COMMUNICATIONS ALLIANCE LTD

AUSTRALIAN STANDARD

AS/CA S035:2015

Requirements for installation of temporary field telecommunications customer cabling for defence purposes

Australian STANDARD

Australian Standard – *Requirements for installation of temporary field telecommunications customer cabling for defence purposes*

This Standard was issued in draft form for public comment as DR AS/CA S035:2014.

First published as AS/ACIF S035:2008
Second edition as AS/CA S035:2015, published on 20 April 2015

ISBN: 1 74000 444 2

Communications Alliance Ltd (formerly Australian Communications Industry Forum Ltd) was formed in 2006 to provide a unified voice for the Australian communications industry and to lead it into the next generation of converging networks, technologies and services.

FOREWORD

General

This Standard was prepared by Communications Alliance and most recently revised by the WC65 Defence Cabling Standard Revision Working Committee. It is one of a series of Telecommunication Standards developed under the Memorandum of Understanding between the Australian Communications Authority (ACA) and the Australian Communications Industry Forum.

Note: On 1 July 2005 the ACA became the Australian Communications and Media Authority (ACMA) and the Memorandum of Understanding continues in effect as if the reference to the ACA were a reference to ACMA.

Communications Alliance was formed in 2006 and continues the functions previously fulfilled by ACIF.

This Standard is a revision of AS/ACIF S035:2008 *Requirements for installation of temporary field telecommunications customer cabling for defence purposes* Standard.

This Standard is the result of a consensus among representatives on the Communications Alliance Working Committee to produce it as an Australian Standard.

Intellectual property rights

Equipment which is manufactured to comply with this Standard may require the use of technology which is protected by patent rights in Australia. Questions about the availability of such technology, under licence or otherwise, should be directed to the patent holder or Australian licensee (if known) or through enquiry at IP Australia which incorporates the Patent, Designs and Trade Marks Offices. Further information can be found at www.ipaustralia.gov.au.

Standards revision

Australian Standards (AS/ACIF and AS/CA Standards) developed by the Communications Alliance are updated according to the needs of the industry, by amendments or revision. Users of these Standards should make sure that they possess the latest amendments or editions. Representations concerning the need for a change to this AS/CA Standard should be addressed to—

The Project Manager
Customer Equipment and Cable Reference Panel
Communications Alliance
PO Box 444
Milsons Point NSW 1565

Regulatory notice

Attention is drawn to the fact that the installation and repair of customer cabling is subject to the Telecommunications Cabling Provider Rules, which require customer cabling work to be performed or supervised by a person with the appropriate cabling provider registration and to be installed in accordance with AS/CA S009 (Wiring Rules). This requirement is determined by legislation and

subordinate regulatory instruments administered by the Australian Communications and Media Authority (ACMA).

The *Telecommunications (Types of Cabling Work) Declaration 2013*, which calls up this Standard, exempts Department of Defence (DoD) personnel and overseas defence forces from the requirements to have a cabling provider registration or to comply with AS/CA S009, provided the requirements of this technical standard have been met. This Standard applies only to installation of temporary field telecommunications customer cabling for DoD purposes during exercise, training or operational deployment in any environment.

ACMA is a Commonwealth Authority with statutory powers to impose requirements on cabling providers concerning customer cabling.

Details on cabling regulations can be obtained from the ACMA website at http://www.acma.gov.au or by contacting ACMA below at:

Australian Communications and Media Authority
PO Box 13112
Law Courts PO
Melbourne VIC 8010
Australia

Telephone: +61 3 9963 6800
Facsimile: +61 3 9963 6899
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Introduction

This introduction for the AS/CA S035:2015 *Requirements for installation of temporary field telecommunications customer cabling for defence purposes* is not an authoritative section of this Standard and is only provided as guidance for the user of the Standard to outline its objectives, the factors that have been taken into account in its development and to list the principle differences between the new and the previous edition.

The reader is directed to the clauses of this Standard for the specific requirements and to the Australian Communications and Media Authority (ACMA) for the applicable telecommunications labelling and compliance arrangements.

Note: Further information on the telecommunications labelling and compliance arrangements can be found in *The Telecommunications Labelling (Customer Equipment and Customer Cabling) Notice* (the TLN). The TLN can be obtained from the Australian Communications and Media Authority (ACMA) website at www.acma.gov.au.

