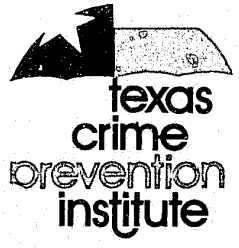

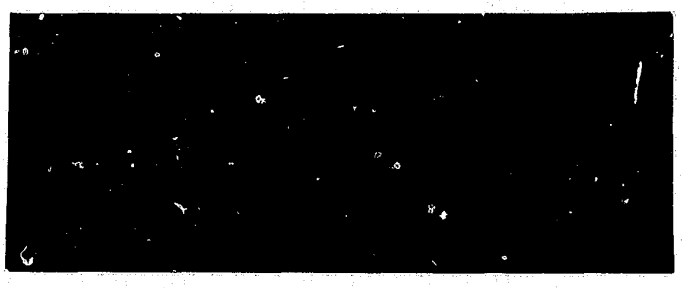

SOUTHWEST TEXAS STATE UNIVERSITY

ENVIRONMENTAL DESIGN

SPECIALIZED ENVIRONMENTAL DESIGN
COURSE FOR CRIME PREVENTION OFFICERS

Sponsored by:

Criminal Justice Division
Office of the Governor
State of Texas

SPECIALIZED ENVIRONMENTAL DESIGN COURSE FOR CRIME PREVENTION OFFICERS

prepared for the

TEXAS CRIME PREVENTION INSTITUTE
SOUTHWEST TEXAS STATE UNIVERSITY
SAN MARCOS, TEXAS

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FOREWARD

Crime prevention through environmental design is a process by which crime risks, or criminal opportunity, can be reduced or removed at the blueprint stage of construction. It is a cost-effective means by which the police, the builders, local government, and the citizen can join together to develop a safe, secure, and architecturally sound environment. It is a process by which security items can be built into new construction, and remodeling, at a minimum cost to the consumer.

When developing this course, the Texas Crime Prevention Institute realized that there was a void between the police departments and the builders in most communities. It became apparent that crime prevention officers were not familiar with the construction industry jargon, and thus could not communicate effectively with this segment of the community. On the other hand, it was found that the construction companies did not realize that they could affect the crime problem by eliminating criminal opportunity through sound architectural design.

The main purpose of this course is to fill this void between the police and construction industry. The course will cover the areas of planning, not only for housing and businesses, but also for communities. The crime prevention officer will be exposed to the construction industry's jargon and symbolism, and will develop skills in blueprint reading.

Upon completion, the crime prevention officer should have gained some insight into the construction industry and should be able to provide valuable input into the planning and environmental design of his respective community.

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INTRODUCTION

INTRODUCTION

Though sometimes thought of as a new concept or approach in law enforcement, crime prevention's existence can be traced back to the 13th century. Through a cultivation process, crime prevention has turned from a primitive survival process to a modern day method of coping with an alarming crime picture.

Within the past ten years, there has been an all-out effort by the national government to transform local police agencies into functional organizations that would be able to curb this rising crime rate. Through the use of massive federal funding, police agencies have been able to purchase more sophisticated equipment and machinery, to initiate the use of modern computers, and to provide better training for the individual police officer. Police agencies have also raised the entrance requirements for police applicants in hopes of attracting more qualified persons into the area of law enforcement. All of these actions were initiated to solve one major problem: The increasing crime rate. Unfortunately, according to recent statistics released by the F.B.I., crime has risen 38% overall since 1969. Indications are that if this trend continues, crime will have increased 100% by the year 1990. With this in mind, the concept of crime prevention may be one of the last remaining tools that can be used to stabilize this crime rate.

When studying the concept of crime prevention, one must realize that the essential component of this process is the joint effort of both the police and the citizen working together to combat crime. If either the citizen, or the police, believe that crime is a police problem that

can only be solved by police enforcement, then the concept of crime prevention will most certainly fail.

Crime prevention, as we know it today, originated in England. When attempting to define the term crime prevention, the English definition, which was incorporated by the Texas Crime Prevention Institute, should be the basis for defining this concept. Crime prevention is:

> The anticipation, recognition, and appraisal of a crime risk, and the initiation of action to either remove or reduce it.[1]

When studying this definition, it can be seen that there are two principle objectives that must be performed. The first, that of anticipating, recognizing, and appraising a crime risk, and then making recommendations to eliminate this risk, is the responsibility of the police. The second, that of initiating action based upon their recommendations, to either remove or reduce this crime risk is the responsibility of the citizen. Therefore, it can be seen that the only way that crime prevention can become an effective tool is through the combined efforts of both the police and the citizen.

Within the framework of the basic crime prevention training manuals, emphasis has been placed on the anticipation, recognition, and appraisal of existing crime risks and then the development of recommendations to the citizen to either remove or reduce these risks. When appraising this situation, one can see that the risk must exist before recommendations can be developed. Unfortunately, depending upon the type of risk, complete elimination is not always possible. Therefore, it would be more practical if the risk never existed, whereby no corrective action would be necessary.

[1]Home Office Crime Prevention Program, Home Office Crime Prevention Training Center, Stafford, England, p. 20.

At first, this may seem impossible, but when one considers that crime risks are built into businesses, homes, and communities, it becomes more feasible that these risks can be eliminated at the planning stage. This is not only more practical, but it is also more economical.

Crime prevention through environmental design at the planning stage is a new and innovative concept that stresses the fact that criminal opportunity can be eliminated through the use of sound architectural design and good planning techniques. In order for this to work, the crime prevention officer must be knowledgeable in the areas of architecture, environmental design, planning, local government zoning, subdivision ordinances, construction terminology, and blue print reading. The crime prevention officer must be able to communicate his thoughts and ideas to different levels of government, to the citizens, and to the building industry. He must also be able to receive and understand communications from these different groups. The crime prevention officer must realize that his ideas, in regard to design, may not be feasible nor workable in some instances. He may be surprised to find that architects and designers may be unfamiliar with the concept of crime prevention and that they never considered the fact that they could play an important part in the elimination of criminal opportunity.

The key to the success or failure of the crime prevention officer in using the technique of planning and environmental design to prevent crime is communications. The ability to convince architects and designers that crime prevention through environmental design is a positive means to reduce criminal opportunity will depend on the knowledge and communication skills of the crime prevention officer. To be knowledgeable in the areas of concern of architects and designers and to be able to communicate your ideas and understand common problems in these areas are the keys to the success of environmental design through the planning process.

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INVOLVEMENT OF S.P.O. IN DESIGN PHASE

DESIGN PHASE OF ENVIRONMENTAL CHANGE AND THE C.P.O. INVOLVEMENT [2]

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.[1]

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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[1] Fabbri, John, "Crime Prevention - Before or After the Fact," F.B.I. Law Enforcement Bulletin, 1973, p. 20.

[2] Windham, Baugh, Hill, Stansbury and Guseman, "Specialized Environmental Design School for Crime Prevention Officers", Texas Crime Prevention Institute, San Marcos, 1975. p.41-45.

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 encumbent 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."[2]

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.[3]

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 unoffical. 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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[2]Fabbri, John, "Crime Prevention Through Physical Plannint," Crime Prevention Review presented to the Office of the Attorney General, State of California, April, 1974, p. 2.

[3]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.[4]

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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[4] Ibid., p. 6.

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CRIME PREVENTION--BEFORE AND AFTER THE FACT

CRIME PREVENTION--BEFORE OR AFTER THE FACT[1]

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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[1]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. Tech nical 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-poluation 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.

Premediated 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 urgan 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 instructing 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 visi n of police patrol units personnel, and installation of silent burglar alarms for improved building security.

COMMUNICATION WITH LOCAL GOVERNMENTAL AGENCIES

COMMUNICATION WITHIN LOCAL GOVERNMENT AGENCIES[1]

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.

[1] Windham, Baugh, Hill, Stansbury, and Guseman, "Specialized Environmental Design School for Crime Prevention Officers", Texas Crime Prevention Institute, San Marcos 1975. p. 15-20.

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. Presupposing 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 dissemirating 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.

THE PLANNING FUNCTION

THE PLANNING FUNCTION[1]

INTRODUCTION

The purpose of this chapter is to explain the physical planning process as it operates in cities and towns across the United States. Planning in the context is considered to be a governmental function. In this chapter we will cover the following topics.

1. Definition of the physical planning process.
2. What can good planning accomplish?
3. The purpose and composition of the comprehensive plan.
4. The function and powers of the Planning Board.

Each of these topics is designed to aid the criminal justice planner in his understanding of how the physical planning process operates.

Definition of the Physical Planning Process

There are almost as many definitions of the physical planning process as there are planners. What I will try to do in this section is to provide you with what are considered to be the essential elements in almost all of the definitions which are currently in use.

Traditionally the physical planning process has been considered to be a local government function through which the city planning department seeks to determine how best to provide "a proper arrangement of land uses, efficient circulation, desirable light air and the general

[1]Howard Balanoff, "Texas Crime Prevention Institute: Specialized Course for Criminal Justice Planners", Planning, (S.W.T.S.U., San Marcos, Texas) 1976, Chapter I.

amenities of community life in order to achieve the most appropriate and economical use of land and a harmonious relationship of structures."[2]

Perhaps the best definition comes from the International City Managers Association:

> The broad object of planning is to further the welfare of the people in the community by helping to create an increasingly better, more healthful, convenient, efficient and attractive community environment. The physical, as well as the social and economic community is a single organism, all features and activities of which are related and interdependent. These factors must be supplemented by the application of intelligent foresight and planned administrative and legal coordination if balance, harmony and order are to be insured. It is the task of planning to supply this foresight and this over-all coordination.[3]

Plannings can thus be considered to be an organized process which will provide the best possible information for the most efficient municipal action. City officials and the general public should view the planning process as an attempt by municipal government to perform a deliberate, hard headed analysis of the everyday problems of land development and municipal expansion. It should be pointed out that planning is not just concerned with the physical design of a city or town but deals with a wide variety of administrative and financial questions as well.

Planning is primarily a means of dealing with the urban expansion that the city can afford. The process of expansion should

[2] Herbert H. Smith, The Citizens Guide to Planning, (West Trenton, N.J.: Chandler Davis Publishing Co., 1969), p. 16-36.

[3] Texas Municipal League, Handbook for Administrators in Small Texas Cities, (Austin, Texas: Texas Municipal League: 9/75), p. 51-52.

be accomplished with a high degree of coordination among the city departments as well as between the city and the general public. In addition the approach to the proposed expansion should be a thoroughly comprehensive one.

The process of planning is a continuous process which requires the accomplishment of a variety of technical studies, investigations, analysis and recommendations. All of these are incorporated into the city's comprehensive plan which we will discuss later on in this chapter. The process of planning also includes the administration and enforcement of zoning and subdivision ordinances and the accomplishment and administration of capital improvement programs. Each of these topics will also be discussed later on in this text.

What Good Planning Can Accomplish

The process of planning provides a means to hold future municipal misjudgments to a minimum. It can also be used, although less successfully, to correct errors of the past.

Good planning can prevent poorly designed subdivisions and water pollution problems. Planning can prevent haphazard, disorganized and unattractive development. It has, as its ultimate objective, the coordination of land uses into compatable, sensible patters of land use. Such sensible patterns of land use are based on the needs and desires of individual communities and can be established through planning and enforced through zoning and subdivision ordinances.

Perhaps the most important thing that planning can accomplish is that it can save the city money. Lots of it! For example, proper advance site selection can often save thousands of dollars in land acquisition costs. Frequently needed land for school buildings, recreation areas and streets and roads can be obtained at little or not cost to the community if the land is purchased in advance of the obvious expansion of community facilities. Another example of tax money that could be saved with good planning is through the orderly construction of water and sewer utility lines. Ripping up concrete streets and roads to add utility lines is an extremely expensive proposition. Good planning would have analyzed and projected the growth and development to particular areas and would have insured that the right number of utility lines would have been laid before development had taken place.

It is inevitable that changes will take place in every community. Development of land will occur regardless of whether planning is there to control it. Planning offers to the city a tool whereby they can influence the type and extent of development within their community. As such it is a means by which they can influence and control their future.

Before we move on to a discussion of the comprehensive plan, some of the things which planning cannot do should be pointed out. Planning cannot, nor should it be expected to solve all community

problems. Planning needs to be utilized in conjunction with both good government and sound fiscal policy to eliminate the problems of the cities.

The Comprehensive Plan

The comprehensive plan can be considered to be a workable guide for the future. As such it is a tool which will help determine in advance the patterns and characteristics of future municipal expansion.

One of the better definitions of what a comprehensive plan is and what should be included in it are found in the New Jersey Municipal Planning Act. Basically, it states that:

> ...a master plan for the physical development of the municipality shall comprise land use, circulation and a report presenting the objectives, assumptions, standards and principles which are embodied in the various interlocking portions of the master plan. The master plan shall be a composite of the one or more mapped and written proposals recommending the physical development of the municipality which the planning board shall have adopted either as a whole or severally after public hearing. Such master plans may include proposals for various stages in the future development of the municipality.

This particular statute goes on to list the number of individual items which may be included within the scope of the master plan. The list itself indicates an intention to achieve comprehensiveness. To further emphasize this point, the statute adds the following:

> In the preparation of the master plan, the planning board shall give due consideration to the probable ability of the municipality to carry out, over a period of years, the various public or quasi-public projects embraced in the plan without the imposition of unreasonable financial burdens. In such preparation, the planning board shall cause to be made careful and comprehensive surveys and studies of present conditions and the prospects for future growth of the municipality. The master plan shall be made with the general purpose of guiding and accomplishing a coordinated, adjusted, and harmonious development of the municipality...

Generally, in all, it is indicated that a comprehensive plan shall include the following elements:

1. Land use. An investigation of existing land utilization within the municipality, depicting the current situation.

2. Physical characteristics. An investigation of all physical characteristics, including such factors as topography, soil conditions and drainage.

3. Population. A study of population trends, distribution and characteristics. The prediction of future population trends is vital to planning.

4. Circulation and Transporation. An investigation of existing facilities for traffic circulation and transportation, together with a careful analysis of the need for improvement.

5. Community Facilities and Services. The basis for future public improvements is provided by a crreful survey of existing facilities--schools, sewers, water systems, fire and police protection, libraries--and an analysis of their adequacy for existing development and future growth.

6. Economic Base and Financial Analysis. A study of the community's economic aspects, with particular attention to the tax base; and an examination of municipal fiscal trends.

7. Neighborhood Development and Community Characteristics. An investigation of individual neighborhood development including housing, shopping and industrial characteristics, as well as trends for the future.

8. The Master Plan, itself, including a summary of all the findings and conclusions; a plan for the future use of land, a plan for future streets, roads, highways and parking, projected future public facilities, and a suggested program of any necessary rebuilding, such as urban renewal or central business district reorganization.

9. Capital Budget Program. A program for the inclusion of the projected public facilities into the municipal budgetary system.

10. Regulatory Measures. The provision of the legal tools to carry out planning, including a zoning ordinance and map, subdivision controls, and reviews of related codes and ordinances.

Numbers 9, Capital Budget Program and 10, Regulatory Measures, are not considered to be a part of the plan itself but are supplementary to it. These items will be discussed later on in this chapter.

In order to accomplish a comprehensive plan (1) a number of inventories of the community's assets and liabilities need to be taken and (2) the needs and desires of the community (goals and objectives) should be ascertained. It is also important to formulate programs which meet the needs and desires of the citizens while always keeping in mind the community's ability to finance facility improvements and social programs.

It is important to remember that completion of the Plan is only the first step in the planning process. The plan must be

published and approved by the city government. It must also be revised and updated when necessary. Appropriate regulatory ordinances must be enacted and enforced and a capital improvement program must be accomplished. It should also be noted that development of a master plan or formulation of a coordinated planning program cuts acress areas of responsibility of the school board, urban renewal authority, parking authority, bond of health, zoning board of appeals, etc.

The Future and Powers of the Planning Board

The Planning Board which is often called the Planning and Zoning Commission is normally responsible to the City Council. Now the City Council is the decision making body responsible for the policies under which the city is operated. The council appoints members of the planning and zoning commission, and provides funds from the city treasury to operate the commission and furnish it with necessary services. The council also adopts policies and enacts the laws necessary to carry out the plans governing the future development of the community. Throughout this process, the council serves as an interpreter to the public for the planning decisions which affect the city's future. The commission's role is to prepare and recommend a long range plan for the city--a plan to be adopted by the council and used as a guide by the community. The commission is also generally charged with the preparation of zoning

ordinances, subdivision regulations, and other local ordinances that aid in accomplishing the objectives and goals of the city plan. Once plans and regulations are adopted, the commission becomes part of the local program for implementing and updating planning objectives. Thus the commission has continuing responsibility in the area of planning administration.

The duties and powers of a planning and zoning commission as reflected in a typical enabling ordinance include:

1. Formulate, and recommend to the city council for adoption, a city plan for the orderly growth and development of the city and its environs, and from time to time recommend changes in the plan which will facilitate the movement of people and goods and the health, recreation, safety, and general welfare of the citizens of the city;

2. Formulate a zoning plan to carry out the goals of the city plan; hold public hearings and make recommendations to the city council relating to the creation, amendment, and implementation of zoning regulations and districts;

3. Exercise all the powers of the commission as to approval or disapproval of plans, plats, or replats, and the vacation of plans, plats, or replats as set out in Articles 974a and 970a, V.T.C.S.;

4. Study and make recommendations as to the location, extension, and planning of public rights-of-way, parks and other public places, and on the vacating or closing of same;

5. Study and make recommendations as to the general design and location of public buildings, bridges, viaducts, street fixtures, and other structures and appurtenances;

6. Initiate in the name of the city for consideration at public hearings all proposals for: (a) the opening or closing of public rights-of-way, parks, or other public places, (b) the original zoning of annexed areas and (c) the changes of zoning district boundaries on an areawide basis.

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ZONING AND SUBDIVISION ORDINANCES, AND CAPITAL IMPROVEMENTS PROGRAMMING

ZONING AND SUBDIVISION ORDINANCES,[1] AND CAPITAL IMPROVEMENTS PROGRAMMING

INTRODUCTION

The purpose of this chapter is to provide the student with an insight into the tools which Planners use to implement the Comprehensive Plan. These tools are primarily zoning and subdivision ordinances and capital improvement programming. As we cover these items we will look primarily at the following areas:

1. Historical Beginnings.
2. Legal Authority.
3. Definitions.
4. Processes and Procedures.
5. Problems and Deficiencies.

Zoning Ordinances

Beginnings

Contemporary zoning began in New York City in 1916 with the adoption of an ordinance which regulated the use and location of buildings throughout the city. This represented the first attempt by an American Municipal Government to control land use.

Definition

Zoning can be defined as the division of a municipality (or other governmental unit) into districts. Within these districts

[1] Howard Balanoff, "Texas Crime Prevention Institute: Specialized Course for Criminal Justice Planners", Planning, (S.W.T.S.U., San Marcos, Texas), 1976, Chapter II.

are regulated the height and bulk of buildings and other structures, the area of a lot which may be occupied, the density of population and the use of buildings and land.[2]

Legal Nature

Zoning is an exercise of the basic power of the State and its political subdivisions to enact legislation protecting the public health, safety, morals and general welfare of its citizens. It is also one of the legal and administrative devices by which city plans may be implemented.

Uses of the Ordinance

The zoning ordinance is designed mainly to regulate private development. The primary reason for adopting a zoning ordinance is to regulate land uses in the community. The reasons for regulating these uses are to prevent the mixing of incompatable uses and to minimize the cost of extending city utilities such as water and sewer services. There are many things which zoning does not affect. For example, zoning cannot regulate the materials and manner of construction of a building. It cannot set minimum costs nor can it regulate the design and installation of streets and utilities.

Zoning Districts

It had been pointed out previously that zoning is the division of a municipality into districts. Almost all zoning ordinances are

[2]William I. Goodman and Eric C. Freund, editors, Principles and Practice of Urban Planning, (Washington, D.C.: International City Managers Association, 1968), p. 389-461.

based on the district concept which is the segregation of land into at minimum, residential, commercial and industrial zones. Residential districts are usaully further subdivided into single family, two-family and apartment districts. Commercial districts are usually subdivided into goods and services districts. Industrial districts are usually divided into light and heavy districts. Industrial districts were once used as the dumping grounds for the zoning ordinance; all classes of use were permitted in the industrial district. In addition to the three major districts, special purpose districts such as agricultural zones may also be included in the zoning ordinance.

Early zoning ordinances were constructed on a "cumulative principle". What this means is that every use permitted in a higher use district was also permitted in all the districts lower on the scale. The highest use district is residential, next comes commercial and the lowest use district is industrial. Most planning experts feel that the abandonment of the cumulative principle is required if the planner is to have the option to design cities which follow the principles of good land development.

Enforcement

Enforcement of the zoning ordinance usually involves two administrative agencies, a zoning enforcement officer and a board of adjustment. The zoning enforcement officer can be considered to be the key man in the zoning process. He is usually the one

charged with conveying the literal provisions of the zoning ordinance. He issues permits and checks for ordinance violations. It is important to note that he has no discretion to modify zoning provisions in individual cases.

The Zoning Board of Adjustment is sometimes referred to as a Board of Appeals. Its function is to hear appeals on the enforcement officers decision and to grant relief in certain hardship situations from the literal enforcement of the ordinance. The Board basically interprets the zoning ordinance, grants special use permits or special exceptions and grants variances.

Zoning Terminology

Most of the terminology which is associated with zoning ordinances has already been discussed. Some of the terms which are important but have not yet been discussed are shown below.

Performance Standards - These standards prescribe the maximum amount of noise, smoke, dust and other external effects that an industry in a given district may produce. If that industry could beat certain high environmental standards then it is conceivable that it could be located without harm in a residential area.

Cluster Zoning - A land developer is allowed to reduce the minimum size of his lots below that specified in the zoning order for the district in which his land is located if, in return, the land is preserved as permanent open space for the benefit of the community.

Nonconforming Uses - At the time a zoning ordinance is originally adopted, there are, in almost every district, some uses that existed before the ordinance was adopted, which do not conform to the use regulations or the dimensional regulations for the district. These are known as nonconforming uses. Provisions of the ordinance usually severly restrict non-conforming uses and require these eliminations after a specified time limit.

Variance - The granting of relief to a property owner from the provisions of the zoning ordinance by the Board of Adjustment where there are practical difficulties or unnecessary hardships in the way of carrying out the strict letter of the ordinance. Property owner must be able to show, if he complies with provisions of the ordinance, that he cannot make any reasonable use of his property.

Spot Zoning - Amendments which give special consideration to the favored few -- any amendment not based on community or neighborhood wide considerations may fall within this definition.

Common Deficiencies of Zoning

Up until this point we have discussed the operation and use of the zoning ordinance. Before we turn our attention to subdivision ordinance some mention needs to be made of the deficiencies of the zoning ordinance. These are listed below:

1. Often the ordinance is not based on a comprehensive plan.
2. The ordinance is often poorly organized and difficult to use.

3. The Board of Adjustment usually grants too many variances.

4. Enforcement officers and the Board of Adjustment sit back and wait for complaints before taking any enforcement action.

5. Many ordinances make no provisions for large scale development under single ownership such as Planned Unit Developments (PUD's) even though these developments may make for efficient use of land and financial resources.

6. Many ordinances do not require the elimination of non-conforming uses.

7. Ordinances often do not restrict development in flood plans and other unsuitable areas such as close to airports.

Subdivision Ordinances

Beginnings

The Standard City Planning Enabling Act of 1928 made subdivision regulation a part of the comprehensive planning program. As a result of this act major responsibility for administering subdivision regulations was transferred from the city engineer to the planning commission and staff.

Purpose

Subdivision regulations may serve a wide range of purposes: they provide for safe water supply and sewage disposal system; they assure safe design and proper construction of new streets, utilities and drainage systems; they protect responsible developers against substandard competitors; they enable planners to coordinate unrelated

plans of a great many individual developers and they enable planners to control internal design (streets, lots, etc.) of subdivisions.

Legal Authority

Subdivision regulations governing the use of property are an exercise of the so-called police power of state and local units of government. Statutory provisions are for the most part similar to the Standard City Planning Enabling Act.

The Standard Act vests municipalities with power to regulate subdivisions both inside their limits and for a distance of five miles beyond their boundaries. Texas has up to 5 miles, depending on population. The Act requires the Planning Commission to adopt written regulations stating requirements to avoid arbitrariness. Enforcement provisions of Standard Act have been widely followed. They include provisions for making the sale of land of an unapproved plot unlawful and subject to civil penalty and the forbidding of issuance of a building permit for a structure on a lot having access only to an unapproved street.

It should be noted also that a comprehensive plan is a legal and practical necessity as a basis for effective subdivision regulation. From a legal standpoint the plan is evidence that particular requirements are not arbitrary or discriminatory.

Definitions

Some of the more important terms associated with subdivision regulation are listed below.

Subdivision - the division of a lot, tract, or parcel of land into two or more lots, plats, sites, or other divisions of land for the purpose, whether immediate or future of sale or building development.

Subdivision Ordinances - subdivision regulations are locally adopted laws governing the process of converting raw land into building sites. They normally accomplish this through plat approval procedures under which a developer is not permitted to make improvements or to divide and sell his land until the planning commission has approved a plat (map) of the proposed design of his subdivision. The approval or disapproval of the commission is based upon compliance or non-compliance of the proposal with development standards set forth in the subdivision regulations.

A typical subdivision regulation contains certain general provisions relating to the location and design of subdivisions, followed by more specific controls over the layout and dimensions of streets and alleys, utilities easement, blocks and lots. Special provisions may include the prohibition of development in flood plains or geologically

unsuitable area; the prohibition of subdivisions in outlying areas to stop urban sprawl; and the insurance that proposed subdivisions will be coordinated with old ones with respect to street connections, utility lines, drainage facilities and reservation of open spaces. Street design and utilities easements are of key importance in subdivision layout.

Dedication of Land - a gift by the owner, of a right to use land for stated purposes. Developers dedicate street rights of way, utility easements, recreation areas, school sites, etc. Dedication is made by a written instrument which is recorded.

Reservation of Land - This process does not involve any transfer of property rights. It constitutes an obligation to keep the property free from development for a stated period of time. Unlike a dedication, in which the owner receives no payment for his land a reservation contemplates that the government will pay the owner at the time it actually acquires the property. Official maps are essentially a legal means of requiring land reservation.

The Subdivision Process

Land subdivision is the process by which cities are built and grow. Initial decisions with respect to the design of the street system, lot layout and so forth have extraordinarily enduring effects. On an available tract of land public or private developers have mapped out the lines of streets, which provided access and divided the land

into blocks. They have further divided these blocks into lots to facilitate distribution of the land among individual property owners. Developers have reserved some land as public squares, parks, schools, churches, hospitals, etc. They have also constructed streets, sidewalks, and utility systems.

Subdivision Procedures

Conventional subdivision regulations follow a fairly common set of procedures involving five steps prior to the time that the developer is permitted to make sales of his lots. These are (1) Pre-Application Procedure - developer submits sketch of proposed subdivision to planning staff for recommendations (2) Preliminary Plat - sketch is submitted to appropriate local agency for approval. The decision made on preliminary plat is the most important step in the approval process because on the basis of this decision, work will begin on opening and constructing streets, installing utility systems, etc. (3) Construction of Improvements - once approval of preliminary plat is granted, improvements must be made before final plat is submitted. Enforcement of subdivision requirements now switch to city engineer (4) Final Plat - submission and approval is required of a plat which incorporates both engineering data and land title information. Two plats with separate engineering and legal data may be subsituted for the one final plat. (5) Recording of the Plat - filing serves two purposes: it may constitute

a legal dedication to the public of streets, parks, utility easements, etc., or it may become a convenient means for describing a particular lot which a developer wishes to deed to a purchaser. As a practical matter much subdivision regulation is treated as a bargaining process between a developer who wishes certain city services and a city government which wishes high standards of development.

Problems

Problems result from subdivision regulations written as through the only types of subdivisions were those designated for single family residences located in a more or less routine terrain setting. Ordinances need to consider items such as cemeteries, commercial and industrial subdivisions, mobile homes, hillside subdivisions, waterfront subdivisions, etc.

Unlike the Standard Zoning Enabling Act, most subdivision regulation enabling acts made no provision for granting of variances from the requirements in hardship cases. The regulations themselves may grant relief. They also leave considerable discretion in the hands of the plat approval agency. Often relief is sought by developer to create substandard lots out of resulting remnants of land. Subdivision regulations are intended to set the minimum standards for development, not maximums.

Capital Improvements Programming

Introduction

Capital programming and capital budgeting are important

financial planning tools which can be used to implement the recommendations of the comprehensive plan. Although it is not necessary to go into a detailed analysis of the capital improvement process it is important that you become familiar with some of the definitions and basic steps in the process.

Definitions

Some of the more important terms associated with Capital Improvement Programming are listed below.

Capital Program - A capital program is a plan for capital expenditures to be incurred each year over a fixed period of years to meet capital needs arising from a long term work program. Essentially a capital improvement program includes the scheduling of public physical improvements for a community over a certain period of time with consideration for priorities and the financial capability of the community. It is also the long range schedule for projects with their estimated costs after a common period of six years. This covers a five year period beyond the capital improvement budget for the first year.

Capital Budget - A capital budget is a plan of proposed outlays and the means of financing them for the current fiscal period. A capital improvement budget is the list of projects together with the

amounts and sources of funds for the coming fiscal year. It is also normally the first year of the Capital Improvements Program.

Capital Improvement - A Capital Improvement is any major nonrecurring expenditure or any expenditure for physical facilities of government such as costs for the acquisition of land or interests in land; construction of buildings or other structures, including additions or major alterations; construction of highways or utility lines; fixed equipment; landscaping and similar expenditures. Capital Improvement projects may range from extensions of utility lines to construction of major public buildings.

Basic Steps in the Capital Improvement Process

The process of capital improvement programming will ordinarily call for the following steps:

1. An inventory of potential projects including cost estimates and an initial evaluation of their relative priority. Categories of priority are urgent, necessary, desirable and deferrable.

2. Analysis of these projects requests, usually involving discussion with the sponsor.

3. Investigation of the financing capabilities of the community and the relation of these to different project categories.

4. A schedule of project execution in a long range program list which considers project relationships to each other and to financial requirements.

5. Selection from this schedule of a slate of projects for early action. This generally takes the form of the capital budget for the coming year.

6. Formal adoption of the capital budget against the background of the long range recommended programs usually after some form of public review.

Function of Capital Programming

The basic reason for a capital improvement program is to insure that money is being spent wisely. Capital improvement programs present the opportunity to schedule projects over time so that the steps in the development of an area logically follow one another. Capital improvement programs also give an advance picture of future needs and required facilities.

Since most capital investments or similar major expenditures are paid for with borrowed funds, an important function of capital programming is to systematically review proposed projects so as to tie them together as to timing, location and financing.

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COMMUNICATION WITH THE CONSTRUCTION INDUSTRY

COMMUNICATION WITH THE CONSTRUCTION INDUSTRY [1]

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.

There are many segments of the construction industry. Each area has its own expertise to offer. There are three major interests to be considered including planning, construction, and inspection.

Architects, engineers, designers, and planners are typically college trained professionals with a great deal of specialized training in the planning phase of construction projects. A person, company, or agency normally makes first contact with the professional planner in the early stages of the process which will lead to a construction project. At this point the planner is primarily concerned with meeting the needs of the project in general concepts. It is not until more detailed plans are developed that the specific crime prevention techniques can be introduced. A good working relationship with the planners is necessary.

[1] Taken in part from the "Specialized Environmental Design School for Crime Prevention Officers", Texas Crime Prevention Institute, San Marcos 1975.

Learn who they are and provide them with the most up to date information that you have in relation to techniques to be used in pre-planning and planning phases of construction. The city building inspector should be able to supply you with a list of planners and builders commonly working in your area.

Builders, contractors, and sub-contractors are businessmen who have typically learned their trade from field experience. It is only recently that specialized school programs have been developed to train persons in the business of building construction and its related service areas. After the plans for a project have been developed, contractors are asked to bid or estimate construction cost. At this point in the project, small changes can still be made, but generally all major aspects of the plans are set. Changes after contracts are under way are usually more costly compared to making change before the plans are finished. But contractors should be aware of ways they can help their clients take advantage of crime prevention techniques. Therefore, learn who the contractors are in your area and let them know that you are available to assist them with information about crime prevention. For residences and other light construction projects, the clients may contact the contractors first and planners may not become involved. This is especially true when contractors are building speculatively. One approach that you might use with this type project is to emphasize the sales appeal where clients have a feeling of security.

Inspection can be divided into two major groups: 1. Building codes enforced by law through governmental agencies; and 2. Finance

and Insurance company standards develop to protect the value of their co-investment of money with the client. Building codes are both national and local in origin. Many cities will adopt one of several national building codes and add local variation to meet local conditions. Most building codes relate to building type and occupancies; fire prevention, engineering requirements, safety requirements, and material usage. Planning and zoning agencies are normally established in conjunction with building codes to control land usage within the city. City building inspection offices are established to enforce the building codes. Code changes are sually initiated through the planning and zoning boards. Thus, it is important to maintain a good working relationship with the building inspector and his office staff. Finance companies are concerned with both quality of construction and sales appeal of the project in case it becomes theirs by clients default. Therefore, the finance company will look over the plans in detail before construction begins and will follow the construction to check quality in much the same manner as the building inspector. The planner may also be inspecting the project to protect the clients interest. Where the city building inspector is protecting the interest of the public. In most cases insurance companies do not become involved until after completion of the project; at which time they inspect to see that the insurance coverage is protected. Finance companies normally require fire and storm insurance to protect the physical property. The owner may elect to extend coverage in many other areas such as; theft, medical liability, personal belongings, etc. At this point insurance companies can implement crime prevention incentives for the client.

Regardless of the level of the construction industry you are working with, remember that most improvements in crime prevention are above and beyond todays building codes and other requirements and will therefore cost the project owner more money. In straight forward terms this means that improved crime prevention techniques will be implemented only as fast as the client-owner is willing to pay for the additional protection. This indicates that the local citizens must be better educated in crime prevention standards. This can be done through the construction industry. But, remember that as you go to talk with persons in the construction industry, there will be those of all philosophies about how to handle crime. You will probably find many that feel crime prevention is important, and in fact think they are doing a good job, 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 over burden 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 originaal 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.

BLUEPRINT READING

BLUEPRINT READING [1]

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.

[1]Windham, Raugh, Hill, Stansbury and Guseman, "Specialized Environmental Design School for Crime Prevention Officers", Texas Crime Prevention Institute, San Marcos 1975. p. 47-78.

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

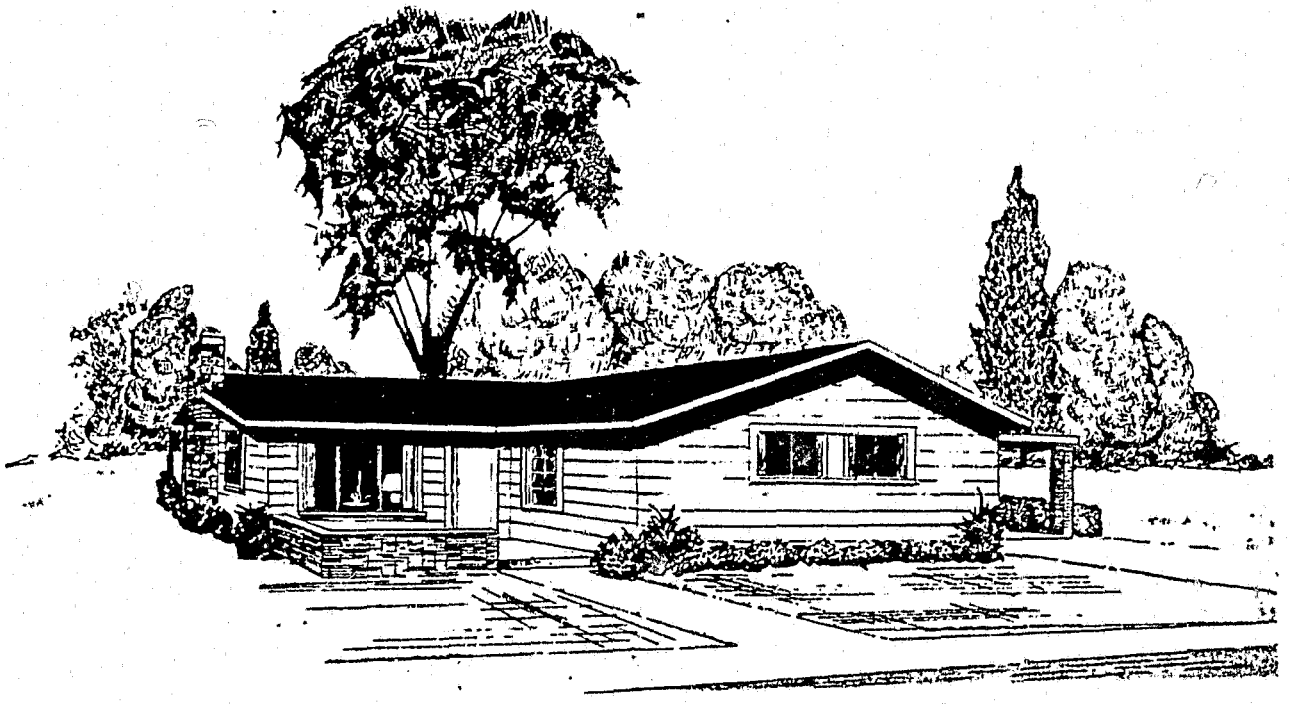


Figure 1 **Perspective Drawing**

Figure 2

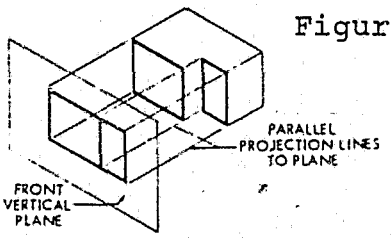
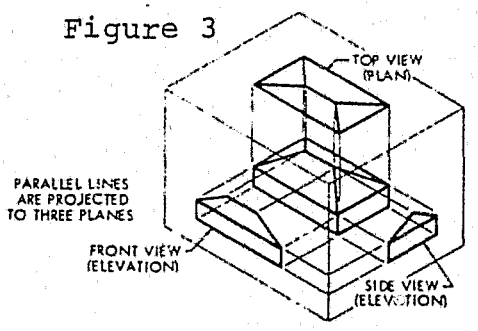


Figure 3



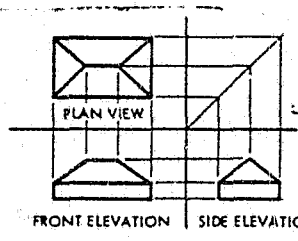


Figure 4

PROJECTION LINES
ARE USED TO DEVELOP
A THREE VIEW DRAWING

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 architecturaal 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.

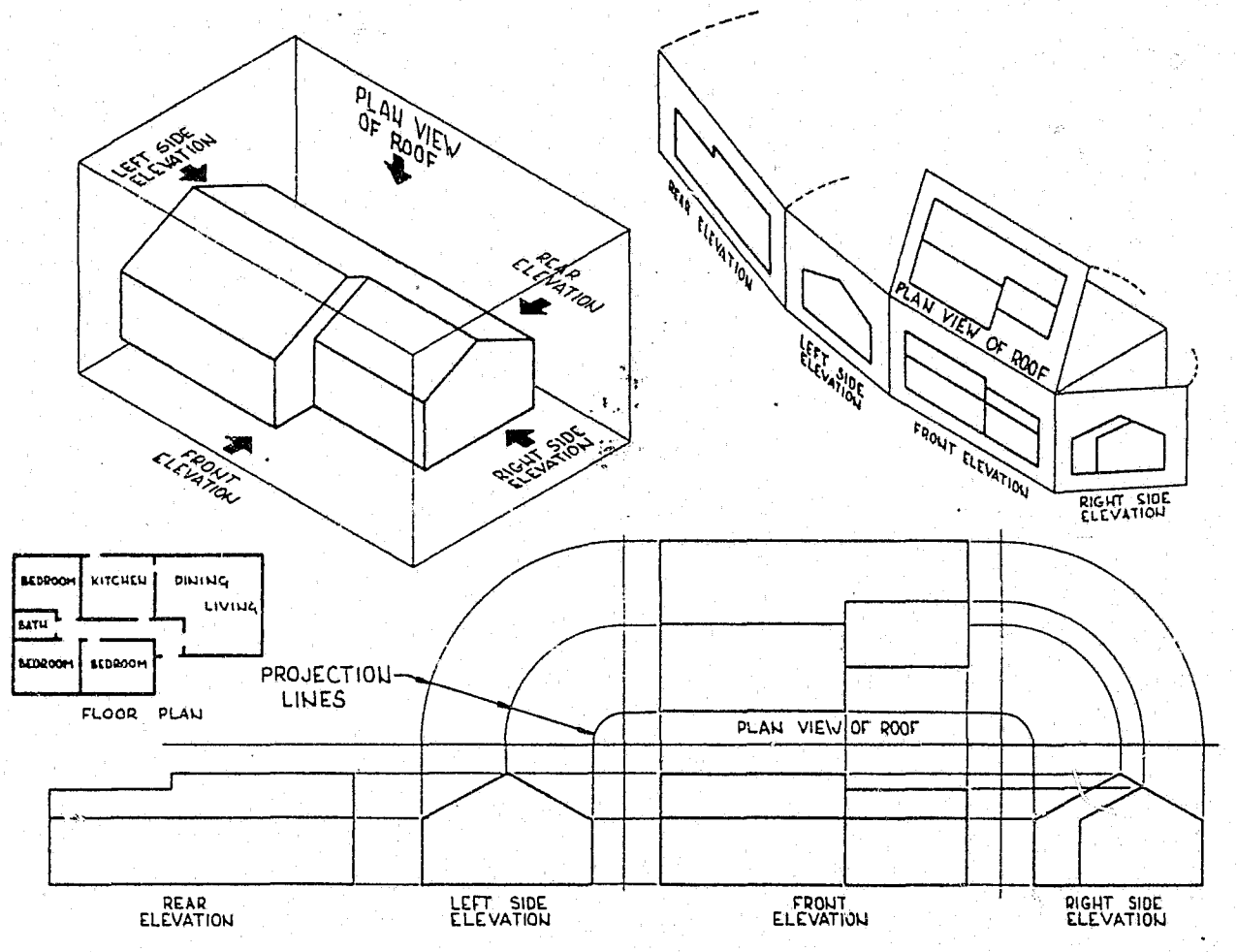

LEFT SIDE ELEVATION
PLAN VIEW OF ROOF
REAR ELEVATION
FRONT ELEVATION
RIGHT SIDE ELEVATION
REAR ELEVATION
LEFT SIDE ELEVATION
PLAN VIEW OF ROOF
FRONT ELEVATION
RIGHT SIDE ELEVATION
BEDROOM
KITCHEN
DINING
LIVING
BATH
BEDROOM
BEDROOM
FLOOR PLAN
PROJECTION LINES
PLAN VIEW OF ROOF
REAR ELEVATION
LEFT SIDE ELEVATION
FRONT ELEVATION
RIGHT SIDE ELEVATION

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.

