Table 1: S009 Wiring Rules Draft V 16 comments

S009 comments to be considered by the WC80 subcommittee

Item	Clause & page	S009 Text	Comment	Proposal	Resolution/comments
1	Standard title: Cover page, inside cover page, and Page iii	***Installation requirements for customer cabling (Wiring Rules)***	AS/CA S009's title can be simplified in line with the approach taken by AS/NZS 3000:2018. Note that other standards referencing S009 (such as AS/CA S008) will need consequential changes to their citation of this standard, but this should not cause great difficulties.	Replace the title with the following: ***Customer Cabling Installation (Wiring Rules)***	Public comment
2	Introduction Page iii	The objective of this Standard is to set out minimal requirements that may ensure the safety and integrity of a cabling installation and of the telecommunications network to which it is, or will be, connected, and to provide additional guidance for compliance with these requirements.	The word "minimal" appears to be incorrect, as it is non-empirical. It is not synonymous with "minimum requirements", which refers instead to empirical requirements.	Replace minimal with minimum.	Public comment edit
4	1.1 (a) Page 1	This Standard does not apply to— (a) any electrical power cabling whose primary function is the distribution of AC mains supply, and which is connected to an AC mains supply, but which may also carry telecommunications signals as a secondary function as long as the telecommunications signals originate from the power network or are	What's a "compliant interface device"? Is it intended to refer to a line isolation device instead (which is a defined term)?	Change "compliant interface device" to "compliant line isolation device".	Public comment

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		injected into the power cabling via a compliant interface device;			
5	1.1 (b) and (c)	The abbreviation "e.g." is used in both list items.	Please spell out the abbreviation, as many people don't understand the difference with i.e.	Replace "e.g." with "for example"	Public comment edit
6	1.1 Note 2 Page 1	Note 2: Cabling described in Item (b) is effectively exempted from technical regulation under the Telecommunications Act 1997 and is therefore out of the scope of AS/CA S009.	It is also understood this applies to item (c) as well	Change "item (b)" to (items (b) and (c)"	Public comment
7	3.1.3 Page 6	Arm's reach As defined in AS/NZS 3000. <MJ to check for inclusion of definition and figure from 3000>	This is defined and diagrammed in AS/NZS 3000:2018 clause 1.4.16 and fig 1 (Page 36). The term and definition also appear in IEV 195-06-12, as follows: arm's reach zone of accessibility to touch extending from any point on a surface where persons usually stand or move about to the limits which a person can reach with the hand, in any direction, without assistance. Further, it appears on page 85 of IEC 60364-1 Ed 3 clause B.1.12.3 and Figure B.1 Fig B.1 of IEC 60364-1 and figure 1 of AS/NZS 3000 are essentially equivalent.	See comment	Public comment (MJ action)

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8	3.18 Page 7	cable an assembly of one or more cable units (e.g. pairs, quads, coaxial tubes, fibres, etc.) in an overall sheath. Note: The assembly may include such things as a shield, moisture barrier, filling compound, strengthener or bearer.	It is unclear what a cable is when it's defined in a circular fashion like this. What is a "cable unit"? It only leads to more questions. Suggest replacing the definition with the definition from IEV 151-12-38.	Replace the definition with the following: An assembly of one or more conductors and/or optical fibres, with a protective covering and possibly filling, insulating and protective material. Note: The assembly may also include other elements, for example a metallic shield, a moisture barrier, a strengthener or bearer. [Source: IEC 151-12-38 (mod)]	Public comment
11	3.1.27 Page 9	cord a flexible cable with a minimum of one termination (e.g. on a plug). Note: Cords are used for connection of movable customer equipment or to afford flexibility. Examples of cords are patch cords, fly leads and pigtails.	The phrase "flexible cable" is defined in 3.1.28 as "cordage", therefore the phrase can be replaced by "cordage" to make the definition for "cord" clearer. Also spell out "e.g." as "for example".	Rewrite as follows: cord cordage with a minimum of one termination (for example: on a plug). Note: Cords are used for connection of movable customer equipment or to afford flexibility. Examples of cords are patch cords, fly leads and pigtails.	Public comment
12	3.1.33 Page 10	customer equipment (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	General question: why is this not aligned with the definition in S008 clause 4.1.16? The two definitions are fundamentally the same but laid out quite differently.	Harmonize the definition with S008 as far as reasonably practicable.	Public comment

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		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*] Note: See also 'terminal equipment'.			
15	3.1.60 Page 16	Jumper A cable unit or cable element without connectors, typically one to four twisted pairs, either unsheathed or sheathed, used to make a cross connection within a distributor.	A jumper can also make interconnection between two or more cables without cross connection, so this definition appears to be inadequate. Jumpers are usually short, but that is not conveyed in this definition. Suggest rewording in line with IEV 466-10-26.	Reword the definition as follows: A short length of conductor or multiple conductors or optical fibres, not under mechanical tension, making a connection between two separate sections of a line within a distributor. Note: the conductors may be sheathed or unsheathed. [Source: IEV 466-10-26 (mod)]	Public comment
16	3.1.75 Page 19	plug a connecting device designed to be inserted in a mating socket. Note: Plugs are typically used on connecting cords	This is not defined in S008, however the term is also used frequently there. Why is it needed to be defined here? Does it apply to optical connectors as well or just electrical connectors? (optical connectors don't seem to be called	If it's to be retained, reword as follows and also add it to S008: plug a connecting device having pins or contacts designed to engage with the contacts of a mating	Public comment

