



**NEW METHOD**

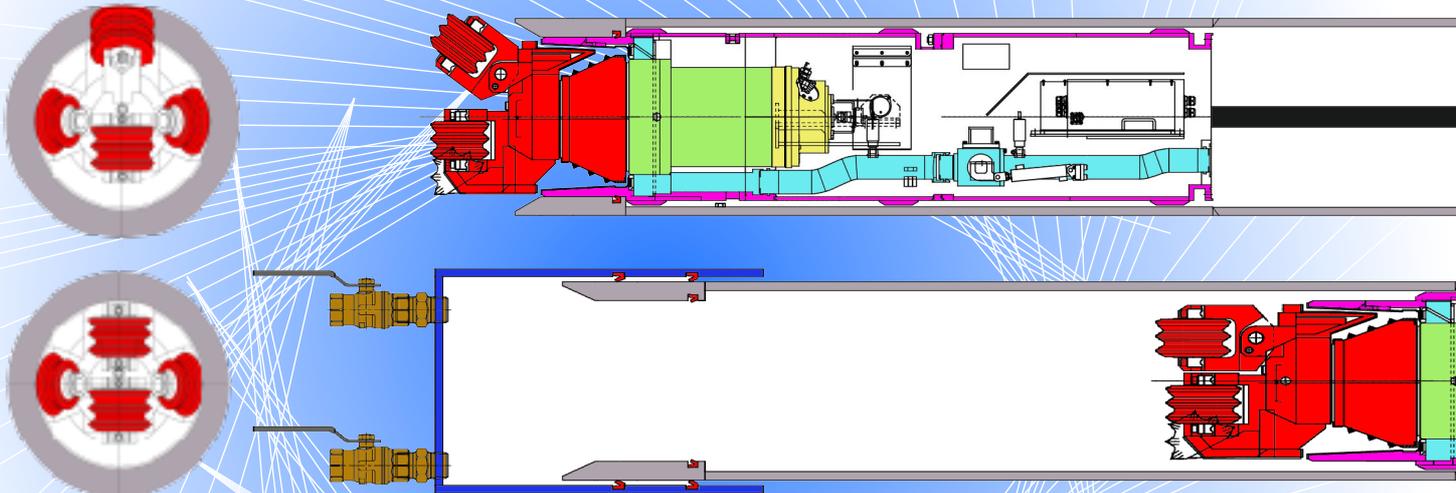
Single-Pass Slurry Pipe Jacking Method

# MARINE SHUTTLE METHOD

Steel Pipe  $\Phi 600\text{mm}$ ~

Capable of installing submarine cables over a range of steel pipe  $\Phi 600\text{mm}$ , extendable up to approximately 200 meters further. The slurry shield method enables long-distance underwater reach using small-diameter pipes.

**Patent Pending**



## System Features

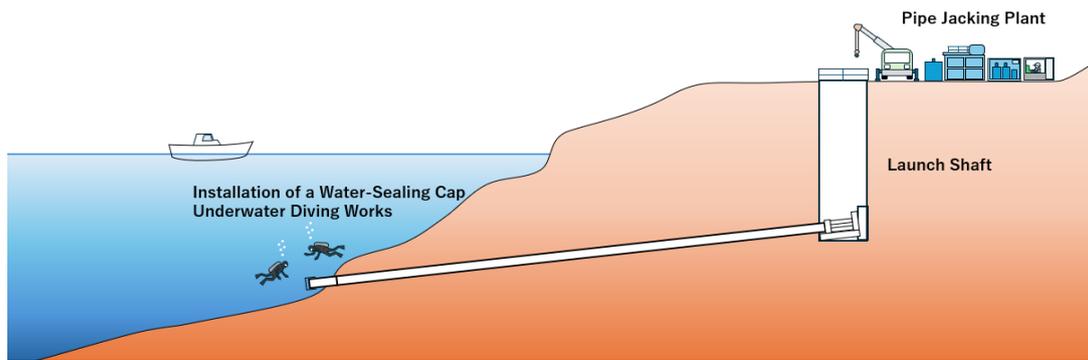
Winner of the NO-DIG AWARD 2016 for the Ankle Mole Shuttle Method



- 1.No need for a re-entry shaft.
- 2.Able to bypass obstacles such as towers and wave-dissipating blocks.
- 3.Vertical alignment allows for a compact plant yard and facilitates transport in and out.
- 4.Overall cost reduction compared to large-scale HDD.
- 5.Continuous construction keeps the inside of the pipe dry, preventing adhesion of fine sand.

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## ① Construction Image of Marine Shuttle



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Soil conditions	Condition Contents
A- I	Ordinary soil (sandy soil with gravel content less than 10%, cohesive soil with N-value less than 3, and maximum gravel diameter less than 20 mm)
A- II	Cohesive soil: $N \geq 3$
B	Gravelly soil (gravel content less than 30%, maximum gravel diameter less than 50 mm)
C- I	Gravelly soil (with cobbles: gravel content less than 60%, maximum gravel diameter less than 23% of the steel pipe outer diameter)
C- II	Gravelly soil (with cobbles and boulders: gravel content less than 80%, maximum gravel diameter between 23% and 52% of the steel pipe outer diameter)
C- III	Gravelly soil (with cobbles and boulders: gravel content less than 80%, maximum gravel diameter between 52% and 75% of the steel pipe outer diameter)
bedrock I	$120 \leq qu \leq 200 \text{ MN/m}^2$
bedrock II	$80 \leq qu < 120 \text{ MN/m}^2$
bedrock III	$40 \leq qu < 80 \text{ MN/m}^2$
bedrock IV	$20 \leq qu < 40 \text{ MN/m}^2$
bedrock V	$10 \leq qu < 20 \text{ MN/m}^2$
bedrock VI	Less than $10 \text{ MN/m}^2$

Bit durability extension	
bedrock I	70m
bedrock II	90m
bedrock III	110m
bedrock IV	150m
bedrock V	220m
bedrock VI	250m

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Note: Specifications listed in this catalog are subject to change without notice

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