



# Install micropiles: drilling, casing, grouting, reinforcement

Install micropiles with our interactive checklist—commentable and export as PDF/Excel. Verify drilling, casing, bond length, grouting pressure and steel placement.

Project:

Date:

Filled by:

## Pre-Installation Verification

1	Survey and mark micropile ID, location, and cut-off elevation using a total station; verify offsets within $\pm 10$ mm; attach marked photo and as-built coordinates.
2	Confirm approved submittals: pile diameter, casing size/grade, design bond length, grout mix, reinforcement type; record approvals per approved project specifications and authority requirements.
3	Verify drill rig capacity and grout pump pressure gauges are calibrated within 6 months; photograph serial numbers and calibration labels; upload certificates.
4	Mark planned unbond and bond-length intervals on drill string/casing with paint bands; cross-check against design; photograph markings before drilling.

## Drilling Operations

5	Drill using rotary or rotary-percussive method with appropriate flush; log strata every 1 m with photos of cuttings and penetration rate; record depth to refusal or design tip.
6	Maintain alignment: deviation within 2% or $\pm 50$ mm at cut-off; verify with inclinometer or fixed template; document readings at 3 m intervals and final position.
7	Control drilling fluids/flush to prevent ground loss or heave; manage returns; record fluid type and approximate volumes in/out; capture collar condition photos.
8	Clean hole bottom and sides before casing or grouting; circulate clean flush until returns are clear; document with time, volume, and a final return photo.

## Casing Installation

9	Install specified steel casing to required depth; verify OD/ID and wall thickness with calipers; record heat numbers and attach mill certificates.
10	Confirm casing embedment/socket into competent layer per design; measure penetration length into rock or dense stratum; log depth and supporting drill data.
11	Check plumbness and cut-off elevation; maintain top elevation within $\pm 5$ mm; verify with level and staff; attach photos of level readings.
12	Join casing sections by approved threaded or welded connection; record welder ID/procedure; perform visual inspection (no cracks, full fusion/threads engaged); photograph each joint.

**Bond Length Verification**

13	Measure borehole diameter in bond zone using caliper tool or probe at three depths; confirm minimum diameter meets design; record measurements with time and depth.
14	Verify bond length interval matches submittal and ground conditions; use weighted tremie tape to confirm full depth and no collapse; record stabilized fluid level.
15	Install centralizers in bond zone at 2–3 m spacing; ensure minimum 25–40 mm cover; photograph centralizer type and positions before grouting.

**Pressure Grouting**

16	Prepare grout to approved water–cement ratio and admixtures; record batch tickets, temperature, and mix time; take a photo of the fresh grout flow/cone test if required.
17	Tremie from base upward maintaining continuous flow; keep tremie tip embedded in grout column; record start/finish times and interruptions, if any.
18	Maintain pump pressure per design (e.g., 0.5–1.5 MPa unless otherwise approved); log pressure versus depth; capture gauge photos every ~2 m of placement.
19	Track grout volume versus theoretical; expect overrun of approximately +10% to +50% depending on ground; reconcile deviations; document clean return at collar.
20	If stage or secondary grouting is specified, install packers and regROUT designated intervals; log pressures, volumes, set times, and attach pump readouts.

**Bar/Cable Placement and Records**

21	Install specified bar or strand; verify diameter, grade, length, and corrosion protection; check mill certificates and tag numbers; photograph identification.
22	Center reinforcement with spacers to maintain $\geq 25$ mm cover; ensure no contact with casing; measure top and mid-depth cover; attach photos.
23	Secure bar/strand projection and coupler/wedge orientation at cut-off; verify thread engagement or wedge seating torque per submittal; record values and photos.
24	After initial set, trim, cap, and stencil pile ID/date; upload redline as-built, grout logs, and daily report; obtain digital signatures from inspector and contractor.

**Comments:**

Filled by:

Signature:

Introduction	How to use this checklist
<p>Install micropiles with confidence using this field-ready inspection checklist. It guides micropile installation teams through drilling verification, casing placement, bond length confirmation, pressure grouting control, and reinforcement (bar or strand) placement. By focusing on correct drilling techniques, stable holes, accurate socketing, and continuous tremie grouting, you reduce risk of voids, soft inclusions, or inadequate bond. The checklist helps site engineers and inspectors document pressures, volumes, grout mix data, and alignment tolerances while capturing photos and readings. It excludes load tests, focusing solely on installation verification per approved project specifications and authority requirements. The result is predictable performance, cleaner records, and fewer reworks. Start in interactive mode to tick items, attach photos, add comments, and export PDF/Excel via a secure project QR code so field and office stakeholders stay aligned in real time.</p>	<ol style="list-style-type: none"> <li>1. Preparation: Assemble total station, inclinometer/template, calipers, tremie, packers, grout pump with calibrated gauges, PPE, batch ticket forms, and camera. Confirm approved submittals and site access; brief crew on tolerances and documentation.</li> <li>2. Open the checklist on a tablet or phone and assign the pile ID. Enable offline mode if connectivity is limited; sync when back online to prevent data loss.</li> <li>3. Using the Interactive Checklist: Tick items as completed, attach photos (gauges, cuttings, tickets), and enter measurements (depths, pressures, volumes). Add time-stamped comments to flag anomalies or approvals.</li> <li>4. Capture Evidence: Scan batch tickets, photograph calibration labels, and record survey screenshots. Use required fields to prevent submission without critical readings or attachments.</li> <li>5. Quality Gate: Before moving to the next stage, review tolerance checks (alignment, cover, elevation) and reconcile grout theoretical versus actual volumes.</li> <li>6. Export: Generate an export as PDF/Excel with embedded photos, comments, and data logs. Include a QR code for authentication and easy site-to-office handover.</li> <li>7. Sign-Off: Collect digital signatures from the contractor, inspector, and engineer (if required). Archive the record per project retention policies and share with stakeholders.</li> </ol>