

TEXAS

CRIME PREVENTION INSTITUTE

*Specialized Environmental Design School  
For Crime Prevention Officers*

SOUTHWEST TEXAS STATE UNIVERSITY  
SAN MARCOS, TEXAS

*In Cooperation With*

CRIMINAL JUSTICE DIVISION  
OFFICE OF THE GOVERNOR  
STATE OF TEXAS

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SPECIALIZED ENVIRONMENTAL SCHOOL  
FOR CRIME PREVENTION OFFICERS

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ACQUISITIONS

Prepared for  
SOUTHWEST TEXAS STATE UNIVERSITY  
TEXAS CRIME PREVENTION INSTITUTE

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Dedicated to

the memory of

*Chief John Fabbri*

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Chief Fabbri, a recognized leader in crime prevention through environmental design, was instrumental in the development of this book. His advice and generosity in providing materials were of great assistance.

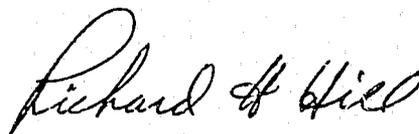
Chief Fabbri appeared in Texas during 1974 as a guest lecturer in an Advance Crime Prevention School and is remembered as a true friend of the Texas peace officer.

We will miss him.

## ACKNOWLEDGEMENTS

The development of the Specialized Environmental School for the Texas Crime Prevention Institute could not have been undertaken without the aid and assistance of many people.

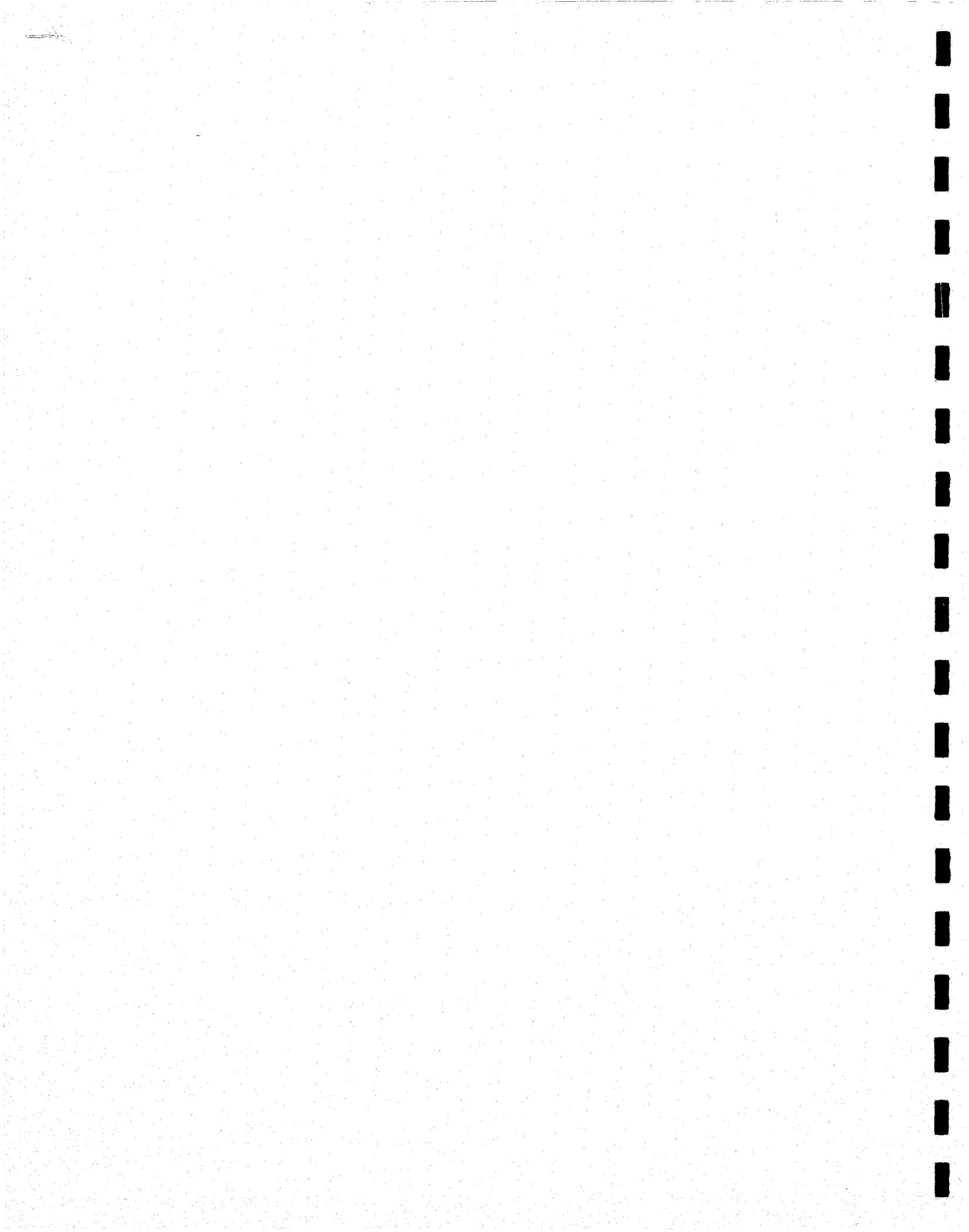
First, we would like to acknowledge the individuals who spent untold hours developing the material for this text: Dr. Billy Lee Windham, Industrial Arts Department, Southwest Texas State University, who coordinated the efforts of all participants and provided substantial input in all materials used; Mr. John Guseman, who developed new material and whose experience and input in the area of the Criminal Justice System was invaluable; Mr. Jim Baugh, City Manager for the city of San Marcos, who in the midst of all of his many job requirements still had time to develop materials for this text; Chief John Fabbri, who pointed us in the right direction and provided us with additional material to develop this text; and the Southern California Association of Governments for the development of the manual "A Study of Crime Prevention Through Physical Planning" which is an invaluable document to all crime prevention officers and especially so to us.



Richard H. Hill, Director  
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## INTRODUCTION

### Background of the Problem

Law enforcement has been searching for ways to combat the rising crime rate for years. We have improved our training; we have better educated our officers; we have adopted the most modern technological advances and implemented them for law enforcement; and we are in the process of developing crime prevention programs which attempt to remove the opportunity for crimes to occur.

In order for these law enforcement programs to be a success, we need the support of the citizens of respective communities; and the crime prevention programs appear to be one way to gain this support. All of the crime prevention programs that law enforcement agencies are developing are being implemented with the assistance of the citizens. The most important of these programs, and the one that will reap the greatest benefits for a community, is the environmental or physical planning program.

### Significance of the Problem

In order for the crime prevention officer to be able to provide the benefits of environmental planning he will first have to establish lines of communication with those members of his community that will have the greatest input in the areas of planning, designing, construction and urban renewal. This communication cannot be accomplished unless the crime prevention officer understands the problems and procedures that are involved in environmental planning and development, and is able to work with the individuals that are involved in these areas. The keys to establishing this communication are: knowing who can

provide you with assistance, and backing within the Criminal Justice System, knowing who has input at the different stages of development of the environment within the local government, and learning the technical languages and problems of designers and builders. If the crime prevention officer can develop these skills and knowledge, he is on the way to establishing communication which will allow him to have input in all levels of planning which will affect the environment in his community.

To assist the crime prevention officer to develop these skills, the Texas Crime Prevention Institute has developed a workshop on Environmental Security.

#### Hypothesis

Upon completion of this workshop:

1. The crime prevention officer will be able to provide basic input into the environmental design process.
2. The officer will be more knowledgeable of the design and building process and the levels at which he will be able to most effectively implement a desired change.
3. The officer will be able to communicate more effectively with designers and builders to create an environment which will deter criminal actions.

#### Assumptions

For the purpose of this workshop the following assumptions will be made:

1. Those crime prevention officers who are attending this workshop have completed basic 80 hour crime prevention course.
2. These crime prevention officers are working in a crime prevention unit within their local law enforcement agency.

3. The crime prevention officer desires to establish lines of communication within the areas of environmental planning.

#### Limitations

This workshop will be limited in one or more of the following ways:

1. The function of the Criminal Justice System related to environmental planning.
2. The functions of government agencies related to environmental planning.
3. The basic principles of environmental planning.
4. The design process as used in environmental planning.
5. The basic terminology used by designers and builders.

#### Definition of Terms

It is necessary to have a clear understanding of selected terms to be used in this workshop. You are probably familiar with most of them, however, a more detailed meaning will be helpful. These terms are defined as follows:

1. Environmental Planning. A generic term including architecture, design, planning, engineering, and construction which intimately connects man's ability to function, to bring visual order to his surroundings, to enhance and embellish the territory he occupies.

2. Architecture - Architect. Architecture is the art of designing buildings. An architect is an artist, businessman and engineer. He is licensed under state law to design, plan, and oversee the construction of buildings. At its largest scale, architecture seeks to design useful and beautiful neighborhoods, cities, and metropolitan areas.

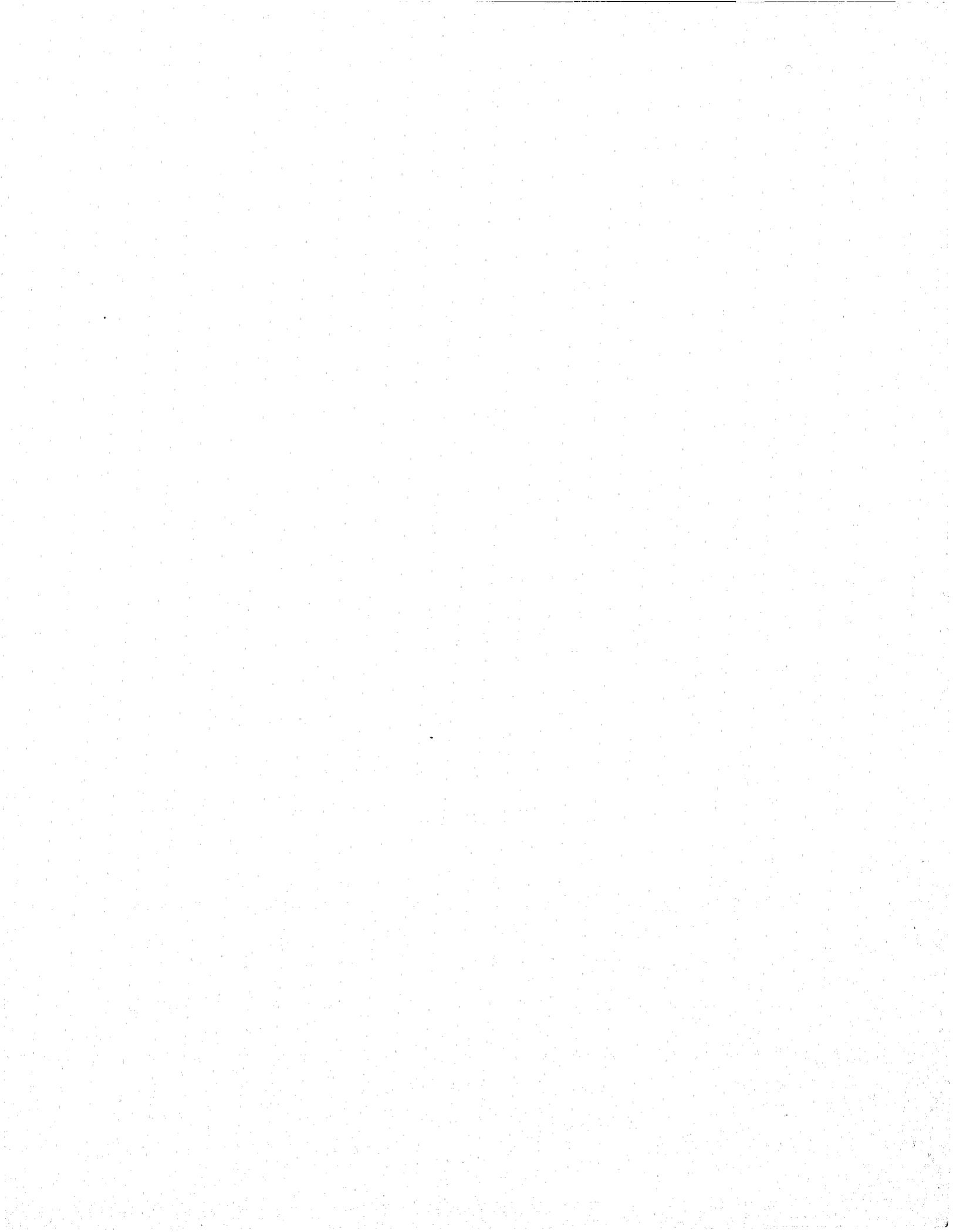
3. Building Designer. Building design is the art of designing buildings. A building designer is an artist, businessman and construction specialist. He designs, plans, and oversees the construction of buildings. At this time he is not licensed by the state, therefore, his work is normally limited to smaller projects than those of the architect, primarily residential and neighborhood areas.

4. City Planning. City planning determines a city's future needs for land, building, highways, and other facilities, through an analysis of current and future urban growth.

5. Design. Design is the creative planning process to find solutions to meet the needs of man.

6. Construction. Construction is a generic term including man made structures for which the materials are brought to the site, and erected for use by man.

7. Builder - Contractor. A businessman who supervises the erection of structures to meet the environmental needs of man.



COMMUNICATIONS





## COMMUNICATION WITH CRIMINAL JUSTICE SYSTEM

### Introduction

It is a fact that the efficiency of the police should be judged by the absence or the prevention of crime. We are all aware that one of the first methods of attaining this proficiency is the distribution of crime information. In this advanced school on "Environmental Design" for crime prevention officers we will learn how to communicate the problem to those people within the criminal justice system. We must identify what the problem is and find a method of painting a word picture for those people who will be involved with us in the prevention of crime. The problem of communicating with those people who are involved with us in the criminal justice system is as varied as those people are varied in personality, education, background and duties. Know these people, find out everything you can about them including:

#### Psychological Factors

Emotions

Interests

Mind

Health

Instincts

Talents

Ambitions

One of the first things we should learn in the art of communicating a problem such as this is the art of compromise. This is not the same as seeing someone run a red light or a stop sign and that person is issued a citation, but this is a problem of other people who are involved in the same profession as we, who have

other goals to attain. So consequently we set our goals and then we arrive at those goals as rapidly as we can and with as much success as we can. Because of different first line objectives of other people involved in the system with us, it is necessary that we see their point of view also and be read, willing and able to compromise so we can get the most out of the program we are selling. As this program goes on you will be aware of various phases of the program of "Environmental Design" from experts in the particular field.

#### Fellows Officers

The most important people to understand our problem, our goal and our methods are our fellow officers. Where we come in contact with maybe at the most twenty different people a day, their duty hours are filled with dealing with people. Why should fellow officers be the most difficult to communicate with? You all know this. They think you are riding the gravy train. You went away to school, took a course in crime prevention, came back to an office, a desk, maybe a secretary, maybe one assistant, two assistants, three assistants and have nothing to do, this is the attitude of the fellow officers. You don't have to hassle drunks, you don't have to make collision reports, burglary reports and on the burglary reports, you look over their reports and that is something else they have to watch out for, to be sure to avoid your constructive criticism of their reports. So that makes their work harder, they think. It is very, very important to get this particular group on your side of the fence. To get them believing in and interested in crime prevention. The average officer today is more interested in where the money is and where the publicity is, which is in apprehending those people who have committed crimes. After the crime has been committed, catch the burglar, catch the murderer, catch the rapist, catch the thief. Then get his arraignment.

### Chief of Police

It may be difficult to sell crime prevention to the Chief of Police. The Chief of Police has many headaches and probably will think this is just an additional one. One problem the chief has is a lack of men. He doesn't have enough men to properly patrol his particular jurisdiction. The primary purpose of the man on patrol is to prevent crime. All of us know that crime is up, the chief knows this also. It is written in the paper almost daily that crime is up but who cares? It is only the person who is actually involved in crime, the victim of crime. It happens on the other side of town, or it happens down the street, or it happens in another town, so the general public is really not conscious of the fact that this is costing them money. And that come to the heart of the whole problem money. How much can the chief do with his budget and his allotted number of men to prevent crime, when he has all the other things to do and he gets no heat on crime except when he doesn't solve the crime? So consequently he builds up his detectives or his investigators to go out and arrest those people who have committed the crimes. It is up to us to convince the chief that to prevent the crime in the first place is a far cheaper thing to do than to apprehend the person after the crime has been committed.

Crime prevention is not just the business of the police, it is the business of everybody. So get these fellow officers selling the idea not only to the taxpayer, the property owner, but also the chief of police.

We may assume if we do a proper job of selling crime prevention, crime will decrease. All crime will decrease is questionable. That crime over which the police have control will decrease.

The crime prevention officer must first know everything he can possibly learn about his particular job, and sell his idea to his fellow officers and

his chief of police, and let them assist him in not only preventing crimes but also selling the programs to the community.

Every person who is in a position of leadership or sees a number of people should be personally contacted by the crime prevention officer and sold on the idea of crime prevention in the savings of dollars and cents, heartbreak and tragedy.

#### Sheriff

Another person that the crime prevention officer should personally contact is the Sheriff. The Sheriff must be approached in a different manner from the Chief of Police. There is a difference, a basic difference. The Chief of Police is an appointed officer, the crime prevention officer is appointed, the Sheriff is elected. The Sheriff is the choice of the people. You must be aware of this at the time he is approached. The sum of the crime prevention idea must be done by diplomacy and not by orders or saying this you must do or this you will do. The Sheriff must be sold on the idea that this will be a very popular thing with the voters if crime decreases instead of increasing. He must be sold on the idea that this will increase his number of votes in the next election, will cut down on the number of opponents he might have and that the general public will believe he is the best sheriff ever. SELL SELL SELL. In a different manner, a different approach than selling the fellow officer or selling the chief of police.

#### District Judge

Another member of the criminal justice system that must be approached personally because of his leadership in the community and because of the fact that he also may be called upon to rule upon some of the ordinances, laws, et cetera

that may be passed due to your efforts is the District Judge. Again what is the method of approaching the district judge? First thing to realize is that the district judge has at least a Bachelor of Laws or a Doctor of Jurisprudence, he has been practicing law for years and he knows his business. He knows how to apply the law, he knows what admissible evidence is and what is not admissible evidence. Sometimes he is overworked. He is in your corner now. Show him where a particular over-all design may possibly lighten his work load.

The judge has a heartbreaking job. After the police have made the arrest, has secured all the evidence, after it has been given to the prosecutor, after the case has been presented, after the jury has heard the evidence, after the finding of guilt, then it is necessary for the judge to send this man or woman to the penitentiary or grant probation, whatever the facts of the case call for. It is heartbreaking. The judge is frustrated all the time, he wishes he only had half or even a tenth of the people coming before him. Many, many times he wonders why he is a judge instead of just a practicing attorney.

The judge is going to be in your corner if he is approached in the manner of the position he occupies. The District Judge is further removed from politics than any of the other local judges. He is more looked up to, he is more popular, and his word is more believed.

#### City Judge

Now for the benefit of the Crime Prevention Officer, the City Judge is the man who is going to rule on the legality of the "Environmental Design" laws he may be able to get passed. The city judge must be able to understand the crime prevention officer's problem, he must understand the cost of crime, he must also understand that this is not a whim of the moment, that this has long

lasting effects. You will have to sell the city judge on crime prevention rather than criminal apprehension.

The city judge is closer to politics than the district judge. Some of the cases he rules on will be politically unpopular. For instance, a builder or a developer is going to be required by ordinance to do something that is going to cost money or it is going to take time or both, then he is going to want to pull all the strings he can to be exempted from this particular ordinance for this particular job. The judge is going to have to have the information to refute the arguments brought to him over a cup of coffee or a civic club meeting by the builder or the developer. You must furnish this judge with all the information necessary for him to sell your program to the person who doesn't want to buy it.

#### County Judge

Another individual of the criminal justice system that must be sold on the idea because of his leadership, because of his official position is the County Judge. Here again to a lesser extent than that of the city judge, you are becoming involved in politics. The county judge, because he is close to him, sees the voter at least once a month, maybe more often, and is not going to want to make the voter unhappy and he is going to want to be a popular judge so he can be re-elected. Again a personal approach to a county judge would be your job and all your ability to communicate your program to the county judge is a must.

#### City Prosecutor

Another position occupied by a person that must be sold on the program is the City Prosecutor. Most of these people hold their positions because no

one else is available to do this thankless job. The city prosecutor will have to be sold on the program and your ability to communicate with him is very essential.

#### County Prosecutor

The County Prosecutor holds a political position and hopes to retain it by being fair and unbiased. He will have to be sold on your program by using the psychological factors involved.

#### Lawyers

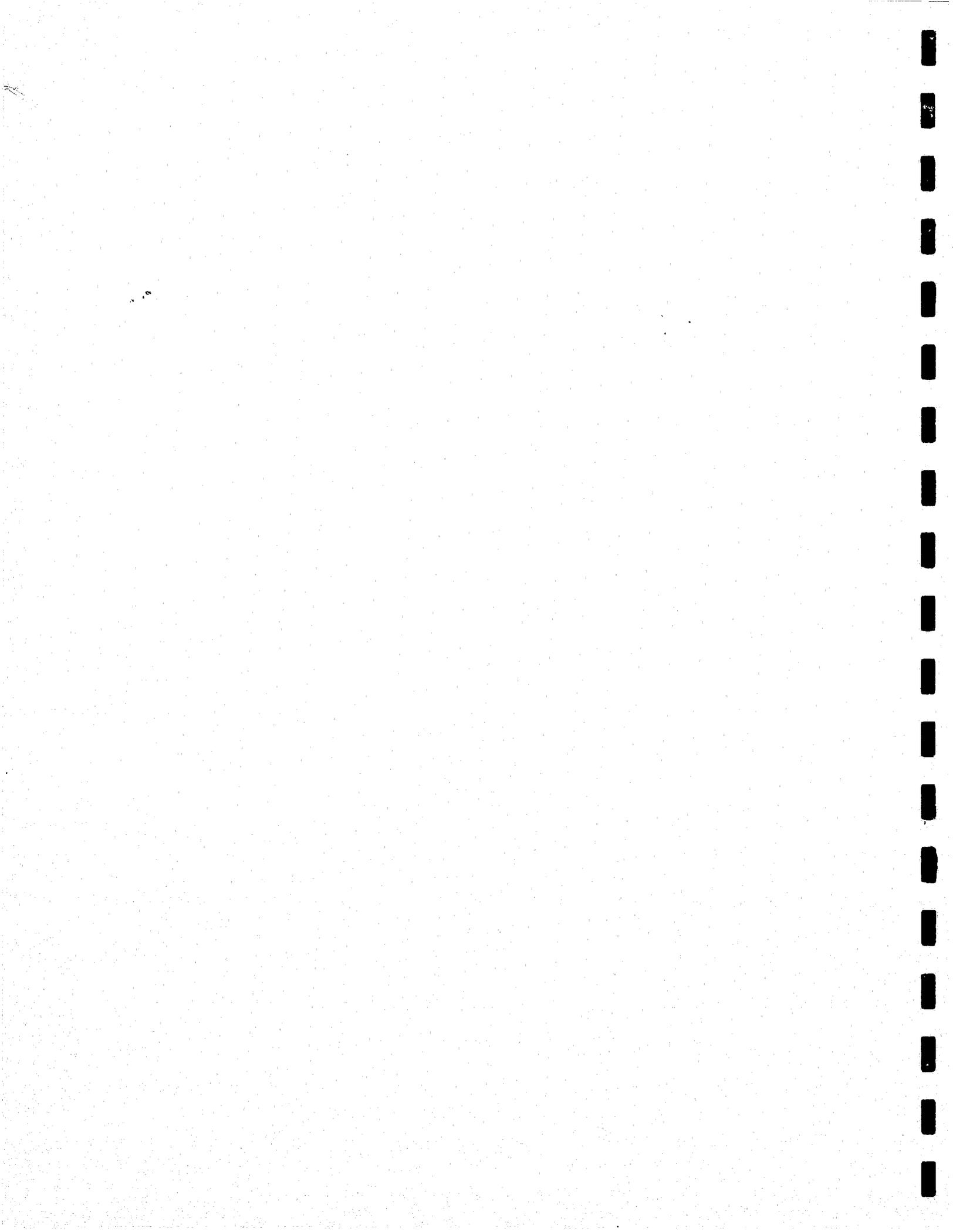
Lawyers have been in the practice of law usually for years and know that crime prevention would be of more importance than crime increases. His job is dealing with the law breaker and therefore preventing crime would be money taken from his pocket. It would be necessary to sell him your program with the idea that Crime Prevention would lower his amount of cases but allot more of his time to other duties under his jurisdiction.

#### Fire Marshal

The Fire Marshal will have a conflict of interest and this is where the Crime Prevention Officer will have to ompromise. The Crime Prevention Officer will have to use all his talent and knowledge to sell and justify his program.

#### Building Inspector

The Building Inspector has a thankless job and receives many complaints from local builders and contractors. A crime prevention program should be of interest to him if presented using the psychological factors involved.



## COMMUNICATION WITHIN LOCAL GOVERNMENT AGENCIES

In order to provide viable input into any organization, municipal or private, it is essential that two ingredients be present. The first of these ingredients may be titled knowledge or expertise and must be presented from two stand points: knowledge of the technical data which will comprise the desired input, and knowledge of the organization into which this input is directed. The second ingredient in a successful input process is honesty. Individuals in key positions in any organization will respond only once to the false cry of wolf. Exaggerated cause and effect conclusions diminish greatly the future effectiveness of the individual desiring to provide input into an organization. Approaching an organization from a position of knowledge and honesty, of course, presupposes that the individual wishes to have a positive and meaningful output.

With this as a point of departure, it will now be helpful to move in the direction of levels of input into a municipal organization. It would appear the first place to begin establishing communication lines will be within the department that is a subsection of the total organization. In the case of crime prevention, the place that the crime prevention officer would begin establishing lines of communication would be within the organization itself. This could be done through a close working relationship with the Chief and allowing the Chief to carry the ball outside of the Police Department. However, it may prove more effective to have the crime prevention officer established within the Police Department structure in such a way that he would be the direct line of contact outside the Police Department.

Practice here would depend to a large extent on the personality and style of the Chief of Police and the personality of the crime prevention officer. I think it is important to note that until a working arrangement is developed within the Police Department, in terms of who would be most effective in representing Crime Prevention input into the organization, all efforts to provide meaningful input into the organization will be diffused and confusing to the responsible and participating parties in other key positions within the organization. The establishment of this relationship will, in fact, establish the crime prevention officer input as formal or informal and will, in fact, relegate him to a position of either staff support to the Chief or to a point of direct input into other portions of the organization. Because it is so critical, I think it is important to reiterate that the internal department structure and relationship must be established prior to input attempts into the rest of the municipal organization.

After this step has been completed, it will then be necessary for the individual who is to carry the ball to arrange a planning meeting with the Manager's office. The individual who will conduct this meeting will depend on the size of the organization and the manner in which administrative authority is delegated. The Manager himself may be involved in this planning meeting or he may delegate this responsibility to an assistant or other staff member whose normal responsibilities place him in contact with the Police Department. This planning meeting is essential to establish new lines of communications that may not have previously existed. Absent establishing formal lines of communications will make it very difficult to

systematize the desired result from the crime prevention officer.

At this planning meeting or possibly a follow-up planning meeting, it will be important to involve other individuals in the organization whose responsibility runs to areas that the crime prevention officer desires to have an impact on. For example, if the City has an established planning office, certainly a representative of this office should be included; a representative from the Public Works Department should be included; the City Attorney's presence would certainly add weight to the meeting, as he is a key part in the preparation of new ordinances. As building codes and zoning ordinances play an integral part in environmental planning and fruition of an effective and workable Crime Prevention program, the city liaison staff member responsible for implementing any changes should be a part of the planning committee. Thus, the building official or Chief Building Inspector should be included because of his intimate knowledge of building codes and his input to city management regarding contemplated changes.

The make-up of the planning committee then would include a planning office representative who would provide expertise in areas of planning and zoning; a building official who would have intimate knowledge and be able to provide input in areas of building codes and proposed changes; and the City Attorney whose role would be to act as a catalyst in formulating any ordinances deemed to be beneficial in carrying out the Crime Prevention mission.

As stated previously, it is imperative that the crime prevention officer, whether acting in an external or internal capacity, develop an indepth knowledge of the areas which affect the mission of his work. He must understand the basis of applicable existing building codes and zoning ordinances and must

anticipate ramifications involved in making changes, enacting amendments, or instituting new regulations. In addition, the crime prevention officer should understand fully the reasons for sound municipal planning and the importance of maintaining same. With this knowledge, he can then correlate his mission to those areas and intelligently discuss and propose such changes, amendments or additions that can accomplish the goals he has set.

The crime prevention officer, whether in the capacity of external liaison or internal staff, must realize that proposals and recommendations for change must be weighed and tested, not only by the planning committee, but by the anticipated effect on a community. Again, the importance of indepth knowledge and integrity is brought to bear. For example, it would be foolhardy to propose a certain change in a building code simply to achieve the goals set by the Crime Prevention unit without considering the impact and acceptance of, not only the committee, but the community. Consequently, reasons for the change must be fully explored and explained; and merits of such a change weighed before proposal. Certainly, if the crime prevention officer lacks the knowledge to adequately explain all ramifications of his proposal; lacks the ability to answer posed questions by the committee regarding this proposal; lacks the expertise to anticipate side effects of such proposal, then all such recommendations will fail at the committee level and, consequently, the program mission.

The crime prevention officer must fully understand that public administration is a system based not only on compromise but on politics and the community. Frequently, the researching crime prevention officer may find that a certain building code, zoning ordinance, or other ordinance needs to

be changed in order to accomplish the goals set in the overall program. Pre-supposing that the officer has done an indepth study of the effects of proposed changes to correct the observed deficiencies, he may present valid and convincing reasons to the planning committee for such change; then, at the committee level he finds, to his surprise, an extreme reluctance on the part of committee members to approve recommended proposals. The reason being -- lack of community acceptance or external citizen pressures. The crime prevention officer must anticipate these reactions and be prepared to offer alternative solutions to achieve the same goals. Previous comments regarding honesty and integrity would mandate that once a negative reaction is encountered and resistance to such proposals is insurmountable, the officer must then resort to other alternatives; none of which involve devious actions. The surest way for the program to fail is for the crime prevention officer, or the program, to attempt to incorporate or implement its own proposals which have been rejected by the planning committee or the citizen public. Again, it must be emphasized that the best way for the program to succeed and the crime prevention officer to accomplish the goals set is to work within the frame work of the organization. If these basic rules and conduct are strictly observed by the participating Crime Prevention unit and officer, a high degree of success can be anticipated in accomplishing all goals.

One area not yet explored but extremely important to the success or failure of the Crime Prevention program is communications. Of course, the ability to communicate, whether at the internal or external level within the organization or affected citizenry, is important. But much more important to the success or failure to a program such as this, is who will communicate

what from decisions made internally either at the departmental or planning committee level. The importance of continued rapport with citizen's affected by any programs generated as a result of the Crime Prevention Bureau is not to be under emphasized. The communicator of proposed changes in ordinances, codes, and city policies, as well as new programs should carefully be determined in relation to each facet. Bureaucracy has many pit flaws in workability but also has many advantages in dealing with citizen and public groups to accomplish invisioned goals. It is suggested that all programs, changes in existing ordinances, programs, policies and procedures be closely correlated with the planning committee and the Manager of the city organization. At this point the City Manager should be appraised of who is proposed to communicate in disseminating various plans, projects and aforementioned changes and/or amendment because the City Manager is the individual most aware of citizen reaction, acceptance and citizen participation. The prerogative of selecting the appropriate communicator for various facets of the program must be reserved by him. It is he, who in the end, must explain the reasons for failure, antagonism, retaliation, etc., if a program or facet of a program is not communicated properly. The selection of a communicator might well be delegated to the planning committee by the City Manager but the final decision must rest with him.

## CRIME PREVENTION--BEFORE OR AFTER THE FACT<sup>1</sup>

Law enforcement reaction to public outcry over crime is usually self-directed. We tend to assume the lion's share of responsibility for the rise and fall of crime rates, perhaps rightly so. But let's not overlook the role played by business, community, and industrial planners, whose judgments literally become cast in concrete, brick, and asphalt, and whose decisions may result in massive population shifts. How will their actions affect crime? What can we in the law enforcement profession do about it?

What this article seeks to suggest is, where a need for police services will exist, police should participate in planning decisions, whether the project is a new industrial complex, a cluster of high-rise apartments, a shopping center, an urban renewal project, or a suburban residential development.

A hypothetical example may serve to illustrate the point.

A trio of safe burglars at work in a suburban bank are interrupted by an approaching police car. They quickly exit through a jimmied door, dart behind decorative hedges, and race through an unlighted parking lot to their car, parked in an alley shrouded in darkness. They have fled unseen. The patrol car moves on.

It could have been worse. The burglars might have chosen to shoot their way out of the situation, using the cover of the hedges and the darkness. The police unit was exposed. The burglars were not.

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<sup>1</sup>Fabbri, John, Chief of Police, Fremont, Calif., FBI Law Enforcement Bulletin, January 1973, p. 20.

Had police participated in planning "before the fact," while plans for the bank were still on the drawing board, these burglars may not have escaped with such ease.

A different landscaping scheme could have eliminated cover for the burglars and left the police officers' view of the area around the bank unobstructed. Adequate lighting of the parking lot and alley certainly would have helped. Intrusion detection devices and high-security door locks and hinges might have discouraged the burglars from even trying entry.

