PILECONNECT

STANDARDS

PCS 102:26

Helical Pile Installer Qualification, Certification, and Quality Assurance Requirements

Installer Categories, Training Standards, Quality Management, and Project Application Classes

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Recommended Practice (Voluntary Guideline)

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Preface

Helical pile installation is performed across North America by a diverse population of contractors ranging from large franchise networks with structured training programs to independent operators with significant field experience but no formal credential. Many manufacturers and franchise systems describe their installers as trained or certified, but at the time of publication no independent standard defines what those terms should mean in terms of curriculum, supervised experience, assessment, or firm-level quality management.

The result is an industry condition in which the term certified installer carries materially different meanings depending on the issuing organization. An owner, engineer of record, or authority having jurisdiction has no consistent basis for evaluating installer competency claims, comparing competing bids, or specifying minimum qualification requirements. This is particularly consequential for permanent foundation applications, where the quality of installation directly affects the long-term performance of the structure it supports.

This recommended practice is intended to fill that gap. It defines tiered installer categories based on training, supervised experience, and demonstrated competency; a firm-level quality management framework; project application classes that tie required qualification to the consequence of failure; documentation and disclosure requirements; and model specification language that owners and engineers may adopt by reference. It does not introduce new installation theory, does not replace any manufacturer training program, and is not itself a certification body. It provides a common vocabulary

and a minimum floor so that the term certified installer becomes meaningful and comparable across the industry.

Manufacturers and franchise networks are encouraged to map their existing training and certification programs onto the categories of this practice and to disclose that mapping in their installer documentation. Independent contractors may self-attest using the framework of this practice or be assessed by a third party. In either case, the framework of this practice is the reference, not the credential issuer.

This First Edition is published for industry comment and trial use. Feedback may be submitted through pileconnect.com.

1 Scope

1.1 This recommended practice applies to individuals, crews, and firms performing the permanent installation of helical piles, screw piles, and helical anchors in buildings and other structures where the installation is intended to support permanent loads. It applies equally to installer personnel operating within manufacturer franchise and dealer networks and to independent contractors.

1.2 This recommended practice establishes installer personnel categories, minimum training and competency requirements, a firm-level quality management framework, project application classes, documentation and recordkeeping requirements, recertification intervals, nonconformance classification, disclosure requirements, and model specification language for use by owners and engineers of record.

1.3 This recommended practice does not apply to

(a) the structural or geotechnical design of helical pile foundations, which remains the responsibility of the engineer of record;

(b) the manufacturing or fabrication of helical pile products, which shall conform to the applicable product standard or evaluation report;

(c) temporary works, except where expressly adopted by contract; or

(d) the assessment of individual manufacturers' training programs for purposes other than mapping to the categories of this practice.

1.4 This recommended practice is intended to be compatible with alternative-solution frameworks under Division C of the National Building Code of Canada and the alternative materials and methods provisions of the International Building Code. It does not, of itself, confer code compliance.

1.5 In this document, *shall* indicates a requirement necessary to conform to this practice; *should* indicates a recommendation; and *may* indicates an option.

> ***Note:*** *This practice addresses the human and organizational side of helical pile installation. It is intended for use alongside product evaluation reports (ICC-ES ESRs, IAPMO/CCMC evaluation reports) and manufacturer installation instructions, not in substitution for them.*

2 Reference Publications

This recommended practice refers to the following publications, and where such reference is made it shall be to the edition current at the time of contract, including all amendments published thereto, unless a specific edition is cited.

- National Building Code of Canada (NBC), Division B Part 4 and Division C (alternative solutions)
- International Building Code (IBC) - Alternative Materials and Methods provisions
- International Residential Code (IRC) - Foundation provisions
- ICC-ES AC358 - Acceptance Criteria for Helical Pile Systems and Devices
- IAPMO/CCMC evaluation report requirements, as applicable to the product system
- ASTM D1143/D1143M - Static Axial Compressive Load Test
- ASTM D3689/D3689M - Static Axial Tensile Load Test
- ASTM D3966/D3966M - Lateral Load Test
- ASTM D4945 - High-Strain Dynamic Testing of Deep Foundations

- CSA W47.1 - Certification of Companies for Fusion Welding of Steel (Canada)
- CSA W59 - Welded Steel Construction (Canada)
- AWS D1.1 - Structural Welding Code, Steel (United States)
- DFI Publication: Helical Piles and Tiebacks, Guidelines and Recommendations (current edition)
- ICC-ES ESR or CCMC evaluation report for the specific helical pile product system used
- Manufacturer installation instructions for the specific helical pile product system used

3 Definitions

The following definitions apply in this recommended practice:

Application Class - a designation assigned to a project by the engineer of record that reflects the consequence of foundation failure, used to determine the minimum installer category and firm qualification required under Clause 9.

Authority having jurisdiction (AHJ) - the governmental body responsible for enforcement of the applicable building code.

Calibration certificate - a document issued by a qualified calibration provider confirming that a torque measurement instrument has been tested against a traceable standard and performs within the stated accuracy tolerance.

Certified Installer - an individual who has completed the training, supervised experience, and assessment requirements of Category II or Category III as defined in Clause 4, and whose qualification has been documented in accordance with Clause 10.

