

June 20, 1995

Introduced By:

JANE HAGUE

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Proposed No.:

95-447

MOTION NO. **9619**

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A MOTION adopting the plan for the Courthouse duress alarm system.

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WHEREAS, expenditures were authorized in Motion 9493 for the purpose of seeking the advice of a consultant with respect to the replacement of the courthouse alarm system, and

WHEREAS, the scope of work outlined in Motion 9493 provided that the consultant study elements to be addressed as part of a functional system plan which provides options and recommendations for improvements to the duress alarm system, including stand-alone electronic systems and systems which combine electronic features with security dispatch staff, and

WHEREAS, a security consultant provided recommendations for a duress alarm system and functional system plan, and

WHEREAS, the replacement of the duress alarm system is an integral element of a coordinated, responsive building security program;

NOW, THEREFORE BE IT MOVED by the Council of King County: The plan contained in Attachment A is hereby approved.

PASSED by a vote of 11 to 0 this 24th day of July 1995.

KING COUNTY COUNCIL
KING COUNTY, WASHINGTON

Kent Pullen
Chair

ATTEST:

Gerald A. Peterson
Clerk of the Council

Attachments: A - Alarm and Communications Study
B - Motion 9493

Attachment
A

9619

F I N A L

**King County Courthouse
Alarm & Communication Systems Study
Phase I**

Prepared for
King County, Washington

May 18, 1995

Prepared by



ENGINEERING - CONSTRUCTION MANAGEMENT

Justice Systems Corporation
Issaquah, Washington

I. Foreword

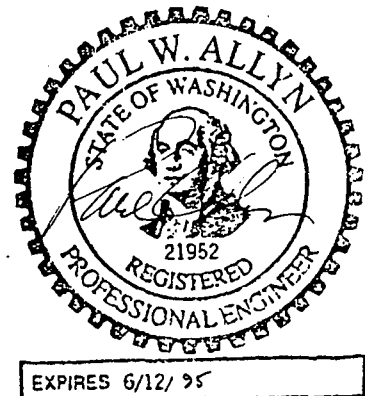
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The purpose of this Courthouse Alarm and Communication Systems Study was to prepare a functional system plan for a replacement alarm and communication system within the King County Courthouse in response to a purpose statement prepared by the Security Oversight Group. Goals of the study were to investigate and assess the current courthouse alarm and communication systems, survey existing alarm system wiring, and to provide recommendations for replacement systems, including the use of existing or new wiring. The study was to be performed in conjunction with representatives of the Superior Court and Department of Public Safety court security unit under the direction of the Technical Working Group for building security.

Because of its expertise in performing past studies of this type, and its principal's involvement with design of the County's new Regional Justice Center (RJC), Justice Systems Corporation was selected to perform the study and signed a consultant agreement (Contract No. P-02928-P) on April 10, 1995 for this purpose. This Phase I report summarizes the study's findings and presents system options and improvement recommendations. A draft version of the report was submitted to King County on May 4, 1995 and presented to the Technical Working Group on May 5, 1995. Review comments from the draft report and presentation have been incorporated into this final report.

Future phases of Justice Systems' work will proceed with the implementation of these recommendations, as adopted by the County. The identification and evaluation of potential vendors for a replacement system and bid document preparation will be performed in Phase II. Phase III services involve the installation of the replacement system and its acceptance testing.

By agreement, Justice Systems also coordinated its study with the architectural security review of the courthouse being performed under a separate consultant agreement by Robert Glass & Associates. Since the goal of these coordination activities was to ensure a comprehensive, thorough, and balanced security program, this report also resolves areas of overlap between the two projects and proposes the future consolidation of both projects to produce a single, integrated security plan (ISP) for all needed security improvements.



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III. Summary

A. Findings

The Courthouse Alarm and Communication Systems Study found significant reliability problems with the two, parallel duress alarm systems currently installed in the King County Courthouse and the cellular telephone system used for security communications.

The reliability of an older, "hard-wired" duress alarm system that reports to the alarm console in the Communications Center, was found to be compromised by its lack of wiring integrity and intermittent staffing problems. A newer, "soft-wired" and "remote" alarm system that was intended to supplement the older system was found to be even less reliable than the older system. It was also found to suffer from wiring integrity problems that are compounded by slow and unpredictable response times, and non-functional or lost wireless alarm transmitters.

The cellular telephone system that is currently used for voice security communications, and to establish a direct audio link with a alarm site speakerphones, was also found to be unreliable. Cellular coverage of the lower floors is poor and calls are often blocked by other traffic. The direct audio link feature was found to be generally inaudible and difficult to operate with sometimes unpredictable results.

B. Recommendations

As a result of these findings, Justice Systems recommends the following:

- Replace the existing, parallel duress alarm systems with a new centrally-monitored system, partially reutilizing existing pushbuttons and wiring.
- Dedicate wiring to the alarm systems and do not share wiring with another system. Electronically supervise alarm wiring for integrity and provide an automatic trouble alarm at the central monitoring station (CMS) when problems are detected.
- Eliminate the alarm paging feature by not installing the optional alarm paging system.
- Completely eliminate the use of cellular telephones for security communications and eliminate the direct audio link feature between the alarm site speakerphone and responding security personnel.
- Purchase portable radios and install a desktop station, bidirectional amplifier, and rooftop antenna system in order to use the County-wide, 800 MHz trunked radio system for security communications.
- Reconnect existing courtroom ceiling microphones and existing courthouse cameras into a new audio/video surveillance and recording console in the new first-floor central monitoring station. Also feed the nine superior courts equipped with a video court recording system to the new console ("Alternate 1").
- Install cameras, but not microphones, at 15 key alarm sites where staff interface with the public, valuable items are present, or the threat to staff is considered high.

Connect these locations to the new audio/video surveillance and recording console. Determine the exact location for these cameras during Phase II ("Alternate 2").

- Add cameras to the remaining 47 courtrooms not otherwise equipped with video court recording systems, and microphones to the few courtrooms not equipped with microphones, and connect these locations to the new audio/video surveillance and recording console above. ("Alternate 3").
- Do not install microphones at every camera location not otherwise equipped with a microphone ("Alternate 4").

When implemented, the above recommendations will not provide audio and visual alarm assessment for the new central monitoring station at every duress alarm site. However, all courtrooms and the most volatile areas within the courthouse will have a camera present and all courtrooms will have a microphone. The resulting system will provide reliable alarm and assessment coverage of the courthouse and a much greater sense of security to courthouse staff.

C. Probable Cost Summary

• Basic alarm system replacement	\$90,000
• 800 MHz radio communications system.....	\$98,100
• Alternate 1, basic A/V surveillance & recording system	\$23,972
• Alternate 2, public counter A/V surveillance & recording system.....	\$13,215
• Alternate 3, courtroom video surveillance & recording	<u>\$66,813</u>
Cost summary total	\$292,100

These costs assume, and in fact rely upon, implementation of the architectural security review recommendations prepared by Robert Glass & Associates, since the cost of central monitoring station equipment was removed from this study to prevent overlap between the two studies. These costs also include sales tax and design contingency, but do not include consultant fees, administration costs, or owner's contingency.

D. Action Plan

After approval or modification of the above recommendations, the County should move immediately into Phase II of the alarm and communication system improvements, including vendor prequalification and bid document preparation.

We also recommend the preparation of a consolidated, Integrated Security Plan (ISP) for the courthouse, thereby combining the recommendations of this project with the architectural security review being performed by Robert Glass & Associates. However, we recommend that bid documents for the alarm system replacement and other electronic security systems be prepared at the same time that the ISP work is underway, not afterwards. Waiting until the ISP is complete could delay the implementation of these urgently needed improvements by 3 - 4 months.

We further recommend that all electronic security system improvements — both those recommended by this project and by the architectural security review — be performed by a fully-qualified, performance-bonded security systems integrator/installer and that such

firms be prequalified prior to bidding. Finally, we recommend that all named vendor products have a suitable track record in courthouse security applications of this type, and be installed according to all governing codes and regulations.

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IV. Introduction

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A. Background & History

The Courthouse is currently equipped with two parallel duress alarm systems: 1) an older, "hard-wired" system that is monitored at console in the Communications Center, and 2) a newer, unattended, telephone-based "soft-wired" and "remote" duress alarm system. Security communications presently utilize cellular telephones. A video surveillance system is installed at three courthouse locations.

1. "Hard-wired" duress alarm and audio surveillance system

Generally, a "hard-wired" type alarm station exists within each superior court and is wired directly to the existing alarm console in the Communications Center. Each hard-wired courtroom alarm site is accompanied by a ceiling microphone that is also wired to the console and allows Communications Center personnel to monitor an audio signal from the alarm site.

This older system proved undependable for personnel security because:

- It had no expansion capability for additional alarm sites,
- Communications Center personnel have significant distractions from their primary duties and do not always staff the alarm console position, and
- The integrity of alarm console wiring was insufficient to guarantee alarm reliability.

As a result, the County left the hard-wired system in place, but also proceeded with the installation of a more reliable system.

2. "Soft-wired" and "remote" duress alarm and radio paging system

The newer alarm system was intended both to add alarm sites not included on the hard-wired system and to transmit alarms directly to responding security personnel. There was also a desire with the new system to accelerate response time without the cost of full-time staffing at a fixed security post.

