



CARES Scheme for Approval of Post Tensioning Systems for Concrete Structures in Australia

Appendix APT05

CARES Registration Scheme for Competent Post-Tensioning Personnel



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Amendment Control Sheet

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0. INTRODUCTION

This CARES assessment schedule supplements CARES post-tensioning installation assessment schedules for Australia and relates to the training and registration requirements for post-tensioning personnel involved in the installation of post-tensioning systems in concrete structures using bonded tendons in accordance with the relevant product standard and/or contract specification.

1. SCOPE

This Schedule describes the minimum training and registration requirements for post-tensioning personnel involved in the installation of post-tensioning schemes in concrete structures using bonded tendons.

For the purposes of this schedule, post-tensioning personnel means supervisors, operatives and trainees who are directly employed or indirectly employed on a subcontract basis.

2. OPERATION OF THE SCHEME

The Scheme will operate as follows:

2.1. Certification of the Organisation

Each organisation shall have a current CARES certificate of product installation against a relevant CARES post-tensioning assessment schedule.

The organisation shall have a documented training system that meets the requirements of clause 4.1 of this schedule which it shall submit to CARES for review.

2.2 Registration of Post-tensioning Personnel

The organisation shall request a PT card from the CARES office and the following information for each person shall be included:

1. Name.
2. Status of PT personnel:
 - Trainee (CW1 level)
 - Operative (CW2 level)
 - Experienced operative with limited supervisory level (CW3 level)
 - Experienced Supervisor (CW4/CW5 level or higher)
3. The CARES installation scheme (APT04 or any other installation schemes which may be developed in the future)

On receipt of this information CARES shall issue a link via their CMS system which will then allow the organisation to upload:

- a) A photograph of the person with sufficient clarity and size as directed on the supplied link and ensure the person is not wearing safety glasses or safety helmet to ensure recognition in the resulting PT card produced.



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- b) Training records or a dated training matrix which can be validated at subsequent office audits confirming the person's level of competency in line with the requested status. For details of requirements of training records please see Appendix A

The Scheme Manager, or his deputy will review the training records and validate or reject accordingly and request more information if not in accordance with Appendix A or the requirements of this Scheme.

When validated the CARES office will issue registration cards to the organisation for its personnel which satisfy the criteria detailed in section 5.

- c) The registration card shall contain the following information:
1. The CARES installation scheme (APT04 or any other installation schemes developed in the future)
 2. The post-tensioning activities covered,
 3. The date of issue and period of validity which shall not exceed 24 months.
 4. Category of personnel (registration cards shall have red headings for operatives, green for supervisors and white for trainees).
 5. The person's CARES approved PT installation company
 6. The person's name
 7. The person's photograph

NOTE: The organisation shall satisfy itself of its compliance with the Australian Privacy Act 1988 when first applying for the CARES PT cards.

2.3 Withdrawal of Post-tensioning Cards

The organisation shall inform CARES immediately of any employee who has left their employment so that the PT card can be revoked on the CMS system. It is not permitted for a person to hold two PT cards for two different companies.

PT competency cards are unique to each CARES approved PT installation company and are not transferrable. It is the responsibility of the organisation to ensure any employee meets their training standards and are conversant with the methods employed for the various Post Tensioning System used.

PT Cards may be withdrawn if it is found that two PT cards are in existence for one individual, or if concerns are raised regarding the proficiency of the employee.

It is acknowledged that experienced / trained PT personnel may move from one PT installation company to another within a very short notice period. It is a requirement of this schedule that the new PT installation company taking on such personnel shall inform CARES and apply for the applicable PT card within a 3-month period.

This 3 month "grace period" recognises that the new PT company may allow the use of such experienced personnel whilst they undergo any necessary familiarisation training, prior to applying for the new PT card which will detail the new company and appropriate assessed experience.



3. QUALITY MANAGEMENT SYSTEM REQUIREMENTS (TRAINING)

The organisation shall operate a quality management system that complies with EN ISO 9001 and the relevant CARES assessment schedule. The quality management system shall include training requirements for post-tensioning operatives.

3.1. Competence, Awareness and Training

The organisation shall ensure that all post-tensioning personnel are familiar with the operation of the post-tensioning equipment and post-tensioning operations. All post-tensioning operations shall be carried out by operatives with appropriate knowledge, training and proven experience in carrying out similar operations. Supervisors and operators shall be trained and certified to meet the requirements given in Section 4 of this Schedule. Trainee post-tensioning personnel shall be adequately supervised when performing post-tensioning activities. All post-tensioning personnel shall carry a means of identification as specified in 3.2.

The organization shall:

- a) Determine the necessary knowledge, experience and competence for post-tensioning personnel performing work affecting product quality, including inspection and verification activities.
- b) Ensure that the installation methodology proposed by the Post Tensioning System Manufacturer or Supplier is incorporated in the training schedule and associated records.
- c) Determine the training needs meet the requirements of section 4.
- d) Provide the necessary training or take other actions to satisfy these needs.
- e) Evaluate the effectiveness of the training or actions taken, and where required certificate the trained individuals.
- f) Ensure that its personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives.
- g) Maintain appropriate records of education, training, skills and experience.
- h) Issue photographic identity cards to post-tensioning personnel in accordance with 2.2c)

3.2. Documentation Requirements, Control of Records

The organization shall establish and maintain records of education, training, skills, and experience for post-tensioning personnel to show conformity with this schedule and shall define their retention period and their disposition.

3.3. Provision of Human Resources

The organisation shall identify the human resource requirements in the quality plan and provide adequately trained personnel for the management, supervision and performance of the work and verification activities.

