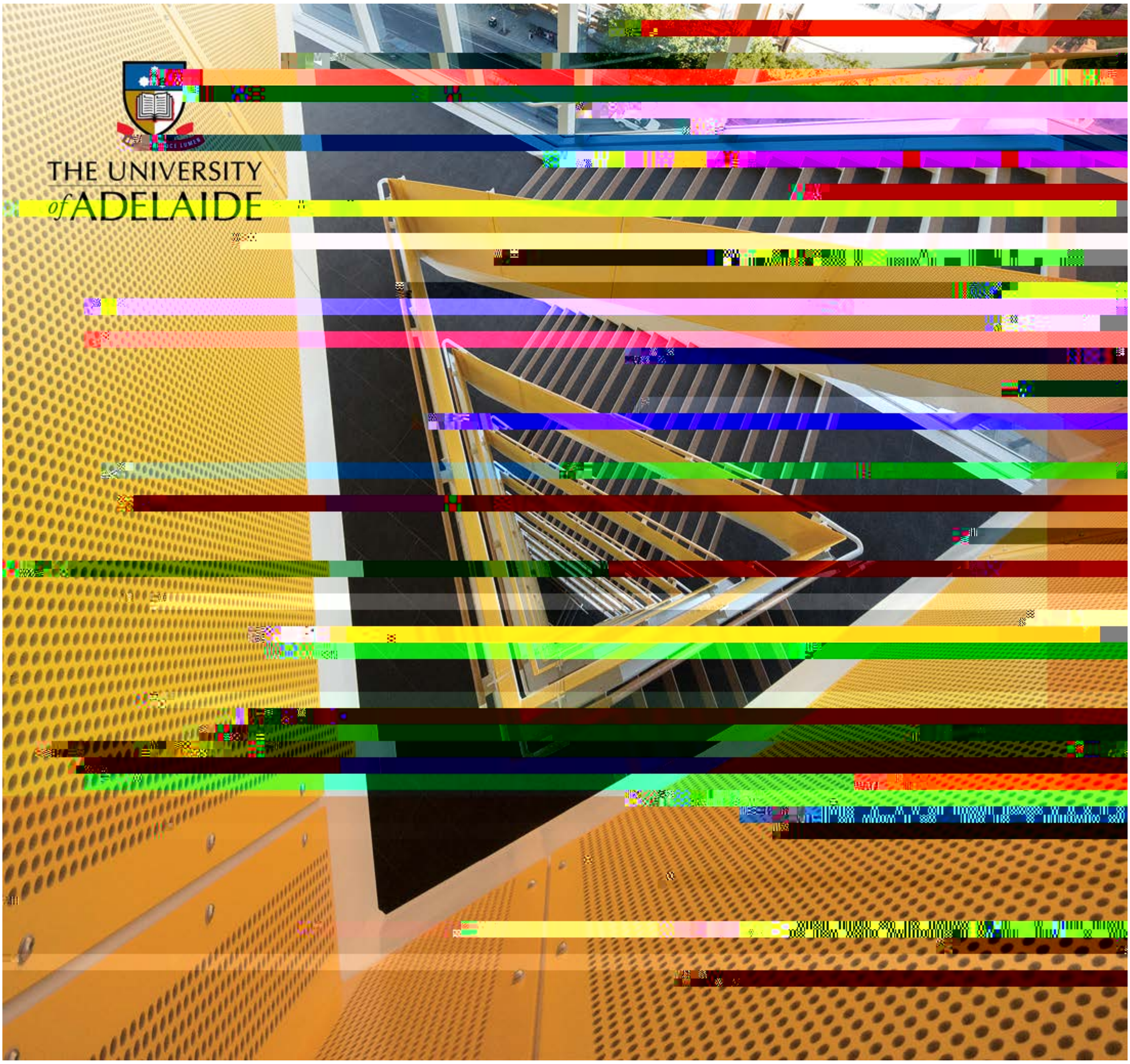


DESIGN STANDARD

E. Communication Services

Abbreviations

(refer –Standard Volume A. Project Process Checklist)

1. Introduction

(refer –Standard Volume A. Project Process Checklist)

2. General requirements

(refer –Standard Volume A. Project Process Checklist)

3. Technical requirements

This section outlines the specific technical requirements for E. Communication Services Design Standards.

