

New Guides for Liquefaction Assessment and Remediation Now Available

MCEER researchers have recently completed extensive studies to assess and mitigate liquefaction hazards. The research studies combine state-of-the-art and -practice techniques used to mitigate liquefaction and provide comprehensive, flowchart-oriented design procedures and guidelines to assess liquefaction hazard.



Various research studies were evaluated and used to update existing assessment procedures for liquefaction hazard by T.L. Youd (*Screening Guide for Rapid Assessment of Liquefaction Hazard at Highway Bridge Sites*, Technical Report MCEER-98-0005). This report combines and incorporates experimental and analytical research findings in unified, well-established guidelines for use by practicing engineers. The result is a step-by-step screening guide that presents systematic application of standard criteria for assessing liquefaction susceptibility, evaluating ground displacement potential and assessing the vulnerability of bridges to liquefaction induced damage. Although the main emphasis is on highway bridge sites, the procedures and screening guide are not highway specific, i.e. they can be used for generic liquefaction evaluation purposes for a wide variety of structures (See [MCEER Bulletin, Vol. 12, No. 2](#) for an in depth description of the screening guide).

In a parallel study, H.G. Cooke and J.K. Mitchell develop approaches for assessing the need for liquefaction remediation, selecting and designing potential improvement measures, and implementing their design. In *Guide to Remedial Measures for Liquefaction Mitigation at Existing Highway Bridge Sites*, Technical Report MCEER-99-0015 (see review on page 11), the authors provide several flowchart procedures that are used to facilitate the assessment of liquefaction potential with reference to the report by Youd, and identify improvement measures and the type of remediation required. Once potential improvement measures have been identified, the authors recommend several remediation schemes. Finally, for each alternative, a design procedure is recommended. The design procedure is devised so that a preferred method of improvement for a particular bridge emerges by the end of the process.

Both studies were part of MCEER's highway project research program, which is sponsored by the Federal Highway Administration. Both technical reports can be ordered via the web site at <http://mceer.buffalo.edu/publications/default.html>.