Oakland Police Department

SURVEILLANCE SYSTEMS TOOLKIT

Merchant Watch & Neighborhood Watch
www.oaklandnet.com/merchantwatch
www.oaklandnet.com/neighborhoodwatch

February 2012
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ACKNOWLEDGEMENTS

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SPECIAL THANKS

Much appreciation goes to the following OPD officers and staff as well as Oakland merchant leaders and others for their expertise, feedback, and/or other assistance:

Captain Anthony Rachal, Criminal Investigations Division
Officer Steve Bang, Criminal Investigations Division
Officer Daniel Salcido, Criminal Investigations Division
Officer Jorge Pereda, Problem Solving Unit
Sun-Kwong (Michael) Sze, Neighborhood Services Coordinator
Office of District 4 Councilmember Libby Schaaf
Steve Ma, Woody’s Café and Laundromat, President - Lake Merritt Business Association
Stu Sweetow, Audio Visual Consultants, Communications - Grand Avenue Business Association
BEST PRACTICES FOR SURVEILLANCE SYSTEMS

PURPOSE
This toolkit was developed as a guide for those interested in installing surveillance systems. The information was originally created for businesses, but all the principles can be applied to residential areas as well.

INTRODUCTION
A video surveillance system basically includes the following:
1. a camera to capture images day and night
2. a recorder to record the images
3. a monitor to view the images

There are so many ways for the system to fail:
1. Wrong camera
2. Right camera used the wrong way
3. Not making the most of your site plan
4. Not getting the most of your recording equipment
5. Insufficient training of staff that works with the equipment

Surveillance systems play a vital role in preventing the same crime from happening again and assisting police in the apprehension of suspects. Recognition quality imagery is recommended for aiding law enforcement. These six points will help guide you in selection, set up, and maintenance of a good system:
1. Resolution
2. Camera position
3. Lighting
4. Image detail
5. Maintenance
6. Site plan

Resolution
Is the resolution high enough for facial recognition?
- The recommended minimum resolution by the FBI is 480 horizontal lines.
- The Oakland Police Department (OPD) encourages even higher resolution: minimum 620 horizontal lines. To capture license plates, a minimum of 720 horizontal lines is highly recommended.
- A digital system is highly recommended to record onto DVDs instead of videotapes.
- Webcams are not recommended. They are sufficient for internet use. However, they are blurry and out of focus due to resolution too low for recognizing faces and other details.

Camera Position
Are cameras positioned for clear view of the subject?
- The camera should be placed or zoomed as close to eye level as possible to capture facial features. Avoid the common mistake of viewing only the top of heads or baseball caps!
• Do your best to keep the camera out of public view.
• To respect the privacy of your neighbors, do not point your camera onto other private property. Cameras should only capture images on your private property and/or public streets and sidewalks.

Lighting
Is the lighting adequate to capture images both day and night?
• Since natural lighting changes as the day progresses, do install lighting near cameras to turn on in the afternoon or night to provide more lighting to supplement infrared LED as needed.
• In parking lots, install timers for lighting and adjust them as seasons change. For instance, as it gets darker earlier in the fall and winter, reset timers to turn lights on sooner.

Image Detail
Is your recorder set up for the best image detail?
• In terms of frame size, the subject’s head should fill 15% of the frame.
• For lens speed, OPD recommends a minimum of 7.5 frames per second (fps); 30 fps or higher would be ideal. A faster lens allows for more lighting, greater depth of field, better focus, and contrast. Fewer frames per second saves on drive space, but the problem is that there will be fewer images. Now you see him, now you don’t!

Maintenance
Are you maintaining and managing your system?
• Surveillance systems should be properly maintained and operational.
• Surveillance tapes/CDs/DVDs should not be recorded over multiple times.
• OPD encourages keeping surveillance footage for 30 days.
• There should be someone at the business who knows how to operate the system.

Site Plan
Do you have a site plan detailing system specifications?
• Cameras should be placed at entrances, exits, aisles, registers, restrooms, break rooms, and other key points.
• Make sure trees, signs, banners, shelves, and other objects are not blocking the camera.
• Putting together a site plan with correct camera coverage (locations), positioning, frames per second, and lighting leads to more likely getting a recognition quality recording.
Summary Recommendations

Camera
• Frames per second: 7.5 fps minimum; 30 fps or higher ideal
• Resolution: 480 lines minimum; 620 lines or higher ideal
• Infrared LED (to enhance night recording); install additional lighting as needed
• Weather/vandalism resistant dome
• Industry standard cables (avoid proprietary cables): coaxial for analog/wired cameras and CAT-5 for IP cameras

DVR (Digital Video Recorder)
• 500 GB hard drive minimum
• Industry standard cables (avoid proprietary cables)
• Exportability: DVD burner or USB port (to extract files onto a flash drive)
• For Apple products, check for compatibility with Mac OS and Mac supported Internet browsers

Monitor
• Television or computer monitor
• Remotely via wireless devices

Other Features
Technology evolves rapidly, so features and prices are subject to change.