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		(otherwise known as 'line cords' or 'fly leads') or patch cords.	plugs in this standard, and that's okay, so electrical plugs are assumed). If needed, then suggest aligning it as far as reasonably practicable with IEV 42-03-01? (below) accessory having pins designed to engage with the contacts of a socket-outlet, also incorporating means for the electrical connection and mechanical retention of flexible cables or cords	socket, also incorporating means for the electrical connection and mechanical retention of cordage. [Source: IEV 442-03-01 (mod)] Note: Plugs are typically used on connecting cords (otherwise known as 'line cords' or 'fly leads') or patch cords.	
17	3.1.79	protective earth the earthing of a point in equipment or in a system which is necessary for safety purposes. Note: A protective earth may be provided by means of a protective earthing conductor, an equipotential bonding conductor to the electrical earthing system, a connection to a CES or via bonding of metallic parts to a protective earth connection.	• See comments on 3.1.51, suggest similar resolution for "system". • Clarify that the electrical earthing system is that of the building installation per 3.1.80. • Clarify that the "protective earth connection" should be referring to the defined term of "protective earthing conductor" in 3.1.80 • Clarify that the PE system *is* provided by the PE conductor etc. (more assertive than "may be").	Reword as follows: protective earth the earthing of a point in equipment or in a system of interconnected conductive parts which is necessary for safety purposes. Note: A protective earth is provided by means of a protective earthing conductor, an equipotential bonding conductor to the electrical installation earthing system, a connection to a CES or via bonding of metallic parts to a protective earthing conductor.	Public comment
18	3.1.80 Page 19	protective earthing conductor a conductor, other than a main earthing conductor, connecting any portion of the electrical earthing system to the portion of the electrical installation or	The term "main earthing conductor" is not used elsewhere in this standard and may be confusing. Suggest deleting its reference and clarifying in the definition that it refers to the electrical installation wiring.	Reword as follows: protective earthing conductor a conductor connecting any portion of the electrical installation earthing system to the portion of the electrical installation or electrical equipment required to be	Public comment

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		electrical equipment required to be earthed, or to any other portion of the electrical earthing system. [AS/NZS 3000] Note: A protective earthing conductor is part of the electrical installation and usually needs to be installed by a licensed electrical worker.	Also, in the note, is the word "usually" required? If yes, please give an example of where a non-licensed electrical worker is permitted to perform installation electrical work.	earthed, or to any other portion of the electrical installation earthing system other than the earth electrode or the source of supply. [AS/NZS 3000 (mod)] Note: A protective earthing conductor should be installed by a licensed electrical worker.	
19	3.1.81 Page 19	readily accessible capable of being reached quickly and without climbing over or removing obstructions, mounting upon a chair, or using a movable ladder, and in any case not more than 2 m above the ground, floor or platform. [AS/NZS 3000]	AS/NZS 3000:2018 specifies "2.0 m" in clause 1.4.3. Suggest using the exact quote.	Modify as follows: readily accessible capable of being reached quickly and without climbing over or removing obstructions, mounting upon a chair, or using a movable ladder, and in any case not more than 2.0 m above the ground, floor or platform. [AS/NZS 3000]	Public comment
20	3.1.82 Page20	Registered Engineer <Mike and Laurie to review – can minimum mandatory requirements paragraph be converted to an informative note?> An engineer that has formal recognition of the qualification and competency of an engineer in a particular field and is current on an engineer register. This engineer	If the definition is to be retained, only the first para and note are needed plus a brief note about kinds of engineers. The minimum mandatory requirements section is informative and the responsibility of the engineering registration body. Electrical and telecoms engineers probably aren't qualified to assess vehicle loading stresses on pits, so the appropriate qualifications for the task are required, not just any registered engineer.	1. Replace the clause with the following: Registered Engineer A person who has formal recognition of the qualification and competency of an engineer in a relevant field and is current on an engineer register. This engineer register may be either a mandatory jurisdictional registration system for engineers (e.g. RPEQ) or the	Public comment

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		register may be either a mandatory jurisdictional registration system for engineers (e.g. RPEQ) or the National Engineering Register (NER). The minimum mandatory requirement for listing on a register is— (a) accumulated five years of relevant engineering industry experience over the past seven years; and (b) continuing professional development of 150 hours over the past three years. Note: Further information can be found at Engineers Australia at www.engineersaustralia.org.au. 3.1.82.1 Registered Electrical Engineer A Registered Engineer in the electrical field. 3.1.82.2 Registered Structural Engineer A Registered Engineer in the structural field. 3.1.82.3 Registered ITEE (Information, Telecommunications and	There are three types of electrical engineers referenced in the standard. Are these all the same or are they supposed to be different? Please consider and harmonize as necessary: • Qualified electrical engineer (cl 6.1.3, 6.2.2) • Registered electrical engineer (cl 18.10, Table H.1) • Certified electrical engineer (6.1.3)	National Engineering Register (NER). Note 1: the term Includes: registered electrical engineer, registered structural engineer, registered ITEE (Information, telecommunications and electronic engineering) engineer. Note 2: Further information can be found at Engineers Australia at www.engineersaustralia.org.au. 2. Check the types or electrical engineers mentioned in the comments an adjust/correct/explain the terms if necessary.	

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		Electronic Engineering) Engineer A Registered Engineer in the ITEE field.			
22	3.1.95 Page 22	Telecommunications Outlet (TO) a connecting device to which an ordinary person may connect terminal equipment to telecommunications cabling, with the connecting device being either—	"telecommunication cabling" is not a defined term. Its usage here is confusing as a "telecommunications network" is defined as something restricted to a carrier, but in this case the TO is actually connected to customer cabling which can be used for any communication network, in-house networks included. It's understood that customer cabling may be eventually connected to a telecommunications network, but at this point it's not. Suggest using the defined term "customer cabling" instead.	Reword as follows: Telecommunications Outlet (TO) a connecting device to which an ordinary person may connect terminal equipment to customer cabling, with the connecting device being either—	Public comment
23	4.3 Page 27 And bibliography Page 222	In this Standard the International System (SI) of units and symbols is used in accordance with Australian Standard AS ISO 1000 [1]. …… AS ISO 1000 - 1998 The international System of Units (SI) and its application	AS ISO 1000 - 1998 adopted ISO 1000: 1992 but not including amdt 1 1998. Also, ISO 1000 was superseded by ISO 80000-1:2009 (which is still current), so the relevance of the AS ISO 1000 standard is questioned as to whether there are any material differences from ISO 80000-1?	Check the standard editions for relevance.	Public comment
25	6.1.3 Page 36	Engineered installation Where an installation cannot be placed in a location where the EPR hazard is less than 430 V a.c., the installation **shall not** proceed	Is this supposed to be the same as a registered electrical engineer per 3.1.82? If so, please correct. Otherwise leave as is.	See comment	Public comment