The impact of community, industrial, and business planning decisions on criminal activity is difficult to assess. But it seems obvious that the cause of crime prevention can be aided by thoughtful planning and regulation of such aspects as building setbacks, parking facilities, location of office sales, lighting, and loading docks, to list a few.

#### Stating the Problem

Whether we define the problem as "crime prevention," "environmental safety," or "environmental security, services, and risk management," the need for consultation between police and planners is obvious.

For example, we in the law enforcement profession should not hesitate to suggest to planners that flooding main streets with light and leaving back and sidestreets mantled in darkness is not going to help keep down crime.

Responsible community leaders, given a nudge in the right direction, will respond. Consider the case of Miami, Fla. Concerned citizens there took an appraising look at their street lighting in 1970, when a more than 30 percent upsurge in murders, a substantial rise in rapes, and accompanying jumps in aggravated assaults and burglaries were reported during the first 6 months of

that year. (Figures like these were by no means unique to Miami.)

A member of the Greater Miami Crime Commission reportedly observed: "One of the most important things we can do (in crime prevention) is to look to the police. We have them to protect us, and we, in turn, have a responsibility to help them. What better way to do this than to give them better light?" This commission member served on a special committee that sought police advice on installation of additional lights in areas of high-crime incidence.

Along with the basic concept of crime prevention, there are other considerations to be kept in mind by the police official approaching the conference table with governmental or private planners. From success in shrinking areas of high-crime risk and bolstering environmental security comes:

Reduction of police workloads (police services as well as investigation of crime).

Gaining better insight regarding environmental causes of crime.

Development of closer working relationships with agencies of local government and representatives of the business community.

All of which should equip the police executive to make better decisions and help clear "official channels" for innovative, effective, and productive operation of his agency.

#### Costs

Putting a price tag on crime in the United States is difficult. The direct cost of crime is capable of assessment, and experts say it runs into billions of dollars. More difficult to assess are the indirect costs, costs

such as police salaries, purchase of equipment, training, construction of police buildings, and the expense of providing police services related to crime. Nor should we overlook the terrible price paid in human misery by victims of crime.

Traditionally, one of our society's key considerations in evaluating new projects has been the cost involved. We may predict that the legislator who sponsors a bill to impose specific security measures for burglary prevention will be asked by his colleagues: "But how does the added burden of cost to the persons affected compare with the dollar value of the average burglary loss?" This measure of practicality, of course, is too narrow. Besides ignoring human anguish and inconvenience, it fails to consider the cost of the resultant demand on police.

Investments in specific measures to reduce or prevent crime are money well spent. Target hardening, that is, the imposition of specific measures to reduce crime in a given area, can result in social as well as economic benefits.

Because the police department is one of the few government agencies available on a 24-hour basis, many public service functions have been delegated to it by default. We arbitrate family disputes. We hospitalize alcoholics and dope addicts. In some cases, we counsel youths and promote recreational activities in areas of high-population density and low income.

What I am pointing out is the need to focus on the concept of environmental security which will require law enforcement responsibilities to be defined in their broadest sense. With this emphasis on expanded police participation in community concerns, police budgets will grow. Intelligent and systematic planning to reduce the likelihood of crime through appropriate controls can, however, tend to offset this trend by reducing the cost of police protection programs.

## Objectives

By providing both crime-related and public service assistance to our citizens, law enforcement agencies contribute to the quality of life. If environmental factors adversely affect the police executive's efforts, it behooves him to try to control them. Participation in physical planning is one means of controlling such environmental factors.

It seems regrettable to me that members of our profession sometimes are responsible for the inertia now existing regarding this topic. Some police officials say planning environmental safety is not within the scope of police work. On the other hand, a planner may cast aside a police recommendation for greater security with the declaration: "We can't turn our community into a fortress."

Crime prevention planning, to increase safety for members of our communities, is an appropriate function of law enforcement. There is a broad area of planning which is of mutual interest to both community leaders and police officials. An effective partnership can deal constructively with the general problem of creating safer cities.

To achieve objectives of an environmental safety or risk management program, it is necessary to consider all possible means of reducing or eliminating criminal depredations. Technical equipment such as high-security locks and intrusion detection devices certainly are things that must be considered. Sales of such hardware are booming. But the overall picture must be appraised. In what ways, we must ask ourselves, can we control environmental factors affecting crime? And we must also ask ourselves, by what means can we enlist community support to accomplish this objective?

We live in an era of accelerated change and, generally speaking, police agencies are making sincere efforts to meet its changing responsibilities. Increased police and community interest in control of environmental factors previously considered outside our scope of interest gives evidence of this.

#### Control Measures

With burglaries being one of the most frequently committed crimes, a number of communities have developed ordinances aimed at target hardening, making commercial buildings and private residences more resistant to burglaries.

One such ordinance has been in effect since 1964 in Oakland, Calif. It requires installation of security and intrusion detection devices in commercial buildings. The ordinance also describes minimum standards for locking devices, tempered glass doors, grates, hinges for doors and windows, roof openings, air ducts and vents, skylights, and transoms.

The ordinance details that hinge pins must be nonremovable, and may be welded, flanged, or secured by screws.

The effectiveness of such ordinances is difficult to assess. Certainly planning against crime must go beyond identification of "soft targets" and requirements of security hardware. Research may allow us to contribute to better decisionmaking regarding such things as selection of real estate to be developed, layout schemes for parks and open spaces, industrial and commercial plant designs and landscaping, street and highway concepts, suburban residential development and creation of urban high-rise dwellings, and control of areas of high-pollution density. Further exploration of psychological deterrents to the commission of crimes also seems in order.

Perhaps more attention should be given, also, to the security possibilities offered by closed-circuit television, not only in commercial buildings but in neighborhoods of high-crime incidence, with monitors set up at police stations.

Many police executives feel strongly that ill-advised architectural and landscaping design decisions have added to their burdens. Let's consider the suggestions a police agency might offer to planners of an industrial park:

- . Adequate setbacks of building and truck-loading areas (at least 60 feet).
- . Adequate street lighting.
- . Unobstructed access for police patrol and fire units (10 to 26 feet).
- . Adequate off-street parking.
- . Placement of loading docks in one area only.
- . Means of observing employees departing for the day (television monitors?).
- . A central control for locking all exit doors.
- . Placement of hedges, fences, and walls so that they do not obstruct the view of passing patrol cars.
- . Elimination of any in-door or out-door ladders.
- . Elimination of covered walkways between loading docks and employee parking areas.

While on occasion police departments have been consulted by planners regarding specific problems of crime prevention, most police agencies have taken little part in community development. We feel we have not only a desire, but

an obligation to actively participate in these decisions. After all, once a plan is implemented, the entire community, including the police, must accept the benefits or the burdens it creates.

Premeditated creation of an area of extremely high population density obviously is a matter of police interest. Planners are beginning to question the wisdom of spending millions of dollars on massive low income, high-rise dwelling complexes without adequate recreational facilities and without regard for crime risks. Perhaps the time is right for police initiatives. Dense concentrations of humanity are bound to increase the likelihood of crime, and how much more logical it seems to consult crime prevention specialists before the fact.

Studies in a number of cities revealed social problems which might have been avoided, or at least limited, if a crime prevention specialist had participated in the original planning. City planners, industrial developers, or street and park engineers cannot be expected to possess expertise in our field.

Police agencies in Fremont, Richmond, and San Francisco have productive working relationships with their city planners. (There are, I am sure, other cities as well.) They have implemented programs for adequate street lighting, off-street parking, and setbacks in building design in addition to carrying forward other concepts having a positive effect on crime prevention and traffic safety.

In the past, we met the problem of increased crime with hard-line law enforcement exclusively. Our duty was to "enforce the law." Environmental control factors were something for discussion in college classrooms. Catching and confining criminals will always be an important function of the police

officer. But more attention should be given to devising means to strengthen vulnerable targets of crime, and to reduce physically and structurally created opportunities for criminal activity.

Prevention of crime and control of environmental elements that stir up citizen unrest and breed hostility, and which drain the resources of police agencies as well, are problems of the total community. They should receive more attention from a greater spectrum of society. Part of the job of the modern police executive, then, is to interest government officials and members of the business community in these problems.

Uncontrolled development in our communities results in a conglomeration of structures which are unattractive to the eye and breed social problems as well as crime. Antisocial behavior may depend on a combination of motivation and opportunity. While we obviously are limited in what we as police officers can do to influence motivation, we can certainly take steps to curtail opportunity. Coordinated, well-thought-out planning can help accomplish this goal. A police role in this planning can help develop communities that are both beautiful and safe for their cities.

#### Addendum

To what extent are law enforcement agencies involved in community or industrial planning to reduce crime?

The 200 members of the 90th Session of the FBI National Academy, representing a variety of police agencies from widely ranging areas of the Nation, were asked what their departments are doing in this regard. About 55 indicated some degree of participation, five reporting their participation is required by law. This summary was conducted at the FBI Law Enforcement Bulletin's request

by the Management Science Section, Training Division.

Here are some of the ways that a few of the departments having community planning experience contribute to safer communities:

Capt. John W. Armstrong, Kirkland Police Department, Kirkland Wash.

The department is consulted in formulating zoning plans and has responsibility for traffic engineering. It recently succeeded in getting wider streets for a new housing development.

Capt. Charles C. Plummer, Berkeley Police Department, Berkeley, Calif.

The department is consulted on all industrial and commercial buildings. It is customary for all final drawings to be approved and initialed by a division commander in the police department. Although there is no ordinance requiring this, the city manager directs this procedure be followed. The department also makes recommendations regarding types of locks for windows, proper lighting fixtures, alarms, location of parking lots, and height of trees, shrubs, and fencing.

Capt. Loyd W. Smith, Metropolitan Police Department, Washington, D.C.

The department, by law, sends members to the Washington Area Council of Governments, which results in metropolitan planning cooperation between Maryland, the District, and Virginia. The chief also is invited to attend Washington Board of Trade meetings and conferences of other civic groups involved with urban planning. The department also participates through District Government meetings in planning ventures (programmed budgeting, National Capital Housing Authority, et cetera). In these meetings, the department makes suggestions for crime prevention.

Chief James R. McMahon, Bothell Police Department, Bothell, Wash.

The planning commission submits proposed plans for residential and industrial

developments to the police department, which then makes recommendations for requirements ranging from traffic direction of streets to removal of shielding walls and baffles.

Chief Jay R. Stroh, Inglewood Police Department, Inglewood, Calif.

The department makes recommendations regarding lighting, building security, alarm systems, walkways, planting of trees and shrubs, means of ingress and egress of employees and delivery men.

Chief Francis J. Croom, Vestal Police Department, Vestal, N. Y. The Department acts as consultant to the town planning board when consideration is given to new industry, shopping plazas, and housing projects. Recommendations have been responsible for shrubs being removed from window areas, improved lighting around industrial plants and shopping plazas, and installation of alarm systems in vulnerable buildings.

Capt. David F. Green, Sioux Falls Police Department, Sioux Falls, S. Dak.

Members of the department accompany building inspectors and fire department representatives on inspections of certain types of buildings; decide on the acceptability of alarm systems; make recommendations regarding industrial security; and are consulted, along with traffic engineering specialists, on street layout, driveway exits, and the like. The department is setting up a crime prevention unit to work full time on these matters and is affording it appropriate training.

Chief Ronald W. Cooper, Kerrville Police Department, Kerrville, Tex.

In recent months the department has required new industrial firms to install additional lighting and to move shrubbery and other items obstructing visibility of police patrol units. The department also has held seminars for bank

employees and businessmen to help curtail bad-check activity. Residential developers are encouraged to use the superior illumination provided by mercury vapor street lights.

Capt. James J. Lima, Lexington Police Department, Lexington, Mass.

The department has insisted on proper street lighting, provisions for proper access of police patrol units to areas in their perimeter, elimination of trees and shrubbery which might obstruct the vision of police patrol units personnel, and installation of silent burglar alarms for improved building security.

## COMMUNICATION WITH THE CONSTRUCTION INDUSTRY

There are many segments of the construction industry. Each area has its own expertise to offer. Architects, engineers, designers, and planners are typically college trained professionals with a great deal of specialized training. Builders, contractors, and sub-contractors are typically businessmen, who have learned their trade from field experience.

Crime prevention has always been part of man's need when planning his environment. From the earliest recorded history, man has developed his shelter to provide a sense of security; from the elements, animals, and other men. In modern times our society has become somewhat complacent about personal security, feeling safety in the fact that a professional law enforcement system would handle the problem by removing the criminal from our midst. Current information in law enforcement reveals this attitude about crime retention to be less than desirable. Crime prevention techniques need to be given increased emphasis. Our society needs to be educated to the philosophy of preventing crime rather than just apprehending the criminal.

Remember that as you go to talk with persons in the construction industry, there will be those of both philosophies about how to handle crime.

You will probably find many feel crime prevention is important, but simply are not knowledgeable about the best ways to conduct a successful program to that end. You can be most effective by being prepared with a well organized program which will not economically overburden the environmental plan. Such a program has been developed and used in Texarkana, Texas. It is included as an example only. You will need to develop your own plan to fit your local

situation, building industry, political temperament, and community acceptance.

The following is only one example of many ways to communicate with the building industry.

"SHIELD OF CONFIDENCE"  
PROGRAM PROPOSAL

It is proposed that the City of Texarkana, Texas, enter into a home and apartment house program to be known as "The Shield of Confidence" program. Home and apartment builders will be given the opportunity to voluntarily enter the program by agreeing to comply with the minimum security standards set forth for the building of a home, duplex, apartment or apartment complex, as incorporated in this program.

Upon applying for a permit to construct such building, the applicant would be furnished with the information covering the program, along with a recommendation that he contact the Crime Prevention Unit of the Texarkana, Texas Police Department. This would be done so the builder could be issued a "Certificate of Convenience" for the building to be constructed.

Under a voluntary program, compliance would be a goal, rather than a requirement, and problems could be met and solved without legal jurisdiction and codes being changed.

I. Requirements for Certificate of Convenience

Any builder, contractor, or owner desiring to have a "Shield of Confidence" awarded to any single family, duplex apartment, or apartment complex to be constructed or in construction may voluntarily meet the following specifications dealing with building security.

A. Exterior Doors

1. All exterior doors, except sliding glass doors or metal doors with or without decorative moulding, shall be solid core wood doors and shall be a minimum of one and three-quarter inches in thickness.
  - a. Hollow Core Doors  
No hollow core doors or hollow core doors filled with a second material will be considered a solid core door.
2. Hinges  
All exterior door hinges shall be mounted with the hinges on the interior of the building; except where a non-removable pin hinge or stud bolt is used, such hinge may be installed with the hinge facing the exterior of the building.
3. Strike Plate Lock Area  
The shim space between the door buck and door frame shall have a solid wood filler 12 inches above and below the strike plate area to resist spreading by force applied to the door frame.
  - a. Screws securing the strike plate area shall pass through the strike plate, door frame, solid wood filler and enter the buck plate by a minimum of one-quarter of an inch.

4. Glass in Exterior Doors

No glass may be used on any exterior door or window within forty inches of any door lock, except:

- a. That glass shall be replaced with the same thickness of polycarbonate sheeting of an approved type.
  - 1. Plexiglass shall not be used to replace glass.
- b. That door locks shall be double cylinder keyed locks with mortised dead bolt that extends into the strike plate a minimum of one-half inch and preferably one inch.

c. French Doors

French doors shall have a concealed header and threshold bolt in the stationary, or first closed door, on the door edge.

d. Dutch Doors

Dutch doors shall have concealed header securing device interlocking the upper and lower portions of the door in the door edge on the door strike, except:

- 1. A double cylinder lock is provided on the upper and lower sections of the door, then the header bolt may be omitted.

e. Sliding Glass Doors

- 1. Sliding glass doors shall be installed so as to prevent lifting and removal of either glass panel from the frame from the exterior of the building.
- 2. Fixed panel of glass doors (non-sliding) shall be installed so that the securing hardware cannot be removed or circumvented from the exterior of the building.
- 3. Each sliding panel shall have a secondary locking or securing device in addition to the original lock built into the panel.
  - a. Second device shall consist of:
    - 1.1 A charlie bar type device
    - 2.2 A track lock of approved type
    - 3.3 Inside removable pins or locks securing the panel to the frame.
- 4. All glass used in exterior sliding glass doors and fixed glass panels to be of tempered glass or polycarbonate sheeting (this is already an F.H.A. Regulation). Plexiglass or single strength glass will not qualify for rating.

f. Keying Requirements

1. During Construction

Each contractor or party building a structure for occupancy shall during construction use a keying system that incorporates either:

- a. A construction cylinder that will be removed upon occupancy by the owner or renter, or new cylinders and all keys be furnished to the owner or occupant.
- b. A cylinder system that admits construction keys during construction but upon occupancy the owner's key will reset the pin system denying the use of the construction key.

Note: The use of plastic inserts into the passageway to provide master keys with later removal prior to occupancy will not comply with award standards.

- c. The original cylinders used during construction may be re-pinned and new keys furnished to the owner or renter.

## II. Windows

### A. Double Hung Wood

1. All locking devices to be secured with three-quarter inch #8 full threaded screws.
2. All window latches must be key locked or a manual (non-spring loaded or flip-type) window latch. When a non-key-locked latch is used, a secondary device must be installed. Such secondary device may consist of:
  - a. Each window drilled with 5/16" holes at two intersecting points of inner and outer windows and 1/4" dowels inserted in the 5/16" holes. Dowels to be cut to provide minimum grasp from inside the window.
  - b. A metal sash security hardware device of approved type may be installed in lieu of doweling.

### B. Sliding Glass Windows

1. Same as sliding glass doors.

### C. Awning Type Wood and Metal Windows

1. No secondary device is required but crank handle may be removed by owner as security feature after residence is established.

### D. Single Hung Metal

1. Primary locking device shall be of quality metal, security fastened. No spring loaded locks.
2. A secondary lock (pin or key) shall be installed remote from primary lock. Fire safety must also be considered.

## III. Alarm Systems

The prime contractor shall agree to make available to the purchaser of a home under construction the option of having an alarm system of his choice installed during construction.

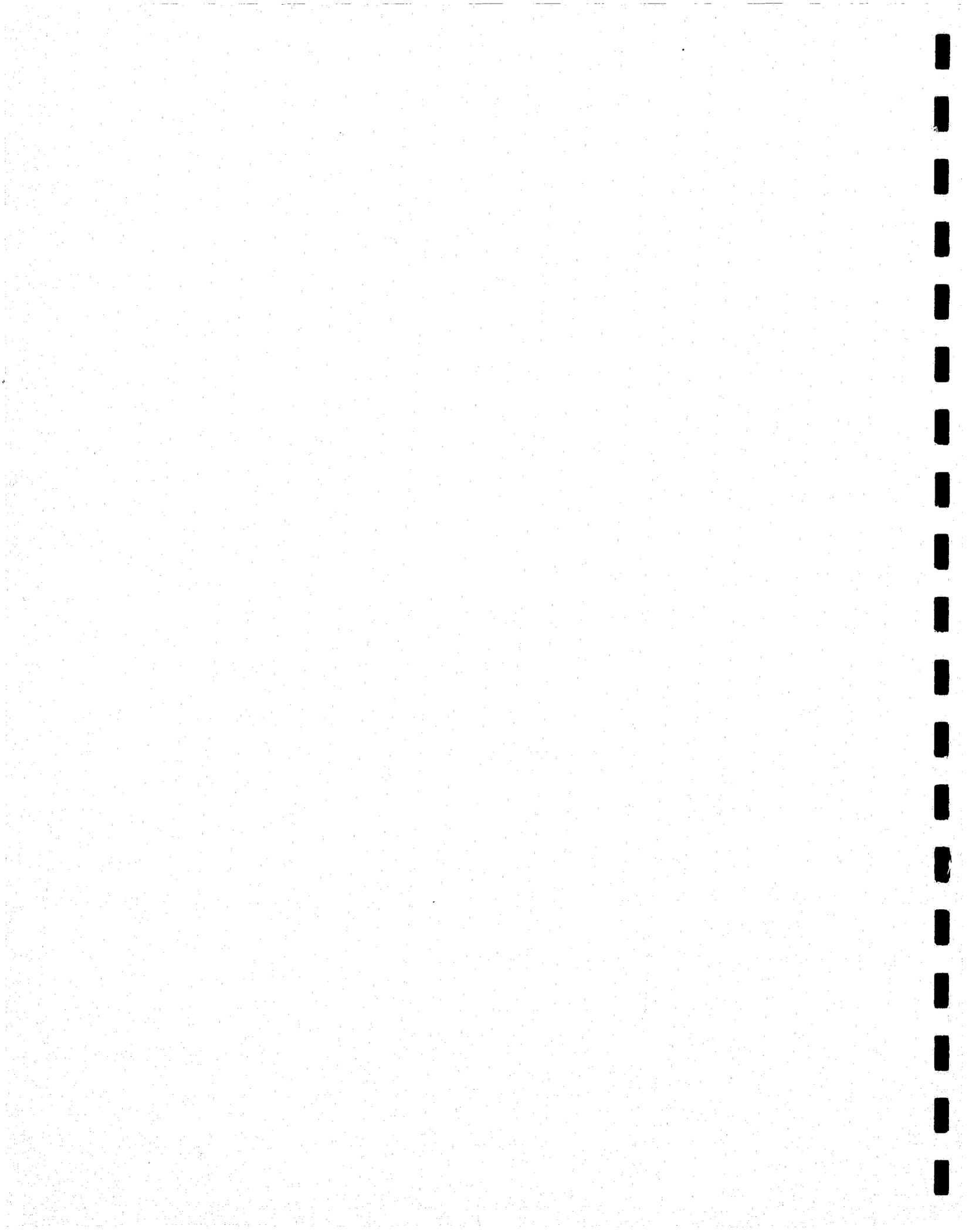
- A. Alarm system selected must be installed by an Underwriters Laboratory approved company, but the alarm system and the type alarm need not be UL approved.

## IV. Door Viewers

- A. Door viewers shall be installed on all entrance doors and shall cover 160 degrees of viewing. Such viewer to be installed with the securing portion on the inside and non-removable from the outside.



ENVIRONMENTAL PLANNING



## DESIGN PHASE OF ENVIRONMENTAL CHANGE AND THE C.P.O. INVOLVEMENT

In our chaotic world of cement and steel, property crime continues to rise. Who is really responsible for the continuing rise in crime? Talk to the victim of a property crime (i.e., burglary, theft), the home owner, or businessman and he would probably accuse the police of poor police protection. Should the blame stop at this point, or can we spread the responsibility throughout various sectors of our society? At this point maybe we need to take a look at the role played by business, community, and industrial planners, whose judgements literally become cast in concrete, brick, and asphalt, and whose decisions may result in massive population shifts.<sup>1</sup>

How do their decisions affect crime, if it does, and what impact can the police contribute to the reduction of crime? The ultimate goal of any free society should be where people can move about freely, and at the same time be free from the fear of crime. Accepting the utopianism of this goal, then law enforcement must step forward and assume a stronger position of responsibility.

### Police Involvement

An effective way in which the police can become involved is through input at the infant stage. This would require consultation with the planners, governmental and private. Not only is involvement with the planners critical, but the need for a strong working relationship with the designers is a critical problem. The crime prevention officer must be able to relate in a professional manner to maintain his credibility.

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<sup>1</sup>Fabbri, John, "Crime Prevention - Before or After the Fact," F.B.I. Law Enforcement Bulletin, 1973, p. 20.

Recognition of the many problems that confront the designers as well as the planners is something the crime prevention officer must keep foremost in his mind. Obviously the input from the crime prevention officer must remain within the realm of expertise that directly reflects to police responsibilities. Infringement within areas not related to your expertise can, and usually will be met with some form of resistance.

An important point that must be remembered is that the designer is a professional, and is trained in the expertise of building design. Total acceptance of police involvement in the design phase is something that will have to be earned by the crime prevention officer.

#### Inter-disciplinary Understanding and Coordination

Understandably there is no absolute procedure to follow in the development of a working relationship with planners or designers. It must be approached from a local level. A method of approach that works in Houston, Texas may not necessarily work in San Marcos, Texas. The crime prevention officers should acquaint themselves with the building codes in their own city. In most cases this will provide them with a starting point in deciding which method of approach to use.

Who do you contact? Again, depending upon your locality there are several approaches that might be used.

Contractors - Depending upon the size of the company and type of construction work done (i.e., residential, commercial, etc.), the designer may be a salaried employee, contract services or an architectural

firm, either way knowing the contractor will provide a means of meeting the designer.

Designers - Sometimes these professionals work under sub-contracts to various construction companies, many design residential and small commercial buildings as a secondary job.

Architect Firms - Usually located in larger cities and concentrate on large multi-plex units.

It is also important to know the different professional societies that the above mentioned people might be associated with:

Texas Society of Architects

Texas Society of American Institute of Building Design

Texas Builders Association

National Builders Association

The importance of knowing these professional organizations will be discussed in another section of the book. Again, depending upon the type of construction the crime prevention officer can choose the best available route in working with the designers.

Working with the planners at the initial input of any building program is important. Location and design are extremely important, whether it is for a recreational facility or any type of construction. But, at the same time provisions must be made for adequate security and protection. To be effective in this area, the police must be actively involved with their local planners. It must be remembered that the police are there to function as advisors in crime prevention and not building designers. Personality can play a major role in

any attempt to coordinate various professionals in seeking the same goals. If a personality clash develops with the designers or planners over a particular security request, then it would be better to back off than develop unbreachable hostilities.

"Mutual understanding is only a part of that necessary to the establishment of total coordinated planning. A mere understanding of the relationship of one unit to another does not insure a coordinated planning process. The developing and establishing of a coordinate process or system is incumbent upon various factors such as community size, organizational structure, manpower availability and capabilities, political attitude, new growth versus urban renewal, etc. Therefore, each city should evaluate its own goals and objectives and develop the best method of accomplishment."<sup>2</sup>

#### Law Enforcement and Physical Planning

There are many reasons for the neglect of crime prevention in the physical planning process. Some will argue that the insurance companies have not provided the necessary incentives to include crime prevention (i.e., low insurance rates), others may blame the police for not adequately providing the training necessary to produce personnel skilled in the application of crime prevention.<sup>3</sup>

Whatever the reason, the time has finally arrived where physical planning must be given more attention by the police. There are a few law enforcement agencies across the country who have become actively involved in the physical planning process. However, at this stage the involvement is predominantly unofficial. The unofficial approach places certain limitations on the crime prevention officers. Informality is the key, the crime prevention officer must be able to

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<sup>2</sup>Fabbri, John, "Crime Prevention Through Physical Planning," Crime Prevention Review presented to the Office of the Attorney General, State of California, April, 1974, p. 2.

<sup>3</sup>Southern California Association of Governments, A Study of Crime Prevention through Physical Planning, Dillingham Corporation, September, 1971, p. 5.

impart his training and knowledge to the architects, planners or developers.

A recent survey conducted by the Southern California Association of Governments revealed several reasons for lack of law enforcement involvement in the physical planning.

The principal reason is probably that physical planning has not been codified into laws to be enforced. The body of knowledge on the subject, including the means of evaluating trade-offs for crime prevention, aesthetics and economics was, and is, not substantial enough to warrant legislation.

A secondary reason, and the one most often cited is the lack of manpower for the physical planning function and, in view of critical needs in other departmental functions, a reluctance to request additional manpower for the purpose.<sup>4</sup>

Police involvement in the physical planning can appear to some to be an impossible job, but total involvement by the crime prevention officer can bring about needed security changes.

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<sup>4</sup>Ibid., p. 6.

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## BLUEPRINT READING

Everyone concerned with construction or with buildings should have some idea how the plans are created and how they are reproduced in the form of blueprints. He should be able to understand the complex combination of lines, symbols, notations, and dimensions which appear on the blueprints so that he can use the information intelligently.

A blueprint is a reproduction of a drawing which has been made on very thin, translucent paper. When an architect prepares a set of drawings containing all of the information and dimensions necessary to carry a job through to successful completion, he has made a set of working drawings. Reproductions of these working drawings are called a set of blueprints.

Generally the prospective owner will meet with an architect to discuss the planning of a structure. The architect will want to know about the project so that he can provide for its needs. He will want to know about the lot; the materials, equipment, and fixtures desired; the approximate price range; and the preference in layout and design. He will then make a series of study sketches and present them to the client. His skill in planning and his knowledge of materials, of costs, and of building codes will be evident as he makes his presentation. When the prospective owner makes his final decision the architect is ready to proceed with the working drawings.

Working Drawings. The working drawings, or architect's plans, consist of several different kinds of drawings usually assembled into a set.

A. Floor plans, which are almost always drawn first, show the layout of rooms, information about windows, doors, cabinets, bath fixtures, and many other features of the building.

B. Elevation drawings show what the exterior of the house and the roof will look like. They will indicate whether the house is built of brick or stone or if the exterior walls are covered with siding, shingles, or plywood panels. Additional information about windows and doors will be shown.

C. A section drawing taken vertically through an exterior wall may be drawn on the same sheet as one of the elevation drawings. Details of construction and information about floor levels in relation to the grade are shown.

D. The plot plan tells where the house is to be located on the lot and gives other information about utilities, grading, walks, etc.

E. Detail drawings are usually drawn to a larger scale than the other drawings in order to show special features such as an entrance doorway, a fireplace mantel, or a built-in cabinet.

F. A set of specifications accompanies each set of blueprints. The specifications give general information about the legal aspects of responsibility, guarantees of performance, etc. Following the general information sections, the specifications describe the responsibility of each subcontractor as to what work is to be done and what materials are to be used.

Pictorial Drawings. It is easy for a person to understand what a house looks like when he sees it in picture form. See Figure 1. Pictorial drawings have great advantages for people not trained in blueprint reading and are a great help to those who want to learn this skill. However, the time spent in making pictorial drawings which would show the information necessary to build the house would be prohibitively expensive. The drawings would also be too complex to read.

Orthographic Drawings. Three view drawings (or orthographic projection) are used almost universally in every field of architecture and engineering to

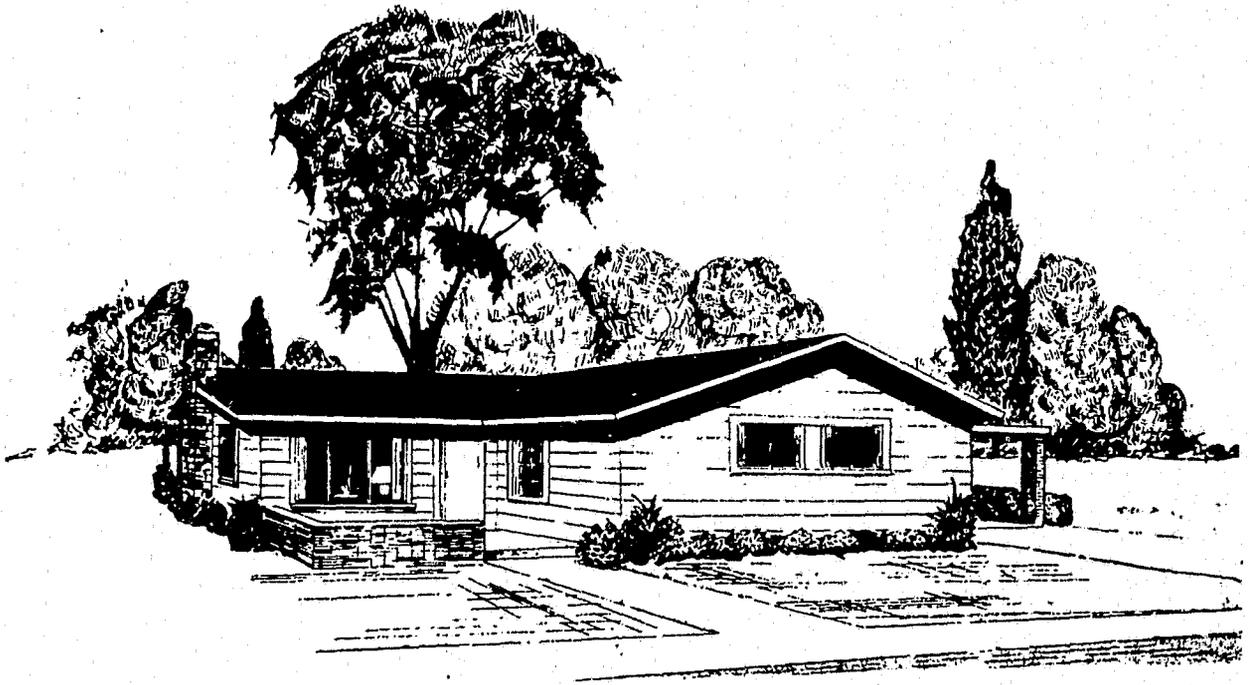


Figure 1 Perspective Drawing

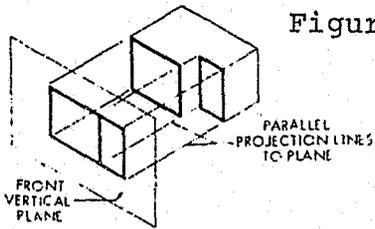


Figure 2

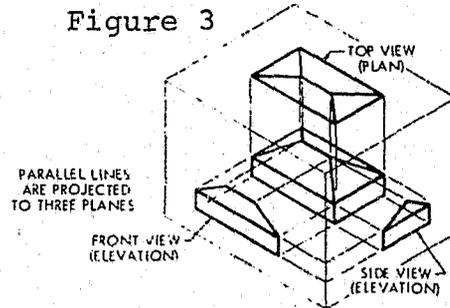


Figure 3

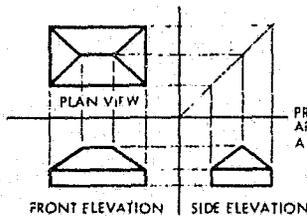


Figure 4

Orthographic Projection: A three view drawing is visualized from a pictorial representation.

make graphical representations of the jobs to be done. When looking at an object to be drawn the viewer must imagine that he is looking through transparent plane. Lines are projected from every corner of the object to record the exact image on the plane. See Figure 2. Three planes are generally sufficient to show all of the details of most objects. Figure 3 shows the planes as though they were part of a hinged box. Projection lines are extended to give the exact shapes of the top (the plan view of the roof), front, and side views of the house. The viewer imagines that he unfolds the planes into a flat position as shown in Figure 4. The projection lines between views serve to show how the various points and lines are related. It is important that this idea of the way views are related be understood from the beginning.

