

Use Of Cold In-Place Asphalt Mixtures Technique In Road Maintenance In Egypt

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Abstract : The main purpose of this research is to assess the effectiveness of the Cold In-Place Recycling (CIR) technique in asphalt maintenance by analyzing performance outcomes. To achieve this, fifteen CIR mixtures were prepared using slow-setting emulsified asphalt as the recycling agent, with percentages ranging from 2% to 4% in 0.5% increments. Additionally, pure water was incorporated in percentages ranging from 2% to 4% in 1% increments, and Portland cement was added at a constant content of 1%. The components were mixed at room temperature and subsequently compacted using a gyratory compactor with 150 gyrations. Prior to testing, the samples underwent a two-stage treatment process: initially, they were placed in an oven at 60°C for 48 hours, followed by a 24-hour period of air curing. The Hamburg wheel tracking test was performed to evaluate the samples' resistance to rutting. Additionally, the Indirect Tensile Strength (ITS) test and the Semi-Circular Beam (SCB) test were conducted to assess their resistance to cracking. Upon analyzing the test results, it was observed that the samples' resistance to rutting decreased with higher asphalt and moisture content. In contrast, ITS and SCB tests revealed that the samples' resistance to cracking initially increased with higher asphalt and moisture content, peaking at a certain point, and then decreased, forming a bell-curve pattern.

Keywords : cold in-place, indirect tensile strength, recycling, emulsified asphalt, semi-circular beam

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