

FACTORS INFLUENCING PERFORMANCE

Pavement Performance Factors

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- ▶ Pavement type and material properties
- ▶ Traffic weight and volumes
- ▶ Environmental factors
- ▶ Quality of underlying materials
- ▶ Maintenance frequency
- ▶ Construction quality

Pavement condition declines over time due to exposure to traffic and weather. Traffic is the most influential factor in pavement performance in Kentucky, which is why KYTC currently factors traffic volumes and loadings into treatment selection and timing decisions.

Pavement structural design is another significant factor that drives performance. KYTC's Interstate and Parkway pavements are designed following engineering standards for structural capacity and include features such as subsurface drainage to maximize service life. Other pavement systems, such as the MP system, contain many pavements that were originally trails and gravel roads, but were later converted to paved asphalt surfaces. Over time, these pavements have been resurfaced multiple times and may have received surface drainage improvements. Even with these treatments, they are not considered full depth, engineered pavement structures.

Managing the MP system pavements is a challenge since many of these roads were originally trails and gravel roads rather than designed pavement structures.

A key to managing pavement effectively is the ability to accurately forecast changes in condition over time. KYTC has been collecting pavement performance data since 1999 and has developed deterioration models based on this data. These models are implemented in the pavement management system and used to predict future conditions under different treatment and budget scenarios.

Bridge Performance Factors

The average age of KYTC's bridges is 49.33 years, nearly 14% older than the national average of 43 years⁵. The advanced age of its bridges is one of the primary challenges facing KYTC today. Figure 3-6 shows the age profile for the state-owned highway bridges, with approximately 51% of these bridges built before the early 1970s. The major spike in activity during the late 1950s through the 1960s represents the construction of the Interstate system, which also included the structural enhancement of much of the non-Interstate system. This activity began to taper off in the 1970s as much of the rural Interstate system was completed. Several gaps in the Interstate system were completed through the mid-1980s.

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⁵ 2017 Infrastructure Report Card, American Society of Civil Engineers. www.infrastructurereportcard.org, Accessed on Oct 9, 2017.