Figure 5 shows how all of the views of the exterior of a house, including the roof plan, would be related if they were arranged to appear on the same sheet of paper. (The floor plan is drawn in order to give an idea of room arrangement but is not drawn in relation to the other views in this figure. The plan view in architectural drawing is a view seen by looking down vertically toward an object or, in other words, the view which is derived by projecting lines vertically upward to form an image on an imaginary horizontal plane. Usually the plan views referred to are floor plan views.)

The architect when drawing a set of working drawings usually draws the floor plan on one sheet of paper. Elevations are drawn on separate sheets for convenience. He is very careful to transfer all of the information about windows, doors, and other exterior building features from the floor plan view to the elevation views. In effect, he is projecting lines from one view to another.

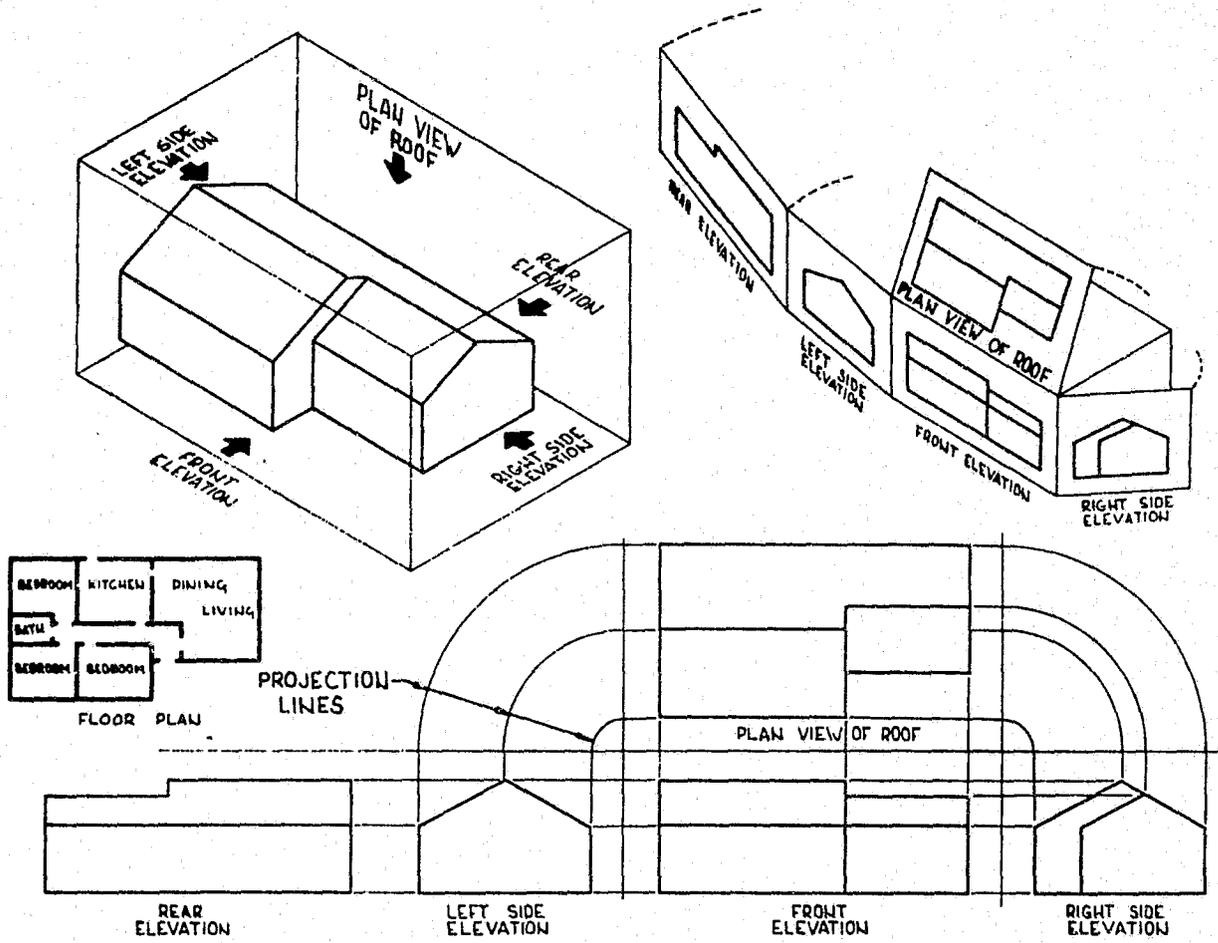


Figure 5

Figure 5 shows the elevation views designated as Front, Left Side, Right Side, and Rear. This is accepted procedure particularly for stock plans which can be adapted for use on a lot facing in any direction. When a building is to be placed on a specific lot, it is more usual to give the compass directions: north, south, east, and west. The North Elevation is the elevating facing north (not the direction a person faces to see that side of the house). The viewer takes different positions to see the various elevation views and must imagine lines drawn out from each point to strike a plane toward which he looks. Thus the image of the house drawn on the plane is the same shape and size (to scale) as that side of the house.

The idea of what is shown in its true shape and how true dimensions may be found is important. Surfaces and lines which are not parallel to the plane the viewer is looking through to see a particular elevation are not in their true length or shape. In the case of a roof it is necessary to take the length from one view and the dimensions along the slope from another view in order to construct the true shape. Sometimes this information is required.

Design of the Building. A building is generally designed from the inside out. In other words, the floor plans are considered first because they will determine the arrangement and size of the various space divisions. The exterior is no less important because it reflects the good planning used inside and makes the building a thing of beauty outside.

An elevation drawing is an orthographic projection showing the exterior view of one side of a building. The four elevations, each showing a side of the structure, are part of the working drawings, and serve to indicate what the building will look like when it is completed. Their function is to show the

design of the house, where the openings are to be placed, what materials are to be used, etc.

The original drawings are carefully drawn so that foundation plan, floor plans, and the elevations exactly match regarding the location of windows, doors, and other details. For instance, to find out about a particular window it is necessary to look at the blueprint of the floor plan to find out the exact dimension from the corner of the house to the window. An elevation view shows what the window looks like and where it is located vertically in the wall. The size of the window may appear on the elevation drawing but it may also be found on a window schedule on some other blueprint.

Elevation drawings show a great deal about windows, doors, and other openings. Reference must be made to the blueprints of floor plans to find horizontal locating dimensions.

The elevations show the windows as they appear in the wall in their exact location. The window types most frequently used are fixed sash, double hung, horizontal sliding (gliding), casement, awning, and hopper. The elevation views show how the sash is divided and where the hinges are located on a sash which swings in or out. The apex of a triangle drawn on a window points to the side with the hinges. The size of the light (pane of glass) may also be shown. If a sash of a window contained a designation 28/24, this would mean that the glass size is 28 inches wide and 24 inches high.

Doors are indicated on elevation drawings in their proper location and their particular style is shown. The symbol for a flush door is a plain rectangle unless it has a light (glass). A panel door is drawn to show the panel and light arrangement. The lock and hinges are usually omitted. The

floor plan shows how the door swings. The builder refers to the floor plan to find out on which side of the door to install the lock and on which side to install the hinges.

Other openings, such as screened vents, louvers, etc., will be drawn in place and designated with whatever notes are deemed necessary.

Basic Ideas in Reading Floor Plans. The following things are basic to reading blueprints of plan views.

1. Floor plan views are drawn to exact scale. The rooms, hallways, cabinets, stairs, etc., are drawn so that they are in correct relationship to one another.

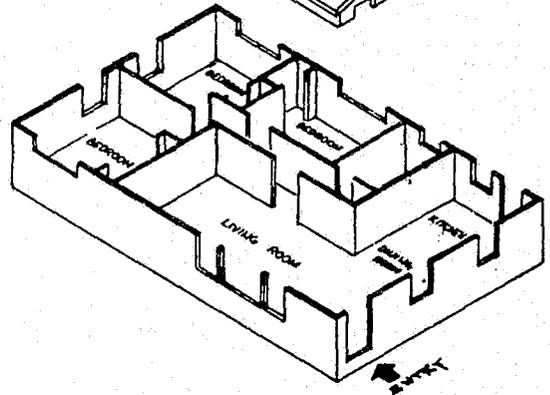
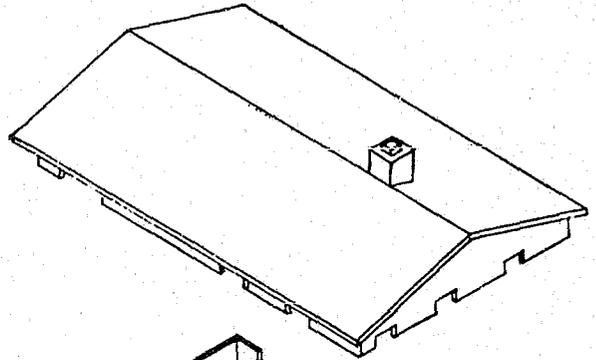
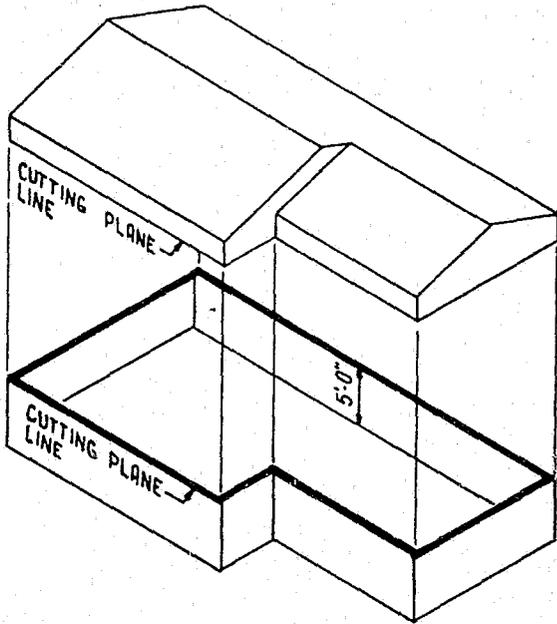
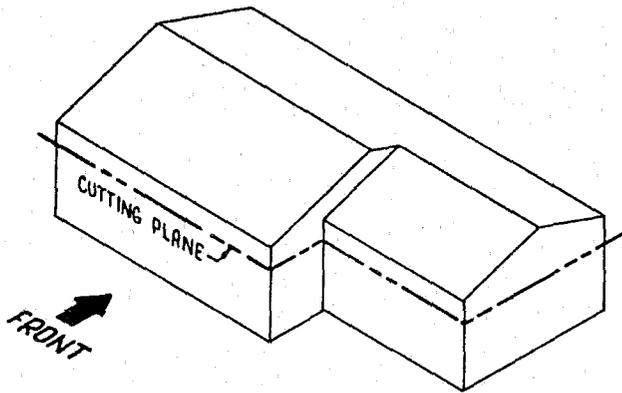
2. The floor plan views and elevations are drawn to the same scale and are exactly related to each other.

3. Floor plan views are related to each other for multi-story buildings.

4. Floor plan views are generally drawn so that the front view is toward the bottom of the sheet.

5. The floor plan view is a horizontal slice taken through the house at between four to five feet above the floor. The plane cuts through upper kitchen cabinets, medicine chests in bathrooms, and the upper sash of windows. However, this rule is modified to cut through fireplaces or other building parts which need to be shown on the plan at a lower level. Actually, a floor plan view is a horizontal section view. See Figure 6.

Remember pictorial views are rarely available, and you must gradually arrive at a point where you can understand all about a house by studying the blueprints of the working drawings without these aids.

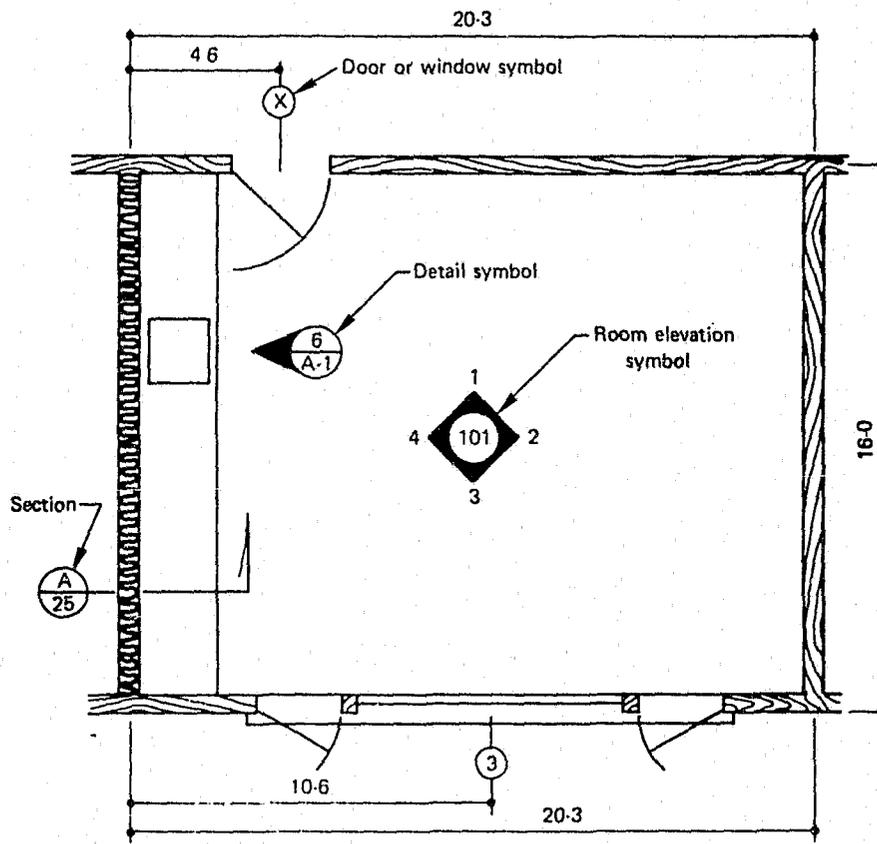


A pictorial sketch of a small home cut by a horizontal plane shows the floor plan.

Figure 6

Cross-referencing of architectural and structural drawings is almost a must. Since floor plans and elevations are usually drawn to a relatively small scale, any extensive and meaningful detail drawn at that same scale would be impossible to read properly. These details are then drawn to a larger scale so as to be read more easily. In order to correlate the different scales, some type of cross-referencing system and proper symbols are required. Since the several parts of the complete set of drawings are usually spread over a number of sheets, it is necessary for a proper symbol to indicate the designation of both the sheet upon which the detail appears and the exact detail. Several types of reference symbols are shown in Figure 7.

Drawing to Scale. If it were possible to make working drawings of a house at full size and then make blueprints from them, they would be of little use on the construction job because they would be extremely cumbersome. The drawings therefore, are made small enough so that the blueprints can be handled easily and also large enough so that the blueprints show the necessary information clearly. The length of every line is reduced to a constant fraction of its true length so that all of the parts of the building are in exact relationship to each other. The scale which is usually used for floor plans and elevation drawings is  $1/4" = 1'0"$ . Wherever detailed drawings are required to show the arrangement of doors and drawers of kitchen cabinets, information on the construction of a front entrance doorway, etc., a scale of  $1-1/2" = 1'0"$  is often used. In order to avoid calculating each dimension, the architect used an architect's scale which gives him direct proportional readings in several scales. The architect's scale used most often is triangular with six ruled faces designed to measure in ten different scales. One of



Scale 1/4" = 1'-0"

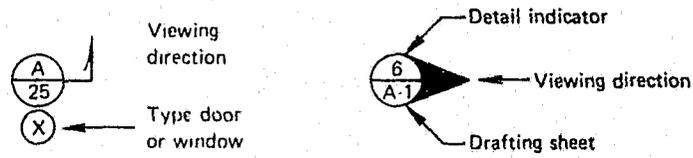


Figure 7

the edges is identical to a twelve inch ruler divided into sixteenth's of an inch. See Figure 8.

One of the scales used is designated  $1/4$  which means that is intended to be used in making drawings at a scale of  $1/4" = 1'0"$ . One foot at this scale should be drawn an actual length of  $1/4$  inch. See Figure 9.

The scale to which a drawing is made is always indicated on the drawing. This scale is generally placed below the title. The  $1/4" = 1'0"$  scale is read from right to left beginning with the line marked "0" near the right hand end. From this line, 46 spaces would represent a distance of 46 feet to scale. The  $1/8" = 1'0"$  scale is read from left to right beginning with a line marked "0" near the left hand end. From this line 92 spaces to the right would represent a distance of 92 feet at this scale. Thus the same set of markings is used for both the  $1/8" = 1'0"$  scale and the  $1/4" = 1'0"$  scale. It is very important to read the numbers underneath the respective lines in relation to the scale used. Those related to the  $1/8" = 1'0"$  scale are in a row nearest the edge of the scale. Those related to the  $1/4" = 1'0"$  scale are in the row farther from the edge of the scale. The lines for the units on this scale have been extended so that this distinction can be made.

In order to read measurements which are less than one foot on the  $1/4" = 1'0"$  scale, it is necessary to use the space to the right of the line marked "0". This space is divided into twelve parts, each representing one inch. Figure 10 shows how the scale is used to read the dimension of the width of opening A-B. Full feet are measured on the left of the line marked "0" and the inches are measured on the right side of the line.

When a drawing is made at a scale of  $1/8" = 1'0"$  the scale marked  $1/8$  is used. Whole feet are read to the right of the line marked "0" and parts of

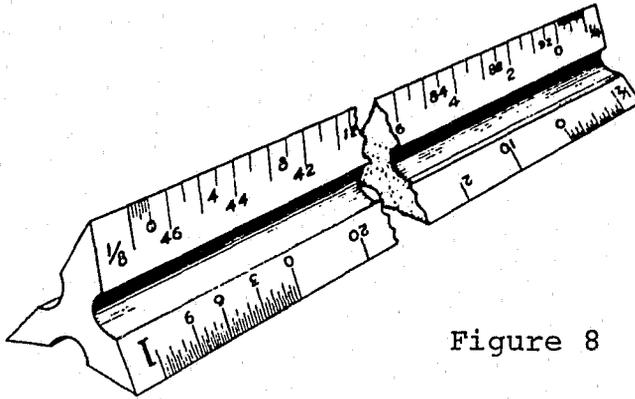


Figure 8

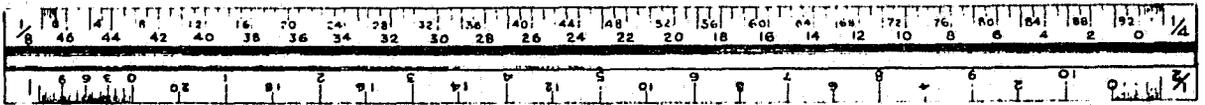


Figure 9

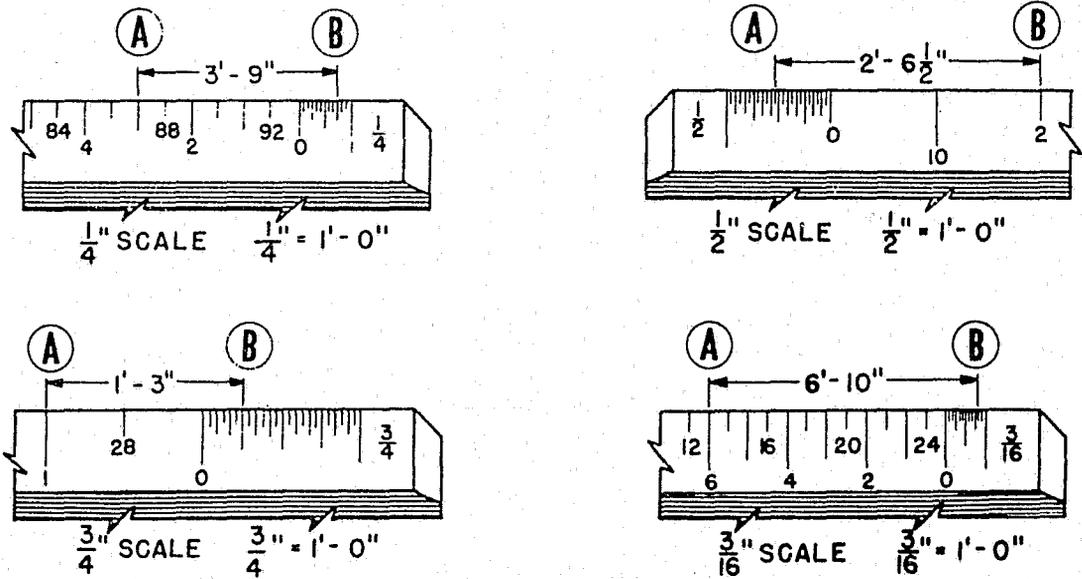


Figure 10

a foot are read to the left of the line. The space representing parts of a foot is divided into only six parts because, if it were divided into twelve parts, the spaces would be so small that they would be difficult to distinguish. Each one of the six parts represents 2 inches to scale.

Even though it is possible to measure blueprints with an architect's scale to obtain missing dimensions, this practice should be used only if every other means has been used first. Blueprints are reproductions of original drawings and in the reproduction process a slight amount of shrinkage may occur. A problem may also develop in that the part of the drawing to be measured may not be drawn to scale. Occasionally last minute changes are made which would mean completely redrawing the plans in order to have them exactly to scale. If the work must go ahead without taking this additional time, only the dimensions may be changed rather than doing all of the drafting work over again.

The Plot Plan. The plot plan is usually shown on the first sheet of a set of blueprints. It shows the shape of the lot on which the building is to be built, the lot dimensions and the angles at each corner. The dimensions of each building already built on the lots and those to be built are shown, and dimensions are given locating them in relation to the property lines. The location of walks, drives, courts, patios, etc., are given. An arrow indicating the north point is included. Utilities such as gas mains and electric power source are shown. Water mains, and sewers are identified with a line symbol. The relationship of levels (elevations) at various points on the lot and the first floor level (elevation) of new buildings are indicated. Contour lines show the natural slope of the ground. A second set of contour lines shows the slope after the fill has been redistributed and the construction is completed. Existing trees and shrubs are usually shown, and those which are to be removed

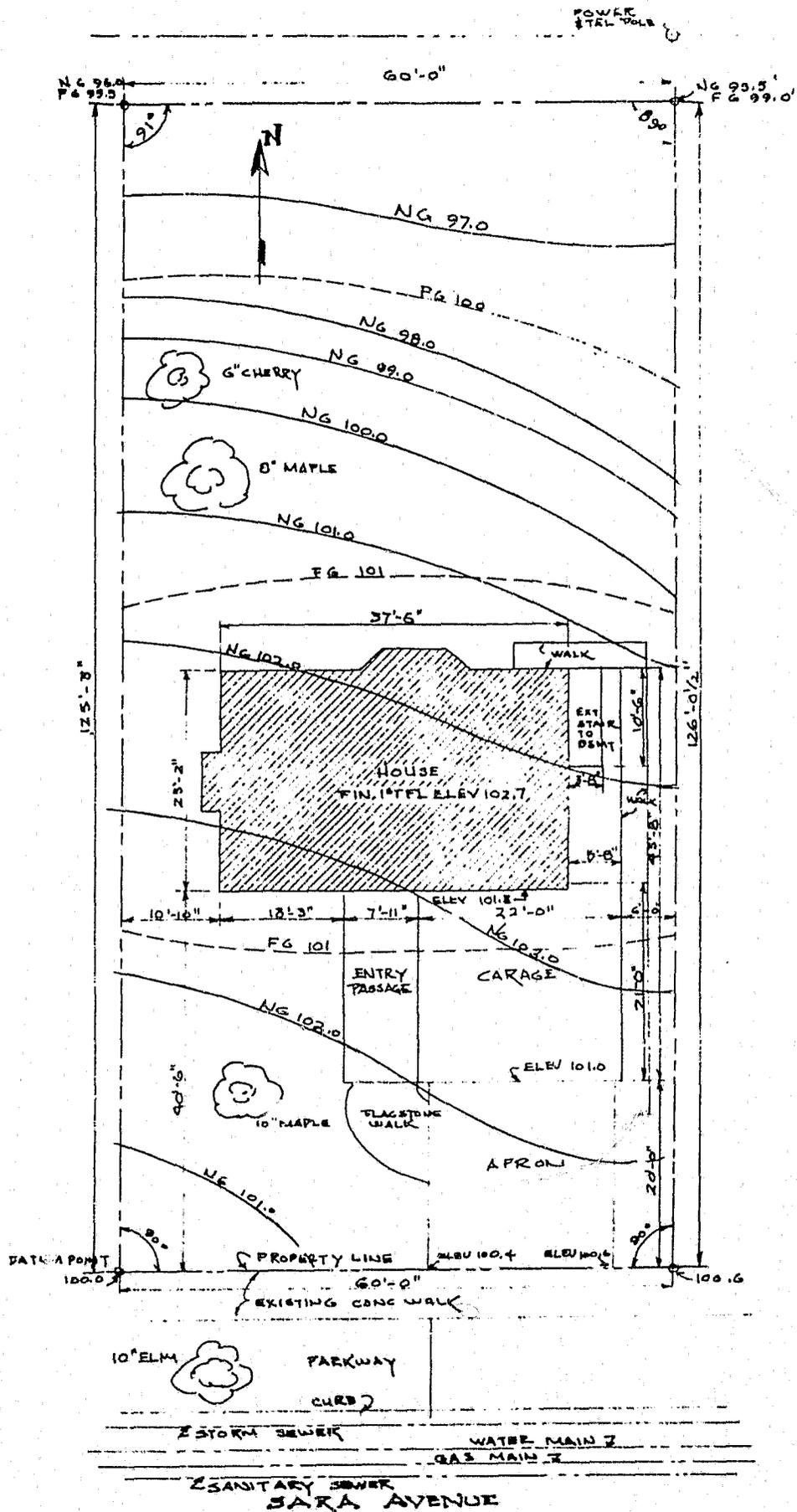


Figure 11

or added are designated. See Figure 11.

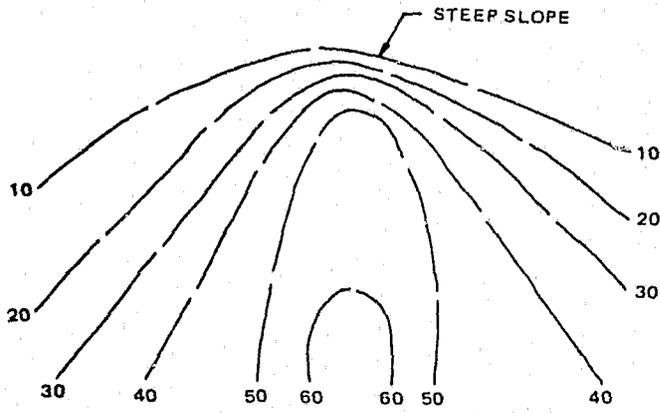
The Survey Plat. The basic information for the plot plan is found on a survey plant which is drawn by a licensed surveyor. He obtains the legal descriptions of the piece of ground from the deed to the property which he receives from the owner. Using his surveying instruments and a tape or chain he locates a corner of the property in reference to a Bench Mark which has been established by the town, city, or county. This is usually a marker made of concrete and embedded in the ground.

Scales Used by the Surveyor. A surveyor uses a tape or chain, and a leveling rod graduated in feet and tenths of a foot. He makes his drawing using a scale of  $1" = 10'$  or  $1" = 20'$ .

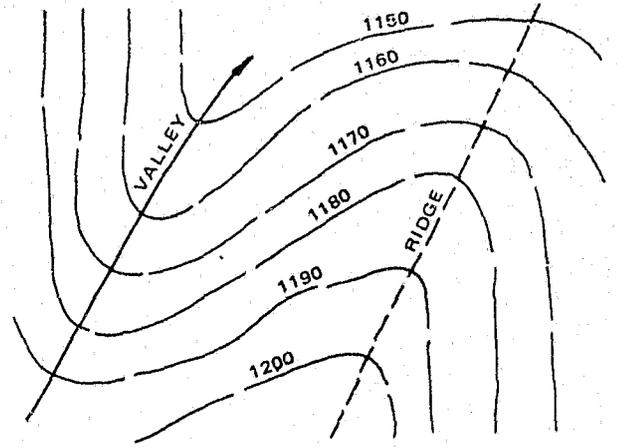
A dimension of  $120.5'$  would mean 120 and  $5/10$  feet or 120 feet and 6 inches.

The height of any point on the lot is called its elevation and is measured above or below some point of reference. (The use of the word elevation in this sense must not be confused with the elevation of a house which is a view of the outside of the structure.) The elevation of all other points on the lot are measured by using a transit and a leveling rod.

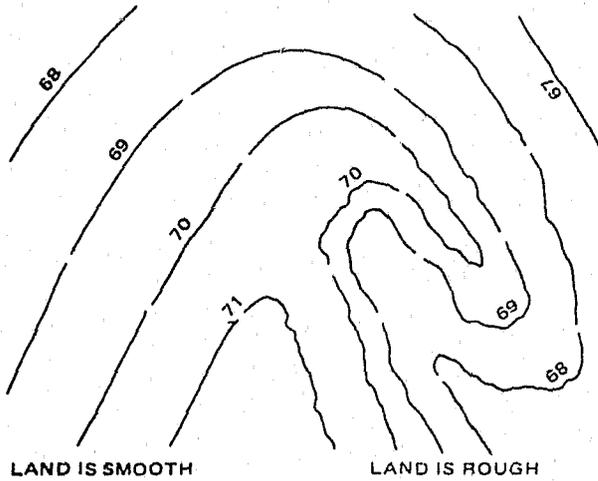
Contour lines are lines drawn on a surveyor's plat or on an architect's plot plan to show the slope of the ground. A contour line may be explained by thinking of the lowest contour line as the shore of a lake. If the water were to rise one foot the shore line (contour line) would take a new shape as the water covered more of the earth. The intervals of contour lines on small lots are usually in units of one foot elevations. If the tracts are large or very hilly, contour lines may be in two foot or larger units. See Figure 12.



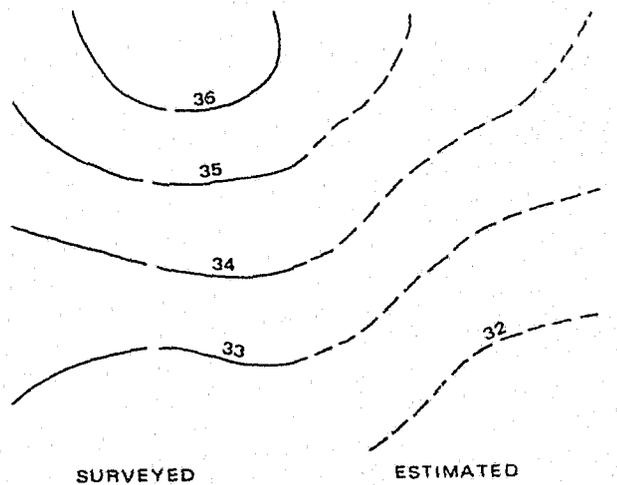
The relative spacing of contour lines represents the slope angle.



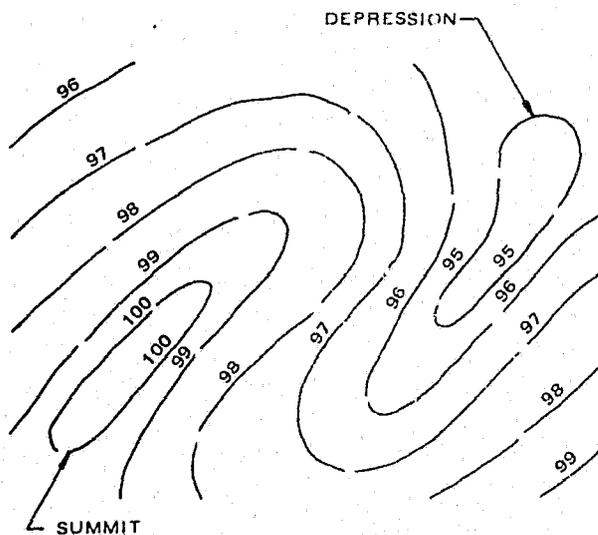
Ridges and valleys should be identified using the proper symbols.



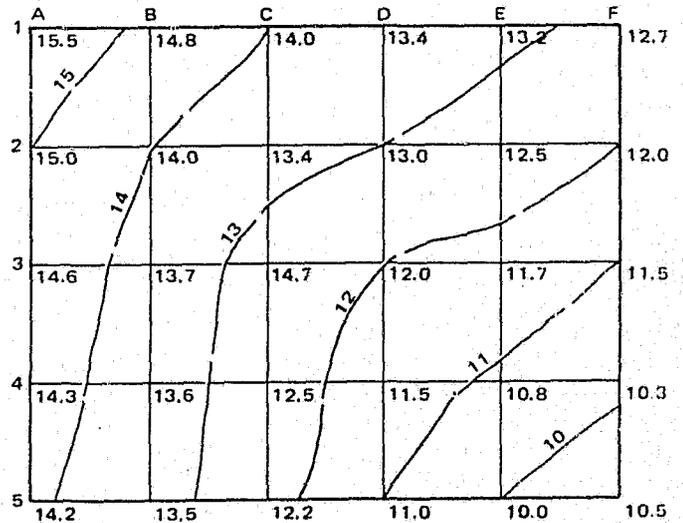
Contour lines show relative roughness of the land as well as elevation.



