Electronic Security Systems

Specifications and

Installation Guidelines

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1 DOCUMENT SUMMARY

1.1 INTRODUCTION

This document outlines the minimum standards required for the supply, installation and commissioning, testing and ongoing maintenance of electronic security systems for Griffith University.

This section is intended as a quick reference area only, for detailed descriptions of the requirements of Griffith University (GU) please refer to the body of this document.

This document is relevant for all Griffith University facilities.

This document alone will not provide a definition of a solution or a scope of works.

1.2 GENERAL

Griffith University has a preferred supplier panel for installers of cabling and equipment for electronic security systems.

All installations shall comply with the relevant Australian Standards, ACA Cabling Guidelines, Building Codes Australia and Griffith University Design Guidelines.

No security works are to be sub-contracted to the electrical contractor or other sub-trades.

1.3 SECURITY EQUIPMENT

The University has an ‘Approved Security Products Schedule’ detailing a list of security products that have been tested and proved suitable for use in the University environment. Equipment that does not appear in this schedule shall not be used without the item being submitted for formal approval prior to installation works commencing.

1.4 MAIN SYSTEM COMPONENT REQUIREMENTS

At each nominated location for a control module of the access control system two (2) 10/100BaseT network RJ45 outlets shall be installed, terminated and patched to the appropriate network equipment.

Where required to be offsite monitored a security alarm system’s main controller a PSTN telephone line and outlet shall be installed and terminated at the nominated location.

Each CCTV digital recorder shall have a 10/100BaseT network RJ45 outlet installed, terminated and made active at the nominated location. Any network connectivity to Griffith University controlled network must be undertaken by a Griffith University NCS approved contractor.

1.5 SECURITY CABLE DISTRIBUTION

Before commencing any works the contractor shall refer to detailed design documentation for any project specific requirements.

Wherever possible cabling shall be installed on cable tray or attached to dedicated catenary wires. Segregation from other services shall be maintained to ensure works comply with the relevant standard.

Cables shall be installed in continuous runs and there shall be no joins excepted between panels and field devices. There shall be no joins within individual cable runs between panels and devices except at the panel or device termination board.
All wiring and filed devices shall be installed so that they are continuously supervised and that the system monitors all four state changes. Cable sizing shall be sufficient to ensure that voltage drop is minimal. Figure 8 cables may be used to power CCTV cameras and high current devices such as Mag-Locks. When figure 8 cable is used it shall be one colour with a second colour clearly marking the “trace” core. Other devices shall be wired in “Security 4 Core” as a minimum. All cabling shall be “AUSTEL” approved.

1.6 CIVIL WORKS

Any cabling installed in an outdoor (exposed) environment or underground shall be installed within a conduit.

1.7 LABELLING

All equipment enclosures shall be clearly marked to indicate their function. All system cabling shall be marked with clearly visible identification number at each end.

1.8 DOCUMENTATION

Documentation including schematic diagrams is to be supplied to the GU Project Manager, prior to the hand-over of any electronic security system. The Contractors warranty certification shall be supplied as part of the documentation and system hand-over.
2 INTRODUCTION

2.1 GENERAL

This document outlines the minimum standards required for the supply, installation, and commissioning, testing and ongoing maintenance of electronic security systems for Griffith University (GU).

This document describes the supply, installation, testing and commissioning of various electronic security systems such as access control, intruder alarms, duress and CCTV systems required at all Griffith University sites.

This standards document shall apply to all new electronic security system installation.

This document alone will not provide a definition of a solution or a scope of works.

Any appointed Contractor shall adhere to all requirements of this standards document as a minimum and ensure that all of their employees assigned to perform any installation tasks are made fully aware of their obligations of this document, except where explicitly varied or excluded in supporting documentation for a specific site.

Any works undertaken which do not adhere to the guidelines contained within this document will be deemed to be non-compliant, and will be rectified by the Contractor responsible for the works at the Contractors expense.

2.2 DISPOSAL OF UNWARRANTED EXISTING EQUIPMENT

All existing equipment that is upgraded or deemed not required in the operation of the system shall be removed and returned to Griffith University.

This equipment shall be returned to Griffith University Campus Life staff within one (1) week of equipment being removed.

2.3 DESCRIPTION OF SYSTEMS

- Integrated System
- Access Control System – including door access and licence plate recognition
- Intruder Detection System
- Duress System
- Closed Circuit Television (CCTV) System
- Intercoms System

2.3.1 SUB-SYSTEMS

Works to be performed using these guidelines by one of the approved suppliers shall include the provision of all personnel, services and equipment necessary to design, supply, install, test and commission an integrated security and surveillance system comprising of any or all of the following as nominated:

- Integrated, computer-based, Security Management System (SMS) to manage and control all security, surveillance and access control functions of the site, all interface equipment, software, programming, and other items to make the systems completely operational in accordance with this Specification.
• **Access Control System** consisting of control panels, electric locks, sonalerts, pushbuttons, break glasses, card readers, cardholder access tokens, cabling, power supplies, enclosures, all interface equipment, software, programming, and other items to make the systems completely operational in accordance with this Specification.

• **Intruder Detection System** consisting of control panels, detection equipment, sirens, strobes, cabling, power supplies, enclosures, all interface equipment, software, programming, and other items to make the systems completely operational in accordance with this Specification.

• **Duress Alarm System** consisting of control panels, duress push buttons, mimic panels, cabling, power supplies, enclosures, all interface equipment, software, programming, and other items to make the systems completely operational in accordance with this Specification.

• **Closed Circuit Television (CCTV) System** as specified, consisting of cameras and lenses, associated housings, mounting brackets, control equipment, Digital Video Recorders (DVRs), Network Video Recorders and servers, monitors, user interface software, power supplies, all interface equipment, programming, and other items to make the systems completely operational in accordance with this Specification.

• **Intercom System** consisting of audio master intercom handsets, audio slave intercom stations, cabling, power supplies, enclosures, all interface equipment, software, programming, and other items to make the systems completely operational in accordance with this Specification.

### 2.4 Conformity with Standards

#### 2.4.1 General

Griffith University has a preferred supplier panel of installers of cabling and equipment for electronic security systems. Works comprising these systems or subsystems shall only be carried out by one of these approved suppliers.

All works detailed in this document shall be implemented and completed in strict compliance with the regulations of statutory authorities, applicable standards, codes and the manufactures guidelines. In general, standards and codes shall be those issued or endorsed by Standards Australia. Where no Australian Standard exists, use the International Standard as published by the International Standards Organisation including subsequent amendments.

Should there be any conflict between the requirements of a nominated standard and this specification; the contractor shall obtain written clarification from Griffith University prior to proceeding with the works.

#### 2.4.2 Quality Standards

The Contractor shall have a quality system in place that conforms to the requirements of ISO 9000 series of quality related standards, or shall provide details of progress toward accreditation to the related standard.

#### 2.4.3 Performance Standards

The contractor shall provide to Griffith University prior to on-site works commencing documentation describing the installation, testing and commissioning methods and procedures. All installation, testing, commissioning and documentation shall comply or exceed the following standards.

- **ACIF S009** Installation requirement for customer cabling (wiring rules)
- **AS2201.1** System installed in client’s premises
- **AS2201.2** Central stations and signalling links
- **AS2201.3** Detection devices for internal use
2.4.4 ENVIRONMENTAL CONDITIONS

All equipment used in the electronic security system shall be deemed to be “fit for purpose” and capable of operating continuously and without degradation in performance for 24 hours per day, 365 days per year, in an ambient temperature of -5°C to +50°C, with a relative humidity between 5% and 95% (non-condensing).

2.4.5 ACCEPTABLE SPECIFICATIONS AND SOLUTIONS

The University has an ‘Approved Security Products Schedule’ detailing a list of security products that have been tested and proved suitable for use in the University environment. Equipment that does not appear in this schedule shall not be used without the item being submitted for formal approval prior to installation works commencing.

Griffith University has a preferred supplier panel for installers of cabling and equipment for electronic security systems works comprising these systems or subsystems shall only be carried out by one of these approved suppliers.

The contractor and personnel carrying out the works must as a minimum have a ACA Open Cabling Registration to install security cabling. Any individual and company must also hold certification from the equipment manufacturer that they are able to supply, install, commission and provide on-going warranty for the product being installed. The contractor and or employee must also hold any relevant state or federal security industry licensing that may become required.

For ALL IP CCTV systems, cameras MUST be installed and connected to standard POE data outlets. These data outlets must be installed by a Griffith University Networking and Communication Services; Information Services approved data and communication contractor with strict adherence to Section 21 – Design Guidelines and Procedures.
3 CONTRACTORS

3.1 GENERAL

The following outlines the Contractors obligations in relation to work performed:

- All contractor’s personnel shall observe the safety and security requirements relating to site in which they are working. Should their conduct be unacceptable or detrimental to the performance of their duties or that of the University's employees or other trades, they shall be instructed to refrain from such actions and / or at the discretion of the University Project Manager be dismissed from the site.
- The Contractor shall attend any site safety inductions as required.
- All personnel working in existing building’s shall inform the University’s Project Manager prior to commencing works on-site.
- Prior to offering a fixed price quotation the Contractor shall inspect the site and all relevant documentation and verify information provided by the University. If a site inspection is not undertaken, any additional works required which could have been determined from a site inspection shall be the responsibility of the Contractor. Preference may be given to contractors undertaking a site inspection.
- The Contractor shall guarantee quality of workmanship for a period of one (1) year from the date of practical completion.
- The Contractor shall provide all cabling and associated installation products required to complete the project in a manner consistent with best trade practices and in accordance with this specification, the equipment manufactures documentation, relevant standards and any University provided site specific instructions, Detailed Design documentation or Scope of Works.
- The Contractor shall, immediately upon completion of the security works, return any keys and access devices to the University Project Manager.
- All works performed shall comply with this specification (latest edition), unless written permission is obtained from the Griffith University Office of Facilities Management – Security and Traffic Manager.
- Any work performed that does not comply with this specification shall be deemed to be non-compliant and shall be rectified by the Contractor at their expense. All rectification works shall be completed prior to the final inspection of the works by the University Project Manager.
- The Contractor shall obtain written approval from the University Project Manager prior to undertaking any variations to the work.
- Prior to the installation of the electronic security system, cabling and device location plans shall be inspected and endorsed by the University Project Manager.
- The contractor shall be responsible for the removal all redundant cable/s, devices and panels from the site.

