

8. Distinction of Shield-Tunnel Face Geology by Vibration of Cutter Bits

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In a sewer tunnel ordered by Yokohama Municipal Sewerage Work, cutter bits were exchanged on the way because the excavating distance is long such as 4,435m. The geology of constructing site composes of hardened silt and loosened sand. It is desirable for us to exchange bits in a good geological condition. So, we had developed a technology in corporation with Yokohama Municipal Sewerage Work to distinguish the face geology by the difference of cutting vibration level between silt and sand. At first we carried out experiments to make clear the difference of cutting vibration and applied the technology in the field. We were able to clarify the geology where the cutter bits were exchanged. At the time, we exchanged the bits used for distinguishing the geology to improve the accuracy of distinguishing geology. Consequently, we were able to distinguish the geology more accurate, for example the result of distinguished geology coincided with the result of boring.

Key words : shield-tunnel, vibration, distinction of face geology