

Title	Install and maintain track circuit bonding in a rail environment		
Level	3	Credits	3

Purpose	People credited with this unit standard are able to: demonstrate knowledge of track circuit bonding; determine job requirements for track circuit bonding; follow rail permission systems; undertake installation and maintenance of track circuit bonding; and check work and complete documentation.
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Classification	Rail Transport > Rail Infrastructure
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Available grade	Achieved
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Guidance Information

- 1 Assessment against this unit standard is to be carried out within the context of an organisation operating under a current, valid Rail Licence issued in accordance with the provisions of the Railways Act 2005. The organisation's operating rules, codes, and instructions, referred to in this unit standard, are those the organisation has in place to meet the requirements of the Rail Licence.
- 2 Legislation relevant to this unit standard includes the Health and Safety in Employment Act 1992, Railways Act 2005, and Health and Safety in Employment Regulations 1995.
- 3 Definitions

Organisational procedures refer to documents that include: worksite rules, codes, and practices; equipment operating instructions; documented quality management systems; and health and safety requirements.

Relevant personnel refers to personnel who should be consulted with/reported to in accordance with organisational procedures. This may include but is not limited to: supervisor, site manager, signal operator, train controller.

Unusual requirements refer to exceptional or unanticipated circumstances, requests, physical or technological requirements or limitations that may not be addressed by the organisation's operating rules, codes, and instructions.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of track circuit bonding.

Performance criteria

- 1.1 Terms are defined in accordance with established codes described in organisational procedures.
- Range bonding, conductors, insulation joints.
- 1.2 Track circuit components are described in terms of their function and purpose.
- Range bonds, track leads, channel pins, rail fastenings, insulated joints, jumpers, track circuit interruptors.
- 1.3 Types of bonds are described in terms of their function and purpose.
- Range web, bootleg, spiral, angle plug, cadweld.
- 1.4 Hazards associated with interrupting the electrical integrity of bonds, and appropriate measures to take to minimise risks, are described in accordance with organisational procedures.
- 1.5 Bonding installation method is described in accordance with organisational procedures.
- 1.6 Temporary bonding is explained in terms of the reasons for its use and organisational procedures for installation.

Outcome 2

Determine job requirements for track circuit bonding.

Performance criteria

- 2.1 Work requirements are determined to identify scope of work and resources required in accordance with work and/or bonding plan.
- 2.2 Environmental factors are evaluated for potential hazards and appropriate actions are determined to eliminate, isolate, or minimise risks in accordance with organisational procedures.
- Range environmental factors may include but are not limited to – heights, live power lines, restricted areas, confined spaces, exposed conditions, day or night.
- 2.3 Unusual requirements are identified and checked with relevant personnel to verify compliance with organisational procedures.
- 2.4 Resources required are identified and scheduled in accordance with work and/or bonding plan.
- Range may include but is not limited to – plant, equipment, materials, personnel.

- 2.5 Bonding method is determined in accordance with work and/or bonding plan and organisational procedures.
- 2.6 Tools and equipment are selected in accordance with work and/or bonding plan.
- Range may include but is not limited to – hand/power tools, generating/hydraulic plant, bonding plant.
- 2.7 Materials are selected for job in accordance with work and/or bonding plan.
- Range may include but is not limited to – steel wire, stainless steel wire, copper cable, web bonds, weld kits, fastenings, lubrication, jointing compound.
- 2.8 Regulations 2 and 26 of the Health and Safety in Employment Regulations 1995 are complied with regarding notifications and work permits.
- 2.9 Personnel participating in task are fully briefed in accordance with organisational procedures.

Outcome 3

Follow rail permission systems.

Performance criteria

- 3.1 Track protection is established in accordance with organisational procedures.
- 3.2 Train movement information is accessed and interpreted in accordance with organisational procedures.
- 3.3 Permission to work or travel is obtained in accordance with organisational procedures.

Outcome 4

Undertake installation and maintenance of track circuit bonding.

Performance criteria

- 4.1 Personal protective equipment (PPE) is used in accordance with organisational procedures.
- Range may include but is not limited to – fall arrest equipment, high visibility clothing, hearing protection, gloves, sunscreen, sunglasses, safety glasses, insect repellent, safety headwear, safety footwear, portable radios, hand lamps, flags, fall restraint device.
- 4.2 Where required, damaged or surplus bonding is removed in accordance with organisational procedures.

4.3 Removed materials are stored or disposed of in accordance with organisational procedures.

Range materials may be – reusable, unserviceable.

4.4 Bond is installed in accordance with organisational procedures.

4.5 Bond is repaired in accordance with organisational procedures.

Outcome 5

Check track circuit bonding and complete documentation.

Performance criteria

5.1 Completed work is checked for compliance with work and/or bonding plan.

5.2 Documentation is completed in accordance with organisational procedures.

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	26 May 2003	31 December 2024
Review	2	21 November 2008	31 December 2024
Review	3	24 February 2022	31 December 2024

Consent and Moderation Requirements (CMR) reference	0013
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.