Response to reviews of the paper entitled:

A Methodological Study on the Design Defending Baffles Based on Mangrove Bionics

Manuscript Number: buildings-2062133

(Research Article)

Reviewer #2: The paper is interesting. But the title and abstract do not match the content. I recommend the change of the title and purpose of the paper. They reflect an objective not achieved with this article. Authors indicate that their result includes "low-carbon and environmentally-friendly baffles Based on Mangrove Bionics" but the data is not calculated or justified; the paper does not include impact analysis for validation.

Response to Reviewer #2:

Above all, we would like to thank you for the specific and constructive comments on this manuscript. These have helped us reexamine our manuscript critically and make the improvements. The title has been modified as: *A Methodological Study on the Design Defending Baffles Based on Mangrove*. The point to point responds to the reviewer's comments are listed as following.

Reviewer #2: There are other incongruous phrases that make us understand another scope for the paper: for example: The current disaster prevention and mitigation engineering design fail to balance aesthetic ornamental and low-carbon environmental method. > Does this paper intend to make only aesthetic proposals? Why talk about disaster prevention if nothing is proposed about it afterwards?

Response: Thanks for the reviewer's comments. The materials used for baffles design is low-carbon comment. The research on the ratio of low carbon cement is a complicated process. Describe no longer about that materials research and structure damage because of space cause. The relevant explanation has been added in the manuscript as follows:

Besides, the traditional design of the baffle group mainly focused on the efficient protection rather than consider both the efficient protection, low-carbon and environmental-friendly concept.

In the actual engineering, the building materials for baffles should be used as low-carbon cement. The material prescription were show in table 6. The development process of low-carbon cement will be listed in our future works rather than in this paper due to the space cause. However, in this study, the baffles were replaced by wall element in EDEM for the convenience of research. The debris flow protective effect was stressed rather than the baffles' impact resistance performance in this study. To emphasize the effective of debris flow protection, the debris flow deposition should be studied specifically rather than the structure impact investigation.

Table 5. The material prescription of low-carbon cement in this design

Additive	Description
Shield residue soil	Liquid limit ≤ 25%, plastic limit ≤ 15%, plasticity index ≤ 10, liquidity index ≤ 1, for high water content of low liquid limit clay
Blast furnace slag	Specific surface area of not less than 0.28 m^2/g, with SiO_2 content ≥ 20% and CaO content ≥ 20%
Steel slag	SiO_2 content ≥ 12% and CaO content ≥ 30%
Magnesium oxide	The activity of magnesium oxide is in 90s~100s
Carbide slag	Powder not less than 200 mesh
Polyacrylamide	Anionic polyacrylamide, molecular weight 8~20 million

Reviewer #2: Furthermore, in study case, the design is mechanically (structurally) analyzed but ultimately the aesthetics are modified, making the FEM analysis invalid.

Response: Thanks for the reviewer's comments. The relevant explanation has been added in the manuscript as follows:

In the actual engineering, the building materials for baffles should be used as low-carbon cement. However, in this study, the baffles were replaced by wall element in EDEM for the convenience of research. The debris flow protective effect was stressed rather than the baffles' impact resistance performance in this study.

Reviewer #2: Review the citation style and references. There are mistakes (example: reference numbre 1)

Response: It has been revised in manuscript.

Reviewer #2: Review the template and style of the magazine. There are mistakes.

Response: It has been modified in manuscript.

We also make some other modification as follows:

The scientific research steps of this paper are as follows (see figure 6): Firstly, literature research is conducted to build the relationship between the mangroves and baffles. Secondly, the Analytic Hierarchy Process method (AHP) is adopted to unveil the key bionics design parameter. Thirdly, the numerical studies are conducted to determine the best case of engineering design. Lastly, the bionics design is conducted to make the baffles more ornamentally aesthetic.

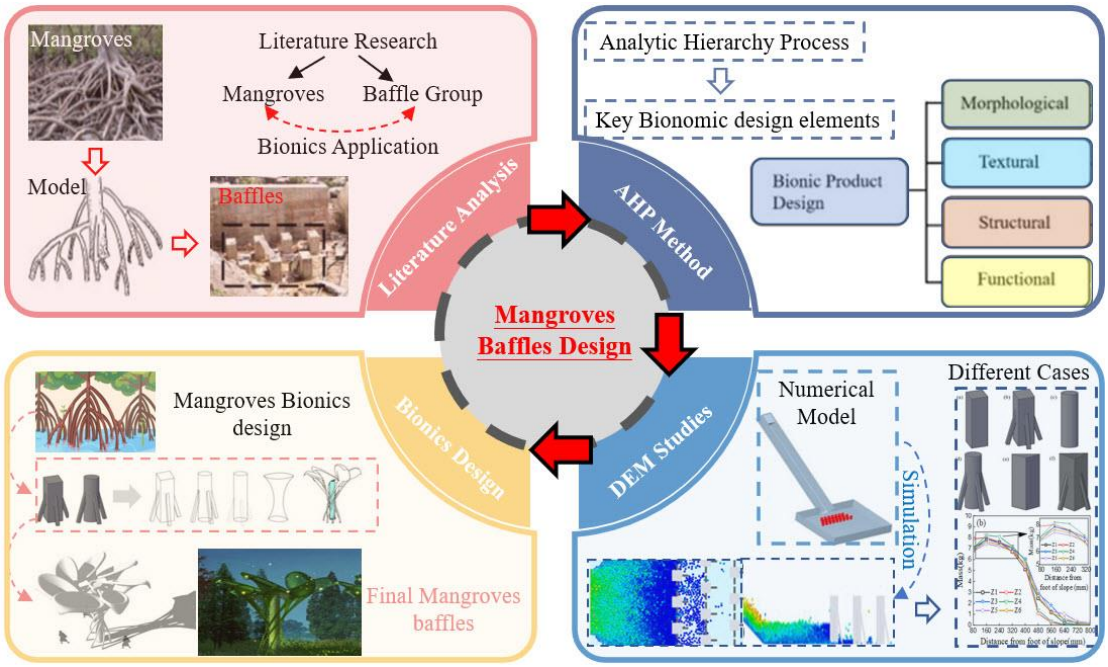


Figure 6. Scientific research steps of this study