

Australian/New Zealand Standard™

**Telecommunications installations—
Administration of communications
cabling systems**

Part 1: Basic requirements



AS/NZS 3085.1:2004

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee CT-001, Communications Cabling. It was approved on behalf of the Council of Standards Australia on 29 April 2004 and on behalf of the Council of Standards New Zealand on 7 May 2004. It was published on 9 June 2004.

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Australian Electrical and Electronic Manufacturers Association
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STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

RECONFIRMATION

OF

AS/NZS 3085.1:2004

**Telecommunications installations—Administration of communications cabling
systems**

Part 1: Basic requirements

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Technical Committee CT-001 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

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NOTES

Australian/New Zealand Standard™

Telecommunications installations— Administration of communications cabling systems

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CT-001, Communications Cabling to supersede AS/NZS 3085.1:1995.

The objective of this Standard is to provide designers and specifiers, building owners and managers, and those who are required to meet cabling requirements (e.g. installers), with a standard format for specifying required cabling in tender and construction drawings, and basic specifications for identification and recording of components at the time of installation to aid in administration of application, maintenance and reconfiguration (if necessary) of telecommunications cabling infrastructure.

Adoption of this Standard will benefit architects, consultants, engineers, building owners and managers in the following respects:

- (a) Facilitate standard methods for specifying, recording and interpreting plant by all staff and contractors.
- (b) Allow single person or single contractor dependencies to be avoided.
- (c) Facilitate planning and administration by remote staff such as information systems administrators, centralized help desks, or specialist consultants.
- (d) Increase the speed of network troubleshooting and reduce down-time.
- (e) Allow rapid identification and restoration of services after major building events, e.g. fire, flood or vandalism damage.
- (f) Provide backup records allowing labels on plant to be restored if removed or damaged.

This Standard references ISO/IEC 14763-1, *Information Technology—Implementation and operation of customer premises cabling*, Part 1: *Administration*, which specifies a comprehensive approach to administration including labelling and database record systems. The ISO/IEC 14763-1 document does not describe methods for recording outdoor cabling between buildings on site plans, rack layouts, or the documentation of open office and centralized fibre optic cabling.

The ISO/IEC 14763-1 document may later be used as the basis for a corresponding Australian/New Zealand Standard, which would be Part 2 of this Standard. However, the Committee believes that this ‘basic’ Standard will meet the requirements of the majority of users. It covers labelling and essential distribution records and drawings to the minimum extent required to effectively maintain communications cabling infrastructure.

This Standard varies the extent and format of documentation depending on the size of the site using a classification system aligned to TIA/EIA 606-A. This allows it to be used for small SOHO and SME installations through to very large sites. The most basic documentation is provided for a Class 1 site comprising a single distributor, ranging through to plans and records for a Class 3 site comprising a multi-building campus. This Standard does not suggest a methodology for the establishment of a single administration system which could be used for centralized administration of Class 4 installations comprising multiple sites.

The informative Appendix F provides a comparison of the requirements of this document with the requirements of EIA/TIA 606-A and ISO/IEC 14763-1.

This Standard covers all current network architectures for all types of building and campus and facilitates standardization of engineering drawings prepared for the purpose of tender specifications, contract documents and as-built records. It is compatible with both the existing Australian National Specification System (Natspec) and the USA CIS Division 25 specification system T-series construction drawings which may be adapted in the future for use in Australia and New Zealand.

The term ‘informative’ has been used in this Standard to define the application of the appendix to which it applies. An ‘informative’ appendix is only for information and guidance.

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Australian/New Zealand Standard

Telecommunications installations—Administration of communications cabling systems

Part 1: Basic requirements

1 SCOPE

This Standard covers the essential basic requirements for identification of components of the cabling and pathway systems and for the recording of installation particulars.

Computer database systems for cabling administration are not described in this Standard, but are covered in ISO/IEC 14763-1.

The methods included in this Standard may be used to supplement records automatically generated by cable test and certification equipment to create a complete record.