The objective of this Standard is to—

(a) provide a mechanism for the rapid deployment of temporary field cabling by Department of Defence personnel and overseas defence forces during exercise, training or operational deployment in any environment.

(b) ensure the safety of Carrier network staff and any contracted non-military personnel who may come in contact with temporary field telecommunications customer cabling for defence purposes.

(c) meet obligations of the Telecommunication Act 1997.

(d) provide ACMA with assurance under the *Telecommunications (Types of Cabling Work) Declaration 2013* which enables an effective mechanism for the Department of Defence or an overseas defence force to rapidly deploy temporary field cabling.

The objective of this revision is to update the requirements for the installation requirements for customer cabling to the 2013 edition of the AS/CA S009 *Installation requirements for customer cabling (Wiring rules)* Standard.

TABLE OF CONTENTS

1 INTERPRETATIVE GUIDELINES

1.1 Categories of requirements

This Standard contains mandatory requirements as well as provisions that are recommendatory only. Mandatory requirements are designated by the words '**shall**' or '**shall not**'. All other provisions are voluntary.

1.2 Compliance statements

Compliance statements, in italics, suggest methodologies for demonstrating CE's compliance with the requirements.

1.3 Definitions, expressions and terms

If there is any conflict between the definitions used in this Standard and the definitions used in the *Telecommunications Act 1997*, the definitions in the Act take precedence.

1.4 Notes

Text denoted as 'Note' is for guidance in interpretation and is shown in smaller size type.

1.5 References

(a) Applicable editions (or versions) of other documents referred to in this Standard are specified in Section 3: REFERENCES.

(b) If a document refers to another document, the other document is a sub-referenced document.

(c) Where the edition (or version) of the sub-referenced document is uniquely identified in the reference document, then that edition (or version) applies.

(d) Where the edition (or version) of the sub-referenced document is not uniquely identified in the reference document, then the applicable edition (or version) is that which is current at the date the reference document is legislated under the applicable regulatory framework, or for a non- legislated document, the date upon which the document is published by the relevant standards organisation.

1.6 Units and symbols

In this Standard the International System (SI) of units and symbols is used in accordance with Australian Standard AS ISO 1000.

2 SCOPE

2.1 This Standard applies to the installation of temporary field cabling by Department of Defence personnel and overseas defence forces for defence purposes during exercise, training or operational deployment by the Department of Defence (DoD), or overseas defence forces exercising with Australian DoD personnel. It should be read in conjunction with other referenced Standards.

2.2 This Standard sets out the minimum requirements to ensure that—

(a) the installation or use of the cabling does not expose Carrier personnel, cabling providers, end-users or other persons to any danger; and

(b) the installation or use of the cabling does not adversely affect the integrity (proper end-to-end functioning) of a Telecommunications Network.

3 REFERENCES

Publication	Title
Australian Standards	
AS ISO 1000-1998	The international System of Units (SI) and its application.
AS/NZS 3000:2007	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS IEC 60825.2:2011	Safety of laser products - Safety of optical fibre communication systems (OFCS)
AS/NZS 60950.1:2011	Information technology equipment - Safety - General requirements
AS/ACIF Standards and ACIF Codes	
AS/CA S002:2010	Analogue interworking and non-interference requirements for Customer Equipment for connection to the Public Switched Telephone Network
AS/CA S003:2010	Customer Access Equipment for connection to a Telecommunications Network
AS/ACIF S006:2008	Requirements for Customer Equipment for connection to a Telecommunication Network
AS/CA S008:2010	Requirements for customer cabling Products
AS/CA S009:2013	Installation Requirements for Customer Cabling (Wiring Rules)
AS/ACIF S016:2001	Requirements for Customer Equipment for connection to hierarchical digital interfaces
AS/ACIF S031:2001	Requirements for ISDN Basic Access Interface
AS/ACIF S038:2001	Requirements for ISDN Primary Rate Access Interface
AS/CA S043	Requirements for Customer Equipment for connection to a metallic loop interface of a telecommunications network

Note: AS/ACIF and AS/CA Standards can be downloaded from the Communications Alliance website at www.commsalliance.com.au

4 ABBREVIATIONS AND DEFINITIONS

For the purposes of this Standard, the following abbreviations and definitions and those of Part 1 apply:

