

# Mn/DOT WHITETOPPING DESIGN

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## Design Method

This design procedure is based on current Mn/DOT design methods for asphalt and concrete pavement. The major modifications include an adjustment for the in-situ R-value based on the in-place flexible pavement structure and several choices for the whitetopping design life.

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## Getting Started

Prior to opening the MnDOT WT design.xls, ensure that the following are set in Excel:

- go to **TOOLS – ADD-INS** and select “Analysis Toolpak”. Hit **OK**.
- go to **TOOLS – MACRO – SECURITY** – and select “Medium”. Hit **OK**.

Close Excel and open the MnDOT WT design.xls spreadsheet and enable macros.

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## Required Information (highlighted yellow)

### “ESAL Forecast” worksheet

- 1) Base Year (i.e., opening to traffic):  
Enter the year that the project will open to traffic. Please note that the year must be entered as **2006** and not 06.
- 2) Number of lanes (both directions):  
Enter **2, 4, or 6** (i.e., a design lane factor of 50%, 45%, or 35%, respectively).
- 3) Historical AADT:  
Enter two to four years of historical AADT data. Please note that the year must be entered as **1996** and not 96.
- 4) Vehicle Classification:  
If a forecast was done for the project using MnESAL, use that vehicle classification data. If not, select one of the three default values, but use caution, as an error in vehicle classification could drastically change the design recommendations.

### “DESIGN” worksheet

- 1) 20-year design lane BESALs:  
Value determined on the “ESAL Forecast” worksheet.
- 2) In-situ R-value:  
Enter the soil R-value that would be used with a typical design procedure.
- 3) Thickness of in-place asphalt:  
Enter the total asphalt thickness.
- 4) Condition of in-place asphalt (@ cracks):  
Use engineering judgment to determine the condition: **excellent, good, average, or poor**.
- 5) Thickness of in-place aggregate base:  
Enter the total thickness of the aggregate base.
- 6) Thickness of in-place granular material:  
Enter the total thickness of the granular sub-base.
- 7) Design Life:  
Select the whitetopping design life: **15, 20, 25, 30, or 35** years.
- 8) Load Transfer, J:  
Select the load transfer coefficient: **3.2** for non-protected edge (12’ lane width) or **2.6** for protected edge (13’+ lane width, tied PCC shoulder, or PCC curb & gutter).