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Development of Long Span Pipe Jacking Method for Laying Underground Pipe

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:

500mm 200mm
(1)
200mm (2)3
(3)
(4)
±40mm

Synopsis :

When it is difficult to use the conventional open-cut method for laying pipe underground, a pipe jacking method is often utilized. In such a case, a longer span is more desirable for actual construction because of the potential cost saving, construction efficiency, minimization of traffic interruption, and other resultant advantages. This paper discusses an improved technique which was implemented by using Komatsu Iron Mole as a basis and by adding thereto several features such as the pipe laying technique utilizing incremental jacking force, reinforced slurry discharge function, improved direction control devices, etc., in a full-scale field test for a distance of a 200-m span employing 500-mm-diameter pipe. The principal results obtained were the following : (1) Long span pipe jacking method was successfully used for a distance of a 200-m straight line. (2) Three types of pipe, namely, double walled pipe, expanded pipe and bare pipe which previously sustained buckling forces were all advanced smoothly through the soil. (3) A procedure for evaluating the main pipe jacking force was confirmed, and brief equations to estimate the maximum jacking force and its probable location were proposed (4) High precision jacking at an accuracy of ±40mm deviation in horizontal as well as vertical directions was achieved.

川崎製鉄技報

埋設鋼管用長距離推進工法の開発*

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要旨


IRONMOLE

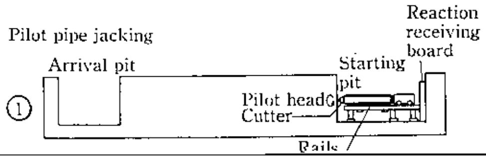
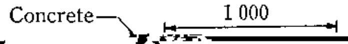

Pilot pipe jacking
①
Arrival pit
Starting pit
Reaction receiving board
Pilot head
Cutter
Rails

Table 2 List of buckling test specimens

Type of pipe	Geometry (mm)	Number
	 Concrete— 1 000	

d:　パイロット管径

x:　本管推進距離

とおくと，

$$dN_H=K_2dx \quad \cdots\cdots (13)$$