

University of Oxford IT Services Infrastructure Specification Project

ISP-02-002: University of Oxford IT Services Intermediate cabling (INTI-ENTI) - Accommodation requirements

1 INTRODUCTION

1.1 Scope

This document specifies the accommodation of the products used in the provision of the University of Oxford IT Services Entrance Facilities installed in each of the premises served by the University of Oxford IT Services external cabling infrastructure.

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 Responsibilities

Figure 1 shows a schematic of the elements used to create the University of Oxford IT Services Intermediate Cabling and how they relate to the other cabling-related functional elements within the premises served. Figure 1 uses the definitions and abbreviations of clause 1.3 of ISP-00-001.

While the elements of the University of Oxford IT Services Entrance Facilities are the property of University of Oxford IT Services they are accommodated within the customers' premises served and the ownership of that accommodation lies with the customer.

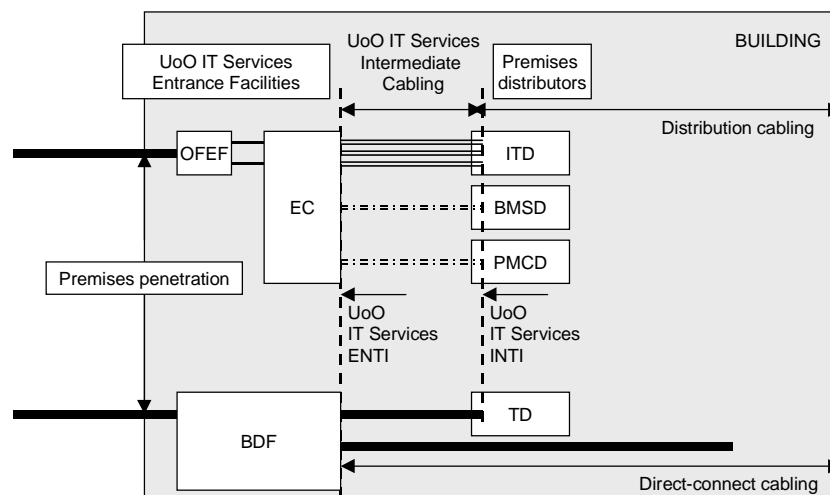


Figure 1 - Schematic of premises infrastructure served by the University of Oxford IT Services

2 ACCOMMODATION OF THE FUNCTIONAL ELEMENTS

2.1 General

The accommodation of the University of Oxford IT Services Entrance Facilities is specified in ISP-01-002.

This document specifies the pathways and pathway system(s) accommodating the Intermediate Cables. In addition, this document specifies the accommodation of:

- the TD panels;
- the ITD panels.

2.2 Accommodation for Intermediate Cables

2.2.1 Pathways at BDF, CE and customers' cabinets

The pathway selected shall provide the segregation between intermediate cables and mains power cabling described in 2.2.2 and 2.2.3.

In order to prevent the ingress of contaminants into the closures via the cable gland (if present) pathways shall enter:

- box- or cabinet-based BDFs from below;
- CE cabinets from below.

There are no requirements for the pathway routes into frame-based BDFs.

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 2.3). This is particularly important in view of the growing use of IEEE P802.3bt and other remote powering equipment that can significantly increase the amount of heat generated within cabinets.

2.2.2 General segregation requirements for Intermediate BDF and EC cables and mains power cabling

The segregation of intermediate cables 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.

2.2.3 Segregation requirements for Intermediate BDF and EC cables and electromagnetic interference sources

2.2.3.1 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 sub-clauses 2.2.3.2, 2.2.3.3 and 2.2.3.4 provide a simple, but limited, reference to those requirements.

2.2.3.2 Segregation of Intermediate BDF 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.

2.2.3.3 Segregation of Intermediate EC 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 Intermediate BDF and Intermediate EC 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). | | |

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 |

2.2.3.4 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.

2.2.4 Pathway system selection

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 Normative References);
- non-flame propagating trunking and ducting systems: BS EN 50085-1 and the relevant part 2 (see Normative References);
- 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 between a BDF and a customers' cabinet (or group of cabinets) containing TD panels shall enable the maximum allocated number of Intermediate BDF Cables to that cabinet (or group of cabinets) to be installed;

- on a phased basis without risk of damage to the cables;
- while maintaining the bend radius of the cables (200 mm).

