



Australian Government

ICTCBL3009B Install, terminate and certify structured cabling installation

Release 1

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Modification History

Release	Comments
Release 2	This version first released with <i>ICT10 Integrated Telecommunications Training Package Version 3.0</i>. Minor changes to an element, a performance criterion and range statement. Outcomes deemed equivalent.
Release 1	This version first released with <i>ICT10 Integrated Telecommunications Training Package Version 1.0</i>.

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to place, secure and terminate structured cabling and to certify installation.

Assessment by a TITAB-registered assessor is recommended.

All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media (ACMA)-accredited registrar.

Application of the Unit

Technical staff who install, terminate and certify structured cabling installation apply the skills and knowledge in this unit.

This unit applies to indoor and outdoor installation within customer premises. It may be applied to domestic, commercial or industrial installations. Communications applications include digital and analog, telephony, data, video, digital broadcasting, computer networks, local area networks (LAN), wide area networks (WAN) and multimedia.

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements	Performance Criteria
<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</i>

Elements and Performance Criteria

1. Prepare for the installation of structured cabling	1.1 Confirm customer requirements and ensure compliance with requirements of relevant legislation, codes, regulations and standards 1.2 Arrange access to the site according to required procedure 1.3 Inform appropriate personnel of identified hazards on work site 1.4 Organise tools and equipment for given work 1.5 Erect barriers according to safety requirements 1.6 Select cable type and match structured cabling to installation environment and customer requirements 1.7 Verify proposed route to meet manufacturer specifications and industry standards
2. Install structured cable	2.1 Place and secure the correct type of cable following occupational health and safety (OHS) and environmental requirements and according to accepted industry practice and standards 2.2 Maintain cable and services separations in runs and cross overs to meet manufacturer and industry standards 2.3 Install structured cabling to industry standards 2.4 Minimise twist ratio defects to avoid accumulation effect on structured cable performance 2.5 Fit over-voltage protection devices to all cables and metallic components where required
3. Terminate structured cable	3.1 Terminate the cable according to accepted industry practice and standards 3.2 Maintain correct twist ratio to optimise system performance at rated level 3.3 Use correctly rated termination hardware with appropriate termination tool to ensure integrity and performance of termination 3.4 Earth cable shield to manufacturer specifications and relevant industry standards if applicable
4. Certify system performance to required level and complete customer documentation	4.1 Test installation and termination to comply with certification requirements 4.2 Record and verify system performance promptly where required 4.3 Authorise and issue appropriate documentation to client to

	certify system performance and complete <i>records</i> where required 4.4 Reinstall site to original condition and dispose of waste in an environmentally safe manner 4.5 Notify customer and obtain sign-off
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Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to liaise with internal and external personnel on technical and operational matters
- literacy skills to read and interpret:
 - technical documentation, such as equipment manuals and specifications
 - drawings related to:
 - cable coding system and identifiers
 - cable layouts
 - frame locations
 - outlet location
- numeracy skills to take and analyse measurements
- planning and organising skills to organise and maintain equipment
- problem-solving skills to solve equipment and logistics problems
- safety awareness skills to:
 - apply precautions and required action to minimise, control or eliminate hazards that may exist during work activities
 - select and use required personal protective equipment conforming to industry and OHS standards
 - work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- task-management skills to work systematically with required attention to detail and adherence to all safety requirements
- technical skills to:
 - use hand and power tools
 - use diagnostic equipment
 - perform fault clearance.
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Required knowledge

- ACMA Competency Requirements for Telecommunications Cabling Provider Rules 2000
- features and operating requirements of test equipment
- information required to operate equipment according to a test specification
- manufacturer requirements for safe operation of equipment
- requirements of legislation, codes of practice and other formal agreements that impact on the work activity
- specific OHS requirements relating to the activity and site conditions
- test methods and performance requirements
- typical issues and challenges that occur on site.

