



Australian Government

UETTD RRT21 Install traction overhead wiring systems

Release: 1

UETTDRT21 Install traction overhead wiring systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package.

Application

This unit involves the skills and knowledge required to install traction overhead wiring systems in the electricity supply industry (ESI).

It includes undertaking safe working practices on or about the running line/track, preparing for profiling including isolating systems and circuits for safe working in accordance with work plans. It also includes identifying and implementing road/rail management plans, procedures of issuing/accepting electrical permits, confirming equipment and associated hardware is correctly installed, prior to service and updating installation data and relevant quality assurance documentation.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may apply under State and Territory legislative and regulatory licensing requirement which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Common Unit Group

UEENEEE101A Apply Occupational Health and Safety regulations, codes and practices in the workplace

UEENEEE102A Fabricate, assemble and dismantle utilities industry components

UEENEEE104A Solve problems in d.c. circuits

UEENEEE105A Fix and secure electrotechnology equipment

UEENEEE107A Use drawings, diagrams, schedules, standards, codes and specifications

UEENEEG101A Solve problems in electromagnetic devices and related circuits

UEENEEG102A Solve problems in low voltage a.c. circuits

UETTDREL11 Apply sustainable energy and environmental procedures

UETTDREL12 Operate plant and equipment near live electrical conductors and apparatus

UETTDREL16 Working safely near live electrical apparatus

UETTDNIS52 Install and maintain poles, structures and associated hardware

UETTDNIS54 Install and maintain poles, structures and overhead conductors and cables

Competency Field

Rail Traction

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to install overhead traction wiring systems

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Work schedules, construction plans, drawings, workplace procedures and material lists are received and confirmed
- 1.2** Job requirements and workplace procedures are identified and communicated with relevant personnel
- 1.3** Work health and safety (WHS)/occupational health and safety (OHS), environmental and workplace procedures for the installation of overhead traction wiring systems are obtained and confirmed for the purposes of the work to be performed
- 1.4** Work is prioritised and sequenced for completion within acceptable timeframes following consultation with relevant personnel and in accordance with workplace procedures
- 1.5** Hazards are identified, WHS/OHS risks assessed and control measures identified in accordance with workplace procedures
- 1.6** Relevant work permits are obtained to access rail corridor and signed in accordance with workplace procedures
- 1.7** Plant, equipment, tools and personal protective equipment (PPE) required for work are identified, obtained and confirmed in working order

- 1.8** Worksite is prepared to minimise risk, damage to property, commerce and individuals in accordance with track protection officer and/or network control officer and workplace procedures
 - 1.9** Road/rail management plan is identified and implemented in accordance with workplace procedures
 - 1.10** Environmental constraints applicable to work are identified and control measures applied
- 2 Installation of overhead traction wiring systems**
 - 2.1** WHS/OHS, sustainable energy and environmental principles and practices are monitored and followed to reduce incidents in accordance with workplace procedures
 - 2.2** Requirements for lifting and/or climbing and/or working at heights and the use of power tools/equipment are followed in accordance with workplace procedures
 - 2.3** Systems and circuits are checked and isolated and proved safe to work and in accordance with job requirements, work permits and workplace procedures
 - 2.4** Installation of overhead traction wiring systems is completed in agreed timeframes, to quality standards and with minimum waste in accordance with workplace procedures
 - 2.5** Overhead traction wiring systems, including cables, fittings, traction conductors and associated equipment, are installed in accordance with work schedule, job requirements and workplace procedures
 - 2.6** Profiling is completed in accordance with workplace procedures
 - 2.7** Unplanned events are responded to in accordance with workplace procedures
 - 2.8** Quality checks of work are undertaken in accordance with workplace procedures
- 3 Complete installation of overhead traction wiring systems**
 - 3.1** Completed work is checked against work schedule, construction plans and drawings for compliance and anomalies are reported in accordance with workplace procedures
 - 3.2** WHS/OHS and environmental incidents are reported in

accordance with workplace procedures, as required

- 3.3** Worksite is rehabilitated, cleaned up and made safe in accordance with workplace procedures
- 3.4** Tools, equipment and surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with workplace procedures
- 3.5** Relevant work permits are signed off and the overhead traction wiring system is returned to service in accordance with workplace procedures
- 3.6** Work records, reports and/or documentation are completed in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRT21A Install traction overhead wiring systems.

Links

UET Training Package Companion Volume Implementation Guide is found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETTDRT21 Install traction overhead wiring systems

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including the use of risk control measures
- applying sustainable energy principles and practices
- using at least four (4) of the following types of system equipment and fittings:
 - support structure
 - span
 - section insulator
 - neutral section
 - midpoint anchor
 - support equipment
 - tension regulators
 - stay/guy wire
 - tramway support network
- using at least two (2) of the following types of traction conductors and cables:
 - catenary
 - dropper
 - contact/trolley*
 - feeder
 - earth conductor
 - drape/potential jumper
 - (*must do)
- operating from at least one (1) of the following types of mobile plant and height equipment:
 - elevated work platform (EWP)
 - ladder
 - mobile platform
- obtaining relevant equipment, tools and personal protective equipment (PPE) required for installing traction overhead wiring systems, including using at least two (2) of the following:

- tensioning equipment*
- specialised tools
- ropes
- geometry profiling equipment
- (*must do)
- dealing with unplanned events on at least one (1) occasion.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- electrical wiring system components - earth wires, feeder wire, return conductor, insulators, catenary wire, contact/trolley wire, droppers, tensioning equipment, current collectors, tram support networks, tram fittings and bridge/tunnel fittings
- electrical traction circuits, including:
 - types
 - applications
- relationship of the components, apparatus and the conductors to the operation of the traction system
- effective current collection and wire interface
- effective registration in the traction power system
- profiling overhead traction wire methods, including:
 - factors that impact on current collectors
 - methods to achieving smooth current collector transitions and interfaces
- dynamic and static forces, including:
 - types that effect traction systems
 - effects on effective registration
 - techniques to minimise the adverse effects
- standards, codes, legislation, supply authority regulations and/or enterprise requirements applicable to the electrical traction
- electrical traction voltage and current circuit paths, including:
 - transmission distribution voltages
 - traction supply system and voltages
 - return and stay current paths, including electrolysis
- relationship of sectioning, section insulator and overlaps/air gaps in a traction power system
- traction power system components, including:
 - function of transformer/rectifiers
 - configuration and purpose of traction overhead wiring systems
 - function of isolators/switches
 - function of the circuit breaker
- reliability and security of traction supply.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for installing traction overhead wiring systems
- applicable documentation, including workplace procedures, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

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