

## SECTION 26

### COMMUNICATIONS SERVICES

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| Version | Date          | Authors           | Summary of Changes |
|---------|---------------|-------------------|--------------------|
| 1       | 10 April 2013 | Multitech for JCU | First Edition      |
|         |               |                   |                    |
|         |               |                   |                    |

## **26.0 COMMUNICATIONS SERVICES**

### **26.1 COMPLIANCE AND STANDARDS**

#### **26.1.1 Compliance / Standards / Authorities**

All design and works are to comply with

- National Construction Code (revision as determined above)
- All referenced standards
- Queensland Development Codes
- Environmental Protection Act, Regulations
- Workplace Health and Safety Act
- Local Electricity Provider requirements
- Local Plumbing Authority
- QFRS
- Design Guidelines
- JCU Communication Cabling System Standards
- University Policies
- Any other regulation or local authority requirements applicable to the works

#### **26.1.2 NCC Version to Apply**

Confirm with the Estate Office the version of NCC that is applicable to the works.

For reference the following key / common standards are brought to the attention of the designer.

#### **26.1.3 Trade Specific Standards**

AS 3000          Wiring Rules

AS 3080          Telecommunications Installation - Generic cabling for commercial premises

AS/ACIF s009    Installation Requirements for customer cabling (wiring rules)

Regardless of the above, any applicable standard is to be considered in the design. The term "AS" shall also refer to "AS/NZS"

Any divergence from the above or other required provisions is to be listed on the Design Divergence Report.

#### **26.1.4 Special Cases not covered by Guidelines**

Should the project involve aspects, scope, technologies, locations or other applications that are not specifically briefed or covered by the Design Guidelines, refer to the JCU Project Manager for guidance, providing clear information on:

- Technical Aspect that is not covered
- A range of options to address the issue
- Time and costs implications for each option
- Effect of the aspect on the design and on other trades
- Effects on users, maintenance, access, life of plant, energy efficiency, cost

- Effects on future re-allocation of the space / system etc

## **26.2 DESIGN PROCESS REQUIREMENTS**

### **26.2.1 Roles and Responsibilities**

#### **26.2.1.1 Traditional Delivery**

Where traditional delivery is chosen, the framework may be through a Principal Consultant (such as an Architect or Project Manager), or direct to the University.

The Principal Consultant is to arrange workshops with Estate Office staff during the design process (particularly from as early as schematic design) to ensure that the overall project direction is to the satisfaction of staff.

#### **26.2.1.2 Managing Contractor Framework**

The University does not wish to be separated from the design process, regardless of whether the project is traditionally delivered, delivered through Managing Contractor, D&C contractor or other. Arrange workshops and information issues to the university's technical staff (through the Estate Office) to ensure that the design approach is to the university's satisfaction.

#### **26.2.1.3 Communication Arrangements**

All communication with university's technical staff is to be directed through the Estate Office. Minutes of any design review meetings etc are to be provided to the Estate Office.

#### **26.2.1.4 Design Departures**

All project team members (for example Consultants, D&C Contractors, Principal Consultants, All project team members (for example Consultants, D&C Contractors, Principal Consultants, Internal/External project managers, subcontractors etc) are responsible for delivering the project in accordance with the project brief, these guidelines, user group information and other contractual documents. Departures from the brief, guidelines, user briefing and other Client supplied information need to be advised to the Estate Office (via the Managing Contractor where applicable). Design departures from the Brief / Guidelines can only be incorporated in the project where they are agreed the Estate Office on a case by case basis.

### **26.2.2 Interfaces with Other Trades**

Ensure that all works necessary for the complete installation and successful operation are arranged with other trades. Ensure also that information required to accurately design the electrical services is obtained from other trades as required.

As a minimum:

#### **26.2.2.1 Architectural Services**

- communications room sizing and location
- communications cupboards sizing and location
- service clearances
- cutouts for services

- penetrations, trenching, etc
- access panels requirements

#### 26.2.2.2 Electrical Engineering

- Requirements of power to the communications room and cupboards
- Requirements of UPS or emergency/generator
- Requirements of smoke detection to the room and cupboards
- Specific power requirements for racks

#### 26.2.2.3 Mechanical Engineering

- Requirement of air conditioning to the communications rooms and cupboards

#### 26.2.2.4 Structural Engineering

- Floor and wall penetrations
- In floor trenches or ducts

#### 26.2.2.5 Lift Engineering

- Requirement of emergency phone line in the lift car

### 26.2.3 Schematic Design Report Requirement

The Schematic Design (SD) report will give a high level understanding to the University of the requirements for the project.

