



Australian Government

ICTTEN4243A Prepare design drawings and specifications for telecommunications installations

Release 1

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Modification History

Release	Comments
Release 1	This version first released with <i>ICT10 Integrated Telecommunications Training Package Version 3.0</i> .

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to prepare design drawings and specifications for a telecommunications installation.

Application of the Unit

Technical staff who prepare design drawings and specifications for a telecommunications installation apply the skills and knowledge in this unit.

This unit applies to access, building and core network installations within the carrier network. It may be applied to carrier, commercial and 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.

This unit is one in a sequence of units that cover network design activities, including:

- design drawings and specifications
- designing a dense wavelength division multiplexing (DWDM) system
- designing infrastructure
- estimating and quoting
- site survey.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.

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. Gather information on existing and proposed installation	1.1 Inspect site to confirm plans where possible 1.2 Review existing <i>plans, drawings and databases</i> against the design brief
2. Determine installation options	2.1 Identify installation options from the design brief and the customer 2.2 Assess installation options against customer requirements and requirements of <i>relevant legislation, codes, regulations and standards</i> 2.3 Establish and assess the cost of options against customer's budget 2.4 Select most suitable option based on function, cost, standards and customer deployment rules
3. Prepare and supply drawings and specifications	3.1 Prepare clear and accurate installation drawings indicating proposed facilities and services 3.2 Prepare detailed <i>design specifications</i> for the network installation that include scheduled and non-scheduled codes to facilitate costing 3.3 Provide drawings and specifications to relevant parties and file copies for later reference according to <i>company policies</i>
4. Verify specifications with customer	4.1 Verify prepared documentation with customer 4.2 Obtain authorisation and approval from customer to proceed according to company policy 4.3 Issue design to the field with authority to construct

Required Skills and Knowledge

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

Required skills

- analytical skills to read and interpret drawings related to:
 - network coding system and identifiers
 - network layouts
 - frame locations
 - network locations
- communication skills to liaise with internal and external stakeholders on technical and operational matters
- literacy skills to interpret technical documentation, such as equipment manuals and specifications
- numeracy skills to:
 - take and analyse measurements
 - prepare accurate costings
- planning and organising skills to organise and maintain equipment
- problem-solving skills to solve equipment and logistics challenges
- task-management skills to:
 - adhere to safety requirements
 - work systematically with required attention to detail
- technical skills to prepare design drawings and specifications.
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Required knowledge

- detailed knowledge of carrier network practices, procedures and systems, including databases and deployment rules
- legislation, codes of practice and other formal agreements that impact on the work activity, including schedule of rates and contract requirements
- Telecommunications Act and codes of practice
- procedures for responding to typical issues and challenges that occur on site, including:
 - barricading
 - damage to site
 - obtaining access
 - problematic weather
 - safety management
 - vegetation and mud
 - waste management.

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	<p>Evidence of the ability to:</p> <ul style="list-style-type: none"> • determine installation options • produce schematics and plan drawings • access database and knowledge systems for network information • produce design drawings and specifications • verify specifications with customer.
Context of and specific resources for assessment	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> • sites where network installation may be conducted • use of equipment currently used in industry • relevant regulations, company policies and cabling specifications that impact on network installation activities.
Method 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 design project completed by the candidate • oral or written questioning to assess knowledge of design options • direct observation of the candidate assessing design requirements • review of design drawings and specification for a network installation prepared by the candidate.
Guidance information for assessment	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p> <p>Aboriginal people and other people from a non-English 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

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.

<p><i>Plans, drawings and databases</i> may include:</p>	<ul style="list-style-type: none">• design drawings covering:<ul style="list-style-type: none">• developers' drawings• existing cable and conduit plans• external plant drawings• fibre distribution hub (FDH) schematics• floor plan drawings• new estate plans• schematics• other drawing terminology in use, including:<ul style="list-style-type: none">• cable plan• termination drawing• multi-ports• floor plan drawings, which may be formal or informal, and may include:<ul style="list-style-type: none">• box locations• cable routes• frame location• location and entry points of risers• location of existing cabling and equipment• service delivery points• multi-dwelling unit (MDU) specifications, which may include:<ul style="list-style-type: none">• capacity of cable• engineering calculations• estimated labour hours• proprietary system requirements• support requirements• termination system• type of cable• volume of cable• support system schematic drawings, which may be formal or informal, and may include:<ul style="list-style-type: none">• frame capacities
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	<ul style="list-style-type: none"> • frame locations • proposed cable routes • site locations.
<p><i>Relevant legislation, codes, regulations and standards</i> include:</p>	<ul style="list-style-type: none"> • AS Communications Cabling Manual (CCM) Volume 1 • AS/ACIF S008:2006 • AS/ACIF S009:2006 • 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 • Australian building codes and regulations • Australian Communications Industry Forum (ACIF) standards and codes • cabling security codes and regulations • EPA, waterways, rail, land access, and national parks • federal, state and local regulations • fire regulations • industry drafting codes of practice • mining legislation • noise abatement and heritage legislation • Telecommunications Act 1997.
<p><i>Design specifications</i> may include:</p>	<ul style="list-style-type: none"> • capacity for future expansion • contingencies during installation • required services • work health and safety requirements.
<p><i>Company policies</i> may refer to:</p>	<ul style="list-style-type: none"> • industry standards, including: <ul style="list-style-type: none"> • appropriate Australian standards and ACIF technical standards • regulated or industry codes of practice • relevant parties, including: <ul style="list-style-type: none"> • builder • cabler • contractor • customer • relevant regulatory authority.

Unit Sector(s)

Telecommunications - Telecommunications networks engineering