

University of Oxford IT Services Infrastructure Specification Project

ISP-03-003: Distribution cabling - Recommendations: IT infrastructure

1 INTRODUCTION

1.1 Scope

This document specifies the minimum recommended design features of the generic distribution cabling used to deliver University of Oxford IT Services to TOs in customers' premises.

This document:

- uses the definitions and abbreviations of clause 1.3 of ISP-00-001;
- assumes that screened cabling is not used.

An overarching objective of this series of documents is to ensure that University of Oxford IT Services, the customer (defined as the college or University, as appropriate) together with those organisations delegated with design and planning responsibilities have discharged the obligations of "the owner of the premises" as specified in BS 6701 and by the other standards referenced normatively from BS 6701; specifically but not exclusively BS 7671, BS EN 50174-1, BS EN 50174-2 and BS EN 50310.

1.2 Applicable external standards

Failure of the customer to install, operate and maintain direct-connect distribution cabling in accordance with the requirements of BS 6701 may result in withdrawal of service support by University of Oxford IT Services. Some critical elements of BS 6701 and its referenced standards are included in this document but customers are strongly advised to be aware of the full requirements of the standard.

2 ELEMENTS OF GENERIC, STRUCTURED, DISTRIBUTION CABLING

As shown in Figure 1, generic cabling in accordance with BS EN 50173-2 comprises:

- building distributor cabinets containing:
 - equipment;
 - patch cords;
 - equipment cords;
 - panels presenting the campus backbone cables;
 - panels presenting the building backbone cables;
- building backbone cables;
- floor distributor cabinets containing:
 - equipment;
 - patch cords;
 - equipment cords;
 - panels presenting the building backbone cables;
 - panels presenting the horizontal cables;
- horizontal cables;
- consolidation points (CPs);
- CP cords;
- TOs.

Not all the elements will be present in all premises. Premises comprising a single small building will be served by a co-located cabinet that provides the functionality of a floor and building distributor (i.e. no building backbone cable will be necessary).

The need for transmission equipment at the building or floor distributors depends upon both the application to be delivered to the TO and the cabling technologies applied.

This document assumes that the applications delivered to the customers' cabinets from the EC, i.e. at the INTI, will include 1000BASE-T. However, the delivery of 10GBASE-T to terminal equipment including wireless access points is becoming more common and the selection of cabling performance has been upgraded to reflect this trend (see 3.4).

However, the information technology systems within the premises may include more demanding applications and which may require optical fibre as the transmission medium in the building backbone system.

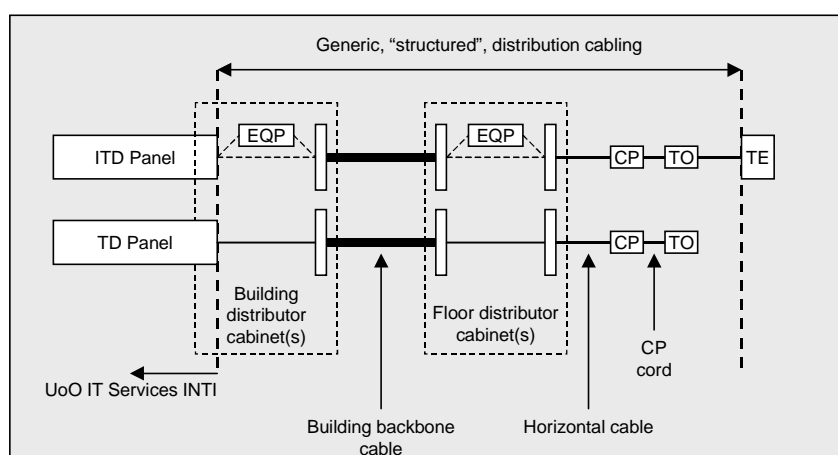


Figure 1 - Schematic of generic "structured" distribution cabling

3 DESIGN SENSITIVITIES

3.1 Cable sharing

Whilst it may be possible to support specific combinations applications to a TO, the balanced cables specified in EN 50173-1 are not designed, or guaranteed, to be capable of simultaneously supporting multiple applications. It is therefore recommended that cabling infrastructure designs are based upon a 4-pair balanced cable carrying a single application to each TO. Failure to take account of this can lead to expensive retrofitting operations.

