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Master Plan and Prototype Research Facility for the University of New Mexico Research Park

Sam H. Robinson Jr.

MASTER PLAN AND PROTOTYPE RESEARCH FACILITY - ROBISON

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MASTER PLAN AND PROTOTYPE RESEARCH FACILITY

FOR THE

UNIVERSITY OF NEW MEXICO

RESEARCH PARK

SAM H. ROBISON, JR.

BACHELOR'S THESIS

PRESENTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF BACHELOR OF ARCHITECTURE.

DEPARTMENT OF ARCHITECTURE
UNIVERSITY OF NEW MEXICO
ALBUQUERQUE, NEW MEXICO
MAY 27, 1967

THESIS COMMITTEE

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2._____

3._____

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INTRODUCTION

Since great emphasis is now being placed on developing our nation's scientific and technical capabilities, many universities are establishing closer liaison with private industry by inviting companies to locate on or near their campuses. This is not solely an effort by universities, for industry, too, finds it to its advantage to locate in proximity to educational institutions. Their are a number of reasons why university-industry relationships are growing, but of most importance is the fact that both have recognized the benefits to be gained through an exchange of knowledge, personnel, and equipment.

In 1960 the University of New Mexico joined with members of the business community in an attempt to develop and promote a Research Park on University-owned property. However, since then, the success of the park has been very limited.

The purpose of this study, therefore, is to determine the potential and justification of such a project by analysing the existing state of development, by illustrating what other universities are doing, and by pointing out what must be done to improve its capabilities. In order to follow thru with the proposals made, a Master Plan and Prototype research laboratory will be presented.

PHASE I : FEASIBILITY STUDY

FEASIBILITY STUDY

Since the Research Park has already been established, this report must then be considered as a post-development feasibility survey. Its purpose being to re-appraise the concept of the establishing the Park, to analyse the existing conditions, and to make proposals to insure its success.

P.S. At the beginning of this study, there was great evidence pointing toward the need for a detailed and concentrated effort in promoting the development of the University of New Mexico Research Park. Since that time, conditions have changed favorably in many respects, which will be enumerated later, and may render many aspects of this report unnecessary at this time. However, it may prove to be a necessary and valuable guide in other areas of development in the future.

HISTORICAL BACKGROUND

The concept of establishing a Research Park in relation to the University of New Mexico came about in 1959 when Dr. Sheldon Dike, President of the newly formed Dikewood Corporation dealing in computers, operations research, and systems analysis, proposed the idea to the Board of Regents, stating that he would be the first tenant if such development took place. University officials and Dr. Dike then confered with Mr. John Daly, then director of Albuquerque Industrial Development Corporation, who conducted a survy of existing university related research industrial parks. This was an attempt to obtain a broad cross-section of similar developments across the country. Fifty-eight (58) universities, both private and state were surveyed, and although the questionnire may have left a lot of ground uncovered it was particularly helpful in ascertaining facts relating to real estate, financing, and sponsership.

While a detailed list of replies is not necessary here, several factors should be noted. In some instances, notably M.I.T.'s Technology Square and University of Colorados Research Park, areas are devoted exclusively to research and development, experimentation, prototype development, and service type facilities. In most other cases, high production, assembly, and manufactoring facilities are being invited to locate near campuses.

There were numberous references to research institutes and foundations. These are, for the most part, private non-profit research corporations.

established close to, but separated from, universities. They often use faculty staff to supplement permanent staff. These groups are frequently independently endowed, but sometimes are sponsered by the University; autonomous, but perhaps administratively overlap the university; and in many cases use the university's name and good will to obtain business while operating as an independent entity. Nearly all research/industrial parks surveyed and now in existance at major universities are controlled by private non-profit corporations. However, the Miami International Research Associations is a private organization and the University of Oklahoma's Park is University controlled as is Colorado's.

Acreage devoted to research/industrial parks by those surveyed varies greatly. Allotted least acreage is Technology Square at M.I.T. with 14.7 acres. Five thousand acres are controlled by developers of Research Triangle in North Carolina. A correlation can probably be established between magnitude of an area's economic development problems and acreage devoted to the parks. It seems valid to assume that where the desire is to attract "think" or "brain" type companies -- small acreage and intensive land use can be planned. Where production facilities are desired, extensive acreage should be provided. Availability of land at a reasonable cost, proximity to campus, financing, and many other factors are also involved in determination of park size.

Some "speculative" building programs, of a sort, can be found on or

near campuses. M.I.T's venture with Cabot, Cabot, and Forbes involves construction of high rise office and laboratory space and although there is the assurance of major tenants, some "speculative" space is being developed. The Ann Arbor Chamber of Commerce is sponsering a "speculative" laboratory and office building in their industrial park to attract research and development firms.

In concluding the survey, Mr. Daly indicated that those universities that are or will be sponsoring research/industrial parks feel strongly that they stand to benefit from their association with industry without upsurping their educational obligations. This conclusion combined with the promise of a "first" occuppant set the stage for proceeding with the development of the U.N.M. Research Park. Approximately 25 acres were alloted on the South Campus; the architectural firm of Flatow, Moore, Bryan, and Fairburn was engaged to develop a Master Plan; the necessary legal documents (options to lease, covenants and restrictions) were obtained, and promotional campaigns put into effect. Several promising responses to a promotional leaftet distributed by Albuquerque Industrial Development Corporation, who has the option to lease, were received (some from such notables as Dow Chemical, Union Carbide, and Sandia Corporation).

