



University of Otago

Building Technologies – Standards Suite

CHAPTER 8: IT INFRASTRUCTURE - LABELLING STANDARD

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BUILDING TECHNOLOGIES STANDARDS SUITE INDEX

This document is only one chapter of the University of Otago Building Technologies Standards Suite.

The Building Technologies Standards Suite consists of the following chapters (chapter highlighted refers this document):

Chapter 1	Introduction
Chapter 2	Cabling Infrastructure Pathways Standard
Chapter 3	IT Infrastructure – Generic Cabling Systems Standard
Chapter 4	IT Infrastructure – Passive Optical LAN Cabling Standard
Chapter 5	Electronic Safety and Security (ESS) Systems Standard
Chapter 6	Closed Circuit Television (CCTV) System Standard
Chapter 7	Audio Visual (AV) Cabling Standard
Chapter 8	Labelling

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1. DOCUMENT PURPOSE

The purpose of this document is to comprehensively define all standards to be followed when undertaking IT infrastructure labelling and labelling records services for the University of Otago (UoO).

The University's IT infrastructure cabling shall support current and future active networking equipment deployed by the University's Network Services Group. Campus wide standardisation of labelling systems is important in meeting the scalability and serviceability requirements of the network.

This document will be periodically updated, with copies and details of changes being issued to the holders of the document as listed in the document control register.

This document provides guidance on minimum technical standards in the following areas:

- i. Labelling on installed infrastructure
- ii. Labelling records

1.1. Document sponsor

This document has been developed and is controlled by the University of Otago.

The contractor or designer shall adhere to the latest published edition of all standards and technical documents for all responses and construction work. Should a conflict exist between the standards or any scope of work, the contractor shall notify the consultant or University of Otago Head of IT Infrastructure of any conflict and seek clarification prior to continuation.

All queries, errors, omissions or suggestions related to this document are to be directed to:

The Head of IT Infrastructure
University of Otago
PO Box 56
Dunedin 9054
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1.2. Outcome statement

By using this document and relative standards, designers and contractors will meet the University of Otago's standards for the consistent and clear labelling of generic and structured cabling systems and information and communications technology environments that the University manages and operates.

1.3. Chapters

The Building Technologies Standards Suite covers the following Information and Communication Systems. Each system is presented as a separate chapter:

- Chapter 1 – Introduction to Building Technologies Standards Suite
- Chapter 2 - Cabling Infrastructure Pathways Standard
- Chapter 3 - IT Infrastructure – Generic Cabling Systems Standard
- Chapter 4 - IT Infrastructure – Passive Optical LAN Cabling Standard
- Chapter 5 - Electronic Safety and Security (ESS) Systems Standard
- Chapter 6 - Closed Circuit Television (CCTV) System Standard
- Chapter 7 - Audio Visual (AV) Cabling Standard
- Chapter 8 – Labelling Standard



2. USING THIS DOCUMENT

This document is CHAPTER 8: IT INFRASTRUCTURE - LABELLING STANDARD and forms part of a suite of documents under the University of Otago building technology standards. This document shall be read in conjunction with CHAPTER 1: INTRODUCTION TO BUILDING TECHNOLOGY STANDARDS.

3. REFERENCED DOCUMENTS

Reference is made in this document to the following:

3.1. New Zealand Standards

Standard number	Standard Description
n/a	

3.2. Joint Australian/New Zealand Standards

Standard number	Standard Description
AS/NZS 2967	Optical fibre communication cabling systems safety
AS/NZS 3084	Telecommunications installations – Telecommunications pathways and spaces for commercial buildings
AS/NZS 3085.1	Telecommunications installations – Administration of communications cabling systems
AS/NZS 14763.2	Telecommunications installations – Implementation and operation of customer premises cabling - Part 2: Planning & Installation

3.3. Australian Standards

Standard number	Standard Description
AS 11801.1	Information technology — Generic cabling for customer premises — Part 1: General requirements
AS 11801.2	Information technology — Generic cabling for customer premises — Part 2: Office premises
AS 11801.3	Information technology — Generic cabling for customer premises — Part 3: Industrial premises
AS 11801.4	Information technology — Generic cabling for customer premises — Part 4: Single Tenant Homes

Standard number	Standard Description
AS 11801.5	Information technology — Generic cabling for customer premises — Part 5: Data Centres
AS 11801.6	Information technology — Generic cabling for customer premises — Part 6: Distributed building services
AS/CA S008	Requirements for customer cabling products
AS/CA S009	Installation requirements for customer cabling (Wiring Rules)