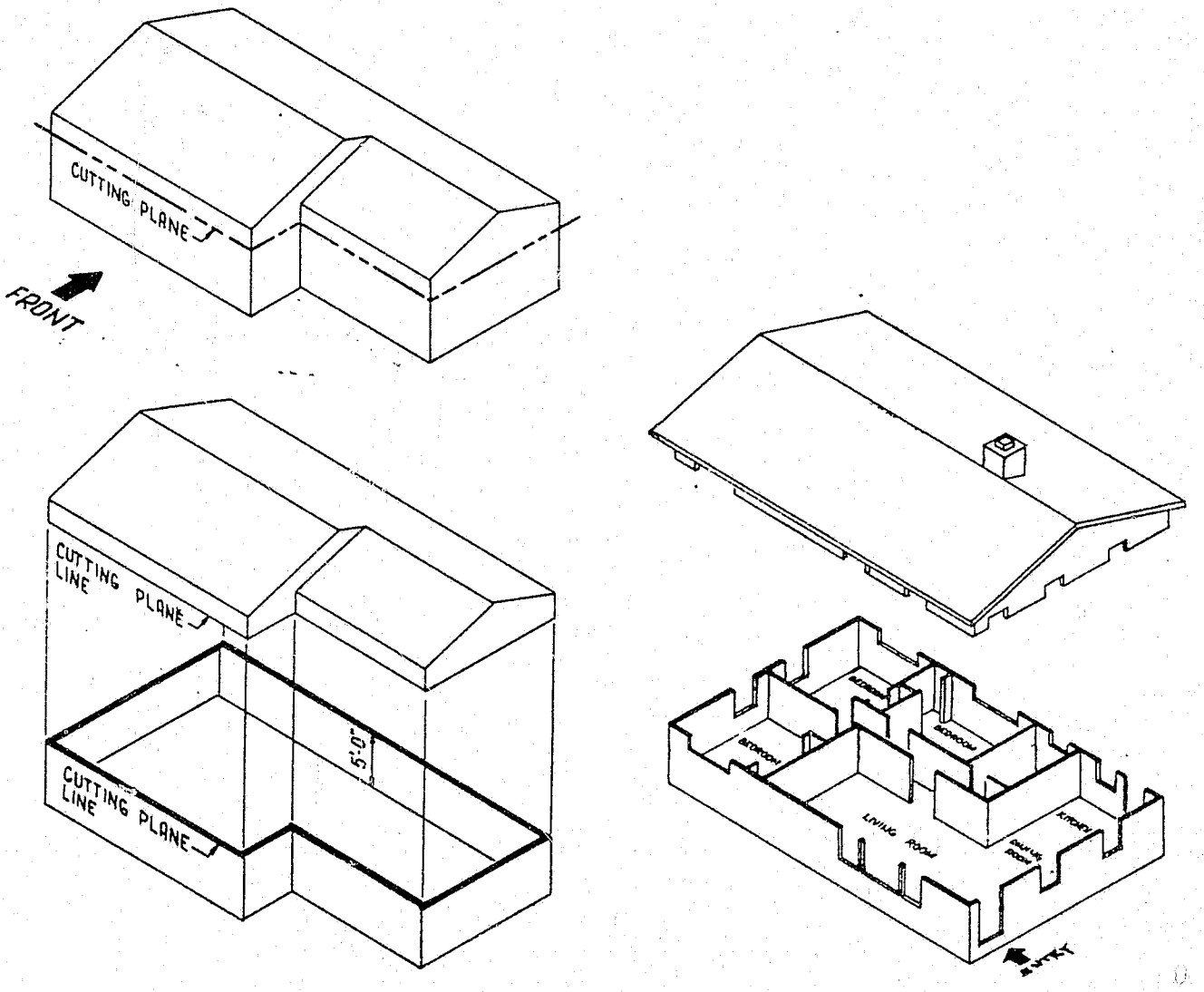
2. The floor plan views and elevations are drawn to the same scale and are exactly related to each other.

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

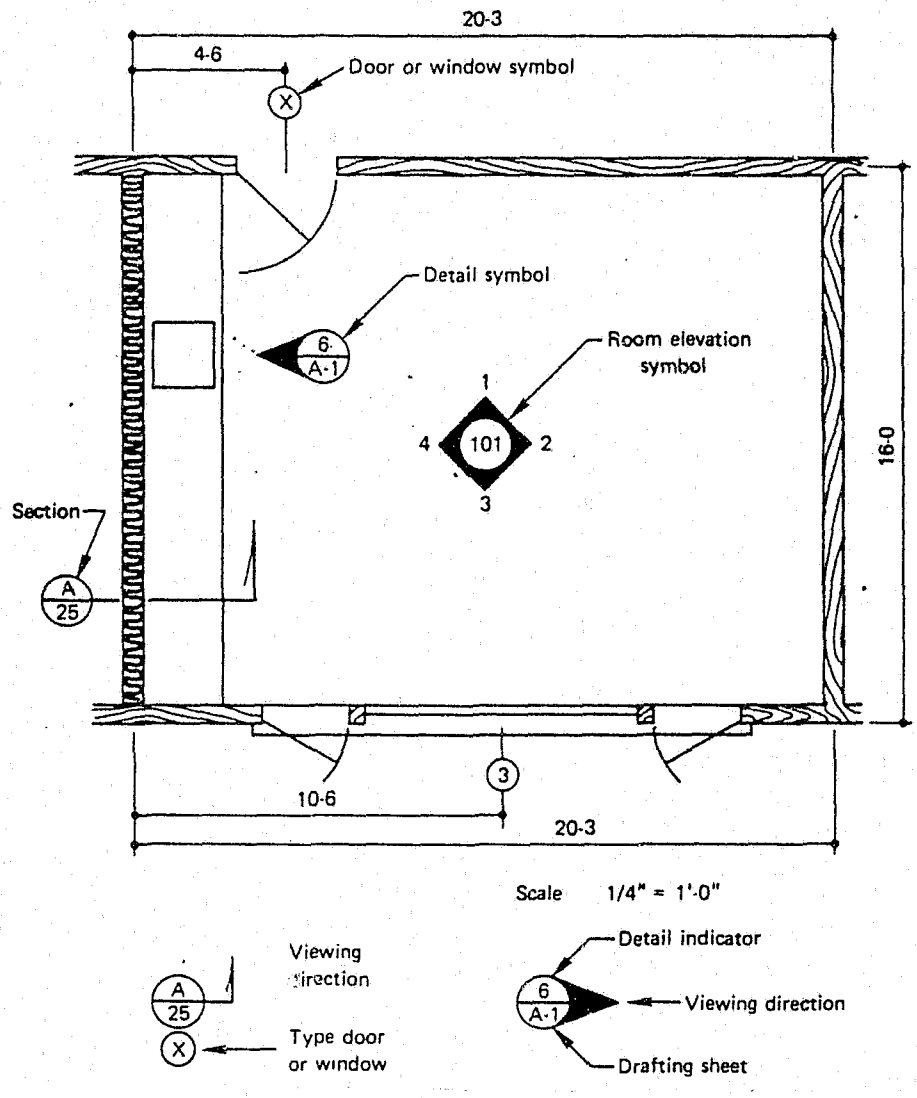

20-3
4-6
Door or window symbol
X
Detail symbol
6
A-1
Room elevation symbol
1
4
101
2
3
Section
A
25
16-0
3
10-6
20-3
Scale 1/4" = 1'-0"
Viewing direction
A
25
X
Type door or window
Detail indicator
6
A-1
Viewing direction
Drafting sheet

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

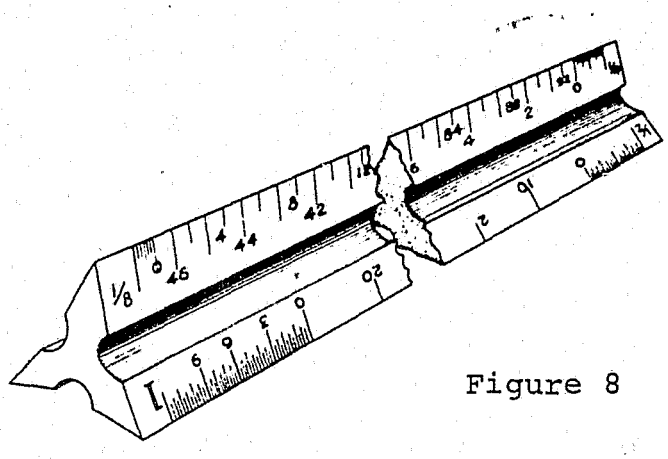


Figure 8

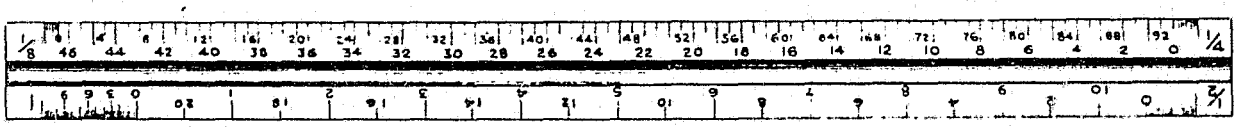


Figure 9

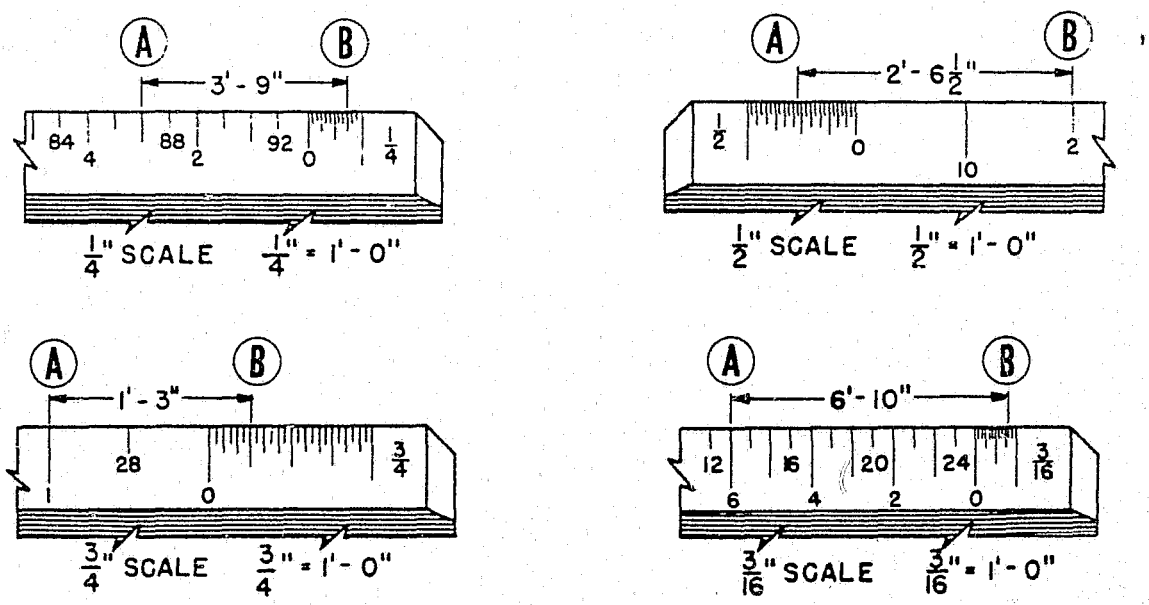


Figure 10

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

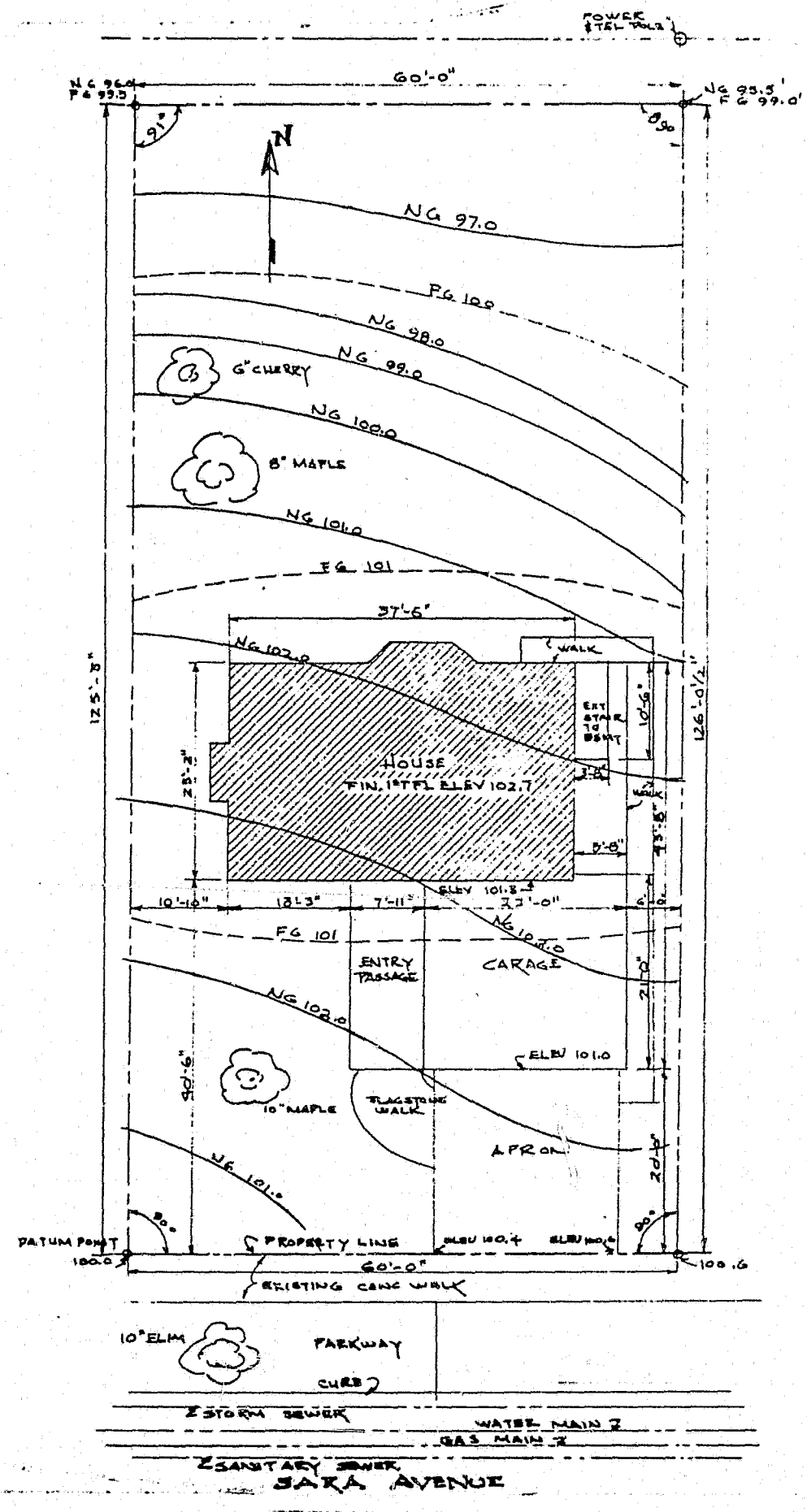

POWER & TEL POLE
NG 96.0
FG 99.5
60'-0"
NG 95.5'
FG 99.0'
N
NG 97.0
FG 100
NG 98.0
NG 99.0
NG 100.0
6" CHERRY
8" MAPLE
NG 101.0
FG 101
37'-6"
WALK
NG 102.0
125'-3"
126'-0 1/2"
EXT STAIR TO BSMT
10'-6"
HOUSE
FIN. 1ST FL ELEV 102.7
28'-2"
WALK
43'-8"
5'-8"
ELEV 101.8
10'-10"
18'-3"
7'-11"
37'-0"
FG 101
NG 102.0
ENTRY PASSAGE
CARAGE
21'-0"
NG 102.0
ELEV 101.0
50'-6"
10" MAPLE
FLAGSTONE WALK
APRON
20'-0"
NG 101.0
80°
90°
DATUM POINT
100.0
PROPERTY LINE
ELEV 100.7
ELEV 100.6
100.6
60'-0"
EXISTING CONC WALK
10" ELM
PARKWAY
CURB
STORM SEWER
WATER MAIN
GAS MAIN
SANITARY SEWER
SARA AVENUE

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'.

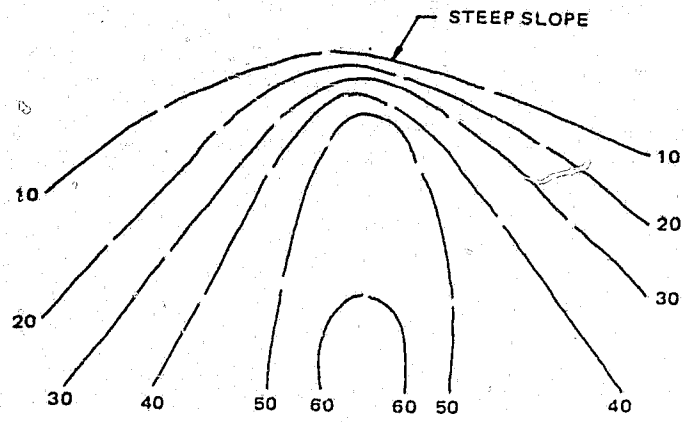
A dimension of 120.5' would mean 120 and 5/10 feet or 120 feet and 6 inches.

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.

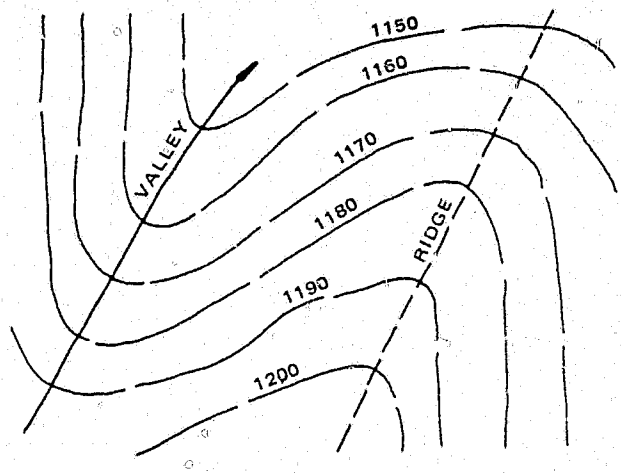
Contour lines are lines drawn on a surveyor's plat or on an architect's plot plan to show the slope of the ground. A contour line may be explained by thinking of the lowest contour line as the shore of a lake. If the water were to rise one foot the shore line (contour line) would take a new shape as 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.

CONTINUED

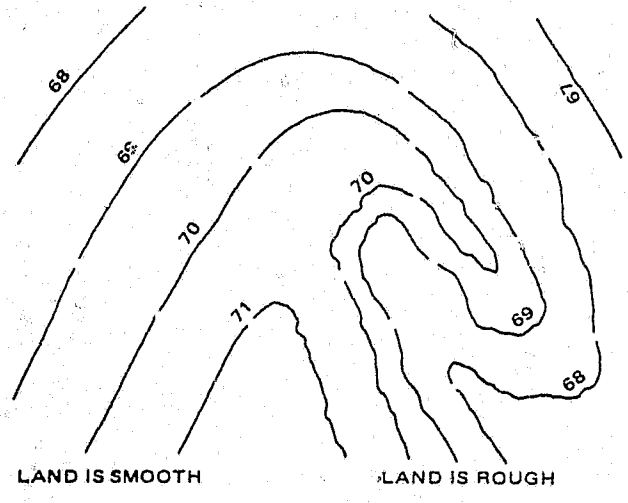
1 OF 3



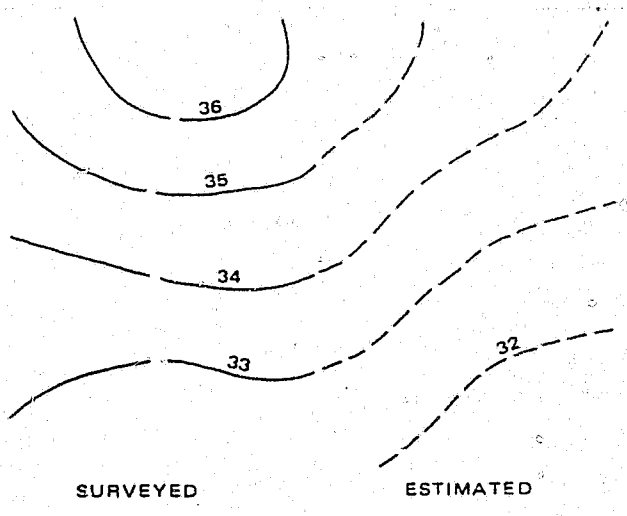
The relative spacing of contour lines represents the slope angle.



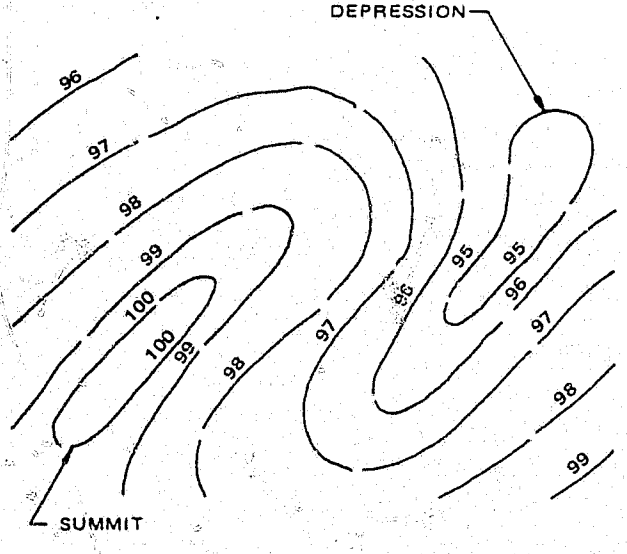
Ridges and valleys should be identified using the proper symbols.



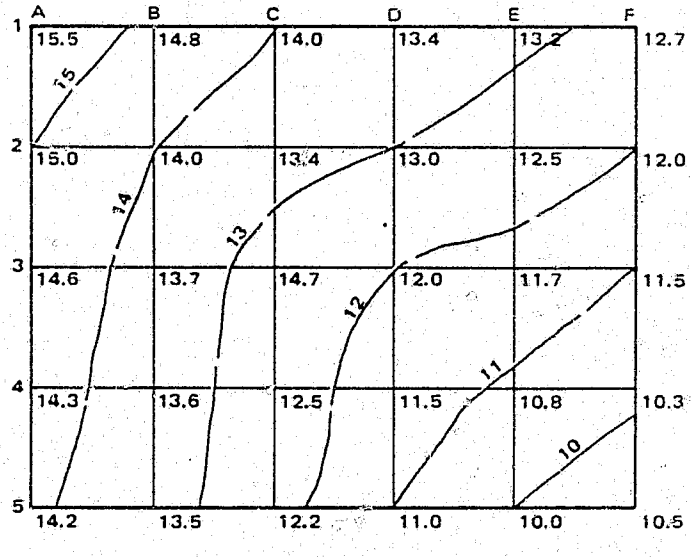
Contour lines show relative roughness of the land as well as elevation.



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.

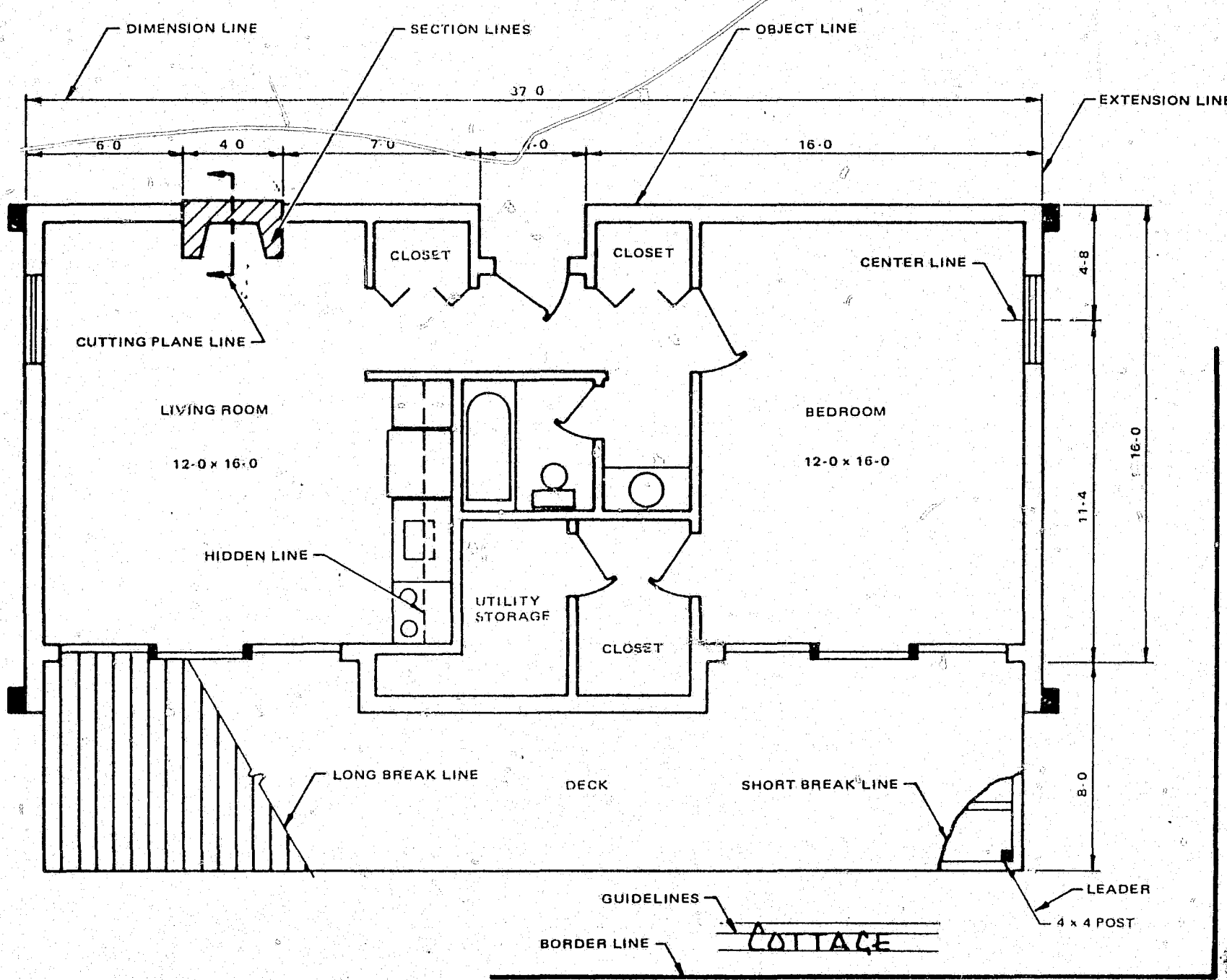
Generally the use of "or equal" is a poor effort to allow bidding by all comers on a specified product selected beforehand. The burden of proving equality is usually on the supplier, but the architect or engineer involved must approve or disapprove substitutions or allow the contractor a free rein, with 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.



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

ABBREVIATIONS COMMONLY USED ON PLAN VIEWS

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

ABBREVIATIONS COMMONLY USED ON PLAN VIEWS (Cont'd)

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

ABBREVIATIONS COMMONLY USED ON ELEVATIONS

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

GENERAL OUTLETS

Ceiling Wall

- 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.
- Lamp Holder with Pull Switch.
- Pull Switch.
- Outlet for Vapor Discharge Lamp.
- Exit Light Outlet.
- Clock Outlet. (Specify Voltage.)

CONVENIENCE OUTLETS

- Duplex Convenience Outlet.
- Convenience Outlet other than Duplex. 1=Single, 3=Triplex, etc.
- Weatherproof Convenience Outlet.
- Range Outlet.
- Grounded Outlet.
- Duplex Convenience Outlet — Split Wired
- Switch and Convenience Outlet.
- Radio and Convenience Outlet.
- Special Purpose Outlet. (Des. in Spec.)
- Floor Outlet.

SWITCH OUTLETS

- S Single Pole Switch.
- S_2 Double Pole Switch.
- S_3 Three-Way Switch.
- S_4 Four-Way Switch.
- S_D Automatic Door Switch.
- S_E Electrolier Switch.
- S_K Key Operated Switch.
- S_P Switch and Pilot Lamp.
- S_{CB} Circuit Breaker.
- S_{WCB} Weatherproof Circuit Breaker.
- S_{MC} Momentary Contact Switch.
- S_{RC} Remote Control Switch.
- S_{WP} Weatherproof Switch.
- S_F Fused Switch.
- S_{WF} Weatherproof Fused Switch.

SPECIAL OUTLETS

$O_{a,b,c,etc}$
$\ominus_{a,b,c,etc}$
$S_{a,b,c,etc}$

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.

PANELS, CIRCUITS, AND MISCELLANEOUS

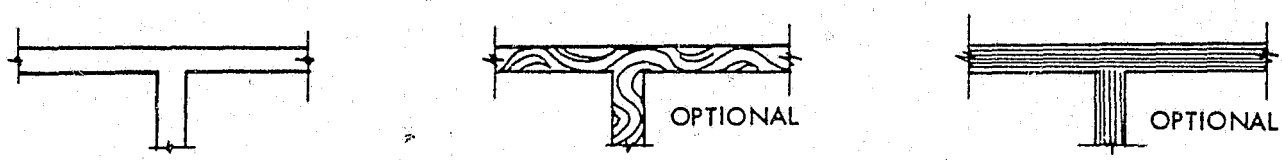
- Lighting Panel.
- Power Panel.
- Branch Circuit; Concealed in Ceiling or Wall.
- Branch Circuit; Concealed in Floor.
- Branch Circuit; Exposed.
- Home Run to Panel Board. Indicate number of Circuits by number of arrows. Note: Any circuit without further designation indicates a two-wire circuit. For 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

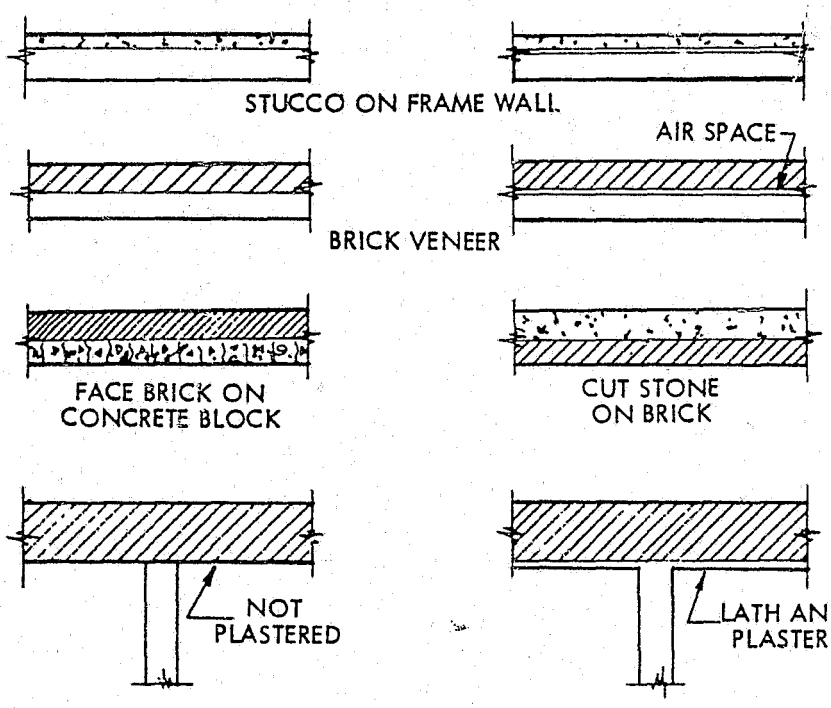
- Push Button.
- Buzzer.
- Bell.
- Annunciator.
- Outside Telephone.
- Interconnecting Telephone.
- Telephone Switchboard.
- Bell Ringing Transformer.
- D Electric Door Opener.
- F Fire Alarm Bell.
- F Fire Alarm Station.
- City Fire Alarm Station.
- FA Fire Alarm Central Station.
- FS Automatic Fire Alarm Device.
- W Watchman's Station.
- W Watchman's Central Station.
- H Horn.
- N Nurse's Signal Plug.
- M Maid's Signal Plug.
- TV TV Outlet.
- SC 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 / CAST STONE (CONCRETE) / RUBBLE OR CUT STONE	SHEET METAL FLASHING		OCCASIONALLY INDICATED BY NOTE	
WOOD	SIDING / PANEL	WOOD STUD PARTITION / OPTIONAL / OPTIONAL	ROUGH MEMBERS / FINISHED MEMBERS (TRIM)	METALS OTHER THAN FLASHING	INDICATED BY NOTE OR DRAWN TO SCALE	SAME AS ELEVATION	STEEL / CAST IRON / ALUMINUM / BRONZE OR BRASS / SMALL SCALE
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 I / L I / I-ANGLES, I-BEAMS, ETC. / SMALL SCALE / LARGE SCALE

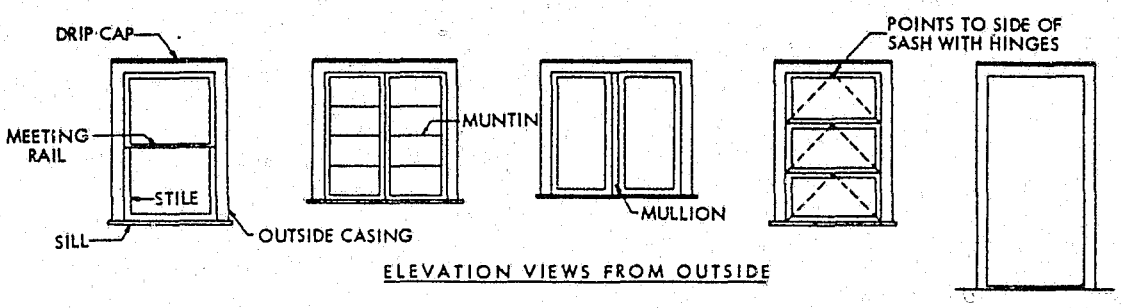
Symbols used for common materials shown on blueprints.



