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SOUTHWEST
RETIREMENT
VILLAGE

SRV

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CHAPTER 1

Issues

LIST OF ISSUES

Psychological

Comfort
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Lifestyle
Health
Social Activity
Relaxation

Environmental

Landscape
Shopping
The Arts
Pollution
Rain Fall
Land Conditions
Soil Conditions

Economic

Funding
Payback Period
Justification

Spacial

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Size
Privacy Space
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Human Biological Issues

Eating
Sleeping
Disposing of Waste
Exercise
Noise

Service

Mail Delivery
Garbage Pickup
Paper Delivery
Repair Services

CHAPTER 2

Background Study of the
Retirement Communities

BACKGROUND STUDY

Old, "advanced far in years of life,"¹ is a thought every individual will contemplate one time or another. However, as per an old saying, "you are only as old as you feel." Therefore, does being old mean you are less productive in society? Does it mean that you should sit and wait for death? These are questions that all individuals ponder. Thus, these questions are also the rationale basis behind my retirement village and its operations.

It seems that no matter what age you are, people want the best out of life - everything from education to the way our lifestyles are structured. The human race wants a piece of the pie. However, as one gets older trying to slice that pie becomes somewhat difficult if you do not have the proper utensils. In the case of retirement living, the proper utensils consist of money, investments, and other benefits that allow for life's greatest rewards at 50.

1

The Consolidated Webster Encyclopedic Dictionary; (1958). Chicago: Franklin J. Maine, PH. B. M.A. editor p. 498.

However, life's enjoyments at 50 do not always happen the way one might intend. For instance, a couple purchased a small dwelling for the later years. But, what they had anticipated to be happiness and fun turned out to be pain and frustration. The couple found themselves out of touch with people of their own age and peer group. They were constantly surrounded with nothing to do. Moreover, they found themselves isolated from their environment around them, they became depressed. This type of lifestyle is one of the most common signs of "Risk Factors in Elderly Suicide."¹ Therefore, this is not the type of atmosphere that will be carried out throughout my facility.

My facility which will be called The Southwest Retirement Village will cater to the active as well as the social needs of its tenants. The facility provided will encourage relaxing and leisurely activities. Also, the retirement village will offer a safe environment which will give its occupants the security they need to live comfortably and free. Located on the outer edge of the City of Houston's

1

Nancy J. Osgood, Suicide in the Elderly (Aspen Publications, 1985), p.38.

southwest side, an area that is rich in luxuries, as well as spirit. the Southwest Retirement Village will prove to be a benefit for the area.

CHAPTER 3

Historical and Environmental
Contextual Information of
Katy, TX

History of Katy

Cane Island, Texas was once a wide open prairie land with an abundance of wild life. In 1875 there only lived one family in this area. In 1892 the Missouri Kansas-Texas railroad bought land to build the railroad through. Once completion of the railroad was achieved, it seems as if everyone wanted to live here. On December 25, 1894, the first family of settlers arrived. Among those to arrive was a Mr. James Oliver Thomas, who bought 320 acres of land and also laid out the town which is now called Katy, Texas. The site of the town was located in the corners of Harris, Ft. Bend, and Waller Counties, twenty-eight miles west of the City of Houston.

In 1897 a German family by the name of Eule were the first family to start farming rice, which was the primary source of income along with cotton and some cattle. Along with rice farming, Eule bought the art of teaching with him. He established the first school in Katy and taught out of his home until future settlers built a new school house. In 1918, the old school house was torn down and the Katy Independent School District was formed.

In 1934 gas was discovered in the little town and a new industry was formed. The town grew so rapidly that Highway 73 was built. However, once the Brazos River bridge was completed in 1940, Highway 73 was changed to Highway 90, and construction of I-10 had begun parallel to 90.

Through the remainder of the thirties, forties, and fifties, the little City of Katy thrived on the Katy Gas Plant. However, in the sixties, seventies, and early eighties, the little town has found itself becoming a huge suburb of the Greater Houston area. The estimated population is now over 30,000 persons, with a growth rate of 2% annually per year.

Within the 30,000 population Katy is now one of the richest areas in Houston with the average house selling on the market for approximately \$120,000. The annual income of residents living in the area is approximately \$75,000 as recorded by The Bureau of Land Property and Value.

Furthermore, from this growth Katy's new environmental context as it refers to my site now consists of several restaurants within a one mile area of my site. It has over three major grocery stores that are approximately three-fourths of a mile away. There is a major department store mall that is two and three-fourths miles away. Furthermore, several doctors' offices have been located in the area. Also, Katy has recently completed a Community Hospital that is approximately 20 minutes away from my site. Katy has also incorporated major theaters along with The Greater Southwest

Equestrian Center. Therefore, within this basic criteria, Katy, Texas is able to provide the adequate site location for The Southwest Retirement Village.

CHAPTER 4

Site Analysis and Data

SITE ANALYSIS

Site planning is the art of arranging an external physical environment in complete detail. Therefore, the site for the Southwest Retirement Village has to accommodate the smallest detail. However, according to Site Planning, by Kevin Lynch, a site must first have known limitations; and secondly, the site cannot be analyzed until the purpose for its use is established. Therefore, knowing this criteria, site selection for The Southwest Retirement Village had to undergo a specific questions and answers test.

The first criteria for selection had to be the limitations of the site. In speaking of limitations, the "biological, social, and psychological", aspects had to be fulfilled. The biological aspects seem to be the actual fitting together of the site and the occupants. Therefore, the site must allow for human interaction. It must be tamed in a sense that it responds to the fact that its occupants will be growing old. Furthermore, the site should also provide as much natural light as possible in order to allow for the tenants to be able to enjoy their atmosphere.

Finally, climate and soil conditions should be adequate enough to allow for comfort and stable building units.

The social aspect of the site should incorporate maximum communication among occupants. This type of experience will come in the form of putting greens, tennis courts, softball fields, and pool-side relaxation area. Within this social realm, trees, foliage, trails, and some small communal gathering areas should be included within the site analysis. Eventhough all of these site guidelines for social communication have been stated, it seems more apparent that most important of all the guidelines is a view. Therefore, the site in conjunction with the building units should allow for the maximum and most beautiful view possible.

The psychological aspect of the site analysis should result in a one-to-one ratio between the land users and the land itself. The relationship should take shape from the very beginning of the project. First of all, the site should provide natural areas which the tenants maybe able to call their own. Secondly, the site should make one feel as if they are safe, and protected from the environment outside. Thirdly, the site should incorporate a homey environment in the sense that the inter-community is one large family. If these guidelines are established and followed through, this site should have balance, scale, and most important a transition.

VACINITY MAP

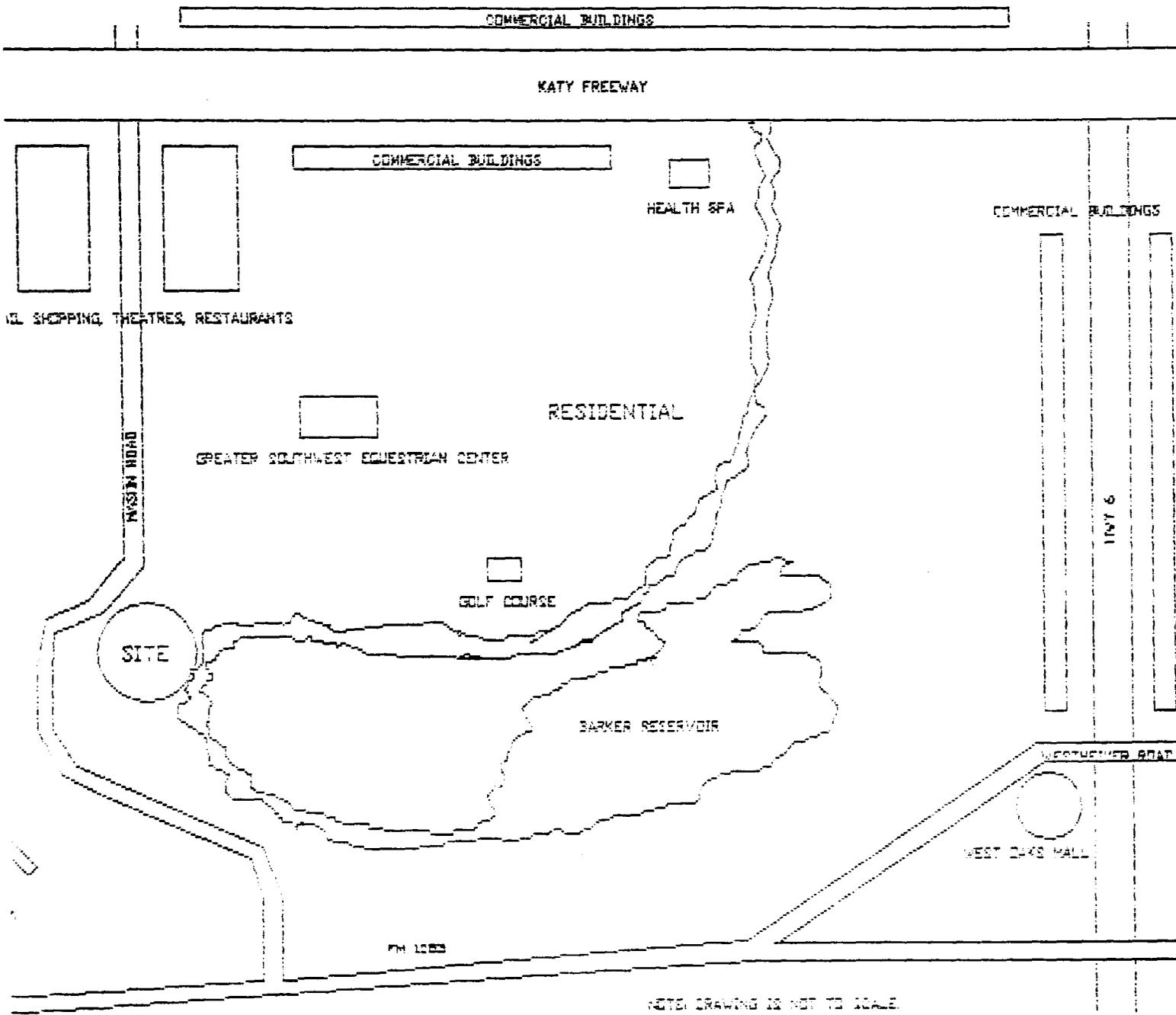


Figure 3-1



Photograph A



Photograph B



Photograph C



Photograph D

Site Data

The average number of days the minimum temperature is ^o 32 and below are only seven with four of those days coming in January. Therefore, the housing units will have to be provided with an efficient heating unit that will be able to heat the house in case this severe weather occurs.

Precipitation is high in this area with a total 106 inches per year, with an average of 8.3 inches per month.

The possible percentage of hours sunshine annually is 2633. Therefore, shaded areas will need to be provided.

The relative humidity in this area seems to be at its highest between 6 AM and 4 PM with the average being 83% year-round. However, in the summer months the humidity is higher with the average being 87%. Therefore, cool areas will need to be provided throughout the site.

The means number of days with a maximum temperature ^o above 90 F is 90 days, with most of them occurring in the summer months from May to September. Therefore, shaded areas will need to be provided. Also, refrigerated air needs to be provided for maximum comfort.

The maximum miles per hour for the wind is eight miles per hour at a NW and SE direction.

The soil in this area consist of hard clay. Therefore, providing for expansion and shrinkage of the soil needs to be provided for in the foundation design.

The water table is approximately 15' down. Therefore, no foundation piers should exceed this dept.

CHAPTER 5

Economic Analysis

ECONOMIC ANALYSIS

The most representable means of status in America is income. However, when one makes a statement like this, they almost have to direct it towards the younger to middle age group. This fact is due primarily to our society believing that the younger you are the more money you will make. Well, within the past the ten years, "IRA's, stock options, pen-¹sions, long term investments" have made it possible to save money wisely. This saving money process has enabled a few smart people to live a great life once they leave the working force. A federal statistic shows people 65 and over have an income of "\$12,8814 and 45-54 to be \$27,256, and those 55-64 to be \$23,531." This statistic is one that has influenced the decision to make this facility one which caters to the middle age. The following economic numbers will substantiate the reasons behind the facility and its operations.

1

Helen Davis, Retirement Preparation (P. C. Heath and Company Lexington, 1984), p. 17.

2

John A. Krout, The Age in Rural America (Greenwood Press, 1986), p. 39.

PROJECT ANALYSIS

Building Cost per Sq. Ft.	\$37.75
Total Sq. Footage	429,437
Building Budget	$429,437 \times \$37.75 =$ \$16,190,484
Land Cost and Development	\$64,000/Acre
Total Land Used	10 Acres
Total Land Cost	$10 \times \$64,000 =$ \$64,0000
Income Generated by Tenants for Those who Live in Unit I	\$500 rent p/mo x 12 mos. = \$6000 p/yr. $\$6000 \times 60 \times 5\%$ vacancy = \$1,083,000
Income Generated by Tenants Who Live in Unit II	\$350 rent p/mo x 12 mos. = \$4200 p/yr. $\$4200 \times 60 \times 5\%$ Vacancy = \$239,400
Total of Income Generated by Rent	\$1,322,400
Total Cost of Facility Not Including Bonds or Loans	\$16,254,484
Payback Period	$\frac{\$16,254,484}{1,322,400} = 12.29 \text{ yrs.}$

CHAPTER 6

- A) Country Place Retirement Community
- B) The Treemont of Houston
- C) Hidden Valley: The Arizona Site

Country Place Retirement Community

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The Country Place Retirement Community is a complete retirement community located in Houston, TX. The facility was built by U. S. Homes and was conceived specifically for people who were 50 years of age and older. However, from my visitation I found that the age group varied from the youngest of 38 to the oldest of 72. Furthermore, the community offered the tenants the luxury of owning their own individual single-family home or townhouse. Also, within this environment there was the abundance of social activities provided for the tenant's leisure.

The facility provided several different types of activities from an eighteen hole golf course, tennis courts, swimming pool, and a seven acre fishing lake stocked with fish. Furthermore, there is a six foot wide path that meanders its way throughout the complex and leads to several different gazebos. Also at different points along the way, one may find themselves walking along side of a stream.

The indoor facilities offered a carriage house design that held within itself a library, tv room with a potters wheel and kiln. Also, located in a nearby area was an indoor exercise room with saunas and whirlpools, and a large gathering room for dinners and parties.

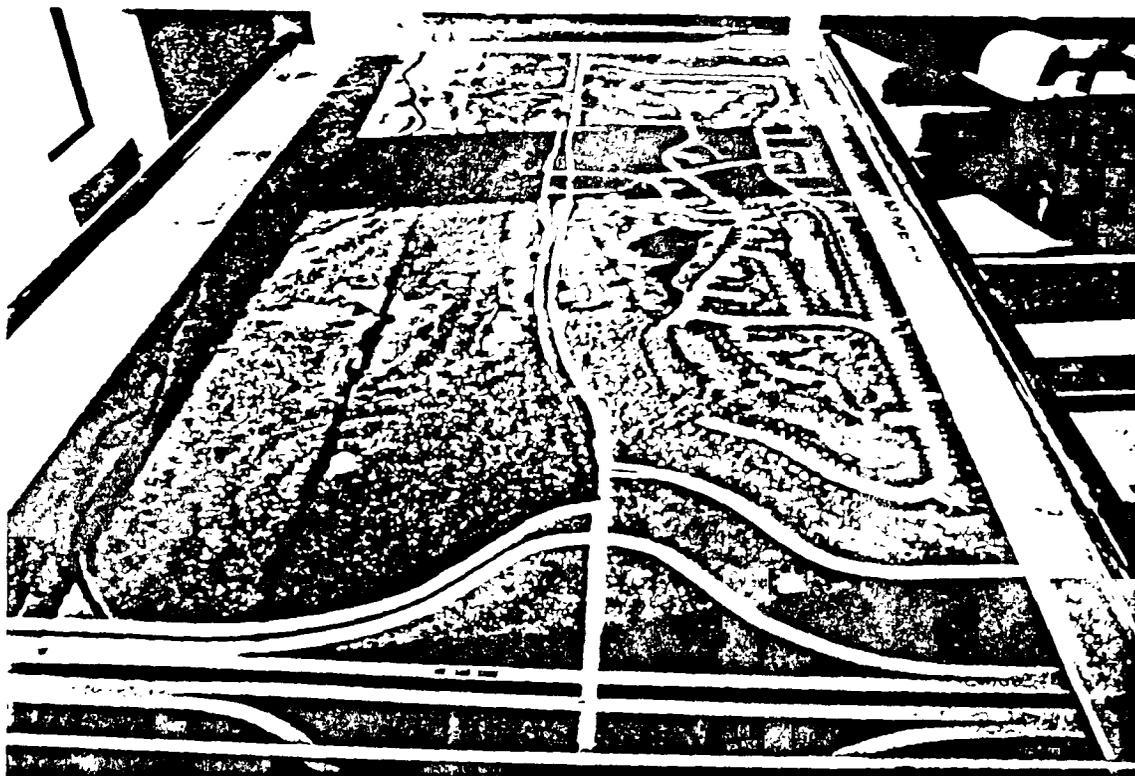
The housing units for Country Place offered a spacious two to three bedroom one-story home. Furthermore, for those people who did not want the maintenance hassles to upkeep

their area, townhomes were also built. Each unit seemed to be consistent and have the basic necessities. The units consisted of a living room with fireplace, master bedroom with bath, guest bedroom, guest bathroom, a kitchen, breakfast nook, dining room and a two car garage, with adequate storage space. Also provided was a patio and a front porch.

Cost for each unit varied in price from \$67,500 to \$118,500. Due to enormous cost and age restrictions set forth by this community, I felt that it would be appropriate if my facility would be governed with the same standards as this project and my following case studies. Also, within the confines of the activities and special requirements set forth, I also feel that some of the requirements be placed within my facility. Furthermore, County Place provides parking for RV and campers which I believe to be essential for the retired individual.

Among the most successful asset of the community, the swimming pool seems to receive the most attention. While on the otherhand, poker and bridge games are high on the list of extra curriculm activity. Furthermore, during my visit I also found that the community seems to throw parties often, thus the banquet hall receives a great amount of use. However, one main point was brought out, the residents do not use the shuffle board area. Instead they have converted it into an outdoor barbaque area.

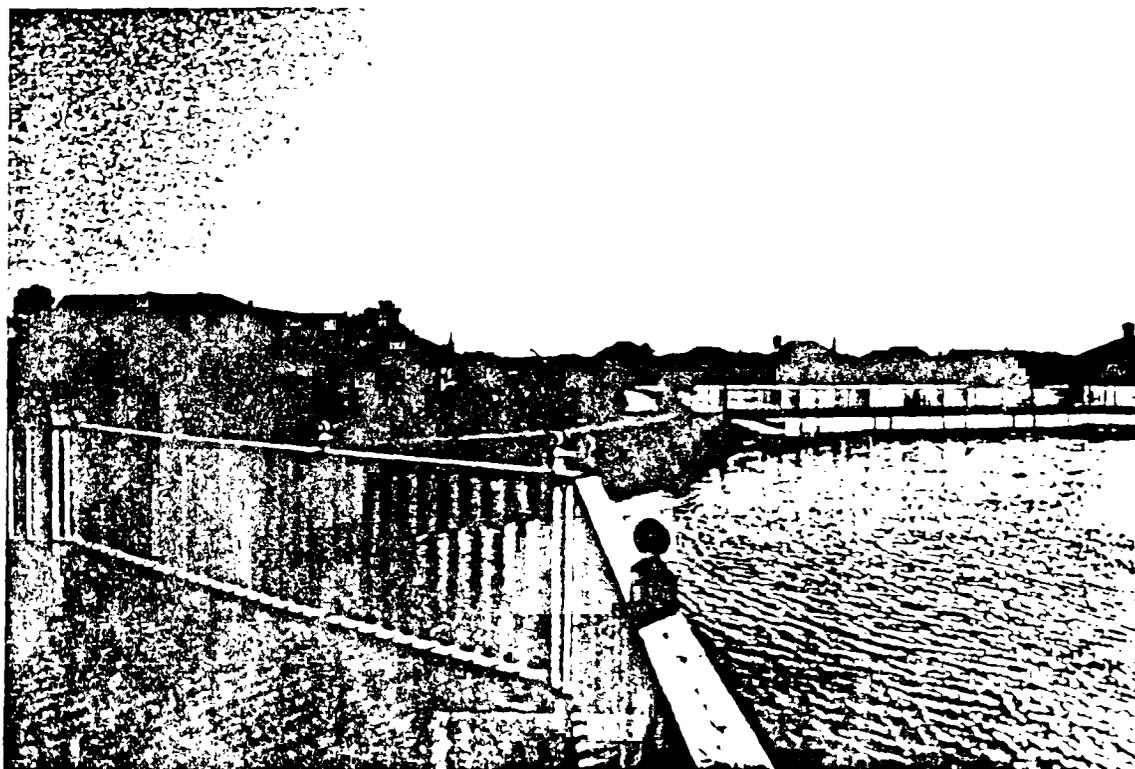
Among some of the lacking amenities were a shopping mall in the area. Some of the tenants seem to want a mall in the area because the nearest one is about 10 miles away. The tenants also would like to see a major grocery store and some negative thoughts about the surrounding environment, most of the tenants are satisfied.



Photograph A



Photograph B



Photograph C

THE TREEMONT OF HOUSTON

The Treemont of Houston is a townhouse-apartment living complex for the retired. It is located in one of the most convenient areas of Houston between Gessner and Fondren on Westheimer Blvd.

The Treemont offers apartment-like living, but unlike apartments, The Treemont allows for its tenants to enjoy the finer things in life while living here. The Treemont offers three well-balanced meals every day of the week. They also offer coordinated activities within the site as well as bus transportation to and from activities outside of the site. There is weekly maid service, 24 hour maintenance, a beauty salon, 24 hour on the job security. Furthermore, The Treemont offers emergency systems within each unit located in both the handicapped accessible baths and bedrooms. Also within the guidelines of The Treemont there is ample parking for residents and their guests. However, the real advantage to this facility is that all of the above amenities are paid when you pay your rent.

The housing units at The Treemont vary in rent cost from \$635 to \$2,055 a month, depending upon the apartment size. The units vary from six different one bedroom apartments with living room, bath and kitchen, to a two bedroom with living room, bath and kitchen. Each unit comes furnished with

draperies and carpet with the tenant having the option to select the color schemes. A kitchenette with electric appliances provide all you may need for a light meal preparation.

The club house-administration building offers several activity events which carry on throughout the year. These activities include going to nearby churches and worshipping aerobic exercise classes, parties, arts and craft rooms, and other unplanned events. The club house does offer one the pleasure to walk around and enjoy the beautiful landscaped grounds within secured state of mind that they are well taken care of.

This case study, I feel, was a good one because it allowed me to see that some of my tenants may want the care-free apartment type of living. Thus, there will need to be provisions made to accommodate such a lifestyle. However, after visiting with some of the tenants I can clearly see that I do not want my tenants to be confined to just my facility, rather I want them to get out and enjoy the environment around them.

HIDDEN VALLEY: THE ARIZONA SITE

The Hidden Valley Retirement Community is a complete retirement facility. It is located in warm Santa Cruz River Valley, 25 miles south of Tucson, Arizona on 2,900 acres of land. There is an estimated 18,000+ residents in this one area. The core area of the complex consist of 1,500 unit rental apartments, a ten store shopping center, a medical clinic, a private ambulatory, fire and police department, a community recreation center, a golf course, and management offices. However, the community does also consist of stylish Spanish architectural homes, churches, banks, and a six million dollar mall.

The indoor activities which go on within this community are all housed in a 10,000 sq. ft. recreation facility, and consist of large meeting rooms, facilities for ceramics, photography, general arts and crafts, and indoor card rooms. The outside activities consist of an olympic-sized swimming pool with club house, shuffleboard and tennis courts, along with a golf course. However, a problem did arise at the Hidden Valley Community, due to enormous complexity of the facility, people from all over came to see it. But there seems to be a problem with parking. It seems as if Hidden Valley provided for a parking ratio of 1 to 150 spaces per occupant living in this community, which allowed for parking to be scarce on the premises.

The administrative staff at Hidden Valley is constantly busy. The social coordinator sits inside of her office mostly all day planning the next day's activities or upcoming events. If you were to walk into the main administrative building, you would find bulletin boards, and a complete information desk with staffed personnel there to answer your questions.

The living arrangements offer a variety of options from apartment living to townhouse living, within the realm of living, one may wish to own a home or rent no matter what type of home it is. Nevertheless, it should be noted that the individuals who live here are about 64 years old. However, younger people may live here, if at least one person is fifty years old. Therefore, I feel that it is necessary to state that at least one person should fit the age requirements set forth in my project. Continually speaking, the housing prices start at \$62,000 with the apartment rental starting at \$1,200. The approximation of rooms were not listed listed in this particular case study, but it seems to be that most of the homes were two and three bedroom complexes. Another note of concern was that the Hidden Valley Community allowed for pets as long as they did not exceed 45 pounds in weight.

This case study was particularly helpful to me because of the vast amount of information gathered concerning the activities and lifestyles of the retired. All of this information was found in the book, "Senior Settlers", by Nancy J. Osgood.

CHAPTER 7

Activity Analysis

- A) Guest Entering and Leaving the Site
- B) Tenants Entering and Leaving the Site
- C) Administration
- D) Outdoor Activities for Tenants
- E) Indoor Activities for Tenants
- F) Living Activities of the Tenants

Activity Definition

Activity is defined by Webster as vigorous or energetic action. Therefore, the activities that will proceed as a result of defining the user's needs will have to be vigorous and energetic.

Guest Entering and Leaving the Site

As one approaches the Southwest Retirement Village rather by automobile or walking, they will need an identification marker indicating the main entrance to the facility.

Therefore:

A public display sign or markey will be needed.



Also as one enters the facility, security will have to be seen in order to ease the mind of the tenants as well as those persons with unlawful intentions. Furthermore, there will be only one way in and one way out with a security fence around the complex.

Therefore:

A security booth is needed to check in and check out

those persons visiting and living within the community. Furthermore, a stop sign is needed in and around the guard post to stop tenants and visitors.

Upon passing the security gate, one will need to know where to park and where to go to receive information concerning the facility.

Therefore:

A public parking area will need to be provided for.

Once one parks their car, they will need to be able to clearly see the Administration Information Center.

Therefore:

An Administration Information building is needed.

Once one leaves their automobile to approach the Administration Information Center, there will be a need for landscaping to reflect the atmosphere that is within the Village.

Therefore:

A monumental landscape is needed.

Upon entering the Administration Information Center, there is a need for perspective tenants to be greeted by a receptionist.

Therefore:

A receptionist area is needed.

After one has been acknowledged by the receptionist, a seating area is needed until an agent can assist them.

Therefore:

Provide a seating area for guest.

Once an agent is ready to receive the perspective tenants an area is needed to discuss the needs of the proposed tenants and how they maybe accommodated.

Therefore:

Provide an area or office so that an agent maybe able to sell the potential tenants on the Village.

Once the proposed tenants have discussed the contractual obligations and amenities of the facility, there will be a need for the agent to show the perspective tenants the grounds area and model homes.

Therefore:

Furnished model homes will need to be provided and walking paths will need to be provided to show the tenants around the facility.

Tenants entering the facility will have to undergo the same criteria as those people who are visiting. However, there is a need for a place where messages, deliveries, and mail may be picked up.

Therefore:

There is a need for a mail area provided on the premises.

Once the tenant leaves the mail area, they will need to drive to home and park.

Therefore:

There is a need for residential parking, whether it is a garage or designated stalls. All parking is not to exceed 30 yards of the tenants home.

For those tenants who travel throughout the year and own RV's or mobile homes, there will be a need for parking and storing of these vehicles.

Therefore:

A RV and mobile home parking lot is needed.

Administration

General:

Upon entering the facility administration officials will need to park their automobiles in secured areas.

Therefore:

Provide administration parking.

Once an individual parks their automobile there will be a need for that person to enter the Administration Information building and go to their work place.

Therefore:

Provide a work place for the following Village staff members so that The Southwest Retirement Village may be able to operate efficiently.

	Quantity
Information Receptionist	1
Real Estate Agents	2
Head Coordinator	1
Assistant Coordinator	1
General Secretaries	3

Total Admin Staff	8

Due to the fact that the administration staff will have to use a copy machine, along with paper, pencils, and other

office equipment, there will need to be an area designated for this.

Therefore:

Provide a storage room with enough room to house a copier.