3.4. Other Publications

Standard number	Standard Description
Building Industry Consulting Service International, Inc (BICSI) - TDMM	Telecommunications Distribution Methods Manual (TDMM), 14th Edition
Building Industry Consulting Service International, Inc (BICSI) - OSP	Outside Plant Design Reference Manual (OSPDRM), 6th Edition
Otago University Campus Passive Fire Guide	Volume 1 – General Volume 2 – Product Selection Volume 3 – Basic Solutions

3.5. International Standards

Standard number	Standard Description
n/a	

3.5.1. Websites

<http://www.legislation.govt.nz/>
<http://www.otago.ac.nz>
<http://www.telepermit.co.nz/PtcSpecs.html>



3.6. Latest Revisions

The users of this document shall ensure that their copies of the above -mentioned New Zealand Standards and the New Zealand Building Code are the latest revisions.

Amendments to referenced New Zealand and Joint Australian/New Zealand Standards can be found on <http://www.standards.co.nz>.

4. DEFINITIONS AND ABBREVIATIONS

For the purposes of this document the following definitions and abbreviations shall apply.

4.1.1. Definitions

Term	Definition
As-built	Final set of drawings produced at the completion of a construction project, including all changes made to the original construction drawings
Building backbone cabling	Cable that connects the building distributor to a floor distributor
Campus	An area or site which contains several University buildings, and includes the grounds in which a cabling system is installed
Campus backbone cabling	Cable that connects the campus distributor to the building distributor(s)
Campus distributor	Distributor from which the campus backbone cabling starts
Category 5 (Cat 5)	For the purposes of this document, cabling components which provide a permanent link that, when tested, do not meet AS 11801.1 Class D performance
Category 5e (Cat 5e)	For the purposes of this document, cabling components which provide a permanent link that, when tested, meet AS 11801.1 Class D performance
Category 6 (Cat 6)	A definition of cabling components which provide a permanent link that, when tested, meet AS 11801.1 Class E performance
Category 6 _A (Cat 6 _A)	A definition of cabling components which provide a permanent link that, when tested, meet AS 11801.1 Class E _A performance
Consolidation Point	Connection point in the horizontal cabling subsystem between a floor distributor and a telecommunications outlet
Contractor	Where the term “Contractor” is used within this document it shall be interpreted as the “Communications Contractor”.
Designer	A person who plans the look, or workings, or both, of something prior to it being made, by preparing drawings or plans

Term	Definition
Distributor	The term used for a collection of components (such as patch panels, patch cords) used to connect cables
Enclosure	A housing for accommodation of equipment and cabling that includes mounting rails and protective panels
Generic cabling system	Structured telecommunications cabling system, capable of supporting a wide range of standardised applications. Standards based design
Horizontal cabling	Cable connecting the floor distributor to the terminal equipment outlets
Installer	A person that places or fixes equipment or machinery in position ready for use. The party(s) responsible for the supply, installation, testing and warranty of cabling systems
Integrator	A person that places or fixes active IT equipment e.g. network switching, Wireless Access Points, servers, desktop computers etc. in position and configures, programs them ready for use. The party(s) responsible for the supply, installation, testing and warranty of active equipment systems
Manufacturer	A person or company that makes cabling goods for sale
Power over Ethernet	Power over Ethernet (PoE) is a technology for wired Ethernet local area networks (LANs) that allows the electrical current necessary for the operation of each device to be carried by the generic cabling system rather than by power cords. Typical uses include VoIP phones, WAPs, IP CCTV cameras, or lighting.
Power Over SCS or GCS cabling	Power over structured telecommunications cabling (application specific cabling) or power over generic cabling (non-application specific cabling)
Permanent link	Transmission path between the telecommunications outlet and the floor distributor
Service Distributor (SD)	Equivalent to distributor 1 in AS 11801.1
Service Outlet (SO)	Equivalent to a TE Outlet in AS 11801.1
Single vendor system	A system provided by a single vendor to help reduce operational, configuration, and management complexity