NOTE: This does not apply to the delivery of low demand voice-grade applications within the telecommunications backbone cables described in 3.5.2.

3.2 Equipment cords

3.2.1 *Balanced equipment cords to connect ITD panels to customers' equipment in building distributor cabinets*

Category 6A cords in accordance with BS EN 50173-1 (these are equivalent to Category 6A cords of ANSI/TIA/EIA-C.2).

Colour of outer sheath: Red

3.3 Consolidation points (CPs)

The desirability of CPs depends upon the stability of TO positioning. Buildings featuring a "flood" or "saturated" cabling approach do not benefit from the use of CPs. However, buildings in which the demands for outlets in particular areas are subject to change or where rooms are subject to re-configuration can benefit significantly from the installation of CPs.

The use of CPs allows any changes at the TOs (including replacement or additional TOs) to be implemented by low-cost changes at the CP, local to the TO, rather than by installation of the complete horizontal cables with attendant access problems.

3.4 Horizontal cabling

The horizontal cabling should meet the minimum requirements of Class E_A cabling, constructed from Category 6_A components, in line with the minimum requirements of BS EN 50173-6:2018 (matching the recommendations of BS EN 50173-2)..

3.5 Building backbone cabling

3.5.1 General

It is the role of the total backbone cabling system to be generic (i.e. non application-specific). To achieve this, the mix of cable technologies and specifications within a backbone cabling system has to reflect the target range of applications to be supported and the lengths of the cabling elements.

3.5.2 Telecommunications backbone cabling

In order to support conventional voice services, the cables are recommended to have a minimum performance in accordance with CW1308 cables used within the Intermediate BDF cabling (see ISP-02-001).

3.5.3 Patch cords

3.5.3.1 *Balanced patch cords to connect TD panels to telecommunications backbone distribution panels*

The cables are recommended to have a minimum performance in accordance with Category 6_A in accordance with BS EN 50173-1 (these are equivalent to Category 6_A cords of ANSI/TIA/EIA-2.D).

Colour of outer sheath: Green

3.5.4 *Balanced patch cords to connect TD panels to horizontal distribution panels*

The cables are recommended to have a minimum performance in accordance with Category 6_A in accordance with BS EN 50173-1 (these are equivalent to Category 6_A cords of ANSI/TIA/EIA-2.D).

Colour of outer sheath: Green

3.5.5 *Balanced patch cords to connect telecommunications backbone distribution panels to horizontal distribution panels*

The cables are recommended to have a minimum performance in accordance with Category 6_A in accordance with BS EN 50173-1 (these are equivalent to Category 6_A cords of ANSI/TIA/EIA-2.D).

Colour of outer sheath: Green

3.5.6 Information technology backbone cabling

For backbone cable lengths (including cords) of up to 300 metres, the building backbone cabling should comprise one or more of the following:

- 4-pair balanced cabling capable of support Class E_A applications up to and including 10GBASE-T - 10 Gigabit Ethernet achieved by the installation of Category 6_A components as specified in BS EN 50173-1:2018;
- multimode optical fibre cabling capable of supporting 10GBASE-S applications achieved by the installation of cabled optical fibre of Category OM4 or OM5 as specified in BS EN 50173-1:2018.
- singlemode optical fibre cabling capable of supporting applications in excess of 10Gb/s achieved by the installation of cabled optical fibre of Category OS1a as specified in BS EN 50173-1:2018.

For backbone cable lengths (including cords) in excess of 300 metres but less than 500 metres, the building backbone cabling should comprise one or both of the following:

- multimode optical fibre cabling capable of supporting 10GBASE-S applications achieved by the installation of cabled optical fibre of Category OM4 or OM5 as specified in BS EN 50173-1:2018.
- singlemode optical fibre cabling capable of supporting applications in excess of 10Gb/s achieved by the installation of cabled optical fibre of Category OS1a as specified in BS EN 50173-1:2018.

