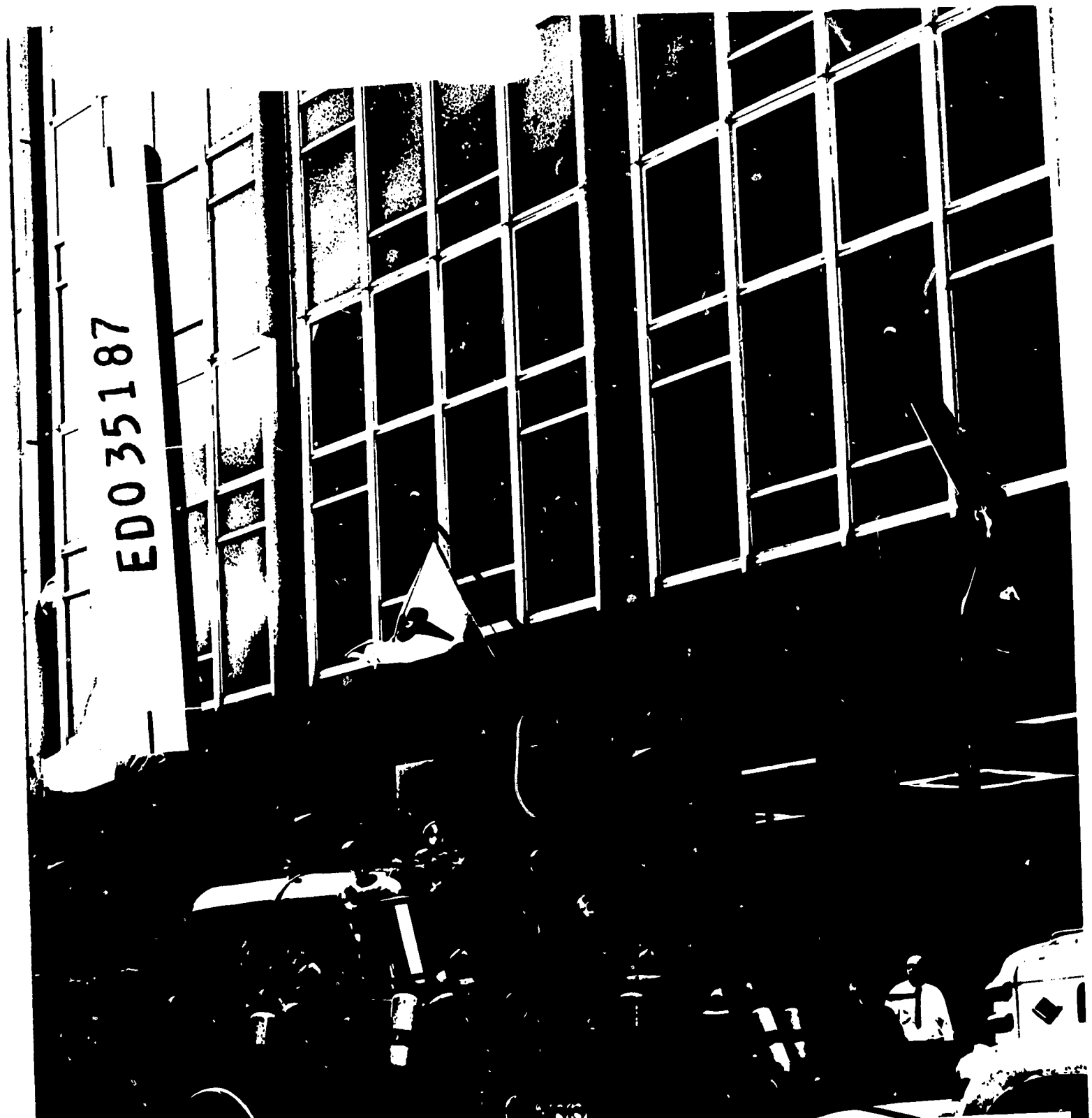
DOCUMENT RESUME

ED 035 187 EF 001 853

TITLE	Fire Protection. Honeywell Planning Guide.
INSTITUTION	Honeywell, Minneapolis, Minn.
REPORT NO	Rep-54-0362
PUB DATE	68
NOTE	34p.
EDRS PRICE	EDRS Price MF-$0.25 HC-$1.80
DESCRIPTORS	*Automation, *Building Design, Building Operation, Comparative Analysis, Comparative Statistics, *Design Needs, *Electronic Equipment, Equipment Standards, Fire Fighters, Fire Insurance, *Fire Protection, Maintenance, Operating Expenses, Safety, School Design

ABSTRACT

A general discussion of fire alarms and protection is provided by a manufacturer of automated monitoring and control systems. Background information describes old and new fire alarm systems, comparing system components, wage savings, and cost analysis. Different kinds of automatic systems are listed, including--(1) local system, (2) auxiliary system, (3) central station system, (4) remote station system, and (5) proprietary system. Proprietary system components include detectors, supervisory equipment, and signaling devices. Specification selection charts are provided for commercial buildings, hospitals, colleges, schools, industrial buildings, multiple dwellings, and libraries. (MM)



HONEYWELL PLANNING GUIDE

FIRE PROTECTION

Fire protection is a changing business

THE GROWING DEMAND FOR HIGHLY EFFICIENT FIRE ALARM SYSTEMS

Today's businesses and institutions have to be efficient in order to face rising costs, aggressive competition, and an increasingly demanding public. By means of modern equipment and highly trained personnel, a firm can reach the high level of productivity that is needed to stay in the race. But if these tools of efficiency are lost, a firm is worse off today than it would have been in the past. Today's pace is so fast that any slip can be serious.

That's why firms are looking for better protection against fire. Many already have found what they want: new, efficient fire alarm systems that match the sophistication of the places they protect. These new systems not only provide the needed security, they also often cost so much less to operate than older systems that replacement is worthwhile for the direct savings alone.

This booklet has been prepared to acquaint you with the economics of these systems, the protection they offer, and what to look for in a good system.

THE ECONOMICS OF MODERN FIRE ALARM SYSTEMS

In the last decade, improvements in fire alarm system design have greatly reduced costs. One of the main advancements has been the development of a great variety of automatic equipment. This automatic equipment makes possible new systems that can save money in five ways:

1. Through designs closely fitted to individual requirements
2. Through wage savings
3. Through the possibility of owning a system at reasonable one-time cost instead of having to pay rent for years
4. Through sharing components and personnel with other systems in a building or complex
5. Through reduced insurance premiums

1. Closely Fitted Systems. A widening range of products has made it possible to provide the right system for each job. This has eliminated both poor performance and unnecessary expense. In fact,

one distinction between good fire protection firms and not-so-good firms is that some have a full complement of specialized equipment and some don't. This will be discussed more fully later on.

2. Reduced Manpower. Until recently, the great portion of fire protection costs was in the wages of watchmen. Fire underwriters continue to demand watch tours, but the required frequency of these tours often can be reduced by automatic alarm equipment.

The three tables below compare a typical system of ten years ago with a typical system of today. Table I shows how the newer system uses a larger number of alarm initiating points, both manual and automatic, to reduce the need for frequent guard tours. Table II derives figures for the resulting labor savings. Table III shows how these savings are reflected in the comparative costs of the old and new systems.

TABLE I

COMPARATIVE MAKEUP OF OLD AND NEW FIRE ALARM SYSTEMS IN A REPRESENTATIVE BUILDING COMPLEX

Building	Fire Alarm Stations		Guard Reporting Stations		Sprinkler System Water Flow Alarm Points		Sprinkler System Supervisory Points	
	Old System (manual pull boxes)	New System (manual boxes, also tied to automatic detectors*)	Old System (tours every 2 hours— 16 hrs/week day, 48 hrs/week end)	New System (tours every 4 hours— 16 hrs/week day, 48 hrs/week end)	Old System	New System	Old System	New System
No. 1	3	4 (19)	30	30	10	10	0	20
No 2	4	6 (22)	30	30	6	6	0	12
No. 3	3	6 (18)	12	12	1	1	0	3
No. 4	1	4 (13)	12	12	2	2	0	4
No. 5	0	2 (11)	2	2	0	0	0	0
Util. Bldg.	0	2 (12)	2	2	1	1	0	2
Gate	0	1 (2)	0	0	0	0	0	0
Cafeteria	0	3 (17)	2	2	1	1	0	2
TOTALS	11	28 (114)	90	90	21	21	0	43

Total number of alarm points in new system (including automatic detectors).....296
Total number of alarm points in old system.....122
Net gain in number of alarm points.....174

*The number of automatic detectors is given in parentheses.

TABLE II

WAGE SAVINGS

Building	Guard Hours Per Week*		Dollar Cost Per Week @ $2.00/hr. Wage Rate		Dollar Cost Per Year	
	Old System	New System	Old System	New System	Old System	New System
No. 1	180	100	360	200	18,720	10,400
No. 2	200	114	400	228	20,800	11,856
No. 3	65	36	130	72	6,760	3,744
No. 4	65	36	130	72	6,760	3,744
No. 5	11	6	22	12	1,144	624
Util. Bldg.	9	5	18	10	936	520
Cafeteria	10	6	20	12	1,040	624
TOTALS	540	303	1080	606	56,160	31,512

Total Wage Cost Per Year

Old System..... $56,160
New System..... 31,512
Yearly Net Savings $24,648

*Guard hours are calculated from the information in Table 1: Old system has tours every *two* hours for a 16-hour portion of each weekday and for the full 48 hours of each weekend; new system has tours every *four* hours for a 16-hour portion of each week day and the full 48 hours of each weekend. Except for their required frequency, the guard tours in the two systems are identical in this case.

TABLE III

COMPARATIVE COST ANALYSIS

OLD SYSTEM	NEW SYSTEM
First Year Costs	**First Year Costs**
Installed Cost.... $12,420*	Installed Cost.... $38,914**
Guard Wages.... 56,160 (per Table II)	Guard Wages.... 31,512 (per Table II)
Total..... $68,580	Total..... $70,426
Second Year Costs	**Second Year Costs**
Guard Wages.... 56,160	Guard Wages.... 31,512
Total..... $56,160	Total..... $31,512
TOTAL 2-YEAR COSTS..... $124,740	TOTAL 2-YEAR COSTS..... $101,938

*Figure is given in 1958 dollars; 1968 dollar figure would be about $14,000.
**In 1968 dollars.

After a payoff period of a little over a year, the new, automatic system begins to save money at a rate of $24,000 per year—the yearly net savings in labor.

3. Owning Instead of Renting. In the past, fire detection was frequently rented from an independent firm. The equipment itself was leased and monitored from a central station off the premises. Rented systems are still in common use, but owned systems have been replacing them because of a cost advantage. Averages from a number of plants show that with the money for two or three years' rent, an entire system can be purchased instead. This means a complete payback out of rent savings in two or three years—that's a 33⅓% to 50% annual return on the owner's investment!

Table IV below shows how the savings are realized. In this case the two systems, one rented and one owned, are alike in that they perform equally well, with the same number of guards required, the same kinds and quantities of equipment, etc. The fixed service charge on the rented system is what makes the difference in cost.

TABLE IV

COMPARISON OF EQUIVALENT OWNED AND RENTED SYSTEMS

RENTED SYSTEM		OWNED SYSTEM	
First Year Costs		**First Year Costs**	
Advanced Service Charge (covers installation)	$20,000	Purchase Price	$34,000
Fixed Annual Service Charge	6,200	1-Year Maintenance Contract (optional)	1,500
Guard Wages	40,000	Guard Wages	40,000
Total	$66,200	**Total**	$75,500
Second Year Costs		**Second Year Costs**	
Fixed Annual Service Charge	6,200	Maintenance Contract (optional)	1,500
Guard Wages	40,000	Guard Wages	40,000
Total	$46,200	**Total**	$41,500
Third Year Costs		**Third Year Costs**	
Fixed Annual Service Charge	6,200	Maintenance Contract (optional)	1,500
Guard Wages	40,000	Guard Wages	40,000
Total	$46,200	**Total**	$41,500
TOTAL 3-YEAR COSTS	$158,600	**TOTAL 3-YEAR COSTS**	$158,500

After 3-year payoff period, the owned system will save the difference between the rented system's annual service charge ($6,200) and the optional maintenance contract on the owned system ($1,500)—an annual savings of $4,700 with the owned system.

4. Shared Components. If a building is to have not only an automatic fire alarm system but also other automated systems for temperature control, security, equipment monitoring and so on, many thousands of dollars can be saved through the use of common panels, wiring, and personnel. Total savings often amount to the full price of a fire alarm system.