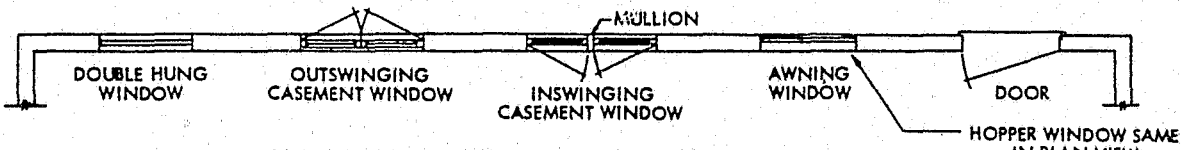
INTERSECTION OF FRAME WALL AND FRAME PARTITION
OR TWO FRAME PARTITIONS



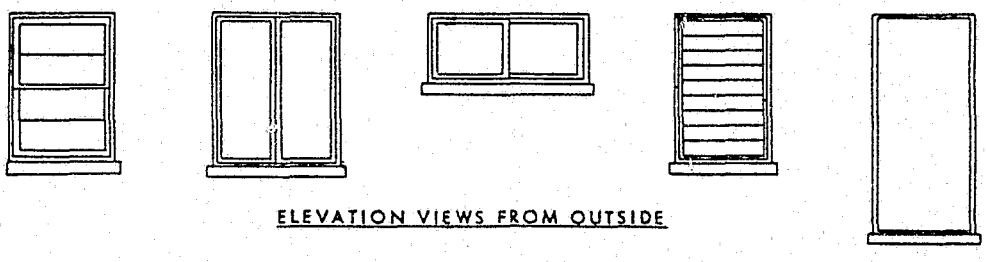
INTERSECTION OF BRICK WALL
AND WOOD STUD PARTITION
NOTE: PLASTER LINE OMITTED
ON PARTITION



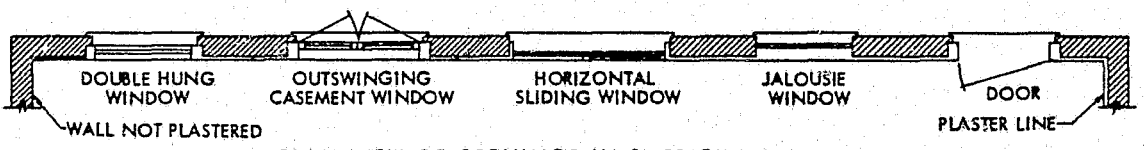
ELEVATION VIEWS FROM OUTSIDE



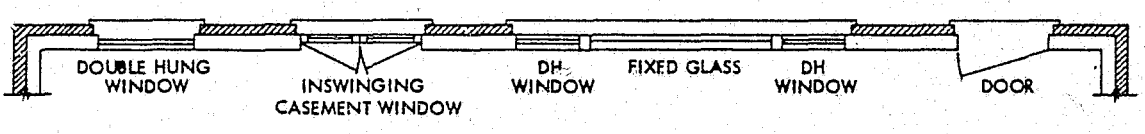
PLAN VIEW OF OPENINGS IN A FRAME WALL



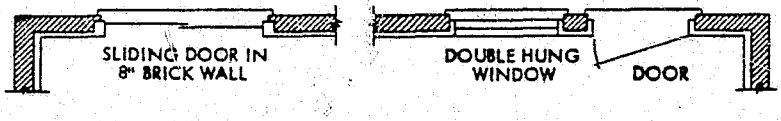
ELEVATION VIEWS FROM OUTSIDE



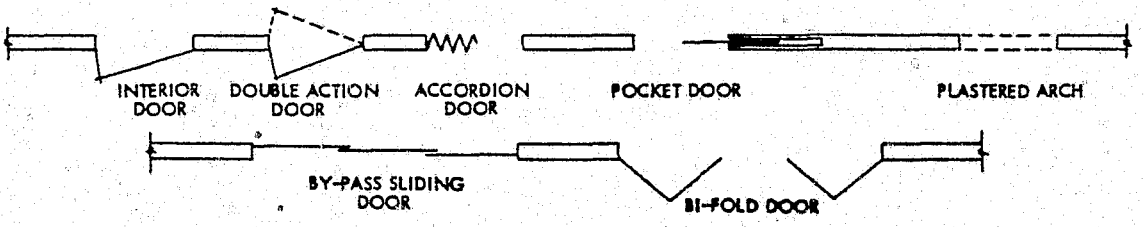
PLAN VIEW OF OPENINGS IN 8" BRICK WALL



PLAN VIEW OF OPENINGS IN BRICK VENEER WALL

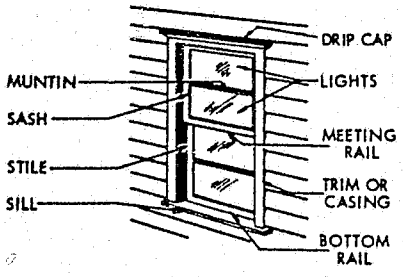


PLAN VIEW OF OPENINGS IN AN SCR BRICK WALL

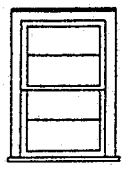


OPENINGS IN INTERIOR PARTITIONS

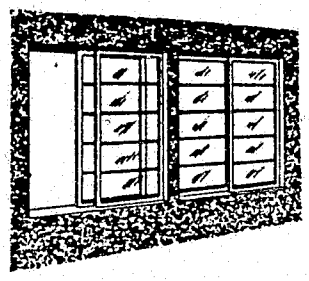
SYMBOLS USED FOR WINDOWS AND DOORS ON ELEVATION DRAWING



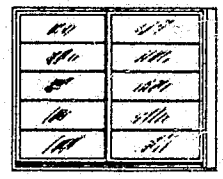
DOUBLE HUNG WINDOW
IN FRAME WALL



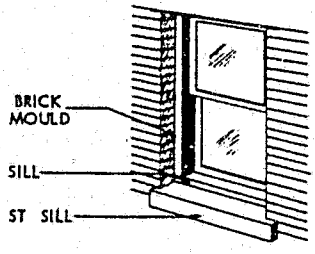
SYMBOL



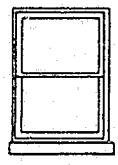
HORIZONTAL SLIDING SASH WINDOW
IN MASONRY WALL



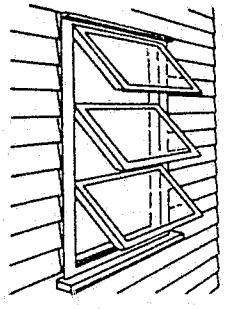
SYMBOL



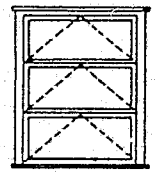
DOUBLE HUNG WINDOW
IN BRICK WALL



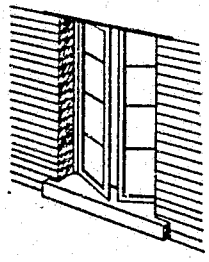
SYMBOL



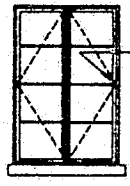
AWNING WINDOW
IN FRAME WALL



SYMBOL

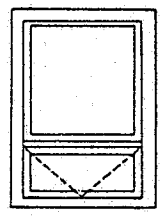


CASEMENT WINDOW
(METAL)
IN BRICK WALL

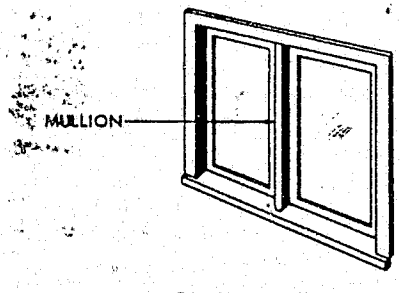


SYMBOL

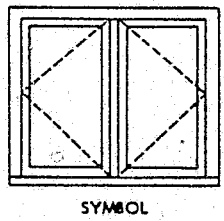
FIXED SASH
AND HOPPER WINDOW
IN FRAME WALL



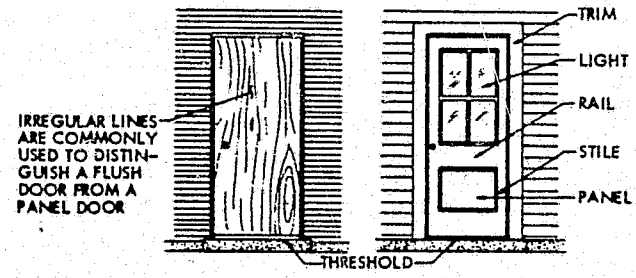
SYMBOL



CASEMENT WINDOW
(WOOD)
IN WOOD WALL



SYMBOL



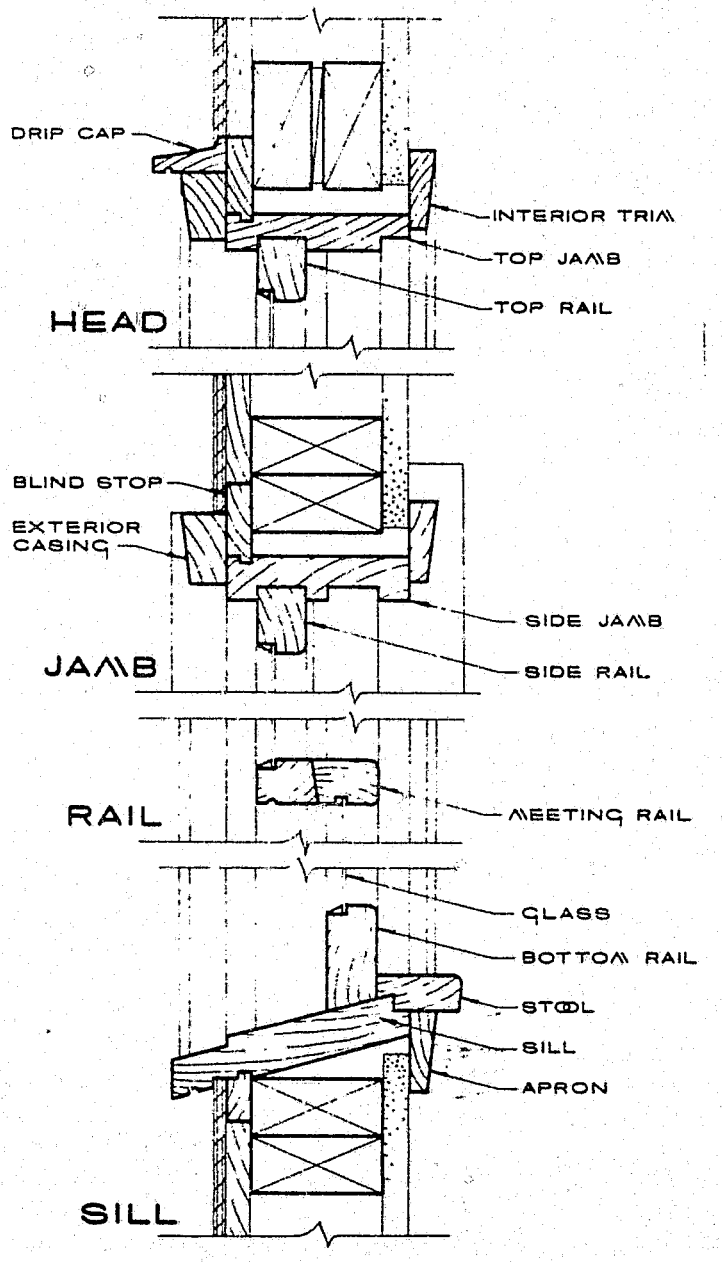
FLUSH DOOR
IN BRICK WALL

PANEL DOOR
IN FRAME WALL

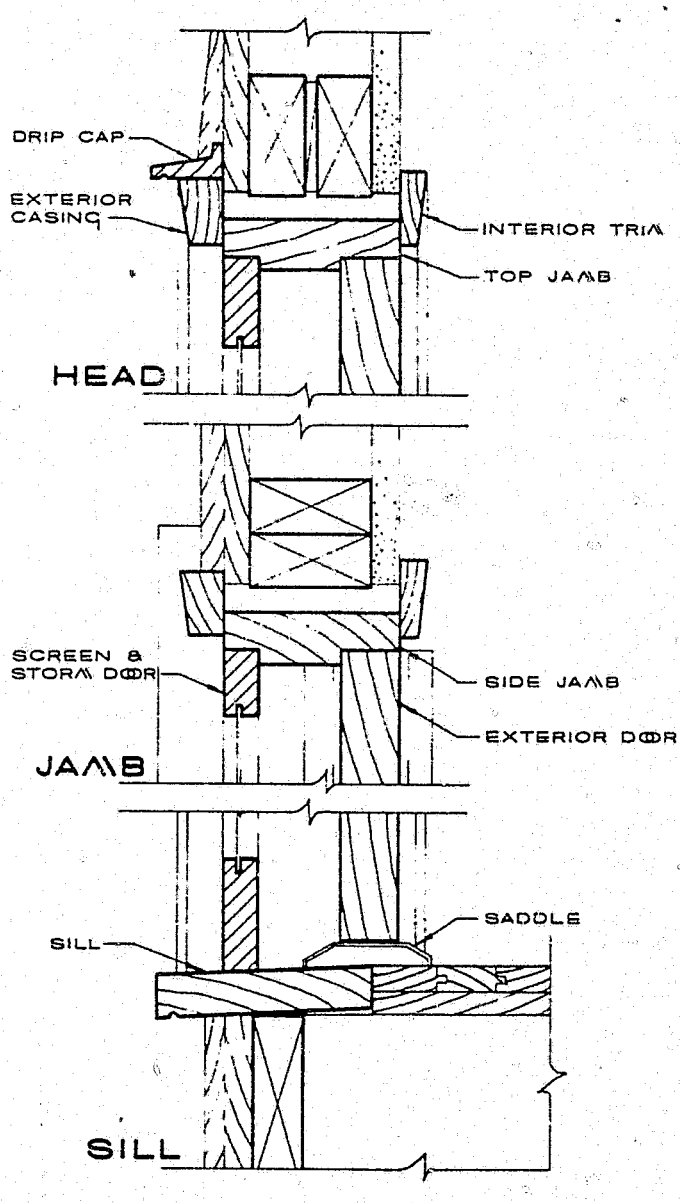
Fig. 3-5

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.



SECTION



SECTION

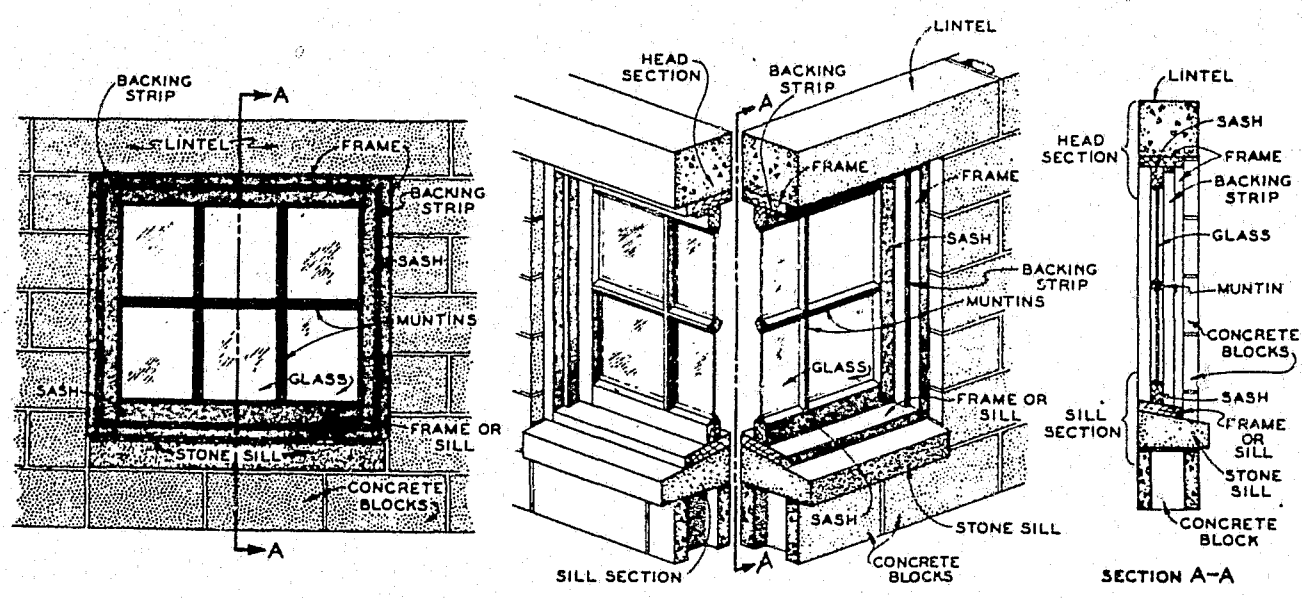
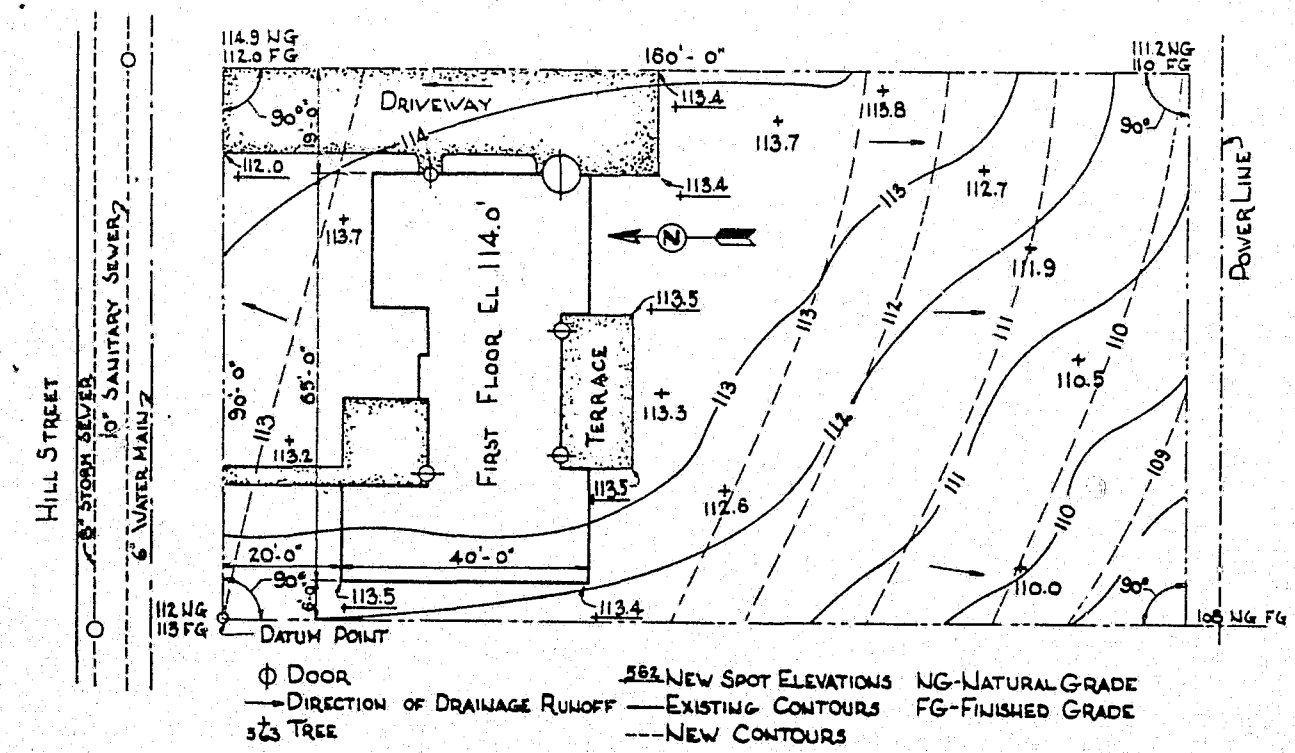
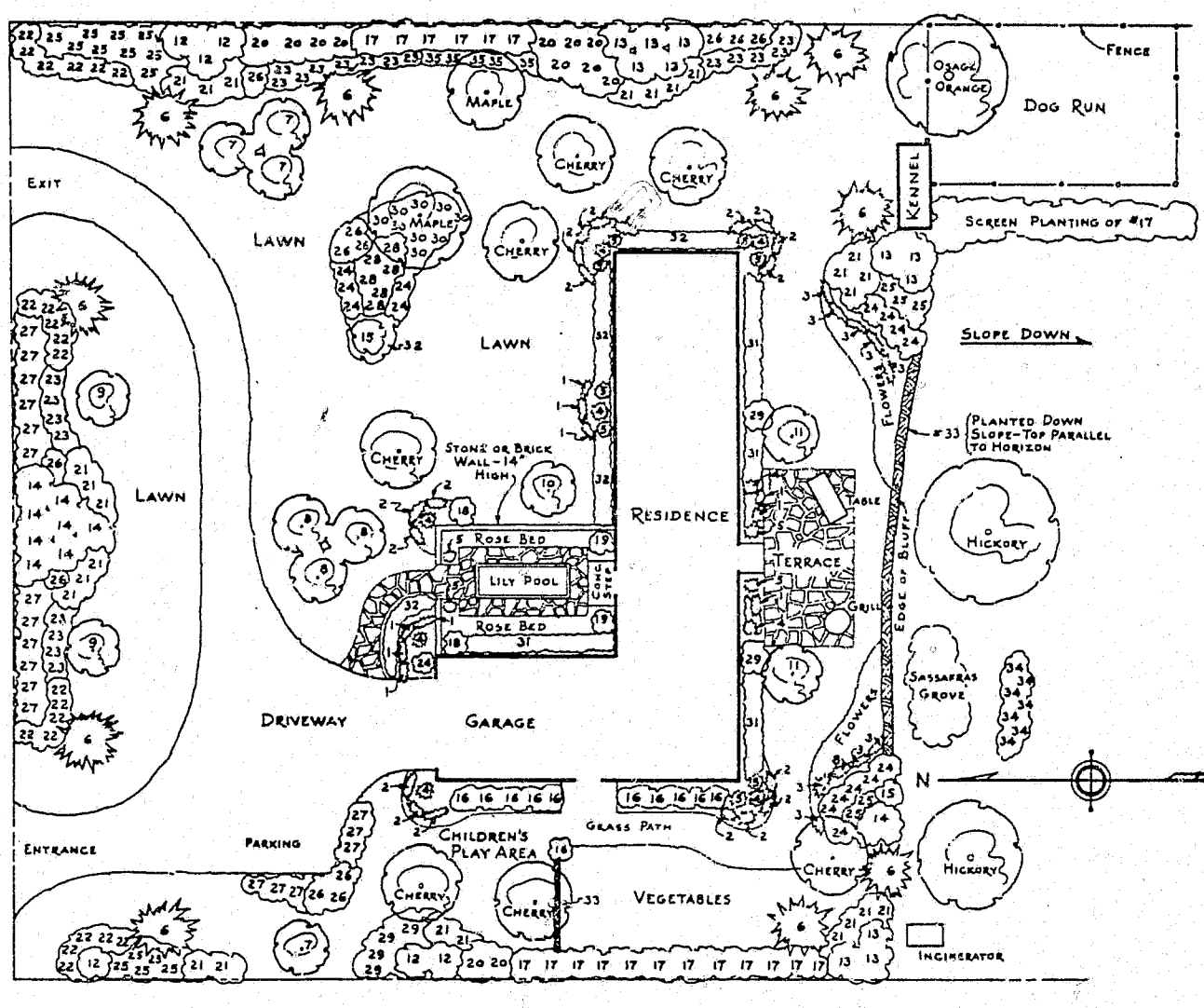


Fig. ' will help you to visualize a section view of a window in a concrete block wall. At the left it is shown as it would appear in an elevation view. The center picture-like drawing shows a cut made on the section line and the two parts turned back at an angle. Try matching-up each part in this drawing with the section view shown at the right. Do you see why it is important to note the direction of the arrows shown in the elevation view?




EXIT
LAWN
MAPLE
CHERRY
FENCE
OSAGE ORANGE
DOG RUN
KENNEL
SCREEN PLANTING OF #17
SLOPE DOWN
PLANTED DOWN SLOPE-TOP PARALLEL TO HORIZON
STONE OR BRICK WALL - 14" HIGH
ROSE BED
LILY POOL
CONC. STEP
RESIDENCE
TERRACE
TABLE
GRILL
HICKORY
EDGE OF BLUFF
FLOWERS
SASSAFRAS GROVE
DRIVEWAY
GARAGE
N
ENTRANCE
PARKING
CHILDREN'S PLAY AREA
GRASS PATH
VEGETABLES
INCINERATOR

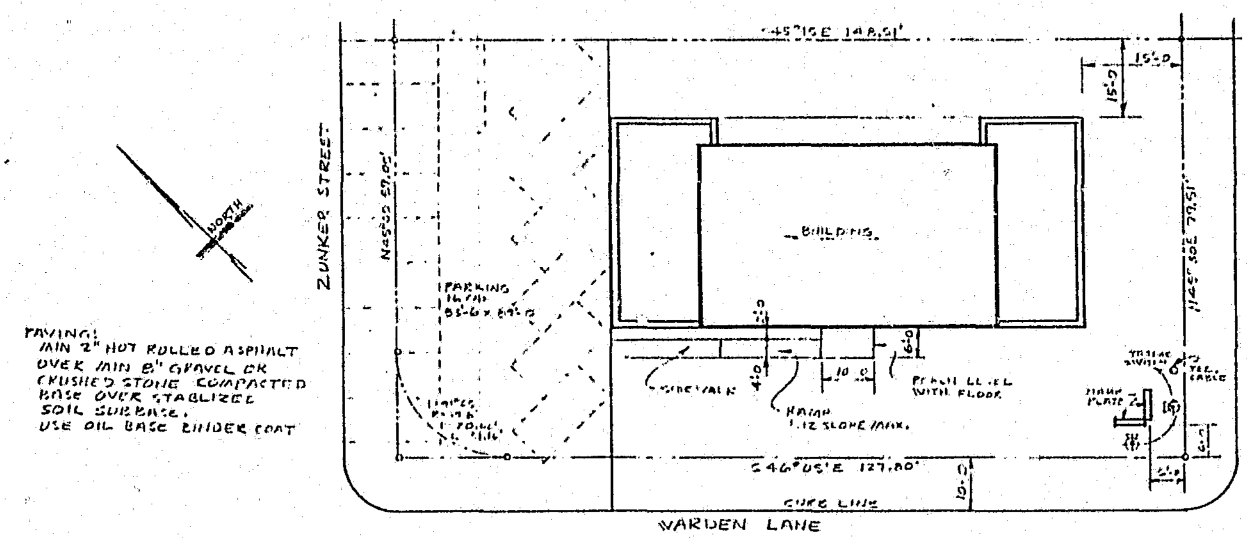
PLANT LIST

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 A

SAMPLE COMMERCIAL PLAN

A-1



PAVING:
MIN 2" HOT ROLLED ASPHALT OVER MIN 8" GRAVEL OR CRUSHED STONE COMPACTED BASE OVER STABLIZED SOIL SUBBASE.
USE OIL BASE BINDER COAT

SIDEWALK, RAMP & PORCH TO BE MIN 4" CONCRETE SLAB FINISH WITH MEX. TILE

PLOT PLAN

SCALE 1/16" = 1'-0"

CABINET SCHEDULE

MARK	TYPE	QTY.	SIZE W.H.D	FINISH	REMARKS
					SEE DETAILS
					TO BUILD
					HARDWOOD
					PLYWOOD W/
					FORMICA TOP

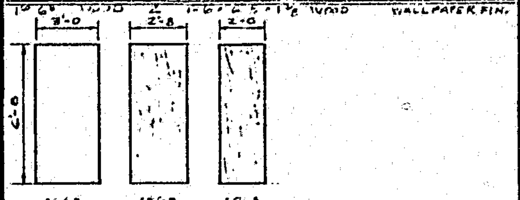
WINDOW SCHEDULE

MARK	TYPE	QTY.	SIZE W.H.	GLAZING	MAKE	REMARKS
6°8°	FIXED	2	[illegible]	[illegible]		
8°8°	FIXED	1	[illegible]	[illegible]		
10°8°	FIXED	1	10'-0 × 6'-6	[illegible]		
10°7⁴	FIXED	4	[illegible] × 7'-4	[illegible]		ARCH
10°8⁹	FIXED	1	[illegible]	[illegible]		ARCH W/ [illegible]
3°8°	FIXED	1	[illegible]	[illegible]		

ALL WINDOWS TO BE [illegible] ALUMINUM FRAME W/ [illegible] GLASS

DOOR SCHEDULE

MARK	TYPE	QTY.	SIZE W.H.TH.	MATERIAL	REMARKS
3°6⁸	PANEL	2	[illegible]	WOOD	SPANISH DESIGN
3°6⁸	PANEL	2	3'-0 × 6'-8 × 1¾	STEEL	
3°6°	GATE	2	3'-0 × 6'-0 × [illegible]	W.T. IRON	[illegible]
3°6⁸	GLASS	1	3'-0 × 6'-8 × 1¾	ALUM. & GL.	
2⁸6⁸	PANEL	10	2'-8 × 6'-8 × 1¾	WOOD	SPANISH DESIGN
2⁶6⁸	PANEL	1	2'-6 × 6'-8 × 1¾	WOOD	"
2°6⁸	PANEL	1	2'-0 × 6'-8 × 1¾	WOOD	"
1°4°	LOUVER	2	1'-0 × 4'-0 × 1¾	WOOD	DOUBLE SWING
6°8°	PATIO	1	6'-0 × 8'-0 × 1¾	ALUM & GL.	SLIDE GLASS
				ALENCO	2V-6X-2F[illegible]
1°6⁸	WOOD	2	1'-6 × 6'-8 × 1⅜	WOOD	WALLPAPER FIN.



FINISH SCHEDULE

REMARKS

N - NATURAL
E - ENAMEL
L - LATEX (FLAT WALL)
S - STAIN

ROOM	FLOOR: EXPOSED CONCRETE	FLOOR: CARPET	FLOOR: VINYL	FLOOR: TILE-HARD SURFACE	FLOOR: FILL DIRT & PLANTS	FLOOR: MEXICAN TILE	BASE: HARDWOOD	BASE: PINE	BASE: VINYL	BASE: CERAMIC TILE	WALLS: ½" SHEETROCK	WALLS: TEXTURE & PAINT	WALLS: PRE-FINISH PANEL	WALLS: JOB-FINISH PANEL	WALLS: WALL PAPER-VINYL	WALLS: STUCCO	WALLS: UNFINISHED	CEILING: ½" SHEETROCK	CEILING: TEXTURE & PAINT	CEILING: ACOUSTICAL TILE	CEILING: PLYWOOD PANEL	UNFINISHED	WAINSCOT: PRE-FINISH PANEL	WAINSCOT: JOB-FINISH PANEL	WAINSCOT: CERAMIC TILE	WAINSCOT: CHAIR RAIL	TRIM: HARDWOOD	TRIM: PINE	TRIM: RED BRICK
FOYER						N	N											•	L								N		
WAITING R/M		•				N	N											•	L								N		
OPTICAL SHOP		•						E										•	L									E	
OPT. WORK R/M.			•					E										•	L									E	
VISUAL FIELD R/M			•					E										•	L									E	
WORK UP R/M			•					E										•	L									E	
PATIENT R.R.			•				N											•	L								N		
BUSINESS OFFICE			•			N		E										•	L									E	
HALL			•					E										•	L									E	
PRIVATE OFFICE		•					N											•	L								N		
STAFF R.R.			•				N											•	L								N		
STORAGE AREA			•					E										•	L									E	
XTRA R/M.			•					E										•	L									E	
LANE #1			•				N											•		•							N		
LANE #2			•				N											•		•							N		
COURT YARD #1	•				•																								•
COURT YARD #2					•																								•

SYMBOLS

- DETAIL NUMBER
- SHEET ON WHICH DETAIL IS LOCATED
- SHEET FROM WHICH DETAIL REFERENCED
- ELEVATION OR SECTION REFERENCE
- SECTION, VIEWING DIRECTION
- FINISH REFERENCE — WHEN MATERIAL IS NOT INDICATED ON PLAN, ASSUME TOP OF SHEET AS N.

DETAIL SYMBOLS

- CEILING LIGHT OUTLET
- CEILING LIGHT OUTLET RECESSED
- WALL LIGHT OUTLET
- FLOURESCENT LIGHT OUTLET
- WATERPROOF FLOOD OR SPOT LIGHT OUTLET
- CEILING OUTLET PULL SWITCH
- CEILING OUTLET FAN - EXHAUST
- CEILING OUTLET HEATER
- DUPLEX CONVENIENCE OUTLET
- WATERPROOF DUPLEX CONVENIENCE OUTLET
- 220 V. OUTLET
- SPECIAL PURPOSE OUTLET
- FLOOR CONVENIENCE OUTLET
- SINGLE POLE WALL SWITCH
- THREE WAY WALL SWITCH
- STEREO VOLUME SWITCH
- TV. OR F/M. OUTLET
- TELEPHONE
- INTERCOM
- POWER SERVICE PANEL
- NATURAL GAS OUTLET
- WATER HOSE BIB
- STEREO SPEAKER R OR L
- WATER SHOWER HEAD
- CONNECTS OUTLET TO SWITCHES

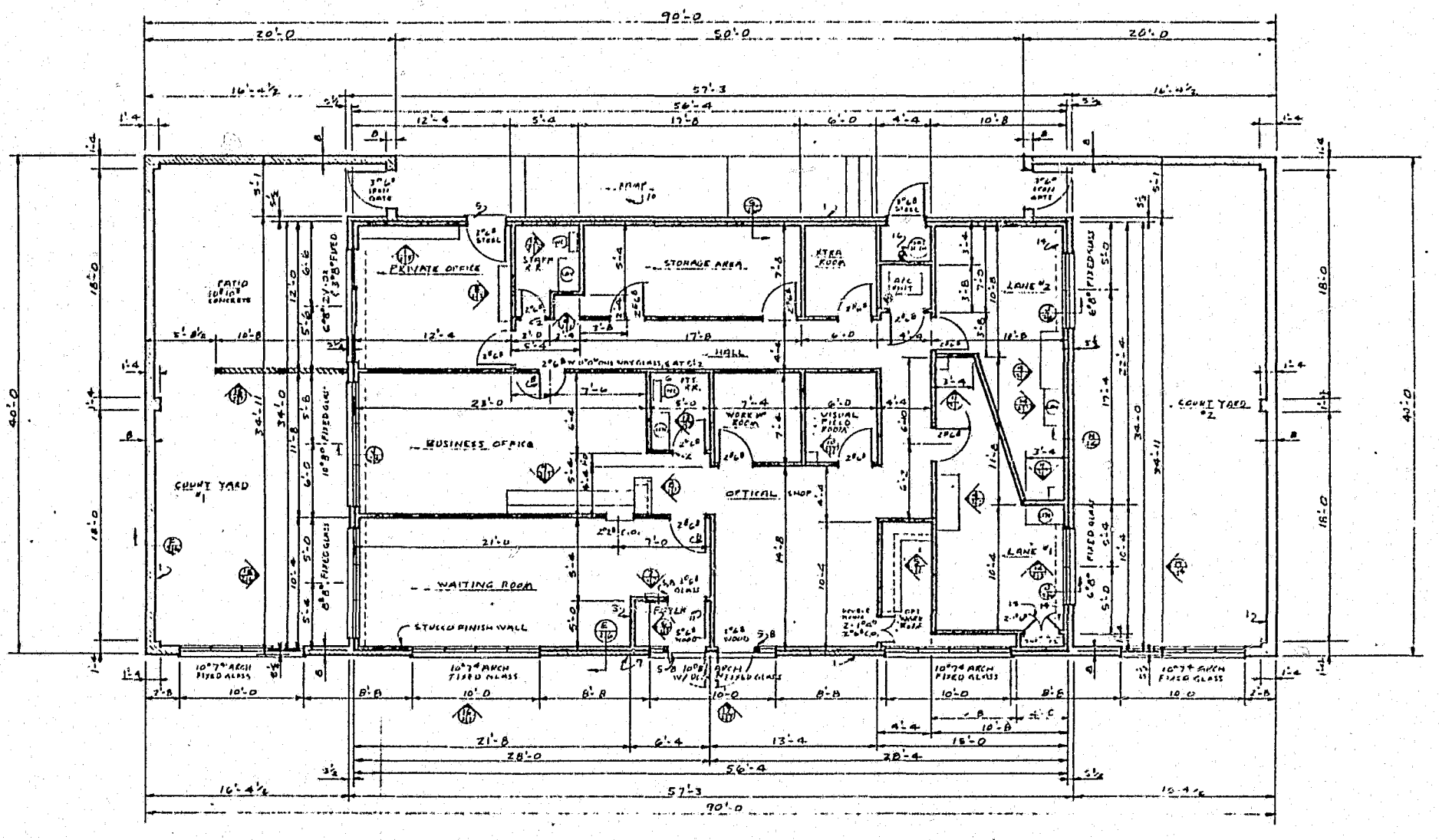
NOTE:
DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS ONLY.
PARTITIONS ARE DIMENSIONED FACE TO FACE NOMINALLY.

DESIGNER MEMBER

DESIGN CONSULTANT

SHEET: 1 OF 9

PLAN: BW-376-2



FLOOR PLAN

SCALE ⅛"=1'-0

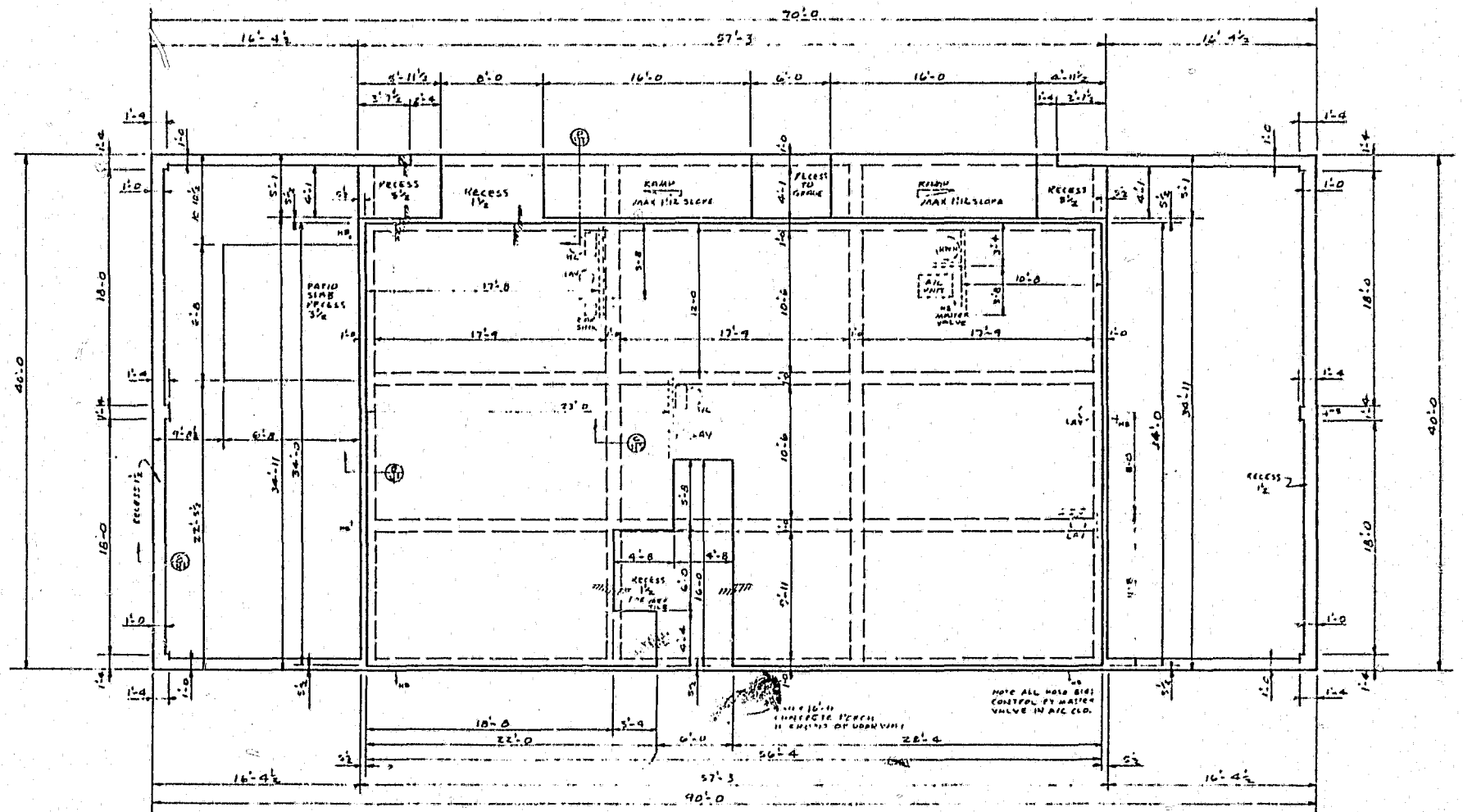
1. EXTERIOR WALL TO BE CONCRETE BLOCK FINISHED WITH ¼" TAN STUCCO USING SURE WALL 10 SURFACE BONDING CEMENT
2. REST ROOM DOOR LOCKABLE FROM OUTSIDE WITH WIRE PROBE.
3. COAT RACK ON WALL IN WAINTING ROOM
4. WIRING SYSTEM FOR FM STEREO SPEAKERS
5. EXTERIOR DOOR TO HAVE DEAD BOLT LOCKS KEY BOTH SIDE OF DOOR
6. GRAB BAR RAILS IN PATIENTS REST ROOM
7. T/V ANTENNA PROVISIONS OR T/V CABLE
9. PLACE NAME PLATE BY FRONT DOOR
10. WHEELCHAIR RAMP IN BACK TO PARKING LOT
11. FOYER TO BE VENTED FOR A/C SUPPLY & RETURN
12. GLASS TO BE BROWN TINT SHATTER-PROOF PLATE
13. ALUMINUM FRAME TO BE BROWN ANODIZED
14. REMOTE CONTROL MOTORIZED DRAPE RODS OPEN & CLOSE - PAINTRACKER BY KRISH
15. CONCEALED 1'-6" DOORS - WALLPAPER FINISH NO TRIM MOLD
16. HWH. LOCATED AT TOP OF SPACE ON SHELF

DESIGNER MEMBER

DESIGN CONSULTANT

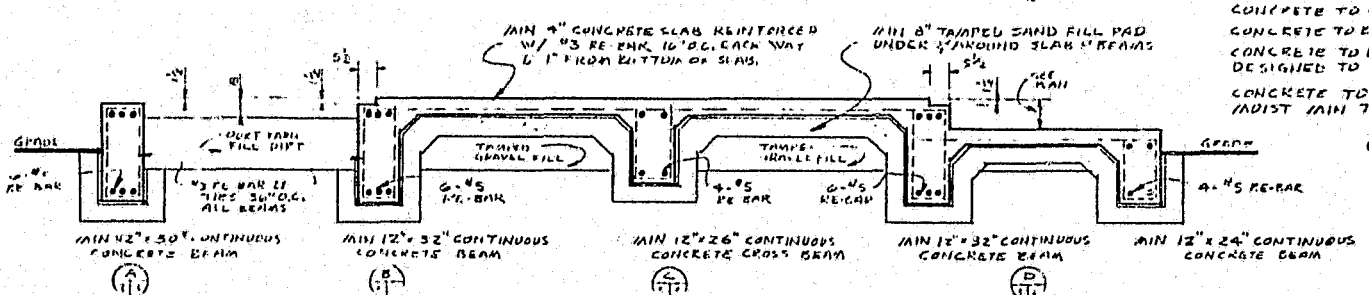
SHEET: 2 OF 9

A-2



FOUNDATION PLAN

SCALE 1/4" = 1'-0"



CONCRETE TO BE PLACED DIRT & MIL VISQUEEN.

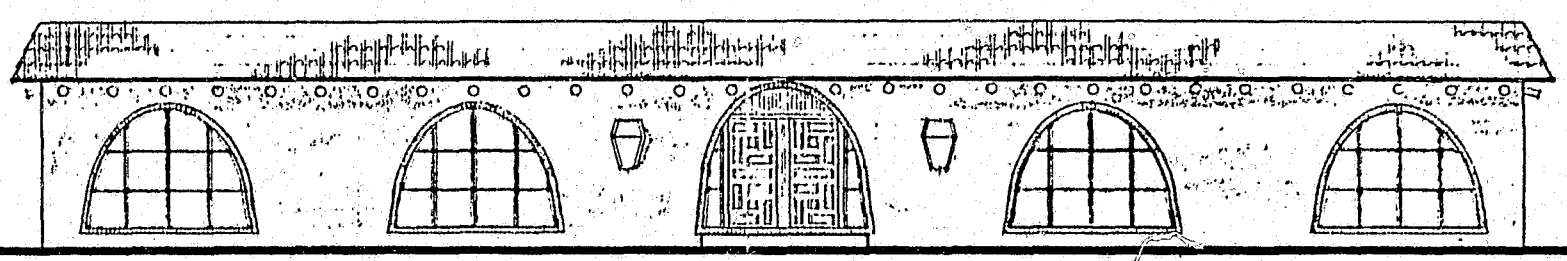
CONCRETE TO BE PLACED AS A MONOLITHIC UNIT.

CONCRETE TO BE MIN 4½ SACK, MAX 4 SLUMP MIX. DESIGNED TO FIRST MIN. 2200 PSI ON 28TH DAY.

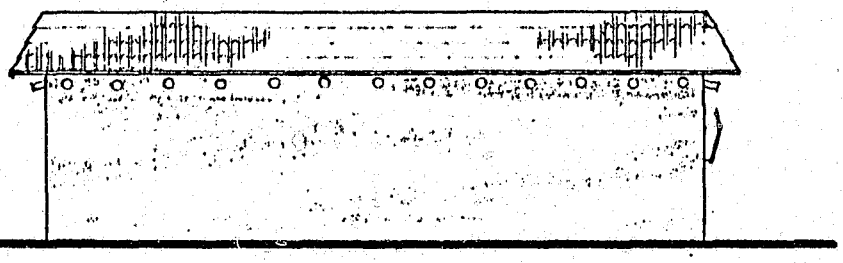
CONCRETE TO BE CURED BY SPRINKLING & KEPT MOIST MIN 7 DAYS.