3.2 CONTRACTOR PROJECT COORDINATOR

Prior to the commencement of the Contract, the Contractor shall appoint a suitably qualified Project Coordinator to coordinate and schedule the design, manufacture, delivery, installation and commissioning of the system.

This person shall be dedicated to the project and an experienced project manager/site supervisor trained and holding current certification in the design, installation, testing and commission of the specific Electronic Security Systems to be installed.
The Project Coordinator shall:

- Attend all meetings and shall fully acquaint themselves with the contractual and technical requirements of the contract.
- Be responsible for the on-site supervision of all of Contractor’s employees and any third party subcontractors appointed by the Contractor.

3.3 USE OF SUB-CONTRACTORS

The Contractor shall be responsible for ensuring the quality of all works carried out by a subcontractor under their control.

The Contractor shall accept the responsibility for any and all damage and the expense incurred, caused by a sub-contractor under their control.

The Contractor shall be responsible to ensure that any sub-contractor under their control is adequately covered by insurances such as public liability and professional Indemnity.

3.4 HOURS OF WORK

3.4.1 BUSINESS HOURS WORK

Unless otherwise specified, the installation works shall be undertaken during the hours of 0700 to 1800 Monday to Friday. The Contractor is not limited to these hours however and shall be expected to complete the works within the specified timeframe, working whatever hours are required to meet the project time lines.

3.4.2 OUT OF HOURS WORK

Should “Out of Hours” work, be required to complete the installation within the given time lines, or to carry out disruptive tasks such as cutting core holes or hammer drilling approval will be required from the University Project Manager before such work takes place.

3.5 SITE SPECIFIC INSTRUCTIONS AND BUILDING OWNER / AUTHORITY REQUIREMENTS

This document is to be read in conjunction with contractual documents and site instructions issued in relation to work to be undertaken.

The Contractor will observe the Site Safety Plan and any safety requirements issued by the University Project Manager.

The Contractor will request and observe any requirements of the Building Fitout Manager or the University Project Manager in relation to amenities, drilling, lifting, ceiling access, etc. Clearing and removal from site of work related rubbish and debris, and cleaning of the general work area, shall be the responsibility of the Contractor and shall be carried out at the completion of each workday. Unless otherwise agreed to by the University Project Manager, the subcontractor will remove all rubbish, unwanted materials and off-cuts completely from the site. The Contractor shall ensure debris (from this trade) in ceiling spaces is removed.
The parking of work or personal vehicles is the responsibility of the Contractor. Vehicles will not be parked on site without the express permission of the University Project Manager or the building site manager.

3.6 **QUALIFICATIONS**

The contractor shall ensure that they provide adequate numbers of supervising installers / cablers holding current trade licences and or registration to perform security cabling. The supervising cabler or cablers shall be on site at all times during the installation and testing of the electronic security system. Refer to the relevant section of this document.

The Contractor shall ensure current trade licences and or registrations issued by regulatory or statutory authorities, are required for the work to be undertaken on the Site are held by each trades person or subcontractor under their control.

It shall be the responsibility of the Contractor where licences, certificates or tickets are required, but not held, that these are obtained by the trades person or operator prior to them commencing any works on Site.

3.7 **MANUFACTURER / VENDOR CERTIFICATION**

3.7.1 **GENERAL**

Electronic Security Systems installed on behalf of University shall be an integrated solution capable of receiving the respective system manufacturer’s certification

The contractor shall be required to possess the relevant vendor qualifications. These qualifications will be current and relevant to the products being installed as part of the project.

All personnel performing security equipment and cabling installation works must possess the relevant equipment manufacturer’s certification and ACA Open Cabling Registration as well as any relevant state or federal security industry licensing.

3.7.2 **MATERIALS**

All materials supplied by the contractor shall comply with the relevant statutory standards. To ensure the consistency of the installation of all equipment / hardware and cabling shall be endorsed within University’s ‘Approved Security Product Schedule’.

No material, equipment or nominated items requiring approval is to be used until written formal approval has been obtained.

3.7.2.1 **SAMPLES**

When required submit samples for any device for approval prior to installation. These may include but should not be limited to:

- Access reader;
- Door release button mounted on engraved plate;
- Door hold open device;
- All lock types;
• Reed switch (Standard and heavy duty type);
• Monitor and bracket;
• Internal/external camera, housing and mounting bracket;
• Master, Sub-master and Door intercom; and
• All cable types to be used.

When samples are supplied they shall be:

• Clearly labelled as to the intended application;
• Clearly labelled with the relevant specification clause to which they relate;
• Adequately packed;

3.7.2.2  **SHOP DRAWINGS**

Before the commencement of any work and within thirty days (20) working days of being awarded the contract, the Contractor shall submit for concurrence detailed design documentation and drawings indicating the following:

Where required, provide shop drawings as follows:

• To scale (except schematics and the like);
• Bear a reference number, revision number and date; and
• Sufficient information by way of notes, location plans and legends
• Site layout diagrams
• System block diagrams
• Schematic diagrams indicating:
  • Access Control system configuration.
  • Electric Door Locking system configuration.
  • Security Alarm system configuration.
  • Duress Alarm system configuration.
  • Intercommunications system configuration.
  • Closed Circuit Television system configuration.
• Any equipment rack(s) layouts.
• Any necessary patch panel layouts.
• Cable types, descriptions and schedules (including proposed routes)
• Interconnection details
• Equipment schedule detailing device types, makes and models
• A work schedule showing project milestones

Once accepted, no changes shall be permitted without written approval of the Project Manager.

On Design and Construct projects, it is the contractor’s responsibility to ensure all work is carried out as per the latest vision of the plans.
3.7.2.3 **TECHNICAL DATA**

When required submit technical data for any of the following items for approval prior to installation:

- Door hold open device.
- All lock Types.
- All cable types to be used.
- Equipment rack(s).
- Any necessary patch panel(s).
- CCTV equipment including cameras and CCTV power supplies.

3.7.3 **ADDITIONAL WORKS OR “ADDS, MOVES & CHANGES”**

Any additional work undertaken as an expansion or modification to the existing System (This is commonly referred to as “Adds Moves and Changes”) shall be compliant with this specification and the Scope of Works.

3.7.4 **COMPLETION OF WORKS**

On completion of work the Contractor shall undertake a pre-witness test and upon successful completion shall apply for a witness test by Griffith University.

Upon successful witness testing by the University Project Manager, provide all necessary documentation to Project Manager with 10 working days.

Refer to relevant section of this document for a copy of this form.
4 ENVIRONMENTAL SPECIFICATION

This section describes typical environments within any Griffith University site and describes the minimum requirements for that environment.

Environmental factors include architectural and heritage constraints imposed on specific sites.

Equipment supplied and installed on any Griffith University shall always be “fit for purpose”.

4.1 GENERAL

It may not be appropriate that the electronic security solution be installed the same way in all areas within the University. Environmental factors will affect the way in which the infrastructure will be installed. Contractors shall adhere to the environmental specification so as to prolong the life span of the system.

4.2 OCCUPATIONAL HEALTH & SAFETY

All Contractors that perform any work on a production site are to undertake a site safety induction. No Contractor is permitted to commence any work on site without having completed this site safety induction.

The induction program will be arranged with the Site Manager where applicable.

4.3 DETAIL DESIGN VARIATION TO STANDARDS

These Standards shall apply for installation activity. Due to specific circumstances for a particular site, the approved Detail Design Document may be at variance to these Standards. In this instance, the Detail Design specifications shall prevail.

Smaller projects that do not have Detailed Design Document specifications must comply with this document.

4.4 REQUIREMENTS OF VARIOUS GRIFFITH UNIVERSITY ENVIRONMENTS

Each of the various environments has differing requirements. These environments will be explained and requirements detailed. Refer to project specific drawings and Scope of Works.
5 TECHNICAL SPECIFICATION

5.1 GENERAL

The University has an “Approved Security Products Schedule”. All equipment supplied under this Contract shall be supplied in accordance with these requirements or must be approved in writing by the University’s Campus Life – Security and Traffic Manager prior to the commencement of works.

Power Boards and Plug Packs are not to be used to provide power to any security equipment.

5.2 CENTRAL MANAGEMENT SYSTEM

5.2.1 GENERAL

5.2.1.1 GALLAGHER COMMAND CENTRE FT

The University has an existing Gallagher Command Centre FT (CCFT) system which provides access control and security solutions for all Griffith University sites. This system shall be expanded for all new access control / electronic security requirements.

5.2.2 PROGRAMMING OF HEAD EQUIPMENT

All programming of head end equipment will follow a logical sequence that directly mirrors the existing naming convention used in the Gallagher CCFT system and the as Built Drawings / Documentation. This is to include a nominated unique equipment numbering system. This is to also include appropriate descriptor to the client’s representative’s satisfaction and or directed by the Security and Traffic Manager.

5.3 ACCESS CONTROL SYSTEM OVERVIEW

The access control system will provide, but is not limited to the following functionality:

- Be able to integrate with other electronic security sub-systems (duress, CCTV etc)
- Utilise both access levels and time zones to determine whether access is be granted;

All access control panels are to be located in a secured room or cupboard approved by Griffith University Security and Traffic Manager or Project Manager.

The System shall be capable of providing a means of controlling access through nominated doors, gates, barriers etc by checking the access privileges stored in memory for access credentials presented at each access control reader.

The System shall also be capable of monitoring the condition of inputs connected to the access control readers and control panels forming part of the System. The System shall be able to be programmed to apply a variety of conditions to the way in which these inputs are monitored and announce the condition of each input in accordance with its programming.

The System shall produce and maintain a log of all events that including but are not limited to:

- Normal access transactions
- Tampers
- System critical events, failures and malfunctions
- System programming events
The System shall provide an operator with a means of searching and extracting information relative to particular events, door operations, cardholder events and the production of printed reports detailing such information.

5.3.1 ACCESS CONTROLLED DOORS

Electric devices used in securing access controlled doors are to be controlled by the associated card reader, time and/or event program, via the operator terminal or door release panels. Whenever access controlled doors are opened on presentation of valid credentials, the associated door alarm will be suppressed.

Access controlled doors shall provide indication of the status of the door (open or closed) to the operator through the User Interface. (eg. reed switch)

Forced Door Alarm functionality is to be provided on ALL access controlled doors and are to be monitored by the operator through the User Interface.