Estimated contours are shown with a dash line symbol. Surveyed contours are represented by solid or long dash lines.



Summits and depressions are represented by closed contour lines.



Contour lines plotted from an elevation grid using data supplied by a surveyor.

Figure 12

Specifications. In general, most specifications can be classed as either closed specifications or open specifications, with a number of variations of each. For the most part it is the list of materials required for the work that determines closed or open. Simply stated, a "closed specification" is one in which only one material or process appears, or in which a description of a material is so detailed that only one product can qualify for use. The "open specification" on the other hand is one that allows the use of a number of products that the specifications writer deems equal and acceptable for the work.

Generally the use of "or equal" is a poor effort to allow bidding by all comers on a specified product selected beforehand. The burden of proving equality is usually on the supplier, but the architect or engineer involved must approve or disapprove substitutions or allow the contractor a free rein, with possible damage to the project resulting if substitutions are not relatively equal.

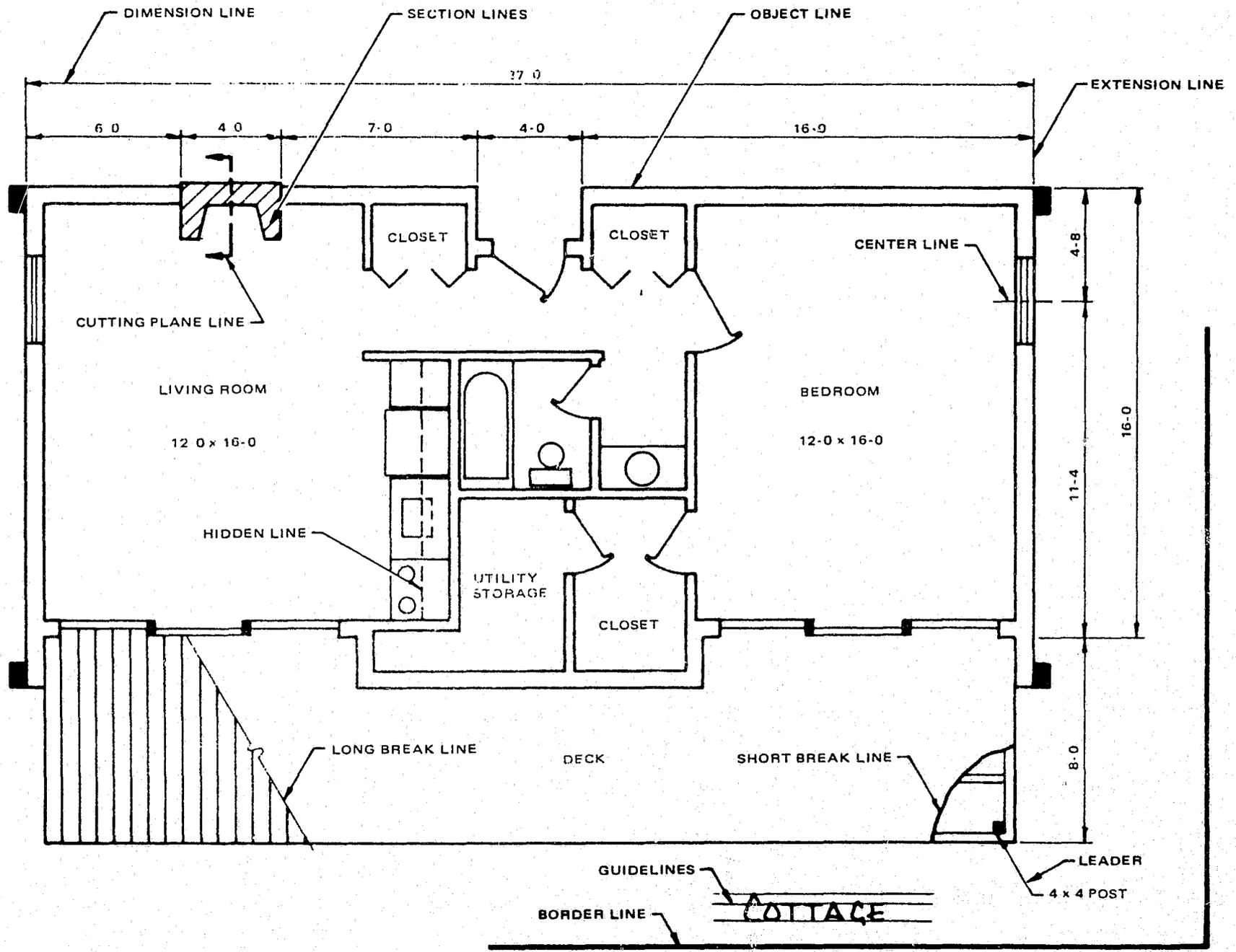
The United States government has a very complete, and somewhat complex, system of specification guides that are provided to the A/E specification writer for each project. These are both guides and masters from which to copy portions as they apply to the project. They are strictly open specifications, since no manufacturer's name or trade name is allowed and materials are required to meet the conditions set forth in the referenced "federal Specification."

The foregoing types of specifications are generally considered descriptive in nature. They describe the material to be used and the methods of acceptable installation. In some cases there may be several equally good

methods of installation, or the product or a part of it may be such that there is no general method available, or the project or material may not even exist. A specification written in a manner that sets forth all of the requirements the installation or product must meet but does not state how is called a "performance specification." It allows the methods, and sometimes the material, to be selected by the contractor, who then assumes responsibility that the methods or materials he selects will produce the desired end result.

Symbols and Notations. Architects do their best to follow the accepted standards in representing materials, equipment, and building parts. Occasionally more than one symbol may be used. New materials are always being developed requiring new symbols and designations. The American Standards Association (ASA) and many other associations and trade groups, each interested in certain areas of the building business, are working constantly to standardize procedures. They are very much concerned with symbols. The architect feels compelled to use abbreviations for the same reason he uses symbols to represent materials. On the following pages you will find some common symbols and abbreviations which may be found on a set of plans.

-69-



A floor plan illustrating most of the line symbols used by the architectural draftsman.



## ABBREVIATIONS COMMONLY USED ON PLAN VIEWS

Access Panel . . . . .	AP	Concrete Floor . . . . .	CONC FL
Acoustic . . . . .	ACST	Conduit . . . . .	CND
Acoustical Tile . . . . .	AT	Construction . . . . .	CONST
Aggregate . . . . .	AGGR	Contract . . . . .	CONT
Air Conditioning . . . . .	AIR COND	Copper . . . . .	COP
Aluminum . . . . .	AL	Counter . . . . .	CTR
Anchor Bolt . . . . .	AB	Cubic Feet . . . . .	CU FT
Angle . . . . .	∠	Cut Out . . . . .	CO
Apartment . . . . .	APT	Detail . . . . .	DET
Approximate . . . . .	APPROX	Diagram . . . . .	DIAG
Architectural . . . . .	ARCH	Dimension . . . . .	DIM
Area . . . . .	A	Dining Room . . . . .	DR
Area Drain . . . . .	AD	Dishwasher . . . . .	DW
Asbestos . . . . .	ASB	Ditto . . . . .	DO.
Asbestos Board . . . . .	AB	Double-Acting . . . . .	DA
Asphalt . . . . .	ASPH	Double Strength Glass . . . . .	DSG
Asphalt Tile . . . . .	AT	Down . . . . .	DN
Basement . . . . .	BSMT	Downspout . . . . .	DS
Bathroom . . . . .	B	Drain . . . . .	D or DR
Bath Tub . . . . .	BT	Drawing . . . . .	DWG
Beam . . . . .	BM	Dressed and Matched . . . . .	D & M
Bearing Plate . . . . .	BRG PL	Dryer . . . . .	D
Bedroom . . . . .	BR	Electric Panel . . . . .	EP
Blocking . . . . .	BLKG	End to End . . . . .	E to E
Blueprint . . . . .	BP	Excavate . . . . .	EXC
Boiler . . . . .	BLR	Expansion Joint . . . . .	EXP JT
Book Shelves . . . . .	BK SH	Exterior . . . . .	EXT
Brass . . . . .	BRS	Finish . . . . .	FIN.
Brick . . . . .	BRK	Finished Floor . . . . .	FIN. FL
Bronze . . . . .	BRZ	Firebrick . . . . .	FBRK
Broom Closet . . . . .	BC	Fireplace . . . . .	FP
Building . . . . .	BLDG	Fireproof . . . . .	FPRF
Building Line . . . . .	BL	Fixture . . . . .	FIX.
Cabinet . . . . .	CAB.	Flashing . . . . .	FL
Calking . . . . .	CLKG	Floor . . . . .	FL
Casing . . . . .	CSG	Floor Drain . . . . .	FD
Cast Iron . . . . .	CI	Flooring . . . . .	FLG
Cast Stone . . . . .	CS	Fluorescent . . . . .	FLUOR
Catch Basin . . . . .	CB	Flush . . . . .	FL
Cellar . . . . .	CEL	Footing . . . . .	FTG
Cement . . . . .	CEM	Foundation . . . . .	FND
Cement Asbestos Board . . . . .	CEM AB	Frame . . . . .	FR
Cement Floor . . . . .	CEM FL	Full Size . . . . .	FS
Cement Mortar . . . . .	CEM MORT	Furring . . . . .	FUR
Center . . . . .	CTR	Galvanized Iron . . . . .	GI
Center to Center . . . . .	C to C	Garage . . . . .	GAR
Center Line . . . . .	⊕ or CL	Gas . . . . .	G
Center Matched . . . . .	CM	Glass . . . . .	GL
Ceramic . . . . .	CER	Glass Block . . . . .	GL BL
Channel . . . . .	CHAN	Grille . . . . .	G
Cinder Block . . . . .	CIN BL	Gypsum . . . . .	GYP
Circuit Breaker . . . . .	CIR BKR	Hardware . . . . .	HDW
Cleanout . . . . .	CO	Hollow Metal Door . . . . .	HMD
Clean Out Door . . . . .	COD	Hose Bib . . . . .	HB
Clear Glass . . . . .	CL GL	Hot Air . . . . .	HA
Closet . . . . .	C, CL or CLO	Hot Water . . . . .	HW
Cold Air . . . . .	CA	Hot Water Heater . . . . .	HWH
Cold Water . . . . .	CW	I Beam . . . . .	I
Collar Beam . . . . .	COL B	Inside Diameter . . . . .	ID
Concrete . . . . .	CONC	Insulation . . . . .	INS
Concrete Block . . . . .	CONC B	Interior . . . . .	INT

## ABBREVIATIONS COMMONLY USED ON PLAN VIEWS (Cont'd)

Iron . . . . .	.I	Roof Drain . . . . .	RD
Jamb . . . . .	.JB	Room . . . . .	RM or R
Kitchen . . . . .	.K	Rough . . . . .	RGH
Landing . . . . .	.LDG	Rough Opening . . . . .	RGH OPNG
Lath . . . . .	.LTH	Rubber Tile . . . . .	R TILE
Laundry . . . . .	.LAU	Scale . . . . .	.SC
Laundry Tray . . . . .	.LT	Schedule . . . . .	.SCH
Lavatory . . . . .	.LAV	Screen . . . . .	.SCR
Leader . . . . .	.L	Scuttle . . . . .	.S
Length . . . . .	.L, LG or LNG	Section . . . . .	.SECT
Library . . . . .	.LIB	Select . . . . .	.SEL
Light . . . . .	.LT	Service . . . . .	.SERV
Limestone . . . . .	.LS	Sewer . . . . .	.SEW.
Linen Closet . . . . .	.L CL	Sheathing . . . . .	.SHTHG
Lining . . . . .	.LN	Sheet . . . . .	.SH
Linoleum . . . . .	.LINO	Shelf and Rod . . . . .	.SH & RD
Living Room . . . . .	.LR	Shelving . . . . .	.SHELV
Louver . . . . .	.LV	Shower . . . . .	.SH
Main . . . . .	.MN	Sill Cock . . . . .	.SC
Marble . . . . .	.MR	Single Strength Glass . . . . .	.SSG
Masonry Opening . . . . .	.MO	Sink . . . . .	.SK or S
Material . . . . .	.MATL	Soil Pipe . . . . .	.SP
Maximum . . . . .	.MAX	Specification . . . . .	.SPEC
Medicine Cabinet . . . . .	.MC	Square Feet . . . . .	.SQ FT
Minimum . . . . .	.MIN	Stained . . . . .	.STN
Miscellaneous . . . . .	.MISC	Stairs . . . . .	.ST
Mixture . . . . .	.MIX	Stairway . . . . .	.STWY
Modular . . . . .	.MOD	Standard . . . . .	.STD
Mortar . . . . .	.MOR	Steel . . . . .	.ST or STL
Moulding . . . . .	.MLDG	Steel Sash . . . . .	.SS
Nosing . . . . .	.NOS	Storage . . . . .	.STG
Obscure Glass . . . . .	.OBSC GL	Switch . . . . .	.SW or S
On Center . . . . .	.OC	Telephone . . . . .	.TEL
Opening . . . . .	.OPNG	Terra Cotta . . . . .	.TC
Outlet . . . . .	.OUT	Terrazzo . . . . .	.TER
Overall . . . . .	.OA	Thermostat . . . . .	.THERMO
Overhead . . . . .	.OVHD	Threshold . . . . .	.TH
Pantry . . . . .	.PAN.	Toilet . . . . .	.T
Partition . . . . .	.PTN	Tongue and Groove . . . . .	.T & G
Plaster . . . . .	.PL or PLAS	Tread . . . . .	.TR or T
Plastered Opening . . . . .	.PO	Typical . . . . .	.TYP
Plate . . . . .	.PL	Unfinished . . . . .	.UNF
Plate Glass . . . . .	.PL GL	Unexcavated . . . . .	.UNEXC
Platform . . . . .	.PLAT	Utility Room . . . . .	.URM
Plumbing . . . . .	.PLBG	Vent . . . . .	.V
Porch . . . . .	.P	Vent Stack . . . . .	.VS
Precast . . . . .	.PRCST	Vinyl Tile . . . . .	.V TILE
Prefabricated . . . . .	.PREFAB	Warm Air . . . . .	.WA
Pull Switch . . . . .	.PS	Washing Machine . . . . .	.WM
Quarry Tile Floor . . . . .	.QTF	Water . . . . .	.W
Radiator . . . . .	.RAD	Water Closet . . . . .	.WC
Random . . . . .	.RDM	Water Heater . . . . .	.WH
Range . . . . .	.R	Waterproof . . . . .	.WP
Recessed . . . . .	.REC	Weather Stripping . . . . .	.WS
Refrigerator . . . . .	.REF	Weephole . . . . .	.WH
Register . . . . .	.REG	White Pine . . . . .	.WP
Reinforce or Reinforcing . . . . .	.REINF	Wide Flange . . . . .	.WF
Revision . . . . .	.REV	Wood . . . . .	.WD
Riser . . . . .	.R	Wood Frame . . . . .	.WF
Roof . . . . .	.RF	Yellow Pine . . . . .	.YP

## ABBREVIATIONS COMMONLY USED ON ELEVATIONS

Aluminum . . . . .	AL	Length Over All . . . . .	LOA
Asbestos . . . . .	ASB	Level . . . . .	LEV
Asphalt . . . . .	ASPH	Light . . . . .	LT
Basement . . . . .	BSMT	Line . . . . .	L
Beveled . . . . .	BEV	Lining . . . . .	LN
Brick . . . . .	BRK	Long . . . . .	LG
Building . . . . .	BLDG	Louver . . . . .	LV
Cast Iron . . . . .	CI	Low Point . . . . .	LP
Ceiling . . . . .	CLG	Masonry Opening . . . . .	MO
Cement . . . . .	CEM	Metal . . . . .	MET. or M
Center . . . . .	CTR	Molding . . . . .	MLDG
Center Line . . . . .	CL or CL	Mullion . . . . .	MULL
Clear . . . . .	CLR	North . . . . .	N
Column . . . . .	COL	Number . . . . .	NO. or #
Concrete . . . . .	CONC	Opening . . . . .	OPNG
Concrete Block . . . . .	CONC B	Outlet . . . . .	OUT
Copper . . . . .	COP	Outside Diameter . . . . .	OD
Corner . . . . .	COR	Overhead . . . . .	OVHD
Detail . . . . .	DET	Panel . . . . .	PNL
Diameter . . . . .	DIA or $\phi$	Perpendicular . . . . .	PERP
Dimension . . . . .	DIM.	Plate Glass . . . . .	PL GL
Ditto . . . . .	DO.	Plate Height . . . . .	PL HT
Divided . . . . .	DIV	Radius . . . . .	R
Door . . . . .	DR	Revision . . . . .	REV
Double-Hung Window . . . . .	DHW	Riser . . . . .	R
Down . . . . .	DN or D	Roof . . . . .	RF
Downspout . . . . .	DS	Roof Drain . . . . .	RD
Drawing . . . . .	DWG	Roofing . . . . .	RFG
Drip Cap . . . . .	DC	Rough . . . . .	RGH
Each . . . . .	EA	Saddle . . . . .	SDL or S
East . . . . .	E	Scale . . . . .	SC
Elevation . . . . .	EL	Schedule . . . . .	SCH
Entrance . . . . .	ENT	Section . . . . .	SECT
Excavate . . . . .	EXC	Sheathing . . . . .	SHTHG
Exterior . . . . .	EXT	Sheet . . . . .	SH
Finish . . . . .	FIN.	Shiplap . . . . .	SHLP
Flashing . . . . .	FL	Siding . . . . .	SDG
Floor . . . . .	FL	South . . . . .	S
Foot or Feet . . . . .	' or FT	Specifications . . . . .	SPEC
Foundation . . . . .	FDN	Square . . . . .	SQ or $\square$
Full Size . . . . .	FS	Square Inch . . . . .	SQ IN. or $\square"$
Galvanized . . . . .	GALV	Stainless Steel . . . . .	SST
Galvanized Iron . . . . .	GI	Steel . . . . .	STL
Gauge . . . . .	GA	Stone . . . . .	STN
Glass . . . . .	GL	Terra Cotta . . . . .	TC
Glass Block . . . . .	GL BL	Thick or Thickness . . . . .	THK or T
Grade . . . . .	GR	Typical . . . . .	TYP
Grade Line . . . . .	GL	Vertical . . . . .	VERT
Height . . . . .	HGT or H or HT	Waterproofing . . . . .	WP
High Point . . . . .	H PT	West . . . . .	W
Horizontal . . . . .	HOR	Width . . . . .	W or WTH
Hose Bibb . . . . .	HB	Window . . . . .	WDW
Inch or Inches . . . . .	" or IN.	Wire Glass . . . . .	W GL
Insulating (Insulated) . . . . .	INS	Wood . . . . .	WD
Length . . . . .	LGTH, LG or L	Wrought Iron . . . . .	WI

- Ceiling Wall
- GENERAL OUTLETS**
- -○ Outlet.
  - Ⓚ -Ⓚ Blanked Outlet.
  - Ⓞ -Ⓞ Drop Cord.
  - ⓔ -ⓔ Electrical Outlet; for use only when circle used alone might be confused with columns, plumbing symbols, etc.
  - ⓕ -ⓕ Fan Outlet.
  - ⓙ -ⓙ Junction Box.
  - Ⓛ -Ⓛ Lamp Holder.
  - Ⓛ<sub>ps</sub> -Ⓛ<sub>ps</sub> Lamp Holder with Pull Switch.
  - Ⓢ -Ⓢ Pull Switch.
  - Ⓥ -Ⓥ Outlet for Vapor Discharge Lamp.
  - ⓧ -ⓧ Exit Light Outlet.
  - Ⓒ -Ⓒ Clock Outlet. (Specify Voltage.)

- CONVENIENCE OUTLETS**
- Ⓜ Duplex Convenience Outlet.
  - Ⓜ<sub>1,3</sub> Convenience Outlet other than Duplex. 1=Single, 3=Triplex, etc.
  - Ⓜ<sub>WP</sub> Weatherproof Convenience Outlet.
  - Ⓜ<sub>R</sub> Range Outlet.
  - Ⓜ<sub>GR</sub> Grounded Outlet.
  - Ⓜ Duplex Convenience Outlet - Split Wired
  - Ⓜ<sub>S</sub> Switch and Convenience Outlet.
  - Ⓜ<sub>R</sub> Radio and Convenience Outlet.
  - Ⓜ Special Purpose Outlet. (Des. in Spec.)
  - Floor Outlet.

- SWITCH OUTLETS**
- S Single Pole Switch.
  - S<sub>2</sub> Double Pole Switch.
  - S<sub>3</sub> Three-Way Switch.
  - S<sub>4</sub> Four-Way Switch.
  - S<sub>0</sub> Automatic Door Switch.
  - S<sub>e</sub> Electrolier Switch.
  - S<sub>K</sub> Key Operated Switch.
  - S<sub>p</sub> Switch and Pilot Lamp.
  - S<sub>CB</sub> Circuit Breaker.
  - S<sub>wcb</sub> Weatherproof Circuit Breaker.
  - S<sub>MC</sub> Momentary Contact Switch.
  - S<sub>RC</sub> Remote Control Switch.
  - S<sub>WP</sub> Weatherproof Switch.
  - S<sub>F</sub> Fused Switch.
  - S<sub>WF</sub> Weatherproof Fused Switch.

○<sub>a,b,c,etc</sub>  
 Ⓜ<sub>a,b,c,etc</sub>  
 Ⓢ<sub>a,b,c,etc</sub>

Any Standard Symbol as given above with the addition of a lower case subscript letter may be used to designate some special variation of Standard Equipment of particular interest in a specific set of Architectural Plans. When used, they must be listed in the Key of Symbols on each drawing and if necessary further described in the specifications.

**SPECIAL OUTLETS**

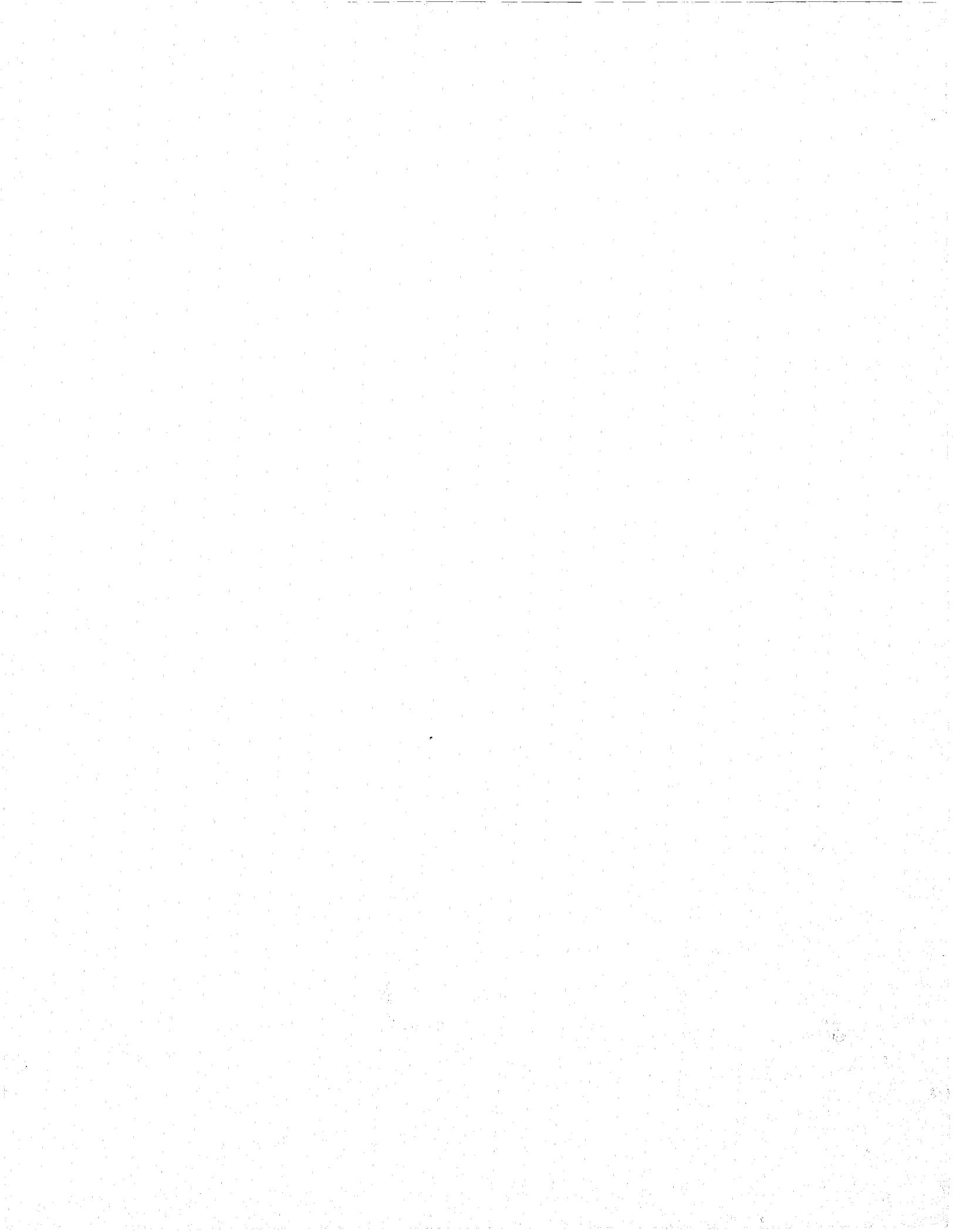
- PANELS, CIRCUITS, AND MISCELLANEOUS**
- Lighting Panel.
  - ▨ Power Panel.
  - Branch Circuit; Concealed in Ceiling or Wall.
  - Branch Circuit; Concealed in Floor.
  - Branch Circuit; Exposed.
  - Home Run to Panel Board. Indicate number of Circuits by number of arrows.  
 Note: Any circuit without further designation indicates a two-wire circuit. For a greater number of wires indicate as follows ~~///~~ (3 wires) ~~##~~ (4 wires), etc.
  - Feeders. Note: Use heavy lines and designate by number corresponding to listing in Feeder Schedule.
  - Ⓜ Underfloor Duct and Junction Box. Triple System. For double or single systems, eliminate 1 or 2 lines. This symbol equally adaptable to auxiliary system layouts.

- Ⓒ Generator.
- Ⓜ Motor.
- Ⓢ Instrument.
- Ⓢ Power Transformer. (Or draw to scale.)
- Ⓢ Controller.
- Ⓢ Isolating Switch.

**AUXILIARY SYSTEMS**

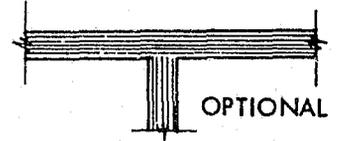
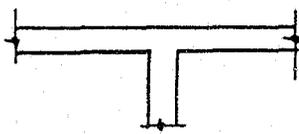
- Ⓢ Push Button.
- Ⓢ Buzzer.
- Ⓢ Bell.
- Ⓢ Annunciator.
- Ⓢ Outside Telephone.
- Ⓢ Interconnecting Telephone.
- Ⓢ Telephone Switchboard.
- Ⓢ Bell Ringing Transformer.
- Ⓢ Electric Door Opener.
- Ⓢ Fire Alarm Bell.
- Ⓢ Fire Alarm Station.
- Ⓢ City Fire Alarm Station.
- Ⓢ Fire Alarm Central Station.
- Ⓢ Automatic Fire Alarm Device.
- Ⓢ Watchman's Station.
- Ⓢ Watchman's Central Station.
- Ⓢ Horn.
- Ⓢ Nurse's Signal Plug.
- Ⓢ Maid's Signal Plug.
- Ⓢ TV Outlet.
- Ⓢ Signal Central Station.
- Ⓢ Interconnection Box.
- Ⓢ Battery.

---- Auxiliary System Circuits.

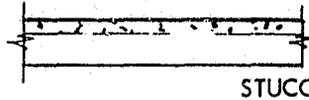


	ELEVATION	PLAN	SECTION		ELEVATION	PLAN	SECTION
EARTH				STRUCTURAL CLAY TILE		 SMALL SCALE  LARGE SCALE	SAME AS PLAN VIEWS
BRICK	 BRICK WITH NOTE TELLING KIND OF BRICK (COMMON, FACE, ETC.)	 COMMON FACE FACE BRICK ON COMMON FIRE BRICK ON COMMON	SAME AS PLAN VIEWS	GLASS	 OR GL BLOCK	 GLASS GLASS BLOCK	 SMALL SCALE LARGE SCALE
CONCRETE		 STONE CINDER	SAME AS PLAN VIEWS	FACING TILE	 WALL TILE	 FLOOR TILE	
CONCRETE BLOCK		 OR 		INSULATION		 LOOSE FILL OR BATTS BOARD AND QUILT SOLID, CORK, ETC.	SAME AS PLAN VIEWS
STONE	 CUT STONE RUBBLE	 CUT STONE RUBBLE CAST STONE (CONCRETE)	 CUT STONE RUBBLE OR CUT STONE	SHEET METAL FLASHING		OCCASIONALLY INDICATED BY NOTE	
WOOD	 SIDING PANEL	 WOOD STUD PARTITION OPTIONAL	 ROUGH MEMBERS FINISHED MEMBERS (TRIM)	METALS OTHER THAN FLASHING	INDICATED BY NOTE OR DRAWN TO SCALE	SAME AS ELEVATION	 SMALL SCALE STEEL CAST IRON ALUMINUM BRONZE OR BRASS
PLASTER		 WOOD STUD, LATH AND PLASTER PARTITION SOLID PLASTER PARTITION LATH AND PLASTER ON BRICK	 LATH AND PLASTER	STRUCTURAL STEEL	INDICATED BY NOTE OR DRAWN TO SCALE	 OR REINFORCING BARS L-ANGLES, I-BEAMS, ETC. SMALL SCALE LARGE SCALE	

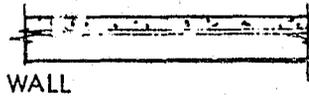
Symbols used for common materials shown on blueprints.