2 APPLICATION

The likely users of this Standard are architects, consultants and engineers specifying building works, and building owners and managers who wish to have a basic record of installations in order to meet tenant requirements and to facilitate access to and changes to the telecommunications infrastructure. The application of this Standard relative to other Australian Standards, Joint Australian/New Zealand Standards and other National Standards is indicated in Figure 1.

3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

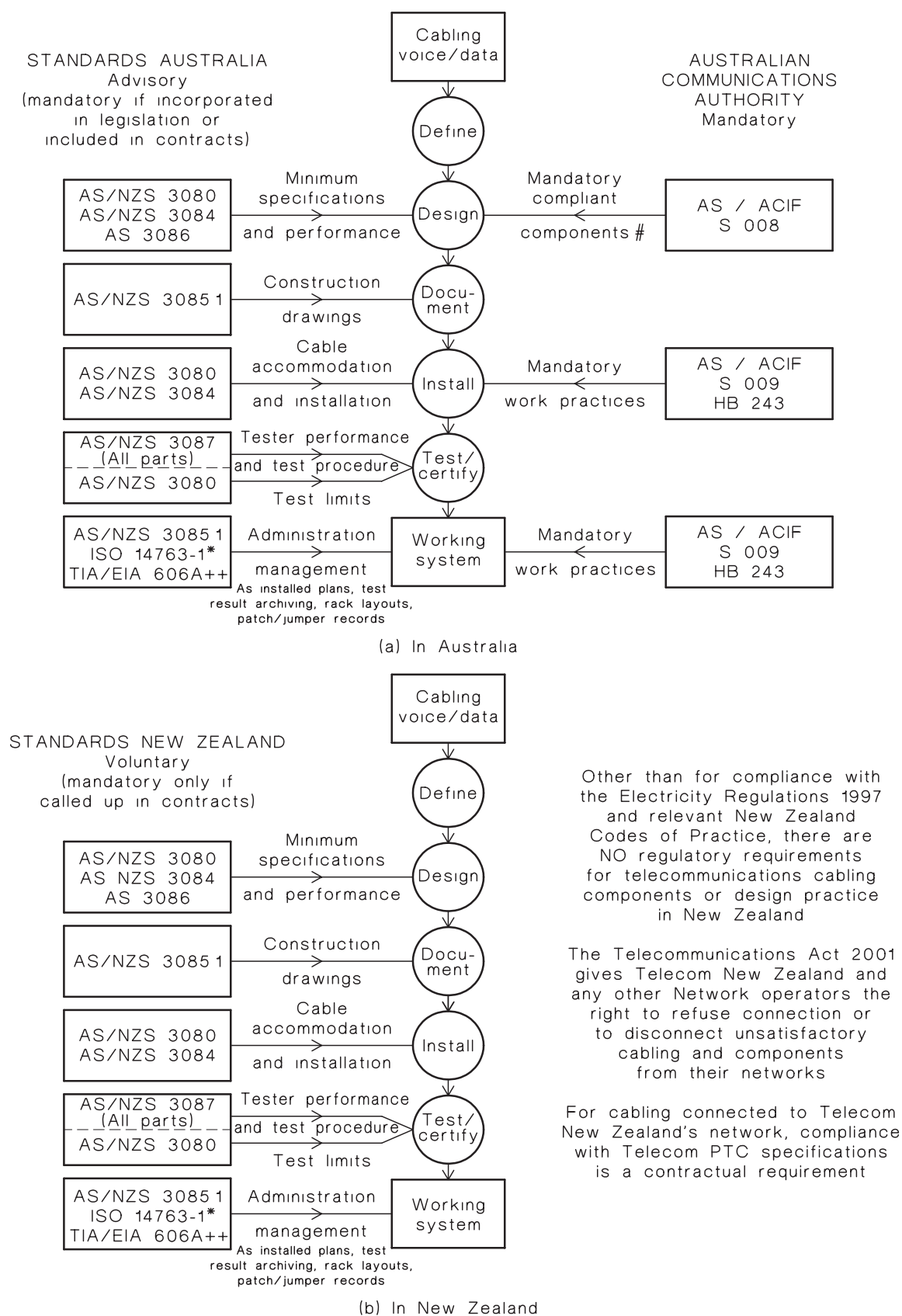
AS

- | | |
|----------|--|
| 1100 | Technical drawing |
| 1100.401 | Part 401: Engineering survey and engineering survey design drawing |

