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## A Life Enhancement Center - An Environment for the Care of the Chronic Degenerative Patient

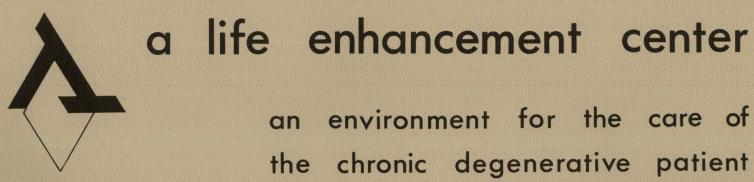
Manouchehr Zakariai Miandoab Clemson University

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a life enhancement center

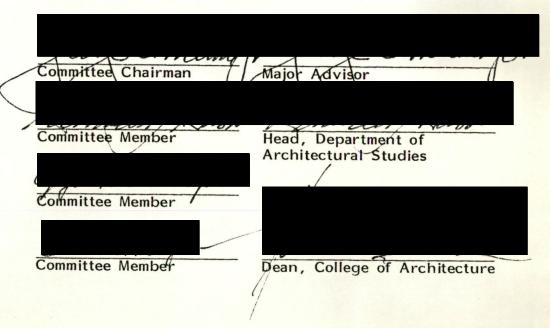
AN ENVIRONMENT FOR THE CARE OF THE CHRONIC DEGENERATIVE PATIENT

A private initiative which may be attached to the Medical University of South Carolina

MANOUCHEHR ZAKARIAI MIANDOAB DECEMBER 1982

A terminal project submitted to the Faculty of the College of Architecture, Clemson University in partial fulfillment of the requirements for the degree of

MASTER OF ARCHITECTURE



To my loving parents for their faithful dedication and patience in my pursuit of knowledge.

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## acknowledgements

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# abstract

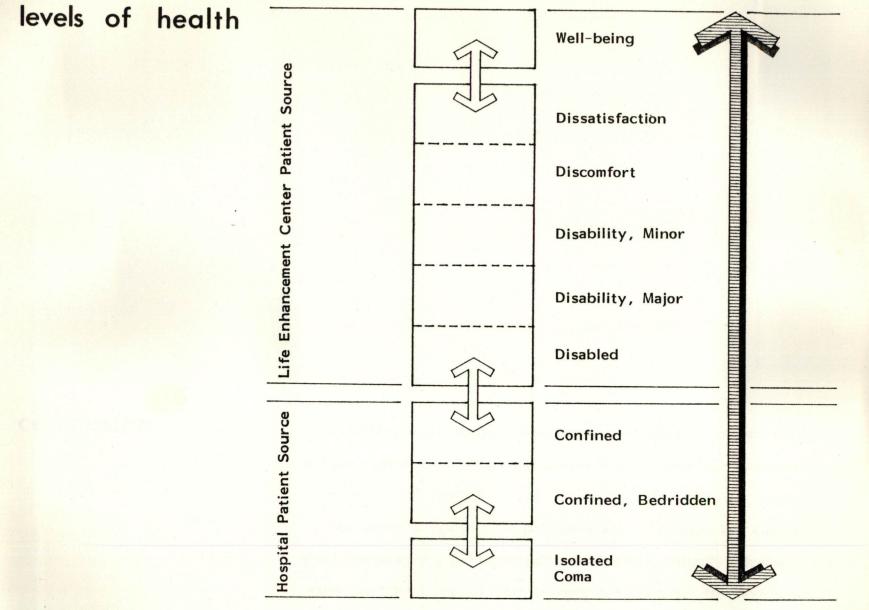
### goals

This century has brought Americans an unprecedented freedom from life-threatening communicable diseases and infections. This has been largely due to the application of primary prevention measures: immunization, sanitation, housing, nutrition, and antibiotics. However, we are now witnessing a greater prevalence of these health risks: the chronic, degenerative diseases which include heart disease, cardiovascular diseases, arthritis, etc. According to statistics published by the Department of Health, Education and Welfare in Healthy People, today seventy-five percent of all deaths in the United States are due to the degenerative diseases. This toll does not include loss of productive days and the reduction in the quality of life. The same source indicates that only four percent of our federal health dollars is supplied to prevention. In addition, there was a seven hundred percent increase in health spending from 1960 to 1978 without an impressive improvement in disease statistics. Since much is known about the complexity of risk factors, this information creates an opportunity to satisfy the unique needs of those individuals with

chronic or degenerative diseases. With the new emphasis on prevention of degenerative diseases, as well as the promotion of higher levels of wellness, there emerges the need for a new type of health care facility: the Life Enhancement Center.

The Center is a health care facility which complements the purpose of the primary health care provider, and is an intermediate health care facility between the primary provider and the hospital. This center deals with all levels of prevention, promotion, and maintenance of the chronic and/or degenerative diseases.

According to the Health Systems Agency, there should be at least four hospital beds per one thousand population; this predicates a need for one million beds in 7,500 hospitals which are oriented to serve acute care programs. The aforementioned degenerative disease statistic of seventy-five percent shows that a minimum of one bed per one thousand population is needed for sub-acute care programs. As such, life enhancement centers need a maximum of 250,000 beds in the United States.



Death

# introduction

### definition

In acknowledging that there are complexities in man that are not fully understood and that health is much more than absence of disease, the Life Enhancement Center seeks to meet and to integrate the physical, intellectual, social, and spiritual aspects of an individual during the time spent at the Center.

The Life Enhancement Center is devoted to a program to prevent the development of chronic and/or degenerative diseases.

1) Chronic disease, according to the Webster Dictionary, is the patient "suffering from a disease or an ailment of long duration or frequent recurrence" such as: heart disease, obesity, diabetes mellitus, cancer, etc.

 Degenerative disease, according to the Webster Dictionary,
is "a disease characterized by progressive, degenerative changes in tissue" such as: arteriosclerosis, multiple sclerosis, chronic renal artery, arthritis, etc.

#### present trends

This Life Enhancement Center is not designed to function as a hospital nor as a diagnostic center. Should anyone require hospitalization while registered in the program, such accommodations will be arranged by the hospital personnel.

Through comprehensive medical testing, evaluation and educational effort, the patient will be guided to restructure his/her lifestyle. The individualized treatment program of education, exercise, and diet is designed to assist in the prevention, promotion and maintenance of an individual's health. The Life Enhancement Center is constructed to promote the idea of showing the patient the way to better health, in which the patient eventually becomes selfaware and better able to take care of himself or herself.

The program is aimed at individuals 18 years of age or older, who desire to maintain optimum health and decrease the incidence or impact of chronic and/or degenerative diseases.

The patients have the opportunity to participate in the program on a short term or long term basis. The short term program consists of long weekends (three days at a time) for a few weeks. The long term program consists of a maximum of twenty-one days to give the patient a balance of service by providing counselling in nutrition, physical health, human life styling, and weight control, in addition to psychotherapy.

During his stay at the Life Enhancement Center, the patient will participate in a comprehensive educational program in order to successfully adapt the principles of this lifestyle at home. It is expected that each participant will return to his or her own physician after departure, and our records will be open to these physicians. Recommendations are made to supplement those made by personal physicians, not to replace them.

### existing facilities

Little Rock, Arkansas This facility is a part of the University of Arkansas Medical School.

Los Angeles, California This facility is a part of the University of California Medical School at Los Angeles.

Santa Monica, California In a stately, oceanfront hotel, this facility provides attractive accommodations, a private beach and a full range of services.

Lafayette, Colorado Located in a rural Colorado setting, the environment is quiet and conducive to relaxation.

Miami, Florida Beach orientation.

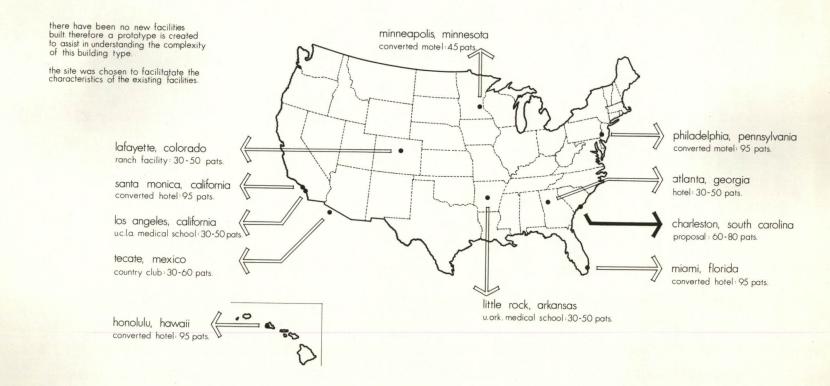
Atlanta, Georgia This facility has luxury accommodations in Colony Square Hotel Complex.

Hawaii Beach orientation.

Tecate, Mexico This facility provides an isolated country club setting.

Minnesota No information available.

Philadelphia, Pennsylvania An urban setting, hospital management corporation.



## l.e.c.'s developed from converted facilities

11

## conclusion

The purpose of giving this information is to differentiate the facilities related to a medical university from the other health care facilities.

These facilities are all renovated from existing facilities to function as Life Enhancement Centers.

Therefore, this facility had to be developed from a small amount of base information.

### program

The Life Enhancement Center program is to consist of three major components to rehabilitate the patient:

- 1) The Education Program
- 2) The Exercise Program
- 3) The Diet Program.

## education

Patient education is an integral part of the patient care. A full scale program is designed in order for the participant to understand fully what is being done and why.

The educational program includes lectures, forums and seminars presented by members of the Life Enhancement Center staff.

### exercise

Just as everyone comes in different shapes and sizes, everyone needs different amounts of exercise. How much depends upon the participant's need and desire.

In the educational program the importance of exercise in the treatment and prevention of chronic and degenerative disease is extensively covered.

Exercise is prescribed for each patient according to:

- 1) The results of the Sub-maximal Exercise Test;
- 2) Individual assessment of the physical condition.

## diet

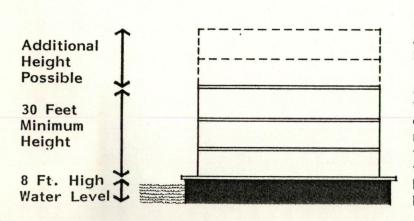
Although we are living in an affluent society, malnutrition is the sixth leading cause of prolonged disability in the United States.

The diet is modified for individual participants on the basis of blood values and other diagnostic tests.

One of the main advantages of the live-in program is that a maximum of benefit is attained under controlled conditions while one's sense of taste acclimates to the pleasure of healthier nutrition.

