Determination of the Optimum Binder Content of Hot Mix Asphalt Using Superpave Mix Design Method

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Abstract:

The selection of appropriate asphalt content is crucial for the design and construction of durable, long-lasting asphalt pavements. The Superpave mix design method has gained significant recognition and acceptance due to its ability to account for various factors affecting asphalt pavement performance. This study focused on utilizing the Superpave mix design method to determine the optimum asphalt content for asphalt mixtures. The research methodology involved a comprehensive laboratory investigation employing a series of tests and analyses to ensure compliance with Superpave specifications. Various asphalt content levels were considered, and the corresponding volumetric properties were evaluated. The Superpave mix design method was then used to assess the performance characteristics of the asphalt mixtures at different asphalt content levels. These performance characteristics included rutting resistance, fatigue cracking resistance and moisture susceptibility. The results of this analysis allowed the researchers to identify the asphalt content that achieved the optimal balance between these performance properties. In conclusion, this research highlights the benefits of utilizing the Superpave mix design method in determining the optimum asphalt content for asphalt mixtures. The findings provide valuable insights for the asphalt industry, supporting the design and construction of long-lasting, resilient infrastructure.

Keywords:

Superpave. Optimum Asphalt Content. Hot Mix Asphalt. Moisture Susceptibility. Indirect Tensile Strength.