AS/NZS

- | | |
|----------|--|
| 1102 | Graphical symbols for electrotechnical documentation |
| 1102.103 | Part 103: Conductors and connecting devices |
| 1102.110 | Part 110: Telecommunications—Transmission |
| 1102.111 | Part 111: Architectural and topographical installation plans and diagrams |
| 2211 | Safety of laser products |
| 3080 | Telecommunications installations—Generic cabling for commercial premises |
| 3084 | Telecommunications installations—Telecommunications pathways and spaces for commercial buildings |
| 3086 | Telecommunications installations—Integrated telecommunications cabling systems for small office/home office premises |
| 3087 | Telecommunications installations—Generic cabling systems |
| 3087.1 | Part 1: Specification for the testing of balanced communication cabling |
| 3087.2 | Part 2: Specification for the testing of patch cords in accordance with AS/NZS 3080 |

AS/ACIF	
S008	Requirements for authorised cabling products
S009	Installation requirements for customer cabling (Wiring Rules)
ISO/IEC	
14763	Information technology—Implementation and operation of customer premises cabling
14763-1	Part 1: Administration
IEC	
60297	Dimensions of mechanical structures of the 482.6mm (19 in) series
60617	Graphical symbols for diagrams
TIA/EIA	
570-A	Residential and Light Commercial Telecommunications Wiring Standard
606-A	Administration Standard for the Telecommunications Infrastructure of Commercial Buildings, Revision A



* Recommended for computer database administration systems.

++ Revision A. Provides a more extensive system for identifying all elements including cables, pathways, grounding systems. Includes classification of methods based on the premises size.

Under former Austel regulations these were termed 'Certified Components'.

FIGURE 1 APPLICATION OF COMMUNICATIONS CABLING STANDARDS

4 GLOSSARY OF TERMS

For the purpose of this part of AS/NZS 3085.1, the following definitions, in addition to the definitions included in AS/NZS 3080, apply.

building	A substantial structure with a roof and walls.
building services manager	The person/organization responsible for day-to-day operation of building services or operation and maintenance of the premises in which the telecommunication facility is installed. This may be the owner, an agent of the building owner or the head tenant in the building.
building owner	The person or organization in whose name the title of the real property is held.
CADD	Computer Aided Design and Drafting (software).
documentation	A collection of schematic, site, location and layout drawings showing the communications cabling infrastructure installed at a site together with the test results for that cabling.
horizontal cabling	The cable reticulation which serves a particular floor of a building, connecting floor distributors to telecommunications outlets. (This cabling often is only as permanent as the partitioning installed by the customer).
identifier	An item of information that links a specific element of the telecommunications infrastructure with its corresponding record.
lead-in cabling	A carrier's telecommunications network cabling from the property entry point to the public network interface (network boundary).
medium	A means by which a signal is propagated, e.g. a metallic conductor or optical fibre.
pathways	Riser shaft, cable tray/trough, cable duct/conduit, accommodation.
premises	Any land together with its building(s) used as a place of business or residence.
public network interface	A point of demarcation between public carriage service provider infrastructure and private network equipment otherwise known as the 'Network Boundary'. In many cases the public network interface is the point of interconnection between the network provider's facilities and the customer premises cabling.
records	Paper or electronic documents, files or databases describing the allocation of copper or fibre conductor pairs to signals being carried on the communications cabling infrastructure and how each signal is cross-connected or inter-connected at distributors by jumpers or patches.
utilities	Suppliers of community services such as water, electricity, gas, telecommunications, sanitation, etc. NOTE: A supplier of telecommunications services may be referred to as a 'carrier', 'carriage service provider' (CSP) or simply 'service provider' (SP).

