



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

**Presenters:**

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Kamloops Augering)**

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



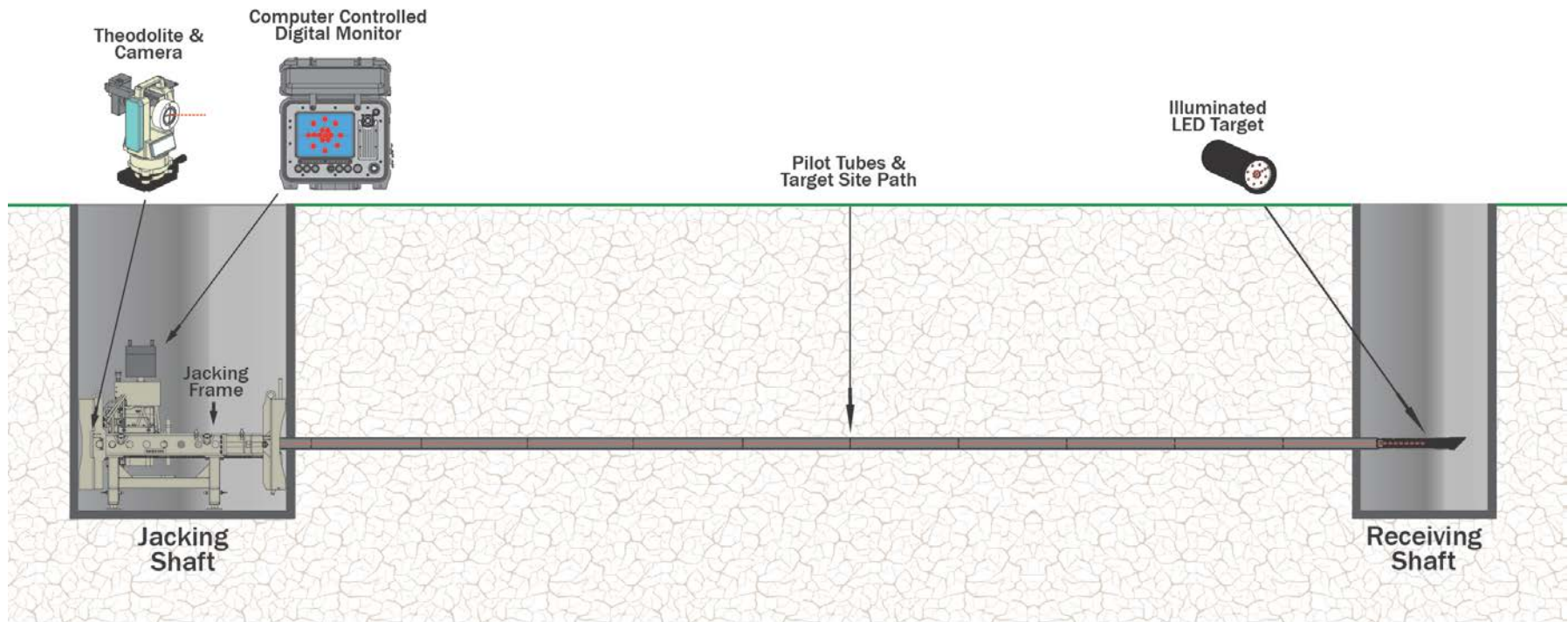
# WHAT IS THE GUIDED BORING METHOD?

