

SUBJECT: ENG - Use of Win-TR55 within Wisconsin

Date: November 12, 2010

TO: NRCS Engineering Staff
DATCP Engineering Staff
All Service Centers

File Code: 210-18

This rescinds the Memorandum with the same subject, dated January 8, 2004, in which it was recommended that WinTR-55 not be used in Wisconsin. The WinTR-55 program is now **released with recommendations and cautions** for its use in Wisconsin. The WinTR-55 computer program was developed to replace TR-55 (Technical Release 55 - Urban Hydrology for Small Watersheds). The current version (1.00.09) of the program, the latest version of the User Guide, and other support materials are available for download at the NRCS Hydraulics and Hydrology website:

http://www.wsi.nrcs.usda.gov/products/W2Q/H&H/Tools_Models/WinTR55.html

There are several important items to consider when using the WinTR-55 program within Wisconsin. First of all, the program limits the length of sheet flow, a component of the time of concentration (T_c), to a maximum of 100 feet. In TR55, the maximum length for sheet flow was 300 feet. Note that the 100 feet maximum sheet flow length is **not** a requirement of NRCS policy. It was a decision made by NRCS at the National level based on typical observed conditions. The rationale used is described in "References on Time of Concentration with Respect to Sheet Flow" (Merkel, 2001) which is included under Support Materials on the NRCS Hydraulics and Hydrology website, given above. A sheet flow length up to a maximum of 300 feet can still be used for T_c calculations. For sheet flow lengths greater than 100 feet, the T_c would need to be calculated outside of the WinTR-55 program and then inputted directly into WinTR-55, in the "Sub-area Entry and Summary" section of the Main Window. This method is recommended in particular for stormwater work where pre-development versus post-development conditions are being modeled, and sheet flow lengths greater than 100 feet need to be modeled. For T_c analysis outside of the WinTR-55 program, it is recommended that the latest TR55 spreadsheet from the WI NRCS website (http://www.wi.nrcs.usda.gov/technical/eng_spreads.html) be used.

Secondly, within the structure portion of the program the hydraulic calculation for an outlet pipe uses a short tube approximation. As stated in the WinTR-55 User Manual, "The short-tube approximation uses an assumption of orifice flow at the pipe outlet... Full-pipe flow may or may not occur, but the condition is never checked by the program." Also, stated in the manual "... WinTR-55 should not be used for structural analysis. Other routing software, such as SITES (Version 2005.02), is necessary to analyze these cases." Therefore, the structure portion of the WinTR-55 program is **not** to be used for design or analysis purposes.

Please forward copies of this memo to partner agencies, municipalities and private engineering firms, as appropriate, within your County(ies).

If you have questions or comments regarding the use of WinTR-55 within Wisconsin, please call Annette Humpal, Hydraulic Engineer, at (920) 733-1575, extension 119.

A handwritten signature in cursive script that reads "John R. Ramsden". The signature is written in black ink and is positioned above the printed name.

JOHN R. RAMSDEN, P.E.
State Conservation Engineer