GUIDED BORING APPLICATION VARIETY: PAIRING THE RIGHT TOOLING WITH THE CHALLENGE

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THE TUNNELING COMPANY

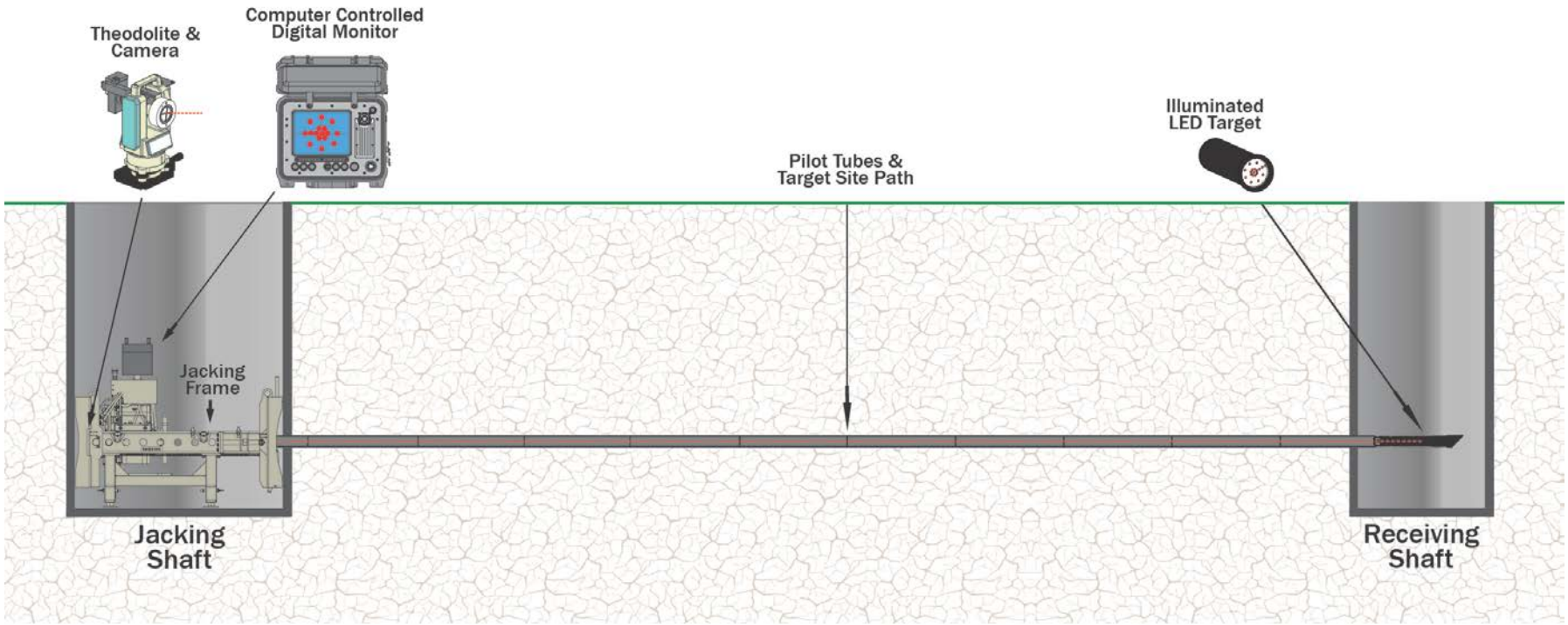
AKKERMAN

THE TUNNELING COMPANY-ARCTIC CIRCLE-1100KM FIBER LINE-CONNECTING TO A SPACE STATION

WHAT IS THE GUIDED BORING METHOD?

- The Guided Boring Method (GBM) is an extremely accurate, multiple-step method of installing pipelines with the grade and alignment precision required to meet the demands of the sewer, water and utility industry.

GUIDED BORING METHOD

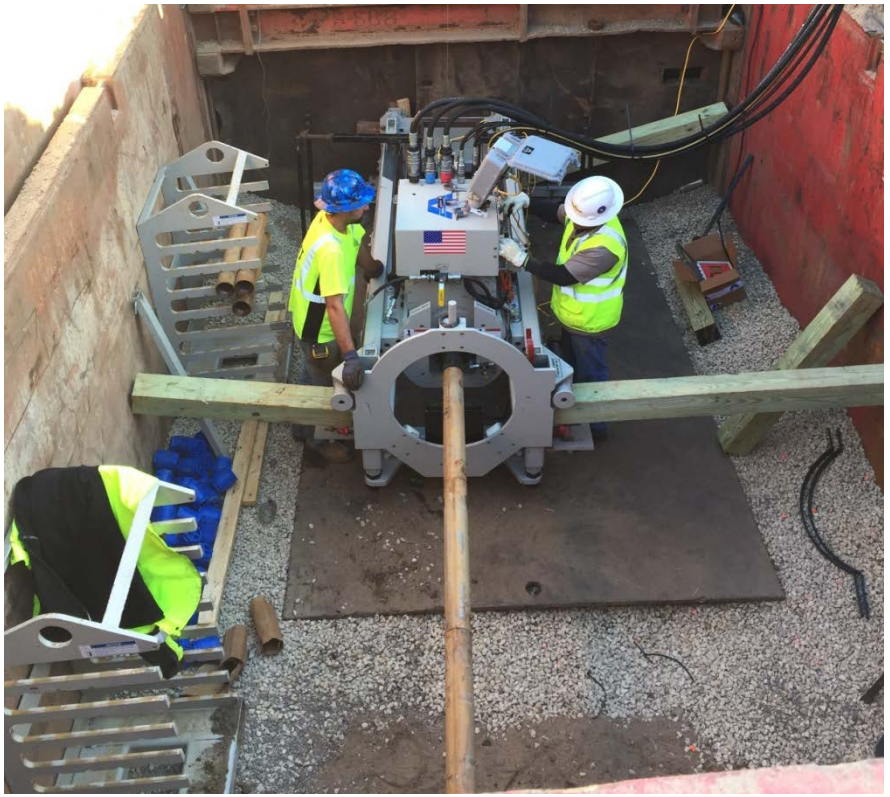


GUIDED BORING METHOD OVERVIEW

- Diameters: 4-48 in. (102-1,220 mm) OD w/ standard system; up to 120 in. (3 m) when applied to other technologies
- Quick setup
- Small footprint
- Versatile

Common Types of Pipe:

