



Australian Government

ICTTEN430 Design infrastructure for telecommunications network installations

Release: 1

ICTTEN430 Design infrastructure for telecommunications network installations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to design supporting infrastructure for telecommunications network installations; for carrier grade switching, transmission and access equipment and associated media, power and monitoring equipment and alarm systems, fibre distribution hubs (FDHs), and remote power feeds.

It applies to field officers, design technicians or technical supervisors from carriers, contractors or other service providers working with switching, transmission and radio networks and the various transmission paths including cable, optical fibre, radio, microwave and satellite.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare for design of infrastructure work	1.1 Obtain relevant legislation, codes, regulations and standards for compliance when conducting work 1.2 Notify client to arrange site access and obtain plans and specifications 1.3 Conduct a site survey to verify infrastructure design

ELEMENT	PERFORMANCE CRITERIA
	requirements can be met 1.4 Identify site hazards and notify appropriate personnel to make site safe 1.5 Develop a design activity schedule to minimise workplace disruption and according to relevant regulation and standards 1.6 Discuss material supplies, safety equipment, resources, tools and test equipment with the construction group so they are available when required for installation for safe work practice
2. Design network equipment infrastructure	2.1 Prepare infrastructure designs according to electrical safety and work health and safety (WHS) and environmental requirements after consultation with operational staff 2.2 Design metal superstructure to house equipment according to manufacturer's specifications 2.3 Design cable pathways, including cable distribution frames and support materials, according to specifications
3. Design power infrastructure	3.1 Design power supply and earthing according to specifications and standard electrical practices 3.2 Design battery and rectifier equipment for project according to manufacturer's and WHS requirements 3.3 Design high Ohmic distribution (HOD) and associated power distribution systems
4. Design DC power distribution	4.1 Design power distribution work to meet electrical safety requirements and certifications 4.2 Monitor electrical work to ensure compliance with installation plan 4.3 Identify and rectify faults where possible or escalate according to enterprise policy
5. Restore site and complete documentation	5.1 Attach infrastructure labels and designations according to enterprise requirements 5.2 Complete inspection sheets and declare asset ready for next stage of installation using appropriate sign off documentation 5.3 Clean up and prepare site in readiness for next installation phase 5.4 Notify carrier and obtain sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3	Analyses and consolidates information and data from a range of sources, against defined criteria and requirements, and checks for accuracy and completeness
Writing	1.2, 1.4, 2.1-2.3, 3.1-3.3, 4.1, 5.1, 5.2, 5.4	- Prepares and produces diagrammatic models and associated documents that convey design parameters - Develops procedural material for a specific audience using clear and detailed language to convey explicit information, requirements and recommendations
Oral Communication	1.2, 1.4, 1.6, 5.4	Uses collaborative and inclusive techniques including active listening and questioning and reading of verbal and non-verbal signals to convey and clarify information and confirm understanding
Numeracy	1.5, 2.2-2.4, 3.1-3.3, 4.1	- Applies design modelling skills to identify, analyse and evaluate budgetary information, time durations and human resource allocations - Performs mathematical calculations to analyse and design telecommunications architecture, labour, costs and material quantities
Navigate the world of work	1.4-1.6, 2.1-2.3, 3.1-3.3, 4.1-4.3, 5.1, 5.2	- Accepts responsibility and ownership for the task and makes decisions on completion parameters and the need of coordination with others - Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements - Identifies and acts on issues that contravene relevant policies, procedures and legal requirements
Interact with others	1.2, 1.6, 5.4	- Selects and uses appropriate conventions and protocols when communicating with clients and co-workers in a range of work contexts - Uses a range of strategies to establish a sense of connection and build rapport with clients and co-workers
Get the work done	1.1, 1.3-1.5, 2.1-2.7, 3.1, 3.2, 4.1-4.3, 5.1, 5.3, 5.4	- Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others, taking into account capabilities, efficiencies and effectiveness - Monitors progress of plans and schedules and reviews

		and changes them to meet new demands and priorities • Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response, applying problem-solving processes in determining a solution
--	--	---

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN430 Design infrastructure for telecommunications network installations	ICTTEN4245A Design infrastructure for telecommunications network installations	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2>

Assessment Requirements for ICTTEN430 Design infrastructure for telecommunications network installations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- determine potential earthing locations, cable routes, cables trays, data cabinets, telecommunication enclosures, distributors
- design metal superstructure
- design protective earth and functional earth installations
- design power infrastructure
- design, monitor and rectify faults in DC power distribution
- design locations and facilities for access network infrastructure.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- evaluate capabilities and performance of cabling types, connectors and cabling structures for given design parameters
- explore common carrier telecommunications applications and related equipment and infrastructure suited to a design
- determine the most appropriate connections to carrier infrastructure or equipment
- identify and recognise compliance requirements of current legislation relating to installation of telecommunications equipment and connection to carrier services
- evaluate environmental impacts including options for green information and communications technology (ICT) installations for network topologies, interfaces and interconnect solutions
- define work health and safety (WHS) requirements for the design to ensure a safe installation plan including:
 - confined spaces
 - electrical safety

- working at heights
- manual handling and lifting
- materials handling
- physical hazards
- evaluate and summarise network and transmission supplies and equipment required for a design
- determine power requirements and electrical safety for a specific design
- specify warranty information for equipment supplies and contractor work guarantees
- devise an appropriate survey to determine design criteria for a given site
- explore and evaluate the nature of tools and equipment required for installation of the design
- consider power distribution work requirements and the impact on the design.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- special purpose tools, equipment and materials
- site where installation of supporting infrastructure may be conducted
- plant, tools and equipment currently used in industry
- relevant regulatory and equipment documentation that impact work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2>