5. Reduced Insurance Premiums. When any approved, high-quality automatic fire alarm system is installed, many underwriters grant a 10% to 25% insurance premium reduction.

SAVING LIVES AND PROPERTY

The direct savings discussed above are for the most part easily understood and measured. Less easy to estimate, but more important, is the possibility of avoiding the cost of fire itself. This is a job that has rarely been done adequately in the past, because the tools at hand were not sufficient. For example:

• "*Fireproof*" *buildings* are no guarantee against losses—building contents have time and again proved their ability to more than offset a building's structural resistance to fire. Today, most commercial buildings, hospitals, and educational buildings have fire-resistant construction. Yet in 1966 there was over $763,000,000 of property damage caused by fire in these kinds of buildings. Despite fire-resistant construction, fire losses have grown almost as fast as the nation's economy.

• *Insurance* can cover property damage, but it usually can't cover the large but hard-to-measure losses that result from a disruption of business. That's the main reason why over 40% of small businesses struck by fire never open their doors again. Even large businesses sometimes fail when fire strikes.

• *Fire departments*, although they have been improved over the years, are still too few to meet the needs of our expanding population. (More than ever, they need an early warning in order to dispatch their men and equipment in time.)

Thus these methods of protection are not a full answer to the danger of fire. However, improved fire alarm systems can fill the gap by detecting and reporting fires quickly, before much damage occurs. A new, automatic system offers much better protection than the older, manual, "pull box" system. A few examples show why:

• Hartford Hospital, erected in 1948, was a supposedly fireproof building equipped with a manual alarm system. Architects described it as one of the safest buildings in the world. In 1961, a fire there killed 16 persons. The fire had started in an unoccupied area and was well along before an alarm was sent. Staff made the common mistake of trying to fight the fire themselves instead of calling the fire department. An automatic system would not have allowed them to make this fatal decision.

• A National Fire Protection Association study of 300 fires in schools without automatic alarm systems revealed that 205 of the fires were reported not by students or school personnel, but by *outsiders.*

• In a 1958 Chicago school fire that killed 93, about five or ten minutes elapsed between ignition and discovery of the fire. In this time the fire became too large to control. A manual alarm system on the premises was not operated until the fire reached major proportions. An automatic system would have discovered the fire immediately.

• In contrast to these examples, a fire in a Rockland, Massachusetts building in 1963 was discovered and reported by an automatic thermal detector system. The system operated a local alarm and transmitted a warning to municipal headquarters. The 380 occupants were evacuated at once without loss of life, and the fire was promptly extinguished.

Those examples reflect three advantages in the performance of an automatic system:

1. *It's always on the spot.* There's no waiting for someone to come along and notice the fire.

2. *When it detects a fire, it doesn't waste time.* It won't panic or be negligent. It can sound an alarm, indicate the location of the fire, and shut off smoke-spreading fans all in a moment. Even a cool-headed and trained guard can't move this quickly.

3. *It won't be prevented from giving an alarm.* Many men have died in the very act of noticing a fire when they opened doors and exposed themselves to superheated gases. A good automatic system, however, will prevail against such situations. Explosions or hot gases will trigger an alarm. A malfunction in the system itself will cause a trouble signal.

So far we have seen that new, customer-owned, automatic systems can save money while improving protection. But just what is a good system and how can one be recognized?

THE EARMARKS OF A GOOD SYSTEM

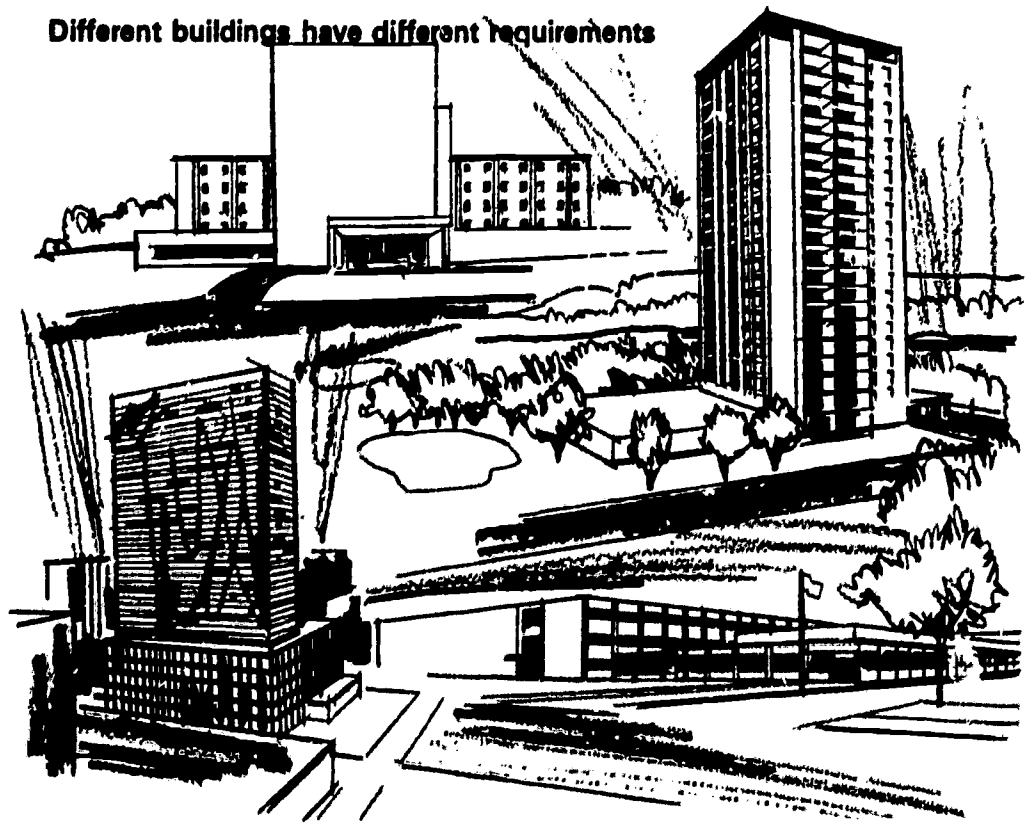
A good system by today's standards takes all these factors into account:

- the size, value, function, and design of the building or complex
- the arrangement and value of the contents
- the need to protect life, or property, or both
- the kinds of fire that are most likely to start in each part of a building
- the quality and proximity of the local fire department

Several basic kinds of systems have been developed as outlines to meet the needs of most plants. A wide range of equipment has been developed by some firms to tailor these basic systems to fit the requirements of individual cases.

Some firms offer better basic systems than others. Some have a wider and better range of equipment than others. The next two sections of this guide are aimed at showing which basic systems are best, where they should be used, and what goes into a wide and modern line of equipment.

Different buildings have different requirements



THE BASIC KINDS OF AUTOMATIC SYSTEMS

Five main kinds of automatic alarm systems are in use today:

1. *Local System*—a system in which the alarm sounding devices are located only in the immediate vicinity of the protected area.

Applications: Schools, apartment buildings, and other buildings where evacuation is of immediate consideration.

2. *Auxiliary System*—this is the same as the local system, with the addition of a tie-in to a municipal alarm system. Because an alarm is routed to a fire station by means of municipal circuitry, this kind of system is called an "auxiliary" to a municipal system.

Applications: Urban schools, hospitals, municipal buildings, other public institutions.

3. *Central Station System*—a system in which the alarm signal is relayed to a remote panel owned and monitored by an independent protection agency. The entire alarm system, including detection equipment, usually is rented from this agency.

Applications: Stores, factories, warehouses.

4. *Remote Station System*—a system in which the alarm signal is transmitted directly to an alarm annunciator at a remote location, usually a fire department, without travelling through municipal or central station circuits.

Applications: School systems, industrial facilities, municipal or governmental installations, military bases, office buildings, large institutional buildings, and others.

5. *Proprietary System*—a system owned and monitored by the protected firm itself, by means of control center located on the premises. Class A Proprietary Systems, as defined by National Fire Protection Association codes, must have:

- two means of transmitting an alarm (double protection)
- an auxiliary power supply (another form of double protection)
- the means for sending alarm signals, trouble signals, and restoration signals (self-checking capability)
- 24-hour monitoring by competent personnel

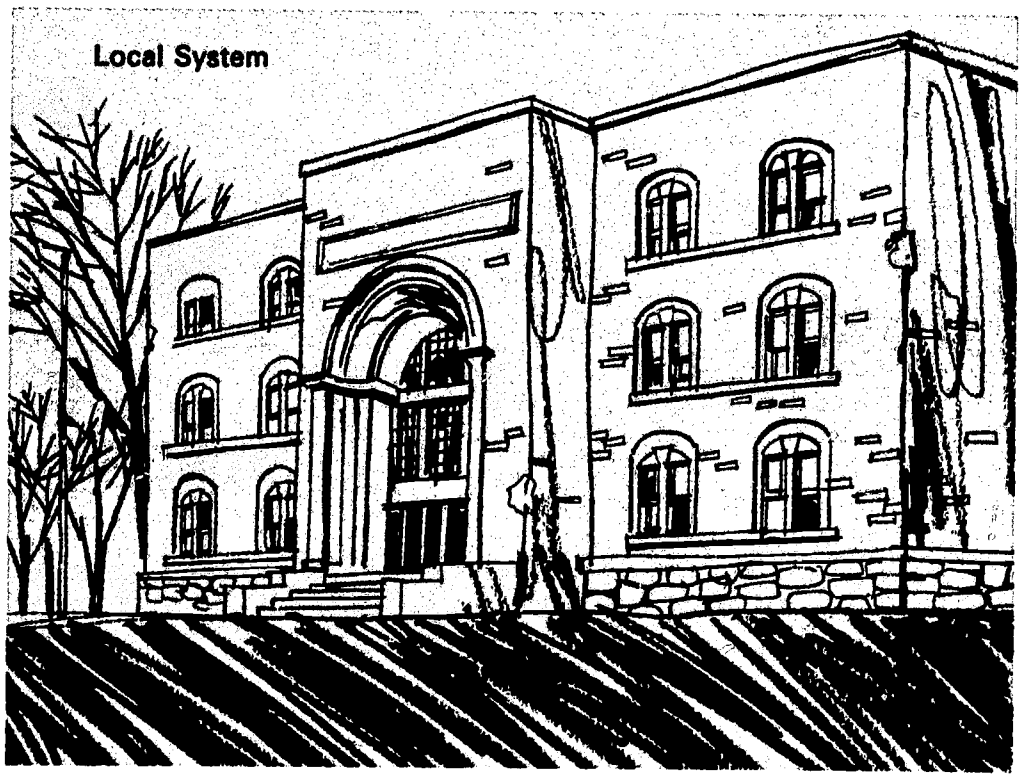
A Class A system is designed to meet strict codes in order to minimize property insurance rates. In buildings where there is a need for life protection but no great importance in property protection, insurance codes are not so strict. In such cases a less elaborate system

may be used. This system can be less expensive because it has fewer "back-up" components and perhaps generally lighter protection.

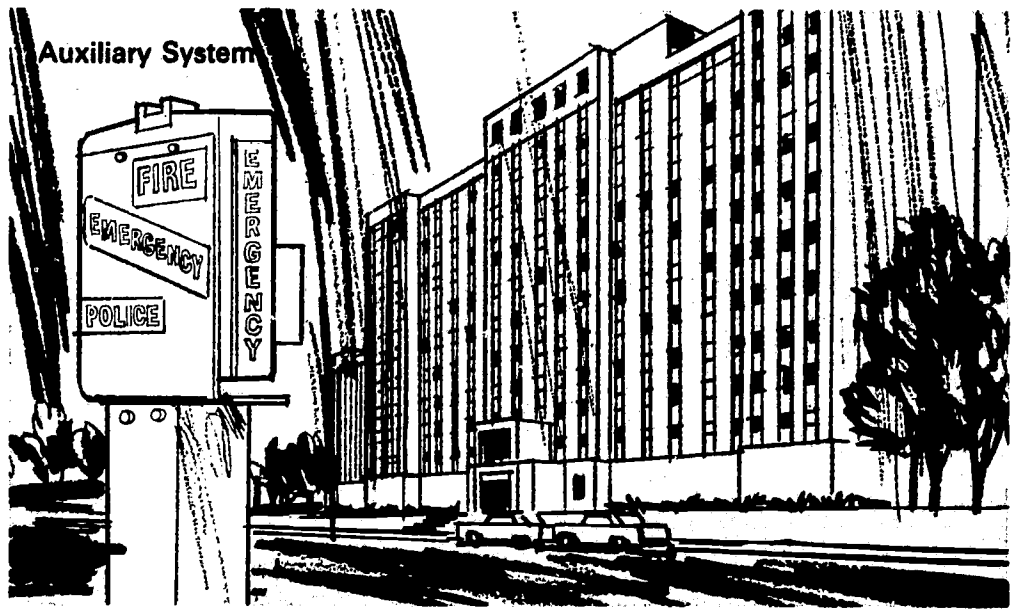
Proprietary system applications: same as remote station systems, except there's no limit on the size of the building or complex. Class A systems are usually best for plants with valuation of several million dollars or more (valuation in this case covers the building, its contents, and potential loss of business).