4.1 Abbreviations

AC (or a.c.)	Alternating Current
ACIF	Australian Communications Industry Forum
ACMA	Australian Communications and Media Authority
ADF	Australian Defence Force
AS	Australian Standard
CE	Customer Equipment
DC (or d.c.)	Direct Current
DoD	Department of Defence
ELV	Extra-Low Voltage
EPR	Earth Potential Rise
HV	High Voltage
LFI	Low Frequency Induction
LIU	Line Isolation Unit
LV	Low Voltage
NZS	New Zealand Standard
SELV	Safety Extra-Low Voltage
TNV	Telecommunications Network Voltage

4.2 Definitions

4.2.1 Cabling Work

(a) the installation of customer cabling for connection to a Telecommunications Network or to a facility; or

(b) the connection of customer cabling to a Telecommunications Network or to a facility; or

(c) the maintenance of customer cabling connected to a Telecommunications Network or to a facility.

[*Telecommunications Act 1997*]

4.2.2 Carrier

The holder of a carrier licence. [*Telecommunications Act 1997*]

4.2.3 Customer Cabling

A line that is used, installed ready for use or intended for use on the customer side of the boundary of a Telecommunications Network. [*Telecommunications Act 1997*]

Note: For the purposes of this Standard, the customer refers to the Department of Defence or an overseas defence force' when referring to the organisation.

4.2.4 Customer Equipment (CE)

(a) Any equipment, apparatus, tower, mast, antenna or other structure or thing that is used, installed ready for use or intended for use on the customer side of the boundary of a Telecommunications Network; or

(b) Any system (whether software-based or otherwise) that is used, installed ready for use or intended for use on the customer side of the boundary of a Telecommunications Network;

but not including a line. [*Telecommunications Act 1997*]

4.2.5 Extra-Low Voltage (ELV)

A voltage not exceeding 42.4 V peak or 60 V d.c. [AS/NZS 60950.1:2003]

Note: This definition differs from the ELV definition contained in AS/NZS 3000:2007, which is more closely aligned to the TNV limits described in Clause 4.2.14, i.e. 120 V d.c. or 70.7 V a.c. peak (50 V a.c. r.m.s.).

4.2.6 Hazardous Voltage

A voltage exceeding ELV limits existing in a circuit which does not meet the requirements for either a limited current circuit or a TNV circuit. [AS/NZS 60950.1:2003]

4.2.7 High Voltage (HV)

A voltage exceeding LV limits. [AS/NZS 3000:2007]

4.2.8 Low Voltage (LV)

A voltage exceeding ELV limits but not exceeding 1000 V a.c. or 1500 V d.c. [AS/NZS 3000:2007]

4.2.9 Network Boundary

A point which is the boundary of a Carrier's Telecommunications Network for determining whether cabling or equipment is 'customer cabling' or 'customer equipment' for the purpose of technical regulation under Part 21 of the *Telecommunications Act 1997*.

Note: In the context of this Standard the Network Boundary will usually be a point between the Carrier or Carriage Service Provider and the Department of Defence or an overseas defence force, such as an LIU specified in Clause 5.2 or an optical fibre termination unit.

4.2.10 Power Feeding

The transfer of electrical power (usually DC) over a telecommunications line for telecommunications purposes to operate a powered device.

4.2.11 Registered Cabling Provider

A cabler who is registered under the ACMA registration system to perform cabling work to which registration relates.

4.2.12 Safety Extra-Low Voltage (SELV) Circuit

A secondary circuit which is designed and protected that—

(a) under normal operating conditions, its voltage does not exceed ELV limits at any time; and

(b) under single fault conditions, its voltage does not exceed ELV limits for longer than 200 ms and, in any case, does not exceed 71 V peak or 120 V d.c. at any time.

Note 1: An example of an SELV circuit is a power feed from a battery or a double insulated 'plug pack'.

Note 2: Adapted from AS/NZS 60950.1:2003

Note 3: A circuit that meets the above requirements, but which is subject to over-voltages from a Telecommunications Network or a cable distribution system, is classified as a TNV circuit.

4.2.13 Telecommunications Network

A system, or a series of systems, that is operated by a Carrier or carriage service provider and which carries, or is capable of carrying, communications by means of guided and/or unguided electromagnetic energy.