The procurement of the new system was won by Security Holdings largely because its proposal avoided the significant costs of dedicated alarm wiring by using existing building telephone pairs. Each "soft-wired" alarm station connects to a nearby "Voice Partner" autodialer which then dials its alarm to one of two alarm monitoring computers over US West telephone wiring as if each alarm site were a standalone business or residence. The computer, in turn, dials a radio paging service and transmits the alarm location, which is then broadcast to pagers worn by courthouse security staff.

"Soft-wired" alarm stations of this type are currently installed in each courtroom and at many other alarm sites within the building. In addition, the system uses "remote" stations (battery-powered wireless transmitters) for wireless alarms to nearby Voice Partners. Remote stations are typically found within each chambers, at many public counters, and at many of the clerk's and bailiff's desks within the courtrooms.

The newer system has proven perhaps more unreliable than the older system for many reasons:

- Staff has found the response time to be quite slow (up to 10 minutes) due to the time required to establish each telephone connection and to wait through the paging queue at the commercial paging service.
- The shared telephone pairs are sometimes disconnected or rewired during telephone system changes and alarm transmissions are occasionally interrupted by telephone activity.
- Remote alarm stations are either difficult to find in an alarm situation, lost completely, or need battery replacements and do not work.

3. Cellular telephone system

Two-way communications between the alarm site and responding security personnel is currently implemented via cellular telephone communications using one or both of two methods:

- “Hard-wired” alarms: A cellular telephone call from the Communications Center for, and
- “Soft-wired” and “remote” alarms: Automatic establishment of a cellular telephone link between a speakerphone at the alarm site and one of the telephones carried by security personnel

In practice, staff have found cellular telephone communications within the courthouse building to be highly unreliable for these critical messages. In part, this is because emergency calls must compete with other cellular telephone traffic and may be blocked for several minutes. In addition, cellular coverage of the lower floors of the building is poor and attempts to reorient the US West antenna and add distributed antennas to the building have not yet solved the problem.

The direct telephone link to the courtroom has proven even more problematic. The audio signal received is completely unintelligible due to poor acoustics and surrounding noise at both the alarm and monitoring sites. Were the signal intelligible, personnel still could not monitor the transmission and run to the alarm at the same time. Although the system supposedly lets security staff reverse the path and talk to the alarm site, this feature is of little practical value and is difficult to operate. Finally, the entire time that the telephone is being used for these purposes it is useless as a communications device.

4. Video (CCTV) surveillance systems

The courthouse currently has three small video (closed circuit television) surveillance systems:

- Communications Center: A second console adjacent to duress alarm console that surveys cameras at several entries, the first floor lobby, and evidence/property corridors
- First Floor Lobby: A monitor that surveys cameras at the Third Avenue entrance and loading dock

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- Main Evidence Room: Two monitors that survey cameras in the viewing room and the evidence room entrance

The cameras are black and white. Even when these cameras have duress alarms associated with them (which few do), they are not currently integrated into the duress alarm system. In addition, nine courtrooms have color cameras associated with video court recording systems that are used to put the court record on video tape. However, these systems are not currently surveyed for security purposes.

B. Purpose Statement

Since the alarm system is thoroughly tested on a periodic basis and always performs poorly due to its many problems, courthouse staff have never considered the system trustworthy enough for their personal safety. In response to these concerns, the Security Oversight Group put forth the following statement of purpose for a replacement alarm system:

“All court related areas, and other sites in the courthouse where security intervention could be required, should have an alarm system that:

- 1) is easily accessed by judges and court staff to alert security personnel to an emergency occurring in a court area,
- 2) is silent in nature, ringing only in a security area indicating the exact court location,
- 3) is 100% reliable (the system should be accident proof, capable of handling all incoming alarms under all circumstances),
- 4) communicates the alarm situation to security personnel as soon as possible, but in no case more than 20 seconds,
- 5) provides two-way audio communications between the alarm site and the responding security personnel,
- 6) provides an audio and video record of what occurs,
- 7) uses state-of-the-art technology,
- 8) neither response time nor reliability should be compromised to add features noted in 5 and 6 above, and
- 9) is compatible with the current trend in security system development, including security designed for the Regional Justice Center.

Duress alarms should also be installed in court areas at Juvenile Court, at the courtroom at Harborview Hall, and at the Superior Court Family Court Services offices, and at other sites where security intervention could be required.”

With the exception of the remote sites, such as Harborview Hall, which will be considered in the next phase of this project, this study and report of recommendations is in direct response to this statement of purpose.

C. Study Methodology

In order to make more detailed recommendations, this study subdivided the statement of purpose into different subsystems, options, and alternatives, as follows:

- **Basic duress alarm system:** A direct replacement of both the older and newer duress alarm systems with a new, hard-wired system that will be monitored at a new, fully-staffed, fixed central monitoring station (CMS) within the courthouse.
As an option, continue to transmit alarms directly to mobile security personnel, but install a dedicated paging system for this purpose.
- **Radio communications system:** Replacement of cellular telephones with portable radios and a desktop control station at the CMS operating on the new, County-wide, 800 MHz trunked radio system.
- **Audio/video surveillance and recording system:** The addition of audio and video surveillance, alarming, and recording to the new alarm console at the CMS for the purpose of assessing and recording alarm incidents. Since these new system features could prove costly, four successive options (i.e., "alternates") were studied.
 - **Alternate 1, Basic A/V surveillance & recording:** A rewiring of the existing ceiling microphones and cameras to the new alarm console at the CMS, along with audio and video surveillance and recording of the nine superior courts equipped with a video court recording system.
 - **Alternate 2, Public Counter A/V Surveillance & Recording:** In addition to Alternate 1, adding cameras (no microphones) at 15 key alarm sites where staff interface with the public, valuable items are present, or the threat to staff is considered high.
 - **Alternate 3 - Courtroom Video Surveillance & Recording:** In addition to Alternates 1 and 2, adding cameras to the remaining 45 courtrooms not otherwise equipped with video court recording systems.
 - **Alternate 4 - Additional Audio Surveillance & Recording:** In addition to Alternates 1, 2 and 3, adding microphones at every camera location not otherwise equipped with a microphone.

D. Central Monitoring Station (CMS) Assumptions

This report assumes the construction and staffing of a central monitoring station (CMS), as recommended by the architectural security review. We understand that the most likely location for the CMS will be within the new security office planned for Room E189 on the first floor of the courthouse. This report also assumes that the CMS will be staffed around-the-clock, but it does not include any costs for staffing.

At a minimum, the CMS will include a new security alarm console and a communications console for routine and emergency security communications. Given the approval of additional alarm system features, the CMS may also include an audio/video surveillance and recording console. Finally, after coordination with the architectural security review, access control features, as well as other video surveillance and security alarm features, may also be added to the systems within this room.

E. Report Organization**1. Organization by system and alternative**

The remainder of this report is organized by system and option/alternate, as outlined above. For each option/alternate the report includes:

- Major recommendations
- System definition statement
- Operational features
- Statement of work & probable costs

2. Major recommendations

This subsection summarizes the key findings of the study with respect to each option/alternate.

3. System definition statement

The system definition statement subsection includes an abbreviated, outline specification of certain system parameters and components. These assumptions were previously confirmed with representatives of the Superior Court and Department of Public Safety court security unit, and are intended to give the basis for probable cost estimation.

4. Operational features

These subsections act as a very preliminary operations manual for the recommended system and could be incorporated into an integrated security plan (ISP) for the courthouse during Phase II. These assumptions were also confirmed with representatives of the Superior Court and Department of Public Safety court security unit.

5. Statement of work & probable costs

Explanations for the columns within the tables of these subsections are as follows:

<u>Statement of work:</u>	This column reports a recommended scope of work for the new system, based upon the study results. Numbers within brackets represent the estimated quantities of devices or equipment upon which probable costs are based.
<u>Equip. (Est. Qty.)/Labor:</u>	This column itemizes new system devices and equipment, and any existing devices to be reconditioned. Numbers within brackets represent the estimated quantities of devices or equipment upon which probable costs are based. Labor costs include engineering, installing, and testing for either a system contractor's crew or the County's own forces.
<u>Probable Cost:</u>	This column gives the probable cost to the County for each scope item including all project-related direct/indirect costs, contractor's overhead and profit, and all applicable taxes and permits.

6. Action plan

The action plan recommends the steps necessary for implementation of this study's recommendations and for future coordination of this project with the architectural security review.

7. Appendices

Appendix A includes a detailed list of alarm system problems either reported by representatives of the Superior Courts or directly observed by the consultant during a survey of alarm sites. The appendix also lists proposed solutions for each identified problem. The resulting problem/solution analysis forms the basis for the recommendations which follow.

A memorandum on radio system equipment is included in Appendix B as the basis for many of the costs given in the radio communications section. Appendix C includes a layout of the RJC courthouse security office for reference in planning the central monitoring station at the King County Courthouse.

Finally, an ISP coordination matrix by system for coordination between Justice Systems and Robert Glass & Associates in the next phase of work is included in Appendix D.



