World Academy of Science, Engineering and Technology
International Journal of Civil and Architectural Engineering
Vol:12, No:01, 2018

Measurement of Asphalt Pavement Temperature to Find out the Proper Asphalt Binder Performance Grade to the Asphalt Mixtures in Southern Desert of Libya

Authors : Khlifa El Atrash, Gabriel Assaf

Abstract : Most developing countries use volumetric analysis in designing asphalt mixtures, which can also be upgraded in hot arid weather. However, in order to be effective, it should include many important aspects which are materials, environment, and method of construction. The overall intent of the work reported in this study is to test different asphalt mixtures while taking into consideration the environment, type and source of material, tools, equipment, and the construction method. In this study, several tests were conducted on many samples that were carefully prepared under the expected traffic loads and temperatures in a dry hot climate. Several asphalt concrete mixtures were designed using two different binders. These mixtures were analyzed under two types of tests - Complex Modulus and Rutting test - to evaluate the hot mix asphalt properties under the represented temperatures and traffic load in Libya. These factors play an important role to improve the pavement performances in a hot climate weather based on the properties of the asphalt mixture, climate, and traffic load. This research summarized some recommendations for making asphalt mixtures used in hot dry areas. Such asphalt mixtures should use asphalt binder which is less affected by pavement temperature change and traffic load. The properties of the mixture, such as durability, deformation, air voids and performance, largely depend on the type of materials, environment, and mixing method. These properties, in turn, affect the pavement performance. Therefore, this study is aimed to develop a method for designing an asphalt mixture that takes into account field loading, various stresses, and temperature spectrums.

Keywords : volumetric analysis, pavement performances, hot climate, asphalt mixture, traffic load
Conference Title : ICTPE 2018 : International Conference on Trends in Pavement Engineering
Conference Location : Amsterdam, Netherlands
Conference Dates : January 22-23, 2018