

1. Development of 4D Simulation Systems and On-site Applications

- Productivity Improvements in Construction Work near In-service Railway Facilities -

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An essential issue on work style reform in construction industry is the goal of allowing workers at construction sites to take two days off each week. This goal makes it even more important to control processes as efficiently as possible. By promoting BIM/CIM and i-Construction by MLIT, we focused on the application of 3D data at construction sites which were rapidly expanded and developed a 4D simulation system that links CIM models and process data. We applied the 4D simulation system to two construction sites near in-service railway facilities.

For railway overpass construction projects that include areas above the station building, the process of constructing the work platform above the railway is critical. We performed a detailed examination of this process using 4D simulation. For underground excavations for railway lines, a construction section with a total length of 735 m was divided into 35 blocks, and multiple blocks were constructed simultaneously. To ensure trouble-free work progress, we used 4D simulations, accounting in particular for the interfaces between the construction blocks and processes involving the entire construction area. The resulting data confirmed the effectiveness of the system developed.

Key words: BIM/CIM, i-Construction, 4D simulation, work style reform, process control