MDOT
Michigan Department of Transportation

BRIDGE ADVISORY
Construction &Technology Division
Bridge Operations Section

BRIDGE ADVISORY NUMBER: BA-2007-01 **DATE**: April 23, 2007

Note: This Bridge Advisory was originally issued as **BMTA-1**. It is being re-issued as a Bridge Advisory for cataloging purposes.

SUBJECT: Bridge Analysis Guide

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The use of the 1983 MDOT Bridge Analysis Guide is to be discontinued. Some of the material, in particular live load distribution factors, in the 1983 Guide is outdated and no longer represents best practice.

Bridges in Michigan are to be rated in accordance with the AASHTO Manual for Condition Evaluation of Bridges, 2nd Edition with 2003 Interims, and the 2005 MDOT Bridge Analysis Guide. Load ratings are to be reported in accordance with the FHWA Reporting and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges, December 1995, the 2005 MDOT Bridge Analysis Guide, and the MDOT SI&A Coding Guide.

Bridge load ratings must be performed in the following situations:

- The bridge is new and has not been previously load rated.
- The bridge has been reconstructed, widened, or overlaid in such a way that affects load capacity.
- A key component of the structure has been damaged or has deteriorated such that the previous load rating is no longer valid.

The Federal Highway Administration (FHWA) provides policy regarding load-rating methods as follows:

> FHWA Memorandum
> Subject: Bridge Load Ratings for the National Bridge Inventory
> Date: October 30, 2006.
> http://www.fhwa.dot.gov/BRIDGE/nbis/103006.cfm

The FHWA policy allows non-NHS bridges built and rated before January 1, 1994 and not requiring rerating due to reconstruction or deterioration to retain their Allowable Stress Rating

(ASR). All other bridges must be rated using Load Factor Rating (LFR) or Load and Resistance Factor Rating (LRFR), with the exception that ASR may be used for timber and masonry bridges.

For computing the Michigan Operating Rating (Item 64M) and reporting NBI Item 70, the FHWA memo allows any load rating method as the excerpt below indicates:

> "As in the past, the load rating used to report NBI Item 70, Bridge Posting may be computed either by LRFR, LFR, or ASR methods using the maximum unrestricted legal loads to establish load limits for the purpose of load posting. Item 70 evaluates the load capacity of a bridge in comparison to the State legal loads."

In addition to the FHWA memo referenced above, the following documents referenced above are available on the internet:

- FHWA Reporting and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges, December 1995
  - http://www.fhwa.dot.gov/BRIDGE/mtguide.pdf
- 2005 MDOT Bridge Analysis Guide
  - http://www.michigan.gov/mdot/0,1607,7-151-9625_24768_24773-132786--,00.html
- Michigan Structure Inventory and Appraisal Coding Guide
  - http://www.michigan.gov/documents/MDOT-Bridge-SIAMANUAL-2_87989_7.pdf