Emphasis should be placed on the use of singlemode optical fibre cabling for data rates in excess of 1Gb/s, independent of transmission distance, since the use of multimode technologies will increase demand the use of parallel optics (e.g. 20 No. optical fibres for a single 100Gb/s channel). Such "optical fibre"-intensive solutions should be avoided for reasons of infrastructure cost, cabinet space and operational complexity (both administration and fault-resolution).

3.6 Fire performance of cables

3.6.1 Backbone cables, horizontal cables and CP cords

BS 6701:2016 Amendment 1:2017 requires certain cables inside buildings to meet EuroClass C_{ca}-s1b,d2,a2 of BS EN 13501-6. As a result, cables that do not meet the requirements of BS 6701:2016 Amendment 1:2017 shall not be installed inside buildings and other structures without the express authority of the Network Operations Manager.

3.6.2 Other cords

Cables in cords shall comply with the minimum recommended performance requirements of BS EN 60332-1-2 or EuroClass E_{ca} of BS EN 13501-6.

NOTE: Cables designed to be used in cords do not automatically fall within the scope of the Construction Products Regulation and therefore there is no reference to EuroClass in this clause.

4 RECOMMENDED CONNECTIVITY

4.1 Information technology cabling

All 4-pair balanced cabling shall be terminated at panels, TOs and, where relevant, CPs in accordance with option T568B within ANSI/TIA/EIA-T568-0.D.

4.2 Horizontal cabling containing CPs

The CP is recommended to take the form of a 24-port panel as used in the floor distributor. It is recommended that a CP is located to serve no more than 18 No. TOs at the initial planning stage. This allows a 33 % increase in TOs to be served from the CP over the life of the infrastructure. The CPs should be located in ceiling spaces, sub-floor areas or in wall-mounted cabinets.

4.3 Telecommunications backbone cabling

4.3.1 Panels

The panels presenting the CW 1308 cables at the building and floor distributors are recommended to conform to the requirements for TD panels (see ISP-02-001) and to contain 50 pairs. Each RJ45 connection should present two pairs within the cables meaning that 2 pairs remain spare within each 50 pair cable).

5 ACCOMMODATION OF THE FUNCTIONAL ELEMENTS

5.1 General

This document specifies the pathways and pathway system(s) accommodating:

- building backbone cables;
- horizontal cables;
- CP cords.

In addition, this document specifies the accommodation of:

- building distributor cabinets containing:
 - equipment
 - patch cords and equipment cords
 - panels presenting the campus backbone cables;
 - panels presenting the building backbone cables;
- floor distributor cabinets containing:
 - equipment
 - patch cords and equipment cords
 - panels presenting the building backbone cables;
 - panels presenting the horizontal cables;
- consolidation points (CPs);
- TOs.

5.2 Accommodation for building backbone cables, horizontal cables and CP cords

5.2.1 Pathways at building or floor distributor cabinets

The pathway selected shall provide the segregation between telecommunications cabling and mains power cabling described in 5.2.2 and 5.2.3.

Pathway systems shall enter customers' cabinets from below. This allows cooling equipment (e.g. fan units) to be fitted in the roof of the cabinets and allows unobstructed airflow around the equipment within the cabinet (see 5.3). This is particularly important in view of the growing use of IEEE802.3bt equipment that can significantly increase the heat generated within cabinets.

5.2.2 General segregation requirements for metallic distribution cables and mains power cabling

The segregation of metallic telecommunications cabling and mains power cabling shall be in accordance with BS 6701 with regard to safety and protection. Segregation in accordance with the requirements of this document will ensure conformance to BS 6701 for mains power cabling of up to 600 VAC.

5.2.3 General segregation requirements for metallic distribution cables and electromagnetic interference sources

5.2.3.1 General

BS EN 50174-2 contains clear requirements regarding segregation of balanced cables and power supply cables. This document applies the requirements of BS EN 50174-2 in total but provides the sub-clauses 5.2.3.2 and 5.2.3.3 as a simple reference to the basic requirements.

5.2.3.2 Segregation of distribution cables and power supply cabling

The separation requirement "A" is calculated by multiplying the minimum separation distance "S" obtained from Table 1 by the power cabling factor "P" from Table 2.