3.1 Structured cabling

The design considerations are intended to facilitate the provision of functional spaces which are safe, comfortable and aesthetically pleasing.

The communications Structured Cabling System (SCS) 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 an office, throughout a building or across several buildings.

The cabling system may be quite small and simple, linking just a few nodes, or it may be extensive, linking several buildings with hundreds of nodes. The SCS shall provide a uniform design regardless of the size of the installation.

To facilitate the day-to-day operations of a normal office environment, the SCS shall readily enable additions, moves and changes, wherever and whenever necessary. Furthermore, the structured cabling system must also be flexible and provide the capability to carry a wide variety of applications - from high-speed local area network (LAN) applications to voice and low speed data.

UoA cabling systems are generally intended to serve for a long period of time. Whilst it is likely that transmission system requirements will

System architecture

The conceptual arrangement of a generic cabling system (from AS / NZS 3080) is illustrated in the figure below.

Figure 1. Generic cabling system

The distributors provide the means to construct different structured cabling system topologies such as bus, star, ring, and mesh or a combination of these. Furthermore, the distributor functions may be combined. The Structured Cabling System within UoA facilities will often combine the Building Distributor (BD) and Floor Distributor (FD) functions.

In general terms, use of Consolidation Points (CP) is discouraged and should be used only when planning for the project identifies that there is a need for localised architectural layout changes (for example, to wall or desk layouts) that would necessitate re-wiring of TOs from the FD with extensive ongoing costs to facilitate such changes.

3.1.3 Backbone cabling

Backbone cabling includes both campus and building backbone cabling subsystems. Campus backbone cabling runs between buildings and Building backbone cabling runs within buildings to provide the interconnection between the floor distributors and building distributors. The backbone cabling generally provides interconnection between active network equipment that may be within the same building or in separate buildings.

Campus backbone communications cabling shall be single mode optical fibre.

3.1.4 Horizontal cabling

The horizontal cabling subsystem extends from the telecommunications outlet (TO) to the associated distributor. It includes consolidation points (CP) that may be in the path (where applicable), but does not include work area cords between the terminal equipment and the TO. All horizontal cabling must not exceed 90m. All user area field TO’s must be installed within 2m of the work station. All concealed space TOs must be installed within 2m of the customer equipment ie (Wireless Access Point).

TOs shall be cabled to the same level comms room as the TO is located unless otherwise specified.

The horizontal cabling shall be a star topology connecting each workplace telecommunications outlet to a patch point at a distributor as shown.

Figure 2. Horizontal cabling

3.2 Balanced cabling

This section applies to Category 6 and above cabling in horizontal and backbone applications.

Balanced cabling shall meet the requirements of AS / CA S008 and shall meet or exceed the performance requirement of AS / NZS 3080 for the relevant performance Class.

Cable of the same manufacturer type shall be used throughout the entire installation.

Certification that the balanced cabling system meets the specified Class performance levels shall be provided by the installer.

3.2.1 Patch and work area cords

3.5 Equipment rooms

3.5.1 General

- Soft Wiring shall be cabled with a patch cord that shall be factory assembled, terminated and certified and fitted with male modular plug at one end. The desktop end shall be terminated with a black RJ45 socket that is the same standard as the horizontal cabling from the Communications Room.

3.9 Wireless

3.9.1 Wireless LAN Interfaces

Outlets used to interface with WLAN access points will be determined in conjunction with UoA IT operational-0.6(h)-4.5(a)-2(ll)7.5(b)-5.3006 TwTd(A

Marking shall consist of an optical fibre warning tag and is to include cable pair range identification and the words “UNIVERSITY OF ADELAIDE.”

