



NY - GEO 2026
March 24-25, 2026 | Brooklyn, NY



Drilling & Completing Geothermal Boreholes for Non-Drillers

Moderator: Brock Yordy / *Geothermal Drillers Association*

Panel: Kevin Moravec / *Barney Moravec, Inc.*

Mike Fleming / *Phoenix Foundation*

Colt McCarthy / *Republic Drill Co.*

Drilling & Completing Geothermal Boreholes for Non-Drillers



WARNING

The following panel features tribal drilling knowledge acquired by drilling professionals, with the supervision of geothermal & groundwater professionals. Accordingly, Brock Yordy must insist that everyone who engages with this presentation consider the following advice.



Drilling Applies Tribal Knowledge with Engineered Specifications

1. Drilling is the imperfect combination of science, physics, and self-taught tribal knowledge compounded over years of success and failure.
2. Drilling is a disruptive process; the key to success lies in your conscious choice of the drilling program that minimizes the impact on the surrounding environment.
3. Drillers, Contractors, Engineers, Scientists, and Clients have entered a powerful partnership to uncover the mysteries of the subsurface.

Geothermal Systems & Design 2016

Depth 300' to
500'

Diameter >6"

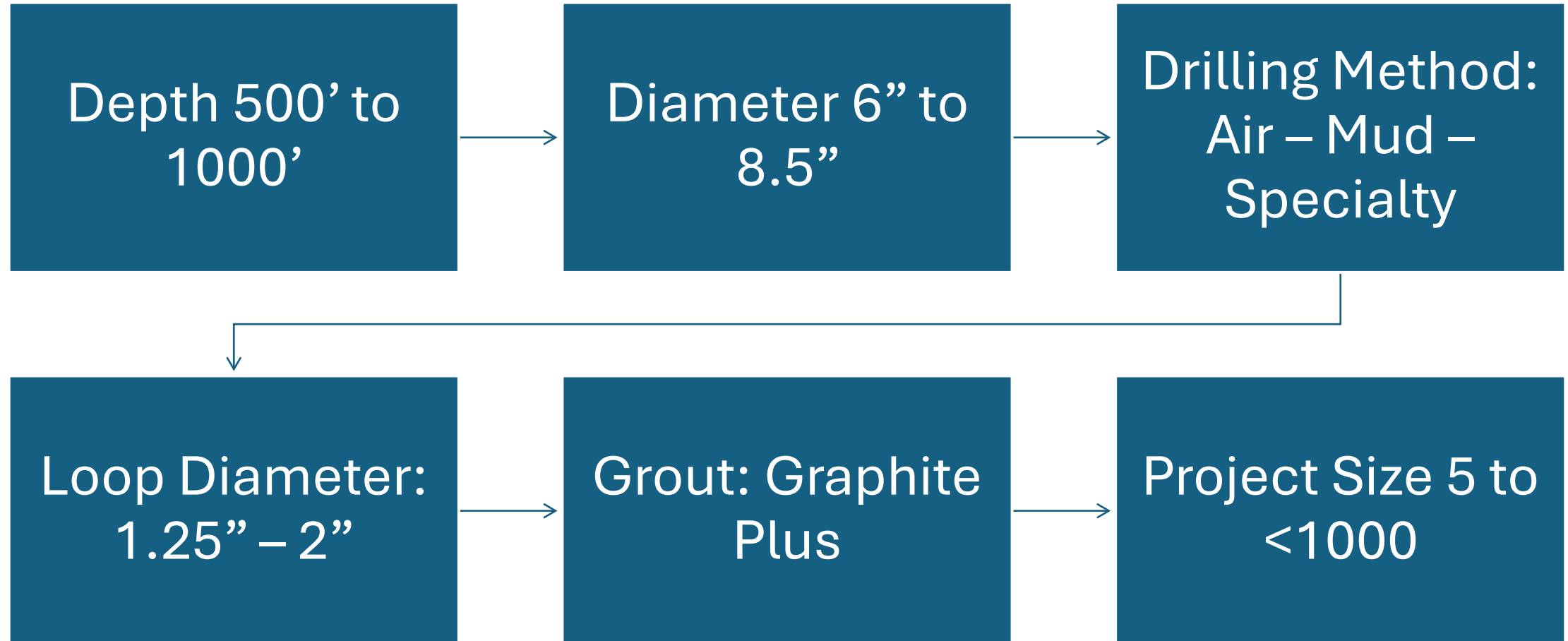
Drilling Method:
Mud

Loop Diameter
1.25"

Grout: Bentonite,
Cement, or
Thermally
Enhanced.

