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## **GEOTECHNICAL ISSUES IN DISPLACEMENT BASED DESIGN OF HIGHWAY BRIDGES AND WALLS**

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There is a growing emphasis on displacement based earthquake design for buildings, walls and bridge structures. The next edition of Section 5 (Earthquake Resistance Design of Structures) of the Bridge Manual, expected to be published in late 2014, will indicate that Displacement Based Design (DBD) is the preferred design method for highway structures.

For bridges and major wall structures, the damping and deformations within the foundation system have a major impact on the displacement response. In the past, the geotechnical input for the design of structures has focused on investigating and defining the soil strength parameters. For DBD there is now a need to investigate and assess soil stiffness as well as strength and to focus on soil-structure interaction analysis.

The shortcomings in the current site investigation methods of assessing soil stiffness and damping parameters for DBD will be discussed and the effects of the uncertainty in these inputs on the structural response in earthquakes will be illustrated by examples from the presenter's recent design and assessment experience.