4.2.14 Telecommunications Voltage Network

A voltage not exceeding—

(a) when telephone ringing signals are not present—

(i) 71 V peak or 120 V d.c.; or

(ii) if a combination of AC voltage and DC voltage is present, the sum of the AC peak voltage divided by 71 and the DC voltage divided by 120 must not exceed 1; and

(b) when telephone ringing signals are present, voltages such that the signal complies with the criteria of either Clause M.2 or Clause M.3 of AS/NZS 60950.1 (the signal is required to be current limited and cadenced).

Note: Adapted from AS/NZS 60950.1

4.2.15 Temporary Cabling

Any customer cabling installed by Department of Defence personnel or overseas defence forces for the sole purpose of supporting the conduct of an exercise, training or operational deployment and only for the duration of that activity but, in any case, for a period not exceeding 90 days

5 REQUIREMENTS

5.1 General

Temporary cabling within the scope of this Standard **shall** be installed by Department of Defence personnel and overseas defence forces in accordance with one of the following:

(a) The requirements of Australian Standard AS/CA S009.

(b) The current ADF cabling specifications and manuals provided that the requirements of Clauses 5.2 to 5.13 of this Standard are met.

(c) Clauses 5.2 to 5.13 of this Standard in the case of cabling installed by overseas forces whether or not these Clauses are contrary to their cabling specifications and manuals.

Note: AS/CA S009 does not make any distinction between permanent cabling and temporary cabling. AS/CA S009 sets out minimum requirements for all customer cabling whether permanent or temporary cabling. While this Standard (AS/CA S035) sets out alternative requirements for temporary DoD cabling, any permanent cabling is to comply with AS/CA S009 and is to be installed by a registered cabling provider in accordance with the *Telecommunications Cabling Provider Rules 2000*.

5.2 Line Isolation

Telecommunications circuits in temporary cabling **shall** be connected to a Telecommunications Network via a line isolation unit (LIU) that provides the equivalent of a double insulation barrier of a minimum of 3000 V a.c. between the telecommunications network and hazardous voltage in accordance with AS/NZS 60950.1.

An LIU **shall** be appropriate for the service interface with which it is to be used. This may require repetition or regeneration of signals, or local power feeding depending upon the particular service provided by the telecommunications network.

5.3 Earth Potential Rise (EPR) and Low Frequency Induction (LFI) Specific drafting rules for subclauses:

Temporary cabling **shall** be installed in such a way as to minimize EPR and LFI hazards.

Note: Appendix H of AS/CA S009may be used as a guide.

5.4 Indoor or Outdoor Cabling

5.4.1 General

All cabling **shall** be installed in such a way as to minimise the risk of injury to persons or livestock due to, for example, tripping, choking, impact, to ensure the safe passage of persons and livestock where they may reasonably be expected to pass.

5.4.2 Aerial cabling ground clearance

The minimum clearance from the ground in any direction of an aerial temporary cable should be as follows—

(a) Over any land not traversable by road vehicles — 2.7 m.

(b) Over any residential driveway — 3.5 m.

(c) Over any commercial/industrial driveway or private roadway — 4.9 m.

(d) Over any public roadway or footway — as required by the relevant authority but, in any case, preferably no less than 4.9 m.

5.4.3 Cable support

Temporary cable **shall** be supported or secured at suitable intervals to maintain the required separation from hazardous services as specified in Clauses 5.11 and 5.12.

5.5 Telecommunications outlets

All telecommunications outlets **shall** be designed or located to prevent the end-user coming into contact with parts at a TNV potential.

5.6 Hazardous voltages

Temporary cabling **shall not** be used to carry a hazardous voltage unless all of the following conditions are met:

(a) The voltage **shall not** exceed LV limits.

(b) The hazardous voltage **shall not** be carried in the same cable (i.e. share the same cable sheath) as any ELV, SELV, TNV or limited current circuit.

(c) The cable **shall** be clearly identifiable at any access point.

(d) The cable terminations **shall** be separated from the terminations of other telecommunications cables in the same way as power cable terminations are required to be separated from telecommunications cable terminations, in accordance with Clause 5.11.

(e) The cable **shall** be separated from other telecommunications cables in the same way as power cables are required to be separated from telecommunications cables, in accordance with Clause 5.12.