Backbone voice cables terminating in Commscope rooms:

- Ports shall be sequentially numbered, left to right, bottom to top, using the letter V and three digits. Sequences shall start at 001 for each rack.
- The frame shall be labelled with the identifier of the CD / BD / FD that the backbone voice cable originates from and the corresponding vertical and pair range.

Backbone voice cables terminating in Panduit rooms:

- Cables to be presented at top of rack 2RU below top and be terminated on Commscope 25 way 1RU Voice Patch Panel

Labelling conventions for voice backbone cabling shall follow the general format:

- Source CD (eg building number “M458”, etc)
- Vertical
- Pair Range

3.16.3 Fibre

Each fibre termination through connector location in the termination unit shall be sequentially numbered from bottom to top and left to right with the appropriate engraved Treffolyte labels. Each end of each fibre core must be labelled with an attached number tag. Cores must be sequentially numbered within the cable.

Each end of each cable jacket must be clearly identified by cable sequence number for the route. Cable sequence numbers shall be determined in consultation with UoA Network Services

Fibre optic cable must be clearly marked in all exposed areas. Exposed areas would be at a point the cable leaves ducting or cable trays, in cable pits and fibre termination points.

Labelling of the cables shall be stainless steel labels affixed with stainless steel ties.

Marking is to consist of an optical fibre warning tag and is to include cable sequence number and the words “UNIVERSITY OF ADELAIDE.”

3.16.4 Outlets

The outlet labelling shall be equivalent to the designation of the horizontal cabling designation by which it is connected to the floor distributor.

3.17 Testing, commissioning and certification

3.17.1 General – current tester standards

The cabling system Contractor shall supply all labour, materials and equipment required for fully commissioning and testing the installation.

Testing shall be performed at the channel level wherever practicable.

Testing shall only be performed using calibrated test and simulation equipment. Vendors recommended tester shall be used.

The test results, for all cables, connectors and outlets shall be fully documented and tabulated, identifying each cable and each outlet or interface port by its label. All test results shall be included in the handover documentation.

Test results shall meet the requirements of AS 3085.1 Section 9.

3.17.2 Balanced cabling and connecting hardware

Test personnel and the test methodology shall comply with the requirements of AS / NZS IEC 61935.1:2006.

