



Illinois Department of Transportation

Memorandum

To: ALL GEOTECHNICAL MANUAL USERS 10.1
From: Ralph E. Anderson
Subject: Liquefaction Analysis Procedure *Ralph E. Anderson*
Date: February 25, 2010

An All Geotechnical Manual Users (AGMU) Design Guide 10.1 has been developed to document the Department's recommended procedures for conducting a liquefaction analysis based upon updates to the liquefaction design requirements included in the 2009 Interim Revisions for the AASHTO LRFD Bridge Design Specifications and other varying research. The procedures documented in the Design Guide are generally anticipated to offer an improvement in the factors of safety against liquefaction. In addition, the Design Guide contains general guidelines to assist designers in characterizing the properties and behavior of liquefiable soils when present. The Design Guide is available on the IDOT website at [http://www.dot.il.gov/bridges/Design Guides/AGMU 10.1-Liquefaction Analysis Procedure .pdf](http://www.dot.il.gov/bridges/Design%20Guides/AGMU%2010.1-Liquefaction%20Analysis%20Procedure.pdf).

Liquefaction analysis shall generally be conducted using a procedure commonly known as the "Simplified Procedure" with modifications that have been incorporated based upon advances in research. Additional modifications include changes in the soil properties that IDOT has typically used to define potentially liquefiable soils and changes in the ground motions that shall be used for the liquefaction analysis. Additional guidance has also been provided for assessing the effects of sloping ground surfaces on the liquefaction resistance of soils.

An excel spreadsheet has been developed to assist Geotechnical Engineers in conducting liquefaction analysis based upon the procedure documented in the Design Guide. The spreadsheet may be downloaded from the IDOT website at <http://www.dot.il.gov/bridges/dcspreadsheets.html>.

AGMU Design Guide 10.1 is applicable immediately and shall be incorporated into all Structure Geotechnical Reports currently under preparation and that have not yet been approved. If you have any questions, please contact William Kramer of the Foundations & Geotechnical Unit at (217) 782-7773 or William.kramer@illinois.gov for further assistance.