Where mains power cables (other than single core cables operating at voltages exceeding AC 600 V) pass through a fire barrier it is possible to reduce the calculated separation requirements of this sub-clause provided that:

- the total distance over which the reduction in the separation occurs is not greater than the thickness of the fire segregation barrier plus 0,5 m on either side;
- the external balanced cables and mains power cables are enclosed in separate metal trunking or conduit;
- national regulations concerning fire barriers are complied with;
- the requirements of BS 7671 are complied with.

Table 1 - Minimum separation distance "S" for external balanced cables

Separation without electromagnetic barrier	Containment applied to information technology or mains power cabling		
	Open metallic containment ^a	Perforated metallic containment ^{b, c}	Solid metallic containment ^d
300 mm	225 mm	150 mm	0 mm
^a Screening performance (0 MHz to 100 MHz) equivalent to welded mesh steel basket of mesh size 50 mm x 100 mm (excluding ladders). This screening performance is also achieved with steel tray (trunking without cover) of less than 1,0 mm wall thickness and/or more than 20 % equally distributed perforated area. ^b Screening performance (0 MHz to 100 MHz) equivalent to steel tray (trunking without cover) of at least 1,0 mm wall thickness and no more than 20 % equally distributed perforated area. This screening performance is also achieved with screened power cables that do not meet the performance defined in footnote d. ^c The upper surface of installed cables shall be at least 10 mm below the top of the barrier. ^d Screening performance (0 MHz to 100 MHz) equivalent to a steel conduit of 1,5 mm wall thickness. Separation specified is in addition to that provided by any divider/barrier. The assumption underlying the material performance of the conduit is that the product of the permeability and conductivity is greater than 38 H•S/m ² . This performance is not provided by stainless steel, aluminium and non-magnetic materials.			

Table 2 - Power cabling factor

Electrical circuit type ^{a, b, c}	Quantity of circuits	Power cabling factor <i>P</i>
20 A 230 V 1-phase	1 to 3	0,2
	4 to 6	0,4
	7 to 9	0,6
	10 to 12	0,8
	13 to 15	1,0
	16 to 30	2
	31 to 45	3
	46 to 60	4
	61 to 75	5
	> 75	6
^a 3-phase cables shall be treated as 3 off 1-phase cables. ^b More than 20 A shall be treated as multiples of 20 A. ^c Lower voltage AC or DC power supply cables shall be treated based upon the their current ratings, i.e. a 100 A 50 V DC cable = 5 of 20 A cables (P = 0,4).		

Within the horizontal cabling no segregation is required between information technology cabling and power supply cabling where the power conductors are maintained in close proximity (e. g. within an overall sheath or twisted, taped or bundled together) and form only single phase circuits of no greater than 32 A.

5.2.3.3 Separation of balanced cables and specific electromagnetic interference sources

The separation requirements of Table 3 shall be applied where information technology cabling is installed in proximity to the EMI sources listed.

Table 3 - Separation requirements for specific EMI sources

Source of disturbance	Minimum distance (mm)
Fluorescent lamps	130
Neon lamps	130
Mercury vapour lamps	130
High-intensity discharge lamps	130
Copiers	400

5.2.4 General segregation requirements for optical fibre distribution cables and electromagnetic interference sources

No requirements or recommendations.

5.2.5 Pathway system selection

5.2.5.1 General

BS EN 50174-1 and BS EN 50174-2 contain clear requirements regarding selection of pathway systems. This document applies the requirements of BS EN 50174-1 and BS EN 50174-2 in total but details the following requirements as a simple reference.

Pathway systems of the types listed below shall comply with the relevant European standards:

- non-flame propagating conduit systems: BS EN 61386-1 and the relevant part 2 (see Bibliography);
- non-flame propagating trunking and ducting systems: BS EN 50085-1 and the relevant part 2 (see Bibliography);
- non-flame propagating tray and ladder systems: BS EN 61537.

Unless the express authority of the Network Operations Manager has been obtained then pathway systems shall be of a non-flame propagating type as defined the standards listed above.

