

STUDY ON AN AIR QUALITY PREDICTION SYSTEM FOR ROADWAY TUNNEL PORTALS

K. Nakasaki², K. Horiuchi¹, K. Kobayashi⁵, **S. Okamoto**³, K. Shiozawa⁴

¹*Chiyoda Engineering Consultants Co., Ltd., Tokyo, Japan*

²*Japan Highway Public Corporation, Tokyo, Japan*

³*Tokyo University of Information Sciences, Chiba, Japan*

⁴*Waseda University, Tokyo, Japan*

⁵*Japan Environmental Management Association for Industry, Tokyo, Japan*

Recently, as a concern of environmental impact assessment is increasing, more effective air quality prediction system is also required for highway sections of special structures, such as vicinity to the roadway tunnel portals. The Japan Highway Public Corporation has carried out an extensive five-year study to develop a prediction system for tunnel portals including in-situ experiments. This prediction system consists of a diffusion model, which is a kind of three-dimensional numerical model using Taylor-Galerkin scheme. This model was validated by using the air tracer field experimental data for three different tunnels. This paper describes an overview of the prediction system developed, which is now used in practice. The meteorological preprocessor, traffic and road geographical data manipulation module are also discussed in this paper.