WHICH KINDS OF SYSTEMS ARE BEST

Until recent years, local and central station systems dominated the field. Today, new products and new requirements have turned buyers toward remote station and proprietary systems as more efficient and/or more economical protection.



Local systems are being used less and less often by themselves. Instead, remote station connections are being added, or else provisions are being made for 24-hour monitoring by trained personnel. The reason: experience has shown that to ensure a prompt call to the fire department, there should be either a specialist or an automatic device on the premises for this purpose.



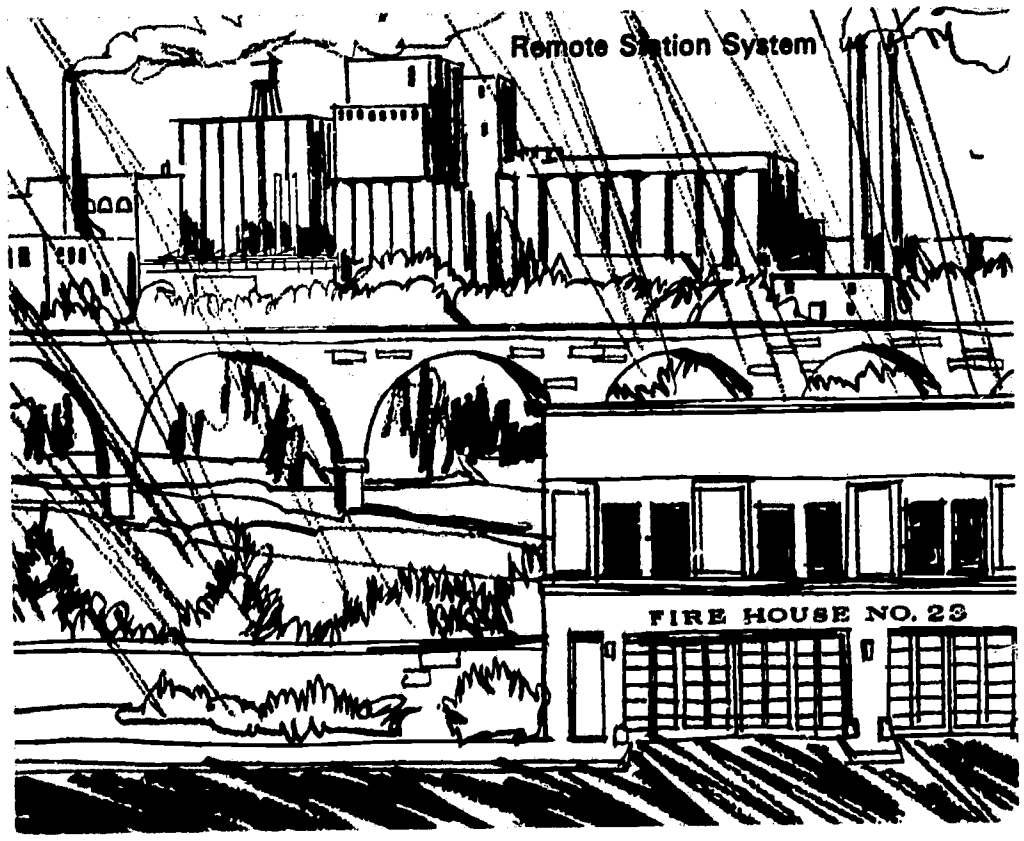
Auxiliary systems are generally a dying kind of system. They are limited primarily to municipal institutions because city alarm systems aren't designed to handle large numbers of private tie-ins. Even new municipal institutions are sometimes excluded, because the cost of expanding a city alarm system as a city grows is prohibitive.

Central station systems have enjoyed popular favor in densely populated urban centers. In most "downtown" metropolitan areas, hundreds of small establishments want better protection than is offered by a local system, but cannot afford their own guard forces or (in the past) expensive proprietary installations. To accommodate these firms, central station companies were formed.

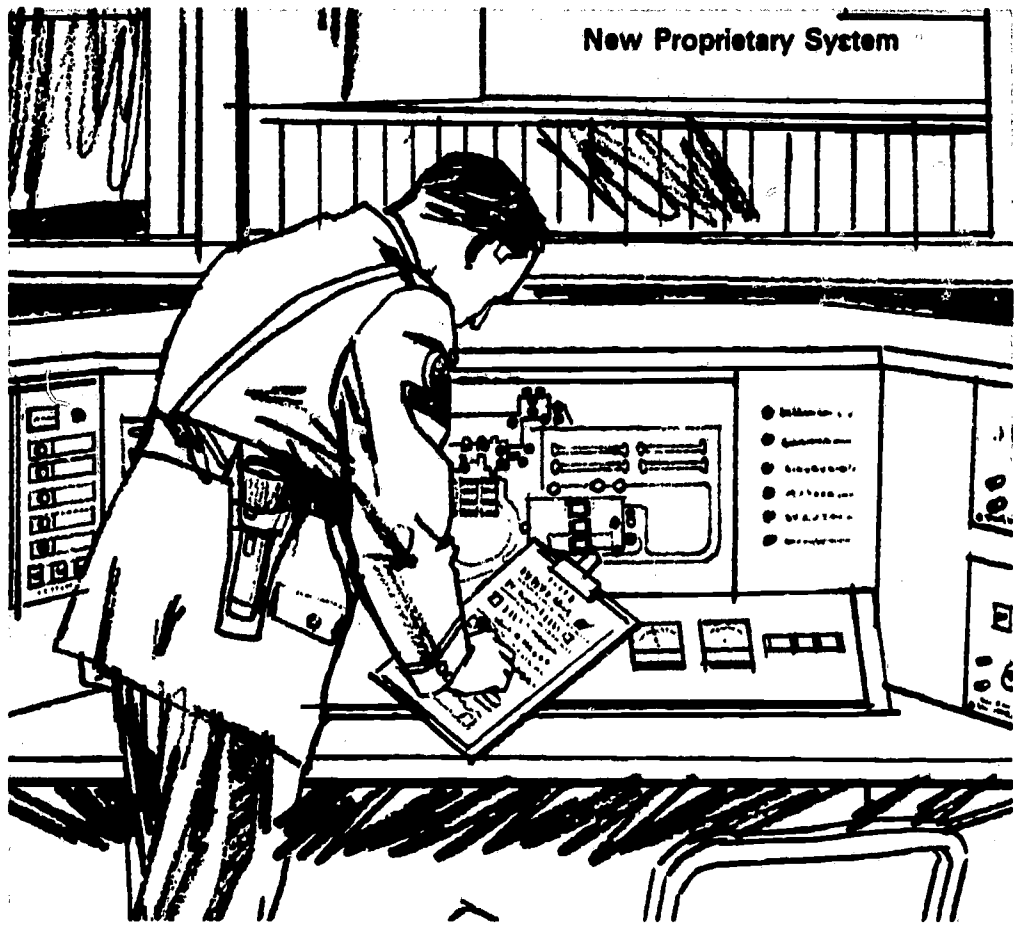
These companies lease detection equipment to their customers and tie this equipment to a central monitoring station by means of leased phone lines. A dispatcher at the central station monitors alarms and sends them on to a fire department.

With the development of improved and less expensive remote station and proprietary systems, it has become more economical in many cases for a firm to buy its own system instead of renting one. This system in many cases can be hooked directly into a fire department without going through a central station agency. This can eliminate the cost of the central station's 24-hour monitoring, as well as the rent for the equipment itself. The resulting savings are shown in Table IV, Page 6.

Another factor in the trend away from central station systems is the increasing number of plants built in suburbs, at considerable distances from central station monitoring offices.



Remote station system connections are good for buildings where a full-time watch crew is financially impractical. The automatic signal to the fire department or other remote post can eliminate the necessity for a guard on the premises. Remote station connections are usually less expensive than equivalent central station systems.



New proprietary systems have been developed over the last decade to supply the flexibility and full service needed in large buildings or groups of buildings. From the standpoints of performance and economy, they are the best way of protecting large plants. A trained guard at a central panel or console monitors automatic equipment throughout the protected area. The guard's presence can result in a reduction of the frequency of tours required by underwriters, because the guard knows the critical areas all around the plant, knows how to direct firemen to the spot, knows where people have to be evacuated. And if trouble develops in the system itself, someone is right there to take corrective action. Proprietary systems are especially well suited for:

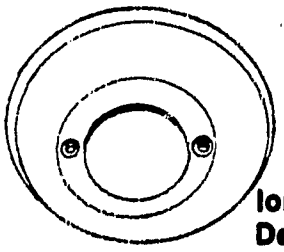
- colleges and universities
- office buildings, hospitals, hotels, shopping centers and large department stores
- industrial complexes and military bases

Proprietary systems are the fastest-growing kind of system made today.

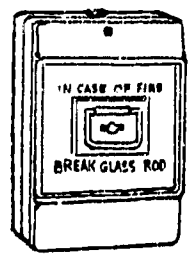
SYSTEM COMPONENTS

Products fall into three major categories: detectors, supervisory equipment, and signalling devices.

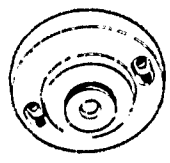
DETECTORS: A good line of products must include several kinds of detectors. Each kind is designed for a different set of requirements and will work best only in those circumstances.



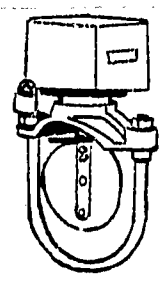
Ionization Detector



Pneumatic Detector



Thermal Detector



Sprinkler Flow Detector

Ionization Detector: This is a new kind of detector that is one of the earmarks of advanced engineering capability on the part of its manufacturers. It works by means of a small current passed through the air between two plates. Hydrocarbons and other invisible products of combustion, emitted by a fire before noticeable flame or smoke, interfere with the current and cause an alarm. Because this detector gives a very early warning of fire, it is ideal for computer rooms, "clean" rooms, areas where spontaneous combustion may occur, and air ducts. Even in a smoky conference room the ionization detector will adjust itself to react to the first sign of accidental fire—it ignores normal amounts of tobacco smoke.

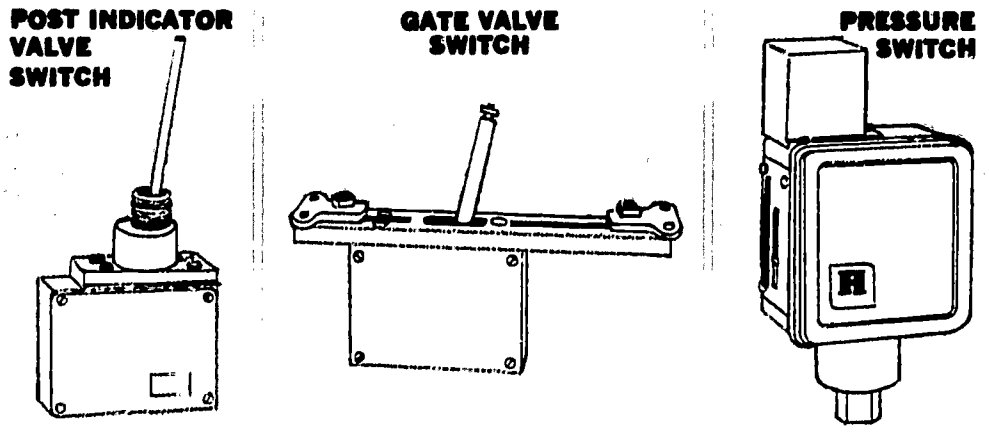
Thermal Detector: This kind of detector senses temperature. Some thermal detectors work at a fixed temperature setting, some react to an unusually rapid rise in temperature, and some combine both of these characteristics. Perhaps the most sensitive of these is the combination type. This sensitivity permits installing the combination detector in a widely spaced pattern, thus saving labor costs

in installation. Less expensive per unit, but more closely spaced, are fixed-temperature detectors. They are good for use in closets where there's no need for the more sensitive rate-of-rise feature. They also are used where rapid temperature fluctuations make a rate-of-rise detector impractical.