- Clay
- Concrete
- FRP/GRP
- Polycrete
- Steel Casing
- PVC



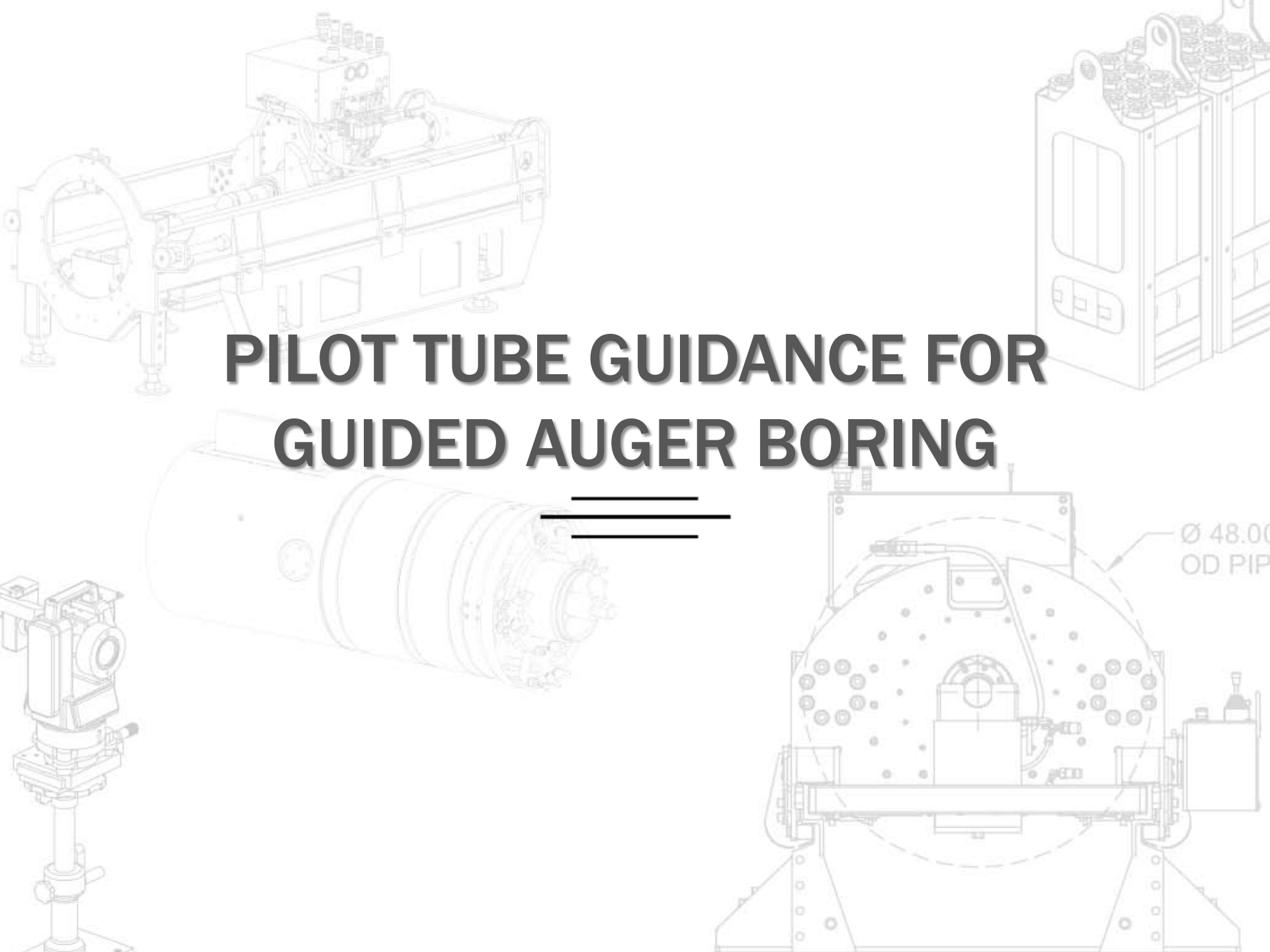
GROUND CONDITIONS, LENGTHS AND APPLICATIONS

- Ground Conditions:
  - Displaceable
  - N Value or SPT = < 50
  - Non-Displaceable
  - UCS = < 12,000 psi (homogeneous)
- Drive Lengths up to 500-lf.+

GUIDED BORING APPLIED TO OTHER TECHNOLOGIES

- Guided Auger Boring
- Pilot Tube Rock Drilling
- Guided Pipe Ramming
- Utility Pullback Installations for HDPE, PVC, Fiber Optic Cables

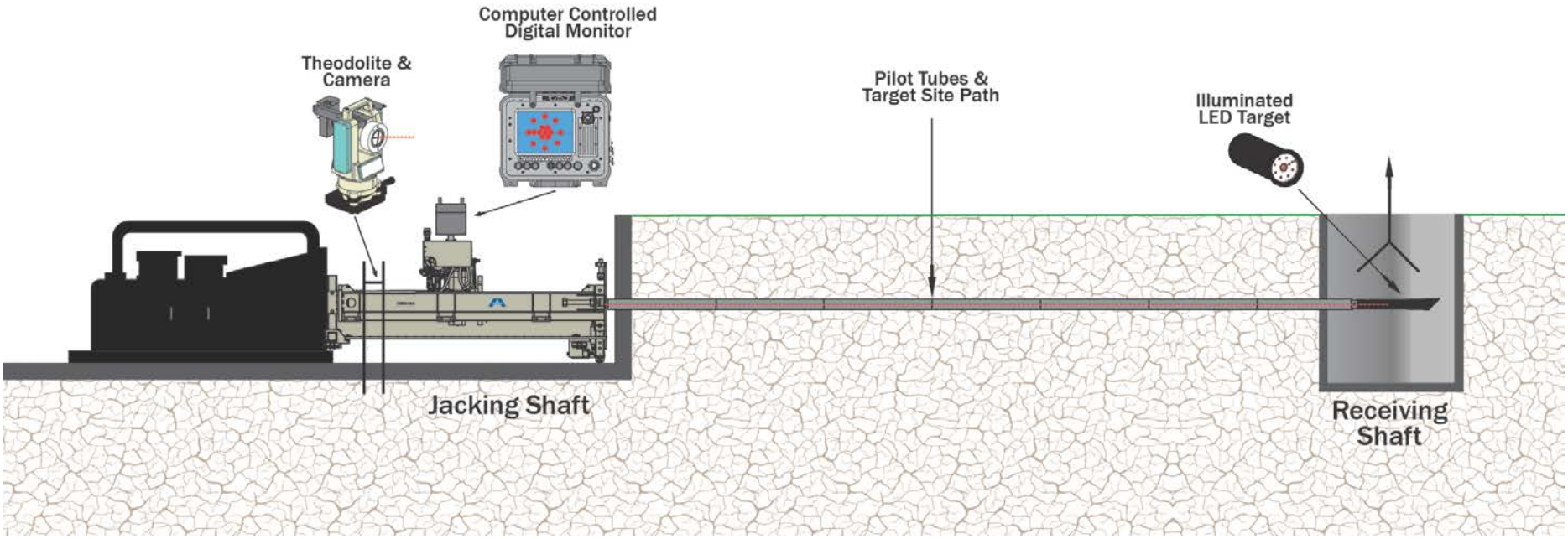
PILOT TUBE GUIDANCE FOR GUIDED AUGER BORING



WHAT IS THE GUIDED AUGER BORING METHOD?

- Guided Auger Boring is the method of accurately installing pipelines by using a guided boring machine (GBM) system in conjunction with an auger boring machine. The guided boring system is used for an accurate pilot tube installation and the final pipe installation is completed with conventional auger boring techniques.