The minimum dimensions of the pathway systems are shown in Table 4.

Table 4 – Dimensions of Intermediate BDF Cable pathway system

| Number of allocated TD panels (see Table 5) served by pathway system | Pathway cross-sectional area (mm ²) | Pathway cross-section for tray/basket | Number of allocated TD panels (see Table 5) served by pathway system | Pathway cross-sectional area (mm ²) | Pathway cross-section for tray/basket |
|--|---|---------------------------------------|--|---|---------------------------------------|
| 1 | 600 | 30 mm x 50 mm | 11 | 3800 | 30 mm x 125 mm |
| 2 | 950 | 30 mm x 50mm | 12 | 3800 | 30 mm x 125 mm |
| 3 | 950 | 30 mm x 50 mm | 13 | 4775 | 30 mm x 150 mm |
| 4 | 1925 | 30 mm x 75 mm | 14 | 4775 | 30 mm x 150 mm |
| 5 | 1925 | 30 mm x 75 mm | 15 | 4775 | 30 mm x 150 mm |
| 6 | 1925 | 30 mm x 75 mm | 16 | 5750 | 30 mm x 150 mm |
| 7 | 2900 | 30 mm x 100 mm | 17 | 5750 | 30 mm x 225 mm |
| 8 | 2900 | 30 mm x 100 mm | 18 | 5750 | 30 mm x 225 mm |
| 9 | 2900 | 30 mm x 100 mm | 19 | 6800 | 30 mm x 225 mm |
| 10 | 3800 | 30 mm x 125 mm | 20 | 6800 | 30 mm x 225 mm |

The dimensions of the pathway systems between an EC and a customers' cabinet containing an ITD panel shall be such that the cross-sectional area of the pathway system is not less than 1800 mm². This enables 24 No. Intermediate EC Cables to that cabinet (or group of cabinets) to be installed;

- on a phased basis without risk of damage to the cables;
- while maintaining the bend radius of the cables (50 mm).

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.

2.2.5 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 required by University of Oxford IT Services, sections of pathway systems shall be jointed to prevent ingress of gases, liquids, etc.

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).

2.2.6 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.

Under no circumstances shall cables that are not terminated in a cabinet, frame or rack be routed within the physical boundaries of that cabinet, frame or rack.

2.3 Accommodation for TD and ITD panels

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.

The cabinets containing TD and ITD panels shall be configured as shown in Figure 2, Figure 3 and Figure 4. These configurations have been developed in accordance with the recommendations of BS 6701 and the standards referenced from it e.g. BS EN 50174-1 and BS EN 50174-2 to enable:

- the length of cords to be minimized and the routing of cords to be simplified;
- adequate space for the provision of horizontal and vertical routing and dressing fixtures for cables and cords;
- adequate space for the storage of any spare cable and cord lengths without causing any obstruction.

The figures show a range of configurations depending upon the number of IT distribution cabling lines supported by the cabinet. It is assumed that the IT distribution cabling panels each contain 24 No. RJ45 outlets.

The contents of the figures are summarised as follows:

- the ITD panel is presented at the top of the cabinet housed between two cord management panels;
- although not all cabinets will initially feature ITD panels, a 3U allocation shall be made;
- the TD panels are presented at the bottom of the cabinet;
- the distribution panels are presented immediately above the TD panels;
- the number of distribution panels takes into account expected growth of at least 25% in the number of user outlets within the customers' premises served by the cabinet (growth allocation is shown as expansion panels);
- the number of TD panels shown includes the growth and is not necessarily the initial number of TD panels installed.

The figures assume that cooling equipment (fan units) will be placed in the roof of the cabinet. If a fan-tray is to be used in position 01 in the figures, the 3U space allocated to the ITD panel and associated cord management panels can be moved down by 1U to take positions 02, 03 and 04.

The space allocation is summarised in Table 5. The initial number of IT distribution cabling lines in Table 5 is limited to 240.