(f) The cable and its terminations **shall** be separated from power cables and their terminations in accordance with Clauses 5.11 and 5.12.

(g) The cable **shall not** terminate on a socket into which conventional telecommunications equipment may be plugged by an end-user.

Note: 'Hazardous voltage' is defined in Section 4.

5.7 Interference to other circuits

Any communications circuit carried in customer cabling with any service provided by a Telecommunications Network **shall** comply with the requirements of AS/CA S002, AS/CA S003, AS/ACIF S006, AS/ACIF S016, AS/ACIF S031, AS/ACIF S038 or AS/CA S043, as appropriate for the type of service.

5.8 Tampering or interference with a Carrier facility

A Carrier's lead-in cabling or network boundary facilities **shall not** be moved, removed or altered without the prior written authorisation of the Carrier.

Note 1: If a Carrier publishes a document authorising registered cabling providers to alter its facilities, for the purpose of this clause such a document will be taken to be the prior written authorisation of the Carrier as long as any terms and conditions set out in the document are adhered to by the registered cabling provider.

Note 2: Sections 446 and 447 of the *Telecommunications Act 1997* empower a Carrier to disconnect customer cabling or customer equipment if the Carrier has an honest belief that the cabling or equipment is, or is likely to be, a threat to the health or safety of persons or to the integrity of the Carrier's Telecommunications Network or a facility.

5.9 Optical fibre cabling

Optical fibre systems should be installed and maintained in accordance with AS/NZS IEC 2211.2. In particular, the installer **shall** ensure—

(a) optical fibre cables carry appropriate markings to distinguish them from metallic cables and cables containing other services (e.g. AC mains power);

(b) all access points (e.g. splice enclosures, connectors) where disconnected fibres may be able to emit laser radiation exceeding the accessible emission limit (AEL) for Class 1 are appropriately located, labelled and secured;

(c) any manufacturer warning or instruction label in relation to the laser product is not damaged or obscured during installation;

(d) suitable mechanical protective eyewear and clothing is worn when preparing, cutting or splicing optical fibres; and

(e) no fibre particles, hazardous solvents or chemicals are left on site at the completion of the work and are disposed of in a suitable hazardous material or 'sharps' container, as applicable.

5.10 Coaxial cabling

A telecommunications circuit **shall not** be connected to the outer conductor of a coaxial cable that may be touched by an end-user, e.g. at a coaxial connector, unless—

(a) the circuit meets the requirements of an SELV circuit; or

(b) the outer conductor is earthed in accordance with Clause 5.13.

5.11 Cable terminations

5.11.1 Access to cable terminations

All telecommunications terminations **shall** be enclosed or located to prevent unintentional contact with ELV, TNV, limited current circuits or hazardous voltages by a person who is not installing or accessing the cabling.

Note: It is permissible to allow end-users to come into personal contact with SELV circuits.

5.11.2 Separation from LV power terminations

5.11.2.1 Shared enclosure

The conductors and terminations of a temporary cable may be located within the same enclosure as the conductors and terminations of an LV power cable subject to the requirements of Clauses 5.11.2.2 and 5.11.2.3.

5.11.2.2 Prevention from accidental personal contact with LV power terminations

The conductors and terminations of a temporary cable should not be located within the same enclosure, building cavity or room as the uninsulated and single-insulated conductors and terminations of an LV power cable unless—

(a) accidental access to the LV power conductors and terminations by persons working on the temporary cable conductors and terminations is prevented by means of a physical barrier or obstruction that prevents contact with the LV power conductors or terminations by any part of the body or by any tool being used by the person working on the temporary cable; or

(b) the temporary cable and the LV power cable are terminated on equipment whose access is restricted to suitably qualified and authorised defence personnel.

5.11.2.3 Prevention from accidental electrical contact between temporary cable terminations and LV power terminations

The conductors and terminations of a temporary cable **shall** be separated from the uninsulated and single-insulated conductors and

terminations of an LV power cable by either a minimum distance of 150 mm or by means of a permanent, rigidly-fixed barrier of durable insulating material or metal earthed in accordance with Clause 5.13 unless all of the following are met:

(a) The temporary cable and the LV power cable are terminated on equipment whose access is restricted to suitably qualified and authorised defence personnel.