GUIDED AUGER BORING

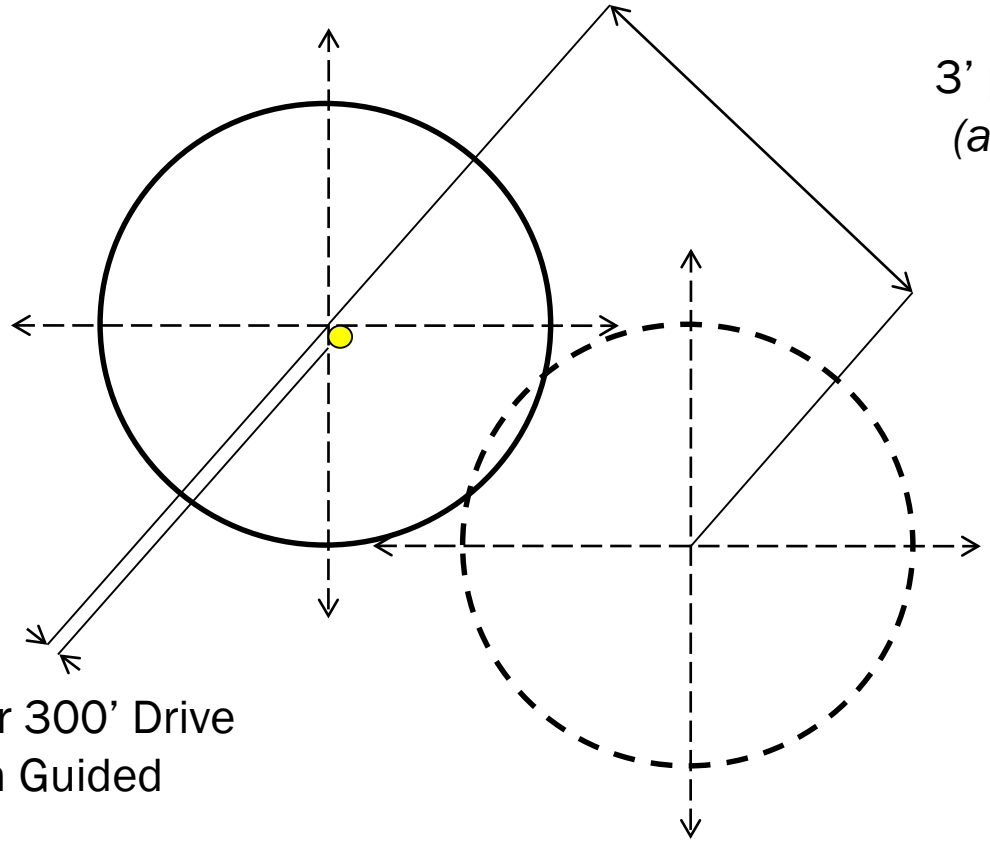


REASONS TO GUIDE AN AUGER BORING MACHINE

- Improved accuracy
- Longer drive potential
- Smaller casing sizes
- Faster installation
- Less dewatering
- Find obstacles before they find you!

REASONS TO GUIDE AN AUGER BORE RIG

TYPICAL CASING ACCURACY
"The 1% Rule"

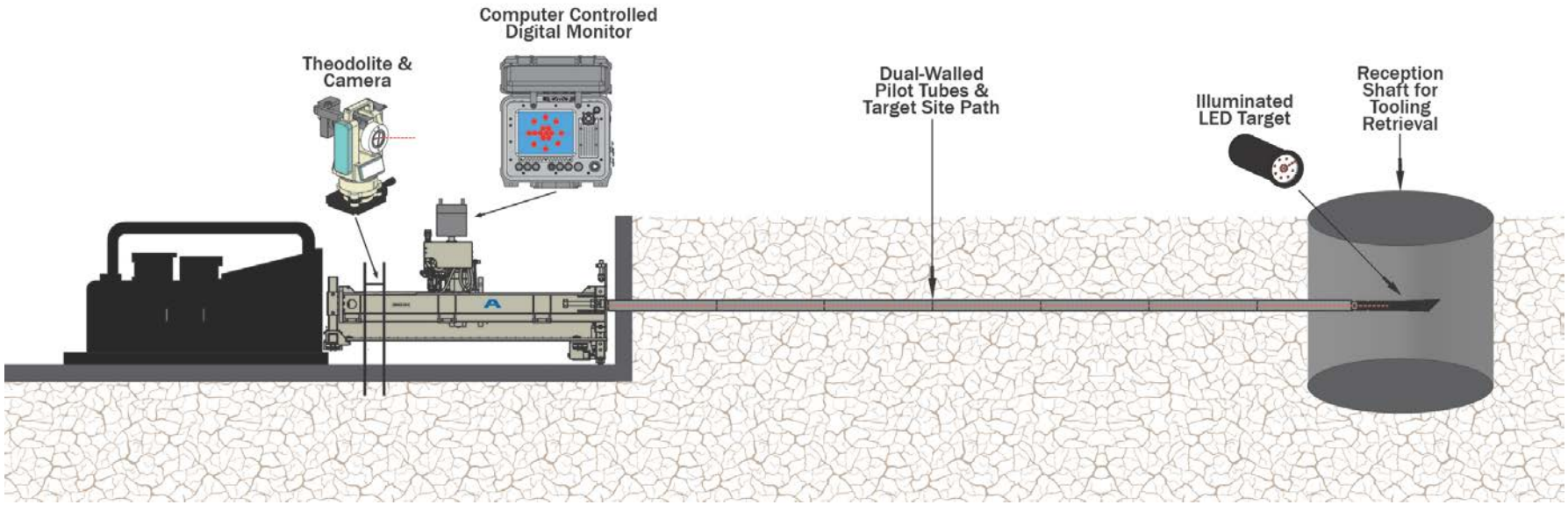


3' per 300' Drive
(avg. deviation)

