



MACQUARIE
University
SYDNEY • AUSTRALIA

CCTV IP Surveillance CCTV Standards

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VERSION CONTROL

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1.1	10/10/2017	S Myles	Cable Spec & Table Adjustment	Revised Draft
1.2	14/11/2017	S Myles	Final	Released Document

Table of Contents

1	Introduction	3
2	Australian Standards	3
3	Other References	3
4	Legislation	3
5	Using Macquarie University's CCTV Standards.....	4
6	Applying CCTV Standards and Specifications.....	5
7	System Overview.....	6
8	CCTV.....	6
8.1	Design	6
8.2	Recommended Object Sizes (Ref AS 4806.2-2006)	6
8.3	Camera Coverage Matrix.....	8
8.4	Camera Placement.....	9
8.5	Housings.....	9

1 Introduction

Macquarie University has developed minimum standards and specifications for CCTV installations. The documents incorporate high level and detailed information that when combined will enable the design, procurement, installation and operation of both campus based and remote facility CCTV.

This document provides an overview of the CCTV Standards and Specifications framework defining the difference between the two and how they should be applied to existing and future CCTV installations. Part 2 of the document details the agreed minimum security standards which can be used to either scope and design new installation or audit existing installations for compliance.

2 Australian Standards

The development of these standards and detailed specifications are based on available standards and the principles of recognised best practice. References are made to Australian Standards AS4808.2-2006 where the application of these is deemed appropriate.

3 Other References

Other reference documents incorporated into the CCTV Standards include:

- Crime Prevention Through Environmental Design (CPTED) C. Ray Jeffrey ☐
- Guidelines for Crime Prevention and the Assessment of Development Application under Section 79C of the Environmental Planning and Assessment Act – Department of Urban Affairs and Planning (DUAP) ☐
- Closed Circuit Television (CCTV) in public places – NSW Government Policy Statement and Guidelines for the establishment and implementation of CCTV (2000)
- Australian Standards CCTV Part 2: Application guidelines
- Macquarie University General Cabling Specification Version 4.2

4 Legislation

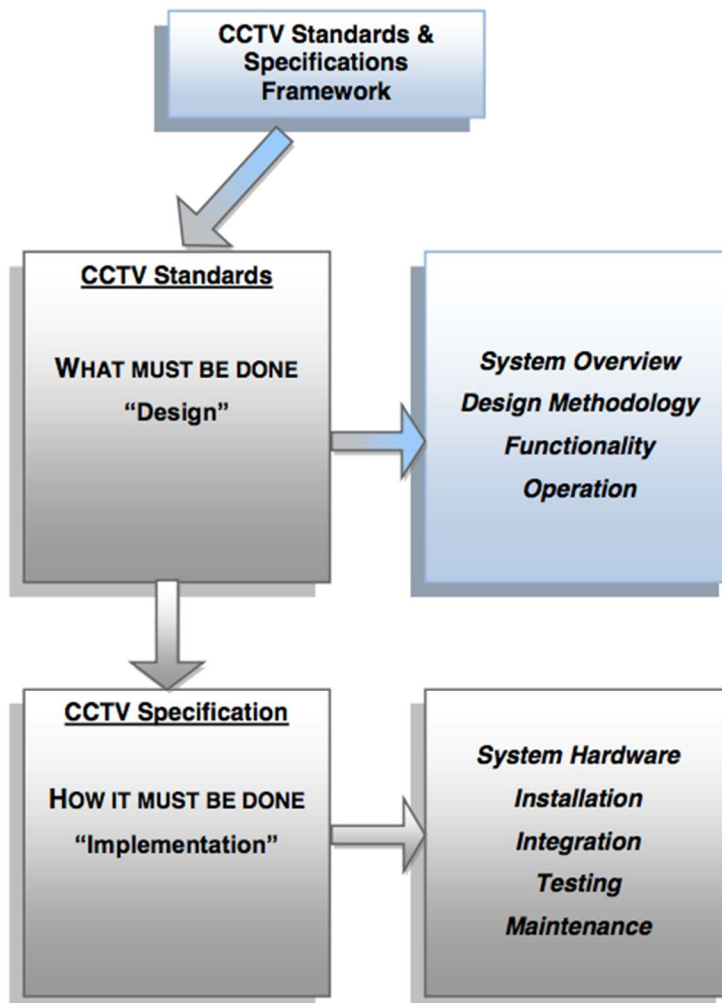
The CCTV Standards incorporate the following statutory requirements: ☐

