



Australian Government

**UEENEEF103A Install and maintain
telecommunication cabling for services in
lifts**

Release 2

UEENEEF103A Install and maintain telecommunication cabling for services in lifts

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

1) Scope:

1.1) Descriptor

This unit covers the installation and maintenance of telecommunications cabling in lift installations. It encompasses working safely and to Australian Communications and Media Authority's 'Lift' Cabling Provider Rule, installing multiple telephone line, multi-pair cables, backbone cabling, terminating in socket outlets, termination modules and distributors, testing and compliance checks and completing cabling documentation.

Application of the Unit

Application of the Unit 2)

This unit applies to customer cabling terminated on distributors and to the installation, maintenance and modification of indoor, external, underground cabling. Customer cabling, for the purpose of this standard, may be used to connect devices for a range of applications, including for example: telecommunications (phones and facsimile), data including video and multimedia, security and alarms, and fire protection.

Licensing/Regulatory Information

License to practice 3)

This unit meets the minimum ACMA 'prescribed level of

License to practice

3)

knowledge and skill that safeguards matters of health, safety, network integrity and addresses matters of interoperability where customer equipment and standard telephone service are involved'. Therefore, skills and knowledge described in this unit may only be practised under the requirements set out in ACMA 'Lifts' Cabling Provider Rule.

Practice of this competency standard unit is also subject to regulations directly related to occupational health and safe and contracts of training where they apply.

Note:

1. Compliance with permits may be required in various jurisdictions and typically relates to the operation of plant, machinery and equipment such as elevating work platforms, powder operated fixing tools, power operated tools, vehicles, road signage and traffic control and lifting equipment. Permits may also be required for some work environments such as confined spaces, working aloft, near live electrical apparatus and site rehabilitation.

2. Compliance may be required in various jurisdictions relating to currency in First Aid, confined space, lifting and risk safety measures.

Pre-Requisites

Prerequisite Unit(s)

4)

Competencies

4.1)

Granting competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed.

UEENEEE1 01A Apply Occupational Health and Safety regulations, codes and practices in the workplace

UEENEEE1 02A Fabricate, assemble and dismantle utilities industry components

UEENEEE1 04A Solve problems in d.c. circuits

Prerequisite Unit(s)	4)
	<p>UEENEEE1 05A Fix and secure electrotechnology equipment</p> <p>UEENEEE1 07A Use drawings, diagrams, schedules, standards, codes and specifications</p> <p>UEENEEG0 06A Solve problems in single and three phase low voltage machines</p> <p>UEENEEG0 33A Solve problems in single and three phase low voltage electrical apparatus and circuits</p> <p>UEENEEG0 63A Arrange circuits, control and protection for general electrical installations</p> <p>UEENEEG1 01A Solve problems in electromagnetic devices and related circuits</p> <p>UEENEEG1 02A Solve problems in low voltage a.c. circuits</p> <p>UEENEEG1 06A Terminate cables, cords and accessories for low voltage circuits</p> <p>UEENEEG1 08A Trouble-shoot and repair faults in low voltage electrical apparatus and circuits</p> <p>UEENEEG1 16A Diagnose and rectify faults in lifts systems</p>

Literacy and numeracy skills 4.2)

Participants are best equipped to achieve competency in this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 'Literacy and Numeracy'

Reading 3 Writing 3 Numeracy 3

Employability Skills Information

Employability Skills 5)

The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a competency standard unit 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 to install and maintain cabling in lifts	1.1	OHS procedures for a given work area are identified, obtained and understood through established routines and procedures.
		1.2	Health and safety risks are identified and established risk control measures and procedures are followed in preparation for the work.
		1.3	Remote power feeding is identified and established risk control measures prepared.
		1.4	The nature and location of the work is determined from documentation or in discussion with appropriate person(s) to establish the scope of work to be undertaken.
		1.5	Cable routes are planned within the constraints of the building structure, significant and regulations.
		1.6	Earthing requirements are determined with consideration of existing earthing

ELEMENT

PERFORMANCE CRITERIA

- arrangements, where applicable and of cable system earth upper and lower resistance limitations.
- 1.7 Advice is sought from appropriate persons to ensure the work is coordinated effectively with others.
 - 1.8 Sources of materials that may be required for the work are established in accordance with established routines and procedures.
 - 1.9 Tools, equipment and testing devices needed to carry out the work are obtained and checked for correct operation and safety.
- 2 Install and maintain cabling in lifts.
- 2.1 Established OHS risk control measures and procedures for carrying out the work are followed.
 - 2.2 Installed support structure is checked to ensure cable will not be exposed to damage during installation and general operation.
 - 2.3 Catenary supports are secured to building structure and tensioned where necessary to ensure cable weight can be carried in operating conditions with interference and safety segregation maintained including adherence to AS/ACIF S009.
 - 2.4 Protective earthing of metal work is installed in accordance with requirements and to industry standards.
 - 2.5 Cables/wires are handled in accordance with manufacturer application specifications including tension and bending stress requirements.
 - 2.6 Control cubicles, travelling cable supports, junction boxes, line isolator units, back-mount and outlet layout conforms to manufacturer specifications and allows adequate work space for ease of access and avoid overlaying and segregation incoming and outgoing cables.