Corrective action - a documented response to a nonconformance that identifies root cause, remedial measures, and steps taken or planned to prevent recurrence.

Engineer of record (EOR) - the professional engineer licensed in the applicable jurisdiction who is responsible for the design of the foundation system in which the helical piles are used.

Field audit - an on-site review conducted during active helical pile installation to verify conformance with project specifications, this practice, and the installer's quality management system.

Franchise or dealer network - a distribution and installation structure in which a manufacturer authorizes independent contractors to install its products under a licensing or dealership agreement that includes defined training and operational requirements.

Installation log - a project-specific record, prepared for each pile, that captures at minimum the pile identifier, installation date, crew members, equipment identification, final installed depth, final installation torque, observed soil conditions, and any deviations or anomalies.

Installer - an individual who performs or directly assists in the physical installation of helical piles, including equipment operation, pile handling, and torque monitoring.

Installer Trainee - an individual who is in the process of acquiring the experience and training required for Category II certification and who performs installation work only under the direct, on-site supervision of a Certified Installer of Category II or higher.

Lead Installer - a Certified Installer of Category III who holds supervisory responsibility for a crew and a project installation, including authority over quality control decisions and nonconformance disposition.

Manufacturer authorization - written confirmation issued by a helical pile manufacturer that an installer or firm has completed the manufacturer's product-specific training requirements and is authorized to install the manufacturer's products.

Nonconformance - a condition in which an installation parameter, documentation record, or personnel qualification deviates from the requirements of the project specification, the applicable product evaluation report, or this practice.

Qualified Installation Firm - an installation firm that meets the Category F requirements of Clause 4.5, including documented quality management procedures, personnel competency records, equipment maintenance and calibration records, and a nonconformance and corrective-action process.

Torque monitoring record - a project-specific record of the installation torque measured at defined depth intervals during helical pile installation, prepared in accordance with the applicable product evaluation report and this practice.

4 Installer and Firm Categories

4.1 All installers performing work on a project applying this practice shall be classified into one of the personnel categories defined in Clauses 4.2 to 4.4, and all installation firms shall meet the firm category requirements of Clause 4.5 where required by Clause 9. Categories shall be stated on quotations, contracts, and submittals in accordance with Clause 11.

4.2 Category I - Installer Trainee

4.2.1 Category I designates an individual who is in active training for helical pile installation and has not yet completed the requirements for Category II certification.

4.2.2 A Category I individual shall work only under the direct, on-site supervision of a Category II or Category III Certified Installer. Direct supervision requires that the supervising installer be physically present at the installation location and immediately available to intervene.

4.2.3 A Category I individual shall not operate as the sole qualified person on a project, shall not be identified as a Certified Installer on any project document, and shall not sign or certify installation records.

4.3 Category II - Certified Installer

4.3.1 Category II designates an individual who has completed the training curriculum, supervised field experience, and assessment requirements of Clause 5 for Category II, and whose qualification is documented in accordance with Clause 10.

4.3.2 A Category II Certified Installer may perform helical pile installation independently, operate as a crew member under the direction of a Category III Lead Installer, supervise Category I trainees, and prepare and certify installation logs for the piles they personally install.

4.3.3 A Category II Certified Installer shall not act as lead installer for a Class 3 project without direct oversight by a Category III Lead Installer present on site.

4.4 Category III - Certified Lead Installer

4.4.1 Category III designates a Certified Installer of advanced experience who has completed the additional requirements of Clause 5 for Category III, including a minimum period of practice as a

Category II installer, and who has been assessed on crew leadership, nonconformance management, and quality oversight.

4.4.2 A Category III Certified Lead Installer may perform all functions of Category II, serve as lead installer on projects of any Application Class, supervise Category I and Category II personnel, make quality control disposition decisions in the field, sign nonconformance reports and deviation authorizations on behalf of the installation firm, and represent the firm in communications with the EOR regarding installation matters.

4.5 Category F - Qualified Installation Firm

4.5.1 Category F designates an installation firm that meets the quality management requirements of Clause 7. Category F is a firm-level designation, not a personnel category.

4.5.2 A firm claiming Category F status shall have at least one Category III Certified Lead Installer in active employment or under a documented retainer arrangement that ensures that individual's availability to the firm's projects.

4.5.3 The presence of manufacturer authorization does not, by itself, constitute Category F status under this practice. Manufacturer authorization and Category F status are complementary and independently documented.

> ***Note:*** *Category F is the firm-level parallel to the individual categories. An owner who requires that a Qualified Installation Firm perform the work is requiring not only qualified people but also documented systems, calibrated equipment, and a traceable quality record. Both elements are necessary for high-consequence projects.*

Table 1 - Summary of installer and firm categories

Cat.	Title	Supervision status	Key restrictions
I	Installer Trainee	Must be directly supervised by Cat. II or III at all times	Cannot be sole qualified person; cannot certify records
II	Certified Installer	May work independently; may supervise Cat. I	Cannot lead Class 3 project without Cat. III on site
III	Certified Lead Installer	May lead projects of any Application Class; may supervise all lower categories	None beyond project specification
F	Qualified Installation Firm	Firm-level designation; requires at least one Cat. III	Manufacturer authorization does not substitute for Cat. F

5 Minimum Training and Competency Requirements

5.1 To qualify under this practice, an installer's training program, whether delivered by a manufacturer, franchise network, independent training provider, or self-directed study combined with structured mentorship, shall demonstrate that the installer has achieved the competency outcomes listed in Clause 5.2.