Throughout the daily use of the administration building, staff members will be responsible for answering questions of the potential clients. Furthermore, they will have to answer the phones and do paperwork.

Therefore:

Provide a space that will be able to accommodate the furnishings of each office.

Outdoor Activities for Tenants

Interior activities for tenants will be based on activities that may arise during the weekend, because most of the tenants are either fully or semi-active in the work force. Thus, their daily habits may not warrant a conclusive day-to-day activity analysis, due to their work habits. Furthermore, the activities list is a step-by-step guide through one's daily habits.

Upon leaving one's home he or she may wish to go running.

Therefore:

Provide a jogging area around the Village.

One may wish to go fishing.

Therefore:

Provide a well stocked fishing hole.

One may wish to go swimming.

Therefore:

Provide a swimming pool with showers and saunas.

One may wish to play tennis.

Therefore:

Provide a tennis court.

Due to a golf course located two and one-fourths miles away, there is not a need for a golf course on the grounds. However, if one wants to practice, there will be a putting green.

Therefore:

Provide a putting greens on the premises.

Furthermore, if one wishes to just relax in the open outdoors, private and public areas should be designed.

Therefore:

Provide well landscaped and open areas.

Indoor Activities for Tenants

Once a tenant enters the facility there will be a need for an events calendar.

Therefore:

Provide a markey.

Upon entering the facility one may wish to sit and relax in a comfortable area or watch t.v., play the piano, host social functions, or just talk to friends.

Therefore:

Provide a lounge area.

Once a tenant has entered the lounge area, they may wish to branch off and go several different areas of the building. These areas will be discussed by means of guiding an individual through the building.

Once a tenant has entered the lounge area, they may wish to attend some of the special classes provided for by management. These classes may vary from week to week due to the interest of the tenants.

Therefore:

Provide two multi-purpose rooms.

A room that serves as molding and shaping clay type

material may be appropriate for my facility because some wives will be working and may need to occupy their schedule throughout the day.

Therefore:

Provide a ceramics room.

Periodically tenants or management may host a dance, banquet, or just a party.

Therefore:

Provide a large multi-purpose area with a kitchen and adequate storage.

For these tenants who are highly active in athletics and may wish to work alot on weights, exercising machines, stationary bicycles, and other fitness equipment, may wish to have an area designed for that purpose.

Therefore:

Provide a weight room.

For tenants who may wish to play billiards, poken, bridge, or dominoes, an area designated for these activities should be provided.

Therefore:

Provide a game room.

Living Activities for Tenants

General informational activities as far as eating, sleeping, relaxing, and performing basic hygiene are the common areas by which a living environment is based upon.

Therefore:

Provide the following basic criteria such as kitchen, master bedroom, hygienal area, and a living room.

Though these general activities are known, the unique differences are found in the following questions and issues.

How does accommodate more than six people in their homes?

How is one protected from the outside environment?

How does one come into contact with nature?

How does one's home environment at the Southwest Retirement Village fit their lifestyle?

These issues and questions are what will make up the determining factors by which the desing of the residential living quarters will be based upon.

Therefore:

All homes designed for the Southwest Retirement Village will have to abide by the criteria set forth in the questions above.

CHAPTER 8

General Requirements

General Requirements

Natural lighting is to be apparent throughout the Village.

Air conditioning equipment and other special heating and cooling equipment shall not be seen by the human eye. However, central heating and cooling system will be required on the grounds.

Operable windows for ventilation will be required throughout the complex.

Items such as carpeting tile, and other finish materials will be determined during the design process of the project.

The fact is known that the human body disposes of unwanted waste. Therefore, provide the recreational facility with public restrooms.

Due to the age factor by which the tenants of the Southwest Retirement Village are restricted to, there is not a need for maid service to be provided for by the management. However, there is a prominent maid service in the Katy area that will be able to serve those tenants who may wish to have maid service. Nevertheless, all persons working for the maid service will have to undergo a security clearance to work on the grounds.

The requirements for security throughout the grounds are as follows:

There will be one way into The Southwest

Retirement Village and eliminating the possibility of thief on the premises. There will also be a need for a fence around the area to protect residents from undesireables.

The landscaping within the area will consist of deciduous trees and wild flowers with some ferns and other natural plant life that grows within the area.

CHAPTER 9

Spacial Analysis

CHAPTER 10
Spatial Adjacencies

Building Codes **APPENDIX**

Spatial Summary

	Sq. Footage Total
Administraton	
A) Head Coordinator	250
B) Assistant Coordinator	200
C) Administrative Secretaries	200
D) Real Estate Salesperson	450
E) Copy Room	200
F) Waiting Room	200
Total	1500
Indoor Spacial Requirements	
A) Lobby	3000
B) Banquet Hall	3200
C) Dance Hall	1125
D) Weight Lifting Room	750
E) Ceramics Room	350
F) Kitchen	350
G) Storage Room	400
H) Multipurpose Rooms	400
I) Game Room	365
J) Restroom	500
Total	10,490
Outdoor spacial Requirements	
A) Tennis Courts	14,400
B) Putting Green	5,000
C) Swimming Area	3,337
D) Parking for Tenants	38,250
E) Parking for Guests	12,750
F) RV Parking	13,000
G) Service Parking	1,000
H) Staff Parking	3,060
Total	90,797

Living Spacial Requirements for
Unit I

Sq. Footage Total

A) Living Room	166
B) Kitchen	200
C) Dining Room	90
D) Master Bedroom	250
E) Master Baths	160
F) Guest Bedroom	150
G) Guest Bathroom	60
H) Storage	75
I) Game Room	200
Total	1,351

$$190 \text{ Units} \times 1,351 = 256,690$$

Living spacial Requirements for Unit 2

A) Living Room	166
B) Kitchen	200
C) Dining Room	90
D) Master Bedroom	250
E) Master Bath	160
F) Guest Bedroom	150
G) Guest Bathroom	60
H) Storage	75
Total	1,151

$$60 \text{ Units} \times 1,151 = 69,060$$

General Spacial Requirements

A) Maintenance Area	275
B) Guard Booth	75
C) Security Area	200
Total	550

Note: All circulation has been calculated within the spacial total.

TOTAL SQUARE FOOTAGE

429,437

ADMINISTRATOR

Head Coordinator:

Needs: There will only be one head coordinator, therefore, only one office is needed.

Considerations:

Item	Size	Quantity
Desk	3'x5'	1
Chairs	24" sq.	3
Couch	6'x2'-6"	1
File Cabinet	30"wx24"dx24"h	3
Storage Closet	4'x5'	1
Computer Area	6'wx24"dx24"t	1
End Tables	18"x18"	2
Coffee Table	24"x4'	1
Bookshelves	8"wx18"dx8t	1
Circulation	25% of total sq. footage	

Total Sq. Footage: 250 sq. ft.

Assistant Coordinator:

Needs: There will only be one assistant coordinator, therefore, only one office is needed.

Considerations:

Items	Size	Quantity
Desk	3'x5'	1
Chairs	24 sq.	2
Couch	6'x2'-6"	1
File Cabinet	30"wx24"dx24H	3
Storage Closet	4'x5'	1
End Tables	18"x18"	2

Coffee Tables	24"x4'	1
Bookshelves	8'wx18"dx8't	1
Circulation	25% of furniture sq. footage	

Total Sq. Footage 200 sq. ft.

Administrative Secretaries:

Needs: There will only be two administrative secretaries, therefore, only two office spaces are needed to be required.

Considerations:

Item	Size	Quantity
Desk	3'x5'	1
Computer Area	24"wx6'l x 24"t	1
File Cabinets	30"wx24"dx24"h	3
Chairs	24" sq.	4
Coat Rack	1' dia	1
Shelving	8'wx18"dx8'T	1
Coffee Stand	24" sq.	1
Circulation	15% of furniture sq. footage	
Misc.	40% of total workable sq. footage	

Total Sq. Footage: 100 sq. ft. x 2 offices = 200 sq. ft.

Real Estate Salesperson:

Needs: There will only be two salespersons, therefore, only two offices are required.

Considerations:

Item	Size	Quantity
Credenza	3'x5' area	1
Computer Area	24"wx6'l x 24"t	1
File Cabinets	30'wx24'dx24"h	3
Chairs	24' sq.	4

Coat rack	1' dia	1
Shelving	8'wx18"dx8t	1
Wet Bar	4'wx18"dx36"t	1
Layout Area	4'x6'	1
Couch	6'x2'-6"	1
End Tables	18"x8'	1
Coffee Tables	24"x4'	1
Circulation	24% of furniture sq. footage	
Misc.	50% of total sq. footage	

Total Square Footage: $225 \times 2 = 450$ sq. ft.

Copy Room:

Needs: This area is used for copying business material.

Considerations:

Item	Size	Quantity
Storage	50 sq. ft.	1
Counters	50 sq.	
Copier	60 sq. ft.	1
Shelving	Above floor	
Circulation	25% of total sq. ft.	

Total Sq. footage: 200 sq. ft.

Waiting Room:

Needs: This area will be used as a seating area for potential tenants and guests.

Considerations:

Item	Size	Quantity
Couch	6'x2'-6"	1
Coffee Table	24"x4'	1
Chairs	18" sq.	4
Circulation	25% of total sq. footage	
Misc.	50% of total sq. footage	

Total Square Footage: 200 sq. ft.

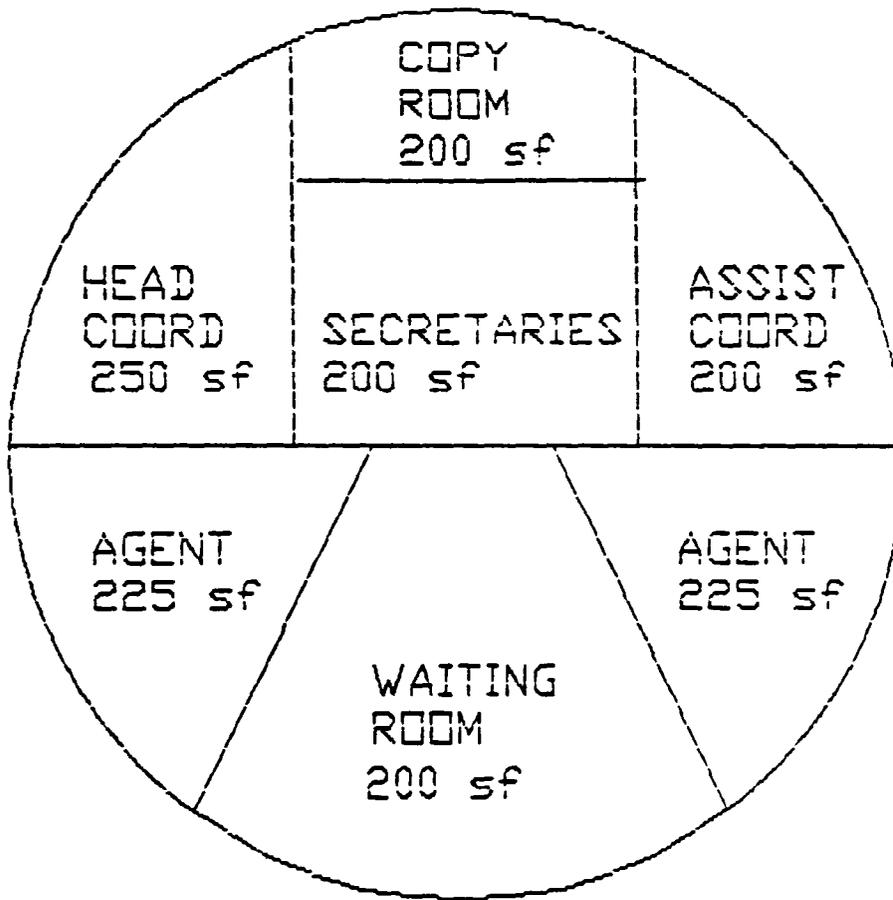


FIGURE. 8-5. ADMINISTRATION SPACIAL DIAGRAM.

INDOOR SPACIAL REQUIREMENTS

Lobby:

Needs: This area is the focal points of all business activity. Therefore the needs for this space will be crucial.

Considerations:

Items	Size	Quantity
Couch	6x2'-6"	5
Coffee Tables	24"x4'	5
Chairs	24" sq.	10
Information Area	8'x8'	1
Water Fountain	18" sq.	2
Aquarium	12'x12'	1
TV Area	10'x10'	
Public Restroom	See Public Section	2
Wet Bar	14'x14'	1
Landscaping	50% of total furniture sq. footage	
Circulation	25% of total furniture sq. footage	
Miscellaneous	50% of total sq. footage	
Total Sq. Footage	3000 sq. ft.	

Banquet Hall:

Needs: This is area will be used as a multi-purpose area. Therefore, the space required will need to be large.

Considerations:

Items	Size	Quantity
Dining Tables	60 sq. ft.	30
Stage	300 sq. ft.	1
Preparation Area	200 sq. ft.	
Circulation	25% of total sq. ft.	
Total Sq. Footage:	3250 sq. ft.	

Dance Hall:

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Needs: this area will be used for dance class.

Therefore, the space will need to be large.

Considerations:

Items	Size	Quantity
Mirrors	Above Floor	
Storage	100 sq. ft.	1
Workout Area	800 sq. ft.	
Circulation	25% of total sq. ft.	

Total Sq. Footage: 1125 sq. ft.

Weight-Lifting Room:

Needs: This area will be used to help individuals keep their muscular look.

Considerations:

Items	Size	Quantity
Mirror	Above Floor	
Storage	100 sq. ft.	1
Workout Area	500 sq. ft.	
Circulation	25% of total sq. ft.	

Total Sq. Footage: 750 sq. ft.

Ceramics Room:

Needs: This area will be used to create ceramic goods.

Considerations:

Items	Size	Quantity
Kils	60 sq. ft.	2
Potter's Wheel	60 sq. ft.	2
Shelving	Above Floor	
Cabinet	8'wx24"dx36"h	
Sink	24"x24" sq.	2
Circulation	25% of total sq. ft.	

Total Sq. Footage 350 sq. ft.

Kitchen

Need: There is a need for an area where food maybe prepared for social gatherings.

Considerations:

Item	Size	Quantity
Counter	24"x15'	1
Stove	32"x28"	1
Range	36"x36"	1
Sink	32"x24"	1
Cabinet	24"x20'	1
Refrigerator	36"x32"	1
Pantry	25 sq. ft.	
Circulation 25% of total	sq. footage	
Total Sq. Footage	350 sq. ft.	

Storage:

Needs: This area will be designated for storage.

Considerations:

Items	Size	Quantity
Shelving	Above Floor	
Floor Space	400 sq. ft.	

Total Sq. Footage: 400 sq. ft.

Multi-room

Needs: There will be a need for an area that will be able to serve as a multi-activities area.

Consideration:

Item	Size	Quantity
Storage	100 sq. ft.	1
Open Space		
Circulation 25% of the total	sq. ft.	
Total Sq. Footage	400 sq. ft.	

Game Room:

Needs: This area will be used for relaxation and socializing.

Considerations:

Items	Size	Quantity
TV	25"	1
Table Tennis	45 sq. ft.	2
Couch	61'x24"x24"h	2
End Tables	24" sq.	2
Coffee Table	4'x2'	1
Wet Bar	60 sq. ft.	1
Storage	80 sq. ft.	1
Table for chess & checkers	35 sq. ft.	4
Circulation	25% of total sq. ft.	

Total Sq. Ft.: 365 sq. ft.

Public Restrooms:

Needs: This will need to be private and also allow for handicap capability. Furthermore, see code section for actual requirements.

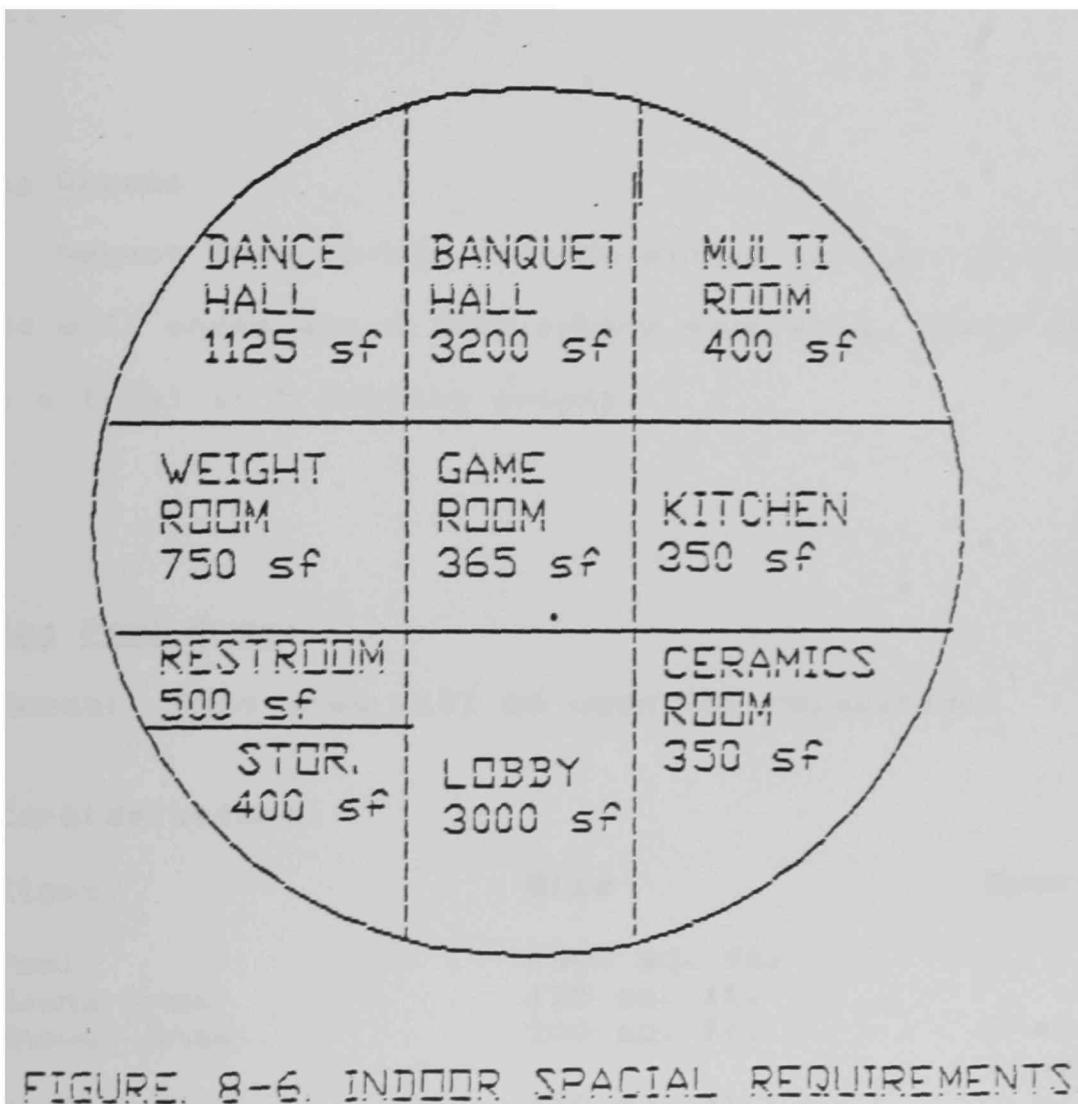
Considerations:

item	Size	Quantity
Water Closets All Handicapped Accessible	15 sq. ft.	3
Urinals	5 sq. ft.	2
Lavatories	12 sq. ft.	3
Hand Dryer	Above Floor	2
Towel Dispenser	24"wx18"dx38"t	1

For Female Restrooms Maxi Dispenser Above Floor 1
Circulation 25% of total sq. ft.

Total Square Footage: 150 sq. ft.

Men and Women = 2 for administration building and 2 for activities area for a total of 4 each. Thus total sq. footage for public restrooms will be 500 sq. ft.



Outdoor spacial Requirements

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Tennis Courts:

Needs: This area will be used to play tennis.

Considerations: The considerations for this particular sport will call for specification from a tennis court manufacturer and will be up approximately 7200 sq. ft. There will be a total of two tennis courts for a total of 14,400 sq. ft.

Putting Green:

Needs: These areas will be placed throughout the and will encompass a 1000 square foot area. There will be a total of 5 putting greens.

Swimming Pool Area:

Needs: This area will be used for relaxation.

Considerations:

Items	Size	Quantity
Pool	1000 sq. ft.	1
Sauna Area	125 sq. ft.	2
Shower Area	200 sq. ft.	2 ea. mens & womens
Toilet Area	150 sq. ft.	2 ea. mens & womens
Dressing Room w/lockers	300 sq. ft.	2 ea. mens & womens
Circulation	25% of sq. ft.	
Total Square Footage:	3337 sq. ft.	

Tenant Parking:

Needs: This area will be used for tenants parking.

Considerations:

Parking Stall Equals 180 sq. ft. ea.

These will be a total of two parking spaces to each unit. This is due in part to the fact that most tenants who are of age only have one car. Total spaces equals 375. Total space footage = 38,250.

Guest Parking:

Needs: This area will be used for guest parking.

Considerations:

Parking stall equals 180 sq. ft. ea.

There will be a total of 1/2 parking spaces allotted to each unit for guest. This is due in part to the fact that most tenants will not have guest coming in often to visit. Total spaces equal 125. Total square footage = 12,750.

RV Parking:

Needs: This area will be used for parking of RV Campers.

Considerations:

Parking stalls equal 200 sq. ft. ea.

There will be a total of 1/2 parking spaces allotted to every two units for RV parking. This is due in part of the fact that most tenants will not have a RV or camper. Total spaces equal 65. Total square footage = 13,000.

Service Parking:

Needs: This area used for service parking.

Considerations: This area will only need 6 spaces at 180 sq. ft. each. Parking for this area may be linear or grouped. Total square feet equals 1,000.

Staff Parking:

Needs: This area is needed for staff parking.

Considerations:

This area will consist of 30 staff members. These parking stalls will consist of 180 sq. ft. Total parking square footage = 3,060.

Total Exterior Circulation:

Parking Sq. Footage:	68,060
Parking Stalls:	603
Circulation 25% of total sq. footage	
Total Square Footage for Parking:	85,075

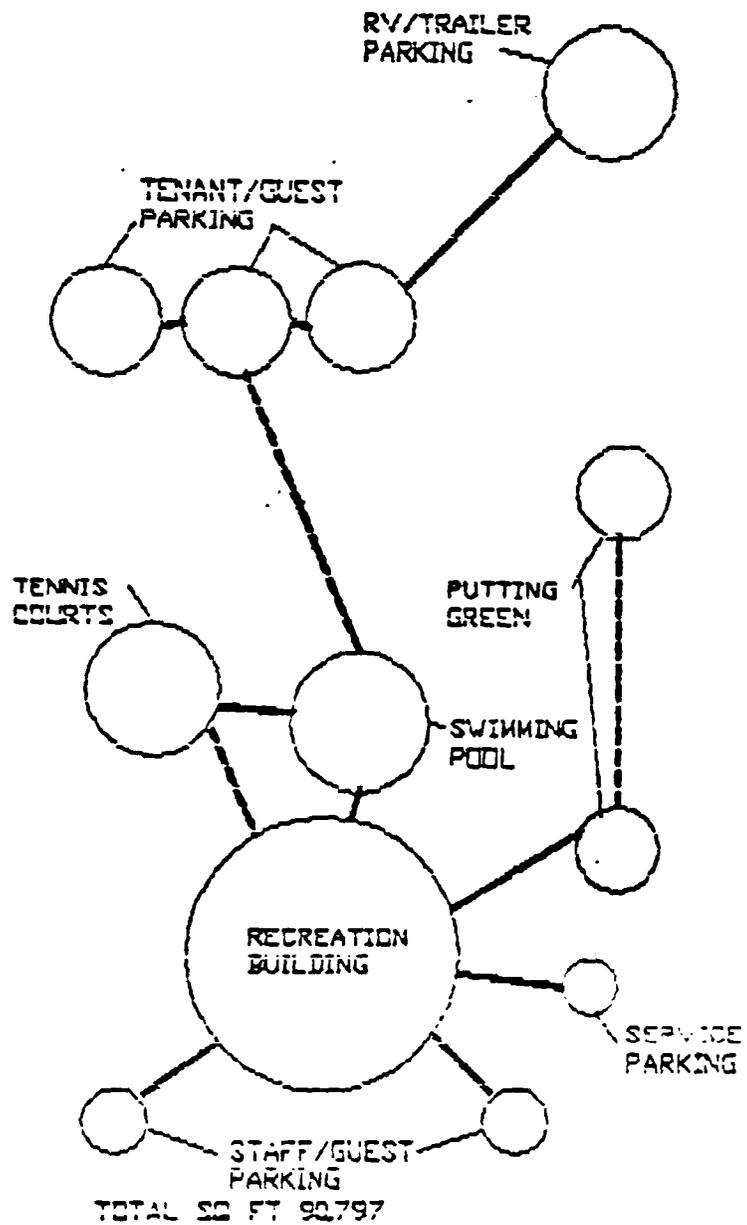


FIGURE. 8-7. OUTDOOR SPACIAL REQUIREMENT

Living Spacial Requirements for Unit I

Housing Units:

Living Room:

Needs: This area is used for relaxation within the home.

Considerations:

Item	Size	Quantity
Couch	6'x2'	1
End Tables	18" sq.	2
Coffee Table	2'x4'	1
Chairs or Love Seat	4'x2'	2
Recliner	4'x2'	1
Closet	4'x2'	1
Shelving	28"dx6'wx8't	1
TV with stand	36" sq.	1
Stereo with stand	36" sq.	1
Wet Bar	4'x2'	1
Fireplace	6'x3'	1
Circulation	25% of total sq. ft.	
Misc.	50% of total sq. ft.	

Total Sq. Footage: 166 sq. ft.

Kitchen:

Needs: This area is used for preparing food.

Considerations:

Items	Size	Quantity
Range	36"wx24"d'4"h	1
Cabinets	24"dx36"hx8'l	
Sink	28"x18"	1
Refrigerator	36"x36"	1
Preparation Area	40 sq. ft.	
Dishwasher	22"x34"hx24"d	1
Stove	24"dx5"wx36"h	1
Pantry	20 sq. ft.	1
Breakfast Nook	60 sq. ft.	1
Circulation	25% of total sq. ft.	

Total Square Footage: 200 sq. ft.

Dining Room:

Needs: This area is used during afternoon eating.

Considerations:

Item	Size	Quantity
Dining Table w/chair	50 sq. ft.	1
China Cabinet	20 sq. ft.	1
Circulation	25% of total sq. ft.	

Total Square Footage: 90 sq. ft.

Master Bedroom:

Needs: This is area used for sleeping and basic hygiene techniques.

Considerations:

Item	Size	Quantity
Water Bed	50 sq. ft.	1

Item	Size	Quantity
Chair	30 sq. ft.	1
TV area	20 sq. ft.	1
Dresser Drawer	35 sq. ft.	1
Chester Crower	25 sq. ft.	1
Closet . Walk-in	40 sq. ft.	1
Circulation	25% of total sq. ft.	

Total Square Footage: 250 sq. ft.

Master Bath:

Needs: This is area used for basic hygiene.

Considerations:

Item	Size	Quantity
Bath Tub Sauna	50 sq. ft.	1
Shower	20 sq. ft.	1
Sink or Vanity w/cabinets	30 sq. ft.	1
Dirty clothes Hamper w/towel storage	20 sq. ft.	1
Toilet	6 sq. ft.	1
Circulation	25% of total sq. ft.	

Total Square Footage: 160 sq. ft.

Guest Bedroom:

Needs: This area is provided for guest sleeping.

Considerations:

Items	Size	Quantity
Bed	40 sq. ft.	1
Dresser	35 sq. ft.	1
Chair	24 sq. ft.	1
Closet	24 sq. ft.	1
Circulation	25% of total sq. ft.	

Total Square Footage: 150 sq. ft.

Guest Bathroom:

Needs: This area will be used for guest to partake in basic hygiene.

Considerations:

Item	Size	Quantity
Bath tub-Shower	30 sq. ft.	1
Vantiy	15 sq. ft.	1
Towel Closet	6 sq. ft.	1
Toilet	6 sq. ft.	1
Circulation	10% of total sq. ft.	

Total Square Footage: 60 sq. ft.

Storage:

Needs: This area is proved for storing of extra furniture.

Considerations: This area will encompass an open area of 75 sq. ft. total.

Game Room:

Needs: This area is proved for extra-curriculum activities.

Considerations: This space will need to be just an open space due to the fact that the owners will be decorating it. Thus, the total square footage will be 200 sq. ft.