Evidence Guide

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

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to: • install, terminate and certify structured cabling installation to industry standards applying related OHS requirements and work practices • install termination hardware • conduct and interpret test results • determine compliance with manufacturer's certification and warranties • provide report documenting installation and test results to client.
Context of, and specific resources for assessment	Assessment must ensure: • sites where installation, termination and certification of structured cabling may be conducted • use of testing equipment currently used in industry • relevant regulatory and equipment documentation that impacts on installation and certification activities.
Methods of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • review of a hands-on project completed by the candidate • review of an oral and written report with completed documentation, including test results • direct observation of the candidate installing, terminating and certifying customer premises structured cabling installation.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • ICTCBL3049A Install systems and equipment on customer

	premises. Aboriginal people and other people from a non-English speaking background may have second language issues. Access must be provided to appropriate learning and assessment support when required. Assessment processes and techniques must be culturally appropriate, and appropriate to the oral communication skill level, and language and literacy capacity of the candidate and the work being performed. In all cases where practical assessment is used it will be combined with targeted questioning to assess required knowledge. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. Where applicable, physical resources should include equipment modified for people with special needs.
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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. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Customer requirements may include:	• ACMA telecommunication cabling advice forms TCA1 and TCA2 • cable plans and designs • contract documents • specification schedules • test results • timelines.
Relevant legislation, codes, regulations and standards may include:	• appropriate licences: • winch • crane • forklift • elevated work platform (EWP) • Australian Communications Industry Forum (ACIF) standards and codes • ACMA Cabling Provider Rules • AS Communications Cabling Manual (CCM) Volume 1 • AS/NZS 3000:2007 • AS/NZS 3080:2003 • AS/NZS 3084:2003 • AS/NZS 3085.1:2004 • AS/NZS IEC 61935.1:2006 • AS/NZS IEC 61935.2:2006 • AS/NZS ISO/IEC 14763.3:2007 • AS/NZS ISO/IEC 15018:2005 • AS/NZS ISO/IEC 24702:2007 • cabling security codes and regulations • Environment Protection Acts • OHS Acts and relevant codes and standards • ISO Draft 11801 (International) • regulated or industry codes of practice, including appropriate ACMA and AS/ACIF technical standards • relevant Institute of Electrical and Electronics Engineers (IEEE) standards • road and traffic control legislation and codes

	technical standards AS/ACIF S008:2006 and AS/ACIF S009:2006.
Hazards may include:	- building debris - earth potential rise (EPR) - glass fibre - live power lines - manual handling - mud and water - natural gas and other gas build-up - needle stick injury - radio frequency equipment emitting radiation - remote power feeding services that operate at above telecommunications network voltage (TNV) - slippery surfaces - vermin.
Tools and equipment may include:	- tools: - cable ties - crimping tool - drills - hammers - labeller - ladders - saws - terminating tool - equipment: - continuity tester - LAN Cat tester - multimeter - test equipment: - conforming to AS/NZS IEC 61935.1:2006.
Barriers may include:	- flashing lights - trench guards - warning signs and tapes - witches hats.
Cable type may include:	- Category 5 or 5E - Category 6 or 6E - Category 7.
Structured cabling may include:	- unshielded twisted pair (UTP) - shielded twisted pair (STP) - solid conductor

<i>OHS and environmental requirements</i> may relate to:	• stranded conductor (short links only). • identifying other services, including power and gas • need for decommissioning and isolating work site and lines before beginning work • personal protective clothing: • earmuffs • gloves: • leather • plastic • rubber • head protection • kneepads • masks • protective suits • safety boots • safety glasses • safety harness • safety line • safe work practices, such as the safe use and handling of: • asbestos • chemicals • materials • tools and equipment • work platforms • safety equipment: • flashing lights • gas and other hazard detection equipment • safety barriers • trench guards • warning signs and tapes • witches hats • special access requirements • suitable light and ventilation • environmental considerations: • clean-up protection • stormwater protection • waste management.
<i>Industry standards</i> may relate to:	• bending ratios to manufacturer's and AS/ACIF or ACMA standard requirements • cable anchors maintaining pair alignment and not

	- compressing cable sheath • cable free from tension • cabling labelled to enterprise and industry standards • twist ratio defects minimised to avoid accumulation effect on structured cable performance • twist ratio in cable maintained to optimise performance.
Over-voltage protection devices requirements must comply with:	• ACMA standards • enterprise or local environmental hazard • manufacturer.
Termination hardware include:	• ACMA-approved products • blocks • connectors • frames • sockets.
Certification requirements may include:	• installer based or independent: • formal and documented testing procedures and results • installer's warranty and documented test results • manufacturer's certificate.
Records may include:	• ACMA telecommunication cabling advice forms TCA1 and TCA2 • NTD record cards.

Unit Sector(s)

Telecommunications - Cabling