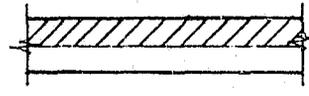
INTERSECTION OF FRAME WALL AND FRAME PARTITION  
OR TWO FRAME PARTITIONS



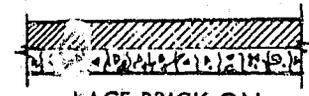
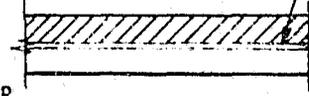
STUCCO ON FRAME WALL



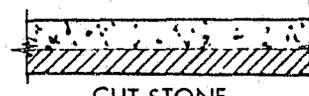
AIR SPACE



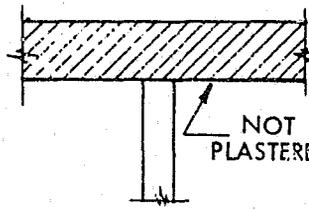
BRICK VENEER



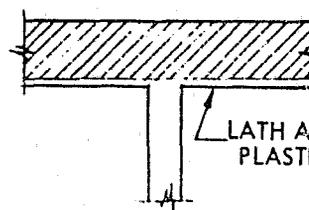
FACE BRICK ON  
CONCRETE BLOCK



CUT STONE  
ON BRICK

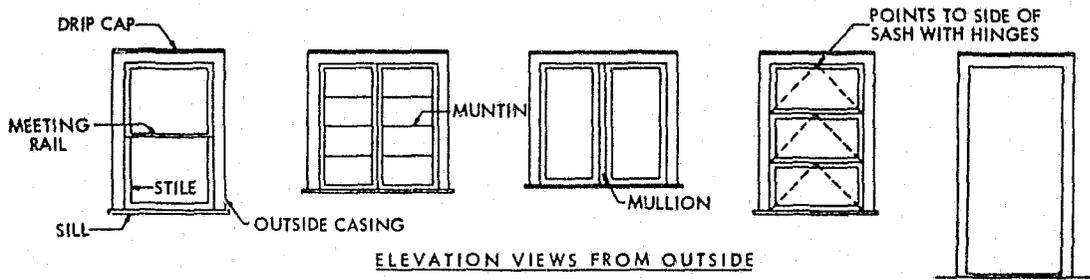


NOT  
PLASTERED

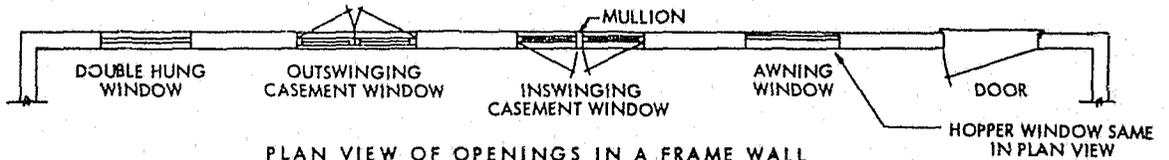


LATH AND  
PLASTER

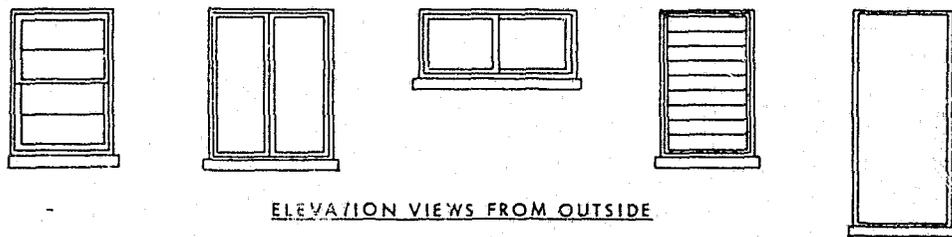
INTERSECTION OF BRICK WALL  
AND WOOD STUD PARTITION  
NOTE: PLASTER LINE OMITTED  
ON PARTITION



ELEVATION VIEWS FROM OUTSIDE



PLAN VIEW OF OPENINGS IN A FRAME WALL



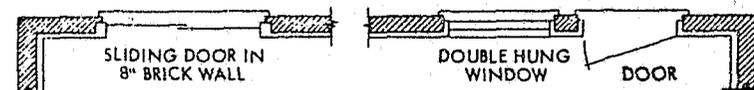
ELEVATION VIEWS FROM OUTSIDE



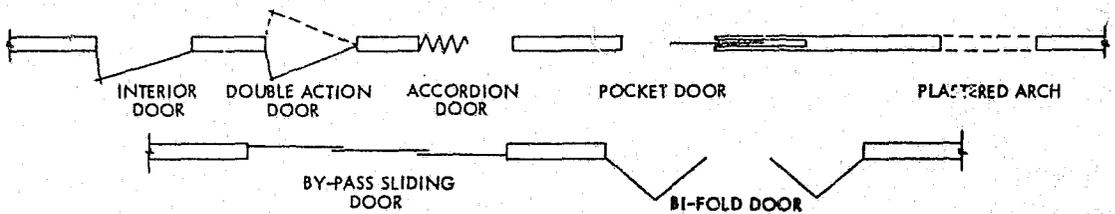
PLAN VIEW OF OPENINGS IN 8" BRICK WALL



PLAN VIEW OF OPENINGS IN BRICK VENEER WALL

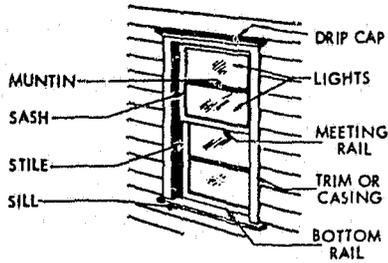


PLAN VIEW OF OPENINGS IN AN 8" BRICK WALL

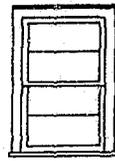


OPENINGS IN INTERIOR PARTITIONS

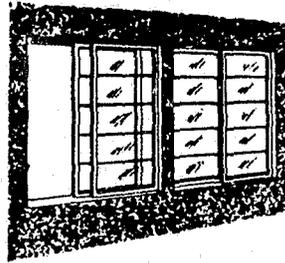
**SYMBOLS USED FOR WINDOWS AND DOORS  
ON ELEVATION DRAWING**



**DOUBLE HUNG WINDOW  
IN FRAME WALL**



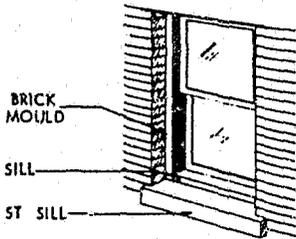
SYMBOL



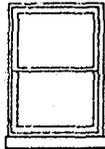
**HORIZONTAL SLIDING SASH WINDOW  
IN MASONRY WALL**



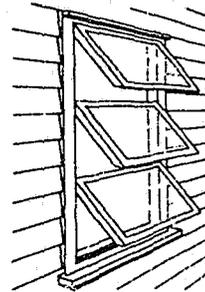
SYMBOL



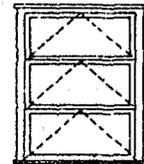
**DOUBLE HUNG WINDOW  
IN BRICK WALL**



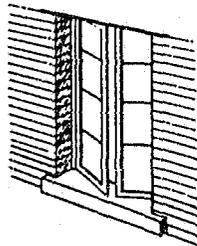
SYMBOL



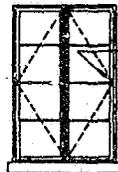
**AWNING WINDOW  
IN FRAME WALL**



SYMBOL

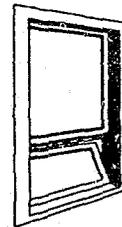


**CASEMENT WINDOW  
(METAL)  
IN BRICK WALL**

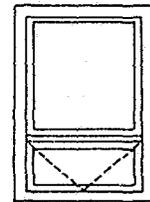


APEX OF TRIANGLE DENOTES SIDE OF WINDOW WITH HINGES

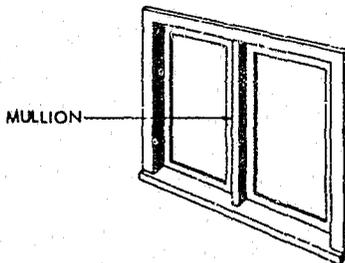
SYMBOL



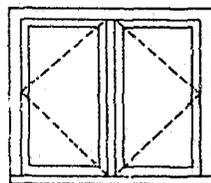
**FIXED SASH  
AND HOPPER WINDOW  
IN FRAME WALL**



SYMBOL

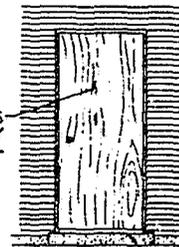


**CASEMENT WINDOW  
(WOOD)  
IN WOOD WALL**

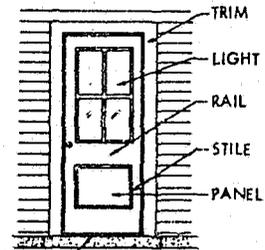


SYMBOL

IRREGULAR LINES ARE COMMONLY USED TO DISTINGUISH A FLUSH DOOR FROM A PANEL DOOR



**FLUSH DOOR  
IN BRICK WALL**



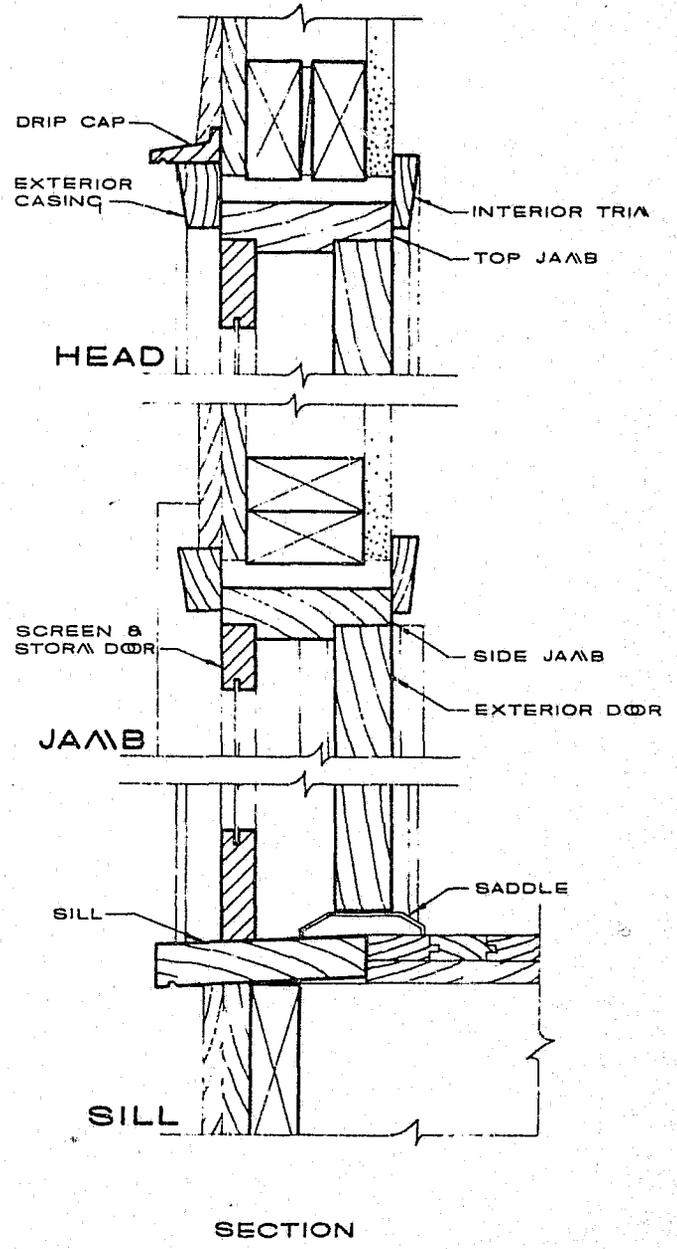
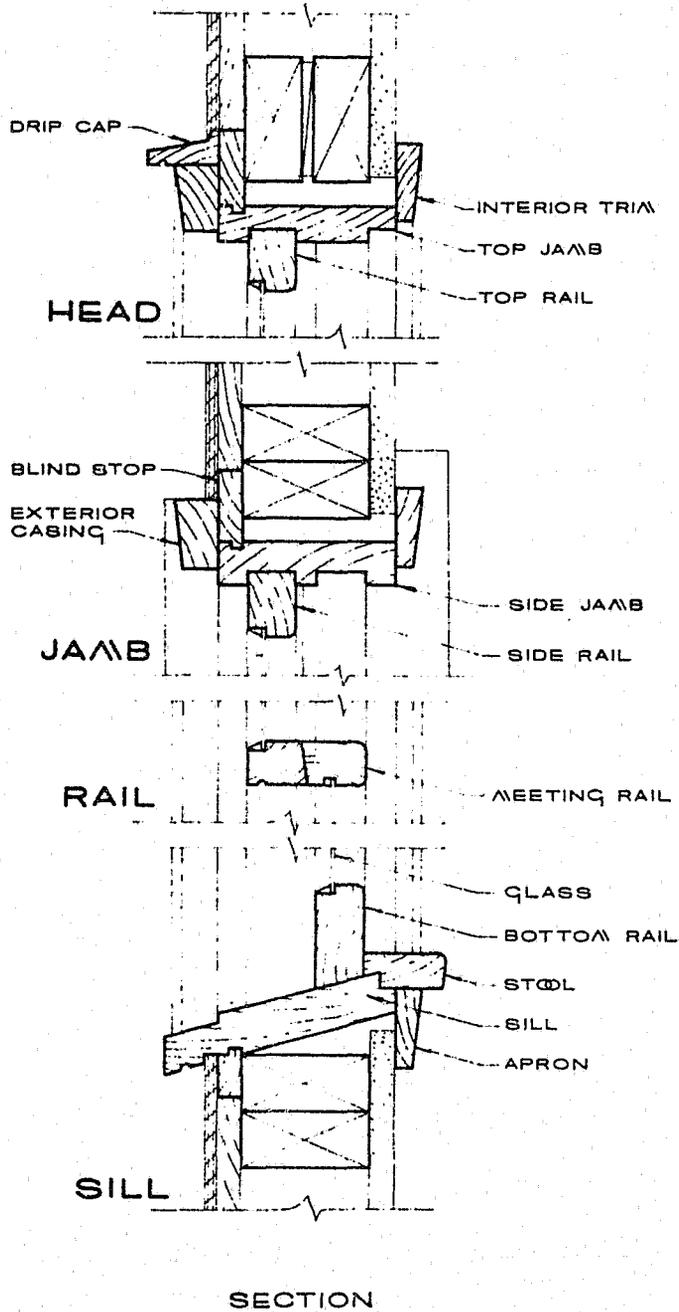
**PANEL DOOR  
IN FRAME WALL**

Fig. 3-5

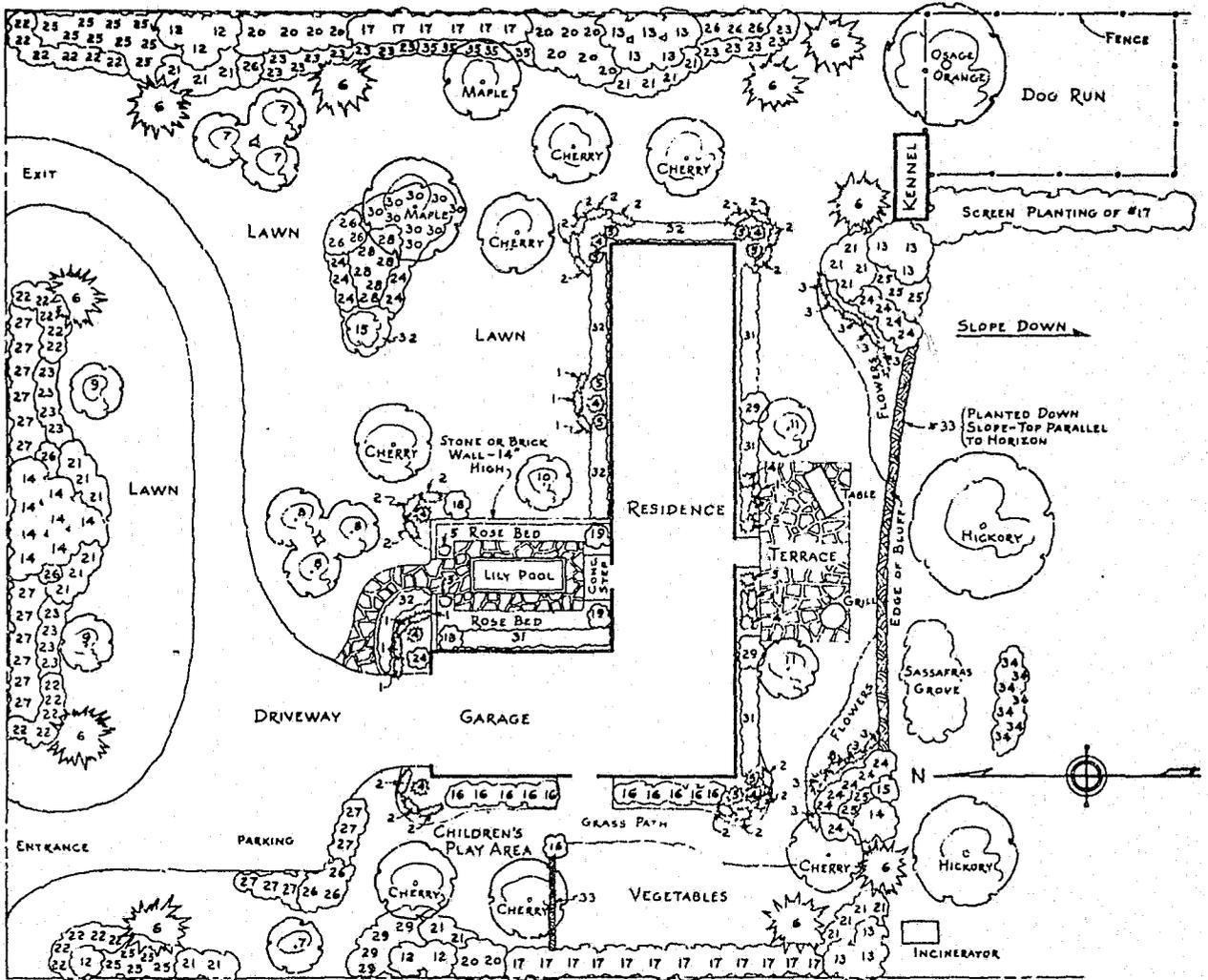
**WINDOW AND DOOR SYMBOLS**

Many lines are omitted when symbols are drawn. Wood windows have wider sash parts than metal windows. Windows in frame walls have wood trim. Windows in masonry walls have a narrow brick mold. The side which has the hinges on swinging windows is indicated by the

apex (or point) of a dashed triangle. (Note the swing symbol for a casement window.) A stationary window with no provision for opening is called a "fixed sash window." Locks and hinges on doors are not generally shown. It is necessary to refer to the floor plan to see the swing of the doors.

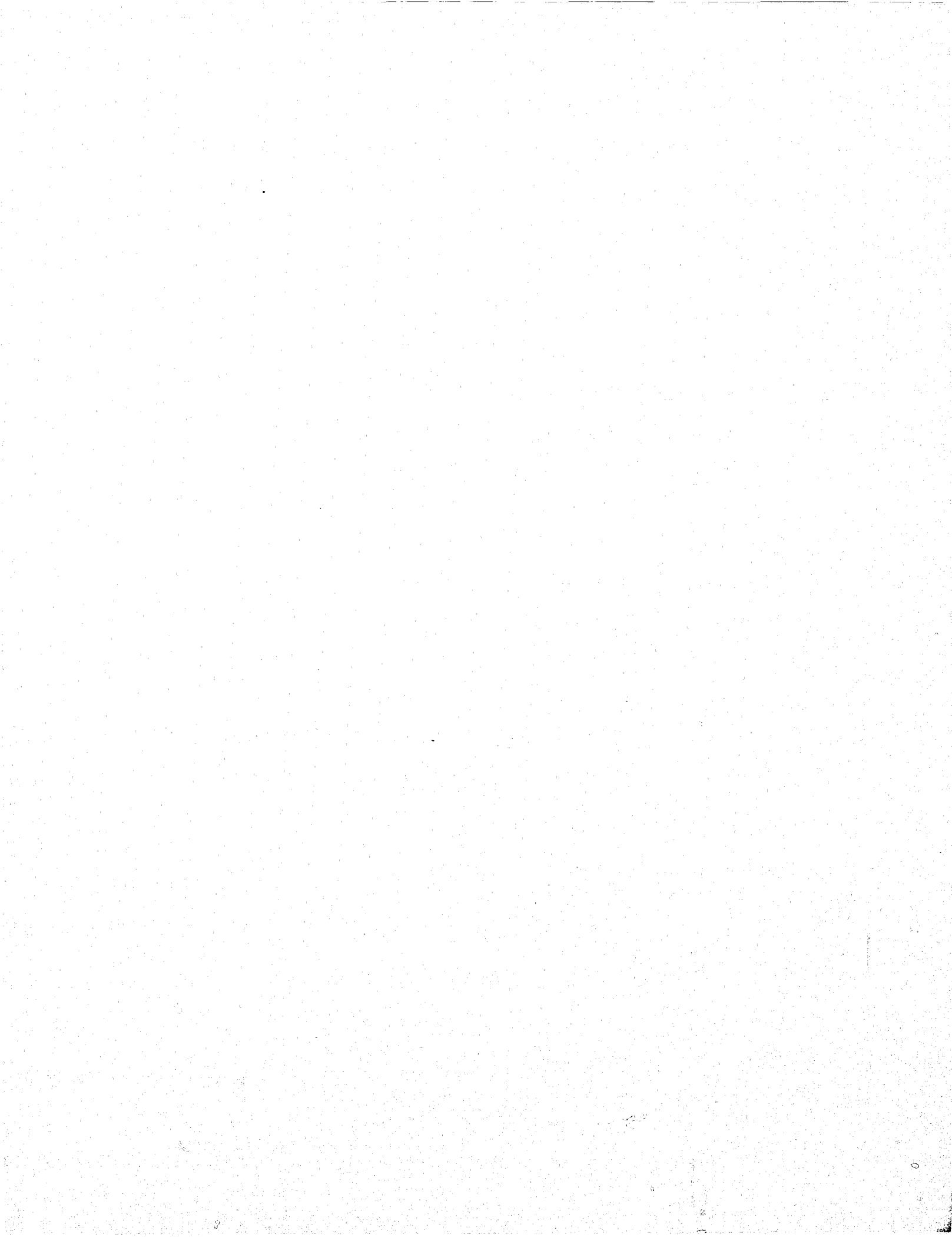


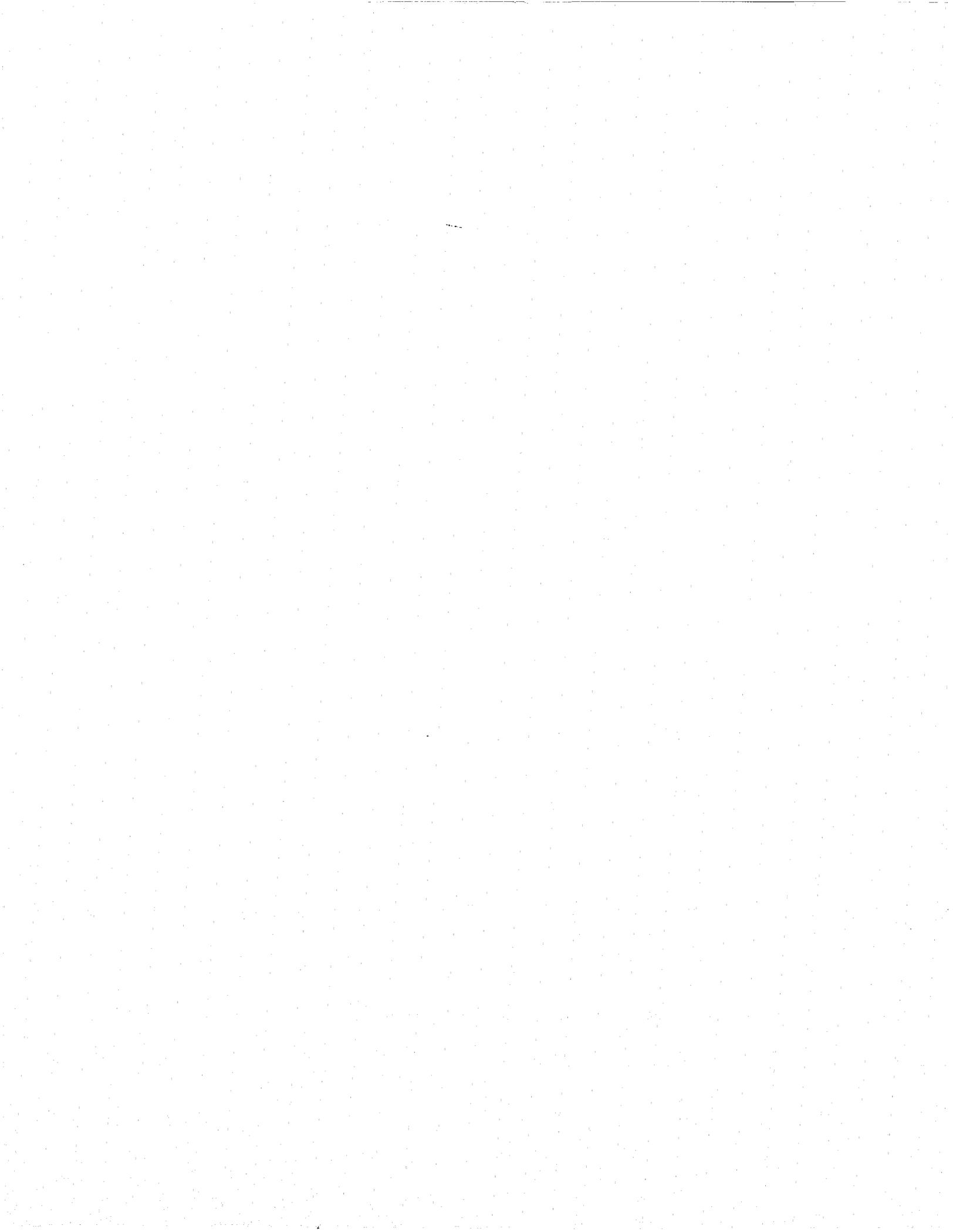




PLANT LIST

KEY	QTY.	NAME	SIZE
1	13	SPREADING YEW	18-24 INCHES
2	19	ANDORRA JUNIPER	18-24 INCHES
3	12	ANDORRA JUNIPER	15-18 INCHES
4	9	UPRIGHT YEW	24-30 INCHES
5	12	HICKS YEW	18-24 INCHES
6	10	COLORADO SPRUCE	3-4 FEET
7	4	HOPA FLOWERING CRAB APPLE	4-5 FEET
8	3	BECHTAL FLOWERING CRAB APPLE	3-4 FEET
9	2	ELEYI FLOWERING CRAB APPLE	4-5 FEET
10	1	WHITE FLOWERING DOGWOOD	6-8 FEET
11	2	PINK FLOWERING DOGWOOD	6-8 FEET
12	6	PAUL'S SCARLET HAWTHORN	4-5 FEET
13	11	WASHINGTON HAWTHORN	6-8 FEET
14	8	REDBUD	6-8 FEET
15	2	MAGNOLIA SOULANGEANA	3-4 FEET
16	11	CALYCANTHUS	
17	18	TARTARIAN HONEYSUCKLE	
18	2	VIBURNUM BURKWOODI	
19	2	VIBURNUM CARLESI	
20	12	VIBURNUM SIEBOLDI	
21	26	FORSYTHIA	
22	21	DWARF CRIMSON SPIREA	
23	21	DWARF WHITE SPIREA	
24	17	KERRIA JAPONICA	
25	19	PINK FLOWERING ALMOND	
26	11	WHITE ALTHEA—ROSE OF SHARON	
27	12	PINK WEIGELA	
28	6	BURNING BUSH	
29	6	FRENCH LILAC—WHITE	
30	9	SNOWBERRY	
31	1000	MYRTLE—VINCA MINOR	
32	1000	PACHYSANDRA	
33	100	AMUR PRIVET	
34	7	RED TWIG DOGWOOD	
35	5	P. G. HYDRANGEA	





APPENDIX



DRAFT

HANDBOOK OF CRIME PREVENTION BULLETINS  
CRIME PREVENTION THROUGH PHYSICAL PLANNING

PREPARED FOR THE  
SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS  
BY THE  
SUA DIVISION OF DILLINGHAM CORPORATION

September 1971

Reprint in part from "A Study of Crime Prevention Through Physical  
Planning" for the California Association of Governments.



**CONTINUED**

**1 OF 2**

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HANDBOOK OF CRIME PREVENTION BULLETINS

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Section 13 is  
not included in  
this text.

## INTRODUCTION

This handbook is aimed at providing the form and substance of materials to increase the consideration of crime prevention possibilities in the physical planning processes. The form prescribed by the handbook is the Crime Prevention Bulletin (CPB), i.e., a series of single topic bulletins which can be conveniently refined and updated. The substance of the handbook is information on means of preventing crime through the planning and design of physical characteristics and a systematic approach to apply the information to specific projects.

The intended audience is the planner or designer who can influence decisions on physical characteristics in the creative or review stages of a project. The material and analytical techniques may be applied by the architect, landscape architect, city planner, building code administrator, law enforcement personnel and any others who have responsibilities for insuring that prevention of crime is considered along with other basic planning and design objectives. Important goals of the handbook are: providing means by which the knowledge and experience of law enforcement personnel can be included in the physical planning processes; and providing physical planners with an organized body of knowledge on crime prevention possibilities.

### Background

The neglect of crime prevention in the physical planning processes, on the part of law enforcement and planning personnel, can be explained by: a lack of awareness of the possible contributions which could be made by physical planning and, therefore, the lack of support in the form of codes, policies, and manpower; the lack of incentives to include crime prevention measures by insurance companies and underwriters; and the lack of a body of knowledge and the education and training efforts to produce personnel skilled in the application of crime prevention in the physical planning processes.

This situation will change and crime prevention will be given more consideration in the physical planning processes in the future. This will be due to: an increasing awareness of the effects of physical characteristics on crime prevention; an increase in the number of personnel who can translate this awareness into specific planning and design recommendations; and a growing body of standards and codes which can be enforced. Perhaps the

greatest impetus to the changing situation will come through such programs as the present handbook and the large-scale research efforts currently being funded by such agencies as the Law Enforcement Assistance Administration and the Department of Housing and Urban Development. This research, on such developments as housing and parks, should add substantially to the body of knowledge. This, in turn, should accelerate the expanded coverage of these topics in the college and university courses for architects, planners and law enforcement personnel. As the body of knowledge grows, there should be an increase in the adoption of codes and building standards which governmental officials can enforce. Concurrently should come increases in personnel allocations as the policy-making bodies recognize the need to enforce the code sections and to work actively with architects, planners and developers.

### Using the Handbook

It is expected that the handbook will find many uses when it is published in final form. It is hoped, for example, that some jurisdictions may amend building codes to include anti-intrusion devices as discussed in three of the Crime Prevention Bulletins.

For the physical planning processes, it is probably that the handbook will find its greatest immediate application in stimulating the more informal means of introducing crime prevention measures. Reviewers of early draft material indicated that the specific questions posed in the handbook could bring several city departments together in reviewing proposed projects. Another example was in providing specific points which the police department could submit to the planning department for inclusion in the file on zoning matters. The stimulus for this informal, inter-departmental consideration of crime prevention possibilities could come from the city or county manager or a department head or departmental employee. The actions could take the form of informal conferences between departments or the referral of architects or developers to another department, e.g. law enforcement, for suggestions on possible improvements. In these cases, the CPB's will provide some basic questions and insights which may lead to new solutions.

As the body of knowledge grows and codes and standards develop, the procedures can become much more formal. That is, there will be mandatory requirements for such items as lighting levels, and plans will be carefully checked to insure that the crime prevention measures have been included.

It is hoped that the handbook will be useful in the stages from informal to formal. In the early stages the handbook will provide a valuable compendium of information for the individual who has responsibility for improving the planning and design of new developments. The handbook can be

used as a training device and information resource for an individual. Because of the relative uniqueness of the concepts and analytical approaches, the handbook may find its greatest utility as a training device for a group of individuals in a formal course, organized training program or informal inter-departmental discussion of a particular project. A ten-session training program outline has been included in a Crime Prevention Bulletin in the handbook.

#### Future of the Handbook

The handbook has been designed to expand and refine as the subject matter in the field grows. From the initial publication on, it is intended that the format will be that of individual CPB's, each on a particular subject. They will be printed in loose-leaf format so that they can be readily revised as additional pertinent information is available. Users of the handbook are urged to submit material for inclusion and suggestions on improving the handbook.



CRIME PREVENTION BULLETIN #1

SUBJECT: ANALYSIS OF A PROPOSED INDUSTRIAL PARK TO IDENTIFY POTENTIAL PHYSICAL  
CRIME PREVENTION POSSIBILITIES

Introduction

Prior to the introduction of an industrial area into a given jurisdiction, the law enforcement agency can anticipate a relatively long planning period. It is essential that during this period they involve themselves in the planning process. This involvement should take place through the planning agency and take the form of formal and informal consultations with the developers or builders who are considering the industrial park.

Some aspects of physical crime prevention for industrial areas may be included in building and zoning codes which would delineate certain minimum security standards. These standards might direct the type of setbacks, lighting, street access, and general location of spur tracks in relationship to the building.

However, the majority of physical prevention steps cannot be formalized into law as they vary so much dependent upon the type of industry. Therefore, the law enforcement personnel will need to meet informally with the individual companies and their planners, to adapt the jurisdiction's security requirements to the company's operating needs. A long-range objective could well be the development of a set of basic criteria with additions or modifications for individual cases.

Procedures should also be established for review of physical security requirements whenever an industrial site changes ownership. In this manner, the security standards are continually tailored to meet the individual company's need.

## What To Look For

The following list considers eight major components of an industrial park development in which design and planning considerations can play an important part in crime prevention. For each component a list of questions is given:

### I. Street Patterns and Lot Plan

Are streets straight and wide enough for effective patrol observation?

Are the industrial buildings set back so far from any patrollable street that observation is hindered?

Is vehicle access provided to the front and back of all buildings in the industrial park? If this is impossible, is foot access provided?

Would any proposed street closing adversely affect patrol observation?

Have provisions been made for emergency access for police vehicles to closed areas?

Are dead end streets and alleys avoided, such as sometimes found adjacent to service entrances?

Does the planning permit industries to be clustered by operating hours, so that industries operating all night or late can be adjacent?

Is adequate lighting provided along the streets?

Would any of the adjacent areas to the industrial park be likely to cause a crime problem?

Is the park located adjacent to streets which have a relatively high degree of traffic at all hours?

Does the industrial park have only the minimum number of streets entering it which could be blocked, secured or controlled if required?

### II. Parking

#### A. Parking Lots

Is there adequate lighting throughout with emphasis on the interior? Have the advantages of low and high profile lighting been evaluated for this location?

Can late hour parkers be brought closer to high-volume traffic to reduce isolation?

Can parking layout permit close-in parking for late shift workers?

Does the landscape provide concealment?

Are parking stalls laid out to permit maximum observation by patrol, other people, or the attendants? Can the lot be at a lower grade than the surrounding streets enabling the patrol to look down upon it without unduly hampering design problems and increasing site development costs?

Will the lot be cleared at off-hours so that isolated vehicles can be checked out more readily?

Will all the parking be located in central areas?

Will the lot be secured by chain link fence and permit only controlled entry through a check point?

B. Parking Structures

Is there adequate lighting day and night?

Is it situated relative to the rest of the buildings in the area so it does not provide access to the roofs of any of the adjoining buildings?

Can night parking stalls be closer to pedestrian traffic and other activities?

Can attendant's station be located to provide maximum observation possibilities?

III. Structural

Are all entrances well lighted?

Are the entrances held to a minimum? Are the windows on the first floor? If so, are they well lighted?

Are the entrances clearly visible to patrol and the public? If not, can extra physical security be provided for off-hours, i.e. screening, etc.? Can they be oriented to increase visibility for patrol?

Have all means of gaining access to the roofs been removed, e.g. standpipes, flagpole, pallet storage, etc.?

Are there separate entrances for public, employees, and deliveries?

Can entrances for employees be situated adjacent to their designated parking areas?

Has night time parking been provided so that service entrances can be kept free of vehicles and trucks during off-hours to increase visibility of non-authorized vehicles?

Are service entrances located so they can be seen easily by random patrol?

Are the buildings situated so as to provide no indentations or alley ways which could be used by assailants for concealment?

Are the buildings planned so that access to one will not give access to other buildings (interconnecting basements and attics, etc.)? Are the larger buildings planned so that access to one part of the building does not give access to the entire building? Has special "target hardening" consideration been given to the office portion of each of the industrial buildings? Are these located in an area readily patrolled?

#### IV. Spur Tracks

Can access roads be provided along spur tracks to make patrol easier or can they be paved to enable a patrol car to patrol them? If not, is there a possibility of barricading the spur tracks to deter truck or vehicle passage during off-hours?

Can extra lighting be provided along the spur tracks?