5 MINIMUM REQUIREMENTS

5.1 General

For effective administration of an integrated communications cabling system, the three essential requirements are component identification, labelling and recording.

5.2 Identifiers

Every element of the generic cabling system, and of the pathways and spaces in which the system is installed, should be readily identifiable. A unique identifier should be assigned to every cable, distributor and termination point in the cabling system. Suitable identifiers should also be assigned to the pathways and spaces in which the cabling is installed.

A recommended format for telecommunications outlet identifiers is shown in Paragraph C2.4.

5.3 Labelling

Telecommunications outlets shall be labelled with the outlet number (which corresponds to its appearance at the distributor) and those additional identifiers which may be necessary to uniquely identify the outlet at the respective premises. Cross-connect positions for horizontal cabling shall be labelled to correspond to the labelling of their respective telecommunications outlets.

Distributor cabinets, racks or frames shall be fitted with a large label readily visible and legible from a range of at least 2 m showing the distributor identification.

The sheath of backbone cables linking distributors shall be labelled using a wrap on label or affixed tag at each end (distributor, splice point or underground joint) detailing the cable type, capacity, remote distributor and termination appearance and local distributor and termination appearance.

Consolidation points shall be fitted with a label indicating the maximum cable run length from the consolidation point to a connected telecommunications outlet. Multi-user telecommunication outlets shall be fitted with a label indicating the maximum fly lead length which may be used to connect to terminal equipment.

Fibre optic patch fields shall be labelled with laser source warning signs to AS/NZS 2211. Where mixed multimode fibre core sizes are used on the same site (for example 62.5/125µm and 50/125µm), a means of distinguishing the core size shall be provided at the connector and on patch cords to prevent mismatched fibres from inadvertently being patched.

Labels shall be of a size, colour and contrast to be readily legible and have a useful life equal to or greater than that of the component being labelled. Machine printing or engraving with a minimum text size of 10 point (or 2.5 mm text height) is recommended for outlets and distributor appearances. Distributor identifiers should be highly visible and have a minimum text height of 10 mm.

5.4 Records

The minimum documentation and records that shall be kept are as follows:

- (a) A description of the identifiers used in the administration scheme of the cabling and pathways. The description should include the colour code used in the cable elements and the numbering convention of the cable elements.
- (b) Scale site and building/floor location plans showing the location and size of the pathways and the type of cables installed therein. Scale may be estimated by eye to represent approximate spatial relationships if measurements or accurate CADD files are not available.

- (c) Acceptance test results detailing the length and performance of individual cable segments, the major characteristics of the medium used, and the class of the link or the category of the medium.
- (d) Schematic diagrams detailing the quantity and type of cables linking distributors and serving outlets showing the interconnection between these components and point of termination.
- (e) A description of the current system configuration. This should include a list of the current cross-connections and patches and may also include logical network architecture schematics for each supported network or system. It should always be possible to trace the route of a particular cable element from a telecommunications outlet to the service on which that cable element originates or terminates.

Effective control of records is vital to the administration process. It is important that suitable procedures are established to ensure the timely updating of documentation whenever changes are made to the configuration of the cabling.

All records should be retained in electronic file format and subjected to rigorous file naming, archiving and file backup processes. Print-outs of items (b) and (d) should be left at relevant distributors. In choosing computer file formats, consideration should be given to the long term readability of the records using industry standard formats rather than proprietary formats. CADD files are preferred for site and location plans and schematics.

Where the base site and floor plans are not available in CADD format, scanned document images may be made of hand drafted diagrams and photocopies to ensure an electronic archive is available and accessible in soft form at all times.