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		unless on the basis of a design certified by a qualified electrical engineer as complying with the principles of AS/NZS 3835.1. Note: A useful reference is HB 100 (CJC 4).			
26	6.1.4 Page 37	Carrier notification The relevant carrier **shall** be notified in writing of an installation proposed under the conditions of Clause 6.1.3 before the installation proceeds.	Shouldn't this also apply to the relevant carriage service provider as well?	Reword as follows: Carrier notification The relevant carrier or carriage service provider shall be notified in writing of an installation proposed under the conditions of Clause 6.1.3 before the installation proceeds.	Public comment
27	6.2.2 Page 37	Engineered installation Where the level of induction may exceed the limit specified in Clause 6.2.1, the installation shall not proceed unless on the basis of a design certified by a qualified electrical engineer as complying with the principles of HB 101 (CJC 5) and HB 102 (CJC 6).	Is this supposed to be the same as a registered electrical engineer per 3.1.82? If so, please correct. Otherwise leave as is.	See comment	Public comment
28	7 Heading Page 38	**HAZARDOUS AREAS AND DAMP LOCATIONS**	Suggest changing to AS/NZS 3000:2018 terminology	Reword as follows: **HAZARDOUS AREAS AND DAMP SITUATIONS**	Public comment
29	6.2.3 Page 17	Carrier notification The relevant carrier **shall** be notified in writing of an installation proposed under the	Shouldn't this also apply to the relevant carriage service provider as well?	Reword as follows: Carrier notification The relevant carrier or carriage service provider shall be	Public comment

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		conditions of Clause 6.2.2 before the installation proceeds.		notified in writing of an installation proposed under the conditions of Clause 6.2.3 before the installation proceeds.	
30	7.1.1 Page 38	Locations that may contain hazardous areas include, but are not limited to the following: …	Suggest adding a new list item for battery rooms of energy storage systems. These rooms should be properly vented; however, care should still be taken. See AS 3011.1 and AS 3011.2 clauses 2.1.1 Hydrogen emission.	Add new list item as follows: (n) Battery rooms of energy storage systems	Public comment
31	7.1.2.3 Page 40	Domestic premises There are no specific Australian Standards for classification of hazardous areas in domestic premises. For domestic premises, hazardous areas are defined in this Standard for flammable gas installations only, as follows: …	It is becoming increasingly common for domestic premises to have battery energy storage systems (BESS) for renewable energy storage. These may produce flammable gases and should be considered for inclusion in the list. BESS standards are currently under development in Australia. Also refer to the Energy Storage Safety report by the CSIRO (Nov 2015) to the Clean Energy Council for more general information on domestic BESS: http://www.cleanenergycouncil.org.au/fpdi/reports/storage-safety-study.html	Add a new list item as follows: (c) Battery energy storage systems (BESS), typically used for storage of surplus renewable energy from photovoltaic or wind power generation systems, or other power generation or grid-connected sources. Note: not all battery technologies produce flammable gases.	Public comment
32	7.1.3.8 Page 44	Safe working practices The cabling provider **shall not** take electric tools and	1. It's not only mains-operated electric tools that are hazardous in an explosive atmosphere, but also battery-operated tools as well: mobile phones, portable	Reword as follows: Safe working practices The cabling provider shall not take electric or battery-operated or line-powered tools	Public comment

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		equipment into a hazardous area unless— (a) they are approved for use in a hazardous area; or	drills, digital meters etc, and telephone line-powered devices. 2. The ANZEx Scheme registers certified equipment for this purpose. See https://www.anzex.com.au and the certification procedure is MP87-1 at https://infostore.saiglobal.com/en-au/Standards/MP-87-1-2008-1009597/#	and equipment into a hazardous area unless— (a) they are certified for use in a hazardous area in accordance with the ANZEx Certification Scheme https://www.anzex.com.au/4/index.php ; or	
33	7.2 heading Page 45	**7.2 Damp locations**	AS/NZS 3000 calls this "damp situations" so it's suggested to use the same term here.	Replace "damp locations" with "damp situations".	Public comment
34	7.2.1 Page 45	7.2.1 General Telecommunications cabling in a damp location **shall** be of such a type or installed in such a manner to prevent the ingress of moisture.	There is no definition in the standard for "telecommunications cabling", however "cabling" is defined in clause 3.1.1. Suggest deleting "telecommunications". Also, change "locations" to Situations" for harmonization with AS/NZS 3000:2018	Reword as follows: Cabling in a damp situation shall be of such a type or installed in such a manner to prevent the ingress of moisture.	Public comment
35	7.2.2.1 Page 45	The particular requirements of this Clause apply to zones in certain damp locations where— (a) the risk of electric shock is increased by a reduction in body resistance and contact of the body with earth potential; and (b) the presence of moisture and	• The word "particular" adds nothing to the clause. • The phrase "this clause" is ambiguous: does it mean 7.2.2.1 only, or all of clause 7.2 or just 7.2.2, or 7.2.2 and 7.2.3? • It's uncertain what the word "certain" is referring to. Suggest it applies to specified restricted zones.	Reword as follows: Clauses 7.2.2 and 7.2.3 apply to restricted zones in specified damp situations where— (a) the risk of electric shock is increased by a reduction of overall body impedance and a reduction of body contact impedance with earth potential due to the presence of moisture; and	Public comment