SHEET 3 of 9

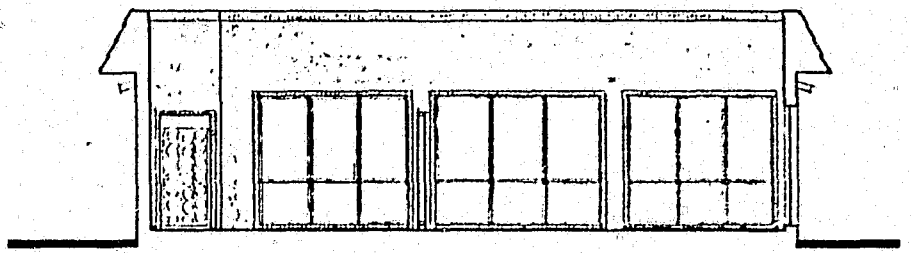
A-3



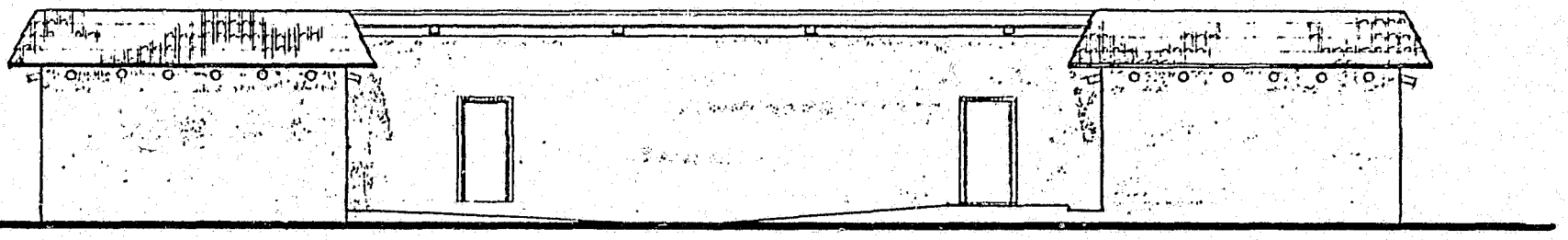
FRONT ELEVATION
SCALE 3/16"=1'-0"



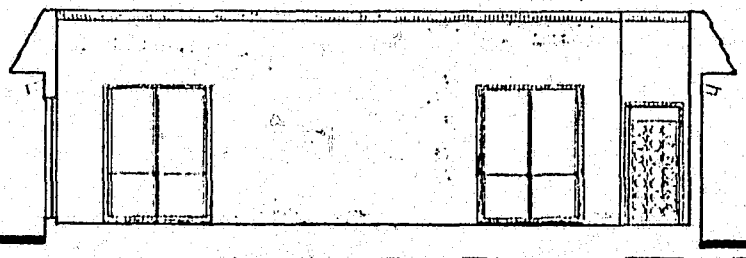
END ELEVATION
SCALE 3/16"=1'-0"



COURT #1 ELEVATION
SCALE 3/16"=1'-0"

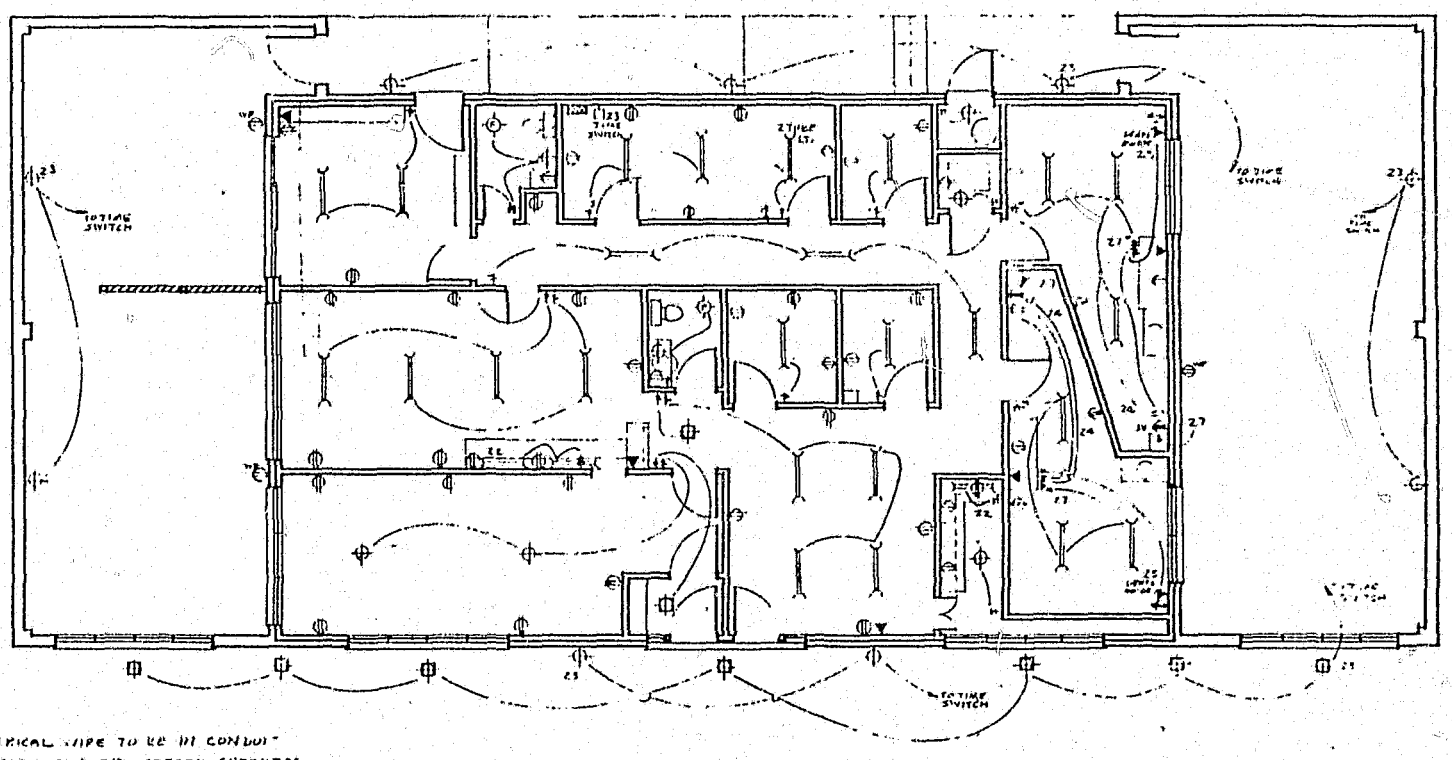


BACK ELEVATION
SCALE 3/16"=1'-0"



A-4

SHEET



20. ALL ELECTRICAL WIRE TO BE IN CONDUIT
21. WIRING SYSTEM FOR FM. STEREO SPEAKERS
22. FLORESCENT LIGHTS UNDER SHELF IN BUSINESS OFFICE & OPTICAL SHOP WORK ROOM
23. OUTSIDE LIGHT CONTROL BY TIME CLOCK SWITCH
24. 3 VOLT SWITCH & OUTLETS IN LANE #1 & #2
25. VACTOR OPERATED DRAPES - OPEN & CLOSE IN LANE #1 & #2 - KIVATRACKER BY KIRSCH W/ SWITCH LEG
26. FLORESCENT LIGHTS RECESSED IN CEILING 4 TUBE 72 AS NOTED.
27. SEE DETAILS FOR LOCATION

ELECTRICAL PLAN

SCALE 3/16" = 1'-0

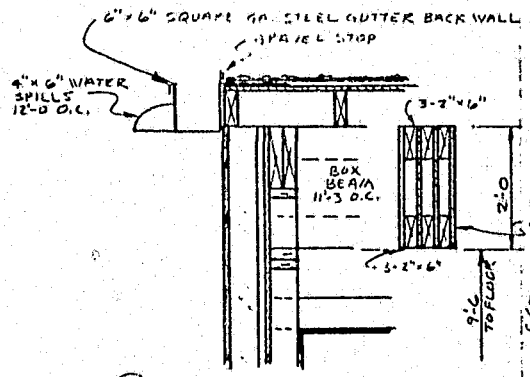
A-5

DESIGNER MEMBER

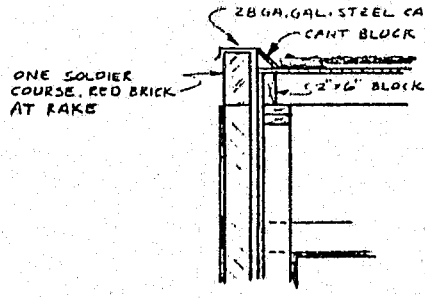
DESIGN CONSULTANT

SHEET: 5 OF 9

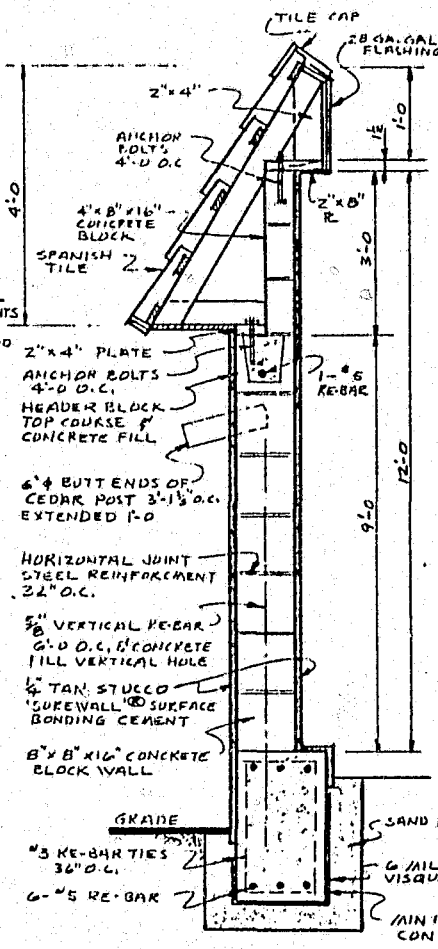
PLAN :



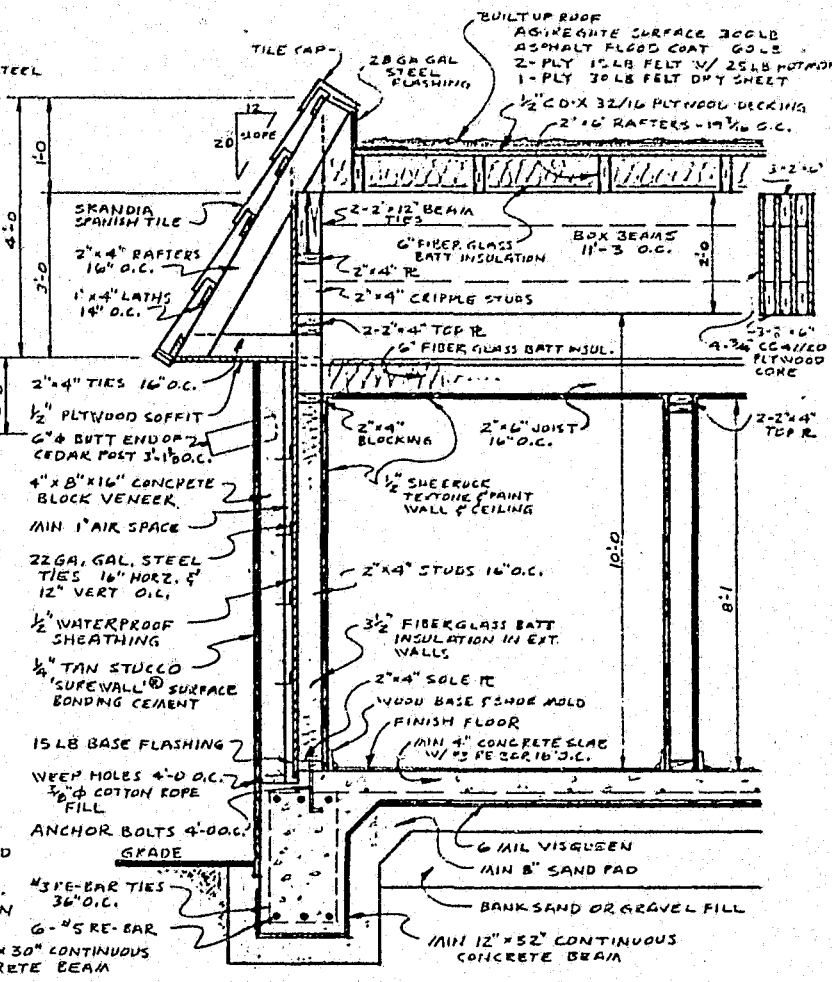
G/2/6 BACK WALL AT EAVE



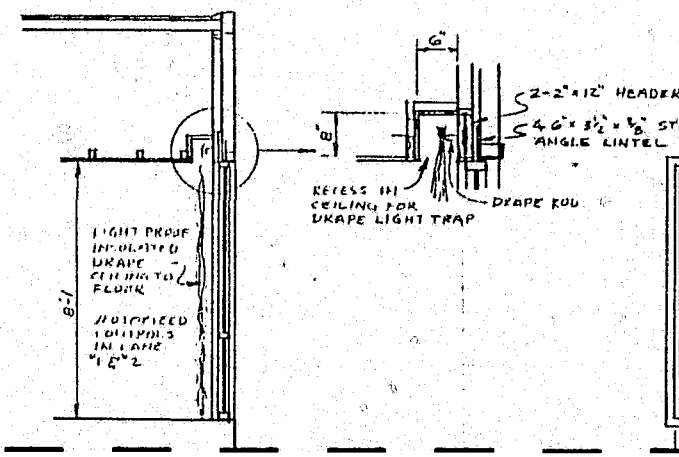
H/2/6 SIDE WALL AT RAKE

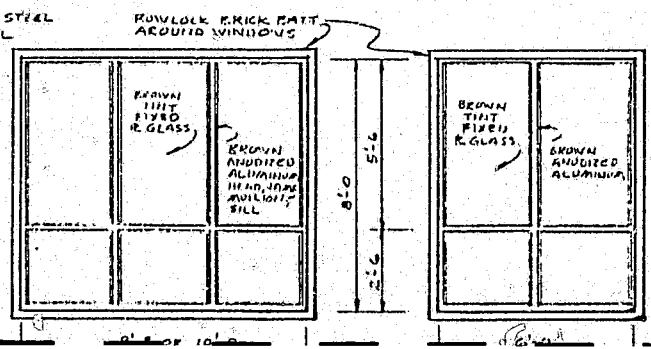


F/2/6 COURTYARD WALL SECTION



E/2/6 TYPICAL WALL SECTION

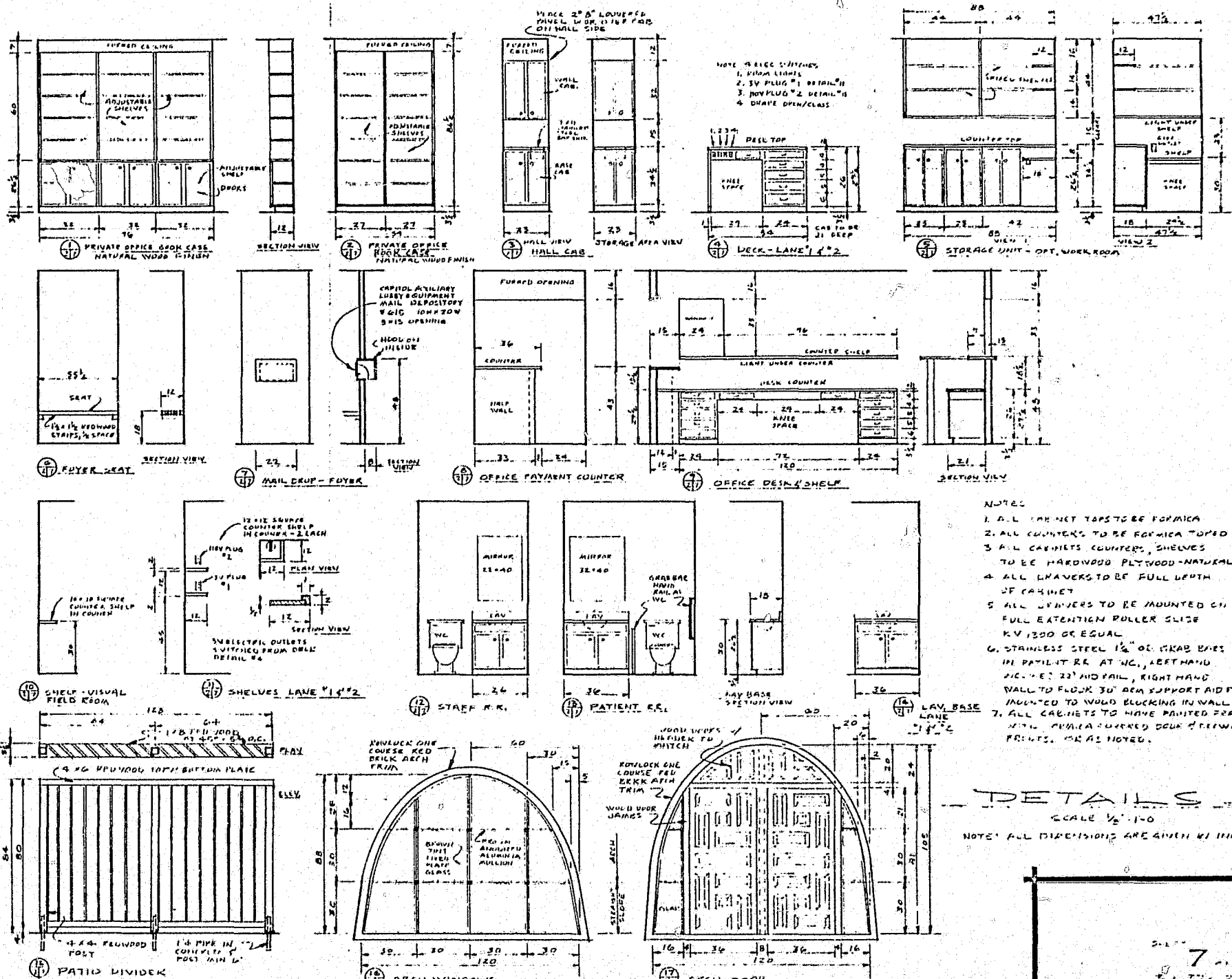




DETAILS

NO SCALE

SHEET 6 9



NOTES

1. ALL CABINET TOPS TO BE FORMICA
2. ALL COUNTERS TO BE FORMICA TOPED
3. ALL CABINETS, COUNTERS, SHELVES TO BE HARDWOOD PLYWOOD - NATURAL FIN.
4. ALL DRAWERS TO BE FULL DEPTH OF CABINET
5. ALL DRAWERS TO BE MOUNTED ON FULL EXTENTION ROLLER SLIDE K.V. 1300 OR EQUAL
6. STAINLESS STEEL 1½" OC. GRAB RAILS IN PATIENT RR AT WC., LEFT HAND WALL TO FLOOR 30" ABM SUPPORT AND RAIL MOUNTED TO WOOD BLOCKING IN WALL.
7. ALL CABINETS TO HAVE PAINTED FRAMES WITH FORMICA COVERED DOOR & DRAWER FRONTS, OR AS NOTED.

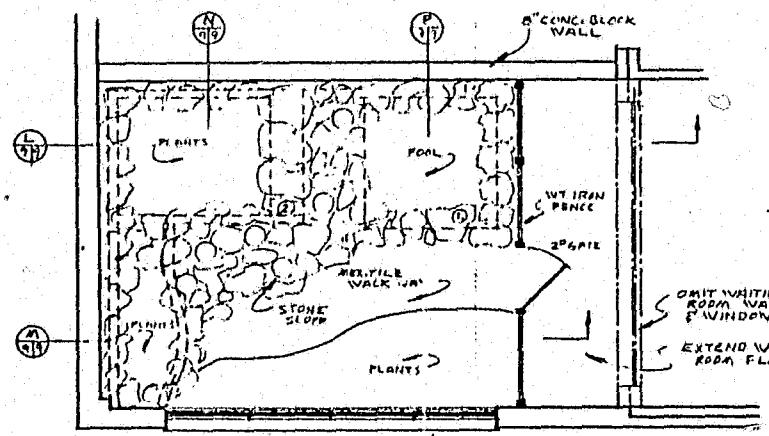
DETAILS

SCALE ½" = 1'-0

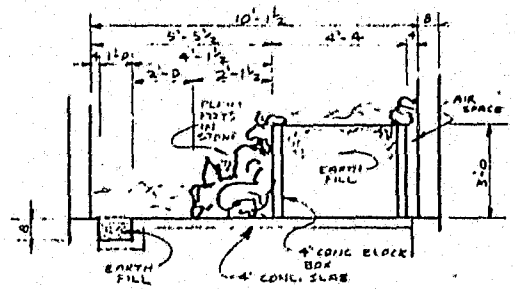
NOTE: ALL DIMENSIONS ARE GIVEN IN INCHES.

SHEET 7.9

OF TWO SHEETS



PLAN



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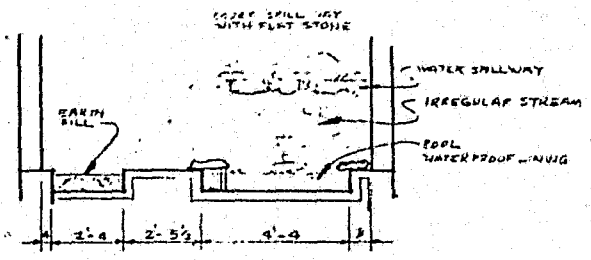
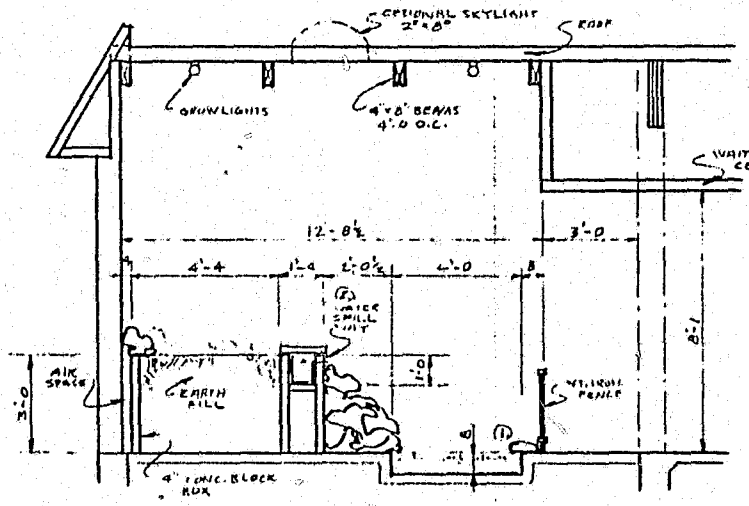


SECTION

OPTIONAL
WAITING ROOM COURT
SCALE ½"=1'-0

1. LOCATED IN POOL & CONCEALED BY FLAT STONE COVER.
   - A. SUBMERGABLE WATER PUMP TO CIRCULATE WATER TO SPILLWAY
   - B. FLOAT VALVE + WATER SUPPLY
   - C. OVERFLOW DRAIN - SET 1" BELOW POOL EDGE
   - D. BOTTOM DRAIN & VALVE FOR CLEAN OUT
2. LOCATED IN SPILLWAY & CONCEALED BY FLAT STONE COVER
   - A. WATER TROUGH WITH SPILL OVERS
   - B. HOSE BIB TO WATER PLANTERS



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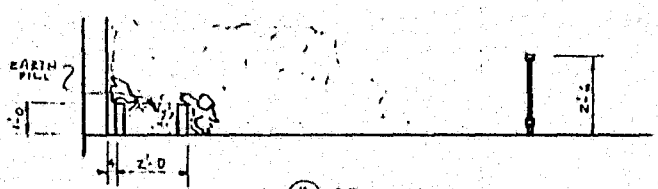

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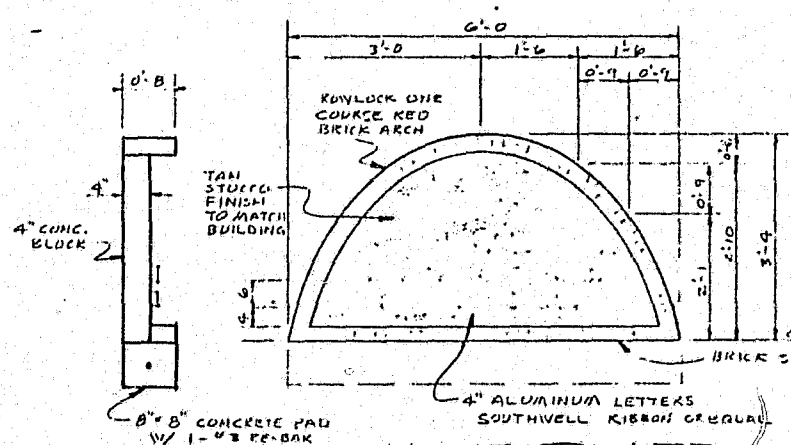


NAME PLATE
SCALE ¾"=1'-0
2 REQ.

SHEET

FHA Form 2005
VA Form 26-1852

☒ Proposed Construction

☐ Under Construction

DESCRIPTION OF MATERIALS

No. ______

Property address ______ City SAN MARCOS State TX

Mortgagor or Sponsor ______

Contractor or Builder ______

1. EXCAVATION:
Bearing soil, type REMOVE TOPSOIL FOR BEAMS TO EXPOSE BEARING SURFACE

2. FOUNDATIONS:
Footings: concrete mix 4½ SACK; strength psi 3200; Reinforcing 6-#5 RE-BAR
Foundation wall: material CONCRETE MIN. 12"×32"
Interior foundation wall: material CONCRETE
Waterproofing 6 MIL VISQUEEN - V.B.
Basementless space: ground cover BANK SAND OR GRAVEL; VAPOR BARRIER
Special foundations MIN. 8" SAND PAD UNDER & AROUND SLAB & BEAMS
Additional information: FOOTINGS, BEAMS & SLAB TO BE PLACED AS A MONOLITHIC UNIT

3. CHIMNEYS:

4. FIREPLACES:

5. EXTERIOR WALLS:
Wood frame: wood grade, and species CONST PINE - K.D. ☒ Corner bracing. Building paper or felt 15LB
Sheathing WATERPROOF; thickness ½"; ☒ solid
Stucco TAN 'SURE WALL' thickness ¼
Masonry veneer CONCRETE BLOCK - RED BRICK; Lintels 6×3½×⅜ ∠; Base flashing 15LB FELT
Masonry: ☒ solid ☐ faced ☒ stuccoed; facing thickness ¼"; facing material SURE WALL
Door sills RED BRICK; Window sills RED BRICK; Lintels 6×3½×⅜ ∠; Base flashing 15LB FELT

6. FLOOR FRAMING:
Concrete slab: ☒ first floor ☒ ground supported; mix 4½ SACK, 3200 PSI; thickness MIN 4"
reinforcing #3 RE-BAR 16" O.C. EA. WAY; membrane 6 MIL VISQUEEN
Fill under slab: material TAMPED SAND; thickness MIN 8"; Additional information SLAB TO BE CURED BY COMPOUND OR WATER & KEPT MOIST MIN 7 DAYS

7. SUBFLOORING: (Describe underflooring for special floors under item 21.)

8. FINISH FLOORING: (Wood only. Describe other finish flooring under item 21.)

9. PARTITION FRAMING:
Studs: wood, grade, and species CONST. PINE - KD; size and spacing 2"×4" 16" O.C.
Additional information: DOUBLE AT OPENINGS & TRIPLE AT CORNERS

10. CEILING FRAMING:
Joists: wood, grade, and species #2 PINE OR FIR; Other 2"×6" - 16" O.C.
Additional information: SUPPORTED BY INTERIOR WALLS

11. ROOF FRAMING:
Rafters: wood, grade, and species #2 PINE OR FIR; Roof trusses: BOX BEAMS
Additional information: 2"×6" - 19⅕" O.C. SLOPE 6" IN 34'-0 TO BACK

12. ROOFING:
Sheathing: wood, grade, and species ½" CD-X 32/16 PLYWOOD; ☒ solid ☐ spaced ⅟₁₆" o.c.
Underlay 30LB FELT DRY SHEET; fastening NAIL
Built-up roofing 15LB HOT MOP; number of plies 3; surfacing material PEA GRAVEL
Flashing material 28 GA. GAL. STEEL; ☒ gravel stops
Additional information: FLASH ALL OPENINGS IN ROOF

13. GUTTERS AND DOWNSPOUTS:
Gutters: material GAL. STEEL; size 6"×6"; shape SQUARE
Downspouts: material GAL. STEEL; size 4"×6"; shape SQUARE; number 4
Additional information: PAINT TO MATCH WALLS

14. LATH AND PLASTER
Drywall ☒ walls ☒ ceilings: material SHEETROCK; thickness ½; finish TEXTURE & PAINT
Joint treatment 4 TREATMENT JOINT - PERF. TAPE & FLOAT

15. DECORATING: (Paint, wallpaper, etc.)

Rooms	Wall Finish Material and Application	Ceiling Finish Material and Application
Kitchen	SEE SCHEDULE	
Bath		
Other		

16. INTERIOR DOORS AND TRIM:
Doors: type 6 PANEL - SPANISH DESIGN; material WOOD; thickness 1⅜"
Door trim: type MOLDING; material WOOD; Base: type MOLDING; material WOOD; size 2¼"
Finish: doors LACQUER OR PAINT; trim LACQUER OR PAINT

17. WINDOWS:
Windows: type SEE PLAN; make JOB BUILT; material ALUMINUM
Glass: grade PLATE; head flashing GAL. STEEL
Trim: type RED BRICK
Weatherstripping: type VINYL
Special windows PATIO DOOR - ALENCO OR EQUAL
Additional information: BROWN TINT GLASS & BROWN ANODIZED ALUMINUM

18. ENTRANCES AND EXTERIOR DETAIL:
Main entrance door: material SOLID PINE; width 3'-0; thickness 1¾; Frame: material WOOD
Other entrance doors: material STEEL; width 3'-0; thickness 1¾; Frame: material WOOD
Head flashing GAL. STEEL; Weatherstripping: type ALUMINUM; saddles ALUM. & VINYL
Exterior millwork: grade and species #1 PINE OR CEDAR
Additional information: 6"×4" BUTT ENDS OF CEDAR POST UNDER SOFFIT

19. CABINETS AND INTERIOR DETAIL:
Kitchen cabinets, wall units: material JOB BUILT
Base units: material HARDWOOD PLYWOOD; counter top FORMICA; edging FORMICA
Other cabinets and built-in furniture SEE DETAILS

20. STAIRS:

Stair	Treads: Material	Treads: Thickness	Risers: Material	Risers: Thickness	Strings: Material	Strings: Size	Handrail: Material	Handrail: Size	Balusters: Material	Balusters: Size
Basement										
Main										
Attic										

Disappearing: make and model number
Additional information

21. SPECIAL FLOORS AND WAINSCOT:

Location	Material, Color, Border, Sizes, Gage, Etc.	Threshold Material	Wall Base Material	Underfloor Material
SEE PLAN & SCHEDULE	ALLOWANCE INSTALLED:		WOOD	CONCRETE
	VINYL - $ 8.00/YD.			
	CARPET - $ 12.00/YD.			
	MEXICAN TILE - $2.00/FT.			

Location	Material, Color, Border, Cap, Sizes, Gage, Etc.	Height	Height Over Tub	Height in Showers (From Floor)
Bath				

Bathroom accessories: ☒ Recessed; material METAL; number 2; ☒ Attached; material METAL; number 4
Additional information: GRAB BARS IN PATIENT REST ROOM

22. PLUMBING:

Fixture	Number	Location	Make	Mfr's Fixture Identification No.	Size	Color
Sink	1	HALL	KOHLER OR EQUAL	STAINLESS ST.	9"×11"	
Lavatory	4	BATH CLINICS	"			
Water closet	3	BATH	"	- OPEN SEAT FRONT W/ COVER		
Bathtub						
Shower over tub						
Stall shower						
Laundry trays						
FAUCETS		MOEN OR EQUAL - SINGLE CONTROL MIXER TYPE				

Water supply: ☒ public
Sewage disposal: ☒ public
House drain (inside): ☒ other PVC; House sewer (outside): ☒ other PVC #40
Water piping: ☒ copper tubing ☐ other 1½" MAIN SUPPLY - MIN.
Domestic water heater: type GAS; make and model MISSION OR EQUAL
Storage tank: material GLASS LINED; capacity 30 gallons
Gas service: ☒ utility company; Gas piping: ☒ house heating

23. HEATING:
Warm air: ☒ Forced. Type of system GAS - ALL YEAR A/C - HEAT & COOL
Duct material: supply FIBER; return FIBER; Insulation FIBER; thickness 1"
Furnace: make and model ARKLA OR EQUAL
Additional information: 68° SUMMER & 80° WINTER GUARANTEE - HEAT PUMP
Controls: make and types FULL AUTOMATIC - MINN. HONEYWELL OR EQUAL
Electric heating system: type HEAT STRIPS; 220 volts
Additional information: AUXILARY HEATING
Other heating, ventilating, or cooling equipment EXHAUST FAN IN EACH REST ROOM

24. ELECTRIC WIRING:
Service: ☒ overhead; Panel: ☒ circuit-breaker; make SQUARE 'D'; No. circuits 24
Wiring: ☒ conduit ☒ nonmetallic cable
Special outlets: ☒ water heater ☒ other 3 VOLT SWITCHED OUTLETS IN LANE 1 & 2

25. LIGHTING FIXTURES:
Total number of fixtures SEE PLAN
Additional information: E/A STEREO SYSTEM - SPEAKER IN WAITING ROOM - UNIT IN BUSINESS OFFICE, ANTENNA IN ATTIC SPACE

26. INSULATION:

Location	Thickness	Material, Type, and Method of Installation	Vapor Barrier
Roof	6"	FIBER GLASS BATT	ALUMINUM
Ceiling	6"	"	"
Wall	3½"	"	"
Floor			

HARDWARE: (make, material, and finish.)
DEAD BOLT - DOUBLE KEY LOCKS ON ALL OUTSIDE DOOR
AUTOMATIC DOOR CLOSERS: SEE PLAN FOR LOCATION

SPECIAL EQUIPMENT: (State material or make and model.)
Other MOTORIZED DRAPES IN LANE 1 & 2

27. MISCELLANEOUS: (Describe any main dwelling materials, equipment, or construction items not shown elsewhere, or use to provide additional information where the space provided was inadequate. Always reference by item number to correspond to numbering used on this form.)

PORCHES:

TERRACES:
SEE PLAN

GARAGES:

WALKS AND DRIVEWAYS:
Driveway: base material GRAVEL; thickness MIN. 8"; surfacing material ASPHALT; thickness 2"
Front walk: width 4'-0; material MEX. TILE
Steps: material CONCRETE; treads 11"; risers 5½"
SEE PLAN

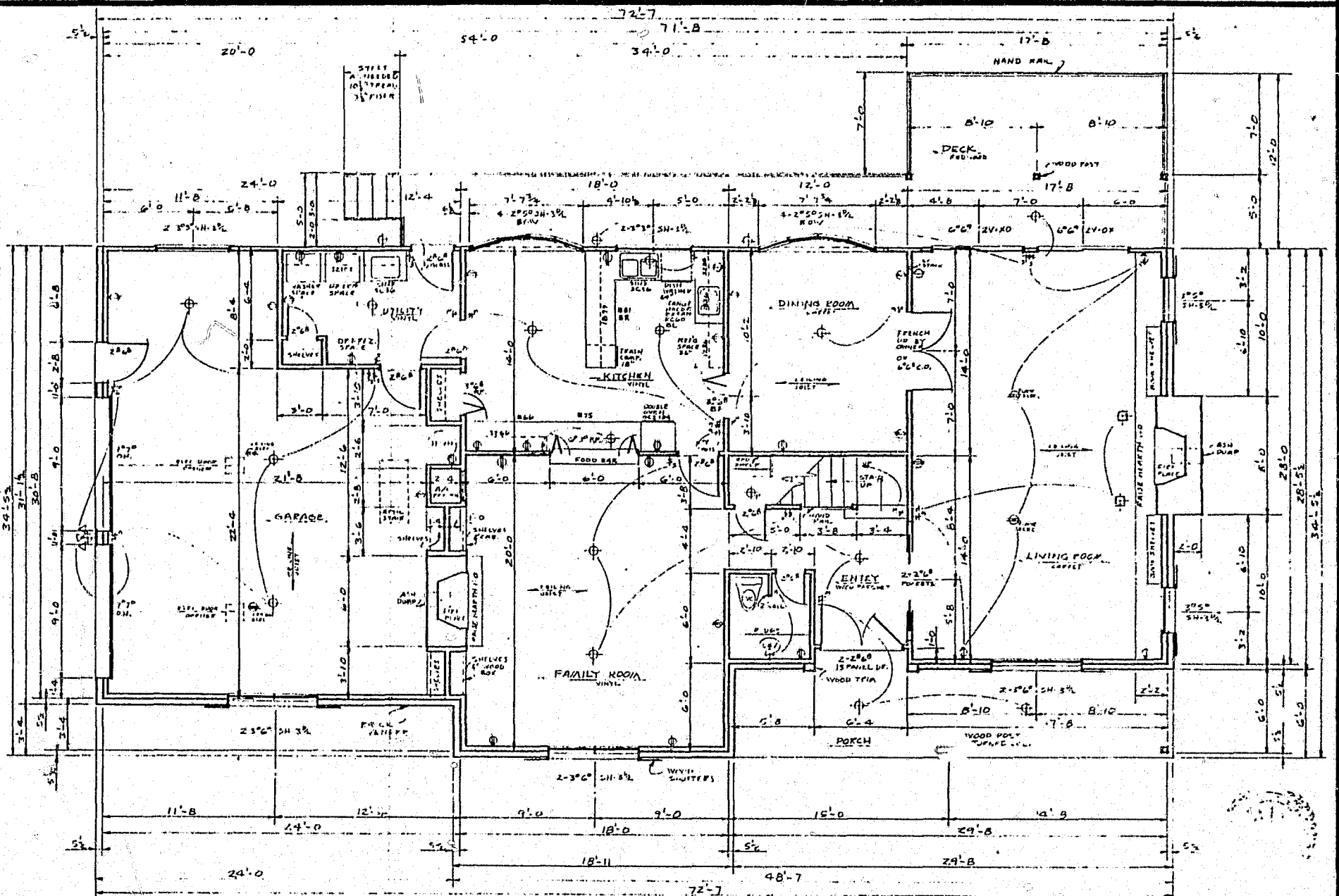
OTHER ONSITE IMPROVEMENTS:
GRADE TO DIVERT WATER AWAY FROM BUILDING & TO NATURAL DRAINAGE

LANDSCAPING, PLANTING, AND FINISH GRADING: ALLOWANCE: $1000.00
Topsoil 4" thick: ☒ front yard ☒ side yards ☒ rear yard
Lawns (seeded, sodded, or sprigged): ☒ front yard SPRIG; ☒ side yards SPRIG; ☒ rear yard SPRIG