# facility concept

#### property restriction



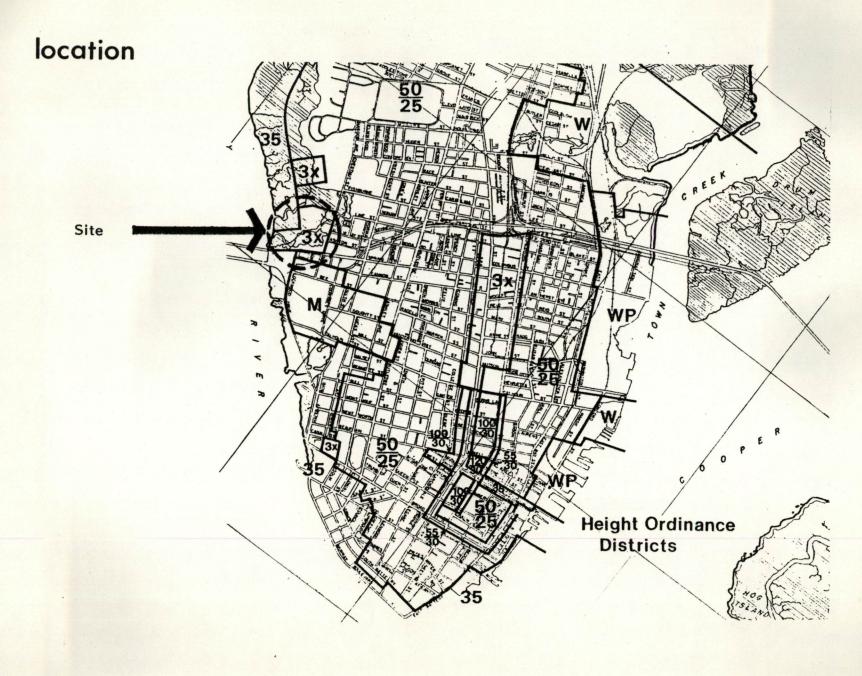
Article 4. Height and Area Regulations.

Sec. 54-36. Applicability of Schedule of Requirements for Old City Height District.

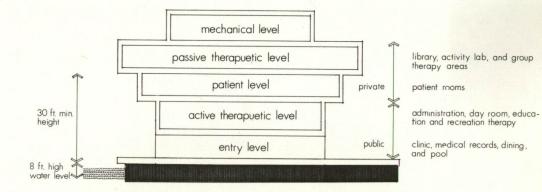
(a) The Schedule of Major Height & Area Regulations accompanying this article hereby is declared to be a part of this chapter. In any zone district, the maximum heights of buildings or structures, the minimum dimensions of yards, courts & other open spaces, the area of lot required per family housed hereon and the percent of lot to be occupied by buildings shall be as shown on the Schedule of Major Height & Area Regulations as modified by special provisions, exceptions, conditions, and general regulations contained elsewhere herein; provided, however, that the requirements set for the Sec. 54-36 (b), (c) and (d) for the Old City Height Districts shall prevail over the accompanying schedule to the extent that they conflict with said schedule but in all other respects, the accompanying schedule shall apply in all other zone districts.

(b) The following maximum and minimum requirements are established for and shall apply in the Old City Height Districts, as created by Section 54-1:

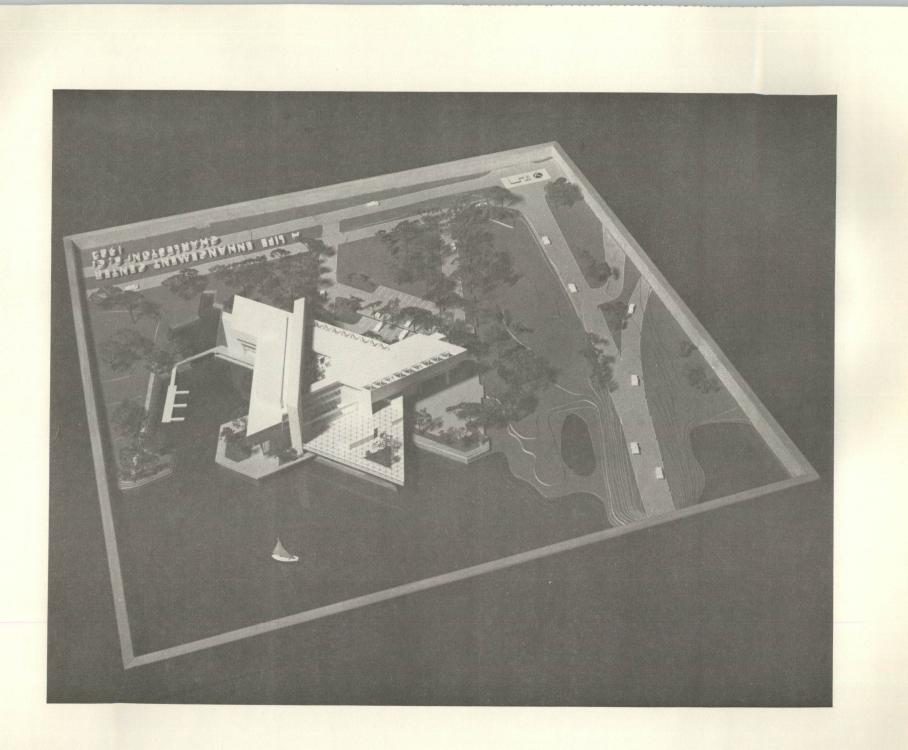
A. Height district 3X. In this district: No structure, including appurtenant parts of a structure, except for elevator penthouses, but including mechanical penthouses, shall exceed a height equal to three times the least dimension as measured from the center of the right-of-way to the face of the building. No structure fronting on any street shall be lower than the height of 30'.



- the facility must be at least 30 feet above the main water level, thus recquiring a building height of three stories or more.
- since the high water level is considered to be \*8 feet, the building is not to be below this elevation because of flotation.
- the entire facility will be placed on a cluster of pilings, capped and connected with grade beams.
- the height recquirement of three or more levels is translated into the physical design illustrated.
- the patient flow from level to level is in conjunction with their pattern of treatment activities.



height recquirements and concepts



# functional program

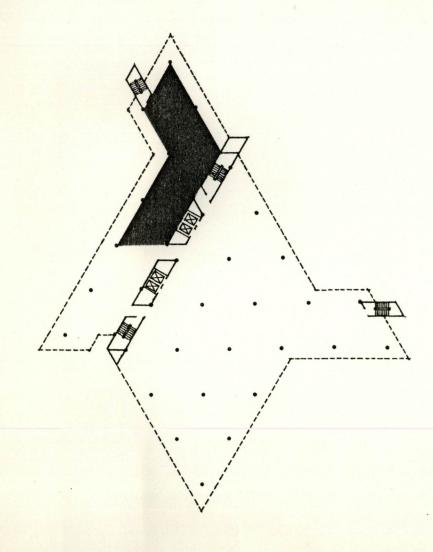
#### space program

The Life Enhancement Center is a health care facility which stresses education for the patient who has suffered disabling diseases. The facility provides an education, exercise, and diet program to rehabilitate the patient.

- A. The Education Program
  - 1. Activity Lab
  - 2. Group Therapy Areas
  - 3. Individual Therapy
  - 4. Education Therapy
- B. The Exercise Program
  - 1. Recreation Therapy
  - 2. Swimming Pool
  - 3. Structured Physical Therapy
- C. The Diet Program
  - 1. Kitchen
  - 2. Dining
- D. Support for the Three Programs Stated Above
  - 1. Clinic
  - 2. Sleeping
  - 3. Administration
  - 4. Circulation
  - 5. HVAC
  - 6. Library
  - 7. Day Room

A + B + C + D = 93,400 Square Feet

## ground level +12



#### **Clinic Area**

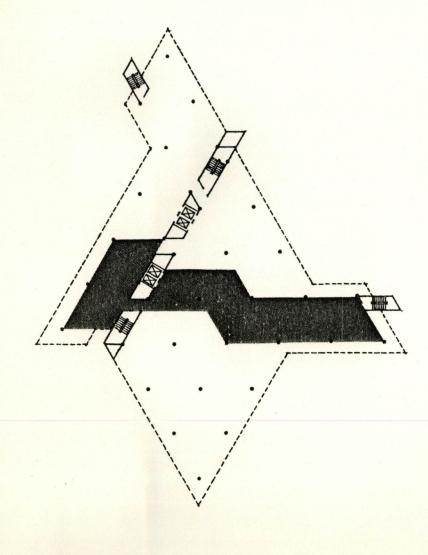
The purpose of this area is to carry out physical assessment of the patient, using the Medical University of South Carolina as an adjunct provider for equipment and testing when necessary. The area contains the emergency room and exam/ treatment rooms.

Treatment Function	Space	Explanation	Sq. Ft.
Clinic Area	Exam/Treatment Area	Provide sufficient space for exam- ining table, chair, physician stool, writing surface, and counter space with sink. Provide private toilet adjacent to exam room.	1.080
	Coordinator	Provide sufficient space for clerical work area, medication storage and preparation area, and reception center.	540
	Medical Records Area	Provide sufficient space for work area and storage of patient's medical records.	700
	Restrooms	Provide sufficient space for two staff restrooms.	150
	Restrooms	Provide sufficient space for two public restrooms.	170

Net Total for Clinic Area

2,640

## ground level +12



#### Dining/Kitchen Area

9

The purpose of this area is to provide food for both patients and staff. This area contains food handling and preparation areas as well as the dining area.