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		condensation, and consequential risk of corrosion due to electrolysis, is high. Note: The installation of MDFs and TOs in restricted zones is prohibited by Clauses 13.4 and 15.3.1. Clause 7.2.3 applies to any other equipment installed in a restricted zone.	• Recommend to change "locations" to "situations to harmonize with AS/NZS 3000. • Reduced body impedance is the key to electric shock risk here, and reduced contact impedance with earth	(b) consequential risk of corrosion due to electrolysis in the presence of moisture is high. Note: The installation of MDFs and TOs in restricted zones is prohibited by Clauses 13.4 and 15.3.1. Clause 7.2.3 applies to any other equipment installed in a restricted zone.	
36	7.2.2.2	Restricted zone boundaries The boundaries of the restricted zones are as follows: …	General comment: the present restricted zones appear to be the outer limits of Zone 2 in AS/NZS 3000:2018. However, I haven't reviewed all the AS/NZS 3000 requirements at this stage. It is noted that AS/NZS 3000 does not have requirements in 6.2.4.5 and Table 6.1 for "other equipment" in zone 3, so S009 needn't specify zone 3 requirements for cabling.	See comment	Public comment
37	7.2.3 Page 46	Any equipment installed in a restricted zone (other than an MDF or a telecommunications outlet, for which installation in a restricted zone is prohibited) **shall**— (a) be of a type designed and constructed for the location and conditions of use; and (b) have a minimum degree of protection	For items (a), (b) of 7.2.3, consider permitting cabling and equipment rated at IPX4 within Zone 2, as per table 6.1 in AS/NZS 3000. There shouldn't be a need to specify an IP rating for other areas of bathrooms or shower rooms, because AS/NZS 3000 doesn't have such requirements for "other equipment".	Reword as follows: Any equipment installed in a restricted zone (other than an MDF or a telecommunications outlet, for which installation in a restricted zone is prohibited) shall— (a) be of a type designed and constructed for the location and conditions of use; and (b) have a minimum degree of protection against the entry of water, in accordance with AS	Public comment

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		against the entry of water, in accordance with AS 60529, for the following locations: (i) IPX7 for a bathroom. (ii) IPX6 for a shower room. (iii) An appropriate degree of protection in other cases.		60529, for the following locations: (i) Prohibited in Zone 0 of AS/NZS 3000:2018 Section 6); (i) IPX 6 for a bathroom or IPX7 for a shower room within zone 1 of AS/NZS 3000 (iii) IPX4 within Zone 2 of AS/NZS 3000:2018 for a bathroom or shower room. No IP requirements against water needed beyond Zone 2. (iv) An appropriate degree of protection in other cases. (Refer to AS/NZS 3000:2018 Section 6).	
38	8.1 Page 47	General Customer cable **shall** be supported or secured at suitable intervals to—	Customer cable is not a defined term, but customer cabling is defined, however the definitions between cabling and cable differ, so this is ambiguous and needs to be clarified. "Customer cabling" is used in 8.2.1.	Replace "cable" with "cabling" Or otherwise clarify the intent.	Public comment
39	8.3.1 (c) Page 48	(c) A customer cable that does not contain electrically conductive elements which may be directly installed, or sub-ducted in insulating conduit that is not a prohibited colour, in an existing conduit containing a service listed in Table 1 in which case the cable **shall** be labelled at all access points with a suitable warning that it may	"customer cable" is not a defined term. In this case the section is referring to a fibre cable, so it should state that. Also, the sentence structure is difficult to parse. The suggested proposal is what I think it's trying to say.	Replace with the following (if this makes sense!): (c) For a fibre cable that does not contain electrically conductive elements, where the cable may be directly installed or sub-ducted ~~in insulating conduit that is not a prohibited colour,~~ in an existing conduit containing a service listed in Table 1, ~~in which case~~ the cable shall be labelled at all access points with a suitable warning	Public comment

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		contain a hazardous light source.		that it may contain a hazardous light source.	
40	8.3.2 Page 49	Where a customer cable is enclosed, in accordance with Clause 8.3.1	Customer cable is not a defined term. Suggest deleting Customer or replacing it with customer cabling.	Reword as follows: Where customer cabling is enclosed, in accordance with Clause 8.3.1	Public comment
41	8.3.3.1 Page 49	Sub-ducting of customer cabling in conduit of another service A customer cable that contains electrically conductive elements **shall not** be accommodated in the same conduit as a cable carrying a hazardous service irrespective of the colour of that conduit unless— (a) the customer cable is sub-ducted in the conduit by the method described in Item 8.3.1(b); and (b) the hazardous service is not an HV circuit.	Customer cable is not a defined term. Suggest deleting Customer or replacing the term with customer cabling.	Reword as follows: Sub-ducting of customer cabling in conduit of another service Customer cabling that contains electrically conductive elements shall not be accommodated in the same conduit as a cable carrying a hazardous service irrespective of the colour of that conduit unless— (a) the customer cabling is sub-ducted in the conduit by the method described in Item 8.3.1(b); and (b) the hazardous service is not an HV circuit.	Public comment
42	8.4 Page 50	**Earthing of cable support systems and cable enclosures** An electrically conductive support system may be connected to protective	Do headings form normative parts of the standard? I thought that headings were supposed to be just descriptive to introduce the material in the clause (perhaps except for the definitions). In this case, the clause is informative anyway, but I think it'd be helpful to	Reword as follows: **Earthing of cable support systems and cable enclosures** An electrically conductive cable support system may be connected to protective earth in accordance with Clause 20.19.	Public comment

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		earth in accordance with Clause 20.19.	insert "cable" in front of support system in the clause.		
45	9.1.2.1 Page 51	Shared enclosure The conductors and terminations of a customer cable may be	The defined term is "customer cabling. The used term is not defined. Suggest reviewing it.	Reword as follows: Shared enclosure The conductors and terminations of customer cabling may be	Public comment
46	9.1.2.2 Page 51	The conductors and terminations of a customer cable **shall not** be	The defined term is "customer cabling. The used term is not defined. Suggest reviewing it.	Reword as follows: The conductors and terminations of customer cabling **shall not** be	Public comment
47	9.1.2.2 (a) Page 51	accidental access to the LV power conductors and terminations by persons working on the customer cable conductors	The defined term is "customer cabling. The used term is not defined. Suggest reviewing it.	Reword as follows: accidental access to the LV power conductors and terminations by persons working on customer cabling conductors	Public comment
51	9.1.2.3 (b) Page 52	(b) Separate cables are used for LV power and telecommunications.	"telecommunications" is not defined but it implies this refers to "telecommunications network" which is defined as the facilities operated by a carrier, which the cabler shouldn't normally touch. Suggest this possible ambiguity needs to be clarified.	Reword as follows: (b) Separate cables are used for LV power and customer cabling communications circuits.	Public comment
52	9.1.2.3 (c) Page 52	(c) Any telecommunications circuit that is terminated on the building control or monitoring equipment— (i) does not share the same cable sheath as any other telecommunications service; and	This is really confusing because it talks of a telecommunications circuit, telecommunications service and telecommunications network, but only the last one is defined so they seem to be the same thing. But they're not. Suggest rewording to clarify. Suggested text is in the proposal column but needs to be checked if this is the intent.	Reword as follows: (c) Any customer cabling that is terminated on the building control or monitoring equipment— (i) does not share the same cable sheath as any other customer cabling service; and	Public comment