Note: The game room is not included in the townhouse design.

Living spacial Requirements for Unit 2

Housing Units:

Living Room:

Needs: This area is used for relaxation within the home.

Considerations:

Item	Size	Quantity
Couch	6'x2'	1
End Tables	18" sq.	2
Coffee Table	2'x4'	1
Chairs or Love Seat	4'x2'	2
Recliner	4'x2'	1
Closet	4'x2'	1
Shelving	28"dx6'wx8't	1
TV with stand	36" sq.	1
Stereo with stand	36" sq.	1
Wet Bar	4'x2'	1
Fireplace	6'x3'	1
Circulation	25% of total sq. ft.	
Misc.	50% of total sq. ft.	

Total Sq. Footage: 166 sq. ft.

Kitchen:

Needs: This area is used for preparing food.

Considerations:

Items	Size	Quantity
Range	36"wx24"d'4"h	1
Cabinets	24"dx36"hx8'l	1
Sink	28"x18"	1
Refrigerator	36"x36"	1
Preparation Area	40 sq. ft.	
Dishwasher	22"x34"hx24"d	1
Stove	24"dx5"wx36"h	1
Pantry	20 sq. ft.	1
Breakfast Nook	60 sq. ft.	1
Circulation	25% of total sq. ft.	

Total Square Footage: 200 sq. ft.

Dining Room:

Needs: This area is used during afternoon eating.

Considerations:

Item	Size	Quantity
Dining Table w/chair	50 sq. ft.	1
China Cabinet	20 sq. ft.	1
Circulation	25% of total sq. ft.	

Total Square Footage: 90 sq. ft.

Master Bedroom:

Needs: This is area used for sleeping and basic hygiene techniques.

Considerations:

Item	Size	Quantity
Water Bed	50 sq. ft.	1

Item	Size	Quantity
Chair	30 sq. ft.	1
TV area	20 sq. ft.	1
Dresser Drawer	35 sq. ft.	1
Chester Crower	25 sq. ft.	1
Closet . Walk-in	40 sq. ft.	1
Circulation	25% of total sq. ft.	

Total Square Footage: 250 sq. ft.

Master Bath:

Needs: This is area used for basic hygiene.

Considerations:

Item	Size	Quantity
Bath Tub Sauna	50 sq. ft.	1
Shower	20 sq. ft.	1
Sink or Vanity w/cabinets	30 sq. ft.	1
Dirty clothes Hamper w/towel storage	20 sq. ft.	1
Toilet	6 sq. ft.	1
Circulation	25% of total sq. ft.	

Total Square Footage: 160 sq. ft.

Guest Bedroom:

Needs: This area is provided for guest sleeping.

Considerations:

Items	Size	Quantity
Bed	40 sq. ft.	1
Dresser	35 sq. ft.	1
Chair	24 sq. ft.	1
Closet	24 sq. ft.	1
Circulation	25% of total sq. ft.	

Total Square Footage: 150 sq. ft.

Guest Bathroom:

Needs: This area will be used for guest to partake in basic hygiene.

Considerations:

Item	Size	Quantity
Bath tub-Shower	30 sq. ft.	1
Vanity	15 sq. ft.	1
Towel Closet	6 sq. ft.	1
Toilet	6 sq. ft.	1
Circulation	10% of total sq. ft.	

Total Square Footage: 60 sq. ft.

Storage:

Needs: This area is provided for storing of extra furniture.

Considerations: This area will encompass an open area of 75 sq. ft. total.

General Spacial Requirements

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Maintenance Storage:

Needs: This area will be used for storing and handling of cleaning equipment.

Considerations:

Item	size	Quantity
closet Space For Chemicals	50 sq. ft.	1
hand Wash Sink	36"wx24"dx24"t	1
Slop Sink	24"x24"	1
Shelving	Above Floor	-
Washer & Dryer	50 sq. ft.	2
Work Tables	4'x6'	2
Storage for Cleaning carts	75 sq. ft.	

Total Sq. Footage: 275 sq. ft.

Guard Booth

Needs: There will only be one guard booth located at the entrance.

Considerations:

Item	Size	Quantity
Premanufactured Booth Circulation Included	75 sq. ft.	1
Total Sq. Footage	75 sq. ft.	

Security Offices:

Needs: This area will incorporate the latest equipment in security surveillance. Therefore, this office will need to be large and secured.

Considerations:

Items	Size	Quantity
Surveillance Counter		1/wall
24 Hr Switch Counter		1
Surveillance Monitor	18"wx15"d	5
Computer for Monitor	18"l x 7"w keyboard	5
Total Alloted Area	200 sq. ft.	
Circulation	25% of total area	250 sq. ft.
Misc.	25% of total area	300 sq. ft.

Total Square Footage: 300 sq. ft.

CHAPTER 10

Spacial Adjacencies

LIVING REQUIREMENTS

	PRIVATE	SEMI PRIVATE	PUBLIC
LIVING ROOM		X	
KITCHEN		X	
DINING ROOM		X	
MASTER BEDROOM	*		
MASTER BATH	*		
GUEST BEDROOM		X	O
GUEST BATHROOM	*		
STORAGE	*		
GAME ROOM			O

PRIVATE *

SEMI PRIVATE X

PUBLIC SPACE O

NOTE: ALL ADJACENCIES ARE CATEGORIZE BY IMPORTANCE AS IT PERTAINS TO PRIVACY.

ADMINISTRATION

	PRIVATE	SEMI PRIVATE	PUBLIC
HEAD COORDINATOR	*		
ASSIST COORDINATOR	*		
ADMIN SECRETARIES			0
SALESMAN		X	
COPY ROOM	*		
WAITING ROOM			0

PRIVATE *
 SEMI PRIVATE X
 PUBLIC 0

INDOOR SPACIAL REQUIREMENTS

	PRIVATE	SEMI PRIVATE	PUBLIC
LOBBY			0
BANQUET HALL		X	
DANCE HALL			0
WEIGHT ROOM		X	
CERAMICS ROOM			0
KITCHEN			0
STORE ROOM	*		
MULTI-ROOM			0
GAME ROOM			0
RESTROOM	*		

PRIVATE *

SEMI PRIVATE X

PUBLIC 0

OUTDOOR SPACIAL REQUIREMENTS

	PRIVATE	SEMI PRIVATE	PUBLIC
TENNIS COURTS		X	
PUTTING GREEN			O
SWIM AREA			O
PARKING TENANTS	*		
PARKING GUESTS			O
RV PARKING	*		
SERVICE PARKING		X	
STAFF PARKING		X	

PRIVATE	*
SEMI PRIVATE	X
PUBLIC	O

COMPLETE SPACIAL ADJACENCIES

ADMINISTRATION	X		
INDOOR REQUIREMENTS	X		
OUTDOOR REQUIREMENTS			0
LIVING REQUIREMENTS		*	

PRIVATE	*
SEMI PRIVATE	X
PUBLIC	0

Building Codes APPENDIX

Chapter 12

REQUIREMENTS FOR GROUP R OCCUPANCIES

Group R Occupancies Defined

Sec. 1201. Group R Occupancies shall be:

Division 1. Hotels and apartment houses.

Convents and monasteries (each accommodating more than 10 persons).

Division 2. Not used.

Division 3. Dwellings and lodging houses.

For occupancy separations, see Table No. 5-B.

For occupant load, see Section 3301.

Construction, Height and Allowable Area

Sec. 1202. (a) General. Buildings or parts of buildings classed in Group R because of the use or character of the occupancy shall be limited to the types of construction set forth in Tables No. 5-C and No. 5-D and shall not exceed, in area or height, the limits specified in Sections 505, 506 and 507.

(b) Special Provisions. Group R, Division 1 Occupancies more than two stories in height or having more than 3000 square feet of floor area above the first story, shall be not less than one-hour fire-resistive construction throughout.

EXCEPTION: Dwelling units within an apartment house not over two stories in height may have nonbearing walls of unprotected construction, provided the units are separated from each other and from corridors by construction having a fire-resistance rating of not less than one hour. Openings to such corridors shall be equipped with doors conforming to Section 3304 (h) regardless of the occupant load served.

Every apartment house three stories or more in height and containing more than 15 apartments, and every hotel three stories or more in height containing 20 or more guest rooms, shall have an approved fire alarm system as specified in the Fire Code.

For Group R, Division 1 Occupancies with a Group B, Division 1 parking garage in the basement or first floor, see Section 702 (a).

For attic space partitions and draft stops, see Section 3205.

Location on Property

Sec. 1203. For fire-resistive protection of exterior walls and openings, as determined by location on property, see Section 504 and Part IV.

Exit Facilities

Sec. 1204. Stairs, exits and smokeproof enclosures shall be as specified in Chapter 33.

Every sleeping room below the fourth story shall have at least one operable window or exterior door approved for emergency egress or

rescue. The units shall be operable from the inside to provide a full clear opening without the use of separate tools.

All egress or rescue windows from sleeping rooms shall have a minimum net clear opening of 5.7 square feet. The minimum net clear opening height dimension shall be 24 inches. The minimum net clear opening width dimension shall be 20 inches. Where windows are provided as a means of egress or rescue they shall have a finished sill height not more than 44 inches above the floor.

Light, Ventilation and Sanitation

Sec. 1205. (a) Light and Ventilation. All guest rooms, dormitories and habitable rooms within a dwelling unit shall be provided with natural light by means of exterior glazed openings with an area not less than one-tenth of the floor area of such rooms with a minimum of 10 square feet. All bathrooms, water closet compartments, laundry rooms and similar rooms shall be provided with natural ventilation by means of openable exterior openings with an area not less than one-twentieth of the floor area of such rooms with a minimum of 1½ square feet.

All guest rooms, dormitories and habitable rooms within a dwelling unit shall be provided with natural ventilation by means of openable exterior openings with an area of not less than one-twentieth of the floor area of such rooms with a minimum of 5 square feet.

In lieu of required exterior openings for natural ventilation, a mechanical ventilating system may be provided. Such system shall be capable of providing two air changes per hour in all guest rooms, dormitories, habitable rooms and in public corridors. One-fifth of the air supply shall be taken from the outside. In bathrooms, water closet compartments, laundry rooms and similar rooms a mechanical ventilation system connected directly to the outside, capable of providing five air changes per hour, shall be provided.

For the purpose of determining light and ventilation requirements, any room may be considered as a portion of an adjoining room when one-half of the area of the common wall is open and unobstructed and provides an opening of not less than one-tenth of the floor area of the interior room or 25 square feet, whichever is greater.

Required exterior openings for natural light and ventilation shall open directly onto a street or public alley or a yard or court located on the same lot as the building.

EXCEPTION: Required windows may open into a roofed porch where the porch:

1. Abuts a street, yard, or court; and
2. Has a ceiling height of not less than 7 feet; and
3. Has the longer side at least 65 percent open and unobstructed.

(b) Sanitation. Every building shall be provided with at least one water closet. Every hotel or subdivision thereof where both sexes are accommodated shall contain at least two separate toilet facilities which are conspic-

uously identified for male or female use, each of which contains at least one water closet.

Additional water closets shall be provided on each floor for each sex at the rate of one for every additional 10 guests, or fractional part thereof, in excess of 10.

Every dwelling unit shall be provided with a kitchen equipped with a kitchen sink and with a bathroom equipped with facilities consisting of a water closet, lavatory and either a bathtub or shower. Each sink, lavatory and bathtub or shower shall be equipped with hot and cold running water necessary for its normal operation.

For other requirements on water closets, see Sections 510 and 1711.

Yards and Courts

Sec. 1206. (a) Scope. This section shall apply to yards and courts having required windows opening therein.

(b) **Yards.** Every yard shall be not less than 3 feet in width for one-story and two-story buildings. For buildings more than two stories in height the minimum width of the yard shall be increased at the rate of 1 foot for each additional story. For buildings exceeding 14 stories in height, the required width of yard shall be computed on the basis of 14 stories.

(c) **Courts.** Every court shall be not less than 3 feet in width. Courts having windows opening on opposite sides shall be not less than 6 feet in width. Courts bounded on three or more sides by the walls of the building shall be not less than 10 feet in length unless bounded on one end by a street or yard. For buildings more than two stories in height the court shall be increased 1 foot in width and 2 feet in length for each additional story. For buildings exceeding 14 stories in height, the required dimensions shall be computed on the basis of 14 stories.

Adequate access shall be provided to the bottom of all courts for cleaning purposes. Every court more than two stories in height shall be provided with a horizontal air intake at the bottom not less than 10 square feet in area and leading to the exterior of the building unless abutting a yard or public space. The construction of the air intake shall be as required for the court walls of the building, but in no case shall be less than one-hour fire resistive.

(d) **Projection into Yards.** Eaves and cornices may project into any required yard not more than 2 inches for each foot of yard width. Unroofed landings, porches and stairs may project into any required yard, provided no portion except for guardrails extends above the floor level of a habitable room and provided further that no such projection shall obstruct a required exitway.

Room Dimensions

Sec. 1207. (a) Ceiling Heights. Habitable space shall have a ceiling height of not less than 7 feet 6 inches except as otherwise permitted in this section. Kitchens, halls, bathrooms and toilet compartments may have a

ceiling height of not less than 7 feet measured to the lowest projection from the ceiling. Where exposed beam ceiling members are spaced at less than 48 inches on center, ceiling height shall be measured to the bottom of these members. Where exposed beam ceiling members are spaced at 48 inches or more on center, ceiling height shall be measured to the bottom of the deck supported by these members, provided that the bottom of the members is not less than 7 feet above the floor.

If any room in a building has a sloping ceiling, the prescribed ceiling height for the room is required in only one-half the area thereof. No portion of the room measuring less than 5 feet from the finished floor to the finished ceiling shall be included in any computation of the minimum area thereof.

If any room has a furred ceiling, the prescribed ceiling height is required in two-thirds the area thereof, but in no case shall the height of the furred ceiling be less than 7 feet.

(b) **Floor Area.** Every dwelling unit shall have at least one room which shall have not less than 150 square feet of floor area. Other habitable rooms except kitchens shall have an area of not less than 70 square feet. Efficiency dwelling units shall comply with the requirements of Section 1208.

(c) **Width.** No habitable room other than a kitchen shall be less than 7 feet in any dimension.

Efficiency Dwelling Units

Sec. 1208. An efficiency dwelling unit shall conform to the requirements of the code except as herein provided:

1. The unit shall have a living room of not less than 220 square feet of superficial floor area. An additional 100 square feet of superficial floor area shall be provided for each occupant of such unit in excess of two.

2. The unit shall be provided with a separate closet.

3. The unit shall be provided with a kitchen sink, cooking appliance and refrigeration facilities, each having a clear working space of not less than 30 inches in front. Light and ventilation conforming to this code shall be provided.

4. The unit shall be provided with a separate bathroom containing a water closet, lavatory and bathtub or shower.

Shaft Enclosures

Sec. 1209. Exits shall be enclosed as specified in Chapter 33.

Elevator shafts, vent shafts, dumbwaiter shafts, clothes chutes and other vertical openings shall be enclosed and the enclosure shall be as specified in Section 1706.

Fire-warning and Sprinkler Systems

Sec. 1210. (a) Fire-warning Systems. Every dwelling unit and every guest room in a hotel or lodging house used for sleeping purposes shall be

provided with smoke detectors conforming to U.B.C. Standard No. 43-6. In dwelling units, detectors shall be mounted on the ceiling or wall at a point centrally located in the corridor or area giving access to rooms used for sleeping purposes. In an efficiency dwelling unit, hotel sleeping room and in hotel suites, the detector shall be centrally located on the ceiling of the main room or hotel sleeping room. Where sleeping rooms are on an upper level, the detector shall be placed at the center of the ceiling directly above the stairway. All detectors shall be located in accordance with approved manufacturer's instructions. When actuated, the detector shall provide an alarm in the dwelling unit or guest room.

When alterations, repairs or additions requiring a permit and having a valuation in excess of \$1000 occur, or when one or more sleeping rooms are added or created in existing Group R, Division 3 Occupancies, the entire building shall be provided with smoke detectors located as required for new Group R, Division 3 Occupancies.

In new construction, required smoke detectors shall receive their primary power from the building wiring when such wiring is served from a commercial source. Wiring shall be permanent and without a disconnecting switch other than those required for overcurrent protection. Smoke detectors may be battery operated when installed in existing buildings, or in buildings without commercial power, or in buildings which undergo alterations, repairs or additions regulated by the second paragraph of this section.

(b) **Sprinkler Systems.** When required by other provisions of this code, automatic sprinkler systems and standpipes shall be installed as specified in Chapter 38.

Heating

Sec. 1211. Every dwelling unit and guest room shall be provided with heating facilities capable of maintaining a room temperature of 70°F. at a point 3 feet above the floor in all habitable rooms.

Special Hazards

Sec. 1212. Chimneys and heating apparatus shall conform to the requirements of Chapter 37 of this code and the Mechanical Code.

The storage and handling of gasoline, fuel oil and other flammable liquids in Division 1 Occupancies shall be in accordance with U.B.C. Standard No. 9-1.

In Division 1 Occupancies, doors leading into rooms in which volatile flammable liquids are stored or used shall be protected by a fire assembly having a one-hour fire-protection rating. Such fire assembly shall be self-closing and shall be posted with a sign on each side of the door in 1-inch block letters stating: "FIRE DOOR—KEEP CLOSED."

Every room containing a boiler or central heating plant in Division 1 Occupancies shall be separated from the rest of the building by not less than a one-hour fire-resistive occupancy separation.

EXCEPTION: A separation shall not be required for such rooms with equipment serving only one dwelling unit.

Access to Buildings and Facilities

Sec. 1213. Buildings containing more than 20 dwelling units or 20 guest rooms shall be accessible to the physically handicapped by a level entry, ramp or elevator. The number of dwelling units or guest rooms accessible to the physically handicapped shall be not less than the following:

21 through 99	one unit
100 and over	one, plus one for each additional 100 units or fraction thereof

To determine the total number of accessible units, more than one structure on a building site shall be considered as one building.

Toilet facilities in accessible units shall comply with Section 1711.

Modifications

Sec. 1214. A one-story carport entirely open on two or more sides need not have a fire separation between the carport and the dwelling.

Windows between the carport and the dwelling shall not be openable. Doors may be of any type, provided that any sash used in a door be fixed; doors between a dwelling and a carport shall be self-closing.

Existing Buildings

Sec. 1215. For existing buildings housing Division 1 Occupancies, see Appendix, Section 1215.

Chapters 13-16 NO REQUIREMENTS

Part IV

REQUIREMENTS BASED ON TYPES OF CONSTRUCTION

Chapter 17

CLASSIFICATION OF ALL BUILDINGS BY TYPES OF CONSTRUCTION AND GENERAL REQUIREMENTS

General

Sec. 1701. The requirements of Part IV are for the various types of construction and represent varying degrees of public safety and resistance to fire. Every building shall be classified by the building official into one of the types of construction set forth in Table No. 17-A. Any building which does not entirely conform to a type of construction set forth in Table No. 17-A shall be classified by the building official into a type having an equal or lesser degree of fire resistance.

No building or portion thereof shall be required to conform to the details of a type of construction higher than that type which meets the minimum requirements based on Occupancy (Part III) even though certain features of such building actually conform to a higher type of construction.

Where specific materials, types of construction or fire-resistive protection are required, such requirements shall be the minimum requirements and any materials, types of construction or fire-resistive protection which will afford equal or greater public safety or resistance to fire, as specified in this code, may be used.

Portions of buildings separated as specified in Section 505 (d) may be considered a separate building for classification of types of construction. When there is no such separation, the area of the entire building shall not exceed the least area permitted for the types of construction involved.

Structural Frame

Sec. 1702. The structural frame shall be considered to be the columns and the girders, beams, trusses and spandrels having direct connections to the columns and all other members which are essential to the stability of the building as a whole. The members of floor or roof panels which have no connection to the columns shall be considered secondary members and not a part of the structural frame.

Usable Space Under Floors

Sec. 1703. Usable space under the first story shall be enclosed except in Groups R, Division 3 and M Occupancies, and such enclosure when con-

structed of metal or wood shall be protected on the side of the usable space as required for one-hour fire-resistive construction. Doors shall be self-closing, of noncombustible construction or solid wood core, not less than 1¾ inches in thickness.

Roofs

Sec. 1704. Roof coverings shall be fire retardant except in Types III, IV and V buildings, where it may be as follows:

1. Ordinary roof coverings may be used on buildings of Group R, Division 3 or Group M Occupancies.

2. Ordinary roof coverings may be used on buildings of Group R, Division 1 Occupancies which are not more than two stories in height and have not more than 3000 square feet of projected roof area and there is a minimum of 10 feet from the extremity of the roof to the property line on all sides except for street fronts.

3. Class C roof coverings which comply with U.B.C. Standard No. 32-7 and roofs of No. 1 cedar or redwood shakes and No. 1 shingles constructed in accordance with the requirements of U.B.C. Standard No. 32-14 for Special Purpose Roofs may be used on Group A, Division 3; Group B, Divisions 1 and 2 and Group R, Division 1 Occupancies which are not more than two stories in height and have not more than 6000 square feet of projected roof area and there is a minimum of 10 feet from the extremity of the roof to the property lines on all sides except for street fronts.

Skylights shall be constructed as required in Chapter 34.

Penthouses shall be constructed as required in Chapter 36.

For use of plastics in roofs, see Chapter 52.

For Attics: Access and Area, see Section 3205. For Roof Drainage, see Section 3207.

Exceptions to Table No. 17-A

Sec. 1705. (a) General. The provisions of this section are intended as exceptions to construction requirements specified in Chapters 5 through 12 and 18 through 22.

(b) Fixed Partitions. Regardless of the fire-resistive requirements for permanent partitions, partitions dividing portions of stores, offices or similar places occupied by one tenant only, and which do not establish a corridor serving an occupant load of 30 or more, may be constructed of:

1. Noncombustible materials.
2. Fire-retardant treated wood.
3. One-hour fire-resistive construction.

4. Wood panels or similar light construction up to three-fourths the height of the room in which placed; when more than three-fourths the height of the room, such partitions shall have not less than the upper one-fourth of the partition constructed of glass.

For use of plastics in partitions, see Section 5210.

(c) **Folding, Portable or Movable Partitions.** Approved folding, portable or movable partitions need not have a fire-resistive rating, provided:

1. They do not block required exits (without providing alternative conforming exits) and they do not establish an exit corridor.
2. Their location is restricted by means of permanent tracks, guides or other approved methods.
3. Flammability shall be limited to materials having a flame-spread classification as set forth in Table No. 42-B for rooms or areas.

(d) **Walls Fronting on Streets or Yards.** Regardless of fire-resistive requirements for exterior walls, certain elements of the walls fronting on streets or yards having a width of 40 feet may be constructed as follows:

1. Bulkheads below show windows, show-window frames, aprons and showcases may be of combustible materials, provided the height of such construction does not exceed 15 feet above grade.
2. Wood veneer of boards not less than 1-inch nominal thickness or exterior type panels not less than $\frac{3}{8}$ -inch nominal thickness may be applied to walls provided the veneer does not exceed 15 feet above grade, and further provided such veneer shall be placed either directly against noncombustible surfaces or furred out from such surfaces not to exceed $1\frac{1}{2}$ inches with all concealed spaces fire-stopped as provided in Section 2517 (f). Where boards, panels and furring as described above comply with Section 407 as fire-retardant treated wood suitable for exterior exposure, the height above grade may be increased to 35 feet.

(e) **Trim.** Trim, picture molds, chair rails, baseboards, handrails and show-window backing may be of wood. Foam plastic trim covering not more than 10 percent of the wall or ceiling area may be used provided such trim (1) has a density of no less than 20 pounds per cubic foot, (2) has a maximum thickness of $\frac{1}{2}$ inch and a maximum width of 4 inches and (3) has a flame-spread rating no greater than 75. Unprotected wood doors and windows may be used except where openings are required to be fire protected.

Materials used for interior finish of walls and ceilings, including wainscoting, shall be as specified in Chapter 42.

(f) **Loading Platforms.** Exterior loading platforms may be of non-combustible construction or heavy timber construction with wood floors not less than 2-inch nominal thickness. Such wood construction shall not be carried through the exterior walls.

(g) **Insulating Boards.** Combustible insulating boards may be used under finished flooring.

Shaft Enclosures

Sec. 1706. (a) General. Openings extending vertically through floors shall be enclosed in a shaft of fire-resistive construction having the time period set forth in Table No. 17-A for "Shaft Enclosures." Protection for stairways shall be as specified in Sections 3308 and 3309.

required for the wall upon which they are erected. The height of the parapet shall be not less than 30 inches above the point where the roof surface and the wall intersect. Where the roof slopes toward a parapet at slopes greater than 2:12 the parapet shall extend to the same height as any portion of the roof that is within the distance where protection of wall openings would be required, but in no case shall the height be less than 30 inches.

Projections

Sec. 1710. Cornices, architectural appendages, eave overhangs, exterior private balconies and similar projections extending beyond the floor area as defined in Section 407 shall conform to the requirements of this section.

Projections from walls of Type I or II construction shall be of non-combustible materials.

Projections from walls of Type III, IV or V construction may be of non-combustible or combustible materials.

Combustible projections located where protection of openings is required shall be one-hour fire-resistive or heavy timber conforming to Section 2106.

Projections shall not extend more than 12 inches into the areas where openings are prohibited.

For projections extending over public property, see Chapter 45.

For combustible ornamentation, see Section 1705 (d).

Water Closet Compartments and Showers

Sec. 1711. (a) Floors and Walls. In other than dwelling units, toilet room floors shall have a smooth, hard, nonabsorbent surface such as portland cement, concrete, ceramic tile or other approved material which extends upward onto the walls at least 5 inches. Walls within water closet compartments and walls within 2 feet of the front and sides of urinals shall be similarly finished to a height of 4 feet and, except for structural elements, the materials used in such walls shall be of a type which is not adversely affected by moisture.

(b) Toilet Facilities. Each water closet stool shall be located in a clear space not less than 30 inches in width and have a clear space in front of the water closet stool of not less than 24 inches.

Where toilet facilities are provided on any floor where access by the physically handicapped is required by Table No. 33-A, at least one such facility for each sex shall comply with the requirement of this section. Except in dwelling units and guest rooms, such facilities must be available to all occupants. All doorways leading to such toilet rooms shall have a clear and unobstructed width of not less than 30 inches. Each such toilet room shall have the following:

1. A clear space of not less than 44 inches on each side of doors providing access to toilet rooms. This distance shall be measured at right angles to the face of the door when in the closed position. Not

more than one door may encroach into the 44-inch space.

2. Except in dwelling units and guest rooms, a clear space within the toilet room of sufficient size to inscribe a circle with a diameter not less than 60 inches. Doors in any position may encroach into this space by not more than 12 inches.
3. A clear space not less than 42 inches wide and 48 inches long in front of at least one water closet stool for the use of the handicapped. When such water closet stool is within a compartment, entry to the compartment shall have a clear width of 30 inches when located at the end and a clear width of 34 inches when located at the side. A door, if provided, shall not encroach into the required space in front of the water closet. Except for door swing, a clear unobstructed access not less than 44 inches in width shall be provided to toilet compartments designed for use by the handicapped.
4. Grab bars near each side or one side and the back of the toilet stool securely attached 32 inches to 34 inches above and parallel to the floor. Grab bars at the side shall be 42 inches long with the front end positioned 24 inches in front of the water closet stool. Grab bars at the back shall be not less than 30 inches long. Grab bars shall have an outside diameter of not less than 1 1/4 inches nor more than 1 1/2 inches and shall provide a clearance of 1 1/2 inches between the grab bar and adjacent surface. Grab bars need not be provided in Group R, Division 1 apartment houses.
5. When it can be established that the facilities are usable by a person in a wheelchair, dimensions other than those above shall be acceptable.

(c) **Toilet Room Facilities.** In other than Group R, Division 3, Group M, Group R, Division 1 apartment houses and Group B, Divisions 2 and 4 storage occupancies, toilet room facilities shall be as follows:

1. Except for the projection of bowls and waste piping, a clear unobstructed space 26 inches in width, 27 inches in height and 12 inches in depth shall be provided under at least one lavatory.
2. Where mirrors are provided, at least one shall be installed so that the bottom of the mirror is within 40 inches of the floor.
3. Where towel and disposal fixtures are provided, they shall be accessible to the physically handicapped and at least one shall be within 40 inches of the floor.

(d) **Shower Areas.** Showers in all occupancies shall be finished as specified in Subsection (a) to a height of not less than 70 inches above the drain inlet. Materials other than structural elements used in such walls shall be of a type which is not adversely affected by moisture.

