ELECTRIC CITY TOOLING

Drilling Buckets

A drilling bucket is a heavy-duty excavation tool used with drilled shaft and caisson rigs to remove soil or rock from vertical boreholes. It operates by cutting into the ground, collecting material inside the bucket, lifting it to the surface, and dumping the material in controlled cycles until the required depth is reached.

How Drilling Buckets Work:

The drilling bucket is lowered into the borehole using the drilling rig. The bucket is positioned at the bottom of the hole where excavation will begin. The rig applies rotation and downward pressure, cutting teeth penetrate the soil or rock, material is loosened and enters the bucket through the bottom opening. Continued rotation allows the bucket to fill evenly. As the bucket fills, resistance increases. Operators monitor torque, penetration rate, and rig feedback to avoid overfilling, which can make extraction difficult and destabilize the hole. Once full, the bucket is lifted out of the borehole, the bottom plate or door remains closed, venting can minimizes suction forces while material is securely retained during extraction. At the surface, a mechanical mechanism opens the bottom door, allowing excavated material to fall into a spoil pile or dump truck. The door then closes for the next drilling pass. This cycle is repeated until the shaft reaches the specified depth and cleanliness requirements.

A drilling bucket is a critical tool in drilled shaft construction, enabling efficient, controlled excavation of soil and rock. Proper bucket selection, operation, and monitoring are essential to maintaining productivity, safety, and borehole integrity.

There are so many advantages to using a drilling bucket:

- Produces vertical, accurate shafts
- Maintains alignment
- Reduces overbreak and disturbance to surrounding soils
- Effective in both cased and uncased holes
- Compatible with both dry and slurry drilling methods.

Reach out for more information on how a drilling bucket can support your next caisson project!