Motion activated cameras help as follows:
• Saves space on your DVR because the camera records only when it detects motion
• Sends email or SMS/text alerts to notify you of activity on and around your property

Wired cameras commonly purchased are analog CCTV (closed circuit television). Digital options that allow for images to be saved to a computer or DVR are becoming more popular. There are also wired analog cameras that can record to either a VCR or DVR.

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
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<tbody>
<tr>
<td>• Reliable, stable; signal cannot be intercepted</td>
<td>• Requires wire routed through attic, roof, or walls; can be expensive</td>
</tr>
<tr>
<td>• Cameras do not need electrical outlets; powered through cables</td>
<td>• Resolution not as good as high-end IP, but sufficient for single family residence</td>
</tr>
<tr>
<td>• Less expensive system, allowing for many cameras and weeks of recording time on DVR</td>
<td></td>
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<tr>
<td>• Cameras can be replaced/upgraded</td>
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Example: Q-SEE QT428-436-5, $300 for 4 cameras, 8 channel DVR, and cables; purchased by a Lincoln Heights resident


**Wireless cameras** are becoming more popular as prices drop. Furthermore, digital options are becoming more popular than analog.

<table>
<thead>
<tr>
<th><strong>Pros</strong></th>
<th><strong>Cons</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Easily installed or moved</td>
<td>• Concrete, dense materials block signal range, and cordless phones, other wireless devices weaken the signal and video quality</td>
</tr>
<tr>
<td>• Some systems not affected by range and signal issues, e.g. Logitech HomePlug Powerline Networking allows video to stream through electrical outlets</td>
<td>• Still needs to be plugged in or use batteries (replace as needed)</td>
</tr>
<tr>
<td></td>
<td>• More expensive than wired</td>
</tr>
<tr>
<td></td>
<td>• Recording device usually sold separately</td>
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<td></td>
<td>• Usually a maximum of 4 wireless cameras per installation environment</td>
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**Examples**

- Foscam F18918W, $80 per camera; purchased by an Eastlake resident
- Logitech Alert 750e Outdoor Master System, $350 per camera; purchased by a group of Montclair residents

**IP (Internet Protocol, a.k.a. network) cameras** have their own IP address to send video over a Local Area Network (LAN). Users can view, record, store, and manage the images either locally or remotely over the network infrastructure. Wireless options are becoming increasingly more popular. IP cameras are typically digital instead of analog.

<table>
<thead>
<tr>
<th><strong>Pros</strong></th>
<th><strong>Cons</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Very high resolution</td>
<td>• Quality IP systems are much more expensive</td>
</tr>
<tr>
<td>• New cameras can be added to the network at anytime</td>
<td>• Most systems do not include a recording device</td>
</tr>
</tbody>
</table>

**Example:** Sony IPPZ6114, $1,000 per camera, no DVR

**REFERENCES**

- FBI: Caught on Camera, [http://www.youtube.com/watch?v=u5Oj2FDwLXs](http://www.youtube.com/watch?v=u5Oj2FDwLXs)

Other Resources

- *How to Install a Home Security Camera*, [http://www.ehow.co.uk/how_2020755_camera-home-security.html](http://www.ehow.co.uk/how_2020755_camera-home-security.html)
GETTING ORGANIZED

POWER IN NUMBERS
In your neighborhood or business district, if you team up, you may be able to acquire group
discounts for surveillance systems. Below are simple tips to organize your neighbors, merchant
and resident alike, to increase your buying power:

1. Research vendors of surveillance systems
2. Invite vendors to provide demonstrations of their systems
3. Select a vendor based on criteria such as price, value, and convenience of use
4. Conduct outreach to neighbors interested in a group discount

SAMPLE SPECIFICATIONS BY COMMITTEE
Below are specifications for two systems offered by one vendor (Cypress Video) selected by a
team in a neighborhood business district in Oakland. The cost was approximately $1,400 per set
of 4 cameras (2 indoor, 2 outdoor), DVR, monitor, and other supplies listed below.

Cameras

*Camera Model 1: Model S650IR*
Vandal-resistant armor dome camera with infrared (IR) night vision
2.8~12mm auto iris vari-focal lens
650 line high resolution
35 infra-red LED
3D digital noise reduction
Backlight compensation
Sens-up, poly-carbonated impact resistant dome able to withstand repeated blows from a 10-
pound hammer, 4-axis adjustment, IP68 Weather-proof rating (i.e. protected against dust and
remained functional even when submerged in water under pressure), 5.7” diameter x 4.6” height

*Camera Model 2: Model E620IR*
Vandal-resistant metal mini-dome camera with infrared (IR) night vision
2.9 or 3.6 or 6mm fixed lens
620 line high resolution
25 infrared LED
60’ IR range
3-axis adjustment
IP68 Weather-proof rating, 4” diameter x 3.5” height

DVR
4-Channel PPro4000 H264 security DVR
Built-in DVD-RW for video backup
500 GB storage
Real-time display, real-time recording
Dual video streaming
Multi-tasking, dynamic/static IP support
Each channel records individually, optimized for network and Internet access, support remote access by PC, iPhones, iPads, Android phones, Windows phones, Blackberry
120 frames per second (fps) live & recording
User friendly, simple operation, advanced central monitoring software that can view multiple DVRs from one location
Remote DVR adjustments
Multi-language including English, Spanish, Chinese, Korean, etc.

