

# 主 論 文 要 旨

論文題名 A study about the impact evaluation of the noise and the vibration for the large-scale construction

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## 主論文要旨

It is often that the issue of special noise and vibration occurs as for the scaling up of the construction. ①Scaling up of construction machine and increases of operation number. ②Period is prolonged. ③Area affected by the noise and the vibration becomes wide.

The author examined about the prediction method, the evaluation and countermeasures of the noise and the vibration for the large-scale construction, and this thesis consists of the below four kinds of themes.

- (1) The methods for the prediction, evaluation and countermeasures of the noise of a belt conveyor were examined. From these results, the power level of the sound source was established adequately. And, the time patterns of the changing noise to predict the equivalent continuous A-weighted sound pressure level was examined.
- (2) The methods for the prediction and the evaluation of the change noise with the large-sized construction machine were examined. The methods for the prediction model that also considered decay by distance, diffraction, air absorption. By comparing with prediction and measurements of the noise level, a practical prediction was showed.
- (3) This analysis focused on the plane distribution with reduction of vibration by the earth retaining wall based on the evaluation of the measurements of pile driving in soft ground and the simulation at peripheral ground. At the measurement points in front and behind the earth retaining wall the reduction of vibration was simulated. It is clear that the set-up of the earth retaining wall concludes the available countermeasure method for vibration in soft ground although it is limited in the total area to reduce vibration.
- (4) The systematization and the effective evaluation of countermeasure methods for construction vibration in soft ground were confirmed. Regarding the effective evaluation of countermeasure methods on vibration, the results of the full implementation of countermeasure methods for vibrations indicated that communication with local residents is highly effective. An informative diagram of the vibration environment and a database of construction vibration results were created to explain the countermeasure process. The results indicated that it is important to effectively utilize both analog and digital information under the right circumstances.