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		(ii) only connects to a telecommunications network via a compliant isolating interface.		(ii) the building control and monitoring equipment only connects to a telecommunications network via a compliant isolating interface.	
53	9.1.3.1 Page 52	Shared enclosure The conductors and terminations of a customer cable **shall not** be located within the same enclosure or building cavity as the conductors and terminations of an HV circuit. Note 1: Customer cable conductors and terminations and HV conductors and terminations may be contained in the same room, subject to the requirements of Clause 9.1.3.2, 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.	The defined term is “customer cabling. The used term is not defined. Suggest reviewing it	Reword as follows: Shared enclosure The conductors and terminations of customer cabling **shall not** be located within the same enclosure or building cavity as the conductors and terminations of an HV circuit. Note 1: Customer cabling conductors and terminations and HV conductors and terminations may be contained in the same room, subject to the requirements of Clause 9.1.3.2, 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.	Public comment
54	9.1.3.2 Page 52	The enclosed conductors and terminations of a customer cable **shall** be	The defined term is “customer cabling. The used term is not defined. Suggest reviewing it	Reword as follows: The enclosed conductors and terminations of customer cabling **shall** be	Public comment

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55	9.2.1 Page 52	The cables, conductors and terminations of customer cabling **shall** be separated from non-telecommunications services such as plumbing and ELV power cables so as not to impede access to, or repair of, the other service. Note 1: A minimum clearance of 50 mm is recommended where customer cabling runs alongside other service cables, conduits or pipes. Note 2: The attachment of customer cabling to any non-telecommunications service is prohibited by Clause 8.2.1.	"non-telecommunications services" is everything that's not customer cabling, which could be mains, or HV services, which is confusing. So, more clarity is needed, preferably without the negative expression. Customer cabling is already defined as connected to be used with a telecommunications network. But the term "telecommunications service" is not defined.	Reword as follows: The cables, conductors and terminations of customer cabling **shall** be separated from other cabled services such as plumbing and ELV power cables so as not to impede access to, or repair of, the other service. Note 1: A minimum clearance of 50 mm is recommended where customer cabling runs alongside other service cables, conduits or pipes. Note 2: The attachment of customer cabling to any other cabled service is prohibited by Clause 8.2.1.	Public comment
56	9.2.2 (a) Page 53	(a) Any pipe containing flammable or corrosive liquid or gas, steam, hot water exceeding a temperature of 60° C, compressed air or any other liquid or gas under high pressure—	What pressure is "high pressure"? It's undefined and there's no way to ascertain the pressure inside a pipe without measuring it anyway. Suggest deleting "high". Also, cold water pipes carry liquid water that's "under pressure". Do these qualify as "high pressure"? Seems like it's the intention to separate cabling from cold water pipes, according to Table 2, which also includes waste that's often not under pressure (it falls due to gravity). But there's no guidance for interpretation, so this needs to be clarified. Suggested text is proposed;	Reword as follows: (a) Any pipe containing flammable or corrosive liquid or gas, steam, hot water exceeding a temperature of 60° C, compressed air, or any other liquid or gas under pressure—	Public comment

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			however, the original intention needs to be checked.		
57	9.2.2 (c) Page 53	(c) Any meter, container, tap, vent, hose, regulator or associated fitting for flammable liquid, steam, hot water exceeding a temperature of 60° C, compressed air or any other liquid or non-flammable gas under high pressure—	As per the previous comment	Reword as follows: (c) Any meter, container, tap, vent, hose, regulator or associated fitting for flammable liquid, steam, hot water exceeding a temperature of 60° C, compressed air or any other liquid or non-flammable gas under pressure—	Public comment
58	9.2.2 Note Page 53	Note: Refer to Table 2 for a summary of minimum separation requirements.	9.2.2 is for separation from non-electrical hazardous services, other than LV and HV circuits, however Table 2 also covers separation from LV and HV services (listed in 9.1), yet no call to Table 2 was made from clause 9.1, only from clause 9.2.		Public comment
59	Table 2 heading Page 54	**Telecommunications cabling — minimum separation requirements from other services in or on a building (informative)**	This table applies to all customer cabling. Telecommunications cabling is not a defined term. Prefer to use the defined term “Customer Cabling” if this is appropriate.	Reword the table heading as follows: **Customer cabling — minimum separation requirements from other services in or on a building (informative)**	Public comment
60	Table 2 Column 1 heading Page 54	**Telecommunications**	The heading is not sufficiently descriptive, as Telecommunications could refer to carrier cabling instead of customer cabling. Suggest reviewing.	Replace “Telecommunications” with “Customer cabling type”	Public comment
62	Table 2 Note 4 Page 54	The installation of conductors or terminations in the same enclosure as any HV conductor or terminations is not permitted.	What kind of conductors? This is not specified	Reword Note 4 as follows: The installation of customer cabling conductors or terminations in the same enclosure as any HV conductor	Public comment