However, the direction, organization and financing necessary to follow through did not exist and resulted in nothing being established Dikewood Corporation went ahead on its own initiative and completed its facilities in 1964. During this time the Forest Service also had plans

drawn up for a Forest Services Laboratory in the Park, also on their own initiative. In short, the Park has been suffering largely from a lack of support from a stronger relationships between the sponsoring developers!

PRESENT CONDITIONS

It has seemed that, until just recently, the park was going to continue on a long, difficult struggle for growth and success unless a more definite direction and plan of action was adopted by the University and A.I.D.C. Then, in the last week of March (1967), the firm of Edgerton, Germeshausen, and Grier, Inc. announced plans to consolodate all their Albuquerque facilities onto the Research Park. This is largely responsible to the promotion of the architect. Also, the Dikewood Corporation is now considering expansion and the Forest Service received funds from Congress to begin construction. Another factor which may encourage more rapid development is the recent campaign conducted by a group of Albuquerque businessmen to solicit one million dollars for industrial, development. Hopefully part of this fund will be used in conjuction with A.I.D.C. to promote the Research Park. If not, it still serves as a good example of the willingness of the community, its government, and business leaders to support a long term economic program. These factors, when combined, will undoubtedly provide the impedus needed for more rapid development; act ing as a magnet to draw others into the area.

It seems, therefore, that the Park will become successful, whether or not the University or A.I.D.C. take an active participation in its development and promotion. The following may serve as the underlying reasons for this.

FACTORS INFLUENCING POTENTIAL

Site Location

The Park is conveniently located to contributing elements. It has a prime location within reasonable distance from the urban center, transporation facilities (by rail, bus, or airlines), attractive living conditions, and the University. Proximity to the University is of major importances since many companies are not finding it difficult to attract competent personnel unless they can offer the advantages of a University environment.

Adequate access to the site is provide by the Pan American Freeway (I-25) and the cross-town one-way streets, Lead and Coal Avenues.

Albuquerque is the center of nuclear/space technology and headquarters for the following firms and organizations: Sandia Corporation, a subsidiary of Western Electric Co.; Sparton Southwest, Inc.; CG Division of Gulton Industries; Sandia--Manzano Bases; Defense Atomic Support Agency; Kirtland Special Weapons Center; Lovelace Foundation for Medical Education and Research; the University of New Mexico; the University of Albuquerque. Other installations in the Albuquerque area and

New Mexico include: Los Alamos Scientific Laboratory; Hollaman Missile Development Center; and White Sands Missile Range. The U.N.M. Research Park offers technologically oriented industries an opportunity to be strategically located in the center of nuclear/space activity.

BENEFITS OF UNIVERSITY - INDUSTRY ASSOCIATION

The following is a selected summarization of the replies on the benefits of University-Industry association.

Benefits to the University:

1. Expanded undergraduate and graduate programs and provides financial support for graduate research.

2. Faculty opportunities to obtain consulting positions are broadened.

3. Increases availability of research equipment on campus.

4. Additional scientific and technical people are available to University for seminars and instruction.

5. Keeps faculty and students abreast of "State-of-the-art".

6. Serves as stimulus to faculty and students.

7. Provides job opportunities for graduates and opportunity for them to obtain experience with industry while in school.

8. Private firms contribute to scholarship programs, endowments, and building funds more readily.

Benefit to Industry:

I. Facilities they individually cannot afford can be made available through University.

2. Faculty available as consultants and students available during training periods and for jobs after graduation.

3. Can attract employees because of proximity to to University with its cultural and academic environment.

4. Employees can conveniently work for degrees or further education.

5. Universities serve as a centralizing point for all information and knowledge which few companies can afford on their own.

6. Families of employees assured high level educational facilities near home.

7. University environment stimulates creative thinking.

Benefits to Community:

1. Establishes community as center for distinguished scientific talent.

2. Develops a close relationship between University and industry to benefit of community.

3. Additional job opportunity for citizens.

4. Attracts highly educated and high income people to community.

5. Attracts scientific meetings and conferences.

6. Attracts small industries that otherwise might not be able to consider community.

7. Increases flow of corporate executives through community.

8. Achievements of research and development could mean additional manufacturing employment-products developed locally would tend to be produced locally.

9. Provides additional tax base.

RECCOMMENDATIONS

Although the conditions now seem very favorable for the continued growth of the U.N.M. Research Park, its development must not be left to chance. The following recommendations are therefore proposed to insure greater success.

1. The University must take a more active participation in the promotion of the park and establish close ties with the firms locating in the Park. (Benefits to be derived are listed previously.) One of the best means of achieving this would be the contruction of a "speculative" research facility to attract more occupants. This could be done in a joint venture with A.I.D.C. to reduce cost to all parties involved.

2. The University should define the direction the Park is to take; i.e., What kind of research is best tailored to the area's potential? Due to the small acreage available, it is desireable to limit occupancy to "think" or "brain" type research. In other words, production or manufacturing facilities should not be considered due to the extensive acreage that is required for such facilities.

3. The site should be expanded West to the Freeway providing a total of about 50 acres. This can be easily achieved sinde the land is owned by the University. Also, the small piece of property, owned by the Board of Education, which cuts in the NorthEast corner should be obtained for use by the Park.