5.3.2 CAR PARK CONTROL SYSTEM

A controlled access system will be provided to restrict unauthorised vehicular access to the secure vehicle car park.

Configure the system as follows:
- Allow operation of the gate through the Access Control System via the presentation of a valid proximity access card or other valid access credential;
- Weatherproof readers mounted onto a steel pedestal;
- Steel pedestals to accommodate an intercom;
- Face plate of each pedestal to be non-ferrous to maintain maximum card reader range;
- Pedestal to be designed to the approval of the Architect and Project Manager;
- Secure face plate of each pedestal with tamper proof screws;
- Provide all necessary security control equipment and logic interfaces to the control station.

Licence Plate Recognition:
Griffith University has an existing Licence Plate Recognition system, Genetec AutoVu. Where required in the scope of works this system shall be used. This system shall also interface directly with the Gallagher system for access control decisions.

5.3.3 LIFT SERVICE WORKS

Where lift security is specified, the Lift Contractor is to provide a trailing cable and tie cables to an enclosure (to be provided by the Security Contractor) located outside the lift motor room from each lift car for connection of the following:

Table 1 - Lift Services Cabling

<table>
<thead>
<tr>
<th>Security Item</th>
<th>Location in Lift</th>
<th>Cable type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Card Reader</td>
<td>Mounted on Lift Panel</td>
<td>2 x single pair (2 wires) screened</td>
</tr>
</tbody>
</table>
Camera video and power cabling (analogue) | Corner of lift car roof in ceiling space | 1x RG-6 coax for video 1x Single (2 wires) pair screened for power

Camera video and power cabling (digital) | Corner of lift car roof in ceiling space | 1 x POE CAT 6 terminal

Note: All cables within lift car to be suitably labelled to identify purpose.

5.3.4 ACCESS CONTROL ALARMS

A separate alarm message shall be transmitted to the Access Control System “Head End” for each of the following alarm conditions but is not limited to:

- Door forced open
- Door held open too long
- Invalid card

The alarm messages shall be displayed in plain English text.

Each alarm shall clearly identify the time, location and type of alarm.

Access Control Panels (ACP) to comply with the following:

- Facilitate the connection of access readers as detailed on the drawings.
- Validation data and alarm status data will be maintained locally.
- ACP will be capable of being updated via the operator terminal and fully configured (control data, time schedules, etc.) from the Head End Software.
- ACP will operate in a completely stand-alone mode for a minimum of twenty-four hours in the event of communication loss with the Head End Software.
- Be fitted with output control facilities, to enable activation of field equipment either by automatic reaction to events, or by operator intervention via the keyboard.
- Be housed in a secure cabinet equipped with an anti-tamper device.
- Check each access card presented against authorised data based information.
- Be continuously polled by the Head End. When all access card data is valid, the reader terminal shall grant access. Invalid data shall be logged and recorded on systems data storage facility.
- ACP’s will include a timer, adjustable from 0 to 3 minutes, which is to shunt the door alarm contact on the associated door, for the period of the timer, whenever access is granted. The timer is to be set to allow sufficient time for the door to be used and closed again. If the door remains open for a period exceeding this time, only then is an alarm to be displayed on the operator terminal as the normal security alarm for that door and logged and recorded.
- Provide mains fail and low battery condition alarms (separate alarm inputs) to the operator terminal with the appropriate alarm text.
- At Practical Completion, provide a minimum of 30% spare door control input on each ACP to enable future connection.

5.3.5 ACCESS CARDS

Access Cards to comply, but is not limited to the following:

- The format of the cards to be provided shall be dual technology ISO 125kHz/MiFare 4k
5.3.6 **Access Reader**

Access control readers are to be proximity type operating with passive proximity cards capable of reading 27 Bit, 125 KHz Motorola type cards currently used by Griffith University, as well as dual tech Gallagher 125/MiFare Plus cards to which Griffith University will use in the future.

Card reading is required to be both rapid and consistent, regardless of the orientation of the card and further enclosure of the card.

Access readers to comply, but is not limited to the following:
- Card readers are to be surface wall mounted and are to be vandal proof type.
- Standard readers will have a minimum read range of 100mm.
- Audible and visual indication of a valid, invalid and faulty card read.
- Mounted on the lock side of the door where practical, 100mm from the frame of the door.
- The centre line of the access reader to equal the centre line of the lock/latch assembly for the associated door.

5.3.7 **Sonalerts**

Sonalerts to comply, but is not limited to the following:
- Locate above external access controlled fire doors, if required.
- Sound if the door remains open longer than a predetermined period. Should the door continue to remain open longer than a second predetermined period, only then is an alarm to be generated at the operator terminal.
- Capable of being isolated via the operator terminal and be disabled when the associated door is in access mode.
- Flush ceiling mounted, complete with sound selection and level adjustment.

5.3.8 **Door Release Buttons (If Required)**

Door release buttons to comply, but is not limited to the following:
- Install on the secured side of selected access controlled doors as indicated on the drawings and MUST be non-powered.
- On activation, the associated door alarm will be deactivated for a period and the power interrupted, to allow travel through the door and door to close, while sending a door exit signal to the Head End User Interface. Door release buttons for automatic sliding doors are to send a signal to both the Gallagher ACP and door controller. (Dual redundancy)
- Door release buttons will be NON-POWERED Green, with a mushroom head, mounted on a white switch plate engraved with the wording "PRESS TO EXIT" using 5mm high Universal font.
- Compatible with the requirements of the access control system and door locks (ie. the device will signal a valid egress to the ACP before releasing the electronic lock).
- The centre line of the door release button will be equal to the centre line of the lock/latch assembly for the associated door.

5.3.9 **Emergency Door Release Unit**

Emergency door release unit to comply, but is not limited to the following:
- Install on the egress side of selected access controlled doors as indicated on the drawings.
• On activation, power will be directly interrupted to the door. Simultaneously, the associated door alarm will be activated and can only reset from the operator terminal. An alarm signal will be sent to the Access Control System and logged.

• Emergency door release units will be KAC type (double pole), white in colour, engraved with the wording “EMERGENCY EXIT BREAKGLASS TO RELEASE DOOR”.

• Compatible with the requirements of the access control system and door locks (ie. the device will directly cut power to the lock (fail-safe) and signal breakglass activation to the CMS.

• The centre line of the emergency door release unit will be equal to the centre line of the lock/latch assembly for the associated door.

• Where a facility or room is deemed to be a bookable space by users other than Griffith University staff or students and an electronically locked door on an emergency path of egress must be fitted with a Panic Exit device or crash bar, where required by BCA.

• The Panic Exit device must have the same functionality as other electronically controlled doors – ie door position monitoring, lock monitoring, ability to be locked, unlocked both by card and remote software.

5.3.10 ELECTRIC DOOR LOCKING SYSTEM

5.3.10.1 ELECTRIC MORTICE LOCKS

Electric mortice locks to comply, but is not limited to the following:

• Shall be configured for power to unlock (fail secure) with dead latch, unless otherwise specified. Refer to drawings to determine lock operation (fail safe/secure).

• Shall be capable of Key Manual Override

• Shall monitor key override function.

• Shall monitor door handle operation.

• Shall monitor dead latch and door closed status (in series with reed switch).

• Shall have door forced alarm monitoring.

• Fit with internal door release switch and be free handle exit (Do not use standalone door release buttons).

• Operation of a free handle shall suppress the associated access control door alarm.

• If the lock is fitted with an LED, then this shall be wired to display RED on locked and GREEN on free.

5.3.10.2 ELECTRIC STRIKES

Electric strikes will only be installed with the express written approval of Griffith University Security and Traffic Manager. If approval is obtained Electronic Strikes shall comply, but is not limited to the following:

• Shall monitor dead latch pin and electric tongue sensor.

• Shall have door forced alarm monitoring.

• Request to exit buttons fitted on secure side of nominated doors.

• Shall be configured for power to unlock (fail-secure) with dead latch, unless otherwise specified. Refer to drawings to determine lock operation (fail safe/secure).

• Tongue sensor wired in series with reed switch.
5.3.10.3 Electromagnetic Locks

Electromagnetic Locks to comply, but is not limited to the following:
- Single doors shall be fitted with EML 6 type locks.
- Double doors shall be fitted with EML 10 type locks.
- External Gates shall be fitted with external EML type locks.
- Provide Hall Effect sensor (Internal Bond Sense) to detect that the door has closed and the magnetic field has bonded to the lock.
- Securely fasten to the head or top frame of the door. If the frame is not structurally strong enough to prevent lock movement, the Contractor shall strengthen the frame or mount the lock in such a manner to ensure it is securely fastened.
- The contractor shall ensure that the method of installation shall reduce the clear opening distance of the doorway.

5.3.10.4 Cable Transfer Unit

Cable transfer units to comply but is not limited to the following:
- Shall conceal all cabling.
- Shall be installed to all electric mortice lock doors so that cabling can transfer from the door frame to the door leaf.

5.3.10.5 Automatic Sliding Doors

- Doors are to be controlled in such a manner that when the Access Zone is in Free mode the automatic sliding door is set to auto via enablement of the door PIR’s.
- When the Access Zone is Secure then the door shall only be opened via a reader with a valid card or via a REX button see 5.3.8
- All automatic doors are to report Door Forced, Door Open Too Long and valid REX signals to the Electronic Security System

5.3.11 Naming Conventions

Naming conventions for all equipment shall be in a format approved by the university. No variation to Griffith University Standard Hardware Naming Convention document will be allowed unless written approval is obtained from the Griffith University, Campus Life – Security and Traffic Manager.

5.4 Security Alarm System Overview

If the site has a GALLAGHER FT system then a separate security alarm system is not to be installed.

The Security Alarm System will provide, but is not limited to the following functionality:
- Provide indication of the condition of detection devices connected to the inputs of the Security Alarm panels forming part of the System.
- The System shall be able to be programmed to apply a variety of conditions to the way in which these inputs are monitored and annunciate the condition of each input in accordance with its programming.

Field alarm devices, eg Detectors, Reed Switches, and Duress Buttons etc, shall be separately and independently connected to a separate and individual alarm input.
All security panels are to be located in a secured room or cupboard (preferably in the same space as the access control panels) and the door to that space must be electronically monitored.