ELEMENT

PERFORMANCE CRITERIA

- 2.7 Sufficient excess is allowed at cable ends to facilitate termination.
- 2.8 Telecommunication outlet ends of cable are uniquely labelled to match identifier at originating location.
- 2.9 Cable is placed and secured to maintain safety and interference segregation in accordance with legislative and industry standards.
- 2.10 Cable ties not tightened to the point of causing cable sheath damage or transmission impairment are trimmed flush to prevent risk of personal damage.
- 2.11 Cables installed as catenaries or supported by catenaries in external environment shall meet minimum above ground clearances and clearances from hazardous electrical services as per AS/ACIF S009.
- 2.12 Travelling cables installed and secured to maintain safety and in accordance to relevant legislative, industry and manufacturer's standards.
- 2.13 Local Isolation Units are fitted as required by TS001 and AS/ACIF S009.
- 2.14 Over-voltage protection devices are fitted to all cable pairs, where required, to suppress voltage surges with the devices protectively earthed in accordance with AS/ACIF S009.
- 2.15 TRC/CES/Earth wire insulation is protected against damage and TRC/CES and protective earths segregated in accordance with relevant industry and legislative standards AS/ACIF S009.
- 2.16 Procedures for referring non-routine events to immediate supervisor for directions are followed.
- 2.17 Cabling is installed efficiently without waste of materials and energy or damage to apparatus,

ELEMENT

PERFORMANCE CRITERIA

- the surrounding environment or services.
- 2.18 Routine quality checks are carried out to ensure cabling complies with requirements.
3. Terminate and test cables and earth wires in lifts.
- 3.1 Established OHS risk control measures and procedures for carrying out the work are followed.
- 3.2 Cable sheath removed to allow for correct termination length and without damage to underlying conductors and their insulation.
- 3.3 Terminating modules are installed in accordance to manufacturer specifications and cable pairs neatly and sequentially fanned for termination.
- 3.4 Conductors are terminated in accordance with recommended colour code sequence using appropriate termination tools in accordance with manufacturer specifications.
- 3.5 Cable shield (if applicable) is earthed to manufacturer specifications and relevant industry codes of practice including AS/ACIF S009.
- 3.6 Visual inspection is undertaken to confirm termination colour code sequence has been followed prior to end-to-end testing of wire and pair termination integrity.
- 3.7 Cable pairs are tested and clearly labelled to provide an accurate identification in accordance with requirements.
- 3.8 TRC/CES/Earth wires are terminated with connectors recommended by manufacturers in accordance with relevant industry codes of practice including AS/ACIF S009.
- 3.9 TRC/CES /Earth wire continuity is maintained through out and interface requirements with electrical systems are observed.
- 3.10 TRC/CES /Earthing installation is tested for continuity, insulation resistance and conductive

ELEMENT

PERFORMANCE CRITERIA

- resistance as per relevant industry standards including AS/ACIF S009.
- 3.11 Earthing system is labelled in accordance with requirements.
 - 3.12 Compatibility of alterations with existing systems is confirmed and new work tested both in isolation and when integrated with existing systems.
 - 3.13 Procedures for referring non-routine events to immediate supervisor for directions are followed.
 - 3.14 Cabling is terminated efficiently without waste of materials and energy or damage to apparatus, the surrounding environment or services.
 - 3.15 Routine quality checks are carried out and a defect rectified to ensure cabling complies with requirements.
- 4 Complete cabling work, records and reporting.
- 4.1 OHS work completion risk control measures and procedures are followed.
 - 4.2 Work site is cleaned and made safe in accordance with established procedures.
 - 4.3 Record sheets and plans of cable location, type and infrastructure are accurately created or updated and stored in accordance with customer requirements.
 - 4.4 Cable pair record books are created or updated to provide an accurate record of pair locations, inter-connections and usage in accordance with industry codes of practice and AS/ACIF S009.
 - 4.5 Cabling completion advice is documented and reported in accordance with requirements.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Evidence shall show that knowledge has been acquired of safe working practices and installing and maintaining cabling for telecommunication services in lifts.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