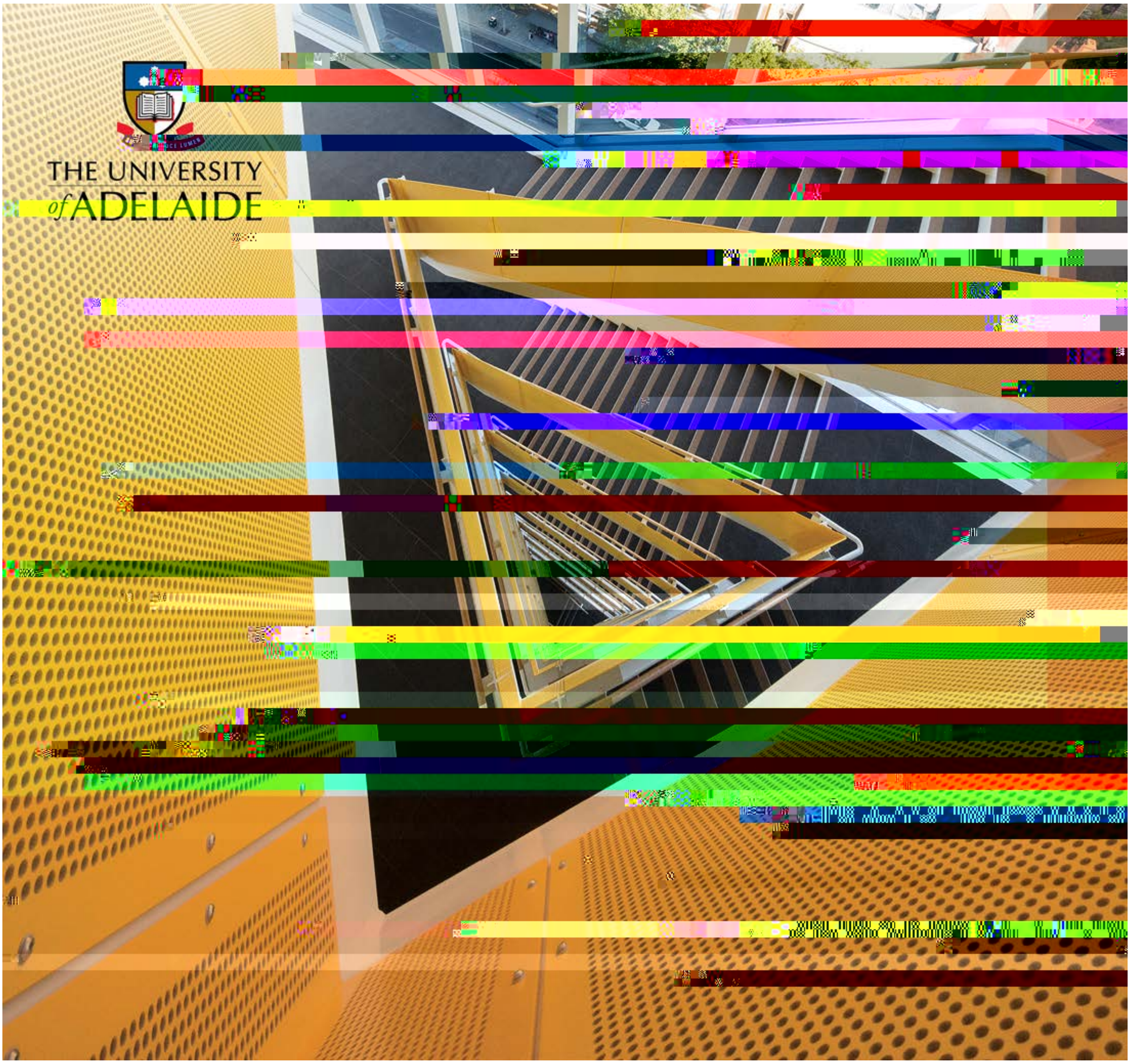
The acceptance testing and certification report section for balanced cabling shall include the test results for each outlet. The report shall include as a minimum the following details and tests results for each outlet:

- Cable and outlet / port identification
- Test equipment and test configuration details
- Wire map testing
- Cable length
- Cabling performance parameters as specified in AS / NZS 3080

- Date and time of testing
- Name and signature of testing engineer

The cable system shall be tested and certified to its Class channel performance in accordance with clause 6 of AS / NZS 3080:2013.

Figure 4. Typical False Wall layout example (Commscope Cat 6A)



SCHEDULES

E. Communication

4. Specifications

4.1.1 Preferred manufacturers

ITEM	PREFERRED MANUFACTURER

- 24 Port – CPPL24WBLY
- 48 Port – CPPL48WBLY
- Jacks for patch panels - CJ6X88TGBL-C
-

4.3 Capital works programs

Horizontal cabling systems shall be a minimum of Category 6a (Class A) balanced cabling.

All main cable trays and core holes shall have 30% spare capacity after project completion to allow for organic growth.

4.4 Expansion and upgrade to existing facilities

Upgrade or expansion works are to maintain uniformity with this standard (i.e. Cat 6 / 6a or OS2)

4.5 Cable pathways

Underground pathways

The minimum conduit count and size for lead-in cables to any permanent building is one 100mm conduits.

M-4.5(t)7-1.3(m)0.7(a)-2(n)-4.5(e)-1.9(n)-4.5(t)7.1( )0.5(b)1a-2(n)-155 -2.6(yh-4.5(g)65B8i(g)65B8iaT3.5(pe2(a)-2(t)TJ-0.007 Tc 0.007 Tw 37.056 0 Td(6w 17