DESIGN CONSULTANT
DESIGNER MEMBER
SHEET: 9 OF 9

APPENDIX B

SAMPLE RESIDENTIAL PLAN



FLOOR PLAN

SCALE 1/4" = 1'-0

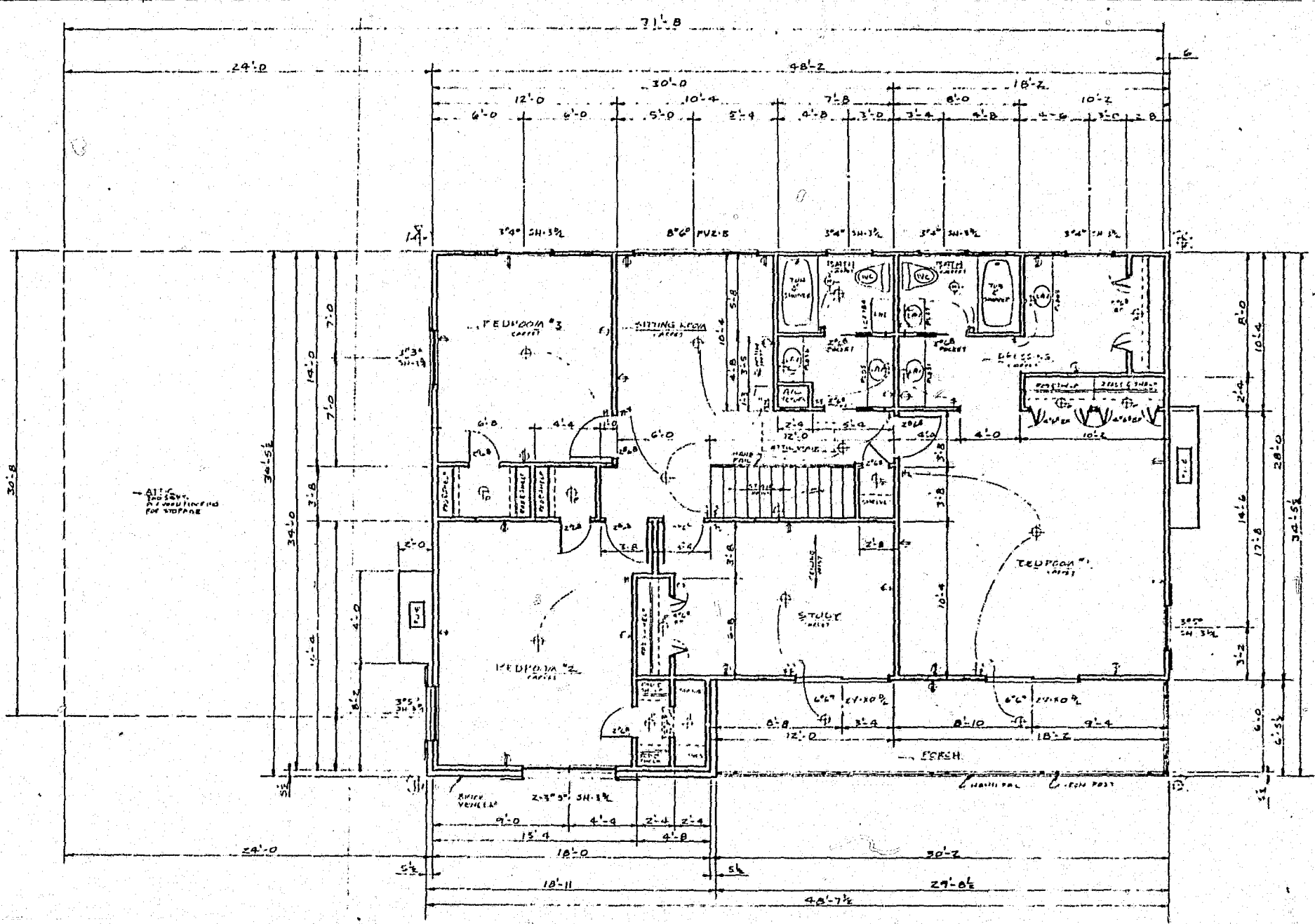
B-1

DESIGNER MEMBER

DESIGN CONSULTANT

SHEET: 1 OF 9

PLAN : BW 1074-2



2ND FLOOR PLAN

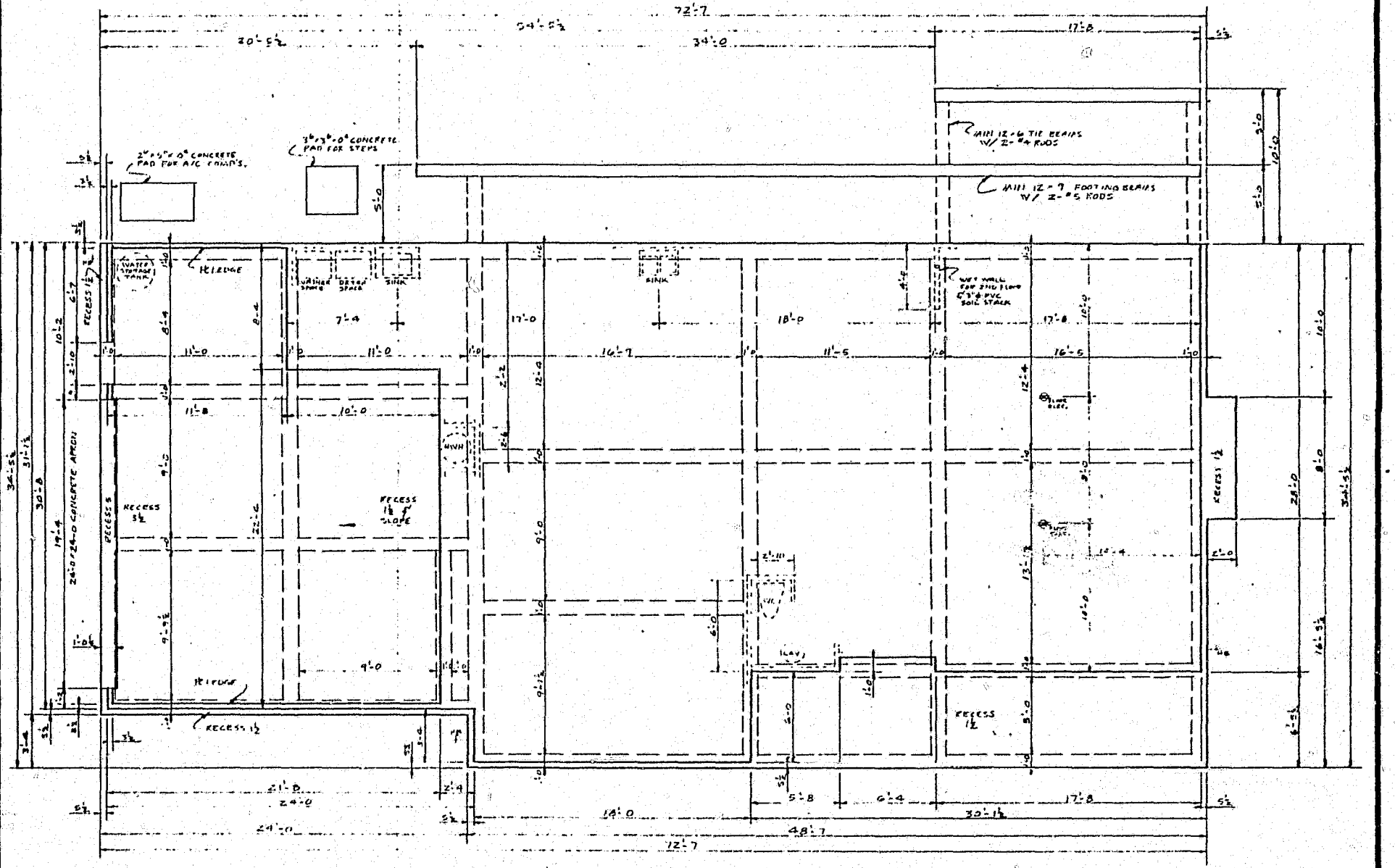
SCALE: 1/4"=1'-0"

DESIGNER REMPEL

DESIGN CONSULTANT

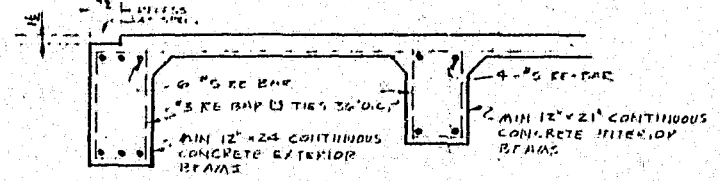
SHEET: 2 OF 9

B-2



FOUNDATION PLAN

SCALE ¼"=1'-0



NOTE: MIN 4" CONCRETE SLAB REINFORCED WITH #3 BAR 16" O.C. EACH WAY @ 1" FROM BOTTOM OF SLAB. SLAB TO BE PLACED OVER 6 MIL VISQUEEN, OVER MIN 6" TAMPED BANK SAND OR GRAVEL FILL. CONCRETE MIX TO BE MIN 4½ SACK, MAX 4" SLUMP MIX DESIGNED TO TEST MIN 3200 PSI. OR 28TH DAY. CURE BY COMPOUND OR WATER & KEEP MOIST MIN 7 DAYS.

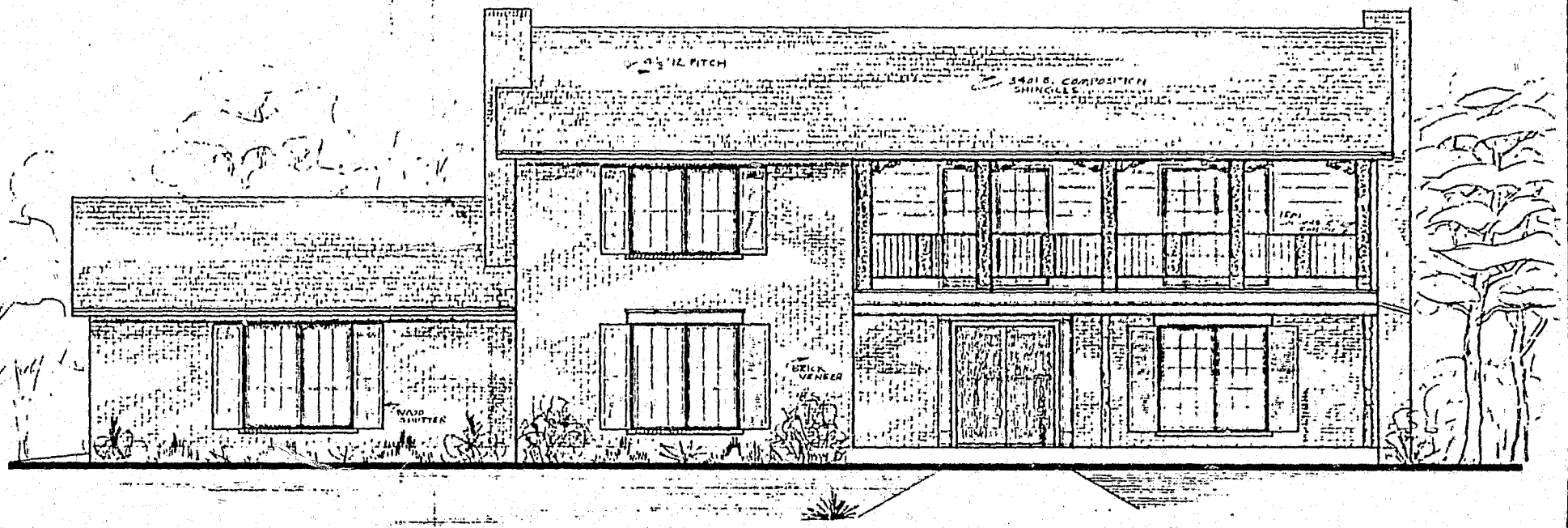
DESIGNER MEMBER

DESIGN CONSULTANT

SHEET: 3 OF 9

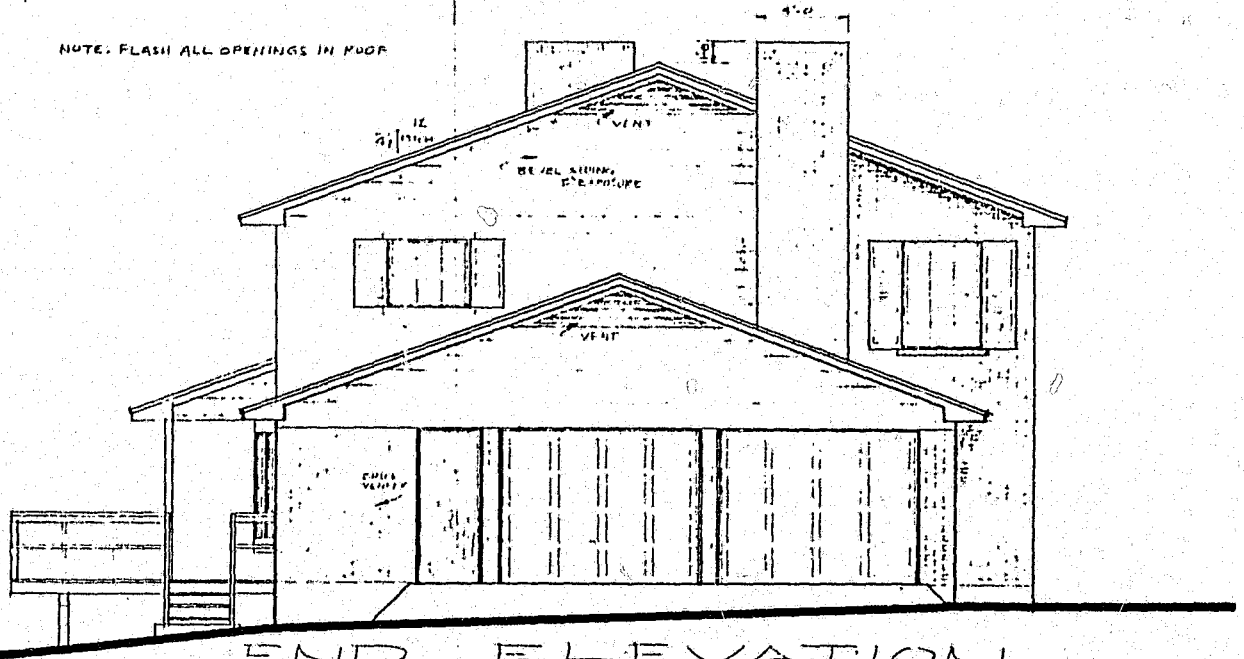
PLAN: SW1074-2

B-3



FRONT ELEVATION

SCALE 1/4"=1'-0"



END ELEVATION

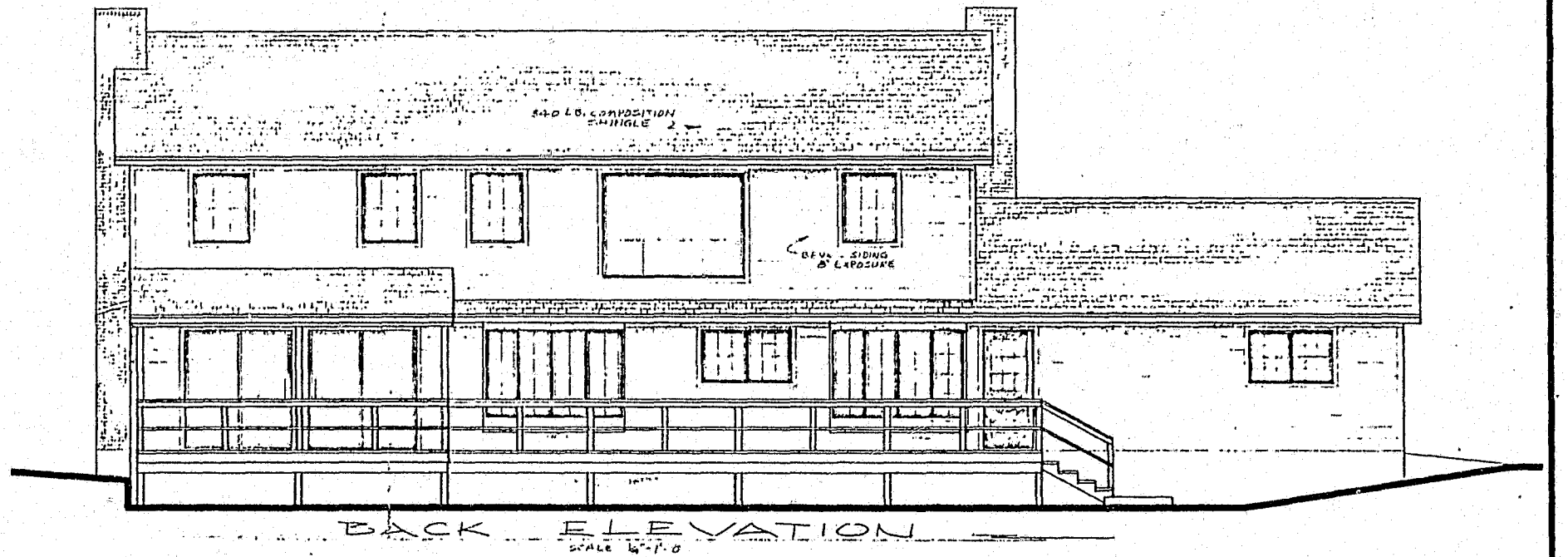
SCALE 1/4"=1'-0"

B-1.4

DESIGNER MEMBER

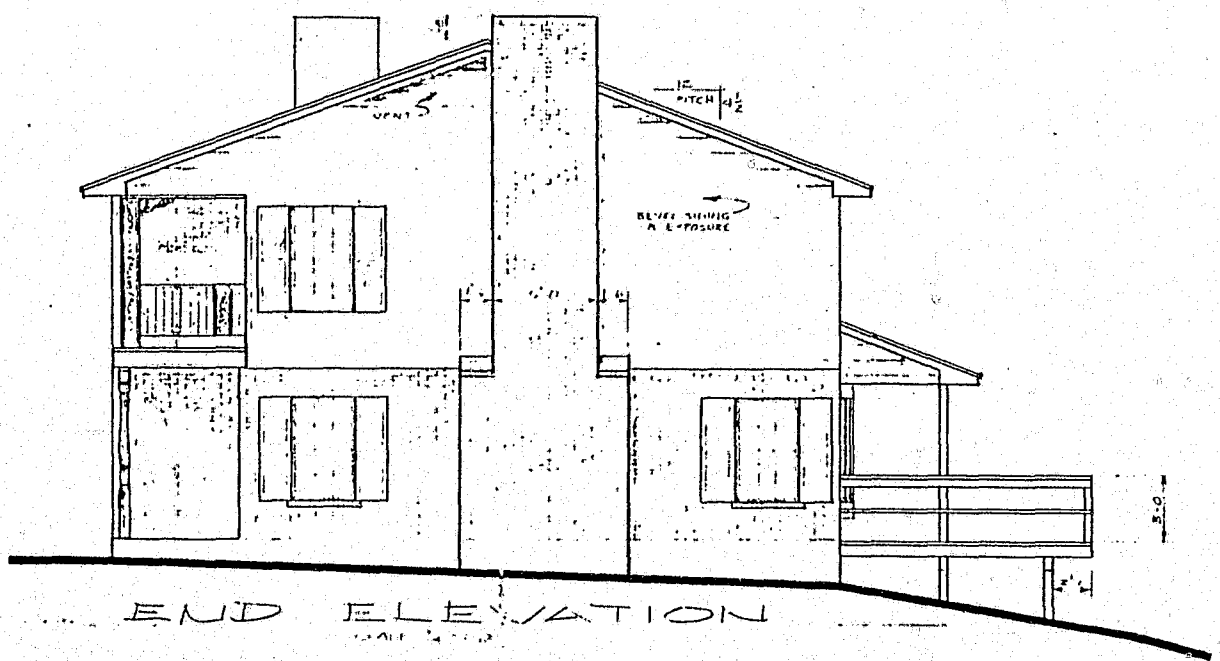
DESIGN CONSULTANT

SHEET: 4 OF 9



BACK ELEVATION

SCALE 1/4"-1'-0



END ELEVATION

SCALE 1/4"-1'-0

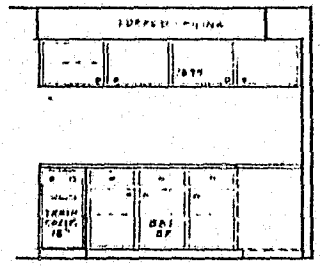
B-5

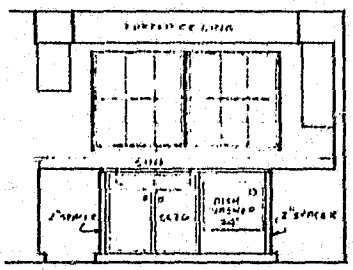
DESIGNER MEMBER

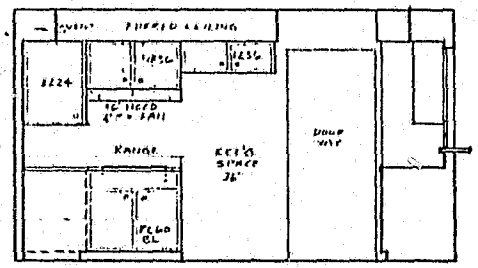
DESIGN CONSULTANT

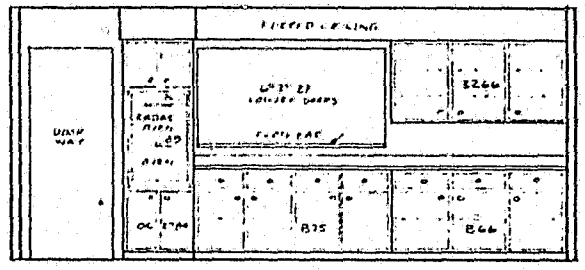
SHEET: 5 OF 9

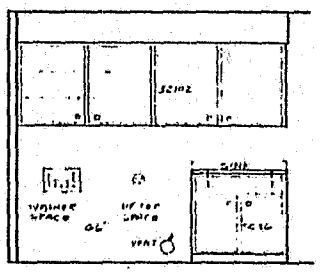
PLAN : ZIV 1074-2

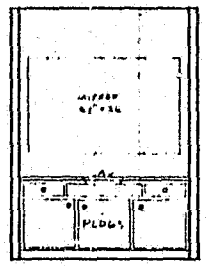


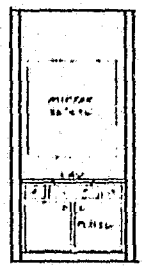


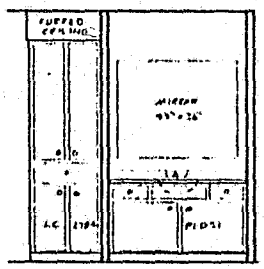


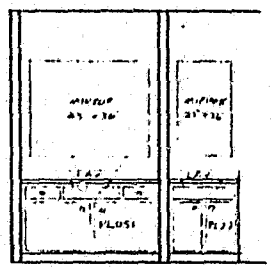


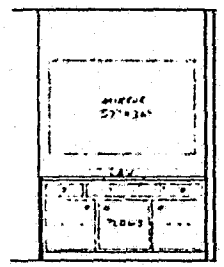


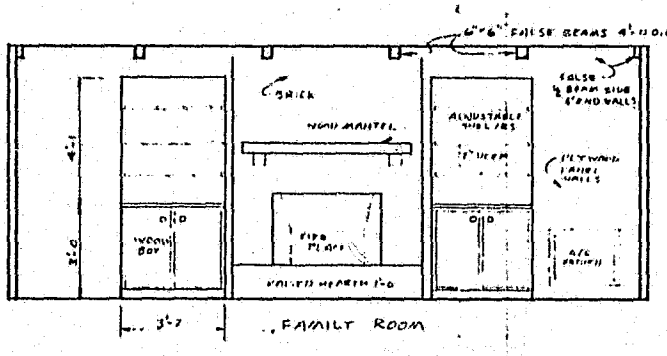


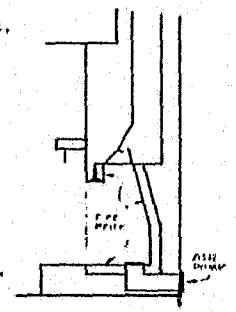


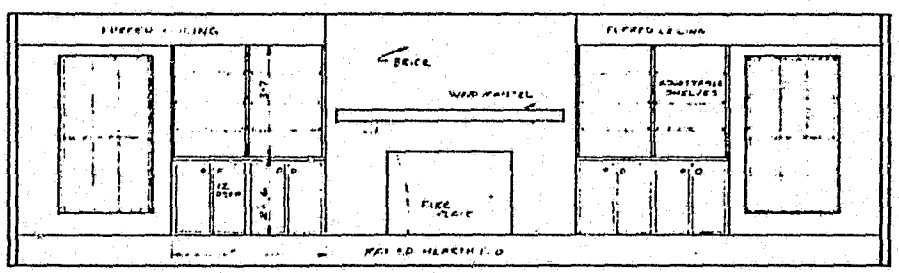


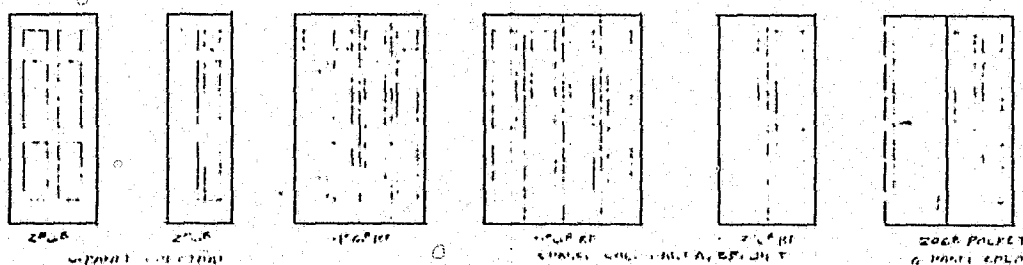












DETAILS

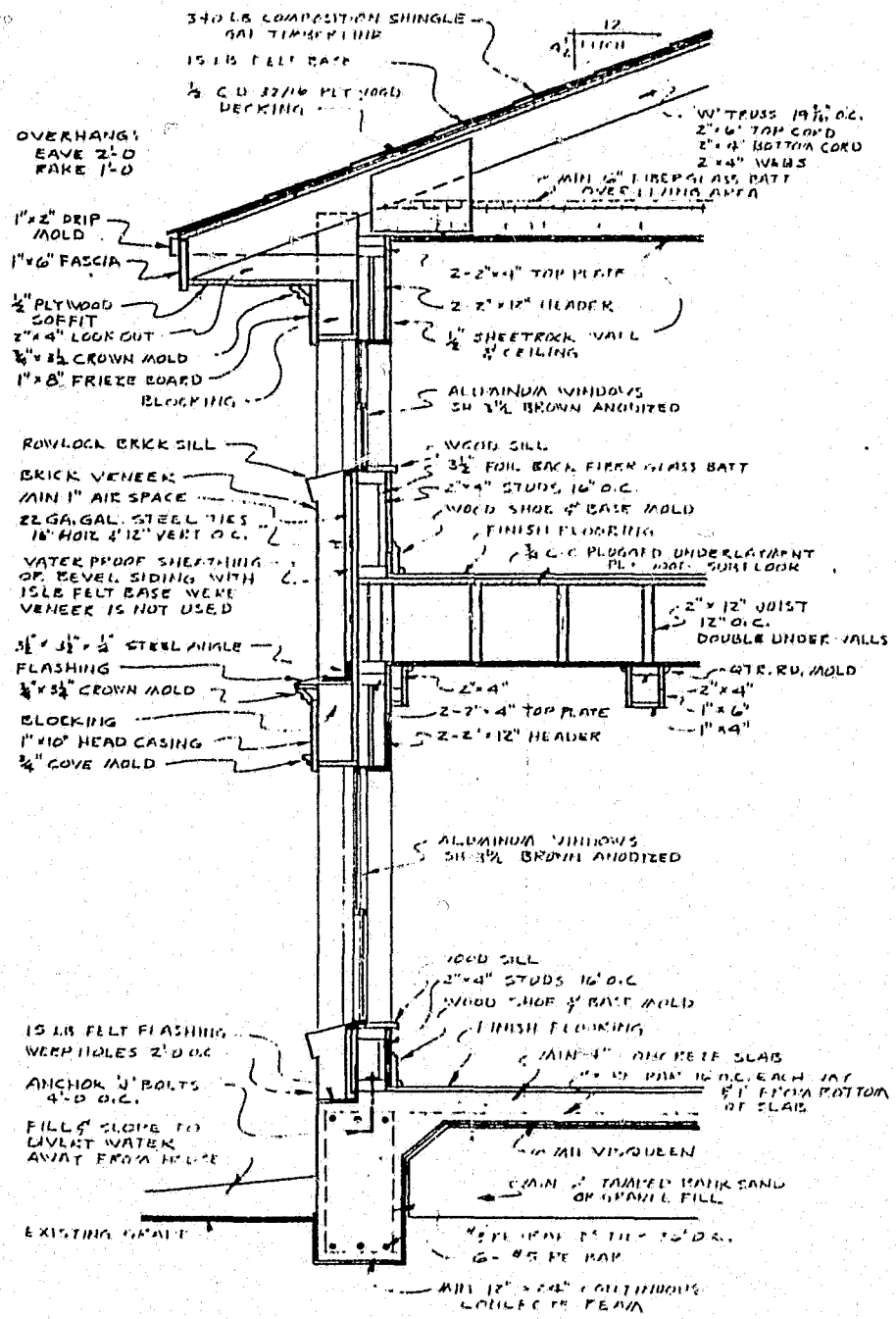
DESIGNER MEMBER

DESIGN CONSULTANT

SHEET: 7 OF 9

PLAN : EW1074-2

B-7



WALL SECTION

B-8

DESIGNER MEMBER

DESIGN CONSULTANT

SHEET: 8 OF 9

PLAN : FW 1074-7

FHA Form 2005
VA Form VA4-1852

☒ Proposed Construction
☐ Under Construction

DESCRIPTION OF MATERIALS No. ______

Property address ______ City SAN MARCOS State TX

Mortgagor or Sponsor ______

Contractor or Builder ______

1. EXCAVATION:
Bearing soil, type REMOVE TOPSOIL FOR BEAMS TO EXPOSE BEARING SURFACE - ROCK

2. FOUNDATIONS:
Footings: concrete mix 4½ SACK; strength psi 3200; Reinforcing 6-½" Ø RODS
Foundation wall: material CONCRETE
Interior foundation wall: material CONCRETE
Waterproofing 6 MIL VISQUEEN - VB
Basementless space: ground cover BANK SAND OR GRAVEL; VAPOR BARRIER
Additional information: FOOTING, FOUNDATION WALL, BEAMS & SLAB TO BE PLACED AS A MONOLITHIC UNIT

3. CHIMNEYS:
Material BRICK; Prefabricated (make and size) DAMPER THROAT & SMOKE CHAMBER
Flue lining: material TERRA-COTTA; Fireplace flue size 12" x 12"
Additional information: VENTS (OTHER): 22 GA. GAL. STEEL

4. FIREPLACES:
Fireplace: facing BRICK; lining FIREBRICK; hearth BRICK; mantel WOOD
Additional information: RAISE HEARTH 1'-0 & ASH DUMP

5. EXTERIOR WALLS:
Wood frame: wood grade, and species CONST. PINE - K.D.; ☒ Corner bracing. Building paper or felt 15 LB.
Sheathing WATERPROOF; thickness ½"; width 4'8"
Siding BEVEL; grade #1; type PINE; exposure 8; fastening NAIL
Masonry veneer BRICK; Sills BRICK; Lintels STEEL; Base flashing 15 LB. FELT
Exterior painting: material EXTERIOR OIL BASE PAINT OR STAIN; number of coats 2
Gable wall construction: BEVEL SIDING

6. FLOOR FRAMING:
Joists: wood, grade, and species #2 PINE K.D.; other 2" x 12" - 12" O.C.; bridging 2" x 12"; anchors BOLTS
Concrete slab: mix 4½ SACK - 3200 PSI; thickness MIN 4"
Reinforcing ½" Ø RODS 18" O.C. EA. WAY; membrane 6 MIL VISQUEEN
Fill under slab: material TAMPED BANK SAND; thickness MIN 6
REINFORCING RODS 1" FROM BOTTOM OF SLAB. SLAB TO BE CURED BY COMPOUND OR WATER

7. SUBFLOORING: (Describe underflooring for special floors under item 21.)
Material: grade and species C-C PLUGGED UNDERLAYMENT; size ¾; type PLYWOOD
Laid: ☐ first floor; ☒ second floor; ☒ attic 300 sq. ft.; ☐ diagonal; ☒ right angles.

8. FINISH FLOORING: (Wood only. Describe other finish flooring under item 21.)

Location	Rooms	Grade	Species	Thickness	Width	Bldg. Paper	Finish
First floor							
Second floor							
Attic floor	sq. ft.						

9. PARTITION FRAMING:
Studs: wood, grade, and species CONST. PINE - K.D.; size and spacing 2" x 4" @ 16" O.C.
Additional information: DOUBLE AT OPENINGS & TRIPLE AT CORNERS

10. CEILING FRAMING:
Joists: wood, grade, and species #2 PINE OR FIR; Other 2" x 6" @ 19⅕" O.C.; Bridging 2" x 4", 1" x 6"

11. ROOF FRAMING:
Rafters: wood, grade, and species #2 PINE OR FIR
Additional information: 2" x 6" @ 19⅕" O.C. - 4½:12 PITCH

12. ROOFING:
Sheathing: wood, grade, and species ½" C-D 32/16 PLYWOOD; ☒ solid
Roofing COMPOSITION SHINGLE; grade 240 LB.; type GAF - TIMBERLINE
Underlay FELT; weight or thickness 15 LB.; fastening NAIL
Flashing: material GAL. STEEL; gage or weight 22 GA.

13. GUTTERS AND DOWNSPOUTS:
Gutters: material ______
Downspouts: material ______

14. LATH AND PLASTER
Dry-wall ☒ walls, ☒ ceilings: material SHEETROCK; thickness ½"; finish TEXTONE & PAINT
Joint treatment TAPE & FLOAT - PERFI-TAPE

15. DECORATING: (Paint, wallpaper, etc.)

Rooms	Wall Finish Material and Application	Ceiling Finish Material and Application
Kitchen	SR. & PAINT	SR. ½" DOUBLE RING NAIL & PAINT
Bath	S.R. & TILE AT TUB	DO.
Other	S.R. & PAINT OR WALLPAPER	DO.
FAMILY	S.R. & PANEL	DO. & FALSE BEAM

16. INTERIOR DOORS AND TRIM:
Doors: type 6 PANEL COLONIAL; material WOOD; thickness 1⅜"
Door trim: type MOLDING; material WOOD
Finish: doors LACQUER; trim LACQUER OR PAINT
Additional information: ALUMINUM PATIO DOOR - ALENCO - BROWN ANODIZED 91

17. WINDOWS:
Windows: type SH-291; make ALENCO; material ALUMINUM
Glass: grade S.S.; head flashing INTEGRAL
Trim: type MOLDING; material WOOD; Paint SAME AS WALLS; number coats 2
Weatherstripping: type VINYL
Screens: ☐ full; ☒ half; screen cloth material ALUMINUM
Additional information: BROWN ANODIZED

18. ENTRANCES AND EXTERIOR DETAIL:
Main entrance door: material SOLID PINE; width 3'-0; thickness 1¾"; Frame: material WOOD
Other entrance doors: material WOOD; width 2'-8; thickness 1¾"; Frame: material WOOD
Head flashing GAL. STEEL; Weatherstripping: type ALUMINUM; saddles ALUMINUM & VINYL
Shutters: ☐ hinged; ☒ fixed. Railings WT. IRON; Attic louvers WOOD
Exterior millwork: grade and species #1 PINE OR CEDAR; Paint OIL BASE OR STAIN; number coats 2

19. CABINETS AND INTERIOR DETAIL:
Kitchen cabinets, wall units: material FACTORY - WOOD; shelf width 1'-0 / 2'-0
Base units: material FACTORY - WOOD; counter top FORMICA; edging FORMICA
Back and end splash FORMICA; Finish of cabinets LACQUER - FACTORY
Medicine cabinets: make ______; model WOOD
Other cabinets and built-in furniture SEE PLAN
Additional information: JOB BUILT BOOK SHELVES & CABS.

20. STAIRS:

Stair	Treads Material	Treads Thickness	Risers Material	Risers Thickness	Strings Material	Strings Size	Handrail Material	Handrail Size	Balusters Material	Balusters Size
Basement										
Main	WOOD	1¼	WOOD	¾	WOOD	2" x 12"	WOOD	1⅝ Ø	WOOD	1⅜ Ø
Attic										

Disappearing: make and model number ATTIC OWN TYPE STAIR
Additional information: STEP ... 11" TRE ... - CONCRETE

21. SPECIAL FLOORS AND WAINSCOT:

Location	Material, Color, Border, Sizes, Gage, Etc.	Threshold Material	Wall Base Material	Underfloor Material
Kitchen	VINYL		WOOD	CONCRETE
Bath	VINYL		WOOD	CONCRETE
OTHER	CARPET OR VINYL - SEE PLAN		WOOD	CONCRETE
	ALLOWANCE: $ 50/YD CARPET; $ 6/YD VINYL			

Location	Material, Color, Border, Cap, Sizes, Gage, Etc.	Height	Height Over Tub	Height in Showers (From Floor)
Bath	CERAMIC TILE IN TUB AREA		6'-6	6'-6

Bathroom accessories: ☒ Recessed; material CERAMIC; ☒ Attached; material METAL

22. PLUMBING:

Fixture	Number	Location	Make	Mfr's Fixture Identification No.	Size	Color
Sink	1	KITCHEN	AMERICAN STANDARD - MEDIUM GRADE OR EQUAL			
Lavatory	6	BATH	DO.			
Water closet	3	BATH	DO.			
Bathtub	2	BATH	DO.			
Shower over tub	2	BATH	DO.			
Laundry trays	1	UTILITY	DO.			
FAUCETS			MOEN MIXERS OR EQUAL			

House drain (inside): ☒ other PVC; House sewer (outside): ☒ other PVC
Sill cocks, number 4
Domestic water heater: type ELECTRIC; make and model AMERICAN STANDARD; material GLASS LINED; capacity 80 gallons

23. HEATING:
Warm air: ☒ Forced. Type of system ELECTRIC - ALL YEAR A.C. - HEAT & COOL
Duct material: supply FIBER; return FIBER; Insulation FIBER; thickness 1"
Furnace: make and model WESTINGHOUSE OR EQUAL
Additional information: 72° SUMMER & 80° WINTER GUARANTEE - 2 UNITS
Controls: make and types EQUAL - AUTOMATIC
Electric heating system: type WESTINGHOUSE OR EQUAL
Additional information: HEAT STRIPS
Ventilating equipment: attic fan, make and model G.E. - 2 SPEED WITH LIGHT
Other heating, ventilating, or cooling equipment ELECTRIC HEATER & EX. FAN IN EACH BATH

24. ELECTRIC WIRING:
Service: ☒ overhead; Panel: ☒ circuit-breaker; No. circuits 24
Wiring: ☒ nonmetallic cable
Special outlets: ☒ range; ☒ water heater; ☒ other DRYER, OVEN, A/C
☒ Doorbell. ☐ Chimes. Push-button locations FRONT DOOR

25. LIGHTING FIXTURES:
Total number of fixtures ______ Total allowance for fixtures, typical installation, $ 800.00 OWNER SELECTION

26. INSULATION:

Location	Thickness	Material, Type, and Method of Installation	Vapor Barrier
Roof			
Ceiling	6"	FIBER GLASS BATT OVER LIVING AREA	
Wall	3½"	FOIL BACK FIBER GLASS BATT	ALUMINUM
Floor			

HARDWARE: (make, material, and finish.) ALLOWANCE: $ 250.00 OWNER SELECTION

SPECIAL EQUIPMENT: (State material or make and model.)
Kitchen range RANGE TOP - GE.
Other OVEN - GE. DOUBLE
Dishwasher DOOR TYPE - G.E.
TRASH COMPACTOR

27. MISCELLANEOUS: (Describe any main dwelling materials, equipment, or construction items not shown elsewhere; or use to provide additional information where the space provided was inadequate. Always reference by item number to correspond to numbering used on this form.)

PORCHES: SEE PLAN

TERRACES: SEE PLAN

GARAGES: 2 CAR - CONSTRUCTION SAME AS HOUSE

WALKS AND DRIVEWAYS:
Driveway: width 12'-0; base material GRAVEL; thickness 4"
Front walk: width 3'-0; material CONCRETE; thickness 4"
Steps: material CONCRETE AS NEEDED; risers ½"; Cheek walls AS NEEDED
24' x 24' CONCRETE APRON

OTHER ONSITE IMPROVEMENTS:
(Specify all exterior onsite improvements not described elsewhere, including items such as unusual grading, drainage structures, retaining walls, fence, railings, and accessory structures.)