It will include the design intent and requirements for the following as a minimum:

- The drawing numbers and revisions the SD report is based upon e.g. Architectural, As Installed drawings etc
- A detailed list of the scope of works for the project
- A detailed list of the applicable standards, regulations and local authority requirements that the project has to conform to
- A high level description of the method of servicing the various spaces in the project
- Any diversions from Codes, Guidelines or Project Brief.
- Identify any areas of risk to the project delivery

#### 26.2.3.1 Submission Format

A4 colour PDF file with A3 drawings as attachments in hard and electronic copies

#### 26.2.3.2 Supporting Documentation

- Concept drawings if applicable
- As Installed services drawings of the area (obtain from Estate Office)
- Preliminary locations of switchboards and other major equipment
- Preliminary interface or site plans

### 26.2.4 Developed Design Report Requirements

The DD report will provide more detail on the design and options studied and the design approaches.

#### 26.2.4.1 Content of the Report

- Provide detailed information of all existing site services, their re-use, refurbishment, relocation or removal
- Detail on connections to existing infrastructure
- Location of communications room and cupboards
- Detail on design approach for each type of system / area etc.
- Preliminary design
- Preliminary single line diagrams
- Divergence Register

#### 26.2.4.2 Submission Format

A4 colour PDF file with A3 drawings as attachments in hard and electronic copies

#### 26.2.4.3 Supporting Documentation

- Maximum 1:500 existing site services drawings
- Maximum 1:500 site services drawings
- Maximum 1:100 services Floor Plans.
- Schematics and single line diagrams

#### 26.2.4.4 The University Estate Office Design Review

Submit DD drawings / report and Divergence register to the University's Estate Office in full size hard copies (3) and on CD for a full design review within the specified time constraints of the project programme.

Inform the Estate Office as soon as possible if the DD drawings are going to be delayed for any reason.

Allow a minimum of 2 weeks for Estate Office review within the design programme.

Following receipt of the Estate Office review, respond formally with

- Acknowledgement that changes will be actioned
- If the proposed change is at variance to the review, reasons why the change will remain at variance

### 26.2.5 Contract Documents Requirements

#### 26.2.5.1 Specification Requirements

A concise, project specific specification shall be produced that

- Clearly identifies the scope of works
- Clearly identifies the Project Nature
- Clearly identifies Interfaces with Other Trades
- Calls into effect the requirements of Codes, Standards, Legislation etc
- Calls into effect the requirements of these guidelines
- Does not contain excessive or spurious references to unrelated projects or non-required works.
- Includes all performance requirements

- Includes schedules of all equipment requirements, capacities etc
- Requires relevant price breakup information from the contractor
- Requires contractor confirmation of equipment, scope, documentation etc
- Calls up required service, maintenance details etc

#### 26.2.5.2 Drawing and Documentation requirements

Drawings shall be produced which

- Clearly identifies the scope of works
- Are clear and legible and easily read
- Provide details for specific items such as Riser/cupboard Layouts, communications room etc
- Include floor plans
- Include Schematics

#### 26.2.5.3 Number of Copies

Unless briefed / agreed otherwise, the contract documents shall be provided

- In Full Sized PDF format
- Three Full Sized hardcopies of all drawings
- Three bound copies of specifications in A4

### 26.2.6 Handover Requirements

#### 26.2.6.1 Testing & Commissioning

The test results are to be provided straight from the tester (e.g. Fluke) in its proprietary format (not Excel), and sent electronically. A Statement of Compliance is to be issued accordance with NATA's accreditation requirements for the in-field test results, together with the Certificate of Guarantee.

#### 26.2.6.2 Records to be provided

*Refer to JCU Communication Cabling Standard*

#### 26.2.6.3 Operating and Maintenance Manuals

Within 3 weeks of Practical completion, Operating and Maintenance Manuals are to be submitted to the Estate Office. This shall include.

- All test results as finalised
- Defects lists signed out and complete
- Certification of any Fire Penetrations etc
- Concise English description of the installation as a whole
- Concise English description of the each system
- List of all equipment and systems
- Supplier / Support list for all electrical equipment
- Manufacturer's Literature for all electrical equipment

A PDF copy of all manuals and bound DWG files for all drawings signed and issued "As Constructed" shall also be provided.

#### 26.2.6.4 Maintenance Requirements

All construction / installation contracts shall allow for the performance of regular preventive maintenance of the works during the period of the defects liability period inclusive of all consumables.

Such maintenance shall be in accordance with the manufacturer's instructions and the requirements of the Workplace Health and Safety Act, Standards or other applicable regulations, legislation, or codes of practice.