(e) **Doors and Panels.** Doors and panels of shower and bathtub enclosures shall be substantially constructed from approved shatter-resistant materials. Hinged shower doors shall open outward.

(f) **Glazing for Shower and Bathtub Enclosures.** Glazing used in doors

and panels of shower and bathtub enclosures shall be fully tempered, laminated safety glass or approved plastic. When glass is used it shall have a minimum thickness of not less than $\frac{1}{8}$ inch when fully tempered, or $\frac{1}{4}$ inch when laminated, and shall pass the test requirements of U.B.C. Standard No. 54-2.

(g) **Plastics.** Plastics used in doors and panels of shower and bathtub enclosures shall be of a shatter-resistant type.

Water Fountains

Sec. 1712. Where water fountains are provided, at least one shall have a spout within 33 inches of the floor and shall have up-front, hand-operated controls. When fountains are located in an alcove, the alcove shall be not less than 32 inches in width.

Telephones

Sec. 1713. Where public telephones are provided, at least one shall be installed so that the handset, dial and coin receiver are within 54 inches of the floor. Unobstructed access within 12 inches of the telephone shall be provided. Such access shall be not less than 30 inches in width.

Clearances for Electric Ranges and Hot Plates

Sec. 1714. Gas and electric ranges or hot plates shall have clearances from combustible material, and ventilation in accordance with the Mechanical Code.

Helistops

Sec. 1715. (a) General. Helistops may be erected on buildings or other locations if they are constructed in accordance with this section.

(b) **Size.** The touchdown or landing area for helicopters of less than 3500 pounds shall be a minimum of 20 feet by 20 feet in size. The touchdown area shall be surrounded on all sides by a clear area having a minimum average width at roof level of 15 feet but with no width less than 5 feet.

(c) **Design.** Helicopter landing areas and the supports therefor on the roof of a building shall be of noncombustible construction. Landing areas shall be designed to confine any flammable liquid spillage to the landing area itself and provision shall be made to drain such spillage away from any exit or stairway serving the helicopter landing area or from a structure housing such exit or stairway.

(d) **Exits and Stairways.** Exits and stairways from helistops shall comply with the provisions of Chapter 33 of this code, except that all landing areas located on buildings or structures shall have two or more exits. For landing platforms or roof areas less than 60 feet in length, or less than 2000 square feet in area, the second exit may be a fire escape or ladder leading to the floor below.

(e) **Federal Aviation Approval.** Before operating helicopters from helistops, approval must be obtained from the Federal Aviation Agency.

Guardrails

Sec. 1716. All unenclosed floor and roof openings, open and glazed sides of landings and ramps, balconies or porches which are more than 30 inches above grade or floor below, and roofs used for other than service of the building shall be protected by a guardrail. Guardrails shall be not less than 42 inches in height. Open guardrail and stair railings shall have intermediate rails or an ornamental pattern such that a sphere 9 inches in diameter cannot pass through. The height of stair railings on open sides may be as specified in Section 3305 (j) in lieu of providing a guardrail. Ramps shall, in addition, have handrails when required by Section 3306.

EXCEPTIONS: 1. Guardrails need not be provided on the loading side of loading docks.

2. Guardrails for Group R, Division 3 and Group M, Division 1 Occupancies may be 36 inches in height.

3. Interior guardrails within individual dwelling units or guest rooms of Group R, Division 1 Occupancies may be 36 inches in height.

4. The open space between the intermediate rails or ornamental pattern of guardrails in areas of commercial and industrial type occupancies which are not accessible to the public may be increased such that a 12-inch-diameter sphere cannot pass through.

5. Guardrails on a balcony immediately in front of the first row of fixed seats and which are not at the end of an aisle may be 26 inches in height.

Foam Plastics

Sec. 1717. (a) General. Except where specifically exempted by Section 1717 (b), foam plastics shall have a flame-spread rating of not more than 75 and shall have a smoke-developed rating of not more than 450 when tested in accordance with U.B.C. Standard No. 42-1 in the thickness intended for use.

(b) Specific Requirements. The following requirements shall apply to all uses of foam plastics in or on the walls, ceiling or both, or in attics, roof or floors, crawl spaces or similar areas unless otherwise specifically approved in Section 1717 (c) or by other sections of this code. For trim, see Section 1705 (e).

1. Foam plastics may be used in the following locations:
 - A. Within the cavity of a masonry or concrete wall regardless of the type of construction.
 - B. On the room side surface of conforming walls or ceiling or other surfaces referred to in the first sentence of Section 1717 (b), provided the foam plastic is fully protected from the interior of the building by a thermal barrier of ½-inch gypsum wallboard having a finish rating of not less than 15 minutes or other approved material having an equivalent finish rating as determined by U.B.C. Standard No. 43-1. Thermal barriers shall be installed in a manner that they will remain in place for a minimum of 15 minutes under the same test conditions.
 - C. Within the wall cavity or as an element of combustible nonfire-

Chapter 18

TYPE I FIRE-RESISTIVE BUILDINGS

Definition

Sec. 1801. The structural elements in Type I fire-resistive buildings shall be of steel, iron, concrete or masonry.

Walls and permanent partitions shall be of noncombustible fire-resistive construction except that permanent nonbearing partitions of one-hour or two-hour fire-resistive construction, which are not part of a shaft enclosure, may have fire-retardant treated wood (see Section 407) within the assembly.

Materials of construction and fire-resistive requirements shall be as specified in Chapter 17.

Structural Framework

Sec. 1802. Structural framework shall be of structural steel or iron as specified in Chapter 27, reinforced concrete as in Chapter 26, or reinforced masonry as in Chapter 24.

For additional requirements for Group H Occupancies, see Section 902 (b).

Exterior Walls and Openings

Sec. 1803. (a) Exterior Walls. Exterior walls and all structural members shall comply with the requirements specified in Section 504 and the fire-resistive provisions set forth in Table No. 17-A.

EXCEPTIONS: 1. Nonbearing walls fronting on streets or yards having a width of at least 40 feet may be of unprotected noncombustible construction.

2. In Groups R, Division 1, and B Occupancies, exterior bearing walls may be of two-hour fire-resistive noncombustible construction where openings are permitted.

3. In other than Group H Occupancies, exterior nonbearing walls may be of one-hour fire-resistive noncombustible construction where unprotected openings are permitted and two-hour fire-resistive noncombustible construction where fire protection of openings is required.

(b) Openings in Walls. All openings in exterior walls shall conform to the requirements of Section 504 (b) and shall be protected by a fire assembly having a three-fourths-hour fire-protection rating when they are less than 20 feet from an adjacent property line or the center line of a street or public space.

No openings shall be permitted in exterior walls of Groups A, E, I, H and B, Divisions 1, 2 and 3 Occupancies less than 5 feet from the property line, and no openings in Groups B, Division 4, R and M Occupancies less than 3 feet from the property line.

Floors

Sec. 1804. (a) Wood Sleepers. Where wood sleepers are used for laying wood flooring on masonry or concrete fire-resistive floors, the space be-

tween the floor slab and the underside of the wood flooring shall be filled with noncombustible material or fire-stopped in such a manner that there will be no open spaces under the flooring which will exceed 100 square feet in area and such space shall be filled solidly under all permanent partitions so that there is no communication under the flooring between adjoining rooms.

EXCEPTION: Firestopping need not be provided in such floors when at or below grade level in gymnasiums.

(b) Mezzanine Construction. Mezzanine floors and supporting members shall be of one-hour noncombustible construction or of heavy timber construction as specified for floors in Section 2106 (e).

Not more than two mezzanine floors shall be in any room of a building.

No mezzanine floor or floors shall cover more than 33⅓ percent of the area of any room.

Stair Construction

Sec. 1805. Stairs and stair platforms shall be constructed of reinforced concrete, iron or steel with treads and risers of concrete, iron or steel. Brick, marble, tile or other hard noncombustible materials may be used for the finish of such treads and risers.

Stairs shall be designed and constructed as specified in Chapter 33.

Roofs

Sec. 1806. Roofs and their members other than the structural frame more than 25 feet above any floor, balcony or gallery may be of unprotected noncombustible materials. Heavy timber members in accordance with Section 2106 may be used for such unprotected members in one-story buildings.

When every part of the structural framework of the roof of a Group A or E Occupancy is not less than 25 feet above any floor, balcony or gallery, fire protection of all members of the roof construction including those of the structural frame may be omitted. Heavy timber members in accordance with Section 2106 may be used for such unprotected members in one-story buildings.

Where every part of the structural steel framework of the roof of a Group A or E Occupancy is more than 18 feet and less than 25 feet above any floor, balcony or gallery, the roof construction shall be protected by a ceiling of not less than one-hour fire-resistive construction.

Roof covering shall be fire-retardant roofing as specified in Section 3203.

Special Provisions for Group B, Division 2 Office Buildings and Group R, Division 1 Occupancies

Sec. 1807. (a) Scope. This section shall apply to all Group B, Division 2 office buildings and Group R, Division 1 Occupancies, each having floors used for human occupancy located more than 75 feet above the lowest

level of fire department vehicle access. Such buildings shall be provided with either an approved automatic sprinkler system in accordance with Section 1807 (c), or safe areas of refuge (compartmentation) in accordance with Section 1807 (1).

(b) **Certificate of Occupancy.** All mechanical and electrical equipment and other required life safety systems shall be approved and installed in accordance with approved plans and specifications pursuant to this section and shall be tested and proved to be in proper working condition to the satisfaction of the building official before issuance of the Certificate of Occupancy.

(c) **Automatic Sprinkler System.** When provided as required in Section 1807 (a), the automatic sprinkler system shall be provided throughout the building. The sprinkler system shall be designed using the parameters set forth in U.B.C. Standard No. 38-1 and the following:

1. Shutoff valves and a water flow device shall be provided for each floor. The sprinkler riser may be combined with the standpipe riser.
2. In Seismic Zones No. 2, No. 3 and No. 4, in addition to the main water supply, a secondary on-site supply of water equal to the hydraulically calculated sprinkler design demand plus 100 gallons per minute additional for the total standpipe system shall be provided. This supply shall be automatically available if the principal supply fails and shall have a duration of 30 minutes.

(d) **Smoke Detection Systems.** At least one approved smoke detector suitable for the intended use shall be installed in:

1. Every mechanical equipment, electrical, transformer, telephone equipment, elevator machine or similar room.
2. In the main return and exhaust air plenum of each air-conditioning system and located in a serviceable area downstream of the last duct inlet.
3. At each connection to a vertical duct or riser serving two or more stories from a return-air duct or plenum of an air-conditioning system. In Group R, Division 1 Occupancies, an approved smoke detector may be used in each return-air riser carrying not more than 5000 cfm and serving not more than 10 air inlet openings.

The actuation of any detector required by this section shall operate the voice alarm system and shall place into operation all equipment necessary to prevent the recirculation of smoke.

(e) **Alarm and Communication Systems.** The alarm and communication systems shall be designed and installed so that damage to any terminal unit or speaker will not render more than one zone of the system inoperative.

The voice alarm and public address system may be a combined system. When approved, the fire department communications system may be combined with the voice alarm system and the public address system.

Three communication systems which may be combined as set forth

above shall be provided as follows:

1. **Voice alarm system.** The operation of any smoke detector, sprinkler, water flow device or manual fire alarm station shall automatically sound an alert signal to the desired areas followed by voice instructions giving appropriate information and direction to the occupants.

The central control station shall contain controls for the voice alarm system so that a selective or general voice alarm may be manually initiated.

The system shall be supervised to cause the activation of an audible trouble signal in the central control station upon interruption or failure of the audiopath including amplifiers, speaker wiring, switches and electrical contacts and shall detect opens, shorts and grounds which might impair the function of the system.

The alarm shall be designed to be heard clearly by all occupants within the building or designated portions thereof as is required for the public address system.

2. **Public address system.** A public address communication system designed to be clearly heard by all occupants of the building shall operate from the central control station. It shall be established on a selective or general basis to the following terminal areas:

- A. Elevators.
- B. Elevator lobbies.
- C. Corridors.
- D. Exit stairways.
- E. Rooms and tenant spaces exceeding 1000 square feet in area.
- F. Dwelling units in apartment houses.
- G. Hotel guest rooms or suites.

3. **Fire department communication system.** A two-way fire department communication system shall be provided for fire department use. It shall operate between the central control station and every elevator, elevator lobby and entry to every enclosed exit stairway.

(f) **Central Control Station.** A central control station for fire department operations shall be provided in a location approved by the fire department. It shall contain:

1. The voice alarm and public address system panels.
2. The fire department communications panel.
3. Fire detection and alarm system annunciator panels.
4. Status indicator and controls for elevators.
5. Status indicators and controls for air-handling systems.
6. Controls for unlocking all stairway doors simultaneously.
7. Sprinkler valve and water-flow detector display panels.
8. Standby power controls and status indicators.
9. A telephone for fire department use with controlled access to the public telephone system.

with panic hardware.

3. At least one conforming exit door is located adjacent to each revolving door installed in a building.

4. The revolving door shall not be considered to provide any exit width.

Corridors and Exterior Exit Balconies

Sec. 3304. (a) General. This section shall apply to every corridor serving as a required exit for an occupant load of 10 or more except as provided in Subsection (b) for Group R, Divisions 1 and 3 Occupancies. For the purposes of the section, the term "corridor" shall include "exterior exit balconies" and any covered or enclosed exit passageway, including walkways, tunnels and malls. Partitions, rails, counters and similar space dividers not over 5 feet, 9 inches in height above the floor shall not be construed to form corridors.

Exit corridors shall be continuous until egress is provided from the building and shall not be interrupted by intervening rooms.

EXCEPTION: Foyers, lobbies or reception rooms constructed as required for corridors shall not be construed as intervening rooms.

(b) Width. Every corridor serving an occupant load of 10 or more shall be not less in width than 44 inches. Regardless of occupant load, corridors in Group R, Division 3 Occupancies and within dwelling units in Group R, Division 1 Occupancies shall have a minimum width of 36 inches. For special requirements for Groups E and I Occupancies, see Sections 3317 and 3319.

(c) Height. Corridors and exterior exit balconies shall have a clear height of not less than 7 feet measured to the lowest projection from the ceiling.

(d) Projections. The required width of corridors shall be unobstructed.

EXCEPTION: Handrails and doors, when fully opened, shall not reduce the required width by more than 7 inches. Doors in any position shall not reduce the required width by more than one-half. Other nonstructural projections such as trim and similar decorative features may project into required width 1½ inches on each side.

(e) Access to Exits. When more than one exit is required, they shall be so arranged that it is possible to go in either direction from any point in a corridor to a separate exit, except for dead ends not exceeding 20 feet in length.

(f) Changes in Elevation. When a corridor or exterior exit balcony is accessible to an elevator, changes in elevation of the floor shall be made by means of a ramp.

(g) Construction. Walls of corridors serving an occupant load of 30 or more shall be of not less than one-hour fire-resistive construction and the ceilings shall be not less than that required for a one-hour fire-resistive floor or roof system.

EXCEPTIONS: 1. One-story buildings housing Group B, Division 4 Occupancies.

2. Corridors more than 30 feet in width where occupancies served by such corridors have at least one exit independent from the corridor.
3. Exterior sides of exterior exit balconies.

When the ceiling of the entire story is an element of a one-hour fire-resistive floor or roof system, the corridor wall may terminate at the ceiling. When the room side fire-resistive membrane of the corridor wall is carried through to the underside of a fire-resistive floor or roof above, the corridor side of the ceiling may be protected by the use of ceiling materials as required for one-hour floor or roof system construction or the corridor ceiling may be of the same construction as the corridor walls.

Ceilings of noncombustible construction may be suspended below the fire-resistive ceiling.

For wall and ceiling finish requirements, see Table No. 42-B.

(h) **Openings.** Where corridor walls are required to be of one-hour fire-resistive construction by Subsection (g) above, every door opening shall be protected by a tight-fitting smoke and draft control door assembly having a fire-protection rating of not less than 20 minutes when tested in accordance with U.B.C. Standard No. 43-2 without the hose stream test. The door and frame shall bear an approved label or other identification showing the rating thereof, the name of the manufacturer and the identification of the service conducting the inspection of materials and workmanship at the factory during fabrication and assembly. Doors shall be maintained self-closing or shall be automatic closing in accordance with Section 4306 (b) 2. Smoke and draft control door assemblies shall be provided with a gasket so installed as to provide a seal where the door meets the stop on both sides and across the top. Other interior openings shall be fixed and protected by approved ¼-inch-thick wired glass installed in steel frames. The total area of all openings, other than doors, in any portion of an interior corridor shall not exceed 25 percent of the area of the corridor wall of the room which it is separating from the corridor. For duct openings, see Section 4306. Viewports may be installed if they require a hole not larger than 1 inch in diameter through the door, have at least a ¼-inch-thick glass disc and the holder is of metal which will not melt out when subject to temperatures of 1700°F.

EXCEPTION: Protection of openings in the interior walls of exterior exit balconies is not required.

(i) **Location on Property.** Exterior exit balconies shall not be located in an area where openings are required to be protected due to location on the property.

Stairways

Sec. 3305. (a) General. Every stairway serving any building or portion thereof shall conform to the requirements of this section.

EXCEPTION: Stairs or ladders used only to attend equipment are exempt from the requirements of this section.

(b) **Width.** Stairways serving an occupant load of more than 50 shall be

not less in width than 44 inches. Stairways serving an occupant load of 50 or less may be 36 inches wide. Private stairways serving an occupant load of less than 10 may be 30 inches wide.

Handrails may project into the required width a distance of 3½ inches from each side of a stairway. Other nonstructural projections such as trim and similar decorative features may project into required width 1½ inches on each side.

(c) **Rise and Run.** The rise of every step in a stairway shall be not less than 4 inches nor greater than 7½ inches. Except as permitted in Subsections (d) and (f), the run shall be not less than 10 inches as measured horizontally between the vertical planes of the furthest projection of adjacent treads. Except as permitted in Subsections (d), (e) and (f), the largest tread run within any flight of stairs shall not exceed the smallest by more than ¼ inch. The greatest riser height within any flight of stairs shall not exceed the smallest by more than ¼ inch.

EXCEPTIONS: 1. Private stairways serving an occupant load of less than 10 and stairways to unoccupied roofs may be constructed with an 8-inch maximum rise and 9-inch minimum run.

2. Where the bottom riser adjoins a sloping public way, walk or driveway having an established grade and serving as a landing, a variation in height of the bottom riser of not more than 3 inches in every 3 feet of stairway width is permitted.

(d) **Winding Stairways.** In Group R, Division 3 Occupancies and in private stairways in Group R, Division 1 Occupancies, winders may be used if the required width of run is provided at a point not more than 12 inches from the side of the stairway where the treads are the narrower, but in no case shall any width of run be less than 6 inches at any point.

(e) **Circular Stairways.** Circular stairs may be used as an exit, provided the minimum width of run is not less than 10 inches and the smaller radius is not less than twice the width of the stairway. The largest tread width or riser height within any flight of stairs shall not exceed the smallest by more than ¼ inch.

(f) **Spiral Stairways.** In Group R, Division 3 Occupancies and in private stairways within individual units of Group R, Division 1 Occupancies, spiral stairways may be installed. Such stairways may be used for required exits when the area served is limited to 400 square feet.

The tread must provide a clear walking area measuring at least 26 inches from the outer edge of the supporting column to the inner edge of the handrail. A run of at least 7½ inches is to be provided at a point 12 inches from where the tread is the narrowest. The rise must be sufficient to provide 6-foot 6-inch headroom. The rise shall not exceed 9½ inches.

(g) **Landings.** Every landing shall have a dimension measured in the direction of travel equal to the width of the stairway. Such dimension need not exceed 4 feet when the stair has a straight run. A door swinging over a landing shall not reduce the width of the landing to less than one-half its required width at any position in its swing nor by more than 7 inches when

fully open. See Section 3303 (i).

EXCEPTION: Stairs serving an unoccupied roof are exempt from these provisions.

(h) **Basement Stairways.** Where a basement stairway and a stairway to an upper story terminate in the same exit enclosure, an approved barrier shall be provided to prevent persons from continuing on into the basement. Directional exit signs shall be provided as specified in Section 3312 (b).

(i) **Distance Between Landings.** There shall be not more than 12 feet vertically between landings.

(j) **Handrails.** Stairways shall have handrails on each side, and every stairway required to be more than 88 inches in width shall be provided with not less than one intermediate handrail for each 88 inches of required width. Intermediate handrails shall be spaced approximately equal within the entire width of the stairway.

EXCEPTIONS: 1. Stairways 44 inches or less in width and stairways serving one individual dwelling unit in Group R, Division 1 or 3 Occupancies may have one handrail, except that such stairways open on one or both sides shall have handrails provided on the open side or sides.

2. Private stairways 30 inches or less in height may have handrails on one side only.

Handrails shall be placed not less than 30 inches nor more than 34 inches above the nosing of treads. They shall be continuous the full length of the stairs and except for private stairways at least one handrail shall extend not less than 6 inches beyond the top and bottom risers, and ends shall be returned or shall terminate in newel posts or safety terminals.

Handrails projecting from a wall shall have a space of not less than 1½ inches between the wall and the handrail. The handgrip portion of handrails shall be not less than 1¼ inches nor more than 2 inches in cross-sectional dimension and shall have a smooth surface with no sharp corners.

(k) **Guardrails.** See Section 1716.

(l) **Exterior Stairway Protection.** All openings in the exterior wall below or within 10 feet, measured horizontally, of an exterior exit stairway serving a building over two stories in height shall be protected by a self-closing fire assembly having a three-fourths-hour fire-resistive rating.

EXCEPTION: Openings may be unprotected when two separated exterior stairways serve an exterior exit balcony.

(m) **Stairway Construction—Interior.** Interior stairways shall be constructed as specified in Part V of this code.

Where there is enclosed usable space under stairs, the walls and soffits of the enclosed space shall be protected on the enclosed side as required for one-hour fire-resistive construction. See Section 3308.

All required interior stairways which extend to the top floor in any building four or more stories in height shall have provided at the highest point of the stair shaft an approved hatch openable to the exterior not less than 16 square feet in area with a minimum dimension of 2 feet.

EXCEPTION: The hatch shall not be required on smokeproof enclosures or on stairways that extend to the roof with an opening onto that roof.

(n) **Stairway Construction—Exterior.** Exterior stairways shall be of noncombustible material except that on Types III and IV buildings not exceeding two stories in height, and on Type V buildings, they may be of wood not less than 2 inches in nominal thickness.

Exterior stairways shall not project into yards where protection of openings is required.

Where there is enclosed usable space under stairs, the walls and soffits of the enclosed space shall be protected on the enclosed side as required for one-hour fire-resistive construction.

(o) **Stairway to Roof.** In every building four or more stories in height, one stairway shall extend to the roof surface, unless the roof has a slope greater than four in 12.

(p) **Headroom.** Every required stairway shall have a headroom clearance of not less than 6 feet 6 inches. Such clearances shall be established by measuring vertically from a plane parallel and tangent to the stairway tread nosing to the soffit above at all points.

(q) **Stairway Numbering System.** An approved sign shall be located at each floor level landing in all enclosed stairways of buildings four or more stories in height. The sign shall indicate the floor level, the terminus of the top and bottom of the stairway and the identification of the stairway. The sign shall be located approximately 5 feet above the floor landing in a position which is readily visible when the door is in the open or closed position. Signs shall comply with the requirements of U.B.C. Standard No. 33-2.

Ramps

Sec. 3306. (a) General. Ramps used as exits shall conform to the provisions of this section.

(b) **Width.** The width of ramps shall be as required for stairways.

(c) **Slope.** ~~Ramps required by Table No. 33-A shall not exceed a slope of one vertical to 12 horizontal. The slope of other ramps shall not exceed one vertical to 8 horizontal.~~

When provided with fixed seating, the main floor of the assembly room of a Group A, Division 1, Division 2, 2.1 or 3 Occupancy may have a slope not to exceed one vertical to five horizontal.

(d) **Landings.** Ramps having slopes greater than one vertical to 15 horizontal shall have landings at the top and bottom, and at least one intermediate landing shall be provided for each 5 feet of rise. Top landings and intermediate landings shall have a dimension measured in the direction of ramp run of not less than 5 feet. Landings at the bottom of ramps shall have a dimension in the direction of ramp run of not less than 6 feet.

Doors in any position shall not reduce the minimum dimension of the landing to less than 42 inches and shall not reduce the required width by more than 3½ inches when fully open.

Chapter 37

MASONRY OR CONCRETE CHIMNEYS, FIREPLACES AND BARBECUES

Scope

Sec. 3701. Chimneys, flues, fireplaces and barbecues, and their connections, carrying products of combustion shall conform to the requirements of this chapter.

Definitions

Sec. 3702. BARBECUE is a stationary open hearth or brazier, either fuel fired or electric, used for food preparation.

CHIMNEY is a hollow shaft containing one or more passageways, vertical or nearly so, for conveying products of combustion to the outside atmosphere.

CHIMNEY, FACTORY-BUILT, is a chimney manufactured at a location other than the building site and composed of listed factory-built components assembled in accordance with the terms of the listing to form the completed chimney.

MASONRY CHIMNEY is a chimney of masonry units, bricks, stones or listed masonry chimney units lined with approved flue liners. For the purpose of this chapter, masonry chimneys shall include reinforced concrete chimneys.

CHIMNEY CLASSIFICATIONS:

Chimney, Residential Appliance-type, is a factory-built or masonry chimney suitable for removing products of combustion from residential-type appliances producing combustion gases not in excess of 1000°F. measured at the appliance flue outlet.

Chimney, Low-heat Industrial Appliance-type, is a factory-built, masonry or metal chimney suitable for removing the products of combustion from fuel-burning low-heat appliances producing combustion gases not in excess of 1000°F. under normal operating conditions but capable of producing combustion gases of 1400°F. during intermittent forced firing for periods up to one hour. All temperatures are measured at the appliance flue outlet.

Chimney, Medium-heat Industrial Appliance-type, is a factory-built, masonry or metal chimney suitable for removing the products of combustion from fuel-burning medium-heat appliances producing combustion gases not in excess of 2000°F. measured at the appliance flue outlet.

Chimney, High-heat Industrial Appliance-type, is a factory-built, masonry or metal chimney suitable for removing the products of combustion from fuel-burning high-heat appliances producing combustion gases in excess of 2000°F. measured at the appliance flue outlet.

CHIMNEY CONNECTOR is the pipe or breeching which connects a

fuel-burning appliance to a chimney. (See Chapter 9, Mechanical Code.)

CHIMNEY LINER is a lining material of fireclay or other approved material that meets the requirements of U.B.C. Standard No. 37-1.

FIREBRICK is a refractory brick which meets the requirements of U.B.C. Standard No. 37-1.

FIREPLACE is a hearth and fire chamber or similarly prepared place in which a fire may be made and which is built in conjunction with a chimney.

Factory-built Fireplace is a fireplace composed of listed factory-built components assembled in accordance with the terms of listing to form the completed fireplace.

Masonry Fireplace is a hearth and fire chamber of solid masonry units such as bricks, stones, masonry units, or reinforced concrete provided with a suitable chimney.

FIREPLACE STOVE is a chimney-connected, solid-fuel-burning stove having part of its fire chamber open to the room.

Chimneys General

Sec. 3703. (a) Chimney Support. Chimneys shall be designed, anchored, supported and reinforced as required in this chapter and applicable provisions of Chapters 23, 24, 26, 27 and 29 of this code. A chimney shall not support any structural load other than its own weight unless designed as a supporting member.

(b) Construction. Each chimney shall be so constructed as to safely convey flue gases not exceeding the maximum temperatures for the type of construction as set forth in Table No. 37-B and shall be capable of producing a draft at the appliance not less than that required for safe operation.

(c) Clearance. Clearance to combustible material shall be as required by Table No. 37-B.

(d) Lining. When required by Table No. 37-B, chimneys shall be lined with fireclay flue tile, firebrick, molded refractory units or other approved lining not less than $\frac{3}{8}$ inch thick as set forth in Table No. 37-B. Chimney liners shall be carefully bedded in approved mortar with close-fitting joints left smooth on the inside.

(e) Area. Chimney passageways shall be not smaller in area than the vent connection on the appliance attached thereto nor less than that set forth in Table No. 37-A, unless engineering methods approved by the building official have been used to design the system.

(f) Height and Termination. Every chimney shall extend above the roof and the highest elevation of any part of a building as shown in Table No. 37-B. For altitudes over 2000 feet, the building official shall be consulted in determining the height of the chimney.