- 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



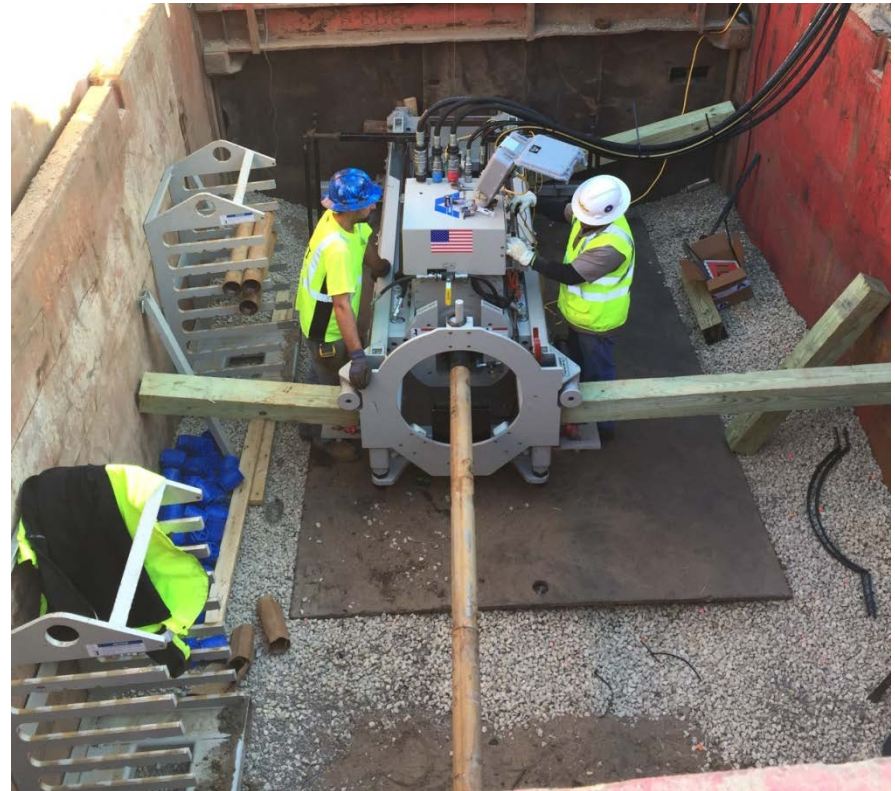


# GUIDED BORING METHOD OVERVIEW

- 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
- Polycrrete
- 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







The background features several technical line drawings of industrial machinery. In the top left, a large machine with a circular opening and various adjustment points is shown. In the top right, a tall, narrow cabinet-like structure with multiple compartments is depicted. In the center, a large horizontal cylindrical component, likely a pilot tube, is shown with a flange at one end. In the bottom left, a smaller machine with a vertical shaft and a circular head is visible. In the bottom right, a large circular machine with a complex internal structure and a central vertical shaft is shown, with a label indicating a diameter of 48.00 and an outer diameter of 48.00.

