

# Experimental Subgrade Treatments, U. S. Highway 30

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## SYNOPSIS\*

This report covers a study of the effect of various subgrade treatments on the performance of a heavily traveled, concrete pavement constructed on plastic, silty-clay soils.

One of the many problems facing the designers of concrete pavements today is the selection of the proper base or subgrade to aid the pavement in withstanding the volume and weight of modern traffic. With this in mind, the State Highway Commission of Indiana, during the construction of U. S. Highway No. 30 in 1937, installed seven test sections with differently treated subgrades. Many structural failures have developed on this highway. A study of these failures offers a means of evaluating the effect of the various subgrade treatments on the pavement performance by comparison with the untreated portions. Aerial strip maps were used as one means of evaluating pavement performance.

The performance data obtained indicate that six of the subgrade treatments improved the concrete pavement performance. Granular base courses contributed the most to improvement of the pavement performance, the result of their use being a pavement of nearly as good riding quality today as at the time of construction nine years ago. The mixing of bituminous materials with the fine-grained subgrade soil improved the pavement performance, but not as effectively as did the granular base courses. No significant difference was readily apparent in the pavement performance on the bituminous-treated sections, although all three treatments improved the performance in comparison to untreated sections. The mixing of limestone dust with the fine-grained subgrade soil also improved the pavement performance. Saturating the subgrade with water proved to be detrimental to the pavement performance.

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\* Reprints of the complete paper, appearing in the *Highway Research Board Proceedings*, 1946, may be secured from the Joint Highway Research Project, Purdue University. Since it has been printed elsewhere, we are omitting it here in the interest of economy.