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## STRUCTURAL ENGINEERING / EARTHQUAKE ENGINEERING

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## A STUDY ON FORCE-DISPLACEMENT-BASED SEISMIC DESIGN OF SINGLE-COLUMN RC PIERS

 Kiyoshi HIRAO<sup>1)</sup>, Yukinori SAKAGAMI<sup>2)</sup>, Yoshifumi NARIYUKI<sup>1)</sup> and Tsutomu SAWADA<sup>1)</sup>

1) Dept. of Civil Eng. University of Tokushima

2) Hitachi Zosen Corporation

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As a fundamental study to develop a force-displacement-based seismic design of RC piers, the acceleration-displacement response spectrum (ADRS) of SDOF systems with elastic-plastic bilinear restoring force characteristics is obtained by inelastic response analysis, provided that the value of modified Park-Ang damage index  $D$  of a SDOF system equals the required value  $D_r=0.4$  that almost correspond to the repairable limit of the system. The regression equation of ADRS is derived and applied to a force-displacement-based seismic design of a single-column RC pier. The design results by the proposed method are compared with the ones by the ductility design method of Japanese Specifications.

**Key Words:** acceleration-displacement response spectrum, modified Park-Ang damage index, force-displacement-based seismic design, single-column RC pier

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