Project size 5
holes to >500

Geothermal Systems & Design 2026





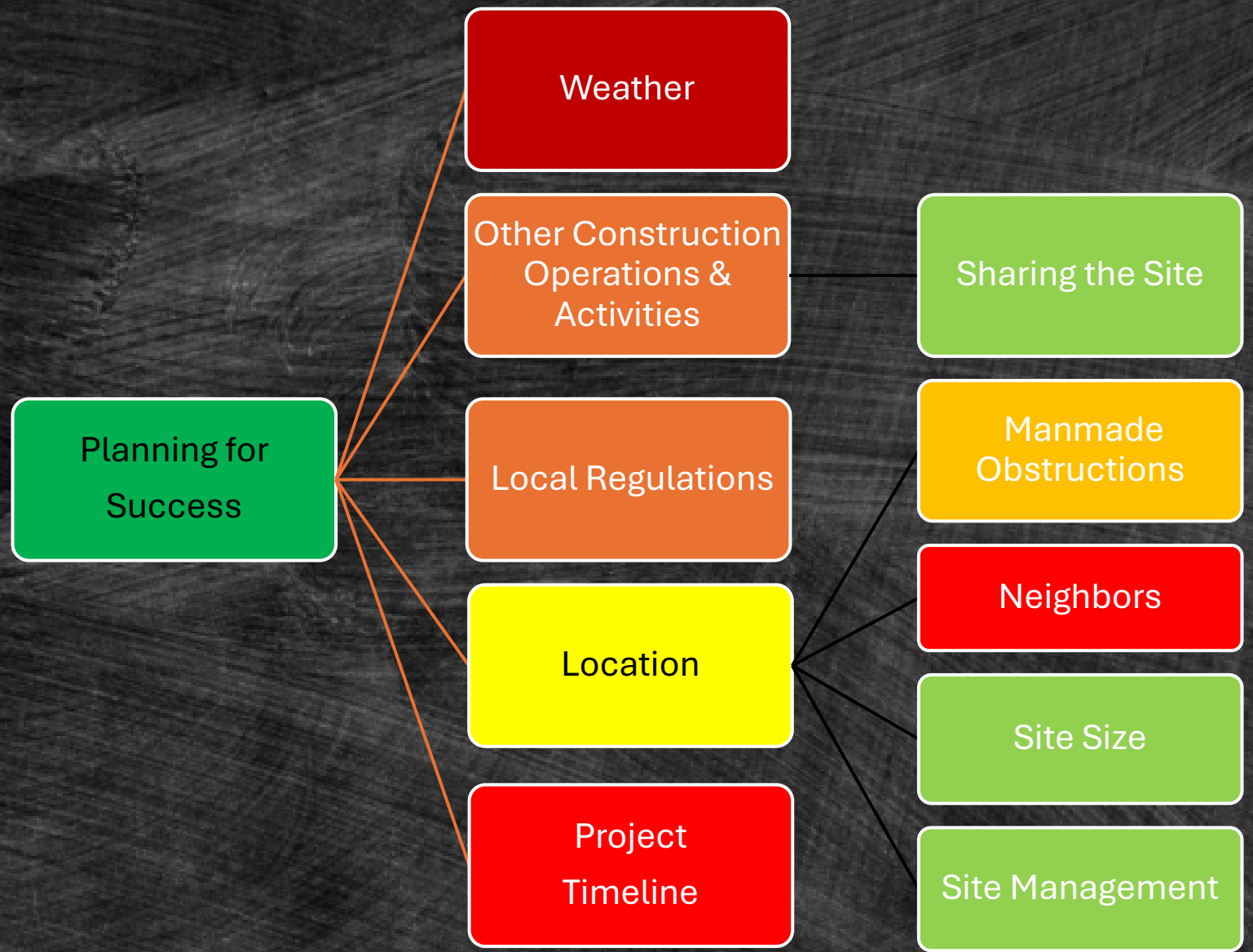
Selection Process

1. Location
2. Project Feasibility, Budget, & Stakes
3. State & Local Regulations
4. Test Hole, Logs, & Data
5. Bore Field Size & Hole Specifications
6. Construction Timeline
7. Contractor Qualifications & Capabilities