KS01-EF103A Telecommunications Installation and Maintenance Practices for Lifts

Evidence shall show an understanding of telecommunications installation and maintenance practices for lifts, applying safe working practices and relevant Standards, Codes and Regulations to an extent indicated by the following aspects:

T1. Lift telecommunications cabling Regulations and Standards

- Registration of Cablers
- Standards
- Record keeping (cable records)
- Lift boundary

T2. Lift telecommunication cables and termination methods

- Cables identification
- Types of cables
- Round travelling cable
- Flat travelling cable
- Cable wire identification
- colour codes

T3. Installation methods of communication cabling

- Requirements
- Installation techniques
- Cabling installation equipment
- Cable drawing and hauling techniques
- Cable installation and cable stripping
- Termination
- Solder
- Screw
- Insulation crushing screw
- Insulation displacement
- Segregation
- Cable protection methods

REQUIRED SKILLS AND KNOWLEDGE

T4. Testing of communication cabling

- Types of tests
- Continuity
- Correct sequence
- Revised pair
- Transposed or split pair
- Insulation resistance
- Test equipment

Evidence Guide

EVIDENCE GUIDE

9) This provides essential advice for assessment of the unit and must be read in conjunction with the performance criteria and the range statement of the unit and the Training Package Assessment Guidelines.

The Evidence Guide forms an integral part of this unit. It must be used in conjunction with all parts of the unit and performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment 9.1)

Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the industry-preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accordance with industry and regulatory policy.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being

assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Sources of evidence need to be 'rich' in nature to minimise error in judgment.

Activities associated with normal everyday work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practised. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

**Critical aspects
of evidence
required to
demonstrate
competency in
this unit** 9.2)

Before the critical aspects of evidence are considered all prerequisites shall be met.

Evidence for competence in this unit shall be considered holistically. Each element and associated performance criteria shall be demonstrated on at least two occasions in accordance with the 'Assessment Guidelines – UEE11'. Evidence shall also comprise:

- A representative body of work performance demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:
 - Implement Occupational Health and Safety workplace procedures and practices, including the use of risk control measures as specified in the performance criteria and range statement
 - Apply sustainable energy principles and practices as specified in the performance criteria and range statement
 - Demonstrate an understanding of the essential knowledge and associated skills as described in this unit. It may be required by some jurisdictions that RTOs provide a percentile graded result for the purpose of regulatory or licensing requirements.

- Demonstrate an appropriate level of skills enabling employment
- Conduct work observing the relevant Anti Discrimination legislation, regulations, polices and workplace procedures
- Demonstrated consistent performance across a representative range of contexts from the prescribed items below:
 - Install and maintain cabling for telecommunication services in lifts as described in 8) and including:
 - A Terminating travelling cables at termination devices and outlet locations with accurate completion of installation records, drawing alterations and compliance forms
 - B Placing of cables on support structures and building faces for both internal and external locations
 - C Securing cables correctly for above locations
 - D Securing trailing cables
 - E Avoiding cable damage such as crushing, burning, kinking, sheath twist, cutting and nicking, bending radius
 - F Reading and interpreting drawings related to cable layouts, outlet location, cable coding system and identifiers, distributor locations
 - G Conducting and interpreting cable test results
 - H Correctly interpreting and applying standards and regulations
 - I Completing the required documentation
 - J Dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions incorporated in a holistic assessment with the above listed items

Context of and specific resources for assessment 9.3)

This unit should be assessed as it relates to normal work practice

using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this unit.

These should be used in the formal learning/assessment environment.

Note:

Where simulation is considered a suitable strategy for assessment, conditions must be authentic and as far as possible reproduce and replicate the workplace and be consistent with the approved industry simulation policy.

The resources used for assessment should reflect current industry practices in relation to installing and maintaining cabling for telecommunication services in lifts.

Method of assessment

9.4)

This unit shall be assessed by methods given in Volume 1, Part 3 'Assessment Guidelines'.

Note:

Competent performance with inherent safe working practices is expected in the Industry to which this competency standard unit applies. This requires assessment in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.

Concurrent assessment and relationship with other units

9.5)

There are no concurrent assessment recommendations for this unit.

The critical aspects of occupational health and safety covered in unit UEENEEE101A and other discipline specific occupational health and safety units shall be incorporated in relation to this unit.

Range Statement

RANGE STATEMENT

10) This relates to the unit as a whole providing the range of contexts and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

This unit shall be demonstrated in relation to installing and maintaining cabling for telecommunication services in lifts.

Generic terms used throughout this Vocational Standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms that apply are given in Volume 2, Part 2.1.

Unit Sector(s)

Not applicable.

Competency Field

Competency Field **11)**

Data and Voice Communications