

CERTIFICATION BOARD FOR INSPECTION PERSONNEL

Guidelines for Certification - Passenger Ropeways Inspectors

DOCUMENT No PRO-CER-12

Fourth Edition March 2015
Issued under the Authority of the
Certification Board for Inspection Personnel, New Zealand (CBIP)

CONTENTS

FOREWORD	3
1 SCOPE AND GENERAL	3
1.1 Scope	3
1.2 Discipline Recognition Range	3
2 CERTIFICATION PROCESS	3
3 PRE-REQUISITES FOR DISCIPLINE RECOGNITION	4
3.1 Passenger Ropeways Inspectors Discipline Recognition	4
3.1.1 Training and Qualifications	4
3.1.2 Experience	4
3.2 Discipline Recognition Recertification	5
4 TRAINING EVIDENCE	5
5 COMPETENCY AND PERFORMANCE REQUIREMENTS FOR PRI	5
6 EXAMINATIONS	5
6.1 PRI Discipline Recognition	5
6.1.1 Examination References	6
6.1.2 Examination Texts	6
6.1.3 Module 1	6
6.1.4 Module 2	6
6.2 Technical content of examinations	6
6.3 Recertification	7
6.4 Knowledge requirements	7
6.5 Exemptions from Examination	7
APPENDIX A Sample Examination Questions	8
APPENDIX B Outline of Knowledge Requirements	9

GUIDELINES FOR CERTIFICATION - PASSENGER ROPEWAYS INSPECTORS

FOREWORD

This Guidelines for Certification – Passenger Ropeways Inspectors (GCPRI), in conjunction with the Guidelines for Certification – General Requirements, defines the requirements for the issue of Discipline Recognition to inspectors performing inspection of passenger ropeways within the scope of the Health and Safety in Employment (Pressure Equipment, Cranes and Passenger Ropeways) Regulations 1999 (PECPR Regulations).

Inspectors performing certain specified activities, defined in the PECPR Regulations, must hold certificates of competence that are relevant to the activity. CBIP issues Competence Certificates under delegated authority from WorkSafe as a ‘Qualification Issuing Agency’, and its Competence Certificates are equivalent to the certificate of competence referred to in the PECPR Regulations. Competence Certificates also provide a basis for International Accreditation New Zealand (IANZ) to approve inspectors as signatories of inspection bodies. The CBIP requirements for a Competence Certificate are detailed in the Guidelines for Certification - General Requirements, and include that a passenger ropeways inspector must hold a relevant Discipline Recognition before they may hold a Competence Certificate.

Certification and re-certification in accordance with this GCPRI confirms the qualifications, training, experience and examined competence of passenger ropeways inspectors.

The qualifications described by this GCPRI have been prepared for registration at level 6, on the NZQA framework.

This GCPRI must be read in conjunction with the Guidelines for Certification– General Requirements.

1 SCOPE AND GENERAL

1.1 Scope

This Guidelines for Certification – Passenger Ropeways Inspectors (GCPRI) covers the learning expectations, training, experience and examination requirements for the issue of a Discipline Recognition to equipment inspectors performing fabrication and in-service inspection of passenger ropeways.

Note: An inspector holding a Discipline Recognition requires a Competence Certificate before they may practice inspection (See Guidelines for Certification – General Requirements).

1.2 Discipline Recognition Range

The Discipline Recognition that may be granted under this GCPRI is the Passenger Ropeways Inspector (PRI).

2 CERTIFICATION PROCESS

Candidates seeking a Discipline Recognition shall satisfy the requirements of the Guidelines for Certification – General Requirements and this GCPRI.

3 PRE-REQUISITES FOR DISCIPLINE RECOGNITION

Candidates shall meet the following training, qualifications and experience requirements. Candidates may submit alternative training, qualifications and experience for consideration which may provide equivalence to that listed.

3.1 Passenger Ropeways Inspectors Discipline Recognition

Candidates shall:

- (a) Hold a current CBIP Certified Welding Inspector (CWI) or Senior Welding Inspector (SWI) Competence Certificate.
- (b) Have training, qualifications and experience which demonstrates understanding of passenger ropeways, including their manufacture, maintenance, inspection and/or operation.

Note: Candidates for a PRI Discipline Recognition must, when undertaking pre-requisite certification as a welding inspector, ensure that any welding inspection reports submitted to CBIP primarily relate to passenger ropeways. Where candidates hold an existing CWI or SWI Competence Certificate they shall demonstrate to CBIP that this requirement has been met by past inspection work, or they shall undertake sufficient additional inspection work, related to passenger ropeways, to satisfy this criteria.

3.1.1 Qualifications

Candidates shall have training and a qualification such as:

- A trade qualification in a relevant engineering or inspection discipline.
- A diploma in engineering from a recognised training establishment.
- 1st Class Marine Engineer's Certificate.
- Bachelor or Masters Degree in Engineering or a relevant Technology or Science.
- New Zealand Certificate of Engineering or an equivalent qualification, e.g. Higher National Certificate in Engineering.