(b) Separate cables are used for LV power and telecommunications.

(c) Any telecommunications circuit that is terminated on the restricted access equipment—

(i) does not share the same cable sheath as any other telecommunications service; and

(ii) only connects to a Telecommunications Network via an LIU as specified in Clause 5.2.

5.11.3 Separation from HV circuit terminations

5.11.3.1 Shared enclosure

The electrical conductors and terminations of a temporary cable **shall not** be located within the same enclosure or building cavity as the conductors and terminations of an HV circuit.

Note 1: Temporary cable conductors and terminations and HV conductors and terminations may be contained in the same room, subject to the requirements of Clause 5.11.3.2, as long as the HV conductors and terminations are separately enclosed within the room.

Note 2: Installation of a distributor in the same room as any HV equipment is not recommended.

5.11.3.2 Separation of enclosures

The enclosed electrical conductors and terminations of a temporary cable **shall** be separated from the conductors and terminations of a separately enclosed HV circuit by a minimum distance of 450 mm, whether or not there is an interposing barrier.

Note: The 450 mm distance is measured between the actual conductors and terminations within their respective enclosures, not between the enclosures. However, allowance should be made for any future equipment expansion within each enclosure.

5.12 Separation from power cables

5.12.1 LV power cables

A temporary cable that contains electrically conductive elements **shall** be separated from any LV power cable so as to prevent cable insulation damage that may result in mutual electrical contact between the cable conductors (e.g. due to pressure, impact, abrasion or heat).

Note: Cable crossings are a particular concern. The cables should be separated at crossings by suitable spacing or a durable insulating barrier.

5.12.2 HV power circuits

5.12.2.1 Single-core cables

A temporary cable that contains electrically conductive elements and which runs alongside or crosses a single-core cable carrying an HV circuit **shall** be separated for its entire length from the single-core cable by a distance of at least 450 mm whether or not there is an interposing barrier.

5.12.2.2 Multi-core cables

A temporary cable that contains electrically conductive elements and which runs alongside or crosses a multi-core cable carrying an HV circuit **shall** be separated for its entire length from the multi-core cable by—

(a) a distance of not less than 300 mm; or

(b) a distance of not less than 150 mm where there is an interposing barrier that—

(i) is of such dimensions that at every point the shortest path between the temporary cable and the multi-core HV cable around the barrier is at least 175 mm measured from the outside of the cable sheaths; and

(ii) is made of either durable insulating material or metal earthed in accordance with Clause 5.13.

Note: Compliance with Item (b) may be achieved by the enclosure of either the temporary cable or the HV cable in conduit.

5.12.3 Aerial cabling

5.12.3.1 Attachment to power poles

Aerial temporary cabling **shall not** attach to any of the following:

(a) Any pole or structure carrying an aerial power line exceeding 66 kV.

(b) Any conductive pole or structure carrying an HV power line of any voltage.

(c) Any non-conductive pole or structure carrying an HV power line unless the HV power line does not exceed 66 kV and there is an existing LV power line below the HV power line.

(d) Any power pole that carries an HV power transformer.

Note: Conductive poles include poles manufactured from steel, concrete or timber.

5.12.3.2 Crossings

(a) Aerial temporary cabling **shall not** cross an aerial power line exceeding 330 kV.

Note: Where it is necessary for temporary cabling to cross an aerial power line exceeding 330 kV, the temporary cabling should be installed underground for at least 50 m each side of the power line at an angle as near as practicable to 90° to the power line route.

(b) Where aerial temporary cabling crosses any aerial power line it **shall** cross below the aerial power line.

5.12.3.3 Separation from aerial power lines

Aerial temporary cabling **shall** be separated from aerial power lines by the minimum distances indicated in Table 1.

5.13 Earthing

5.13.1 Resistance

Any earthing connection made for safety purposes should have a maximum resistance to ground of 30 Ω (5 Ω preferred).

5.13.2 Access to earthing bars or terminals

Any earthing bar or terminal, other than a connection to an earth electrode, **shall** be enclosed or located to prevent unintentional contact by a person who is not installing or accessing the cabling.

