

NORTHWEST CORPORATE CENTER

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Sun Northwest Corporate Center

by

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INTRODUCTION

INTRODUCTION

The proposed facility is a regional corporate headquarters, in combination with a research center and training facility for the Sun Company. The corporate headquarters will handle the affairs of Sun's Northwestern operations. The office facility will also be the managerial sector for the research and development and training components of the facility. All components will be taken into the architectural solution, in terms of site planning. However, the district corporate office facility will be focused on the most in terms of design. The overall complex will be focused on in terms of maintaining Sun's corporate image.

The facility will stress the fact that Sun has a distinguished image to maintain. To strengthen this image the entire complex will have to respond in an architectural manner that is appropriate with the company's established image. The image will have to be communicative in the sense that the materials used should reflect the size and specialization of the company. The image may have to be adaptive to the other identities of the subsidiaries of Sun and most important tie into the image of the parent corporation. The architecture will have to enhance the image of Sun in a dynamic and synergistic manner to keep up with Sun's involvement in the energy scene.

Today large corporations are putting their money into new development facilities for energy research and management. The Corporations see a need for management at regional levels, therefore a regional corporate headquarters and research and development center is a logical choice. The increase in facilities of such has spurred an entirely new and improved approach in industry devoted to energy development. New approaches for development are being undertaken by improved wet and dry lab computer techniques. It is my goal to design a type of facility that will meet the needs of corporate development and the growing industry

of energy development.

The city chosen for the proposed facility is Billings Montana, an appropriate area for the different types of energy involvement. The location of the site is between Interstate 90 and south of the Rimrock Mall at the junction of 24th Street West and King Avenue. This location allows the proposed facility to be seen by a number of people commuting on these primary thoroughfares.

The selected site is currently being used as a construction yard and a dirt landfill area by United Industries, a local construction company. Historically the site had been used as a gravel pit to accommodate ready mix plants that were located throughout the city. The land has also been owned for a period of time by United Industries of Billings in which no plans have been made to develop the land. In any case, development on this property will enhance and strengthen the area.

The surrounding context is part of a new development plan of the city. New businesses have been created south and southeast of the site. At the north boundary of the site, the Petro Lewis Headquarters terminates the major amount of sprawl of the 24th Street West businesses.

The project will give me an introduction into how corporations maintain a well balanced architectural image. The study will act only as a beginning for me to understand a building type that I hope to pursue in the future. The facility proposes a mixture of problems that have to be dealt with to derive a suitable solution. Working with three major aspect to the problem, I feel each should have a unique solution, yet work together as a whole.



GOALS

INTRODUCTION TO GOALS

The goals are a step in the programming analysis which defines an end. The goals are what the client and also the architect wishes to achieve for the end.
They are a prolonged effort throughout the programming process involving both architect and client. The goals can be classified as either educational or project goals.

The educational goals are the goals that I am concerned with to achieve the final product. They are stressed with my process and what I learn as I am involved with the problem. The project (problem) goals are the goals that concern the issues the client wants to address in the problem to achieve the final product. These goals are established between the architect and the client to make decisive considerations in form, function, economy and time considering the problem.

EDUCATIONAL GOALS

* To explore an introduction into the approaches corporations use to maintain a well balanced architectural image.

* To understand how a corporate campus works as a whole with each individual component.

* Explore methods of enhancing and maintaining images of corporations in remote areas.

* To explore methods to further understand site and building integration of a corporation in a suburban setting.

* To understand how a corporation promotes the development of its greatest assets, its people.

* To create this facility with the best possible solution using the knowledge that I have gained over the last five years.

PROJECT GOALS

1. Create a corporate office for Sun that maximizes efficiency of its personnel.

2. To design a facility that will uphold and strengthen the image of Sun through the architectural statement.

3. To create a facility that can be expanded to easily for future needs of the company.

4. To create a facility for Sun that evokes a sense of Corporate hierarchy.

5. The facility for Sun shall create a "Corporate Campus" for their distinct needs now and in the future.

6. To create a facility for Sun that harmonizes with the site and maintains a sense of environmental responsibility.

7. Create a facility for Sun that emphasizes critical and an analytical approaches towards new energy techniques through a prototype facility.

HISTORY

HISTORY OF BILLINGS MONTANA

In 1882 along the west banks of the Yellowstone River a community was planned that would be a center for railroad industry. The Northern Pacific Railroad had been making its mark through the territory of Montana to link the east to the west. The site chosen, that of Billings, was to be a divisional headquarters terminus for the railroad. "It might be said of the rise of Billings that in a word- from the Northern Pacific Headquarters in New York City- that a town would be required as a division terminus for the railroad moving up the Yellowstone Valley"[1]

In 1881 a tract of 60,000 acres of railroad land was purchased by Minnesota and Montana Land and Improvement Company two miles from the small rail community of Coulson. Of the purchase 840 acres were for the township of Billings. Coulson was on the east of the Yellowstone River and was at that time a community determined to become the rail center instead of Billings. With the site platted in March of 1882 for a community, the town that was along the rail link from the Great Lakes to the Pacific Ocean grew immensely as the small community of Coulson faded over the decade.

The Northern Pacific Railroad placed a divisional Headquarters there with Fredrick Billings, of whom the town was named after for his contributions to the railroad, as president of the company and its engineering department. The town grew quickly the first year and from the opportunities promised for people arose the title of "The

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1. Lawrence F. Small, A Century of Politics on the Yellowstone, (Billings, Montana: Rocky Mountain College, 1983) p. 14.

Magic City". "Billings Montana - boom town, rail town, tent city, hot and dusty - was full of noise and promise."[2] From a population of nearly zero, after nine months the city achieved a population of 1000 people.

Between 1880 and 1900, the thriving western town was soon becoming a center for business establishments. The rail provided easy access for involvement in trade and distribution primarily of agricultural products and cattle. The trade was maintaining a productive stabilizing and profitable economy.

Though the town was becoming a major center for trade and distribution, there was little development since the first layout of the township by Minnesota and Montana Land and Improvement Company. Problems arose for the Magic City in all aspects of planning and improvements. The many wooden structures were a major fire hazard and concern. "Each spring turned the streets into a sea of mud, "too deep to wade and hardly enough to swim"[3] At the turn of the decade, 1890, the town had the basic elements of the Northern Pacific Railroad and Engineering headquarters building, banks and educational institutions, and homesites south of the tracks. The Billings Water and Power Company was formed during the late 1880's. The basic infrastructure for the town was developed by this company to supply water and electricity. After the turn of the century the thriving center also had the capabilities of a medical facility, firefighting facility and equipment, and also some basic "law and order".[4]

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2. Boden, Aneke J, Billings, The First 100 Years, (Norfolk Va.: The Donning Publishing Co., 1981), p. 19.

3. Lawerence F. Small, p. 47.

4. Anneke J. Boden, p.20.

The frontier town had the problems of contending with the Indian populations of the Crow and the Sioux tribes. There were outbreaks of violence between 1880 and 1900 that ended and allowed for peaceful coexistence. As a trading center, Billings, based on the cattle industry and agriculture at the time, sought trade with the Indian nations to maintain peace. Indian goods were traded for manufactured goods of the industrial age.

During the era of 1900 to 1920 the township of Billings was continually growing and planning and development increased rapidly. Billings was starting to enforce and establish a set of building codes. Strict codes were established requiring the replacement of major wooden buildings with that of brick and stone masonry building materials.

With the influx of people the town improved greatly in all aspects. Easy mobilization of people by new methods of transportation played an important part in the planning and revitalizing of the city. Billings soon had brick paved streets and a street car system for public transportation that ran throughout the city up until 1918. The city was catering to a variety of needs for people including recreational needs. Public parks were being planned and developed. Surveying and development of city parks and recreational facilities was being coordinated by the master surveyor Clyde E. Durland, who also planned the city fairgrounds. Durland held the position for 32 years as surveyor and planner/developer.

In conjunction with the recreational aspect, Billings was also on the road to becoming a major entertainment center of the northwest region. In the 1930's, theaters such as the Babcock and the Fox theater hosted such names as Al Jolson and Webster and Fields. The Babcock theater, completed in the second decade was a theater for live drama and entertainment, it was however gutted by fire in the 1930's. The Fox theater in Billings completed in 1931 was the last Art Deco theater built in the U.S. by 20th Century

Fox.

The city continued to grow in the 1930's, now north of the Northern Pacific Line spreading onward towards the rims. During the depression years Billings experienced growth spurts from an influx of people from the farming lands hoping to make it in the city.

The city grew northward towards the rims at the onset of the 1930's. Expansion to the top of the rims had even been planned with the completion of the airport road up the side of them. In 1933 Northwest Air established transportation to the city. From then until the mid fifties the airport continued to expand to accommodate aircraft and act as a air transportation hub. Today the enlarged facility is a major element to the city. Billings Logan International Airport can accommodate the largest of passenger planes including planes as large as the military C-41 transport.

It was also during the 1930's to the mid 1950's when oil booms triggered an expanding economy and a modification in politics. Billings experienced its first involvement with oil in the early depression years when Yale Oil built a refinery in the city in 1932. The oil business had been taking off when Carter Oil bought Yale in 1934 and operated the refinery significantly up to the early 60's. Exxon Corporation and Conoco also established refineries in Billings in the 1950's. By the end of the 50's the Magic City was becoming a thriving capitol for oil business in the Northern Rockies. The involvement with energy was representing roughly 80 percent of the state capacity for manufacturing. "From approximately the 1950's on, Billings has been located on the edge of he energy boom, which accounted for the major expansion of Billings in the 50's."[5]

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5. Ibid. p. 81.

The Magic City grew greatly throughout its history, but some say it would not of occurred if it had not offered the entity of education. Billings has maintained a strong emphasis on education since the early beginnings of the city. The city has through time become an education center for the state. Ever since 1878 with the formation of Rocky Mountain College, given this name in 1947, under the Montana College Institute, higher education has been emphasized. Throughout the history of
Billings numerous small private institutions came about in which Rocky assimilated them into one institution. Today Rocky Mountain College is a private institution and in conjunction with Eastern Montana College, established at the turn of the century, promote higher education.

From the 60's to the present the city continued to grow. It remains a large hub for the state of Montana in many different fields. Billings upholds business opportunities, educational opportunities, transportation and advanced medical facilities, and an established industrial field for trade and distribution.