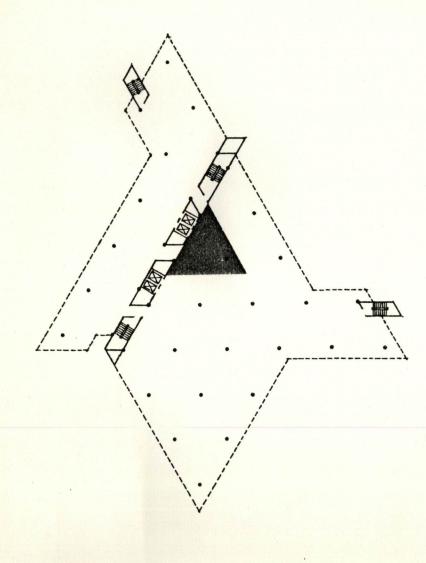
Treatment Function	Space	Explanation	Sq. Ft.
Dining/Kitchen	Receiving Office	Provide sufficient space for pri- vate work area. (The Receiving Officer's role is to oversee the ordering and receiving of food.)	130
	Dietician's Office	Provide sufficient space for pri- vate work area. (The Dietician's role is to oversee the preparation of food within L.E.C.)	190
	Food Preparation Area	Provide sufficient space for food preparation, cooking and baking areas with their respective equipment work space and storage areas.	850
	Special Food Preparation Area	Provide sufficient space for special food preparation, cooking, and baking areas with their respective equipment work space and storage areas.	140
	Dining Area	Provide sufficient seating space for 75-100 people. For both patient and staff together. Serving of food will be within the dining area.	2,450
	Freezer	Provide sufficient space for storage of freezing perishable food.	190

Treatment Function	Space	Explanation	Sq. Ft
Dining / Kitchen	Cooler	Provide sufficient space for refrigeration of perishable food.	210
	Dry Storage	Provide sufficient space for storage of dry food.	200
	Dishwashing and Storage	Provide sufficient space for dishwashing equipment, work area and dish storage.	300
	Cart Storage	Provide sufficient space for up to 5-6 carts and work space.	210
	Staff Lockers/ Toilet	Provide sufficient space for male and female employees to store personal items, apparel and for toilets.	180
	Trash Room	Provide sufficient space for trash.	110
	Dining and Social Deck (non-climatized)	Provide sufficient space for outdoor dining and socializing in summer and winter. (Locate adjacent to dining room.)	4,140

Net Total for Dining/Kitchen Area 5,190

28

ground level +12

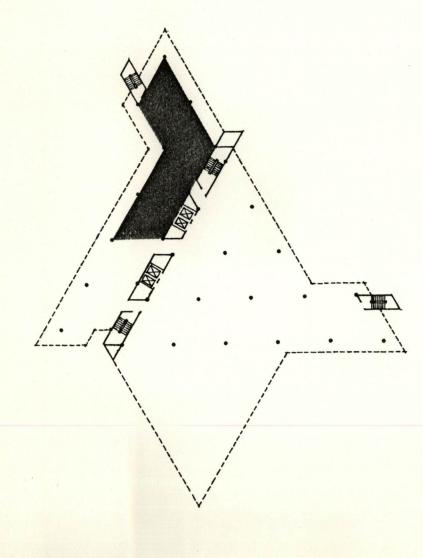


**General Services** 

The purpose of this area is to provide adequate spaces for central control and interaction. The area contains the admitting lobby, the library and a day room.

Treatment Function	Space	Explanation	Sq. Ft.
General Services	Admitting Lobby	Provide sufficient space for initial interview and admission procedures. (Locate adjacent to reception center.)	690
	<b>Reception Center</b>	Provide sufficient space for reception and control; this should be visible and immediately accessible upon entry	
	Control Center	Provide sufficient space for private work and consultation area. Locate at clinic area.	130
	House Control Office	Provide sufficient space for private work and consultation area. Locate adjacent to reception center.	150
	Private Restroom	Provide sufficient space for a private restroom adjacent to house control office.	60
	Day Room (1st Level)	Provide sufficient space for inter- action between the patients, pas- sive interaction, limited entertain- ment, resting and other unstructured activities.	1,630
	Library (3rd Level)	Provide sufficient space for reading and for "getaway" space.	760
	Public Restrooms	Provide sufficient space for two public restrooms.	100
		Net Total for General Services	4,000

## first level + 24



Administration Area

The purpose of this area is to administer the activities and services of all life enhancement programs. The area contains offices and meeting spaces for staff and a control point for participant admission and release.

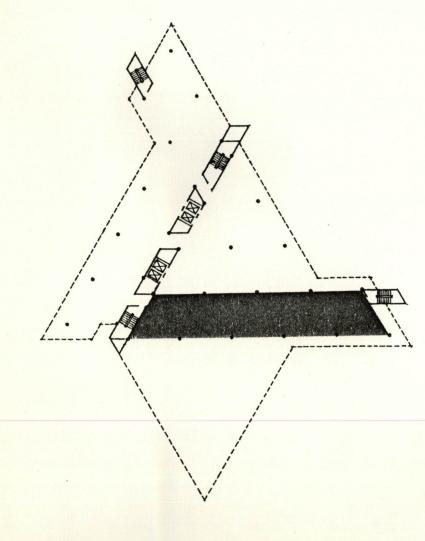
Treatment Function	Space	Explanation	Sq. Ft.
Administration Area	Reception / Secretarial	Provide sufficient space for reception and clerical support to administer files, copy, and miscellaneous secretarial functions.	280
	Office of Administrator	Provide sufficient space for private work and consultation area. (Administrator's role is to oversee the operation of the physical facility and see to management responsibilities relevant to its purpose.)	200
	Administrator's Secretary	Provide sufficient space for clerical support to administer files, perform secretarial duties and waiting area for 2-4 people.	290
	Office of Assistant Administrator	Provide sufficient space for private work and consultation area. (Assistant Administrator's role is to assist the Administrator.)	200
	Office of Nurse Administrator	Provide sufficient space for private work and consultation area. (Nurse Administrator's role is to deliver nursing services at L.E.C; aside from routine assessment of patient conditions, a wide range of	150
		rehabilitative, counseling and emotional support will need to be offered.)	

Treatment Function	Space	Explanation	Sq. Ft
Administration Area	Office of Nutritionist	Provide sufficient space for pri- vate work and consultation area. (Nutritionist's role is teaching of nutritional importance and effect on health, management of diet.)	150
	Office of Exercise Physiologist	Provide sufficient space for pri- vate work and consultation area. (Exercise Physiologist's role is managing the physical fitness program, developing emotional support and increasing patients' physical capabilities.)	150
	Office of Counselor	Provide sufficient space for pri- vate work and consultation area. (Counselor's role is to provide emotional and spiritual support for each patient.)	130
	Staff Conference Room	Provide sufficient space for 10-15 people, depending on needs. Allow for large conference table along with a storage area. (Locate near administrator's office for immediate access.)	410
	Waiting Area	Provide sufficient space for seating of 5-8 people.	100
	Staff Lounge	Provide sufficient space for lounge seating, reading, and conversation area in atmosphere of "getaway" space	290 ce.

Treatment Function	Space	Explanation	Sq. Ft.
Administration Area	Kitchenette	Provide sufficient space for kitchenette. (Locate adjacent to staff conference room.)	90
	Equipment Storage	Provide sufficient space for storage of all potentially idle mobile equip- ment and general storage, including paper storage, forms, and supplies for secretarial use.	120
	Staff Restrooms	Provide sufficient space for two restrooms with adjoining lounge (for administration area).	120
	Public Restrooms	Provide sufficient space for two public restrooms.	100

Net Total for Administration Area 2,780

## first level +24



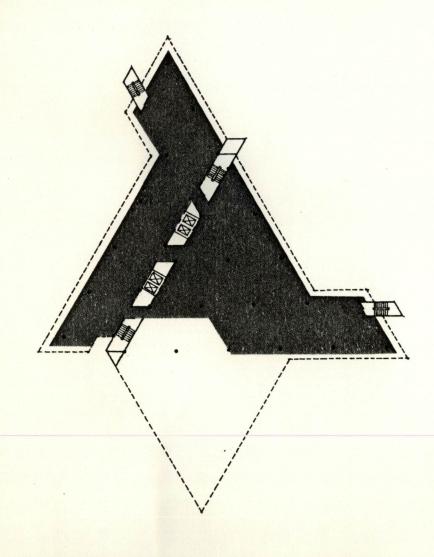
#### **Recreation Therapy**

The purpose of this area is to administer the physical fitness program of each patient. This area contains swimming pool, recreation therapy area and structured physical therapy area.

Treatment Function	Space	Explanation	Sq. Ft.
Recreation Therapy	Recreation Therapy Area	Provide sufficient area for equipment, both stationary and mechanically powered. To be used for patient exercise.	2,140
	Swimming Pool	Provide sufficient space for structured and/or non-structured physical therapy. (Square foot- age includes the mechanical spaces below.)	2,840
	Structured Physical Therapy (3rd Level)	Provide sufficient space supplied with necessary equipment, local physical therapy and exercise. Also to be used for recreational purposes when needed.	1,530
	Public Restrooms	Provide sufficient space for two public restrooms.	340
	Activity Deck (non-climatized)	Provide sufficient space for sun terrace with landscaping for patients. (Locate adjacent to swimming pool and recreation therapy area.)	

Net Total for Recreation Therapy 6,850

second level +40



Patient Sleeping Area

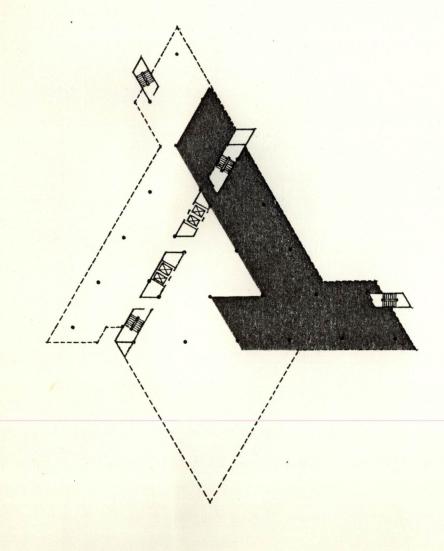
The purpose of this area is to provide adequate space for patient sleeping. This area contains 30 2-bed rooms and 9 larger hotel-type rooms.

Treatment/Function	Space	Explanation	Sq. Ft.
Patient Sleeping Area	Patient Rooms (30)	Provide sufficient private space for patient and the partner. Each room to include full bathroom, dressing, and personal effects storage.	8,820 bath @ 50 room @235
	Hotel Type Rooms (3rd Level)	Provide sufficient private space for patient and the partner. Each room to include full bathroom, dressing, and personal effects storage.	3,330 bath @ 50 room @ 305
	Medication Preparation Area	Provide sufficient space for storage cabinets, work counter, and cart storage.	200
	Soiled Utility Room	Provide sufficient space for linen hamper and cart storage along with cabinet storage, double sink and utility hopper sink.	200
	Clean Utility Room	Provide sufficient space for carts, shelf and cabinet storage along with counter space with small sink.	380
		(Provide for dual access from both nursing station and public corridor.)	