5.2 Required curriculum outcomes

A training program shall cover, at minimum, the following outcome areas:

(a) Product and system knowledge: understanding of helical pile components (shafts, helix plates, couplings, brackets), common product types and configurations, and the content and limitations of applicable ICC-ES ESRs or IAPMO/CCMC evaluation reports, including permitted use conditions, installation torque limits, and minimum shaft embedment requirements.

(b) Reading drawings and specifications: ability to read and interpret foundation drawings, pile layout plans, pile schedules, detail sheets, and project specifications; ability to identify required pile locations, design capacities, installation parameters, and specified tolerances.

(c) Soil and subsurface basics: practical understanding of common soil types encountered in installation (clays, sands, gravels, fills, organic soils, and frozen ground); recognition of conditions likely to affect installation performance or require engineering review.

(d) Equipment selection and operation: knowledge of drive head types, torque monitoring systems, installation machines, hydraulic system pressure-torque relationships, and the maintenance checks required before and during installation.

(e) Torque monitoring and pitch compliance: understanding of the torque-capacity correlation used in the applicable evaluation report, the effect of helix pitch on advance rate, methods for monitoring and recording torque vs. depth, and the significance of torque spikes, drops, and terminal torque.

(f) Handling refusal and obstructions: recognition of refusal conditions (legitimate bearing vs. obstructions), procedures for attempting penetration, criteria for declaring refusal, documentation requirements, and obligation to notify the EOR when a pile cannot achieve the design depth or torque.

(g) Installation tolerances: knowledge of the permitted tolerances for pile location, plumb and batter, final depth relative to design, and final installation torque relative to the minimum specified.

(h) Documentation and recordkeeping: ability to prepare installation logs, torque monitoring records, as-built records, and deviation reports in accordance with Clause 10.

(i) Safety and site communication: awareness of hazards associated with helical pile installation, including underground utilities, overhead obstructions, equipment operating zones, soil face stability, and communication protocols with site supervision.

5.3 Training modalities

5.3.1 Training delivered under this practice shall include both theoretical and practical components.

5.3.2 Theoretical training covers product knowledge, soil basics, drawing reading, documentation, and safety. It may be delivered in a classroom, online, or in a blended format. Completion shall be documented by the training provider and shall include a written or online assessment to confirm retention of the curriculum outcomes of Clause 5.2.

5.3.3 Practical field training covers equipment operation, torque monitoring, handling of field conditions, and documentation practice. It shall be conducted on an active installation site or a controlled training site under the direct supervision of a Category III Certified Lead Installer or a manufacturer's qualified field trainer.

5.3.4 Assessment shall consist of, at minimum: (a) a written or online examination covering the curriculum outcomes of Clause 5.2, with a minimum passing score of 70%; and (b) an observed field performance evaluation, scored by a Category III Certified Lead Installer or a manufacturer's qualified field trainer, confirming that the installer can correctly operate the installation equipment, monitor and record torque, and complete an installation log without assistance.

5.4 Category-specific experience requirements

Table 2 - Minimum experience and assessment requirements by category

Requirement	Category I (Trainee)	Category II (Certified Installer)	Category III (Certified Lead Installer)
Theoretical training	Enrolled in approved program	Completion of full curriculum per Clause 5.2	Category II plus additional module on crew leadership and QA
Supervised field hours	None required to enter trainee status	Min. 80 hours supervised installation; min. 50 piles installed under supervision	Min. 24 months as a Category II installer; min. 300 piles installed in that period
Written examination	Not required	Required; min. 70% pass mark	Required; min. 75% pass mark; includes leadership and QA questions
Field performance evaluation	Not required	Required; observed by Cat. III or manufacturer-qualified field trainer	Required; includes nonconformance scenario and crew communication evaluation
Certification period	N/A	3 years; recertification per Clause 12	3 years; recertification per Clause 12

Note: *The 80-hour and 50-pile minimums for Category II are consistent with the supervised field experience customarily required by structured apprenticeship programs in the trades and reflect a practical minimum for exposure to the range of soil conditions, equipment configurations, and installation outcomes encountered in normal helical pile work. Individual manufacturers may specify higher minimums as a condition of their product authorization. The basis for these values is set out in Annex C.*

5.5 Project diversity and credential interoperability

5.5.1 The 50 piles required for Category II should be installed across not fewer than three distinct project sites, so that the supervised experience reflects genuine variety in soil conditions and site constraints rather than repetition on a single job.

5.5.2 An installer who holds a current Red Seal piledriver qualification or an equivalent NCCER credential may have the Category III time-in-category requirement of Clause 5.4 reduced from 24 months to 18 months, in recognition of the structured trade training those credentials represent. All other Category III requirements continue to apply.

6 Product-Specific Training and Manufacturer Authorization

6.1 The category requirements of Clauses 4 and 5 address foundational installer competency that is independent of any particular product system. Where a manufacturer issues product-specific authorization as a condition of installing its products, that authorization is a separate and additional requirement, not a substitute for the category requirements of this practice.

