

Pavement Preservation as a Network Maintenance Strategy

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Maintenance of pavement network in an optimal condition has increasingly been becoming a necessity for various agencies. Individual pavement sections within a network are at different condition levels and require several different types of appropriate Maintenance and Rehabilitation (M&R) treatments. If the availability of funding for the maintenance of the network is not a concern, plausibly every pavement section needing a treatment could be provided with the treatment. In reality rarely there is enough funding to cover the maintenance needs of an entire network, and most of the times the available funding can sufficiently address only a portion of the M&R needs of a network.

To use the limited funds in a cost-effective manner, various types of strategies and analysis procedures are adopted. As a strategy for network maintenance, a mix of fixes that includes pavement preservation, i.e., a spectrum of treatments ranging from lighter types such as preventive maintenance to heavier types such as reconstruction is adopted. Pavement preservation represents a proactive approach in maintaining pavements that reduces expensive heavier treatments and associated traffic disruptions while providing increased mobility and reduced congestion. Based on the existing structural and functional condition of pavements, there are windows of opportunity when particular types of treatments would be suitable. Established pavement management systems answer the questions of when, where, and what regarding the treatment types to be provided for various pavement sections. This makes it all the more important to not just address the worst sections but to use mix-of-fixes as a network level maintenance strategy. The lighter preventive type of treatments can be provided to those sections that are lightly distressed and require only functional conditions to be addressed while the heavier treatment types are to be provided for pavements that are heavily distressed requiring some kind of structural condition to be addressed. The lighter types of treatments are more economical on per unit basis and therefore can cover a larger portion of the network with a given amount of funding or a portion of that funding. Application of these lighter treatments to appropriate sections retards their deterioration into condition states needing costlier heavier treatments.

Heavier treatments are necessary to address heavily distressed pavements that cannot be properly addressed with lighter treatments. With a given funding level it may not be possible to address all the pavements in the network that need heavier treatments within one year. These sections need to be addressed over multiple years while other sections are provided with other appropriate treatments as a part of the network maintenance strategy. It is well recognized that using treatments as band-aids, wherein a lighter treatment is used as a temporary measure till the needed heavier treatment is applied, is not a part of pavement preservation strategy. It is also to be noted that providing heavier treatments are not cost-effective on sections requiring lighter treatments. On the other hand, providing lighter treatments are ineffective for sections when heavier treatments are warranted. This leads to a reemphasis of providing the right treatment to the right section at the right time for the optimal maintenance of a pavement network.