PHASE II: MASTER PLAN

MASTER PLAN

I. Existing Conditions:

A. Site Study

Location and Size

The site is located at the N.W. corner of University and Stadium Blvd. S.E. and consists of approximately 25 acres. Across Stadium Blvd. to the South is the U.N.M. Basketball Arena and to ehe East of the Arena is the Football Stadium. The Albuquerque Dodger Baseball Stadium is proposed to be located across University Blvd. to the East.

Access

Access to the site is provided both from the University and Stadium Blvds., leaving the immediate corner for a parking lot for University Activities. Access to Stadium Blvd. is provided at I-25 or Yale; access to University by Lead or Coal Avenues.

Existing and Proposed Facilities

*Facility	Site	Building	Remarks
1. Dikewood Corporation	3.25 acres	12,500 sq. ft.	Considering e expansion.
2. Forest Serves	1.5 acres	22,800 " "	awaiting const.
3. E.G.&G.	10.0 "	160,000 " "	in design stage
	14.75 "	195,312 " "	

*Dikewood Corporation and Forest Services are single story structures. E.G. & G. being planned as a two-story structure. Its site hasn't yet been determined.

Streets & Utilities

Streets and Utilities are provided up to Dikewood Corporation Building. Utilities, connect to the city's services under Stadium and University Blvds.

B. Development

The three facilities now planned for occupancy require over one-half of the total site leaving about ten acres remaining. In the case of Dikewood Corporation and the Forest Services Laboratories the program requirements did not call for agything other than small single-story structures. When a single research building requires a floor area of 50,000 sq. ft. or more (as is the case for E.G. & G.) it probably should be constructed as a multi-story building. Beyond this amount communications and circulation in the one story plant becomes difficult and inefficient, and site requirements become extensive. Unfortunately, this consideration has not been given to the E. G. & G facility and is only being concieved of as a two-story building. This means that with parking included, it will require ten acres of land. Since the facility is only in the design stage, I proposed that it be adapted to a multi-story building and located to the North or South edge of the stte--since this will alow for a parking structure or basement parking, economical use of land and structure, proper orientation to the sun and attractive views.

At this point the site should be expanded to the West to the University's boundary line near I-25. The only problems presented here are

those of site work. This additional land is divided almost in half by very rugged terrain. However, the soil is soft and can easily be graded or excavated. (See drawing #1 and photos).

Once the site is prepared it will be relatively sub-divided by its terrain into thirds: The Eastern, fairly flat; the middle portion, sloped; and the Western portion, flat. The Eastern and middle portion will drop off on the north and south edges. This will allow for larger firms or multi-story buildings to be constructed on the North and South edges, since the site will then be suitable for incorporating parking structures with the building. This type of arrangement permits a high ratio of land use (as much as 85%),good orientation for solar heat and view.

The central or flat areas will then be left for the construction of small facilities allowing for adequate parking, future expansion and views. Building coverage in this area should not exceed 25% due to unforseeable expansion by the facility. (See drawing #2)

Certain employee amenities to be used by all occupants of the Park, should be provided in one centralized facility. Such amenities would include a cafeteria, auditorium, library, recreation room, lounges, and possible a computer center. This would allow smaller firms to reduce overhead and to compete with larger firms, who, more likely than not, would require their own computer or data processing equipment.

Access will be provided at two points off University Blvd. and at two or possibly three points off Stadium Blvd. to allow for smooth flow of traffic during peak hours.

This organization as a whole, then, will provide for an average of 40 to 50% land use ratio, with an attractive organized appearance from the freeway or other approaches. When combined with the controls offered by the "Covenants and Restrictions" (See Below), the tenent is assured of a desirable address, considerate neighbors, and security against deterioration of property. (drwg. #5)

C. Covenants and Restrictions (Architectural Considerations)

1. No building, fence, wall, sign, or other structure shall be commenced, erected, or maintained upon the premises until the plans and specifications showing the nature, kind, shape, height, materials, and location of the same shall have been submitted to and approved in writing by the Board of Directors of the Association, or by an architectural committee composed of three (3) or more representatives appointed by the board.

2. Building Setbacks. No building or structure shall be located within fifty (5) feet of the curb line of any public street, nor within fifteen (15) feet of any boundary line of the premises, provided that the Architectural Control Committee for good reason may approve lesser setbacks.

3. Land-Use Ratio. The area of all buildings and structures shall not exceed twenty-five (25%) per cent of the area of the premises, unless a greater ratio of building area to total area is approved by the Architectural Control Committee.

