Effects of Nanosilica Particles and Randomly Distributed Fibers on the Ultrasonic Pulse Velocity and Mechanical Properties of Cemented Sand
Conclusion

This research evaluated the impacts of nanosilica particles and randomly distributed fibers on the mechanical properties and ultrasonic pulse velocity of cemented sand. Other limitations linked to cement agent, soil, nanoparticle, and fiber cement were investigated. Further research is still necessary to check if such a result might be spread to other fibers (e.g., nylon, glass, polyester, and polypropylene), nanoparticles (nanoclay, carbon nanotube, nano alumina, nano copper), soils (e.g., silt, loess, and clay), as well as other cement agents, such as lime, cement kiln dust, lime fly ash, gypsum plaster, and calcite cement. The obtained results can be summarized as follows:

• The inclusion of portland cement to the sandy soil increased the secant modules of elasticity and compression strength and changed the sand behavior to a noticeably more brittle behavior.

• Inclusion of randomly distributed fiber causes an increase in the energy absorption capacity and compression strength in the cement-stabilized soil. In addition, the secant modulus of elasticity decreases with increasing fiber content.