Treatment/Function	Space	Explanation	Sq. Ft.
Patient Sleeping Area	Staff Lounge/ Toilets	Provide sufficient space for private "getaway" area. Also provide sufficient space for two restrooms.	370
	Nursing Station	Provide sufficient space for work area and dictation area for nurse or physician. Also provide space for temporary record storage.	560
	Day Rooms (2)	Provide sufficient space for sitting areas that encourage social interaction.	390
	Equipment Storage (2)	Provide sufficient space for storage of all potentially idle mobile nursing equipment.	290

Net Total for Patient Sleeping Area 14,540

## third level +53



Group Therapy Area

The purpose of this area is to provide an environment where group interaction takes place, to include individual and/or group therapy sessions, limited entertainment, resting and other unstructured activities.

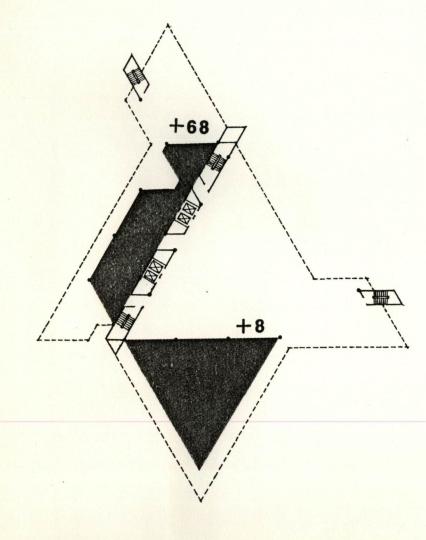
Treatment Function	Space	Explanation	Sq. Ft.
Group Therapy	Group Therapy Rooms (6)	Provide sufficient space for 12-15 people where group inter- action takes place, to include group therapy sessions, passive recreation, limited entertainment, resting and other unstructured activities.	3,750 @ 625
	Individual Therapy Rooms (4)	Provide sufficient space for 2-3 people, where visiting assisting staff can hold private sessions of moderate length.	390 @ 98
	Education Therapy Area (1st Level)	Provide sufficient seating for 75-100 people for both the patients and staff together. To carry out lectures where all the patients could gather in one place.	2,070
	Public Restrooms (2)	Provide sufficient space for two public restrooms, adjacent to Education Therapy Area.	200
	Equipment Storage Area	Provide sufficient space for storage of all potentially idle mobile equipment and general storage (to store chairs, audio visual equipment).	570
	Public Restrooms (4)	Provide sufficient space for four public restrooms.	390 @ 98

Treatment Function	Space	Explanation	Sq. Ft.
	Offices (3)	Provide sufficient space for private work area.	510
	Activity Lab	Provide sufficient space for 25-30 people to carry out lectures and demonstrations in cooking and other dietary activities.	1,360
	Outdoor Garden (non-climatized)	Provide sufficient space for conference area for use in group therapy sessions.	2,720

### Net Total for Group Therapy

7,370

## mechanical level +68



Mechanical Area

The purpose of this area is to house all mechanical equipment necessary to building utilization. This area contains boilers, air handler units, etc.

Treatment Function	Space	Explanation	Sq. Ft.
Mechanical Area	Ground Level (+8)	Provide sufficient space for boilers, condensers, evapo- rators and pumping equipment.	4,850
	Mechanical Level (+68)	Provide sufficient space for air handlers and water supply tanks for fire and domestic water.	4, 340

Net Total for Mechanical Area

9,190

Net Total for Clinic Area 2,640	
Net Total for Dining/Kitchen Area 5,190	
Net Total for General Services Area 4,000	
Net Total for Administration Area 2,780	
Net Total for Recreation Therapy Area 6,850	
Net Total for Patient Sleeping Area 14,540	
Net Total for Group Therapy Area 7,370	
Net Total for Mechanical Area 9,190	

Explanation

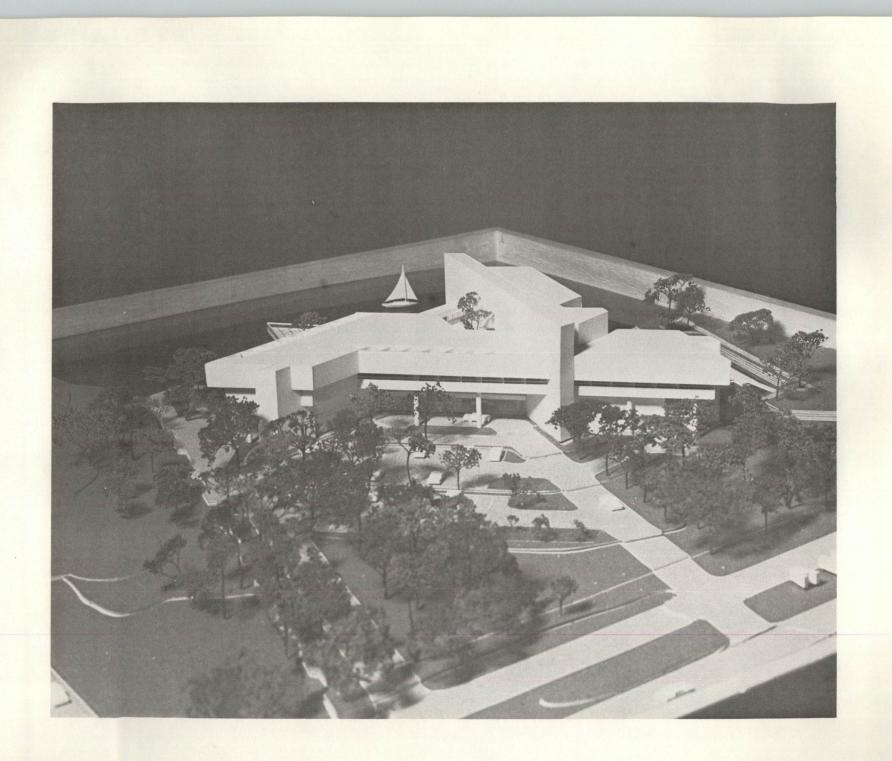
Space

**Treatment Function** 

Vertical & Horizontal Circulation & Walls 43,480

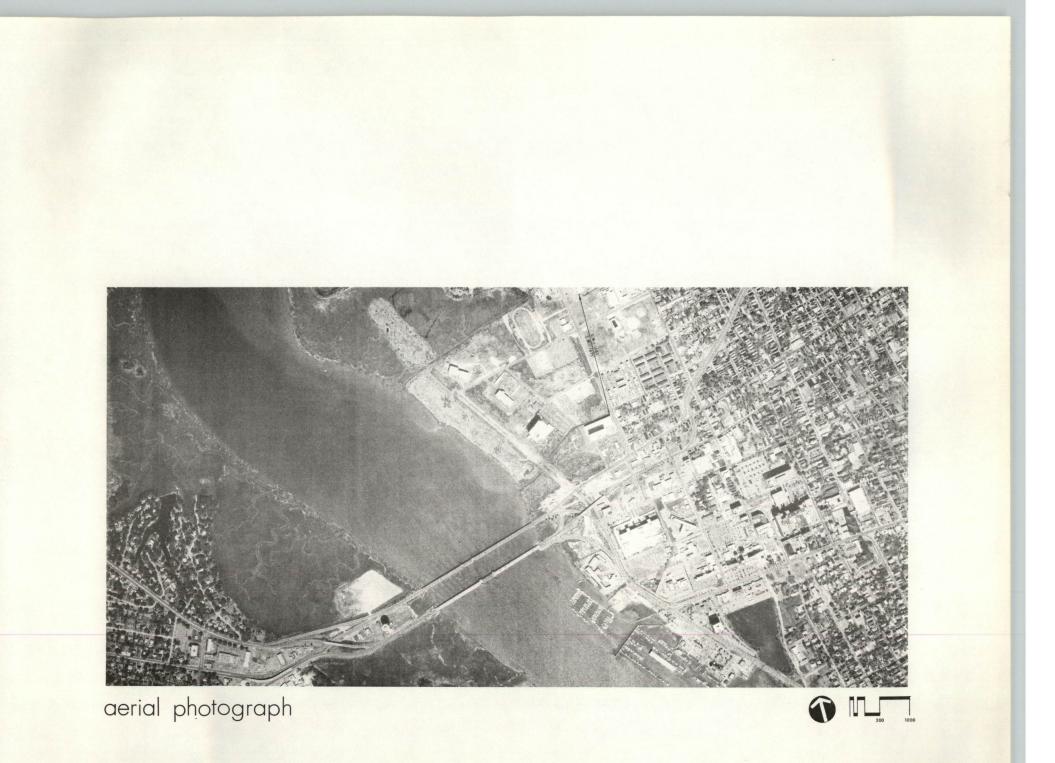
Total Enclosed Area forThe Life Enhancement Center93,400

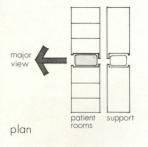
Sq. Ft.



# design proposal

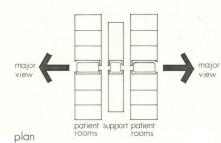
a life enhancement center charleston, south carolina

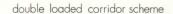




#### single loaded corridor scheme

this option cannot meet the code recquirements concerning distances (too long).

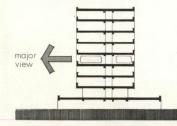




advantage: the facility can be built on the site and satisfy all of the code requirements.

major view

disadvantage: this scheme will have the character of a standard hospital which should be avoided due to special psycho-logical patient needs.



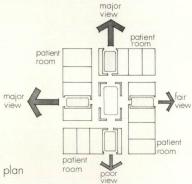
section

majo viev

section

concepts which generated the l.e.c.

50



square plan scheme

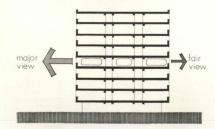
advantage:

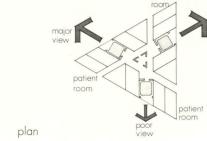
concepts which generated the l.e.c.

low amount of building perimiter provides a greater degree of economy disadvantages:

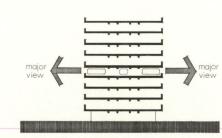
the people coming to the facility are concerned about their physical well-being. they need a facility which encourages their enthusiasm. the square plan does not emphasize this quality.

the square plan recquires equal emphasis of all four sides. the site is not appropriate for the promotion of this scheme.





patient



section

#### triangular plan scheme

disadvantage:

this scheme may require unconventional building techniques. thus it may be more expensive to build.