All incinerator chimneys shall terminate in a substantially constructed spark arrester having a mesh not exceeding $\frac{3}{4}$ inch.

(g) **Cleanouts.** Cleanout openings shall be provided at the base of every masonry chimney.

Masonry Chimneys

Sec. 3704. (a) Design. Masonry chimneys shall be designed and constructed to comply with Section 3703 (b) and Section 3704 (b).

(b) **Walls.** Walls of masonry chimneys shall be constructed as set forth in Table No. 37-B.

(c) **Reinforcing and Seismic Anchorage.** Unless a specific design is provided, every masonry or concrete chimney in Seismic Zones No. 2, No. 3 and No. 4 shall be reinforced with not less than four No. 4 steel reinforcing bars conforming to the provisions of Chapter 24 or 26 of this code. The bars shall extend the full height of the chimney and shall be spliced in accordance with the applicable requirements of Chapters 24 and 26. The bars shall be tied horizontally at 18-inch intervals with not less than ¼-inch-diameter steel ties. Two ties shall also be placed at each bend in vertical bars. Where the width of the chimney exceeds 40 inches, two additional No. 4 vertical bars shall be provided for each additional flue incorporated in the chimney or for each additional 40 inches in width or fraction thereof.

In Seismic Zones No. 2, No. 3 and No. 4, all masonry and concrete chimneys shall be anchored at each floor or ceiling line more than 6 feet above grade, except when constructed completely within the exterior walls of the building. Anchorage shall consist of two ⅜-inch by 1-inch steel straps cast at least 12 inches into the chimney with a 180-degree bend with a 6-inch extension around the vertical reinforcing bars in the outer face of the chimney.

Each strap shall be fastened to the structural framework of the building with two ½-inch bolts per strap. Where the joists do not head into the chimney the anchor straps shall be connected to 2-inch by 4-inch ties crossing a minimum of four joists. The ties shall be connected to each joist with two 16d nails. Metal chimneys shall be anchored at each roof and ceiling with two 1½-inch by ⅝-inch metal straps looped around the outside of the chimney insulation and nailed with six 8d nails per strap to the roof or ceiling framing.

(d) **Chimney Offset.** Masonry chimneys may be offset at a slope of not more than 4 inches in 24 inches but not more than one-third of the dimension of the chimney in the direction of the offset. Where lined, the lining shall be cut to fit.

(e) **Change in Size or Shape.** Changes in the size or shape of a masonry chimney, where the chimney passes through the roof, shall not be made within a distance of 6 inches above or below the roof joists or rafters.

(f) **Separation of Masonry Chimney Passageways.** Two or more flues in a chimney shall be separated by masonry not less than 4 inches thick bonded into the masonry wall of the chimney.

(g) **Inlets.** Every inlet to any masonry chimney shall enter the side there-

BIBLIOGRAPHY

John A. Krout, The Aged in Rural America, (New York: Greenwood Press, 1986),: pg 183.

Henry J. Aaron and Gary Burtless, Retirement and Economic Behavior, (Washington, D.C.: The Brookings Institution, 1984),: pg 352.

Helen Dennis, Retirement Preparation, (Massachusetts Toronto: Lexington Books, 1984),: pg 206.

Nancy J. Osgood, Senior Settlers, (New York: Praeger Publishers, 1982),: pg 296.

Nancy J. Osgood, Suicide in the Elderly, (Richmond, Virginia: Aspen Publication, 1985),: pg 241.

Thesis Documentation

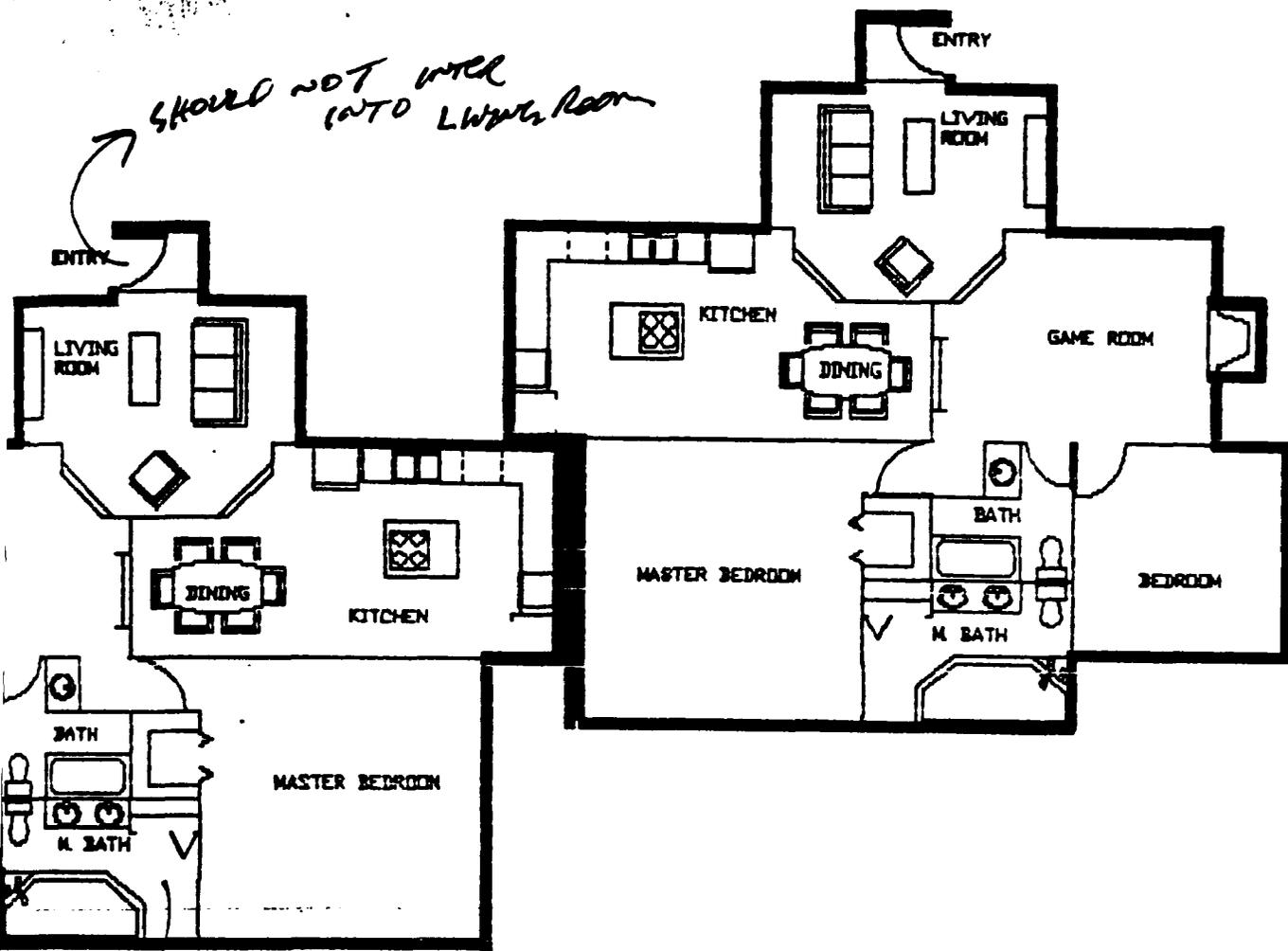
The Greater Southwest Retirement Village was a project that changed tremendously throughout the semester. The first change occurred the very first day when I realised that I could construct my housing units in a factory and have them sent out to the site. Therefore research had to be done on the concept of premanufactured housing. Once that was done, I had to begin to workout my site analysis.

During the site phase of the project, I looked at the possibility of stacked housing, duplex housing, and finally row housing as my solution. Among the constraints I had to deal with was a lake that penetrated my site and a newly formed golf course that was to also be located in my site. Furthermore, I had to battle the problem of RV parking as well as a residential parking on my site. After solving these problems my solution was evident as seen in the photo of the site plan. I finally decided to place parking on my site, but only on the perimeter of the site. Thus, I was able to leave pedestrian paths open, and incorporate the lake in to my overall site plan.

The next hurdle that I had to face was that of designing the actual units for residents to live. In solving this problem I looked at several differnt ways of organizing my units, until I came up with the idea of interchangeable units. The way these units functioned was that of allowing one efficiency unit to have the ability to interchange to a two or three bedroom unit with a game room. In addition,

mini garages were created to allow for storage of golf carts and other necessities.

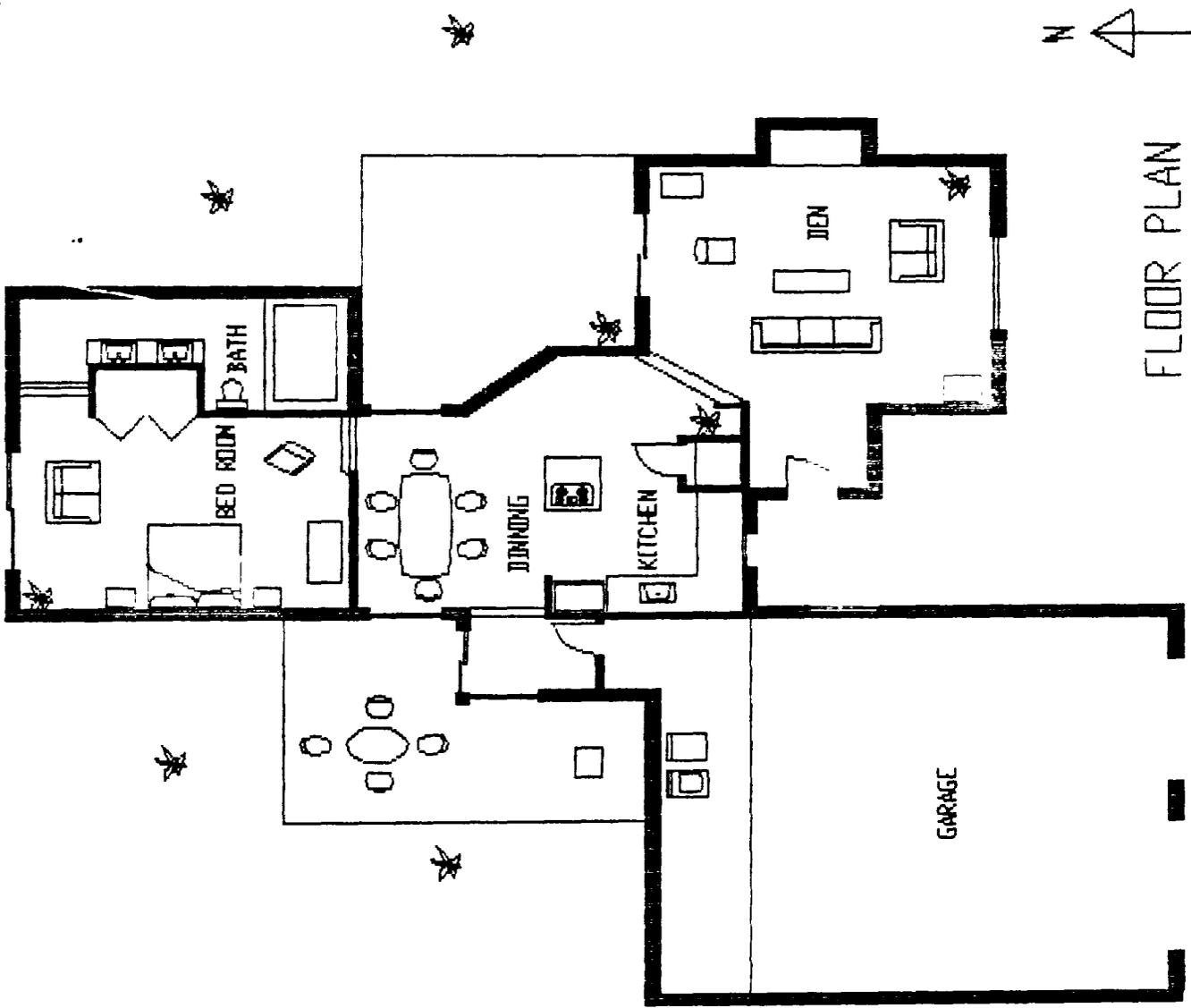
Upon solving this phase of the problem, the next step was that of determining what the building will look like. Several color and design studies were done to solve this problem. Next, the solution was to have five different but similar elevations that would allow for the change of pace as one was walking through my facility. Furthermore, with the basic pastel colors and matching trim the complex was able to take on the look of a small subdivision. Finally as an added touch, roof gardens were designed as to allow for private relaxation. The final obstacle of the project was that of figuring out the details of how the design went together. In this portion of the design, parts were designed to fit together in a way that will make it easy to change parts if the client wanted to. Also as a final note windows and planters for the roof gardens were also designed in a way that they seemed to be a part of the puzzle.



NEED PRIVACY FOR MASTER BED.

~~OFFER~~ ORGANIZE UNITS. TO SOME TYPE STYLE OF THEIR OWN.

2/9/88



N

FLOOR PLAN

SCALE 1" = 20'

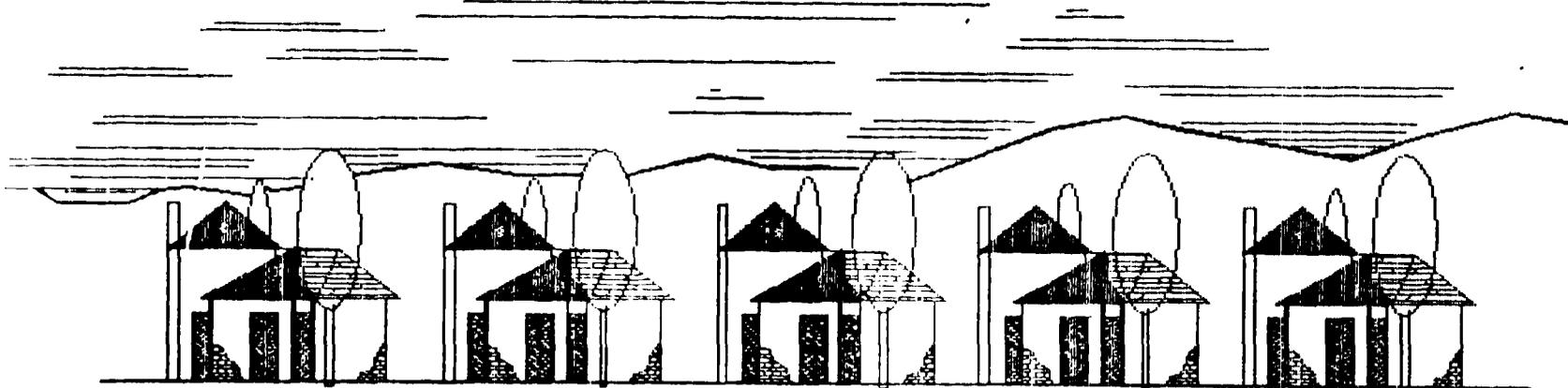
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SITE ELEVATIONS

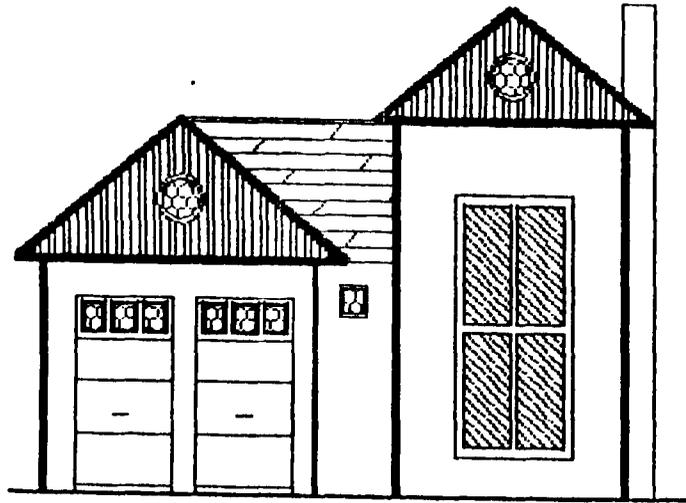
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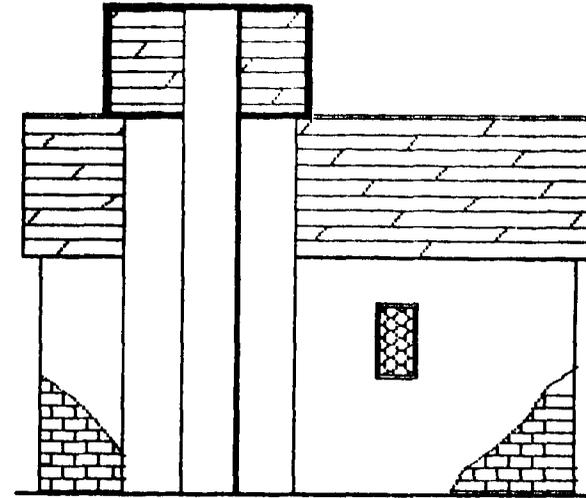
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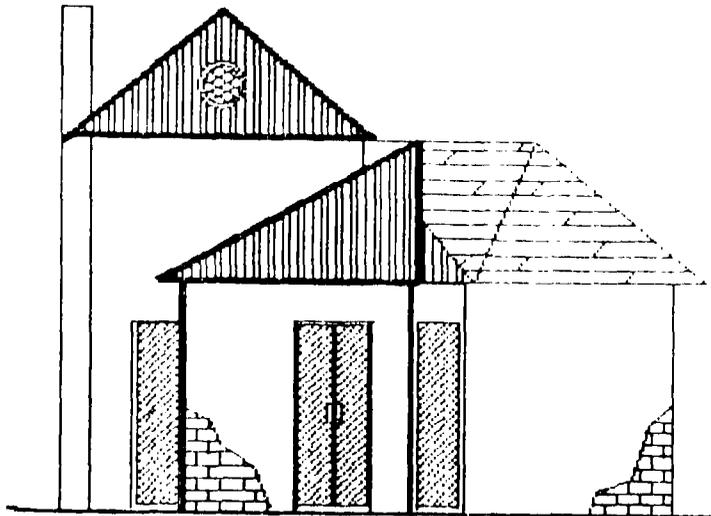
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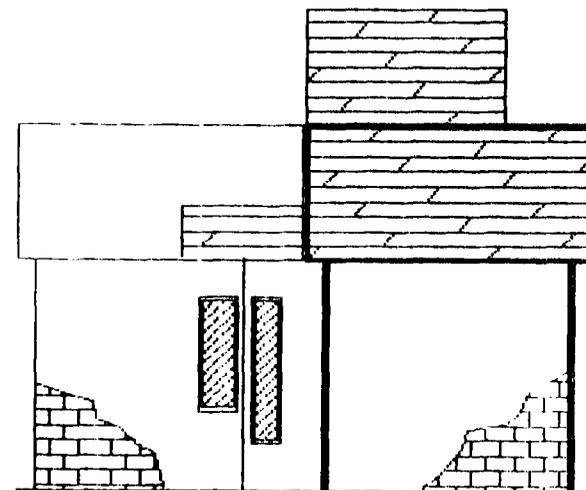
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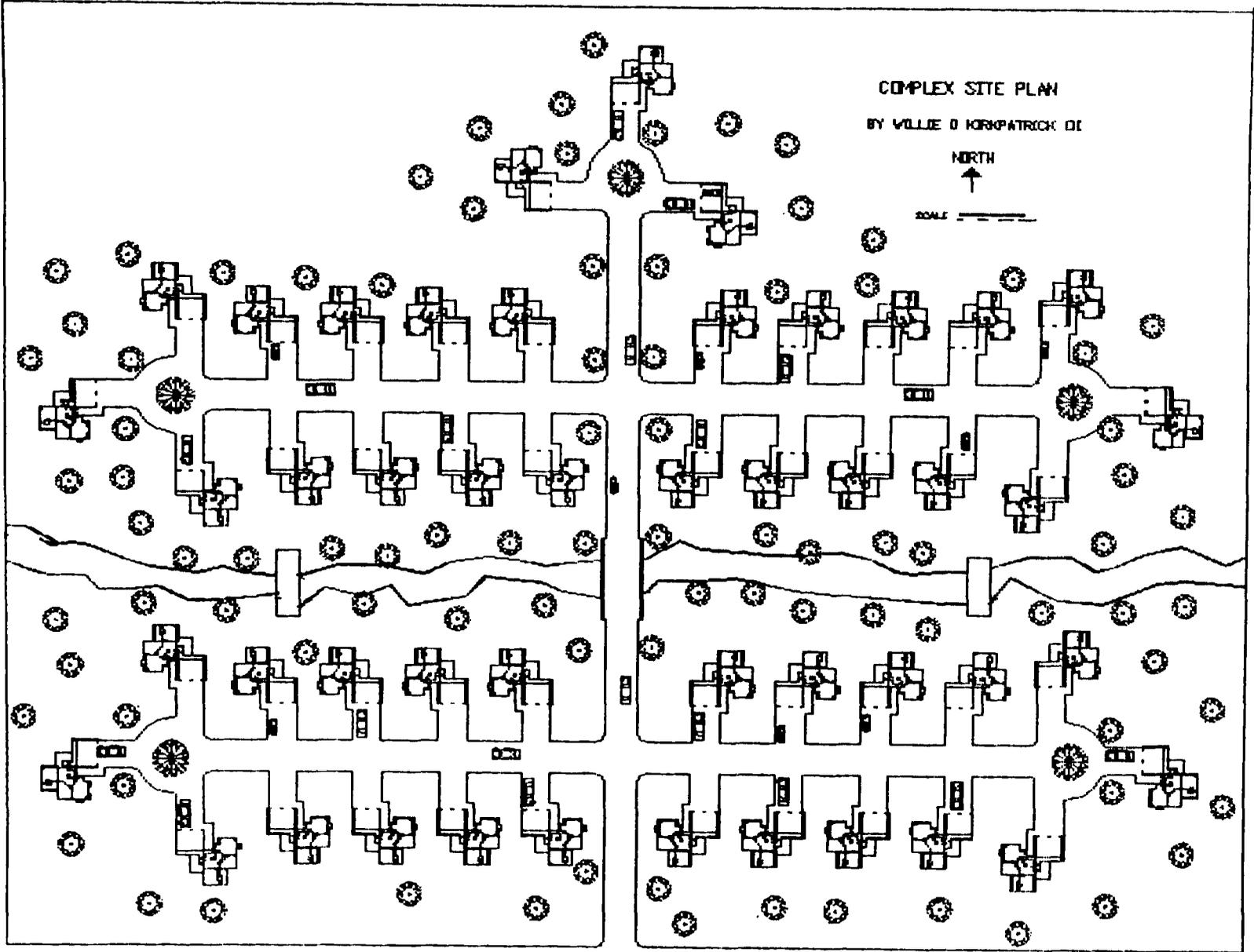
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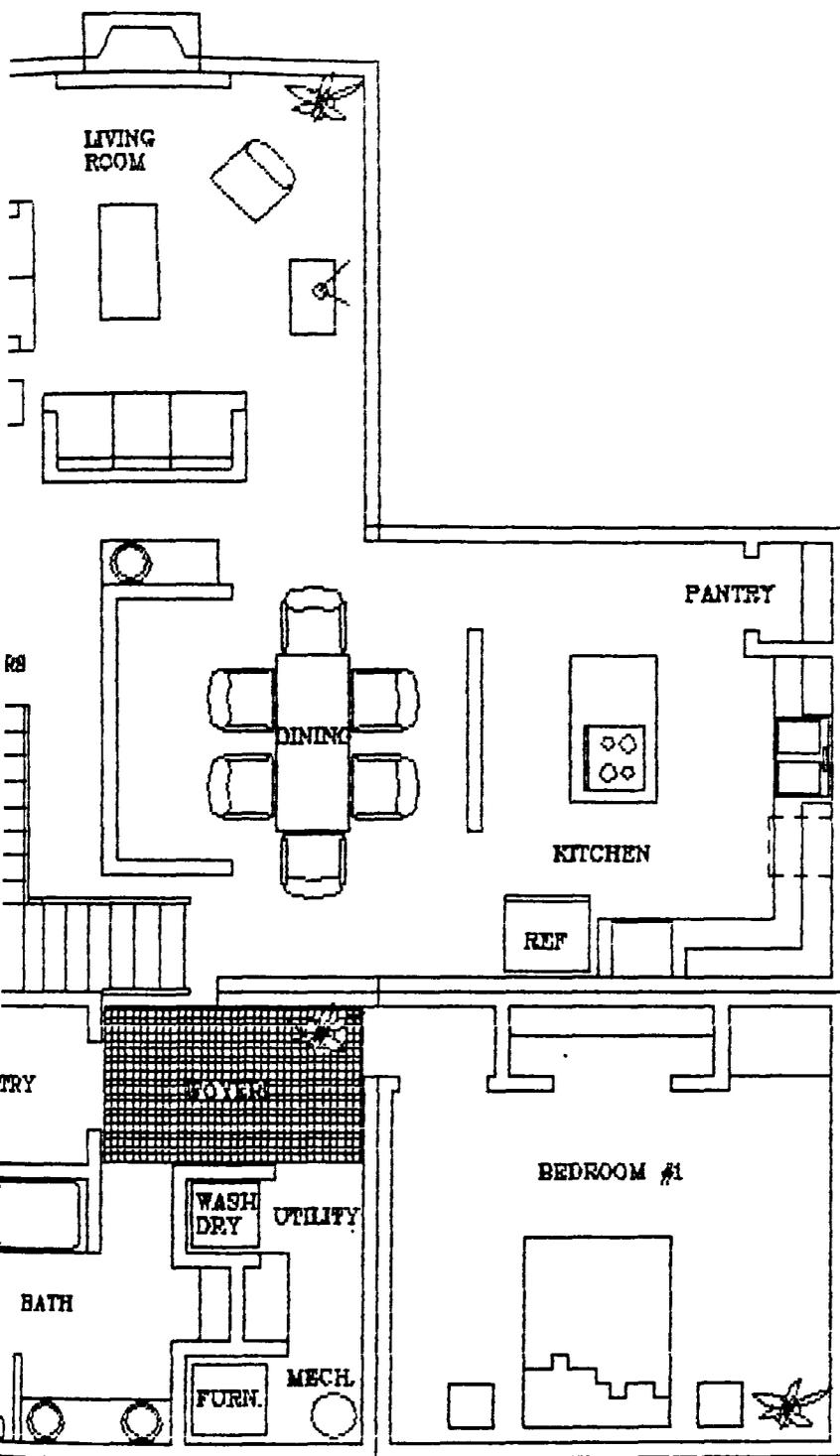


