

Verification of Prediction Method for Thermal Environment in Tunnel by Model Experiment

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For the purpose of improvement of thermal environment in railway tunnels, it is necessary to utilize the mechanical ventilation systems and the cooling equipments for the underground train stations effectively. For the effective use of those equipments, improvement of prediction accuracy of thermal environment in tunnel is required. To verify the accuracy of the current prediction method, we have developed a model experiment system. This experiment system is so designed as to investigate heat transfer in a tunnel and heat conduction in the rock surrounding the tunnel by blowing hot air into a thick pipe made of acrylic plastic. Temperature detectors with high accuracy are put at various position of the experiment system to measure temperature. The differences between the temperatures by the model experiment and that by the calculation are about 1°C and the numerical calculation of the current method is found to have enough accuracy.