Drilling Company Project Selection Process



Drilling Project Management



Drilling Program Management Geothermal

Impacts to
project success

Local Geology
Non-Reactive
&
Reactive

Sand
Gravel
Rock
Clay
Shale

Manmade Subsurface
Obstructions &
Contaminates

Utilities
Old Building
Old Dump
Industrial Pollution

Problematic Subsurface
Conditions

FORMATION HYDRAULICS
Fragile Formations
Cobbles – Boulders
Loss Zones, Fractures, Voids

Water
High Volume Zones
Well Head Protection Areas

Artesian Flow
Methane
H₂S
Volatile Gas

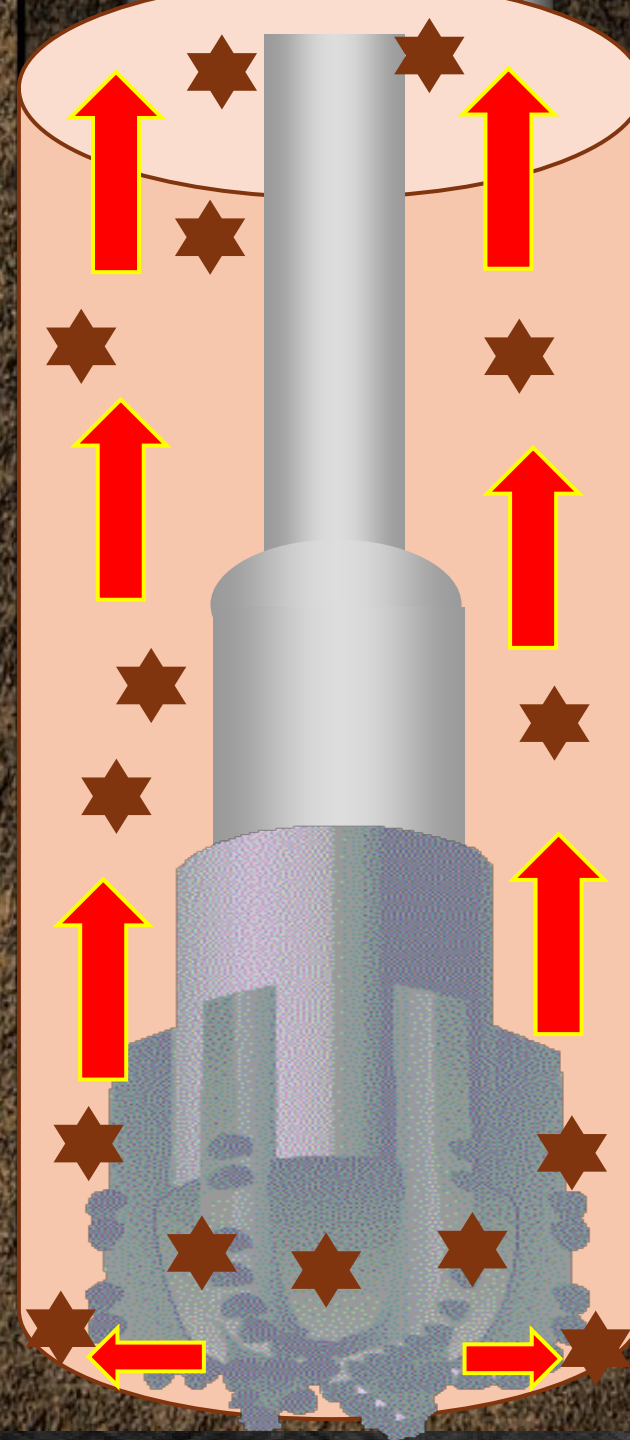
Borehole Creation

1. Pressure + Cutting Force

- a) Rotation
- b) Percussion
- c) Velocity
- d) Frequency

2. Cuttings Removal

- a) Mechanical
- b) Flushing
 - i. Water
 - ii. Air
 - iii. Drilling Fluids





The Drilling System. Defining the Subsurface Conditions

Geology

Formation
Hydraulics

Depth to
Water

Subsurface
Challenges



Drilling Capabilities

Rig capabilities

- Horsepower – Depth
- Rotation – Bit Selection
- Pulldown – Force – Angle
- Pullback – Depth – Tool Assembly
- Diameter – Depth – Angle