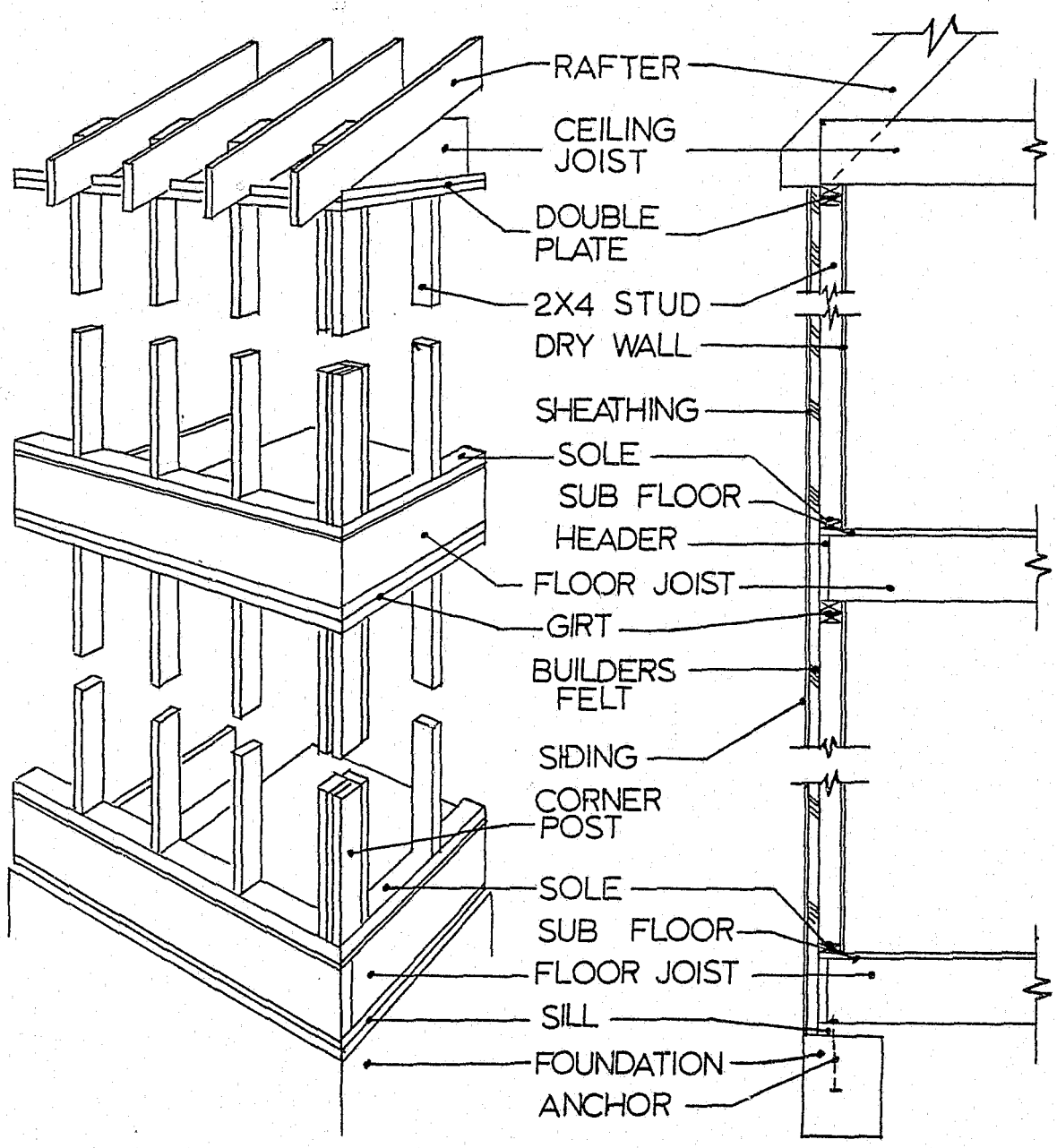
LANDSCAPING, PLANTING, AND FINISH GRADING:

SHEET: 9 of 9
PLAN: 5/1074-Z

APPENDIX C

CONSTRUCTION DETAILS AND PLAN SYMBOLS

PLATFORM FRAMING



AIR CONDITIONING DUCT SYMBOLS

DUCT (1st FIG. WIDTH; 2nd DEPTH)

DIRECTION OF FLOW

INCLINED DROP IN RESPECT TO AIR FLOW

INCLINED RISE IN RESPECT TO AIR FLOW

CANVAS CONNECTION

LINED DUCTWORK

AUTOMATIC FIRE DAMPER

MANUAL VOLUME DAMPER

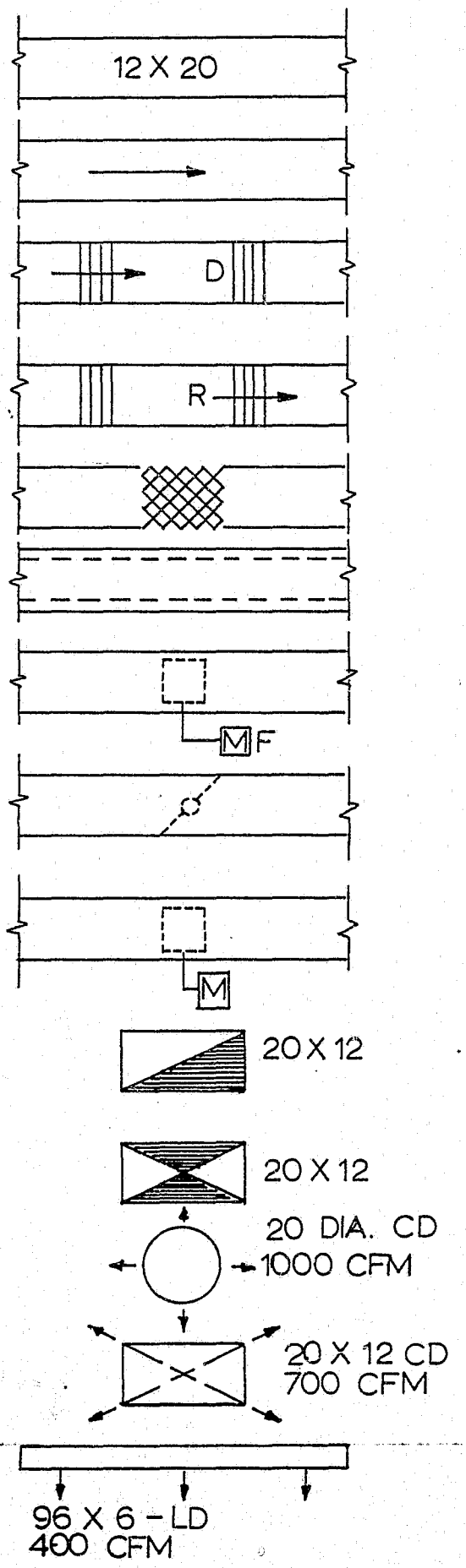
AUTOMATIC VOLUME DAMPER

EXHAUST RETURN OR OUTSIDE AIR DUCT SECTION

SUPPLY DUCT SECTION

SUPPLY OUTLET, CEILING DIFFUSER

LINEAR DIFFUSER



ELECTRICAL SYMBOLS

GENERAL OUTLETS

- CEILING OUTLET
- WALL OUTLET
- F FAN OUTLET
- L P.S. LAMP AND PULL SWITCH

SWITCH OUTLETS

- S DOUBLE POLE SWITCH
- S_3 THREE WAY SWITCH
- S_4 FOUR WAY SWITCH

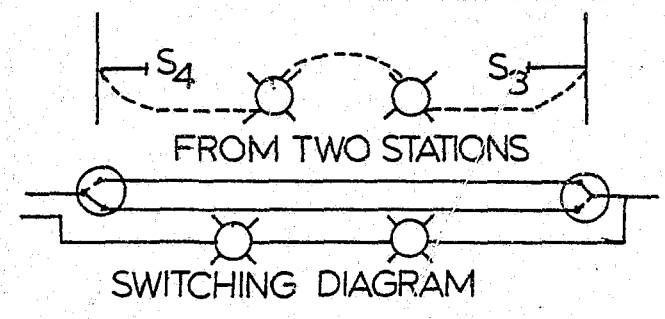
CONVENIENCE OUTLETS

- DUPLEX OUTLET
- W.P. WATERPROOF OUTLET
- R RANGE OUTLET
- S SWITCH & DUPLEX OUTLET
- 3 TRIPLEX OUTLET
- FLOOR OUTLET
- SPECIAL PURPOSE OUTLET

AUXILARY

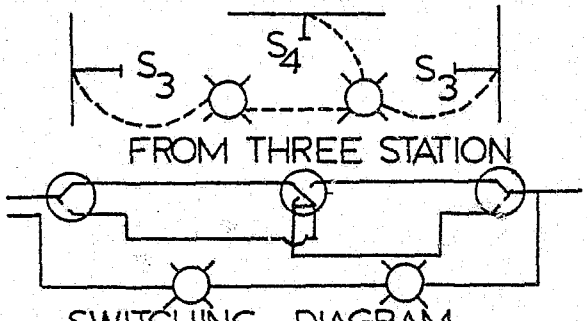
- PUSH BUTTON
- BUZZER
- BELL
- OUTSIDE TELEPHONE
- INTERCONNECTING TELEPHONE
- M MOTOR OUTLET
- LIGHTING PANEL

SWITCHING ARRANGEMENTS



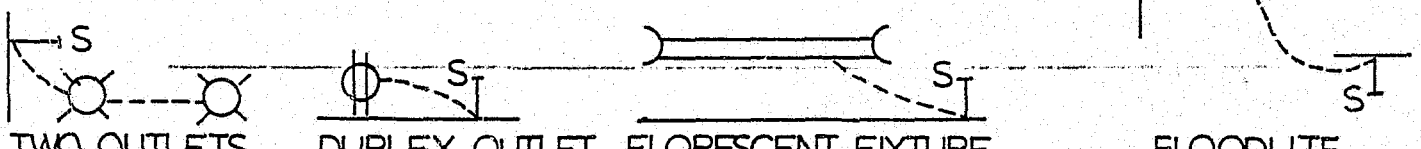
FROM TWO STATIONS

SWITCHING DIAGRAM



FROM THREE STATION

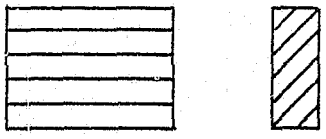
SWITCHING DIAGRAM



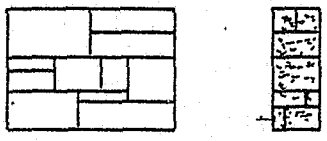
TWO OUTLETS · DUPLEX OUTLET · FLORESCENT FIXTURE · FLOODLITE

ARCHITECTURAL SYMBOLS

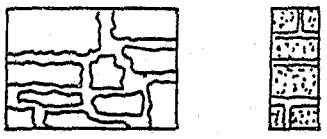
ELEVATION SECTION



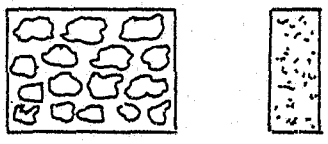
COMMON BRICK



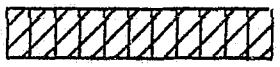
CUT STONE



ROUGH CUT STONE



RUBBLE



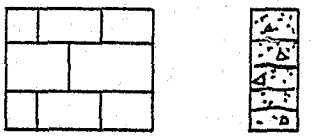
FIRE BRICK SECTION

FIRE BRICK ON COMMON

CONCRETE

EARTH SECTION

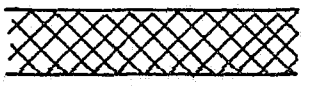
ELEVATION SECTION



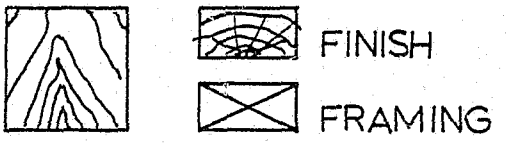
CONCRETE BLOCK

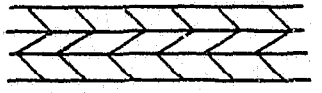
GLASS

BATT AND LOOSE FILL INSULATION

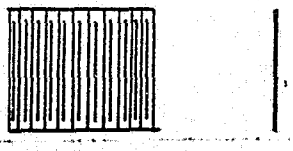


RIGID INSULATION



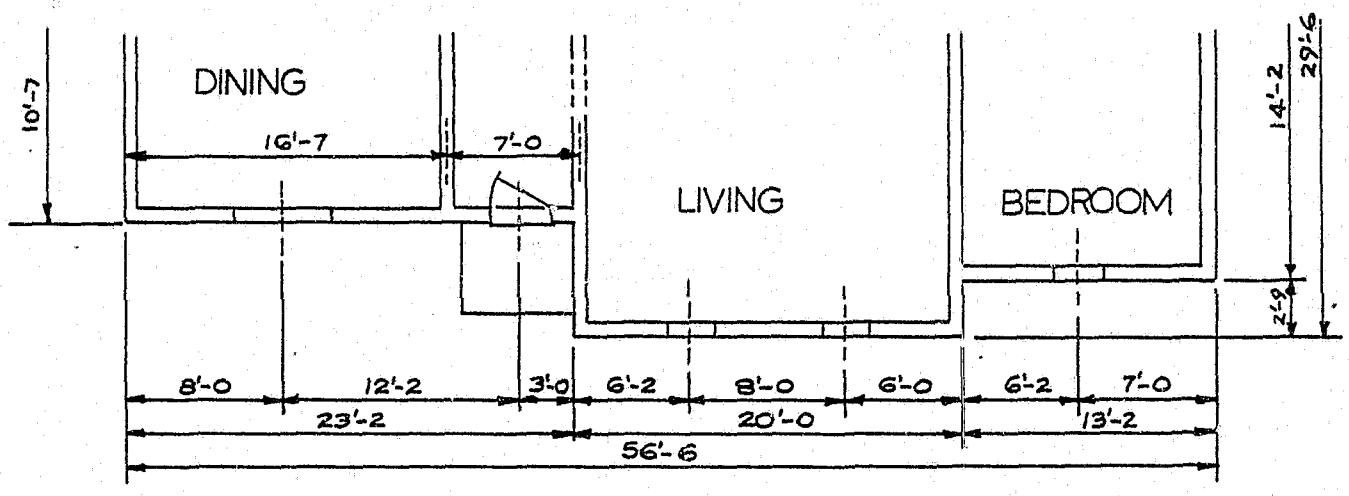


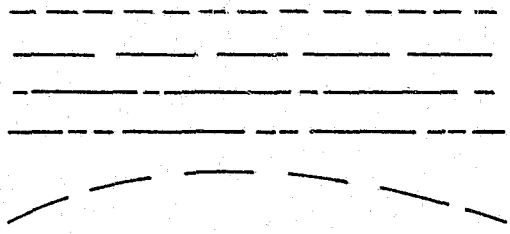
PLYWOOD IN SECTION



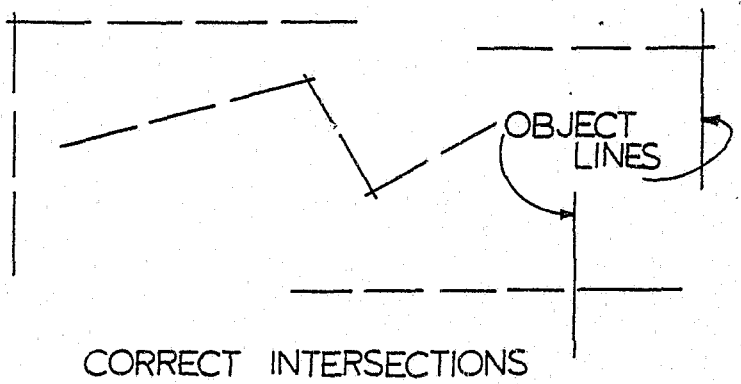
SHEET METAL

DIMENSIONING PRACTICES

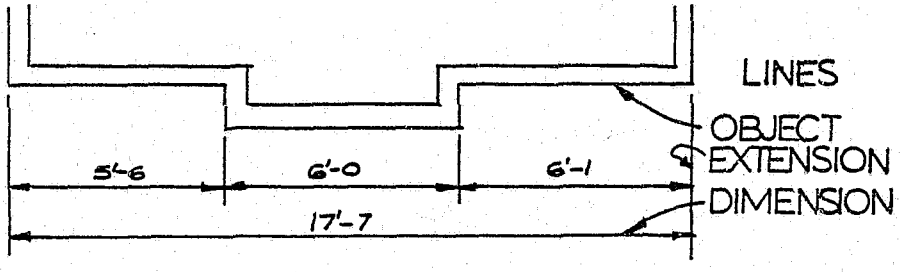




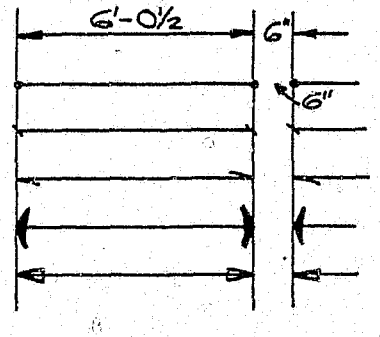
VARIOUS BROKEN LINES



CORRECT INTERSECTIONS

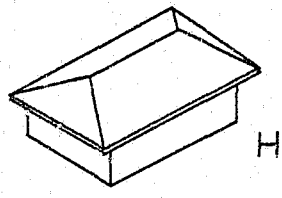


DIMENSIONING LINES

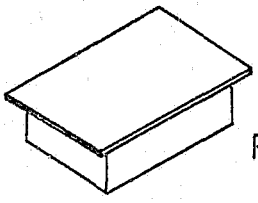


ARROWHEAD TYPES

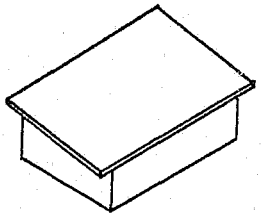
CONVENTIONAL ROOF TYPES



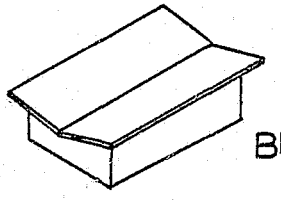
HIP



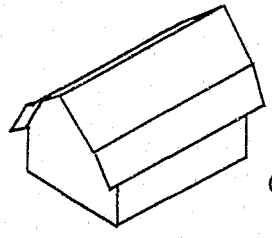
FLAT



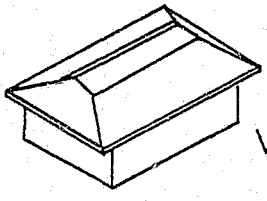
SHED



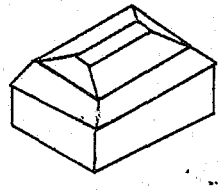
BUTTERFLY



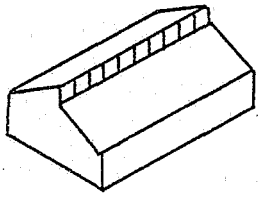
GAMBEL



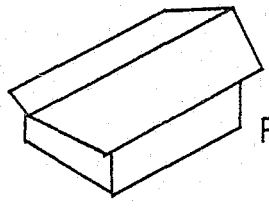
VARIETY OF HIPPED



MANSARD

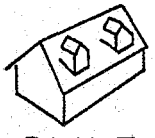


MONITOR



FLYING GABLE

GABLE ROOFS



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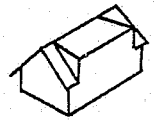
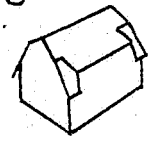
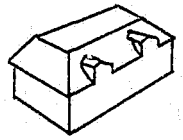


SHED

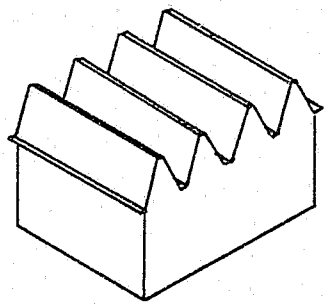


DUTCH COLONIAL

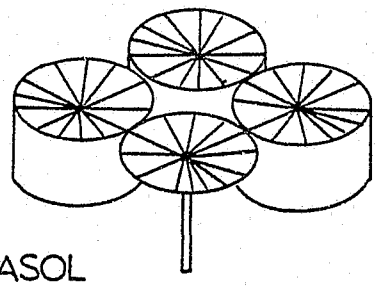


FRENCH

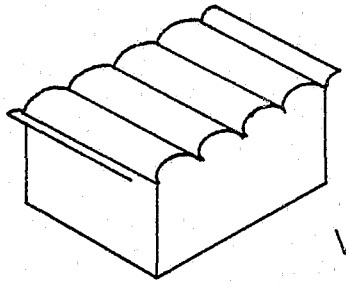
CONTEMPORARY ROOF STYLES



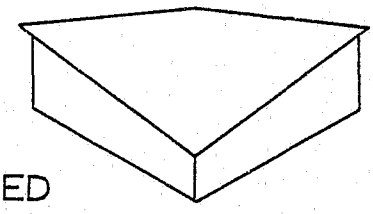
FOLDED



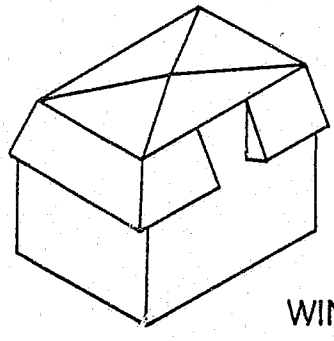
PARASOL



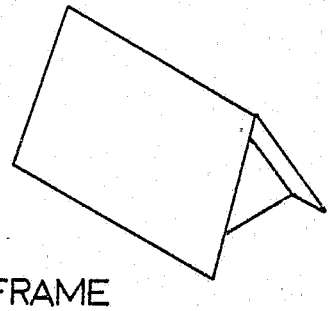
VAULTED



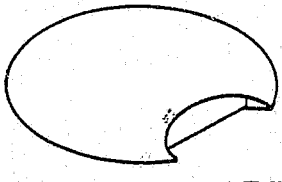
WARPED



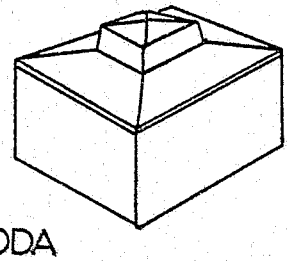
WINDMILL



A-FRAME



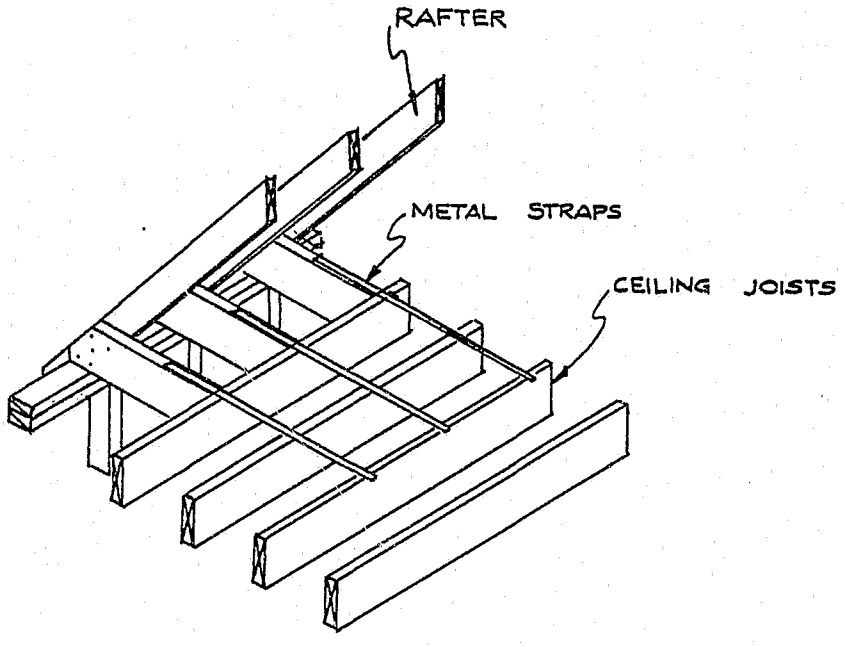
FREE FORM

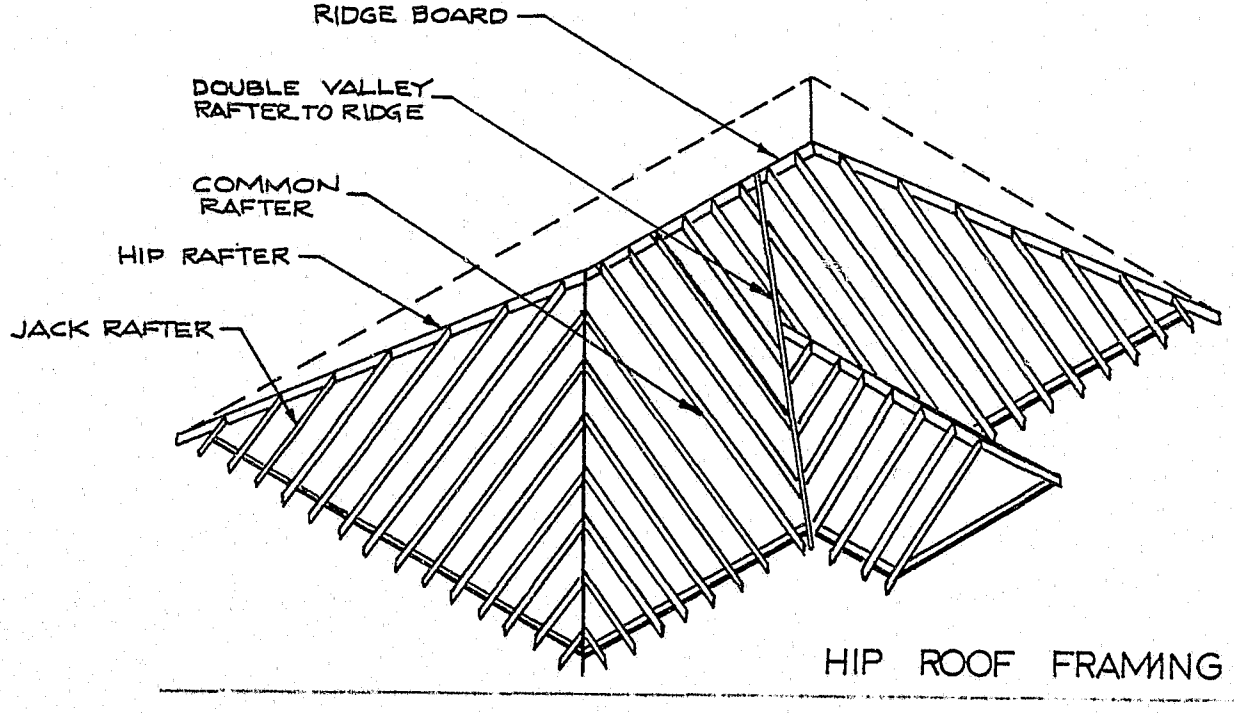


PAGODA

ROOF CONSTRUCTION

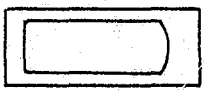
CEILING JOISTS AT RIGHT ANGLES TO RAFTERS

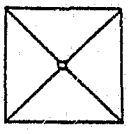




HIP ROOF FRAMING

PLUMBING AND HEATING SYMBOLS


TUB


SHOWER


WATER CLOSET

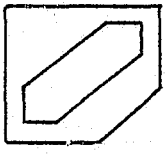

WALL HUNG W.C.