Pneumatic Detectors: These are a common form of rate-of-rise detectors. They operate by means of an air-tight tube that is run through the protected area. A rapid increase in temperature raises pressure in the tube and triggers a pneumatic switch at the end, causing an alarm. The pneumatic detector is relatively expensive, but it has the advantage of safety from explosions and suitability for high ceilinged rooms and other areas where access is difficult. The pneumatic switch can be placed out of the explosive area or in a location easily accessible for inspection and service.

Sprinkler Water Flow Detectors: Where a sprinkler system is used, water flow switches and pressure switches should give an alarm when a sprinkler goes into operation.

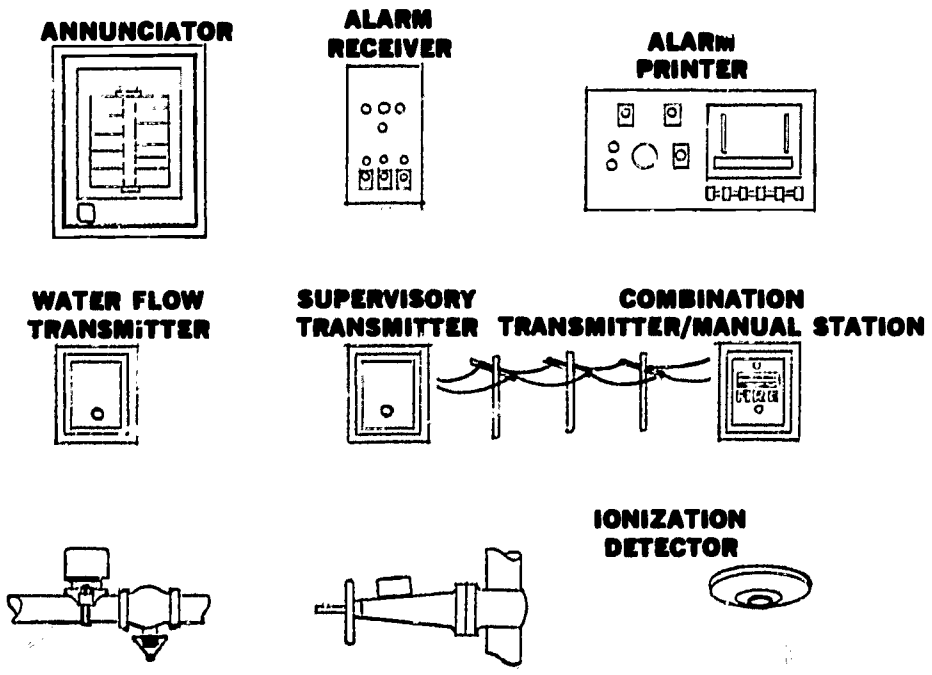
SUPERVISORY DEVICES



SPRINKLER SYSTEM SUPERVISORY DEVICES: By automatically monitoring a sprinkler system's condition, a fire alarm system can cut down on watch tours. Besides water flow detectors, sprinkler system monitoring should include:

- temperature supervision—to warn when a tank or pipe nears freezing temperature
- air pressure supervision — to warn when air pressure drops in pressure tanks or dry-pipe sprinkler systems
- tank level supervision—to warn when the level in a water tank falls below minimum

- post indicator valve supervision—to warn when the main water supply valve is shut off
- gate valve supervision—to warn when a secondary water supply valve is shut off



SIGNALLING DEVICES: The basic signalling arrangement of most automatic systems works like this: a detector or supervisory device gives a signal; a zone transmitter for that area picks up the signal and sends it to a central panel; the central panel "reads" the signal and activates appropriate audible and/or visible alarms.

The protection firm should have a number of refinements at hand with which to adapt this arrangement to a customer's needs. First of all, the firm should have several ways to *code* an alarm or trouble signal. Coding means providing an automatic means of giving information in a signal--such as whether it's an alarm, a trouble warning, or an all-clear message; whether it comes from the fire alarm system or the sprinkler supervisory system; and which zone it comes from. A small system may not need coding at all—but a large system frequently requires a signal to carry considerable identification.

The best way of coding a signal, and the locations where the code should be seen or heard, depend on the protected area's characteristics. Coding can be done by means of a patterned series of bell strokes, by lights on a panel, by special buzzers, horns, sirens, etc.,

and by printed records. A protection firm should have all of these alternatives at hand in order to select the best for an owner's requirements.

In a hotel, department store, or hospital, a system should alert key personnel without causing panic among the general public. For example, Honeywell in these cases often uses a pleasant chime instead of a bell. This is called a *presignal* system. A good presignal system should include some arrangement for sure signalling to the fire department. It is equally important to be sure to reach the people in charge—signals should reach all staff-occupied areas, not just one or two rooms.

In schools, a *march step code* is often used. It is a steady, marching bell stroke that helps to get students moving and to keep the evacuation orderly. Often the march beat is preceded by a few rounds of code to identify the location of the fire.

In most large plants, especially where there are proprietary systems, the fire alarm system should include an automatic *alarm recorder* as a means for making a permanent record of signals. This keeps staff from having to depend entirely on understanding the audible code. Honeywell has recently introduced a much superior printer to do this. In the past, alarm recorders were tape-punching machines. It was up to the guard to translate the code punched into the tape. If two or more signals came in at the same time, the punching overlapped and became difficult or impossible to de-code. Honeywell's alarm recorder is not a tape-punching machine, but a printer. It does its own translating and prints out the kind of alarm in English, the numerical zone code, and the date and time. The system is wired so that only one signal can come in at a time. Two or more signals coming in very close together are printed in order of priority.

MAINTENANCE

A system can be maintained entirely by the owner, or, as is often the case, the manufacturer can be contracted to do this. The quality of a manufacturer's service amounts to a testimony of how willing and how prepared he is to take care of what he sells.

The country's largest network of branch offices equipped to install and maintain fire alarm systems is Honeywell's. Each of Honey-

well's 117 branches (as well as other offices in 55 foreign countries) is ready, if a customer wishes, to take *total responsibility* for delivery, coordination of installation, start-up, checkout, personnel training, preventive maintenance and emergency service of its fire alarm systems. This is an ironclad guarantee of a system that meets expectations by giving many years of troublefree performance.

Behind Honeywell's branches and total responsibility approach are 75 years of experience with many thousands of automated installations in just about every kind of building.

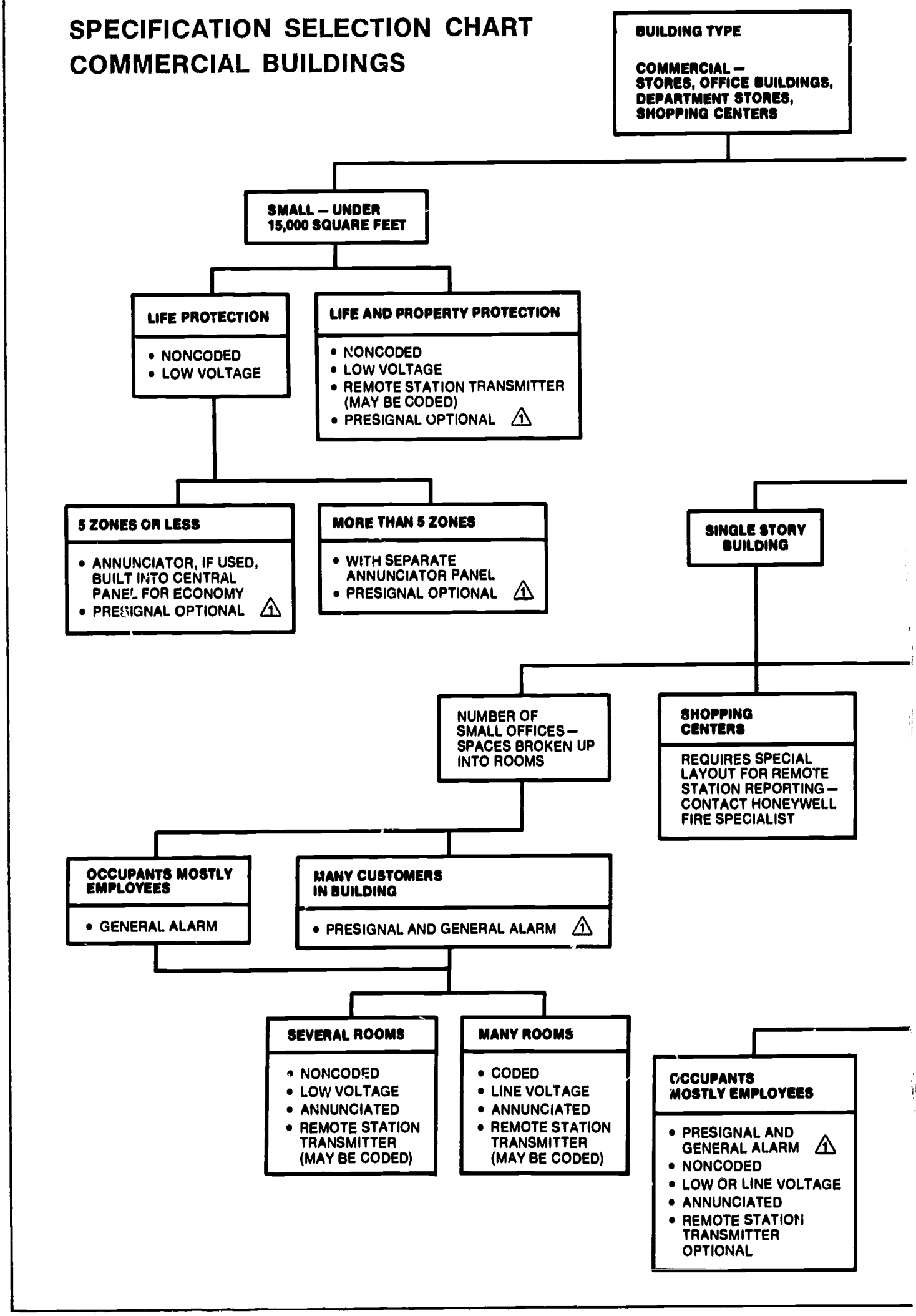
IN SUMMARY... THE MAIN POINTS TO CONSIDER

- Today's better automatic fire alarm systems offer cost savings and greater safety.
- Owned systems (proprietary and remote station systems) are replacing rented systems because the owner can realize a return on his investment in a short time, and because of performance advantage.
- Fire alarm systems can now be integrated with other building systems to reduce costs through the use of common parts and personnel.
- Automatic fire alarm systems have reached the stage where equipment can be both diverse and specialized enough to do a particular job efficiently and without "oversell". Good basic systems by today's performance and cost standards are remote station and proprietary systems. A good system manufacturer will have a very large range of products for tailoring these systems.
- Available maintenance is one standard of a manufacturer's faith in his products.

SYSTEM SPECIFICATIONS

Experience has shown the kind of system that most often is ideal for a given kind of building. Specifications are supplied in the following pages to give a general estimate of the kinds of systems best used for various businesses and institutions. These specifications are, of course, just a beginning for a plan—they can serve as a frame of reference to help you and Honeywell create a special answer to your special needs.

