

2. Development of Earthworks Management System for Acquiring and Utilizing ICT DATA - Soil Traceability Management System -

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We developed a system that records from what site soil was obtained and filled based on a beacon installed on the backhoe at the soil collection site and a sensor installed on the soil transportation dump truck. At the embankment site, a sensor attached to the dump-up lever detects the operation of the lever during unloading based on changes in tactile pressure and acceleration, at which position information and time are recorded. A 3D earthwork control chart is automatically created by the developed application by associating the sensor data with data of the compaction management system. This eliminates the need for staff to manually manage records related to embankment sites and reduces the number of traceability management personnel required. Attributes information such as construction date and soil quality are automatically added to the created 3D earthwork control chart to allow future confirmation of construction records. We applied this system to an actual construction site and verified its efficacy using 10 dump trucks and rollers equipped with compaction management systems.

Key words: sensor, banking, traceability, ICT earthworks, data utilization