Naming conventions for all equipment shall be in a format approved by the university. No variation will be allowed unless written approval is obtained from the Griffith University, Office of Facilities Management – Security and Traffic Manager.

5.4.1 SECURITY SYSTEM ACCESS CODES

Program user codes according to written directions from the University Project Manager.

5.4.2 ALARM MONITORING

The system is required to be monitored by the University’s nominated security monitoring centre.

The following alarms shall report to University’s nominated security monitoring centre but is not limited to the following:

- Tamper alarms of all system components including detection devices on a 24 hour basis;
- Duress alarms on a 24 hour basis;
- Intruder alarms outside normal business hours;
- System seal and unseal events, including times and users;
- Partial system seals;
- Alarm restoration;
- Zone isolations;
- Low battery;
- AC fail;
- Fuse failures; and
- Daily communications test and test results;
- System lockout after a preset number of unsuccessful code attempts

The Contractor shall coordinate, test and commission the remote monitoring facility via an alarm PSTN dial-up service or other approved communication method (eg: 3G/4G or IP)

The Contractor shall liaise with University’s nominated security monitoring centre during the test and commissioning phase to ensure all alarms are reporting properly.

5.4.3 ALARM MONITORING PANEL

Alarm Monitoring Panels (AMP) shall comply, but is not limited to the following:

- Facilitate the connection of security field devices as detailed on the drawings.
- Be fully intelligent devices capable of processing, transmitting and receiving alarm and control data from the security communications network.
- Control data and alarm status data will be maintained locally.
- AMP will be capable of being updated (control data, time schedules, etc).
- AMP will operate in a completely standalone mode for a minimum of twenty-four hours in the event of communication and power loss.
- Be fitted with output control facilities, to enable activation of field equipment either by automatic reaction to events, or by operator intervention via the keyboard.
• Be housed in a secure cabinet equipped with an anti-tamper device.

• Provide mains fail and low battery condition alarms (separate alarm inputs) to the operator terminal with the appropriate alarm text.

• At Practical Completion, ensure a minimum of 30% spare inputs, are available on AMP’s to enable connection of additional security devices.

5.4.4 ALARMED DOORS

Access Control and alarmed doors to comply, but is not limited to the following:

• Fit with flush magnetic reed door contacts.

• Unauthorised access will cause an alarm to be generated at each Operator console.

• The alarms associated with emergency exit doors are to be active and instantaneous twenty-hour (24) hours per day.

5.4.5 ALARM INPUTS

Alarm inputs to comply, but is not limited to the following:

• Connect to an individual alarm input.

• The only exception is double sets of doors, where each leaf is to be alarmed, but connected to a single input.

5.4.6 DETECTORS

The maximum number of detectors per alarm input is one (1).

Each individual detector is to report as an individual alarm. The number of detectors to be installed in an area shall be suitable to the size of the area requiring coverage as specified by the detector manufacturer.

All cable entries into the detector is to be sealed to prevent the ingress of dirt, insects and the like that may cause environmental false alarms.

5.4.6.1 WALL MOUNTED DUAL TECHNOLOGY DETECTORS

• Located on the wall closest to the position detailed on the attached drawings giving consideration to coordination with other services equipment.

• Shall be mounted at a height and orientation in accordance with the manufacturer’s recommendations.

• The detector when mounted flat on the wall shall be fixed through the rear of the detector (behind the printed circuit board) or using a metal or other suitably secure manufactured bracket if mounted in a corner, to ensure that the active field of view does not encroach onto adjacent external windows.

• The configuration shall be such that both technologies must detect motion before an alarm is signalled (using AND logic).

• Sensitivity to be set to give maximum detection capability with NIL false alarms.

• The detector cover is to be tamper switched.

• The detector shall be installed so the active fields of view provide protection to all possible access points to the area. Eg: windows, doors, trapdoors etc.
5.4.6.2 Ceiling Mounted 360° Dual Technology Detectors

- Located at the position detailed on the attached drawings giving consideration to coordination with other services equipment.
- Shall be mounted in accordance with the manufacturer’s recommendations.
- The configuration shall be such that both technologies must detect motion before an alarm is signalled (using AND logic).
- Sensitivity to be set to give maximum detection capability with NIL false alarms.
- The detector cover is to be tamper switched.
- The detector shall be installed so the active fields of view provide protection to all possible access points to the area. Eg: windows, doors, trapdoors etc.

5.4.7 Magnetic Reed Switches

5.4.7.1 Flush Type

Flush magnetic reed switches to comply, but is not limited to the following:
- Install on nominated internal and perimeter doors as indicated on the drawings.
- Installed on the top of the door 100mm from the edge.
- Installed opposite hinge or pivot.

5.4.7.2 Surface Type

Surface magnetic reed switches to comply, but is not limited to the following:
- Install on nominated internal and perimeter doors as indicated on the drawings.
- Installed on the top of the door 100mm from the edge.
- Installed opposite hinge or pivot.

5.4.7.3 Surface Type (Heavy Duty)

Surface magnetic reed switches to comply, but is not limited to the following:
- Install on roller doors, gates as indicated on the drawings.
- Provide tamper proof junction box for cable terminations and end of line resistors.
- Position so as not to be damaged by vehicles or other traffic.
- Stainless steel armoured cable.

5.4.8 End of Line Resistors

All end-of-line resistors must be located at the peripheral device connected to the system and be installed to monitor 4 states – open, closed, short-circuit and open-circuit.

5.4.9 Anti-Tamper Circuits

All field equipment to comply, but is not limited to the following:
- Fit with an anti-tamper device.
- Circuit is not to be suppressed when the system is in access mode.
5.5 **Duress Alarm System Overview**

The Duress Alarm System will provide, but is not limited to the following functionality:

- Be able to be integrated with the other electronic security systems installed onsite.
- Provide indication of the condition of duress devices connected to the inputs of the Duress Alarm panels forming part of the System.
- The System shall be able to be programmed to apply a variety of conditions to the way in which these inputs are monitored and annunciate the condition of each input in accordance with its programming.

Each duress point is to report as an individual alarm. Individual portable radio duress activators are to be treated as individual alarm points, and are to report as individual alarms.

When specified within the scope of the project, all duress alarms shall also be enunciated in the nominated area as defined on accompanying drawings.

Duress alarm signals shall also be transmitted on a 24-hour basis to University’s nominated security monitoring centre and must be afforded the highest priority alarm status.

Naming conventions for all equipment shall be in a format approved by the university. No variation will be allowed unless written approval is obtained from the Griffith University, Office of Facilities Management – Security and Traffic Manager.

5.5.1 **Duress Buttons (If Required)**

Under bench and desk buttons shall comply with the following:

- Surface mounted on the underside of the bench or desk and fixed with 6 gauge counter-sunk screws.
- Set back from edge of the bench or desk by 25mm.
- Shrouded to reduce the risk of false activation.

Wall mounted duress buttons in all other areas shall comply with the following:

- Mount at 1100mm from the finished floor level.

Device shall be installed with pushbutton facing downwards and fixed to wall with 6 gauge counter-sunk screws.

5.6 **Closed Circuit Television (CCTV) System Overview**

5.6.1 **General**

The Closed Circuit Television (CCTV) System also referred to as a surveillance system will provide, but is not limited to the following functionality:

- Be able to be integrated with the other electronic security systems installed onsite.
- The University’s CCTV System serves the following principal purposes:
  - To prevent crime, misconduct and disorder by acting as a psychological deterrent to potential offenders;
  - To aid the detection of crime, misconduct and disorder and enable a greater proportion of crime to come to the attention of Crime Enforcement Authorities or security personnel;
• To enhance the apprehension and successful prosecution of offenders by facilitating the gathering of evidence;
• To reduce the likelihood of theft or damage to University property or assets; and
• To monitor utilisation of teaching and learning spaces so that the University’s assets may be used in the most efficient and effective manner.
• Be installed, operated and managed in line with the requirements of the Griffith University CCTV and Surveillance policy

All necessary system design, programming (ie. videotext, point descriptors, display maps, alarm message text) is to be included.

All CCTV installations and changes require the express permission of the Director, Campus Life and Vice President (Corporate Services) as per the Griffith University Closed Circuit Television and Surveillance policy.

Where an IP camera system is to be installed, CAT 6 cabling must be installed by a Griffith University INS approved data contractor. The outlet for each camera must be completed with adherence to Section 21 - Communication and Data Services, of the Design Guidelines & Procedures document.

5.6.2  SYSTEM FUNCTION

The University protects its Sites and the buildings and physical property on those Sites in accordance with the Security Policy. Notwithstanding this, the open and accessible nature of the majority of its buildings and Sites has resulted on occasion in damage and loss of the University’s property and assets and/or unauthorised access to Sites. To deter and protect its property and assets and measure the utilisation of specific spaces and assets the University employs a CCTV System.

5.6.3  DIGITAL VIDEO RECORDER

All IP solution cameras will be installed and programmed on the relevant Griffith University CCTV virtual server. No building based servers are to be installed or allowed for unless express written permission from the Campus Life – Security & Traffic Manager is obtained.

5.6.4  VIDEO OUTPUT DISPLAY

This shall be taken into account prior to locating, installing and commissioning cameras. Approval shall be sought from the University’ Project Manager before final camera placement is undertaken.

5.6.5  PROGRAMMING

Programming of the system shall be such that it shall be possible for an authorised operator to easily change any or all of the system programming parameters with minimal training.

Specific details on how the video control and management system is to be programmed shall be provided to the Project Manager for approval prior to the commencement of installation.

Naming conventions for all equipment shall be in a format approved by the university. No variation will be allowed unless written approval is obtained from the Griffith University, Campus Life – Security and Traffic Manager.
5.6.6  **ALARM HANDLING**

The system shall include a comprehensive suite of alarm handling routines. Upon receipt of alarm the associated video input(s) shall be switched to the programmed monitor output for display along with a pre-programmed alarm enunciated message.

The video management system shall detect video signal failure and initiate an alarm for the user.

5.6.7  **CCTV INTERFACE**

Provide an interface between the security and surveillance systems to automatically activate the video surveillance system on activation of the appropriate alarm. The appropriate alarms that trigger the video surveillance system will include but is not limited to: use of an intercom station, monitored points, door open too long or door forced alarms and duress alarms, etc., associated in the general vicinity of a video surveillance camera.