The dimensions of the pathway systems shall enable the maximum allocated number of distribution cables to be installed;

- on a phased basis without risk of damage to the cables;
- while maintaining the bend radius of the cables.

The following recommendations apply:

- enclosed shapes provide the best electromagnetic protection to the installed cables by reducing the common mode coupling;
- trays with small slots, for easy attachment of cable, parallel to the axis of the tray provide the best electromagnetic protection to the installed cables;
- tray with slots, for easy attachment of cable, perpendicular to the tray axis should not be used.

5.2.5.2 Pathways serving TOs

The recommendations of this sub-clause are those of OUT.

Where TOs are served by trunking, the trunking should have design features that enable the segregation requirements of 5.2.2, 5.2.3 and 5.2.4 to be complied with. The installation of the distribution cabling and the mains power cabling should observe the relevant design features.

Note: where TOs are served by 3-compartment trunking, segregation requirements of 5.2.2 and 5.2.3 force the distribution cabling and mains power cabling to be installed in the outer compartments. Only cabling terminations are housed in the central compartment.

Where TOs are served by conduit:

- the conduit should be continuous to the TO from the point at which the cable leaves the main pathway system (e.g. tray).
- the conduit should not serve more than four TOs;
- the conduit should be of at least 25 mm diameter;
- no section of conduit shall contain more than two swept 90-degree bends, or equivalent, between pull points;
- no section of conduit shall be longer than 30 m (100 ft) between pull points;
- the inside radius of a bend in conduit shall be at least 75 mm.

5.2.6 Pathway system installation

BS EN 50174-2 contains clear requirements regarding installation of pathway systems. This document applies the requirements of BS EN 50174-2 in total but details the following requirements as a simple reference.

Pathway systems shall be installed:

- in accordance with instructions provided by the manufacturer(s)/supplier(s) of the pathway systems;
- to allow installation and removal of the cable without risk of damage to the cable;
- without sharp edges or corners that could damage the cabling installed within or upon them;
- to ensure that water or other contaminant liquids cannot collect.

Where a conducting pathway system is installed, sections shall be bonded to earth in accordance with BS 7671 in order that the pathway system acts as a parallel earthing conductor (PEC).

5.2.7 Cable installation

BS EN 50174-2 contains clear requirements regarding installation of cables. This document applies the requirements of BS EN 50174-2 in total but details the following requirements as a simple reference.

When installing cables, cords or jumpers appropriate techniques shall be applied to:

- eliminate cable stress as caused by:
 - tension in suspended cable runs;
 - tightly cinched cable bundles;
- ensure that minimum bend radii are never less than those specified in the product standard (rollers or other devices shall be used to avoid damage);
- ensure that the maximum pulling tensions taken from the cable specifications are not exceeded;
- prevent pressure marks (e.g. through improper fastening or crossovers) on the cable sheath or the cable elements;
- avoid joints other than those in accordance with the installation specification.

When installing cables into cable tray, the bundles created shall be lower than the sidewalls of the tray.

The installation process shall not degrade the intended environmental performance of the pathway/pathway system e.g. water seals and fire barriers shall be re-fitted upon completion of the installation.

Cable ends shall remain sealed during installation to prevent the ingress of water and other contaminants.

Cables that are not terminated in a cabinet, frame or rack should not be routed within the physical boundaries of that cabinet, frame or rack.

5.3 Accommodation for customers' cabinets

BS EN 50174-1 contains clear requirements regarding accommodation of cabinets, frames and racks. This document applies the requirements of BS EN 50174-1 in total but details the following requirements as a simple reference.

The location of cabinets, frames and racks shall:

- allow subsequent measurements, repair, expansion or extension of the installed cabling may be undertaken without risk of injury to personnel;
- be consistent with the space, floor loading and other services required for information technology equipment;
- allow the installation of the necessary cabling together with the delivery and removal of larger items of apparatus;

- provide a minimum clearance of 1,2 m on all faces of the where access is required;
- allow for the installation of additional cabling without major disruption.