#### V. Storage Yards and Service Areas

Are they situated so as to permit clear observation for patrol?

Are they in open areas for clear observation, i.e. free of parked vehicles, railroad cars, etc.?

Are they adequately lighted?

Can extra security be provided, e.g. chain link fences -- especially if pallets are stacked?

If supplies are stacked, is there enough area available so it might be done in a systematic manner allowing adequate lane space for a patrol vehicle?

Will these storage areas have at least a 50 foot cleared perimeter surrounding them?

#### VI. Walkways

Are the walkways situated to generate enough traffic to provide a deterrent by virtue of the number of people using them?

Are they routed past areas where the public is likely to congregate?

Are they wide enough to permit clear observation?

Are they sufficiently straight to provide adequate observation?

If they will be utilized at night, are they adequately lighted?

Have the walkways been landscaped in a manner as to provide minimum concealment for would-be attackers?

Are there access roads nearby so that emergency vehicles can get relatively close to any point on the walkways?

Are there any unnecessary indentations which would provide hiding places for would-be assailants?

VII. Landscaping

Is the landscaping of the type and situated in locations so as to maximize observation while providing the desired degree of aesthetics?

Is lighting used in the landscaping both for security and aesthetics?

Are walls planned only where they would create a desirable buffer? Then are they sufficiently high to deter circumvention? Are they situated in a manner so as not to provide concealment for a would-be attacker? Are they set back from sidewalks and walkways? Would it be feasible to use a chain link fence instead?

VIII. Miscellaneous

Has some sort of buffer been provided between the industrial park and the surrounding areas -- one which would deter a person crossing it with stolen goods?

Can access to the industrial park be controlled with a guard on duty or can it be equipped with an intrusion alarm system?

Does the industrial park employ its own security force? Can the law enforcement agency assist with the selection and training of the force?



## CRIME PREVENTION BULLETIN #2

SUBJECT: ANALYSIS OF A PROPOSED COMMERCIAL DEVELOPMENT TO IDENTIFY POTENTIAL PHYSICAL CRIME PREVENTION POSSIBILITIES

### Introduction

This CPB presents a series of questions to be asked about a proposed commercial development which could be the renovation of an existing area to create a mall or the planning of a new shopping center complex. The intent of these questions is to illuminate potential crime problems and to suggest ways to avoid them at the planning and design stages.

In all cases, a problem arises in balancing crime prevention with economic and aesthetic factors and such things as shopper habits and traditions. Decisions of this sort must be made in consultation with owners, builders, planning officials, fire officials, etc. Even if a crime hazard is allowed to remain because, for example, its aesthetic value is too important to eliminate, all people involved in the development should be aware of the nature of the crime hazard and the full extent of the trade-offs involved and other steps planned.

A sketch of a mall proposal has been included to illustrate some of the factors involved.

### What To Look For

The following list considers six major components of a commercial development in which design considerations can play an important part in crime prevention. For each component, a list of questions is given to illuminate these design considerations.

#### I. Street Patterns and Site Plan

Is vehicle access provided to the front and back of all buildings in a shopping center, mall, or strip commercial area? If this is impossible, is foot access provided?

Would any street closing necessary to effect a shopping mall adversely affect patrol observation?

Has access to closed areas been provided for emergency vehicles?

Are dead-end streets and alleys avoided, such as sometimes found adjacent to service entrances?

Does the layout permit stores to be clustered by operating hours so that stores open after normal shopping hours can be together?

Is adequate lighting provided along the streets?

Would any of the adjacent areas be likely to cause a crime problem for this commercial area? Are these areas located adjacent to streets which have a relatively high degree of traffic at all hours?

## II. Parking

### A. Parking Lots

Is there adequate lighting throughout with emphasis on the interior? Have the advantages of low and high profile lighting been evaluated for this location?

Can late hour parkers be brought closer to high volume traffic to reduce isolation?

Is employee parking provided in an area with constant traffic or observation from surrounding activities to preclude isolation? Is it enclosed by a fence? If not, would it be better to inter-mix the employee and the customer parking?

Does the type of landscaping material provide concealment?

Are parking stalls laid out to permit maximum observation by patrol, other people, or the attendants? Can the lot be at a lower grade than the surrounding streets to increase patrol observation without creating design problems and increasing site construction costs?

Will the lot be cleared at off-hours so that isolated vehicles can be checked out more readily?

Will all the parking be located in central areas?

If there is an attendant, will a strong box be available and correct change be demanded so that minimum cash will be on hand? Can attendant's station be located to provide maximum observation of the parking area?

Is there a way to control access and egress? Would it be feasible to do so?

B. Parking Structures

Is there adequate lighting day and night?

Is it situated relative to the rest of the buildings in the area so that it does not provide access to the roofs of any of the adjoining buildings?

Can night parking stalls be closer to the attendants?

If it is out of operation during a portion of the day, can it be completely sealed off alleviating the need to patrol it?

Can the attendant's station be located to provide maximum observation if one is required? Should closed circuit T.V. be installed and monitored? Should a listening system be employed?

Can elevators be monitored? Can doors of elevators be oriented so that departing passengers will be seen by attendants?

Can shops be located in the parking ramp to increase the number of people in the ramp during operating hours?

III. Structural

If it is an interior mall, can it be sealed off after business hours so that the only building access points can be seen from the streets and parking areas surrounding it?

Are the entrances held to a minimum?

Are entrances well lighted?

Are the entrances clearly visible to patrol and public? If not, can extra physical security be provided for off-hours, i.e. screening, etc.? Can they be oriented to increase visibility for patrol?

Have all means of gaining access to the roofs been removed without conflicting with fire regulations?

Are there separate entrances for public, employees, and deliveries?

Can entrances for customers and employees be situated adjacent to their designated parking areas?

Can service entrances be kept free of vehicles and trucks during off-hours to increase visibility of non-authorized vehicles?

Are service entrances located so they can be seen easily by random patrol?

Are the buildings situated so that they provide no indentations or alley ways which could be used by assailants for concealment?

Are the stores structured so that access to one story will not give access to all stores in the mall or shopping center (inter-connecting basements and attics, etc.)? Are the larger stores structured so that access to one part of the store does not give access to the entire store?

#### IV. Walkways

Are the walkways situated to generate enough traffic to provide a deterrent by virtue of the number of people using the walkway at all times?

Are they routed past areas where the public is likely to congregate?

Are they wide enough to permit clear observation?

Are they sufficiently straight to provide adequate observation?

If they will be utilized at night, are they adequately lighted?

Have the walkways been landscaped in a manner so as to provide minimum concealment for would-be attackers?

Are there access roads nearby so that emergency vehicles can get relatively close to any point on the walkways?

Are there any unnecessary indentations which would provide hiding places for would-be assailants?

#### V. Landscaping

Is the landscaping of the type and situated in locations so as to maximize observation while providing the desired degree of aesthetics? Will landscaping obscure observation from patrol helicopters?

Is lighting used in the landscaping both for security and aesthetics?

Are walls planned only where they would create a desirable buffer? Then, are they sufficiently high to deter circumvention? Are they situated in a manner so as not to provide concealment for a would-be attacker? Are they set back from sidewalks and walkways? Would it be feasible to use a chain link instead?

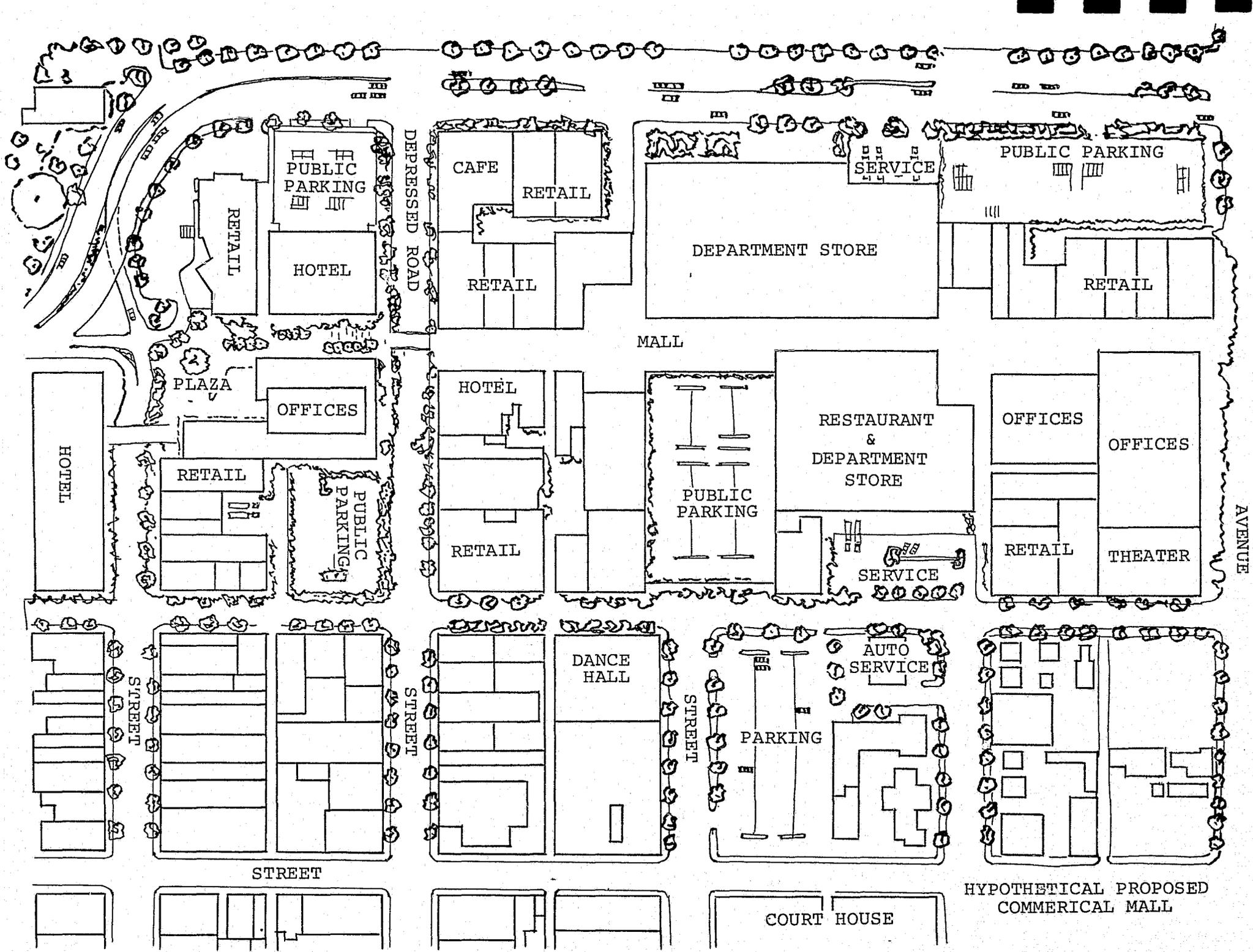
VI. Miscellaneous

If there are facilities in the shopping center or mall remaining open later than the majority of the stores, are they located adjacent to the main access streets, grouped together?

Is there a buffer zone (such as lower density commercial, office buildings, parks) between the commercial area and the adjoining areas which would deter a person from parking in one area and walking to another? Would this buffer zone inhibit persons from carrying stolen goods across it?

Is it possible to regulate deliveries to the commercial area so that there is at least one period of time during the night that no trucks or cars should be in the area?

Have provisions for an intrusion alarm system been included in the planning for the commercial area? Can a zone system be used so the entire mall does not have to be sealed off?



PUBLIC PARKING

RETAIL

HOTEL

DEPRESSED ROAD

CAFE

RETAIL

RETAIL

DEPARTMENT STORE

SERVICE

PUBLIC PARKING

RETAIL

MALL

PLAZA

OFFICES

HOTEL

HOTEL

RETAIL

PUBLIC PARKING

RETAIL

PUBLIC PARKING

RESTAURANT & DEPARTMENT STORE

OFFICES

OFFICES

AVENUE

RETAIL

THEATER

SERVICE

STREET

STREET

STREET

DANCE HALL

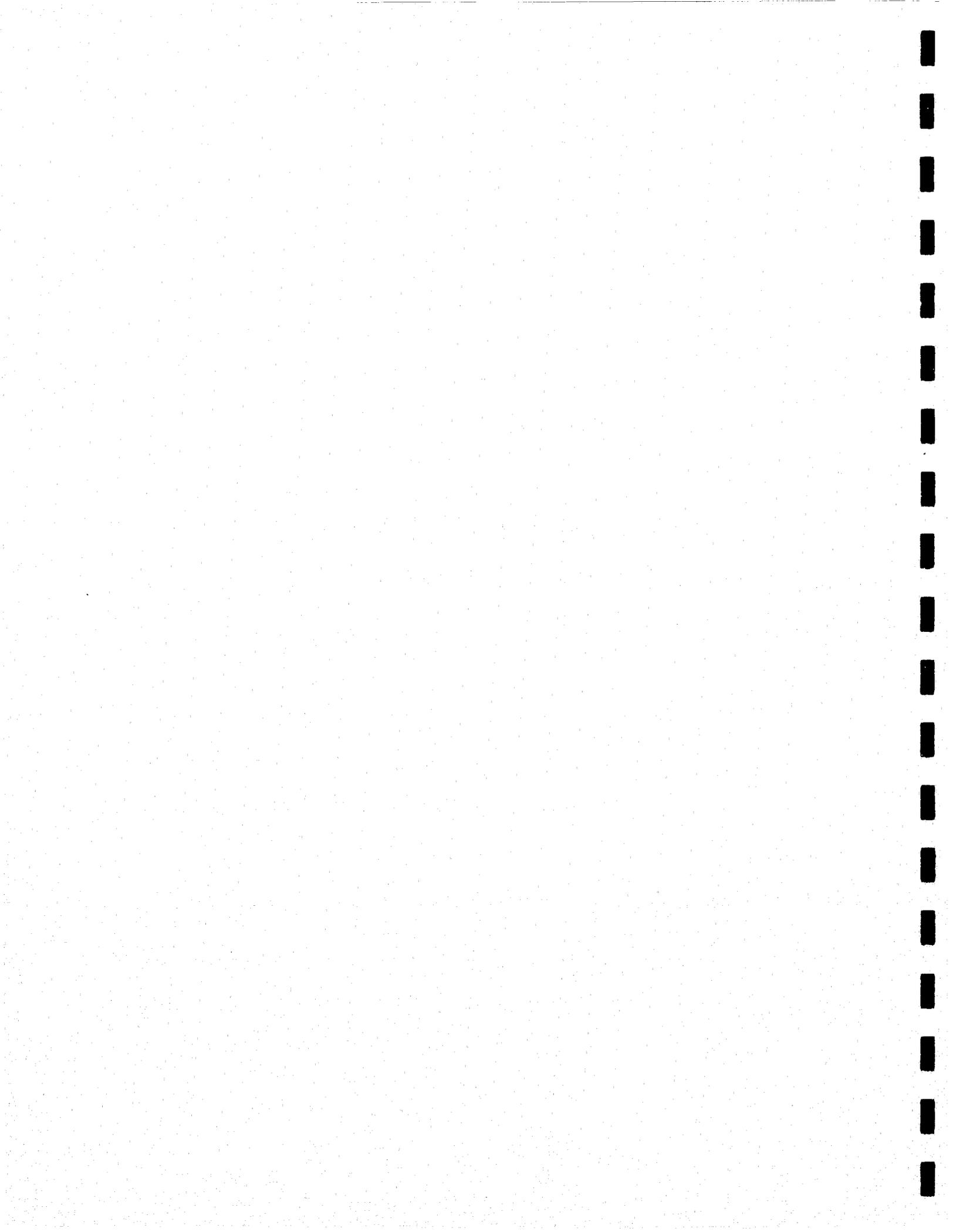
PARKING

AUTO SERVICE

STREET

COURT HOUSE

HYPOTHETICAL PROPOSED COMMERCIAL MALL



CRIME PREVENTION BULLETIN #3

SUBJECT: ANALYSIS OF A PROPOSED RESIDENTIAL SUBDIVISION TO IDENTIFY POTENTIAL  
CRIME PREVENTION POSSIBILITIES

Introduction

The law enforcement and planning agencies should recommend that the jurisdiction enact an ordinance which delineates minimum security standards for all residential buildings. The enforcement of this ordinance should be the primary responsibility of the department enforcing the building code. In addition, guidelines for street patterns and placement of dwellings on their lot should be established.

It is anticipated, however, that the ordinance will not be able to cover every aspect of each residential development, thus, it will be necessary for the law enforcement officials to meet either with the developer and with the jurisdiction's planners to tailor their security needs to the particular subdivision under consideration. These factors are also applicable in cases of residential renewal areas.

What To Look For

The following list considers six major components of a residential development in which design considerations can play an important part in crime prevention. For each component, a list of questions is presented.

I. Street Patterns and Lot Plan

Do street patterns and lot plans maximize social deterrents to crime by enhancing intra-neighbor observation and recognition?

Are houses clustered into small neighborhoods which are removed from thoroughways, thus making strangers in the neighborhood more obvious?

Are the houses situated on the lots in a manner to facilitate patrol observation?

Is the entire clustered neighborhood (at least the residents) located within one jurisdiction to reduce confusion in police responses?

Are the cul-de-sacs relatively short so not to hinder patrol and to increase intra-neighbor observation? Are they wide

enough to permit a patrol car to turn around? Do the backs of the cul-de-sacs border on a central open neighborhood park area as opposed to a possible escape route such as a thoroughfare or another cul-de-sac?

Are the streets wide enough to permit clear observation?  
Are they sufficiently straight to provide for adequate patrol observation?

Are the major through streets sufficient in number and laid out in a manner to facilitate the police when responding to an emergency? Are their patterns and names systemized to facilitate emergency responses?

Are the streets well lighted?

## II. Parking

Have provisions been made for sufficient off-street parking so the streets will be clear of vehicles at night?

Have enclosed garages been planned instead of open carports?

Are the garages situated so they cannot be observed easily from the street?

## III. Structural

Could all the entrances be clearly visible to patrols or neighbors if the resident chose not to obscure them?

Is there adequate lighting at the entrances?

Are unobservable windows kept to a minimum? Are the unobservable windows small enough to prevent an average sized person from gaining access through them?

Are the residences clearly identified by house numbers and are addresses visual at all times?

## IV. Walkways

Are the walkways situated to generate enough traffic to provide a deterrent by virtue of the number of people using the walkway at all times?

Are they routed past areas where the public is likely to congregate?

Are they wide enough to permit clear observation?

Are they sufficiently straight to provide adequate observation?

If they will be utilized at night, are they adequately lighted?

Will the walkways be landscaped in a manner so as to provide minimum concealment for would-be attackers?

Are there access roads nearby so that emergency vehicles can get relatively close to any point on the walkways?

Are there any unnecessary indentations which would provide hiding places for would-be assailants?

V. Landscaping

Is the landscaping of the type and situated in locations so as to maximize observation while providing the desired degree of aesthetics?

Is lighting used in the landscaping both for security and aesthetics?

Are walls planned only where they would create a desirable buffer? Then, are they sufficiently high to deter circumvention? Are they situated in a manner so as not to provide concealment for a would-be attacker? Are they set back from sidewalks and walkways? Would it be feasible to use a chain link fence instead?

VI. Miscellaneous

In those neighborhoods which are clustered, has the developer provided recreational facilities or other community facilities which would facilitate neighbors becoming acquainted with one another?

If the neighborhood is located adjacent to a commercial zone, a school, etc., is there some buffer between them such as a large expanse of park land or high wall?

When an area is being developed at one time, has the developer included provisions for intrusion alarm systems?



CRIME PREVENTION BULLETIN #4

SUBJECT: ANALYSIS OF A PROPOSED APARTMENT COMPLEX TO IDENTIFY POTENTIAL  
CRIME PREVENTION POSSIBILITIES

Introduction

This CPB covers a variety of types of apartments from the small building with only a few units to the large complex encompassing several apartment buildings. This includes the multi-storied apartments as well as the sprawling garden variety.

What To Look For

I. Street Patterns and Lot Plans

Have large complexes of apartments eliminated all but essential thoroughfares through the apartment areas without reducing fire suppression capabilities?

In the large apartment complexes, are the apartment buildings set back sufficiently from the perimeter streets to deter the casual passerby from entering the complex area?

Do street patterns and lot plans maximize social deterrents to crime by enhancing neighborhood observation and recognition?

Are the apartments situated on the lots to facilitate patrol observation and allow patrol access to all sides of the apartments?

Are the apartments arranged on the site with adequate access streets to enable the police to respond quickly in an emergency?

Are the streets well lighted?

II. Parking

Is an off-street garage parking area available for tenants and some spaces for visitors to reduce on-street parking to a minimum?

Is the tenant off-street parking area in a secure place, with an access control device which limits entrance and

exit from the area to authorized tenants only?

Is this well lighted?

Are technological devices needed in the parking area, such as CCTV and sound devices, to provide adequate security?

Is the parking area situated in a manner that it does not provide access to any of the apartments other than for authorized persons?

### III. Structural

Are all the entrances clearly visible to patrols or neighbors?

Are the number of entrances at a minimum and, where possible, require passage through some central point such as the lobby where a clerk could be on duty?

Can entrances to the building from the parking structure be tightly secured?

Is there adequate lighting at the entrances?

Are unobservable windows kept to a minimum, especially on the first floor?

Are the stairwells open and able to be observed at all times from public areas?

Could the elevator use a shaft that would be observable from a public area -- such as a glass shaft on the outside of the building?

Is the elevator equipped with a security alarm button that would sound a silent alarm and automatically send the elevator to the first floor?

For the smaller apartment building, do the apartments open onto a central court and face one another without unduly increasing the noise factor?

Are the number of units per building relatively limited to facilitate a sense of community and mutual observations?

Are storage areas outside of the tenants' apartments required? If so, are they located in a secure area, i.e. somewhere remote and not visible from an adjacent street?

Does each apartment have their own storage area with access limited to their use only? Are storage areas secure?

Is there need for a service entrance? Is it located to provide selective access and not to create an entrance way for criminals into the complex?

#### IV. Walkways

Are the walkways situated to generate enough traffic to provide a deterrent by virtue of the number of people using or observing the walkway at all times?

Are they routed past areas where the public is likely to congregate?

Are they wide enough to permit clear observation?

Are they sufficiently straight to provide adequate observation?

If they will be utilized at night, are they adequately lighted?

Have the walkways been landscaped in a manner as to provide minimum concealment for would-be attackers?

Are there access roads nearby so that emergency vehicles can get relatively close to any point on the walkways?

Are there any unnecessary indentations which would provide hiding places for would-be assailants?

#### V. Landscaping

Is the landscaping of the type and situated in locations so as to maximize observation while providing the desired degree of aesthetics?

Is lighting used in the landscaping both for security and aesthetics?

Are walls planned only where they would create a desirable buffer? Then are they sufficiently high to deter circumvention? Are they situated in a manner so as not to provide concealment for

a would-be attacker? Are they set back from sidewalks and walkways? Would it be feasible to use a chain link fence instead?

VI. Miscellaneous

In those apartments which are clustered, has the developer provided recreational facilities or other community facilities which would facilitate neighbors becoming acquainted with one another? Are these areas located in places where they will receive a maximum amount of observation from the tenants?

If the apartments are located adjacent to a commercial zone, a school, etc., is there some buffer between them such as a large expanse of park land or high wall?

Has the developer included provisions for intrusion alarm systems?

## CRIME PREVENTION BULLETIN #5

SUBJECT: ANALYSIS OF A PROPOSED PUBLIC BUILDING TO IDENTIFY POTENTIAL  
CRIME PREVENTION POSSIBILITIES

### Introduction

Public buildings range widely in size, function and types of occupancies. No one set of considerations for crime prevention will exactly fit the entire range. Law enforcement and physical planning personnel reviewing plans for proposed public buildings should have a detailed understanding of the activities to be housed in the building to insure that recommendations on crime prevention possibilities are truly functional. For example, if prisoners are to be transported in and out of the building, special precautions may be required in prisoner movement systems. The changing demands on governmental services dictate that new, multi-purpose public buildings should have a great deal of planning flexibility built into them to permit adaptation to future changes. This adaptability need not be compromised for crime prevention purposes if basic principles, e.g. limited accesses and zone security, are introduced in the early planning processes.

### What To Look For

The following list includes major factors which should be considered in the planning and design of a public building, to prevent future crimes in or around the building.

#### I. Orientation on the Site

If a single building, are there sufficient open areas on all sides of the building to allow for easy movement and surveillance around and from within the building?

If more than one building on the site, is there suitable open space between buildings in addition to that around the outside perimeter of all the buildings?

Is it possible to locate building(s) on the site to allow for maximum observation of all sides from adjacent street(s)?

Has obscurity or partial obscurity been avoided by proper planning of site features such as trees, mounds, slopes, walls, monuments, etc.?

Is there unobstructed observation of and access to entrances from adjacent streets?

## II. Building Design

Are offsets in building configuration kept to a minimum, in order to avoid areas obscured from surveillance?

Are the number of entrances to the building kept to a bare minimum consistent with efficiency, public convenience, code regulations and other factors?

Is there an unobstructed view of the entrances, as well as access from adjacent street(s)?

If building must be in operation during off hours, are unlocked entrance doors restricted to one only?

Are the latest in building security control devices being used, wherever practicality and economics permit, e.g. T.V. surveillance of corridors, electronic locking devices, electronic warning devices, central security control station, etc.?

Have recesses, offsets, and exposed columns in or off interior public areas been restricted to a minimum?

Can public corridors be limited to one per floor? Have offsets and turns been kept to a minimum?

Are there suitable alarms or detection devices in stairwells wherever such stairs must remain open and are otherwise non-secure or patrollable without use of extra manpower?

Are windows of fixed glass (non-openable)? Can windows be eliminated entirely on lower floors? If not, is glass shatterproof? Has the amount of window glass been kept to a minimum (that is, have floor to ceiling windows been eliminated or used sparingly)?

If prisoner traffic in the building is more than moderate, are there special security entrances, separate security elevators, and, possibly, special corridors?

Have closets and special compartments which open onto public corridors been kept to a minimum, and is there a locking system on all such doors which are necessary?

Are heavy public contact functions located on the lower floors with limited public access to the remainder of the building?

Were practical and possible, have escalators been substituted for elevators for public use?

Have the complaint/information and payment counters been located on the ground or first floor close to the public entrance? Are there suitable open areas around such counters for easy surveillance? Where cash is handled, is there a security system installation?

Have sensitive functions and equipment, such as communications, computer operations, telephone equipment, police property and evidence, been located in areas that can be easily restricted to authorized personnel only?

Is the lighting throughout the building adequate for sound surveillance and security practices?

### III. Yard and Parking Areas

Are yards and parking areas sufficiently illuminated at night, wherever economically feasible, to increase patrol observation effectiveness?

Is the landscaping planned so that it does not provide places of concealment for would-be vandals?

Are emergency and police patrol vehicles in an enclosed, securable structure and inaccessible to the public?

Does the parking system permit ease of surveillance of autos and areaways? Are night-time parking areas illuminated adequately?

Is ingress and egress from the parking areas effectively controlled and patrolled?

Are there suitable alarm or detection devices in the stairwells or elevators of parking structures?



## CRIME PREVENTION BULLETIN #6

SUBJECT: ANALYSIS OF A PROPOSED SCHOOL PLAN TO IDENTIFY POTENTIAL CRIME PREVENTION POSSIBILITIES

### Introduction

The security and crime prevention problems of schools vary considerably, depending on a wide variety of factors. These factors include the location of the school, the history of vandalism and other crimes in the area, the orientation of the school on the site, the availability and effectiveness of patrol by the school's security force, local law enforcement agencies, and others. These factors should be considered at the earliest possible time in the planning and design of a new school.

The questions presented in the following sections seek to illustrate how these factors and others can be considered in the planning and design stages. It is recognized that not all of these questions are applicable to every proposed school and that certain restrictions, e.g. economic, aesthetic, and climatic, may need to outweigh the crime prevention provisions.

### What To Look For

The following list considers four major components of a school plan in which planning and design considerations can provide significant crime prevention possibilities. A list of questions is presented for each component. Additional experience and research in these areas will, hopefully, produce specific guidelines and standards for future planning.

#### I. Site

Is the proposed site in a location which will permit close coordination of patrol of the school with regular patrol of the general area? Is the location readily accessible if additional police units are needed in emergencies?

Is the site in a location where large turn-outs for after-school activities, e.g. night football games, could create vandalism and other crime problems for surrounding property owners?

Can all areas of the site be observed from regular patrol cars during off-school hours to detect unauthorized activities?

Are there off-site areas where crowds can congregate but police units cannot readily patrol?

## II. Structural

Is it possible to have a multi-storied structure? If so, can windows on the first level be eliminated, reduced in number, or made of vandal-proof materials?

Can walkway covers be eliminated or designed to avoid their use in gaining access to the roof of the school? Are there other structural or landscaping features which could afford access to the roof?

Can functional areas be grouped together so that they can be secured when not in use as, for example, isolating recreational areas and classrooms from administrative areas when the former are used for after-school activities?

Do electrical plans provide for intrusion alarms in the areas of high crime incidence, e.g. offices, cafeterias, band rooms, shops and typing and office machine classrooms?

If the school is to be one building, can it be planned and designed so that entry to one area does not permit ready access to all areas during off-school hours?

Are entrances readily observable by patrol units? Can entrances be minimized? Are they adequately lighted?

## III. Parking

Can access to the parking areas be controlled so that only authorized vehicles can enter? Can parking areas be secured when not in use?

Can sufficient parking be provided on or immediately adjacent to the proposed school site so that adjoining property owners will not be burdened and so that crimes against the parked vehicles can be minimized through more concentrated patrol and increased lighting?

Can parking lots be lighted, if they are to be used with some frequency for night-time parking?

Does the proposed landscaping of the parking area obscure observation?

Can police units easily patrol all sides of the parking areas? Can parking areas be depressed for more effective observations without creating undue design problems and increased site development costs?

Can there be designated areas for parking bicycles? Are the bicycle racks in readily observable areas? Are racks immovable?

IV. Grounds

Can chain link fencing be used instead of solid walls?

Does the landscape plan increase the observability of most areas of the school property? Will the specified landscaping materials provide hiding places for would-be attackers?

Is adequate lighting available to permit observation by patrol units during non-school hours?

V. Miscellaneous

If dormitories are to be provided, are they situated away from the academic areas so that unauthorized activities around the academic areas can be more readily observed during non-school hours? Are the dormitories adjacent to permit observation of criminal acts? Have entrances been minimized? Is adequate security provided for property storage areas? (For additional questions, see CPB on apartment complexes.)



## CRIME PREVENTION BULLETIN #7

SUBJECT: ANALYSIS OF A PROPOSED PUBLIC PARK OR OPEN SPACE TO IDENTIFY POTENTIAL CRIME PREVENTION POSSIBILITIES

### Introduction

This CPB covers the factors to consider in the planning and design of a wide variety of public park areas and open spaces ranging from the small, compact park in a commercial area through the vast regional parks. The park layouts may range from highly structured and very formalized usages, e.g. tennis courts, baseball diamonds, shuffleboard courts, etc. to less formal areas for picnics, nature trails and just open expanses.

The crime potential for these areas can range across the entire spectrum of anti-social behavior, from petty vandalism through grievous assaults and mass disturbances. Physical planners and law enforcement personnel should be involved in the early stages of planning and design to introduce suggestions for physical features which might serve to prevent the commission of crimes and/or increase the ability of law enforcement agencies to respond in the event of a crime.

### What To Look For

The following list considers six major components of a public park or open space in which physical features might make a significant contribution to the prevention or deterrence of crime. The questions are designed to illuminate the crime prevention possibilities.

#### I. Street Patterns and Park Layout

Are adjoining streets planned to permit observation of park areas by regular police units or special park patrols?

Can an access street be provided through the park without destroying the character of the park? If full access for all types of vehicular traffic would be destructive, is it possible to provide for occasional patrol and emergency vehicles?

Does the proposed park require the closing of a major street with potential problems for other patrol activities?

Can the high volume park activities be located close to the patrol observation points?

Can buildings be located close to access roads to permit maximum observation?

Can access roads be provided to reservoirs and similar "targets" to permit maximum patrol observations?

Can access, or patrol roads, be laid out to permit efficient patrol and maximum observation of major park activities, buildings, equipment storage areas, reservoirs and other possible crime "targets"?

## II. Parking

Can off-street parking be situated so that it can be readily observed from patrol and so that it does not obscure patrol observation of other park areas?

Is parking provided in a secure, well-lighted area? Is the parking for night activities located adjacent to the activity centers to reduce isolation? Is there adequate lighting of these areas?

Are parking stalls laid out to improve, not hinder, patrol observations?

## III. Buildings

Are buildings located near regularly patrolled streets and in areas of high activity? Are the number of entrances held to a minimum? Are entrances observable from patrol points? Are there means of gaining access to the roof? Can windows be reduced to a minimum without impairing park-like qualities? Are buildings well lighted?

Are restrooms located on the perimeter of the park or adjacent to patrolled streets? Can entrances be seen from the street? Are entrances unobstructed without blindwalls and small access ways? Are restrooms well lighted inside and out? Are lighting fixtures tamper-proof?

## IV. Storage Areas

Are storage areas located on perimeters and close to patrolled roads to permit maximum observation by regular patrol units?

Is parking provided for equipment away from buildings and fueling facilities so that unauthorized vehicles can be readily observed by patrol units?

Is area well lighted?

Does landscaping permit places of concealment from patrol units?

Can chain link fencing be used instead of block walls?

V. Walkways

Are they wide enough to permit clear observation?

Are they adequately lighted if to be used at night?

Does adjacent landscaping provide concealment opportunities?

