



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

May 24, 2011

CIRCULAR LETTER 2011-06

PILE DESIGN AND CONSTRUCTION CHANGES - REVISED

COUNTY ENGINEERS/SUPERINTENDENTS OF HIGHWAYS
MUNICIPAL ENGINEERS/DIRECTORS OF PUBLIC WORKS
CONSULTING ENGINEERS

This Circular Letter supersedes Circular Letter 2010-14. This is a result of the issuance of All Bridge Designers (ABD) 11.1 - Discontinued Use of Wave Equation Analysis of Piles, dated March 3, 2011. As stated in the ABD, the use of the Wave equation, which was used on piling projects with nominal bearing values exceeding 600 kips, should be discontinued.

The purpose of this Circular Letter is to ensure local agencies are aware of policy changes made by the Illinois Department of Transportation (IDOT) regarding pile design and pile acceptance. With the issuance of All Geotechnical Manual Users (AGMU) Memorandum 10.2, dated February 3, 2010 (<http://www.dot.il.gov/bridges/AGMU%20102.pdf>), IDOT provided changes affecting the design of bridge piling, as well as information for the determination of pile acceptance. These changes were the result of a research study conducted to improve the agreement between estimated and actual driven lengths with the intent to attain more accurate and economical pile lengths.

As indicated in the memorandum, IDOT now requires the new Modified IDOT Static Method be used for geotechnical pile design and inclusion of the revised Guide Bridge Special Provision (GBSP) 68, which now specifies use of the Washington State Department of Transportation (WSDOT) dynamic formula for determination of the nominal driven bearing of each pile. Pile designs should be in accordance with this information and GBSP 68 should be inserted on all pile projects.

The new pile design procedure in AGMU 10.2 requires insertion of the new special provision (with new pile formula). The memo also provides construction inspectors with a link to the IDOT website where contractors and inspectors can download the current spreadsheet tool to determine when bearing is obtained (<http://www.dot.il.gov/bridges/dcspreadsheets.html>). The project specifications will state what pile bearing verification method selected by the designer is to be used during construction, which could be Gates, WSDOT or Wave equation. The Gates and Wave equation should only be used for projects designed before the new guidelines were published. The spreadsheet tools may be used, or the calculations can be performed by hand. The pile

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construction inspection course reference manual is available for viewing or downloads at <http://www.dot.il.gov/bridges/geotechtraining.html>.

Incorporated with the changes is a revised equation for determining the allowable hammer size for pile driving equipment. This equation takes into account the efficiency of the hammer type (i.e., steam, diesel, etc.) and, in general, provides a larger range of hammer sizes from which the contractor may select.

Subscription Services. As mentioned before, this information was provided in an AGMU memorandum. The department is relying on our customers and clients to utilize our subscription services to disseminate general information, guidelines and new or changing policies. A list of available subscription services can be found on the IDOT Doing Business Page (<http://www.dot.il.gov/dobuisns.html>). Local agencies are encouraged to review the list and sign up for any service that may be applicable to their organization.

If you have any questions regarding this Circular Letter, please contact Jack Elston at (217) 785-8748 or jack.elston@illinois.gov. Technical questions should be directed to Bill Kramer in the Foundations and Geotechnical Unit at (217) 782-7773 or william.kramer@illinois.gov.

Sincerely,



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