

OXNARD POLICE DEPARTMENT
STANDARDS, GUIDELINES & RECOMMENDATIONS:
CLOSED-CIRCUIT TELEVISION (CCTV) SURVEILLANCE SYSTEMS



PURPOSE

1. The purpose of these conditions and guidelines is to increase the likelihood that images recovered from CCTV systems are sufficient to enable the identification of people and objects of interest by law enforcement.

DEFINITIONS

2. Standard. Contain only mandatory requirements and use the word “shall.” Standards are indicated by underlined text.
3. Guideline or Recommendation. Use the word “should” and are indicated by text that is not underlined.

CCTV SYSTEM

4. “CCTV system” should consist of at least the following components: camera, lens, digital video recorder (DVR), protective enclosure, wiring, monitor, and uninterrupted power supply (UPS).
5. All installation work shall be executed in a neat and skillful manner a properly licensed contractor in accordance with standards set forth herein, by state, local or federal law, and in compliance with the appropriate installation manual for each device.
6. System components shall be grounded a required by the equipment manufacturers.
 - a. All system grounds will be made of a #12 AWG green solid copper conductor.
 - b. All system grounds shall be connected to a cold water pipe or structural steel with an approved ground clamp.

CAMERAS

7. One camera shall be mounted at every exit.
 - a. Exit cameras shall be aimed toward the interior of the facility
 - b. Exit cameras shall be located where it can obtain an unobstructed front view of the head and shoulders of every individual exiting the facility.
8. One camera should be placed at each point of customer transaction
 - a. Transaction cameras should be focused where the customer is expected to stand.

9. Additional cameras that provide an overview of the interior or exterior portions of the premises should be used as necessary but cannot be relied upon to provide images suitable for identification purposes.
10. All digital video cameras should demonstrate the following minimum performance characteristics:
 - a. 1/4-inch charged coupled day/night device (CCD)
 - b. Output resolution of at least 480 horizontal resolution.
 - c. Signal-to-noise ratio of at least 50 dB.
 - d. Signal bandwidth of at least 7 MHz.
 - e. Light sensitivity 0.15 lux at F2.0
 - f. Switch selectable or automatic backlight compensation
 - g. Automatic white balance
 - h. Line loss between each camera and recorder shall not exceed 45 dB.
11. Cameras shall be equipped with an automatic mechanism to ensure proper exposure under varying light conditions.
 - a. The camera field of view should not have bright illumination behind the main subject
 - b. When backlighting conditions cannot be avoided or the scenes have extreme contrast, high dynamic range or backlight compensation cameras should be used.
12. Cameras mounted in areas that are subject to tampering or environmental elements should be mounted inside of camera housings rated by the manufacturer to meet or exceed the intended use.

L E N S E S

13. Each lens shall be equipped with an auto iris function.
14. Lenses on exit cameras should be configured with a depth of field from 3-feet to at least 10-feet from the camera in order to provide images of exiting individuals that are in focus while providing overviews of the interior and head-to-foot views of people as they enter and exit the premises.
15. On exit and customer transaction cameras, the area of interest (face, license plate, etc.) shall cover 15 percent or more of the cameras field of view.
 - a. The average human head is 6 inches-wide; a 3 foot-wide field of view will meet this requirement. License plates 12-inches wide will be covered sufficiently with a 6 foot-wide field of view.

DIGITAL VIDEO RECORDER (DVR)