Item	Clause & page	S009 Text	Comment	Proposal	Resolution/comments
				or terminations is not permitted.	
63	Table 2 Note 6 Page 54	Only 150 mm is required if the cables are separated by a permanent, rigidly fixed barrier of durable insulating material or earthed metal as long as at least 175 mm is maintained between the cables around the barrier.	The note could be phrased better. Suggested wording is in the proposal. It is unclear how to apply the 175 mm "around the barrier" dimension. It's thought this means the through-the air clearance between the cables measured over or under the barrier in the shortest through the air space. The barrier could be located anywhere in the 150 mm spacing required, not necessarily the centre line. The requirement could refer to cables laid parallel or cables crossing each other at any angle.	Reword Note 6 as follows: This may be reduced to a minimum of 150 mm if the cables are separated by a permanent, rigidly fixed barrier of durable insulating material or earthed metal, provided that a minimum clearance between the cables through air anywhere around or over or under the barrier is at least 175 mm.	Public comment
65	9.5 Page 55	A customer cable that has steel wire armouring that is connected to protective earth	Is this supposed to refer to SWA customer cabling? The term "customer cable" is not defined.	Reword as follows: Customer cabling that has steel wire armouring that is connected to protective earth	Public comment
67	10.4 Page 57	Any surge suppression device installed for any reason in twisted pair customer cabling (e.g. at a distributor, terminal block or joint) and connected between telecommunications line conductors and earth, **shall** be earthed in accordance with Clause 20.20.	"Telecommunications line conductors" is not a defined term and may be confused with the defined term: "telecommunications network" conductors installed by a carrier, but this clause is talking of customer cabling, not carrier cabling. Needs clarification.	Change "telecommunications" to "communications".	Public comment
68	11.1.1 Page 58	General exemption from separation requirements While customer cabling that does not contain electrically conductive elements is exempt from certain separation requirements in	1. This clause is not normatively expressed, so it's not a requirement to be safe? Suggest it should be "shall". It's not an exemption unless it's normatively expressed and reduces some requirements that would otherwise apply.	Rewrite the clause as follows: Separation from nearby electrical hazards Optical fibre customer cabling that does not contain electrically conductive elements **shall** be installed so that no	Public comment

Item	Clause & page	S009 Text	Comment	Proposal	Resolution/comments
		this Standard, it should be installed in such a way so as to ensure a cabling provider or an ordinary person is not exposed to electrical hazards while testing or connecting the customer cabling. Note: In some circumstances the installer of the cabling may need to be appropriately licensed. For example, the installer may be required to be a licensed electrical worker to draw the cabling through electrical conduits.	2. "Cabling provider or ordinary person" essentially refers to all persons, as a cabling provider is defined as a skilled or instructed person, so the phrase can be simplified. 3. The note could be better expressed in defined terms.	person is exposed to nearby electrical hazards while testing or connecting the customer cabling. Note 1: An installer may need to be a licensed cabling provider in some cases, for example to draw the cabling through electrical conduits. Note 2: Optical fibre customer cabling that does not contain electrically conductive elements is exempt from certain separation requirements in this standard.	
70	11.1.5.5 Page 59	Laser Explanatory Label wording The Laser Explanatory Label shall provide the customer with warnings of potentially dangerous laser radiation. Wording on the Label should be such that effective warning is given to any customer that may or may not be familiar with laser radiation and its danger to exposure. Laser beams have the ability to damage eyesight. The text for a Laser Explanatory Label should be as follows:	1. The laser should be safe for any person, not just customers, in the appropriate circumstances, even if they are familiar with the danger. 2. Also, no need to capitalise the lead-in sentence as it's not a proper noun or a person's name. 3. Uncapitalize the needlessly capitalised terms.	Reword as follows: Laser explanatory label wording The laser cautionary label **shall** caution persons of the risk of exposure to potentially dangerous laser radiation. The wording should be such that effective warning is given to any person who may be exposed to the laser radiation to avoid eye contact with the beam due to its danger to damage eyesight. The text for a laser explanatory label should be as follows: CAUTION VISIBLE AND INVISIBLE LASER RADIATION AVOID EXPOSURE TO THE BEAM	Public comment

Item	Clause & page	S009 Text	Comment	Proposal	Resolution/comments
		CAUTION VISIBLE AND INVISIBLE LASER RADIATION AVOID EXPOSURE TO THE BEAM The above wording for the Laser Explanation Label is not mandatory and other words that convey the same meaning may be used.		The above wording for the laser explanation label is not mandatory and other words that convey the same meaning may be used.	
71	11.1.5.6 Page 60	Marking durability The durability of the laser warning markings **shall** meet Clause 5.3.3.2 of AS/CA S008.	Which markings specifically? Is it just the label in 11.1.5.3? Does it include the caution label in 11.1.5.5? Does it include the group and multiple markings in 11.1.5.8 and 11.1.5.9?	See comment and clarify the text.	Public comment
75	11.1.6.1 Page 60	Unused ports Unused ports in optical fibre patch panels and in optical fibre TOs **shall** be covered by suitable plugs or protective covers.	Define “suitable”? who decides what’s suitable? And if a protective cover is used, does that not have to be suitable also?	Reword as follows: Unused ports Unused ports in optical fibre patch panels and in optical fibre TOs **shall** be covered by plugs or protective covers to reduce laser exposure to Class 1 or better and prevent contamination of the optical interface.	Public comment
76	11.1.6.2 Page 60	Unconnected cords Optical fibre cord, cable and pigtail connector ferrules **shall** be protected by suitable protective caps when not connected to a port, adaptor or TO. Note: Protective covers and caps should provide suitable optical attenuation to reduce	Define “suitable”? who decides what’s suitable? The note is informative so that doesn’t help much	Rewrite as follows: Unconnected cords Optical fibre cord, cable and pigtail connector ferrules **shall** be fitted with protective caps when not connected to a port, adaptor or TO. Protective covers and caps should provide sufficient optical attenuation to reduce the laser hazard to Class	Public comment

Item	Clause & page	S009 Text	Comment	Proposal	Resolution/comments
		the laser hazard. They also provide physical protection for the optical fibre interface and help minimise contamination of the interface.		1 or better, and help minimise contamination of the optical interface.	
77	11.2 Page 61	Coaxial cable systems A telecommunications circuit shall not be connected to the outer conductor of a coaxial cable that may be touched by an ordinary person, e.g. at a coaxial connector, unless—	"Telecommunications circuit" is ambiguous with a "telecommunications network" which is a defined term. Recommending clarifying the difference.	Replace "telecommunications" with "communications"	Public comment
79	13.3 (a) Page 65	Location The MDF— (a) should be located at the same building as the end-user;	The term "end-user" is not defined and in any case is an ordinary person, however that wouldn't convey the intent. Propose to refer to terminal equipment instead, as that is defined and that's where the end-user is likely to be located.	Replace "end-user" with "terminal equipment".	Public comment
80	13.4 (e) Page 66	(e) Near an automatic sprinkler, unless—	Needs a definition or clarification for "near"? In this case it appears to mean to not be subjected to dripping or sprayed water from a sprinkler.	Rewrite as follows: (e) within the spray zone of an automatic sprinkler, unless—	Public comment
83	13.13.3 Page 68-69	Removal of 'dead' jumpers A cabling provider is deemed to be authorised by a carrier to remove a redundant cross-connection from the carrier side of the MDF if all reasonable steps have been taken to ensure a working service is not inadvertently disconnected.	The term "dead" is colloquial and should be avoided. "Redundant" isn't much better. Suggest saying "unused" instead. If the jumper is removed from the carrier side and not reassigned to another position it should be removed completely.	Rewrite as follows: Removal of unused jumpers A cabling provider is deemed to be authorised by a carrier to remove an unused cross-connection from the carrier side of the MDF if all reasonable steps have been taken to ensure a working service is not inadvertently disconnected.	Public comment