LAVATORY


OVAL LAVATORY


DOUBLE SINK

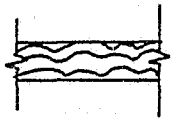
WATER HEATER


SQUARE TUB

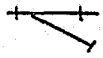

SHOWER HEAD

HOT WATER HEATING SUPPLY

HOT WATER HEATING RETURN


SOIL STACK PLAN


ELBOW


CLEAN OUT


GATE VALVE

HOT WATER

COLD WATER

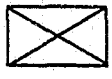
GAS LINE

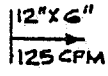
SPRINKLER LINE

SOIL or WASTE LINE

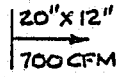
VENT PIPE


SUPPLY DUCT

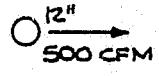

RETURN DUCT



WALL SUPPLY OUTLET

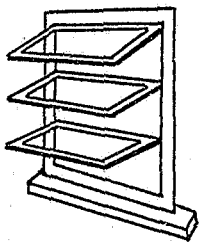


WALL RETURN OUTLET

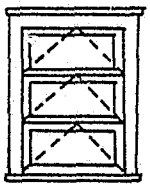


CEILING SUPPLY OUTLET

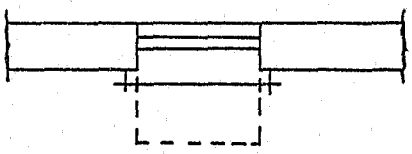
WINDOWS



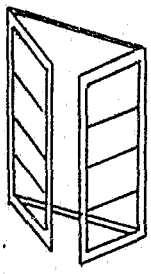
AWNING



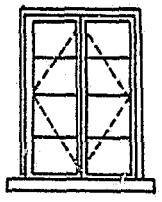
SYMBOL



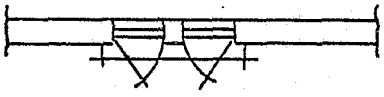
PLAN VIEW IN FRAME WALL



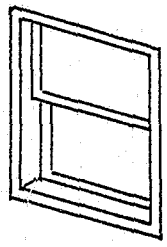
CASEMENT



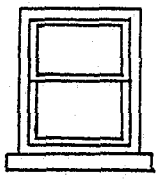
SYMBOL



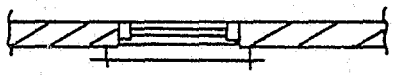
PLAN VIEW IN FRAME WALL



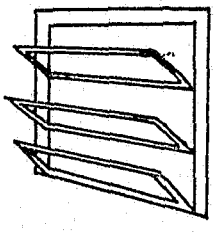
DOUBLE HUNG



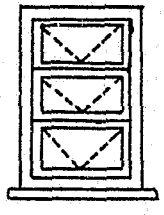
SYMBOL



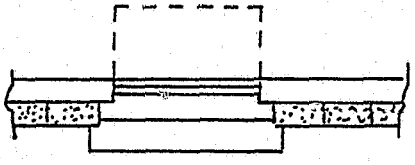
PLAN VIEW IN SOLID BRICK WALL



HOPPER

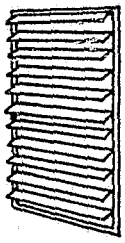


SYMBOL

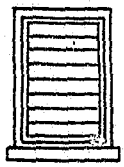


PLAN VIEW IN CUT STONE VENEER WALL

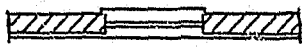
WINDOWS



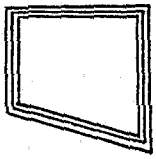
JALOUSIE



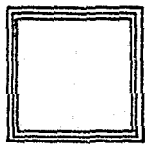
SYMBOL



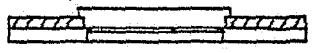
PLAN VIEW IN 8" BRICK WALL



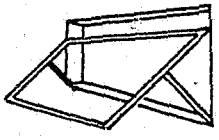
PICTURE



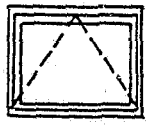
SYMBOL



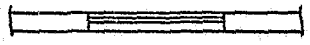
PLAN VIEW IN BRICK VENEER WALL



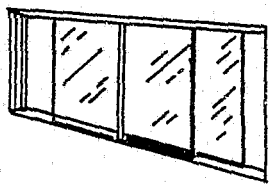
PROJECTED



SYMBOL

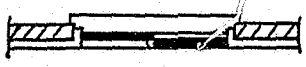


PLAN VIEW IN A FRAME WALL



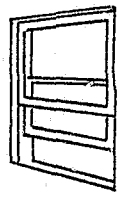
SLIDING

SYMBOL

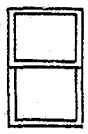


PLAN VIEW IN 8" BRICK WALL

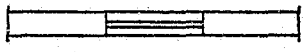
WINDOWS



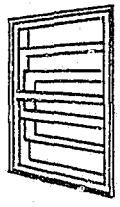
SINGLE HUNG



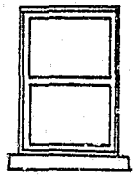
SYMBOL



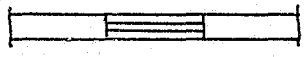
PLAN VIEW IN A FRAME WALL



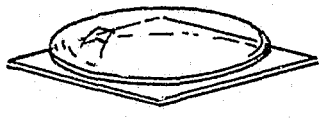
STORM-SCREEN



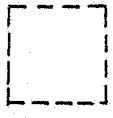
SYMBOL



PLAN VIEW IN A FRAME WALL

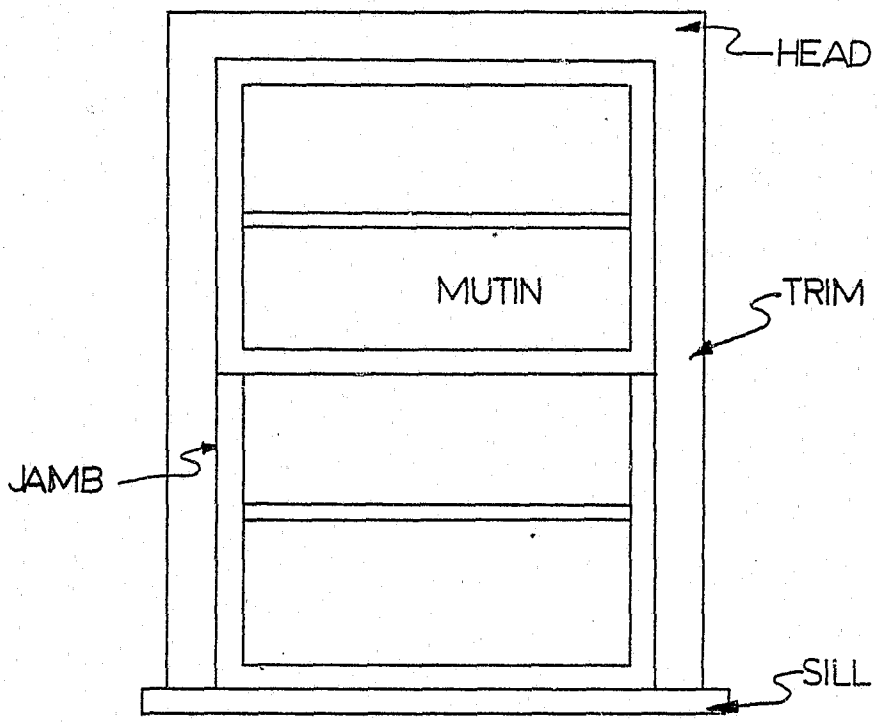


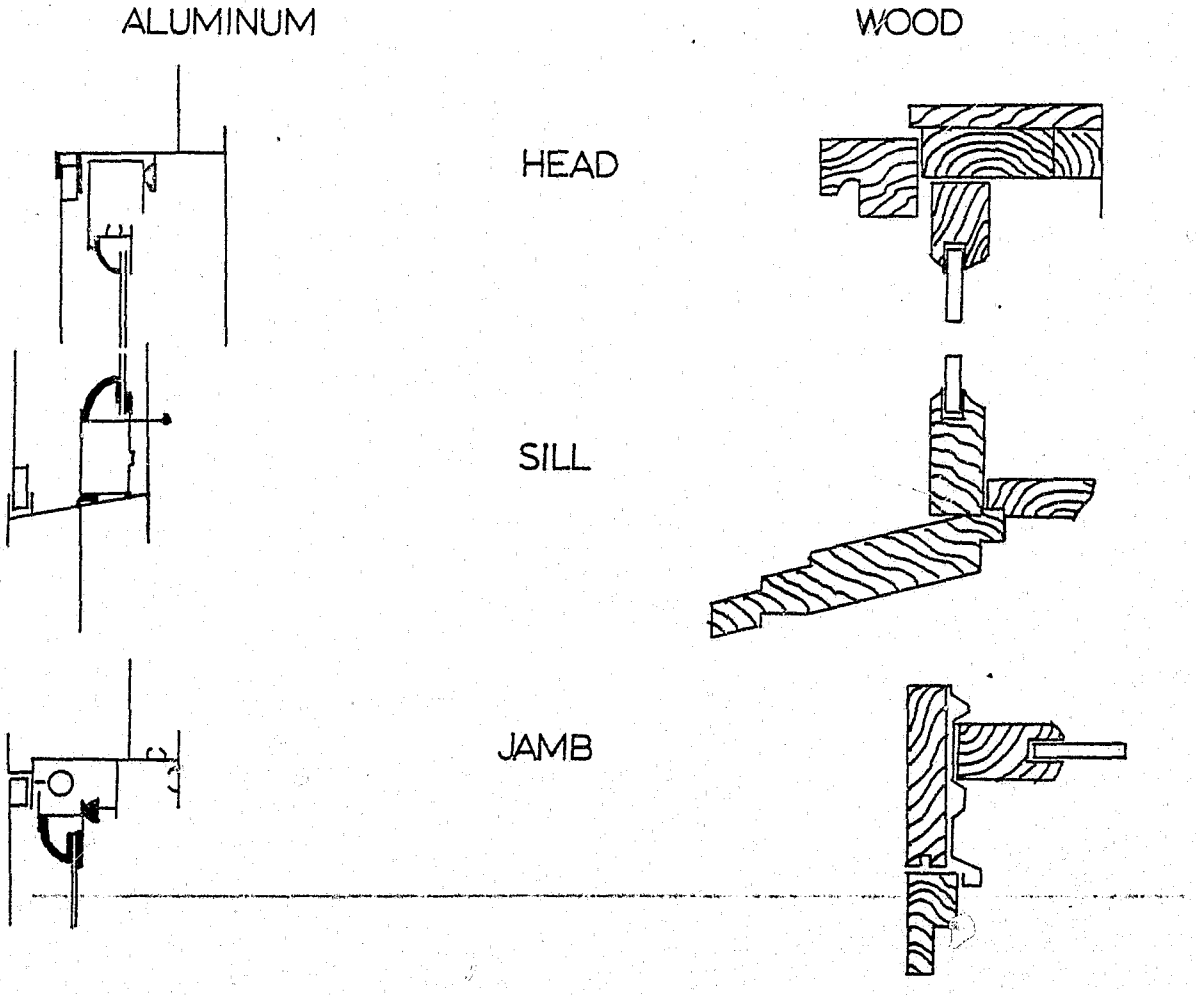
SKY LIGHT



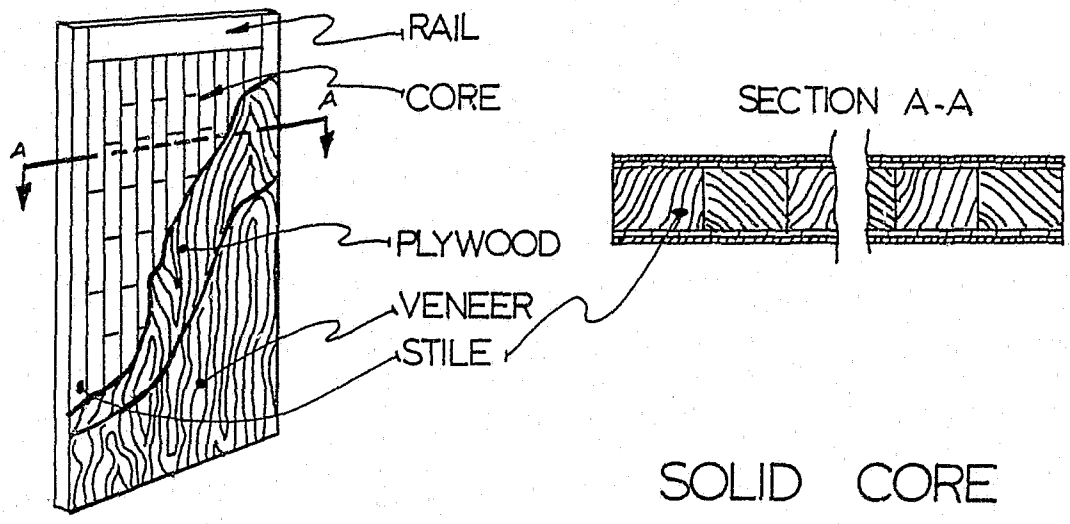
PLAN VIEW

WINDOWS

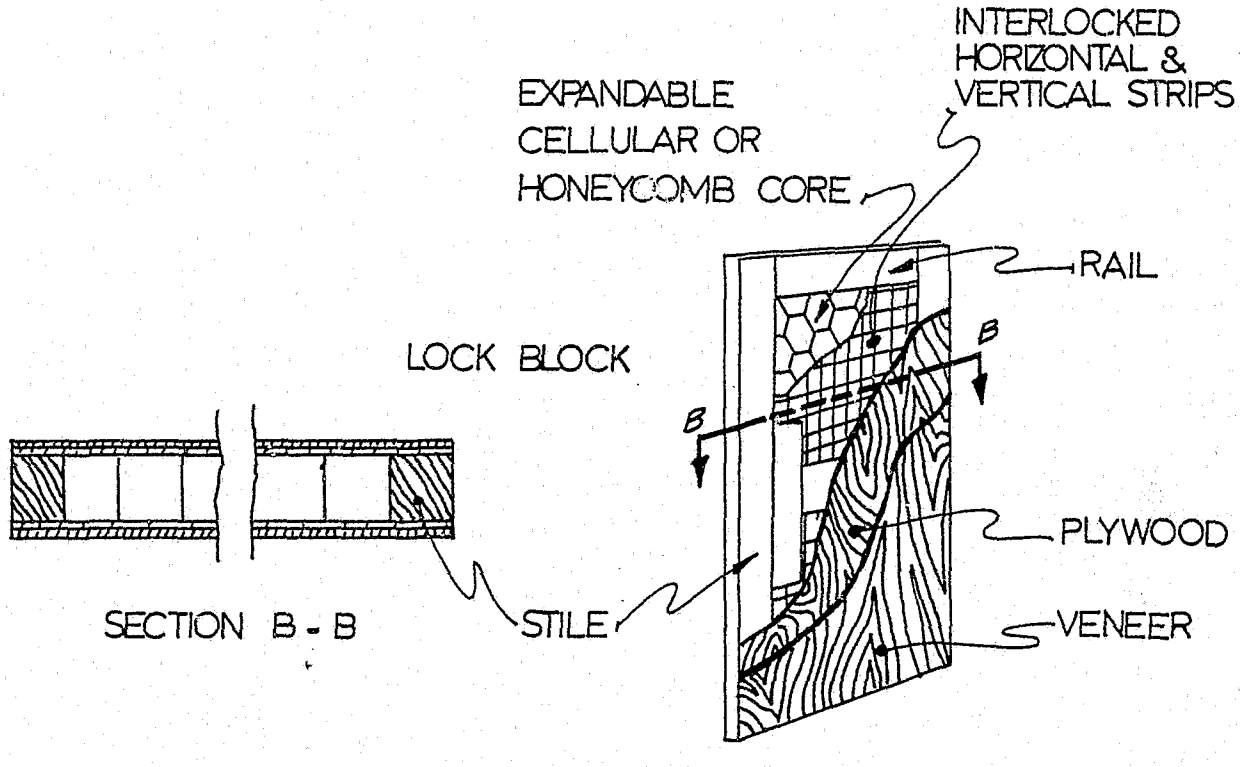




DOOR CONSTRUCTION

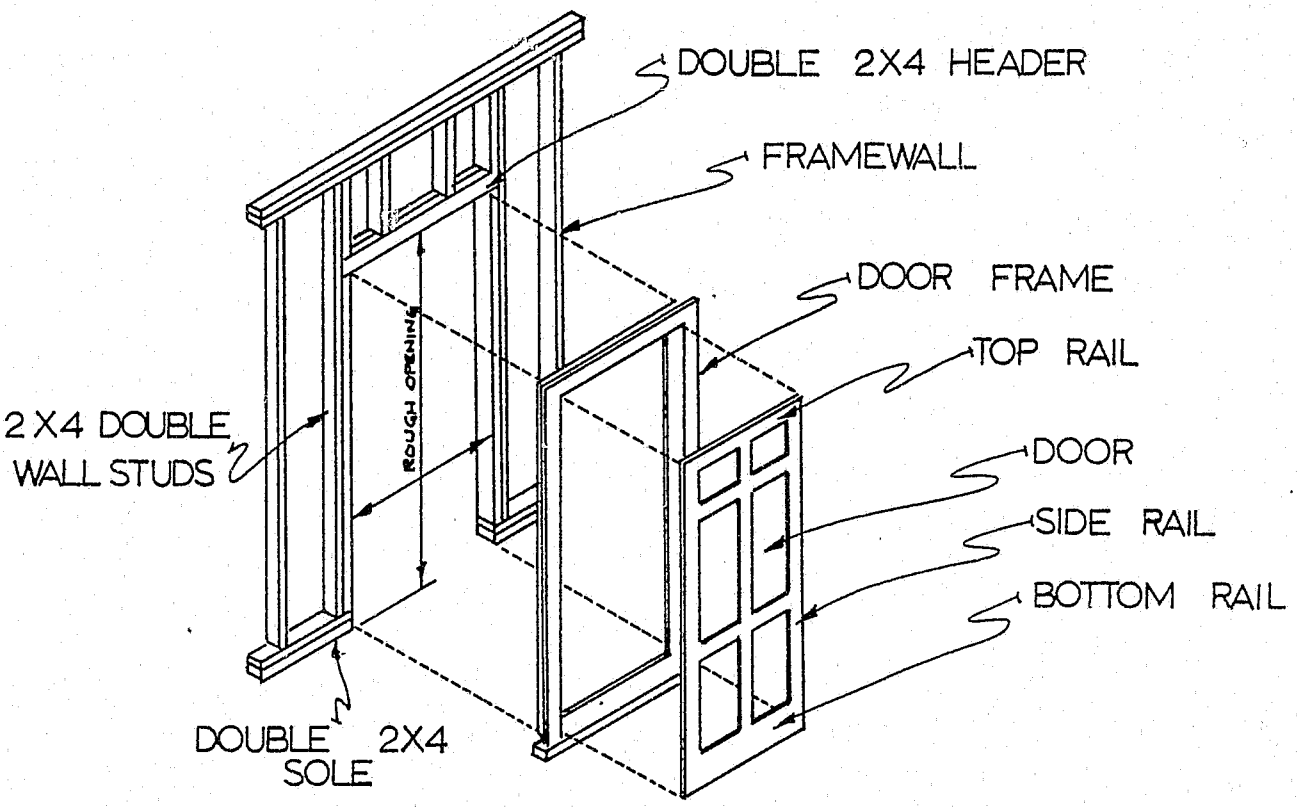


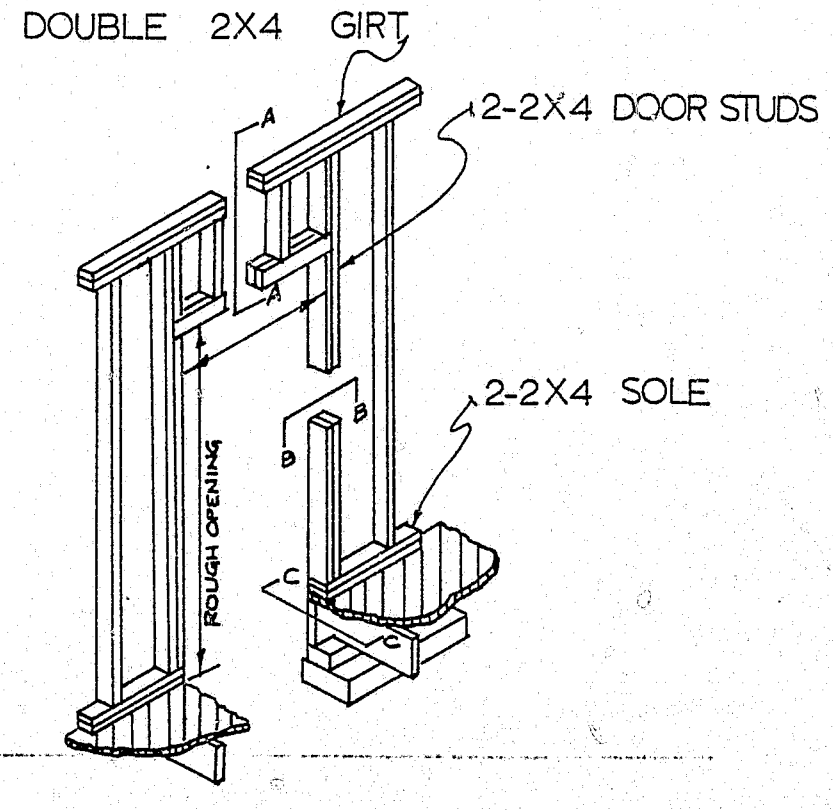
SOLID CORE



HOLLOW CORE

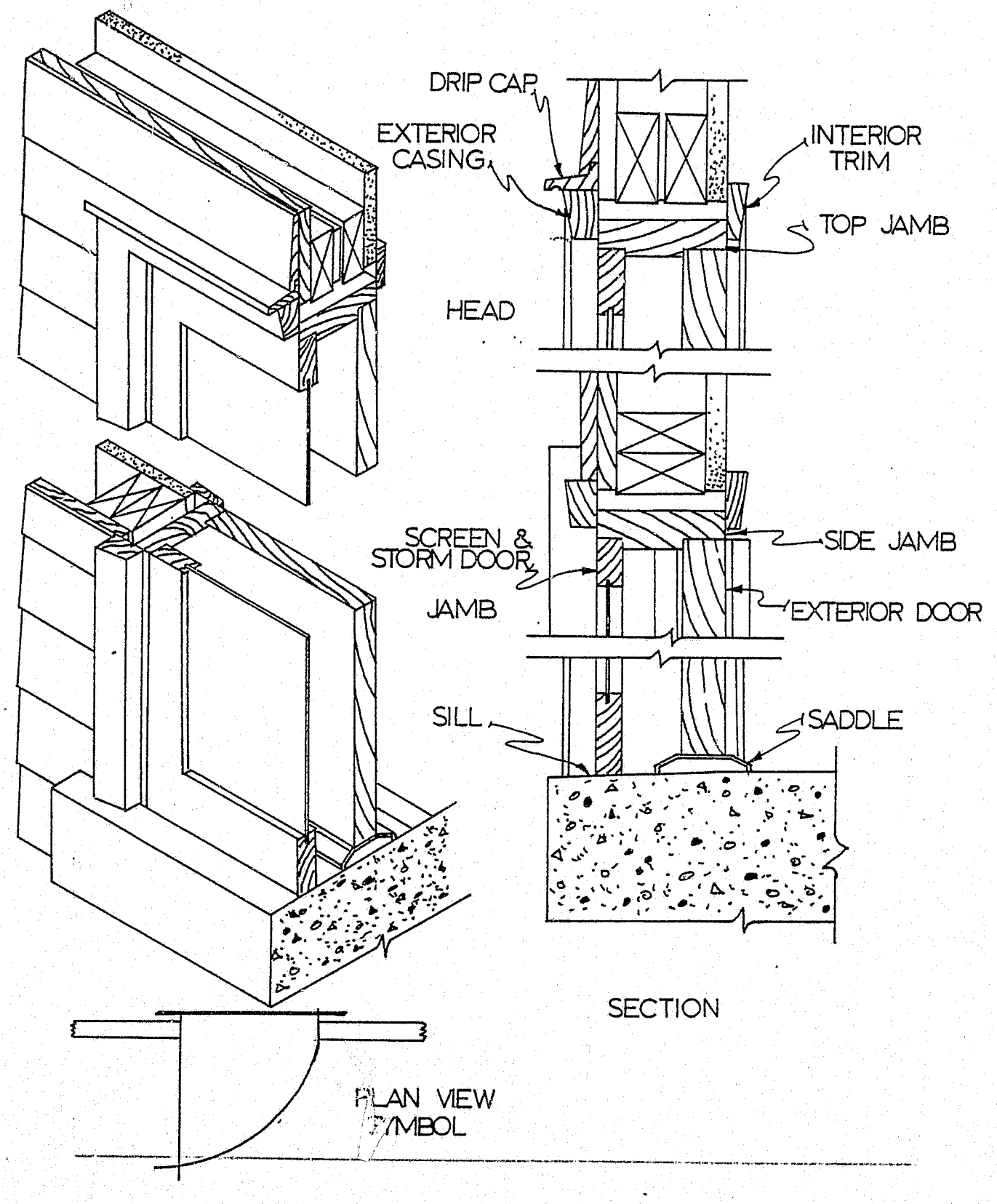
ROUGH OPENING



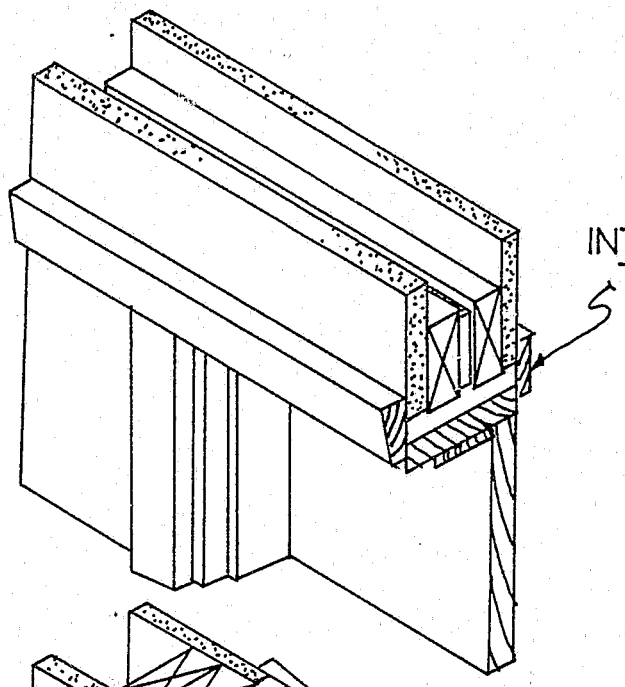


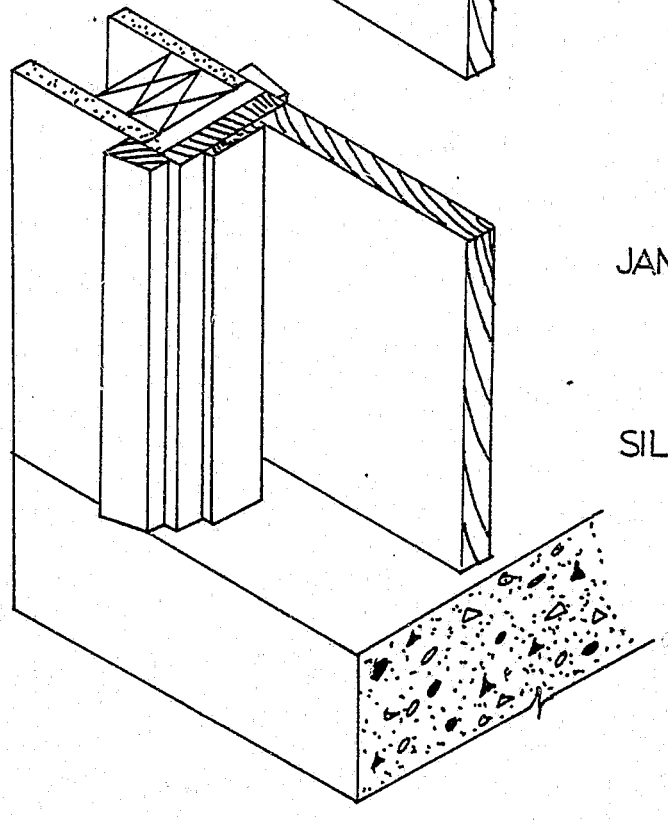
THIS DRWG. SHOWS TYPICAL DOOR SECTIONS DRAWN

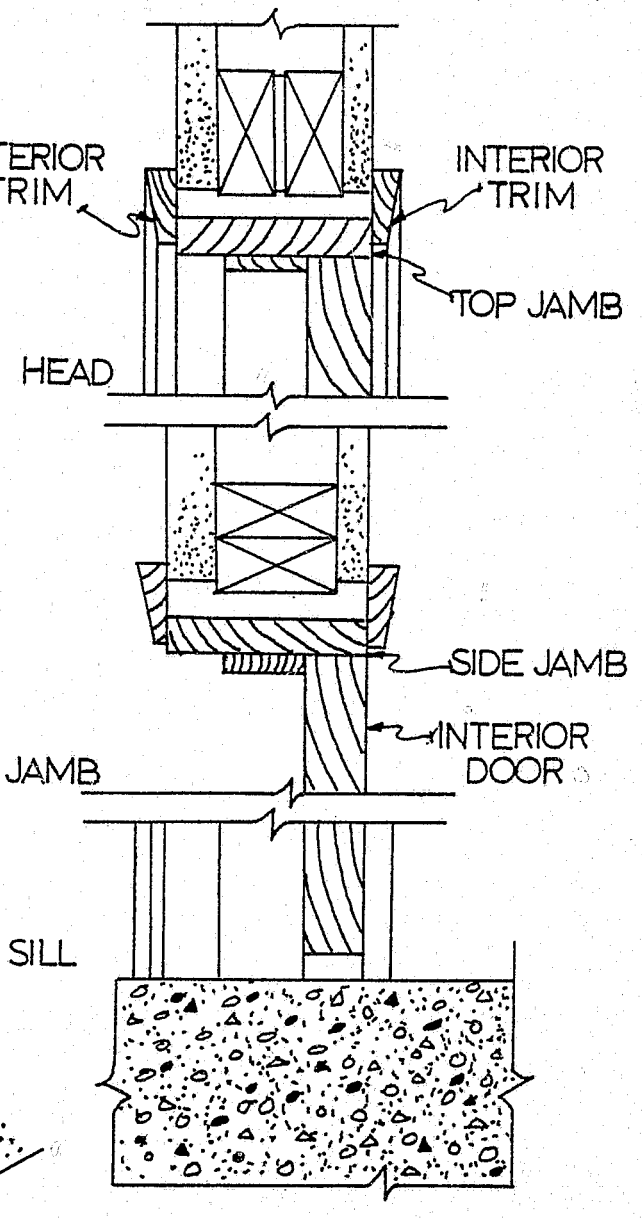
EXTERIOR DOOR



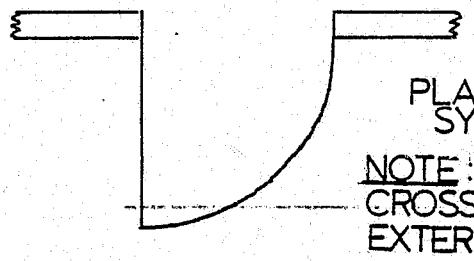
INTERIOR DOOR







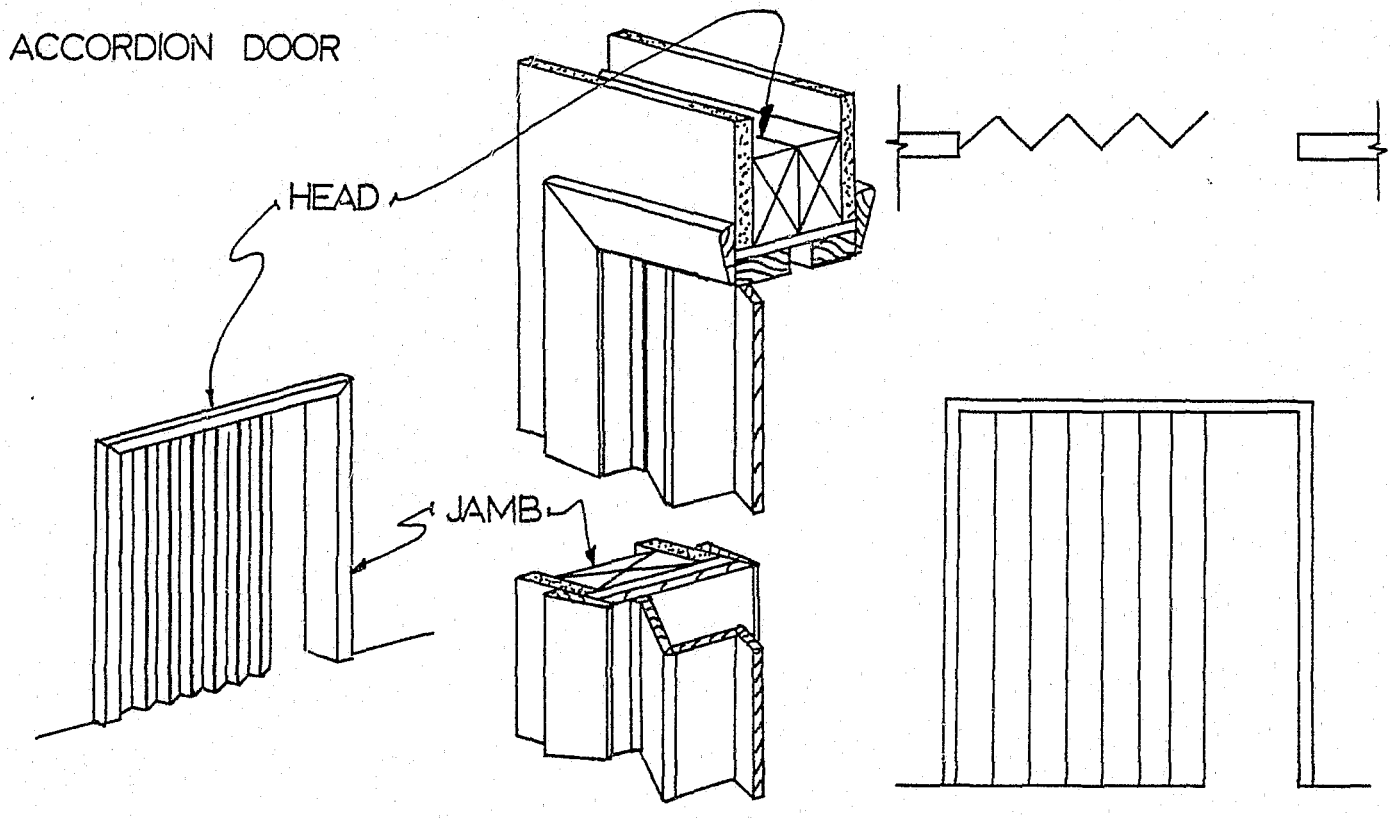
SECTION

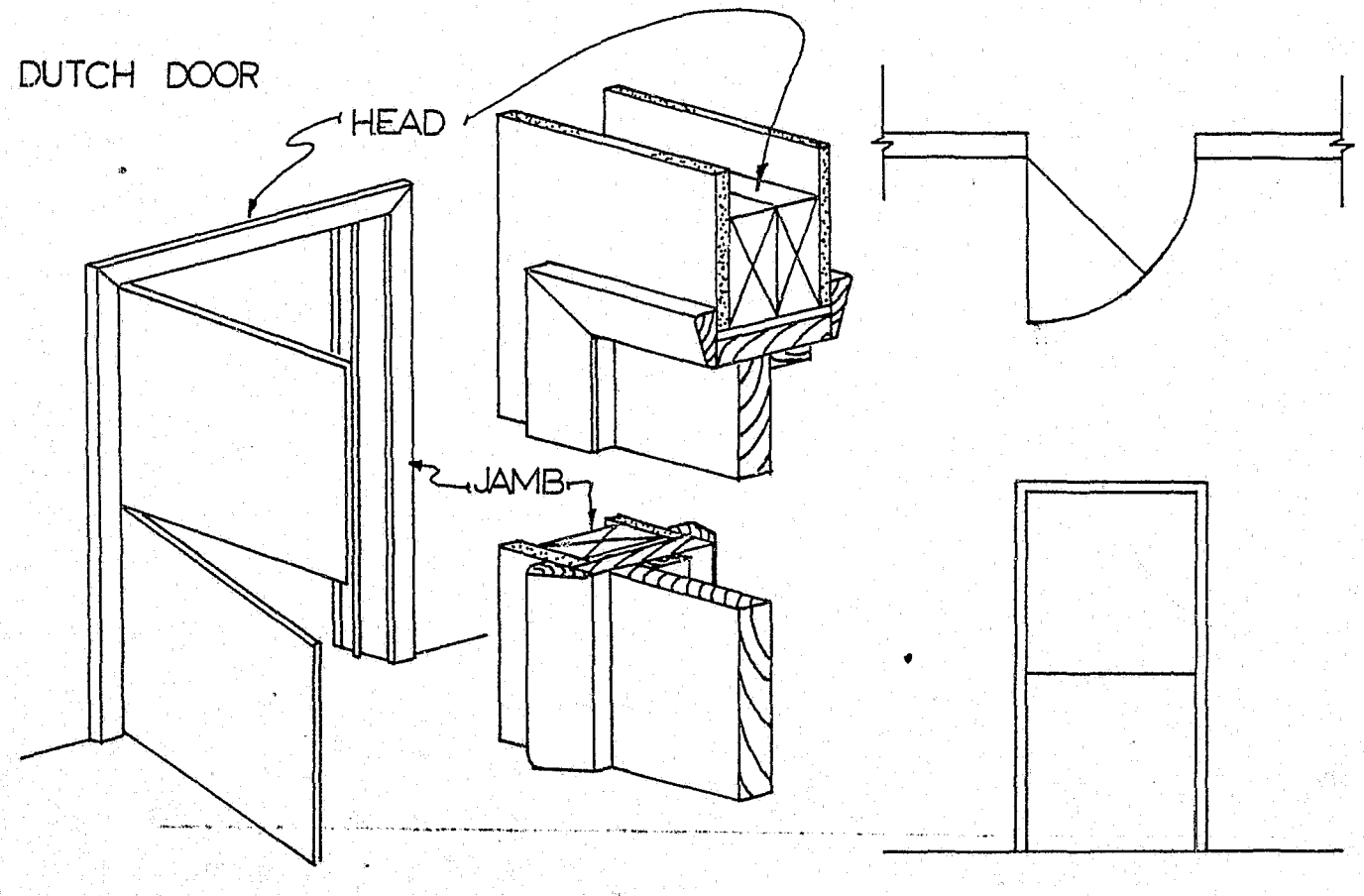


PLAN VIEW SYMBOL

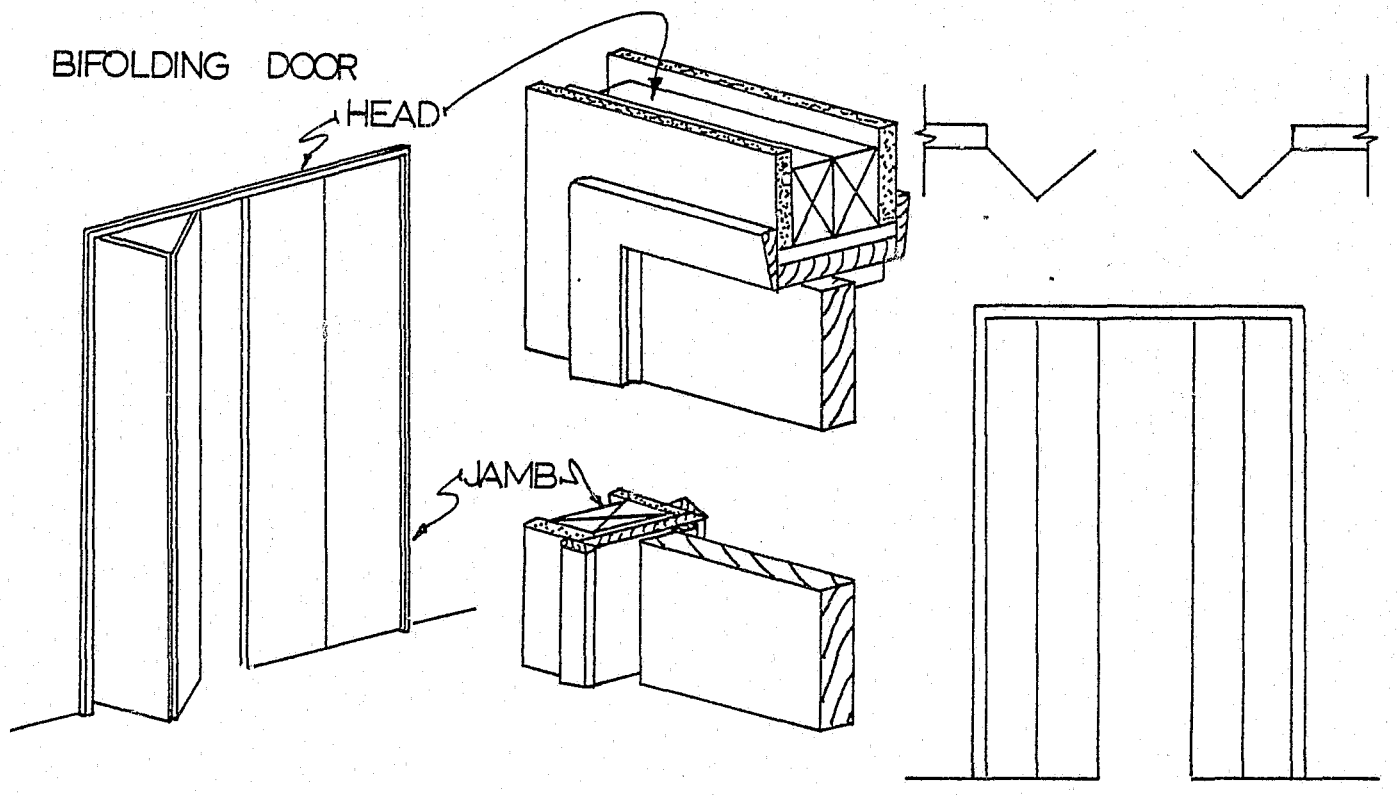
NOTE: ABSENCE OF CROSS BAR ON EXTERIOR DOOR