I feel that the city of Billings has the potential to accommodate a facility as I have proposed. The city has operational energy components now that contribute to the fact that a facility as such could be justified. The city offers the potential to become a Northern Energy hub because of its geographic location. By being located near a large energy reserve that goes from lower Wyoming to Central Canada, Billings has the resources to support new businesses and facilities dealing with energy. This could only be possible in the future when the energy fields in the states pick up again.

The northern energy region is somewhat neglected. The fact is that the are only a few facilities that are concerned with the direct needs of the Northwest Energy Region. Most corporations that have anything to do with the area support it in an indirect manner. Atlantic Richfield is one corporation that supports this area with a

corporate facility within the region. It is located in Denver and shows concern for the Rocky Mountain region in Colorado, Wyoming and Montana. Billings tends to be an ideal area to support a corporate facility for energy needs. The diversity of fields in the types of industries, institutions and overall culture of Billings would contribute to a corporate facility.



JUSTIFICATION

JUSTIFYING A CORPORATE FACILITY

At the present time Sun Company has many operations and affiliates in the Northwest Region involved in energy production for use within the United States and other parts of the world. The corporation has all of these facilities under the arm of the home office in Radnor Pennsylvania. This office today handles all major types of transactions of its affiliates and operations that affect the company directly.[1] Major transactions would be of something in the nature of a merger with another corporation or the buying of land to establish a new operation on. At some point the home office handles some business of all operations whether they are national, international, inland or overseas.

Today many larger energy companies find a need to distribute the load of operations more equally throughout the territories they are involved with. The idea that it is difficult to run a competent business out of one location sets the need to develop branch and district operations.[2] Large energy corporations have found this true and have broken up the bulk of there operations with composite territorial operations and other corporate facilities. Usually East-West breakdowns are applied and even some overseas operations are broken into districts. In the energy scene, Atlantic Richfield Company (ARCO) was a strong forerunner in advocating such a policy.[3] The main "home" headquarters is located back east in Philadelphia

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1. Arthur M. Johnson, The Challenge of Change: The Sun Oil Company, 1945 - 1977, (Columbus: Ohio State University Press, 1983) p. 250 - 281.

2. James G. Gray, Managing the Corporate Image West Port Connecticut: Quorum Books 1986 p. 106-114.

3. Ibid. p.42-49.

while a new major regional headquarters has been established in Texas to serve Western and coastal chemical and oil needs of the company's affiliates. The company also separated the district mineral headquarters branch in Los Angeles and established one in Denver Colorado solely for the needs of the energy in the Powder River Basin.[4]

Today Sun has operations going in remote areas of Montana and Wyoming, also operations are being maintained in Colorado, Idaho and within the Canadian Provinces.[5] Involvement in Energy exploration and technologies occur minimally in the Northwest areas through direct Sun affiliates. The involvement is usually relied on by an outside source that is not part of the "Sun Family" or done by eastern affiliates of Sun that only understand the process and not the nature of the problems. The Northwest Energy Region needs to be responsive to people who work in the area and can learn from it the potentials it has to offer. A facility as proposed would allow for direct involvement versus indirect in the Northwest. A district regional headquarters would contribute greatly to the needs of Sun's Northwest Region operations. With the combination of a research and development center, and a training facility for Sun personal and the possibility to act as a training facility for other corporations in the area, the exploration and developments of Sun would be a continuing process with the resources available in the Northwest.

My selection of such a facility for the Northwest area would enhance Sun's commitment to the Northwest to serve the public with new ideas in energy response. The facility

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4 4. Ibid. p.42. The Powder River Basin is a large coal and oil deposit that runs from central Wyoming through Eastern Montana to the Canadian boarder.

5. Arthur M. Johnson, p. 150 - 281.

would cater to Sun's northern operations and show that the company is changing as the energy scene also changes.

USERS DESCRIPTION

The majority of users for the new Sun Company complex will be a select group of professionals from diversified fields of Sun's affiliates. These people will be combined into one centralized facility. The users will be chosen from both National and International operations of Sun. A collective choice of people will then respond to the Northern Energy Region within the regional corporate headquarters and development center. Management Professionals may come from the main Corporate headquarters in Radnor Pennsylvania.1 Computer scientists and technical engineers would also be relocated from some of Sun's other facilities to work and maintain the engineering and testing components of the complex. In addition to the engineering professionals and the management professionals, Sun advocates an intern program for a wide variety of fields. In the past Sun has showed this to be a viable asset for future positions within the corporation. Therefore, in conjunction with the other professionals, there would be a mixture of students from different universities that would also be a user to the facility.2

Employees would be working in diversified fields concerning management and engineering. While a majority of the employees will be of the middle to age group of people who have been with the company over a period of years, some will be young with little experience with the company. The professional employee of Sun tends to have an array of interests and ideas that can be focused on in this type of facility. The users of this facility will not only be able to promote these ideas but also develop them further, in which Sun can direct the formations of the ideas throughout their operations in the Northwest.

The Northwest Energy Region consists of a multitude of resource extraction and testing by large corporations. The professionals that Sun will bring together in the proposed facility will represent a group of professionals in

conjunction with student interns to allow the facility to become a driving force in the Northwest Energy Region for management and energy development.



CORPORATE IMAGE

CORPORATE IMAGE: A Brief Introduction

What is Corporate Identity?

IBM, JOHNSON & JOHNSON, BMW, ARCO,... are all corporations that strike an image in our mind. To many corporate leaders and corporate managers the image can be conveyed in various ways. Corporations are beginning "Image Building Programs" to convey their image in the most positive method.[1]

What is the identity for a Corporation? How is it conveyed? To the public the corporate identity is a communication of unifying elements that evokes an image. It may be the quality and reliability of the corporations products. Other unifying elements to the public may be the financial status and long term establishment of the corporation, the list goes on.The architect however, may see the corporate identity as a symbol that is created through his architectural solution. It is a unification of elements that is in an architectural solution to convey image.

All corporations today convey some type of image. The image may be good or bad in different cases. The fact is that each corporation makes a visual or verbal statement of itself with different methods of how they would like the public perceive them. The statement is made through architecture, advertising, internal and external affairs.

The corporation that has made extensive efforts in corporate identity programs will be easily distinguished over the rest. A well received perception by the general public will prove the well established program to be working for the corporation image goal.

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1. Gray, Managing the Corporate Image, West Port Conn.: Quorum Books, 1986. p. 3.

"Corporate image is the key to understanding and reacting to the public demand for corporate social responsibility and to providing the link between between public perception and corporate reality. The goal of a corporate image program is to bring perception into line with reality."[2]

2. Ibid. p. 7.

IMAGE FROM NON-ARCHITECTURAL METHODS

How the public views the corporation is a growing concern among many corporations. It is a vital part of the success of todays corporations in the business world. Surveys conducted by "Fortune" magazine of top executives managers and financial analysts of various corporations allowed for a conclusive list of what they understood the public perceived "corporate image" to be. The compiled list is as follows.[3]

* The corporations quality of management in its own structure.
* The quality of product and services the corporation provides to the public.
* The innovativeness within and outside of own structure.
* The recognition of a value in a long term investment.
* The corporation's financial soundness.
* The ability to attract and keep talented people.
* The corporations community and enviromental responsibility to the public.
* Use of corporate assets.

The compiled list lays the basis for how a corporate image is perceived. The image is perceived both by the public at large and within the corporation. This remains a vital concern to corporate management.

If there is some failure in the management system and the image program, the long term effect would be that a corporation could fail partly due to having its image fail. Studies of image points out that a failure within the management of image programming causing a downgrade in

3. Ibid. p.8.

image will tarnish the views of the public and would be investors. Corporations therefore tend to educate people of its methods and business conditions relating to image.[4]

Quality, innovativeness, financial status, etc. lead to the issue of corporate image. This involves social responsibility on the corporations part to maintain a favorable view by the public.
If a tragedy strikes because of failure in a element previously mentioned, the image will become tainted. Social responsibility then comes into play to regain the corporate image and the trust of the customer. Immediate actions are followed through with to begin the road back to the strong image they once had. Social responsibility was a major factor to rebuild the image of Johnson & Johnson after the Tylenol incident.

A vital corporate image program is needed to convey and maintain a consistent public image. It begins with what the public sees, name, corporate logo, building address, office structures, etc. These types of elements trigger subconscious and conscious images that gives a lasting impression. It is these images that shape the public attitudes of corporations.
"When corporate executives are willing to cultivate public attitudes the net gains are reflected in positive response..."[5]

Methods of media also convey the corporate image. This type of communication will boost public morale and in turn a positive public response. A consistent communications such as media allows for communications between the corporation and the public.

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4. Ibid. p. 13 -14.

5. Ibid. p.69.

Public and customer concern also tends to be an image builder for the corporation. Any type of public and consumer awareness shows corporations are making strong efforts to create images through both internal and external affairs.

Other responses to the public and to the community by various techniques will result in a "corporate image" Relations of being involved in community affairs and concerns will enhance an established image or set a strong basis for one. The corporation shows concern by integrating into the public. Open houses to a corporate facility and corporate contributions to a community just start the list that begins to build a strong identity. Other methods would include involvement in different organizations, local and national; involvement in cultural aspects as with art; etc. The list goes on, but the idea is generated that the corporation is not out only for itself, it is for the public, and any positive method for enhancing or building an image will be used.

AN IMAGE CREATED ARCHITECTURALLY

General Theory

In order to maintain a strong image, the architect must create a building that will communicate by architectural means and imbed an image into the minds of the public and the employees. This is what affords a lesson in the corporate world and image perception. The architectural communication is an element that shows an indication to the state of a corporation. But how do buildings communicate and image? In every culture there is a system of communication. There is a sender, a receiver and a message. In the corporate world what the public sees is the message, whether it is the building, product or anything that conveys their image. The corporation is therefore the sender in all senses and the public the receiver.

Buildings for large corporations must communicate to the public to maintain a strong image. Today this has been done in the real world and in other ways such as the television scene. The nighttime soap Dynasty is a prime example of how image for a large corporation is maintained. The show portrays large oil corporations that have images to be maintained.