# PILOT TUBE GUIDANCE FOR GUIDED AUGER BORING

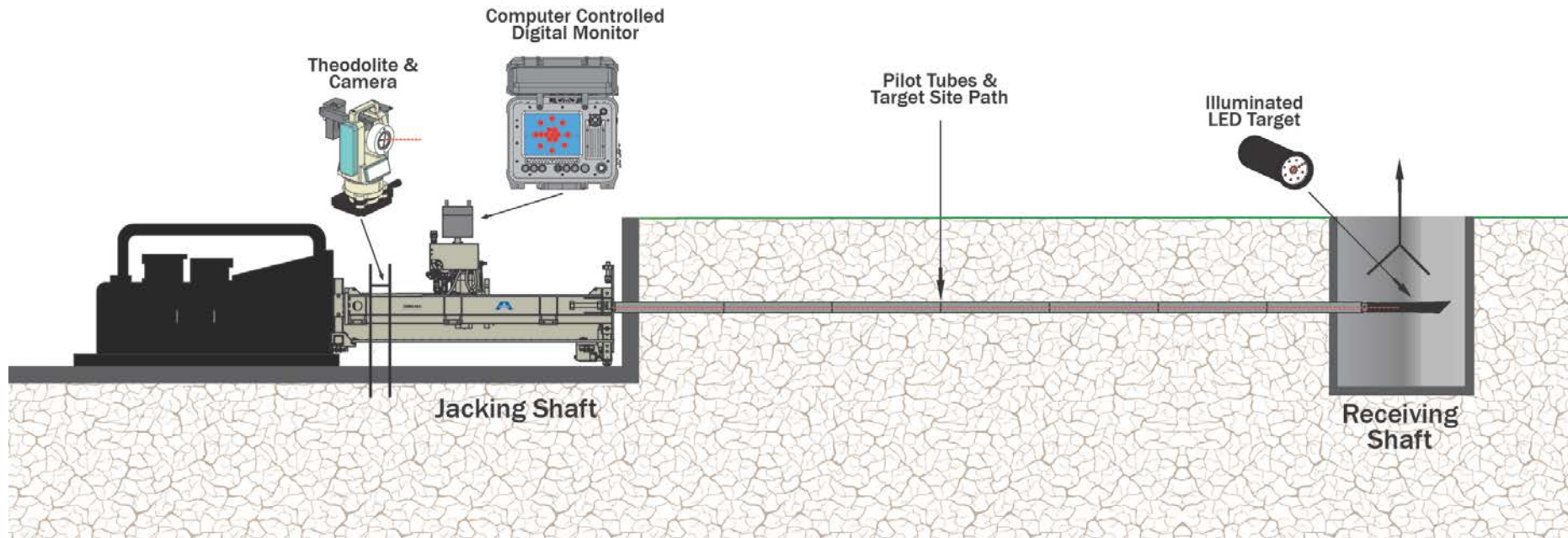
Ø 48.00  
OD PIPE

# 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!

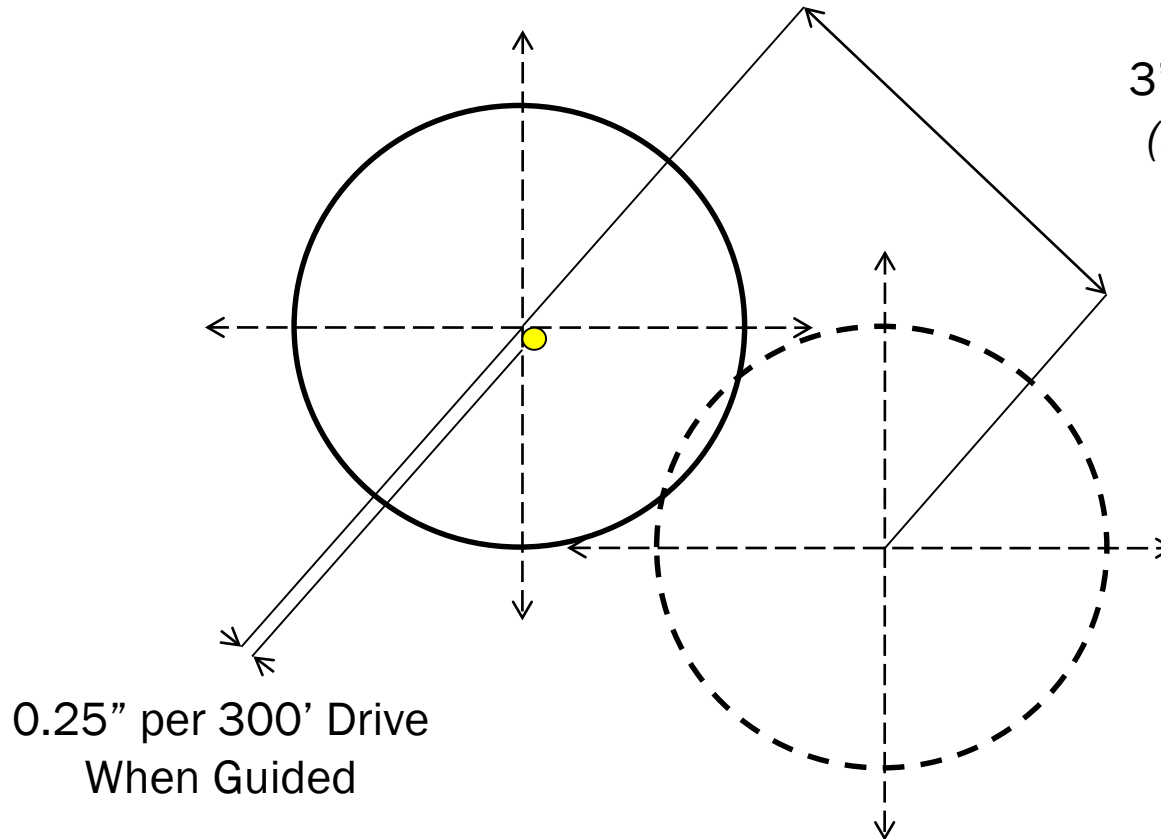


# REASONS TO GUIDE AN AUGER BORE RIG

## TYPICAL CASING ACCURACY

**"The 1% Rule"**

3' per 300' Drive  
(avg. deviation)