Table 5 - Space allocation within customers' cabinets

| Initial number of IT distribution cabling lines | No. of IT distribution panels (+ expansion) | No of IT distribution cord management panels | No. of TD panels allocated | TD space allocation (U) (shaded in Figures) | ITD space allocation (U) (shaded in Figures) | Total |
|---|---|--|----------------------------|---|--|-------|
| 24 | 1 (+1) | 1 | 1 | 3 | 3 | 9 |
| 48 | 2 (+1) | 2 | 2 | 4 | 3 | 12 |
| 72 | 3 (+1) | 2 | 2 | 4 | 3 | 13 |
| 96 | 4 (+1) | 3 | 3 | 6 | 3 | 17 |
| 120 | 5 (+2) | 4 | 4 | 7 | 3 | 21 |
| 144 | 6 (+2) | 4 | 4 | 7 | 3 | 22 |
| 168 | 7 (+2) | 5 | 5 | 9 | 3 | 26 |
| 192 | 8 (+2) | 5 | 5 | 9 | 3 | 27 |
| 216 | 9 (+3) | 6 | 6 | 10 | 3 | 31 |
| 240 | 10 (+3) | 7 | 7 | 12 | 3 | 35 |

The layout of the IT distribution cabling panels and the associated cord management panels is outside the scope of this document. However the minimum space allocation and position of that space for TP panels and ITD panels is a normative requirement this document.

| CUSTOMERS' CABINET | | |
|--------------------|-----------------------|-----------|
| | 01 | 24 |
| 01 | CMP | |
| 02 | To EC | ITD panel |
| 03 | CMP | |
| | EQUIPMENT | |
| 04+E | CMP | |
| 05+E | Distribution panel | |
| 06+E | Expansion panel/blank | |
| 07+E | CMP | |
| 08+E | To BDF | TD panel |
| 09+E | CMP | |

Customers' cabinet configuration for up to 24 distribution lines

| CUSTOMERS' CABINET | | |
|--------------------|-----------------------|-----------|
| | 01 | 24 |
| 01 | CMP | |
| 02 | To EC | ITD panel |
| 03 | CMP | |
| | EQUIPMENT | |
| 04+E | CMP | |
| 05+E | Expansion panel/blank | |
| 06+E | CMP | |
| 07+E | Distribution panel | |
| 08+E | Distribution panel | |
| 09+E | CMP | |
| 10+E | To BDF | TD panel |
| 11+E | To BDF | TD panel |
| 12+F | CMP | |

Customers' cabinet configuration for up to 48 (initial) distribution lines

| CUSTOMERS' CABINET | | |
|--------------------|-----------------------|-----------|
| | 01 | 24 |
| 01 | CMP | |
| 02 | To EC | ITD panel |
| 03 | CMP | |
| | EQUIPMENT | |
| 04+E | CMP | |
| 05+E | Expansion panel/blank | |
| 06+E | Distribution panel | |
| 07+E | CMP | |
| 08+E | Distribution panel | |
| 09+E | Distribution panel | |
| 10+E | CMP | |
| 11+E | To BDF | TD panel |
| 12+E | To BDF | TD panel |
| 13+E | CMP | |

Customers' cabinet configuration for up to 72 (initial) distribution lines

| CUSTOMERS' CABINET | | |
|--------------------|-----------------------|-----------|
| | 01 | 24 |
| 01 | CMP | |
| 02 | To EC | ITD panel |
| 03 | CMP | |
| EQUIPMENT | | |
| 04+E | CMP | |
| 05+E | Expansion panel/blank | |
| 06+E | CMP | |
| 07+E | Distribution panel | |
| 08+E | Distribution panel | |
| 09+E | CMP | |
| 10+E | Distribution panel | |
| 11+E | Distribution panel | |
| 12+E | CMP | |
| 13+E | To BDF | TD panel |
| 14+E | CMP | |
| 15+E | To BDF | TD panel |
| 16+E | To BDF | TD panel |
| 17+E | CMP | |

Customers' cabinet configuration for up to 96 distribution lines

| CUSTOMERS' CABINET | | |
|--------------------|-----------------------|-----------|
| | 01 | 24 |
| 01 | CMP | |
| 02 | To EC | ITD panel |
| 03 | CMP | |
| | EQUIPMENT | |
| 04+E | CMP | |
| 05+E | Expansion panel/blank | |
| 06+E | CMP | |
| 07+E | Expansion panel/blank | |
| 08+E | Distribution panel | |
| 09+E | CMP | |
| 10+E | Distribution panel | |
| 11+E | Distribution panel | |
| 12+E | CMP | |
| 13+E | Distribution panel | |
| 14+E | Distribution panel | |
| 15+E | CMP | |
| 16+E | To BDF | TD panel |
| 17+E | To BDF | TD panel |
| 18+E | CMP | |
| 19+E | To BDF | TD panel |
| 20+E | To BDF | TD panel |
| 21+E | CMP | |