Each security alarm is to be transmitted to the surveillance system as an individual signal. The video surveillance system shall be configured to activate the appropriate camera, monitor, etc.

5.6.8  **CCTV MANAGEMENT SOFTWARE**

The software will provide, but is not limited to the following functionality:

- The ability to view images as full screen or multi-screen displays;
- Ability to network multiple PCs together and view any or all camera images simultaneously;
- Individual user and password for system management and remote site access at each PC;

5.6.8.1  **IMAGE AUTHENTICATION AND SYSTEM PROTECTION**

- Time and data text will be permanently embedded within the recorded image;
- Images will be individually watermarked;
- The system will provide extensive, user definable password protection (entered via keyboard) for access to playback, record and system set-up functions;

5.6.9  **MATRIX SWITCH**

The matrix switch (where required to manage camera system) is to conform, but is not limited to the following:

- The video matrix switcher shall have a capacity to connect all cameras, monitors and keyboards with a spare capacity of at least 30%, or a minimum forty (40) video inputs, eight (8) video outputs, and three (3) control keyboards, whichever is greater.
- Provide sufficient alarm inputs (make contact or open collector input) for all functions with an additional 30% spare capacity
- Provide sufficient relay outputs (make contact or open collector input) for all functions with an additional 30% spare capacity
- All video inputs of the matrix switcher shall include down frame looping cards (DFL), the looping output of the down frame looping cards shall be connected to an input of a DVR.
- All video signals, shall be looped-through a Patch Panel before being routed through to the matrix switcher
- Shall automatically switch a camera image to the console monitor on an alarm
• Shall be password protected with least two access levels

5.6.10 CAMERAS

Cameras to conform but is not limited to the following:

• Mounted in appropriate approved housing and supported by appropriate approved brackets.
• Shall be phase locked and synchronised to ensure clean, roll-free switching and image stability.
• Shall be installed and commissioning to ensure, focus, clarity and brightness of image at each Operator Console and Recording Device is maintained in all operating conditions.
• Shall be powered from a centralised distributed power supply. Plug packs are not acceptable.

5.6.11 LENS

Lenses to conform, but is not limited to the following:

• Shall be vari-focal, video driven auto iris type.
• The specific focal length required for each camera position will be determined on site. Lens focal length will typically range from 4mm – 16mm.

5.6.12 CAMERA HOUSINGS AND MOUNTS

5.6.12.1 INTERNAL HOUSINGS

Internal housings to conform, but is not limited to the following:

• Fitted with screw fixings to prevent unauthorised access.
• Sealed and secured.

5.6.12.2 EXTERNAL HOUSINGS

External housings to conform, but is not limited to the following:

• Fitted with screw fixings to prevent unauthorised access.
• Sealed and secured.
• Provide external housings with a sunshield. (The environmental conditions at some sites may require external housings to be provided with a heater, blower, thermostat and sunshield. The Contractor, following a site inspection, will be responsible for determining and providing an appropriate housing to suit the environment.)

5.6.12.3 CAMERA MOUNTING

Camera mounting to conform to the following:

• Utilise wall or ceiling mounted brackets
• Provide manual adjustment of position of 0 degrees to 90 degrees tilt and 360 degrees pan
• Be firmly locked into the desired position and be rigidly supported to prevent any vibrations and movement.
5.6.12.4 **MOUNTING POLES**

External cameras will be typically wall mounted however, selected external cameras will be mounted on a lighting type column supplied and installed by the Security Contractor.

Camera poles to conform to the following unless otherwise specified:

- 104mm square section steel (as a minimum)
- Minimum 4.0 metres high from finished floor level and underside of camera bracket.
- Black powder coated in colour
- Fitted with a head frame for the direct mounting of the camera housing brackets
- Have a weatherproof and tamper-proof compartment at the base, for the enclosure of wiring and connectors.
- Provide a base-plate suitable for mounting on a rag bolt assembly.

Note: It is the responsibility of the Security Contractor to provide the rag bolt assembly and all associated hardware. The Security Contractor shall coordinate these works with the University Project Manager and Builder for the correct setting up, vertical alignment and grouting under base plate as necessary.

5.7 **CCTV SYSTEM TESTING**

In addition to the manufactures requirements the following specific CCTV System testing shall be conducted, as part of the commissioning and acceptance testing procedures outlined further in this document.

5.7.1 **EQUIPMENT TESTING**

Equipment tests shall include but is not limited to:

- Proposed camera(s) resolution,
- Proposed lens(s) resolution,
- Proposed camera(s) colour test under natural and artificial light,
- Proposed video capture card(s) resolution,
- Proposed video recorder(s) recorded resolution,
- Installed camera and lens back focus, tested on site during the day and night.

5.8 **INTERCOMMUNICATIONS SYSTEM OVERVIEW**

5.8.1 **GENERAL**

The Intercommunications System will provide but is not limited to the following functionality:

- Be capable of being integrated with other electronic security systems installed onsite.
- Provide audio communication facility to the master station from all sub master and field stations.

Provide Field stations to each of the nominated locations. Each field station may separately or severally call one (1), some, or all master and sub master stations.
To receive an incoming call at a master station, a call initiated from a field station will illuminate at the master station and a tone shall sound. The operator at the master station can elect to receive the call by selecting the relevant field station button.

The master station speaker and microphone are then activated allowing connection to the field station. The field stations will be hands free in operation once a master station accepts or initiates a call. The master station will have the ability to terminate the call.

Each additional incoming call will sound a tone and the relevant field station indicator will be displayed until the call is accepted at the receiving master station.

The master station will be capable of initiating a call to any field, master or sub master station such that a tone is sounded at the recipient station. It will be possible for field stations to call master stations but no other field stations.

The contractor shall provide details of the proposed programming of the intercommunications system to the Project Manager prior to installation.

5.8.2  EXCHANGE

Shall conform as a minimum but is not limited to the following:
- Located as defined on drawings or in Scope of Works.
- Provide sufficient number of inputs to allow connection of all field stations.
- Provide spare capacity for the connection of an additional 30% field stations.
- Provide a regulated power supply and cabling terminal block at the Station.
- Enclosed in an enclosure of approved manufacture which is monitored for tamper protection.

5.8.3  MASTER STATION

Intercoms shall conform as a minimum but is not limited to the following:
- Label each button (with suitably printed text) to identify each field station.
- Labelling and text font shall be approved by the University’s representative prior to installation.
- All incoming calls will be indicated with an illuminated light and a corresponding tone.
- No hum or interference will be detectable.

5.8.4  SUB MASTER

Intercoms shall conform as a minimum but is not limited to the following:
- Label each button (with suitably printed text) to identify each field station.
- Labelling and text font shall be approved by the University’s representative prior to installation.
- All incoming calls will be indicated with an illuminated light and a corresponding tone.
- No hum or interference will be detectable.

5.8.5  FIELD STATION

Intercoms shall conform as a minimum, but is not limited to the following:
- Flush mounted and centred at 1300mm from the finished floor level, with the exact location for installation to be determined on site to the approval of the Project Manager.
• Face plate to have engraved operating instructions.
• No hum or interference will be detectable.

5.8.6 CCTV SYSTEM ALARM OUTPUTS

Provide an output signal for each field station in the form of a normally closed, voltage free, relay contact, which is to activate/open upon the operation of a call button on a field station.

Configure the output to display an appropriate camera view a monitor located at each Operator console.

5.9 SYSTEM POWER SUPPLIES

Plug Packs and power boards shall not be used in any instance.

All power supplies installed for the provision Extra Low Voltage power to any part of the equipment installed at the Site shall conform but is not limited to the following:
• Individual power supplies shall be provided for the supply of power to locks and shall be segregated from power supplies provided for other electronic equipment;
• Shall be installed in accordance with the manufacturers recommendations;
• Shall be provided with a minimum allowance of 30% spare capacity

5.9.1 STANDBY POWER SUPPLIES

Standby power supplies to comply, but is not limited to the following:
• Fit to all access control and alarm monitoring panels.
• Shall be integral to all alarm and access control panels.
• Shall be installed in suitable enclosures.
• Stand by batteries to be installed in suitable enclosures and provide power to the field cabinet for a period not less than four (4) hours.

5.10 RACKS

Where specified on drawings or in Scope of Works the system equipment with the exception of field panels and devices, operator consoles, monitors etc shall be housed in a 19 inch type rack to be provided and installed as part of these works.

Racks shall be enclosed on all sides with lockable doors front and rear including vertical power distribution rails, cable management (with separation between power and signal cables in accordance with AS3000 and ACA Cabling Regulations), ventilation (if necessary install fans), cable termination panels etc.

The rack enclosure is to be constructed with ample manufactured ventilation slots or pores.

The rack shall be positioned such that equipment can be readily accessed, front and rear for maintenance and servicing purposes.

The rack shall be designed to accommodate all nominated equipment allowing for a 1RU space between equipment components.
Patch panel(s) shall be provided for all incoming and outgoing video and data cabling.

Cable management shall be provided for all internal and external cabling.

30% spare 240 VAC GPOs shall be provided for testing and servicing.

The rack is to be securely fixed to the floor or wall and equipment securely mounted inside it.
6 CABLING AND EQUIPMENT INSTALLATION

6.1 GENERAL

Provide all materials, equipment and fixings and all necessary cable trays and conduits, control and power cabling to ensure full operation of the system as specified.

Materials and standards of workmanship shall fully comply with the relevant documents of the Standards Association of Australia.

All cabling and conduits and ducting are to be fully concealed. Where concealment of cables and conduit is not possible, written approval to proceed shall be required from the Project Manager prior to the commencement of this work. This approval is to be obtained in writing prior to installation.

The Contractor shall design all cabling networks such that voltage drops; video signal attenuation, cable separation and ground loop parameters are designed in accordance with the relevant Standards and equipment manufacturer’s recommendations.

All cabling shall be adequately shielded to prevent the introduction of spurious signals being generated onto or from adjacent cables/services. The Contractor shall ensure that shielded cable shall be used wherever spurious signals could affect the proper operation of the system or other services.

Open wiring is permissible in enclosed, secure spaces under floor, in ceiling and wall cavities and on cableways only.

6.1.1 POSITIONING OF EQUIPMENT

The layout of equipment shown on the drawings is diagrammatic only, and exact locations shall be determined on site. Also refer to requirement for location of cameras specified under CCTV within this specification.