"To secure to ratings, Dynasty producers carefully design the programs elaborate business sets. Wall to wall carpeting, futuristic ivory and glass desks, designer seating, and fully equipped wet bars fill the offices of the towering glass skyscrapers. And the high tech meeting rooms with mahogany walls and massive conference tables reflect power and success."[6]

The preceding is a set of symbolic communicative devices used to convey an image. These symbols are used in

6. Ibid. p. 55.

everyday and even in corporate architecture. Types of symbols as such trigger images subconsciously and consciously in the publics mind. Both exterior and interior symbols create a strong communicative system for portraying a corporate image to the outside world.

Creation of a Symbol

The architect is creating a symbol for the corporation calculated out in a approach similar to the previously mentioned television set. He is creating the symbol for the users so they can have and identity and so the public can identify with the corporation by the image portrayed. The symbol for a corporation is generally an established symbol built up over a number of years. A symbol can be in the nature of status and achievement; wealth and power; and quality and representation just to name a few. The architect, when commissioned, has a moral and legal obligation to the corporation when establishing new architectural forms to represent corporate symbols.

The dilemma the architect is face with is how to create a solution via forms that give meaning an represent the symbols of the corporations. The form generated also represents a communicative device for the symbols. The architect creates forms that have a symbolic function and meaning to the corporation and also serves a particular function or special need for the corporation.

Image Created by the Architect.

To capture the symbolism and function of a corporate facility through an architectural solution the architect and client must work in a cooperative effort. The facility must answer to the objective (functional) need and to the subjective (aesthetic) need. This will answer to the people who work within the facility and also to the public who sees the facility and imbeds some type of image of the corporation.

The project must be accomplished in a manner that is aesthetically and technically suited.[7] This should be of the latest standards of architecture, conforming to ergonomics, interior design needs and engineering needs. To put forth a solution to create or enhance a corporate image for a corporate complex, the architect should follow the basic design tools of orientation, scale, proportion, form, materials, light and color.

Orientation Needs

The corporation strives to have a facility to be viewed properly from a user standpoint and a public standpoint. For example, the corporate facility could be orientated in a frontal position in order for the prime features of the design elements to be presented. This may be the only orientation need the corporation wants. There are other methods however that also may fulfill the need of the corporation. The orientation could also be of such that a distant view, frontal or non frontal, allows the viewer to create mental images while coming towards the facility allowing the viewer to be overwhelmed by what he/she sees. The orientation of the facility could also take command of the site showing the corporation strength. By working with the site the orientation may allow the site to remain natural and the facility to take up as little as possible of it maintaining a sense of corporation sensitivity. In any case, the orientation of the corporate facility should command respect, therefore setting a stage for corporate image.

Many of the pasts major monuments achieve this because of the orientation patterns followed. Buildings such as the Parthenon and the Acropolis and the Karnak of ancient Egypt

7. Roger Yee, Corporate Design New York: Interior Design Books, 1983. p. 226.

followed the general rule of orientation to command a sense of respect.[8]

Truth of Scale and Power

The modern solutions of todays corporate facilities tend to abolish scale in a sense and signify the power of the corporation. Large metal and glass skinned office towers of the various Miesian themes hides the elements to denote scale and strives for absolute power. Without a commitment towards scale the architect can derive a sense of power, if it is the clients intent to identify the symbol of power in the corporation's image. Skidmore, Owings and Merril achieved this sense of power for the Sears Corporation in the Sears Tower. In contrast a large corporation may have power and may not need to show this sense architecturally. Scale is then important from the humanist outlook here also. A well scaled building can still communicate the sense of power of a corporation. Again SOM shows this to hold true the Pacific Bell Administrative center, Danville California. The facility is of a human scale. It does not skyrocket from the ground, yet it achieves a powerful presence in its setting.

Creating a Proportion suitable to Man.

Architectural design for corporate facilities today is achieved by standardized modules. The modules being based off human and non human dimensions. The standard five by five foot office module can be expanded to accommodate a variety of needs. The modules hold true whether it is being used for the executives office in the executive suite or the computer lab in a corporate research center. The module reflects easy adaptability and maintains an efficient image for the corporation in terms of internal functions and space relationships.

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8. Ibid. p.226.

Form

Form generated to capture the corporation is on of the strongest aspects of corporate design to establish or maintain an image. Forms generated can take different architectural styling to fit the needs of the corporation. Aesthetic languages can be conveyed to carry modern, regional, period or historic themes. Modern styles of today for example are accepted as "Big Business" if the corporation is willing to pay the cost to have it perfected for their need and image.[9] If form is generated to carry a regional theme for Corporate America the theme of "Big Business" may or may not be conveyed. This would tend to depend on the prevailing style. If the case was Modern, then the "Big Business" theme may still be applicable.

It is the aesthetic decisions that have been made to portray the individual character of the corporation to the area. They may be sensitive to the environment, or they may not, it depends on the style. The corporate executives who wish to respond only to traditional forms of English and French design are in a sense conveying the image of tradition and well established. Even in small areas, traditional forms and artifacts can be reserved for the executive alone, while the rest of the facility responds to a more functional modern aspect.[10]

The form the architect generates will carry some type of message of the corporate business. The form may or will carry some type of message from both past and present, and even possibly be extrapolated to the future. The proper form will carry some type of corporate cultural aspects if possible and answer to the specific needs of the users.

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9. Ibid. p. 24.

10. Ibid. p. 230 - 231.

What theme does the form take on for corporate architecture to convey the image? If a modern architecture and modern interior design is to be achieved functionally and aesthetically, it must be done so in a manner consistent with modern technologies of today. "Technologies aesthetic is a neutral spirit that awaits culture to impart character and a definitive shape."[11] If a traditional form is to be represented because of a clients persistance the manner may have to evolve from the traditional prototypes of the past. For example, Classical periods are generally of a traditional type that establishes tradition. The richness in ornament of Roman styles and others allows the possibility of a corporation to stand out among the blank faces of a modern corporate building, allowing for them to be highly recognized.

Status Achieved by Material Selection

The architect and the corporation has a diversity of materials to choose from to help achieve a sense of status, a well known element in the Corporate Image. "New", "advanced", "state of the art" materials are conceived to be of the technical innovation derived from a synthetic method. The choice of pressed aluminum or exposed steel or of white porcelain with polychroming strips as materials and the use of them honestly portrays a highly technical advanced element in corporate image. Usage of synthetic materials of carpet, wood paneling, etc. portrays high status in corporate industrial America. Traditional materials created by nature and modified only by craftsmen convey a sense of responsibility and quality if they are applied in manner that works with and compliments the form. "Choosing the right materials is an aesthetic and political exercise as well as a functional one."[12] Highly polished

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11. Ibid. p. 231.

12. Ibid. p. 232.

an reliable materials strengthen the sense of status. Granite, marble and rich teak wood are a few materials that give a sense of status and accomplishment.

Handling Light and Color Properly

The corporate image must come alive and remain intriguing. This is accomplished with the use of light and colors. The architect struggles to tame the light that creates a special atmosphere within a corporate facility. To be able to control lighting patterns he can set a mood within the facility to create a productive atmosphere. By playing with the variables the architect can create a dynamic architecture for the corporation. This can be achieved in conjunction with color.

Color is an important element in shaping the corporate facility exterior and office symposium. Choices of color can be used to enhance the image and reflect the nature of the people working there.

MAINTAINING CORPORATE IMAGE

This part of the section deals with an analysis of solutions used to maintain the previously mentioned implications of corporate image. The implications of, quality of management, quality of products, innovativeness, long term investments, financial soundess, ability to attract people, community involvement, and corporate assets has allowed me to break down these ideas into more specific details dealing with corporate image. The preceding has been broke down into non-architectural and architectural implications that arise in order to maintain a consistant and outstanding image for a corporation. This section is in chart format to distinguish between non architectural and architectural implications.

IMAGE BUILDERS	NON ARCHITECTURAL IMPLICATIONS	ARCHITECTURAL IMPLICATIONS
1. QUALITY OF MANAGEMENT	C.E.O. and staff are seen as carriers of corporate image. C.E.O. defines, molds and communicates corporate image. Express policies in a way that reflects the corporation a credible. Aspects of management should be shared at all levels of management. Send clear signals of economic goals to employees and public.	Proper grounds and facility upkeep via management.
2. QUALITY OF PRODUCTS AND SERVICES	Social responsibility to the consumer.	High quality materials that will hold up to people and climate.

	Commitment to quality products for consumers. Development for material standards for consumer products. *safety *health hazards *handling and storage *emergency procedures Control through quality assurance teams for monitoring and distribution. Numerical quality performance goals for each product.	Properly detailed and installed materials to ensure performance and longevity. Properly chosen and inspected materials. Quality made materials that have a known record of performance.
3. INNOVATIVENESS	Innovative programs *consumer affairs *employee affairs *environmental *safety Communications and media. Building community and government relations.	Innovative office systems that are responsive to change. Innovative features in lab systems that respond to continuous change. Innovative design for use of new technologies

		involving communications and processing systems in relation to the user. Glare free surfaces using different daylighting techniques.
4. VALUE AS A LONG TERM INVESTMENT	Choose business affairs carefully so they will pay off in future years. *mergers *communications Involvement with the government, local and state. Aiding employees in career development. Improve overall image to consumers. Maintain skilled and dedicated employees.	Ensure performance over time with the use of quality materials. Minimal maintenance of facility with use of quality products. A larger investment ensures quality that will last. Furnishings that hold up and maintain performance over time.

5. FINANCIAL SOUNDNESS	Maintain contracts for products and service. Increase productivity. Promote consumer and business investment.	Quality design initiates financial soundness. Use of top of the line materials inside and out consistently promotes a sound institution.
6. ABILITY TO ATTRACT AND KEEP TALENTED PEOPLE	Maintain management employee communications. Maintain skilled people. Ensure employee health and safety. *promote training * provide competitive salaries and benefits. Recognize status of senior employees. Maintain good records.	Create workable environments for people by designing with ergonometrics in mind. create Productive environments by using natural light and color in spaces. Include components in design of complex to promote wellness of employees and their families. Create spaces that wont alienate users.

		*tennis courts *gym
7. COMMUNITY AND ENVIRONMENTAL CONCERNS	Promote news and advertise in local community media for support. Patronize community business. Join organizations. *increase community knowledge of corporation. Involve corporate leaders with the local affairs. Help develop the community resources.	Integrate facility selectively to not disrupt any natural balances. Respect surrounding facilities. Have appropriate disposal facilities so corporation will not contaminate any of the community air, water, and vegetation for recreation and consumption needs.
8. USE OF CORPORATE ASSETS	Selective.	Best possible solution for problem.