V. Duress Alarm System

A. Basic System

1. Major recommendations

- Eliminate all Voice Partner autodialers and hard-wire all "soft-wired" alarm stations into the new system.
- Replace all "remote" alarm stations with new pushbuttons of the same type currently used and hard-wire these alarm stations into the new system.
- Add approximately 30 additional alarm sites within the courthouse.
- Utilize existing horizontal wiring from each alarm site to the building telephone closets, but eliminate the shared use of telephone pairs and use only dedicated wiring.
- Install a new dedicated, alarm system conduit and cabling riser between telephone closets on each floor.
- Eliminate the Communications Center alarm console and the unattended alarm computers. Install a new alarm computer, color-graphic display, and alarm printer at the central monitoring station.
- Integrate all courthouse security alarms, access controls, and elevator controls, including those recommended by the architectural security review, into the new alarm and control console.

Figure 1 illustrates the recommended basic alarm duress alarm system.

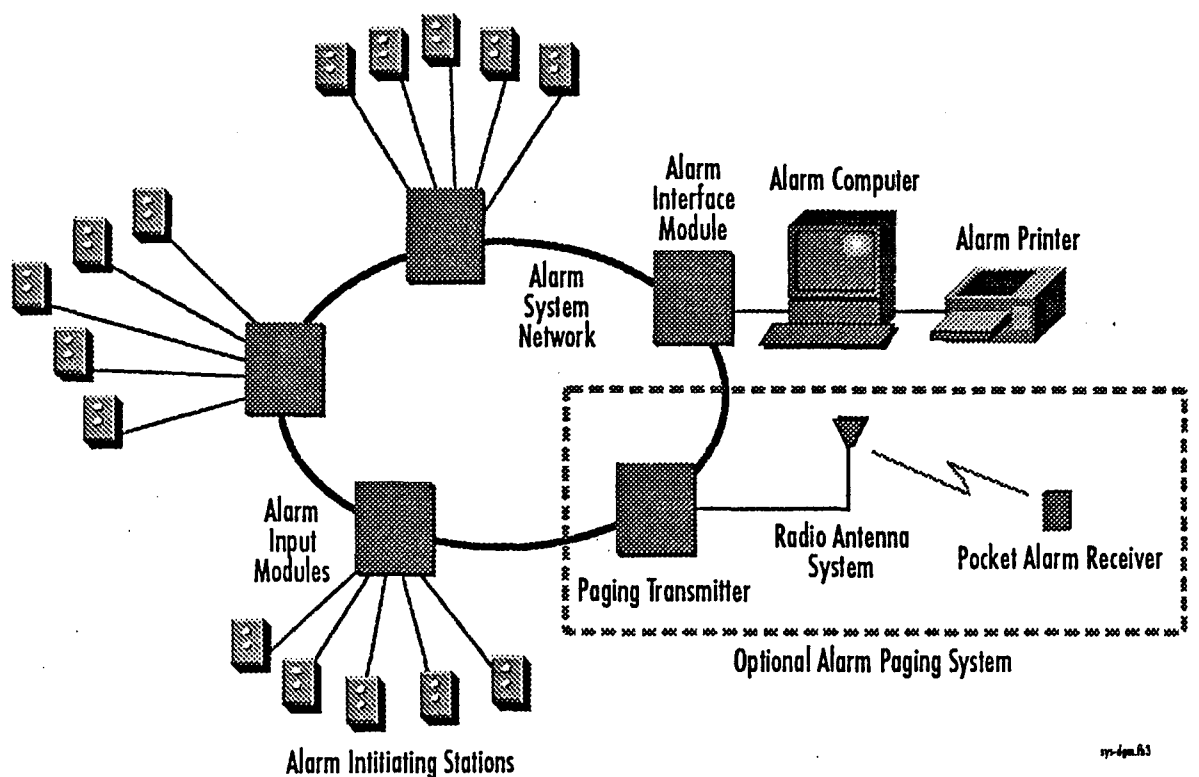


Figure 1 - Basic Duress Alarm System and Optional Alarm Paging System Diagram

2. System definition statement

Existing Alarm Sites: All 84 existing alarm sites (150 alarm initiating stations) will be rewired to the new alarm system. Each of the 56 courtrooms (45 superior courts, 5 district courts, and 6 commissioner courtrooms) will be a single alarm site, even though each courtroom may have up to four alarm initiating stations (one each at the bench, clerk's desk, bailiff's, and inside chambers). Similarly, each of the other 28 alarm sites, such as the evidence room and other locations, will be wired to produce a single alarm site, even though they may have multiple alarm initiating stations.

New Alarm Sites: An allowance of up to 30 new alarm sites will be included in the replacement alarm system. The exact location of these new sites will be determined during Phase II design. However, candidate alarm sites include:

- New superior court on the second floor (E211)
- New superior court on the second floor (E259)
- Main evidence room (A19)
- New admin services area (C201)
- CASA area (C201)
- Arbitration & family law facilitator (C211)
- Family law counter (W363)
- Law library reception counter (W621)
- Court Administrator's office (E935)

- Trial assignments coordinator (E942)
- Mark's Cafeteria (C154)
- 12 additional sites identified in the architectural security review
- Seven unidentified additional sites

Alarm Initiating Stations: Alarm initiating stations will utilize fixed, hard-wired, two-button pushbuttons, that require both buttons depressed to initiate an alarm. Each button will be encircled by a collar guard to protect it from accidental activation. Buttons will be surface-mounted on a stainless steel plate inside an electrical outlet box. Existing stations of this type will be reconditioned and reused. Stations not of this type will be replaced.

Trouble Supervision: For reliability purposes, all wiring to alarm initiating stations and between alarm input modules will be electronically monitored for integrity (i.e., "supervised"). The alarm computer and printer will automatically detect all wiring fault conditions and record their location.

Alarm Interface/Input Modules: Distributed alarm interface/input modules will be installed in each telephone closet to collect alarms from adjacent alarm sites. It will not be necessary to wire each alarm site individually to the alarm computer -- only to the nearest alarm interface/input module. Alarm interface/input modules will "daisy-chain" together and then connect to the alarm computer. The modules will be expandable to include access controls and intrusion detection alarms. If possible, modules will be of the same type and manufacturer as the RJC system.

Alarm Computer and Printer: The alarm computer will utilize color-graphic map displays of the building to annunciate alarm locations. The computer will be a standard manufacturer's access control and security alarm host computer, if possible of the same type and manufacturer as the RJC system. The system may be configured to include the access control, badging, and intrusion alarm functions recommended by the architectural security review, in addition to its duress alarm functions.

Response time of the system will be very fast -- in no case more than one second from activation of an alarm station to alarm annunciation at the CMS.

Dedication of Wiring to Alarms: The system will utilize only dedicated wiring. In no case, will alarm wires be shared with any other system or utilized for any other purpose.

Existing Wiring: Existing horizontal alarm wiring between "hard-wired" alarm stations and the nearest telephone closet will be reutilized, but new junction boxes will be installed for improved access to splices. Existing telephone wiring for "soft-wired" alarm stations will not be reutilized. Within the telephone closets, alarm wiring will be rerouted, labeled, and reterminated within the new alarm equipment enclosures, so as not to be mistaken for other wiring.

New Wiring: New wiring will be installed for new alarm sites and for vertical ("riser") cabling within the building. Code provisions have changed, so that any existing vertical alarm wiring no longer meets the flame-resistance requirements for riser cable. Vertical riser runs will be installed in conduit, as will horizontal runs from the first floor telephone closets to the central monitoring station (CMS).

3. Operational features

Alarm Monitoring/ Reporting Actions:

Initiation of one of the alarm stations at an alarm site shall cause the following actions to occur at the new central monitoring station:

- A distinctive duress alarm tone at the alarm video terminal.
- A color-graphic map representation of the alarm site with alarm nomenclature on the video terminal
- An alarm response procedure to be displayed
- The date, time, and alarm location to be recorded on disk and on the alarm logging printer

The same actions shall occur for all subsequent alarms after the previous alarm has been acknowledged at the keyboard. The number of alarms waiting to be acknowledged in the queue will be indicated on the video screen. The type or location of an alarm assigned with the highest priority shall come up first in the queue with chronological order. The date, time and operator name of each acknowledgment shall be recorded and printed.

After each alarm has been acknowledged and investigated, the system will require entry of alarm status (i.e., false alarm or disturbance type) before being completely reset. The date, time, operator name and alarm status of each reset shall be recorded and printed.

The resetting process shall not inhibit any alarm from displaying on the video terminal. A current listing of all acknowledged alarms with date, time, alarm location and a brief description shall be available on screen so that the operator may continue to follow up with any outstanding alarms. A hard-copy of the listing shall be printed out, if and when desired.

**Trouble Monitoring/
Reporting Actions:**

Detection of a wiring fault or other trouble condition shall cause the following actions to occur at the new central monitoring station:

- A distinctive trouble alarm tone at the alarm video terminal
- A description of the trouble location and condition to appear on the video terminal
- A trouble response procedure to be displayed
- The date, time, and trouble location to be recorded on disk and on the alarm logging printer

Subsequent trouble alarms shall cause the same events to occur after the previous alarm has been acknowledged at the keyboard. The date, time and operator name of each acknowledgment shall be recorded and printed.

After each trouble condition has been acknowledged and investigated, the system will require entry of trouble status (i.e., tampering, wiring malfunction, maintenance problem, etc.) before being completely reset. The date, time, operator name and trouble status of each reset shall be recorded and printed.

The resetting process shall not inhibit any alarm from displaying on the video terminal. A current listing of all acknowledged alarms with date, time, alarm location and a brief description shall be available on screen so that the operator may continue to follow up with any outstanding alarms. A hard-copy of the listing shall be printed out, if and when desired.