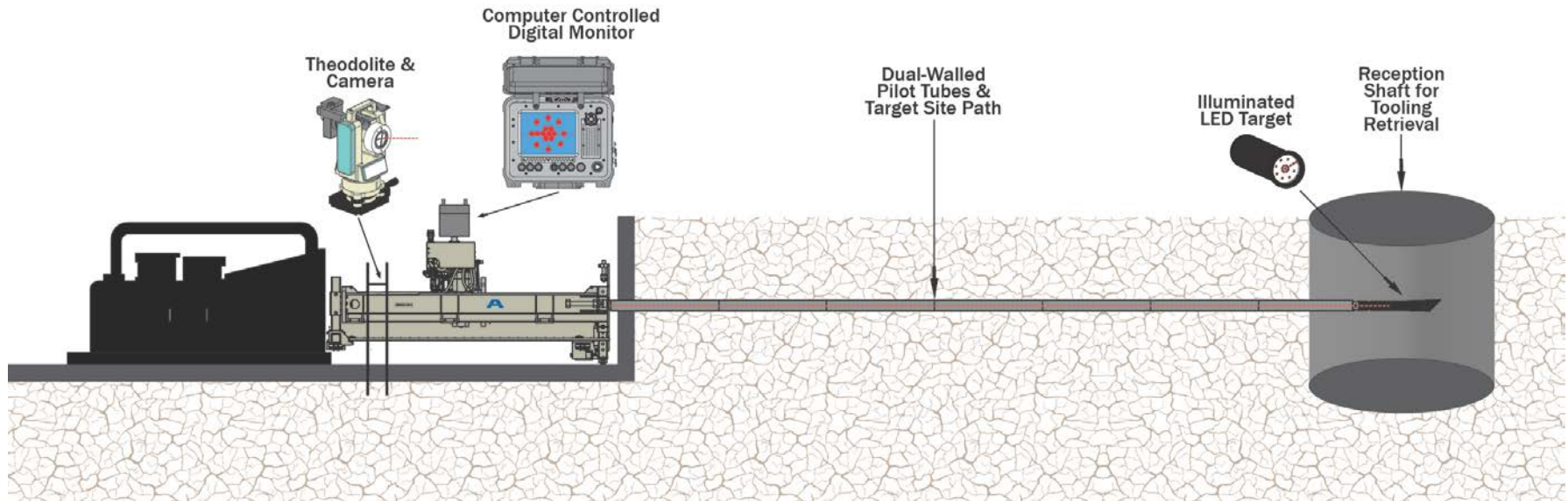
0.25" per 300' Drive  
When Guided



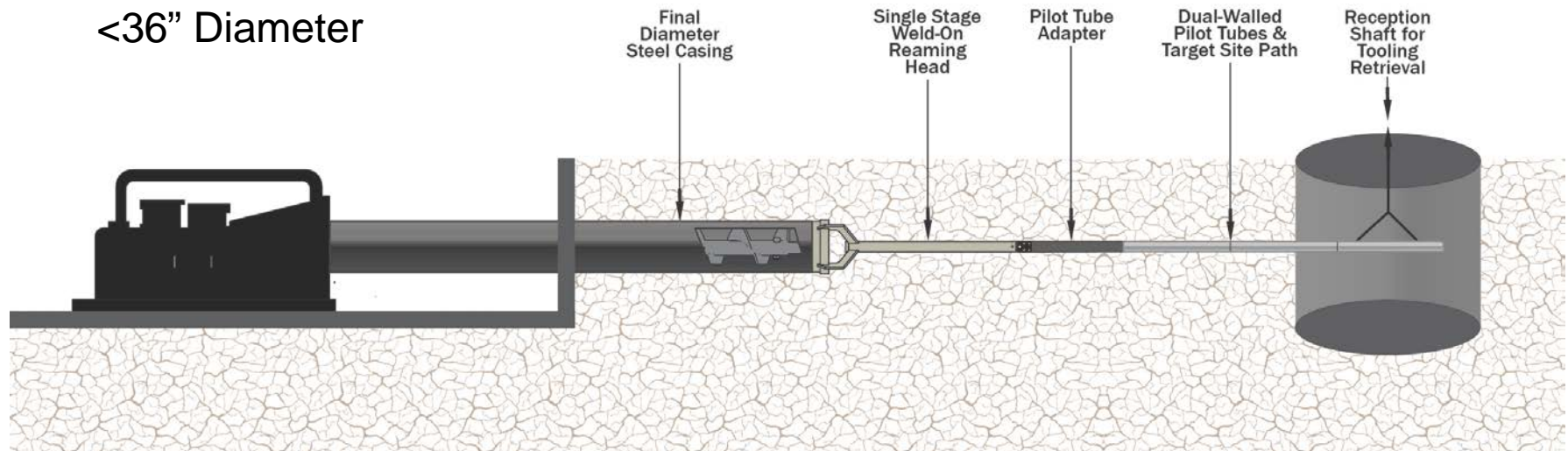




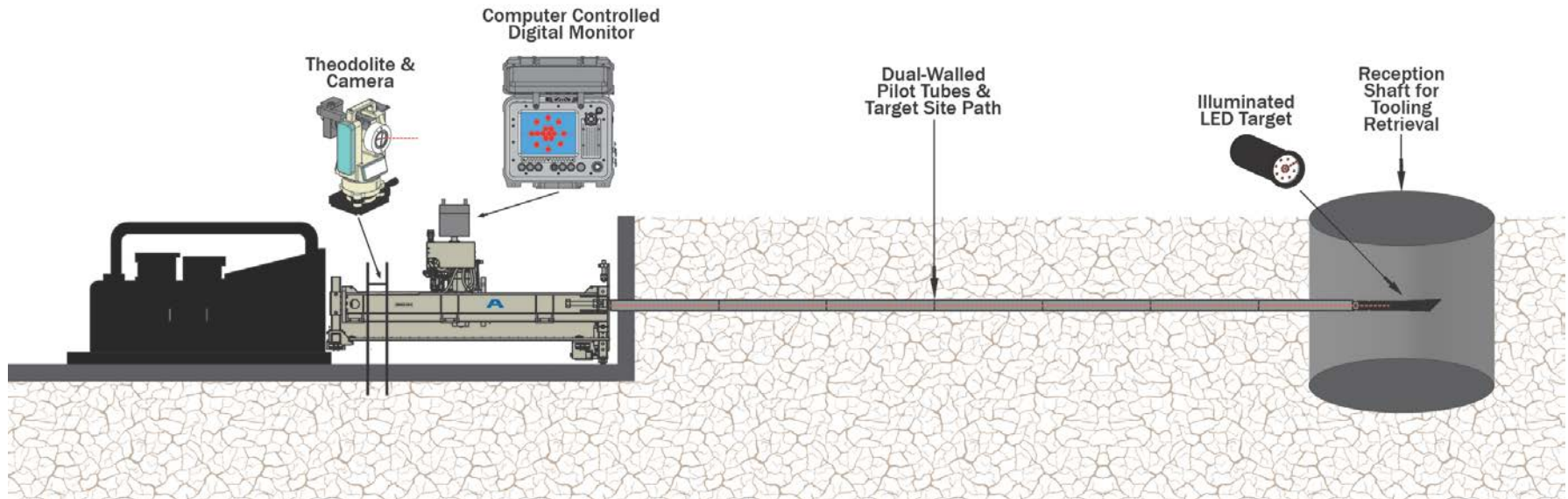
# GUIDED AUGER BORING METHOD



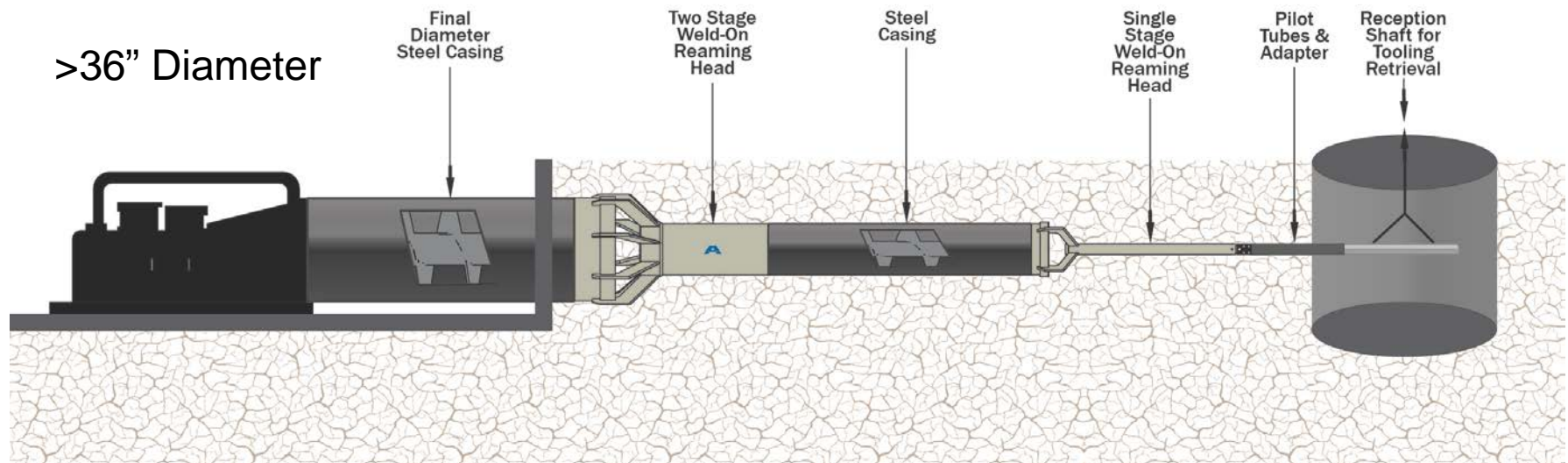
<36" Diameter



# GUIDED AUGER BORING METHOD



>36" Diameter





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





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





# DIRECT CASING INSTALLATION WITH SWIVELS



Guide Rod Swivel-Simple-Ideal  $\leq 24''$   
Diameter and  $<200'$



50 ton bearing swivel assembly-  $\leq 24''$   
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



The background features several faint technical line drawings of industrial drilling and surveying equipment. In the top left, there is a large machine with a circular opening and various adjustment points. In the top right, a vertical structure with multiple cylindrical components is shown. In the bottom left, a surveying instrument on a tripod is depicted. In the bottom right, a large circular machine with many small holes and a central assembly is shown, with a label 'Ø 48.00 OD PIP' pointing to a specific part. A large horizontal cylinder is also visible in the middle left background.