SUBURBAN IDENTITY

The suburban corporate office complex - "a low-rise, rambling building surrounded by acres of manicured landscape"- is one of the major office types used today in achieving a corporate headquarters.[13]

Whether the location is in the Frost-belt, the Sun-belt, suburban New York or suburban Houston, the location of the corporate headquarters in a suburban setting faces some dilemmas. Location to access a company's other functioning units and relation to other companies become a prime concern. However terrible the concerns may be, the suburban corporate headquarters is solving many needs of the corporation in helping provide a strong corporate image.

"Despite the pitfalls of corporate location, American businesses have steadily dispersed their functioning units since the 1960's, moving their headquarters from central cities to the suburbs...."[14] This has been achieved with the presence of the Interstate Highway System and various modes of transportation. Freer access to facilities has also prompted the move from the central city to the suburban landscape. The central business district has been continually dulled since the 1920's making corporate facilities less feasible "downtown". The decentralization of transportation, communication and energy needs was in

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13. Michael J. Crosbie, "Evaluation: Prototype in the Suburbs" Architecture, January 1988 p. 80.

14. Roger Yee, Corporate Design, p. 8.

need of reform. This dulled the ideas for corporations to have a "central business district address"[15] The move to the suburbs for todays corporations began to evolve in the late '40's. Through time this move has redefined the American Dream for the employee and thus started a trend to define a distinct image for the corporation.

The new suburban location is preferred by the office workers. The offices located as such provides healthy environments and maintains a special sense of place. Suburban offices allow the worker to be closer to home (most cases) and therefore provides a boost in psychological morale allowing the employee to become more productive. An increase in production and higher employee morale help achieve an image of efficiency.

EVOLUTION OF THE SUBURBAN OFFICE COMPLEX

The technologies of the industrial era allowed buildings to grow taller, providing more space for many operations of businesses, in a compact area. These technologies set a pattern for tall offices of corporations in the central business district of a large city. But with corporations expanding into many different operations and needing a flexible space for in house operations the move to the suburb was considered. With the corporation moving, what constitutes a suburban office in a campus type setting. The evolution of this is explained.

The prototype began in the 1940's with elegantly detailed factory buildings done by Albert Kahn. Creation of pavilions with raw space accented with natural light set the stage for open office planning used in suburban offices. Wright initiated open office planning in the Johnson Wax Building, 1936-1939. The open offices were bathed in light with his Minoan Column scheme. Mies added

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15. Ibid. p. 20.

to the typology forming of low sprawling structures and open interior spaces with the planning at Illinois Institute of Technology. Creation of low sprawling machine type buildings for offices in campus settings seems more elysian than the spirit created in the inner city for offices. Add this type of flavoring used in the buildings at I.I.T with rich landscaped backdrops and a pattern is set for the suburban corporate office.

The suburban office could be achieved with success. Prototypes of low sprawling structures and richly created campus type paradigms set a definite stage for the corporate office structure in suburban America. Elegant headquarters such as John Deere and Company in Moline Illinois by Saarinen established a strong foothold for the suburban corporate office complex.

CREATION OF URBANITY IN THE SUBURBAN SETTING

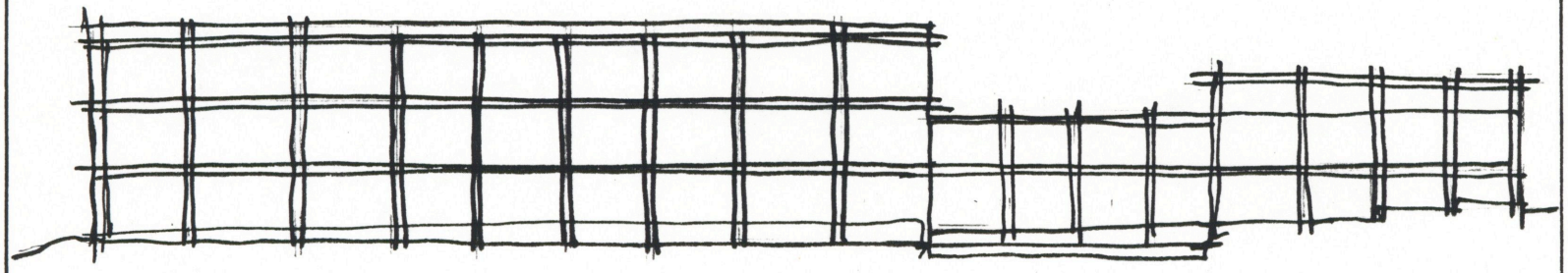
For a successful corporate office design in suburban America the architect must realize two important issues. The first is how the facility must address the site to maintain and enhance the facility to strike a corporate image in ones mind. To successfully do this, via megastructure or campus type plan, the facility addresses issues in achieving Corporate Images. The particular issues addressed here is that of environmental responsibility and community concerns. To address the issues brought forth in a successful manner will help achieve a successful corporate image in a setting as such.

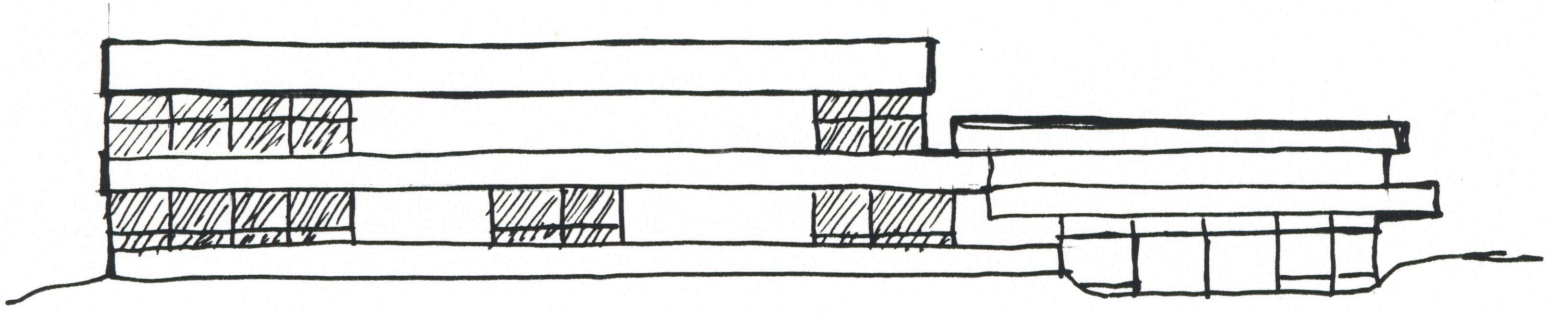
The second issue that should be addressed with great concern is the replacement of downtown conveniences of various shops, clubs and restaurants that support a central business district. These types of elements are highly attractive to corporate employees. Buy creating a facility in the suburbs with similar types of amenities the corporation has the much to gain. Many large corporations provide health centers, food services, shops etc. for the well being of their employee.

LANDSCAPE: AN IMAGE BUILDER

The suburban office gains much of its identity from the types of outdoor spaces that are created for the users. Corporations such as John Deere and Company, Moline Illinois, and Weyerhauser in Tacoma Washington, use the natural forested landscape already there. These two facilities strike images of responsibility to the environment by the way the buildings are nestled into the land. Bodies of water are integrated in to the landscape to provide pleasant outdoor spaces and provide stimulating views to the users and the guests. Picturesque settings created with rich landscape and water elements add up to a successful image builder. Manicured formal and non-formal rows of trees help reinforce the suburban setting to achieve image. Rolling hills of lawn and plant scapes also add to the picture. Heavily planted around outdoor and above ground terraces for the employees to enjoy during a break tend to enforce the strong picture created. A successful integration of these types of outdoor spaces for the employee with the overall building structure(s) achieve a successful campus type plan.

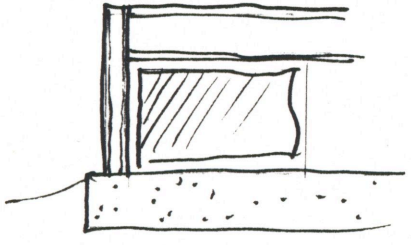
The suburban identity complex has face the architect for a number of years now. The idea is clear why corporation are moving to the suburbs. the atmosphere of the "American Dream" is prolonged and enhanced if the facility is done successfully. A pattern evolved through prototypes of industrial structures and campus settings. These factors combined with the fact that the suburban setting was a more humanistic approach to maintain the needs and desires of the users than that of the downtown district, todays suburban corporate facilities are formed.