Equipment shall be symmetrically located in relation to other equipment, devices, the building module and general aesthetic treatment.

6.2 ELECTROMAGNETIC COMPATIBILITY

All equipment and/or appliances provided are to be designed so that no interference will be caused with any radio or other electronic transmitting or receiving equipment in the same locality.

6.3 CONDUITS

6.3.1 GENERAL

Conduits concealed in wall chases, embedded in floor slabs or installed in inaccessible locations are to be complete with a draw cords to enable the pulling in of cabling: Run directly between points of termination, minimising the number of sets. Do not use inspection fittings.

Conduits and fittings are to comply, but is not limited to the following:

- Underground conduit use white heavy duty rigid UPVC;
- 20mm minimal bore;
- Use inspection-type fittings only in accessible locations and where exposed to view;
- Provide straight long runs, smooth and free from rags, burrs and sharp edges;
• If installed in damp locations, galvanise mild steel wiring enclosures and support systems;
• If exposed to view, install conduits in parallel runs with right angle changes of direction;
• Spare conduits to have:
  • draw cords installed;
  • 1m of cord coiled at each end of the run;
• Use polypropylene cord, or insulated stranded earth wire, 2.5mm² minimum size;
• Provide draw-in boxes at intervals not exceeding 30m in straight runs, and at changes of level or
direction; and
• For underground draw-in boxes, provide gasket covers and seal against moisture.
• Light duty rigid PVC conduit except in plant areas and exposed external locations or where there
  is a security risk;
• For installations in car parks and plant rooms below 2100mm above finished floor level use
galvanised steel conduits. For installations above 2100mm use galvanised steel or heavy duty non-
metallic conduit;
• Seal other ducts and conduits after cable installation.

6.3.2 Metallic Conduits

• Metallic conduits and fittings to comply, but is not limited to the following:
• Comply with AS2052;
• Screwed steel;
• For steel conduits, paint ends and joint threads with zinc rich organic binder to GPC-C-29/16;
• Provide flexible couplings consisting of flexible conduit and fittings in the following instances:
  • at structural expansion joints;
  • in long straight runs if the ambient temperature varies by more than 40°C.
• Maintain electrical conductivity between the two ends of rigid metallic conduit; and
• Provide conduit support saddles close to flexible couplings to permit free movement for
  expansion and contraction.
• Conduits shall be fixed at intervals of not less than 400mm utilising full metal saddles. Metal half
  saddles and PVC saddles shall not be accepted.

6.3.3 Conduits in Concrete Slabs

Do not install conduits in the following areas:

• In concrete toppings;
• Within pretension cable zones;
• Cross pretension cable zones at right angles;
• Avoid crossovers and minimise the number of conduits in any location;
• Space parallel conduits at the minimum distances required by the ACMA;
• Maximum conduit size 25 mm diameter.

6.3.4 Conduits Block Work
Locate conduits in the core and fill sections of precast hollow.

**6.3.5 Conduits in Columns**

Do not place more than four (of maximum conduit size 25mm diameter) conduits centrally in each column.

Enter columns via bends with minimum radius of 150 mm.

Do not chase columns unless where approval is obtained.

**6.3.6 Flexible Conduit**

Corrugated flexible conduit may only be used where sweep bends are required and for final connections into cameras, or for the enclosure of cabling where it is necessary to transverse a mains cable way.

Do not use flexible conduit for straight runs or chased into walls or underground cabling.

**6.3.7 Conduits and Fittings - External Use**

Where exposed to the weather or dampness, provide junction boxes with covers of heavy gauge material fitted with a neoprene gasket.

In damp and/or exterior locations, mount conduits using pre-painted galvanised saddle spacers of not less than 13mm from surfaces concerned.

**6.4 Cabling - Installation Methods**

**6.4.1 General**

Install cables in a workman like manner parallel to walls, floors and ceilings, as applicable.

Neatly loom and continuously cable tied to the catenary cable or enclosed in conduit, tray or ducting.

Install cables in a manner to eliminate any possibility of strain on the cable itself or on cable terminations.

Do not embed cables directly in plaster, concrete, mortar or other finishes.

Install cables a safe distance from items liable to become hot.

Care shall be taken in the grouping and installation of single core power cables to reduce inductive effects, including effects on surrounding metalwork.

Do not install cables from different distribution systems and system voltages or switchboards in the same length of conduit, duct or junction box.

Bending radii are to be less than the maker’s recommendation and in all cases not less than six times the overall cable diameter.

Install cables straight for at least 300mm immediately prior to entering equipment.
Where groups of sheathed cables are bunched together in the one enclosure, the maximum number of layers shall be two (2).

### 6.4.2 Cabling in False Ceiling Spaces

Support cables at intervals not exceeding 1200mm using catenary wires or approved dedicated hangers fixed to the ceiling structure. Cabling shall not be secured to hangers provided by other services, pipes, ceiling rods, or other non-structural supports within the ceiling space.

Cables shall be neatly grouped together such that cables do not rest at any point on the topside of the false ceiling, lighting fittings or other heat producing equipment.

Where tile ceiling support systems are utilised, PVC/PVC cable shall be fixed at intervals not exceeding 300mm in all spaces greater than 600mm deep. In spaces less than 600mm deep PVC/PVC cables may be fixed at intervals not exceeding 1200mm.

### 6.4.3 Cabling in Partitions and Similar Enclosures

Install cables in areas free from the protrusion of screws and similar fasteners.

Allow cables to run slack.

### 6.4.4 Cabling Installed Vertically

Support cables running in vertical ducts at intervals not exceeding 1200mm.

Acceptable methods of support include cable tray, cable ladder, unistrut channel or equivalent.

Support cables installed in vertical wiring troughs at a maximum of 5 metre intervals using an efficient and approved method of clamping to the trough.

### 6.4.5 Cables on Trays

Fix cables neatly to the tray, wherever possible, in a single layer and install parallel with the tray edge.

Install cables such that spare space capacity of not less than 20% of each tray is provided.

Install cables at fixed intervals not exceeding 1200mm by means of approved fastenings of non-corrosive materials.

### 6.4.6 Catenary Wiring Supports

Catenary wire support to comply with the following:
- Secure catenary wires by anchoring to the floor slab of the floor above;
- Not more than 24 cable runs to be bunched up and fixed to one catenary wire;
- The length of any span not to exceed 7 metres;
- The maximum sag of any span not exceed 100mm;
- Minimum separation between catenary wires not less than 150mm;
- Minimum separation between catenary wires and high temperature pipes and steam pipes not less than 300mm; and
- Adhere to cable manufacturers recommended minimum bending radius and installation practices.
6.5  **CABLE TYPES**

All security devices shall be wired in multi-core cabling to meet manufacturer’s specifications for the device.

Figure eight (8) cabling shall only be used for power supply to electric locking devices or cameras, not for data connection of other security devices.

Reed switches and other devices typically only requiring two conductors for operation shall be wired in four (4) core cabling.

6.6  **GROUNDING AND INTERFERENCE**

Each electronic panel chassis and respective signal cable shield wire shall be grounded strictly in accordance with manufacturer’s requirements to ensure against interference and earth ground loops.

The Contractor shall determine:

- Adequate shielding of cables;
- Adequate separation of cables; and
- Earthing requirements are adequate to ensure equipment operates according to the manufacturer’s specifications

The contractor shall ensure that all existing cabling and equipment is in compliance with the relevant Standards and the requirements of this Specification.

6.7  **BOLLARDS**

Bollards are to be designed to support accessories outdoors.

- Provide bollards designed, manufactured and tested by a specialist manufacturer;
- Provide bollards with mounting bases for fixing to reinforced concrete footings;

6.8  **FIXINGS**

All fixings are to provide suitable mechanical strength to the satisfaction of the Project Manager.
7 MATERIALS

7.1 GENERAL

Griffith University has an ‘Approved Security Products Schedule’ detailing a list of security products previously trialled and tested and now approved for use within the University. Under no circumstances is any deviation to be made from the selection of those approved products without written approval of Griffith University, Office of Facilities Management – Security and Traffic Manager.

Any proposed alternatives or unlisted products shall be submitted for formal approval prior to the commencement of the works.

7.2 MATERIALS, EQUIPMENT AND WORKMANSHIP

Only new materials, equipment, components and devices are to be used that are of current manufacture and first quality. The manufacturer must be approved where this has not been specified.

Manufacturer’s recommendations are to be followed with regard to workmanship and associated materials, equipment, components and devices.

If the University provides recovered equipment for use at a specific site, the Contractor is to assess the equipment's suitability and advise the University’s Project Manager should the equipment not be suitable for use.

7.2.1 UNIFORMITY

When a particular manufacturer has been adopted for fittings, accessories or equipment, all such fittings and their components must be uniform throughout the project.
8 TESTING, INSPECTION AND COMMISSIONING

8.1 GENERAL

All systems will be completely commissioned by a qualified engineer / technician with appropriate qualifications and experience to audit and give a certificate of compliance for each project. This is to include a structured commissioning sheet on Company letterhead detailing exact procedure to verify system performance as fit for purpose complies with specification and meets all applicable standards. This commissioning sheet will be signed & dated by the engineer / technician that has performed this compliance check.

Contractors can either utilise their own engineers / technicians or can employ the professional services of a commissioning engineer if deemed necessary but will form part of the Contractors cost.

A system will not be deemed fit for purpose, nor can it enter the DLP and final payments cannot be made until the above compliance testing and verification has been actioned.

Pre-plan and schedule all tests. Submit such information for approval not less than two (2) weeks before commencement of commissioning.

8.2 UNWITNESSED TESTING (PRE-COMMISSIONING)

Notice of fourteen (14) calendar days is required so that witnessed commissioning can be arranged by the University.

Before lodging this Notice, the Contractor is to conduct his own 100% pre-commissioning tests on all equipment.

Should any test fail, determine the cause of the failure, corrected the fault and repeat the test.

The Contractor shall arrange and bear the cost of all the necessary technical and other staff in addition to test equipment, including at least two (2) hand held two way radios to adequately test the installation.

All panels, power supplies, detection devices, keypads, cameras and intercoms shall be inspected and tested for correct operation.

Provide draft “As Installed” documentation inclusive of operating instruction, as installed drawings, technical and other manuals, and system programming details.

