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[ADVANCED](#)[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

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STRUCTURAL ENGINEERING / EARTHQUAKE ENGINEERING

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[\[PDF \(1420K\)\]](#) [\[References\]](#)**ENHANCED SEISMIC DESIGN OF A PILE FOUNDATION BY CELL-TYPE WIB**Hirokazu TAKEMIYA¹⁾ and Feng CHEN²⁾

1) Dept. of Environmental and Civil Eng., Okayama University

2) Graduate School of Natural Science and Technology, Okayama University

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These authors, focusing on the seismic responses of a pile foundation of traffic viaduct, propose an innovative enhancement method of a pile foundation by surrounding cells like Wave Impeding Barriers (WIB) for design. The present WIB consists of a multiple number of soil-cement columns, which are arranged in cells around piles. Since nonlinear dynamic soil-pile interaction is unavoidable in strong earthquake motions at soft site, such behavior is simulated approximately by a two-dimensional FEM-BEM in time domain. The performance design is pursued by parametric studies in view of pile internal forces. Partial damage of the WIB makes the pile safe with less nonlinear response. The high-damping assumption for the WIB fill-in keeps the WIB within safe margin.

Key Words: soil-pile interaction, viaduct pile foundation, cell-type WIB, nonlinearity, seismic reduction, bending moment

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