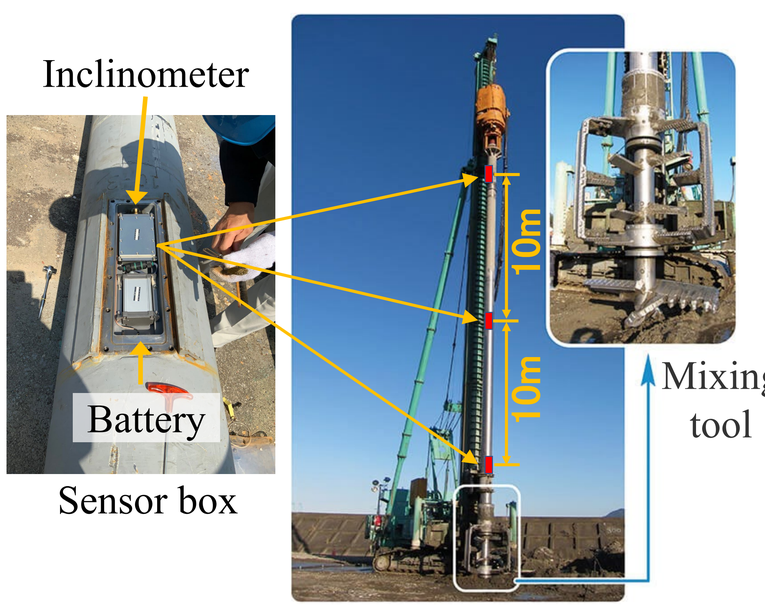
Deep Depth Tip Position Measurement System

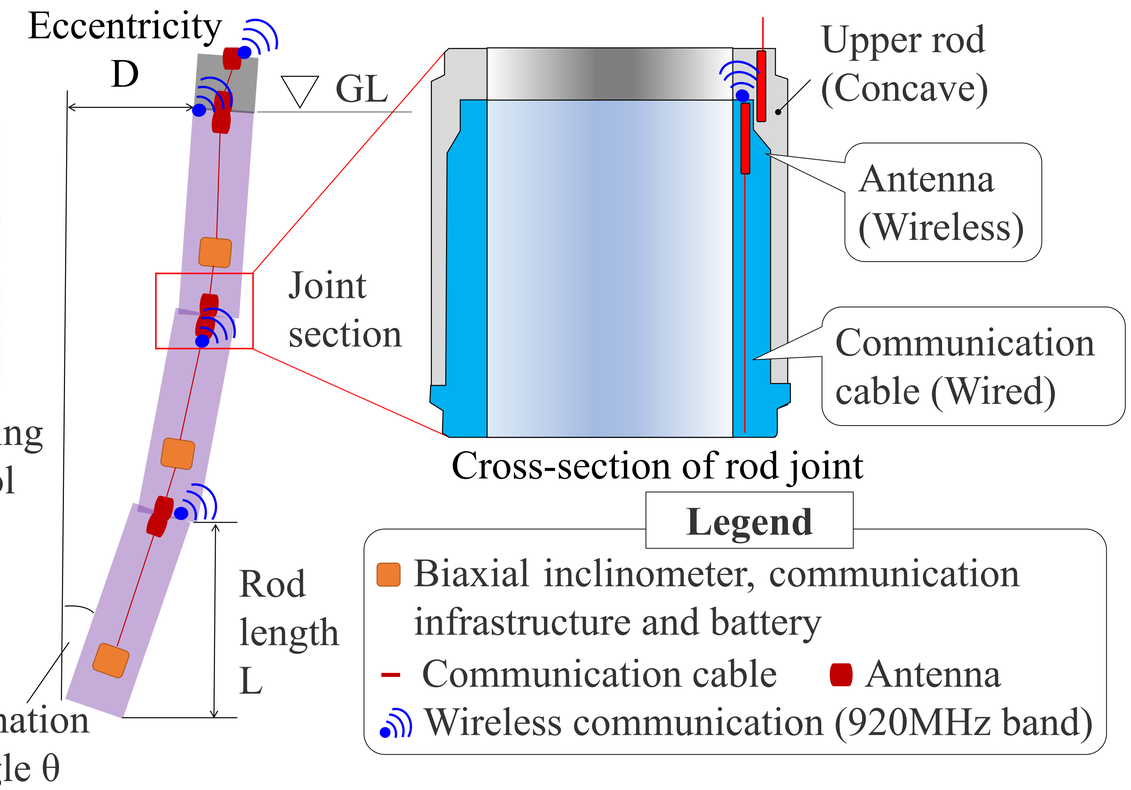
Advanced visualization technology for deep mixing method

Overview of Technology

Targeting the Deep Cement Stabilization method (DCS method), this system provides real-time and precise tracking of the rod tip positions in the ground. It measures the inclination of each rod using a biaxial inclinometer attached to the casing rod, combined with the rod length. The rod joint adopts wireless communication, simplifying the process during rod addition. By applying "multi-hop communication technology" with data relay functions in the measuring devices on each rod, enabling the acquisition of underground rod inclination data at the surface.