Table 1

Minimum separation of aerial temporary cabling, including joint or termination enclosures and telecommunications poles or structures, from aerial power lines and fittings

Type of power line, structure or fitting		At a shared/ common pole or structure (Note 8)	In span	Telecommunications pole or structure		
				Crossing (Note 5)		Separate parallel route
				Horiz.	Radial	
Light fitting, stay fitting or power conduit at a pole		50 mm	n/a	n/a		n/a
LV cable independently secured to the same catenary support as the temporary cable (Note 1)		50 mm or insulating conduit	Insulating conduit	n/a		n/a
Independently supported, insulated LV (Notes 2 and 3)		0.6 m	0.6 m	2.4 m	2.4 m	2.4 m
Uninsulated LV		1.2 m	0.6 m	2.4 m	2.4 m	10 m
HV (Note 3)	≤ 11 kV	2.4 m (Note 4)	1.2 m	2.4 m	3.7 m	10 m
	> 11 kV ≤ 33 kV		2.1 m	2.4 m	4.0 m	10 m
	> 33 kV ≤ 66 kV	3.0 m (Note 4)	2.1 m	2.4 m	4.0 m	10 m
	> 66 kV ≤ 132 kV	Note 6	3.0 m	2.4 m	4.6 m	10 m
	> 132 kV ≤ 220 kV		3.7 m	2.4 m	6.0 m	10 m
	> 220 kV ≤ 330 kV		4.6 m	2.4 m	7.5 m	10 m
	> 330 kV		Note 7	Note 7		50 m

Notes:

1. LV power and telecommunications conduits may share the same catenary support as long as they are independently secured to the catenary support and separated by the enclosure of either the power cable or the telecommunications cable in conduit or are otherwise protected from damage that may result in mutual electrical contact between the cable conductors.
2. 'Independently supported, insulated LV' means—
   (a) aerial bundled cable (ABC);
   (b) insulated cable on a separate catenary support;
   (c) aerial insulated cable to a light fitting; or
   (d) an insulated service lead or neutral-screened cable servicing a building.
3. Earthed Metallic Screened HV ABC may be treated as 'Independently supported insulated LV'.
4. HV separations at the pole apply where no aerial LV power line is installed below the HV (attachment to the pole in such cases is only permitted for crossings).
5. Where the horizontal distance cannot be met, the radial distance applies. The horizontal distance is measured from the vertical projection below the aerial power line to any part of the telecommunications pole or structure. The radial distance is measured from the power line itself to the closest part of the telecommunications pole or structure.
6. Attachment of temporary cabling to a pole or structure carrying power lines exceeding 66 kV is not permitted.
7. Aerial temporary cabling crossings with aerial power lines exceeding 330 kV are not permitted. Where it is necessary for temporary cabling to cross power lines exceeding 330 kV, the temporary cabling should be installed underground for at least 50 m each side of the power lines at an angle as close as practicable to 90° to the power line route.
8. The temporary cable bearer is to be insulated from any conductive pole or structure and insulated or shrouded to prevent accidental personal contact with the bearer by an electrical worker accessing the power line.

PARTICIPANTS

The Working Committee responsible for the revisions made to this Standard consisted of the following organisations:

Organisation	Membership
Australian Communications and Media Authority (ACMA)	Non-Voting
CISCO Systems	Voting
Comtest Laboratories	Voting
Foxtel	Voting
Free TV Australia	Voting
Huawei	Voting
IBM	Voting
International Copper Alliance Australia	Voting
Market Access	Voting
NBN Co	Voting
Optus	Voting
Primus	Voting
Standards Australia	Non-Voting
Stanimore	Non-Voting
Telstra	Voting
Trillium Technology	Voting
VTI Services	Voting

This Working Committee was chaired by Kevin Richardson of Stanimore. Mike Johns of Communications Alliance provided project management support.

Communications Alliance was formed in 2006 to provide a unified voice for the Australian communications industry and to lead it into the next generation of converging networks, technologies and services.

In pursuing its goals, Communications Alliance offers a forum for the industry to make coherent and constructive contributions to policy development and debate.

Communications Alliance seeks to facilitate open, effective and ethical competition between service providers while ensuring efficient, safe operation of networks, the provision of innovative services and the enhancement of consumer outcomes.

It is committed to the achievement of the policy objective of the *Telecommunications Act 1997* - the greatest practicable use of industry self-regulation without imposing undue financial and administrative burdens on industry.

Published by:
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ISBN: 1 74000 444 2