Candidates shall provide evidence of qualifications with their application for certification. CBIP does not issue a schedule of recognised qualifications, therefore the applicant must provide sufficient information for an evaluation to be completed.

3.1.2 Training

Candidates shall undertake training in passenger ropeways inspection sufficient for them to be knowledgeable in the requirements of section 5.

Training shall include;

- Knowledge requirements for inspection, including in-service inspection, e.g. by undertaking training
- Practical training on items of passenger ropeways.

3.1.3 Experience

Candidates shall have a minimum of three years experience, preferably with increasing experience, in a related field to passenger ropeways inspection, such as fabrication, maintenance, operation or similar experience. The experience shall include inspection, including in-service inspection, be on a range of passenger ropeways equipment, and include

documentation of results sufficient to demonstrate competence in the requirements of section 5.

3.2 Pre-Requisite for Discipline Recognition Recertification

Candidates who have held a PRI Discipline Recognition, with an associated Competence Certificate, for a period of five years or more, and who carry out welding inspections as part of their passenger ropeways inspection are not required to hold a current CWI or SWI. When applying for recertification, candidates shall provide evidence of welding inspection related to passenger ropeways (which may be a current CWI or SWI Discipline Recognition).

4 TRAINING EVIDENCE

Candidates shall provide with their application an affidavit signed by their employer which certifies that the candidate has completed the required training.

Candidates who are not employees of an inspection body should refer to section 7 of the Guidelines for Certification – General Requirements for guidance on providing the necessary evidence of training.

5 COMPETENCY AND PERFORMANCE REQUIREMENTS FOR PRI

The competency and performance requirements for PRI are given below; these encompass the knowledge requirements in the examination modules:

- (a) Understand the operational requirements of the various types of passenger ropeway.
- (b) Understand the inspection method for passenger ropeways.
- (c) Understand
 - i. The fabrication materials, welding materials and methods used in passenger ropeways construction, and,
 - ii. The type and cause of defects found in passenger ropeways.
- (d) Understand the methods of hauling rope inspection and maintenance of ropeway systems.
- (e) Meet the statutory requirements necessary to ensure safety of persons during inspection of passenger ropeways.
- (f) Ability to plan inspections and maintain inspection documentation and records.
- (g) Ability to assess and raise inspection reports and report on reviews of operational records.
- (h) Appreciation of QA/QC procedures outlined in the ISO 9000 series.
- (i) Understand the methods of fabrication, testing and inspection used during the construction of passenger ropeways.
- (j) Knowledge of welding methods and flaw assessment of welds using visual inspection.
- (k) Have a working knowledge of the various standards and codes of practice used in the construction and testing of the various types of passenger ropeways.
- (l) Knowledge requirements outlined in Appendix B.

6 EXAMINATIONS

6.1 PRI Discipline Recognition

The examination for a PRI Discipline Recognition is comprised of the following papers:

- Module 1: Inspector's Responsibilities and Legislative Requirements

- Module 2: Passenger Ropeways Inspection

6.1.1 Examination References

References for completing the examinations are listed on the CBIP website at www.cbip.co.nz/NCBIPPassRopeways.html.

6.1.2 Examination Texts

The Passenger Ropeway examination is based on a good understanding of the “Health and Safety in Employment (Pressure Equipment, Cranes and Passenger Ropeways) Regulations 1999” (1999/128) (PECPR regulations), and the technical content and requirements of the Canadian Standards Association document Z98-07, including update No 1 published 2010 (the Canadian Standard). This shall include current and future supplements and updates.

6.1.3 Module 1

The module 1 examination paper covers:

- (a) Personal protective equipment and safety.
- (b) Inspector’s Responsibilities, and
- (c) Legislative Requirements

6.1.4 Module 2

The module 2 examination paper covers the following aspects of construction, operation and maintenance of passenger ropeways pertinent to the inspection, testing and certification of these systems:

- (a) Quality management processes
- (b) Quality assurance and control
- (c) Inspection methods
- (d) Inspection planning
- (e) Fabrication methods and materials of construction
- (f) New construction inspection
- (g) Commissioning inspections
- (h) In-service inspection
- (i) Operation and maintenance
- (j) Equipment failures and defects
- (k) Review of operational records
- (l) Inspection reports and maintenance of inspection records

6.2 Technical content of examinations

The examinations will include questions on the following aspects of passenger ropeway inspection for both new-construction and in-service inspection:

- (a) Approval of inspection and test plans and preparation/approval of any specific inspection procedures required.
- (b) Witnessing and verifying tests including mechanical testing of welding procedures during fabrication, repairs and in-service inspection.
- (c) Understanding and recognising the types and causes of deterioration and defects.
- (d) Inspection of repairs and alterations.
- (e) Interpretation and evaluation of inspection results.

- (f) Reporting results of inspection.
- (g) Recommendations on future inspection periods, and on the remaining life of the equipment, based on the records of the amount and type of usage.