Term	Definition
Site	See Campus
Structured Cabling System	Specific cabling solution designed with a set of cabling and connectivity products that are constructed (engineered) according to standardised rules to facilitate specific connectivity requirements e.g. Nurse Call (Staff Assist). Legacy design.
Suitably qualified person	A person with the professional qualifications and experience in the industry to undertake the design and supervision of the works
Terminal Equipment Outlet (TEO)	Fixed connecting device which provides and interface to the terminal equipment. N.B. The term telecommunications outlet is used in some other parts of the AS 11801 series, while the term terminal equipment outlet is used within AS 11801.1 and this document.
Velcro™	A proprietary form of Hook & Loop fastener/cable tie

4.1.2. Abbreviations

Abbreviation	Definition
AFFL	Above Finished Floor Level
APC	Angled Physical Contact connector
ATS	Auto Transfer Switch
BD	Building Distributor
BER	Bit Error Rate
BTSS	Building Technology Standards Suite
CAD	Computer Aided Design
CD	Campus Distributor
CES	Communications Earth System
CoC	Certificate of Compliance

Abbreviation	Definition
CP	Consolidation Point
DB	Electrical Distribution Board
EMC	Electromagnetic Compatibility
ES1	Energy Source Class I
ES2	Energy Source Class II
ES3	Energy Source Class III
ESC	Electrical Safety Certificate
FD	Floor Distributor
FOBOT	Fibre Optic Break Out Termination
F/UTP	Overall screened cable with unscreened twisted pairs (often referred to as FTP)
GbE	Gigabit (per second) Ethernet
GPO	General Purpose Electrical Outlet
GCS	Generic Cabling System
IT	Information and Communications Technology
IDC	Insulation Displacement Connection
IP	Internet Protocol
LAN	Local Area Network
LC	A small form factor optical fibre connector type
MAC	Moves Adds Changes
MATV	Master Antenna television
MCB	Miniature Circuit Breaker
MER	Main Equipment Room
MMOF	Multimode Optical Fibre
MCB	Miniature Circuit Breaker

Abbreviation	Definition
MPTL	Modular Plug Terminated Link
MSSB	Mechanical Services Switch Board
MUTO	Multiuser Telecommunications Outlet
ODF	Optical Distribution Frame
OFCS	Optical Fibre Communication Systems
PE	Polyethylene
PL	Permanent Link
PoE	Power over Ethernet
POL	Passive Optical LAN
RCBO	Residual Current Breaker (with overcurrent protection)
RCD	Residual Current Device (No overcurrent protection)
RJ45	Registered Jack Number 45
RU	Rack Unit
SCS	Structured Cabling System
SCP	Service Concentration Point
SD	Services Distributor
S/FTP	Overall braid screened cable with foil screened twisted pairs (often referred to as STP or PiMF)
SFF	Small Form Factor
SMOF	Single Mode Optical Fibre
SO	Service Outlet
SPD	Surge Protection Device
TEO	Terminal Equipment Outlet
TO	Telecommunications Outlet

Abbreviation	Definition
TR	Telecommunications Room
TRC	Telecommunications Reference Conductor
UoO	University of Otago
UPC	Ultra Physical Contact connector
UPS	Uninterruptible Power Supply
uPVC	Unplasticised polyvinyl chloride
UTP	Unshielded Twisted Pair
UV	Ultraviolet
WA	Work Area
WAP	Wireless Access Point
WLAN	Wireless Local Area Network
SPE	Single Pair Ethernet
SPPOE	Single Pair Power over Ethernet

5. LABELLING SYSTEMS: OVERVIEW

5.1. IT labelling systems background

The Information and Communications Technology (IT) cabling system plays a critical role in telecommunications systems, providing the physical link between sources and destinations of information. Data, voice, video and control signals are transmitted over this infrastructure linking devices across the hall, throughout a building or across several buildings.

Cabling systems range in size from small and simple, linking just a few nodes, to large and complex, linking several buildings with tens of thousands of nodes throughout a campus.

The cabling system provides the physical link between active network equipment such as routers and switches, and the terminal equipment such as computers and telephones. New Generic Cabling Systems (GCS) are typically comprised of copper and optical fibre cabling.

To facilitate the day-to-day operations, the cabling system and its components shall be consistently labelled to enable the University to make additions, moves and changes, wherever and whenever necessary.

This standard contains the new requirements and recommendations for a labelling system to identify and label University of Otago cabling system infrastructure and elements. The new scheme has been developed to align with current industry standards and with a view to future records maintenance that may include Automated Infrastructure Management platforms to enable the University of Otago to have consistent and detailed records.

Older installed labelling will not be updated to be consistent with this document automatically. When new work, Moves/Additions/Changes or get-well programmes are undertaken in an existing area the labelling scheme is to be updated to the new format.



