

Closed Circuit TV Video Problems and Solutions

As a video forensic expert, I have seen almost everything when it comes to Closed Circuit TV. Some of it is very disturbing, but much of it is benign -- from the lady whose ex-husband is stalking her, to the bank that just captured a robbery on video. Understanding CCTV systems has become part of the video forensic examiner's job because a majority of video evidence is made on CCTV systems. In the following article, I will give you my tips, from a forensic perspective, on CCTV.

Imagine this. You are the proprietor of a convenience store. Last night at 11:06, you rang up a customer's Snickers bar and a Jumbo Slurpee. The customer reached in his pocket, pulled out a gun, and put it to your head, demanding all the cash in the register. Terrified for your life, you gave him the money. Luckily you had a CCTV system and turned the tape over to the police. The police sent it to a forensic expert because all you could see on the tape was a dark silhouette of the criminal. Unfortunately, the robber's face and features were unidentifiable.

Although CCTV systems can prove to be beneficial for many reasons, they can be useless without some well thought out considerations. My hope is that the law enforcement and legal community will read this article and pass on the information to the businesses in their community.

CCTV is a network of cameras hooked to a monitoring system so that various locations or angles can be viewed and/or recorded. It does differ from broadcast television in that CCTV cameras are not openly broadcast through the airwaves. However, some CCTV systems have point-to-point transmissions (wireless cameras) that could be intercepted by someone with the equipment and knowledge to intercept that signal.

The benefits outweigh the drawbacks for implementing CCTV systems for several reasons. Think of how CCTV systems have helped our traffic problems. Having cameras all over our roads and highways allows accidents and traffic jams to be discovered sooner so traffic can be rerouted. In banks, casinos, airports, shopping centers, businesses and military bases, CCTV systems can prove beneficial against crime.

There are some drawbacks that can really cause problems with CCTV systems. These systems can be expensive. They can be considered an invasion of privacy. Also, a system can fail because of a bad or over-recycled tape, and the crime will not be recorded."

For some strange reason, businesses who still use VHS tape to record their surveillance often insist in recycling their videos beyond a logical limit. Then, when the expert needs to lift an image off for identification, fuzzy, blurry photos are produced.

In the convenience store example above, the camera was in the wrong position. A light was installed in a recently added display that was not in the store when the CCTV system was installed. Nobody ever updated the CCTV system or performed maintenance to discover the problem.

The purpose of this article is to share some of my experiences with CCTV footage and provide some tips from a forensic expert's point of view, sound advice to avoid costly mistakes and expensive forensic restoration.

Number one: Plan your CCTV system layout in advance. Do not put in a CCTV system without planning for your potential crime circumstances. What crimes could be

executed under the watchful eyes of your CCTV system? You can call this crisis management. Draw a diagram of this activity, and use it as your blue print for locating your camera positions. If you own a business that has a back lot to cover, don't just mount a camera to the back of your building, thinking it will do the job. Consider what you have to protect, the value of these items, and the various ways a criminal could get at them. Then, place the camera (s) to cover all potential activity. Consider multiple cameras because, in the long run, it will save you money.

Because so many systems were not planned thoroughly in advance, the majority of my forensic cases involve video restoration and clarification. So much of this can be avoided.

Number two: Use a digital video recorder and record direct to hard drive. If at all possible, do not use VHS . There are some great companies like Focus Micro and Crest Electronics who specialize in DVR CCTV systems, maintenance of the system, and training your staff to use them properly. They offer some excellent products and CCTV systems, and will even help you plan your system layout.

Here are some reasons why a DVR is superior to VHS.

- Far better image quality
- The ability to view cameras, live or recorded, from another location through the Internet
- Ease in copying images from crime scenes
- No VHS tapes to change

Number three: Make sure to account for lighting conditions as well as sun positions. About one out of ten of my cases require comparison of a frame of evidence from darkly lit video with an exemplar frame or photo. Make sure there is light where your camera is located. If necessary, hire an electrician to put in a light or two near your camera, especially if the potential crimes that warrant the installation of your CCTV system can occur at night. Duh! I can hear the installer now, "Sure looked good in daylight"!

In addition, consider sun positions all year long. Remember sixth grade science class? The sun changes positions with the seasons. Bright sun facing the camera will cause the iris in the camera to close (in automatic position), causing the image of the perpetrator to darken. Try this with your home camera. Take a video of your friends with the sun behind them instead of behind you. The friends will appear dark because of the camera's lenses adjusting for the high light level.

Number four: Plan camera positions for all possible situations. I have heard it said that if you want to rob a bank, wear a baseball cap. Why is it that CCTV installers put the cameras in high positions that will never show a criminal's face?

Number five: Keep your camera clean. Car dealerships wash their windows and cars weekly if not more often. Why don't they wash their cameras? Think about it. Many outdoor cameras are somewhat protected from the elements, but after awhile, dirt will still gather on the surface of the camera lenses.

A solution of Shaklee basic H or white vinegar in hot water will clean them nicely without scratching or clouding the lenses or protective housing. Harsh cleaning chemicals can scratch or cloud the glass, especially on Plexiglas camera housings.

Number six: Do not use wireless cameras. If at all possible, run cable and go wired for your entire network. Wireless cameras are unreliable, especially in storms.

Almost all maintenance can be performed by you or done very reasonably by a professional. Avoid costly mistakes and tragedy by keeping your system maintained and updated. (Use Google to seek a professional in your area who can help with your circumstances.)

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