Drilling Methods

- Mud Pumps
- Air Compressor
- Sonic
- Dual Rotary
- Reverse Circulation

Drilling Contractor Qualifications

Special Tools
Special Methods
Applied Science &
Fundamentals

Target Up Hole Velocity

MUD Drilling

Water-Based Drilling Fluids

60 to 150 feet per minute



Direct Air Drilling

3,500 to 7,500 feet per minute



Air Foam Drilling

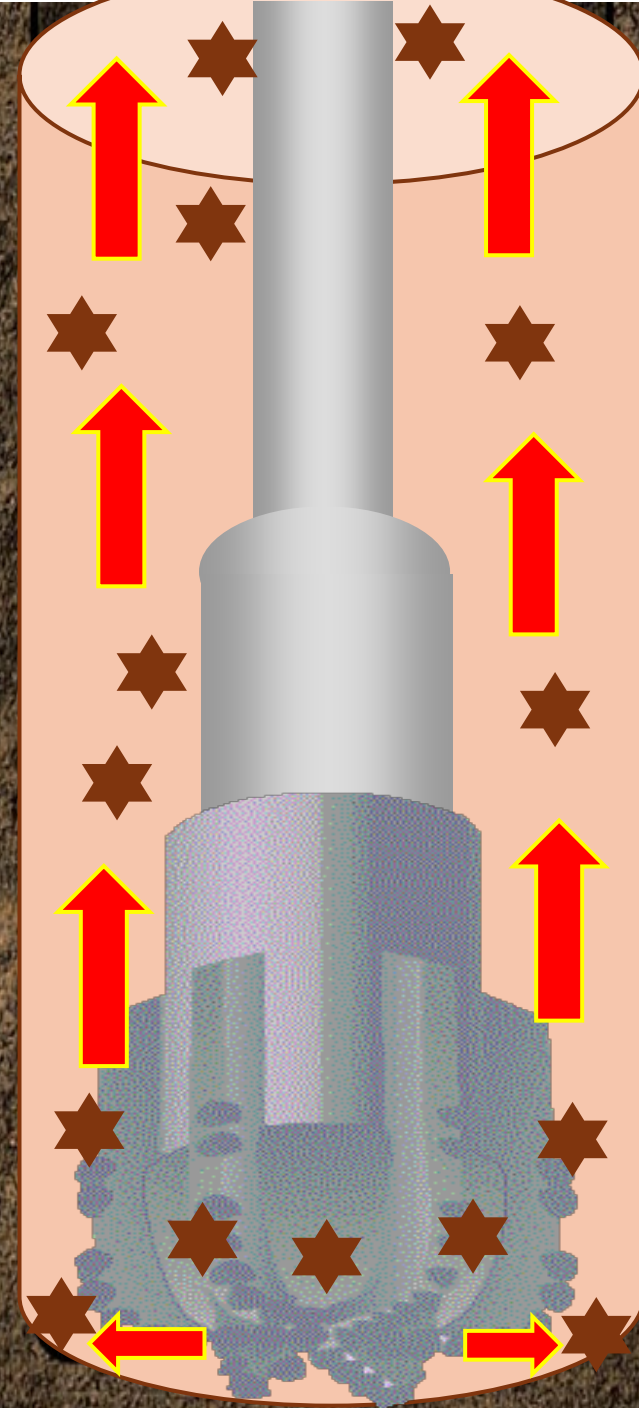
Water + air + foaming agent = foam

200 feet per minute



Engineered Fluid Solutions

100 feet per minute



Contractor Qualifications

Equipment

- Availability
- Tooling
- Drilling Method

Compatibility Location

- Geology
- Site Footprint
- Environmental Demands
- Site Management

Project Timeline

Borehole Design

- Diameter
- Loop Type
- Grout

Project Restoration, Clean up and Disposal

Workforce

- License Qualifications, State Drilling License, IGSHPA
- Safety Certifications
- Insurance Standards
- Quality Installations



Lessons Learned

Regardless of the geographic location or geologic conditions, a competent drilling company will approach a project with the following objective:

To safely complete the project with the best drilling methods, equipment, and tooling available while minimizing risk to the company and client.

Every project has the opportunity for a more optimized drilling method, equipment, or tools to increase productivity. Often, equipment availability and cost supersede maximizing drilling efficacy.