6.3 Recertification

The recertification exam will comprise one paper based on Modules 1 and 2.

6.4 Knowledge requirements

The knowledge requirements underlying the examination papers for passenger ropeways inspectors are given in Appendix B.

6.5 Exemptions from Examination

CBIP will consider applications for exemption from the module 2 examination paper, but there will be no exemptions for the module 1 examination paper.

Application for exemptions from examination papers shall be made in accordance with the requirements of the Guidelines for Certification SOP for the Certification of Inspectors – General Requirements.

APPENDIX A

Sample Examination Questions¹ (Informative)

¹ Provision for future sample questions

APPENDIX B

Outline of Knowledge Requirements (Normative)

B1: ASPECTS OF INSPECTION

B1.1 Objectives of Inspection

- To comply with the PECPR regulations and the Canadian Passenger Ropeways standard Z98-07.
- To verify fabrication, installation, commissioning and testing in accordance with the design and the Canadian standard.
- To ascertain when repairs, replacements, overhauls or modifications are required.
- To assess and report upon the condition of ropeway and associated equipment.
- To ensure that the ropeway performs reliably under operating conditions between inspections.

B1.2 Ingredients of Inspection.

- Recognise the importance of performing inspections impartially, competently and efficiently.
- Recognise the correct inspection method.
- Recognise the importance of experience gained from other inspections.
- Recognise the value of operating data and equipment records.
- Ensure the extent, level and frequency of inspections is adequate to ensure equipment reliability.
- Use fabrication and inspection history.
- Communicate openly and efficiently on all safety related matters promptly, clearly and effectively.
- Relationships with others.

B1.3 Stages of Inspection

- Fabrication – local and overseas components.
- Installation.
- Commissioning and initial certification.
- Periodic inspection.
- Operation – within design limits and correct sequence.
- Servicing – maintenance, modification.
- Repairs – checks and assessments.

B2: PASSENGER ROPEWAY INSPECTION

B2.1 Construction Documentation Requirements

B2.1.1 NZ manufactured components

- Verification of:
 - o Component size and configuration.
 - o Material certificates and identification.
 - o Welding procedures.
 - o Welder qualification.
 - o Interpretation of non-destructive testing (NDT) reports.
 - o Interpretation of destructive testing (DT) reports.
 - o Load testing

B2.1.2 Imported components

- Verification and identification with certificates.

B2.2 Installation

- Compliance to approved manufactured drawings and the Canadian Standard.
 - o Location
 - o Width of clearing.
 - o Electrical protection.
 - o Lightning protection.
 - o Acceptance tests and inspection.
 - o Anchor connections.
 - o Machine rooms
 - o Exposed equipment.
 - o Protection against moving parts.
 - o Prime movers.
 - o Internal combustion engines.
 - o Fuel storage
 - o Speed reducers.
 - o Bearings, couplings and shafts.
 - o Clutches.
 - o Foundations.
 - o Tension systems.
 - o Tension system adjustment.
 - o Buildings and structures.
 - o Wire ropes.
 - o Telephone and signal cables.
 - o Design check requirements for new ropeways.
 - o Approval and inspection requirements.

B2.3 Periodic Inspection and Tests as specified in the Canadian Standard.

- Maximum speeds.
- Minimum spacing between carriers.
- Emergency drives.
- Acceleration and speed control.
- Brakes and backstops.
- Stops.
- Drive and return sheaves. (Bull wheels).
- Sheaves and bearings.
- Loading and unloading areas.
- Line structures. (Towers).
- Rope and connections.
- Service and inspection platforms.
- Passenger carriers.
- Rope grips.
- Carriage wheels.
- Communication.
- Operational wind limits.

B2.4 Operation and Maintenance

- Competence of personnel.
- Minimum operating personnel.
- Control and safety of passengers.
- Signs.
- Control of ropeway operations.
- Communications.
- Inspections.
- Lighting.
- Engine fuel supply.
- Operating under wind conditions.
- Earthing.
- Fire Protection.
- Maintenance.
- Routine procedures.
- Wire ropes.
- Records.

B2.5 Evacuation Equipment

B3: ASSESSMENT OF PASSENGER ROPEWAY INTEGRITY

B3.1 Responsibility

- Owner
- Passenger Ropeway Inspector
- Regulating Authority.

B3.2 Documentation

- Health and Safety in Employment Act.
- PECPR Regulations.

B4: OWNER'S RECORDS

B4.1 Technical information and manufacturer's technical specification

- Commissioning date
- Number of intermediate stations
- Number of chairs/gondolas
- Number of passengers per chair/gondola.
- Up hill/down hill load limitations.
- Speed limitations. Skiers/foot passengers.
- Fault log.
- Outstanding fault log.
- Maintenance log.
- Operation log.
- Component certificates.
- General arrangement drawings.
- Circuit drawings (Mechanical and electrical.)
- Manufacturer's maintenance manuals.
- Accidents/incidents.
- Inspection dates.
- Inspection organisation.
- Operation manual.

- Staff training manual.