Title	**Install and maintain telecommunications customer copper network infrastructure**		
Level	**3**	**Credits**	**25**

Purpose	This unit standard is intended for technicians who require basic knowledge of copper telecommunication networks. People credited with this unit standard are able to: – read, interpret, and mark up telecommunications outside plant drawings; – joint underground telecommunications copper cables; – terminate underground telecommunications cables; – install telecommunications aerial cable and drop wire; – test and fault find telecommunications cables; – install additional copper cable pairs to existing telecommunications cabinets and building frames; – handover telecommunications outside plant and equipment to customer.

Classification	Telecommunications > Telecommunications – Service Delivery

Available grade	Achieved

Guidance Information

1 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with relevant industry and legislative requirements.

2 Legislation and references relevant to this unit standard include:
- Electricity Act 1992;
- Health and Safety at Work Act 2015;
- Privacy Act 2020;
- Resource Management Act 1991;
- Telecommunications Act 2001;
- New Zealand Telecommunications Forum Inc., *Customer Complaints Code;* available from https://www.tcf.org.nz/industry/resources/publications/industry–standards–guides/;
- and all subsequent amendments and replacements.

3 It is highly recommended that Unit 30520 *Demonstrate knowledge of telecommunications customer copper network infrastructure* is completed before entry or demonstration of equivalent knowledge and skills.

4 Definitions

Basic knowledge refers to fundamental operational and theoretical knowledge of the subject matter to interpret available information.

Industry requirements refer to relevant policies, processes, methodologies, industry codes of practice, site specific health and safety plans, standard operating procedures, quality plans, work plans, traffic management plans, contract work programmes, job safety analysis, safe work method statements, job instructions, manufacturer's requirements, contract specifications, manuals, and procedural documents.

Outside plant refers to that portion of the telecommunications network which generally extends from exchange switch to the point of entry at customers' premises.

Outside plant drawings refer to underground network plans, copper cable distribution plans, plans generated by an Automated Mapping and Facilities Management Systems AM/FM system.

RLG refers to a system of reticulating underground cable pairs to customer premises.

Specifications refer to detailed job specifications, drawings, instructions, manufacturer's specifications and instructions or any employer or company specifications.

Telecommunications outside plant and equipment refers to the fundamental components which make up telecommunications customer access networks and excludes the more complex equipment and complete or end-to-end systems.

Outcomes and performance criteria

Outcome 1

Read, interpret, and mark up telecommunications outside plant drawings.

Performance criteria

1.1 Drawings are interpreted in terms of the plant items, network entities, and plant locations they represent.

Range plant items and network entities may include but are not limited to – cable distribution, interconnections, jointing details, cable types and sizes, details of jointing chambers, cabinets, closures, loading details, system of reticulating underground cabling, poles, main distribution frame (MDF);
evidence of ten drawing interpretations is required.

1.2 Drawings are marked up to reflect changes and existing and proposed items are identified.

Outcome 2

Joint underground telecommunications copper cables.

Range large plastic sheathed cable, plastic insulation, paper insulation;
a minimum of 50 pairs is required.

Performance criteria

2.1 Jointing materials and tools are drawn from stock or purchased in accordance with job specifications and instructions and assembled on site.

2.2 Site is prepared for jointing in accordance with job requirements.

2.3 Cables are stripped and prepared for jointing.

2.4 Conductors are identified and jointed in accordance with specifications.

Range manual jointing, modular jointing with one type jointing tool.

2.5 Pair groups are wrapped, and screen continuity and earth bonding established in accordance with specifications.

2.6 Plastic cable joint is closed, sealed, and, where appropriate, pressurised, in accordance with specifications.

2.7 Site is left safe and secure, and reinstated to customer's expectations.

Outcome 3

Terminate underground telecommunications cables.

Range terminations at – cabinets, terminal boxes, RLG, building frames, MDF.

Performance criteria

3.1 Site is prepared in accordance with job requirements.

3.2 Materials are purchased or obtained from stock and assembled on site.

3.3 Cables are stripped and prepared for termination in accordance with specifications.

3.4 Conductors are identified and terminated in accordance with specifications.

3.5 Cable entries and cable ends are sealed, pairs insulated, and, where appropriate, gas pressure connections are made, in accordance with specifications.

3.6 End-to-end testing confirms continuity and insulation resistance in accordance with specifications. Test results are required and expected for before and after completions.

3.7 Site is left safe and secure, and reinstated to customer's expectations.

Outcome 4

Install telecommunications aerial cable and drop wire.

Performance criteria

4.1 Permissions and/or permits for site access, and where appropriate, for joint use of poles are confirmed.

4.2 Materials are purchased or obtained from stock and assembled on site in accordance with company practice.

4.3 Pole mounted hardware is installed in accordance with specifications.

4.4 Aerial cable is installed in accordance with specifications.

4.5 Drop wires to customer premises are installed in accordance with specifications.

Outcome 5

Test and fault find telecommunications cables.

Range testing of cables, other than acceptance testing, and fault-finding is demonstrated during the installation process or subsequently on cables in service.

Performance criteria

5.1 Testing establishes identity, and measures loop resistance and insulation resistance of cable pairs.

5.2 Acceptance tests for a cable installation are completed in accordance with specifications.

5.3 Testing establishes the location of short circuit, and open-circuit faults, using direct current instruments.

5.4 Short and open circuit faults are identified and located by logical interpretation of test results, and rectified.

Outcome 6

Install additional copper cable pairs to existing telecommunications cabinets and building frames.

Performance criteria

6.1 Inspection confirms that site preparation was completed according to specifications.

6.2 Materials are purchased or obtained from stock and assembled on site.

6.3 Hardware and protective devices are fitted in accordance with specifications.

6.4 Termination of copper cable pairs is completed in accordance with specifications.

Outcome 7

Handover telecommunications outside plant and equipment to customer.

Performance criteria

7.1 Plant and equipment is made available to the customer by the agreed date, and, in cases where it impacts upon a network or larger system, plans for the commissioning are agreed with the customer.

7.2 Handover documentation is completed in the agreed format in accordance with customer requirements.

7.3 Job is closed off and drawings and documentation submitted in the agreed format in accordance with customer requirements.

Planned review date	31 December 2026

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	28 September 2017	N/A
Rollover and Revision	2	27 June 2019	N/A
Revision	3	28 October 2021	N/A

Consent and Moderation Requirements (CMR) reference	0101

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact Connexis – Infrastructure Industry Training Organisation qualifications@connexis.org.nz if you wish to suggest changes to the content of this unit standard.