



Asphalt Pavement Supports Minnesota Traffic!

The Minnesota Asphalt Pavement Association (MAPA) commissioned ERES Consultants to evaluate the performance history of the Minnesota Department of Transportation (Mn/DOT) highway system, including both Asphalt pavement and Portland cement concrete (PCC) pavements based on Mn/DOT's pavement performance database. See MAPA website at www.asphaltisbest.com for "Summary of Minnesota Research Findings." The reports are complete and the results are interesting indeed.

ASPHALT PAVEMENTS

- Full-depth asphalt pavements have service lives similar to asphalt pavement using aggregate base.
- Asphalt pavements have average service lives of approximately 18 years. The data indicates that pavements constructed in recent years are performing better, showing the benefits of improved design and quality control techniques.
- Asphalt pavements are indeed "PERPETUAL PAVEMENTS." Performance data shows asphalt pavements lasting 60 years with only periodic asphalt overlays.

PCC PAVEMENTS

- Fifty percent of PCC pavements are either overlaid with asphalt or otherwise removed from service by the time they reach 20 years of age.
- Of the remaining fifty percent of PCC pavements, over 50 percent receive major repair work within the first 20 years.
- Mn/DOT's Pavement Management System (PMS) data shows no increase in performance of PCC pavements with time as measured by Present Serviceability Rating (PSR).

Did you know that over the last 25 years, prior to Gyrotory design and Performance Graded (PG) asphalt, the occurrence of some of the common asphalt distresses have been greatly reduced, or have essentially disappeared in asphalt pavements. Based on the Mn/DOT pavement management data, raveling and alligator cracking occur at a much lower rate on pavements that have been constructed in recent years. These changes in pavement performance were recognized during a series of studies on Minnesota pavement life and performance that was conducted by ERES Consultants. Mn/DOT provided the data for the study from their pavement management system and also provided project review by their pavement engineers.

A recent review of this data has revealed the following additional asphalt performance facts:

- Raveling has been very rare since 1983.
- Alligator cracking, also called fatigue cracking, became quite rare in pavements constructed since the early 1980's.
- There has been a significant decrease in the deterioration that occurs at the transverse crack and the occurrence of high severity transverse cracks diminished during the 1980's.
- The occurrence of multiple cracking is much lower for pavements constructed in the 1980's than pavements constructed in the 1970's, and even lower yet for pavements constructed in the 1990's.

Further reduction of these distresses has led to an improvement in the overall surface condition of asphalt pavements here in Minnesota. Probable reasons for the improvement can be traced to changes that have occurred in materials, mix design and placement along with Quality Management (QM) that began in the 1980's that have all had a positive impact on the performance of asphalt pavement in the last 25 years.

The positive gross effect of QM, PG asphalts, Gyrotory design, preventive maintenance, and long lasting pavement design strategies on asphalt pavement performance and lower life cycle cost will continue to be analyzed as data continues to be collected.

In putting forth a scenario for performance life, it is important that the agency refer to its past experiences with different pavement types. There are a number of studies that document asphalt pavement performance in terms of time to first overlay and the timing of subsequent overlays. The following table presents the results of some of these. Contact MAPA for more information.

Table 1. Asphalt Pavement Performance Data

State	Time to 1 st Overlay (Years)	Time between 1 st and 2 nd Overlay (Years)
Florida**	14	14
Kansas	10*	17
Minnesota***	15.5/18	15
Ohio	17	13
Ontario**	19	12
Washington	12.5	11.5
Wisconsin**	18	Project Specific
Long-Term Pavement Program (National)	12	N/A 15

* Planned stage construction.

** Performance times used in pavement type selection.

*** Most common age of an overlay is 18 (20-year design).

With new, well-engineered asphalt pavement technologies and improved quality control practices, the service life of asphalt pavement is the better pavement to the public road agencies and taxpayer patrons they serve!

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