6. GENERAL CONDITIONS

The contractor shall refer to the UoO BTSS CHAPTER 1: INTRODUCTION for all general conditions required by the University when installing a GCS.

7. DESIGN CRITERIA

7.1. Criteria for use

The designer and contractor shall refer to sources and publications outlined at the beginning of this document for general design guidance.

GENERIC CABLING SYSTEMS

This standard contains the new requirements and recommendations for a labelling system to identify and label University of Otago cabling system infrastructure and elements. The new scheme has been developed to align with current industry standards and with a view to future records maintenance that may include Automated Infrastructure Management platforms to enable the University of Otago to have consistent and detailed records.

The new labelling standard is consistent with the existing labelling convention but includes additional requirements and information. Older labelling will not be updated to be consistent with the new scheme automatically. When new work, Moves/Adds/Changes or get-well programmes are undertaken in an existing area the labelling scheme is to be updated to the new format where necessary.

7.2. Standards references

The contents of this standard are based on the following UoO references, and New Zealand and international standards including:

Standard	Standard Description
AS/NZS11801.1	Information technology – Generic cabling for customer premises. Part 1: General requirements.
AS 11801.2	Information technology – Generic cabling for customer premises. Part 2: Office Premises.
AS 11801.3	Information technology – Generic cabling for customer premises. Part 3: Industrial premises.

Standard	Standard Description
AS 11801.5	Information technology – Generic cabling for customer premises. Part 5: Data centres.
AS 11801.6	Information technology – Generic cabling for customer premises. Part 6: Distributed building services.
AS/NZS 14763.2	Information technology – Implementation and operation of customer premise cabling. Part 2: Planning and installation.
ISO/IEC/TR 14763-2-1	Information technology – Implementation and operation of customer premises cabling. Part 2-1: Planning and installation – Identifiers within administration systems.
AS/NZS 3085	Telecommunications installations – Administration of communications cabling systems. Part 1: Basic requirements.
AS ISO/IEC 18598	Information technology – Automated infrastructure management (AIM) systems – Requirements, data exchange and applications.
UoO document	Space Numbering Guidelines
UoO document	Building technologies – Standards Suite

Table 1 - Standards and references

7.3. Building Numbers / Building Grid Codes

The Property Management Unit is responsible for assigning all building numbers. PMU will advise all relevant parties in the University when a new building code has been created.

7.3.1. Building codes

The building code is a 4-character alpha-numeric unique identifier for the building.

The building codes are those contained in the UoO Property Services Division spaces list in the “Bldcode” column. Refer to the UoO Property Services Division for the full list of building codes to be used.

7.4. Floor level

The floor level is identified by a 3 or 4 character alpha-numeric code in a common format across all buildings and structures.

Valid codes are identified in the Space Numbering Guidelines as follows:

Floor Level Code	Floor Level Name	Notes
B01	Basement	Relates to the lowest level of the building. In most instances this is non-habitable space (e.g. Basement carpark)
LG01	Lower Ground	Lower ground relates to levels below the ground floor not defined as a basement.
G01	Ground	Relates to the floor of a building at or nearest ground level
M0#	Mezzanine	An intermediate floor, between other floors. # relates to the level below the mezzanine. (e.g. M03 = mezzanine level between third and fourth floors)
L01 - L12	Level 1 - 12	Level 1 relates to the first floor above ground level
R01	Roof Level 1	
R02	Roof Level 2	
R03	Roof Level 3	

Table 2 - Level Numbering Guidelines

7.5. Space identifiers

Indoor telecommunications spaces are identified with a space code, generally this is the Room number as defined in the Numbering Guidelines. The room number will not be unique and will exist in other buildings therefore master records will need to include the campus and building codes. The label on the space will be the room number only as the campus and building are self-evident.

UoO uses a “number room by type” Numbering system in which numbering standards differ between what the space is used for. Numbering standards for each space type are outlined in the document Space Numbering Guidelines v2.1 20171 (or subsequent revisions).

7.5.1. Special spaces

Specific spaces such as stairs, corridors, amenities and plant rooms have a unique identifier after the building level and before the room number. Refer to Space Numbering Guidelines v2.1 20171 (or subsequent revisions) for more information.