Customers' cabinet configuration for up to 120 distribution lines

| CUSTOMERS' CABINET | | |
|--------------------|-----------------------|-----------|
| | 01 | 24 |
| 01 | CMP | |
| 02 | To EC | ITD panel |
| 03 | CMP | |
| | EQUIPMENT | |
| 04+E | CMP | |
| 05+E | Expansion panel/blank | |
| 06+E | Expansion panel/blank | |
| 07+E | CMP | |
| 08+E | Distribution panel | |
| 09+E | Distribution panel | |
| 10+E | CMP | |
| 11+E | Distribution panel | |
| 12+E | Distribution panel | |
| 13+E | CMP | |
| 14+E | Distribution panel | |
| 15+E | Distribution panel | |
| 16+E | CMP | |
| 17+E | To BDF | TD panel |
| 18+E | To BDF | TD panel |
| 19+E | CMP | |
| 20+E | To BDF | TD panel |
| 21+E | To BDF | TD panel |
| 22+E | CMP | |

Customers' cabinet configuration for up to 144 distribution lines

Figure 2 - Customers' distribution cabinet configurations up to 144 lines

| CUSTOMERS' CABINET | | |
|--------------------|--------|-----------------------|
| 01 | | 24 |
| 01 | | CMP |
| 02 | To EC | ITD panel |
| 03 | | CMP |
| EQUIPMENT | | |
| 04+E | | CMP |
| 05+E | | Expansion panel/blank |
| 06+E | | CMP |
| 07+E | | Expansion panel/blank |
| 08+E | | Distribution panel |
| 09+E | | CMP |
| 10+E | | Distribution panel |
| 11+E | | Distribution panel |
| 12+E | | CMP |
| 13+E | | Distribution panel |
| 14+E | | Distribution panel |
| 15+E | | CMP |
| 16+E | | Distribution panel |
| 17+E | | Distribution panel |
| 18+E | | CMP |
| 19+E | To BDF | TD panel |
| 20+E | | CMP |
| 21+E | To BDF | TD panel |
| 22+E | To BDF | TD panel |
| 23+E | | CMP |
| 24+E | To BDF | TD panel |
| 25+E | To BDF | TD panel |
| 26+E | | CMP |

Customers' cabinet configuration for
up to 168 distribution lines

| CUSTOMERS' CABINET | | |
|--------------------|--------|-----------------------|
| 01 | | 24 |
| 01 | | CMP |
| 02 | To EC | ITD panel |
| 03 | | CMP |
| EQUIPMENT | | |
| 04+E | | CMP |
| 05+E | | Expansion panel/blank |
| 06+E | | Expansion panel/blank |
| 07+E | | CMP |
| 08+E | | Distribution panel |
| 09+E | | Distribution panel |
| 10+E | | CMP |
| 11+E | | Distribution panel |
| 12+E | | Distribution panel |
| 13+E | | CMP |
| 14+E | | Distribution panel |
| 15+E | | Distribution panel |
| 16+E | | CMP |
| 17+E | | Distribution panel |
| 18+E | | Distribution panel |
| 19+E | | CMP |
| 20+E | To BDF | TD panel |
| 21+E | | CMP |
| 22+E | To BDF | TD panel |
| 23+E | To BDF | TD panel |
| 24+E | | CMP |
| 25+E | To BDF | TD panel |
| 26+E | To BDF | TD panel |
| 27+E | | CMP |

Customers' cabinet configuration for
up to 192 distribution lines

| CUSTOMERS' CABINET | | |
|--------------------|--------|-----------------------|
| 01 | | 24 |
| 01 | | CMP |
| 02 | To EC | ITD panel |
| 03 | | CMP |
| EQUIPMENT | | |
| 04+E | | CMP |
| 05+E | | Expansion panel/blank |
| 06+E | | Expansion panel/blank |
| 07+E | | CMP |
| 08+E | | Expansion panel/blank |
| 09+E | | Distribution panel |
| 10+E | | CMP |
| 11+E | | Distribution panel |
| 12+E | | Distribution panel |
| 13+E | | CMP |
| 14+E | | Distribution panel |
| 15+E | | Distribution panel |
| 16+E | | CMP |
| 17+E | | Distribution panel |
| 18+E | | Distribution panel |
| 19+E | | CMP |
| 20+E | | Distribution panel |
| 21+E | | Distribution panel |
| 22+E | | CMP |
| 23+E | To BDF | TD panel |
| 24+E | To BDF | TD panel |
| 25+E | | CMP |
| 26+E | To BDF | TD panel |
| 27+E | To BDF | TD panel |
| 28+E | | CMP |
| 29+E | To BDF | TD panel |
| 30+E | To BDF | TD panel |
| 31+E | | CMP |