6.2 A Category II or Category III Certified Installer who holds manufacturer authorization for a specific product system shall document both credentials separately on project submittals: the PCS 102:26 category establishes general competency; the manufacturer authorization establishes product-specific training.

6.3 Where an installer holds manufacturer authorization but does not yet meet the experience thresholds for Category II, the installer shall be classified as Category I under this practice and supervised accordingly, notwithstanding any manufacturer certification claim.

6.4 Manufacturers and franchise networks are encouraged to publish a mapping table stating which elements of their training program correspond to the curriculum outcomes of Clause 5.2 and which category of this practice their certified installers are assessed to meet. Publication of such a mapping does not require PileConnect review or approval; it is a voluntary disclosure.

> ***Note:*** *This clause is not intended to constrain or replace manufacturer training programs. It is intended to ensure that installer documents carry two distinct pieces of information: the installer's general foundational competency (this practice's category) and the manufacturer's product-specific authorization. Both are material to a project submittal.*

7 Quality Management for Installation Firms (Category F)

7.1 An installation firm claiming Category F status under this practice shall maintain, implement, and continuously improve a quality management system that addresses at minimum the elements defined in Clauses 7.2 through 7.8.

7.2 QA/QC procedures

7.2.1 The firm shall maintain written quality assurance and quality control procedures covering, at minimum: pre-installation planning and drawing review; equipment inspection and setup; torque monitoring and documentation; handling of obstructions, refusal, and deviations; completion of installation logs; and submission of as-built records.

7.2.2 Procedures shall be accessible to all installation personnel and shall be reviewed and updated at intervals not exceeding 24 months or when significant changes to products, equipment, or project conditions make a review necessary.

7.3 Equipment inventory and maintenance

7.3.1 The firm shall maintain an inventory of all installation equipment, including drive machines, drive heads, torque monitoring systems, and couplings. The inventory shall identify each item by type, make, model, and serial number or firm-assigned identifier.

7.3.2 Each item of installation equipment shall be subject to a documented maintenance schedule consistent with the manufacturer's recommendations. Maintenance records shall be retained for a period of not less than five years.

7.4 Torque equipment calibration

7.4.1 All torque monitoring instruments used to establish installation torque for capacity correlation purposes shall be calibrated at intervals not exceeding 12 months by a qualified calibration provider using a traceable reference standard. Calibration certificates shall be retained and available for review.

7.4.2 Where a pressure-based torque measurement system is used, the conversion factor relating hydraulic pressure to torque shall be confirmed against the manufacturer's specification and shall be included in calibration records.

7.4.3 Equipment whose calibration has lapsed or cannot be documented shall not be used for torque-controlled installation until recalibration is completed and documented.

7.5 Personnel competency records

7.5.1 The firm shall maintain a current register of all installation personnel, identifying for each: full name, PCS 102:26 category, category issue date, recertification due date, manufacturer authorizations held, and status (active/inactive).

7.5.2 Personnel records shall be updated within 30 days of any change in category status, recertification, or manufacturer authorization.

7.6 Installation log templates and as-built documentation

7.6.1 The firm shall maintain standard installation log templates that include, at minimum, the data fields required by Clause 10.1.

7.6.2 Completed installation logs and as-built records shall be retained by the firm for a period of not less than ten years from the date of project completion.

7.7 Nonconformance and corrective-action process

7.7.1 The firm shall have a documented process for identifying, classifying, recording, and resolving nonconformances in accordance with Clause 13.

7.8 Internal audits and management review

7.8.1 The firm shall conduct internal audits of its quality management system at intervals not exceeding 24 months. Audit findings, corrective actions, and management review records shall be retained.

Table 3 - Summary of Category F (Qualified Installation Firm) requirements

Element	Requirement	Record retention
QA/QC procedures	Written procedures per Clause 7.2; reviewed every 24 months or less	Current version always
Equipment inventory	Documented inventory with equipment IDs per Clause 7.3	Current version always
Maintenance records	Maintenance schedule per manufacturer's recommendations; records per Clause 7.3.2	Minimum 5 years
Torque calibration	Calibration every 12 months or less by qualified provider; traceable certificate	Current certificate always; prior certificates 5 years
Personnel register	Current register of all installers with category and expiry dates per Clause 7.5	Current version always; superseded entries 5 years
Installation log templates	Standard template with minimum fields per Clause 10.1	Current version always
Completed installation logs	All project logs and as-builts per Clause 10	Minimum 10 years from project completion
Nonconformance records	Nonconformance reports and corrective-action records per Clause 13	Minimum 10 years
Internal audit records	Internal audit and management review per	Minimum 10 years

	Clause 7.8; 24-month interval or less	

8 Installation Tolerances

8.1 Installation tolerances shall be as specified in the project specification or the applicable product evaluation report. Where neither the project specification nor the evaluation report specifies a tolerance, the default tolerances of Clause 8.2 shall apply.

8.2 Default tolerances

Unless specified otherwise in the project documents or evaluation report:

(a) Pile location: plus or minus 75 mm (3 in.) from the specified plan location for piles supporting structural elements; plus or minus 150 mm (6 in.) for piles supporting non-structural elements.