Can walkways be routed through areas where there are usually some people to reduce isolation?

VI. Recreational Equipment

Can recreational equipment be located close to other activity centers to reduce isolation?

Can it be located close to patrolled roads?

Can it be secured at night?

Can the area be lighted at night?



## CRIME PREVENTION BULLETIN #8

SUBJECT: ANALYSIS OF PROPOSED OPENING OR CLOSING OF A STREET OR ALLEY TO IDENTIFY POTENTIAL CRIME PREVENTION POSSIBILITIES

### Introduction

The opening or closing of a street or alley could have a substantial effect on police patrol and beat configurations as well as on means of preventing crime. The participation of law enforcement personnel in the early planning and decision stages may help to reduce or eliminate some serious future operational problems. Their participation may help to eliminate changes in physical characteristics which could make the commission of crimes much easier.

### What To Look For

The following list of questions are designed to illuminate factors which should be considered in the analysis of a proposed change in a street or alley.

#### I. Opening of a Street or Alley

Will the opening provide a would-be criminal with easier access to residences, stores, industries or other targets?

Does the proposed alignment of the street or alley provide for unobstructed patrol observation?

Will it increase or decrease traffic congestion at certain times, thereby affecting police response times?

Will the street opening provide additional off-street parking areas with greater opportunities for car thefts, etc.?

Is adequate lighting provided?

#### II. Closing of a Street or Alley

Will the closing make patrol less effective because it reduces the patrol observation of certain high-risk buildings or areas?

Does the closing produce a dead-end area increasing patrol difficulties and providing concealment place? Will it increase response time to certain areas?

Does the closing produce a "pocket" which will be difficult to police?

What will replace the vacated street or alley? Will the intended use create additional policing problems? (See other CPB's for questions on particular uses.)

## CRIME PREVENTION BULLETIN #9

SUBJECT: ANALYSIS OF A PROPOSED TRAILER/MOBILE HOME PARK TO IDENTIFY POTENTIAL CRIME PREVENTION POSSIBILITIES

### Introduction

This CPB presents a series of questions to be asked about a proposed trailer/mobile home park development. The intent of these questions is to illuminate potential crime problems and to suggest ways to avoid them at the planning and design stages.

Although these developments have many common physical characteristics, e.g. "pads" for individual units and certain centralized services, they vary widely as to the value of individual units, monthly rentals, density, landscaping treatments, provision of security forces and occupancy. The physical planning for crime prevention should capitalize on two important facets: the relatively high density which increases the opportunity to observe unlawful activities; and, the high degree of community interaction which develops in these parks.

The following questions seek to illustrate how these factors and others can be considered in the planning and design stages.

### What To Look For

The following list considers four major components of a mobile home park in which design considerations can play an important part in crime prevention. For each component a list of questions is presented.

#### I. Street Patterns and Lot Plans

Are street patterns and lot plans designed to permit maximum observation by patrol (private or public)?

Is sufficient side yard clearance provided for unobstructed vision for patrol?

Is access to the area limited to one or two roads which pass an office or check point?

#### II. Parking

Is sufficient off-street parking provided so that streets may be cleared at night?

III. Storage

Has secure, central storage place been provided to reduce the valuables which have to be stored within the mobile homes or in adjoining sheds?

Has a separate, secure area been provided for the storage of smaller trailers and boats? Will a chain link fence be provided? Will area be lighted? Does street pattern permit easy patrol observation from all sides?

IV. Landscaping

Does landscaping (walls and shrubs) reduce patrol visibility or visibility from one section to another?

## CRIME PREVENTION BULLETIN #10

SUBJECT: ANALYSIS OF A PROPOSED SECOND HOME DEVELOPMENT (RECREATIONAL COMMUNITY) TO IDENTIFY POTENTIAL CRIME PREVENTION POSSIBILITIES

### Introduction

Because these areas are likely to be entirely or partially abandoned during portions of the year, they present a serious problem to the law enforcement agency having jurisdiction over the area. Most of these developments are now being planned as an entire community. The consideration of crime prevention possibilities in the early planning and design stages can serve to reduce future crime problems.

Procedures should be established to encourage or require all developers to check proposed developments with the law enforcement agency in the planning processes.

Some physical security requirements may be standardized and enacted into law, but substantial coordination will be required to accommodate the security requirements in each development. Much of the security requirements will depend upon the site, the type of recreation available, the anticipated use of the residences, and the type of population attracted to this type of development.

### What To Look For

The following list considers four major components of a second home development in which design considerations can play an important part in crime prevention. For each component a list of questions is presented.

#### I. Street Patterns and Lot Plan

Unless contrary to fire regulations, can egress and ingress be limited to one road? Can access be controlled at a security gate? If not, do the access road(s) pass some commercial or populated area where unauthorized persons entering the area would be observed? Can this access road(s) be closed during off seasons?

Can the high value items of recreational equipment, such as boats, ski centers, etc., be clustered in areas which will be occupied by some inhabitants year round?

Can the residences be clustered in a manner which would aid in their security, i.e. unoccupied residences might be totally sealed off or comingled with those residences occupied year round?

II. Parking

Does each resident have a secure vehicle and recreational equipment parking area? Is it fenced, lockable, and lighted, if necessary?

Do the recreational areas of the development have secure parking, especially for persons leaving their vehicles overnight? Can the yard be secured with locks? Is it in an area which can easily be patrolled, etc.?

III. Storage Areas

Is there adequate secure storage areas adjacent to the docks or other recreational areas where owners can store valuables while engaged in recreational activities?

Does each resident have a secure bulk storage area adjacent to his residence?

Can the security of commercial storage areas be improved by improving patrol observation, fencing or other means?

IV. Walkways

If the walkway will not generate enough traffic to provide the safety of numbers for the walker, can all shrubbery and other plants providing concealment be eliminated?

Has night lighting been provided?

## CRIME PREVENTION BULLETIN #11

SUBJECT: ANALYSIS OF A PROPOSED COMMERCIAL RECREATION DEVELOPMENT TO IDENTIFY POTENTIAL CRIME PREVENTION POSSIBILITIES

### Introduction

Commercial recreation developments can range widely in size, function, the number and types of persons attending and the crime problems which may be created. Law enforcement and physical planning personnel reviewing plans for the proposed developments should have a good understanding of these factors in addition to thorough knowledge of the surrounding area. Large developments will have substantial effects on traffic patterns within a wide radius and, if reasonable parking is not provided on-site, the pedestrian traffic and crimes may be spread over an area which is extremely difficult to patrol. While many problems will be operational in nature, as in ticket scalping and purse-snatching, the application of some basic concepts of crime prevention in the early planning and design stages may serve to reduce law enforcement problems in the future.

### What To Look For

The following list includes major factors which should be considered in the planning and design of commercial recreation development.

#### I. Location

Is the proposed site in a location which will permit a close coordination of the regular patrol of the area with the additional patrol that might be required due to the new recreational development? Is the location readily accessible if additional police units are needed in emergencies?

Can buffers of any type be created to isolate the recreation development from the adjoining property owners? For example, will the location force a great many vehicles to be parked in adjoining areas, thereby increasing the exposure to crimes against cars and adjoining properties?

Are there off-site areas where crowds can congregate but police units cannot readily patrol?

## II. Structural

Are entrances and exits located so they can be observed from regular patrol during off-hours?

Can cashier booths be grouped to prevent isolation of a single booth?

Can windows on the first level be eliminated, reduced in number, or made of vandal-proof materials?

Have facilities been provided for a police sub-station?

Can storage areas be adequately secured?

Can stairwells, elevators and pedestrian ways in the building be opened to observation through use of transparent, but vandal-proof, materials?

## III. Parking

Is sufficient parking provided so that adjoining areas will not be burdened with on-street parking? If there is no alternative to on-street parking in the adjoining areas, can restrictions be imposed which will increase the ability of police units to patrol the area?

Is adequate lighting specified for the parking lots?

Are stalls designed to permit maximum patrol observation?

Can patrol units easily patrol all sides and through the lanes of the parking areas?

Can attendant stations be situated to provide maximum observation of parking areas?

If parking structures are to be provided, are they well lighted? Are attendant stations located to permit maximum observation of the structure? Do elevators off-load within sight of the parking attendants?

Can parking for late workers be provided near activity centers to avoid isolation?

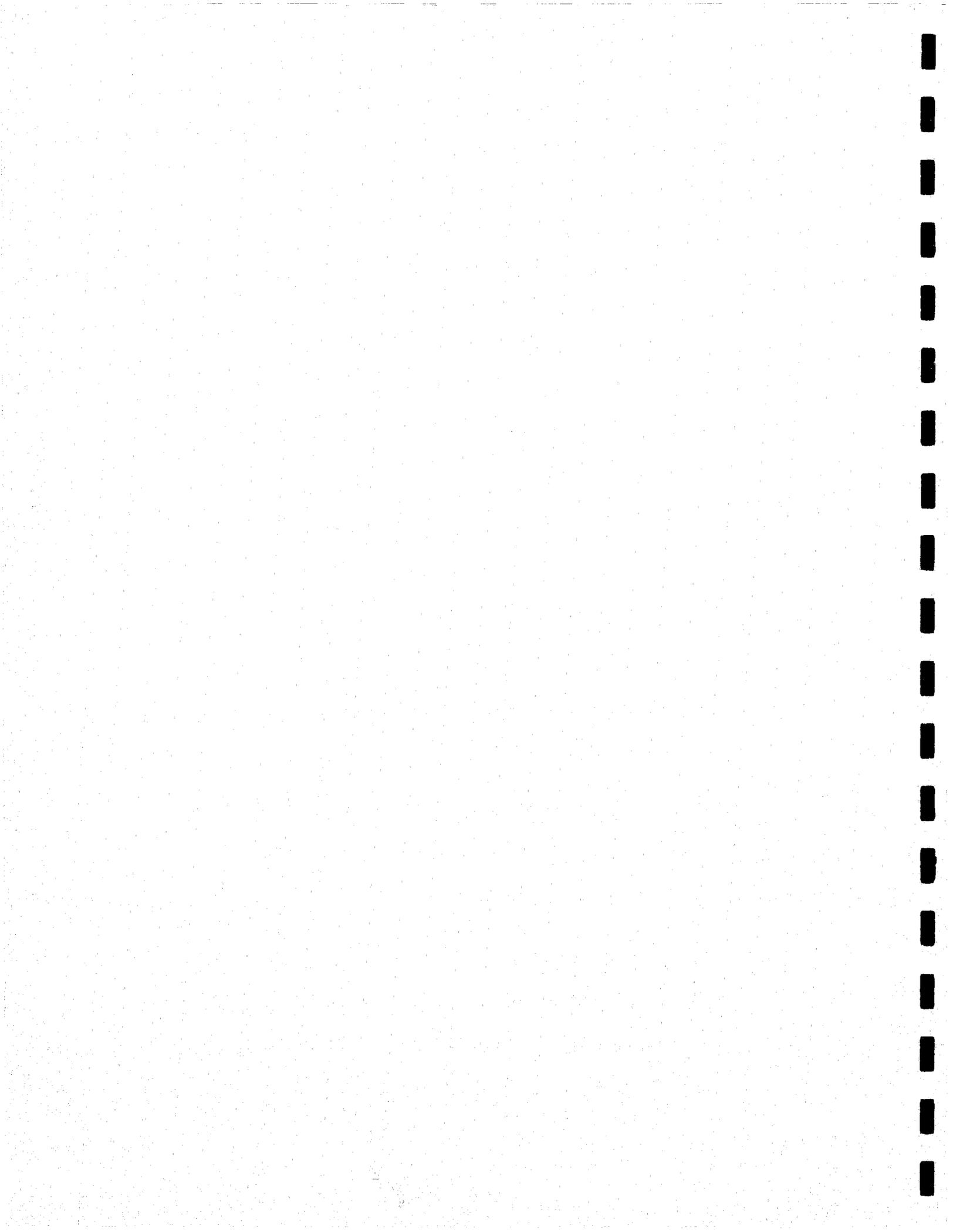
Does landscaping in the parking areas provide places of concealment?

IV. Walkways

Have walkways been designed to increase observability?  
Are they routed so as to minimize areas of very limited  
use and pockets of isolation?

Does landscaping of walkways provide concealment areas?

Can lighting be provided?



CRIME PREVENTION BULLETIN #12

SUBJECT: PLANNING AND DESIGN OVERSIGHTS

This CPB is aimed at identifying planning and design oversights which created crime prevention problems for law enforcement. The CPB defines a mean of accumulating and disseminating this type of information to physical planners and law enforcement officials so that these oversights will not be replicated.

Oversights

Only six inches of side clearance was provided for patrol or emergency vehicles in the accessway to a new mall.

Tree plantings in a new mall obscure observation from helicopter patrol.

A block wall, installed to screen the parking lot from the unsightly rear entrances of a line of stores, presents a difficult patrol observation problem and a place of concealment for would-be burglars.

Parking spaces for vehicles next to an industrial building presents a difficult patrol observation problem at night.

Locating the gas pumps in an unlighted and obscure corner of a large commercial warehouse complex presents a difficult patrol observation problem.

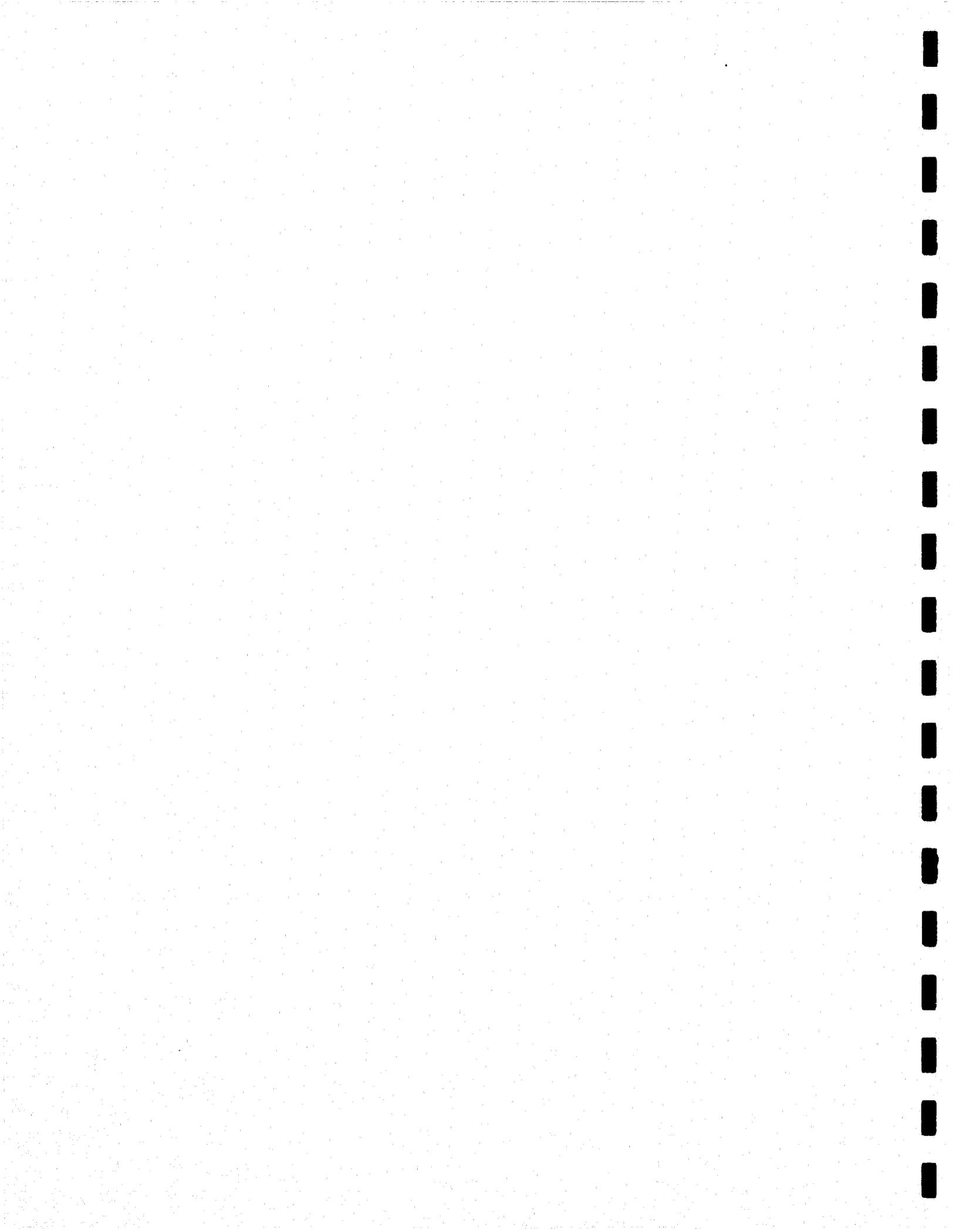
Locating the pallet storage area next to the industrial building presented easy access to the roof.

A flagpole next to a building presented easy access to the roof.

\* NOTICE \*

If you know of a planning or design oversight which should be brought to the attention of other physical planners and law enforcement officials, please write it up and mail it to:

Director, Criminal Justice Planning  
Southern California Association of Governments  
Suite 400  
1111 West Sixth Street  
Los Angeles, California 90017



## CRIME PREVENTION BULLETIN #14

SUBJECT: ISSUANCE OF A BUILDING PERMIT FOR A COMMERCIAL STRUCTURE

### Introduction

This CPB is aimed at providing specific information to those who will be enforcing a building code which has been amended to include anti-intrusion devices. It also includes a discussion of the types of information which should be included in informal advisory services to be offered to builders and owners. A case study on the steps to be taken in the amendment process and a sample code section may be found in another CPB.

This CPB is divided into three main sections. Following this introduction, there is a discussion of the steps in the formal building permit and inspection process. The next section provides an elaboration of the sample building codes by describing the provisions for doors, locks and windows. The last section includes a discussion of the informal advisory services which law enforcement or building officials might provide to prospective owners or builders as a means of crime prevention. These services may extend considerations beyond those provided in the normal building code enforcement process.

In adopting ordinances designed to make a building more secure from an unwanted intruder, the legislative bodies expand the more traditional role of the building code, i.e. the safety of the occupants from fire or structural deficiencies to provide occupant safety against the unlawful intruder and to protect the occupant's goods.

### Steps in the Building Permit Process

There are three main steps in the process: the review of plans and issuance of permit; the appeals and decisions on alternative devices; and inspections during construction and upon completion. It is to be noted that these steps all follow the planning agency's approval, as required, on such factors as use, site and aesthetics.

The first stage is the application for the permit and checking of plans. The builder, architect or developer formally makes application for the building permit, pays the required fees, and submits the necessary plans. The plans are checked within the building safety division and then referred to other appropriate agencies for approval (fire department, health department, etc.). In actual practice, the building safety division checks the plans for fire department or health department regulations, and approval by these departments is handled routinely except for unusual conditions. This CPB assumes that the building division will also check the plans for the anti-intrusion devices.

The second stage makes provision for appeal and the possibility of alternative security devices. Because of the limited experience in this general field, as well as the multitude of ways of accomplishing the objective, it is important to provide the architect, builder or developer with the means of gaining approval of alternative security methods. These are primarily in the area of substitution as, for example, in permitting the use of alternative types of locks.

The third stage is the inspection stage to insure that the requirements of the building code as noted on the plans and the permit are met.

### What to Look for in Plan Checking a Commercial Structure

The following discussion is intended to provide some elaboration of the sample codes in the Appendix, as they apply to Commercial Structures. The provisions of the sample codes may be different from a code adopted in another jurisdiction; the discussion is intended to illustrate what things to look for and why they are important.

#### I. Exterior Doors

Doors ranked second only to show windows as the most commonly used point of entry for burglar attempts in 1969 (1969 Field Service Record, Bulletin #30, Underwriters' Laboratory). The construction of existing doors and their locking mechanisms is often so inadequate as to allow easy access to an intruder. While many doors are protected by alarm detection devices, these systems can provide a false sense of security. Of 968 attempted burglaries in 1969 where an alarm was sounded by a door mounted sensory device, only 289 people were apprehended - about 30%. These figures consider only those establishments equipped with central station alarms; the rate was only about 16% for those establishments having local alarms. (UL Field Service Record, 1969)

#### A. Swinging Doors

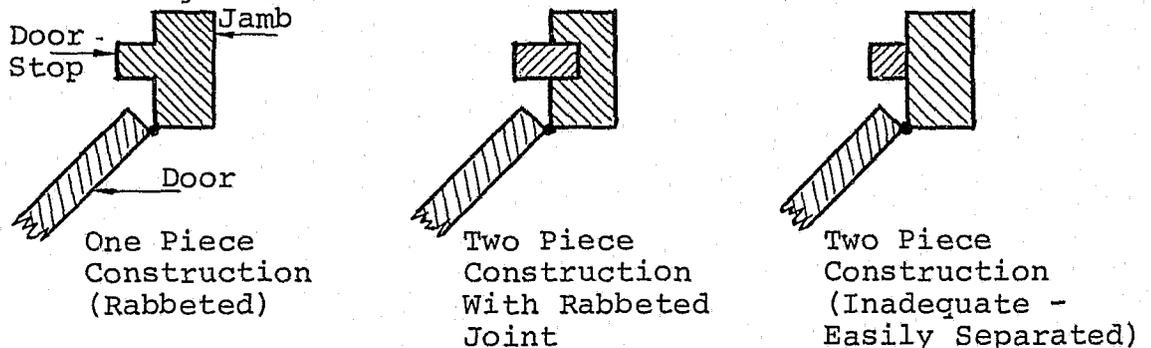
##### 1. Type of Construction

Wood Doors. Wood doors which are too thin or of hollow core construction can be easily kicked in allowing the intruder to unlatch the door. In some cases, a large enough hole can be quickly made to allow passage through the hole itself without opening the door and tripping alarm devices. All three ordinances considered require that doors less than 1-3/8" thick, or not of solid core construction, be protected with metal sheathing of at least 16 gauge in the interior. (The requirements in Oakland for residential construction are more stringent: doors must be solid core and at least 1-3/4 inch thick.

Doors with Glass Panels. Glass, of course, is very easily cut or broken. A small section can be cut from the glass, allowing access to the door lock without breaking the foils used for burglar alarms. The city of Oakland and Los Angeles County require burglar resistant glass or glass covered with iron bars 1/2" round or 1" x 1/4" plat steel or iron or steel grills 1/8" thick of 2" mesh on the inside of the glass. The city of Monterey Park makes the same requirement for rear, side, basement and roof doors but exempts front doors, probably on the supposition that unusual activities at the front door can be easily spotted by passing patrol cars or civilians.

2. Construction of Door Jamb. Even with adequate locks, a solidly built door can be easily opened if the door jamb is not properly constructed and protected.

The Oakland ordinance requires a protective plate or other strengthening device at the point where the lock engages the door frame. All ordinances considered require that inwardly swinging doors be equipped with door stops that are either the same piece as the rest of the jamb or that are set in a groove in the jamb itself. (See illustration below.)



3. Hinges. All codes considered require non-removable hinge pins on those doors swinging to the exterior. Without these, the door can be easily and quietly removed.
4. Locks. The Oakland Commercial Burglary Ordinance requires all doors to be equipped with either a double cylinder deadbolt (locks with key inside and outside) or a single cylinder deadbolt without a turnpiece (locks from inside or outside with key only). The Los Angeles County ordinance allows these kinds of locks only in those cases where life safety portions of the code do not require doors which can be opened from the inside without a key. Otherwise, the locks must have a turnpiece on the interior side.

While cylinder locks, which are actuated only by a key, offer maximum amount of security, in case of fire or other emergency they can inhibit rapid exit.

Monterey Park prohibits key-only locks on all front doors except those with glass panels not of tempered glass, in which case key-only locks are required. An intruder can easily break the glass panel, reach inside and release the locking mechanism unless it is key operated.

Oakland and Los Angeles County both require that the cylinder deadbolt have a minimum throw of one inch. Monterey Park allows the substitution of a dead locking latch for the cylinder deadbolt. This type of latch prevents "slipping" the lock with a plastic card, but is more susceptible to prying and jimmying.

Los Angeles County makes the further requirement that each deadbolt contain hardened inserts to prevent cutting. In Los Angeles County and Oakland, cylinder guards are also required for all cylinder locks protruding from the surface of the door in order to inhibit wrenching or pulling of the cylinder. Both ordinances also suggest alternative locks (e.g. two deadbolts embedding a half-inch can be substituted for a deadbolt with a one-inch throw).

#### B. Double Swinging Doors

All three codes considered require the active leaf to be secured with the same type of locks required for single swinging doors. The Los Angeles County ordinance also requires equivalent deadbolts to be installed on the inactive leaf, while Monterey Park and Oakland ordinances require it to be equipped with flush bolts at head and foot. (Oakland specifies that these bolts must have a minimum throw of 5/8-inch.)

#### C. Sliding Glass Doors

Because of poor construction, sliding glass doors can often be easily lifted from their tracks, disengaging the lock or allowing the door itself to be lifted from its frame. The ordinances adopted by the cities of Monterey Park and Oakland both require these doors to be protected in the same manner as swinging doors. Los Angeles County requires the same kind of locks on this type of door as on swinging doors, but also demands that the following performance test be met:

With the door locked and the window lifted to its highest point in the frame, three hundred pounds of pressure is to be applied in the opening direction of the door. At the same time, 150 pounds of pressure is to be applied perpendicular to the panel, alternately

in either direction. The panel must remain intact and engaged.

D. Overhead Doors (Swinging, Sliding, or Accordion Type)

1. Locks. This type of door is often an easy target for an intruder. The construction of the door itself is usually massive enough to resist easy entry by a burglar, but locking devices used are often inadequate and easily violated.

Consequently, none of the sample codes considered make any requirements about the construction of the doors but are explicit about the types of locks used. If such a door is not locked electrically, all three ordinances specify that they must be secured by a cylinder lock or padlock with hardened steel shackle. If a padlock is used, Monterey Park specifies it must be of pin tumbler operation; the Oakland ordinance further specifies that it be of five pin tumbler operation with non-removable key when unlocked. The non-removable key provision is designed to prevent the lock being taken and then returned after a key has been made. This provision also reduces the chances of a lock being stolen in the hopes that a weaker lock or, no lock at all, will be used when the establishment closes.

In addition to padlocks and cylinder locks, both Monterey Park and Los Angeles County allow metal slide bars, bolts, or crossbars when operated on the inside.

Oakland, however, states that padlocks or cylinder locks must be used and further specifies that these be operated only from the inside. This stipulation inhibits those types of burglaries in which the intruder enters through another entry and then opens the overhead door from inside to allow easy loading to a vehicle.

E. Overhead Doors (Rolling Type)

Los Angeles County and Oakland both treat this type of door in the same fashion as the other overhead doors considered. The Monterey Park ordinance, however, treats these doors in a separate fashion, requiring locking slide bolts on the inside if they are not locked electrically. However, if the door is chain operated, then the chain must be provided with a metal keeper and pin to secure the chain, or if it is crank operated, then the operating shaft must be secured in the same way. By securing the operating mechanism, the door itself cannot be easily forced.

F. Metal Accordion Grate or Grill Type Doors

1. Construction. All three ordinances require that these doors be equipped with metal guide tracks at top and bottom. If they are not so equipped, the door could have a sufficient amount of play for someone to crawl under or for the easy disengagement of the locking mechanism.
2. Locks. All three ordinances considered require cylinder locks or padlocks with hardened steel shackles. As in the case of overhead doors, Oakland requires that a padlock, if used, be of at least five tumbler operation and have a non-removable key when in an unlocked position.

G. Interior Doors (Office Buildings)

1. Locks. Oakland provides that all entrance doors to individual office suites must have a dead-bolt lock with at least a one-inch throw bolt. This provision is designed to prevent burglaries of offices if the intruder once gets inside the building.

II. Windows

According to the Underwriters Laboratory Field Service Record for 1969, in almost one half of all burglaries the point of entry was a window.

Show windows are especially vulnerable to quick "break and run" attacks. Even if the window is equipped with alarm devices, the burglar spends so little time at the scene that he is rarely apprehended.

Other windows are also vulnerable even when protected by alarm systems. The UL Field Service Record reports that less than one burglar is apprehended for every five attacks made on windows (excluding show windows) protected by central station alarm systems.

None of the ordinances considered make any requirements about show windows and only two, Los Angeles County's and Oakland's, place any restrictions on other windows.

A. Louvered Windows

1. Type of Construction. Los Angeles County specifies that these windows must be made of tempered glass, burglary resistant material, or else guarded by metal bars, screens, or grills in an approved manner. This type of window is easily opened, if one pane can be broken or otherwise removed. Los Angeles County also requires that individual panes be fastened

with devices that require a special tool for removal and which can only be removed from the inside. The Oakland ordinance treats this type of window as it does all other openable windows.

B. Sliding Windows

1. Type of Construction and Locks. This type of window is often so constructed as to be easily violated. Therefore, Los Angeles County requires that a special test be made on these windows and their locks. When the window is locked, it must stay intact and engaged while lifted to its maximum travel with an opening direction force of 150 pounds applied simultaneously to 75 pound forces perpendicular to the panel. Here again the Oakland ordinance makes no separate requirements for this type of window beyond the requirements for all other openable windows.

C. Openable Windows

1. Type of Construction. Oakland requires all rear and side windows not visible from the street to be made of burglar resistant material. Los Angeles County makes the same requirement for all windows between six and forty-eight inches in width.
2. Locks. Both Oakland and Los Angeles County require approved locking devices on all openable windows. (Oakland exempts front windows.) Los Angeles County specifies what devices are approved: glide bar, bolt, crossbar, or padlock with a hardened steel hasp.
3. Hinges and Screws. The Oakland ordinance specifies that all accessible side and rear windows be provided with non-removable pins if the hinges are on the outside. All accessible hinge screws must be non-removable.

D. Stationary Windows

1. Type of Construction. As in the case of openable windows, Oakland requires rear and side windows to be of burglar resistant material. Los Angeles County makes the same requirement for all windows more than six and less than forty-eight inches in width. Show windows, then, are effectively exempted by both ordinances since they are usually larger than 48 inches and are usually in front.

#### E. Transoms

1. Type of Construction. Oakland's ordinance requires any transom larger than 8"x12" on the rear or side of a commercial building to be made of burglar resistant materials, like other types of windows, or to be protected with bars or grills. It further requires them to be secured with rounded head flush bolts on the side.

### III. Roof Openings

While roof hatches, skylights and roof vents are fairly inaccessible, a burglar who climbs to the roof is not usually visible from below and consequently, has more time in which to work. All three ordinances considered require that these openings be properly secured and protected.

#### A. Skylights

1. Type of Construction. All three ordinances require that skylights be made of burglar resistant material or be protected from the inside with properly fastened iron bars or grills.

#### B. Hatchways

1. Type of Construction. Los Angeles County requires that all hatchways less than 1-3/4 inch solid wood be covered on the inside with 16 gauge sheet metal. The other two ordinances make this covering mandatory for all wooden hatch covers.
2. Locks. Los Angeles County and Oakland specify that the hatchway be secured with a slide bar, slide bolt, crossbar or padlock with hardened steel shackle. Oakland requires approval of the Fire Marshal if a crossbar or padlock is used.
3. Hinges. Here again all ordinances specify that non-removable pins be used if outside hinges are employed.

#### C. Air Vents and Air Ducts

1. Type of Construction. All ordinances require that all openings exceeding 8"x12" be secured with metal bars or grills.

### IV. Lighting

Adequately lit premises discourage illegal intrusions and increase the chances of an intruder being spotted while attempting entry.

A. Entryway Lights

1. Size. Oakland requires 60 watt and Monterey Park specifies that 100 watt bulbs must be placed over all exterior doors except the front doors. The assumption is that front doors are already visible enough without special lighting.
2. Type of Construction. Oakland requires that the bulbs used be protected with a vapor cover or cover of equal breaking resistance, in order to prevent these lights from being extinguished by burglars or vandals.

V. Safes

The Oakland ordinance requires that all establishments having more than \$1,000.00 in cash in the premises shall have a class "E" safe to lock it in after hours.

VI. Intrusion Detection

Both Monterey Park and Los Angeles County stipulate that detection devices specifically approved for a particular installation by the appropriate law enforcement agency may be used in lieu of other anti-intrusion devices normally required.

The Oakland ordinance, however, provides that the Oakland Police Chief may require intrusion detection devices in addition to the other devices specified in the ordinance, if he feels the particular establishment requires it.

In addition, the ordinance itself requires establishments having specific inventories to install and maintain certain types of burglar alarms. (Refer to the ordinance for the list of establishments requiring various anti-intrusion devices.)

VII. Conflict with Fire Regulations

In all cases, the ordinances provide exemptions for regulations which might conflict with existing fire safety regulations, and provide for consultation and collaboration with the Fire Department.

Informal Advisory Services

In addition to those measures required by the sample codes considered, further requirements may be made by a particular jurisdiction. In all cases, provision should be made for an informal advisory service to offer advice, upon request, to a business owner, firm or builder as to how the particular residence

may be made more secure than allowed for by the building code. This informal service could be furnished by building inspectors prior to or while performing plan checks. More likely, the builder or owner would be referred to the local law enforcement agency for advice of this kind. Additionally, many of the items might be specified by the planning department as a condition of issuing a use permit.

Some crime prevention possibilities that could be included in an advisory service program will be discussed in the following paragraphs.

I. Exterior Lighting

Lights on and near business premises increase the chances of a night time intruder being observed and eliminate dark spots that allow him to hide if his activities become noticed. These lights should be somewhat protected to prevent the intruder from breaking them.

II. Landscaping

A landscaping program could be recommended to businessmen to reduce number of large, bushy plants which provide good hiding places for intruders particularly near entranceways.

