



Australian Government

Department of Education, Employment and Workplace Relations

ICTCBL3009A Install, terminate and certify structured cabling installation

Release: 1

ICTCBL3009A Install, terminate and certify structured cabling installation

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes, skills and knowledge required to place, secure and terminate structured cabling and to certify installation.</p> <p>Assessment by a TITAB registered assessor is recommended.</p> <p>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.</p>
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Application of the Unit

Application of the unit	<p>Technical staff who install, terminate and certify structured cabling installation apply the skills and knowledge in this unit.</p> <p>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.</p>
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for the installation of structured cabling	1.1. Confirm customer requirements and ensure compliance with 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 worksite 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's 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's 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's specifications and relevant industry standards if applicable
4. Certify system performance to required level and complete 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 4.4. Reinstate the site to customers satisfaction and dispose of wastes in an environmentally safe manner 4.5. Notify customer and obtain sign off

Required Skills and Knowledge

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 organisational 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

Required knowledge

- ACMA Competency Requirements for Telecommunications Cabling Provider Rules 2000
- legislation, codes of practice and other formal agreements that impact on the work activity
- features and operating requirements of test equipment
- information required to operate equipment according to a test specification

REQUIRED SKILLS AND KNOWLEDGE

- manufacturer's requirements for safe operation of equipment
- 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

EVIDENCE GUIDE	
<p>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.</p>	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>Evidence of the ability to:</p> <ul style="list-style-type: none"> • 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 the installation and test results to client.
Context of, and specific resources for assessment	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> • 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 impact on installation and certification activities.
Methods of assessment	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> • 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	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> • ICTCBL3049A Install systems and equipment on customer premises. <p>Aboriginal people and other people from a non-English</p>

EVIDENCE GUIDE

	<p>speaking background may have second language issues.</p> <p>Access must be provided to appropriate learning and assessment support when required.</p> <p>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.</p> <p>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.</p> <p>Where applicable, physical resources should include equipment modified for people with special needs.</p>
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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. 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.

<i>Customer requirements</i> may include:	<ul style="list-style-type: none"> • contract documents • cable plans and designs • specification schedules • timelines.
<i>Relevant legislation, codes, regulations and standards</i> may include:	<ul style="list-style-type: none"> • appropriate licences: <ul style="list-style-type: none"> • winch • crane • forklift • EWP • Australian Communications Industry Forum (ACIF) standards and codes • AS Communications Cabling Manual (CCM)

RANGE STATEMENT

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
- Environmental Protection Acts
- OHS
- 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.

RANGE STATEMENT	
<i>Hazards</i> may include:	<ul style="list-style-type: none"> • building debris • earth potential rise (EPR): <ul style="list-style-type: none"> • event at a site, such as an electrical distribution substation, may expose telecommunications personnel, users or plant to hazardous voltages • 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 which operate at above telecommunications network voltage (TNV) • slippery surfaces • vermin.
<i>Tools and equipment</i> may include:	<ul style="list-style-type: none"> • tools: <ul style="list-style-type: none"> • cable ties • crimping tool • drills • hammers • labeller • ladders • saws • terminating tool • equipment: <ul style="list-style-type: none"> • continuity tester • LAN Cat tester • multimeter • test equipment: <ul style="list-style-type: none"> • conforming with AS/NZS IEC 61935.1:2006.
<i>Barriers</i> may include:	<ul style="list-style-type: none"> • flashing lights • trench guards • warning signs and tapes • witches hats.
<i>Cable type</i> may include:	<ul style="list-style-type: none"> • Category 5 or 5E Category 6 or 6E Category 7.

RANGE STATEMENT	
<i>Structured cabling</i> may include:	<ul style="list-style-type: none"> • unshielded twisted pair (UTP) • shielded twisted pair (STP) • solid conductor • stranded conductor (short links only).
<i>OHS and environmental requirements</i> may relate to:	<ul style="list-style-type: none"> • identifying other services, including power and gas • need for decommissioning and isolating worksite and lines prior to commencement • personal protective clothing: <ul style="list-style-type: none"> • earmuffs • gloves <ul style="list-style-type: none"> • leather • plastic • rubber • head protection • kneepads • masks • protective suits • safety boots • safety glasses • safety harness • safety line • safe working practices, such as the safe use and handling of: <ul style="list-style-type: none"> • asbestos • chemicals • materials • tools and equipment • work platforms • safety equipment <ul style="list-style-type: none"> • 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:

RANGE STATEMENT	
	<ul style="list-style-type: none"> • clean-up protection • stormwater protection • waste management.
<i>Industry standards</i> may relate to:	<ul style="list-style-type: none"> • bending ratios to manufacturer's and AS/ACIF or ACMA standard requirements • cable anchors maintain pair alignment and do not compress cable sheath • cable free from tension • twist ratio defects minimised to avoid accumulation effect on structured cable performance • twist ratio in cable maintained to optimise performance.
<i>Over-voltage protection devices</i> requirements must comply with:	<ul style="list-style-type: none"> • ACMA standards • enterprise or local environmental hazard • manufacturer.
<i>Termination hardware</i> include:	<ul style="list-style-type: none"> • ACMA-approved products • blocks • connectors • frames • sockets.
<i>Certification requirements</i> may include:	<ul style="list-style-type: none"> • installer based or independent: <ul style="list-style-type: none"> • formal and documented testing procedures and results • installers warranty • manufacturer's certificate.

Unit Sector(s)

Unit sector	Telecommunications
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Co-requisite units

Co-requisite units	

Co-requisite units		

Competency field

Competency field	Cabling
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