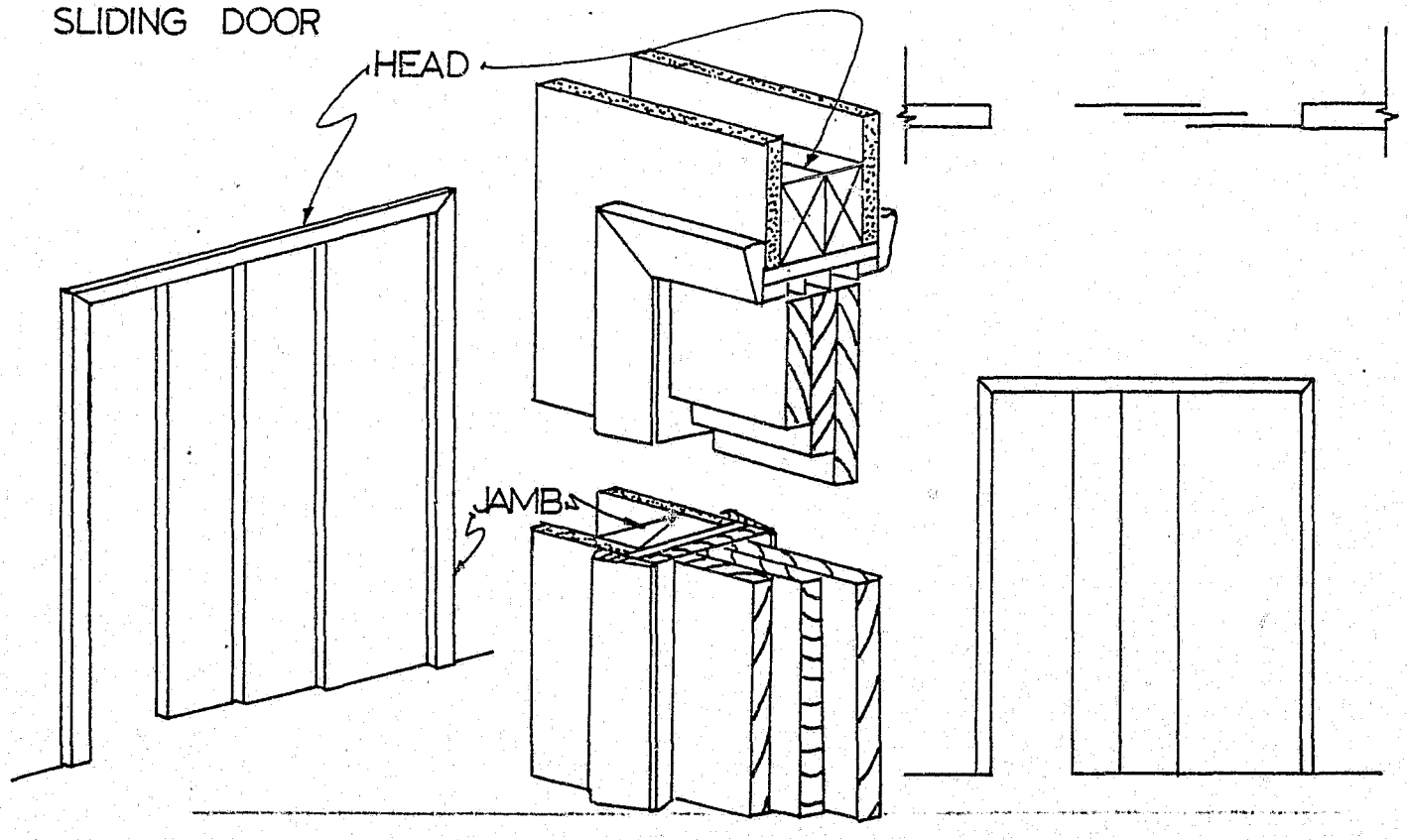
DOOR TYPES





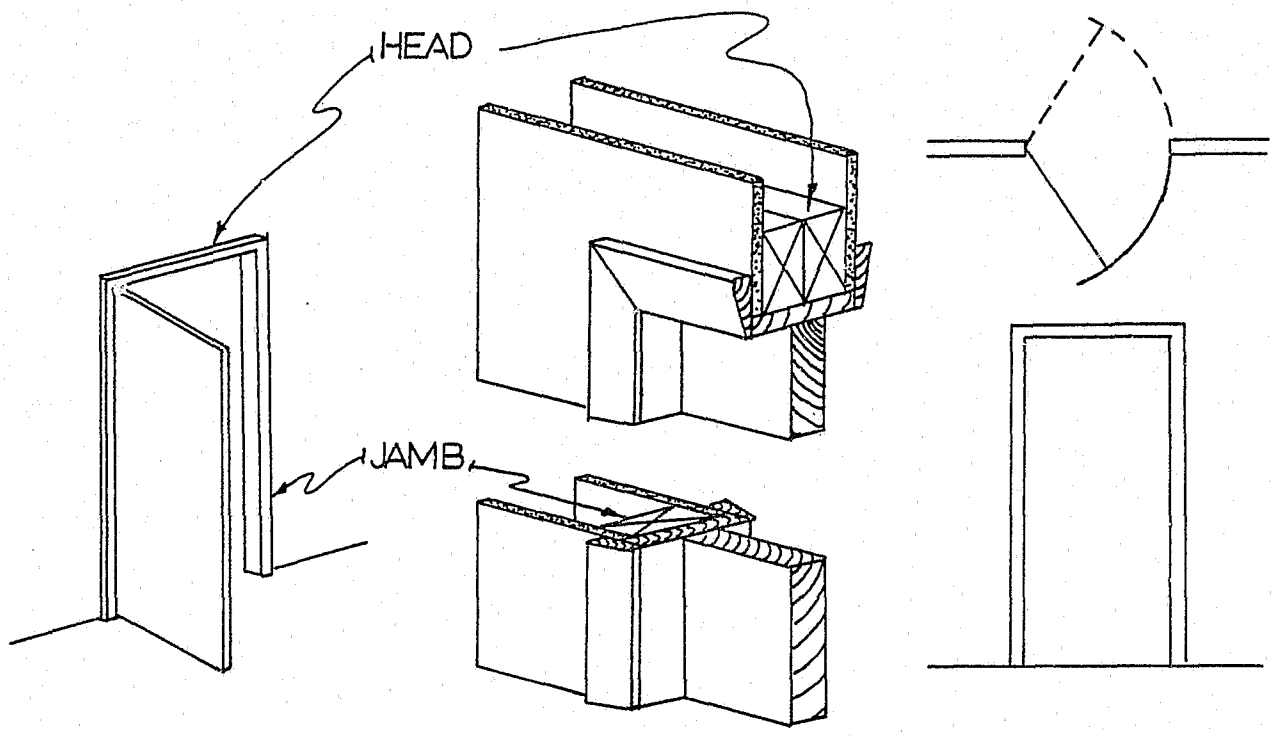
DOOR TYPES



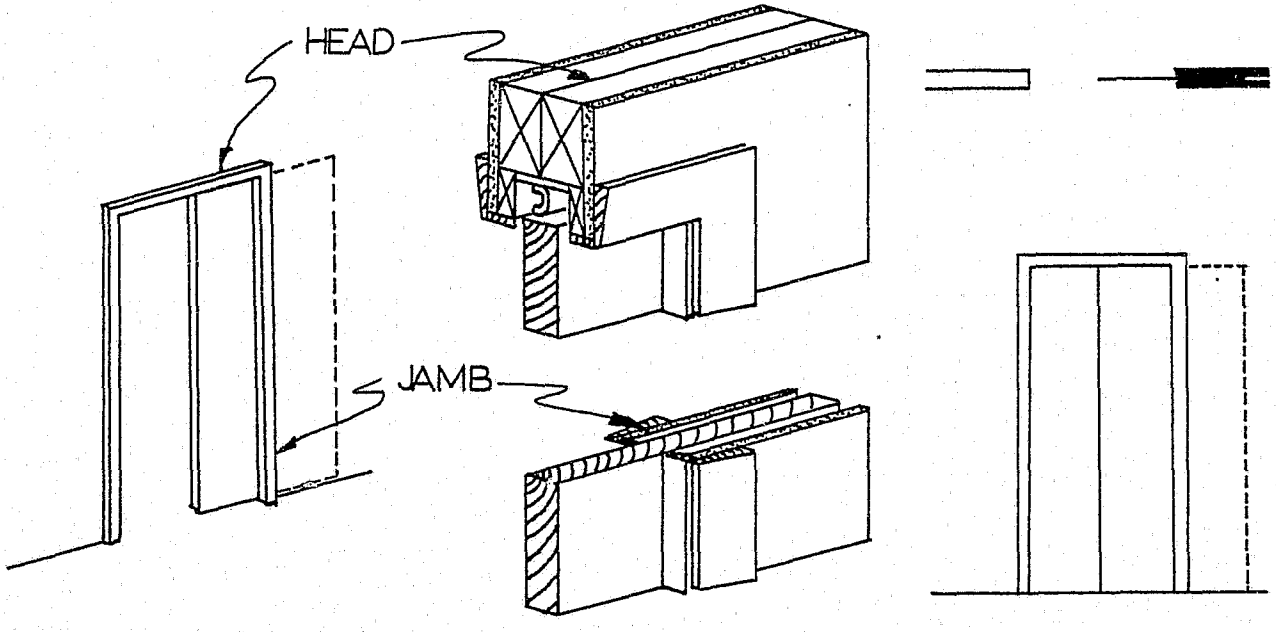


DOOR TYPES

DOUBLE ACTION DOOR

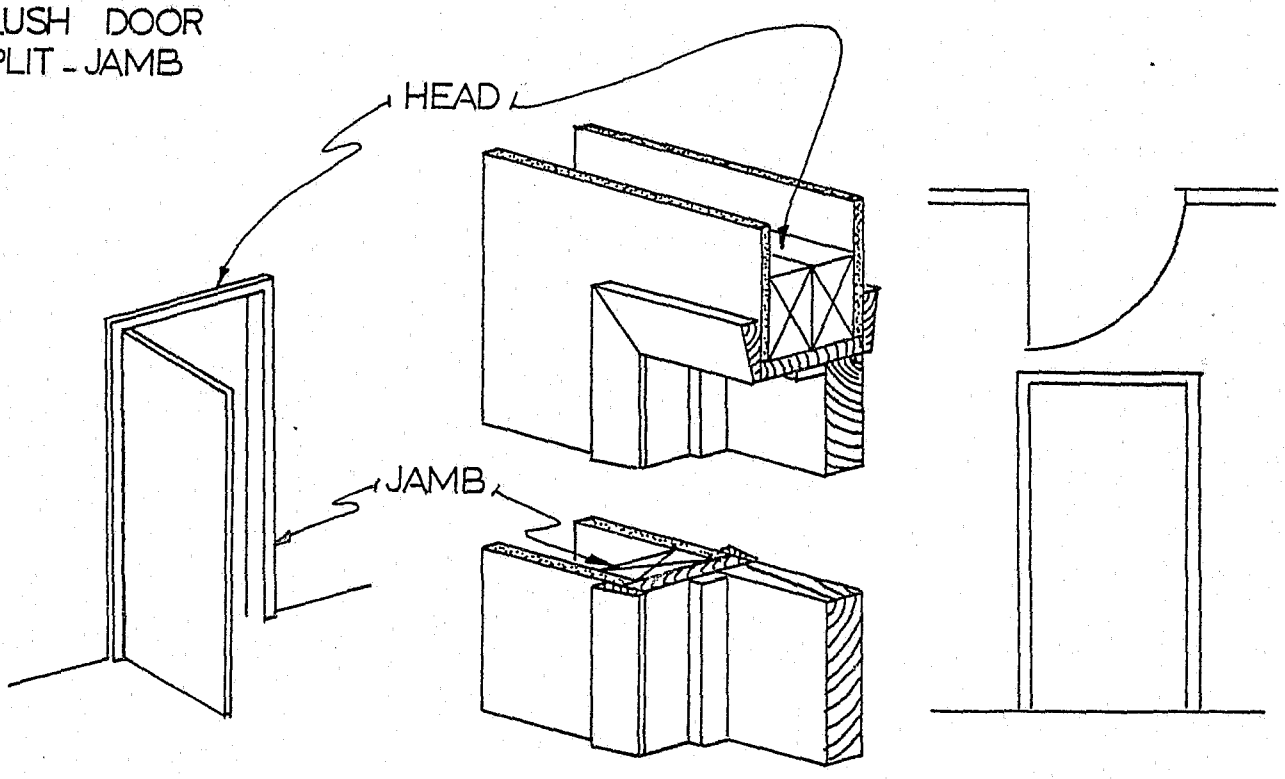


POCKET DOOR

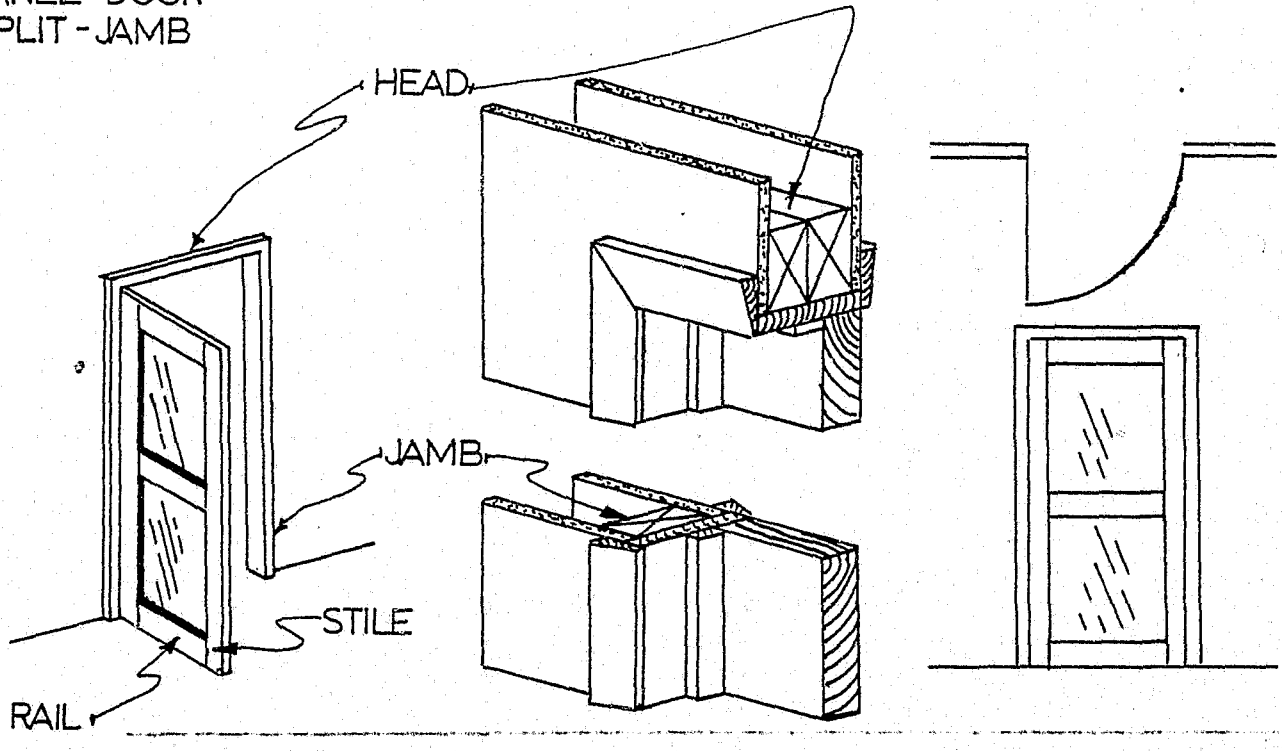


DOOR TYPES

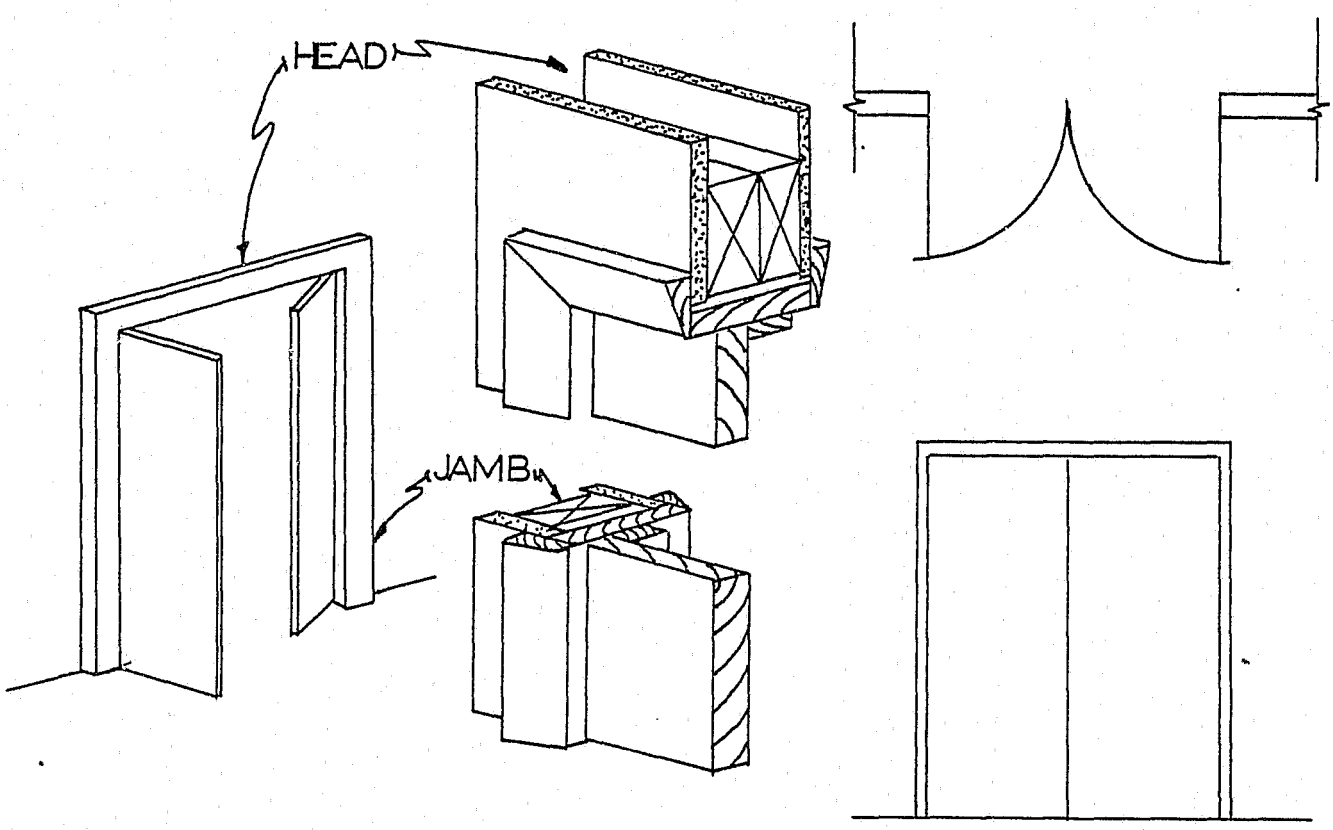
FLUSH DOOR
SPLIT - JAMB

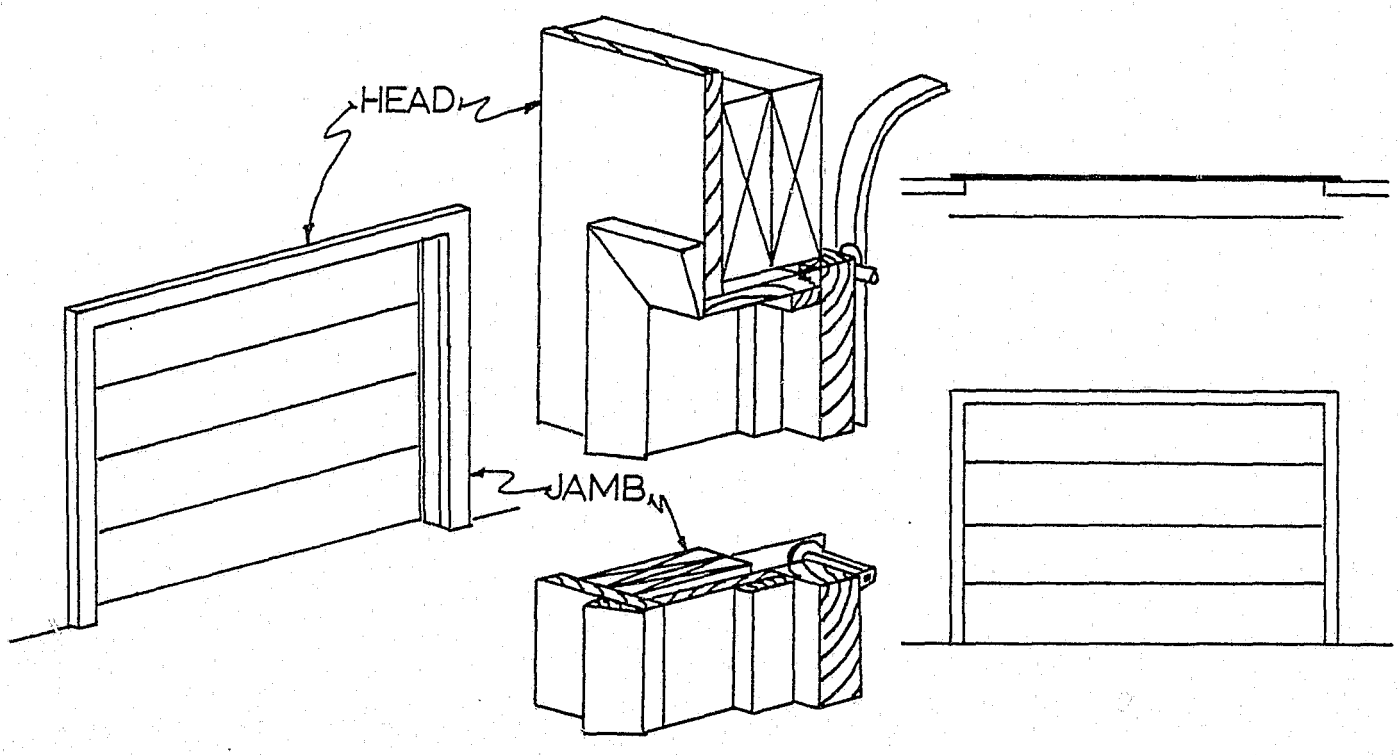


PANEL DOOR
SPLIT - JAMB

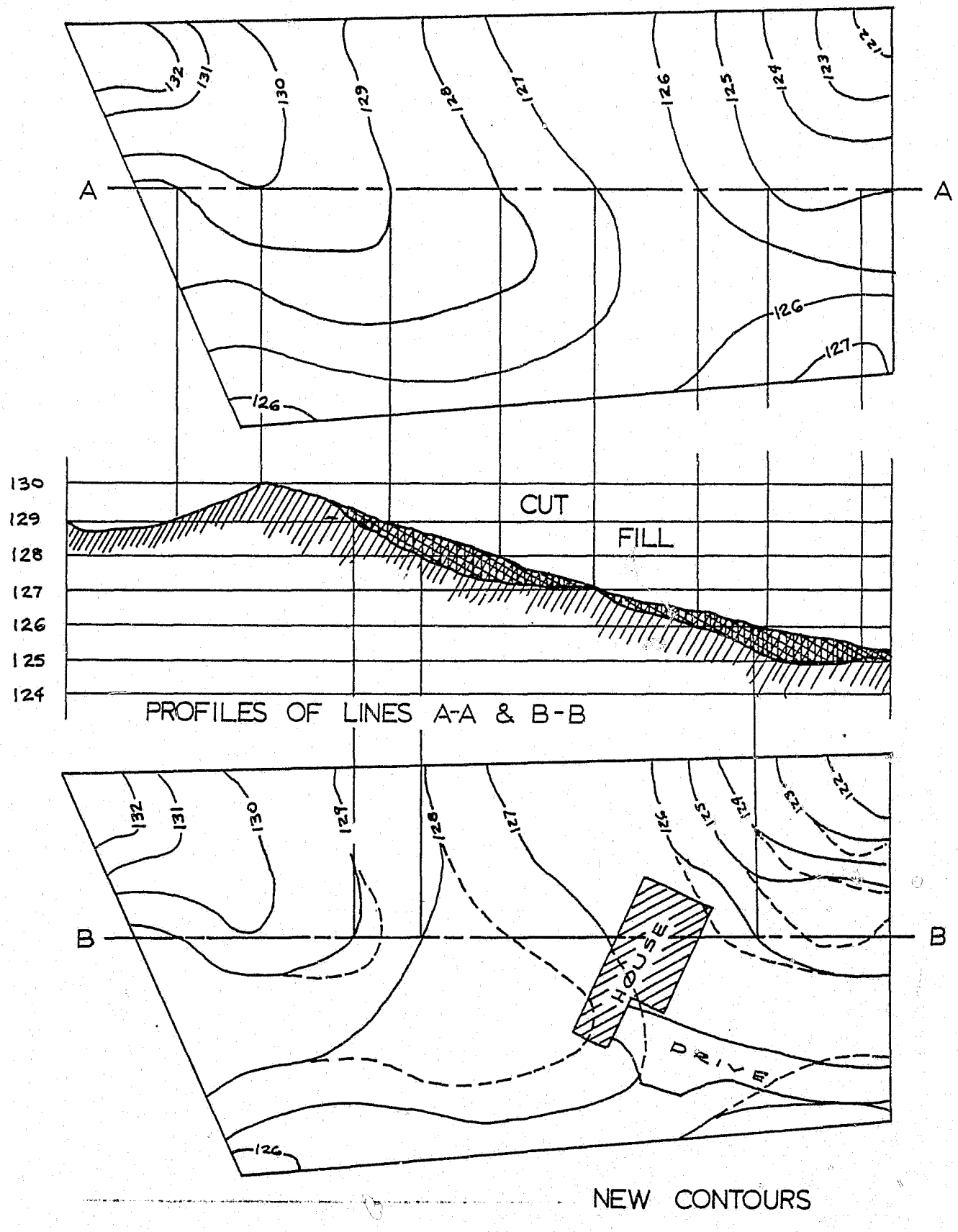


DOOR TYPES

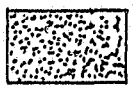




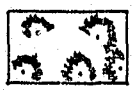
CONTOUR PROFILE

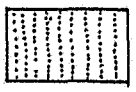


COMMON TOPOGRAPICAL SYMBOLS

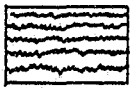

SAND

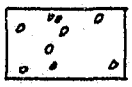

GRAVEL

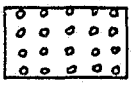

OPEN WOODLAND


CULTIVATED AREA

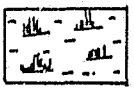

DENSE FOREST


WATER


IRREGULAR SPACED TREES

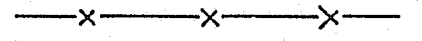

ORCHARD

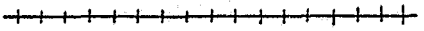

TALL GRASS

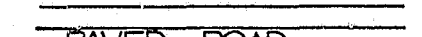

MARSH

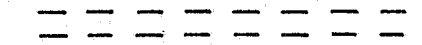

LARGE


DRY CRACKED

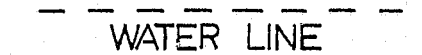

FENCE

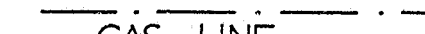

RAILROAD TRACK

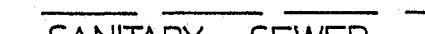

PAVED ROAD

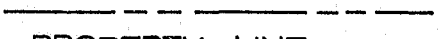

UNPAVED ROAD

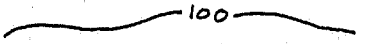

POWER LINE


WATER LINE

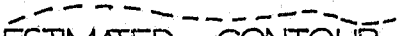

GAS LINE


SANITARY SEWER

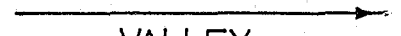

PROPERTY LINE

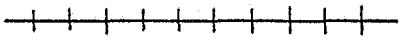


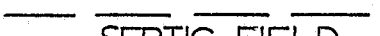
SURVEYED CONTOUR

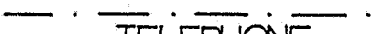

ESTIMATED CONTOUR


RIDGE

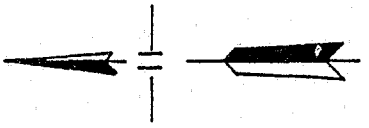

VALLEY


SEWER TILE

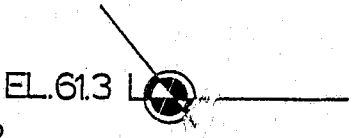

SEPTIC FIELD


TELEPHONE


NORTH


MERIDIAN ARROWS


GROUND COVER



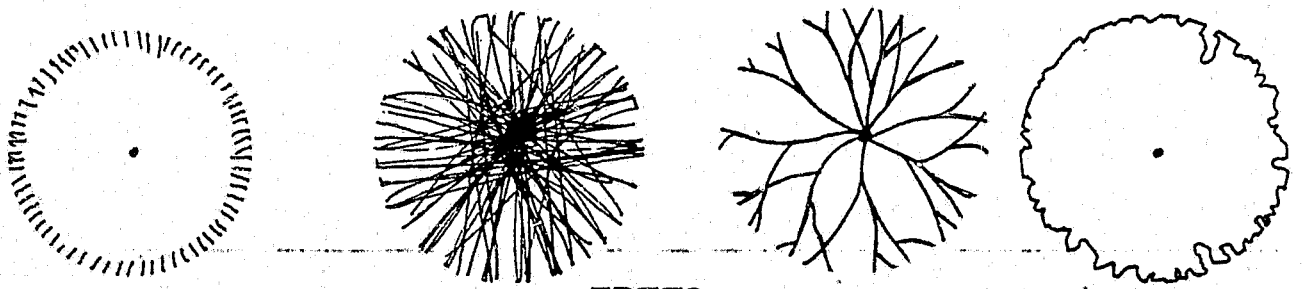
PROPERTY CORNER WITH MONUMENT

SPOT ELEVATION

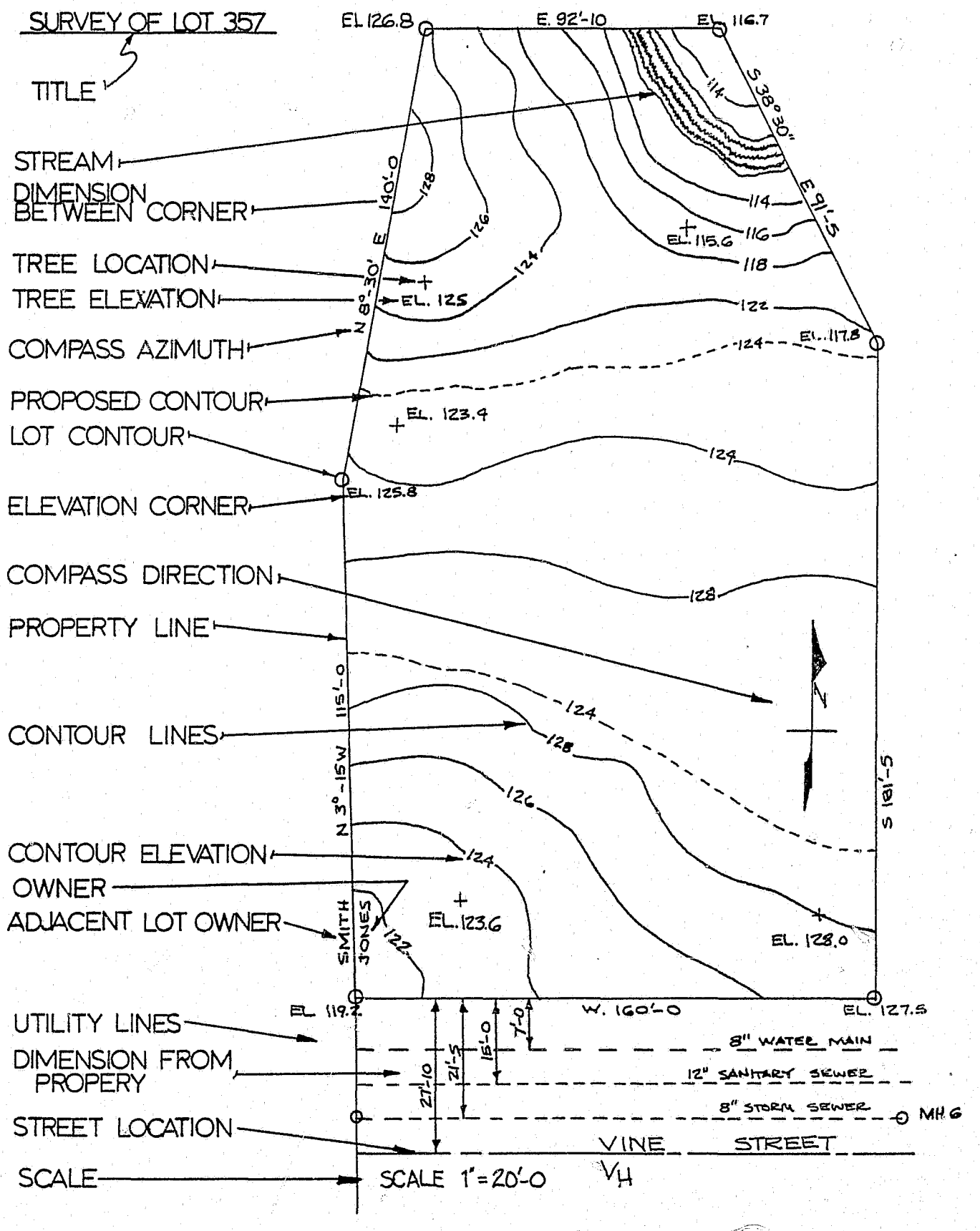

WELL

BM X 902.61
BM △ 603.42
BENCH MARKS

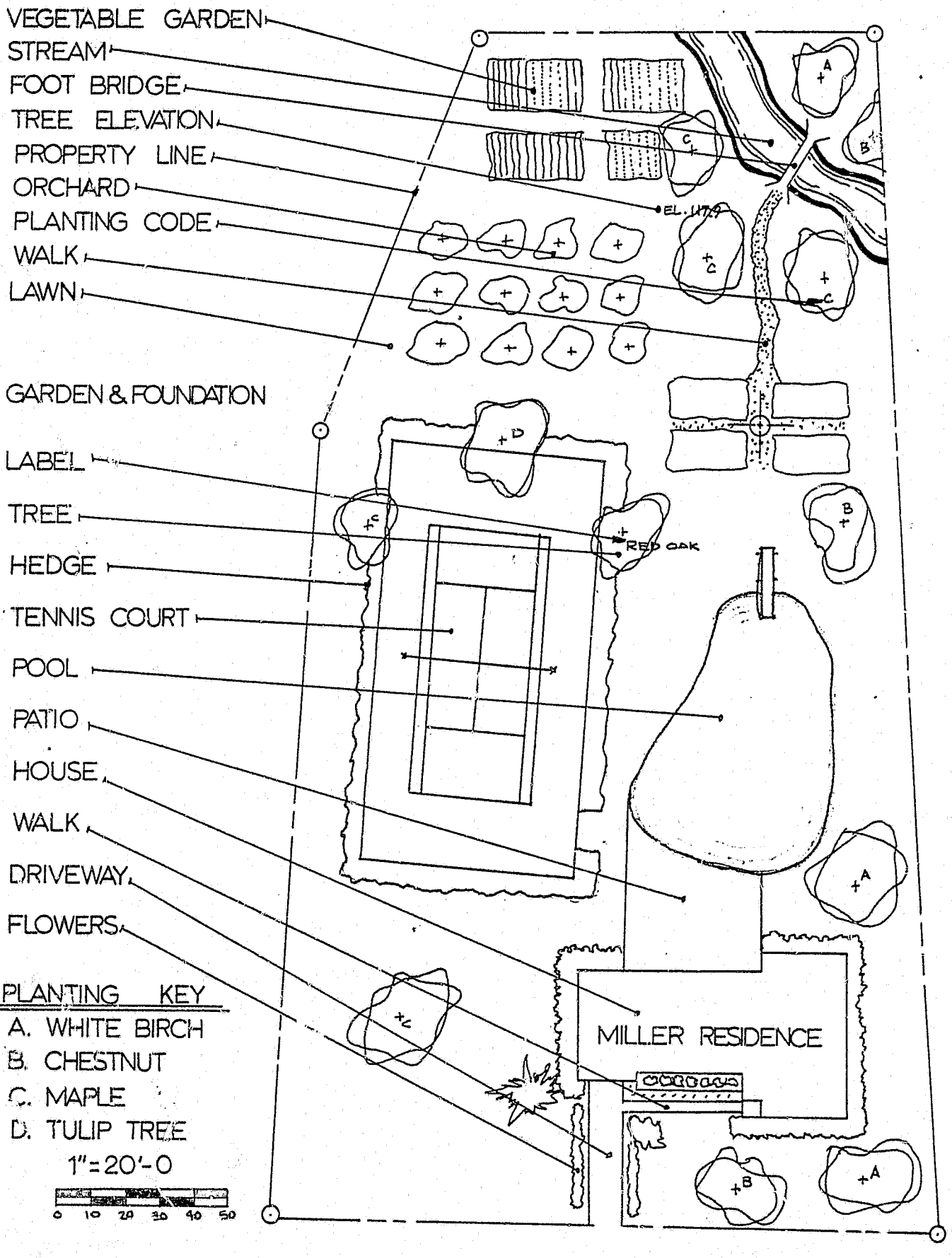
PROPERTY CORNER


TREES

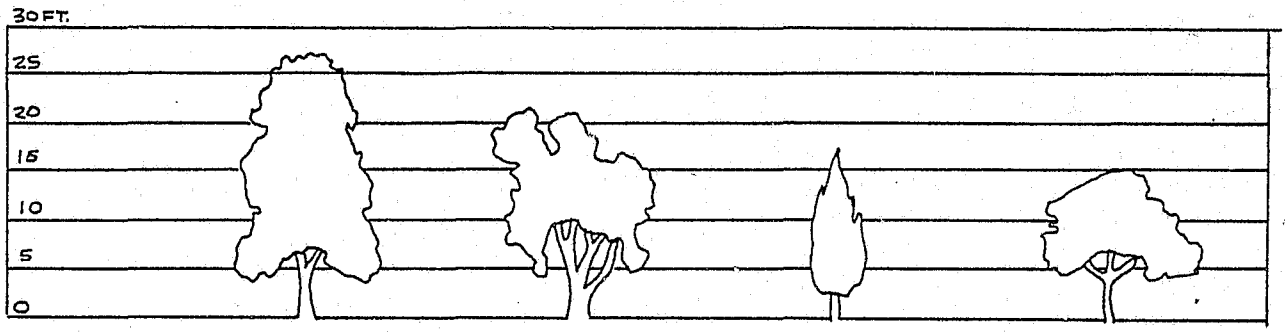
SURVEY - PLAN SYMBOLS



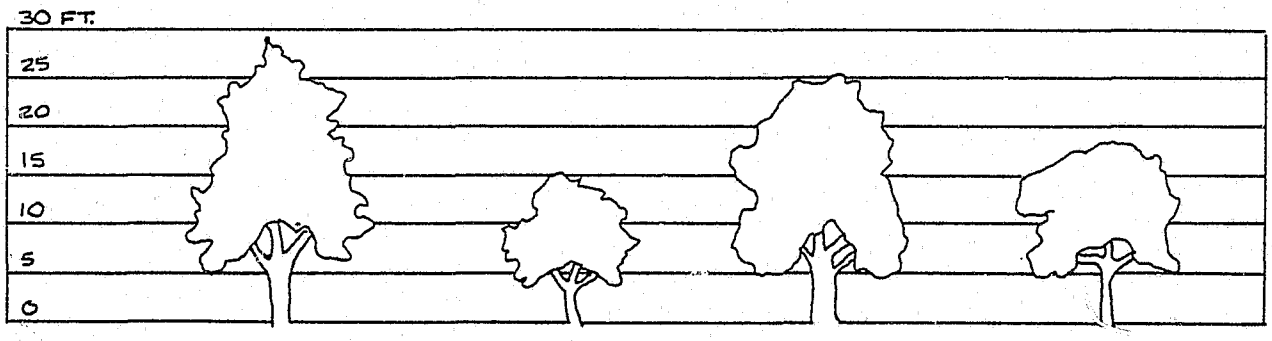
LANDSCAPE - PLAN SYMBOLS



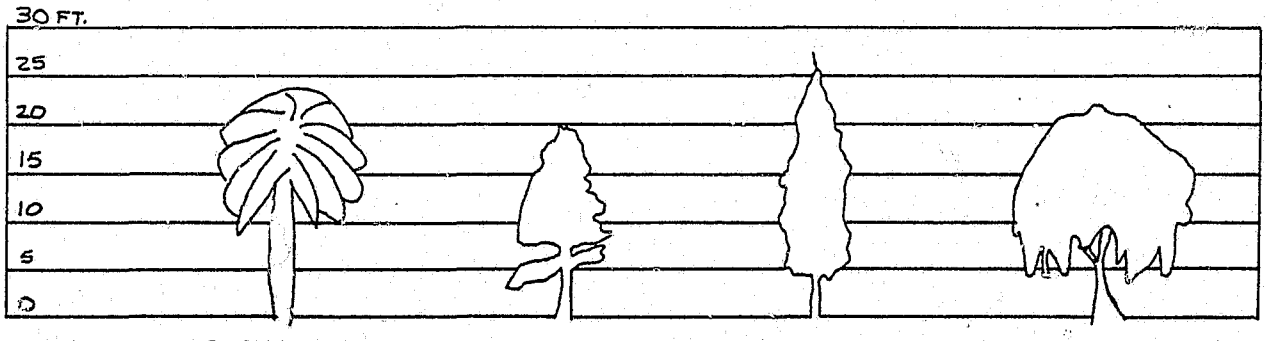
TREES IN TEXAS



NAME:	GREEN ASH	BIRCH	CEDAR	DOGWOOD
MATURE:	60'H - 40'SPR	30'H - 20'SPR	100'H - 35'SPR	20'H - 25' SPR



NAME:	ELM	MAGNOLIA	MAPLE	OAK
MATURE:	50'H - 40'SPR	25'H - 25'SPR	80'H - 60'SPR	75'H - 75'SPR



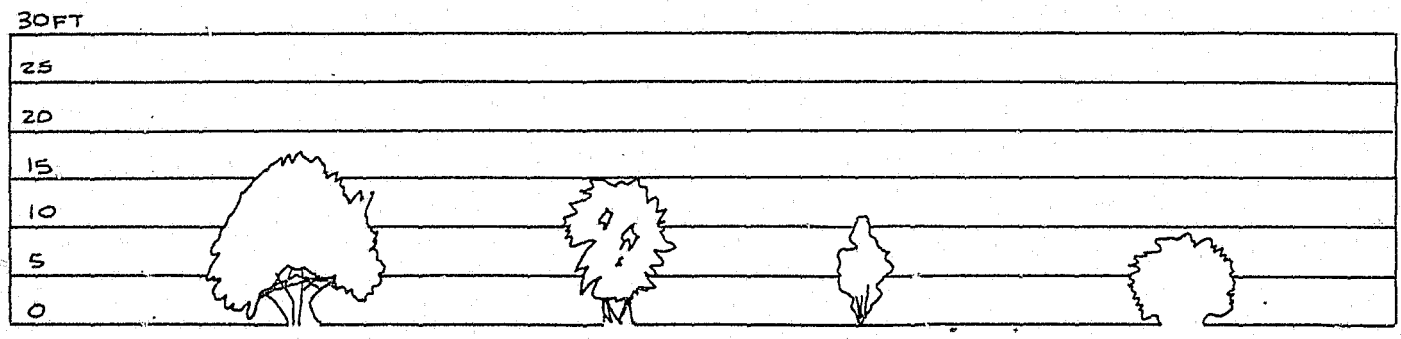
NAME:	DATE PALM.	PINE	POPLAR	WEEPING WILLOW
MATURE:	50'H - 40'SPR	150'H	60'H - 15'SPR	50'H - 40'SPR

H = HEIGHT

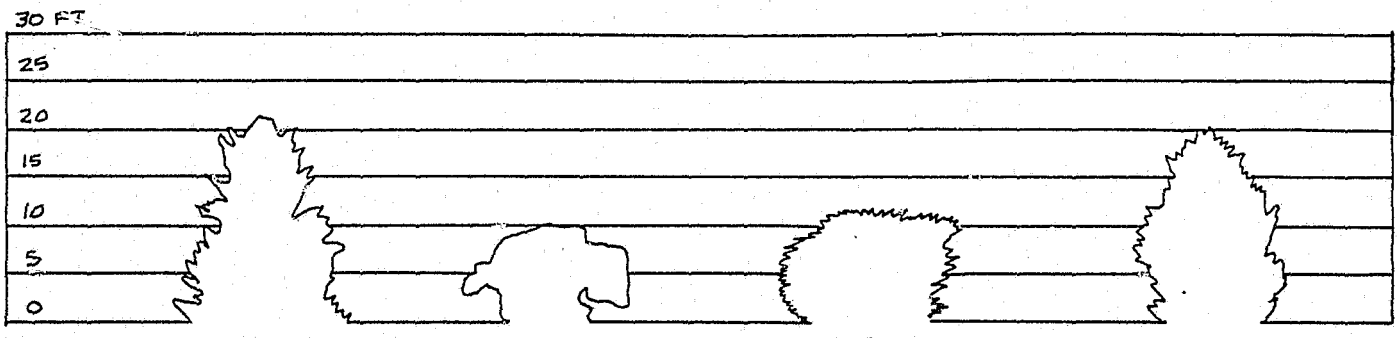
SPR = SPREAD

HEIGHT ILLUSTRATED IS APPROXIMATE 10 YEARS HEIGHT FOR TREE GROWING UNDER FAVORABLE CIRCUMSTANCES.

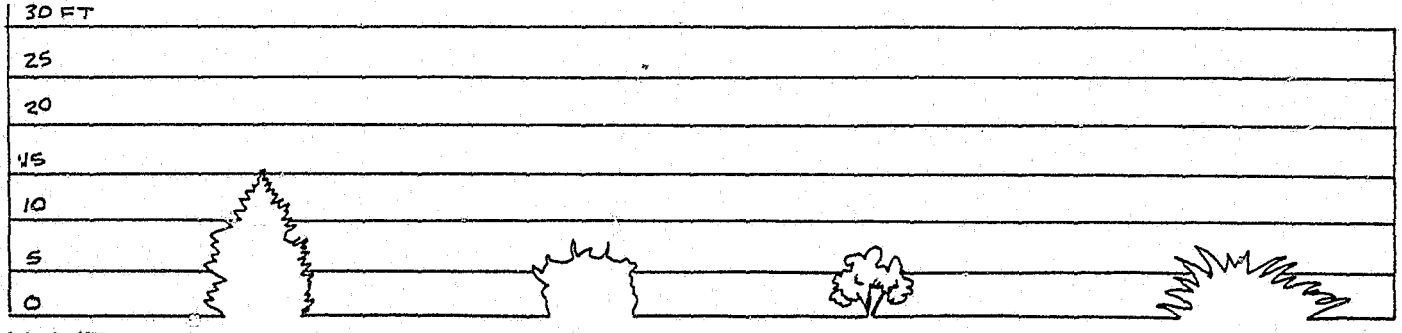
SHRUBS



NAME:	MYRTLE CRAPE	LILAC	ARROWHEAD	FORSYTHIA
MATURE:	15'H-20'SPR	12'H	10'H-12'SPR	7H-10'SPR



NAME:	HOLLY	DWARF BOX	JAPANESE YEW	RHODODENDRON
MATURE:	20'H-15'SPR	10'H-15'SPR	12'H-12'SPR	6'to30'H-6'to15'SPR



NAME:	OLEANDER	MUGHO PINE	MOUNTAIN AUREL	JUNIPER
MATURE:	7to15H-7to12SPR	8H-10SPR	4to10H-4to8SPR	8H-8SPR

H=HEIGHT
SPR=SPREAD

APPENDIX D

HANDBOOK OF CRIME PREVENTION BULLETINS

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.

TABLE OF CONTENTS
HANDBOOK OF CRIME PREVENTION BULLETINS

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?

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2 OF 3

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 assailtants?

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 closers 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 (interconnecting 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?

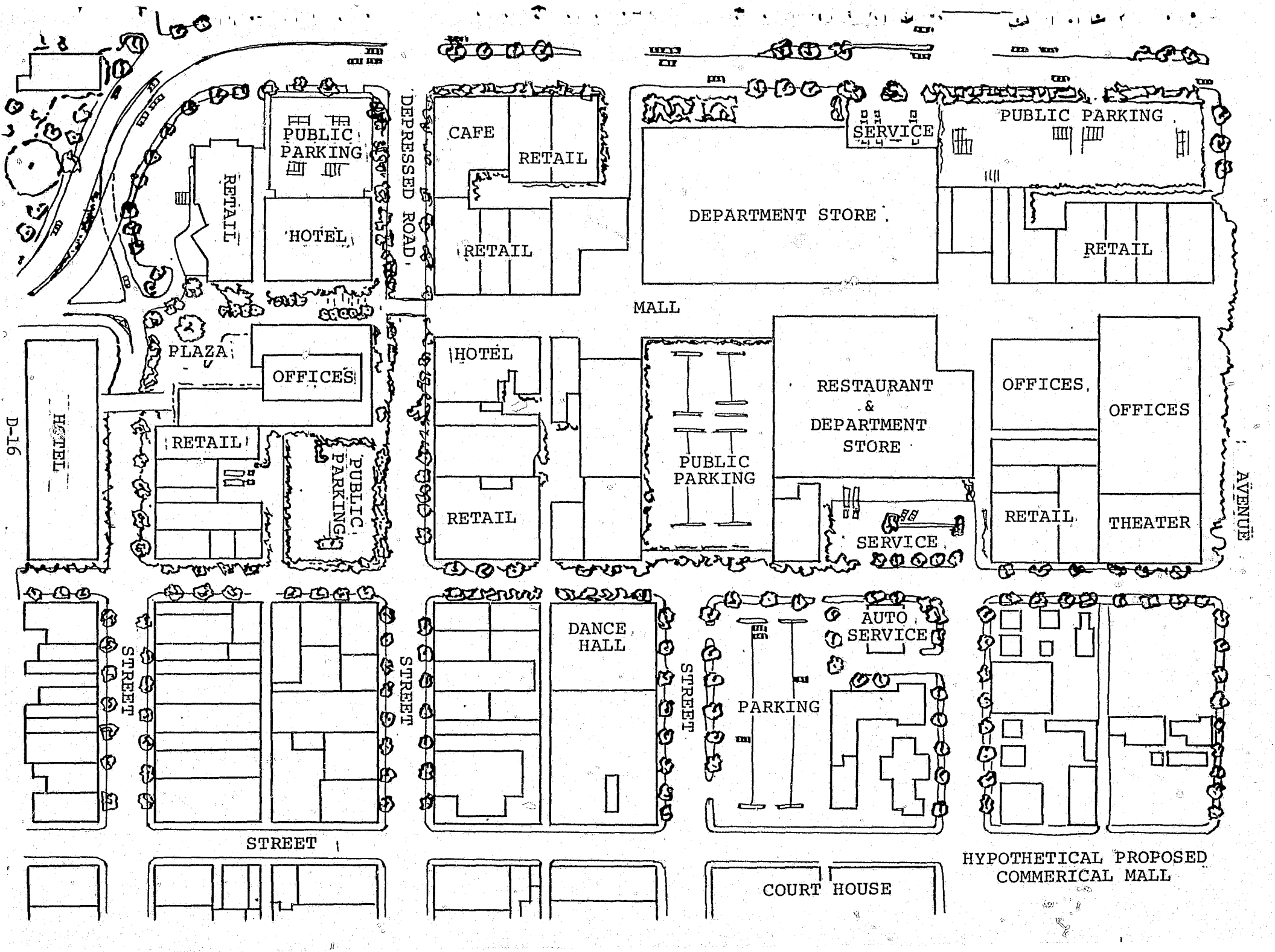
VI. Miscellaneous

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 cares 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
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SERVICE
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THEATER
AVENUE
D-16
STREET
STREET
DANCE HALL
STREET
AUTO SERVICE
PARKING
STREET
COURT HOUSE
HYPOTHETICAL PROPOSED COMMERICAL 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 enhacing 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-securable 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 stace 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 by 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 problens 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 #13

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

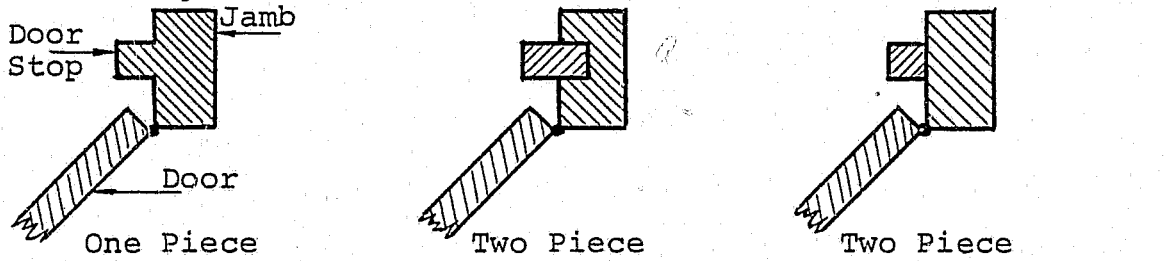
1. Type of Construction

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.)



One Piece Construction (Rabbeted)

Two Piece Construction With Rabbeted Joint

Two Piece Construction (Inadequate - Easily Separated)

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 iteself 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 inces 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 clims 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 coverning 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 estabilishments 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 entraceway 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 to 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 weighling less than 750 pounds should be firmly anchored to the floor. Otherwise, the safe itself can be easily taken.

CRIME PREVENTION BULLETIN #14

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 deficiences, 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.

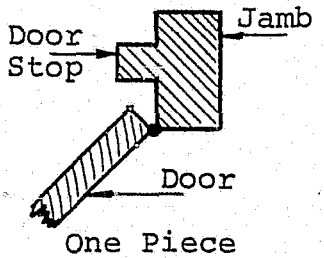
   Wood or hardboard doors can be of either solid core or hollow core construction. Hollow core doors can be easily kicked in or pried open and are prohibited by the Oakland model ordinance. Los Angeles County requires that such doors, if used, be sheathed on the interior side with 16 gauge metal sheeting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

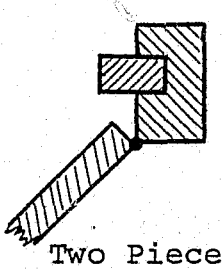
2. Thickness of Construction. The strength of a door is directly proportional to its thickness. Most new residential developments utilize doors 1-3/4" thick; doors at least this thick are required by the Oakland model ordinance. Los Angeles County permits doors 1-3/8" thick. Any smaller than these must be metal sheathed on the interior.

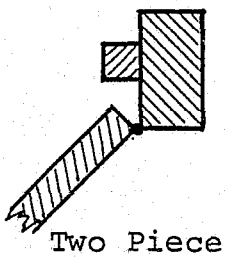
3. Construction of Door Jamb. A strong door and adequate locking system will be of little value if the door frame itself is weak. By prying or chiseling an inadequate door jamb or door stop, an intruder can open the door without operating the locking mechanism.

   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 jamp or that are set in a groove in the jamb itself. (See illustration below.)



One Piece Construction (Rabbeted)


Two Piece Construction With Rabbeted Joint


Two Piece Construction (Inadequate - Easily Separated)

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 rmoved.

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 jamp 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 entraceway visible from the street? (2) does the position of the house itself provide any hiding places, particularly on corner lots?

CRIME PREVENTION BULLETIN #15

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.

Swection 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 hings 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