Review of: "Future Trends in Ground Improvement: A Review"

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Potential competing interests: No potential competing interests to declare.

Major reviews are necessary

Upon reviewing your manuscript, I was notably impressed by the systematic methodology of your research. However, I suggest that certain areas could be elaborated upon to enhance the clarity and impact of your paper. Specifically, the techniques section could benefit from more comprehensive descriptions, which would assist readers in gaining a complete understanding of your approach. Additionally, incorporating a wider array of supporting references would strengthen the foundation of your arguments and deepen the contextual understanding of your study. Furthermore, I noticed that some parts of the results were presented in a somewhat unclear manner. Clarifying these areas would undoubtedly augment the overall efficacy of your research.

Introduction - pag.2 - lines 7-11: Given the wide range of factors that influence land improvement, what specific technologies or innovations do you see as most promising for addressing environmental concerns and promoting sustainability? Furthermore, what key challenges do you see in integrating these new practices with traditional approaches to land management, and how would you suggest overcoming them to ensure a lasting positive impact?

Sustainable Ground Improvement Techniques - pag.2 - lines 4-8: Considering the importance of cold recycling in Julius Berger's Abuja Kaduna road project, how does the long-term performance of this construction method compare to traditional road construction techniques in terms of durability and maintenance costs? Furthermore, what were the main challenges encountered in adopting this technology in Nigeria, and how were they overcome to ensure the success of the project?

Sustainable Ground Improvement Techniques - pag.2 - line 11: I highly recommend incorporating the following source into your research, as it offers significant relevance and could provide valuable insights pertinent to your study: ”https://doi.org/10.1002/jeq2.20446"

Advanced Material Science - pag.3 - lines 5-7: Given the current limitations of concrete examples on the use of nanomaterials and smart materials in soil improvement, what are the main barriers preventing their large-scale implementation in the civil engineering and construction sector? And how can these challenges be overcome to facilitate wider adoption of these advanced technologies in future projects?

Advanced Material Science - pag.3 - lines 8-10: Given the congruence of your findings with those presented in, I

recommend citing this study in your manuscript. “https://doi.org/10.1016/B978-0-12-818961-0.00011-9”. Doing so would not only enrich your discussion but also provide a more comprehensive understanding of the subject matter to your readers.

Geotechnical Robotics, Advanced Monitoring and Data Analytics - pag.4 - lines 5-7: Considering the significant role that geotechnical robots have played in London's Crossrail project, especially in drilling, ground stabilization, and tunnel inspection activities, what are the main technical and logistical challenges encountered in integrating these advanced technologies into a construction project so complex? And what lessons were learned from this experience that could be applied to future civil engineering projects to further optimize the use of sophisticated robotics and monitoring systems?

Geotechnical Robotics, Advanced Monitoring and Data Analytics - pag.5 - lines 22-25: Given the effectiveness of earthquake early warning systems in reducing potential damage and protecting people, what are the main challenges in developing and integrating these sensitive sensors into dense urban areas? Furthermore, how can the speed and reliability of warning notifications be improved to maximize people's reaction time before the arrival of mainshocks?

Sustainable Earthworks, Risk Assessment and Mitigation - pag.6 - lines 11-15: I suggest referencing the following source as it is highly pertinent to your work: " https://doi.org/10.1016/j.jhydrol.2018.10.074".

Sustainable Earthworks, Risk Assessment and Mitigation - pag.7 - lines 28-31: Considering the importance of sensors and algorithms in predicting landslides, what are the biggest technical and logistical challenges in maintaining the accuracy of these systems in variable environments? Furthermore, how can the reliability of real-time data transmission be improved, especially in remote or difficult-to-access areas, to ensure continuous and timely data collection and analysis?

Education, Workforce Development and International Collaboration - pag.7 - lines 12-15: What are the main challenges and lessons learned in integrating different disciplines such as engineering, environmental conservation, data analysis, and safety protocols into the Thames Tideway Tunnel project? How did the interdisciplinary approach specifically help overcome obstacles to land improvement, and what practices or tools were instrumental in ensuring the effectiveness and sustainability of the proposed solution?

Conclusion - pag.8: Considering the key findings presented, what are the main challenges and barriers to adopting the new trends in land improvement identified by the research? Furthermore, what strategies or approaches would the study suggest to overcome such obstacles, particularly regarding technology integration, management of environmental issues, climate adaptation, regulation, and enhancing international collaboration in the construction sector?