The degree of detail for documentation and records and the extent of computerization which is economically justified vary with the size of the premises and the needs of the user organizations. Some typical requirements are as set out in Table 1:

TABLE 1
RECOMMENDED DOCUMENTATION SCOPE

Size of premises	Site characteristics	Recommended minimum documentation and records
Class 1: <1,000 m ² and fewer than 50 work areas.	Single distributor or telecommunications room, small business or residential occupant.	Hand drawn plans to approximate scale showing relevant detail drawn to methods detailed in this Standard. Hand written patching records based on the pro-forma sheets in this Standard. Test results retained on disk.
Class 2: Up to 60 000 m ² total area or typically up to 5 000 work areas.	Single building site. May be multiple floors of typically up to 1 500m ² per floor with a single distributor on each floor, or a lower rise building with a very large floor area and multiple distributors on each floor. Multiple distributors linked by one or more risers and/or horizontal backbones to a building distributor and one or more entrance facilities. For example: commercial office space, motels, call centres, shopping centres, smaller airports.	Pathways and backbones may not have identifiers but should be clearly documented on the location plans and schematics. Backbone lines are clearly identified at distributor terminations. Computer drafted floor location plans to scale (accuracy better than ± 1 m), distribution and backbone cabling schematics and distributor layouts provided; in both printouts and editable file format. Updated after any significant works or at intervals of one to three years depending on the stability of the site layout. Patching and jumpering records recorded on spreadsheets and updated as part of change procedure. Paper copy or printout always kept at distributor. In some cases, hand written record on pro-forma sheets kept at distributor may suffice but photocopies should be made annually and archived with a backup copy kept off site. All backbone and distribution test results electronically archived and readily retrievable.

(continued)

TABLE 1 (*continued*)

Size of premises	Site characteristics	Recommended minimum documentation and records
Class 3: Up to 60 000 m² total floor area or typically up to 5 000 work areas.	Multiple building campus, with each building having one or many floors. Multiple distributors linked by riser backbones within buildings, and by outdoor plant, such as backbones in underground ducts between buildings. For example: schools and colleges, hospitals, factories, industrial sites, resorts, large airports.	Building identifiers used in all numbering. Pathways and backbones may not have identifiers but should be clearly documented on the location plans and schematics. Backbone lines clearly identified at distributor terminations. Computer drafted site plans to scale showing outdoor plant locations, optionally including burial depth and distance from buildings or road alignment. Computer drafted floor location plans to scale (accuracy better than ± 1 m), distribution and backbone cabling schematics and distributor layouts provided in both printouts and editable file format. Updated after any significant works or at intervals of one to three years depending on the stability of the site layout. Patching and jumpering records recorded on spreadsheets and updated as part of change procedure. Paper copy or printout always kept at distributor. In some cases, hand written record on pro-forma sheets kept at distributor may suffice but photocopies should be made annually and archived with a backup copy kept off site. All backbone and distribution test results electronically archived and readily retrievable.
Class 4: Multiple sites each comprising a campus, total area of all sites over 40 000 m² and over 3 000 work areas.	Premises of large corporations with buildings in many locations across a country, centrally administered. Banks, national government agencies, retail and service sector chains, carriers, multi-national corporations.	Numbering scheme may have additional identifier for site. Links between sites documented. Computer drafted site and floor location plans, schematics and distributor layouts in both printouts and editable file format, to scale (accuracy better than ± 1 m). Updated after any significant works or at intervals of one to three years depending on the stability of the site layout. All major pathways and backbone identified with labels. Computerized database established and maintained to record all cross-connections. The record is updated in real time as changes are made. Database may link with other network management or asset management systems. Links between the database and floor plans may be useful. All backbone and distribution test results electronically archived and readily retrievable.

This Standard only applies to Class 1, 2 and 3 premises as defined above. Administration systems outlining the Class 4 recommendations may be found in ISO/IEC 14763-1 or TIA/EIA-606-A.

Where as-built CADD files are a contractual requirement, the following shall be provided:

- (a) One archive and one working print-out or plot of every drawing.
- (b) Computer files of all drawings in native application editable format.
- (c) Computer files saved in an industry standard default file format capable of being read and edited by most CADD application software and most importantly in a format which may be read and edited by any CADD software owned by the cabling owner or facility manager.