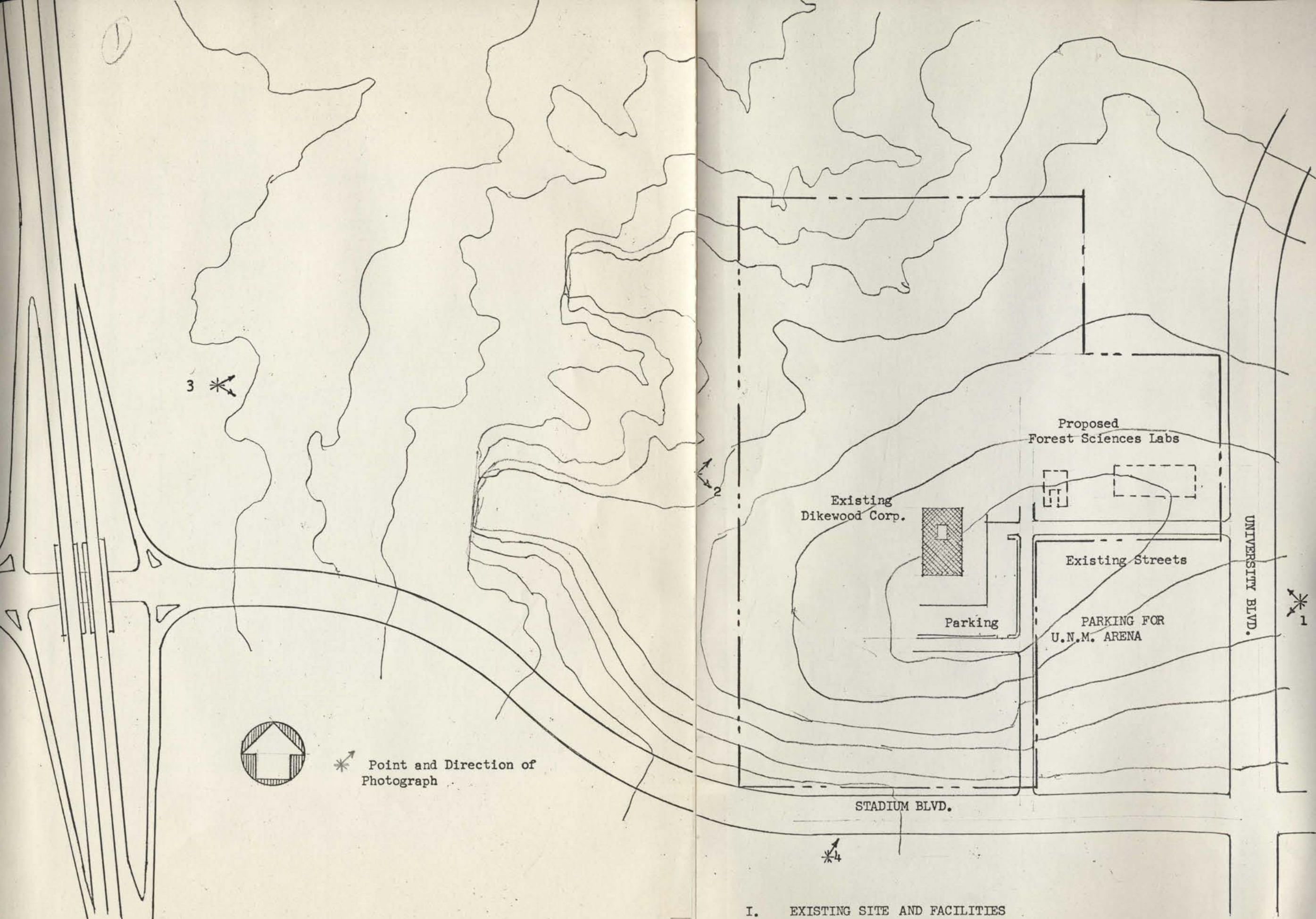
4. Parking Space. Parking on the rights-of-way in the

Research Park shall be regulated and may be prohibited by the University. The premises shall include paved parking space equal to not l less than one (1) space per fulltime employee and in no case less than one (1) space per hundred (400) square feet of building area.

5. Landscaping. All tenants aee expected to provide and maintain appropriate landscaping contiguous to improvements and particularly in setback areas facing public streets. Failure to install and maintain adequate landscaping to high standards shall be cause for the Associate to install and maintain what it deems adequate at the tenant's expense.

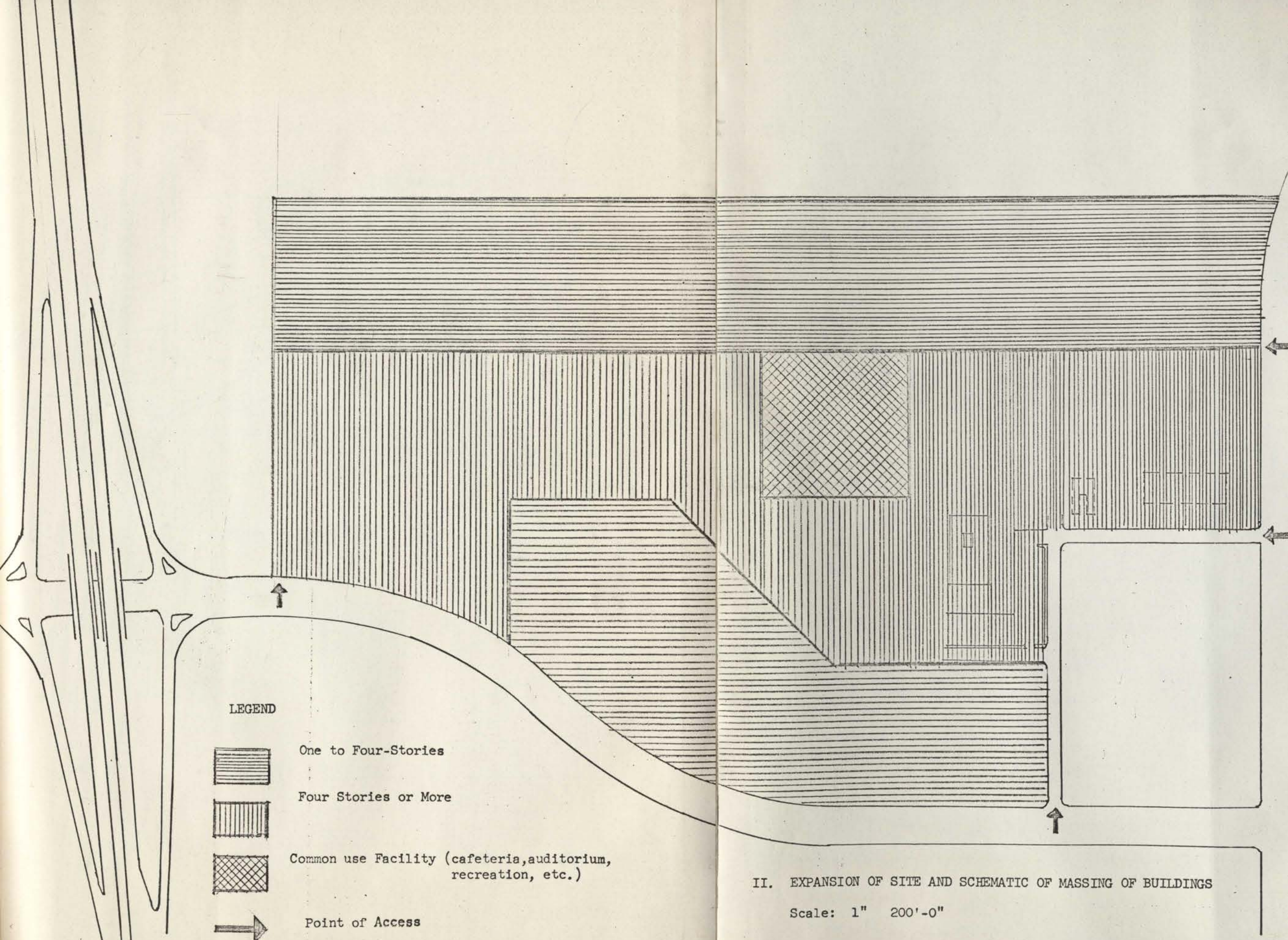
6. Signs and Lighting. All signs and exterior lighting sh shall be subject to prior approval and continuing control by the Architectural Control Commiteee.