8.2.1 WITNESSED COMMISSIONING

Carry out the following commissioning procedures, testing, checking and adjustments in the presence of the Griffith University Project Manager or their nominated person(s) to demonstrate the installed systems complies with the Specification:

- Inspect installation.
- Demonstrate full system functionality.
- Provide a structured staff training and familiarisation session for the Client's nominated staff, the session being a minimum of two (2) hours duration. The training session is to cover the following minimum requirements:-
- Function and Operation of Various Systems, (generally).
• A copy of the training material and program shall accompany the Witnessed Commissioning Application Form.

• At completion of the staff training session, hand over all keys, access codes and final "As Installed" documentation to the Project Manager and obtain a signed statement from the Client that training has been satisfactorily provided.

Acceptance of the system based on the commissioning tests shall not absolve the Contractors of responsibility should any defects appear later, due to poor workmanship of faults in equipment supplied under this Contract.

8.2.2 TEST AND INSTALLATION INSTRUMENTS

Supply all instruments and appliances necessary to complete the performance tests.

Ensure all test instruments are checked for accuracy by the manufacturer or any approved laboratory prior to their use.

Provide calibration certificates if requested.

8.2.3 HANDING OVER

Prior to handing over of the installation, adopt the following procedures:

Carry out all preliminary testing, checking and adjusting of the installation before forwarding notification that the installation is considered to have reached Practical Completion.

Provide installation manuals together with post contract drawings and documentation as specified.

Practical completion will be certified only after the system has been inspected, tested and approved, all manuals and drawings have been received and approved and all of the above requirements fulfilled.
9 DOCUMENTATION AND LABELLING

9.1.1 GENERAL

Provide the following documentation as part of the scope of work, but is not limited to the following:

- Day to day operation provided on a single laminated sheet;
- Operating manuals;
- Installation manuals; and
- Maintenance manuals.

Provide two (2) copies of all manuals and “As Installed” documentation (including drawings) to be presented in hardcopy format and one (1) copy of ALL documentation on storage media correctly indexed using industry standard file display format, i.e. PDF or approved equivalent.

‘As Installed’ drawings on storage media are to be compatible with AutoCAD format.

9.1.2 OPERATING MANUALS

Provide complete sets of operating manuals that include, but is not limited to the following:

- Operating handbooks;
- Operator instruction manuals; and
- Training manuals together with interactive teaching aids (via CD ROM);

9.1.3 INSTALLATION MANUALS

Provide complete sets of installation manuals that include, but are not limited to the following:

- Full description of the Installation and the functionality of the various elements involved;
- “As Installed” drawings with a legend of symbols where applicable that include:
  - Schematic wiring diagrams with correct circuit and termination identification;
  - Final equipment layouts and locations;

If the specification requires specific performance tests to be carried out during the defects liability period, the manual maybe accepted without the results of tests being included. Provide the results within one (1) week following completion of the testing.

Further, the cabling system shall be fully documented on a cable schedule which shall detail the device location, equipment connection details, any auxiliary cabling and field cabling including cable markings and cable type. The cable schedule shall be documented on a Microsoft Excel spreadsheet.

9.1.4 MAINTENANCE MANUALS

Provide complete sets of maintenance manuals that include, but are not limited to the following:

- Manufacture’s literature, diagrams, illustrations, drawings and instructions to cover every action necessary for the efficient maintenance of the installation;
- Test reports covering works tested, site tests and commissioning;
- Details of all warranties for equipment supplied;
- Routine maintenance schedule detailing period of maintenance and activities undertaken;
9.1.5 **MANUAL PRESENTATION**

The manuals are to contain only information directly relevant to the project. General brochures and descriptive literature not totally applicable to the works under the project are not to be included. Where literature contains reference to alternative models and options on equipment not supplied under the contract, delete such references or marked "NOT APPLICABLE".

Manufacturer’s literature will be assessed on its suitability of purpose, and reproduction. If any documentation is considered to be unsuited to its purpose the Contractor shall substituted with written (typed) text. If considered to be unsuitable for copying or if illegible copies are included in final draft, include original literature to identify clearly particular items incorporated in the work. Text is to be factual and written in clear, concise English language, easily understood by tradesmen, who may not be familiar with the equipment.

Be consistent throughout with equipment and component designations and other identifying references, including text, drawings and components schedules and actual equipment. Be consistent with component designations with those included in this specification.

Data, which is provided by others, shall be collated and included in the manual so that the manual forms an integrated whole.

Submit a draft of the proposed manuals for assessment not less than four weeks (4) prior to the date of practical completion. A further draft copy of each manual may need to be submitted for approval prior to final printing. The completed manuals are to be compiled and supplied not later than the practical completion date of the work.

Present the manuals in both Hardcopy and Electronic, but is not limited to the following:

### 9.1.5.1 **HARDCOPY FORM**

- International A4 size, with stiff plastic covers and be blue in colour;
- Face cover, spine and cover sheet shall bear wording as directed and approved;
- The binding shall be of loose leaf type with all pages machine punched and shall permit pages to lie flat and enable easy insertion and removal of pages;
- A minimum of 3 rings to be used;
- Good quality, durable printing paper (minimum 80GSM) shall be used for text, printed on one side only;
- Drawings, illustrations, diagrams and photographs to be sheets of a height not exceeding the major dimension of other pages;
- Drawings shall be folded type, with no part of the drawing obscured by preceding pages. Drawings shall be folded in their length to fit covers and put into plastic inserts to enable easy removal;
- Each section to be started on a new page, separated from other sections by a stiff indented divider; and
- Each page to be sequentially numbered or otherwise identified, for quick and easy reference.
- Each paragraph to be numbered or otherwise identified, for quick and easy reference.

### 9.1.5.2 **ELECTRONIC FORM**

All documents specified above must be provided on a CD including all manufacturers’ information.
9.2 LABELLING

Comprehensively label all cables and equipment cabinets to clearly indicate their function.

All system cabling is to be identified using a cable marking system. Cable marking to be permanent and indelible and indicate a cable number, a prefix relevant to the type of device at the destination of the cable and the equipment connection location the cable is connected to in the system.

Each cable is to be identified at each point of termination with the identification numbers clearly visible within fifty (50) mm of the termination.

All wiring terminating within cubicles, control panels or equipment shall be clearly and permanently identified by means of indented letters or numbers.

Labels shall be affixed to identify each control panel or equipment, power supplies and other items as necessary.

All labelling information shall be cross-referenced to the “as-installed drawings, documentation and schedules”.

9.2.1 EQUIPMENT MARKING STANDARD

All electronic security equipment will be appropriately marked with suitable labelling on the exterior that cross-references all the Pre-Built and As Built Drawings for the project. ie; CCTV Camera No 1 will be marked - CAM 01

9.2.2 CABLE MARKING STANDARD

All cabling shall be marked at both ends within 100mm of connection point and at any joins with a clear heat shrink covered label that is clearly typed and is openly visible even when cabling is inside ducts or looms.

The cabling marking shall be recorded on all drawings including as-built and schematics and will directly mirror the marking on the cabling. A complete soft copy in XL and hard copy of the cabling schedule shall be provided with the pre-build and as-built drawings.

The cabling will be marked as follows;

Site No - Device acronym - Device No

Standard acronyms for use on GU’s Security Cabling:
PCR – Proximity Card Reader
CON - Controller
RS - Reed Switch
PB - Push Button
BG - Break Glass
LOK - Locking Device
FP - Fire Panel Interface
CT - Computer Terminal
PIR - Passive Infrared Detector
DT - Dual Technology Sensor
CAM - Camera
PSU - Power Supply Unit
DVR - Digital Video Recorder
SW - CCTV Switcher
I – Intercom

All equipment boxes, cabinets, racks will contain a schematic diagram detailing equipment and a cable marking schedule for each piece of infrastructure.
10 SYSTEM TRAINING

10.1 GENERAL

Provide the following training courses in the correct use, operation and maintenance of the system:
- User training; and
- Operator training;

Provide all instructions and full support resources including course outlines, training materials, and instruction notes.

10.2 USER TRAINING

Provide User level training in use of the new system that includes, but is not limited to the following:
- Short training sessions on the main features of the system
- Schedule enough sessions to cover all users.

10.3 OPERATOR TRAINING

Provide for operator level training to enable operators to be fully familiar with the system that includes, but is not limited to the following:
- Cater for operators of different skill and authority levels;
- Conducted on site on a fully complete and configured system;
- Enables operators to become fully familiar with all aspects of the operation of the system;
- Be structured to provide operators with sufficient proficiency to perform their duties efficiently;
- Provide an introduction to the system in the context of the site and formal instruction detailing system operation and applicable procedures relevant to the site;
- Focus on general operational techniques, control functions, including programming functions, menu functions and basic fault finding techniques;
- Provide charts and diagrams to explain principles; and
- Schedule enough sessions to cover all operators.

Provide a full set of typed reference notes for each attendee at the commencement of the course.
Provide a draft syllabus of the content of the operator level training course.
11 DEFECTS LIABILITY AND SYSTEM MAINTENANCE

11.1 GENERAL

A Defects Liability Period is deemed to be the Contractor’s Warranty Period for installation works and the Manufacturer’s Warranty Period for the security equipment installed.

11.2 WARRANTY PERIOD

The Contractor’s Warranty Period shall be twelve (12) calendar months from the date of Practical Completion (deemed to be the date of final witness testing by the University’s Representative) will apply.

At the commencement of the Warranty Period, the University will give a list of defective items to the Contractor.

The contractor shall make good the defective items within the following timeframes:

- Priority 1 (one) 4 hours.
- Priority 2 (two) next working day.
- Priority 3 (three) 10 working days.
- All other repairs 28 working days.

During the Warranty Period:

- Replace or otherwise make good any part or parts of the installation, which may prove faulty in design, workmanship or material. All replacement parts shall be new and covered by an additional 12 months warranty from the date of replacement.
- Warrant all faults and defects, which occur during the above period.
- Include all labour and all incidental costs for the removal and replacement of defective parts or components.
- Perform the required works as per timeframes listed above.
- Test all replaced items and show that the system operates as designed.

Failure to rectify defects found during the Warranty Period may result in the University engaging others to finish the required works. The costs of these works will be deducted from payments owing or billed, and the Warranty Period may be extended by the amount of excess time taken to complete them.