Item	Clause & page	S009 Text	Comment	Proposal	Resolution/comments
		Note: Refer to Figure J18 of Appendix J for an explanation of the expression 'carrier side'.		Note 1: if a jumper is removed from the carrier side, then it should be removed completely from the MDF unless the carrier end is to be reassigned to another cross-connection. Note 2: Refer to Figure J18 of Appendix J for an explanation of the expression 'carrier side'.	
84	14.4 (b) Page 70	Where isolation or testing necessitates removal of a component (e.g. a link, plug or surge suppressor), the cabling provider **shall** reinstate the component at the completion of testing unless it is faulty and its reinstatement would prevent the safe or proper functioning of a carriage service.	Although carriage service is defined, it might be better & clearer to refer to another defined term "telecommunications network" as that definition specifies the carriage service is operated by a carrier or CSP.	Replace "carriage service" with "telecommunications network"	Public comment
85	14.4 (c) Page 70	(c) Where the cabling provider is prevented from reinstating a component in accordance with Item (b), the cabling provider **shall** inform the carrier of the fault.	Also need to inform the CSP?	Replace "the carrier" with "the carrier or carriage service provider".	Public comment
87	15.3.2 Page 72	Outside restricted zones A telecommunications outlet installed in a damp location,	Replace the term damp location" with "damp situation" for consistency with AS/NZS 3000:2018.	See comment	Public comment
88	15.4.1 Page 72	Where a carriage service is supplied to an end-user in a building by	Although carriage service is defined, it might be better & clearer to refer to another defined term	Replace "carriage service" with "telecommunications network"	Public comment

Item	Clause & page	S009 Text	Comment	Proposal	Resolution/comments
			"telecommunications network" as that definition specifies the carriage service is operated by a carrier or CSP.		
90	15.5.3 Page 73-74	Type of mechanical connectivity <MJ: Is this requirement for a cabler to perform work on a non-cabling product (a 'part?'). If so, then S009 cannot specify these requirements> The mechanical connectivity required for compliance with Clause XXXXX **shall**— (a) kinematically constrain the movement of the movable part at all times; (b) ensure that the movable part can only move in a controlled and predictable manner; and (c) be robust. Note: The purpose of Item (a) is to disallow trivial connections which are equivalent to tying on the movable part with a piece of string. To be 'kinematically constrained', the movement of the movable part is to be mechanically guided so that it cannot be moved or twisted freely in all possible directions.	This seems to refer to cabling work, to restrict the movement of a movable socket so it can't be twisted in all directions. It's cabler work to set up the socket this way, so the user can connect to it without risk of breaking the connector or the cable. In this case, the cable should be a flexible type to account for the movement. But, seriously, "kinematically constrained" is an impossible to understand term as it appears to be self-contradictory (an oxymoron) and should be avoided. Rewrite in plain English to remove the term and clarify the requirements. Also, the reference to "clause XXXXX" is unclear. Does it mean "this clause" or does it mean some other clause? It should be removed unless it's referring to some other clause.	Rewrite as follows: Restricting the range of TO movement A movable TO system **shall**— (a) provide a mechanically-guided restricted range of movement of the movable part so that it cannot be moved or twisted freely in all directions; (b) ensure that the movable part can only move in a controlled and predictable manner; and (c) be robust. Note: The purpose of Item (a) is to disallow trivial connections which are equivalent to tying on the movable part with a piece of string.	Public comment

Item	Clause & page	S009 Text	Comment	Proposal	Resolution/comments
91	16.1 Page 75	**Cable flammability** <Changes proposed by JS based on WC80 discussion. Note that wording of S008 Cl. 5.6.4 needs to be considered> Customer cable installed wholly within a building should comply with Clause 5.6.4 of AS/CA S008, but other cable may be installed in this situation if it is required for compliance with this Standard. Note 1: There is no requirement in this Standard to change the cable type where an underground or aerial cable enters a building. However, any cable used within the building past the first cable connection point (e.g. distributor) should comply with Item (a) unless that cable will exit the building as outdoor cabling (e.g. run underground or aerial to another building) or the use of underground type cable is required by Clause 16.8. Note 2: The Building Code contains information about how buildings may be	1. Item (a) has been deleted, so the reference is incorrect. 2. The major change in this clause is changing Shall to Should, thus making no requirements in this clause for cable flammability, therefore S008 cl 5.6.4 does not apply to any building cabling because S008 cl 5.6.4 only applies in this case if S009 requires it, which informative language does not do. Suggest reinstating "shall" instead of "should". 3. It's not clear what is meant by "other cable may be installed … if required for compliance with this standard". Specifically, what other cable is intended here? 4. Don't use abbreviations like "e.g.", please spell it out.	Reword as follows: Cable flammability Customer cable installed wholly within a building **shall** comply with Clause 5.6.4 of AS/CA S008, unless other cables are required to be installed in this situation elsewhere in this standard. Note 1: There is no requirement in this Standard to change the cable type where an underground or aerial cable enters a building. However, the requirements apply to any cable used wholly within the building past the first cable connection point (such as a distributor) unless that cable will exit the building as an outdoor cable (for example cables run underground or aerial to another building) or the use of underground type cable is required by Clause 16.8. Note 2: The Building Code contains information about how buildings may be designed to inhibit the propagation of fire.	Public comment