7. Objectionable Uses. No open storage is permitted. No use is allowed which is objectionable by reason of noise, odor, vibration, smoke, electromagnetic ration, nuclear radiation, or is of a hazardous nature.



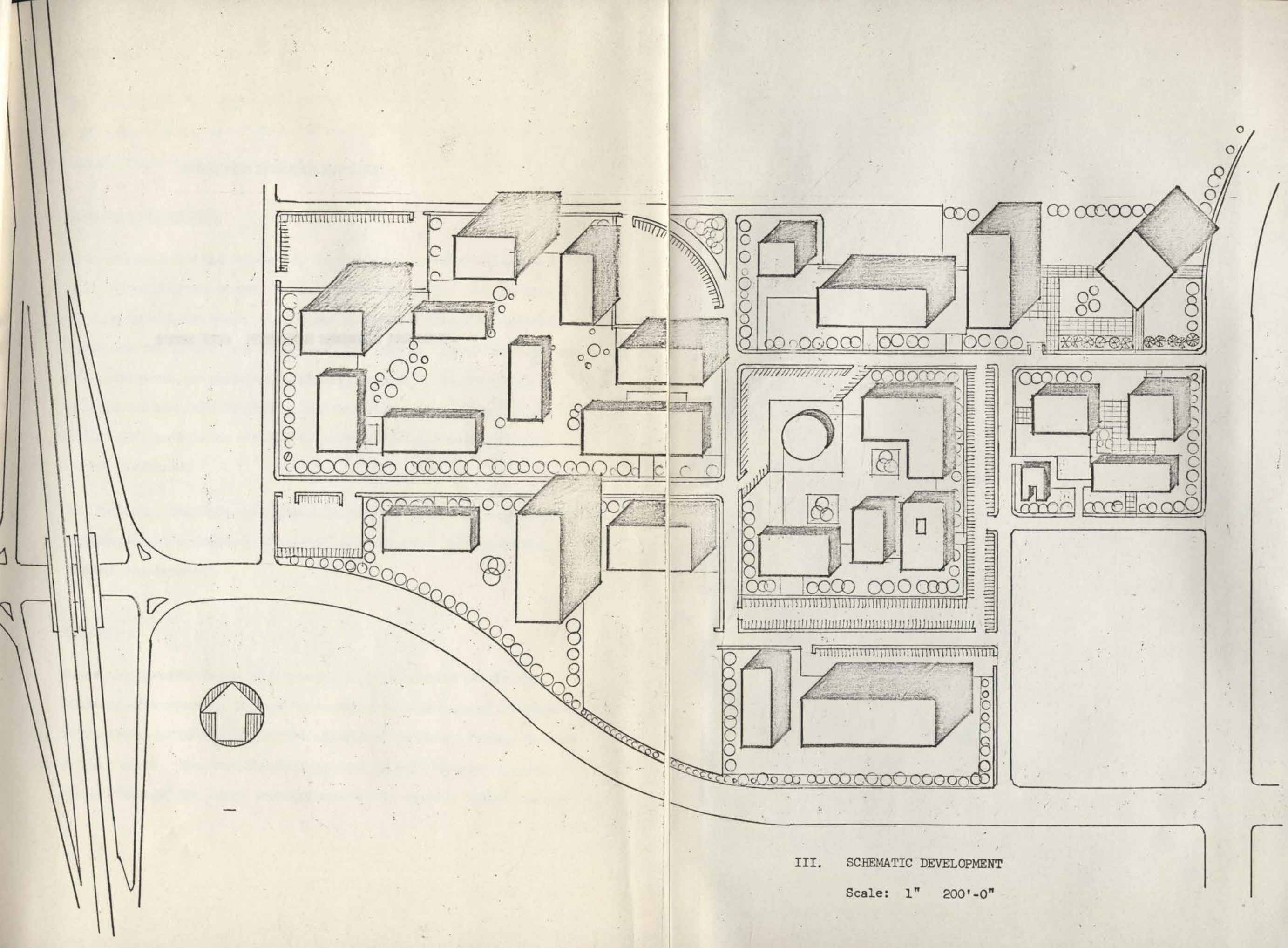
I. EXISTING SITE AND FACILITIES

Scale: 1" 200'-0"