NORTH ELEVATION



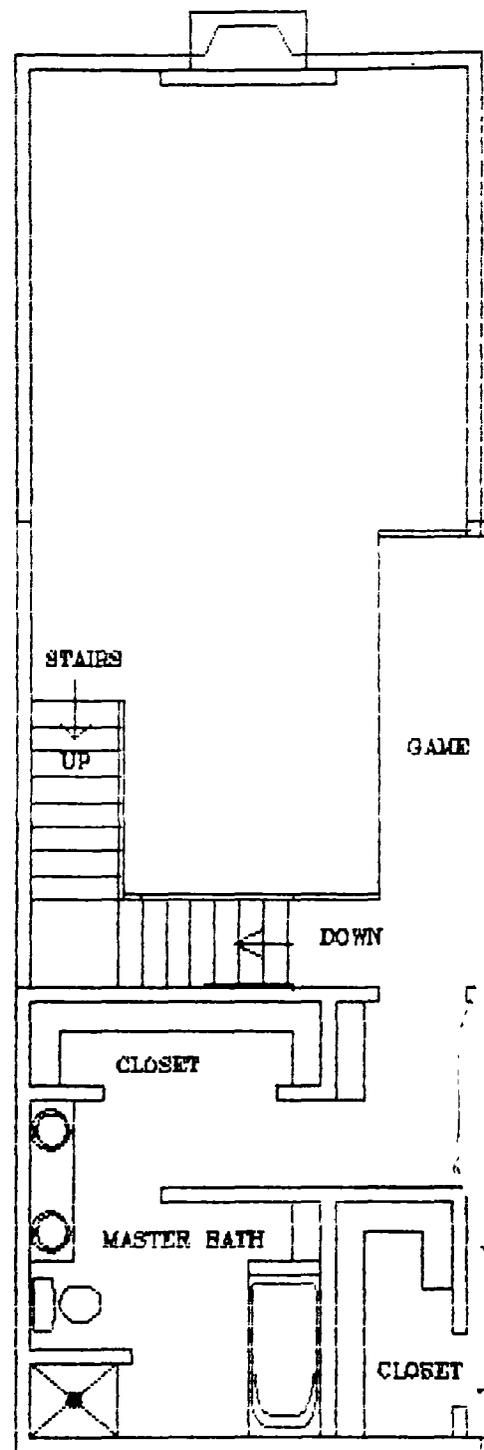
EAST ELEVATION



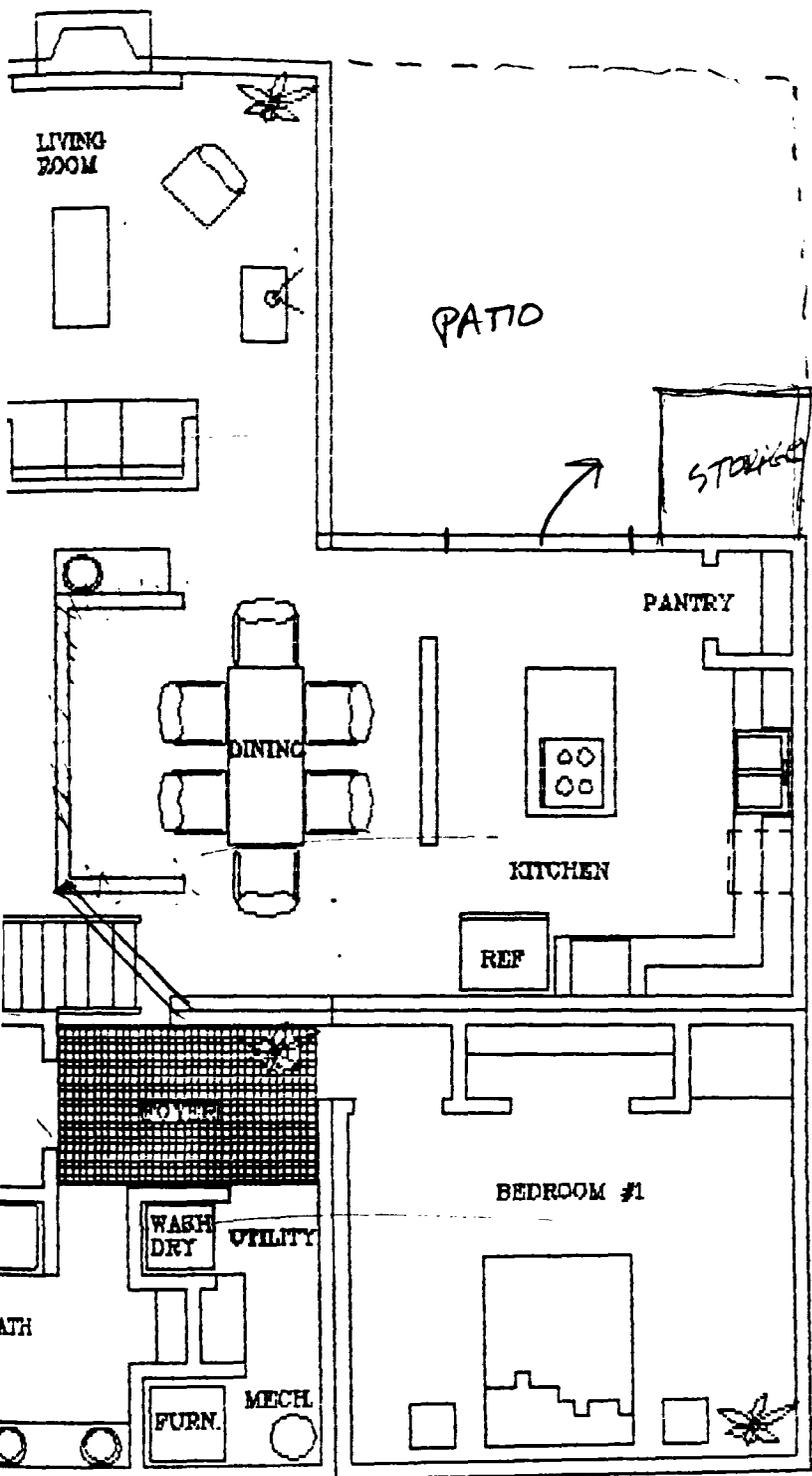


1 BEDROOM UNIT C

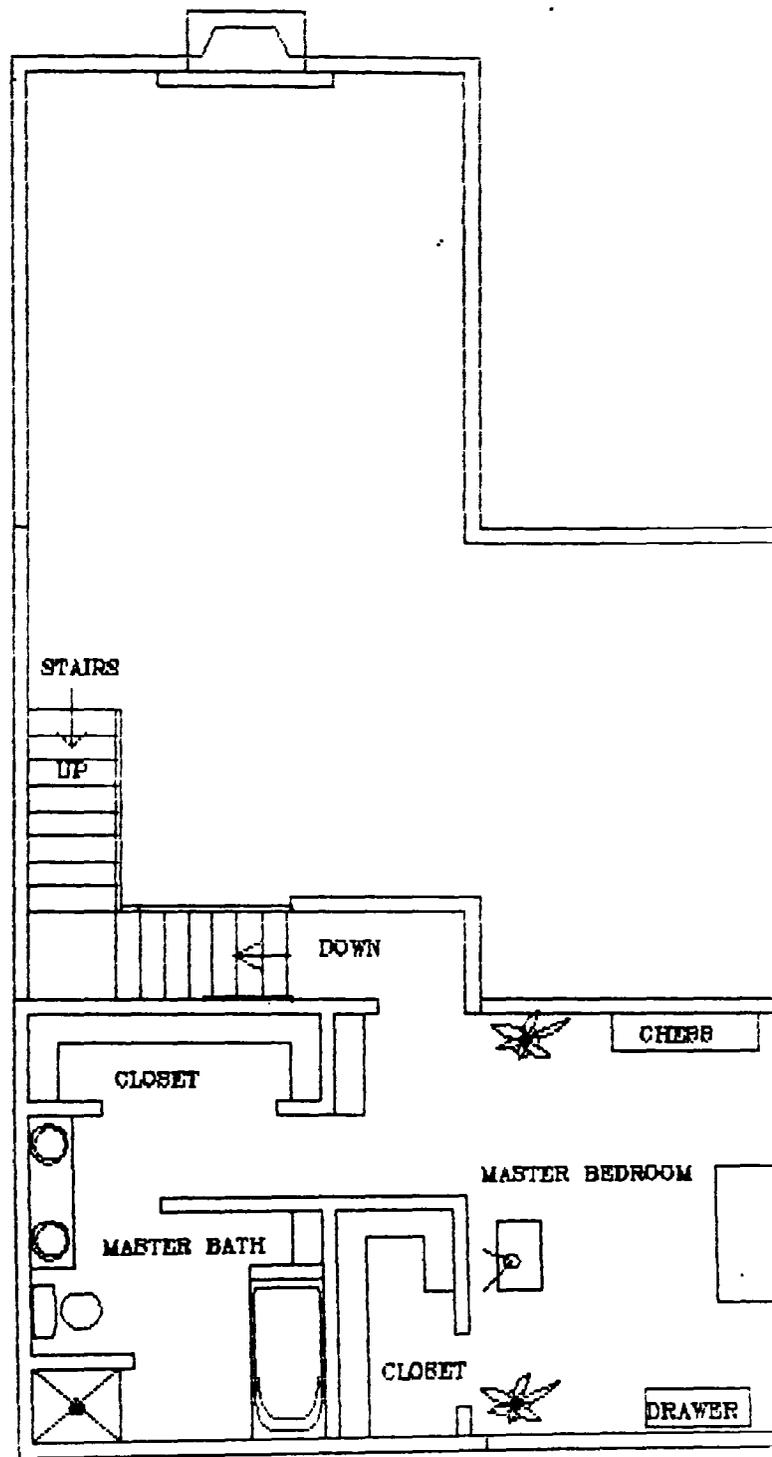
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SECOND FLOOR UNIT



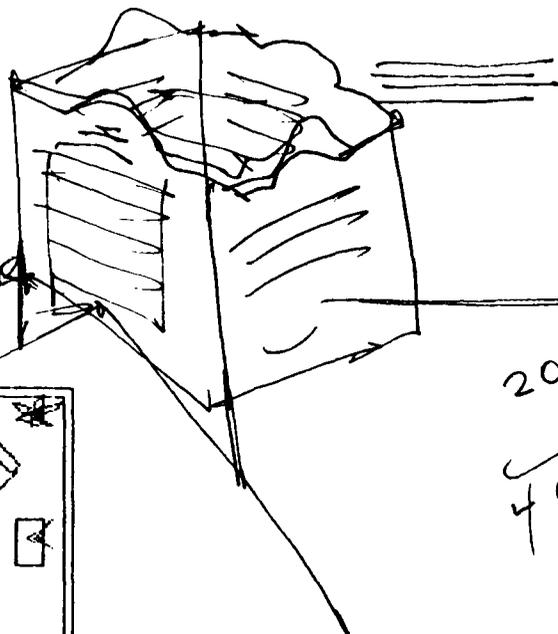
BEDROOM UNIT B



SECOND FLOOR UNIT B

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HVAC



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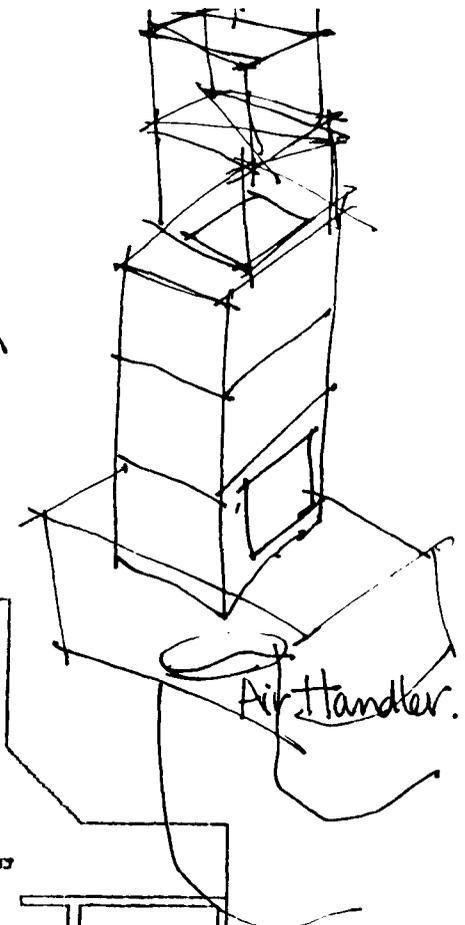
cooling

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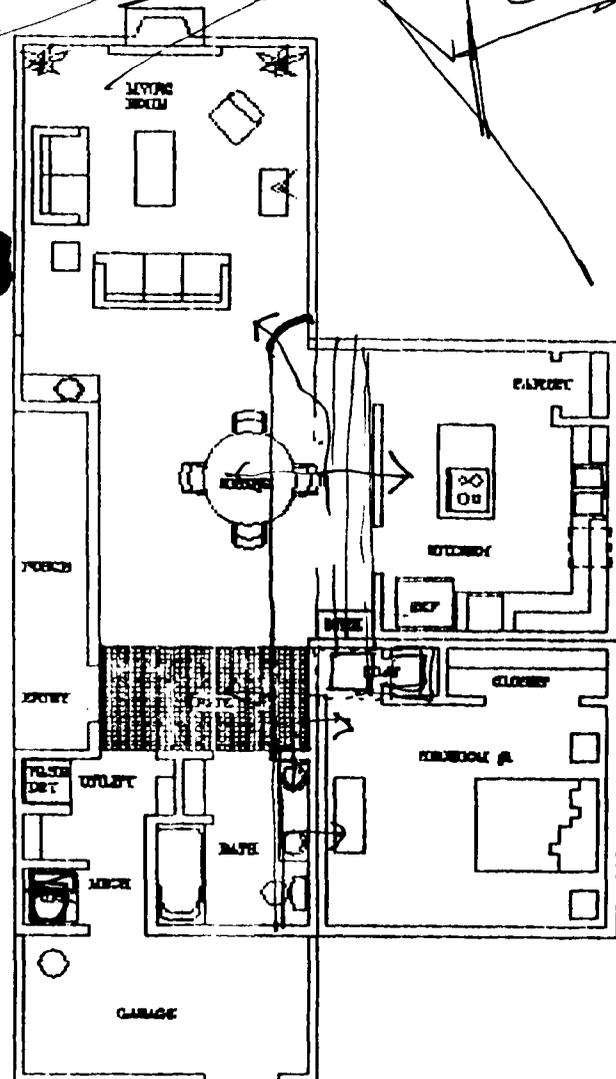
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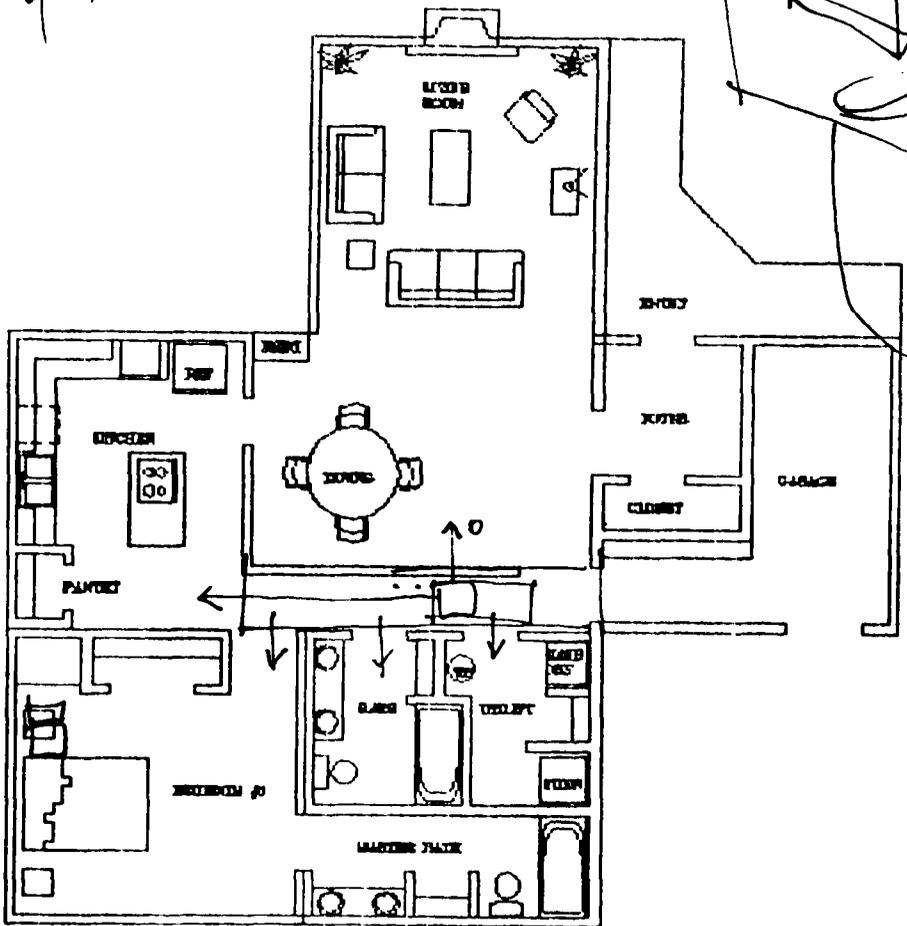
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Air Handler.



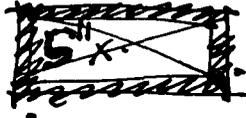
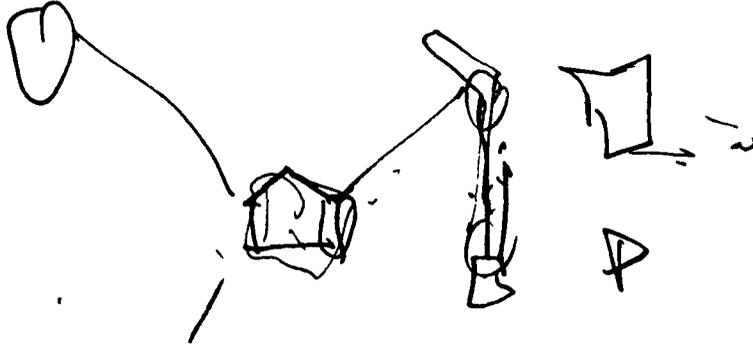
EFFICIENCY UNIT A 1



EFFICIENCY UNIT B 2

HVAC

Need game room Design Help
 Need 4 Bed room Design here



2 FLOORS
 & ELEVATION

SITE

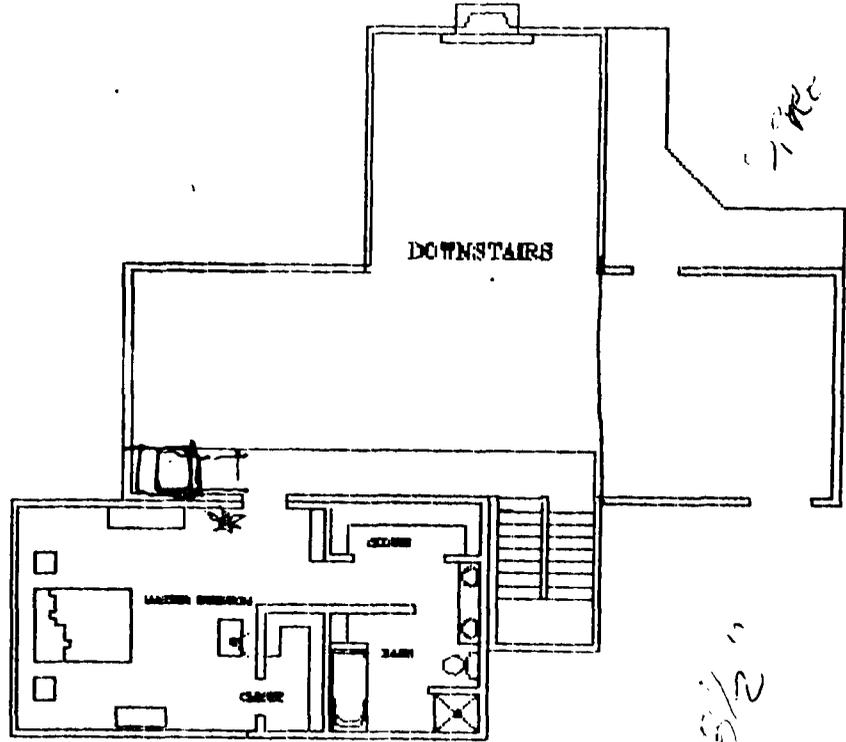
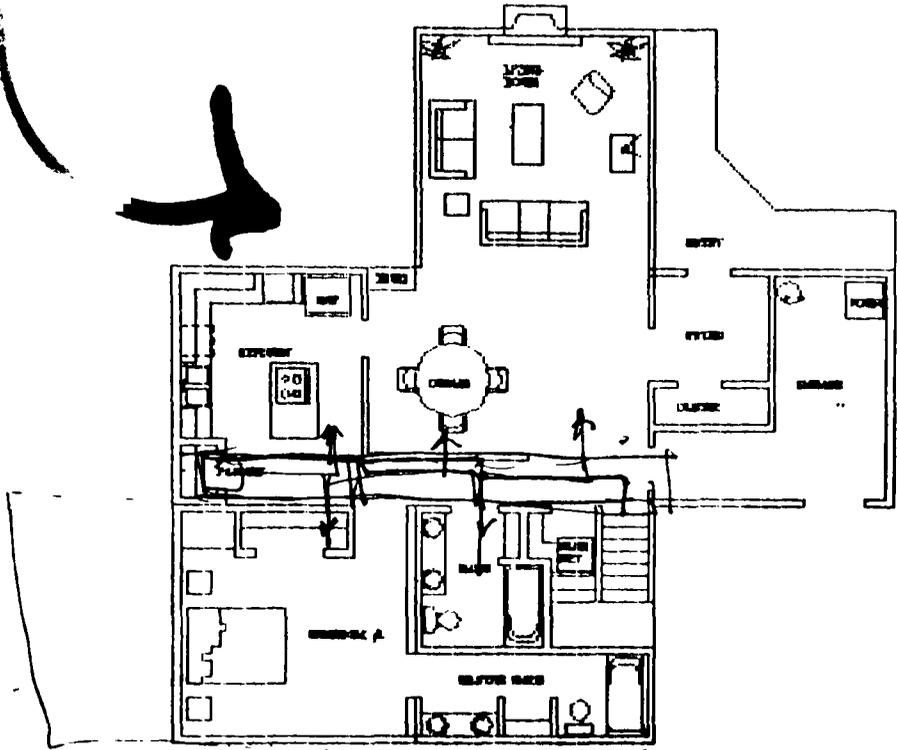
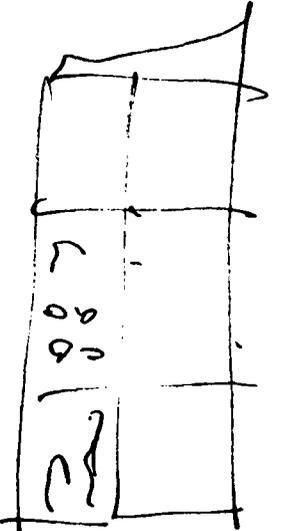
APPROXIMATELY

NEED

1 DETAILS

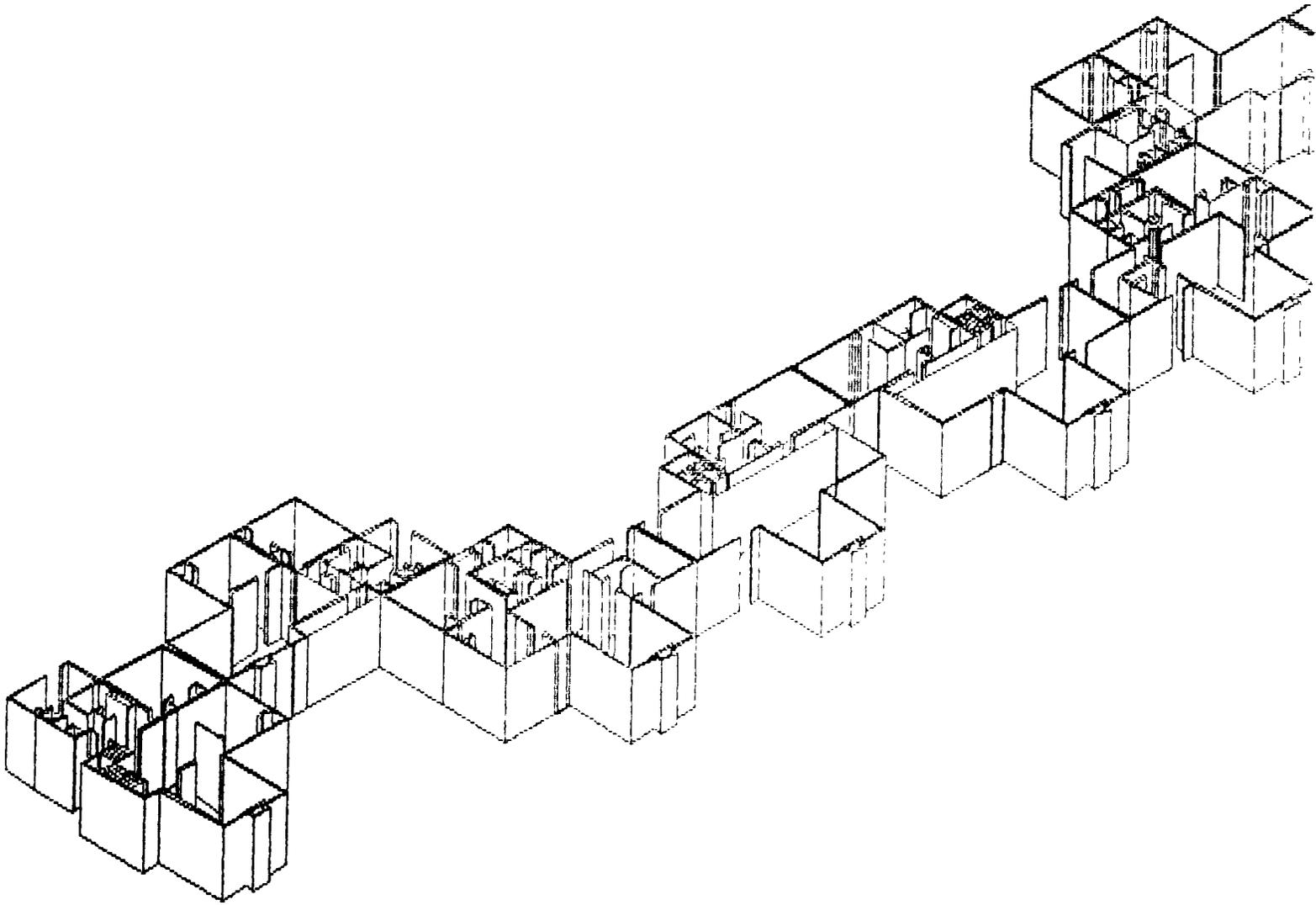
4 TYPICAL

1/2"

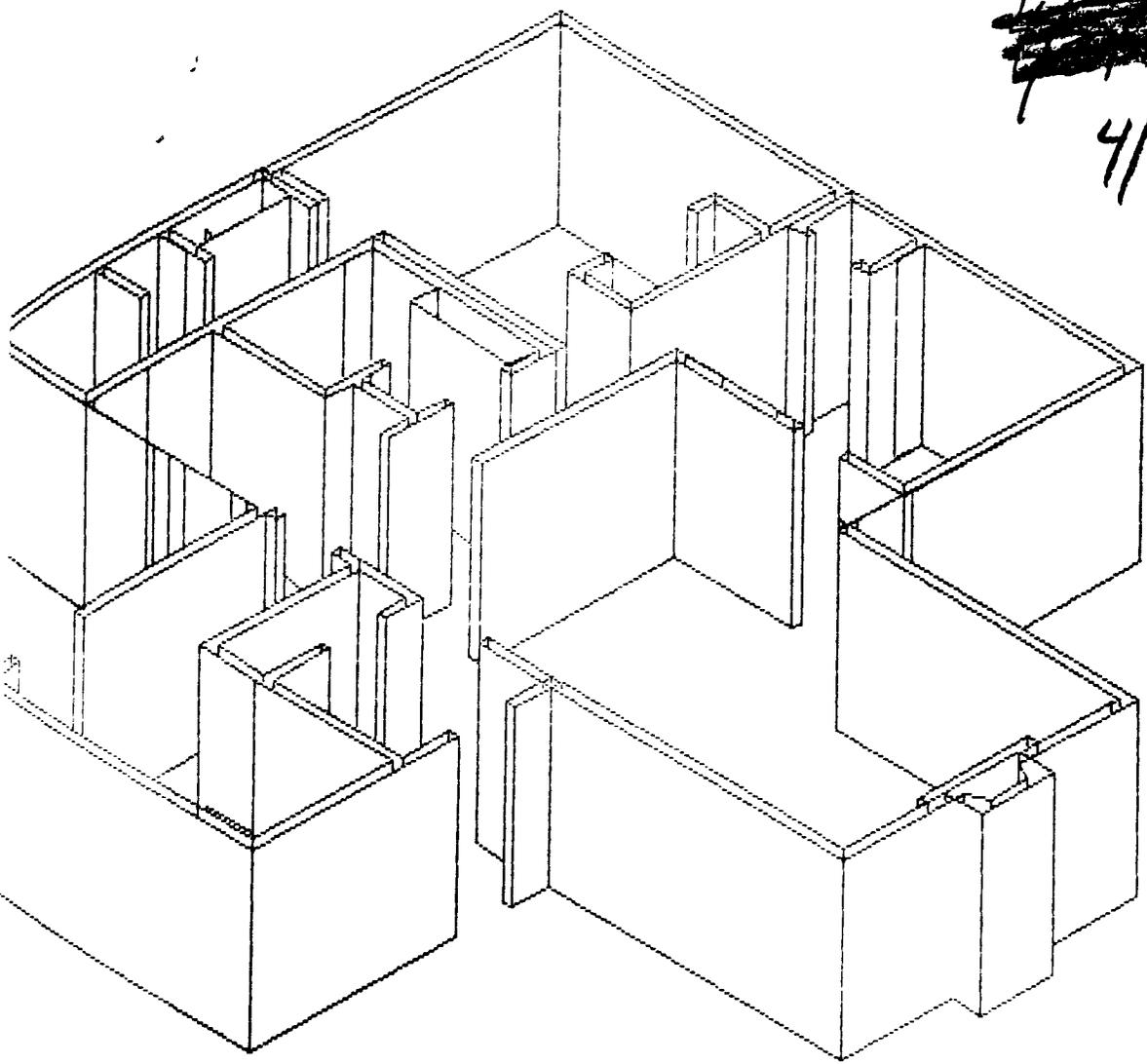


3/2"