- WH&SActNSW2011 ☐
- W H & S Regulation 2011 ☐
- Workplace Surveillance Act 2005 (NSW)
- Privacy and Personal Information Act 1998 (NSW)

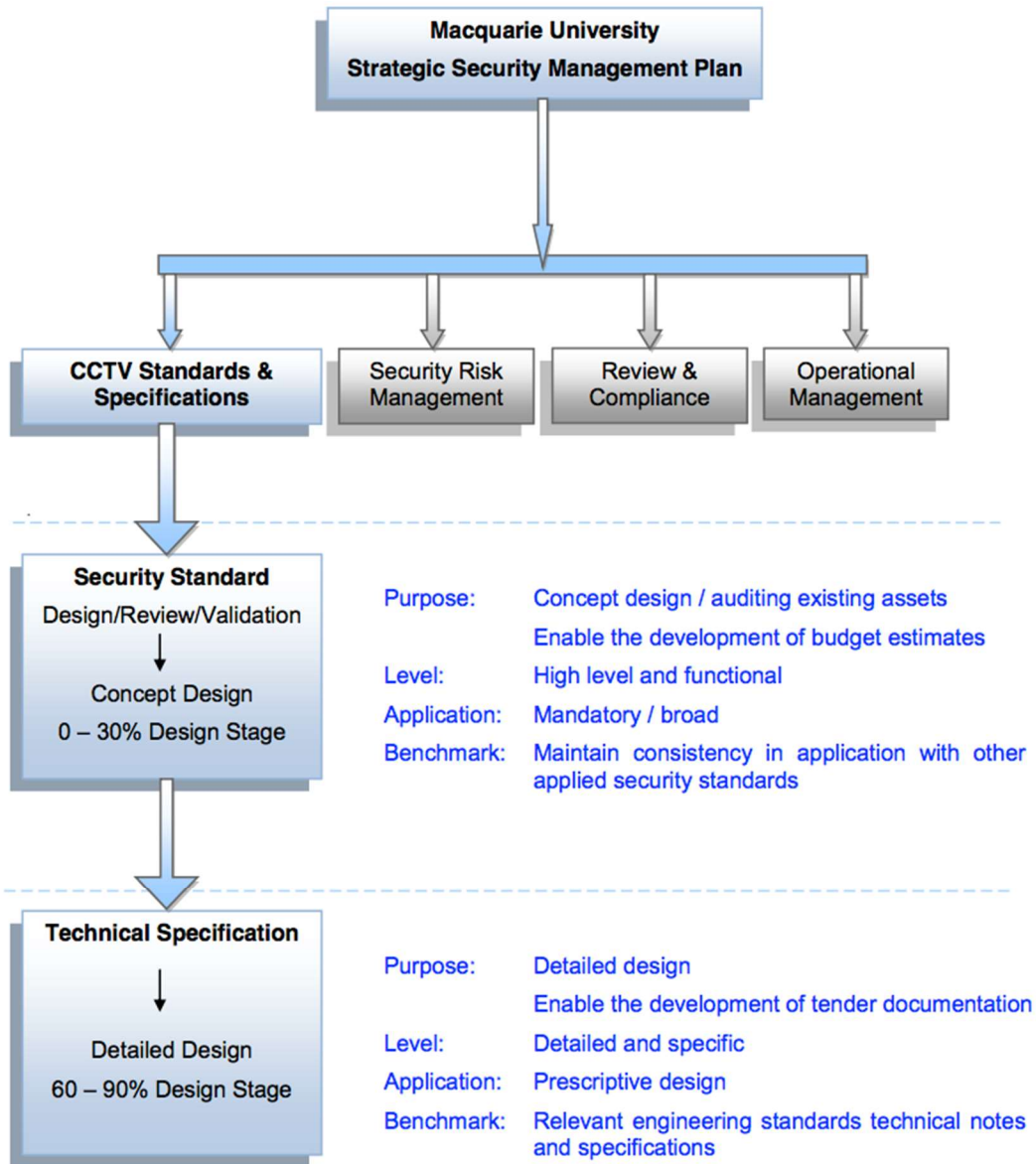
5 Using Macquarie University's CCTV Standards