#### advantages:

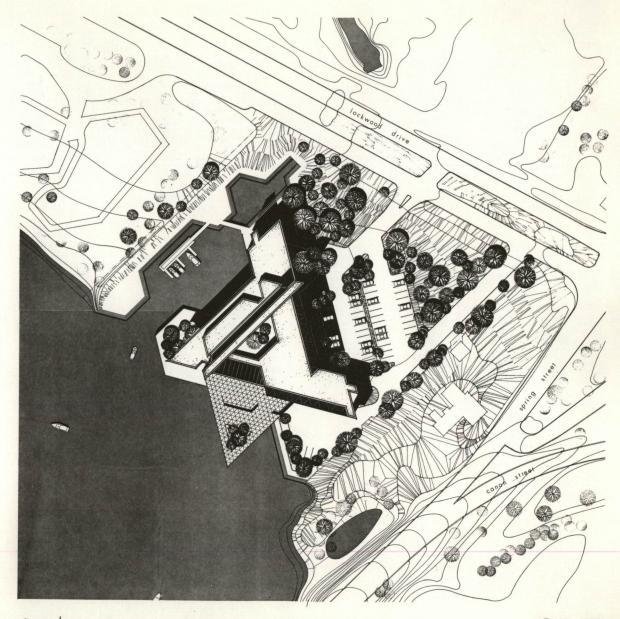
developed.

due to repetitive structural forms throughout the facility, construction should be relatively economical, since the patient needs excitement and fun to overcome their physical imparities, the building's unique shape will supply enjoyment and positive identification from the patient's point of view.

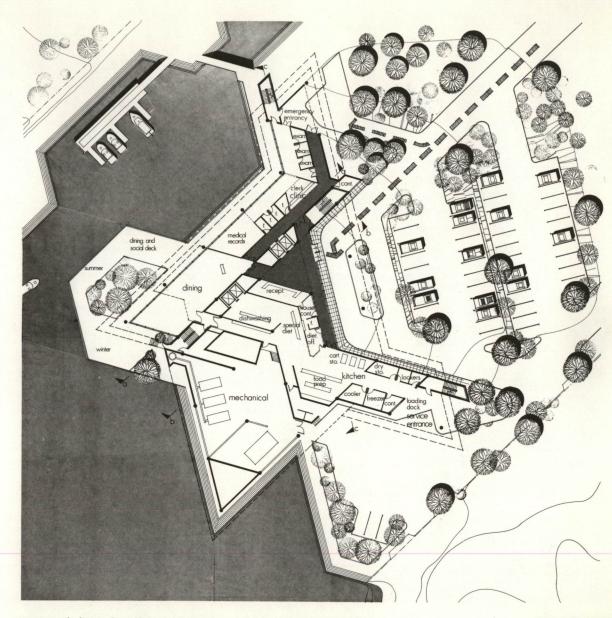
since the site is located in a seismic 3 high tide water foundation, the triangular structural bay system was adopted to accommodate these natural phenomina. since the above advantages allow for an interesting patient facility as well as code compliance in patient care areas, this design scheme should be