Construction machine mounted with the system

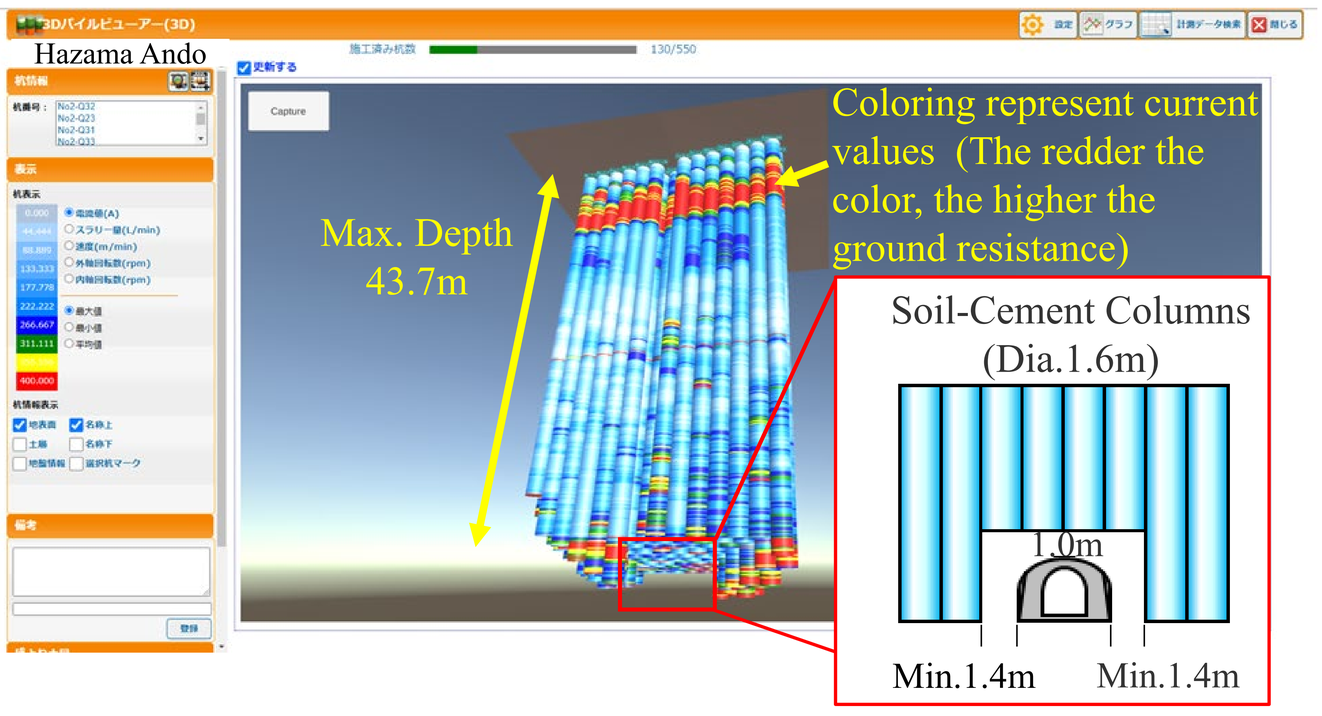


Overview of the system

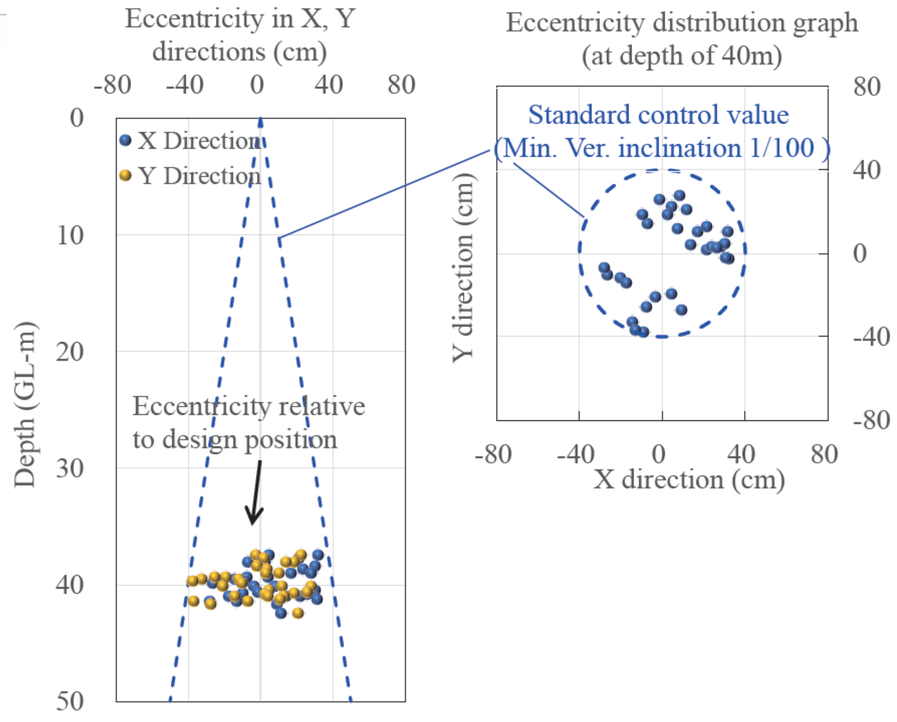
Antenna installation

Effect of Technology

The system was applied to a seismic reinforcement ground improvement project. With a maximum depth of 43.7 meters, the construction required consideration for an existing waterway tunnel at the bottom of soil-cement columns. By integrating our developed construction information visualization system "3D Pile Viewer" with this system, we directly monitored the tip position of the soil-cement columns in real-time, ensuring construction without impacting existing structures.



3D Visualization by 3D Pile Viewer
(When construction near existing waterway tunnel)



Measurement results surrounding existing waterway tunnel

HAZAMA ANDO CORPORATION