16. DVRs shall automatically start-up in a preprogrammed operation mode upon power-up from extended power outages. Such a function shall not require manual intervention.
17. DVR shall record each image at a minimum resolution of 640 pixels in the horizontal direction and 480 pixels in the vertical direction in frame mode or 640 x 240 in field mode.
18. DVR shall not record in multi-image modes, wherein more than one camera is recorded in a single field.
19. DVR shall be equipped with a write-once storage device such as CD-ROM or DVD recorder.
20. DVR must be capable of directly exporting still images at the highest quality setting in one of the following industry standard formats: TIFF, BMP or JPG.
21. DVR shall be capable of exporting video to uncompressed non-proprietary AVI file and the native video file format.
 - a. All output formats shall maintain accurate aspect ratios consistent with the original recordings.
22. DVR software should use “lossless” compression algorithms, where only redundant information is removed, thereby permitting the complete recovery of the original file.
23. The DVR shall be placed in a restricted access location to prevent tampering.
 - a. A locked cabinet or room is appropriate.
24. Placement of the DVR shall be in a location with proper environmental controls (e.g. heat, dust, humidity) per manufacturer specifications.
25. Data information stored in association with video images (e.g. time, date, camera information) shall not hinder the view of objects of interest.
 - a. Images linked to data should be recoverable separately.
26. Recordings should be retained for no less than ten days with the least amount of compression available within the system’s capabilities.
27. DVR should allow remote clients to view live or recorded feed via a LAN, WAN, Internet or modem.

UNINTERRUPTED POWER SUPPLIES (UPS)

28. Backup power sources and surge protection should be included in the CCTV system design to ensure that recordings are preserved in the event of a power loss.
29. UPS should provide sufficient power to run the CCTV system for a period of not less than 30 minutes and will generate commands to shut down the CCTV system in an orderly manner in case service power is not restored within that period of time.

WIRING

30. The installation of all wiring, cable, and equipment shall be performed in a workman-like manner in accordance with NFPA 70, *National Electrical Code*, and specifically with Article 725 or 800, where applicable.
31. Optical fiber cables shall be protected against mechanical injury in Accordance with NFPA 70, *National Electrical Code*, Article 70.
32. Unless specifically allowed by the manufacturer's wiring specifications, low voltage electronic premises security system wiring shall be spaced at least two inches from conductors of any light and power circuits unless one of the circuits is in a metal raceway.
33. Coaxial cable shall have a jacket appropriate for the environment and shall be compliant with local codes.
 - a. The shield of the coaxial cable shall be braided, 100 percent copper material with an efficiency rating (ER) of 95 percent or better, or reverse foil of copper braid with 100 percent ER.
34. All coaxial cable connections shall be made with a three-piece crimp BNC connector.

SYSTEM DOCUMENTATION

35. Users should maintain current documentation regarding their CCTV system on site. The Maintenance & Operations Manual is designed for use by operating personnel that fully explains all procedures and instructions of the system.
36. Documentation should include, but is not limited to, the following:
 - a. Title page
 - b. Typewritten table of contents
 - c. Make and model of all system components including software and hardware information.
 - d. Point of contact information for the system installer and/or system maintenance organization.
 - e. Site plan showing all equipment placements.
 - f. Maintenance log.
 - g. Procedures on how to operate each components of the system including start-up procedures, system configuration, database maintenance and upgrades.
 - h. Procedures on how to make copies of recordings for use by law enforcement personnel.

ROUTE MAINTENANCE TESTING AND INSPECTION PROCEDURES

Frequency	Check/Activity	Procedure
Daily	Is the system operating?	Playback 30 seconds of recorded video and confirm that all cameras are being recorded.
	Are the cameras aimed properly, in focus, and not obstructed?	Review live images from each camera.
	Is the time and date correct?	Refer to user's manual for correct procedure.
	Is the removable recording media properly installed and in the record mode?	Check that the record indicator is active.
	Is the system secured?	Check physical locks on cabinet and/or doors.
Monthly	Clean lenses and camera housings.	Follow manufacturer's specifications.
	Check environmental controls to ensure that they meet manufacturer's specifications for all system components.	Follow manufacturer's specifications.
Annually	Complete system preventative maintenance check.	A qualified CCTV technician should perform this check.
	For digital systems using hard drives for storage, a check for bad clusters and other disk errors should be performed.	Refer to user's manual for correct procedure.
	Ensure written policies and procedures regarding system operations are up to date.	Review existing policies and procedures and revise as needed.
	Ensure employee competence in system operations, including alarm-mode response.	Conduct operator training.
	Ensure system output to compact disk meets law enforcement needs.	Write sample images from system to removable media and review images on separate computer system.