# PILOT TUBE ROCK DRILLING

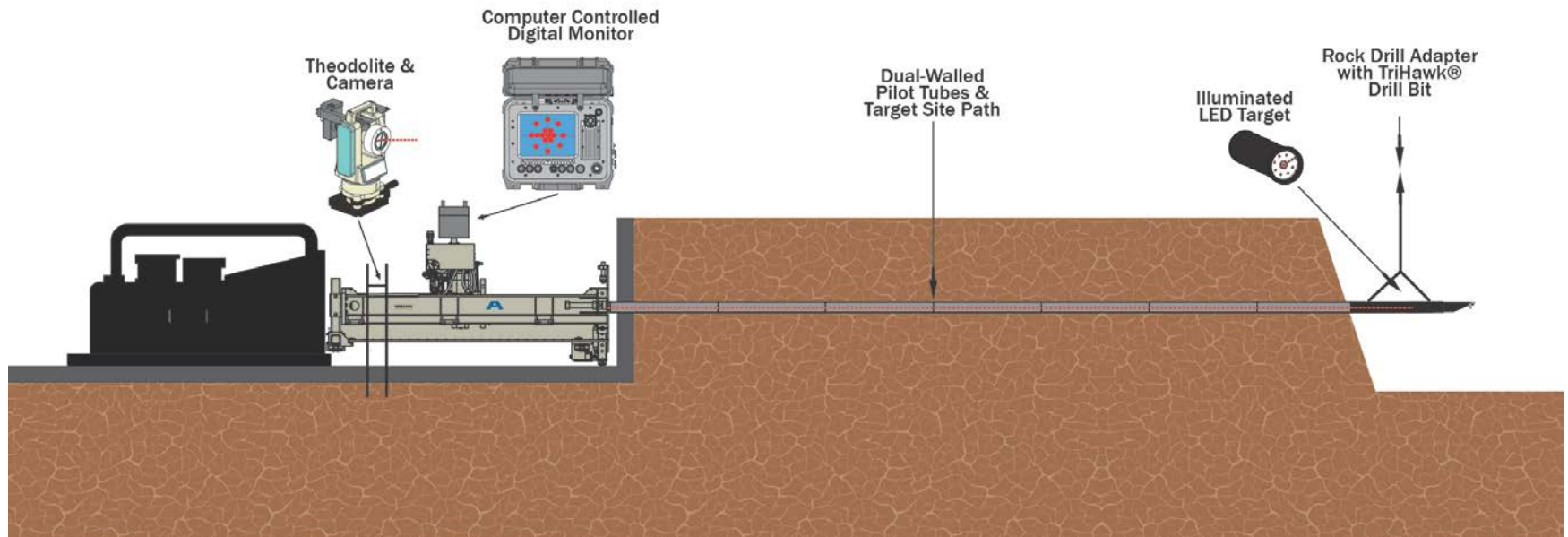
Establishing Line and Grade in Non-Displaceable Soils  
>50 Blows per foot (N-Value)