II. EXPANSION OF SITE AND SCHEMATIC OF MASSING OF BUILDINGS

Scale: 1" 200'-0"



III. SCHEMATIC DEVELOPMENT

Scale: 1" 200'-0"

PHASE III: PROTOTYPE RESEARCH FACILITY

PROTOTYPE RESEARCH FACILITY

Purpose and Function

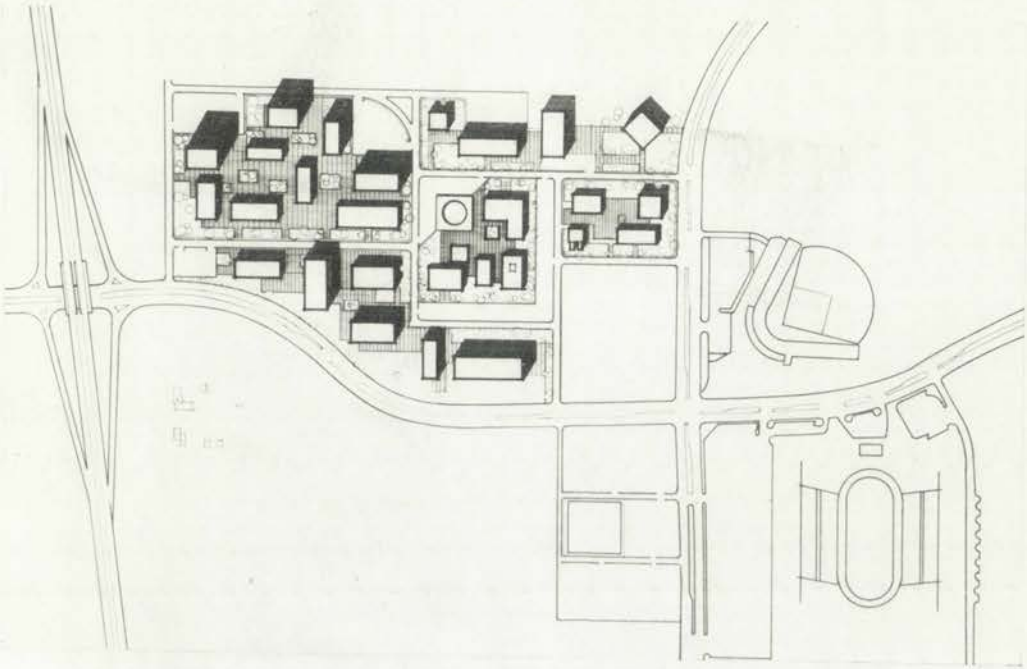
This proposal for the University to construct a "speculative" research facility was stated in the feasibility study. Its purpose will be to attract those small firms who cannot afford to construct their own facilities, and to provide for special "short term" government contracts, or individuals wishing to test certain markets. For these cases, the "Covenants and Restrictions" and "options to lease" will have to be amended to provide for special leasing or rental contracts.

The facility, therfore, will function similar to that of an apartment building--with a frequent "turnover" of occupants, each demanding special requirements.

Concept

Since the specific types of research, to be conducted within the building, are unknown, it must be designed to allow almost complete flexibility, permitting extensive changes to be made in order to meet varying needs. The term flexibility must be defined here to mean change "within" the space provided and not to include "expansion" of

