

RoadSoft RoundUp

December, 2010 Vol. 10, No. 4

Do you have a question?
Call Technical Support at (906) 487-2102

"RoadSoft continues to advance the asset management capability by allowing users to develop more representative deterioration curves. Users can more confidently model scenarios by using historical rating data from their own agency or region."

Douglas Mills, Baraga CRC

Pavement Deterioration Curves

RoadSoft's pavement deterioration curves predict pavement deterioration over time. Using both idealized PASER deterioration information and your own PASER ratings, RoadSoft generates deterioration curves that provide you with detailed pavement performance data. This data includes the pavement's critical distress point (CDP) which is the point at which the pavement will require reconstruction or structural rehabilitation, as well as the pavement's remaining service life (RSL) which is the number of years it will take the pavement to reach its CDP (assuming no maintenance is performed).

Pavement Management

Being able to predict how your pavement will perform in the future can be extremely valuable when it comes to making the most of your resources. For example, the "Mix of Fixes" approach of "applying the right fix, in the right place, at the right time" is an effective pavement management strategy, yet it requires that you know when that "right time" actually is: this is where RoadSoft's deterioration curve modeling can help you. By understanding how your pavement will perform in the future, you can better determine when treatments should take place, then use that information to decide what the most effective treatment will be at that given time. This knowledge allows you to maximize the use of your preventative maintenance budget, and can ultimately prevent costly future repairs and/or reconstructions due to unforeseen pavement failures.

The Original Method

When deterioration curve modeling was first added to RoadSoft in 1999, pavement condition data was collected infrequently due to high collection costs, so users didn't have as much data then as they do today. To overcome this lack of data, the deterioration model relied on generating three estimated points that would represent idealized pavement deterioration. These estimated points would help supplement actual user data when data was scarce, but made it difficult to model pavements that did not perform as expected. As data collection processes improved (through the use of global positioning system (GPS) data in the Laptop Data Collector) users began collecting more data

quicker, and at lower costs. Today, RoadSoft users tend to have multiple PASER ratings for a single road, making the original estimated points less useful. In some cases, especially those where pavement is not deteriorating as expected, the estimated points can weigh the data causing less confident projections of deterioration. "Folks were seeing that the generated curve (the base curve) was not matching actual data very well because the estimated points were moving the curve, so we were asked to remove the estimated points," says RoadSoft software engineer Mike Pionke.

The New Method

A new method for generating deterioration curves that doesn't require the use of estimated points was created and added to RoadSoft in late 2008. The old method (default) was not removed from RoadSoft, so users can easily toggle between using the old method and the new method. The new method is a straight curve fitting routine that uses only actual data. Side-by-side comparisons of the old and new methods reveal that the new method provides a more accurate representation of deterioration in almost all instances. In addition to better fitting deterioration curves, the new method calculates RSL much more efficiently, thus reducing calculation times for large jurisdictions. You'll also notice that unlike the old method, the new method automatically infers a treatment was made when you enter a PASER rating of 10.

Making the Switch

Ready to try the new method? If you're not already using the new method and your noticing that some of your data isn't fitting the deterioration curve as it should, you may want to try using the new method. Remember, you can always go back to using the old method if you prefer. To switch between methods, select Pavement Management from the Asset Management menu in RoadSoft, then select Change Deterioration Curve Method.

The Center for Technology & Training at Michigan Technological University publishes *RoadSoft RoundUp* four times a year. To obtain permission to reprint any articles or graphics from *RoadSoft RoundUp*, please contact the editor at the address shown below. Subscriptions are available by contacting CTT. © Copyright 2010 Michigan Technological University.

Director: Tim Colling, P.E., Ph.D. **Civil Engineer:** John Kiefer, P.E.
Project Leader: Gary Schlaff **Software Engineers:** Nick Koszykowski,
Luke Peterson, Mike Pionke, Nancy Moore, Mary Crane, Chris Pinnow,
Jeff Johnson **Programmer Analyst:** Jason Poll **Editor:** Enneesa Ewing
Intern: Trevor Kuehl

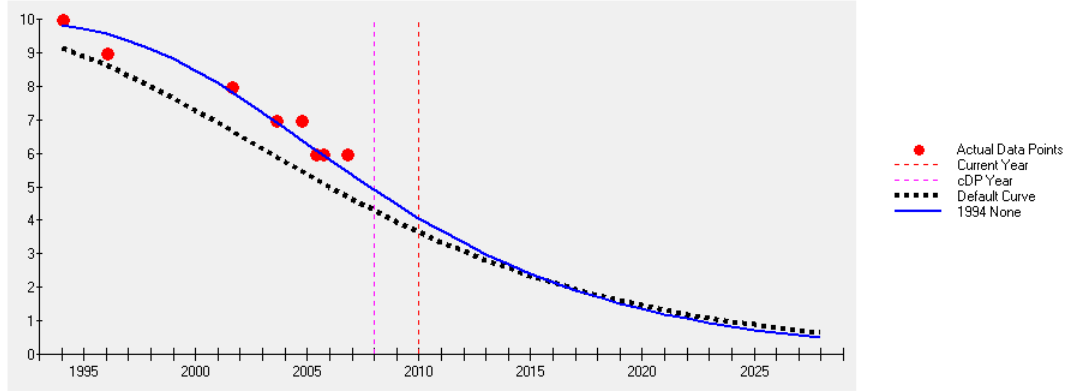
Center for Technology & Training
Michigan Technological University
309 Dillman Hall
1400 Townsend Dr.
Houghton, MI 49931-1295

Telephone (906) 487-2102
Fax (906) 487-3409
E-mail RoadSoft@mtu.edu
Web www.RoadSoft.org

*RoadSoft RoundUp Volume 10, Number 4
3,133 copies mailed this edition*

RoadSoft Pavement Deterioration Curve (New Method)

Using their collected PASER data, RoadSoft users can obtain reliable projections of their pavement's future deterioration using deterioration curve modeling in the road module.



U.S. Department of Transportation
Federal Highway Administration



Published in cooperation with
MDOT
Michigan Department of Transportation

Center for Technology & Training
Michigan Technological University
309 Dillman Hall
1400 Townsend Drive
Houghton, MI 49931-1295
906-487-2102