III. Fences

Low or open mesh fencing allow easy surveillance and eliminate hiding places. Barbed wire fencing with adequate gates should be installed wherever possible in industrial areas.

IV. Address Placards

Softly illuminated or fluorescent address markers will allow the police easy recognition of a particular business if trouble does occur. For the same reason, some cities require businesses to be marked on the alley side also.

V. Position on the Lot Site

The informal advisory service should include the capability of offering advice as to the relative advantages and disadvantages of various positionings of the building on the site. Some factors to consider in maximizing the security of a business structure are: (1) is the entranceway visible from the street? (2) does the position of the house itself provide any hiding places, particularly on corner lots? (3) are overnight parking facilities located close to the establishment providing hiding places? (4) are storage facilities close by for the same reason? (5) is the building away from anything that allows access to the roof?

VI. Interior Lighting

Lights should be placed over safes and cash registers so that they are clearly visible from the street. Alarms should be connected to the light circuit to signal that they have been turned off. Utility companies often provide advisory services on lighting problems.

VII. Show Windows

Because of the high incidence of break-and-run burglaries and vandalism, show windows should be made of burglar resistant material. Moreover, the view through the show window into the establishment should be as uncluttered as possible.

VIII. Locks

- a. The serial number on locks should, whenever possible, be filed off particularly in the case of padlocks. This step will make unauthorized key duplications more difficult.
- b. In establishments where large numbers of people have keys, electronic locking devices should be considered, both because of their amenability to complicated master keying schemes and because of the ease with which the entire keying system can be changed if a key is lost or stolen.
- c. Relocking devices, when economically feasible, should be installed on safes, cabinets or vaults storing valuables. These devices automatically relock the equipment when the original lock is destroyed or tampered with.

IX. Intrusion Detection Devices

- a. Hold up alarms which cannot be inadvertently set off and which do not allow the robber to see any unusual movement of the victim should be installed in those types of establishments where robberies often occur, e.g. financial establishments, liquor stores.
- b. In that same type of establishment, where robberies tend to occur, the installation of photographic cameras or a videotape system should be recommended. The cost of a videotape is much higher initially, but the tape can be reused every day and allowed to run throughout the business day.
- c. In those places where a watchman is employed, the installation of closed circuit television can help the watchman in his surveillance of the premises.

X. Building Walls

Certain building shapes furnish a burglar or other intruder a place where he can work unobserved. The builder or owner should be aware of these potential trouble spots. They should be eliminated whenever possible, or if not, the wall at that point should be strengthened or protected by an intrusion detection device.

XI. Safes

Any safe weighing less than 750 pounds should be firmly anchored to the floor. Otherwise, the safe itself can be easily taken.

## CRIME PREVENTION BULLETIN #15

SUBJECT: ISSUANCE OF A BUILDING PERMIT FOR A SINGLE-FAMILY RESIDENTIAL STRUCTURE

### Introduction

This CPB is aimed at providing specific information to those who will be enforcing a building code which has been amended to include anti-intrusion devices. A case study on the steps to be taken in this amendment process and a sample code section may be found in another CPB.

This CPB is divided into three main sections. Following this introduction, there is a discussion of the steps in the formal building permit and inspection process. The next section provides an elaboration of the sample building codes by describing the provisions for doors, locks and windows. The last section includes a discussion of the informal advisory services which law enforcement or building officials might provide to prospective owners or builders as a means of crime prevention. These services may extend considerations beyond those provided in the normal building code enforcement process.

The principal objective in requiring anti-intrusion devices for new, single-family residences is in protection of the occupants against the unlawful intruder. In adopting the enabling ordinances, the legislative bodies expand the more traditional role of the building code, i.e. the safety of the occupant from fire or structural deficiencies, to provide occupant safety against the unlawful intruder.

It is to be noted that: the standards are minimum, i.e. designed to deter the burglar, rather than to provide absolute exclusion; alternative security devices are accepted upon approval by a law enforcement agency; and consistency with fire codes must be recognized.

### Steps in the Building Permit Process

There are three main steps in the process: the review of plans and issuance of permit; the appeals and decisions on alternative devices; and inspections during construction and upon completion.

The first stage is the application for the permit and checking of plans. The builder, architect or developer formally makes application for the building permit, pays the required fees, and submits the necessary plans. In the case of single-family residential structures, the plans are usually checked completely within the building division without referral to other departments,

unless unusual conditions prevail. This CPB assumes that the building division will also check the plans for the anti-intrusion devices.

The second stage makes provision for appeal and the possibility of alternative security devices. Because of the limited experience in this general field, as well as the multitude of ways of accomplishing the objective, it is important to provide the architect, builder or developer with the means of gaining approval of alternative security methods. These are primarily in the area of substitution as, for example, in permitting the use of alternative types of locks.

The third stage is the inspection stage to insure that the requirements of the building code as noted on the plans and the permit are met.

### What to Look for in Plan Checking a Single-Family Residential Structure

The following discussion is intended to provide some elaboration of the sample codes in the Appendix, as they apply to single-family residences. The provisions of the sample code may be different from a code adopted in another jurisdiction; the discussion is intended to illustrate what to look for and why they are important.

#### I. Doors

Probably the easiest access point for an unlawful intruder is a door. There is no need to climb through a window, no need to shatter glass, and no need to be obtrusive in daylight. Several types of doors are commonly used in residential construction; these types and the various means for securing them are discussed in the following narrative.

#### A. Exterior Swinging Doors and Garage-to-Residence Doors

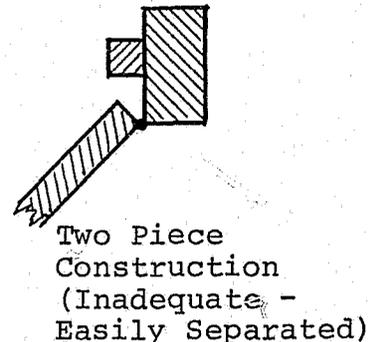
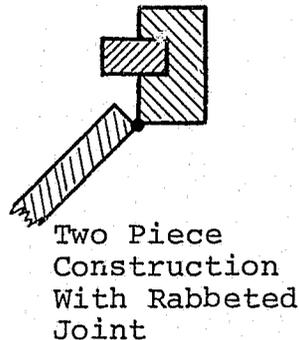
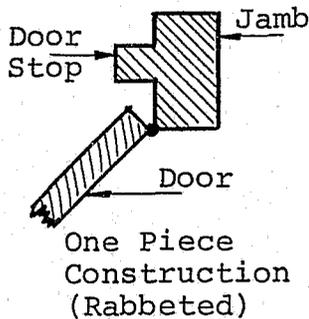
1. Type of Construction. Most exterior doors for single-family residences are made of wood or pressed hardboard. Metal doors, if properly reinforced at the locking mechanism provide the greatest security against unlawful entry.

Wood or hardboard doors can be of either solid core or hollow core construction. Hollow core doors can be easily kicked in or pried open and are prohibited by the Oakland model ordinance. Los Angeles County requires that such doors, if used, be sheathed on the interior side with 16 gauge metal sheeting securely fastened.

Some exterior swinging doors are provided with decorative or vision panels made of glass or other transparent or translucent material. The sample codes require these panels to be made of burglar resistant materials. Ordinary glass can be easily shattered allowing the burglar to reach in and release the various locking devices.

2. Thickness of Construction. The strength of a door is directly proportional to its thickness. Most new residential developments utilize doors 1-3/4" thick; doors at least this thick are required by the Oakland model ordinance. Los Angeles County permits doors 1-3/8" thick. Any smaller than these must be metal sheathed on the interior.
3. Construction of Door Jamb. A strong door and adequate locking system will be of little value if the door frame itself is weak. By prying or chiseling an inadequate door jamb or door stop, an intruder can open the door without operating the locking mechanism.

The Oakland ordinance requires a protective plate or other strengthening device at the strike (the place where the lock engages the door frame) for all doors. Both ordinances considered require inwardly swinging doors to have door stops that are either the same piece as the rest of the jamb or that are set in a groove in the jamb itself. (See illustration below.)



4. Hinges. Both codes require non-removable hinge pins on those doors swinging to the exterior. Without these, the door can be easily and quietly removed.
5. Locks. Both ordinances considered require self-locking dead latches on all doors. This type of latch cannot be opened by inserting a plastic or metal card through the door jamb. The Oakland ordinance requires a throw of at least 1/2" for these latches (the typical latch has a 3/8" throw) to make it more difficult to pry the door from its jamb. Los Angeles County makes no throw requirements but does require, in addition to the dead latch, a dead bolt for each door which must have a minimum throw of one inch imbedding itself in the door jamb at least 5/8". Provision is made for equivalent locks of unusual construction. If cylinder locks are used and the cylinder protrudes from the door surface, cylinder guards must also be installed to prevent the cylinder from being pulled out with pliers or vice-grips. The bolt of the lock must also have hardened inserts to prevent cutting.

The Los Angeles County ordinance does not require such sturdy locks if more than one is used on each door. Unusual doors larger than five feet in width are exempted from these requirements and treated in the same manner as garage doors (see below).

#### B. Exterior Sliding Doors

1. Type of Construction. Most existing sliding doors present little problem to intruders. The doors are generally so loosely fitted to their frames that a slight upward pressure on the movable panel will release the door from its catch or out of its guide rail entirely. To prevent easy removal from their mountings, the Oakland ordinance requires that the movable panels be mounted to the interior of the stationary panels so that the stationary panel protects the movable panel.
2. Locks. The Oakland ordinance specifically requires a cylinder type, key operated lock on sliding doors. Mounting screws must only be accessible from the inside and the lock bolt must withstand a force of 800 lbs. applied in any direction. Any double sliding doors must be locked at the meeting rail.

The Los Angeles County ordinance does not make any specific requirements as to the type of construction or lock used, except that a lock be used and, if it is a cylinder lock which is accessible to tools, that a cylinder guard be installed. Instead, a performance test of the system as a whole is made. The locked door panel must remain intact and engaged with the movable panel lifted upwards to its full limit while an opening direction force of 300 lbs. is applied simultaneous to forces of 150 lbs. perpendicular to the panel in either direction.

### C. Overhead Garage Doors

1. Type of Construction. Garage doors are often the easiest points of entry for an intruder, providing quick access to storage areas. Moreover, once inside a garage, a burglar is protected from surveillance and can break in through a garage to residence door. Because of their size, garage doors are usually constructed solidly enough to resist forceful entry, their weak points being the locking mechanism. However, some garage doors contain bottom vents allowing an intruder to crawl through and into the garage. For this reason, the Oakland ordinance bans such construction.
2. Locks. Most garages are presently equipped with locking devices, but because of their inconvenience, the resident leaves them open a good part of the time. Los Angeles County ordinance requires either a cylinder lock (with appropriate cylinder guard), a padlock, a slide bar or bolt (operated from the interior) or equivalent if the door is not locked by an electrical mechanism.

## II. Windows

Next to doors, windows are the most convenient means of entry for an intruder. Window locking mechanisms are often so feeble that a simple prying or pulling will violate their function.

### A. Louvered Windows

1. Materials. Because of the small size of the panes, an individual pane on this type of window can be easily and quietly broken or cut. Once a pane is cut, an intruder's hand can reach in, open the locking mechanism and remove the panes one by one. For this reason, Los Angeles County requires the panes to be made of burglar resistant material.

2. Type of Construction. In type type of window, the framing holding the individual panes is usually so inadequate that through prying and tugging the panes may be removed from the outside. For this reason, Los Angeles County requires that individual panes be fastened by devices that require a special tool for removal and that can only be removed from the interior when the window is locked.

Oakland goes so far as to prohibit any louvered windows at all within eight feet of ground level, adjacent structures or fire escapes, the implication being that louvered windows, no matter how strengthened, are inherently weak.

3. Locks. Los Angeles County requires all windows, including louvered types, to be equipped with "substantial" locking devices.

B. Vision Panels or Windows Near a Door

1. Materials. If a vision panel is less than 40 inches away from a required door lock that is not key operated from the inside, Los Angeles County requires that it be made of burglar resistant material, otherwise an intruder could break the panel, reach in and unlock the door.

C. Sliding Glass Windows

1. Type of Construction. Because of their similar construction, this type of window is subject to the same weaknesses as sliding glass doors. The Oakland ordinance requires that all windows be so constructed that when locked it cannot be lifted from the frame.
2. Locks. Both codes considered require locks for all windows; Oakland specifies that they be capable of withstanding a force of 300 lbs. applied in any direction.

Here, as with sliding doors, Los Angeles County makes no requirements as to the specific type of construction or lock to be used. A performance test of the system as a whole is made: the window must stay intact and engaged when, with the window forced upwards to its maximum, an opening force of 150 lbs. is applied simultaneous to forces of 75 lbs. in either direction perpendicular to the pane.

#### D. Other Windows

1. Type of Construction. The Oakland ordinance requires that all windows be so constructed that when locked it cannot be lifted from the frame.
2. Locks. Both ordinances state that locking devices are required; Oakland specifying they be capable of withstanding 300 lbs. of force applied in any direction; Los Angeles requiring only that they be "substantial." Perhaps an equivalent performance test to that one required for sliding glass windows could be used, since those forces represent approximately the maximum force the average person can apply with simple prying without actually shattering the glass itself.

#### III. Conflict with Fire Regulations

In both cases, the ordinances provide exemptions for regulations which might conflict with existing fire safety regulations, and provide for consultation and collaboration with the Fire Department.

#### Informal Advisory Services

In addition to those measures required by the sample codes considered, further requirements may be made by a particular jurisdiction. In all cases, provision should be made for an informal advisory service to offer advice, upon request, to a homeowner or builder as to how the particular residence may be made more secure than allowed for by the building code. This informal service could be furnished by building inspectors prior to or while performing plan checks. For highly technical crime prevention problems, the builder or owner would be referred to the local law enforcement agency for assistance.

Some crime prevention possibilities that could be included in an advisory service program will be discussed in the following paragraphs.

#### I. Exterior Lighting

Lights in yards and above entranceways increase the chances of a night time intruder being observed and eliminate dark spots that allow him to hide if his activities become noticed. These lights should be somewhat protected, if possible, to prevent the intruder from breaking them. Utility companies often provide advisory services on lighting problems.

#### II. Door Viewer

The Oakland model ordinance requires a door viewer or peephole in the entry door to each unit of a multiple dwelling. This is

not a requirement for single-family residences, but the installation of such a device allows the resident to see who is at the door before opening it.

### III. Landscaping

A landscaping program could be recommended to homeowners to reduce number of large, bushy plants which provide good hiding places for burglars and peeping toms, particularly near entranceways.

### IV. Mail Slots

Mail slots instead of mail boxes would reduce the number of mail thefts and should be recommended to builders and homeowners.

### V. Fences

Low or open mesh fencing allow easy surveillance and eliminate hiding places.

### VI. Address Placards

Softly illuminated or fluorescent address markers will allow the police easy recognition of a particular residence, if trouble does occur. House numbering ordinances often require such posting in front and also on the alley side, when appropriate.

### VII. Locks

A. Door Latches. Locks are available whose exterior knob spins free when locked. This feature prevents a potential intruder from using tools to twist the knob, either breaking and releasing the locking mechanism, or removing the knob so the locking mechanism is exposed.

B. Chain Locks. Strong chain night locks should be recommended because they allow the resident to see who is at the door before fully opening it.

C. Sliding Door Locks (Auxiliary). A rod placed in the track of a sliding door will prevent it from being opened even if the lock is broken.

### VIII. Garages

A garage represents a significant financial investment, but should be recommended in lieu of carports when the crime prevention benefits can be demonstrated.

IX. Window Gratings

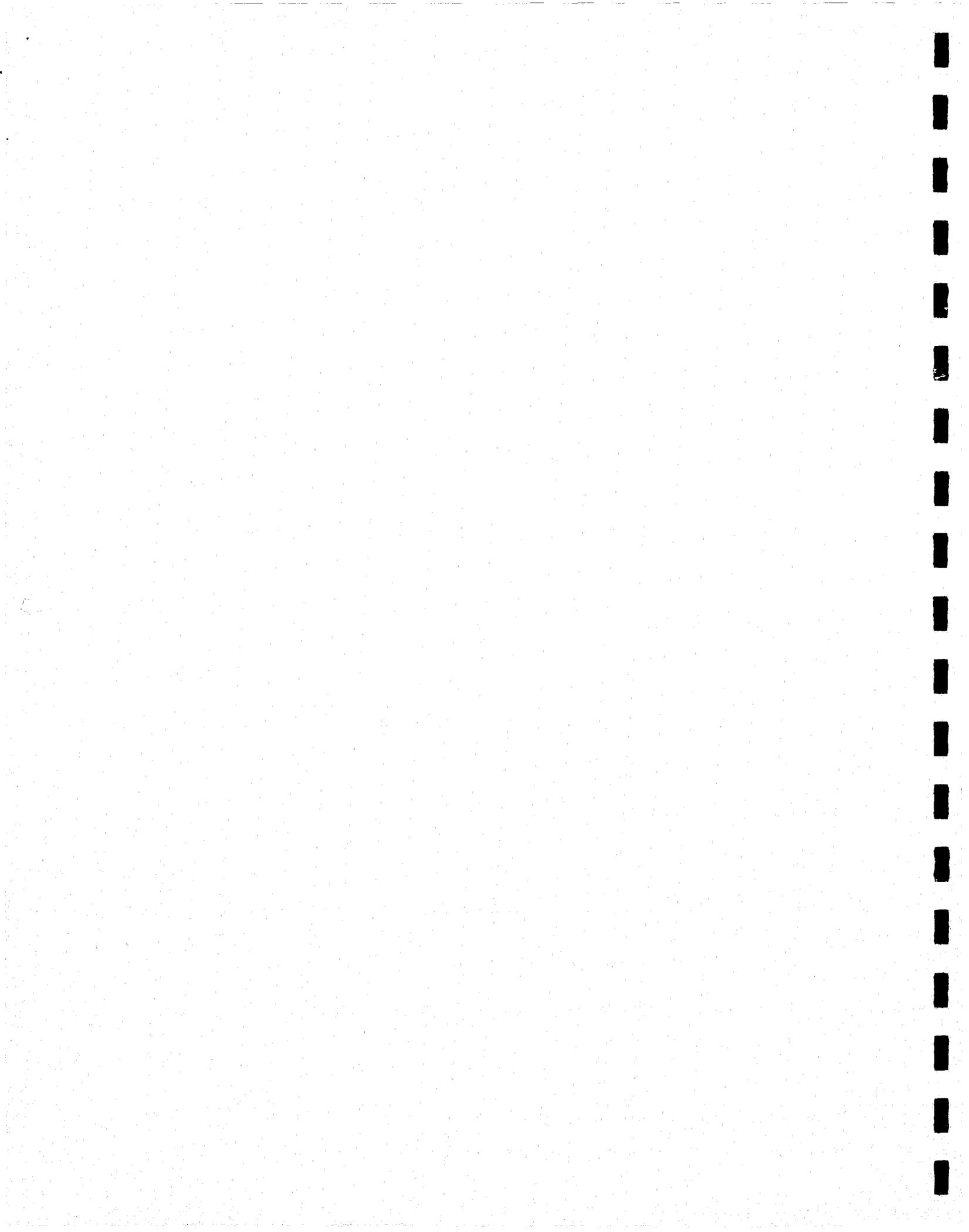
In extreme situations, decorative case iron gratings can be recommended to be placed over window openings. However, the cost of these installations are very high and they are only as strong as their mountings.

X. Burglar Alarms

Because of the high rate of false alarms (95-99%) and because of the expense involved, burglar alarms should only be recommended in high risk situations. Underwriters Laboratory (1655 Scott Boulevard, Santa Clara, California, 95050) maintain a list of approved alarm devices and approved installation and maintenance companies.

XI. Position on the Lot Site

The informal advisory service should include the capability of offering advice as to the relative advantages and disadvantages of various positionings of the building on the site. Some factors to consider in maximizing the security of a residential structure are: (1) is the entranceway visible from the street? (2) does the position of the house itself provide any hiding places, particularly on corner lots?



## CRIME PREVENTION BULLETIN #16

SUBJECT: A CASE STUDY - INTRODUCTION OF ANTI-INTRUSION STANDARDS AND DEVICES INTO A BUILDING CODE

### Introduction

This CPB illustrates how one community, Los Angeles County, amended its building code to include anti-intrusion standards and devices. While every community government functions in its own manner, the structures of each are similar enough so the experiences of one can often be translated to fit the needs of another.

### The Case Study

Upon noting a high rate of burglaries in residences and business establishments in Los Angeles County, the Los Angeles County Sheriff's Department conducted inter-departmental discussions of methods to deter such activities. These discussions led to the conclusion that this rate could be reduced by hardening the targets through the requirement of certain anti-intrusion devices and standards in the County Building Code.

The County Board of Supervisors, in response to the initial request of the Sheriff's Department, and after investigation and recommendation by the County Engineer, adopted an ordinance expanding the building code to include minimum requirements for resistance to unlawful entry.

In developing the ordinance, consultations were held with various manufacturers of anti-intrusion devices, security specialists, and builders to solicit recommendations as to the feasibility and need for anti-intrusion standards and devices in protecting residences, commercial establishments and other buildings against unlawful intrusion. In addition to these outside consultations, the County investigated available methods and devices. Upon completion of the above consultations and investigations, a proposal ordinance was drafted.

The proposal ordinance was discussed with various community groups and associations to solicit their community. The strongest point of opposition held that the individual builder or owner should have the right to decide which, if any devices, be included, and that the building code was not a proper vehicle for security standards.

Upon submission of the proposed ordinance and completion of hearings before the County Board of Supervisors, the ordinance was adopted. As adopted, the ordinance provided for the enforcement of the amended sections of the

Building Code by the County Engineering Department which was already responsible for enforcement of other sections of the Building Code. Utilization of Plan Checkers and Inspectors of the County Engineering Department enabled the County to provide a much broader range of coverage than would enforcement by a limited number of Sheriff's personnel if enforcement were the responsibility of the Sheriff's Department.

The adopted ordinance provides for an alternative to the standards and devices explicitly set forth in the Code. This alternative permits the owner or builder to substitute an alternative security method provided it is approved by the Sheriff's Department as providing equivalent security to that specified in the Code. In those cases, the County Engineer forwards the application and plans to the Sheriff's Department.

To effectuate the enforcement required by the amended Building Code, the Training Officer of the County Engineering Department developed and conducted training programs for Plan Checkers and Inspectors to acquaint them with the purposes of the Code provisions and the procedures for enforcement.

Since passage of this ordinance, several cities in Los Angeles County, which contract with the County for their building enforcement, have adopted similar amendments to their own building codes.

The County has encountered some difficulties in enforcing the amended Building Code. Some equipment manufacturers of anti-intrusion devices have complained that the standards established by the Code are too restrictive. The field inspectors encountered initial difficulties in matching some of the anti-intrusion hardware to the ordinance specifications. These have been overcome as the procedures have been clarified.

Ordinance No. 10,163

An ordinance adding Chapter 67 to Ordinance No. 2225, the Building Code, relating to security provisions.

The Board of Supervisors of the County of Los Angeles do ordain as follows:

Section 1. Chapter 67 (beginning with Section 6701) is added to Ordinance No. 2225 entitled "Building Code" adopted March 20, 1933 to read:

Chapter 67

Security Provisions

Section 6701 - Purpose

The purpose of this chapter is to set forth minimum standards of construction for resistance to unlawful entry.

Section 6702 - Scope

The provisions of this chapter shall apply to enclosed Group F, G, H, I, and J Occupancies regulated by this Code. EXCEPTION: The requirements shall not apply to enclosed Group J Occupancies having no opening to an attached building or which are completely detached.

Section 6703 - Limitations

No provision of this Chapter shall require or be construed to require devices on exit doors contrary to the requirements specified in Chapter 33.

Section 6704 - Alternate Security Provisions

The provisions of this Chapter are not intended to prevent the use of any device or method of construction not specifically prescribed by this Code when such alternate provides equivalent security based upon a recommendation of the County Sheriff.

Section 6705 - Definitions

For the purpose of this Chapter, certain terms are defined as follows:

1. CYLINDER GUARD is a hardened ring surrounding the exposed portion of the lock cylinder or other device which is so fastened as to protect the cylinder from wrenching, prying, cutting or pulling by attack tools.

2. DEADLOCKING LATCH is a latch in which the latch bolt is positively held in the projected position by a guard bolt, plunger, or auxiliary mechanism.
3. DEADBOLT is a bolt which has no automatic spring action and which is operated by a key cylinder, thumbturn, or level, and is positively held fast when in the projected position.
4. LATCH is a device for automatically retaining the door in a closed position upon its closing.

#### Section 6706 - Tests

Sliding Glass Doors. Panels shall be closed and locked. Tests shall be performed in the following order.

- a. Test A. With the panels in the normal position, a concentrated load of 300 pounds shall be applied separately to each vertical pull stile incorporating a locking device at a point on the stile within six inches of the locking device in the direction parallel to the plane of glass that would tend to open the door.
- b. Test B. Repeat Test A while simultaneously adding a concentrated load of 150 pounds to the same area of the same stile in a direction perpendicular to the plane of glass toward the interior side of the door.
- c. Test C. Repeat Test B with the 150 pound force in the reversed direction towards the exterior side of the door.
- d. Tests D, E, and F. Repeat A, B, and C with the movable panel lifted upwards to its full limit within the confines of the door frame.

#### Section 6707 - Tests

Sliding Glass Windows. Sash shall be closed and locked. Tests shall be performed in the following order:

- a. Test A. With the sliding sash in the normal position a concentrated load of 150 pounds shall be applied separately to each sash member incorporating a locking device at a point on the sash member within six (6)

inches of the locking device in the direction parallel to the plane of glass that would tend to open the window.

- b. Test B. Repeat Test A while simultaneously adding a concentrated load of 75 pounds to the same area of the same sash member in the direction perpendicular to the plane of glass toward the interior side of the window.
- c. Test C. Repeat Test B with the 75 pounds force in the reversed direction towards the exterior side of the window.
- d. Tests D, E, and F. Repeat Tests A, B, and C with the movable sash lifted upwards to its full limit within the confines of the window frame.

#### Section 6708 - Doors - General

A door forming a part of the enclosure of a dwelling unit or of an area occupied by one tenant of a building shall be constructed, installed, and secured as set forth in Sections 6709, 6710, 6711, and 6712, when such door is directly reachable or capable of being reached from a street, highway, yard, court, passageway, corridor, balcony, patio, breezeway, private garage, portion of the building which is available for use by the public or other tenants or similar area. A door enclosing a private garage with an interior opening leading directly to a dwelling unit shall also comply with said Sections 6709, 6710, 6711, and 6712.

#### Section 6709 - Doors - Swinging Doors

- a. Swinging wooden doors, openable from the inside without the use of a key and which are either of hollow core construction or less than 1 3/8 inches in thickness, shall be covered on the inside face with 16 gauge sheet metal attached with screws at six (6) inch maximum centers around the perimeter or equivalent. Lights in doors shall be as set forth in Sections 6714 and 6715.
- b. A single swinging door, the active leaf of a pair of doors, and the bottom leaf of Dutch doors shall be equipped with a deadbolt and a deadlocking latch. The deadbolt and latch may be activated by one lock or by individual locks. Deadbolts shall contain hardened inserts or equivalent, so as to repel cutting tool attack. The lock or locks shall be key operated

from the exterior side of the door and engaged or disengaged from the interior side of the door by a device not requiring a key or special knowledge or effort.

EXCEPTION:

1. The latch may be omitted from doors in Group F and G occupancies.
  2. Locks may be key or otherwise operated from the inside when not prohibited by Chapter 33 or other laws and regulations.
  3. A swinging door of width greater than five (5) feet may be secured as set forth in Section 6711. A straight deadbolt shall have a minimum throw of one inch and the embedment shall be not less than 5/8 inch into the holding device receiving the projected bolt, a hook shape or expending lug deadbolt shall have a minimum throw of 3/4 inch. All deadbolts of locks which automatically activate two or more deadbolts shall embed at least 1/2 inch but need not exceed 3/4 inch into the holding devices receiving the projected bolts.
- c. The inactive leaf of a pair of doors and the upper leaf of Dutch doors shall be equipped with a deadbolt or deadbolts as set forth in Subsection (b). EXCEPTION:
1. The bolt or bolts need not be key operated, but shall not be otherwise activated from the exterior side of the door.
  2. The bolt or bolts may be engaged or disengaged automatically with the deadbolt or by another device on the active leaf or lower leaf.
  3. Manually operated hardened bolts at the top and bottom of the leaf and which embed a minimum of 1/2 inch into the device receiving the projected bolt may be used when not prohibited by Chapter 33 or other laws and regulations.
- d. Door stops on wooden jambs for in-swinging doors shall be of one piece construction with the jamb or joined by a rabbet.
- e. Nonremovable pins shall be used in pin type hinges which are accessible from the outside when the door is closed.

- f. Cylinder guards shall be installed on all mortise or rim type cylinder locks installed in hollow metal doors whenever the cylinder projects beyond the face of the door or is otherwise accessible to gripping tools.

#### Section 6710 - Doors - Sliding Glass Doors

Sliding glass doors shall be equipped with locking devices and shall be so installed that, when subjected to tests specified in Section 6706, remain intact and engaged. Movable panels shall not be rendered easily openable or removable from the frame during or after the tests. Cylinder guards shall be installed on all mortise or rim type cylinder locks installed in hollow metal doors whenever the cylinder projects beyond the face of the door or is otherwise accessible to gripping tools.

#### Section 6711 - Doors - Overhead and Sliding Doors

Metal or wooden overhead and sliding doors shall be secured with a cylinder lock, padlock with a hardened steel shackle, metal slide bar, bolt or equivalent when not otherwise locked by electric power operation.

Cylinder guards shall be installed on all mortise or rim type cylinder locks installed in hollow metal doors whenever the cylinder projects beyond the face of the door or is otherwise accessible to gripping tools.

#### Section 6712 - Doors - Metal Accordion grate or grille-type doors

Metal accordion grate or grille-type doors shall be equipped with metal guides at top and bottom and a cylinder lock or padlock and hardened steel shackle shall be provided. Cylinder guards shall be installed on all mortise or rim-type cylinder locks installed in hollow metal doors whenever the cylinder projects beyond the face of the door or is otherwise accessible to gripping tools.

#### Section 6713 - Lights - In General

A window, skylight, or other light forming a part of the enclosure of a dwelling unit or of an area occupied by one tenant of a building shall be constructed, installed and secured as set forth in Section 6714, and 6715, when the bottom of such window, skylight or light is not more than a street, highway, yard, court, passageway, corridor, balcony, patio, breezeway, private garage, portion of the building which is available for use by the public or other tenants or similar area.

A window enclosing a private garage with an interior opening leading directly to a dwelling unit shall also comply with said Sections 6714 and 6715.

#### Section 6714 - Lights - Material

Lights within forty (40) inches of a required locking device on a door when in the closed and locked position and openable from the inside without the use of a key, and lights with a least dimension greater than six (6) inches but less than forty-eight (48) inches in F and G Occupancies, shall be fully tempered glass approved burglary resistant material or guarded by metal bars, screens or grilles in an approved manner.

#### Section 6715 - Lights - Locking Devices

- a. Sliding glass windows shall be provided with locking devices that, when subjected to the tests specified in Section 6707, remain intact and engaged. Movable panels shall not be rendered easily openable or removable from the frame during or after the tests.
- b. Other openable windows shall be provided with substantial locking devices which render the building as secure as the devices required by this section. In Group F and G Occupancies, such devices shall be a glide bar, bolt, cross bar, and/or padlock with hardened steel shackle.
- c. Special louvered windows, except those above the first story in Group H and I Occupancies which cannot be reached without a ladder, shall be of material or guarded as specified in Section 6714 and individual panes shall be securely fastened by mechanical fasteners requiring a tool for removal and not accessible from the outside when the window is in the closed position.

#### Section 6716 - Other Openings - In General

Openings, other than doors or lights, which form a part of the enclosure, or portion thereof, housing a single occupant and the bottom of which is not more than sixteen (16) feet above the grade of a street, highway, yard, court, passageway, corridor, balcony, patio, breezeway, or similar area, or from a private garage, or from a portion of the building which is occupied, used or available for use by the public or other tenants, or an opening enclosing a private garage attached to a dwelling unit which openings therein shall be constructed, installed and secured as set forth in Section 6717.

#### Section 6717 - Hatchways, Scuttles and Similar Openings

- a. Wooden hatchways less than 1-3/4 inch thick solid wood shall be covered on the inside with 16 gauge

sheet metal attached with screws at six (6) inch maximum centers around perimeter.

- b. The hatchway shall be secured from the inside with a slide bar, slide bolts, and/or padlock with a hardened steel shackle.
- c. Outside pin-type hinges shall be provided with non-removable pins.
- d. Other openings exceeding nine-six (96) square inches with a least dimension exceeding eight (8) inches shall be secured by metal bars, screens, or grilles in an approved manner.

Section 2. This ordinance shall be published in the Journal of Commerce and Independent Review, a newspaper printed and published in the County of Los Angeles.

(Seal)

WARREN M. DORN  
Chairman.

Attest:

JAMES S. MIZE  
Executive Officer-Clerk of the Board of Supervisors of the County of Los Angeles

I hereby certify that at its meeting of December 8, 1970, the foregoing ordinance was adopted by the Board of Supervisors of said County of Los Angeles by the following vote, to-wit:

Ayes: Supervisors Kenneth Hahn, Ernest E. Debs,  
Burton W. Chace and Warren M. Dorn.

Noes: None.

(Seal)

JAMES S. MIZE  
Executive Officer-Clerk of the Board of Supervisors of the County of Los Angeles.

Effective date January 8, 1971.

(95918) Dec. 18



**END**