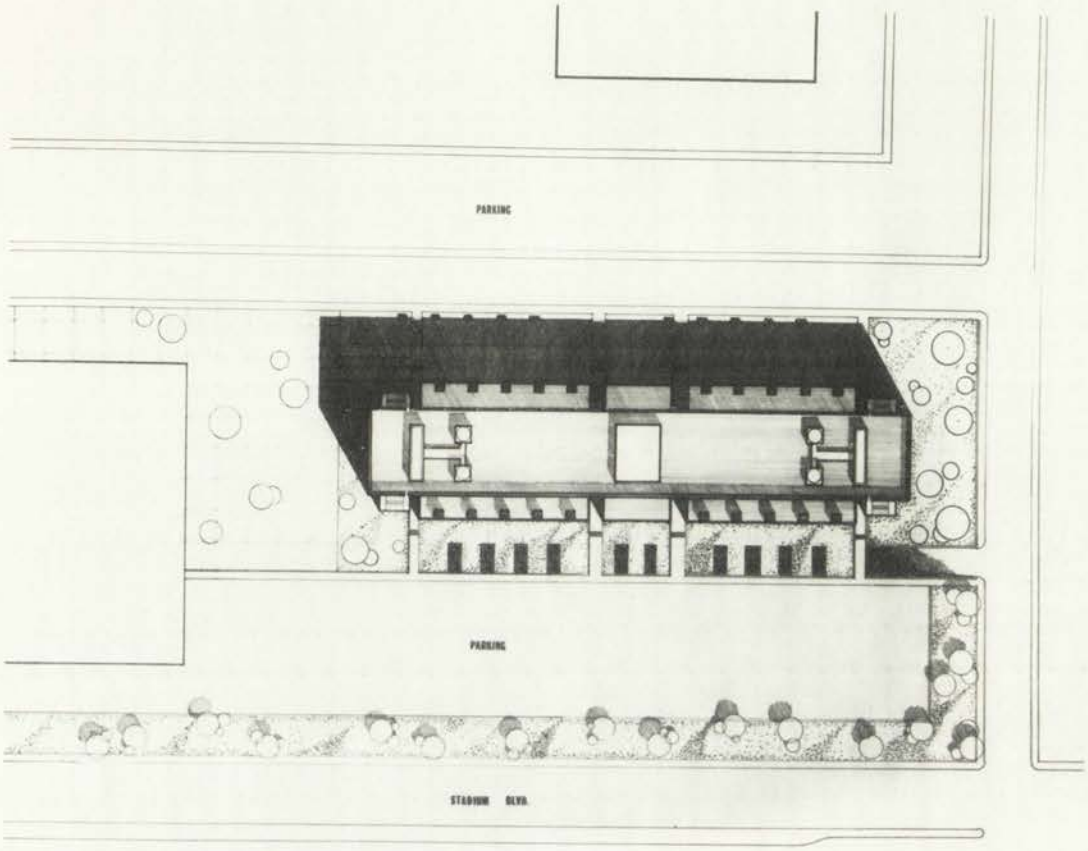
the space provided. Since the building is to be con ructed by the University and leased by others, expansion will not be a factor involved in its flexibility.



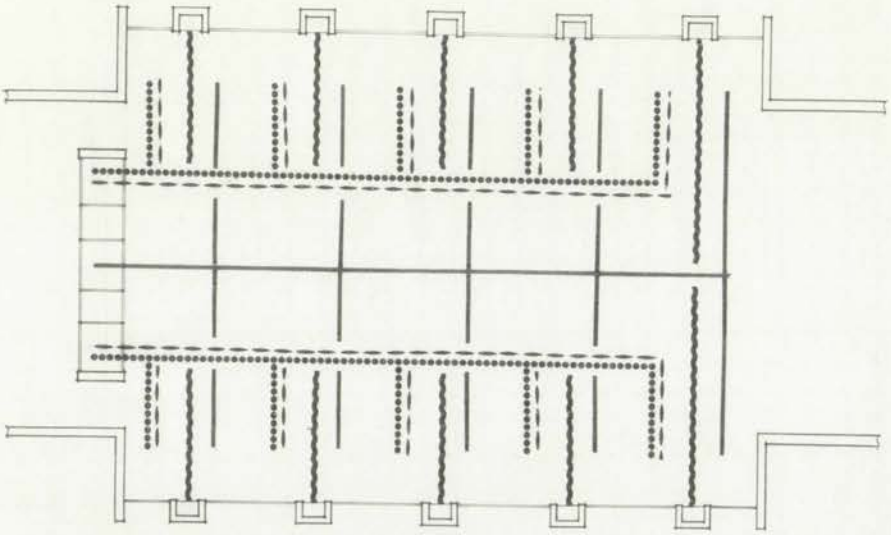
A MASTER PLAN & PROTOTYPE RESEARCH LABORATORY