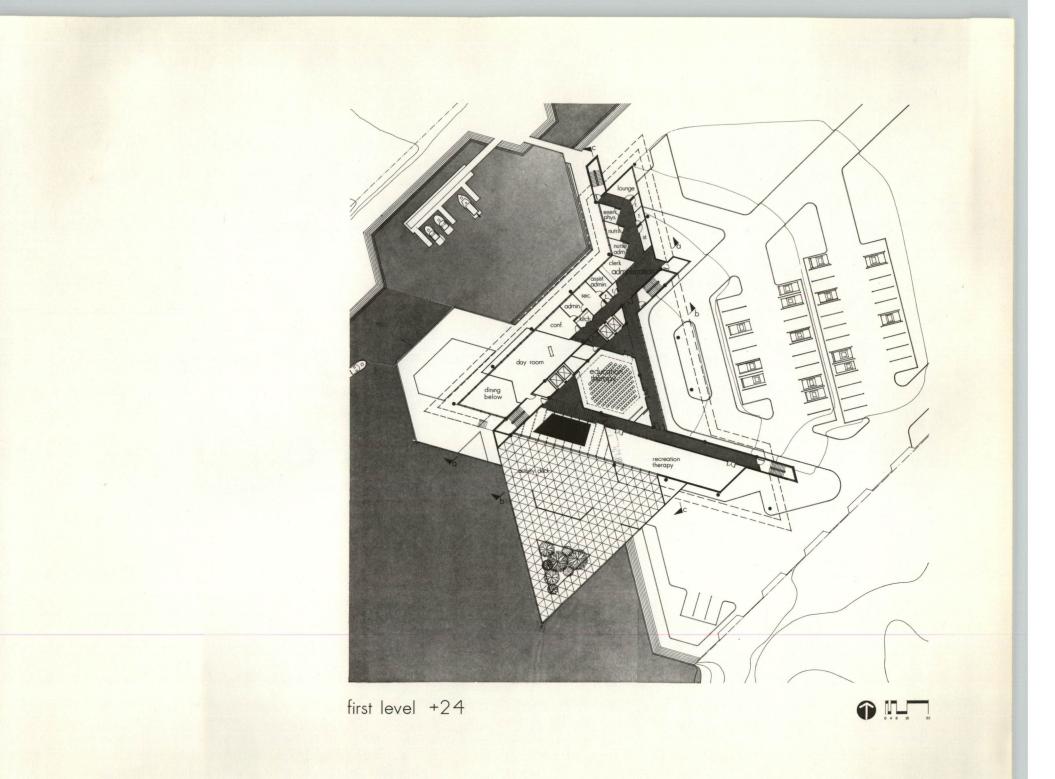
51

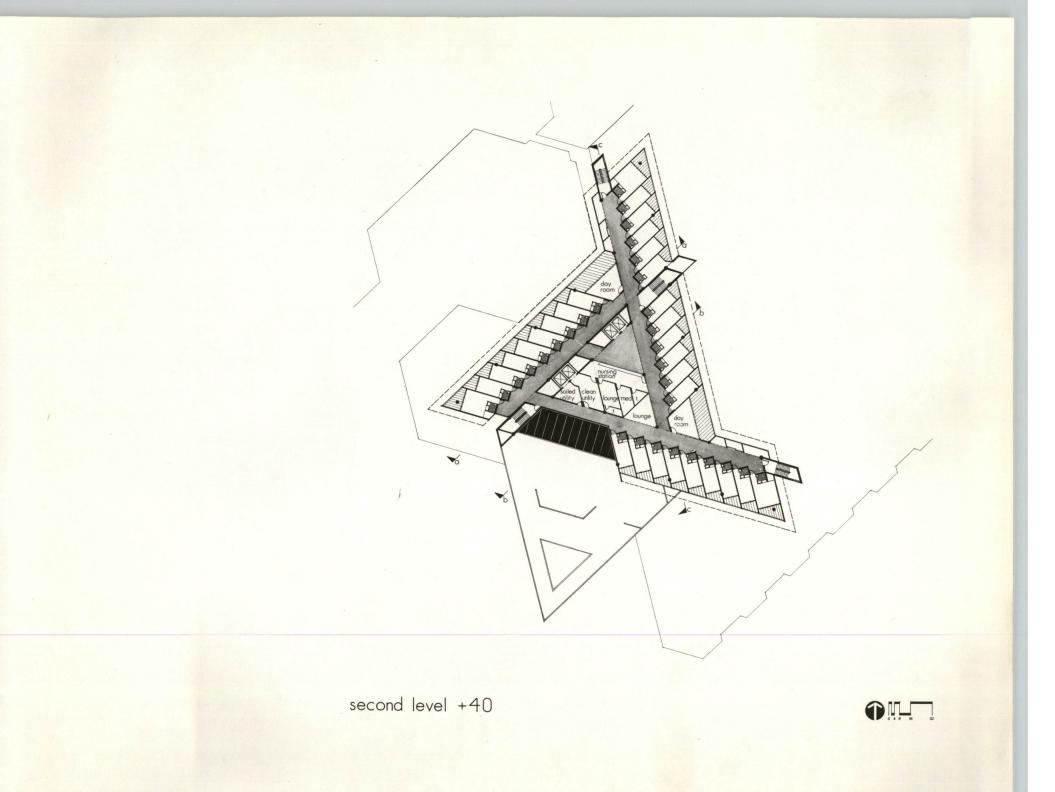


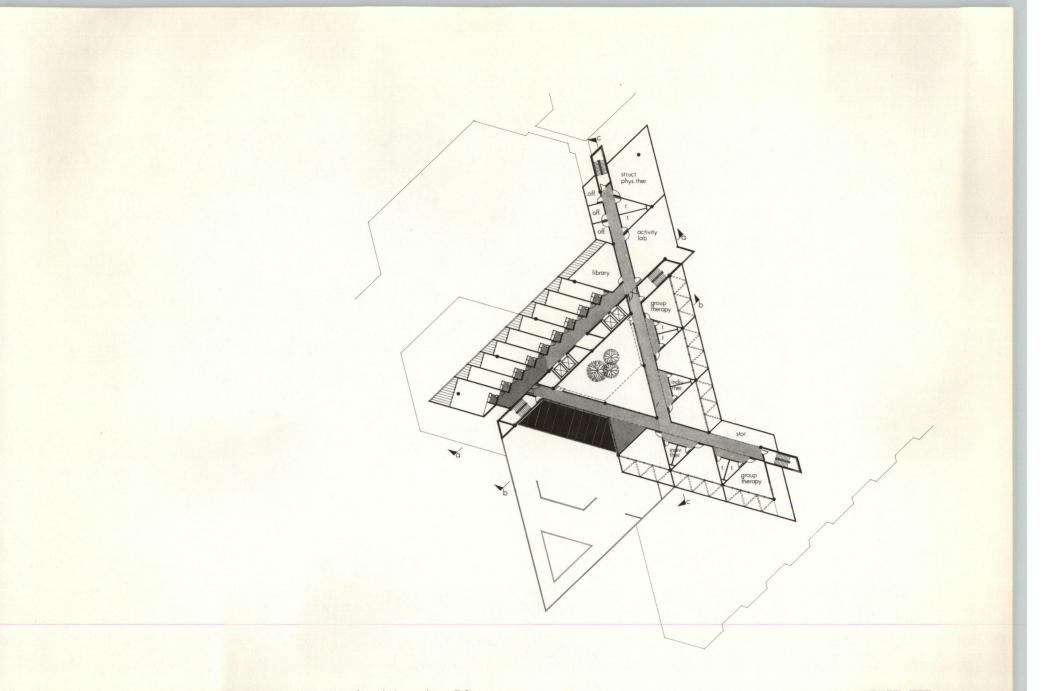
site plan

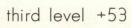


ground level +12

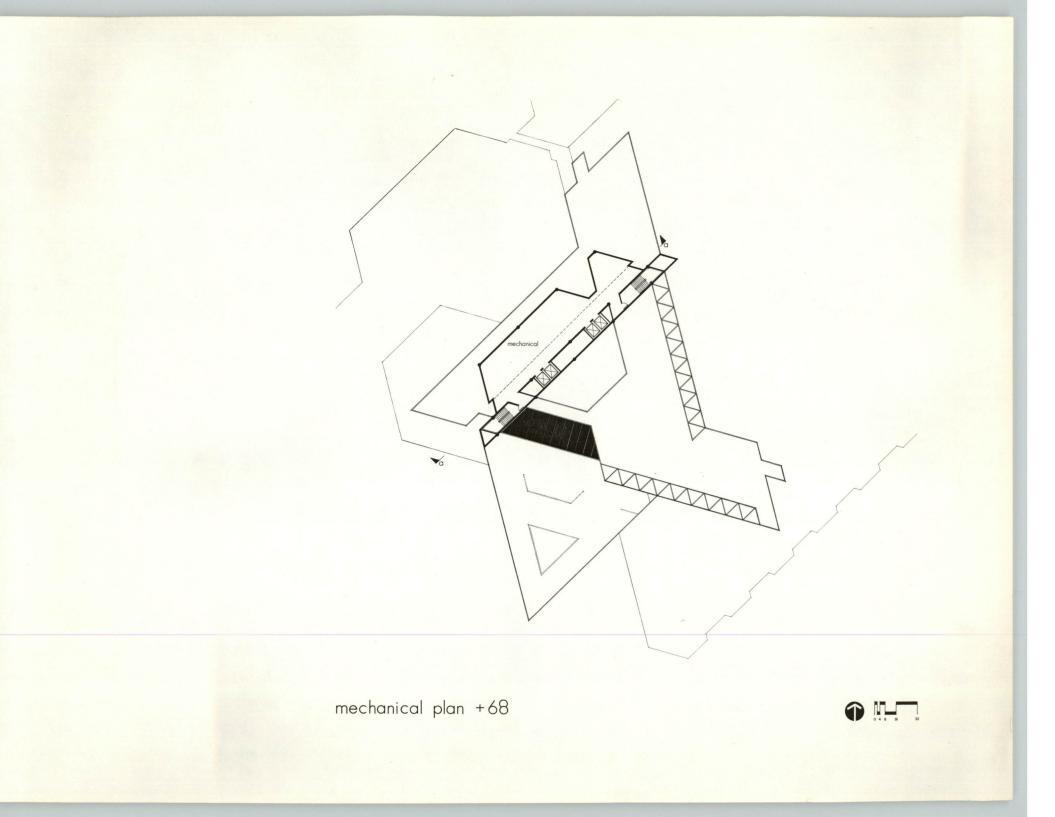


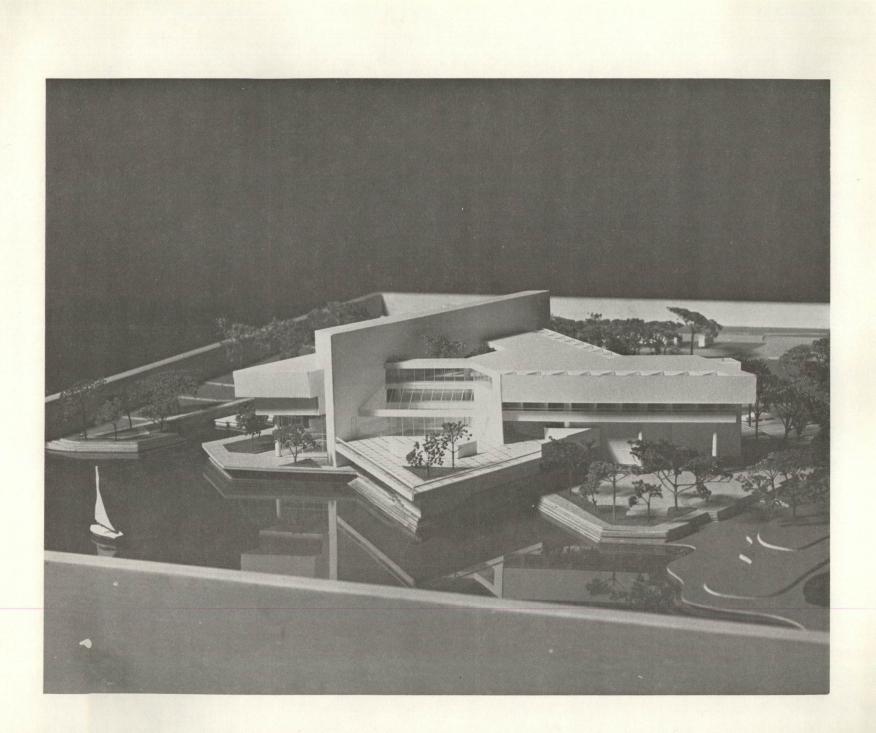


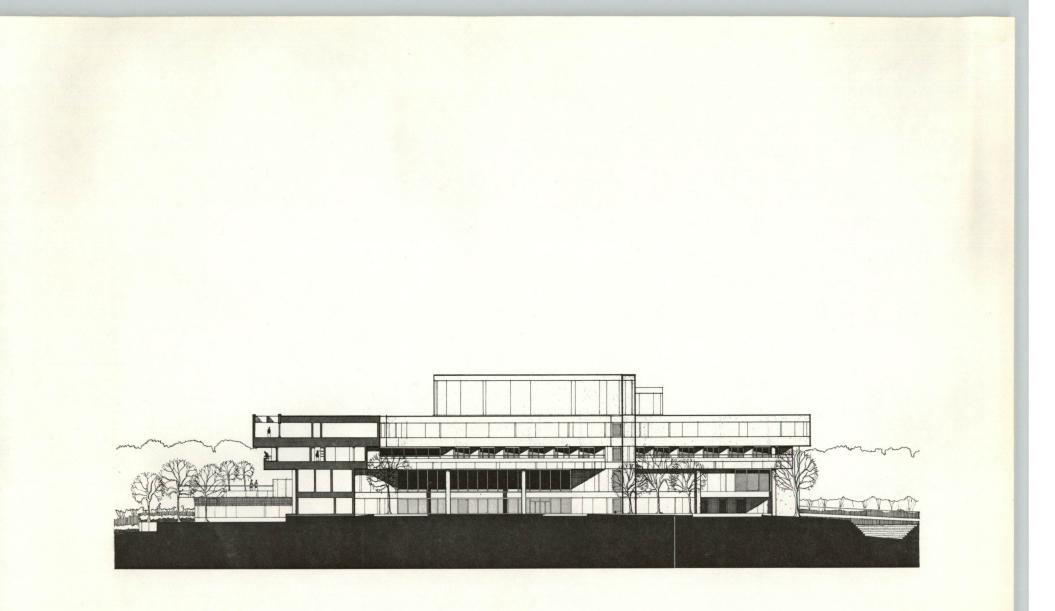






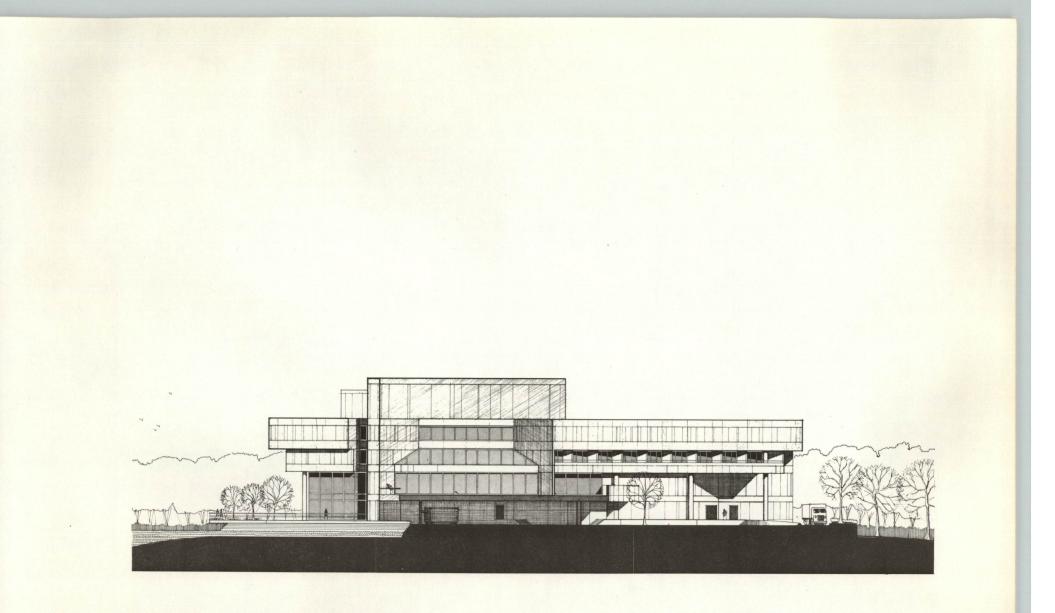