Cabinets, frames and racks shall not be installed:

- in toilet facilities and kitchens;
- in emergency escape ways;
- in ceiling or sub-floor spaces;
- within cabinets or closures containing fire hose reels or other fire-extinguishing equipment.

Cabinets (or the closures within them) shall provide the necessary levels of physical and environmental protection for the distribution cabling and equipment installed and shall achieve the necessary protection by their location, design features or a combination of both. Where necessary, atmospheric control shall be provided within the space and/or the cabinets.

The design and dimensions of the cabinets, together with clearances (including those above and below them, as appropriate) shall ensure that:

- it is possible to install the initial quantity of cables in accordance with the minimum bend radii (installation and operating). Where multiple cable types are involved, the largest minimum bend radius shall apply;
- additional cables can be subsequently installed in accordance with the minimum bend radii (installation and operating). Where multiple cable types are involved, the largest minimum bend radius shall apply;
- facilities for the management of cables and cords are provided.

5.4 Accommodation for CPs

5.4.1 General

BS EN 50174-1 and BS EN 50174-2 contain clear requirements regarding location and accommodation of termination points and the closures housing those termination points. This document applies the requirements of BS EN 50174-1 and BS EN 50174-2 in total but details the following requirements as a simple reference.

5.4.2 Location

Closures for CPs shall provide the necessary levels of physical and climatic protection for the cables and the connecting hardware. The closure or the CP shall achieve the necessary protection by their location, design features or a combination of both.

The location of TOs shall:

- allow subsequent measurements, repair, expansion or extension of the installed cabling to be undertaken without risk of injury to personnel;
- provide adequate clearances for the closure containing the CP to be installed without damage to cabling components and in accordance with the minimum bend radii (installation and operating);
- be in accordance with national or local regulations.

5.4.3 Closures

The cable entrance to the closure at the CP shall:

- maintain the environmental performance of the CP;
- provide the necessary cable support and prevent kinking at the point of entry;
- provide strain relief for the cable if not already done by separate fixtures;
- be capable of accepting suitable glands.

5.5 Accommodation for TOs

5.5.1 General

BS EN 50174-1 and BS EN 50174-2 contain clear requirements regarding location and accommodation of termination points and the closures housing those termination points. This document applies the requirements of BS EN 50174-1 and BS EN 50174-2 in total but details the following requirements as a simple reference.

5.5.2 Location

The location of TOs shall:

- allow subsequent measurements, repair, expansion or extension of the installed cabling to be undertaken without risk of injury to personnel;
- take into account the level of security required for the attached information technology equipment (e.g. termination points to which networking equipment such as wireless access points is attached may need to be located to prevent unauthorised access);
- provide adequate clearances for the closure containing the TO to be installed without damage to cabling components and in accordance with the minimum bend radii (installation and operating);
- be in accordance with national or local regulations.

The location of TOs should:

- minimise the length of cords attached from them to the terminal equipment;
- reflect the proposed occupancy of the premises, based upon floor area or upon a specific application requirement but allowing for any foreseeable future variations.

5.5.3 Closures

5.5.3.1 General

Closures for TOs shall provide the necessary levels of physical and climatic protection for the cables and the connecting hardware. The closure or the TO shall achieve the necessary protection by their location, design features or a combination of both.

The cable entrance to the closure at the TO shall:

- maintain the environmental performance of the TO;
- provide the necessary cable support and prevent kinking at the point of entry;
- provide strain relief for the cable if not already done by separate fixtures;
- be capable of accepting suitable glands.

5.5.3.2 Floor-boxes

Where TOs are housed in floor-boxes, a service loop of 3 m length should be provided to allow the floor-box to be repositioned.

5.5.3.3 Wall boxes (stand-alone or within trunking systems)

BS EN 50173-2 requires each define work area to be served by at least two TOs. OUT recommends that the backbox used:

- for each 2-port presentation should be 1-gang and at least 28 mm depth;
- for each 4-port presentation should be 2-gang and at least 28 mm depth.

6 ACCEPTANCE TESTING

No specific test recommendations are included for telecommunications backbone and optical fibre cabling.

