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Incorporation of Foundry Sand in Asphalt Pavement

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Abstract : With the growing need to save natural resources and value waste that was previously worthless, waste recycling becomes imperative. Thus, with the techno-scientific growth and in the perspective of sustainability, it is observed that waste has the potential to replace significant percentages of materials considered “virgin”. An example is the replacement of crushed aggregates with foundry sand. In this work, a mix design study of two asphalt mixes, a base mix (AC 20) and a surface mix (AC14) was carried out to evaluate the maximum amount of foundry sand residue that could be used. Water sensitivity tests were performed to evaluate the mechanical behavior of these mixtures. For the superficial mixture with foundry sand (AC14FS), the maximum of sand used was 5%, with satisfactory results of sensitivity to water. In the base mixture with sand (AC20FS), the maximum of sand used was 12%, which had less satisfactory results. However, from an environmental point of view, the re-incorporation of this residue in the pavement is beneficial because it prevents it from being deposited in landfills.

Keywords : foundry sand, hot mix asphalt, industrial waste, waste valorization, sustainability
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