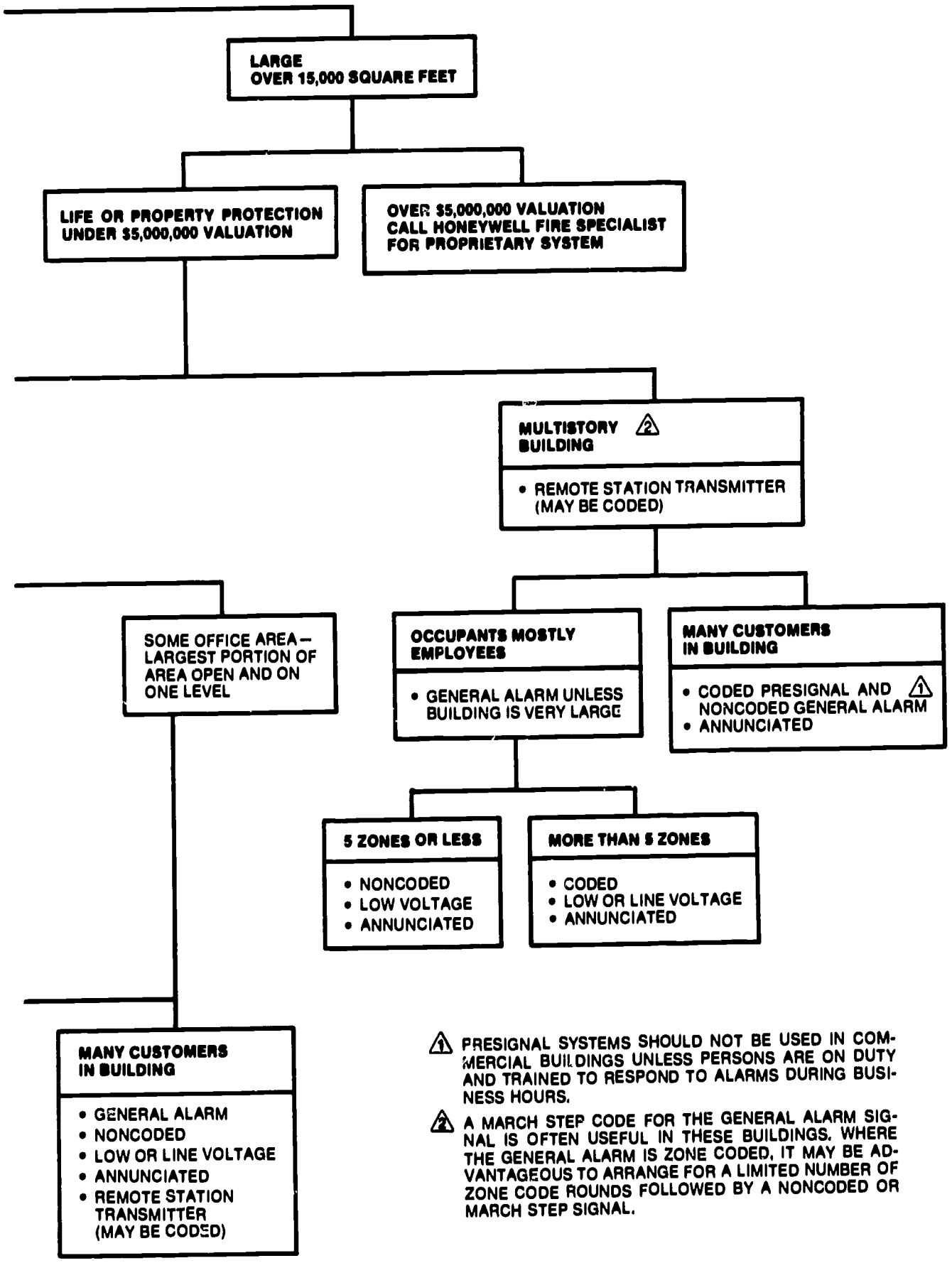
SPECIFICATION SELECTION CHART
COMMERCIAL BUILDINGS



REFERRAL: Hotels and motels — listed under multiple dwellings.

NOTES: 1. Individual devices and layout to be specified in accordance with local insurance codes and building design.

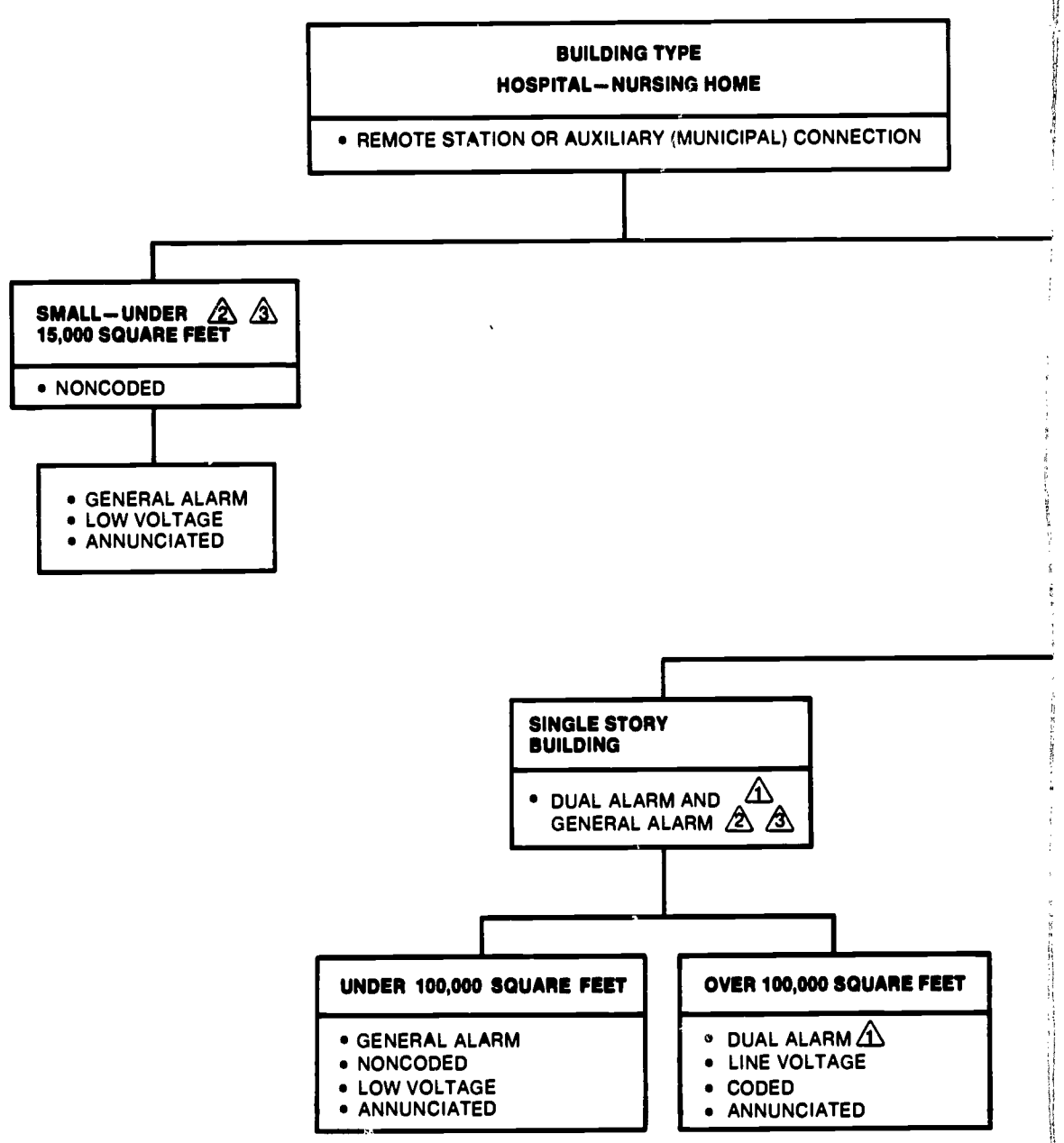
2. All systems may have auxiliary connection.



⚠1 PRESIGNAL SYSTEMS SHOULD NOT BE USED IN COMMERCIAL BUILDINGS UNLESS PERSONS ARE ON DUTY AND TRAINED TO RESPOND TO ALARMS DURING BUSINESS HOURS.

⚠2 A MARCH STEP CODE FOR THE GENERAL ALARM SIGNAL IS OFTEN USEFUL IN THESE BUILDINGS. WHERE THE GENERAL ALARM IS ZONE CODED, IT MAY BE ADVANTAGEOUS TO ARRANGE FOR A LIMITED NUMBER OF ZONE CODE ROUNDS FOLLOWED BY A NONCODED OR MARCH STEP SIGNAL.

SPECIFICATION SELECTION CHART
HOSPITALS — NURSING HOMES



NOTE: 1. Individual devices and layout to be specified in accordance with local insurance codes and building design.

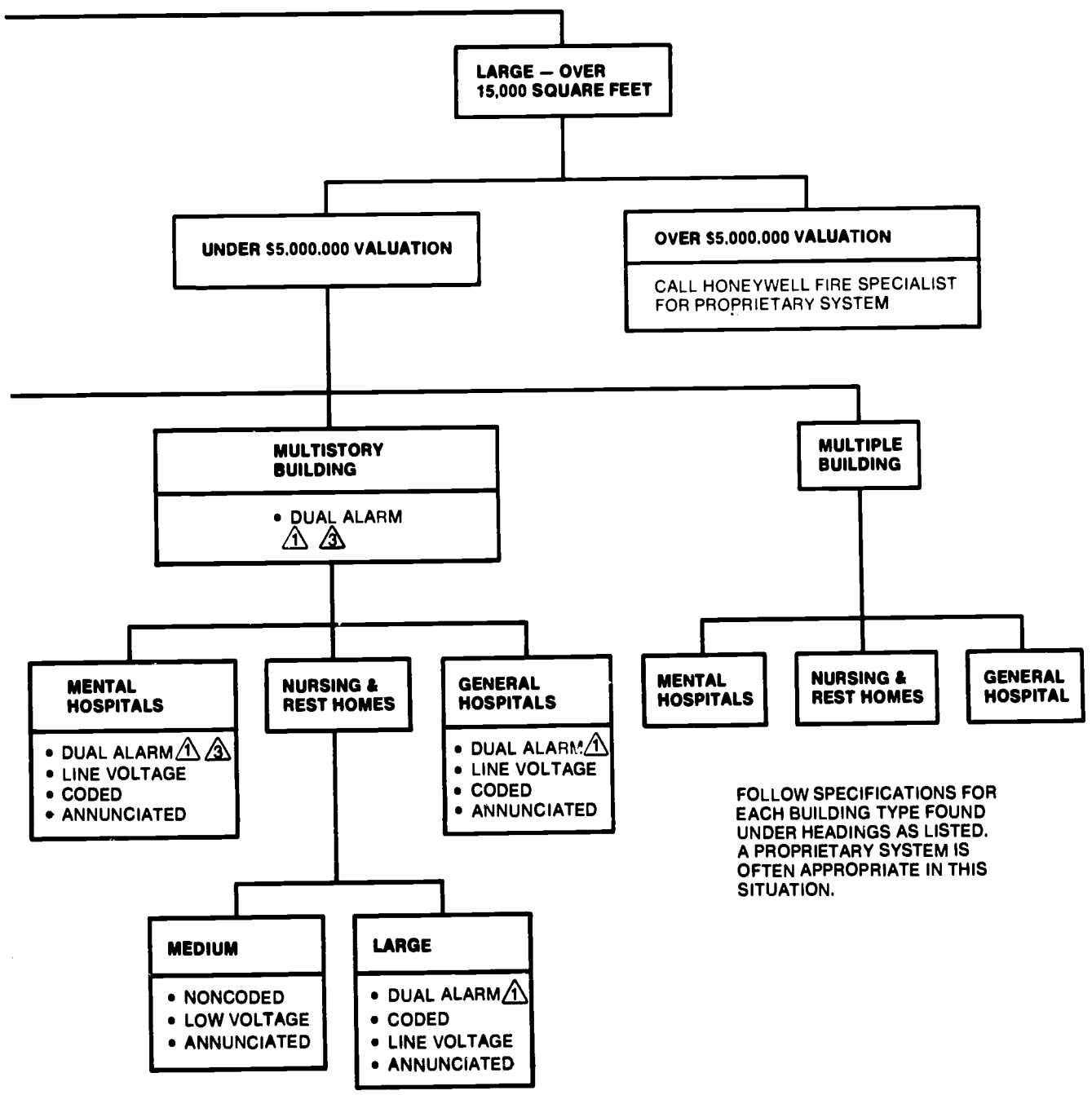
(1) DUAL ALARM SYSTEM. The dual alarm system sounds coded signals on all alarm sounding devices in all occupied nurses stations and other areas where trained persons and employees can answer alarms and assist in immediate evacuation of the zone or area in greatest danger.

If it is determined that the entire building should be evacuated immediately, a key may be inserted in any station and turned to cause all alarm sounding devices to sound a continuous alarm signal for complete and immediate evacuation.