For 4-pair balanced cabling, transmission performance tests are able to confirm that the permanent link requirements in accordance with BS EN 50173-1 are met. It is recommended that the test result should be provided as part of the documentation covering the installation. Balanced cabling tests should include the full characterisation traces.

Document IISS-01-001 provides further information on assessment of test results.

7 ADMINISTRATION SYSTEMS

It is a strategic objective and a normative requirement of BS EN 50174-1 to apply an integrated administration system to the cabling infrastructures of, and supported by, University of Oxford IT Services.

Although it is not necessary to define the specific administration tools in this document, the format of documentation containing the details of the fixed infrastructures is critical to future integration.

The data supplied by installers should allow a full and proper completion of the fields applicable to the cabling sub-system.

Table 4, Table 5 and Table 6 show a common format for distribution cabling implementations. This type of administration system allows an integrated record keeping system to be implemented as shown in ISP-00-001.

Table 4 - Example of field listing for optical fibre backbone cabling infrastructures

	Backbone OF	
Fields	Group	Example
Building	1	Walker Annex
Floor		L
Closet		WA-CR
Cabinet		WA-CR-2
Closure Type		MMF Panel
MMF Panel ID		MMP-01
Port Type		OFC Port
OFC Port		FC-01
Cable Type	2	Cable-MMF-12
Cable-MMF-12 ID		MMF-12-01
Building	3	Walker Annex
Floor		2
Closet		
Cabinet		M-2-01
Closure		MMF Panel
MMF Panel ID		MMP-01
Port Type		OFC Port
OFC Port		FC-01

Table 5 - Example of field listing for telecommunications backbone cabling infrastructures

	Telecommunications backbone cabling	
Building	1	Walker Annex
Floor		L
Closet		WA-CR
Cabinet		WA-CR-2
Closure Type		VP Panel
VP Panel ID		DP-2-21
Port Type		RJ45
RJ45 Port ID		RJ45-12
Cable Type	2	Cable-BV-100
Cable-BV-100 ID		CIV-1
Building	3	Walker Annex
Floor		2
Closet		WA-CR
Cabinet ID		M-2-01
Closure Type		VP Panel
VP Panel ID		DP-2-38
Port Type		RJ45
RJ45 Port ID		RJ45-12

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Table 6 - Example of field listing for 4-pair balanced backbone and horizontal cabling infrastructures

	Backbone cabling		Horizontal cabling	
Building	1	Walker Annex		
Floor		L		
Closet		WA-CR		
Cabinet		WA-CR-2		
Closure Type		Distribution Panel		
Distribution Panel ID		DP-2-21		
Port Type		RJ45		
RJ45 Port ID		RJ45-12		
Cable Type	2	Cable-Cat.5e-4		
Cable-Cat.5e-4		H4323		
Building	3	Walker Annex		
Floor		2		
Closet				
Cabinet		M-2-01		
Closure Type		Distribution Panel		
Distribution Panel ID		DP-2-15		
Port Type		RJ45		
RJ45 Port ID		RJ45-12		
Building			1	Walker Annex
Floor				2
Closet				
Cabinet				M-2-1
Closure Type				Distribution Panel
Distribution Panel ID				DP-2-18
Port Type				RJ45
RJ45 Port ID				RJ45-12
Horizontal Cable			2	Cable-Cat.5e-4
Cable-Cat.5e-4				H4323
Building			3	Walker Annex
Floor				2
Closet				
Cabinet				
Closure Type				CP
CP ID				CP-28
Port Type				RJ45
RJ45 Port				RJ45-12
Horizontal Cable			4	CP Cord
CP Cord				6578
Building			5	Walker Annex
Floor				2
Closet				
Cabinet				
Closure Type				TO-2
TO-2				WA-2-01
Port Type				RJ45
RJ45 Port				RJ45-02

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459 **8 OTHER DOCUMENTS IN THIS SERIES**