# 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.

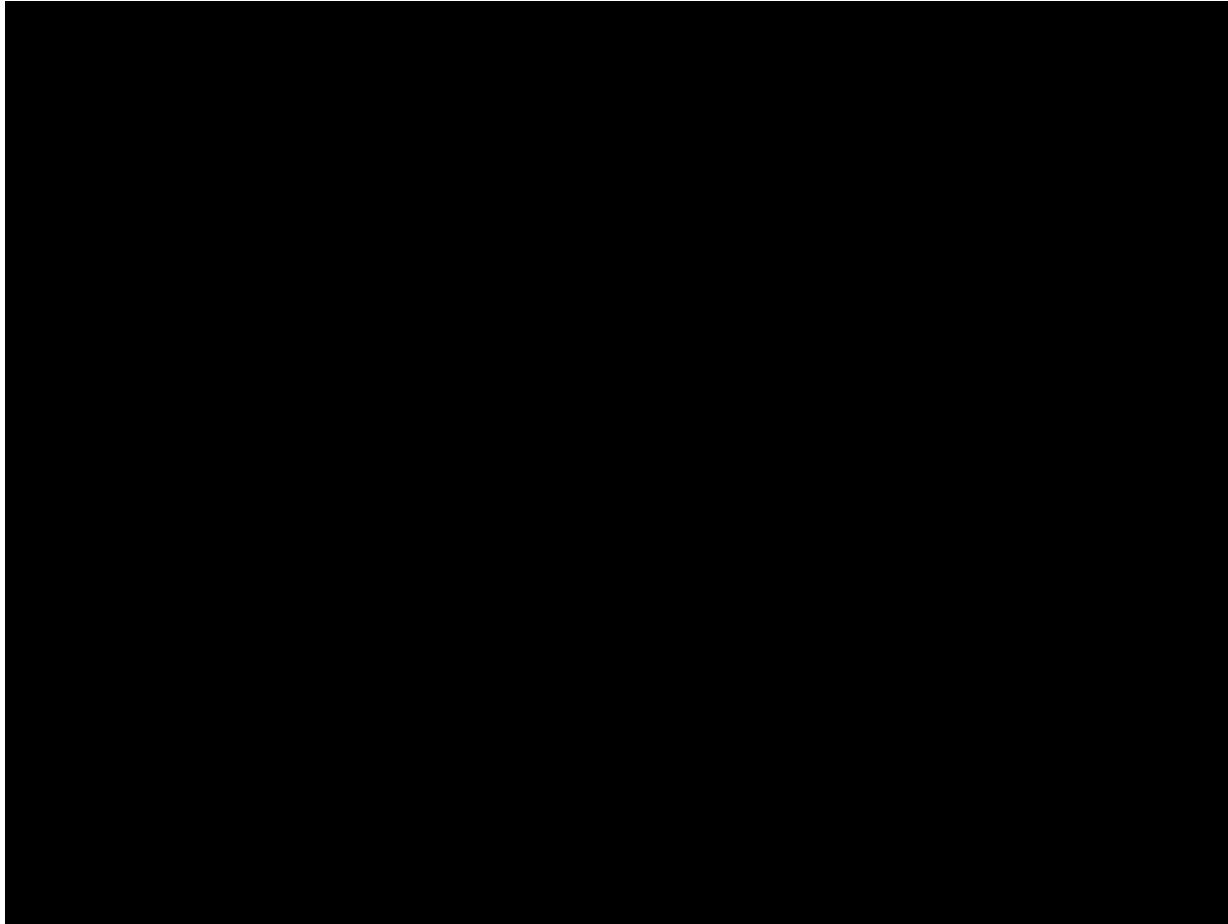


# PILOT TUBE ROCK DRILLING METHOD





# PILOT TUBE ROCK DRILLING



# PILOT TUBE ROCK DRILLING





# PILOT TUBE ROCK DRILLING



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



The background of the slide features several faint, technical line drawings of industrial machinery. In the top left, there is a large machine with a circular opening and various mechanical components. In the top right, a vertical structure with multiple cylindrical components is shown. In the bottom left, a smaller machine with a circular head is visible. In the bottom right, a large circular machine with many small ports or sensors around its perimeter is depicted, with a label 'Ø 48.00 OD PIP' pointing to one of the ports. The central text is overlaid on these drawings.