(b) Plumb: the installed pile shaft shall not deviate from plumb by more than 2 degrees in any direction for vertically installed piles.

(c) Batter angle: plus or minus 2 degrees from the specified batter angle for battered pile installations.

(d) Final installed depth: not less than the design depth specified in project documents; depth in excess of design is permitted where supported by adequate terminal torque.

(e) Minimum installation torque: not less than the minimum torque required by the applicable evaluation report or project specification for the design capacity.

8.3 Any pile installed outside the tolerances of Clause 8.2 or the project specification shall be classified as a nonconformance and handled in accordance with Clause 13.

Note: *Tolerances for helical piles installed in restricted access conditions (tight sites, low-headroom interiors, adjacent to existing structures) may require project-specific adjustment by the EOR. The defaults of Clause 8.2 are not intended to override those adjustments.*

9 Project Application Classes and Minimum Requirements

9.1 Each project shall be assigned to an Application Class by the engineer of record, based on the consequence of helical pile foundation failure, with reference to the importance categories of the applicable building code:

(a) Class 1 - Low consequence: decks, light ancillary structures, fences, agricultural buildings, and similar applications whose failure presents low risk to life safety and limited consequences to adjacent property;

(b) Class 2 - Normal consequence: single-family and multi-unit dwellings, low-rise commercial and industrial buildings, schools, and structures of normal importance as defined by the applicable building code; and

(c) Class 3 - High consequence: telecommunication and transmission towers, structures assigned high importance or post-disaster use, structures supporting essential services (hospitals, emergency response facilities, water treatment), and any structure so designated by the EOR or AHJ.

9.2 The minimum installer category and firm qualification requirements for each Application Class shall be as given in Table 4.

Table 4 - Minimum installer and firm requirements by Application Class

Application Class	Min. installer category on site	Min. lead installer category	Cat. F required	Recommended EOR/owner oversight
Class 1 - Low consequence	Category I permitted with Category II supervision	Category II	Not required; recommended for projects > 10 piles	EOR review of installation logs at project completion
Class 2 - Normal consequence	Category II minimum	Category II for projects up to 20 piles; Category III for projects > 20 piles	Required for projects > 20 piles or where specified by EOR	EOR review of installation logs; spot-check field review recommended
Class 3 - High consequence	Category II minimum; Category III required on site at all times during installation	Category III required	Required	EOR or designated inspector present during installation; 100% installation log review required

9.3 Nothing in Table 4 limits the authority of the EOR or AHJ to impose more restrictive requirements for any project.

9.4 Where Application Class is not assigned by the EOR, Class 2 requirements shall apply as the default, except for demonstrably low-consequence ancillary structures where Class 1 may be applied by the installing firm with documented justification.

10 Documentation and Recordkeeping

10.1 Installation log

An installation log shall be prepared for each pile installed under this practice. The log shall record, at minimum:

(a) project name, address, and EOR name;

(b) pile identifier (consistent with foundation plan);

(c) date of installation;

(d) name and PCS 102:26 category of the installing crew member(s);

(e) installation machine identifier and drive head identifier;

(f) torque monitoring instrument identifier and calibration certificate reference;

(g) design depth and design minimum torque as specified in project documents;

(h) torque readings at defined depth intervals (see Clause 10.2);

(i) final installed depth;

(j) final installation torque (average of last three readings at full depth);

(k) observed soil conditions and any anomalies encountered;

(l) any deviations from design, including deviation from specified location, depth, plumb, or minimum torque, and whether EOR notification was provided; and

(m) signature or electronic attestation of the installer who prepared the record.

10.2 Torque monitoring record

10.2.1 Torque shall be recorded at depth intervals not exceeding 300 mm (12 in.) during the final 1.5 m (5 ft) of installation, or at intervals specified in the applicable evaluation report or project specification, whichever is more frequent.

10.2.2 Torque records shall identify the measurement method (direct transducer, pressure gauge, calibrated relief valve) and shall reference the applicable pressure-to-torque conversion factor where a pressure-based system is used.

10.3 Calibration records

10.3.1 Current calibration certificates for all torque instruments used on a project shall be available for review at the project site or submitted with the project closeout documentation.

10.4 Deviations and as-built records

10.4.1 Any deviation from the design documents shall be recorded in the installation log and reported to the EOR in writing within 24 hours of occurrence. The EOR's written acceptance or direction shall be attached to the installation log for the affected pile.

10.4.2 As-built records showing the actual installed location, depth, and final torque for every pile shall be prepared at project completion and submitted to the EOR and owner within the timeframe specified in the project contract, and in any event not later than 30 days after project completion.

10.5 Traceability

10.5.1 Installation records shall identify the installing personnel by name and PCS 102:26 category, creating a traceable link between the project record and the installer's qualification status at the time of installation.

> ***Note:*** *The traceability requirement is the mechanism by which the category system produces accountability. A project owner who later discovers a foundation problem can identify who installed each pile, verify that those individuals held the required category at the time, and assess whether the documentation supports the installation parameters claimed.*

11 Disclosure

11.1 Quotations, contracts, shop drawings, and engineering submittals for helical pile installations performed under this practice shall state, for the installation personnel and firm:

(a) the PCS 102:26 category (I, II, or III) of each installer assigned to the project, by name;

(b) whether the firm is a Qualified Installation Firm under PCS 102:26 (Category F), with the name of the responsible Category III Certified Lead Installer;

(c) the training and certification basis for each installer's category; and

(d) any manufacturer authorization relevant to the specific product being installed.