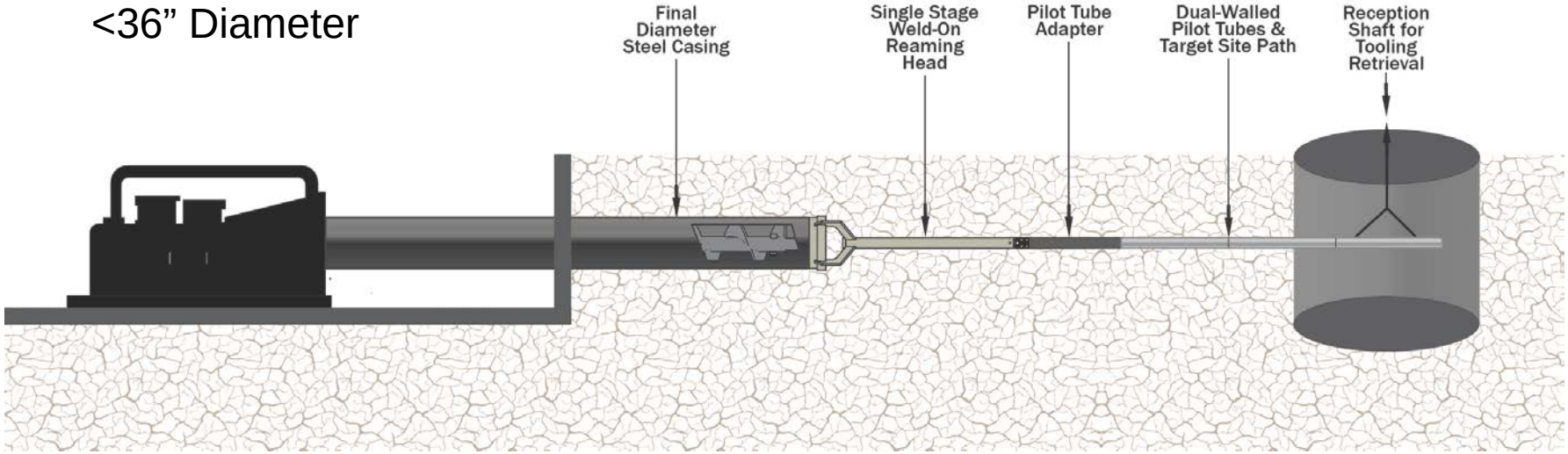
0.25" per 300' Drive
When Guided


Charlotte County
TRANSIT
CABANA CONSTRUCTION OF SWFL, INC.
GBM240A
AMERICAN AUGERS
48-900-S
Quik/Split
Turbo

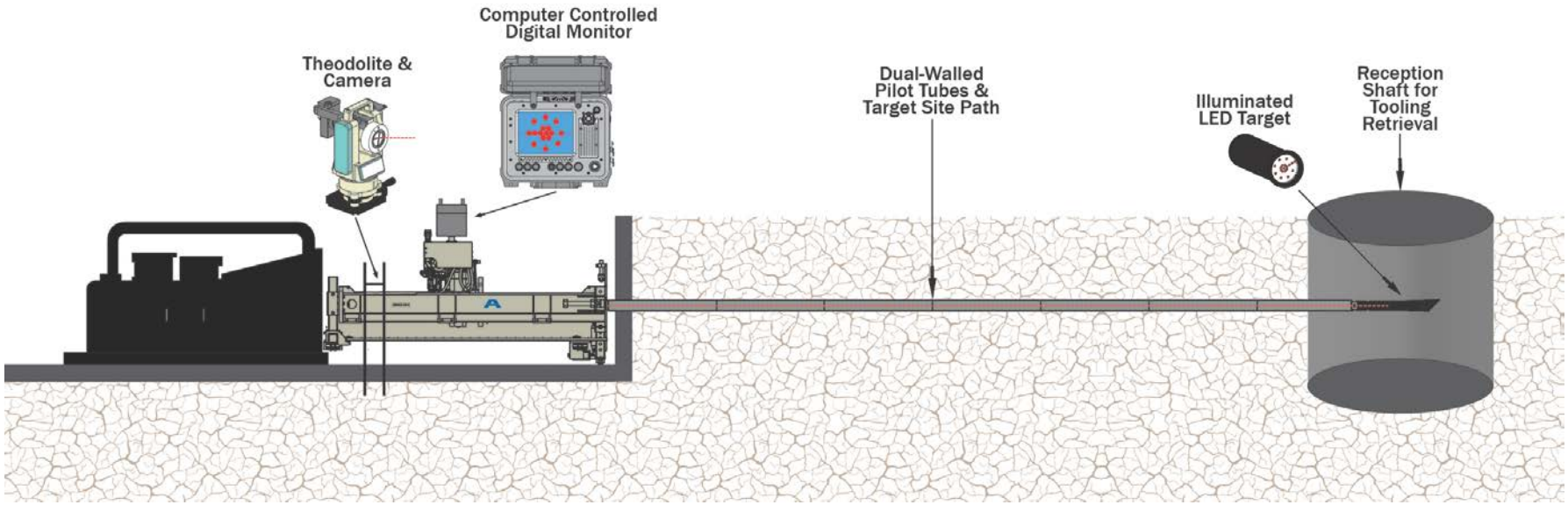
GUIDED AUGER BORING METHOD



<36” Diameter



GUIDED AUGER BORING METHOD



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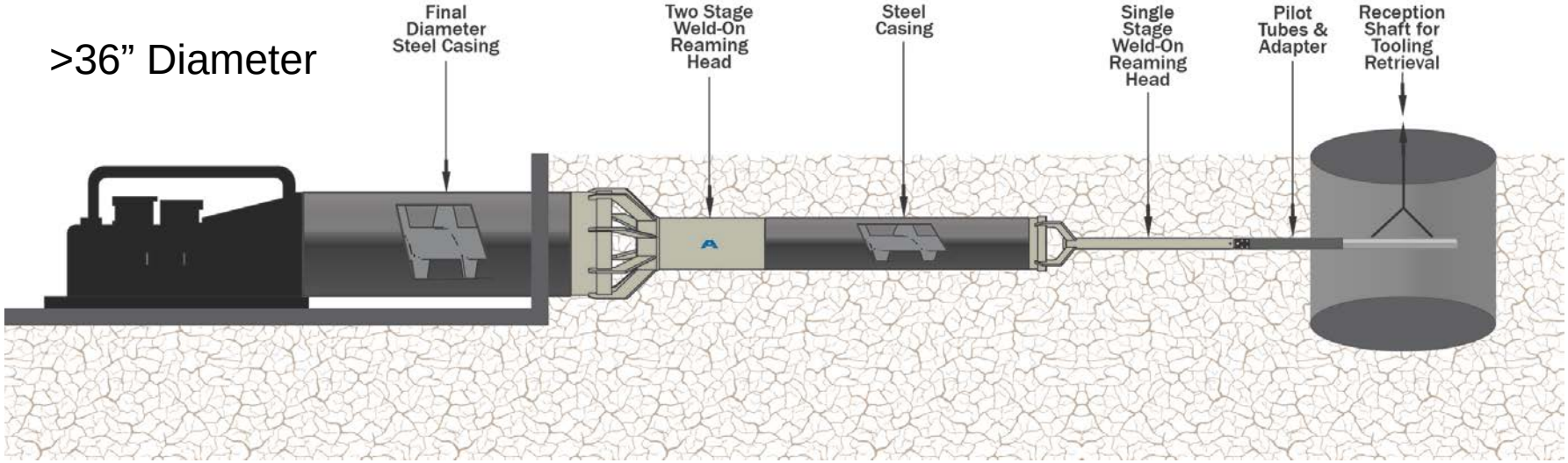


STEEL CASING ADAPTER <36-IN. (914MM)

STEEL CASING ADAPTER >42-IN. (1,067MM)

DIRECT CASING INSTALLATION WITH SWIVELS

Guide Rod Swivel-Simple-Ideal ≤ 24” Diameter and <200’

50 ton bearing swivel assembly- ≤ 24” up to 400’

