A LOW COST SECURITY SYSTEM FOR THE SMALL CONSERVATION LAB

Rick Parker, Senior Conservator
American Conservation Consortium, Ltd.,
Mid-West Laboratory
101 N. 1st
Gentry, AR 72734

Abstract: Conservators, especially in private practice, have long been concerned with providing a sound security base to protect the items intrusted to them for examination and/or treatment. This paper will follow the design and implementation process for a total security system in a furniture\painting conservation lab. As with any new building project, cost was a factor. Areas discussed will include heat and smoke detection, infra red scan, power back-up, window and door sensors, keyed multiple entry, recorded entries, automatic calls to both police and fire departments, light and sound sirens, and routine maintenance. A review of the systems first eighteen months performance will also be discussed.

I. BACKGROUND

In August of 1989, work was started on a 1200 square foot conservation lab for furniture in Gentry, AR. The design of the building incorporated several security measures. There was to be no opening on either the back side (a blind alley used for utility work and access), or the street side of the building. Access to both the main entrance and loading area were to be from a controlled access driveway through a fenced in yard, both visible and well lighted. Construction lasted roughly eight months with some finish work still continuing. The security system was installed in February of 1990.

II. THE SYSTEM

One could pick from literally thousands of security options. The problem was deciding which would work best in this situation. A solid and well established firm was selected for consultation. The firm, Spurling Fire and Burglar Alarm of Springdale, AR, came to the site, reviewed the structure and made a list of the requirements needed. After several consultations, a system made by Fire Burglary Instruments, Inc., 100 Engineers Road, Hauppauge, New York 11788, was selected.

At this stage of construction, the building was little more than a skeleton frame. After selecting the system, each unit was measured and marked for its location. One of the requirements was a standard size of equipment not requiring any special fitting. All parts use standard electrical boxes and fit within 16 oc standard framing. One circuit was left for just the security system in the main electrical panel.

The system chosen, the Star XL-4600, was flexible enough to fit all requirements needed as well as fit the budget. Standard specifications include the following: EEPROM based control communicator, six programmable zones plus a wired panic, keypad programming, LED keypad, battery back-up, siren and remote monitoring. The system was laid out in the following manner. Both doors, entry and loading, were wired for entry as were all ten windows. Again, all possible entry was confined to only two visible sides of the building. An infra-red motion detector was installed inside the structure to cover the entire inner floor space. The building is approximately 1200 square feet, and fully open inside with no partitions. The infra-red scan is capable of covering every corner of the structure. A smoke and heat unit was installed centrally in the building. A 135 degree sensor was installed for the unit. A nice feature on the heat unit alerts the monitor if there is a ten degree rise in temperature within sixty seconds. As a result of pre-planning the system into the building, we decided to locate the brain in the attic of the structure.

This was done to deny access to anyone with the ability to break in and re-program. The ceilings in the building are eleven feet high and there is no readily available entry to the attic. All wiring is completely underground or under the building. All conduit carrying the wiring for the system is buried in the walls behind 7/8″ thick elm panels. Should the system be violated or a power outage, an eighteen hour battery back-up takes over. This back-up is constantly monitored at the keypad. Should the AC power ever go down and come back on, the system automatically arms itself. Programmed into the system is a fifteen second delay, which allows the individual desiring access, time to enter the access code. Fifteen seconds does not allow time to access either the cables or the brain to de-arm the system.

The programable features of the system allow considerable variation in the use of the unit. The Star XL4600 allows four separate keypads to be used. There are six programable codes that can be entered for access to the system, but only one code that will program the system. Employees, or relatives may have access to certain portions of the building, but will be unable to alter the system. Each entry to the system is also monitored, and if required, a recording of each entry by time and code can be obtained. A STAY feature allows the system to be armed while remaining in the structure. Anyone or all of the interior zones may be deactivated, while still retaining full monitoring of all perimeter protection. An INSTANT feature instantly activates the alarm while bypassing the time delay. The BYPASS mode is designed to eliminate zones that are not ready for use or from activating the system. A KEYPAD PANIC allows a signal to be sent directly to the monitoring station in case of emergency. A special DURESS code allows any forced entry under duress to be noted and the proper alarm sent without detection.

III. COSTS AND INSTALLATION

The budget allowed $600 for a security system. The Star XL4600 complete and installed was slightly less than $500. This figure is somewhat misleading. Much time was saved by pre-planning the location of all the involved components. Also, this was a new structure with no interior walls, and access at installation time to all walls, was open and without insulation and covering of any type. There were no obstructions of any type to hamper running of the wire or placement of the master components. Costs of both material and labor would go up considerably should this same system be applied to an existing structure. Installation of the system was very straight forward and fairly simple. Anyone familiar with the local codes and electrical procedures could easily install this type of system. Monthly monitoring costs are $20 for round the clock protection. As a result of some early planning the only visible signs of anything relating to a security system is one keypad by the door and one infra-red unit high up on the back wall.

IV. REVIEW

As with most things, time is the best judge of satisfaction. The Star XL4600 has performed very nicely and for the most part, as planned. It is easy to use, and very easy to program. The special features all operate as advertised. The brain of the system appears to be very sensitive to vibration however, and the only problem with this particular system relates to this area. The entire system was installed before completion of the building. While installing siding near the unit, it went off. Apparently the vibrations from hammering on the exterior of the building dislodged something in the master control unit. From that point on, the system would go off with no more vibration than shutting a door. It is at this point, that placement of the unit in a fairly unaccessible area becomes a problem. Control from the keypad was impossible and the only way to shut the system down was to get into the attic and disconnect both the AC circuitry and the battery back-up. A good point here to note, is that the siren does attract attention, and the monitor calls do go out to both the police and fire units. The problem was temporarily fixed by

the company, but has since proven not to be adequate. A new brain is scheduled to be installed to correct the problem. The infra-red scan has also proven to be very effective. It constantly monitors the building. Any movement catches one of its invisible fingers and lights the system. If the unit is not armed, nothing more than a flash on the unit occurs. If the unit is armed, you have fifteen seconds to enter the access code before it goes off. The system is sensitive and is capable of picking up even a flying insect which happens to break its beam. It is also worth noting, that the system does attract a lot of attention. Visitors do notice and comment on the funny little red light that goes off every time they move. Less noticeable, but still mentioned, is the keypad. The wired doors and windows, while less visible, still offer a nice pad of protection. This is re-affirmed when opening a door and hearing the familiar tone of the system warning. Clients have a more secure feeling about their property as well, when they know time has been taken to safeguard their possessions.

This system has worked very well in this case because it was designed for this particular application. It may not work as successfully in another use or in another building. There is no such thing as a blanket alarm system that will do all things in all situations. It is important to seek professional help and to consider each application with its own particular needs before buying such a system.