

## **Evaluation of the Total Exposure Reduction Measures during Construction of the Land-side Impermeable Walls Using the Frozen Soil Method**

Kajima Corporation

As a part of the Project for the Contaminated Water Issue at the Fukushima Daiichi Nuclear Power Plant, we at Kajima Corporation are involved in the construction of the land-side impermeable walls using the frozen soil method. This method restricts the inflow of the groundwater into the reactor buildings by continuously freezing the soil for a long period of time.

The construction has been conducted under the following severe conditions:

- Construction area of 1.6 km in length encircling the nuclear reactor buildings and turbine buildings of Units 1 to 4
- High radiation dose rate since no decontamination works have been undertaken here following the accident
- Necessity of coordination with other construction works around the site, leading to reduction of the work efficiency
- Investigation of underground installations along the construction line (1.6 km) in preparation for the borehole drilling
- Unexpected increase of manpower with the increased volume of the construction works due to changes in the construction plan, reaching 200,000 workers in total, which is significantly more than the originally planned number of workers.

Taking into account such conditions, which included several factors that would increase the total exposure dose of the workers, we have undertaken measures to reduce the air dose rate and to shorten working hours by improvement of the construction methods.

This report introduces examples of the exposure reduction measures and the improvement of the construction methods, and evaluates the reduction of the total exposure dose based on a quantitative analysis of the trade-off between “exposure dose” and “prevented potential exposure dose.”

The construction of the impermeable wall is still in progress as a key measure for control of contaminated water at Fukushima Daiichi NPP and we are determined to continue our efforts in reducing the total exposure dose until the wall is completed.