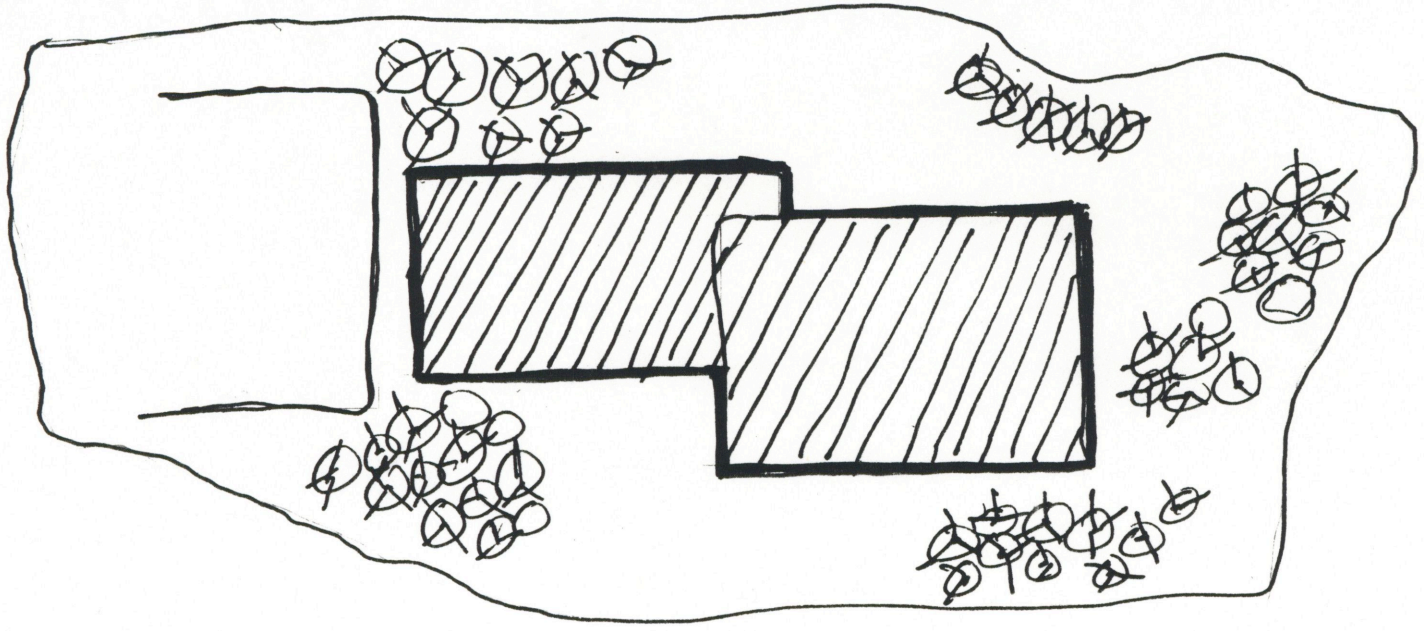




1940 – 1950

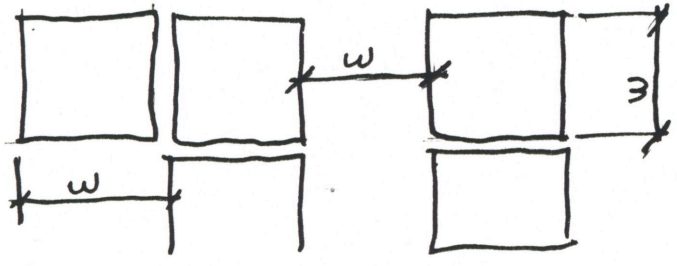
- LOW RAMBLING BUILDINGS 2-3 FLOORS MAXIMUM
- MACHINE LIKE QUALITY INFLUENCE OF ALBERT KAHN
- HONEST MATERIALS: STEEL, GLASS CONCRETE

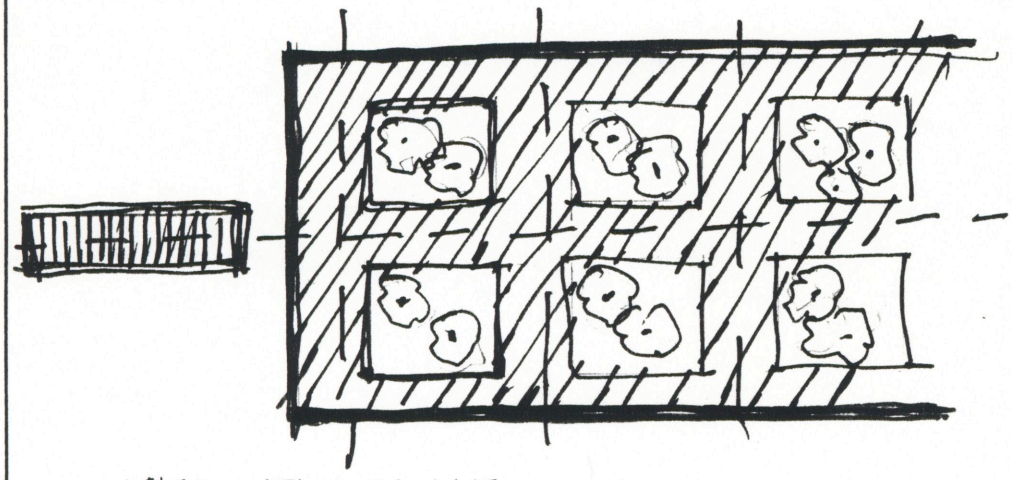


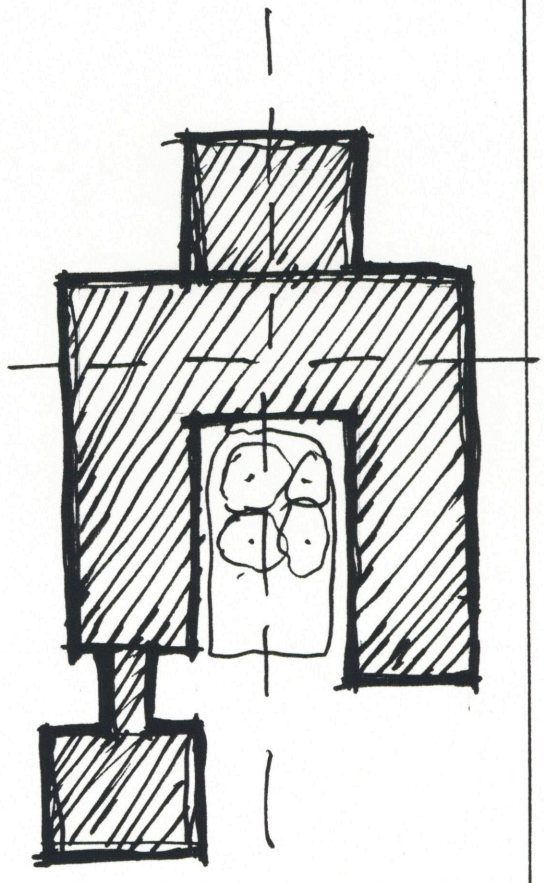


1940 – 1950

- LARGE FOOT PRINT ON SITE. SINGLE STRUCTURE
- RICHLY LANDSCAPED SITE
- RECTANGULAR PLANNING FOR MAJOR COMPONENTS
- BASIC OFFICE PLANNING MODULE: PRIVATE AND OPEN OFFICES



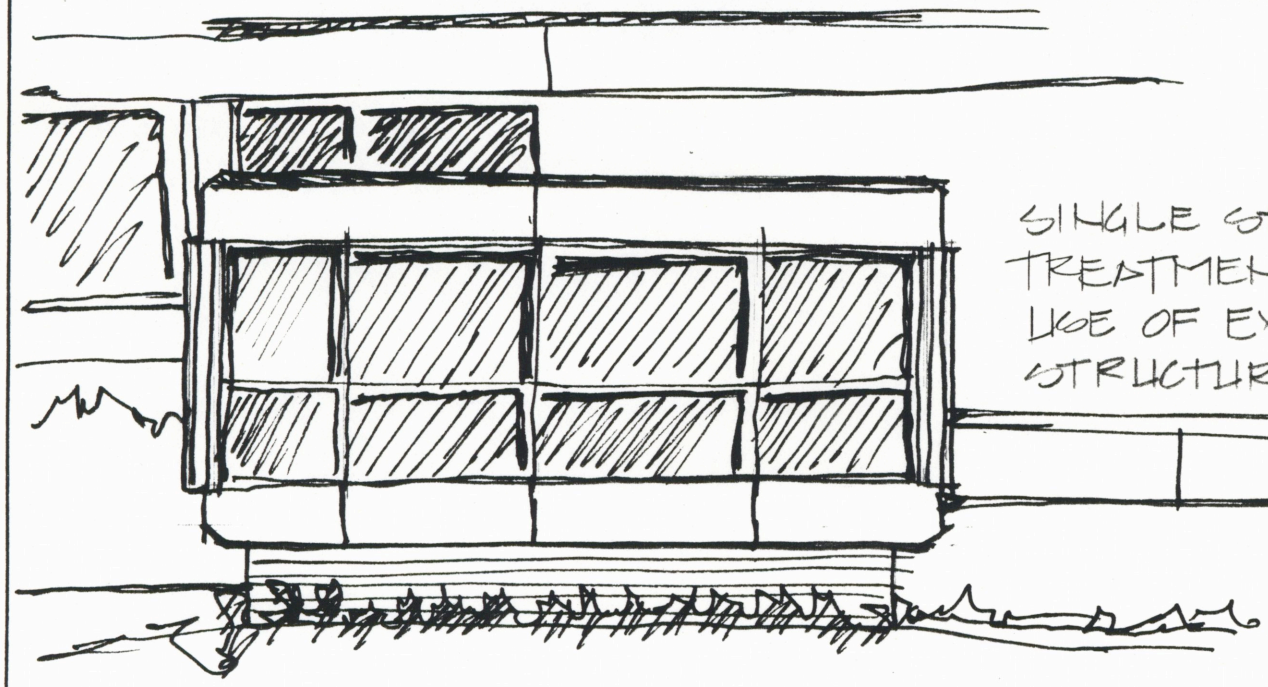




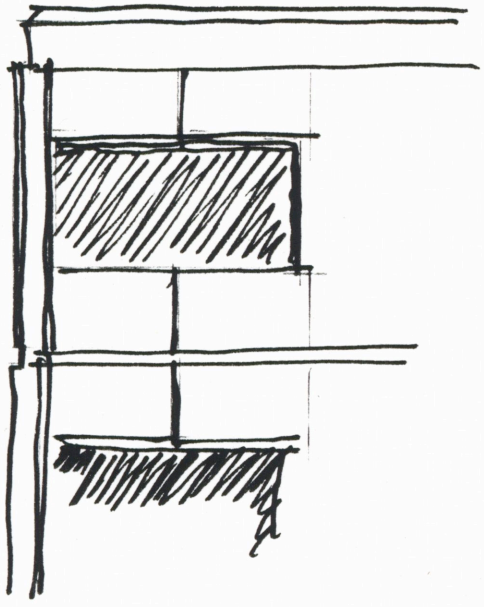
1950'—PRESENT

- FORMAL PLAN LAYOUT
- INNER COURT YARDS
- SYMMETRY

EXPANSIONS LINKED WITH OTHER DEVICES: COVERED WALK, BRIDGES ETC.