DIRECT CASING INSTALLATION WITH GUIDE ROD SWIVEL (GRS-50)

Available Sizes: 24”, 30”, 36” and 42”

Heavy Duty-50 Ton Bearing Swivel

GBM 4800 COMBINATION PILOT TUBE AND AUGER BORING

DIRECT CASING INSTALLATION WITH AUGER ADAPTER ASSEMBLY

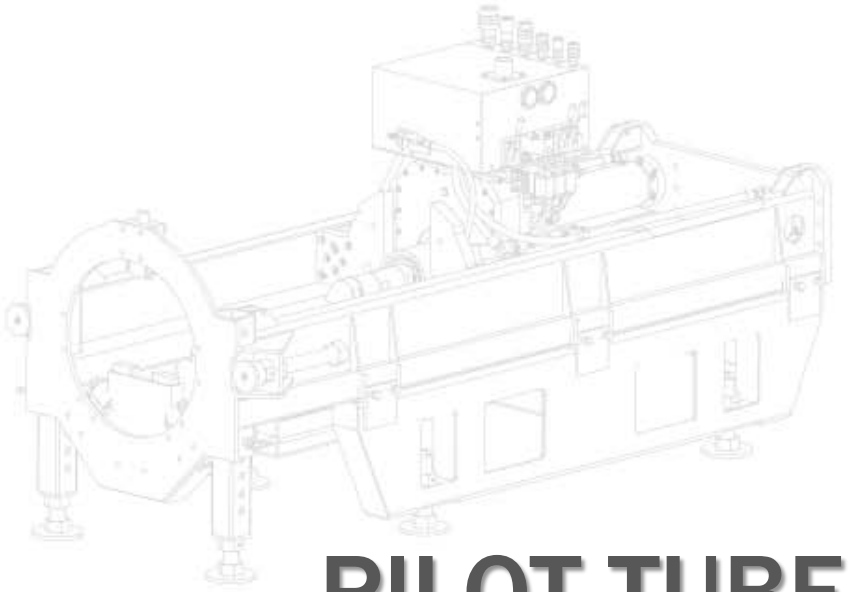
4800 Series GBM with 36” Auger Boring Master Pusher Attachment.

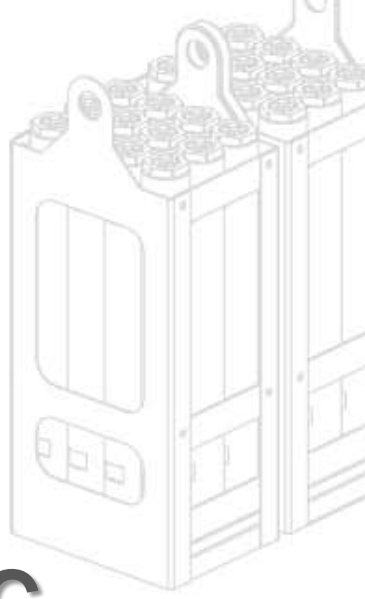
Machine Capable of Auger Boring up to 36” Steel Casing with standard adapter.

DIRECT CASING INSTALLATION WITH HTCA AUGER BORING ADAPTER

HTCA-High Torque Casing Attachment

48” HTCA-Shown Jacking 40” Casing

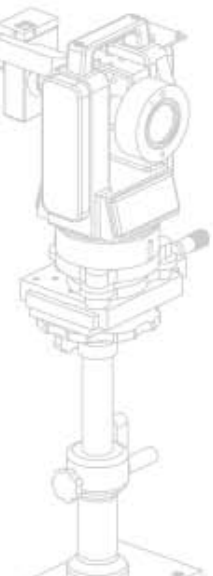


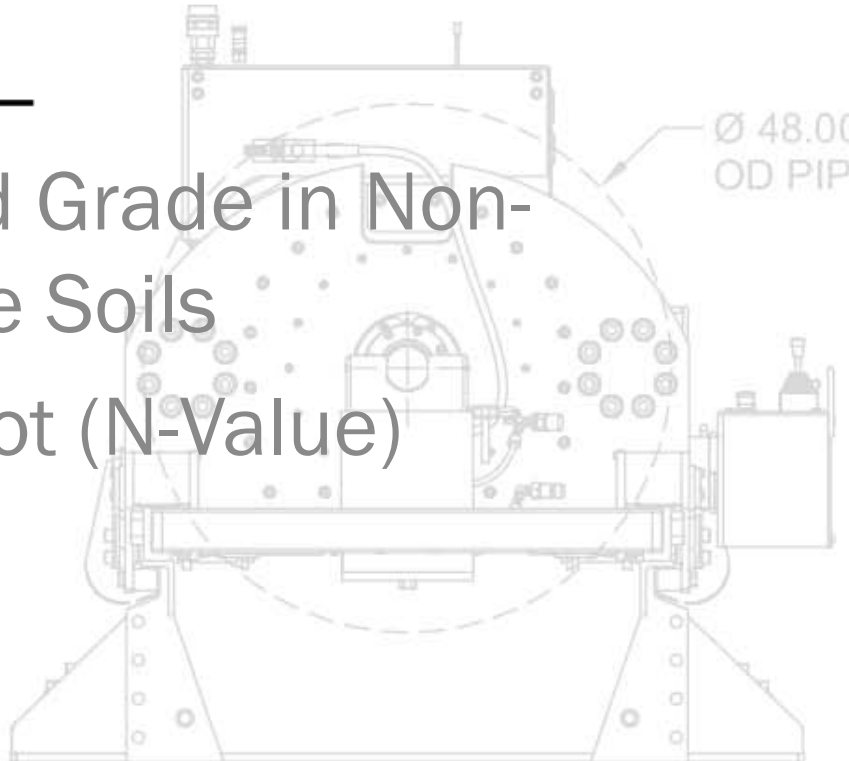


PILOT TUBE ROCK DRILLING

Establishing Line and Grade in Non-Displaceable Soils

>50 Blows per foot (N-Value)