Customer to provide electrical outlets, and for remote viewing, an Internet connection near DVR.

**Monitor**
17” LCD monitor

**Other**
Cables, Mounting Kit, Power Supply

**OUTREACH**
Appendix A includes a sample outreach letter created by a committee in Chinatown. The letter explains their process and recommendations for interested merchants to participate if they so desire.

This committee contacted three vendors for presentations and selected Central Computer’s basic package, starting from $788 that included 4 cameras (3 indoor, 1 outdoor), 4 channel DVR, and LCD monitor.

Furthermore, every participating merchant has a “Neighborhood Camera Program” logo flyer or sticker in their window (as seen in the upper left corner of Appendix A).
WHO DO I CONTACT IF I HAVE VIDEO FOOTAGE?

CRIMES IN PROGRESS
For any type of crime in progress, threatening situation, or other emergencies, please call 911 or by cell phone (510) 777-3211.

Upon arrival of the responding officer(s), if you have video footage, then please inform the officer(s) right away in order for them to retrieve it or inform a technician to retrieve it.

VIOLENT CRIMES

Robbery or Assault
If you have video that may assist in the investigation of a robbery (a.k.a. person to person mugging or store hold up) or assault, please call 911 (by cell phone 777-3211).

Homicide or Shooting
If you have video that may assist in the investigation of a homicide or shooting, please call 911 (by cell phone 777-3211). Information and evidence may also be anonymously emailed to oaklandhomicide@oaklandnet.com.

PROPERTY CRIMES
If you have video for a property crime such as residential or commercial burglary, auto theft, auto burglary, etc., that already occurred to your property (no suspect in sight), then please do the following:

- Call the OPD non-emergency # (510) 777-3333 to request an officer to take a report and retrieve the video.
- OR
- Report the property crime online at www.oaklandpolice.com.
- After you receive your Report Document # (RD#) via email, please visit the Police Administration Building at 455 7th St. (238-3455) during the hours of 8am-6pm, Monday-Friday or 8am-4pm on weekends (press buzzer to gain entry on weekends). Please provide the desk officer with the RD# and video footage. The officer will write a supplemental report using that same RD# and submit the video to the property section.

If your building manager, neighbor, or other persons inform you after your report has been taken that they have video that may assist in the investigation, then please do the following:

- Provide that person with the RD#.
- That person can call the OPD non-emergency # (510) 777-3333 to request an officer to take a report and retrieve the video. Please provide the RD# to the dispatcher and responding officer. The officer will write a supplemental report using that same RD# and submit the video to the property section.
- OR
That person can visit the **Police Administration Building at 455 7th St. (238-3455)** during the hours of 8am-6pm, Monday-Friday or 8am-4pm on weekends (press buzzer to gain entry on weekends). Please **provide the desk officer with the RD# and video footage.** The officer will write a supplemental report using that same RD# and submit the video to the property section.
Dear Business Owners:

To make Oakland Chinatown safer and to discourage criminal activities, the Asian Advisory Committee on Crime, Chinatown Neighborhood Crime Prevention Council and Oakland Police Department (OPD) are canvassing Chinatown to encourage the business community to participate in the “Chinatown Neighborhood Video Crime Watch,” a program aimed to prevent crime.

Business owners are encouraged to install an additional camera outside and in front of their business or to install a new system, including an exterior camera. OPD will help business to determine camera angle and log all the exterior cameras. So that when a crime occurs police can retrieve video footage as evidence to identify and apprehend criminals.

With an overwhelming support from the Chinatown business community, many business owners wish to install a new system. A security camera system demonstration had been organized and 3 vendors, Central Computers, Reed Brothers Security and US Security Network Inc., were invited to participate. Later, a community based committee was formed to make recommendations to the community according to three categories, price, value and convenience of use.

A deliberate decision was made by the community to recommend Central Computer’s basic package which starting from $788, including a 4 channel DVR, 3 indoor cameras, 1 outdoor camera and a LCD monitor. Please note that price may vary depending on individual business establishment’s setting; however, labor cost is free. For detail information please contact Candy Kwong, Sales Manager, Central Computers, at 415-495-5888 Ext. 2109 or candyk@centralcomputer.com.

Thank you for participating in the Chinatown Neighborhood Video Crime Watch. If you have any questions feel free to contact Officer Alan Yu at 510-xxx-xxxx.