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MIXTURE DESIGN METHODS FOR EMULSION TREATED BASES AND SURFACES

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Mixture Design Methods for Emulsion Treated Bases and Surfaces

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Emulsion stabilized aggregates have become a viable paving material. To date the use of this material for base courses has been limited mainly to the west and midwest; however, shortages of high quality aggregates together with certain economic and energy considerations make the use of emulsion in Texas appear appealing.

A brief review of emulsion mix design methods indicates that several methods exist but only a few have criteria which allow the engineer to select the optimum emulsion content. Most of these current methods are based on the use of the Hveem stabilometer and the Marshall apparatus. Criteria for the most part have been developed without the benefit of long term field performance information.

The report summarized in these pages describes a laboratory testing program that was undertaken to establish an emulsion mix design method suitable for use by the Texas State Department of Highways and Public Transportation. This program was established to correlate existing Chevron and Asphalt Institute testing methods with testing methods currently utilized in Texas. For example, the method of compaction commonly utilized in Texas is gyratory as compared to the kneading compaction used in the Chevron and Asphalt Institute procedures. Thus, if the Chevron and Asphalt Institute criteria are to be utilized, a suitable criterion has to be established.

Based on the laboratory study a mix design method has been suggested which allows the engineer to select the optimum emulsion content as well as determine the thickness of the layer in a pavement section. In addition several aggregates have been identified which are suitable for use as base courses. The districts in which these materials are located are encouraged to make use of this economical material as a base course in order that field performance information can be obtained.

The published version of the report may be obtained by addressing your requests as follows:

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