Identifier	Space / Room	Example
S	Stair	1.S01
C	Corridor	2.C01
D	Duct / Riser	2.D01
L	Lift	2.L01
LL	Lift Lobby	2.LL01
P	Plant Room	2.P01
LB	Lobby	2.LB01
Q	Unenclosed spaces opening off a corridor.	2.Q01

Table 3 - Special spaces

7.5.2. Outdoor telecommunications spaces

Outdoor telecommunications spaces include pits/chambers, pedestals, poles or other external structures used for telecommunications distribution or termination.

The format of the outdoor space label is as follows, [+c]+T[(g)] where:

- c = campus
- T = outdoor telecommunications space type with unique number identifier
- g = GPS coordinates of the space in brackets. The (g) field shall be applied consistently throughout the administration system.

The following types of outdoor spaces labels are to be used:

Label	Description
KSK	Kiosk, for example Duress call point kiosk
PMH	Pit / chamber
PED	Pedestal

Table 4 - Outdoor spaces

7.6. Cabinet identifiers

Cabinets and frames may be identified by using a row/number combination in telecommunications rooms and spaces. Identify racks and frames in telecommunication rooms in a consistent format where:

- Cabinets have a 2 or 3 character ALPHA identifier, the unique identifier will be assigned by the UoO ITS Infrastructure Team.
- Rack labelling will be a minimum of 50mm in height with the label located at the top-front and top-rear of the cabinet.

7.6.1. Outlet identifiers

Outlets will be identified by sequential NUMERIC codes, typically a 3-number identifier.

7.7. Examples

The following examples are provided for guidance:

- F204 – 444 Great King Street
- F204-ZU-01 – Switch in the ZU cabinet / F204 Building
- ZU099 – Network Outlet / Patch panel (F204 is implied by presence and not required in the label)

SPECIAL CONDITIONS - AUDIO-VISUAL SYSTEMS

All components of the AV installation shall be labelled. 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 labels shall be provided as per below.

Examples of labelling may be requested by the UoO AV Team if required.

7.8. AV Racks

Distributors shall be labelled top and bottom, front and back.

- AV Racks shall be fitted with labels of 40mm high white lettering on a black background showing the distributor identification

7.9. Patch Panels

Patch Panels shall be labelled to correspond to the labelling of their respective AV Outlet.

Labels at fibre patch panels shall identify individual fibres in an optical fibre cable.

- Patch panel labels shall be machine printed labels with black text (minimum text size of 2.5mm) on a white background.

7.10. Cables

All AV cables shall be labelled with heat shrink or cable-wrap type labels, fixed 300 mm from both ends of every cable run.

7.11. Outlets

AV Outlets shall be labelled with the outlet number (which corresponds to its appearance at the rack) and those additional identifiers which may be necessary to uniquely identify the outlet at the respective premises.

Outlets mounted within the ceiling space shall be labelled on the outlet faceplate and on the underside of the ceiling grid below the AV Outlet.

AV Outlet labels shall be:

- Permanent marker pen on the outlet to match the cover plate engraved label
- Machine printed labels on the cover plate with black text (minimum text size of 2.5mm) on a white background for standard outlets
- Machine printed labels with black text (minimum text size of 2.5mm) on a red background for labels on the underside of the ceiling grid

7.12. Pathways

Every conduit and cable tray shall be clearly labelled at both ends and within 300mm of every wall penetration, designating the floor room by number which includes the sequential numbering of the conduit originating at that room. Conduit or Cable Tray length shall also be indicated on the label.

Draw boxes shall be labelled on the exposed exterior.

- Pathways shall be labelled with machine printed or wrap labels with black text (minimum text size of 5mm) on a white background.

7.13. Earth Points

Each connection point shall be labelled as AV and shall reference the distribution board number it connects to.

SPECIAL CONDITIONS - PASSIVE OPTICAL LAN SYSTEMS

7.14. POL Fibre Labelling Convention

The communication contractor shall use the labelling convention shown in the following schematic for a Passive Optical LAN installation. Any traditional copper patch panel to outlet shall use the standard labelling detailed elsewhere in this document. All labels shall be from the point of origin and include the floor level they originate from.

Any item that is mounted with a ceiling cavity or concealed within a box shall have the ceiling or box labelled to indicate the item mounted behind. This shall include zone distribution points (RDTs) and ONTs that are mounted within the ceiling.

Ceiling or box lid labels shall be engraved laminated white labels with black letters & numbers with a minimum height of 10mm and shall be fixed using 3M double sided tape. Passive Optical LAN system face plate labelling shall use a permanent marker behind the removable plate cover and brother printed labelling (or Equivalent) on the face plate front.

