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Microtunneling projects for power-transmission pipes–sharp curves at alignment changes and steep slope

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Microtunneling projects for power-transmission pipes –sharp curves at alignment changes and steep slope

Shinjiro Nakamura[1], Masahiro Yoshimoto[2] and Kazuki Kito[3]

[1] Department of Civil Engineering, TEPCO Power Grid, Inc., Tokyo, Japan
[2] Department of Civil Engineering, TEPCO Power Grid, Inc., Tokyo, Japan
[3] Department of International Business Development Office, TEPCO Power Grid, Inc., Tokyo, Japan

ABSTRACT: The installation design for power-transmission pipes with microtunneling sometimes requires tight curves and steep gradients that are unique to electrical power transmissions. This paper reports some unique projects including an internal casing pipe laying technology, conducted by TEPCO Power Grid.

The alignment design for power transmitting pipes does not need to consider gravity slopes which are typical to sewer designs. Therefore, a combination of tight curves and steep gradient lines can be incorporated. For horizontal alignment designs, tight curves at a street intersection are available too.

As an example of one of the projects of this kind, an installation of 800 mm diameter pipes using mud-slurry microtunneling is given. The driving distance was 170 m, the maximum height difference was 5 m (maximum gradient of 5% and a minimum gradient of 5%), the radius of curvature at the horizontal section was 26m.

When the curvature is very tight and the gradient is steep, blockage of slurry-emitting pipes can be expected. To prevent the blockage, the rate of curvature at the bottom of the path needs to be lowered. By setting a flat section at the bottom, gravels can be avoided from clogging inside the pipes.

In this project, the internal multi-pipe (casing) laying technology was employed for laying four 150 mm diameter pipes into the 800 mm diameter host pipe. The pipes were assembled on the trolley set at the shaft and

the pipes were pulled in together to the host pipe. This technology made possible the long-distance pipe-laying installation, which led to the availability of long microtunneling projects for this purpose, exceeding 500 m in length.