

Development of Recycled-Modified Asphalt Using Basalt Aggregate

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Abstract : With the strengthened regulation on the mandatory use of recycled aggregate, development of construction materials using recycled aggregate has recently increased. This study aimed to secure the performance of asphalt concrete mixture by developing recycled-modified asphalt using recycled basalt aggregate from the Jeju area. The strength of the basalt aggregate from the Jeju area used in this study was similar to that of general aggregate, while the specific surface area was larger due to the development of pores. Modified asphalt was developed using a general aggregate-recycled aggregate ratio of 7:3, and the results indicated that the Marshall stability increased by 27% compared to that of asphalt concrete mixture using only general aggregate, and the flow values showed similar levels. Also, the indirect tensile strength increased by 79%, and the toughness increased by more than 100%. In addition, the TSR for examining moisture resistance was 0.95 indicating that the reduction in the indirect tensile strength due to moisture was very low (5% level), and the developed recycled-modified asphalt could satisfy all the quality standards of asphalt concrete mixture.

Keywords : asphalt concrete mixture, performance grade, recycled basalt aggregate, recycled-modified asphalt

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