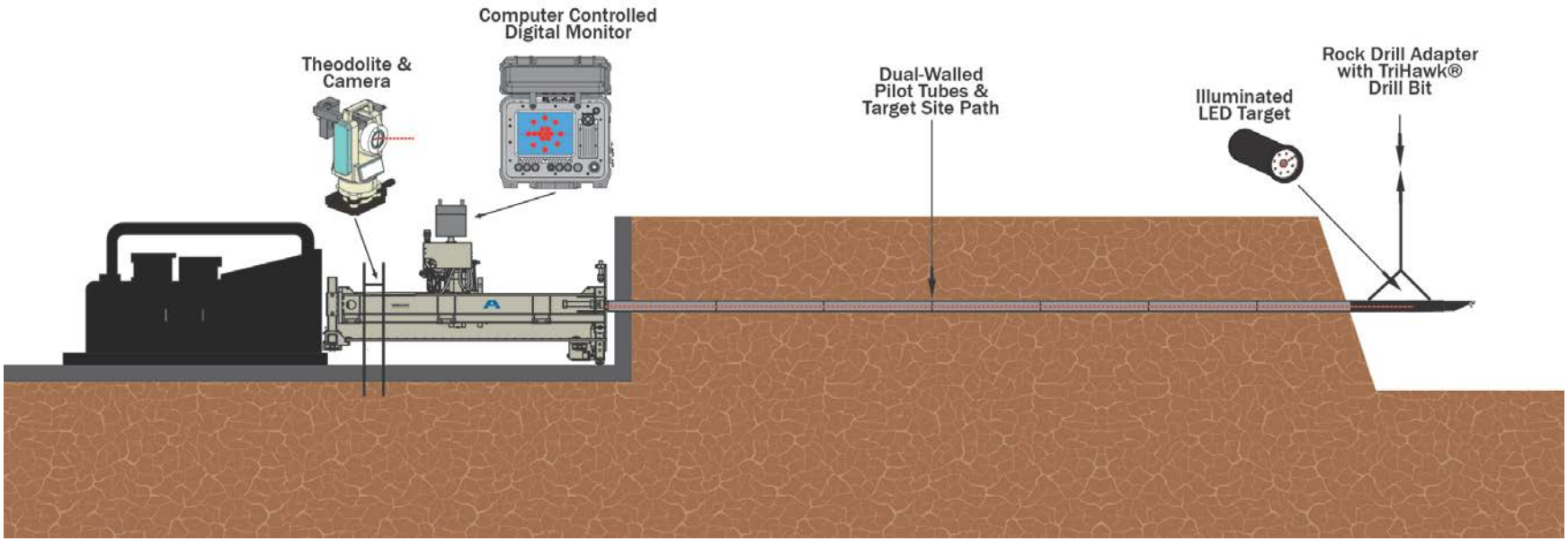




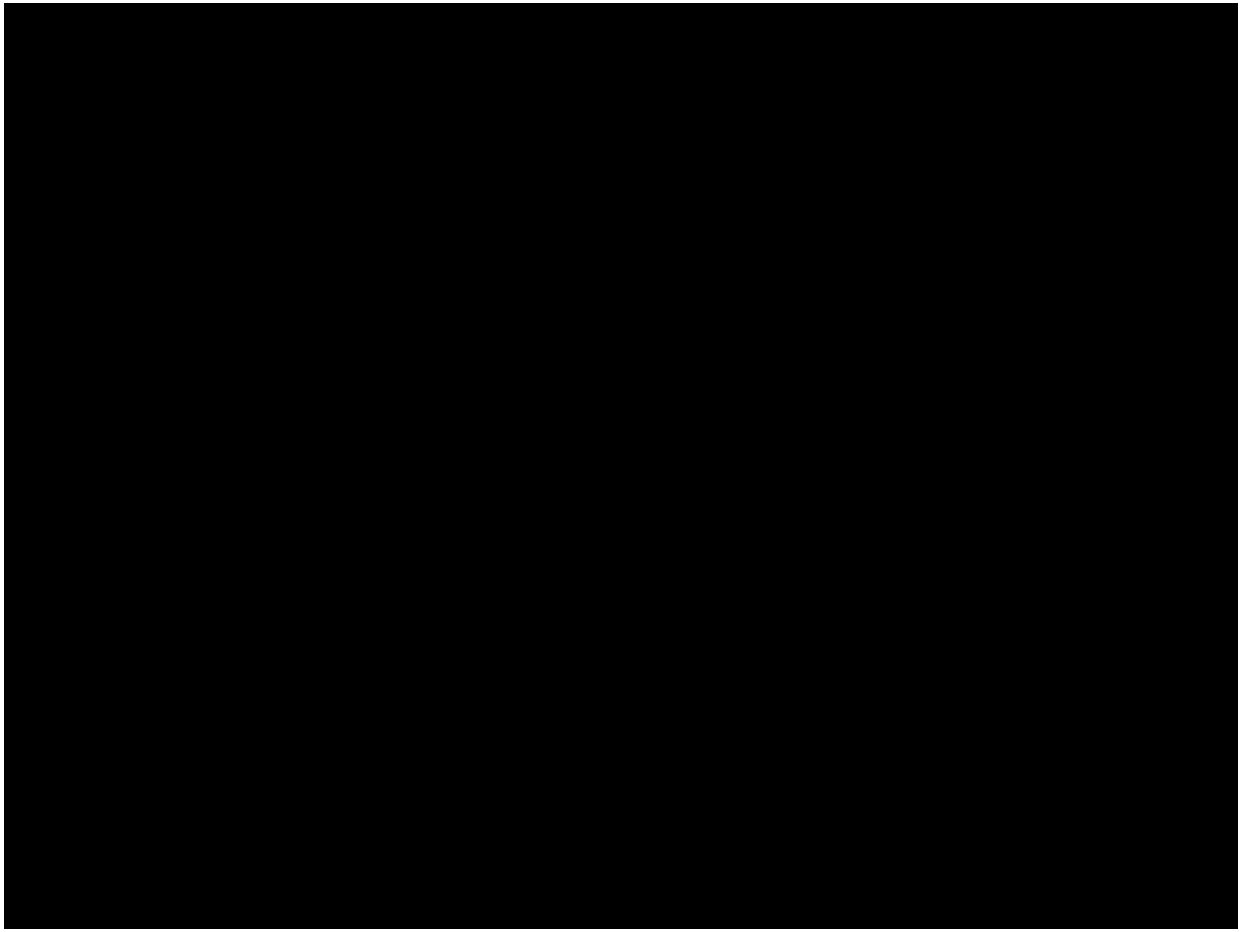
WHAT IS PILOT TUBE ROCK DRILLING?

- Pilot Tube Rock Drilling is the method using a GBM system to install pilot tubes on line and grade in rock formations up to 18,000 psi with the latest cutting tool technology. The Rock Drill Adapter spline holds TriHawk® drill bits. To date, up to 12,000 psi has been achieved.

PILOT TUBE ROCK DRILLING METHOD



PILOT TUBE ROCK DRILLING



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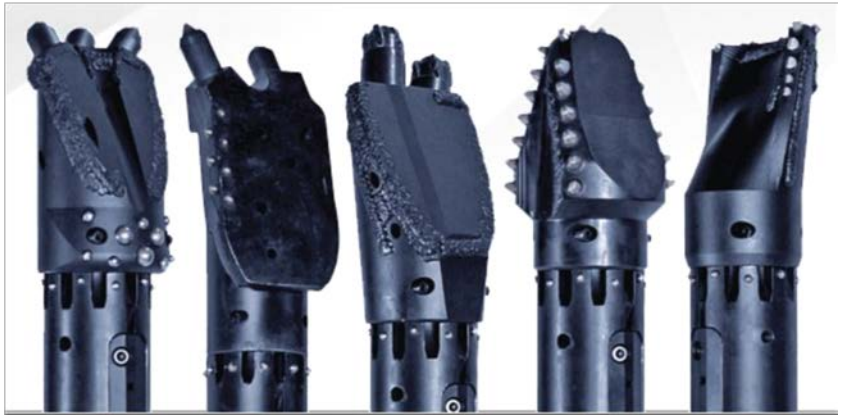


PILOT TUBE ROCK DRILLING

6 GPM-2600 PSI-In Tank Mix-
Higher Viscosity

PILOT TUBE INSTALLATION IS COMPLETE IN ROCK OR > 50 BLOW COUNT GEOLOGY

Now, What do we do?