4/15/98

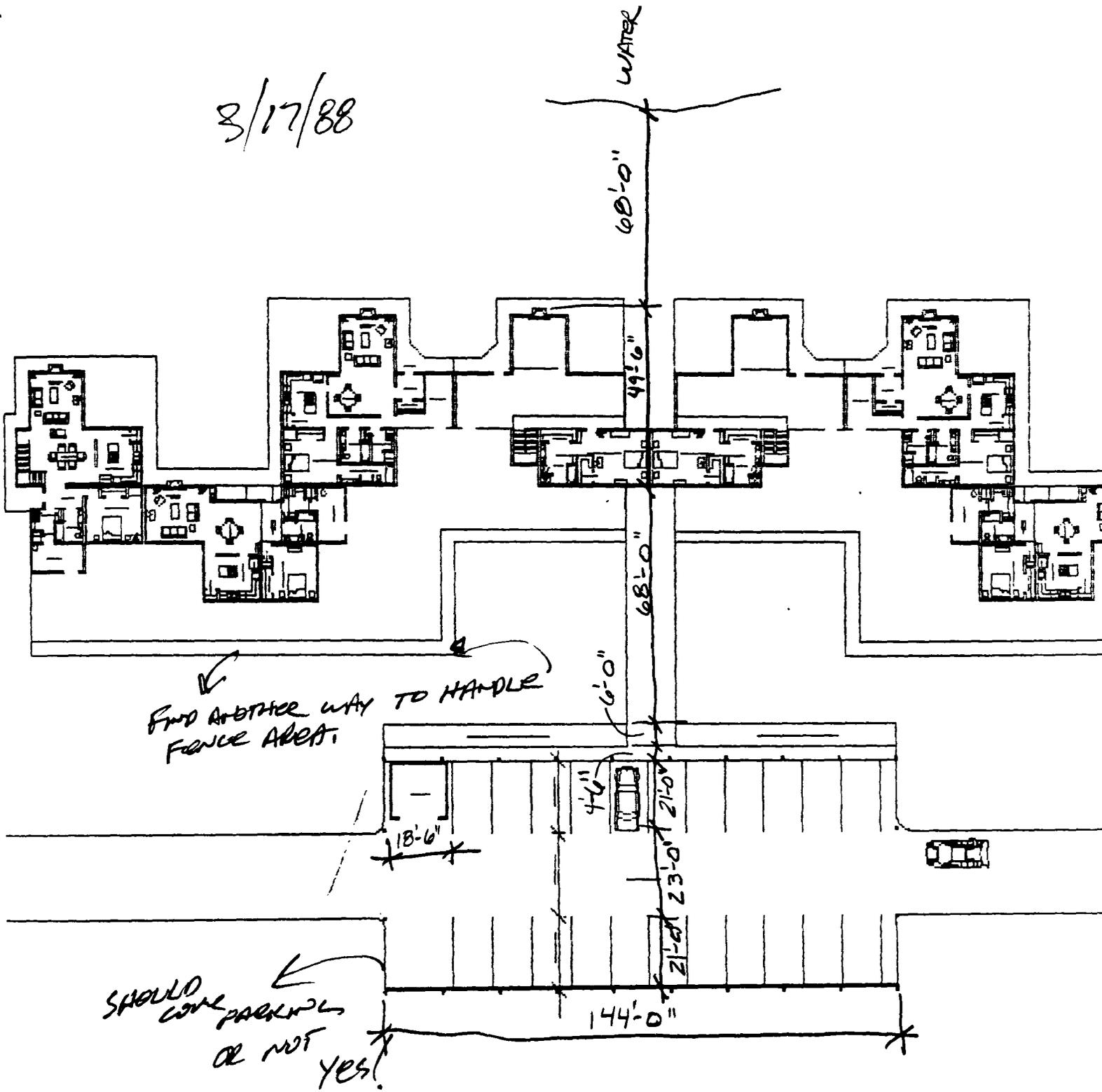


~~4/17/95~~
4/17/95



>

8/17/88

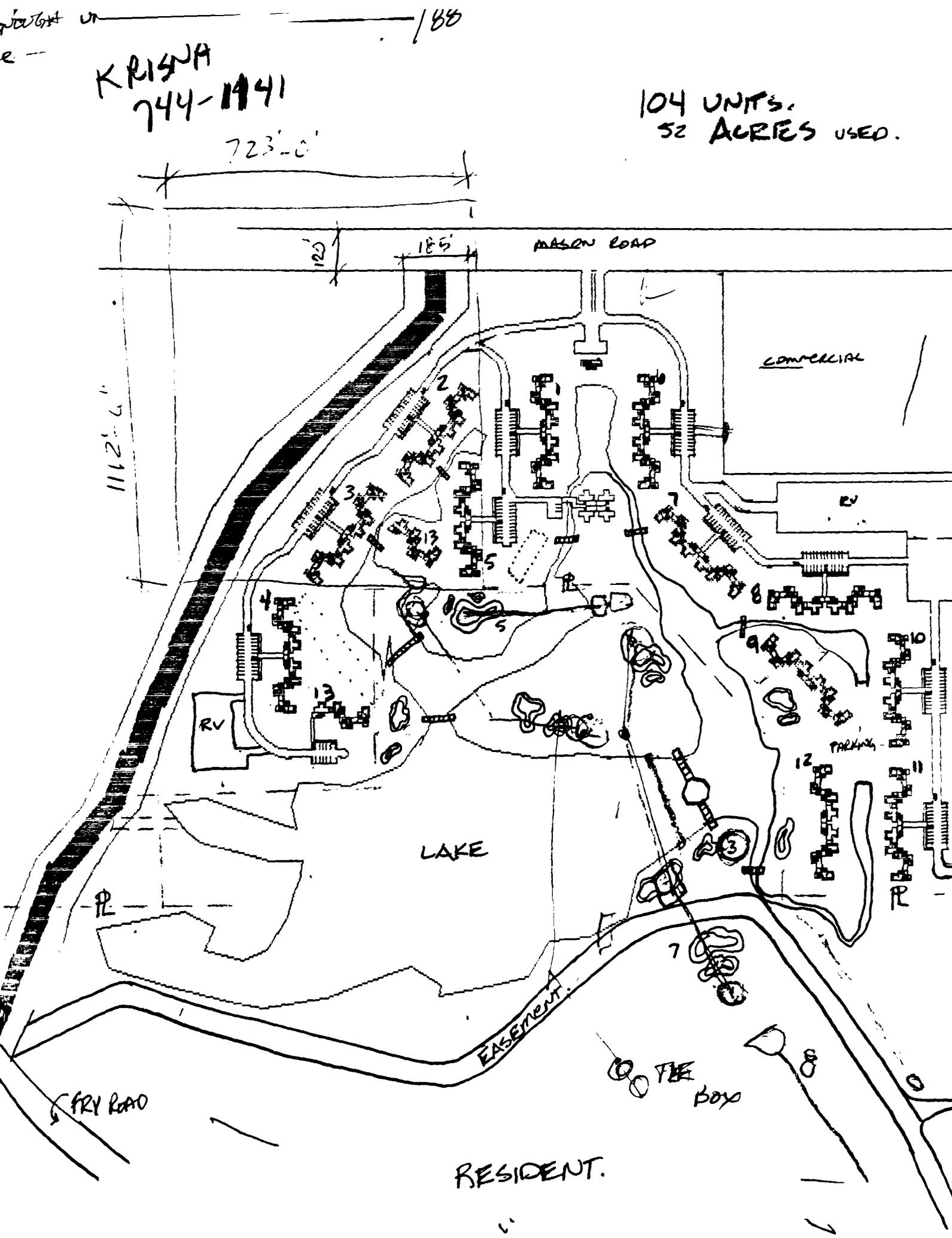


Mr. Master said to go to 23'-0" DRIVEWAY

KRISHNA
744-1941

104 UNITS.
52 ACRES USED.

723'-0"

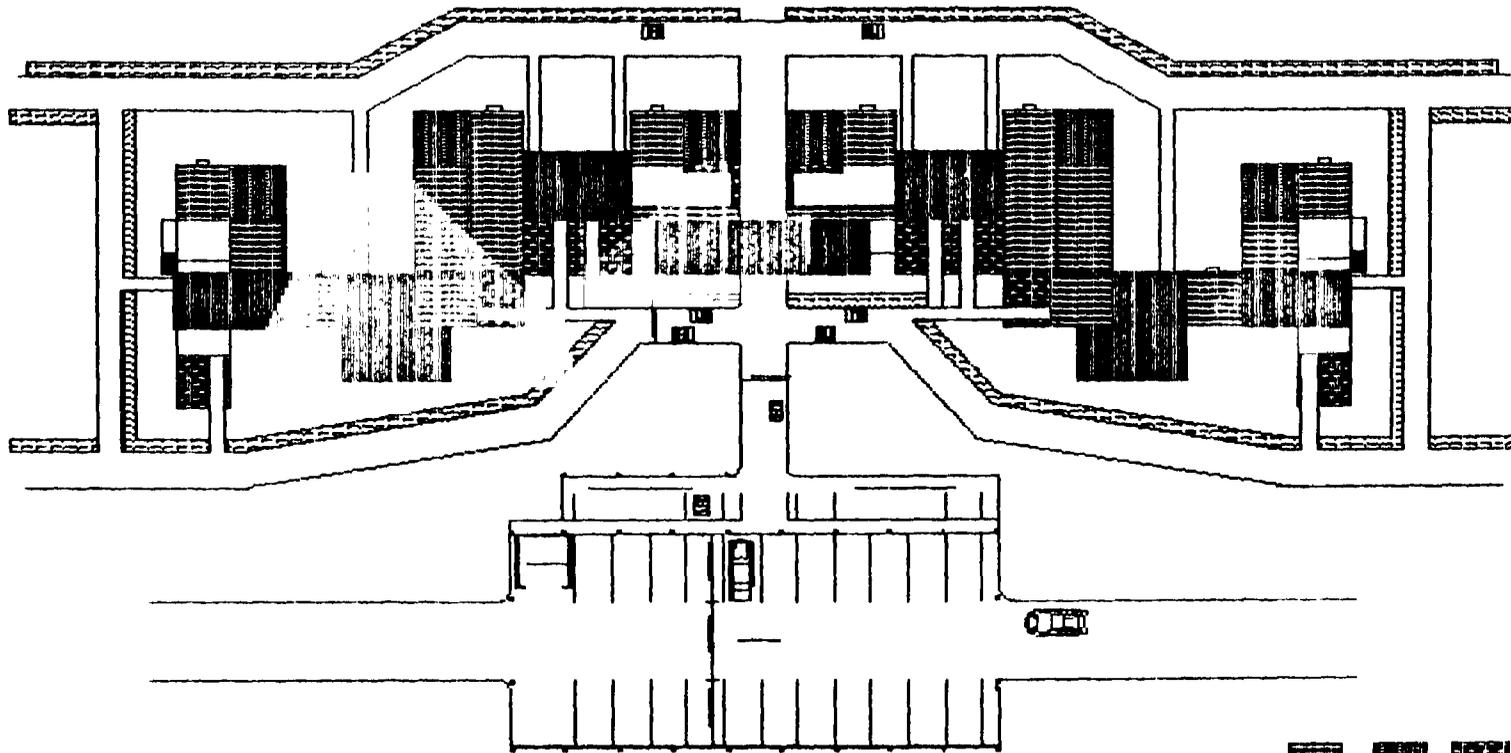


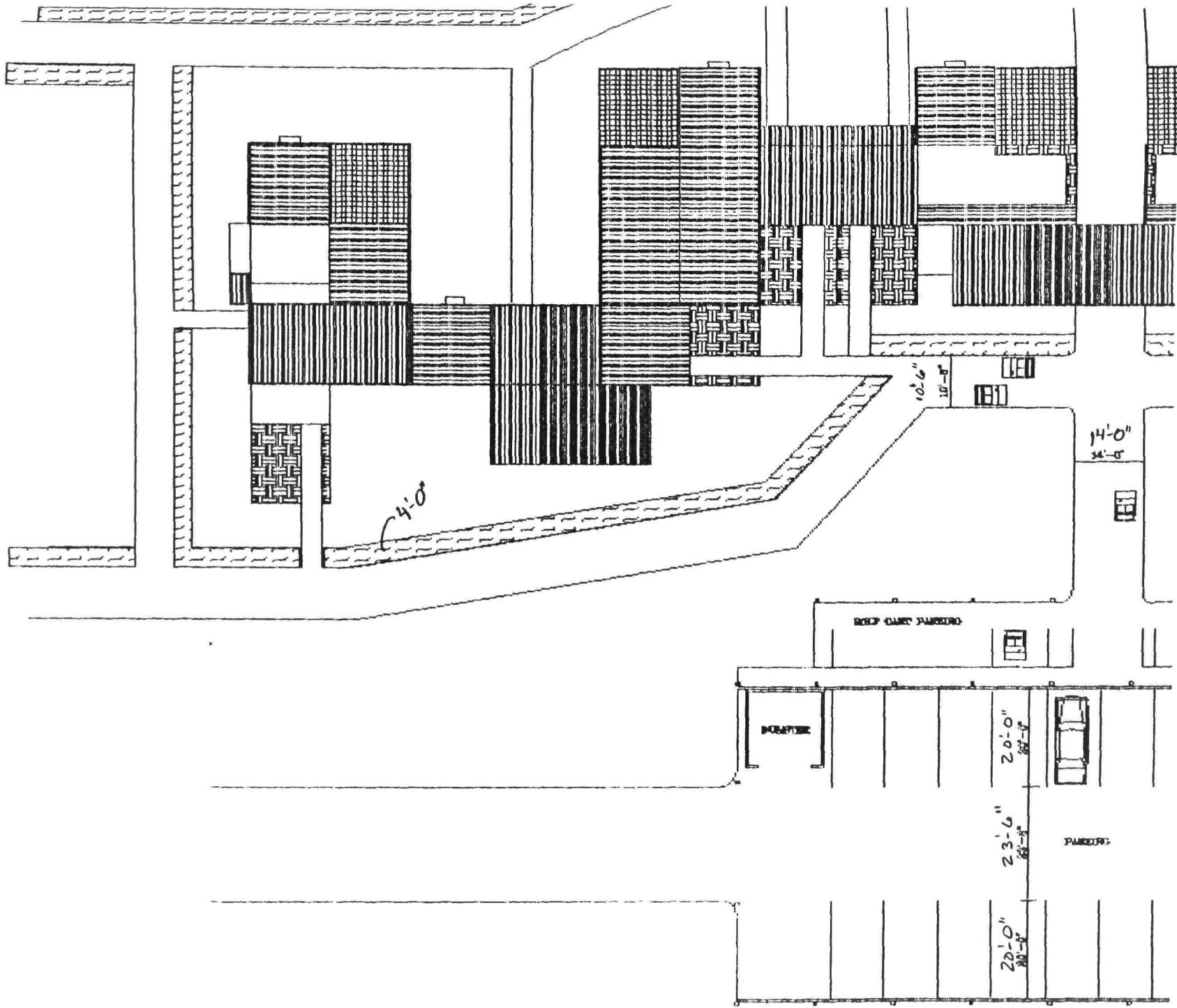
SITE PLAN

1" = 40' SCALES

4/28/88

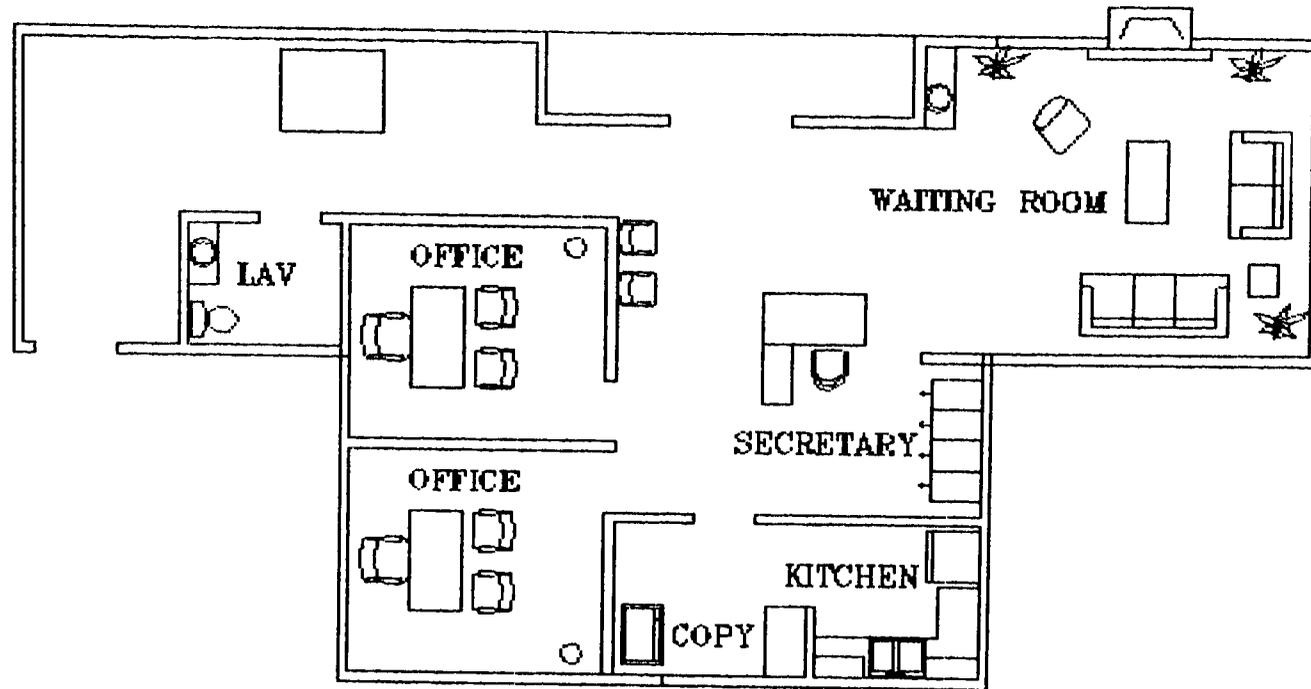
TO BUSY
AND
THINK ABOUT THE
IDEA OF TWO
PATHWAYS



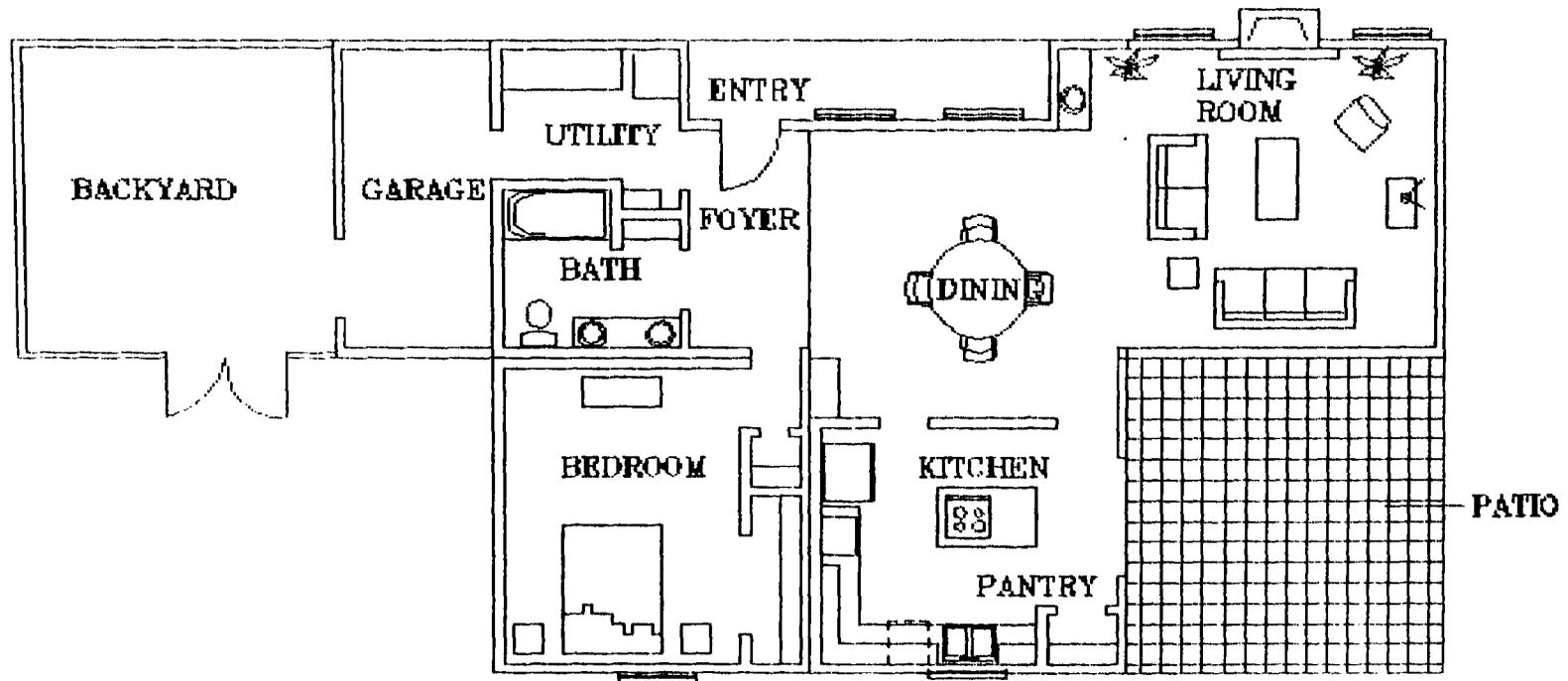


TO BUSY
LOOKING
SCALE
DONE

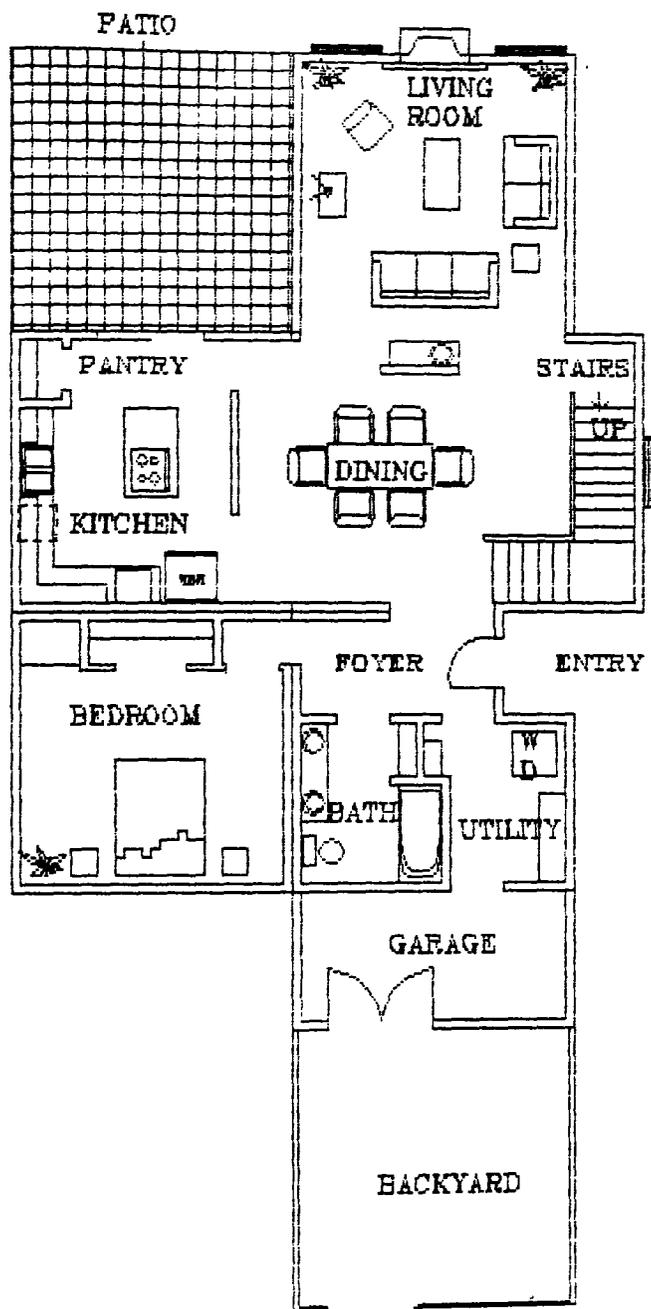
FLOOR PLAN, PARTIAL SITE PLAN
SCALE 1/8" = 1'-0"