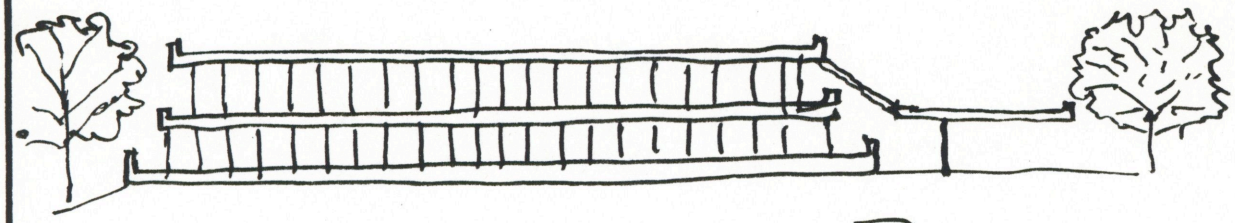


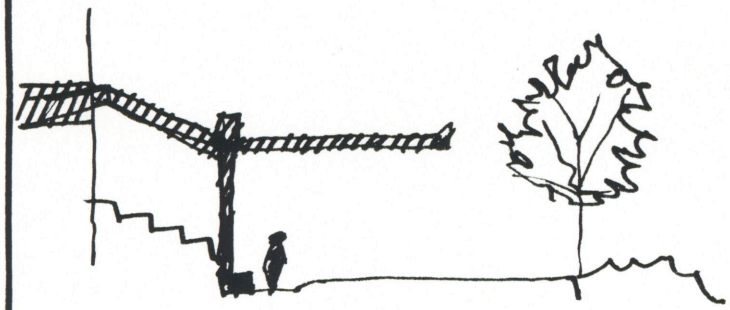
SINGLE STORY TREATMENT, TYPICAL, USE OF EXPOSED METAL STRUCTURE.

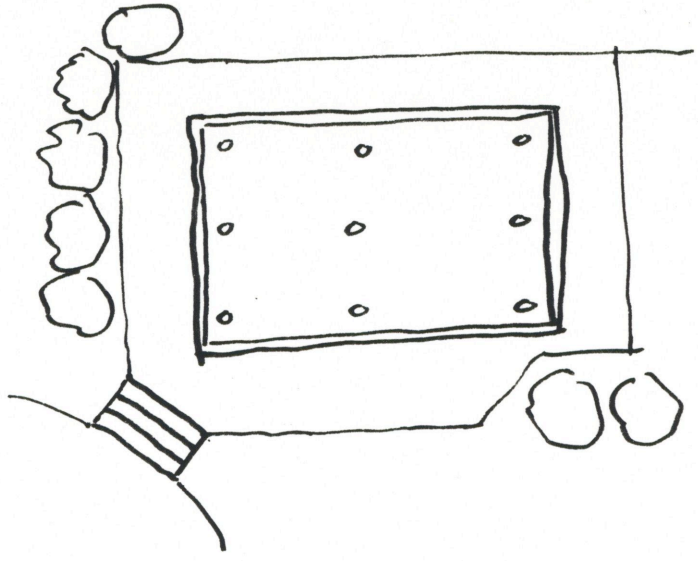


1950 - (VARIATION)

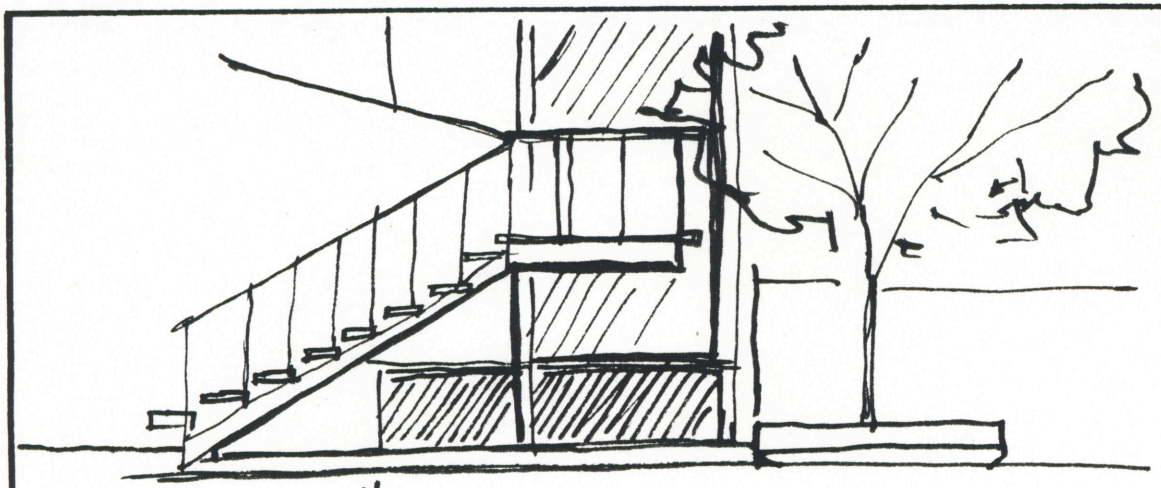
- MODULAR PANEL SYSTEM.
- PRECISE MODULAR GRID
- ON LOW LEVELS (SINGLE STORY) ROOF TENDS TO FLOAT
- STEEL SECTION CORNERS
- EXPOSED

