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Install shear keys/dowels at pile heads checklist, QA

Install shear keys/dowels at pile heads with interactive checklist: commentable steps, embedment verification, and records you can export as PDF/Excel for QA.

Project:	
Date:	
Filled by:	

Pre-Installation Verification	
1	Confirm the activity excludes reinforcement starters; only shear keys/dowels at pile heads per approved drawings. Mark up plan showing excluded starters; capture supervisor sign-off and photo of markings.
2	Verify dowel diameter, grade, and coating per bar schedule using callipers and mill certificates; record heat/lot numbers and acceptance signature in the ITP.
3	Measure ambient and substrate temperatures with an infrared thermometer; confirm within adhesive manufacturer’s application range; log readings and hold work if out-of-range.
4	Set out dowel centres and edge distances with a rigid template and steel tape; tolerance ±5 mm from drawings; photograph layout with a visible scale.
5	Scan pile head using ferroscan/GPR to avoid existing reinforcement; adjust hole positions if required; attach scan images and revised markup approved by the engineer.

Drilling and Hole Preparation	
6	Fix a drill stand or jig to maintain the design angle (typically perpendicular); verify with a digital angle gauge; tolerance ≤ 2° from design; photo evidence.
7	Drill to specified diameter and depth per drawings and adhesive TDS; measure depth with a calibrated gauge rod; tolerance ±5 mm; record measurements per hole.
8	Control breakout near surfaces by moderating hammer action and respecting minimum edge distances; inspect for spalls; record condition photos and proposed repairs if needed.
9	Clean each hole with brush–blow cycles using a nylon brush and oil-free compressed air until dust-free; minimum two full cycles; attach bore photos for evidence.
10	Confirm hole moisture condition matches adhesive requirements (dry or SSD); verify with lint-free swab; if wet beyond limits, dry with a heat gun; log method and result.

Bar Preparation and Epoxy Grout	
11	Cut and deburr dowels to achieve design embedment and projection; tolerance ±5 mm; mark insertion depth line with permanent marker; photograph bar markings.
12	Degrease and abrade the bonding length to bright metal; ensure surfaces are free of oil and rust bloom; capture close-up photos of prepared bars.
13	Trial fit each bar to confirm embedment and projection using a depth stop or collar; acceptance: mark aligns with surface; record pass/fail per hole.
14	Condition adhesive cartridges to TDS temperature range; check expiry; fit a new mixing nozzle; purge until uniform colour; record batch/lot numbers and purge length.
15	Inject adhesive from hole bottom while withdrawing nozzle to avoid voids; fill approximately two-thirds of the hole; photograph filled hole prior to insertion.

Installation and Alignment	
16	Insert the dowel while rotating slowly to wet all surfaces; seat to the marked line; acceptance: depth line flush within ±3 mm; record insertion time.
17	Install temporary jigs or clamps to prevent movement during gel time; verify bar angle with a magnetic level; tolerance ≤ 2°; photo evidence of gauge reading.
18	Check centre-to-centre spacing and edge distances after insertion using a steel tape; tolerance ±5 mm from drawings; capture scaled photos of measurements.
19	Remove excess expelled adhesive and form a clean fillet at the annulus; avoid contaminating adjacent concrete; dispose of waste per SDS; photo of finish.

Embedment Verification and QA	
20	Maintain an exclusion zone until full cure; log ambient and substrate temperatures and adhesive cure time; confirm cure complete per TDS before any load or impact.
21	Verify embedment after cure using a depth probe or endoscope where accessible; acceptance: embedment meets or exceeds design; record measurements with photos or video.
22	If specified, conduct proof pull-out tests with a calibrated tester; acceptance per approved project specifications and authority requirements; attach test report and calibration certificate.
23	Complete ITP hold points and obtain installer, supervisor, and engineer approvals; notes must confirm exclusion of starters; upload signed records to the checklist.

Finishing and Documentation	
24	Fit protective caps or foam sleeves to protruding dowels to prevent damage before pile cap works; photo evidence of protections in place.
25	Apply specified temporary corrosion protection to exposed steel if required; record product name, lot number, and application date; capture photos after application.
26	Update as-built records with dowel sizes, locations, embedment, adhesive batch numbers, and tests; export the interactive checklist and photos to PDF/Excel with a QR-secured link.

Comments:

Filled by:

Signature:

Introduction	How to use this checklist
Install shear keys/dowels at pile heads is a focused installation and QA process for transferring shear across the pile-to-cap interface. This checklist covers drilled dowel installation, epoxy anchoring, and embedment verification while explicitly excluding reinforcement starters. It guides site engineers and inspectors through layout, rebar scanning, drilling, hole cleaning, adhesive injection, bar alignment, and post-cure checks. By standardizing dowel installation at pile heads, teams reduce risks like striking reinforcement, voided adhesive bonds, inadequate embedment, misalignment, and early loading before full cure. The result is reliable shear transfer and orderly records ready for quality and compliance reviews. Practical cues—such as angle tolerances, brush–blow cycles, moisture control, and proof testing if specified—are paired with photo evidence, batch tracking, and signatures. Use this interactive checklist to tick each step, comment on anomalies, attach photos and reports, and export your completed records to PDF/Excel with a secure QR link.	1. Preparation: Brief the team on scope (exclude starters). Assemble drill stand, rotary/diamond drill, nylon brushes, oil-free air, ferroscan, depth rod, infrared thermometer, adhesive system with nozzles, jigs, PPE, and forms. Confirm drawings, ITP, and TDS. 2. Project setup: Enter project, pile IDs, dowel sizes, design embedment, and hold points. Preload acceptance tolerances (±5 mm, ≤ 2°) and required evidence (photos, batch numbers, signatures). 3. Using the Interactive Checklist: Start interactive mode, tick steps as completed, add comments for deviations, attach photos/scans, and tag responsible parties. Generate interim exports to PDF/Excel for daily reviews. 4. Sign-Off and Archiving: Capture digital signatures from installer, supervisor, and engineer. Lock the record with a QR-secured link, distribute to stakeholders, and archive with attachments for audits.