Programming and other system software Features:

Programming of system software shall be extremely user-friendly. Other system software features shall include, but not limited to, the following:

- Log on/off function with date, time, and operator name.
- Security access with passwords and different operator levels.
- Power supply and backup battery fault monitoring and annunciation.
- General system and communication fault monitoring and annunciation.
- Alarm priority changes.
- System alarm points, trouble points, and event history viewing.
- System alarm points, trouble points and event history logging.
- Full-screen database editing.
- Menu driven function for changing major system parameters.

4. Statement of work & probable costs

Statement of Work	Equip. (Est. Qty.) / Labor	Cost
1. Replace all (160) remote/wireless stations with new two-button, hard-wired stations. Add (40) new button stations at new alarm sites. Stock (20) spare button stations. This totals 220 new alarm stations. Test and re-use existing cables in dropped ceilings. Recondition (100) existing hard-wired/ soft-wired stations. Terminate all alarm initiating stations. Provide labor for complete installation and testing.	New stations (220)	\$14,300
	Existing stations (100)	\$2,000
	New cables (7,000 ft)	\$1,400
	Labor (100 hours)	\$5,500
	Labor (200 hours)*	\$15,000
	* represents weekend rate	
2. Install new junction boxes at all cable splice locations, including furniture locations, dropped ceilings, telephone closets and other exposed areas.	Electrical backboxes with cover plates (100)	\$500
	Labor (50 hours)	\$2,750

Statement of Work	Equip. (Est. Qty.) / Labor	Cost
<p>3. Install an electrical enclosure inside the telephone closet at each alarm system interface/input module location to housing the new electronics.</p> <p>Install EMT metal conduits to connect enclosures between telephone closets from floor to floor as a vertical riser for the most critical network cables of the new system. Use two vertical cable risers, one each for the east and west portion of the building. Install a horizontal EMT conduit run from each telephone closet on first floor to the new central monitoring station (CMS) for system network cables.</p>	<p>Electrical enclosures (8)</p> <p>Cable tray (200 ft)</p> <p>EMT conduits (900 ft) and connectors</p> <p>Labor (60 hours)</p>	<p>\$2,800</p> <p>\$4,020</p> <p>\$1,350</p> <p>\$3,300</p>
<p>4. Install new alarm system interface/input module panels into their corresponding enclosures. Pull network cables into the new conduit risers. Extend all alarm initiating cables from dropped ceilings into their local enclosures. Terminate all system network cables and all alarm site field device cables.</p>	<p>Interface/input panels (8)</p> <p>Network cables (1,400 ft)</p> <p>Labor (72 hours)</p>	<p>\$6,400</p> <p>\$420</p> <p>\$3,960</p>
<p>5. Install new alarm system computer and printer. Connect and terminate all remaining central equipment. Program system software according to Owner's requirements. Perform device-by-device testing for all operational features of the entire system.</p>	<p>Computer and printer (1)</p> <p>Central system panel (1)</p> <p>System software (1)</p> <p>Programming (80 hours)</p> <p>Labor (88 hours)</p> <p>Direct expenses</p>	<p>\$3,000</p> <p>\$3,320</p> <p>\$3,240</p> <p>\$4,400</p> <p>\$4,840</p> <p>\$7,500</p>
<p>Total Probable Cost for Basic Duress Alarm System</p>	<p>One complete</p>	<p>\$90,000</p>

B. Optional Alarm Paging System

1. Major recommendations

Figure 1 illustrates the optional alarm paging system that would transmit alarm locations directly to responding security personnel. However, we recommend that the County:

- Eliminate the alarm paging feature by not installing the optional alarm paging system described below.
- Instead, invest the estimated \$35,490 in the 800 MHz trunked radio system as recommended under the radio communications section of this report.

2. System definition statement

If installed, the optional alarm paging considered by this study would have the following characteristics:

Dedication to Alarms: The alarm paging system will be dedicated to security alarm functions. In no case, will the paging system be shared with any other system or utilized for purposes other than transmitting security alarms to mobile security personnel.

Paging Equipment: The system will utilize radio frequency, wireless messaging technology. One-third of the system cost will be required for the pocket receivers worn by security staff. The system will also require one or more paging transmitters and antennas connected to the alarm system network bus.

Response Time: In no case shall the system require more than 20 seconds from alarm initiation to receipt of the alarm at the pocket receiver.

Building Coverage: The radio paging transmitter and antenna system shall be designed to provide 95% coverage throughout the building, provided that the poorly-covered 5% portion is located in areas where mobile security personnel would not be present.

3. Operational features

If installed, the optional alarm paging would have the following operational features:

General: Pre-programmed alarm text messages will be annunciated on wireless mobile pocket receiver ("pager") units carried by security officers. Alarms will be silent in nature, so as not to disturb other court areas or to cause panic among other court personnel or the public.

Alarm Reporting Actions: Initiation of an alarm station shall cause an instantaneous radio frequency transmission to all pocket receivers. The transmission will broadcast a text message of up to 128 characters identifying the alarm site by room number and description. If desired, alarm transmissions may also be grouped, in order to alarm certain pagers depending upon the alarm location. This feature could permit the creation of "response teams" by courts area, rather than a general response from all on-duty personnel.

Optional Alarm Messages: If the duress and intrusion alarm systems were combined (which is recommended), and the optional paging system were installed (which is not recommended), the system could also transmit intrusion alarm locations, in addition to duress alarms.

4. Statement of work & probable costs

Statement of Work	Equip. (Est. Qty.) / Labor	Cost
1. Install four electrical enclosures for the alarm paging system interface electronics in designated telephone closets. Install EMT metal conduits from paging interface enclosures to the basic alarm system enclosures within the same telephone closet to enclose paging system network cables. Note that the paging network cables will share conduit risers with the basic duress alarm system.	Electrical enclosures (4) Labor (12 hours)	\$800 \$660
2. Install the alarm paging system interface panels into their corresponding enclosures. Pull network cables into the new conduit risers. Terminate all system network cables. Mount and connect RF antennas in telephone closets.	Interface panels (4) Network cables (900 ft) Antennas & cables (4) Labor (24 hours)	\$6,000 \$630 \$1,280 \$1,320
3. Connect and terminate all remaining paging equipment. Program system software according to owner requirements. Perform area-by-area testing for all operational features of the entire system. Purchase (15) pocket receivers. Provide labor for installation and testing.	Central system panel (1) System software (1) Programming (20 hours) Pocket pagers (15) Labor (40 hours) Direct expenses	\$4,800 \$1,450 \$1,100 \$14,250 \$2,200 \$1,000
Total Probable Cost for Optional Alarm Paging System	One complete	\$35,490

VI. Radio Communication System

A. Major recommendations

- Completely eliminate the use of cellular telephones for security communications, including eliminating the direct audio link feature between the alarm site and responding security personnel.
- Purchase portable radios and install a desktop station, bidirectional amplifiers, and additional antenna system in order to use the County-wide, 800 MHz trunked radio system for security communications.
- Integrate all communications to the new central monitoring station (CMS), including telephone equipment and intercoms being recommended by the architectural security review, into a single communications console.

B. System definition statement

Portable Radios: Mobile staff will carry 800 MHz portable radios of the type described in the Appendix D memorandum from the Regional Radio System project office. 20 portable radios with accessories, four 6-unit chargers, and several spare batteries will be purchased.

Desktop Control Station: An 800 MHz console unit meeting the requirements of Appendix D will be installed at the central monitoring station (CMS).

Building Coverage: Radio frequency coverage performance will be designed for 95% coverage, 95% of the time. For this purpose, additional distributed antenna (i.e., Radiax) taps will be installed on the basement floor, first floor, floor 1A, and possibly the second floor. Bidirectional amplifiers will be installed to boost the signal to and from the antenna system in order to achieve the stated performance goals.

C. Operational features

Alarm Response: In an alarm situation, staff at the central monitoring station (CMS) will transmit the alarm type and location to responding security personnel verbally over the air on previously assigned talk groups. They will state both the room number and room name of the alarm site and request an immediate response.

D. Statement of work & probable costs

Statement of Work	Equip. (Est. Qty.) / Labor	Cost
1. Install a panel antenna on building roof and a bidirectional air-interface amplifier at a nearby location/room. Connect and terminate all equipment.	Electrical enclosure (1)	\$300
	Antenna & amplifier (1)	\$19,100
	Labor (24 hours)	\$1,560
2. Install one distribution amplifier and power dividers in an electrical enclosure in a room on 2nd floor. Connect and terminate all equipment and extend horizontal 3/4" Radiax cable runs to the end of each west and east wing on 2nd, 1A, 1st and basement from the existing Radiax riser.	Electrical enclosure (1)	\$300
	Amplifier & dividers	\$4,980
	3/4" Radiax (1,200 ft)	\$9,600
	Connect. & hangers (a lot)	\$1,522
	Labor (80 hours)	\$5,200
3. Install, connect and terminate all central equipment and radio control station. Perform area-by-area testing through out the entire building.	Portable radio (20)	\$36,271
	Leather cases (20)	\$675
	Lapel microphones (20)	\$1,624
	6 Unit 1-hour chargers (4)	\$2,422
	Spare Ultra-h battery (20)	\$1,858
	Desktop ctrl. station (1)	\$2,408
	Labor (64 hours)	\$4,160
	Engineering (48 hours)	\$3,120
	Direct expenses	\$3,000
Total Probable Cost for Two-way Radio Distributed Antenna System	One complete	\$98,100

VII. Audio/Video Surveillance & Recording System **9619**

A. Overview of Alternates

The addition of audio/video surveillance and recording to the courthouse alarm systems will serve two functions: 1) sequential, real-time monitoring of security conditions from the courthouse central monitoring station (CMS), and 2) an audio and video record of alarm events (as required by Item 6 of the purpose statement) for documentation purposes. Besides improved security and documentation, these additions will also provide commonality between security systems in the County's new Regional Justice Center (RJC) and the downtown courthouse (although the RJC system provides video surveillance and recording only and does not currently support audio surveillance or recording). The recommended basic audio/video system is illustrated in Figure 2 below.