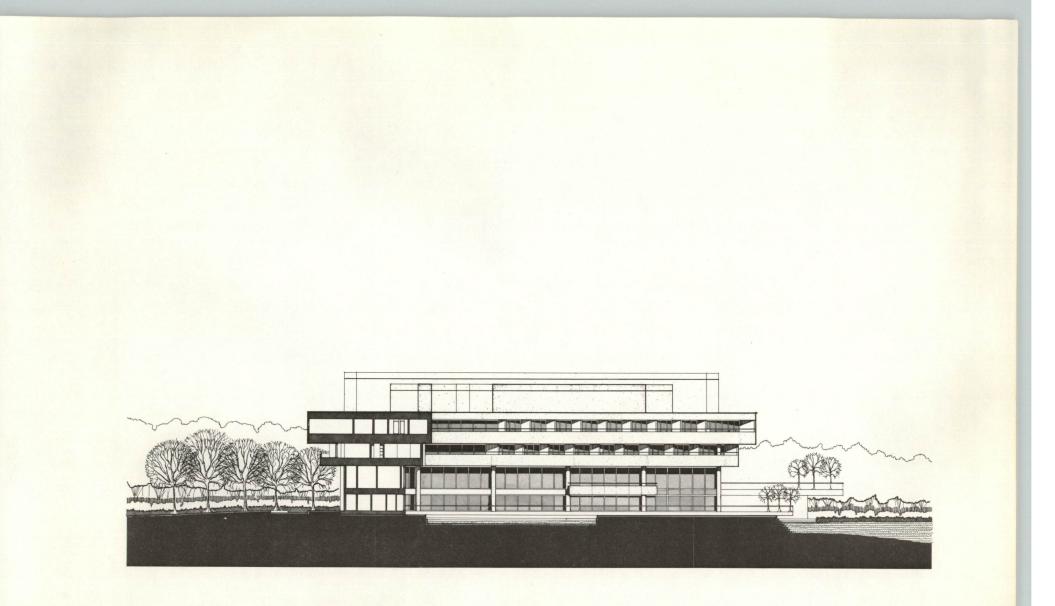


northeast elevation



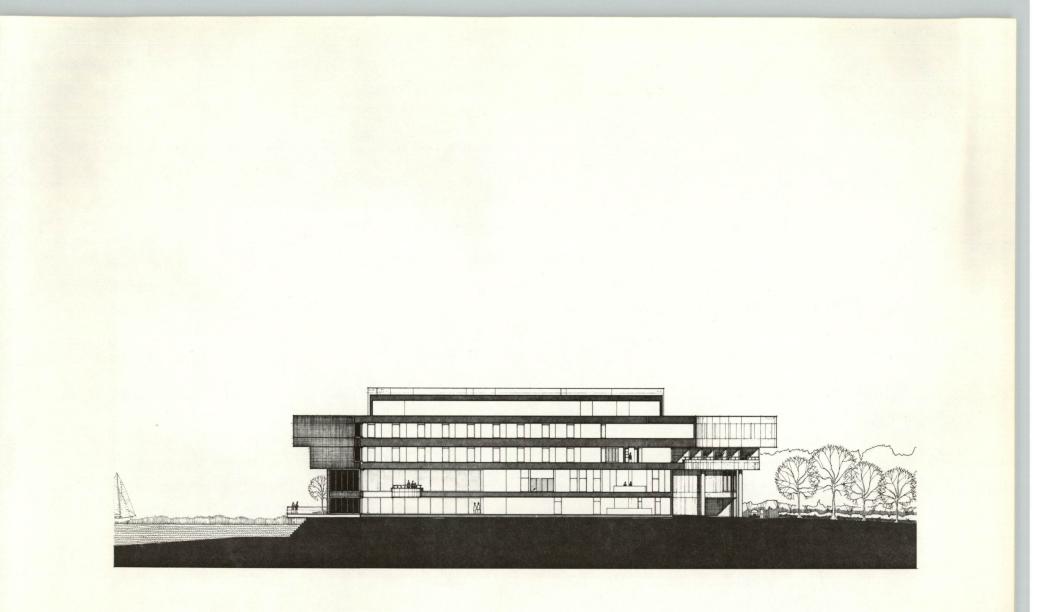


south elevation



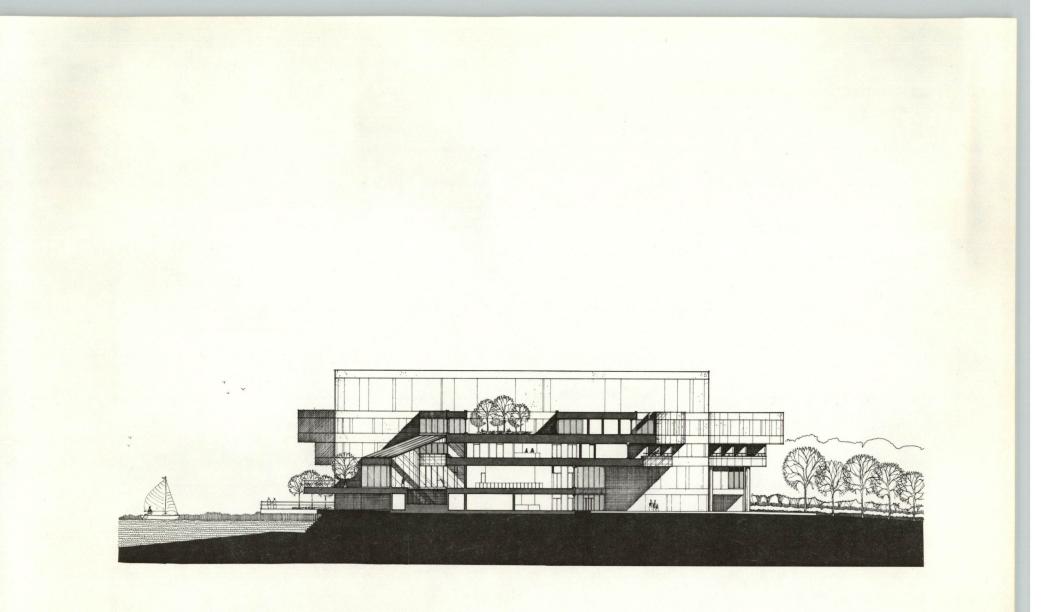
northwest elevation



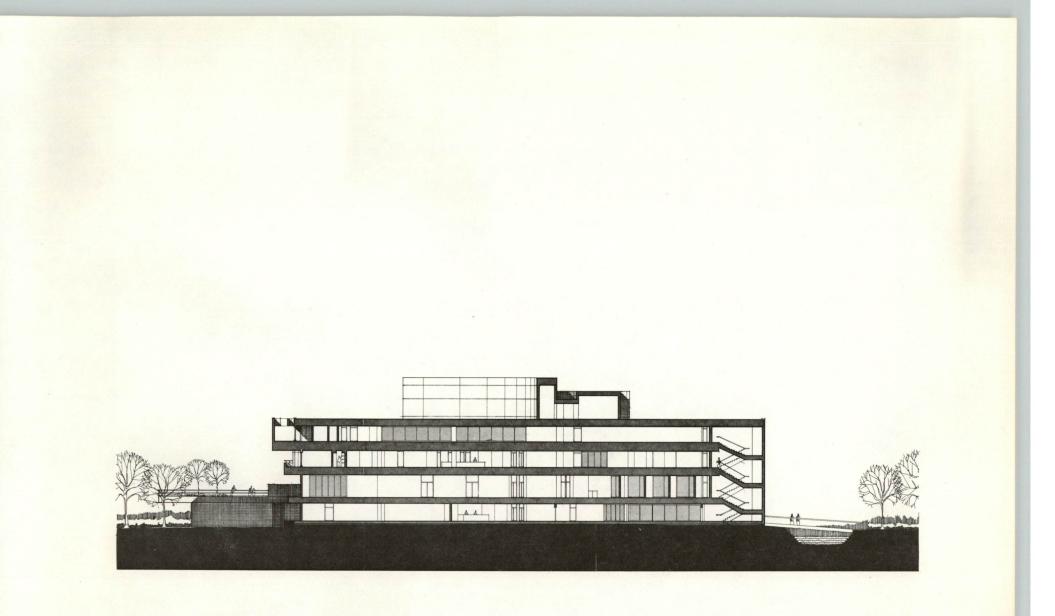


section a-a



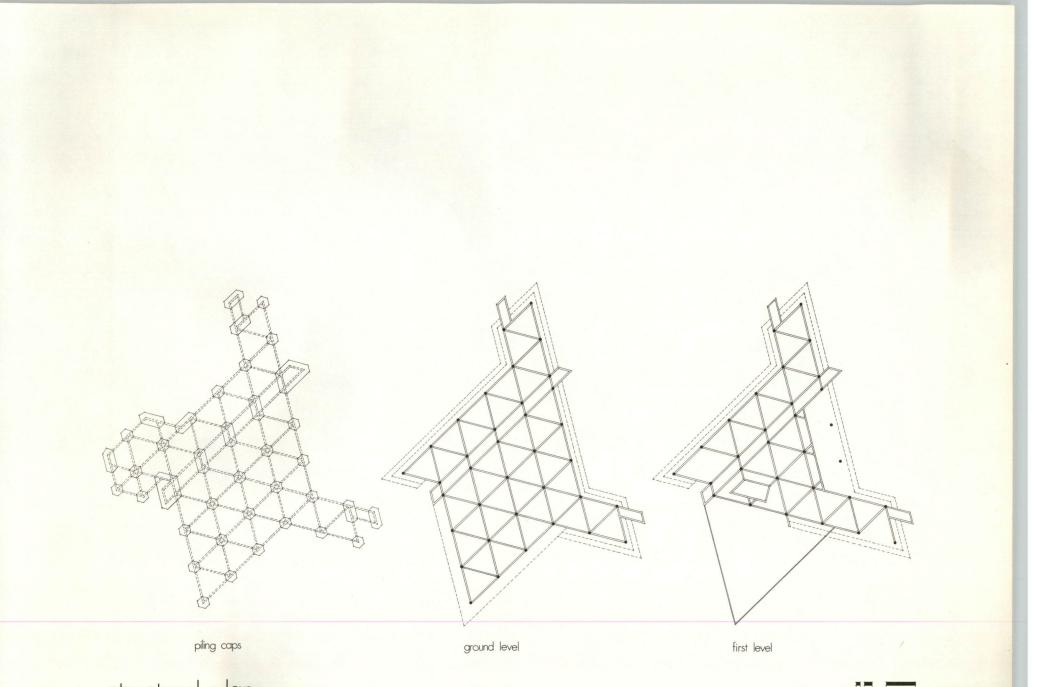


section b-b



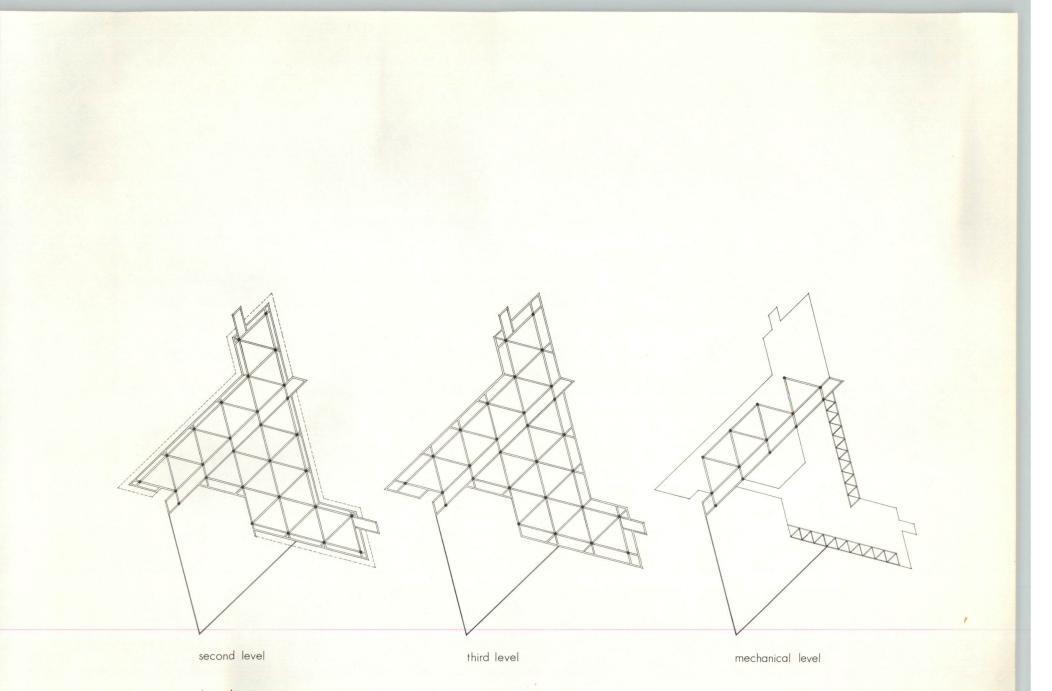