The two tier approach is designed to facilitate ease of use and navigation by users from all levels, be they internal personnel or external contractors and suppliers. Whether designing a new facility, or retrofitting CCTV measure to an existing asset, the standards are compiled to enable a non-subject matter expert to determine what CCTV measures will need to be considered and/or incorporated into the project. Due to their generic nature, within reasonable limits these standards should remain relatively static and require minimal ongoing maintenance.

Should an end user require the specific detail of how a standard is to be achieved, including installation methods and functionality, the information could be obtained from the CCTV Technical Specification. Illustrations following provide a graphical representation of how the CCTV Standards and Specifications Framework is positioned within Macquarie University's Security Management Framework. These further illustrate how the standard must work in chorus with overall security standards.



6 Applying CCTV Standards and Specifications



7 System Overview

The IP CCTV System or Network Video Management System (NVMS) shall use a standard IP network to transmit High Resolution IP Cameras and digitally encoded Analogue video, audio and other data. The IP CCTV System shall have standard IP network switching and routing technology to manage the connection of live or recorded video sources to one or more destinations, resulting in a 'Virtual Matrix'.

All new cameras shall be High Resolution IP type cameras however the system shall be capable of analogue camera connection via appropriate encoders.

8 CCTV

8.1 Design

The CCTV design is to be applied as a base-line to the Campus as per the building categorisation with the prescribed level of coverage. Depending on the building category and other assessed risks surrounding the building function, additional CCTV coverage may be required. The CCTV design must provide the coverage as detailed in Table 1 and incorporates features including:

- a) The CCTV design for the Campus must be in accordance with design features outlined in the Macquarie University CCTV IP Surveillance Master Specification, [Version 1.2 September 2017] and General Cabling Specification, Macquarie University General Cabling Specification [Version 4.2 May 2017]
- b) The CCTV system must be capable of being operated and monitored by the Macquarie University Security Control Centre located at Building Y4A.
- c) The CCTV system must deliver adequate and suitably clear and sharp CCTV images and coverage to nominated areas in all diverse environmental conditions anticipated throughout the Campus including buildings, general spaces and car parks
- d) The CCTV system shall be capable of being integrated with the local electronic access control and intruder detection technologies installed within buildings or associated areas of the Campus

The CCTV system must record data in compliance with the evidentiary requirements of the NSW Evidence Act No 25 of 1995

8.2 Recommended Object Sizes (Ref AS 4806.2-2006)

The size of an object (target) on the monitor screen should have a relation to the operator task, e.g., identification, recognition, detection or monitoring.