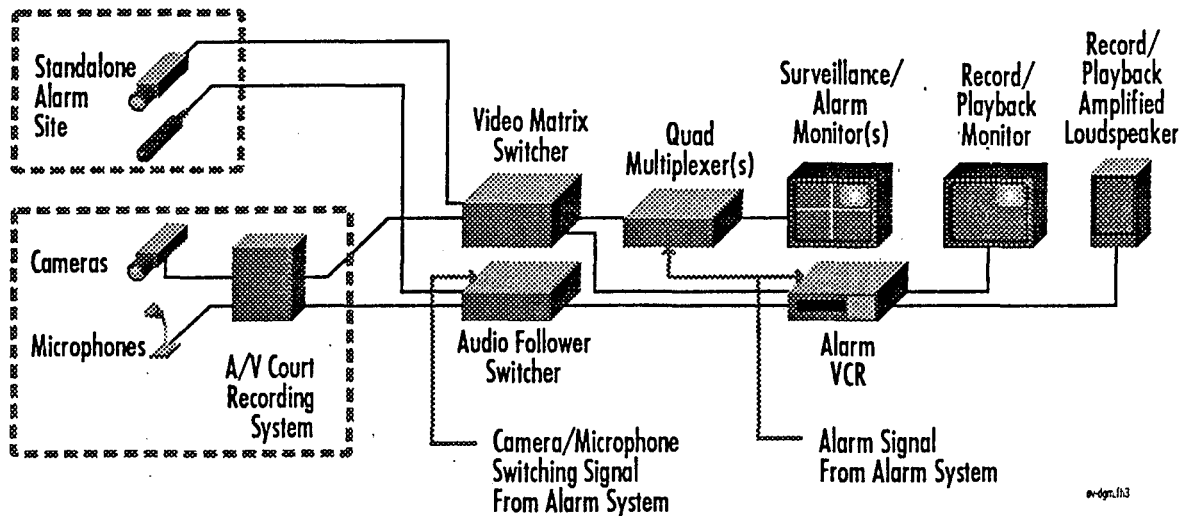


Figure 2 - Audio/Video Surveillance & Recording System Diagram

Four “alternates” are proposed for implementation of audio/video surveillance and recording. Alternate 1 includes the basic system illustrated in Figure 2. With each successive alternate (Alternates 2, 3, and 4) either more standalone alarm sites are added to the system or more equipment is added to each alarm site.

B. Alternate 1 - Basic AV Surveillance & Recording

1. Major recommendations

- Rewire the existing ceiling microphones in most courtrooms to a new audio/video surveillance and recording console at the CMS. Remove the existing console in the Communications Center.
- Rewire the existing courthouse cameras to the new CMS console. Remove the existing video monitors in the Communications Center.

- Feed an audio and a video signal from each of the nine superior courts equipped with a video court recording system to the new console.
- Integrate all courthouse video surveillance systems, including those recommended by the architectural security review, into the new console.

2. System definition statement

Existing Microphone Sites: Most superior courts have ceiling microphones already installed within the courtroom that are wired to the existing alarm console in the Communications Center. In addition, the nine superior courts equipped with audio/video court recording systems also have the ability to feed an audio monitoring system. These microphone locations will be rewired to an audio switching, monitoring, and recording system at the central monitoring station.

Existing Camera Sites: Existing cameras are favorably positioned to view duress alarm sites at only ten courthouse locations:

- The nine superior courtrooms equipped with audio/video court recording systems (color cameras)
- The first floor lobby (a black & white camera)

These camera locations will be rewired to a video switching, monitoring, and recording system at the central monitoring station.

The remaining existing cameras are positioned to view the loading dock, entries, doorways, evidence areas, and corridors. Although they are not associated with a nearby alarm site and would not be useful for assessment purposes, they will also be rewired to the new console.

Surveillance & Recording Console Location: Audio/video switching and recording equipment for the system will be installed in the new central monitoring station (CMS) on the first floor of the courthouse.

Console Monitor Configuration: A quad-multiplexer will be used together with one or more 20" color monitor so that up to four (4) camera pictures may be simultaneously viewed on the same monitor. A dedicated 14" record/playback color monitor will also be provided for video playback so as not to interrupt the normal surveillance and alarming functions.

Console Speaker Configuration: An alarm/playback amplified loudspeaker will be provided for audio surveillance of the alarm site during alarm period or for playback of recordings after an alarm incident.

Recording Mode: One or more VCRs and a playback monitoring system will be installed for recording purposes. Since the VCR will start recording on alarm only, full frame-rate recording mode may be used along with high quality 2-8 hours VHS tapes without running out of tape. Lower quality, time lapse recording will not be used.

3. Operational features

Real-time Alarm Assessment: At alarm sites with cameras or microphones, CMS staff will relay their interpretation of the scene to responding personnel while en-route to the alarm site using the 800 MHz radio system.

System Function: Upon activation of one or more alarm initiating stations at an alarm sites, the system will:

- Automatically switch to and monitor camera(s) at the alarm site (for sites with cameras)
- Automatically switch to and monitor the microphone(s) at the alarm site (for sites with microphones)
- Automatically start the VCR and begin recording the camera and microphone signals
- Continue recording until manually reset

Camera Selection: During the normal mode of operation, several cameras may sequence on each quad screen so that the system cycles through all cameras in the courthouse approximately every minute. The system will also have a programming option for a single camera to occupy the entire monitor screen upon activation of an alarm initiating station.

4. Statement of work & probable costs

Statement of Work	Equip. (Est. Qty.) / Labor	Cost
1. Patch/extend (38) existing courthouse ceiling microphones and cameras cabling to a new centralized equipment rack with all necessary audio/video switching and recording equipment in the new CMS. Install electrical backboxes at locations where exposed cable/wire splices occur. Bundle video and audio cables separately in dropped ceilings and in telephone closets.	Electrical backboxes (43)	\$215
	Electrical enclosure (1)	\$200
	Video dist. Amp. (15)	\$4,425
	Cables, connectors (one lot)	\$1,800
	Labor (116 hours)*	\$8,700
* represents weekend rate		

Courthouse Alarm & Communication Systems Study

Statement of Work	Equip. (Est. Qty.) / Labor	Cost
<p>2. Patch audio and video feed from each of the nine (9) courtrooms equipped with A/V documentation systems to the new CMS console. Install electrical backboxes at locations where exposed cable/wire splices occur. Bundle video and audio cables separately in dropped ceilings and in telephone closets.</p>	<p>Electrical backboxes (9) Video dist. Amp. (9) Cables (3,500 ft) Connectors (a lot) Labor (56 hours)* * represents weekend rate</p>	<p>\$27 \$1,755 \$2,450 \$200 \$4,200</p>
<p>3. Install, connect and terminate all central switching, recording and monitoring equipment. Start-up and program all equipment according to specification and owner requirements. Perform device-to-device testing and verify all operational features. Provide all installation and testing labor.</p> <p>“(ASR)” indicates equipment items whose cost is included within the architectural security review recommendations prepared by Robert Glass & Associates.</p>	<p>Equipment rack (1) Video matrix switcher (1)w/ computer & software Audio follower Switch (1) Quad multiplexer (1) 20" color monitor (1) 14" color monitor (1) Alarmed VCR (1) Amplified speaker (1) Connectors (a lot) Labor (40 hours) Labor (48 hours) * * represents weekend rate Direct expenses</p>	<p>(ASR) (ASR) (ASR) (ASR) (ASR) (ASR) (ASR) (ASR) (ASR) (ASR) (ASR) (ASR) (ASR)</p>
<p>Total Probable Cost for Alternate 1 Basic A/V Surveillance & Recording</p>	<p>One complete</p>	<p>\$23,972</p>

C. Alternate 2 - Public Counter AV Surveillance & Recording

1. Major recommendations

- Add cameras only (no microphones) at 15 key locations where staff interface with the public, valuable items are present, or the threat to staff is considered high.
- Coordinate these camera sites with camera locations recommended by the architectural security review.

2. System definition statement

Camera Locations: Exact camera locations will be determined during Phase II design. Candidate locations include:

- Basement evidence room.
- Property room.
- Most public counters.

Cameras: New cameras will be the solid-state color variety of sufficient sensitivity for the amount of illumination available, and with an automatic iris to adjust for changing light conditions. Lenses and camera orientations will be chosen in order for the widest practical coverage without silhouetting or glare from outside windows.

3. Operational features

No difference or additions to Alternate 1.