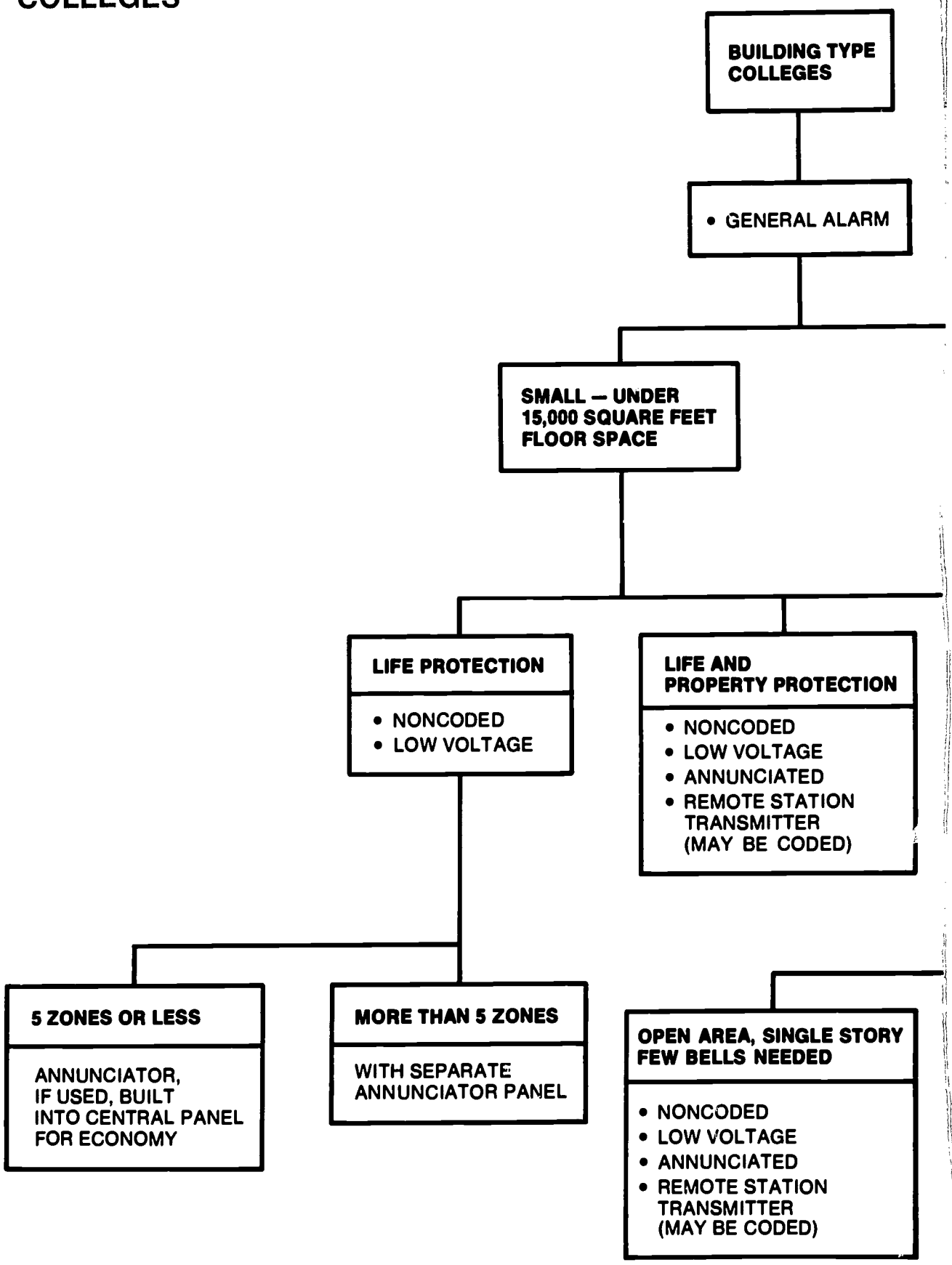
In all cases, an alarm must be transmitted to the fire department immediately upon the first alarm.

(2) In single-story buildings where all patients are sane and ambulatory, an immediate general alarm (no pre-signal) may be in order.

(3) Mental wards require certain doors to be normally locked. The alarm system should include automatic fail safe door releases to ensure freedom of evacuation.



SPECIFICATION SELECTION CHART
COLLEGES



REFERRALS: DORMITORIES—LISTED UNDER MULTIPLE DWELLINGS

LIBRARIES—LISTED UNDER LIBRARIES AND RECORD STORAGE

DISPENSARY AND HOSPITAL—LISTED UNDER HOSPITAL-NURSING HOMES

NOTES:
1. Individual devices and layout to be specified in accordance with local insurance codes and building design.
2. All systems may have auxiliary connection.
3. Honeywell recommends that a functional operation be standardized and followed throughout the campus and varying only in the dispensary, hospital, library and boys' dormitories.

LARGE
OVER 15,000 SQUARE FEET FLOOR SPACE

OVER $5,000,000 VALUATION

CALL HONEYWELL FIRE SPECIALIST FOR PROPRIETARY SYSTEM

SINGLE BUILDING

MULTIPLE BUILDING

FOLLOW SPECIFICATION FOR EACH BUILDING TYPE LISTED. ALL BUILDINGS SHOULD TRANSMIT ALARM SIGNALS TO A CENTRAL REPORTING CENTER BY MEANS OF NON-CODED DIRECT WIRE OR CODED LOOP WIRED REMOTE STATION SYSTEM TRANSMITTING TO A CENTRAL REPORTING CENTER. MANY UNIVERSITIES ARE FINDING SPECIAL PROPRIETARY SYSTEMS VERY DESIRABLE AND HELPFUL.

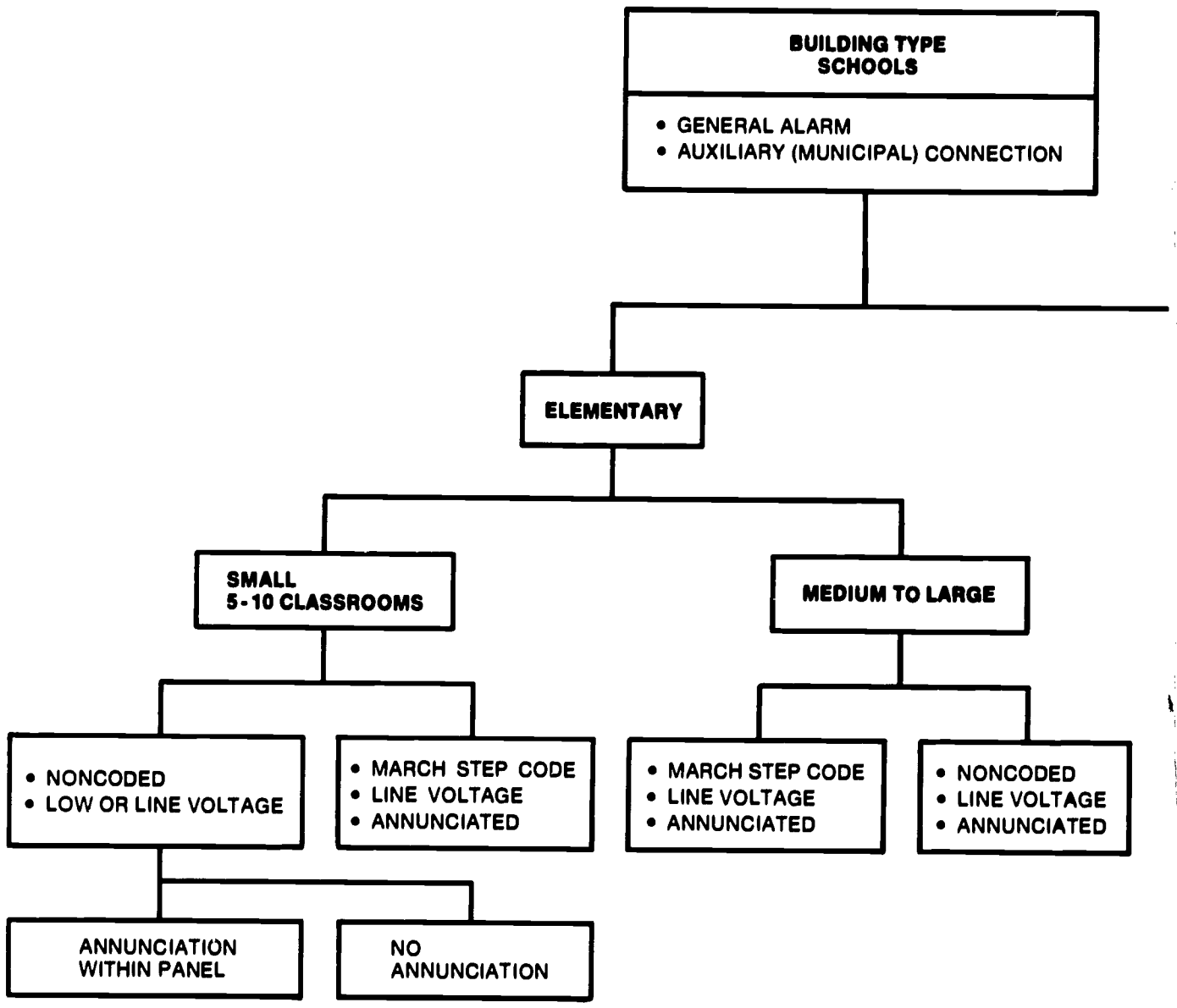
SINGLE STORY BUT AREA BROKEN BY WALLS, ETC.
SEVERAL OR MORE BELLS NEEDED

- NONCODED
- LINE VOLTAGE
- ANNUNCIATED
- REMOTE STATION TRANSMITTER (MAY BE CODED)

MULTISTORY OR VERY LARGE SINGLE FLOOR

- CODED
- LINE VOLTAGE
- ANNUNCIATED
- REMOTE STATION TRANSMITTER (MAY BE CODED)

SPECIFICATION SELECTION CHART
SCHOOLS



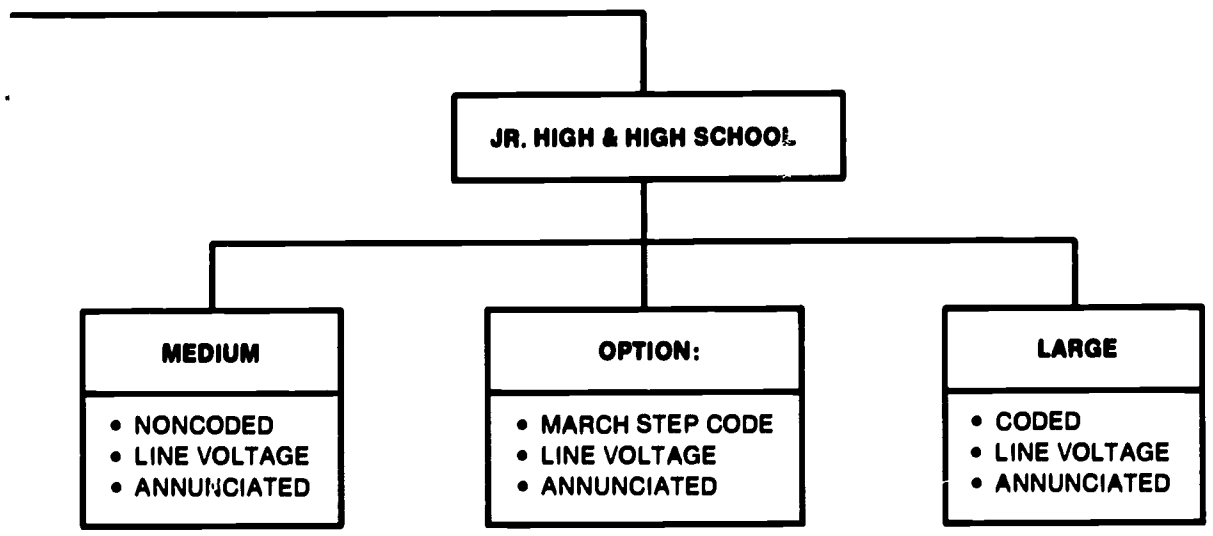
REFERRAL: For colleges, see chart on colleges.

NOTES: 1. Individual devices and layout to be specified in accordance with local insurance codes and building design.