All employees involved with the PT installation must be fully trained and in possession of a CARES PT card which details the company they are employed by and their skill level.

Evidence of this must be made available for the site they are working.



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A daily record of all operations should be kept identifying the operations carried out and the CARES personnel carrying out these operations, which may be subject to checking during site / office audits.

Any post tensioning installation shall be traceable to the company, and individuals who carried out each stage of installation. Site installation records shall be available to detail each stage and supervisor and operatives who have undertaken the task.

All operatives shall be under the direct control of the experienced supervisor or a person of at least CW3 level as determined by the company. An experienced supervisor shall be present for all PT activities at each site and shall sign off all stages of the PT installation process confirming their presence and satisfactory acceptance of the work undertaken.

4 TRAINING REQUIREMENTS

4.1 General

The organisation shall maintain procedures that identify training needs and provide training for all personnel performing activities that have an effect on quality in accordance with the requirements of BS EN ISO 9001 and paragraph 3.3 of this schedule. The procedures shall:

- a) Define the categories of on-site personnel, e.g. trainee, operative, supervisor, engineer.
- b) Define the knowledge, skill and experience required for each personnel category.
- c) Evaluate and endorse experience of personnel based on objective evidence such as verifiable training records.
- d) Provide relevant theoretical and practical training.
- e) Evaluate the level of knowledge and skill attained during training.
- f) Issue statements of achievement, which identify the level of training achieved, the date of issue and the date of expiry.

4.2 Identification of the Status of On-site Personnel

The organisation shall have a documented procedure, which ensures that on-site personnel have a current CARES registration card on site or a copy contained within a readily accessible site file.

4.3 Site Training Requirements

The organisation shall have a documented procedure that ensures that on-site personnel are trained with respect to their post-tensioning capability.

The procedure shall ensure:

- a) Engineer(s) are familiar with the on-site post-tensioning procedures and safe operation of equipment in relation to duct installation, tendon installation, tendon stressing and grouting and are familiar with the post-tension design criteria.



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- b) All on-site post-tensioning personnel are familiar with the procedures and safe operation of equipment in relation to duct installation, tendon installation, tendon stressing and grouting.
- c) All on-site operations shall be carried out by personnel with appropriate knowledge, training and proven experience in carrying out the specific operations on the specific post-tension system.
- d) Post-tensioning trainees shall not carry out any post-tensioning activities unless adequately supervised by suitably trained personnel.

4.3.1 As a minimum, all post-tensioning personnel shall have an appropriate level of training and experience of:

Ducts:	Installation, jointing, testing, positioning of vents, identification of ducts.
Tendon Stressing:	Installation of strand and anchorages, setting up jacks, stressing procedure, site safety, recognition of load/elongation relationship, de-tensioning, assembly of dead-end anchors and couplers.
Duct grouting:	Grouting procedures, grout mixing, w/c ratio, grout, testing, use of admixtures, grouting trials, dealing with blockages, temperature constraints, grouting records.

4.3.2 Additionally post-tensioning operatives shall have an appropriate level of training and experience of:

Post-tensioning equipment: Setting up, cleaning, adjustment, and maintenance.

4.3.3 Additionally post-tensioning supervisors shall have an appropriate level of training and experience of:

Post-tensioning system: Anchorages, strand types and grades, duct sizes and types. Knowledge of CARES PT Schemes

Post-tensioning data: Quality records, logging and disposition of site information.

PT Design drawings: Understanding of and ability to read PT Design drawings and ensure accurate setting out

5.0 ASSESSMENT OF PROFICIENCY ON SITE

During the agreed site audits, whether announced or unannounced PT site audits the CARES auditors will on occasions assess the level of proficiency of Supervisors and / or operatives on site. This may be followed up by a review of their individual training records during annual office audits.

Should such an assessment raise concerns regarding the level of proficiency then this will be reported to the PT supervisor / PT Manager to ensure necessary re-training



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and re-assessment. This may take the form of an NCR by the auditor or a separate letter from the Authority.

Should this not be undertaken in a timely and / or satisfactory manner, then CARES may remove the individual(s) PT card in line with clause 2.3.

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ANNEX A TRAINING RECORD REQUIREMENTS.

It is essential that any training records uploaded for review are sufficiently detailed to ensure that the Authority can make a decision on the individual (s) depth of training and competence to allow for the issue of the CARES PT card.

The use of training matrices are not considered sufficient for this process, unless they are accompanied by the back-up training records for each individual.

Training procedures, control and records are an essential part of the initial assessment and ongoing surveillance of the organisation under AS/NZ ISO9001 and the relevant PT installation scheme requirements. This should allow for an understanding by the Authority of the types of training records available for subsequent PT card decisions.

Should the training records presented during the PT card application process not allow for a consideration of the competence of the individual(s) then the Authority may require a further office visit to undertake a more detailed review.

It is also acknowledged that site training records for individuals will be available and these will be reviewed during both announced and unannounced site visits. It is not expected that these are to be uploaded for the PT card review.

Such site records may relate to the type of PT kit being used and detailed in the method statements for the particular site or project.

Where PT kit manufacturers have implemented training schemes for the use of their particular design then it is expected that records of such training will be made available for the Authority.



ANNEX B NORMATIVE REFERENCES.

The following standards are relevant to the application of this scheme document.

Unless agreed otherwise during the application process, the latest version of the product or management system standards will apply. The applicable standard and date shall be stated in the CARES product and/or management system certificate published on the CARES website.

AS / NZS ISO 9001: 2016 Quality Management Systems – Requirements.

Appendix APT04: Quality and Operations Schedule for the Supply and Installation of Post Tensioning Systems in Concrete Structures (excluding Highways Structures)

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