Review of: "Effective use of Waste Materials: A Case Study of Utilization of Fly Ash in Flexible Pavement Structures"

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Potential competing interests: No potential competing interests to declare.

Effective use of Waste Materials: A Case Study of Utilization of Fly Ash in Flexible Pavement Structures

Major Comments: The authors have done a vast literature survey. The use of fly ash in asphalt concrete and soil has been concentrated. A lot of research is ongoing for the use of said waste material. However, it is difficult to generalize the usage of a material like fly ash, which has varying characteristics from different sources, to enhance the properties of other materials like soil, which have vast varying properties by origin. Therefore, proper modifications can be made in the conclusions and abstract. Also, a grammar check is recommended. Otherwise, this paper has a good write-up.

Detailed Comments

Abstract

Graphical Abstract

Comment: Title for graphical abstract is missing. In the Tree of Flexible Pavement, the term "fly ash" is to be incorporated. In stabilization, whether the use of fly ash increases or decreases moisture requirements?

In Future Research, is it ‘Standardization of fly ash,’ ‘Standardization of fly ash usage,’ or ‘Standardization of fly ash dosage’?

Introduction

Properties of Fly Ash.

In Table 1, how are the exact compositions of various compounds obtained? Is it from tests conducted on materials pertaining to this work?

Applications of Fly Ash.

Rewrite this sentence ‘A review of the current literature shows that review efforts have already been undertaken successfully with regards to the use of fly ash in concrete structures which show clear and solid conclusions.’

Statement: However, there is a need to extend the current literature to the use of fly ash in pavement structures, which is an important part of national infrastructure.

Comment: In recent years, both types of fly ash are partially and effectively used in road constructions. This statement is contradictory.

Statement: Moreover, pavements have different load applications, support, and exposure mechanisms, so the findings of the review from concrete structures cannot be applied to them directly.

Comment: Even with these various parameters used for designing pavements, the tests for the suitability of the partial use of fly ash have been effectively studied by various researchers in the recent past. And designing layers of pavement is not done based on data relevant to concrete structures. Justify this statement.

Use of Fly Ash in Asphalt Concrete

Statement: Hence, it has been a subject of study for many researchers.

Comment: Check grammar.

Statement: Asi and Assa'ad [27]…

Comment: They based their results on? Correct the writing language.

The use of words 'he/she/they,' etc., is to be avoided in the manuscript.

Statement: Al-Osta et al. [37] studied the effects of heavy fuel on asphalt concrete as a mineral filler as well as binder replacement.

Comment: Check the correctness of this statement. And check relevant literature in the paragraph.

Comment: Correct the sentence 'Santos et al. [69]… They found that the addition of fly ash increased the water content at optimum moisture content, while the dry density and permeability decreased.'

Comment: Correct the sentence "With regards to the use of fly with organic soils, Tastan et al. [81]…..

Statement: The advantages for the use of fly ash as a replacement for asphalt are inconclusive, and further investigations will be required before its use can be recommended.

Comment: This statement is related to which material? After going through so much literature review, how can you state that 'the advantages of fly ash are inconclusive?'

Statement: Another potential area of research is the standardization of fly ash, in terms of contents and compositions, for use in different layers of pavement. This will enable the generalization of trends from different studies.

Comment: How can a material having varying properties be generalized for mixing with a soil or preparing an asphalt concrete with vast varying characteristics?