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Base-grout bored piles: pressure, uplift and acceptance

Base-grout bored piles interactive checklist for ports, pressure and uplift monitoring. Commentable with QR. Record volumes and acceptance, export PDF/Excel.

Project:	
Date:	
Filled by:	

Pre-Grouting Readiness	
1	Confirm pile ID, design grouting pressure limit, target grout mix, acceptance criteria, and stop conditions against the approved grouting plan; record document numbers and obtain superintendent sign-off.
2	Verify concrete has achieved the project-specified early strength before grouting using compressive test reports or rebound hammer correlation; attach lab results showing strength in MPa and acceptance sign-off.
3	Check access, lighting, exclusion zone, and emergency egress around the pile head; capture site photos and a signed permit-to-work confirming controls, barriers, and communication plan.
4	Review as-built pile records for toe level, final depth, and groundwater notes; verify alignment with drilling log and approved design; attach the verified as-built with reviewer initials.

Port Installation and Integrity	
5	Confirm base grout ports are fixed to the reinforcement cage terminating at the pile toe, with non-return valves and colour-coded, uniquely labelled lines visible at the pile head; attach installation photos.
6	Hydrotest each port line with clean water to the specified test pressure (≥ design grouting pressure) and hold for the required duration without loss; record pressure, duration, and any leak rectification.
7	Verify manifolds, isolation valves, and packers fit securely on each port; function-test open/close operations and document valve positions; capture valve tags in photos tied to the pile ID.
8	Blow through and flush lines to confirm they are free from obstructions; log the flush volume in litres and clear return at manifold, then cap lines to prevent contamination.

Grouting Equipment and Materials	
9	Confirm grout pump capacity and relief valve setting meet the approved plan; perform a relief test to verify automatic bypass activates at the set limit; record setpoint and technician signature.
10	Calibrate pressure gauges (range ≥ 1.5 × design pressure) and verify date-valid certificates; attach calibration sheets and photograph gauge face readings at zero and at a known load.
11	Zero and verify flow meter or stroke counter; conduct a timed bucket test to correlate strokes to litres; attach correlation chart and initial verification results.
12	Check grout materials: cement type, admixtures, water quality, and w/c ratio per mix design; record batch numbers, temperature (°C), Marsh cone/flow readings, and retain grout cubes for testing.

Pressure Grouting Operations	
13	Install dial gauge or laser displacement sensor at the pile head with an independent datum; zero to baseline and record ambient temperature; capture a photo of gauge setup and zero reading.
14	Prime pump, hoses, and selected port with grout until air is purged; log priming volume in litres and confirm stable pressure without surging before commencing Stage 1 grouting.
15	Execute Stage 1 grouting with a controlled pressure ramp and hold periods per plan; record pressure (MPa), flow (L/min), cumulative volume (L), and uplift (mm) at 30–60 s intervals.
16	Continue staged grouting (subsequent ports if required) following planned increments; do not exceed design maximum pressure; document any pressure spikes and corrective actions taken.
17	Apply stop criteria if uplift exceeds the specified limit or adjacent structures show movement; immediately depressurise, notify the engineer, and record readings, photos, and instructions received.
18	Declare refusal when additional pressure produces negligible volume intake and uplift stabilises per plan; record final pressure, total volume, last uplift reading, and operative’s signature.

Monitoring and Measurements	
19	Maintain continuous pressure–volume–time logging via data logger; verify sampling frequency; export raw data (CSV) and attach a pressure–volume curve plot with timestamped axes.
20	Measure and record pile head uplift at defined intervals and at each pressure hold; log readings in millimetres with instrument ID; include before/after photos of gauge scale.
21	Survey pile head elevation before and after grouting relative to a stable benchmark; report net change in mm and surveyor’s certification; attach the survey sketch.
22	Record ambient temperature and grout temperature at the pump discharge and port; note any impact on viscosity or pumping rates; attach thermometer photos showing °C.

Records and Acceptance	
23	Complete the grouting log: port IDs, start/stop times, pressures, volumes, uplift readings, and anomalies with corrective actions; obtain supervisor verification and date.
24	Compile material traceability: cement and admixture lot numbers, water source, mix tickets, cube IDs, and test results; attach certificates of analysis and delivery dockets.
25	Check acceptance against the approved plan: required pressure–volume response achieved without exceeding limits, uplift within criteria, and ports left sealed; record engineer acceptance per approved project specifications and authority requirements.
26	Archive the QA package to the common data environment: signed checklist, logs, photos, calibration certificates, and CSV exports; generate a QR-coded PDF/Excel export for audit.

Comments:

Filled by:

Signature:

Introduction	How to use this checklist
Base-grout bored piles require disciplined preparation, accurate instrumentation, and rigorous documentation to deliver dependable load transfer at the pile toe. This checklist focuses on installing grout ports at the base, executing controlled pressure grouting, monitoring uplift, and recording volumes and acceptance outcomes. It covers pile base grouting (tip grouting) only; shaft grouting is explicitly excluded. You will verify port integrity, use calibrated pumps and gauges, run pressure stages per the approved grouting plan, and track uplift with dial gauges or laser sensors. By logging pressure–volume–time curves and correlating them to uplift response, you avoid risks such as port leaks, over-pressurisation, soft toe response, and undocumented acceptance. The result is a clear, auditable QA trail for bored pile foundations that supports handover and performance assurance per approved project specifications and authority requirements. Use this interactive checklist to tick items, add comments, and export your records as PDF/Excel with a secure QR link.	1. Preparation: gather the approved grouting plan, ITP, calibrated pump, pressure gauges, flow meter, packers, grout mixer, materials, dial gauge/laser and survey kit; set up a safe exclusion zone and a clean work platform. 2. Open the checklist, select the pile ID, and preload reference documents (drawings, mix design, calibration files). Assign responsibilities and due times for each item to the field team. 3. Start interactive mode during operations. Tick completed items, add time-stamped comments, attach photos and CSV data, and flag any nonconformances directly from a tablet or phone. 4. Use the live summary to verify prerequisites are complete before grouting. During staging, log pressure–volume–uplift readings at the required intervals and link instrument IDs. 5. Export the completed record set as PDF/Excel with embedded photos and data tables. Share the QR-secured link with the engineer and QA for review and acceptance. 6. Sign-Off: obtain digital signatures from the supervisor, contractor, and engineer; archive to the common data environment with version control and QR authentication.