DIRECT CASING INSTALLATION WITH GUIDE ROD SWIVEL (GRS-50)

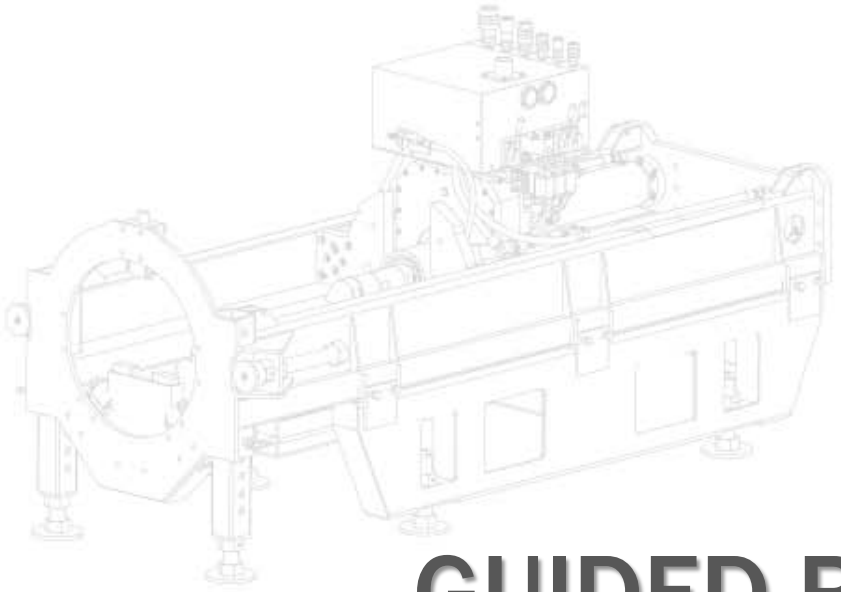
Available Sizes: 24”, 30”, 36” and 42”

Heavy Duty-50 Ton Bearing Swivel

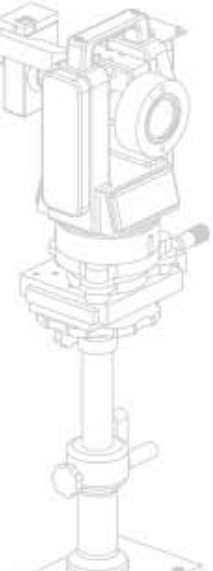
DIRECT CASING INSTALLATION WITH A GUIDED ROCK BORING UNIT (RBU)

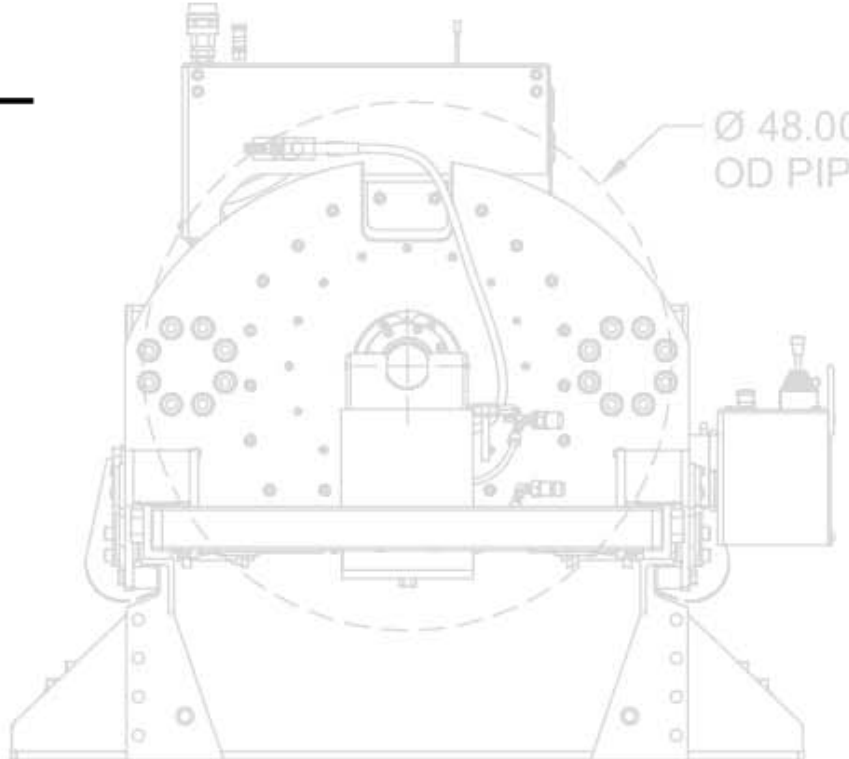
<15,000 PSI UCS Rock and Mixed Ground Geology

Available sizes: 24”, 30”, 36” and 42”



