

Overburden Drilling Methods

Overburden drilling systems are used when soil and subsurface conditions are not considered to be highly stable. These systems use casings as part of the drilling process to ensure that the drilled hole remains stable. The information below shows the number of overburden drilling systems sold by drilling equipment suppliers worldwide.

Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your State agency's standards and specifications when using these guidelines.

Methods

	Drilling Method	Principle	Common Diameters and Depths	Notes
1	Single-tube advancement a) Drive drilling	Casing with “lost point” percussed without flush	2–4 in. to 100 ft.	Obstructions or very dense soil is problematic
	b) External flush	Casing with shoe rotated with strong water flush	4–10 in. to 200 ft.	Needs high torque head and powerful flush pump
2	Rotary duplex	Simultaneous rotation and advancement of casing, plus internal rod carrying flush; rod may have down-the-hole hammer	4–8.75 in. to 230 ft.	Used only in very sensitive soil/site conditions; needs positive flush return; needs high torques (internal flushing only)
3	Rotary percussive concentric duplex	As two, except casing and rods percussed as well as rotated	3.5–7 in. to 130 ft.	Useful in obstructed/rocky conditions; needs powerful top rotary percussive hammer

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4	Rotary percussive eccentric duplex	As two, except eccentric bit on rod cuts oversized hole to ease casing advance	3.5–8 in. to 200 ft.	Expensive and difficult system used for difficult overburden; rod can be percussive at top, or may have down-the-hole hammer above the bit
5	“Double head” duplex	As two or three, except casing and rods may rotate in opposite directions	4–6 in. to 200 ft.	Powerful, new system for fast, straight drilling in very difficult ground; needs significant hydraulic power; casing can be percussed by top hammer; rod may be percussed by top hammer or may have down-the-hole hammer above the bit
6	Hollow-stem auger	Auger rotated to depth to permit subsequent introduction of grout and/or reinforcement through stem	4–16 in. to 100 ft.	Obstructions are problematic; care must be exercised in cohesionless soils; prevents application of higher grout pressures
7	Sonic	Casing is excited by a variable frequency, variable amplitude, sonic head	4–12 in. to 330 ft.	No or minimal flush needed; full-length sample of soil recovered for each hole

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