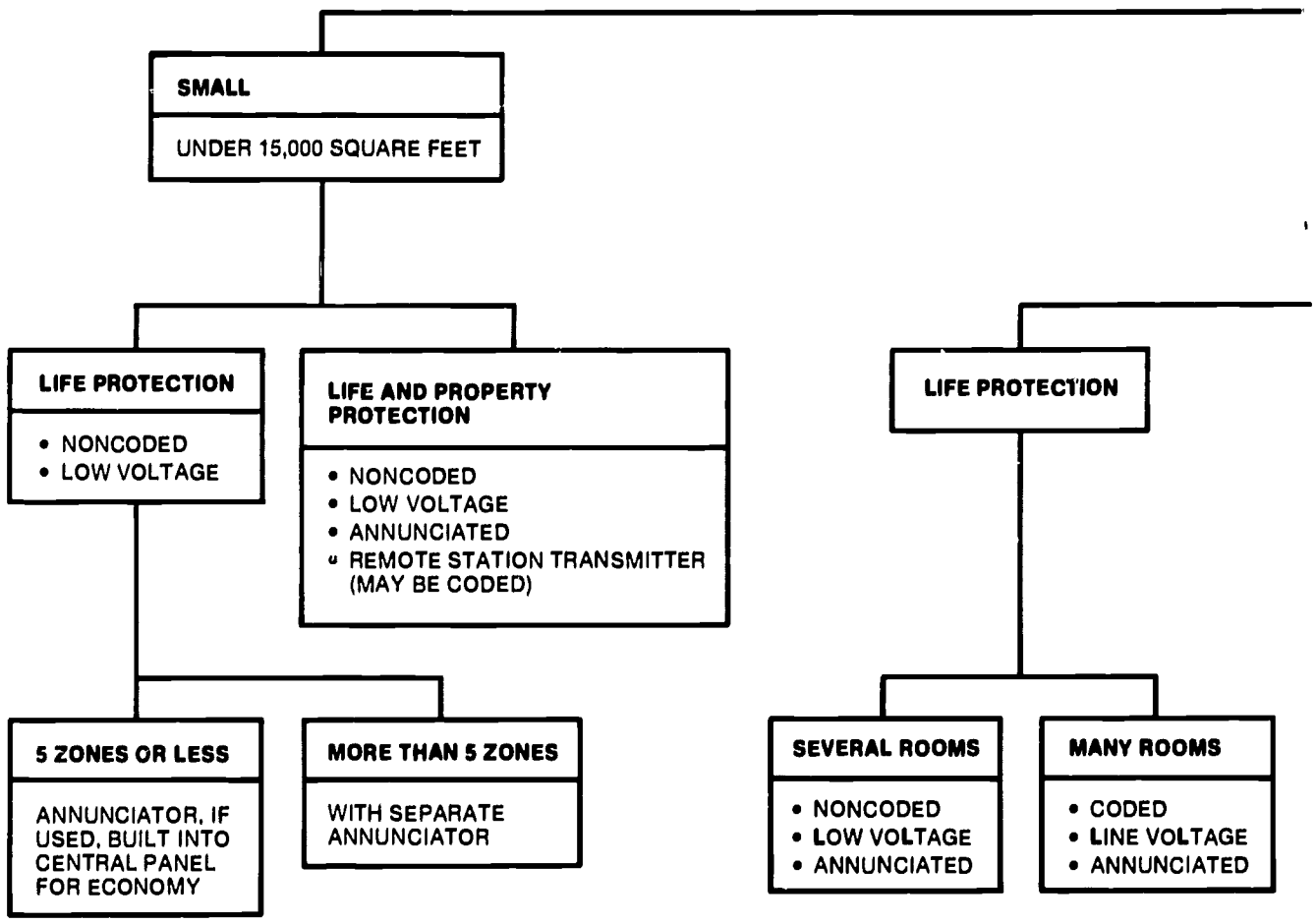
2. Although this chart specifies auxiliary connections, remote station tie-ins may be used where preferable.

3. A special combined fire and clock system panel is available from Honeywell for schools.

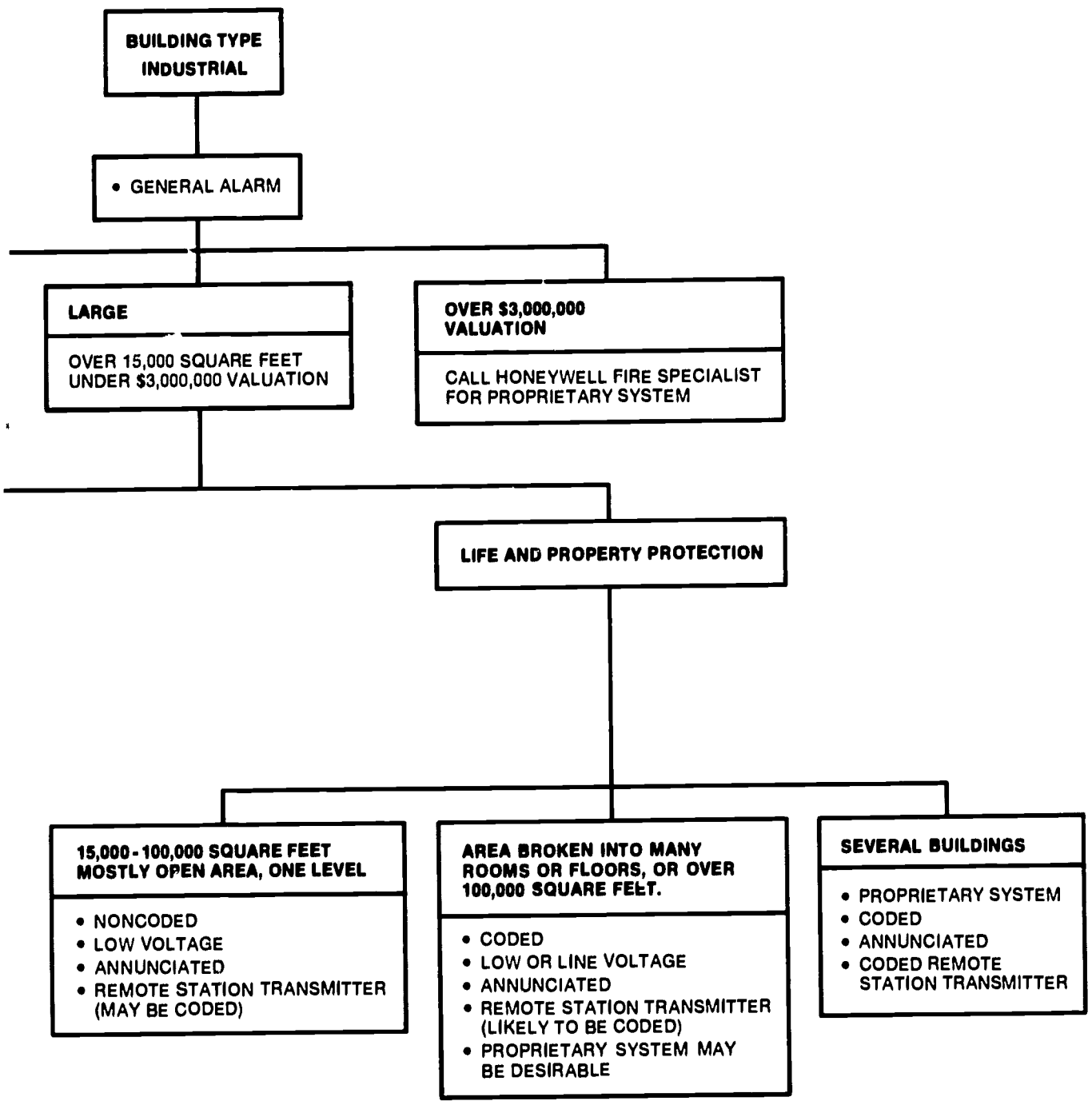
4. A special campus-type system is available from Honeywell for community school systems.



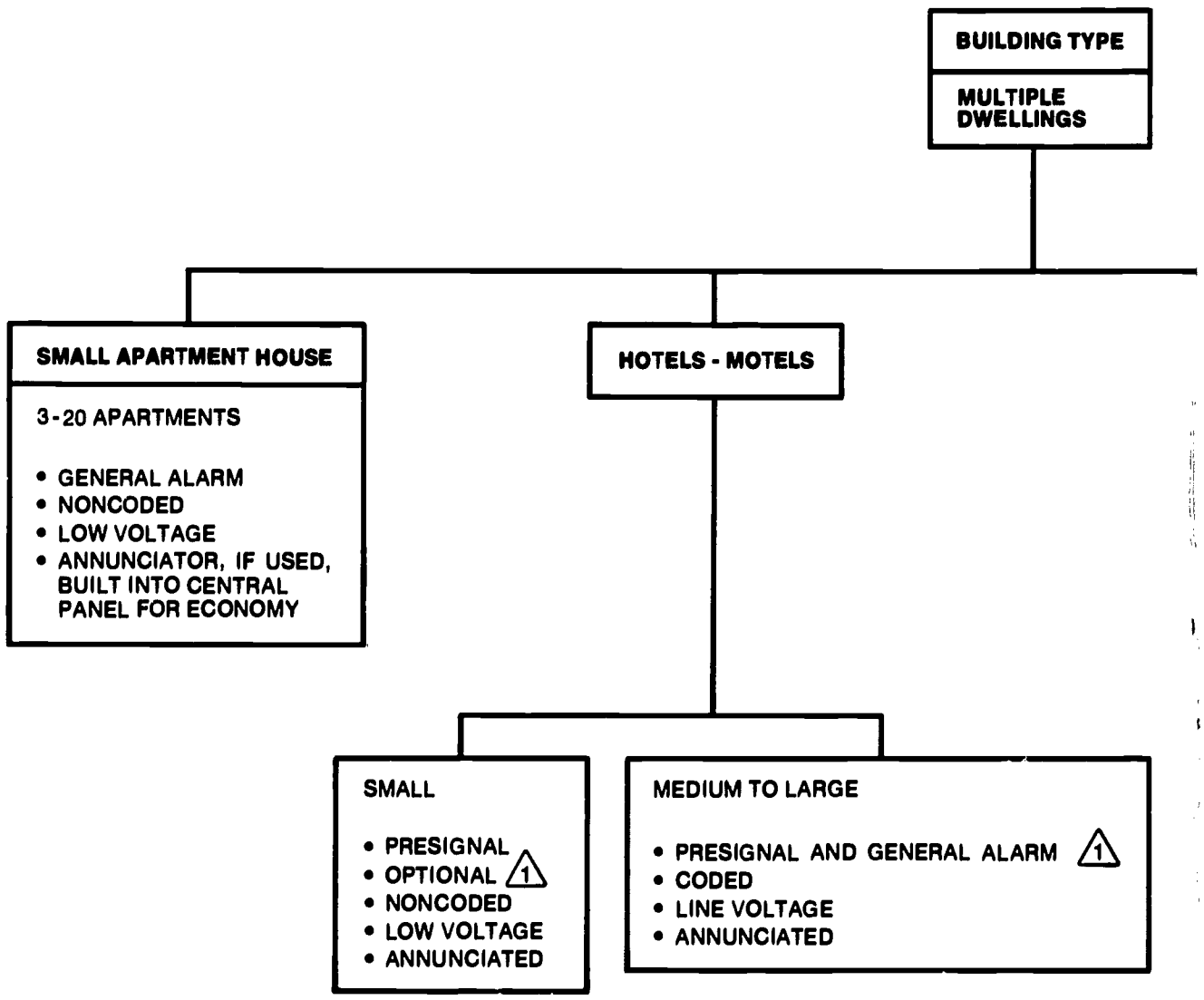
SPECIFICATION SELECTION CHART
INDUSTRIAL BUILDINGS



NOTE: 1. Individual devices and layout to be specified in accordance with local insurance codes and building design.