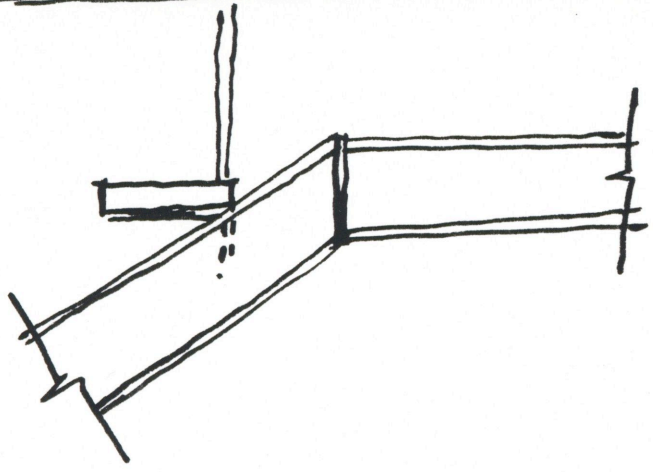






50's – 60's
PLANAR FORM
PLANAR COVERED ENTRIES
LIFT SLAB STRUCTURAL SYSTEM



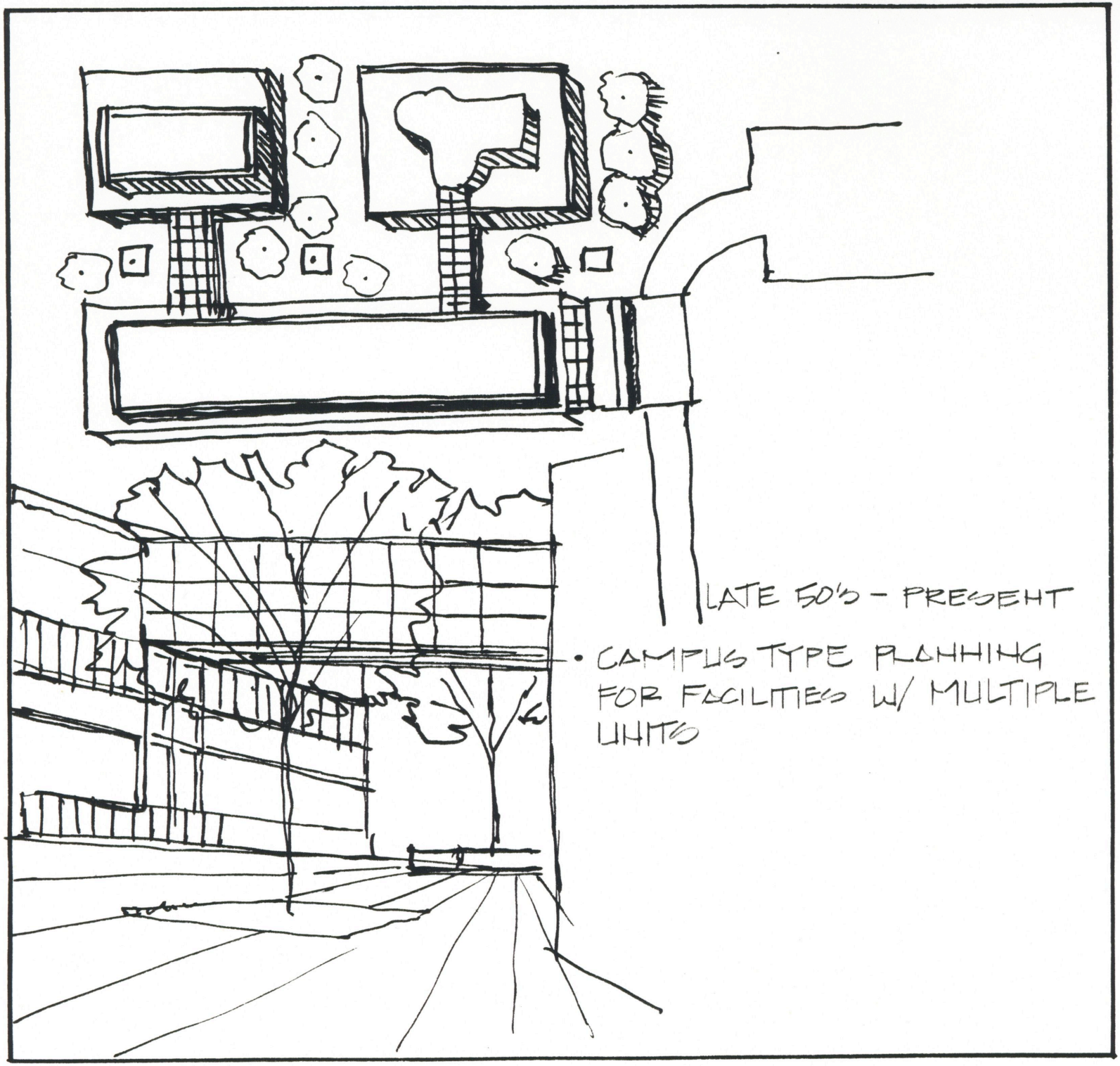


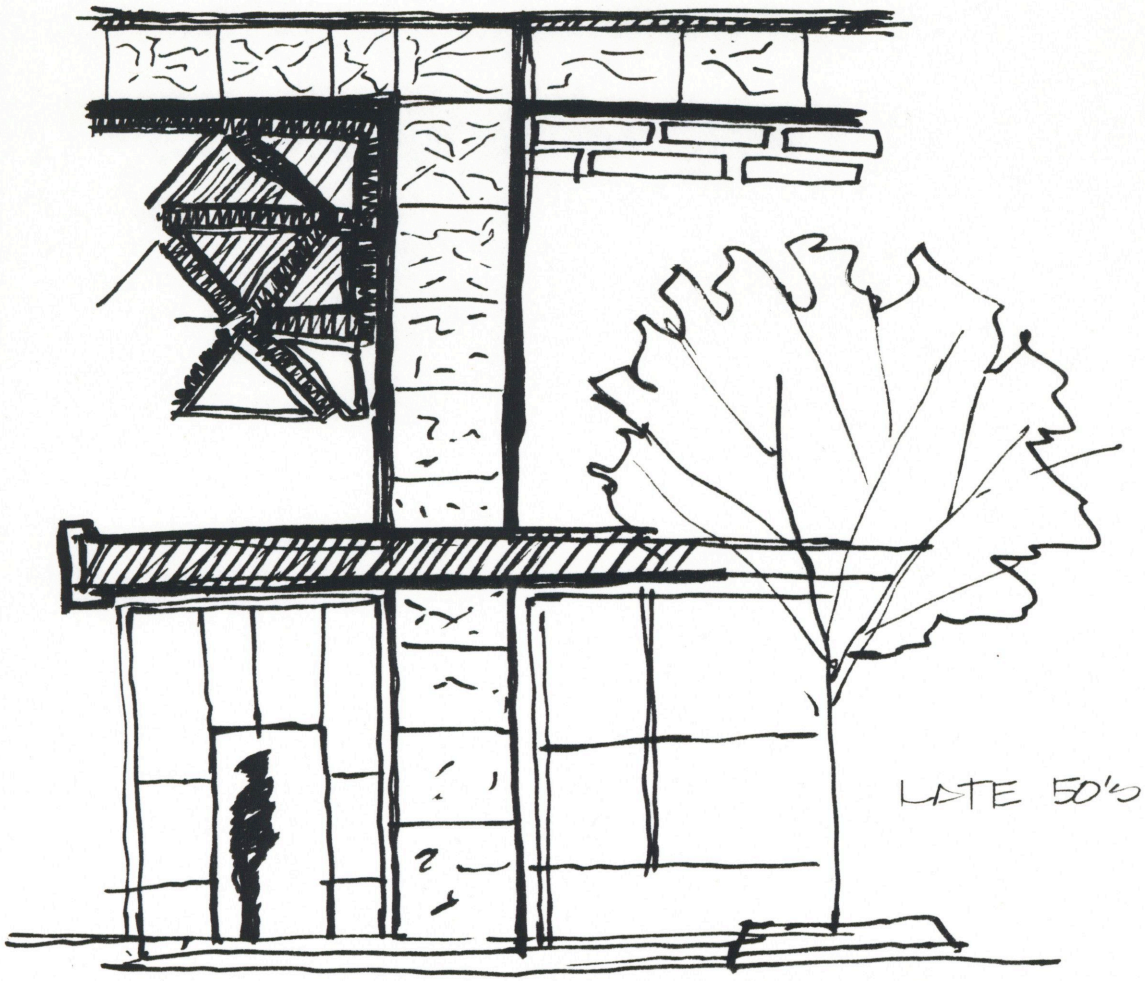
MID 50's - 60's

STYLING IN STAIRCASES

- EPOXED STEEL AND CONCRETE

INTERIOR/EXTERIOR

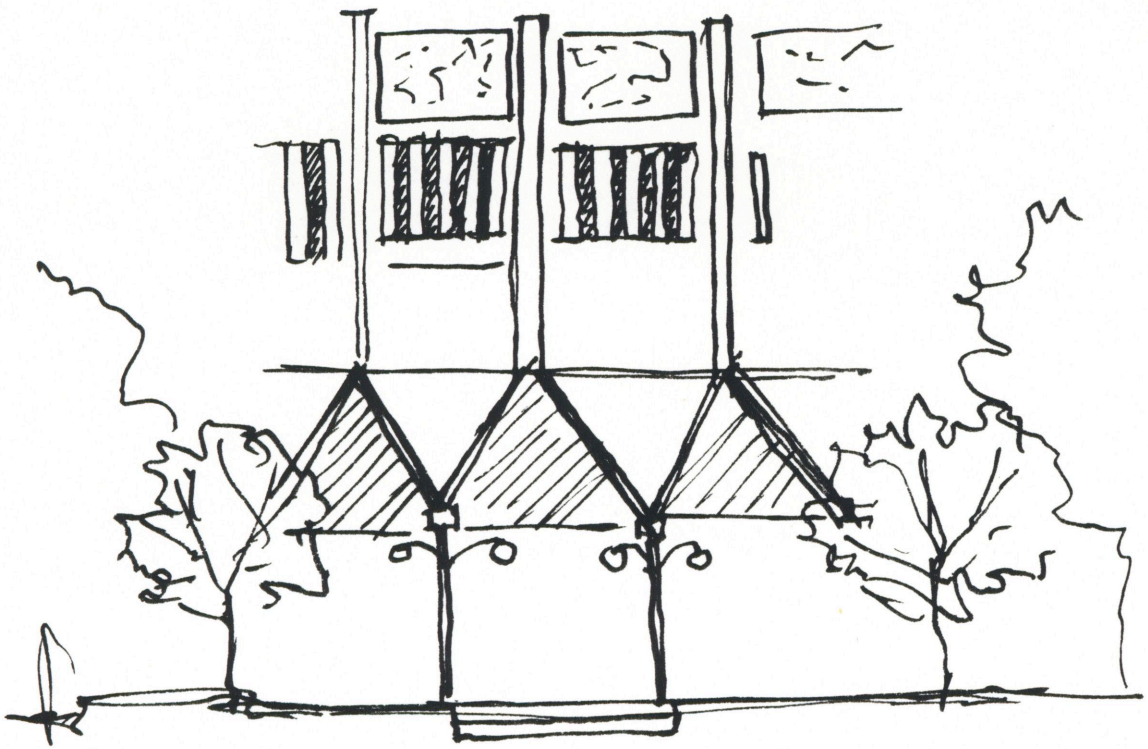

LATE 50's - PRESENT
• CAMPUS TYPE PLANNING FOR FACILITIES W/ MULTIPLE UNITS



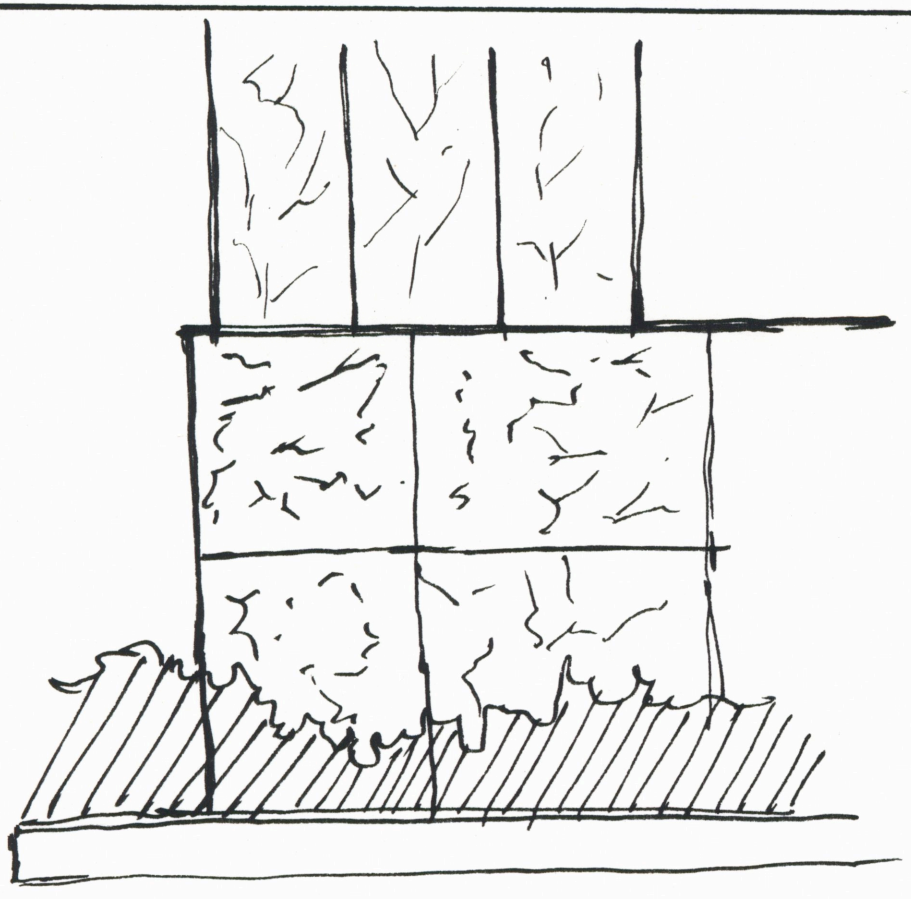
LATE 50's – MID 70's

TYPICAL SURFACE TREATMENTS WHERE STRUCTURE IS COVERED

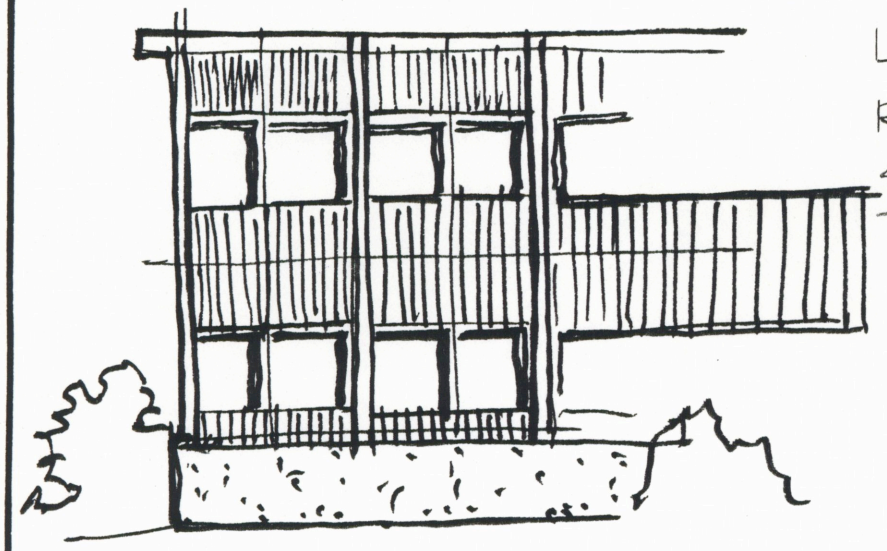
- MARBLE – VAST AMOUNTS
- DECORATIVE CERAMIC GRILLES
- BRICK TREATMENT
- LOWER LEVEL GLAZED; STEEL