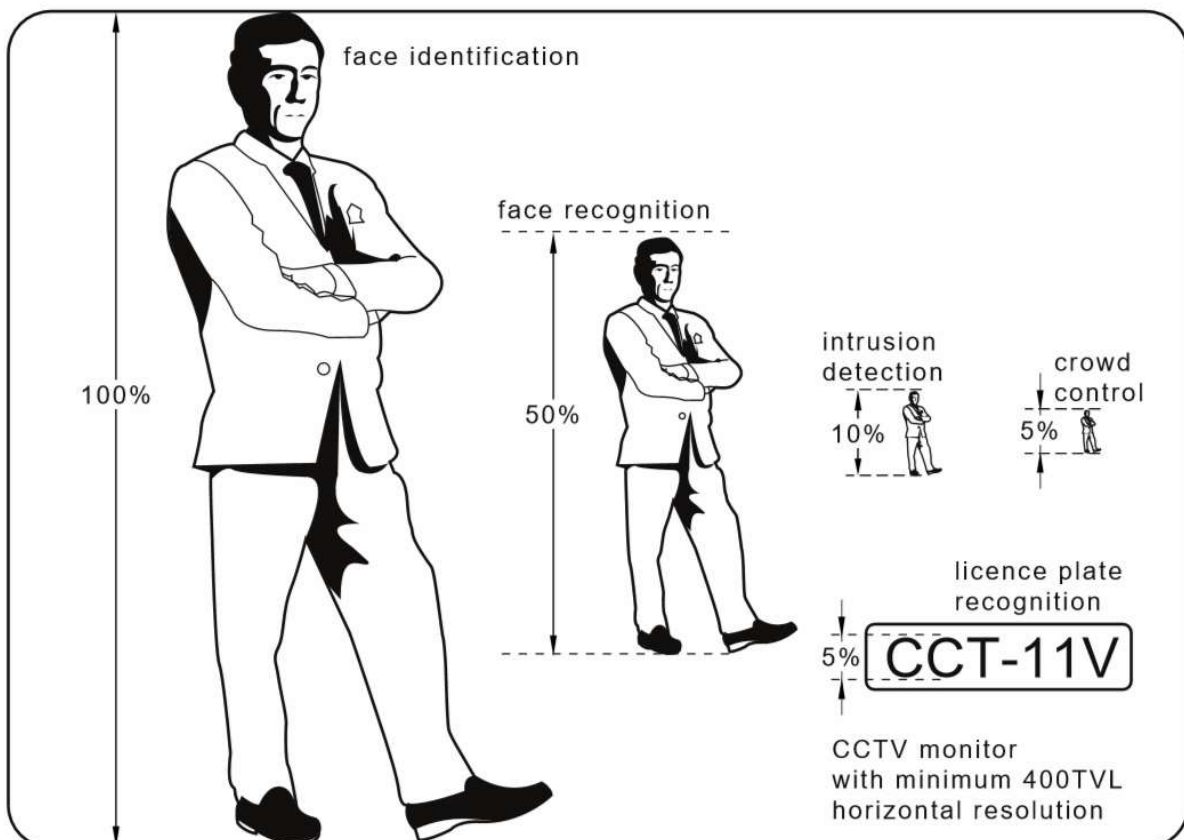
If digital recording is used, a full PAL frame resolution and highest picture quality should be used, i.e., 704 × 576 active pixels (this is equivalent to 720 × 576 ITU frame grabbing recommendations). Where possible, for better vertical resolution, TV frames are recommended instead of TV fields recording.

If the target is a person and the CCTV system has an installed limiting resolution of 400 TV

lines or more, for the whole system end-to-end including record and playback, the minimum sizes of this target should be (refer to Figure 5) as follows:

- a) For face identification, the entire target person should represent not less than 100% of screen height. It is assumed that a person's face (head) occupies around 15% of a person's height.
- b) For face recognition, the entire target person should represent not less than 50% of picture height.
- c) For detection of an intruder, the entire target person should represent not less than 10% of picture height.
- d) For crowd control (monitoring), the entire target person should represent not less than 5% of picture height.
- e) For vehicle number plate visual recognition, the licence plate characters should be not less than 5% of the monitor height.

All object sizes and images in the above measurements are assumed to be at optimum optical resolution, have good lighting conditions, be using the lowest compression setting for the system and be measured on a display device that shows 100% of the camera image view.



