



BRIDGE ADVISORY
Design Division
Bridge Management Section

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SUBJECT: Corrugated Metal Pipe Analysis Spreadsheets

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The Michigan Department of Transportation is providing, as a service to contractors, consultants, and local agency bridge owners, three (3) spreadsheets and supporting documentation for the analysis of corrugated metal pipe culverts. The spreadsheets have been adapted from spreadsheet created by the Ohio Department of Transportation to incorporate MDOT's legal and overload vehicles and are based on National Corrugated Steel Pipe Association Design Data Sheet 19. The documents are available at the following location:

http://www.michigan.gov/mdot/0,4616,7-151-9625_24768_24773-201633--,00.html

To view the files, review the Disclaimer of Liability, select "I agree to these terms" and "View Documents".

Please note: MDOT makes no warranties or representations whatsoever regarding the quality, content, completeness, suitability, adequacy, sequence, accuracy or timeliness of the information and data provided in these electronic engineering data and/or analysis programs.

A description of the available files is as follows:

MDOT CMP LFR (ver. 1.0).xlsx

MDOT CMP LFR (ver. 1.0).xlsx is used to compute the federal and legal rating factors and MDOT Overload Class for corrugated metal pipe (CMP) structures via Load Factor Rating (LFR) Method.

MDOT CMP LFR SAD (ver. 1.0).pdf

MDOT CMP SAD (ver. 1.0).pdf includes detailed documentation of all of the input and output values contained within the LFR spreadsheet as well as an explanation of the assumptions and limitations of the formulas contained within the sheet.

Truck Combinations 10-16-12.xlsx

Truck Combinations 10-16-12.xlsx includes a detailed evaluation of Federal, Legal and Overload trucks at depths ranging from 1' to 20' and determines the controlling trucks and resulting line load

pressures for each truck. A summary of this spreadsheet is included in each of the three CMP spreadsheets and used to calculate rating factors for Federal, Legal and Overload trucks. **Note: this spreadsheet is not necessary to perform CMP load rating calculations unless the user intends to modify the loading in the CMP spreadsheets.**

The following documents are not currently posted on the website, but will be made available in November, 2012.

MDOT CMP LRFR (ver. 1.0).xlsx

MDOT CMP LRFR (ver. 1.0).xlsx is used to compute the federal and legal rating factors and MDOT Overload Class for CMP structures via Load and Resistance Factor Rating (LRFR) Method.

MDOT CMP LRFR modified minimum cover (ver. 1.0).xlsx

MDOT CMP LRFR (ver. 1.0).xlsx can be used to compute the federal and legal rating factors and MDOT Overload Class for structures via LRFR for situations where minimum cover controls the rating. This spreadsheet includes an alternate calculation method for structures that do not meet LRFD minimum cover requirements.

MDOT CMP LRFR SAD (ver. 1.0).pdf

MDOT CMP SAD (ver. 1.0).pdf includes detailed documentation of all of the input and output values contained within the two LRFR spreadsheets as well as an explanation of the assumptions and limitations of the formulas contained within the sheets.