4. Statement of work & probable costs

Statement of Work	Equip. (Est. Qty.) / Labor	Cost
Install new color CCD cameras at 15 key alarm sites (the cost for 6 of these sites is included within the architectural security review recommendations) . Run new cables and connect all 15 cameras to the new video matrix switcher at the fixed security office. Add one quad-multiplexer and one 20" color monitor for the additional video surveillance. Provide all installation and testing labor. “(ASR)” indicates equipment items whose cost is included within the architectural security review recommendations prepared by Robert Glass & Associates.	Color cameras (9)	\$8,100
	Cables (1,800 ft)	\$1,980
	Equipment rack (1)	(ASR)
	Quad multiplexer (1)	(ASR)
	20" color monitor (1)	(ASR)
	Connectors (a lot)	\$51
	Labor (47 hours)	\$2,584
Direct expenses	\$500	

Total Probable Cost for Alternate 2 A/V Surveillance & Recording	One complete	\$13,215
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D. Alternate 3 - Courtroom Video Surveillance & Recording

1. Major recommendations

- Add cameras only at the other 47 courtrooms, not otherwise equipped with audio/video court recording systems.
- Add ceiling microphones to approximately nine courtrooms currently without existing ceiling microphones or audio/video court recording systems. Note that microphones already exist in all other courtrooms and are recommended for reuse under Alternate 1.

2. System definition statement

No difference or additions to Alternate 1.

3. Operational features

No difference or additions to Alternate 1.

4. Statement of work & probable costs

Statement of Work	Equip. (Est. Qty.) / Labor	Cost
Install one new color CCD camera in each of the remaining 47 courtrooms not otherwise equipped with video court recording systems. Run new cables and connect all 47 cameras to the new video matrix switcher at the CMS. Add three (3) quad-multiplexers and three (3) 20" color monitors for the additional video surveillance. Add nine (9) microphones to the few courtrooms not equipped with microphones. Provide all installation and testing labor. “(ASR)” indicates equipment items whose cost is included within the architectural security review recommendations prepared by Robert Glass & Associates.	Color cameras (47)	\$42,300
	Cables (13,500 ft)	\$9,461
	Quad multiplexer (3)	(ASR)
	20" color monitor (3)	(ASR)
	Connectors (a lot)	\$150
	Microphones (9)	\$3,042
	Labor (64 hours)	\$3,520
	Labor (90 hours)*	\$6,840
	* represents weekend rate	
	Direct expenses	\$1,500
Total Probable Cost for Alternate 3 A/V Surveillance & Recording	One complete	\$66,813

E. Alternate 4 - Additional Audio Surveillance & Recording

1. Major recommendations

If chosen, Alternate 4 will add microphones to approximately 20 standalone alarm sites where cameras are already present or are recommended under the alternates above. However, we recommend that the County:

- Not add microphones at all standalone alarm sites with cameras. The low intelligibility anticipated at these locations does not justify the nearly \$16,000 expenditure.
- Continue to leave some standalone alarm sites without either cameras or microphones.

Alternates 1 through 3 will provide cameras at 71 alarm sites and microphones at 56 sites, out of approximately 114 total alarm sites (84 existing and 30 new). In Justice Systems' opinion, the added expense of cameras and microphones for audio/visual assessment and recording purposes at every alarm site is not justified by the value of alarm assessment itself. Overall system reliability and personnel response time are more important than either the amount of audio/visual coverage at the central monitoring station or alarm assessment information relayed to responding personnel.

2. System definition statement

No difference or additions to Alternate 1.

3. Operational features

No difference or additions to Alternate 1.

4. Statement of work & probable costs

Statement of Work	Equip. (Est. Qty.) / Labor	Cost
Install one new microphone at all camera locations (20) not otherwise equipped with a microphone. Run new cables and connect all microphones to the new audio switcher at the CMS. Provide all installation and testing labor.	Microphones (20)	\$6,760
	Additional switcher (1)	\$1,500
	Cables (5,400 ft)	\$2,700
	Terminals & misc. (a lot)	\$60
	Labor (74 hours)	\$4,070
	Direct expenses	\$800
Total Probable Cost for Alternate 4 A/V Surveillance & Recording	One complete	\$15,890

VIII.Action Plan

A. Coordination with Architectural Security Review

1. Background

Because of the urgent need for improved security at the courthouse, the County has contracted with two separate consultants to study and recommend security improvements. Robert Glass and Associates has done an architectural security review of the entire courthouse at the same time that Justice Systems has performed this study of alarm and communication system improvements. The Security Oversight Group plans to consolidate both sets of recommendations before presenting a recommendation to the County Executive and the County Council.

2. Study coordination results

In coordinating with the work of the architectural security review, Justice Systems has found these two studies to have overlapping recommendations with respect to electronic security. This portion of the report identifies the overlap between projects and proposes consolidating their Phase II activities.

Although they have different reasons for doing so, both studies recommend new or upgraded video surveillance/recording systems, access control systems, and audio intercom/recording systems. For example, the following table shows the functional purpose of each system and reveals that the duress alarm system recommended by this study is capable of functioning as the access control and intrusion alarm system recommended by the architectural security review. Similarly, the architectural security review's video surveillance system includes all of the central monitoring components to act as the audio/video surveillance and recording systems recommended by this study.

Table 1 - Functional Purpose of Electronic Security Systems

Electronic Security System	Architectural Security Review	Alarm & Communications Study
Access control and security alarm	To control card access doors, elevators, and monitor intrusion alarms	To monitor personal duress alarms
Video surveillance/ recording system	To monitor continuous surveillance and movement control cameras	To monitor and record alarm cameras
Audio intercom/ recording system	To communicate with controlled doors and other locations	To monitor and record alarm microphones and intercoms

3. Single System Recommendation

It is strongly recommended that the courthouse have only one electronic security system that includes all alarm, surveillance, and recording functions — not parallel systems. A single system will not only be less expensive, but will also be easier for central monitoring station personnel to monitor and operate.

The architectural security review recommends the preparation of an Integrated Security Plan (ISP) for the courthouse as its next phase of work. We also recommend an ISP be prepared and view its development as an opportunity to combine these projects in order to eliminate the present overlap in electronic security systems.

Appendix D presents a system-by-system proposal for combining the scope of the two consultants into a consolidated ISP document during Phase II activities.

B. Recommended Phase II Activities

Considering the emergency nature of this study, we recommend the following Phase II activities be undertaken immediately after approval by the County Council:

1. Contribute to the preparation of an integrated security plan (ISP) for the courthouse as outlined in Appendix D.
2. Review consideration of remote sites such as Juvenile Court, the courtroom at Harborview Hall, and at the Superior Court Family Court Services offices, and at other sites where security intervention could be required.
3. Identify potential vendor systems that meet the ISP system requirements (and are approved for installation at the RJC) and arrange for demonstrations.
4. Evaluate and prequalify vendors and systems integrators (i.e., installers).
5. Prepare bid documents for systems installation simultaneously with ISP preparation.
6. Evaluate bid proposals and assist in negotiations with the lowest responsible bidder.

We do not recommend that design activities be delayed by the Integrated Security Plan. Rather, a "fast track" approach should be used whereby both the ISP and system bid documents are prepared simultaneously, with ISP activities leading by a few weeks. Otherwise, awaiting final completion of the ISP before commencing with design could delay the implementation of these urgently needed improvements by 3 - 4 months.

With the design engineer involved in ISP preparation, as recommended above, this overlap between planning and design activities should proceed smoothly.

C. Recommended System Selection Criteria

Selection criteria for system vendors and installers is extremely important and may be somewhat to blame for the problems experienced with the existing alarm systems.

It is also recommended that this installation not be performed by County crews — except for the radio system — but rather, by one of several prequalified, low-voltage alarm installers that specialize in this type of installation and have the necessary qualifications and experience to guarantee a quality installation.

1. System Selection Criteria

We recommend that the bid documents name systems and products based upon the following selection criteria:

- The system be a fully-developed alarm system manufactured for use as a security access system or dedicated duress alarm systems.
- The system have been installed and made operational in a minimum of three (3) courthouses of similar size and complexity. These facilities must be in full operation with complete satisfaction from the end users.
- The manufacturer be a financially stable company which has been in the security alarm business for at least five (5) years with steady sales and profit, and having a strong current balance sheet.
- The company have a local service representative with existing maintenance agreements for the product at other facilities, a good track record of performing on those agreements, and fully trained and certified local technicians.
- The system be fully-tested system with U.L. labels and F.C.C. approval on all applicable equipment.
- The system either be of the same manufacture as the systems for the new Regional Justice Center (RJC) or an "open" system that is fully compatible with the RJC equipment.
- The system also be expandable to provide the access control functions recommended by the architectural security review.

2. Low-Voltage Installer Prequalification Criteria

We strongly recommend that low-voltage alarm installers for the system be prequalified prior to bidding based upon the following qualifications criteria:

- Satisfactory installation of the specified systems in a minimum of three (3) past projects of similar size and complexity. These facilities must be in full operation with complete satisfaction from the end users.
- A sufficient quantity of qualified technicians — trained, certified, and experienced with the specified alarm system — that will be assigned to the project.
- A project manager and field superintendent that will be assigned to the project having a minimum of five (5) years experience in low-voltage security alarm system installations.
- Financial stability with a 5-year history in the security alarm business and having a strong current balance sheet.
- Ability to post a performance bond for the full amount of the contract.