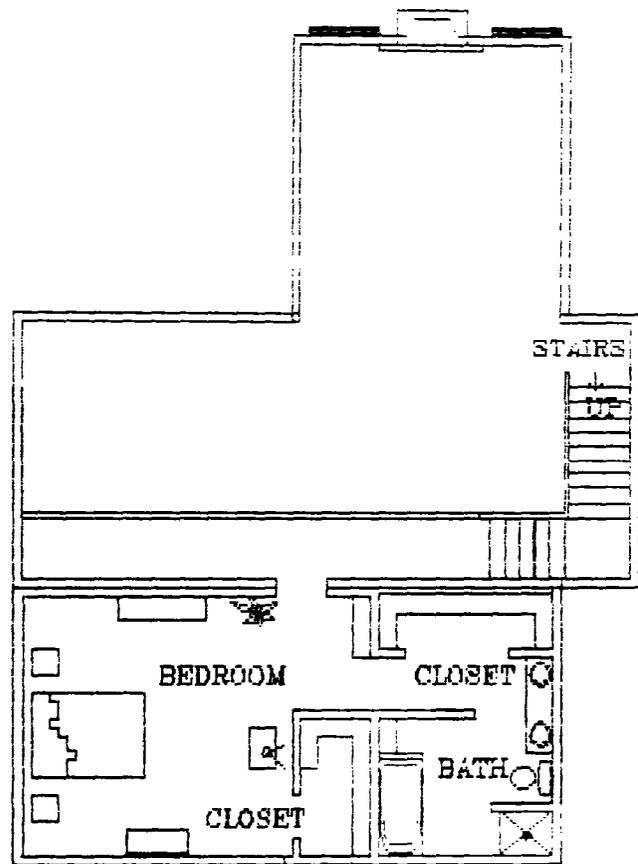
OFFICE PLAN



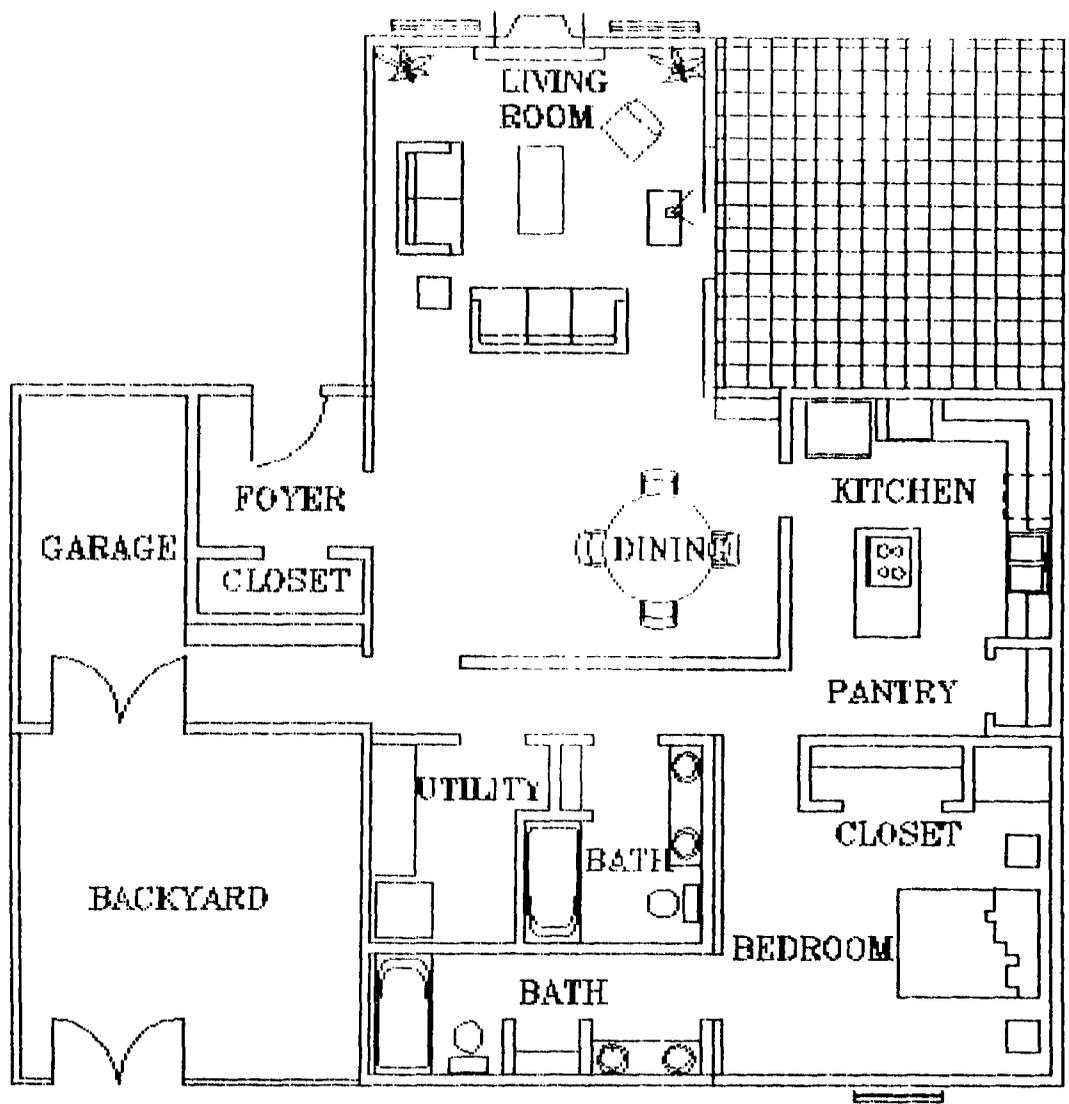
UNIT A EFFICIENCY



UNIT A1

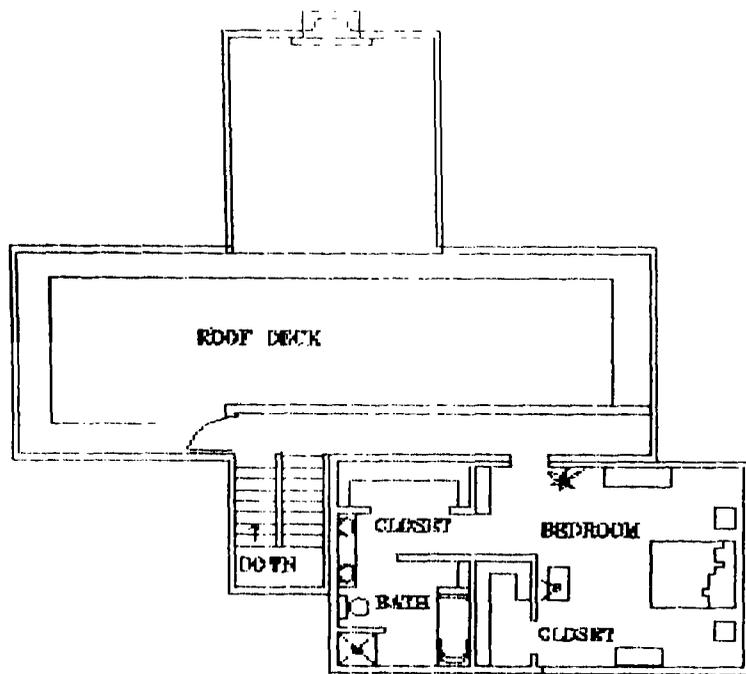


UNIT A1 SECOND FLOOR



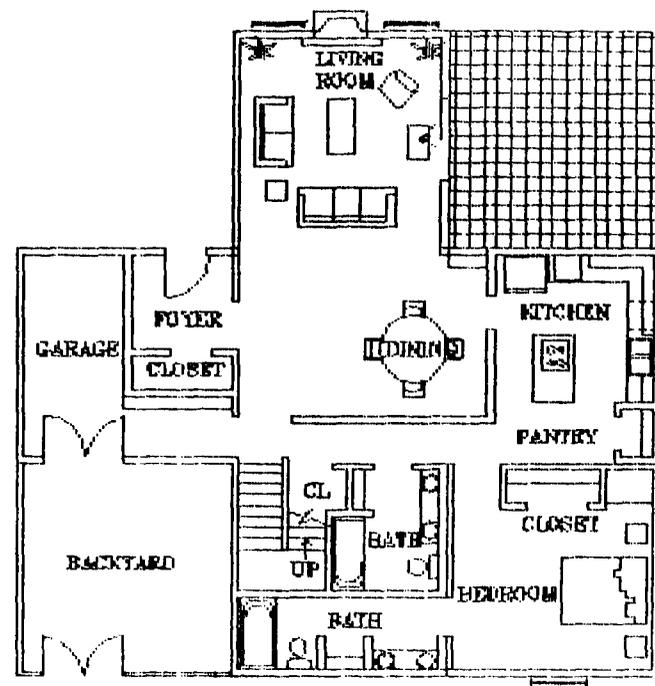
UNIT B EFFICIENCY

SCALE: 1/8"=1'-0"



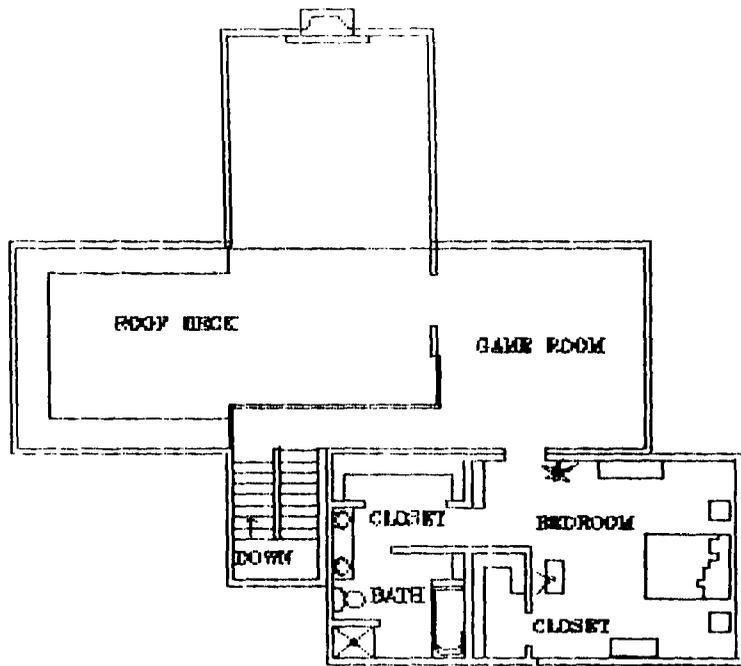
UNIT B1

SCALE 1/8"=1'-0"



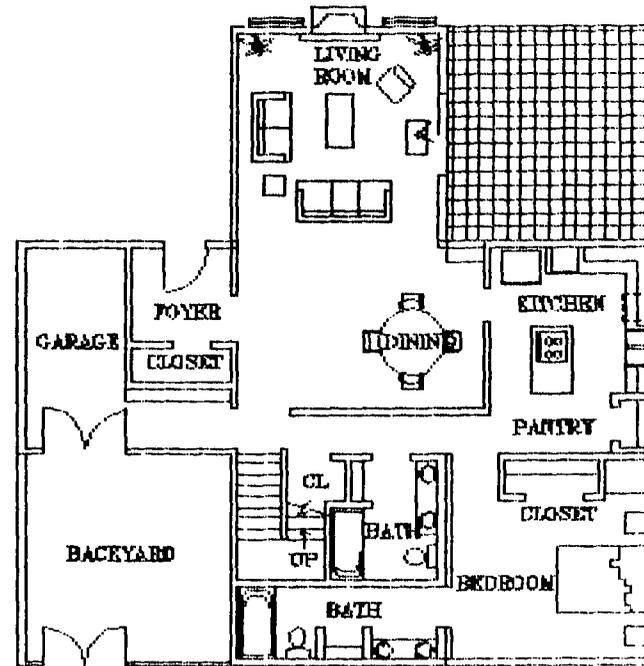
UNIT B1

SCALE 1/8"=1'-0"



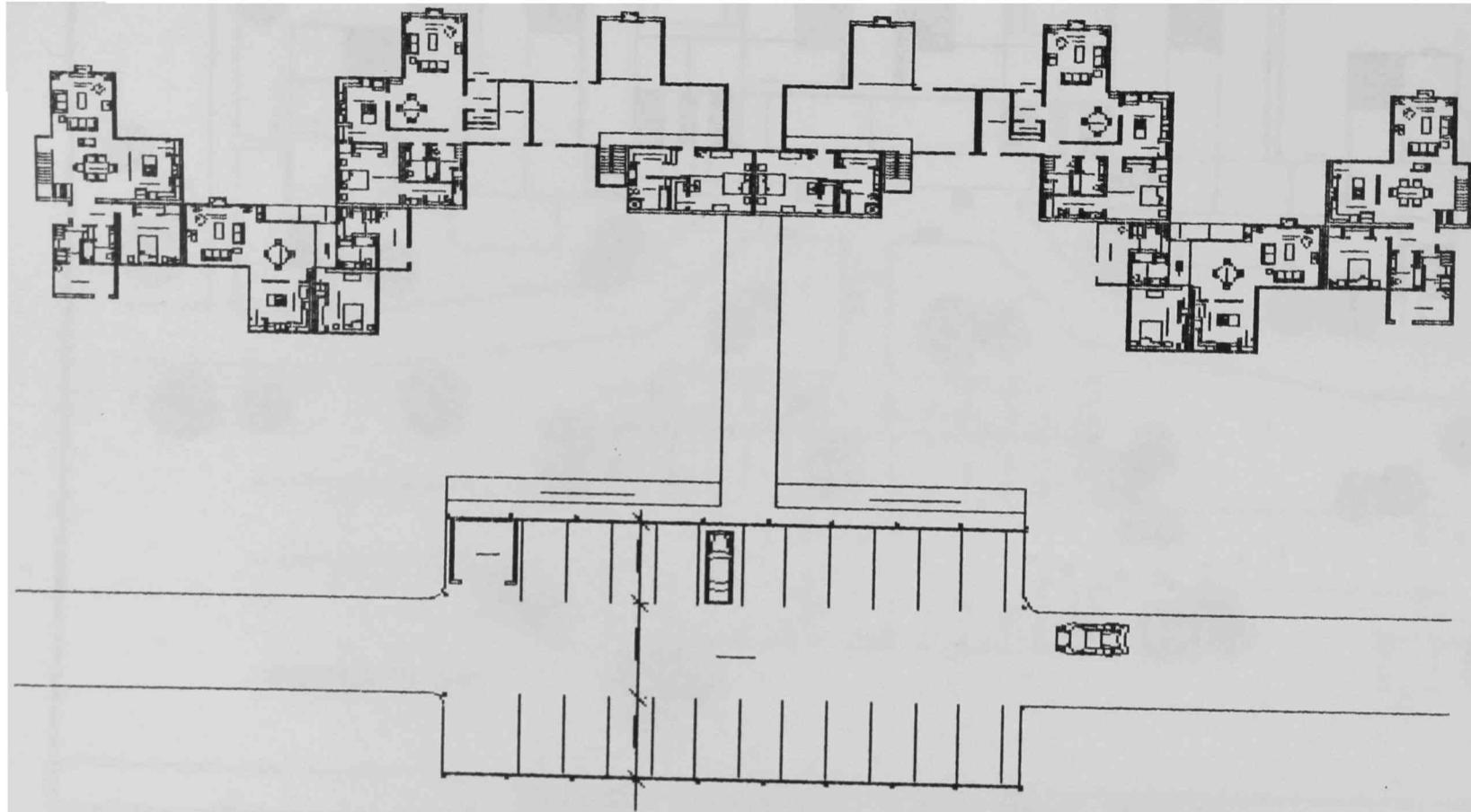
UNIT B2 SECOND FLOOR

SCALE 1/8"=1'-0"

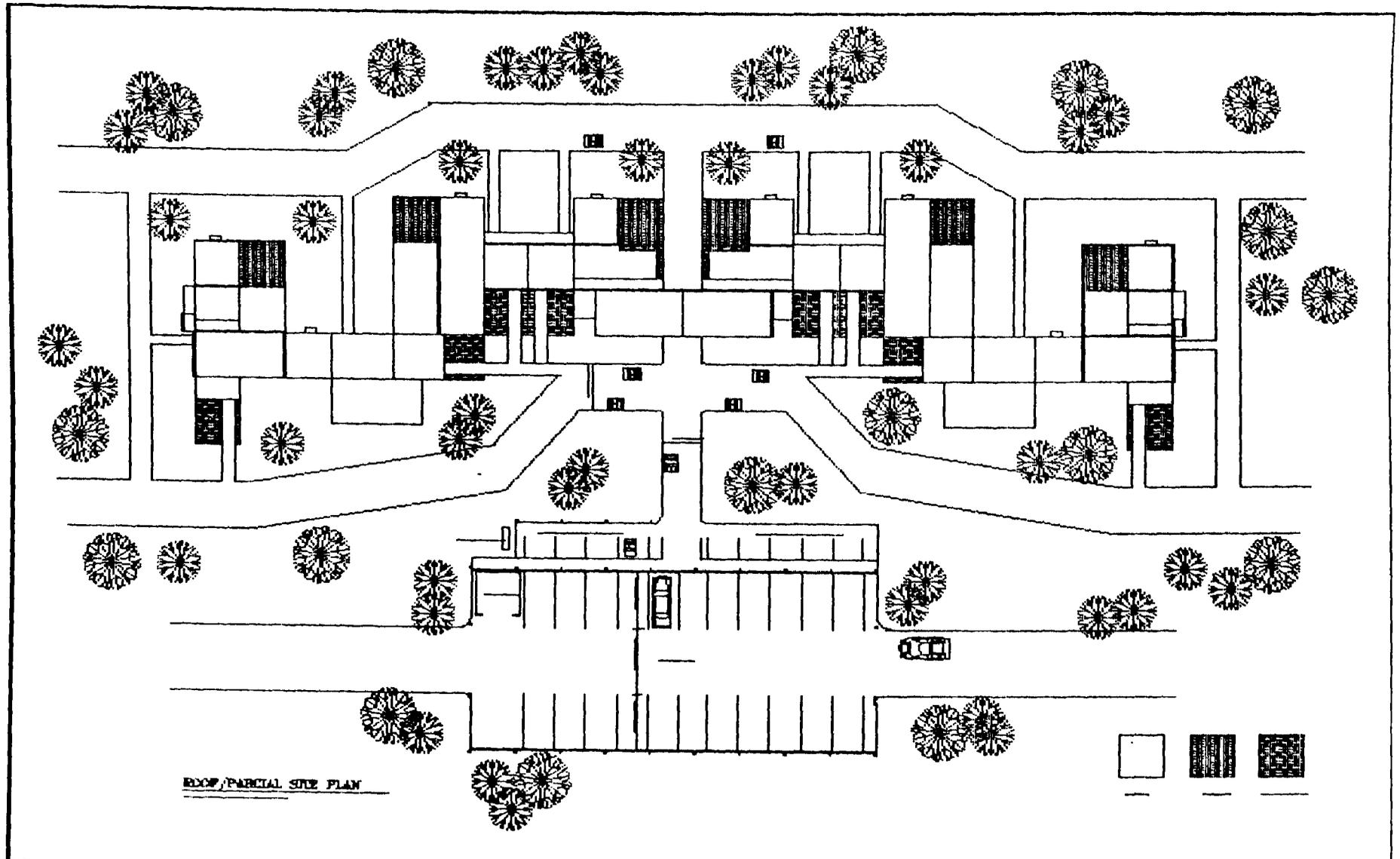


UNIT B2

SCALE 1/8"=1'-0"



COMPLEX DESIGN



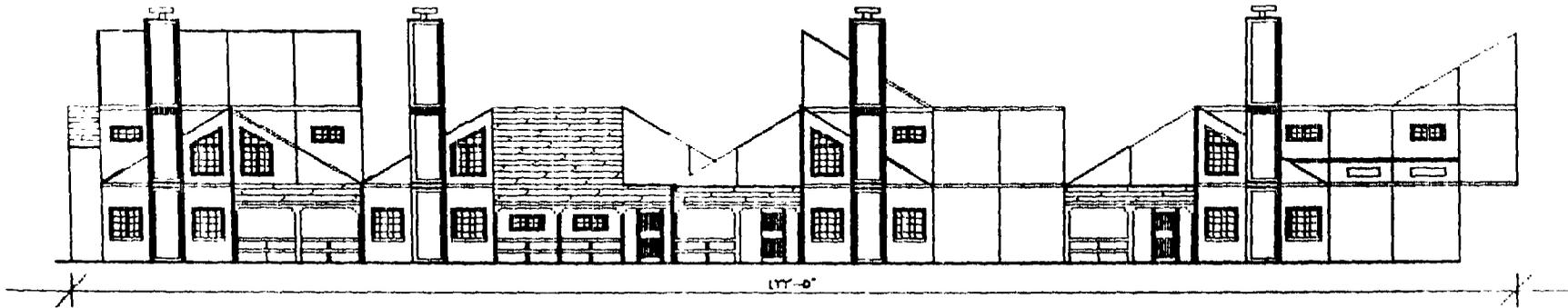
GREATER SOUTHWEST RETIREMENT VILLAGE

BY WILLIE D KIRKPATRICK III

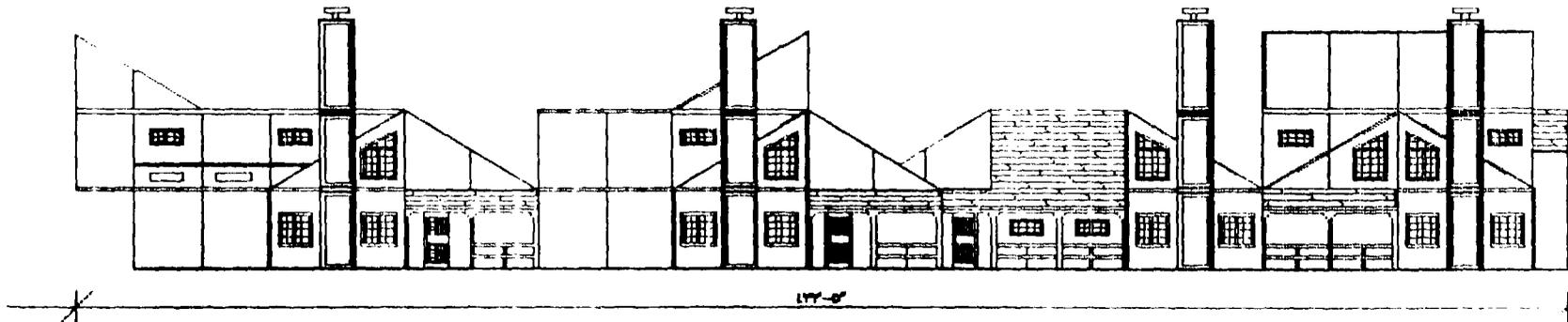
TEXAS TECH UNIVERSITY

THESIS 1988

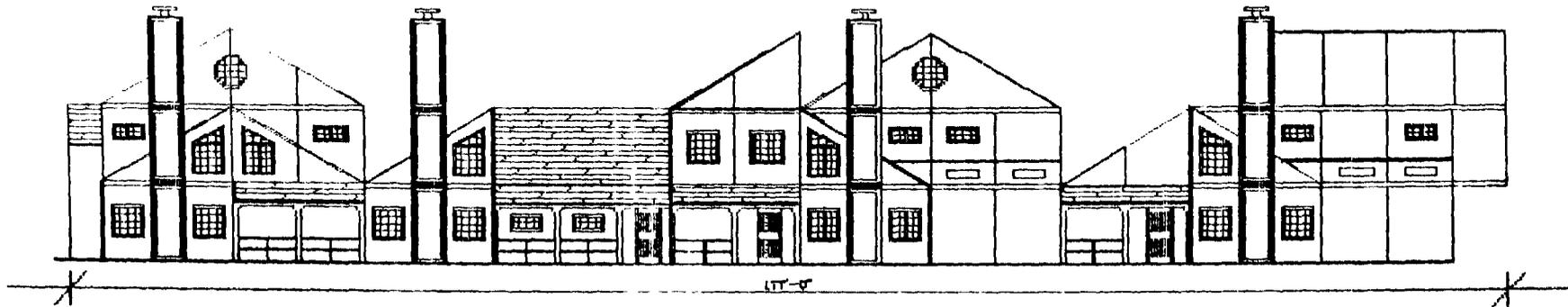
PROF. MICHAEL PETERS



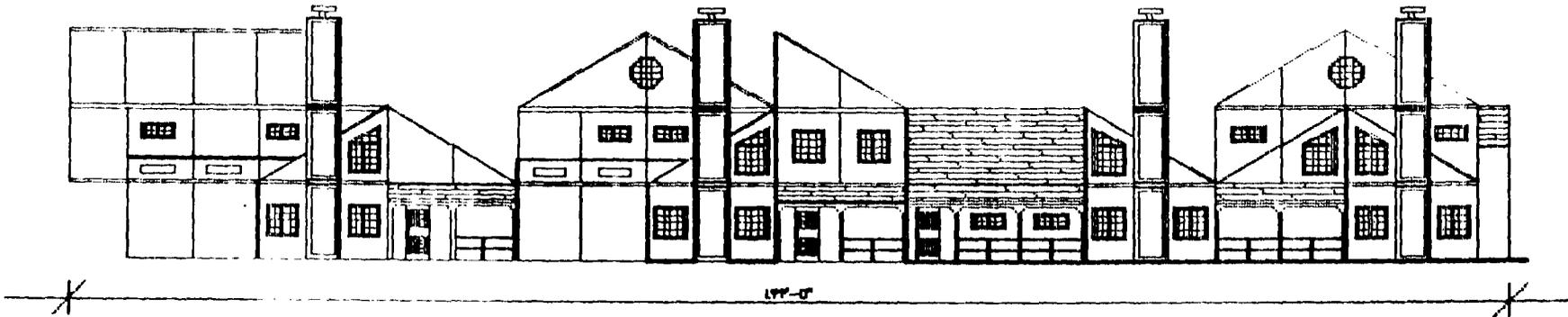
FRONT ELEVATION DESIGN #1
SCALE 1/8"=1'-0"



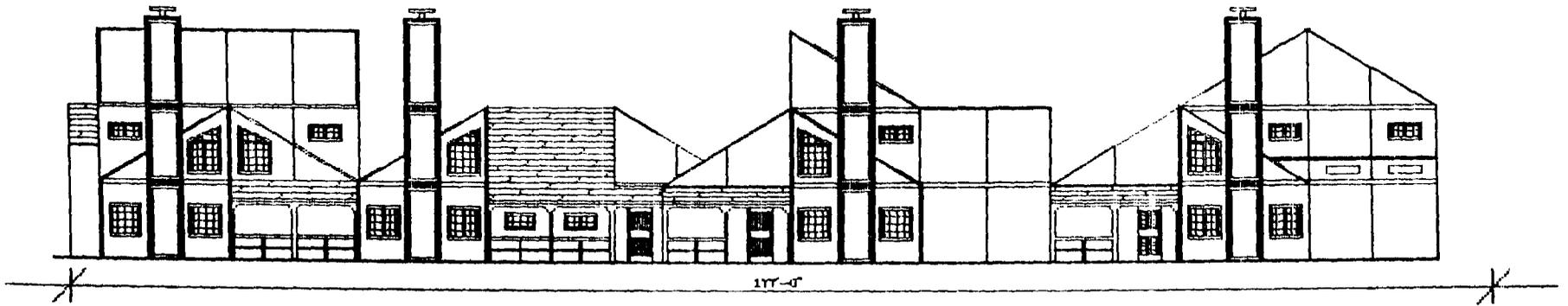
FRONT ELEVATION DESIGN #2
SCALE 1/8"=1'-0"



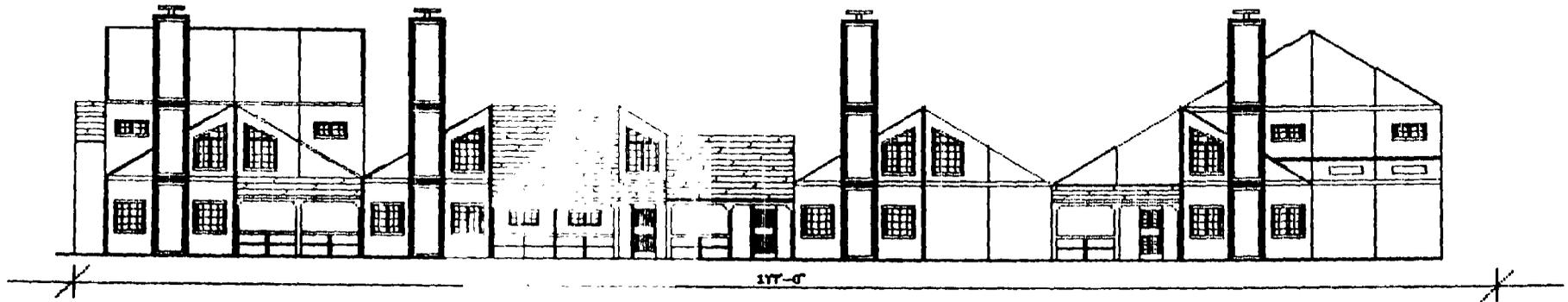
FRONT ELEVATION DESIGN OPTION #2
SCALE: 1/8" = 1'-0"



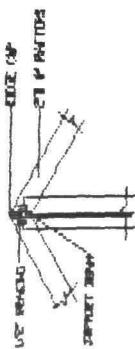
FRONT ELEVATION DESIGN OPTION #2
SCALE: 1/8" = 1'-0"



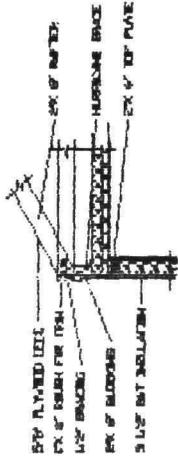
FRONT ELEVATION DESIGN #3
SCALE 1/8"=1'-0"



FRONT ELEVATION DESIGN #3
SCALE 1/8"=1'-0"



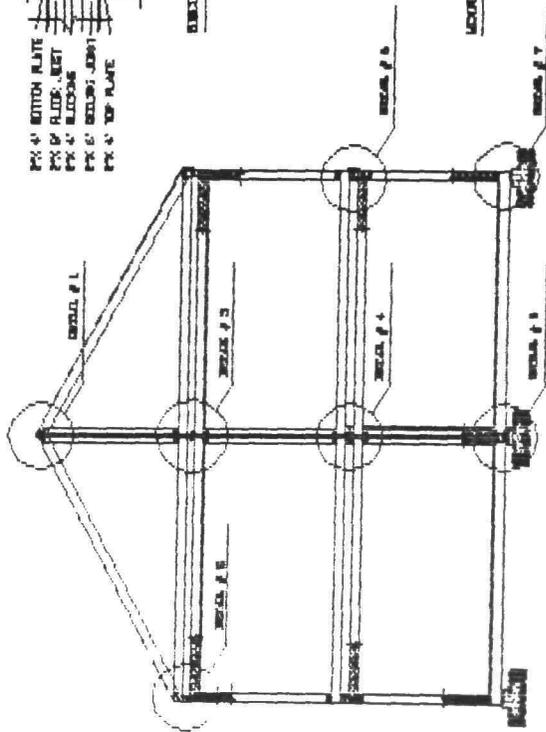
ROOF CONNECTION DETAIL # 1



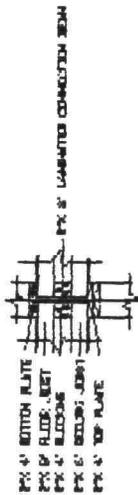
ROOF CONNECTION DETAIL # 2



ROOF CONNECTION DETAIL # 3



INTERNAL CONNECTION SECTION
SCALE 1/2" = 1'-0"



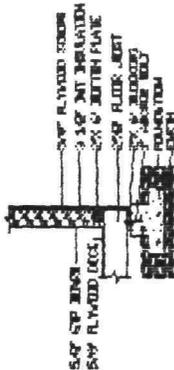
BEAM TO WALL CONNECTION DETAIL # 4



BEAM TO WALL CONNECTION DETAIL # 5



BEAM TO WALL CONNECTION DETAIL # 6



BEAM TO WALL CONNECTION DETAIL # 7

NOTE:
ALL WOOD MATERIAL SHALL BE GRADE
TO MEET THE REQUIREMENTS.

GREATER SOUTHWEST RETIREMENT VILLAGE

BY WILLIE D KIRKPATRICK III

TEXAS TECH UNIVERSITY

THESIS 1988

PROF. MICHAEL PETERS