Mike Fleming

Foundation Tactics used for Geothermal Drilling



MEM – Building A – 22 Boreholes



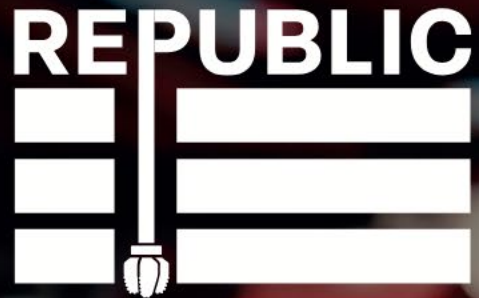
MEM – Building A – 22 Boreholes



MEM – Building A – 22 Boreholes

COLT McCARTHY

CEO - REPUBLIC DRILL CO.



PROVEN, PRECISE, POWERFUL



For more than 40 years, Comacchio has engineered drilling equipment designed to perform in demanding environments around the world. Known for precision engineering, versatility, and reliability, Comacchio rigs support a wide range of drilling applications including geothermal, water well, geotechnical, and mineral exploration.

Republic Drill Co. proudly represents Comacchio equipment across the United States, providing sales, service, and support to contractors who rely on dependable drilling performance everyday. Through this partnership, we are bringing globally trusted drilling technology to operators across the U.S. market.

COMACCHIO REPRESENTS THE KIND OF ENGINEERING AND RELIABILITY TODAY'S DRILLING OPERATIONS DEMAND. WE ARE PROUD TO OFFER THEIR RIGS TO CONTRACTORS WHO EXPECT THEIR EQUIPMENT TO PERFORM EVERY DAY.

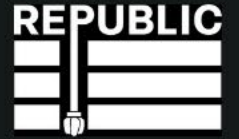
COLT MCCARTHY
OWNER AND CEO REPUBLIC DRILL CO.

DRILLREPUBLIC.COM



BROUGHT TO YOU BY REPUBLIC

REPUBLIC LOOP LOADER



The Loop Loader allows for smaller borehole diameters, requiring less costly drill bits and enables faster drilling times. This also helps reduce overall production costs by minimizing the processing of cuttings and drilling fluids, reducing grout material usage, and making loop installation safer, more consistent, and more productive.

RETRACTABLE GOOSE NECK TO ACCESS AND REMOVE COIL TUBING REEL

1,200 FT ON BOARD 1.25 INCH COIL TREMIE TUBING

FIELD SWAPPABLE COIL TREMIE TUBING UNIT

NO WAY THAT LOOP WAS GOING IN BY HAND.

MORRIS SHEA



COIL TUBING PUSHES LOOP TO DEPTH AND FUNCTIONS AS A TREMIE PIPE

ENSURES CONSISTENT BOTTOM-UP GROUTING EVERY TIME

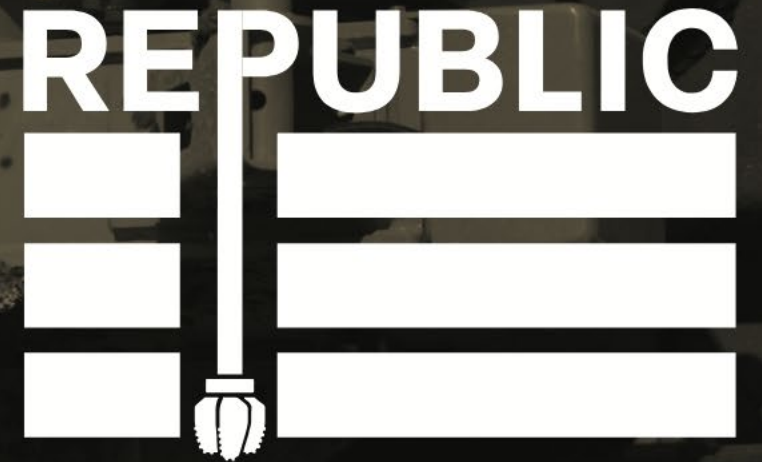
DELIVERS IGSHA-COMPLIANT INSTALLATIONS ON EVERY BOREHOLE

QUICK LOADING LOOP SYSTEM

TRACKS 10,000 LB RATING RUBBER TRACKS

48HP ENGINE WITH A 68HP OPTION

**REPUBLIC
DRILL CO.**





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