



Australian Government

Department of Education, Employment and Workplace Relations

TLIW3005A Perform direct burial of cables

Release: 1

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Modification History

Not Applicable

Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to perform the direct burial of cables in accordance with safeworking and regulatory requirements and workplace procedures including preparing the site, excavating the trench, preparing for directional boring, preparing the cable for installation, hauling and installing the cable, carrying out required tests, and completing all required documentation. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Application of the Unit

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

Work is performed under some supervision, generally within a team environment.

It involves the application of operational principles and procedures to perform the direct burial of cables as part of workplace 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 Prepare site

- 1.1 Proposed cable route is planned and documented after identifying existing below-ground services in preparation for trench excavation
- 1.2 Vegetation and other surface obstructions are removed and cable route is pegged out
- 1.3 Resources, including tools, equipment and specialised cable-laying equipment are identified ready for use

2 Excavate trench

- 2.1 Stable excavation is carried out using excavating equipment in accordance with planned cable route, and trench is shored up where necessary to prevent unwanted subsidence
- 2.2 Excavation site is made safe through the erection of barriers and appropriate warning signs and bunting

3 Prepare for directional boring

- 3.1 Site survey data is reviewed to determine suitable directional boring locations
- 3.2 Sites such as railway lines, drains, creeks and obstructions are assessed to provide detailed information for directional boring activities
- 3.3 Signs, barriers and bunting are erected to ensure site safety prior to directional boring activities

4 Prepare cable for installation

- 4.1 Cable to be installed is checked against specifications to ensure correct cable is installed
- 4.2 Operational readiness of all tools and lifting equipment is verified to ensure efficient installation of cable
- 4.3 Cable ends are prepared for hauling to ensure entire length of cable is efficiently installed without any cable damage

5 Haul cable

- 5.1 Cable-hauling equipment is checked and placed in correct hauling position, ensuring that winches, rollers and cable stockings are suitable for cable-hauling as per relevant specifications
- 5.2 Cable is hauled and placed into trench, ensuring that cable-hauling equipment operates within specifications and cable is installed without damage

6 Install cable

- 6.1 Earth conductors are fitted as per specifications and protective cable cover is fitted prior to compacting the backfill in the trench
- 6.2 Erosion prevention procedures are applied and trench and joint markers are installed
- 6.3 Signal and telecommunications are separated to ensure compliance with AUSTEL regulations

7 Test cables and

- 7.1 Cable ends are prepared for testing and testing procedures are

ELEMENT**document results****PERFORMANCE CRITERIA**

applied using specified test equipment to confirm the cable circuit

7.2 Test results and as-laid cable plans are documented and distributed to appropriate personnel for recording or further action

7.3 Site works are completed and condition of site is reinstated to organisations 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:

- Applicable legislated rail safety requirements including acts and regulations from each state and territory together with any nationally approved compliance codes and/or guidelines
- Relevant OH&S and environmental procedures and regulations
- Workplace procedures for the direct burial of cables
- Problems that may occur during the direct burial of cables and action that can be taken to report or resolve the problems
- Hazards that may exist during the direct burial of cables and ways of controlling the risks involved
- Basic electrical theory relevant to cable burial and installation
- Clearances and locations from other services
- Support methods
- Cabling hauling techniques
- Types of cables
- Relevant Australian Standards including AS 4292, 3000 and relevant Austel standards TS 008, TS 009, and associated regulations
- Relevant building standards and regulations
- Common cable installation practices
- Characteristics of equipment, materials and tools, and procedures and precautions for their use
- Trench shoring and excavation practices
- Hazardous situations and related personal protection measures
- Relevant recording and documentation procedures

Required skills:

- Communicate effectively with others when carrying out the direct burial of cables
- Read and interpret technical data, drawings, plans and instructions relevant to the direct burial of cables
- Interpret and follow operational instructions and prioritise work when carrying out the direct burial of cables
- Complete documentation related to the direct burial of cables
- Operate electronic communication equipment to required protocol
- Work collaboratively with others when carrying out the direct burial of cables
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems, faults or malfunctions that may occur when carrying out the direct burial of cables in accordance with regulatory requirements and workplace procedures
- Plan own work including predicting consequences and identifying improvements
- 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
- Carry out relevant cable tests
- Check compliance between work and job specifications
- Select and use required personal protective equipment
- Select and use relevant equipment and tools

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

EVIDENCE GUIDE

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 procedures, regulations, codes of practice and operation manuals

Method of assessment

- Assessment of this unit must be undertaken by a registered training organisation
- 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.

Operations may be conducted:

- by day or night
- in all possible weather conditions

Work may be conducted in:

- restricted spaces
- exposed conditions
- controlled or open environments

Work may involve:

- exposure to chemicals, and dangerous or hazardous substances
- movements of equipment, goods and vehicles

RANGE STATEMENT

- Type of cable may include:
- underground rated and approved copper
 - optical fibre
 - co-axial
- Cable installation equipment may include:
- spools
 - drums
 - feeders
 - slippers
 - hauling eyes
 - jinker
 - forklift
 - crane
 - cable cover strips or protection straps as per relevant specifications
- Site safety hazards may include:
- dangerous gases
 - water
 - soil
 - guards
 - barricades
 - lanterns
 - removal and placement of enclosure covers
 - handling of jelly-filled cables
- Safety equipment may include:
- witches hats
 - flashing lights
 - trench guards
 - warning signs and tapes
 - gas detector
- Preparation may include:
- trenching by:
 - hand
 - plant
 - excavator
 - backhoe
 - boring, including:
 - directional compaction
 - wet boring
 - sleeve boring
- Hauling feeders may include:
- rod
 - rope
 - air pressure
 - attachments such as stockings (mesh), splicing and hauling

RANGE STATEMENT

	eye
Earth conductors may include:	• stainless steel or copper as per relevant specifications
Hauling methods may include:	• hand winch (hand and mechanical) using safety devices such as guards, slippers and two-way radios
Methods of sealing ends may include:	• shrink-end caps • self-amalgamating tape
Installation requirements and constraints may include:	• site conditions • condition of enclosures and pipe • availability of cable size and type
Communications equipment may include:	• two-way radios, and/or • telephones
Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:	• company procedures • enterprise procedures • organisational procedures • established procedures
Depending on the work context, safety and protective equipment may include:	• high visibility clothing • hearing protection • gloves • sunscreen • sunglasses • safety glasses • insect repellent • safety headwear • safety footwear • gumboots • portable radios
Information/documents may include:	• applicable legislated rail safety requirements including acts and regulations from each state and territory together with any nationally approved compliance codes and/or guidelines • operational instructions, policies and workplace procedures • relevant logs or record books • work orders • technical instructions • AUSTEL Technical Standards TS 008, TS 009 • AUSTEL Customer Premises Cabling Manual • appropriate licences or certificates of competency (winch and/or crane, forklift)

RANGE STATEMENT

Applicable procedures and codes may include:

- manufacturers or workplace equipment instructions and operation manuals
- emergency procedure manuals
- two-way radio operation procedures
- QA plans, data and document control
- conditions of service, legislation and industrial agreements including workplace agreements and awards
- relevant state/territory regulations, codes of practice and safeworking system requirements
- relevant Australian Standards and related requirements, including AS 4292, AS 2865 and AS 3000
- relevant Austel standards and regulations
- relevant state/territory OH&S legislation
- relevant state/territory environmental protection legislation
- ADG Code and associated requirements

Unit Sector(s)

Not Applicable

Competency Field

Competency Field

W - Equipment and Systems Operations