How To Buy Drilling

What drillers will ask you to mitigate their risk

Geothermal: The Genius Renewable

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CEUs for this workshop

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About the Speaker

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Course Description

Title: How to buy Drilling: What Drillers will ask you to Mitigate Their Risk

Description: “Drilling is just too expensive.”
How often have you said and/or heard this common phrase? A lot of scopes bid out for any building are built up (easily seen), not down (not so easily seen), especially not down hundreds of feet into the ground. During this session, we will walk through the types of information that drillers will need to give you a proposal, some of which may seem simple but the key is in how the information is communicated. We will review examples of scopes, drill logs, drawings and more to distinguish how to help the drillers mitigate their risk, resulting in a more competitive bidding process.
What does mitigating risk really mean?

How do you cover yourself when exposed to risk? Usually by adding in additional money to cover the worst case scenario.

And it might be the difference between a driller saying that they’ll bid the project, and a driller saying no.
What is that we’re buying

• Let’s talk about scale –
  • Example, The Westgate Hotel is 375’ tall
    [Wikipedia Resource]
  • Aria Las Vegas – 600’ tall
  • Bellagio – 511’ tall
  • Eiffel Tower (Paris, France) – 986’
  • Chrysler Building (New York, NY) – 1,046’
  • Golden Gate Bridge (San Francisco, CA) – 746’
What is that we’re buying

• Let’s talk about scale –
  • Across the country, drillers are being asked to go deeper, smaller, but with larger pipe.
  • Borehole diameter – 4” to 6”
  • Pipe diameter – .75” to 1.5”
What is that we’re buying

• Constructability
  • In most construction, you can visually see what you’re building.

But we can’t see what’s going on hundreds of feet below our feet.
Information a driller needs

Drill logs are key!

In the photo on the top, what is coming out of the shaker is sticky clay. On the bottom, chippy shale. Both of these photos are taken on the same site.

What comes out of these shakers, or into a mud tub, are the cuttings the driller reviews to help determine what they are drilling through.
All drill logs are not created equal
All drill logs are not created equal

• Things that should be included on the drill log
  • Drilling type
  • Include any water encountered, any voids encountered, subsurface gas, etc.
  • More description of formation (employ a geologist)
Test Bores Tell a Tale

Drilling test bores give the designer what they need – conductivity, diffusivity and undisturbed ground temperature. But they tell us so much more!

A test bore also helps make an educated decision on depth – if our goal is 850’, but hit a void at 450’, then discussions can be had on how to overcome the void, and include in that conversation the cost impacts to overcome the void.
Best Practices - Verticality

• A smaller hole may not be a straighter hole.
• Example – directional drillers
  • They can angle drill, turn corners, etc.
  • They use 10’ rods, steel.
• Best practices for drilling straight:
  • Weight on bit
  • Life of the bit
  • Speed of penetration
Specifications

Let’s talk standard specifications:
- Grout testing requirements
- Pressure testing
- Flow check
- Closeout documentation
- Schedule
- Scope

Refer to –
IGSHPA Standards
CSA C448
ASHRAE
PPI
Drawings

Let’s talk standard drawings:
• On center dimensions
• Depth from grade
• Existing utilities and/or structures
• Existing grade and/or final grade
Where Scopes Stop

Exterior Installer

Interior Installer

Complete Working Geothermal System

Drilling
Circuit Piping
Vault
Bypass
Excavation
Flushing & Purging
Pumps
Chemical Cleaning
Glycol
Interior Piping
Mechanical Equipment
Glycol feed station & equip.

Drilling
Interim Flushing & Purging
Pressure Testing – Step by step

- Pressure testing understanding

Uni-coils come factory pressure tested

Interim pressure tests on each borehole

Timed pressure tests to 100psi
Let’s go shopping!!

Let’s start by buying a residentially drilled project. We’ll be the mechanical contractor, asking for a price.
I’m looking for a 4 ton vertical

Can you provide me a price on a 4 ton vertical?

Or

Can you provide me a price on (2) bore at 400’ deep?

Sure! Let’s look at your project.
I’m looking for a 4 ton vertical

- Who’s going to design this?
- Type of grout?
- Pipe?
- Cuttings/spoils?
- Excavation/Lateral Tie-In
- Permits

Remember – the best tool is the one that you have available!
I’m looking for a 4 ton vertical

Questions a driller will ask:
- Access to water
- Utility locations
- Lot lines
- Existing “stuff” (sidewalks, driveways, buildings)
I’m looking for a 300 bores at 500’ deep

Can you quote to me a 300 bore project, 500’ deep?

Sure! Do you have drawings and specs that we can take a look at?
I’m looking for a 300 bores at 500’ deep

- What is the on center dimension from each bore?
- Grade across the site?
  - Rough & Finish
- Existing utilities
  - Overhead or buried
- Test Bore/Drill Logs
- Schedule
I’m looking for a 300 bores at 500’ deep

Questions a driller will ask:

- Site maintenance, including dewatering, snow removal, etc.
- Access to water
- Site access
- Utility locations
- Lot lines
- Existing “stuff” (sidewalks, driveways, buildings)
Common Complaints and Misconceptions

- We don’t have the space.
- We’ve heard that you can’t drill through that.
- This only works for big buildings – not my house.
- You only do that for new construction.
- Drilling is just too expensive.