section c-c





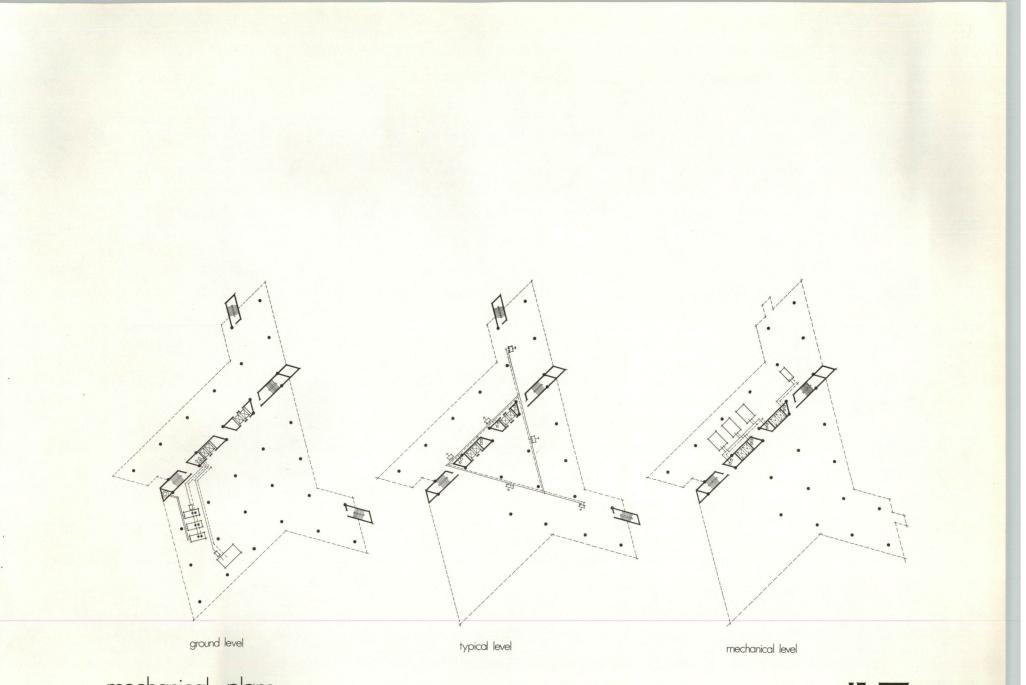
structural plans

0 8 16 32 64



structural plans

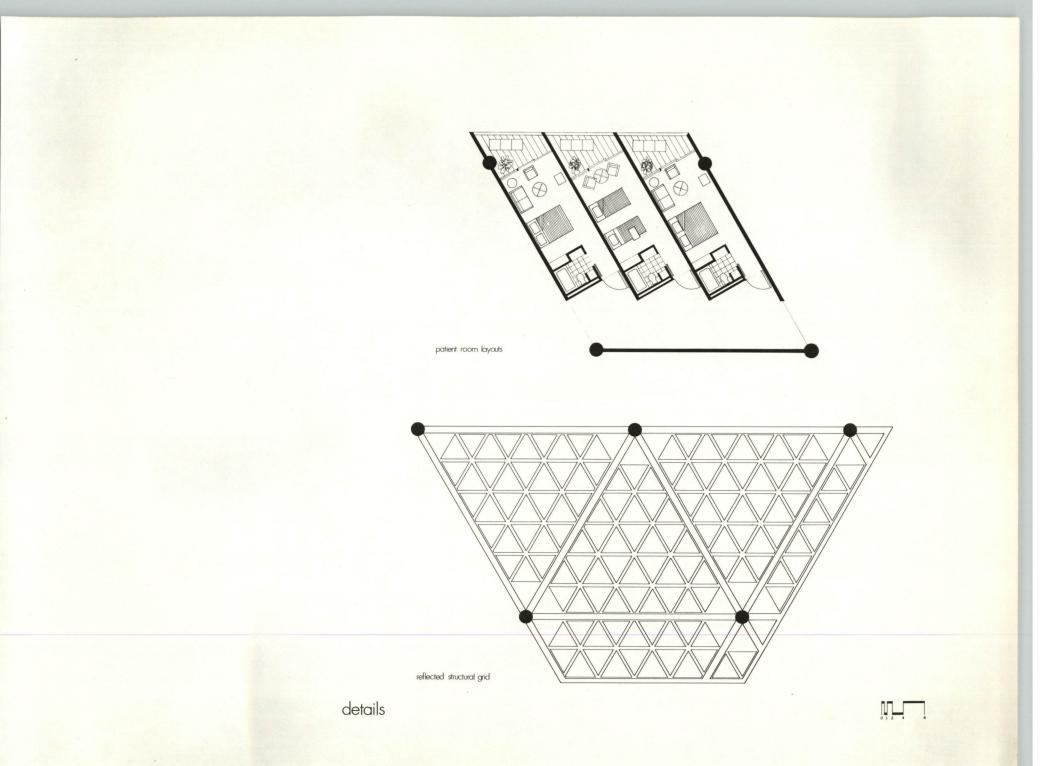
0 8 16 32 6

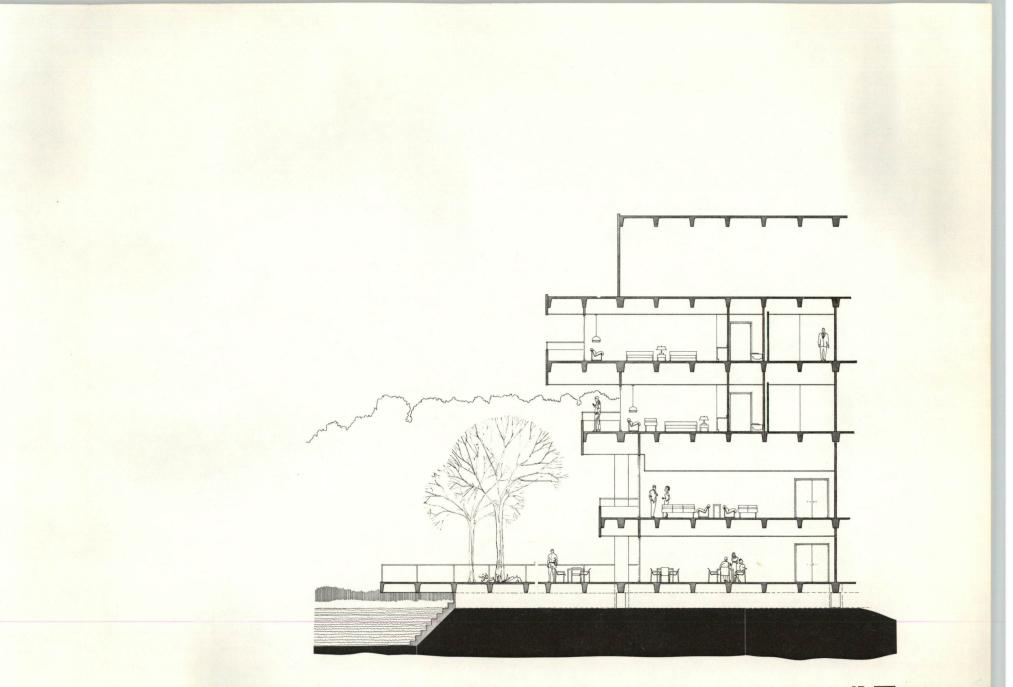




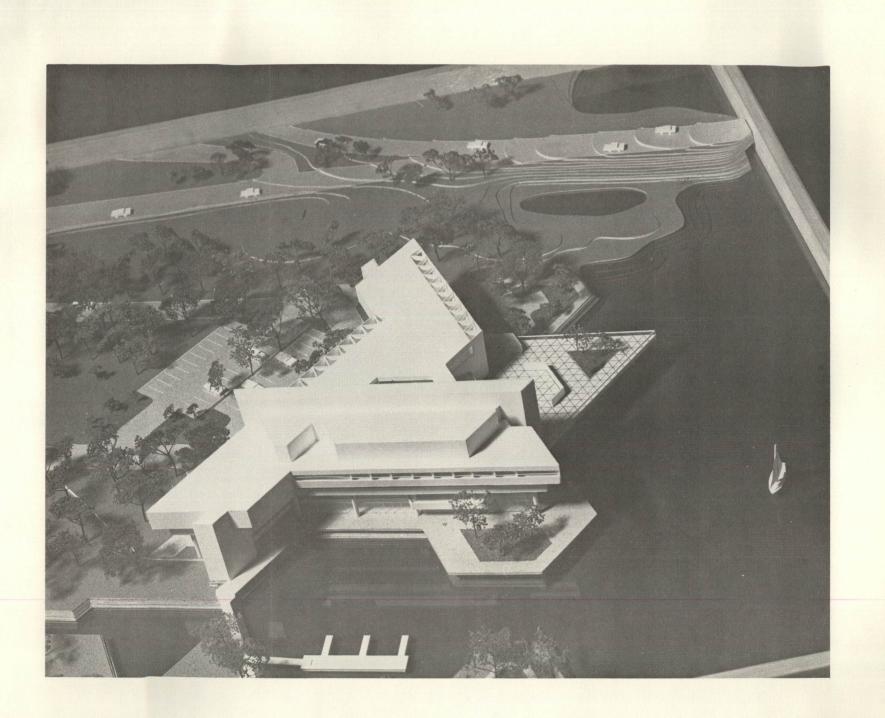








section



## resources

#### resources

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