- 460 IISS-00-001: Infrastructure Installation Specification Strategy: Overview
461 IISS-00-002: Infrastructure Installation Specification Strategy: Distributed building services
462 IISS-01-001: Assessment of balanced cabling test results
463 IISS-01-002: Installation and acceptance testing of singlemode optical fibre cabling
464
465
466 ISP-00-001: Infrastructure Specification Project: Overview
467 *ISP-00-002: Access to University of Oxford IT Services facilities (later)*
468 ISP-01-001: University of Oxford IT Services Entrance Facilities - Product and design specification
469 ISP-01-002: University of Oxford IT Services Entrance Facilities - Accommodation requirements
470 ISP-02-001: University of Oxford IT Services Intermediate cabling (INTI-ENTI) - Product and design specification
471 ISP-02-002: University of Oxford IT Services Intermediate cabling (INTI-ENTI) - Accommodation requirements
472 ISP-03-001: Distribution cabling - Recommendations: Overview
473 ISP-03-002: Direct-connect cabling - Recommendations: Telecommunications infrastructure
474 ISP-03-004: Distribution cabling - Recommendations: Distributed building services infrastructure
475
476
477

478 **NORMATIVE REFERENCES**

479 The following documents are required to be applied in a normative manner (i.e. mandated) by the users of this document.

480

BS 6701:2016 + Amendment 1:2017	Telecommunications equipment and telecommunications cabling - Specification for installation, operation and maintenance
BS 7671:2018	Requirements for electrical installations: IEE Wiring Regulations: 18th edition
BS EN 13501-6	Fire classification of construction products and building elements. Classification using data from reaction to fire tests on electric cables
BS EN 50174-1:2018	Information technology - Cabling installation - Part 1: Installation specification and quality assurance
BS EN 50174-2:2018	Information technology - Cabling installation - Part 2: Installation planning and practices inside buildings
BS EN 60332-1-2	Tests on electric and optical fibre cables under fire conditions. Test for vertical flame propagation for a single insulated wire or cable. Procedure for 1 kW pre-mixed flame

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483

BIBLIOGRAPHY

484 The following documents are considered useful reference sources for the users of this document.

485

ANSI/TIA-568-0.D	Generic Telecommunications Cabling for Customer Premises
ANSI/TIA-568-2.D	Balanced Twisted-Pair Telecommunications Cabling and Components Standards
BS EN 50085-1:2005 + Amendment 1:2013	Cable trunking systems and cable ducting systems for electrical installations. General requirements
BS EN 50085-2-1:2006 + Amendment 1:2011	Cable trunking systems and cable ducting systems for electrical installations. Cable trunking systems and cable ducting systems intended for mounting on walls and ceilings
BS EN 50085-2-2:2008	Cable trunking systems and cable ducting systems for electrical installations. Particular requirements for cable trunking systems and cable ducting systems intended for mounting underfloor, flushfloor, or onfloor
BS EN 50085-2-3:2010	Cable trunking and cable ducting systems for electrical installations. Particular requirements for slotted cable trunking systems intended for installation in cabinets
BS EN 50085-2-4:2009	Cable trunking systems and cable ducting systems for electrical installations. Particular requirements for service poles and service posts
BS EN 50173-1:2018	Information technology - Generic cabling systems - General requirements
BS EN 50173-2:2018	Information technology - Generic cabling systems - Office premises
BS EN 50310:2016	Information technology - Telecommunications bonding networks for buildings and other structures
BS EN 61386-1:2008	Conduit systems for cable management. General requirements
BS EN 61386-21:2004 + A11:2010	Conduit systems for cable management. Particular requirements. Rigid conduit systems
BS EN 61386-22:2004 + A11:2010	Conduit systems for cable management. Particular requirements. Pliable conduit systems. pliable conduit systems
BS EN 61386-23:2004 + A11:2010	Conduit systems for cable management. Particular requirements. Flexible conduit systems
BS EN 61386-24:2010	Conduit systems for cable management. Particular requirements. Conduit systems buried underground
BS EN 61537:2007	Cable management. Cable tray systems and cable ladder systems
IEEE P802.3bt	IEEE Standard for Information Technology - Telecommunications and Information Exchange Between Systems - Local and Metropolitan Area Networks - Specific Requirements - Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications - Data Terminal Equipment (DTE) Power Via Media Dependent Interface (MDI): Amendment 2: Power over Ethernet over 4 Pairs

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