FOR THE

UNIVERSITY OF NEW MEXICO RESEARCH PARK



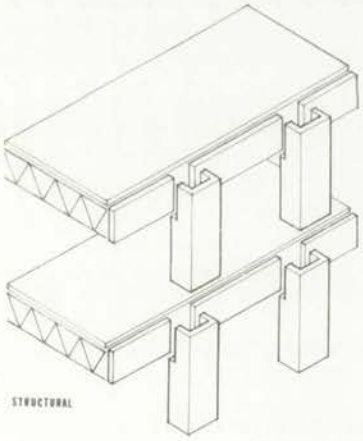
SITE PLAN



MECHANICAL SYSTEM

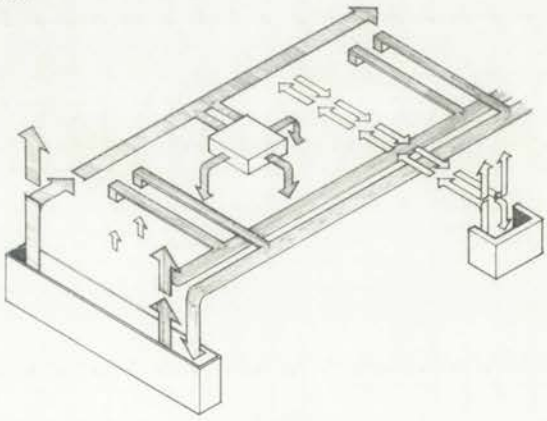
LEGEND

- DRAIN FUME HOOD SERVICE SUPPLY
- RETURN
- EXHAUST
- SUPPLY



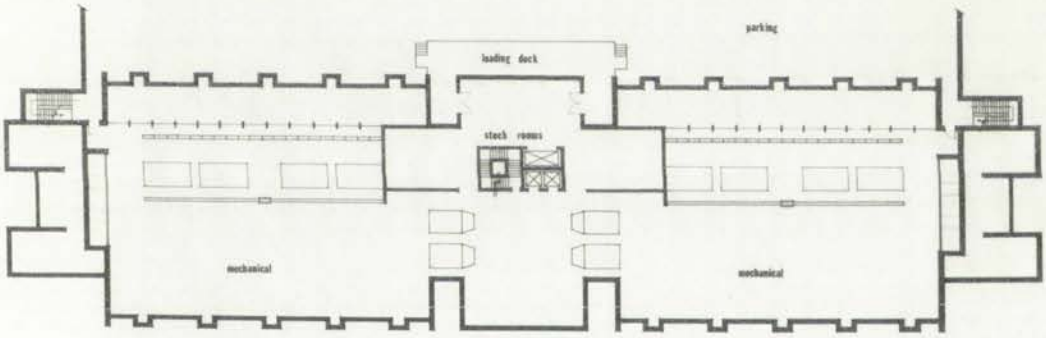
STRUCTURAL

ISOMETRICS

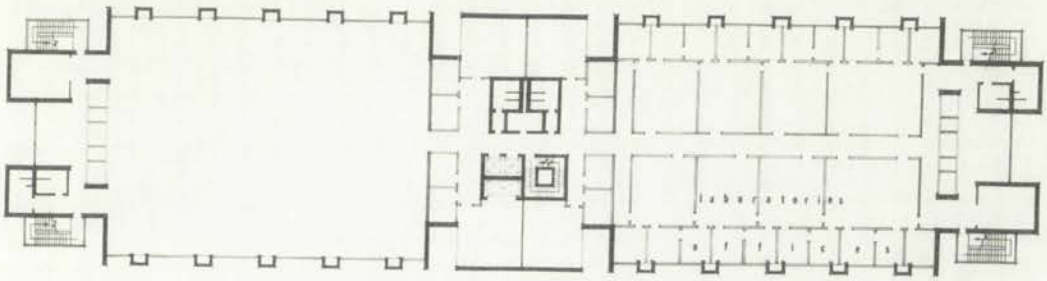


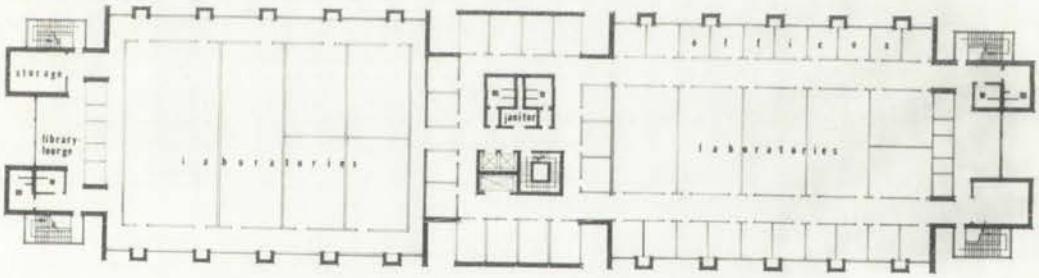
MECHANICAL

FIRST FLOOR PLAN

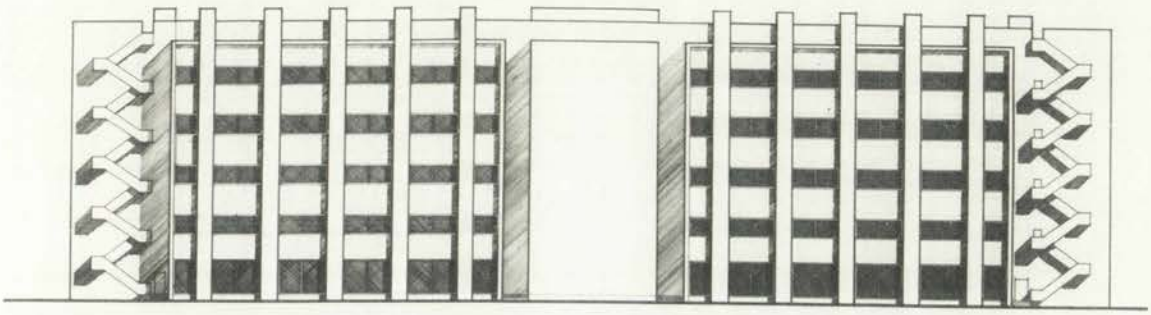


BASEMENT FLOOR PLAN

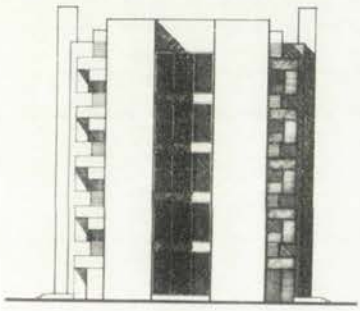




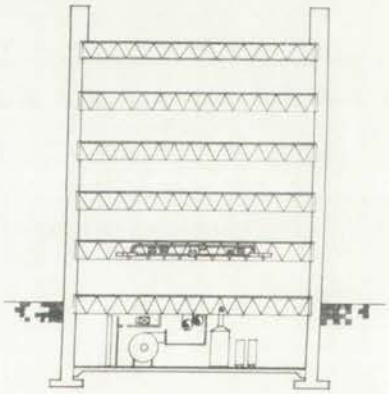
TYPICAL FLOOR PLANS



SOUTH



EAST



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INTERVIEWS

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