

**Development of Prediction Method of Tunnel Deformation  
Using the Time-dependent Ground Deterioration Model**

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Some mountain tunnels suffer from deformation and cracks caused by earth pressure. This deformation might progress along with the time passage for some tunnels. Because of existence of various uncertain factors of such time-dependent deformation and destruction behavior of a mountain tunnel, a maintenance management method has not yet been established currently. In this study, we focused on tunnels deformed due to earth pressure, and tried to apply a numerical analysis to the deformation. As the result of the study, we developed a prediction method of tunnel deformation using the time-dependent ground deterioration model, realized to simulate the behavior of tunnel deformation with time, and showed its applicability to decision of appropriate execution time and kind of countermeasures.