

# 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.

The paper deals with utilization of fly ash in pavement construction. The topic of the paper is worthy. However, the manuscript has many weaknesses that need improvement before publication. Therefore, according to the following suggestions, minor revisions should be provided in the paper before potential publication.

## Comments on the Abstract section

You can consider adding a better graphical abstract to ease the readability of the article. Also, the objectives and scope of the review were not specified. The authors should shed light on the methodology used in the review as well as give the finding percentage of the results and give the implication of the study in one sentence at the end of the abstract.

## Comments on the Introduction section

1. The introduction section needs to be restructured to describe the research gap clearly and how and what you are doing will extend the current state of the art.
2. Make it clear why this work is needed and significant by extending the research significance section.
3. Also, the author needs to present a more cogent argument for doing the research in the introduction. Most of the sentences are just reporting what others did, but it is advised to synthesise and critically write what is going on in the literature and give a conclusion to the argument.
4. This work focuses on reviewing fly ash in pavement; the author may need to give a general picture about various available binders and their sustainability in civil engineering applications. A clear reasoning why the author selected fly ash is needed. Also, authors need to describe graphically the chemical composition of fly ash classes used in pavement previously.

## Comments on overall

1. Besides the chemical composition, provide the phase composition of the fly ash that exists in the literature.
2. Authors should generate more tables and figures to compare different studies and what the main elements of these studies were focused on.
3. Argument discussions are needed between the existing studies, and this argument should be concluded by the author's good opinion.
4. The mixes and percentages of fly ash used in various studies on the pavement need to be mentioned and compared in

every aspect.

5. Considering the number of studies used in the review, the authors should mention a boundary time like "This review has considered five years of existing publications on the topic." It is suggested to boost the depth of discussion by comparing the results in more detail to others in the literature.
6. The novelty and the contributions to knowledge are not clear in your results.
7. Please consider improving all figures and fonts.
8. Provide a detailed explanation for the dispersion of the results.
9. Consider regressing models for your results to establish mathematical relationships between the variables considered in this research.
10. Results require adding a more detailed comparison of the current results that exist in the literature.
11. There are plenty of studies on fly ash in pavement. Hence, the article section needs to be improved by adding an in-depth discussion and improving the figures by zooming into the concrete matrix. The author needs to show in every section of the discussion what the contribution of your study is to the body of knowledge.

#### Comments on Conclusion

1. Consider amending the conclusion section as per all the previous comments and state back the importance, objective, conclusion, and contribution of your study.