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Prediction of specifications for steel tower foundations using non-destructive testing method

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ABSTRACT

As wind speed criteria for steel towers have increased, the load on the foundation of the steel tower has also increased, necessitating reinforcement of the tower foundation. In order to reinforce the foundation of the steel tower, it is necessary to have accurate specifications of the foundation; however, there are steel towers for which foundation specifications are not available due to various reasons. The conventional method of determining foundation specifications through excavation is time-consuming and costly, particularly for steel towers located in hard-to-reach areas where heavy equipment accessibility is limited. In this study, electrical field analysis was utilized as a non-destructive testing method to predict steel tower foundation specifications. The portable testing apparatus was designed for on-site application, making it applicable in situ for the foundation of steel towers. Through on-site application to 2,000 steel towers in Korea, a 92% accuracy rate was achieved. These results provide the data interpretation method and valuable field test results that can further extend the application of electrical field analysis in various fields.

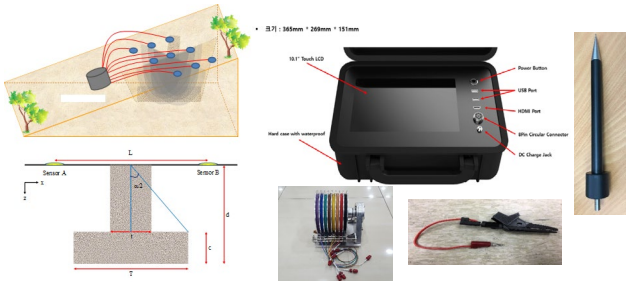

Fig. 1 Theory and exploration equipment

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REFERENCES

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