# **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)



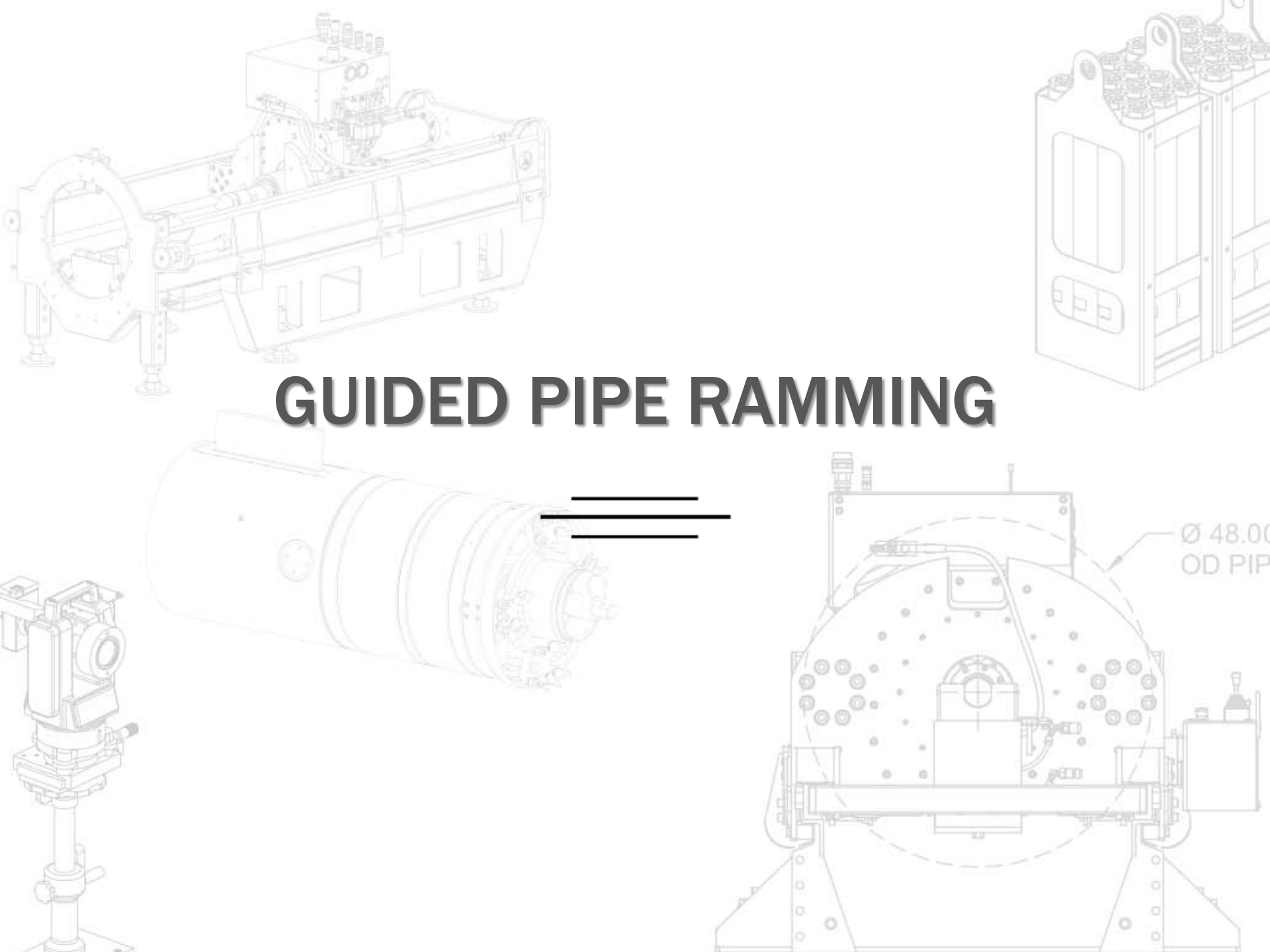
<15,000 PSI UCS Rock and  
Mixed Ground Geology



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

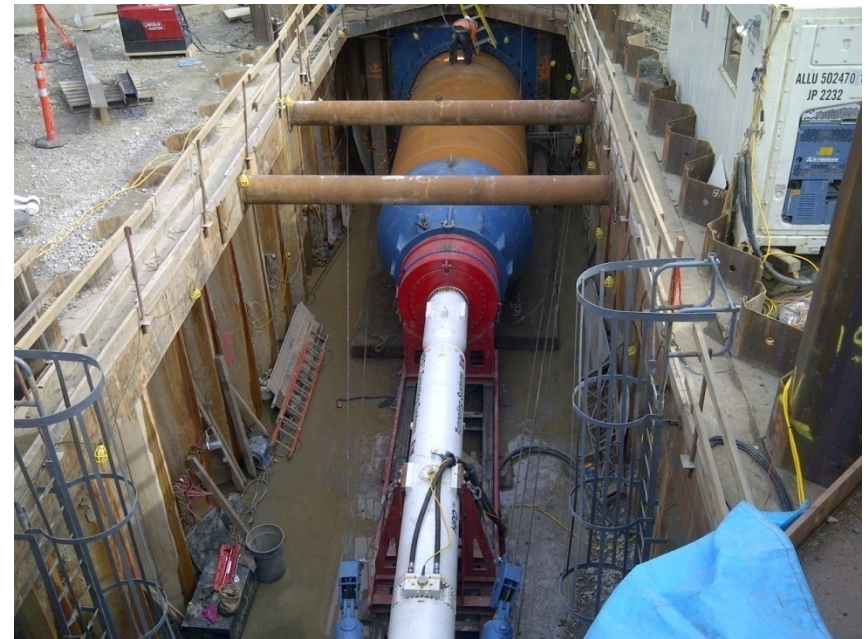


# GUIDED PIPE RAMMING



# 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







The background features several technical line drawings of industrial machinery. In the top left, there is a large machine with a circular opening and various mechanical components. In the top right, a vertical structure with multiple cylindrical components is shown. In the center, a large horizontal cylindrical component is depicted with three horizontal lines pointing to its right end. In the bottom left, a smaller machine with a circular component is shown. In the bottom right, a large circular structure with many small holes is shown, with a label indicating a diameter of 48.00 and the text 'OD PIP'.

# **GUIDED BORING UTILITY PULLBACK INSTALLATION METHOD**

Ø 48.00  
OD PIP

# 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

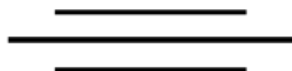






# QUESTIONS?

## Thanks for attending!



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