#### 26.2.6.5 Defects Liability

The Defects Liability period shall be a minimum of 12 months from the date of Practical completion or acceptance of the systems by the Estate Office. Longer periods may be specified on a project specific basis.

During this period the contractor must attend to and rectify all faults, defects etc at their cost including all parts, labour, commissioning and associated costs. Should an item repeatedly fail during this period, the University may require warranty in relation to that item to apply from the date of latest repair / replacement

### 26.3 COMMUNICATIONS SERVICES

#### 26.3.1 General

Integrated voice/data telecommunications outlets shall be provided to all rooms in every building. The system shall be connected into the university telephone/data network in accordance with established university requirements, through an integrated hub in a location to be determined during schematic design.

Each building shall have at least two points for communications entry such that incoming copper and fibre optic cables can be expected to enter either from the ring road or from the internal reticulation or both directions.

Where a building is supplied with a generator, all SSOs in the communications room and cupboards shall be on the generator supply.

Where the comms room houses 2 or more racks, a separate and dedicated switchboard supplying power to the room and all racks shall be provided. This allowance shall extend to all other racks in cupboards or other rooms within the building. This switchboard should have provision for connection to a UPS.

#### 26.3.2 Design for Tropical Areas

The university's campuses are located in a tropical environment. Particular care is required to ensure necessary measures are taken to prevent the formation of condensate on surfaces such as cable trays, ceilings, walls, windows etc, growth of mould in building, materials, transmission or cold tracking inducing condensation on other surfaces or on or within building elements.

#### 26.3.3 Safety in Design

Undertake a safety in design workshop for the electrical services in conjunction with the principal consultant and submit the resultant matrix to the Estate Office.

#### **26.3.4 Special Cases not covered by Guidelines**

Where circumstances occur that are not directly covered by these guidelines, request clarification from the Estate Office via formal request for information to identify the design approach required.

#### **26.3.5 Cabling**

Infrastructure cabling shall be copper for Analogue Telephony Services and optic fibre for data. Sizing shall be determined during schematic design. The scope of the building contract extends to full installation and commissioning (as well as Installer and System Warranty). The University will specify a selection of preferred suppliers in the Consultant Brief, and one of the specified suppliers will be engaged by (nominated to) the Contractor to undertake the work.

Ownership of installed data and voice cabling ultimately vests with Information Technology and Resources (IT&R). Accordingly, the Manager, Communications Systems & Architecture, IT&R should be contacted (during schematic design) on 4781 4041 to discuss or clarify telecommunications infrastructure issues.

#### **26.3.6 Telecommunications Rooms**

Unless notified otherwise in writing by the Manager, Communications Systems & Architecture, IT&R, the design shall incorporate room/s of sufficient size to accommodate and provide clearance around Data Racks together with data equipment, cabinets, and any building services equipment. (The Room should be of sufficient size so open doors to the Racks, Cabinets and other building services equipment do not interfere with each other or the doors to the room)

24/7 air-conditioning to these rooms, separated and dedicated from the main system shall be provided. Rooms (including all openings) shall be effectively sealed including fire-rated sealing. Rooms shall be fully painted and dust-free. Security and controlled access is required for these rooms.

#### **26.3.7 Telecommunications Closets / Cupboards**

Unless notified otherwise in writing by the Manager, Communications Systems & Architecture, IT&R, the design shall incorporate room/s of sufficient size to accommodate and provide clearance around Data Racks together with data equipment, cabinets, and any building services equipment. (The Room should be of sufficient size so open doors to the Racks, Cabinets and other building services equipment do not interfere with each other or the doors to the room.) Rooms (including all openings) shall be effectively sealed including fire-rated sealing. Rooms shall be fully painted and dust-free. The key system to be used on these areas shall be part of the communications sub master key structure.

Cooling heat extraction shall be provided to the cupboards. Ensure chill water pipes are not placed above comms equipment. A backup cooling system eg cassette or split on generator supply (if available) is to be provided.

#### **26.3.8 Timing of Construction of Telecommunications Rooms**

To facilitate testing and commissioning of the data network and data communications equipment in sufficient time to test and commission other electronic systems dependent on this infrastructure (e.g. audio-visual systems), building designs and programs will be required to schedule early completion of telecommunications rooms and closets to full 'lock up' stage. This will include air-conditioning supply, power supply, power filtering, data port labelling and all the usual room fitout



elements. This will eliminate the need to expose data network equipment to the risk of damage from harsh building conditions.

#### **26.4 SPECIFIC REQUIREMENTS**

*Refer to the JCU Communications Cabling System Standards*

"insert link"