Customers' cabinet configuration for
up to 216 distribution lines

Figure 3 - Customers' distribution cabinet configurations up to 216 lines

| CUSTOMERS' CABINET | | |
|--------------------|--------|-----------------------|
| | 01 | 24 |
| 01 | | CMP |
| 02 | To EC | ITD panel |
| 03 | | CMP |
| EQUIPMENT | | |
| 04+E | | CMP |
| 05+E | | Expansion panel/blank |
| 06+E | | CMP |
| 07+E | | Expansion panel/blank |
| 08+E | | Expansion panel/blank |
| 09+E | | CMP |
| 10+E | | Distribution panel |
| 11+E | | Distribution panel |
| 12+E | | CMP |
| 13+E | | Distribution panel |
| 14+E | | Distribution panel |
| 15+E | | CMP |
| 16+E | | Distribution panel |
| 17+E | | Distribution panel |
| 18+E | | CMP |
| 19+E | | Distribution panel |
| 20+E | | Distribution panel |
| 21+E | | CMP |
| 22+E | | Distribution panel |
| 23+E | | Distribution panel |
| 24+E | | CMP |
| 25+E | To BDF | TD panel |
| 26+E | | CMP |
| 27+E | To BDF | TD panel |
| 28+E | To BDF | TD panel |
| 29+E | | CMP |
| 30+E | To BDF | TD panel |
| 31+E | To BDF | TD panel |
| 32+E | | CMP |
| 33+E | To BDF | TD panel |
| 34+E | To BDF | TD panel |
| 35+E | | CMP |

Customers' cabinet configuration for
up to 240 distribution lines

Figure 4 - Customers' distribution cabinet configurations up to 240 lines

2.4 Accommodation for BMSD panels

See requirements for ITD panels in 2.3.

2.5 Accommodation for PMCD panels

See requirements for ITD panels in 2.3.

2.6 Accommodation for customers' cabinets

In general the location of the customers' cabinets is outside the scope of this document.

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 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 information technology 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.

Under no circumstances shall cables that are not terminated in a cabinet, frame or rack be routed within the physical boundaries of that cabinet, frame or rack.

3 OTHER DOCUMENTS IN THIS SERIES

IISS-00-001: Infrastructure Installation Specification Strategy: Overview

IISS-00-002: Infrastructure Installation Specification Strategy: Distributed building services

IISS-01-001: Assessment of balanced cabling test results

IISS-01-002: Installation and acceptance testing of singlemode optical fibre cabling

ISP-00-001: Infrastructure Specification Project: Overview

ISP-00-002: Access to University of Oxford IT Services facilities (later)

ISP-01-001: University of Oxford IT Services Entrance facilities - Product and design specification

ISP-01-002: University of Oxford IT Services Entrance facilities - Accommodation requirements

| | |
|-----|--|
| 289 | ISP-02-001: University of Oxford IT Services Intermediate cabling (INTI-ENTI) - Product and design specification |
| 290 | ISP-03-001: Distribution cabling - Recommendations: Overview |
| 291 | ISP-03-002: Direct-connect cabling - Recommendations: Telecommunications infrastructure |
| 292 | ISP-03-003: Distribution cabling - Recommendations: IT infrastructure |
| 293 | ISP-03-004: Distribution cabling - Recommendations: Distributed building services infrastructure |
| 294 | |
| 295 | |
| 296 | |

297 **NORMATIVE REFERENCES**

298 The following documents are required to be applied in a normative manner (i.e. mandated) by the users of this document.
 299

| | |
|--|--|
| BS 6701:2016 + Amendment 1:2017 | Telecommunications equipment and telecommunications cabling - Specification for installation, operation and maintenance |
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