Item	Clause & page	S009 Text	Comment	Proposal	Resolution/comments
		designed to inhibit the propagation of fire.			
92	16.3.1 Note 3 Page 76	Note 3: A flexible customer equipment cord is not required to be separated from an electrical appliance cord or fixed LV power cable unless the customer equipment cord is installed as fixed or concealed cabling.	It's confusing here what the difference between the "customer equipment cord" and "electrical appliance cord" is supposed to be. Suggest the electrical equipment cord is referring to the mains power attachment cord of some appliance other than customer equipment. Is that correct? In this case, the CE cord might not also need to be separated from the CE mains attachment cord either. More clarity is needed.	Reword as follows: Note 3: A flexible customer equipment communications cord is not required to be separated from an LV AC mains attachment cord or fixed LV power cable unless the customer equipment cord is installed as fixed or concealed cabling.	Public comment
95	17.3.1 Page 80	General Where any equipment is to be interconnected between separate buildings, the connection may be made using one of the following methods:	Essentially, this lead-in clause makes the entire contents of 17.3.1 informative, since it's not expressed in normative language of "shall". Is that the intention? Essentially it means that the entire clause can be ignored. Review whether this is the intent or whether "shall" was intended and correct accordingly. Perhaps it means that where the following methods are used (allowing for other methods not listed) then the requirements against those methods shall be complied with? Please clarify.	See comment	Public comment
97	17.3.2 Page 82	Inter-building cabling within a sheltered structure Cabling which is installed in a service tunnel, covered walkway, aboveground trunking system or other	This contains normative requirements if an optional element is chosen. Needs clarification to emphasize the normative elements..	Reword as follows: Inter-building cabling within a sheltered structure Cabling which is installed in a service tunnel, covered walkway, aboveground trunking	Public comment

Item	Clause & page	S009 Text	Comment	Proposal	Resolution/comments
		sheltered structure between buildings may be treated as indoor cabling as long as the requirements of Clauses 17.3.1, 17.4 and 17.5 are met.		system or other sheltered structure between buildings may be treated as indoor cabling, in which case the requirements of Clauses 17.3.1, 17.4 and 17.5 shall be met.	
98	18.1.3 (b) Page 84	(b) manufactured and installed in accordance with a design certified by a qualified registered engineer.	The new term defined in 3.1.82.2 is "registered structural engineer". Should use that term, which by definition includes "qualified".	Reword as follows: (b) manufactured and installed in accordance with a design certified by a registered structural engineer.	Public comment
99	Table 4 Column 1 heading Page 94	**Telecommunications cabling situation**	Disambiguation needed. Basically, this is talking about underground customer cabling, not carrier cabling, so the defined terms should be used if intended or other term should be used that doesn't ambiguate with the defined term.	Change "telecommunications" to "communications".	Public comment
102	20.15 Page 114	**ES3 DC power supply system** <to be reviewed by subcommittee> An installation in a restricted access area operating an ES3 DC power supply system that provides DC/earth return paths on the positive or negative conductor of the DC supply, should comply with the ELV DC power system requirements of AS/NZS 3015 <AS/NZS 3015 is obsolete – BD to check reference>.	AS/NZS 3105 is still referenced by AS/NZS 3000:2018 as a normative requirement in clauses 5.6.2.1 (c) and 7.8.2.6. There is a useful/interesting paper on Telstra's use of AS/NZS 3105 that was published in 2015 here: https://www.telstrawholesale.com.au/content/dam/tw/products/Facilities%20Access/Tower%20Site%20Sharing/power-earthing-1.pdf However, SAI Global says AS/NZS 3105 is "obsolescent for Australia only", which means NZ is still using it. See https://infostore.saiglobal.com/en-	Suggest keeping the reference for now, but WC80 may need to ask EL-001 what the status is for AS/NZS 3015 and why is it now obsolescent in Australia, and what the alternative requirements are.	Public comment

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			au/Standards/AS-NZS-3015-2004-367060/		
103	Appendix A Page 128	**Restricted zones in damp locations (NORMATIVE)** <AS/NZS 3000:2018 *DAMP SITUATIONS* (45 pages) covers the same topics as the 2007 edition of 3000 (40 pages) - baths, showers, pools, fountains, saunas, refrigeration rooms and sanitisation operations. A cursory scan indicates that S009 exclusion zone dimensions of the topics covered are similar to 3000. They seem to be based on 3000 and are a cutdown version. For committee consideration>	This whole appendix needs to be checked and aligned with the requirements in As/NZS 3000:2018, but only so far as it relates to communications installations. Note that AS/NZS 3000:2018 has introduced a 4-zone system, numbered 0 to 3, but the existing S009 dimensions only go up to Zone 2 dimensions. It's not proposed to extend S009 into Zone 3. Also, a careful review of the IPXX requirements should be conducted to ensure the requirements do not exceed the requirements of AS/NZS 3000:2018. In most cases, for ES1 and ES2 circuits, a lower IP rating for customer cabling can be justified, however the present requirements in S009 appear to exceed the requirements for 240 V in AS/NZS 3000 by a significant amount. Also, adopt the terminology used by AS/NZS 3000, such as by changing to "damp situations" in the heading to this Appendix A.	See comment.	Public comment
43	9.1.1 Page 51	**Separation from LV or HV cables** The requirements for separation of customer cables from LV power …	The defined term is "customer cabling. The used term is not defined. Suggest reviewing it.	Reword as follows: **Separation from LV or HV cables** The requirements for separation of customer cabling from LV power …	Public comment

Item	Clause & page	S009 Text	Comment	Proposal	Resolution/comments
44	9.1.1 Page 51	(no relevant requirement)	The Note to clause 9.2.2 is for separation from non-electrical hazardous services, other than LV and HV circuits, however Table 2 also covers separation from LV and HV services (listed in 9.1), yet no call to Table 2 was made from clause 9.1, only from clause 9.2.	Add the following note to clause 9.1.1: Note: Refer to Table 2 for a summary of minimum separation requirements.	Public comment
49	9.1.2.3 Page 50	Prevention of accidental electrical contact between customer cable terminations and LV power terminations The conductors and terminations of a customer cable **shall** be	The defined term is “customer cabling. The used term is not defined. Suggest reviewing it.	Reword as follows: Prevention of accidental electrical contact between customer cabling terminations and LV power terminations The conductors and terminations of customer cabling **shall** be	Public comment