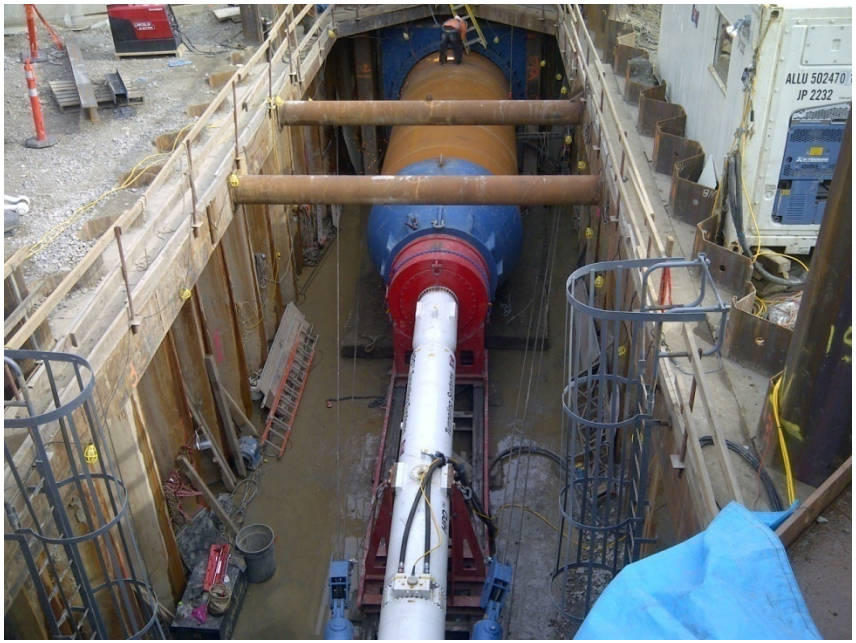
GUIDED PIPE RAMMING



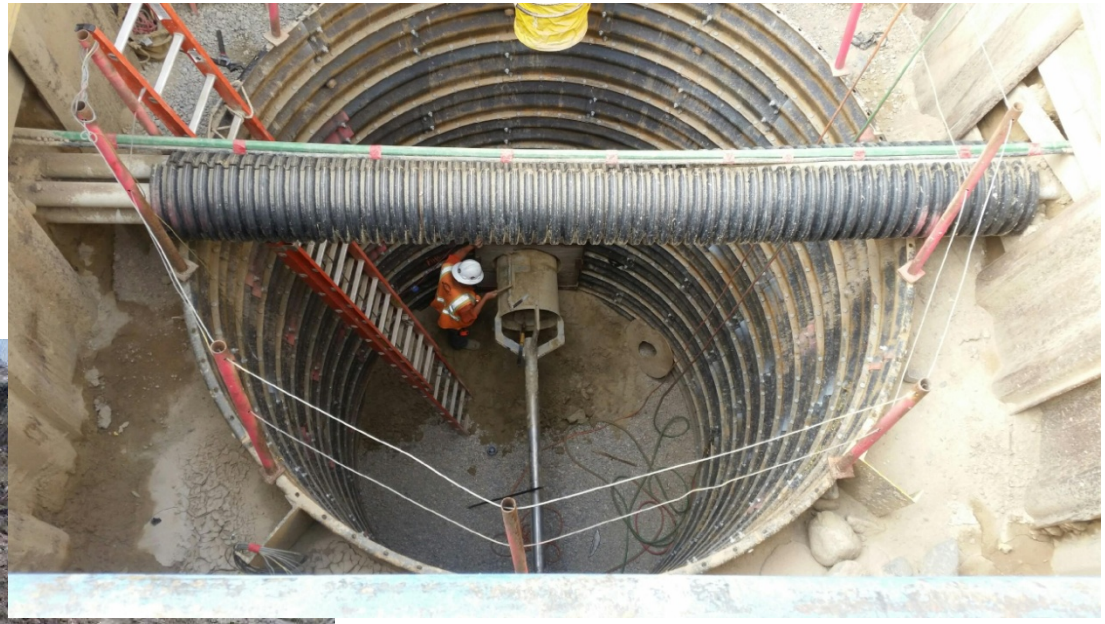


WHAT IS GUIDED PIPE RAMMING?

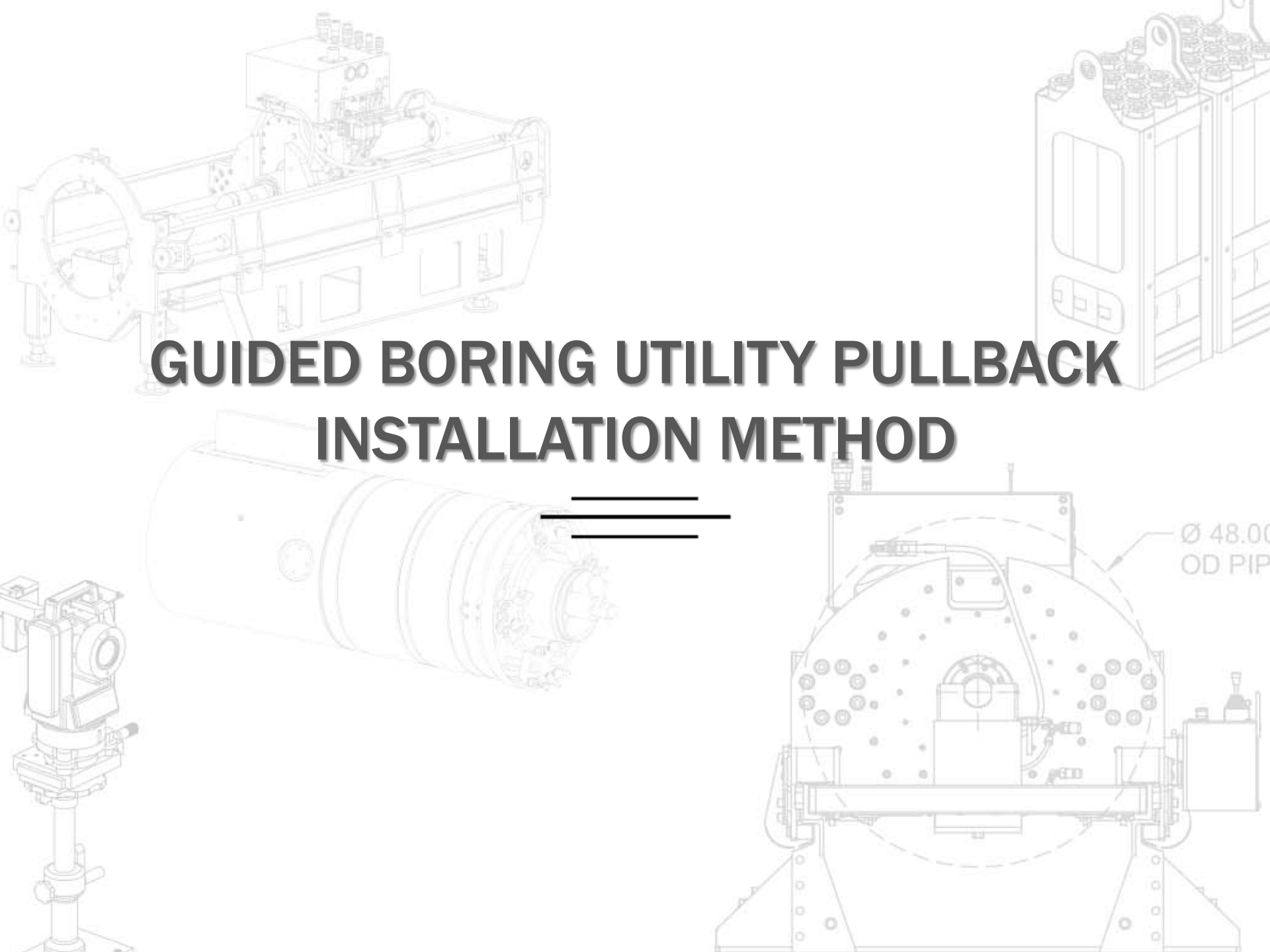
- Guided Boring Pipe Ramming is the method of accurately installing pilot tubes which are followed by a pneumatic pipe hammer to transfer force from the hammer to advance the pipe on line and grade.



GUIDED PIPE RAMMING



GUIDED BORING UTILITY PULLBACK INSTALLATION METHOD



WHAT ARE GUIDED BORING UTILITY PULLBACK INSTALLATION METHODS?

- Guided Boring Utility Pullback method uses the guided boring system for an accurate pilot tube installation which is followed by a carrier pipe installation and a pullback of fiber optic cable, gas line, PVC or HDPE.

HDPE (GAS LINE) PULLBACK

HDPE PULLBACK

PVC PULLBACK

FIBER OPTIC CABLE PULLBACK

QUESTIONS?

Thanks for attending!

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