11.2.1 SOFTWARE WARRANTY

Where software or firmware is supplied, the contractor shall comply, but is not limited to the following:

- Be fully licensed to comply with the software vendor’s requirements.
- Provide details of software licenses and copyright information.

11.3 MAINTENANCE SERVICE

11.3.1 GENERAL

Maintenance requirements will be determined by the University and be included within the project specific Scope of Works.
12 WITNESSED COMMISSIONING APPLICATION FORM

SAMPLE FORM ONLY

The Contractor shall supply a similar form to the University project manager requesting a suitable time and date for Witness Testing.

CONTRACT: ..........................................................................................................................
CONTRACTOR: ...................................................................................................................
PHONE: ...............................................................................................................................
E-MAIL: ..............................................................................................................................
DATE: .................................................................................................................................

I ........................................................................................................................................... certify that the system has been 100% pre-commission tested by our Company and that all Contractual requirements have been fulfilled and I now request a Witnessed commissioning date be nominated by Griffith University. The following will be supplied and arranged for the day of Witnessed commissioning:

Requirement:-
  a) Final "As Installed" documentation. (Inclusive of operating instruction, technical and other manuals, drawings and system programming details, include code numbers).
  b) Staff training and system Hand Over to the Client.
  c) Two (2) staff for testing.
  d) Access to the site.
  e) Test equipment, including two (2) operating hand held radios for site communications.

<table>
<thead>
<tr>
<th>Work</th>
<th>Satisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>As Installed Documentation Supplied</td>
<td></td>
</tr>
<tr>
<td>Test all Panels</td>
<td></td>
</tr>
<tr>
<td>Test all Batteries</td>
<td></td>
</tr>
<tr>
<td>Test remote signalling to nominated Monitoring Centres</td>
<td></td>
</tr>
<tr>
<td>Test all Access Control Devices</td>
<td></td>
</tr>
<tr>
<td>Test all Duress Buttons</td>
<td></td>
</tr>
<tr>
<td>Test all Intruder Devices</td>
<td></td>
</tr>
<tr>
<td>Test all cameras (including those associated with Duress Buttons), include cleaning viewing windows on external fixed, &amp; PTZ cameras</td>
<td></td>
</tr>
<tr>
<td>Test Video Switcher (if applicable)</td>
<td></td>
</tr>
<tr>
<td>Test DVRs - recording and play-back</td>
<td></td>
</tr>
<tr>
<td>Test Communications to nominated Monitoring Centres</td>
<td></td>
</tr>
<tr>
<td>Provide report</td>
<td></td>
</tr>
</tbody>
</table>

..................................................................................................................  ..................................................
Contractor Signature                                      Date

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## 13 APPENDIX 1 - ACCESS CONTROL EQUIPMENT LIST

### GRIFFITH UNIVERSITY

### Electronic Security

Valid as of 16/11/2016

<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Manufacturer</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Security</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Access Controllers</strong>&lt;sup&gt;50&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gallagher</td>
<td>Gallagher</td>
<td>FT 6000-8H and dedicated HBUS expansion modules to suit project requirements</td>
</tr>
<tr>
<td>Gallagher (existing only)</td>
<td>Gallagher (existing only)</td>
<td>FTC 6000-8R &amp; Dedicated expansion modules to suit project requirements</td>
</tr>
<tr>
<td><strong>Card Reader</strong>&lt;sup&gt;*&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gallagher</td>
<td>Gallagher</td>
<td>T11 dual technology readers (black)</td>
</tr>
<tr>
<td>Gallagher</td>
<td>Gallagher</td>
<td>T20 Card+Pin (black)</td>
</tr>
<tr>
<td>*when reader is installed on an aluminium mullion</td>
<td>Gallagher</td>
<td>T15 dual technology readers (black) as required</td>
</tr>
<tr>
<td>*when reader is installed on ANY metallic surface</td>
<td>Gallagher</td>
<td>C300302 T11 Spacer, Black, Pk 10</td>
</tr>
<tr>
<td><strong>Mortice Lock</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lockwood</td>
<td>Lockwood</td>
<td>3570 Series Long Body</td>
</tr>
<tr>
<td>Lockwood</td>
<td>Lockwood</td>
<td>3570 Series Short Body</td>
</tr>
<tr>
<td>Lockwood</td>
<td>Lockwood</td>
<td>3580 Series Long Body</td>
</tr>
<tr>
<td>Lockwood</td>
<td>Lockwood</td>
<td>3580 Series Short Body</td>
</tr>
<tr>
<td>Ingersoll Rand</td>
<td>Ingersoll Rand</td>
<td>LEGGE 990MFE EML</td>
</tr>
<tr>
<td><strong>Power Transfer</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abloy</td>
<td>Abloy</td>
<td>8810 (Assa Abloy or Lockwood)</td>
</tr>
<tr>
<td><strong>Electric Strike</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>USE ONLY WHERE APPROVED</strong></td>
<td>PADDE</td>
<td>ES200</td>
</tr>
<tr>
<td><strong>Magnetic Lock</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PADDE</td>
<td>PADDE</td>
<td>Z4 single monitored</td>
</tr>
<tr>
<td>PADDE</td>
<td>PADDE</td>
<td>Z6 single monitored</td>
</tr>
<tr>
<td>PADDE</td>
<td>PADDE</td>
<td>Z4 double monitored</td>
</tr>
<tr>
<td>Padde</td>
<td>FSH</td>
<td>FSH</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Z8 double monitored</td>
<td>MEM2400LP (outward, single, monitored)</td>
<td>MEM2400LED (inward, single, monitored)</td>
</tr>
<tr>
<td>FEM5700M (single, monitored)</td>
<td>FEM5700DM (double, monitored)</td>
<td></td>
</tr>
</tbody>
</table>

**Power Bolts**

<table>
<thead>
<tr>
<th>Padde</th>
<th>FSH</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB25 (monitored bolt position)</td>
<td>DB1200MLDRET (monitored bolt position)</td>
</tr>
</tbody>
</table>

**Power Supply Unit**

<table>
<thead>
<tr>
<th>Access Control / Security Use</th>
<th>Tactical Technology</th>
<th>TPS13-2.5iB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Exit Device</td>
<td>Tactical Technology</td>
<td>TPS13-5iB</td>
</tr>
<tr>
<td>Trojan</td>
<td>EM-REX</td>
<td></td>
</tr>
<tr>
<td>Or similar</td>
<td>Non powered</td>
<td></td>
</tr>
</tbody>
</table>

**Panic Exit Device (Crash Bar)**

| *where required to meet BCA   | Lockwood            | 9000/91000, 9300/9400 |
| Ingersoll Rand                | Von Duprin “CHEXIT” series | |

**Exit Device**

| Smart                        | SMART4342 - Green   |             |
| Or similar                   | Non powered         |             |

**Reed Switch**

| Concealed                    | Sentrol             | 1078C       |
| Tane                         | TAP103              |             |
| Surface Mount                | Tane                | TAP1080     |
| Tane                         | TAP112              |             |
| Tane                         | TAP115              |             |
| Tane                         | 2505A               |             |
| Tane                         | 2202AU-L            |             |

**Duress Button**

| Ademco                       | 269R/270R or similar |

**Intruder Detection Devices**

<p>| Visonic                      | Subject to project requirements |
| Takex / Pulnix               | Subject to project requirements |</p>
<table>
<thead>
<tr>
<th>Bosch</th>
<th>Tritech Series subject to project requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risco</td>
<td>iWise series (360° or wall mount)</td>
</tr>
<tr>
<td>Intercom Devices (analogue)</td>
<td>REPLACEMENT ONLY</td>
</tr>
<tr>
<td>Aiphone</td>
<td>Subject to project requirements</td>
</tr>
<tr>
<td>Emphone</td>
<td>Subject to project requirements</td>
</tr>
<tr>
<td>Dallas Delta</td>
<td>Subject to project requirements</td>
</tr>
<tr>
<td>Intercom Devices (digital)</td>
<td></td>
</tr>
<tr>
<td>Helios</td>
<td>Subject to project requirements</td>
</tr>
<tr>
<td>Licence Plate Recognition</td>
<td></td>
</tr>
<tr>
<td>Genetec AutoVu</td>
<td>SharpX Model</td>
</tr>
</tbody>
</table>

14 CHANGE TO CONTROLLER BUS PROTOCOL FROM GBUS TO HBUS:

- Gallagher FT6000 HBUS: however please note that ALL new installations and controller replacements (where possible) will be HBUS compliant. (FT6000-8H modules)
- T11 HBUS – all T11 dual tech readers are to be HBUS compliant and installed in HBUS configuration
- Additional downstream devices are to be HBUS compatible and installed via HBUS – ie 8in8out door modules, and HUBS I/O boards

15 APPENDIX 2 CCTV EQUIPMENT LIST

GRiffith University

CCTV – Analogue – ALL ANALOGUE CCTV NEW AND REPLACEMENT INSTALLATIONS MUST BE APPROVED BY THE SECURITY AND TRAFFIC MANAGER

CCTV - IP

<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Manufacturer</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>All IP equipment is subject to review during design and prior to commencement of project. All IP cameras must be submitted for approval and network testing prior to installation.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NVR/DVI

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ONSSI</td>
<td>University preferred software</td>
<td></td>
</tr>
<tr>
<td>Griffith IT Server</td>
<td>Cameras direct to network and software stored on server</td>
<td></td>
</tr>
</tbody>
</table>

ALL IP solutions MUST be approved by the Security and Traffic Manager prior to project start and cameras must be listed: [http://www.onssi.com/support/_supported-devices](http://www.onssi.com/support/_supported-devices)

Hardware listed below is to be used as a guide and hardware specification must be submitted prior to install

Camera - Indoor

<table>
<thead>
<tr>
<th>Axis</th>
<th>P33 series</th>
<th>M30 series</th>
</tr>
</thead>
</table>

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<table>
<thead>
<tr>
<th>Component</th>
<th>Manufacturer</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camera – Outdoor</td>
<td>Axis</td>
<td>P33 series (outdoor, vandal resistant)</td>
</tr>
<tr>
<td>Camera – PTZ</td>
<td>Axis</td>
<td>SONY</td>
</tr>
<tr>
<td>Power Supply</td>
<td>POE (Power over Ethernet)</td>
<td>Where applicable</td>
</tr>
</tbody>
</table>