11.2 Where the purchaser is a consumer (e.g., a residential owner), the disclosure of Clause 11.1 shall be made in plain language on or with the quotation.

11.3 Substitution of an installer of a lower category from that quoted or specified, or substitution of a non-Qualified Installation Firm where a Qualified Installation Firm was specified, shall not be made without the written acceptance of the EOR and notification to the owner.

11.4 A claim that an installer is certified without reference to a specific category under this practice, or without disclosure of the training and certification basis, does not satisfy the disclosure requirement of Clause 11.1.

> ***Note:*** *Clause 11 is the central obligation of this practice. The installer categories and firm designation carry different competency levels, and each is legitimate within the limits of Clause 9; the condition this practice is intended to prevent is the use of the word certified as an undifferentiated marketing claim without meaningful content that can be evaluated by an owner, EOR, or AHJ.*

12 Recertification and Audits

12.1 Recertification

12.1.1 Category II and Category III certifications issued under this practice are valid for a maximum of three years from the date of assessment.

12.1.2 Recertification shall require, at minimum: (a) a refresher training module covering any changes to relevant product evaluation reports, building code provisions, or manufacturer installation requirements since the prior certification; (b) a written or online examination covering the Clause 5.2 curriculum outcomes, with a minimum passing score of 70% for Category II or 75% for Category III; and (c) a review of the installer's field performance record, including any nonconformances recorded against the installer during the certification period.

12.1.3 Triggers for earlier recertification. An installer's certification shall be reviewed before its normal expiry if: (a) a major or critical nonconformance under Clause 13 was attributed to that installer; (b) the installer transitions to a significantly different product system for which additional product-specific competency is required; or (c) the certifying organization determines, on the basis of field performance reports or audit findings, that a review is warranted.

12.2 Firm audits

12.2.1 A Qualified Installation Firm (Category F) claiming status under this practice should conduct or arrange a documentation audit of its quality management system at intervals not exceeding 24 months, confirming that the elements of Clause 7 are current, complete, and implemented.

12.2.2 An EOR, owner, or AHJ may request a field audit of an installation at any time. The installing firm shall cooperate with field audit requests and shall make relevant documentation available within 48 hours of the request.

12.2.3 Field audit scope. A field or documentation audit conducted under this practice should verify, at minimum: (a) that the installers on site hold the category required for the Application Class; (b) that torque instrument calibration is current; (c) that installation logs are being completed in real time and contain all required fields; (d) that observed installation practices are consistent with the applicable evaluation report and manufacturer instructions; (e) that any deviations have been documented and that EOR notifications have been issued as required; and (f) that the firm's personnel competency register reflects the personnel actually on site.

13 Nonconformances and Corrective Action

13.1 Classification

Nonconformances arising from installation activities or documentation shall be classified as minor, major, or critical.

13.1.1 Minor nonconformance: a deficiency that does not affect the structural adequacy of the installation and is correctable through documentation alone. Examples: incomplete data field in an installation log; missing calibration certificate reference; late submission of as-built records.

13.1.2 Major nonconformance: a deficiency that may affect the structural adequacy of the installation or that represents a significant departure from project requirements. Examples: pile installed outside positional tolerance without EOR notification; final torque below the minimum specified without documented remedial evaluation; plumb deviation exceeding tolerance.

13.1.3 Critical nonconformance: a deliberate misrepresentation, act of fraud, or safety-threatening condition. Examples: falsified torque records; representation of a Category I trainee as a Certified Installer; installation of piles without torque monitoring in a jurisdiction where it is required; deliberate destruction of installation records.

13.2 Response requirements

13.2.1 Minor nonconformance. The installation firm shall prepare a corrective documentation package within 10 business days that resolves the deficiency and confirms that the underlying practice has been corrected.

13.2.2 Major nonconformance. The installation firm shall: (a) notify the EOR and owner in writing within 24 hours of identifying the nonconformance; (b) halt further installation of the affected pile type or configuration until the EOR has reviewed and issued written direction; (c) implement remedial measures as directed by the EOR, which may include re-driving, load testing, or installation of supplemental piles; and (d) prepare a corrective-action report identifying root cause and preventive measures within 5 business days of EOR direction.

13.2.3 Critical nonconformance. The installation firm shall: (a) notify the EOR, owner, and AHJ in writing within 24 hours; (b) cooperate fully with any investigation by the EOR, owner, or AHJ; (c) remove from the project any individual whose deliberate conduct was the cause of the nonconformance; and (d) suspend that individual's claim to a category under this practice pending review of the circumstances and, where warranted, initiate decertification proceedings through the certifying organization.