SPECIFICATION SELECTION CHART
MULTIPLE DWELLINGS

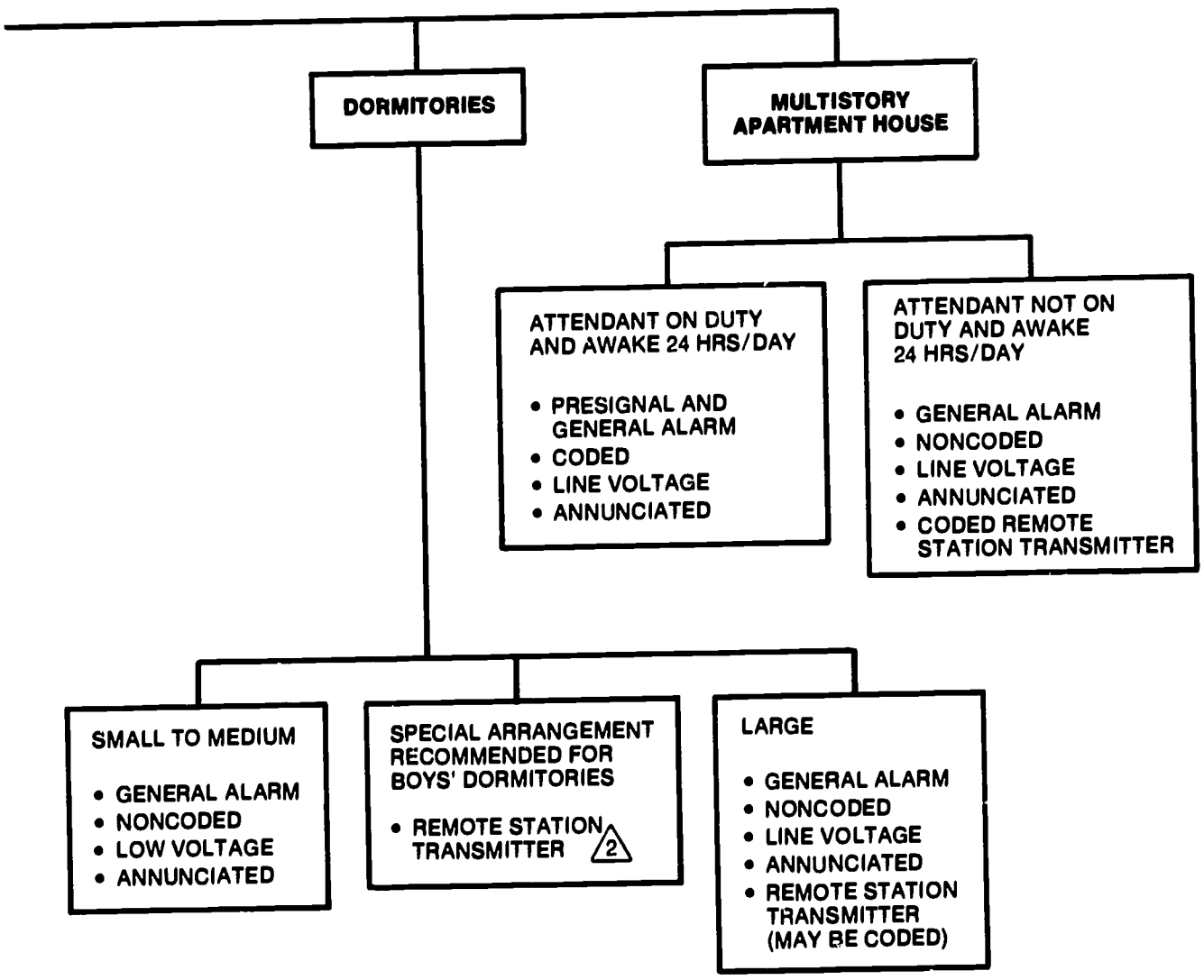


1 PRESIGNAL SYSTEMS SHOULD NOT BE USED UNLESS SUPERVISORY PERSONNEL ARE ON DUTY AND AWAKE 24 HOURS A DAY.

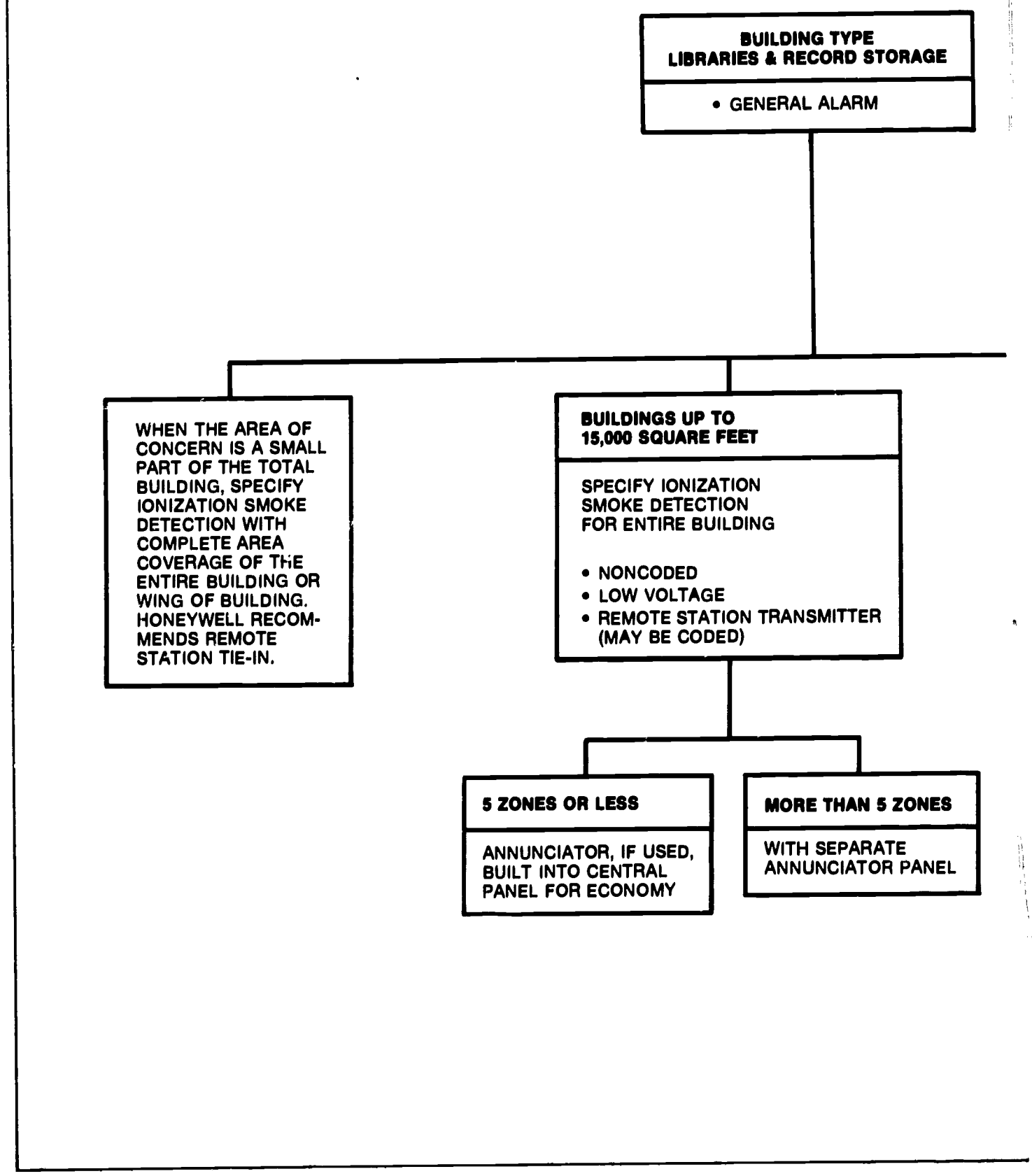
2 BOYS' DORMITORIES ARE EXCEPTIONALLY PRONE TO FALSE ALARMS CAUSED BY BOISTEROUSNESS AND VANDALISM. HONEYWELL, THROUGH EXPERIENCE, RECOMMENDS THE PRESIGNAL SYSTEM WHERE THE INITIAL ALARM IS SOUNDED ONLY ON THE FLOOR WHERE THE ALARM WAS INITIATED AND AT COUNSELORS ROOMS. SMOKE DETECTION IS RECOMMENDED IN STORAGE AREAS AND DUCTS AND PREFERABLY NON-RESTORABLE FIXED TEMPERATURE DETECTORS WITHIN ROOMS.

NOTES: 1. Individual devices and layout to be specified in accordance with local insurance codes and building design.

2. All systems may have auxiliary connection.

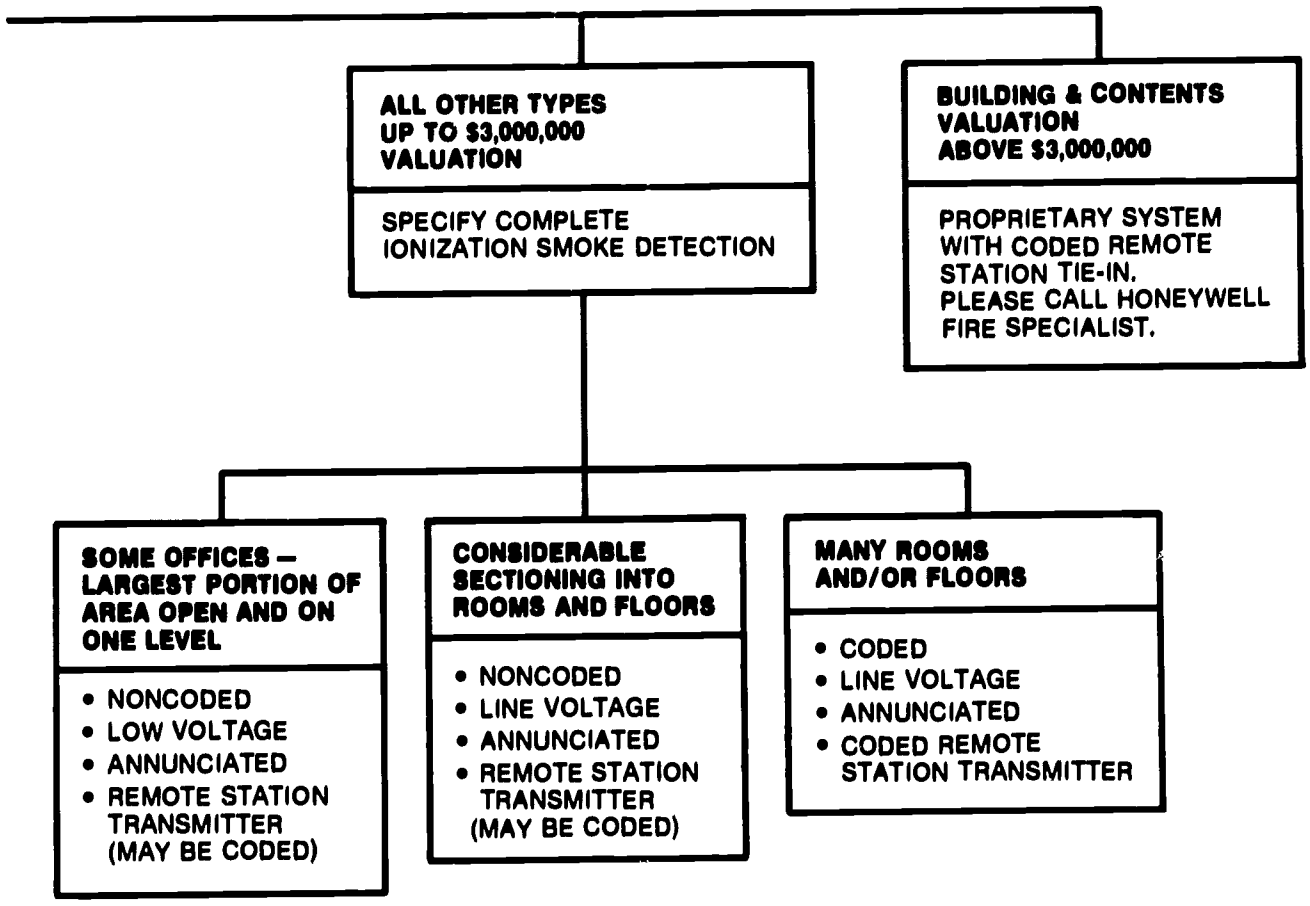


SPECIFICATION SELECTION CHART
LIBRARIES & RECORD STORAGE



NOTES: 1. Individual devices and layout to be specified in accordance with local insurance codes and building design.

2. Municipal, state, and federal libraries and record centers may have auxiliary (municipal) connection rather than remote station.



FOR FURTHER INFORMATION

Whatever your building requirements may be, Honeywell can provide technical assistance, systems and components in these technologies:

- Building Automation
- Temperature Control
- Security
- Fire Detection
- Equipment Surveillance
- Clocks

In addition, Honeywell provides all supporting services, such as maintenance, programs and personnel training in the operation of these systems.

For a thorough discussion of exactly what Honeywell's capabilities can mean to you and your building, call your local Honeywell Commercial Division Branch Office and ask for the Protection Systems Specialist. Honeywell is listed in the Yellow Pages under "Controls, Control Systems & Regulators".

FIVE INFORMATIVE PLANNING GUIDE

This planning guide is one of five booklets prepared by Honeywell to present a basic discussion of building automation systems, security systems, fire alarm systems, temperature control systems and preventive maintenance. You are encouraged to send for any of these booklets that may be helpful to you. *Please specify the appropriate form number.* Write to: Honeywell, Inquiry Supervisor M.S. G6118, 2701 Fourth Avenue South, Minneapolis, Minnesota 55408. *In Canada*, write to: Honeywell Controls Limited, Commercial Division—740 Ellesmere Road, Scarborough, Ontario.