8.3 Camera Coverage Matrix

Table 1 below provides details of required areas of CCTV coverage

AREAS OF CCTV COVERAGE	
Campus Target Areas	Category
External and Internal Stairs	ID = Intrusion Detection
Open Areas - Walkways	CC = Crowd Control
Pedestrian Ramps	CC = Crowd Control
Pedestrian Bridges	CC = Crowd Control
Pedestrian Tunnels	ID = Intrusion Detection
Lifts (Doors & Landings)	FR = Face Recognition
Lifts (Internal)	FR = Face Recognition
Toilets (External Entry point)	FR = Face Recognition
Campus Indicator Boards (Electronic)	ID = Intrusion Detection
Fire Exit Doors	FR = Face Recognition
Emergency Help Point	FR = Face Recognition
Security Control Centre	FR = Face Recognition
Seating Areas	ID = Intrusion Detection
Food Court – Seating	FR = Face Recognition
Food Court – Tenant Areas	FR = Face Recognition
Cash Counting Rooms	FR = Face Recognition
Car park entry & exit (Note: This coverage relates to motor vehicles)	NP = Number Plates
Critical Infrastructure	FR = Face Recognition
Multi-level car park - Stair wells	FR = Face Recognition
Multi-level car park - Pedestrian entry points	FR = Face Recognition
Multi-level car park - Open areas	CC = Crowd Control
Macquarie University Bus stops (Waiting areas)	ID = Intrusion Detection
Macquarie University Taxi stands	ID = Intrusion Detection
Macquarie University Drop off zones	CC = Crowd Control

8.4 Camera Placement

- a) Where possible all cameras should be installed so that they are under the surveillance coverage of another camera
- a) The installation of cameras 'back-to-back' must be avoided
- b) Must be placed to reduce the likelihood of vandalism
- c) The placement must also give consideration to future repair and/or servicing
- d) Must ensure that they do not act as a climbing aide

8.5 Housings

- a) Only camera housings approved by Macquarie University shall be used in Macquarie University CCTV camera installations
- b) Directional housings as detailed in the contract shall be used for camera installations requiring coverage to the following definitions
 - ID,R,NP
- c) Dome housings that are either tinted or tinted with a clear viewing window shall be used for camera installations requiring coverage to the following definitions.
 - ID,CC
- d) Alternate housings must be subject to review and approval by Macquarie University Security Services
- e) Some installations may require specific camera housing types, and these must be reviewed and approved by Macquarie University Security Services

The objective of the Master Specification when used in conjunction with the design brief, is to equip potential CCTV contractors with all the necessary information to provide a fully functional cost-effective installation of finished works that complies with the University's requirements.

The CCTV Contractor is required to provide all workshop drawings for the finished system that complies and meets the Specification for the installation, commissioning, and 12 Months Defects Liability and Preventative Maintenance, (in addition to the manufacturer's warranty as detailed in the manufactures recommendations)

The objective of the specified solution is to view, monitor, and record images from all cameras across the University Campus. The system shall enable security personnel to carry out ongoing surveillance of the buildings and surrounding areas during and after core business hours, and to record images for archive, review, and evidentiary purposes. The requirement to view live vision and review historical playback at the Y4A Control Room, or any other location as determined suitable by the University.

It shall be the contractor's responsibility to install, connect and program the following;

- i. Install all new IP cameras and connection to the existing Campus Milestone Solution.
- ii. Install and program of all VMS licensing and software updates.
- iii. Installation of cabling, conduits and ducts for all new camera to the designated termination points, and any additional cabling as required.
- iv. Provide and install any required Power Supplies, UPS and racking.
- v. Include and install any camera housing, poles and associated equipment as required.

The security contractor will run all new cables to the existing IT Security Network at the various demarcation location points within the campus. The security contractor will liaise with the Universities authorised person to agree and finalise all demarcation points prior to the commencement of scheduled works.

END OF DOCUMENT