear analysis. In conclusion, it is apparent that nonlinear dynamic analysis is effective for seismic design. In the second case, the effect of the foundation strength on ductility factor of bridge pier is examined by nonlinear dynamic analysis. In conclusion, it is apparent that strength of foundation derived from seismic design code is overestimated.

**Key words:** nonlinear dynamic analysis, ductility design, reinforced concrete structure, seismic design, analysis model of soil-foundation-superstructure