> ***Note:*** *This practice does not establish a certifying body or a decertification tribunal. References to suspension and decertification are directed to whatever organization, manufacturer, franchise network, or third-party training provider, issued the individual's category credential. Where no such organization exists, the EOR and owner have the authority and obligation under the project contract to remove personnel from the work.*

14 Owner and Engineer Specification Language

14.1 Owners and engineers of record may adopt this practice by reference using language substantially as follows:

> *"All helical pile installation personnel shall be classified and documented in accordance with PCS 102:26. The minimum installer category and firm qualification for this project shall be as*

> *required by PCS 102:26 Table 4 for Application Class [1/2/3, as applicable]. Documentation confirming installer categories and, where required, Qualified Installation Firm status shall be submitted to the engineer of record for review prior to commencement of installation."*

14.2 Owners may, by project specification, impose requirements more restrictive than the minimums of Table 4, including: (a) requiring that a Qualified Installation Firm (Category F) be engaged for all Application Classes; (b) requiring that a Category III Certified Lead Installer be present on site for the full duration of installation regardless of Application Class; (c) requiring submission of installer qualification documentation, training records, and calibration certificates prior to issuance of a notice to proceed; (d) requiring third-party audit of a firm's quality management system as a condition of award; or (e) requiring that all installation logs be reviewed and countersigned by the EOR or a designated project inspector before final payment.

Annex A (Informative) Installer and Firm Qualification Checklist

The following checklist may be reproduced and attached to quotations, pre-construction submittals, and project closeout documentation.

Personnel qualification

- Name and PCS 102:26 category stated for each installer assigned to the project (I / II / III)
- Category issue date and recertification due date stated for each Category II and III installer
- Training basis identified (manufacturer program, third-party assessment, or self-attested with documentation)
- Written examination completion confirmed and score recorded
- Field performance evaluation confirmed and evaluator identified
- Manufacturer authorization(s) listed by product system and expiry date, where applicable
- For Category III Lead Installer: leadership and QA assessment confirmed
- For Class 3 projects: Category III Certified Lead Installer confirmed assigned to site

Firm qualification (Category F)

- Firm's Category F status confirmed (or noted as not applicable for this Application Class)
- Name of responsible Category III Certified Lead Installer stated
- Personnel competency register provided or available for review
- QA/QC procedures confirmed current (review date within 24 months)
- Equipment inventory provided, identifying drive machines and torque instruments by ID
- Torque instrument calibration certificates provided (current within 12 months)
- Nonconformance and corrective-action process confirmed in writing

Documentation readiness

- Standard installation log template confirmed consistent with Clause 10.1 minimum fields
- Application Class confirmed and stated in project documents
- EOR name and contact for deviation notification confirmed
- Substitution acknowledgement: no installer category substitution without written EOR acceptance
- Plain-language disclosure provided to consumer purchaser, where applicable

Annex B (Informative) Commentary

B.1 Why a tiered installer category system

The dominant failure of current practice is terminological: the phrase certified installer is applied to individuals who have completed a manufacturer's half-day product orientation and to individuals who have installed thousands of piles across varied soil conditions. These are not equivalent, and treating them as equivalent exposes owners, engineers, and the industry to unnecessary risk. The three-tier personnel framework of this practice, Trainee, Certified Installer, and Certified Lead Installer, is calibrated to the range of task complexity actually encountered in helical pile work: a Category II installer can competently execute a straightforward residential installation; a Category III Certified Lead Installer carries the additional judgment, documentation discipline, and supervisory capability needed for complex sites, high-consequence structures, and multi-crew projects.

B.2 Matching qualification to consequence of failure

The Application Class framework of Clause 9 is modelled on the approach taken in PCS 101:26 and in the importance categories of the NBC and IBC: the required rigor of any quality measure should be proportionate to the consequence of failure if that measure is absent. A Category I trainee supervised by a Category II installer is an entirely appropriate arrangement for a residential deck application; the same arrangement would be inadequate for a hospital foundation. The table in Clause 9 maps that principle onto specific personnel and firm requirements so that owners and engineers do not have to derive the appropriate floor themselves.

B.3 This practice as vocabulary and floor, not a certification program

PileConnect does not assess, certify, or credential individual installers or firms. This practice defines what the category designations mean, the training outcomes, experience thresholds, and assessment methods required to reach each level, and requires that any claim to a category be supported by documentation that can be verified. The credentialing infrastructure may be provided by a manufacturer's training program, a franchise network's certification system, a trade association, or an independent third-party assessor. This practice is the reference standard against which any of those programs can be evaluated. The goal is not to displace existing programs but to give them a common reference point, so that a Category III designation from one manufacturer's program and a Category III designation from another are both grounded in the same minimum competency floor.

B.4 The quality management framework and its relationship to ISO 9001

The Category F requirements of Clause 7 are not intended to impose ISO 9001 registration on installation firms. They are a targeted, practical subset of quality management elements that are directly relevant to helical pile installation quality and verifiable by an EOR or owner. A firm that is already ISO 9001 registered will satisfy Clause 7 within its existing system. A small independent contractor can satisfy Clause 7 with a modest set of documented procedures, a personnel register, calibrated equipment, and completed project logs, none of which requires significant organizational complexity.