The communications contractor shall create a patching excel spread sheet that includes all components between the OLT Cabinet and the final device connection and submit this for approval. This shall also be provided as a part of the final site documentation. A sample excel is available on request from Torque IP.

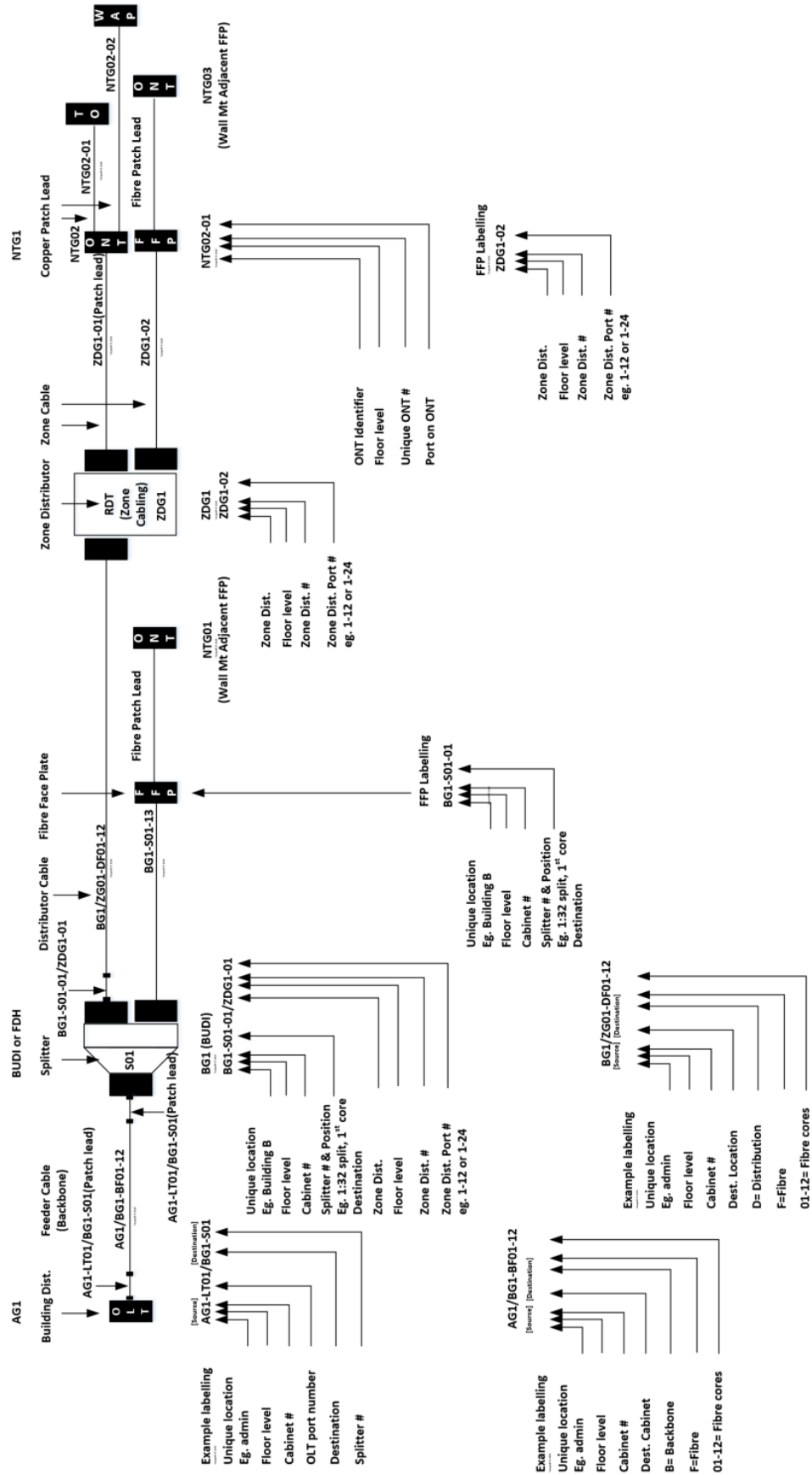


Table 5 - POL labelling

SPECIAL CONDITIONS - SECURITY SYSTEMS

Cabling for security systems shall conform with the cabling requirements for GCS. The following additional requirements are made:

- When devices such as cameras are connected by MPLT connections, the MPLT connection shall be labelled as if it were a TO.