



Australian Government

Department of Education, Employment and Workplace Relations

TLIS3037B Install and repair rail earthworks

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit involves the skills and knowledge required to install and repair rail earthworks in accordance with safeworking and regulatory requirements and organisational procedures. It includes determining job requirements, undertaking trenching, establishing track formation and minor trackside earthworks, and completing documentation in accordance with specifications.

Licensing or certification requirements may apply to this unit. Persons achieving competence in this unit will need to fulfil the legislated rail safety requirements, including acts and regulations from each applicable state and territory, together with any nationally approved compliance codes and guidelines.

Application of the Unit

Work is performed under some supervision, generally in a team environment. It involves the application of routine operational principles and procedures to install and repair rail earthworks as part of organisational activities across a variety of operational contexts within the Australian rail system.

Operators of mechanised equipment must have undertaken training and, where appropriate, hold the relevant licence, permit or certificate and be recognised as competent for the class of machinery being used.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

Employability Skills Information

Employability Skills

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT

PERFORMANCE CRITERIA

1 Determine job requirements

- 1.1 Worksite is identified
- 1.2 Underground services are identified where required and marked to protect services from excavation
- 1.3 Work method is selected to meet job requirements
- 1.4 Resources are organised to meet the scope of the job and selected work methods

2 Undertake trenching

- 2.1 Worksite is prepared for trenching
- 2.2 Excavation is undertaken along or across track to accommodate services in accordance with design and organisational procedures
- 2.3 Suitable materials and methods are used to backfill trench in accordance with design and organisational procedures

3 Establish track formation

- 3.1 Excavation is undertaken to establish base for formation in accordance with design
- 3.2 Excavated material is removed from worksite
- 3.3 Suitable materials and methods are used to construct new track formation in accordance with design and organisational procedures

4 Establish and maintain minor trackside earthworks

- 4.1 Trackside earthworks are constructed or repaired using appropriate equipment and following workplace procedures
- 4.2 Grading and/or compaction are carried out using appropriate equipment, with care taken to maintain correct drainage and to protect the environment, trackside installations, fences and underground cabling

5 Complete documentation

- 5.1 Documentation is completed in line with organisational requirements

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

Required knowledge:

- Relevant safety, OH&S and environmental procedures and regulations
- Workplace procedures for installing and repairing rail earthworks
- Problems that may occur during the installation and repair of rail earthworks, and action that can be taken to report or resolve them
- Hazards that may exist during the installation and repair of rail earthworks, and ways of controlling the risks involved
- Causes of defects, such as erosion and water scouring
- Information in relevant workplace technical manuals and instructions
- Functions and design principles of track formation and earthworks
- Required standards of materials and the methods involved in the installation and repair of rail earthworks
- Characteristics of relevant plant and equipment, hardware and components used in work activities
- Hazardous situations and related personal protection measures
- Required personal protective equipment (PPE)
- Relevant recording and documentation procedures
- Environmental protection requirements relating to installing and repairing rail earthworks

Required skills:

- Communicate effectively when installing and repairing rail earthworks
- Read and interpret plans relevant to the installation and repair of rail earthworks
- Interpret and follow operational instructions and prioritise work when installing and repairing rail earthworks
- Complete documentation related to the installation and repair of rail earthworks
- Operate electronic communication equipment to required protocol
- Work collaboratively with others when installing and repairing rail earthworks
- Report and rectify within limits of own role problems, faults and malfunctions identified when installing and repairing rail earthworks in accordance with regulatory requirements and workplace procedures
- Determine environmental protection requirements as required
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments

- Work systematically with required attention to detail without injury to self or others, or damage to equipment
- Select and use required PPE
- Select and use relevant equipment and tools
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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
 - the underpinning knowledge and skills
 - relevant legislation and workplace procedures
 - other relevant aspects of the range statement
- Assessment must include exercises which demonstrate competent performance of the following in a range of situations:
 - selecting appropriate work methods
 - establishing track formations in accordance with designs
 - repairing minor trackside earthworks including grading and compaction
 - completing documentation correctly

Context of and specific resources for assessment

- Performance is demonstrated consistently over a period of time and in a suitable range of contexts
- Resources for assessment include:
 - a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
 - access to an appropriate range of relevant operational situations in the workplace
- In both real and simulated environments, access is required to:
 - relevant and appropriate materials and equipment, and
 - applicable documentation including workplace

EVIDENCE GUIDE

	procedures, regulations, codes of practice and operation manuals
Method of assessment	• As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests • Practical assessment must occur: • through activities in an appropriately simulated environment at the registered training organisation, and/or • in an appropriate range of situations in the workplace

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Rail earthworks may include:	• reconstructing track formation and capping • shaping shoulders (cesses) • accessing roads • rehabilitating waterways, including shaping channels and/or scour protection • trackside or across track trenching (less than 1.5m depth) • sub-surface drainage
Services may include:	• water sewage and drainage pipe • electrical cables • signalling cables
Equipment may include:	• measuring tapes • levels
Plant may include:	• front end loaders • back hoes • graders • skidsteer loaders • grab buckets • trench diggers • road trucks • hand tools and small plant
Support plant and equipment may include:	• cranes and buckets • compressors, fittings, hoses and pumps

- pneumatic picks and jack hammers
- winches
- Materials may include:**
 - soils and gravel
 - geo-textile materials
 - earthwork protection materials, including fascines, gabion baskets, reno mattresses and revetment mattresses
 - concrete pipes, PVC pipes and FRC pipes
- Liaison may include:**
 - internal or external personnel from other work areas (e.g. other work teams)
- Communication systems may include:**
 - two-way radios
 - telephones, including mobile phones
 - agreed audible or hand signals
- Depending on work context, safety and PPE may include:**
 - high visibility clothing
 - hearing protection
 - gloves
 - sunscreen
 - sunglasses
 - safety glasses
 - insect repellent
 - safety headwear
 - safety footwear
 - portable radios and mobile phones
 - hand lamps
 - flags
 - safety devices
- Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:**
 - company procedures
 - enterprise procedures
 - organisational procedures
 - established procedures
- Information and documents may include:**
 - operational instructions, policies and workplace procedures
 - relevant logs or record books
 - work orders
 - technical instructions
 - manufacturer or workplace equipment instructions and operation manuals
 - emergency procedure manuals
 - two-way radio or mobile telephone operation procedures
 - quality assurance (QA) plans, data and document control
 - conditions of service, legislation and industrial agreements, including workplace agreements and awards

Applicable procedures and codes may include:

- legislated rail safety requirements, including acts and regulations from each applicable state and territory, together with any nationally approved compliance codes and guidelines
- relevant Australian standards and related requirements, including AS 4292
- relevant state or territory legislation relating to:
 - OH&S legislation
 - environmental protection legislation

Unit Sector(s)

Not Applicable

Competency Field

Competency Field

S - Construction and Installation