B.5 Basis for the qualification values

The numerical qualification thresholds in Clause 5 (supervised hours, pile counts, time in category, and examination pass marks) are not arbitrary. They are calibrated against published manufacturer certification programs, public-sector and regulatory specifications, and analogous skilled-trades training frameworks. The basis for each value, with citations, is set out in Annex C. In summary: the

examination pass marks of 70 percent and 75 percent carry direct published precedent in Red Seal and NCCER programs; the 80-hour supervised-training threshold is deliberately set above the most structured manufacturer onboarding programs and below full trade apprenticeship; and the pile-count and time-in-category thresholds are first-principles values scaled from firm-level benchmarks, offered for refinement through trial use.

B.6 Items identified for future development

The following matters are identified as requiring further development through committee work, calibration studies, or trial use before formal standardization: assessment question banks and examiner training guides; statistical performance criteria for field assessment; a protocol for third-party audit and category verification; a reliability-based analysis of the Application Class thresholds; model mapping table templates for manufacturers; and a consumer-facing disclosure form for residential applications. Publication of this practice for comment and trial use is intended to invite that work.

B.6 Roadmap for a future formal standard

A future CSA technical specification, ASTM guide, or industry standard developed from this practice could usefully add: quantified training curriculum hours and approved course templates; a registration database for certified installers and qualified firms; a formal appeals and decertification process; reliability calibration of the Application Class requirements; a companion standard for on-site load testing acceptance criteria; and integration with the ICC-ES AC358 installer requirement provisions. PileConnect invites comment on these topics through pileconnect.com.

Annex C (Informative) Basis for the Qualification Values

This annex records the basis for the numerical qualification thresholds in Clause 5. The values were compared against published manufacturer certification programs, public-sector and regulatory specifications, and analogous skilled-trades training frameworks. The intent of publishing this basis is to make each threshold transparent and open to informed comment during the trial-use period.

C.1 Examination pass marks (70 percent and 75 percent)

These are the most firmly anchored values in this practice. A 70 percent minimum is the common pass mark for Red Seal trade examinations across Canadian provinces and for National Center for Construction Education and Research (NCCER) module examinations. The elevated 75 percent mark for the supervisory Category III mirrors the published pass mark for the NCCER Construction Superintendent credential, reflecting the greater judgment expected of a lead installer. The tiered structure of this practice follows that established precedent rather than introducing a new convention.

C.2 Supervised training hours (80 hours, Category II)

Published manufacturer certification programs are comparatively brief: the most structured franchise program identified provides approximately 40 hours of combined classroom and hands-on training, and several manufacturer programs provide substantially less. Full union piledriver apprenticeship, by contrast, involves thousands of on-the-job hours over multiple years. The 80-hour threshold of this practice is deliberately set between those two reference points: higher than manufacturer onboarding, so that the category designation means more than completion of a product course, and well below full trade qualification, so that it remains a practical, product-specific competency floor. The threshold exceeding manufacturer programs is intentional and is the central purpose of the category.

C.3 Pile counts and time in category (50 piles, 24 months, 300 piles)

No published standard specifies installation experience as an individual-level pile count or time in category; public-sector specifications express experience at the firm or contractor level, typically as three to five years and two to five completed projects. The thresholds in this practice translate that firm-level logic to the individual installer using first principles. Fifty supervised piles correspond to roughly 37 to 75 hours of installation practice and, under Clause 5.5.1, should span at least three sites to ensure genuine variety. The 24-month interval sits between the one-to-two-year advancement pace of trade apprenticeship levels and the three-to-five-year firm benchmarks, and is reducible to 18 months for holders of recognized trade credentials. Three hundred piles over 24 months represents approximately 150 piles per year, a sustained but readily achievable pace for an active full-time installer. Because these three values are original to this practice, they are expressly offered for refinement through trial use and comment.

Table C.1 - Qualification values and their benchmarks

Value	PCS 102:26	Published benchmark	Basis
Supervised training (Cat. II)	80 hours	Most structured manufacturer program approx. 40 hours; union piledriver Year 1 well in excess of 1,000 hours	Set above manufacturer onboarding, below full trade apprenticeship
Piles under supervision (Cat. II)	50 piles	No individual-level published comparator; public specs use 2 to 5 projects at firm level	Approx. 37 to 75 hours of installation practice; works with the 80-hour

			requirement
Time in Category II before III	24 months	Trade apprenticeship advancement 1 to 2 years per level; firm specs 3 to 5 years	Midpoint; reducible to 18 months for Red Seal / NCCER holders (Clause 5.5.2)
Piles over 24 months (Cat. III)	300 piles	No individual-level published comparator; approx. 150 per year, roughly 3 per week	Represents sustained, not episodic, installation practice
Written exam pass marks	70% / 75%	Red Seal and NCCER module exams 70%; NCCER Construction Superintendent 75%	Direct published precedent; tiered to match supervisory responsibility

C.4 Documented need for an independent standard

The need this practice addresses is documented in the public record. Canadian engineering regulators have reported a pattern of disciplinary cases arising from helical pile design and installation, including cases citing inadequate oversight of installation. Industry investigations have reported that manufacturer certification, while widely marketed, is inconsistently enforced in the field, and academic review has found that specification guidance for helical pile installation is inconsistent from project to project. These findings support the central premise of this practice: that an independent, manufacturer-neutral, verifiable reference for installer qualification fills a genuine gap. Readers are encouraged to consult the primary sources directly; PileConnect maintains the supporting reference list and welcomes additions and corrections through pileconnect.com.