By verifying that these qualifications are in place prior to bidding, the County is assured up-front that all bids will be responsible, thus avoiding the unpleasant task of rejecting an unqualified bidders who is probably low. The prequalification process also eliminates the temptation to trade-off qualifications for price. The process was used successfully for the low-voltage security systems integrators on the RJC and is highly recommended for the courthouse alarm and communications project.

D. Recommended Phase III Activities

We further recommend that system installation activities begin immediately after approval by the County Council of the Phase II bid results. Our services on courthouse security improvements should conclude with the following Phase III activities:

1. Review shop drawings and submittals, and provide periodic inspections to observe installation quality.
2. Participate in systems acceptance testing, prepare remedial action reports ("punch lists"), and recommend for or against system acceptance.

IX. Appendix A - Basic Duress Alarm System: Problems/Solutions Analysis

The following "Problems/Solutions Analysis" is intended to clearly report all identified problems in the existing alarm systems. Recommendations and possible solutions are given on a problem-by-problem basis and are drawn from common duress alarm features and standard industry installation and maintenance practices.

A. Hard-Wired and Soft-Wired Alarm Initiating Stations

Existing System Problems

- Pushbutton switch contacts and their movable mechanisms may have already worn out.
- Location of stations are inconsistent making it difficult for staff to find the alarm station in a duress situation.
- Certain stations are currently located in areas where movable objects, such as chairs and knees, may occasionally run into them. Some of stations have been damaged or false alarmed this way.
- The availability of existing station components needs to be assured for consistent future replacement and stocking of spares.
- Component quality and life span of the existing stations should be checked, since large quantities of stations will be needed for new alarm sites and existing alarm site replacements.
- Some of the hard-wired initiating stations are not reporting to the alarm annunciator panel in the existing Communications Center.
- Many of the soft-wired initiating stations are either non-functional or unreliable with extremely slow response time.

Recommendations and Possible Solutions

- Test and replace bad switches and their related components.
- Analyze and designate the most consistent location for each station, especially for those areas with typical furniture configurations.
- Check and replace unprotected buttons with guarded type buttons. This collar guard will reduce the possibility of damaging and accidental activation. Give consideration to movable, hard objects when deciding the best mounting location of stations.
- Research and obtain distributor listing for future purchasing of station components.
- Investigate the quality and life span of the existing buttons by analyzing product data from manufacturer, and specify better quality components for the replacement system, if needed.
- Check each of the hard-wired stations and rewire them to the new system in strict accordance with the approved installation/ termination methods.
- Check each of the soft-wired stations and hard-wire them directly to the new system in strict accordance with the approved installation/ termination methods.

B. Remote Alarm Initiating Stations

Existing System Problems

- Many of the remote alarm initiating stations are either non-functional or unreliable with extremely slow response time.
- Some of the remote alarm initiating stations are put away and stored in certain unknown places. Some of them have simply "walked away."
- Many of the remote alarm initiating need battery replacements.

Recommendations and Possible Solutions

- Replace all remote alarm initiating stations with new two-button, hard-wired alarm initiating stations. Change the method used to transmit alarms with the new system to solve response time problems.
- All new alarm initiating stations will be fixed at designated locations.
- New alarm initiating stations will not have batteries.

C. Alarm System Interfaces

Existing System Problems

- Many of the existing hard-wired, soft-wired and remote duress alarm initiating stations are non-functional with the existing Alarm System Interface and Main Equipment due to the following:
 - Alarm initiating station problems described above.
 - Some autodialers are non-functional or disconnected.
 - Some system interfaces are non-responsive.
 - Some system main equipment is non-functional, partially due to wiring integrity problems.
 - Some signal wires are broken or removed without any system trouble alarms.

Recommendations and Possible Solutions

- Troubleshoot and replace all bad or damaged two-button, hard-wired stations.
- Reconnect thoroughly tested, hard-wired stations with approved termination methods and wires.
- Securely and permanently terminate all splices, wiring connections, and device terminations within electrical backboxes so that they will not be accidentally or unintentionally removed.
- Install new alarm system interfaces which will constantly supervise wiring for integrity, including shorted/broken connections.
- Perform periodic alarm-by-alarm performance testing on the new system, similar to the testing that is currently performed on the existing system.
- Perform periodic training so that court staff is briefed on emergency policies and procedures and understands the use of the duress alarm stations. With this testing, courthouse staff should gain full confidence in the new alarm system.

D. Alarm Computers and Alarm Logging Printer

Existing System Problems

- The existing alarm computers and system logging printer are highly unreliable or non-functional.
- The existing alarm reporting system was manufactured by a central station alarm service primarily for central station service at a residence or commercial business.

Recommendations and Possible Solutions

- The new video annunciator terminal and logging printer will be U.L. listed with the main system equipment as a complete monitoring system, which will provide the minimum guarantee as a U.L. approved product.
- Use a system designed specifically for use as an alarm and access control system with proprietary monitoring within a large, multi-departmental facility.

- While the existing hard-wired annunciator console usually works, it is not very user-friendly.
- Provide high resolution, color screens with user-friendly graphics on the new video annunciator terminal. Make many types of useful reports available on the logging printer.

E. Alarm Cabling

Existing System Problems

- Most of the alarm riser cables are solid 24 AWG. telephone type multi-conductors, which have great tendency to break off individually.
- Most of the alarm riser wires are mixed with telephone wires in common multi-conductor cables with no provision for security, except that they are run within locked closets. Critical alarm wiring may be readily disconnected or removed accidentally while servicing other non-security equipment.
- Cable/wiring routing is not well documented. A review of as-built documents generated for the County in 1991 produced many apparent differences from the observed cable/wiring routing.
- Most of the existing cables/wires are not labeled or tagged. None of the field devices and equipment are labeled, thus, aggravating the maintenance processes.
- Numerous exposed wiring splices occurred inconsistently along many duress initiating alarm wiring runs. These system wires are exposed to an extremely high risk of being disconnected unintentionally or got lose every time any unrelated service work is performed by other non-security contractors.

Recommendations and Possible Solutions

- The solid 24 AWG. telephone type conductors are not rated to be used for duress alarm wiring; therefore, they are not recommended. Minimum 22 AWG stranded conductors are normally specified for duress alarm wiring.
- Rated conductors shall be specified in dedicated cables for duress alarm uses only. All duress cables shall be clearly labeled and bundled together in dropped ceilings, telephone closets and equipment/ control rooms per applicable codes.
- Generate a set of cable/wiring as-built, record drawings for the new alarm system and any reused wiring.
- Identify every wiring termination and splice with an approved label or tag for the entire system. Also label every field device and equipment item. Record this information correctly in the final as-built drawings.
- No exposed wiring splices shall be allowed. All terminations and splices shall be housed in approved electrical enclosures or backboxes. This requirement will apply to all locations including dropped ceiling, closets and equipment/control rooms with or without a metal conduit system.

9619

X. Appendix B - Radio System Equipment Memorandum



**KING COUNTY & VALLEY COMMUNICATIONS CENTER
REGIONAL 800 MHz TRUNKED RADIO SYSTEM
PROJECT OFFICE**



MEMORANDUM

DATE: April 5, 1995

TO: Capt. John Beard, KCDPS

FROM: Kevin Kearns, Joint Project Manager

SUBJECT: Trunked System Radio Costs for Courthouse Security Functions

COPY

Here is the information on the costs of various radios and accessories we discussed in our meeting today. I've tried to include all the equipment that would likely be used to meet the needs we discussed. If I've left out any accessories let me know and I'll get you the information. All of these prices are under the existing County purchasing agreements with Motorola so they are the "best available" prices and consistent with pricing for all public agencies in King County. All prices are before tax, so when budgets are being developed make sure to add tax.

MTS2000-I Portable Radio \$ 1,675.35

This is the portable radio that I believe best fits the needs we discussed. It is fully compatible with the regional system so it could be programmed to access the entire system if that were necessary for a particular use. This price is for the basic radio package; radio, antenna, ultra-high capacity battery and belt clip.

Accessories:

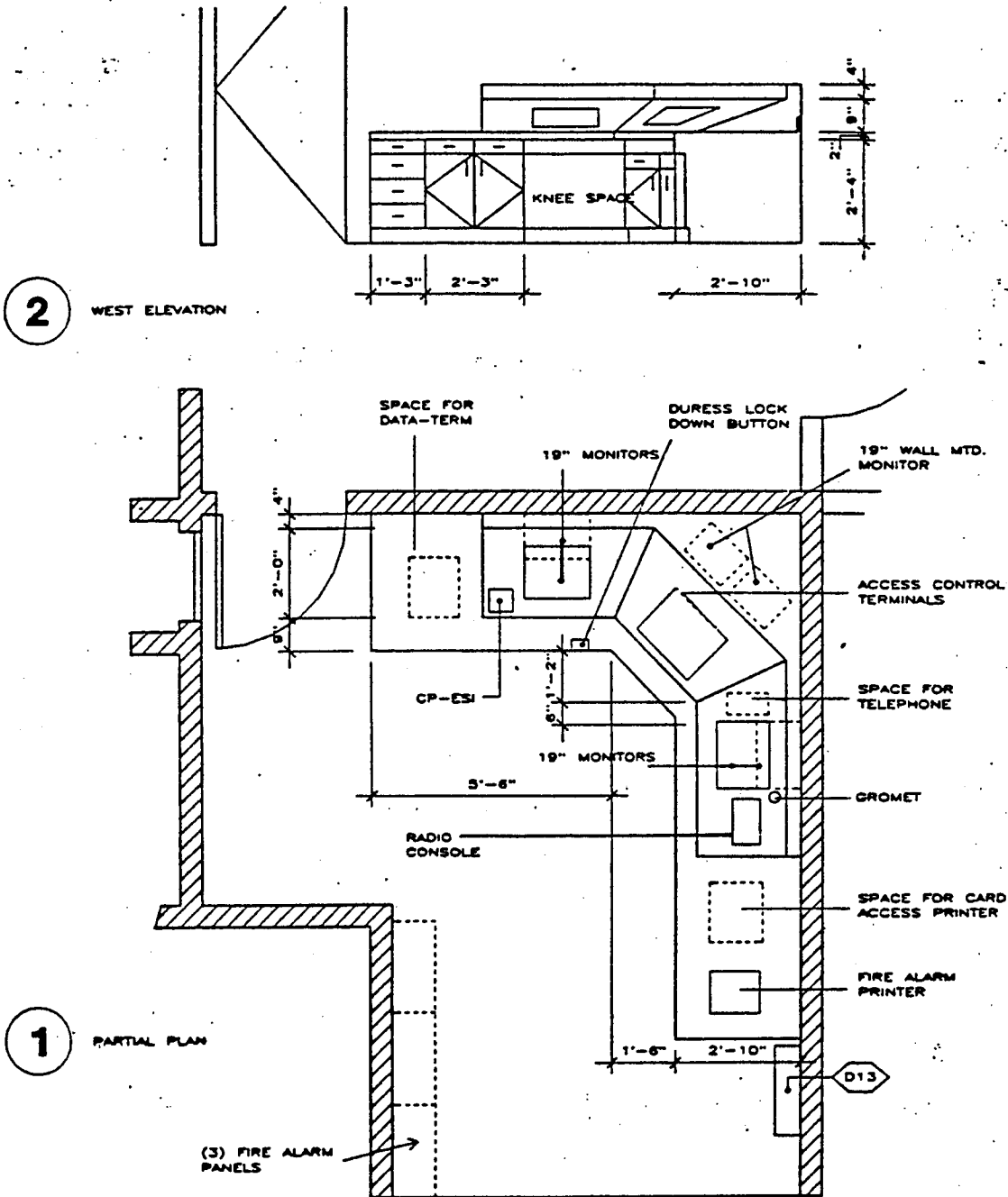
Leather Cases	\$ 31.20
Single Unit 1-Hour Desktop Chargers	\$ 93.60
6 Unit 1-Hour Charger	\$ 559.26
Spare Ultra-high Capacity Battery	\$ 85.80
Lapel Microphone	\$ 75.00

SPECTRA E-5 Desktop Control Station \$ 2,224.00

This is a small desktop radio that is fully compatible with the regional system. This price includes the radio, speaker base, desktop microphone, and power supply. It does not include the antenna for the radio itself or any "installation" costs. I don't have a good handle on these costs yet. Assuming that we are successful in getting the in-building antenna and amplifier systems installed, the cost could be as low as \$150 to \$250 per control station. If an electrical outlet needed to be added, or longer cable runs or different antennas were needed, the cost could go up to \$500 or more per control station. We'll know more as we learn more about the in-building antenna system and get a chance to look at each location that will get a control station to evaluate power and cable needs.

Feel free to call me at 979-1313 if you have any questions.

XI. Appendix C - Regional Justice Center (RJC) Security Office



**1 COURTS SECURITY RM A0228
CONTROL COUNTER ELEV/SECTION**

**COURTS BUILDING
CONTROL ROOM
ENLARGED PLAN
ELEV. & SECTION**

Category Sequence

40:22

Sheet no.
Project no. 50001.01
Drawn by B Date 9-10-88
Checked Binding Order

XII.Appendix D - Integrated Security Plan Coordination Proposal

Table 2 on the next page outlines a proposal to coordinate Phase II integrated security plan (ISP) services between the architectural security review project being performed by Robert Glass & Associates and the alarm and communications systems upgrade project being performed by Justice Systems Corporation.

Consolidating the ISP development ensures that the County will receive a truly integrated, combined plan for security improvements at the downtown courthouse. By combining electronic security systems in this manner, the resulting savings in initial installation cost and annual operation and maintenance costs will be substantial.

Table 2 - Proposal for Combining ISP Development Activities

System	Robert Glass & Associates	Justice Systems Corporation
• Continuous & movement surveillance cameras	Determine camera locations (P)	Coordinate (S)
• Remote door controls	Determine locations (P)	Coordinate (S)
• Movement intercoms	Determine intercom locations (P)	Coordinate (S)
• Card access doors and elevators	Determine card access door and elevator locations (P)	Coordinate (S)
• Remote door controls	Determine remote control door locations (P)	Coordinate (S)
• Intrusion detection sites	Determine intrusion detection sites (P)	Coordinate (S)
• Duress alarms*	Coordinate (S)	Determine alarm sites (P)
• Alarm cameras*	Coordinate (S)	Determine camera locations (P)
• Alarm mics & intercoms*	Coordinate (S)	Determine mic/intercom locations (P)
• Access control and security alarm system	Coordinate (S)	Develop access control & security alarm system and CMS workstation (P)
• Remote door control system	Develop control panel (J)	Develop control system (J)
• Video monitoring/ recording system*	Coordinate (S)	Develop central video monitoring/recording system and CMS video console (P)
• Master intercom/ recording system*	Coordinate (S)	Develop intercom/ recording system and CMS master console (P)
• 800 MHz radio	Develop CMS radio storage/issue requirements (J)	Develop radio antenna system and CMS radio console (J)
• CMS room design and console casework	Design room configuration and console casework (J)	Layout monitoring and communications consoles (J)
• Remote court sites	Develop security system recommendations (J)	Develop security system recommendations (J)

* Systems presently having overlapping responsibility

P Primary responsibility

S Secondary responsibility

J Joint responsibility

9619

Attachment
B

March 6, 1995

Introduced By:

Maggi Fimia
Louise Miller

94-759:Clerk

Proposed No.:

94-759

MOTION NO. **9493**

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A MOTION authorizing the expenditure of \$50,000 from the Superior Court Security Fund for the purpose of funding consultants to provide architectural advice with respect to entrance screening and replacement of the courthouse alarm system, and declaring the policy of King County that to protect court areas it is necessary to exclude weapons from the building, except those carried by law enforcement personnel, and to screen for weapons at courtrooms and entrances to the King County Courthouse.

WHEREAS, King County has recognized the need to achieve the goal of safety basic to the process of justice, and

WHEREAS, security is a common concern to all courts, court related agencies, and other departments and agencies occupying the courthouse, and

WHEREAS, in the 1991 budget, the King County Council appropriated \$315,000 in CIP Project 666527 for the purpose of improving courthouse security, and

WHEREAS, per a 1991 budget proviso, no funds shall be expended on the Superior Court Security Project until the council approves a scope of work for the project, and

WHEREAS, the King County Superior Court has found that court areas can be protected only by screening at entrances to the courthouse, and that the court must have architectural advice in order to plan a sensible screening program to avoid delays at entrances and exits, and

WHEREAS, the courthouse alarm system has never worked reliably and needs to be replaced;

NOW, THEREFORE BE IT MOVED by the Council of King County:

The scope of work contained in Attachment A is approved to spend up to \$50,000 from the Superior Court Security Fund for consultant studies.

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**SUPERIOR COURT SECURITY
FUND PROJECT**

Scope of Work

The Court intends to contract with security consultants to:

1. Prepare a functional system plan in conjunction with representatives of the Superior Court and Department of Public Safety court security unit which provides options and recommendations for improvements to the duress alarm system, including stand-alone electronic systems, and systems which combine electronic features with security dispatch staff.
2. Identify potential vendor systems that meet the system plan and arrange for demonstrations of those systems.
3. Evaluate vendor systems, technical materials, project references, proposed installer and service agent qualifications.
4. Survey existing building wiring and provide recommendations regarding the use of existing or new wire, or cable for alarm system use.
5. Submit a report to the court on items 1 through 4 above, including estimated project costs.
6. Prepare bid documents for systems installation.
7. Evaluate bid proposals and assist in negotiations.
8. Review drawings and bid submittal, and provide periodic inspections to observe installation quality.
9. Participate in system acceptance testing, prepare remedial action reports (punch lists), and recommend for or against system acceptance.
10. Provide professional advice from persons with expertise in security and building remodeling which explores options and make recommendations for a sensible screening program that meets the requirements of state law contained in RCW 9.41.300 and additional security measures such as video cameras, electronic card readers and other items as might be needed throughout the King County Courthouse to enhance security.

9493 7

RESOLUTION OF KING COUNTY SUPERIOR COURT

2 March 1995

9619 7

In recognition of the court's responsibility to provide a safe courthouse for the resolution of disputes and to provide a safe place for the public as well as staff, parties, witnesses, jurors, and other court participants, and in view of the threat to all court participants posed by weapons of all varieties,

The King County Superior Court resolves:

1. The court will conduct court operations only so long as all persons entering the courthouse are subject to screening of their persons and packages at the entry to buildings housing court facilities, and weapons are excluded except for authorized law enforcement personnel.

2. Further, the judges unanimously direct the presiding judge to cease court operation at any time the Presiding Judge determines that court security measures are not adequate to protect the public and court staff.