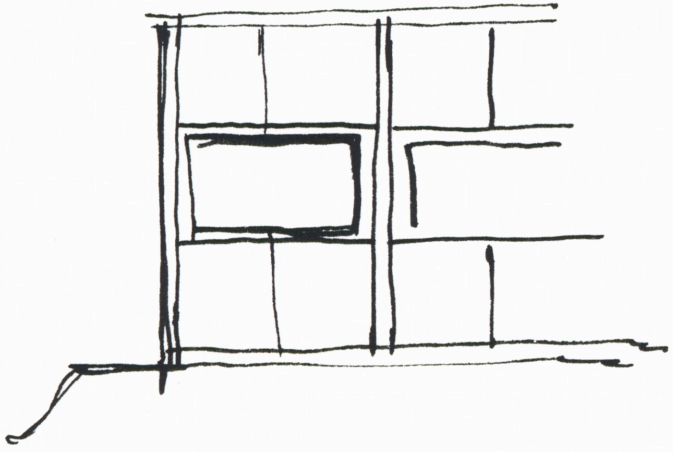
MID 60's - 70's
DECORATION W/ MATERIAL, SAME THROUGHOUT
- MARBLE TYPICAL



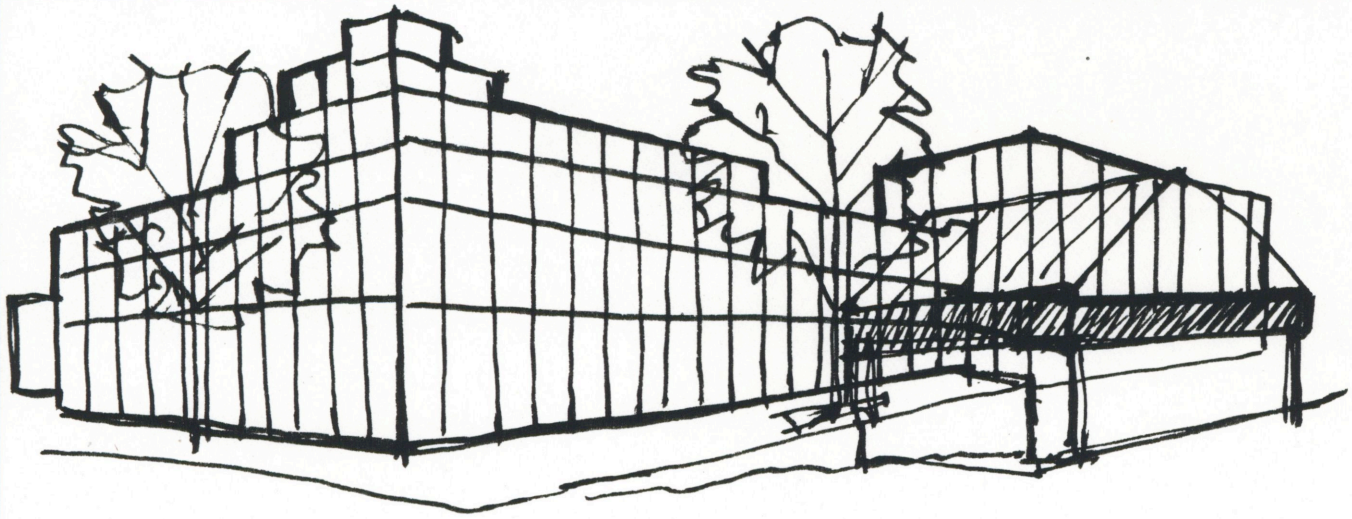
MID 60's – 70's
STRONG MARBLE BASES FOR BUILDINGS

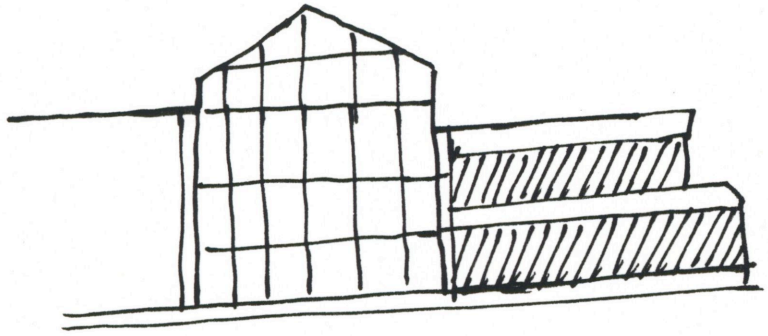


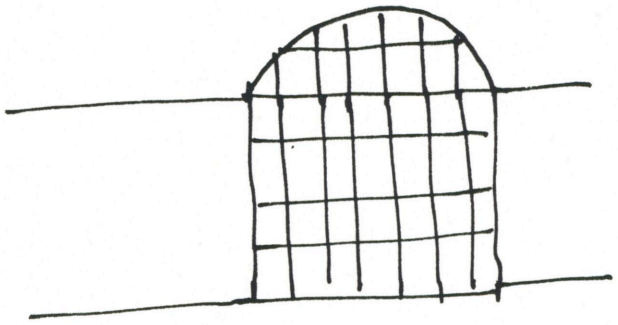
LATE 50's - 60's
RIBBED CONCRETE AND
STEEL FACADE TREATMENT
TYPICAL



COLORED PORCELAIN OR STEEL
PANELS
· DEEP HUE, PASTELS







MID 60's TO PRESENT

- WRAPPED IN GLASS (FAVORED IN '70's FOR ENERGY THEME)
- PITCHED OR VAULTED ATRIUMS (JOHN DEERE 1964)
- CIRCULATION DEFINED WITH SKYLIGHT
- RIBBON WINDOWS
- METAL PANELIZED SYSTEMS DEFINE SPANDRELS



SUN

SUN COMPANY: AN OVERVIEW

The Beginnings

The original company was formed in 1886 with a start in the oil industry. The company, Sun Oil Line Company, was a small company in which Joseph Newton Pew, the founder, began as an entrepreneurship. The company at the time was an Ohio based company owned by the Pew family. The organization of the company was around oil leasing, transfer and storage. Opportunities were recognized in various states which allowed for the company to expand. In 1889 the company incorporated.

In 1909 the Sun Company was formed and organized as a New Jersey organization. The company promoted the energy interest arising in southern states. The state of Texas was a state that involved a tremendous amount of competition with other industries. Gulf Oil and Standard Oil provided a successful amount of competition to the Sun Company.

Joseph Pew turned to the United Gas Improvement Company as a major source of support for his investments. The United Gas Improvement Company was one of Sun's major customers for their products. With the support of the gas company, Sun could acquire crude from Texas and other southern producing states to be refined near Philadelphia. Sun had managed enough capital to by the stocks of United Gas Improvements in 1918 to enlarge the corporation.

The corporation grew through family involvement. John Howard Pew (J. Howard 1882-1971) joined with his father in 1901. Educated at MIT J. Howard had more involvement in shaping the corporation that anyone else. He served it for seventy years. In the early years of Sun Company, he was involved in the major research of development of cheap Texas crude to a highly refined lubricant. He was an innovator and a businessman. Sun became a major developer

of refined products under J. Howard's supervision and involvement. A successful introduction of the first petroleum asphalt developed by Sun under J. Howard and marketed under the trade name of Hydrolene proved Sun's research viable for a changing tomorrow. J. Howard, president for Sun, and key board member, helped Sun achieve its status in the Energy Industry.

The corporation was involved in many operations. Oil refining, Sun Shipbuilding (Chester Pennsylvania), deriving synthetics from oils and numerous others. The Company is the only oil and mineral company today that has been owned and operated extensively (with few exceptions) by family tradition. This adds to the success of the company and an sense of establishment. Owned and operated by the Pew family and following the entrepreneurial guidelines of Joseph Newton Pew, the corporation moved into the motorfuel gasoline market with the boom in transportation in the 1920's.

During the 20's Sun Developed new derivatives in fuels that exceeded government standards. Their Blue Sonoco fuel - "High Power Knockless Fuel"- lead the way to the motorfuel market.
The marketing strategy of Sun's proved vital. They were marketing their product at 500 company owned stations by 1930. Improvements in fuel technologies were continually being made with the expansion of Sun's operations.

During the depression years Sun took innovative steps for product distribution . The Pews philosophy wa to invest into the petroleum business expressing the confidence when hard times prevailed. The rewards were to come in the long run when the economy and livelihood of the people picked up. In 1931 Sun created the first pipeline to specificly move refined products.

New developments in fuel items by new processes increased sale. The company redefined the Houdry process, a catalytic process of refining fuel, to help produce better

fuel for better sales. In 1930, 2.3 percent of total gas sales were handled by Sun. With the new process, sales increased by 50 percent in the 1940's.

Sun Company is a unique company. At the close of the 1930's, Sun was on of only eight corporations out of 200 of the largest nonfinancial corporations that was characterized by "family control". At this time the Pew Family held 80 percent of the company holdings and the immediate family of Joseph Newton Pew about 64 percent.

The Pews engaged in active company management. They remained in opposition of government interaction to restrict free trade and regulate the interstate commerce in the energy industry. From post WWII the company has been exploring change relationships in private enterprize and public and governmental policy. From the 1950's and 60's Sun has pioneered many new energy developments. Development of Synthetic Crude was done because of projected energy shortages in the 70's and 80's.

Mergers and joint ventures with other companies in the late 1960's and early 70's were done for projections into the future. The Great Canadian Oil Sands is one case that strained the company when the investment was made in the mid 1960's. It was the largest investment for Sun ever done on the philosophy of J. Howard. Improvements for extraction of oil in the midwest and coal in the east were made. Further developments in the oil and coal resource areas were made for the use in the Rocky Mountain areas of the West and off-shore drilling processes. The developments concern the environmental issues raised when dealing in these areas. Sun is an innovator in environmental techniques, including disposal of waste products and land reclamation in the vast fields of Wyoming used for Strip Mining.

The Sun company built its image mainly with the involvement that it has with the people it effects. A community or "family" type relation is built by the

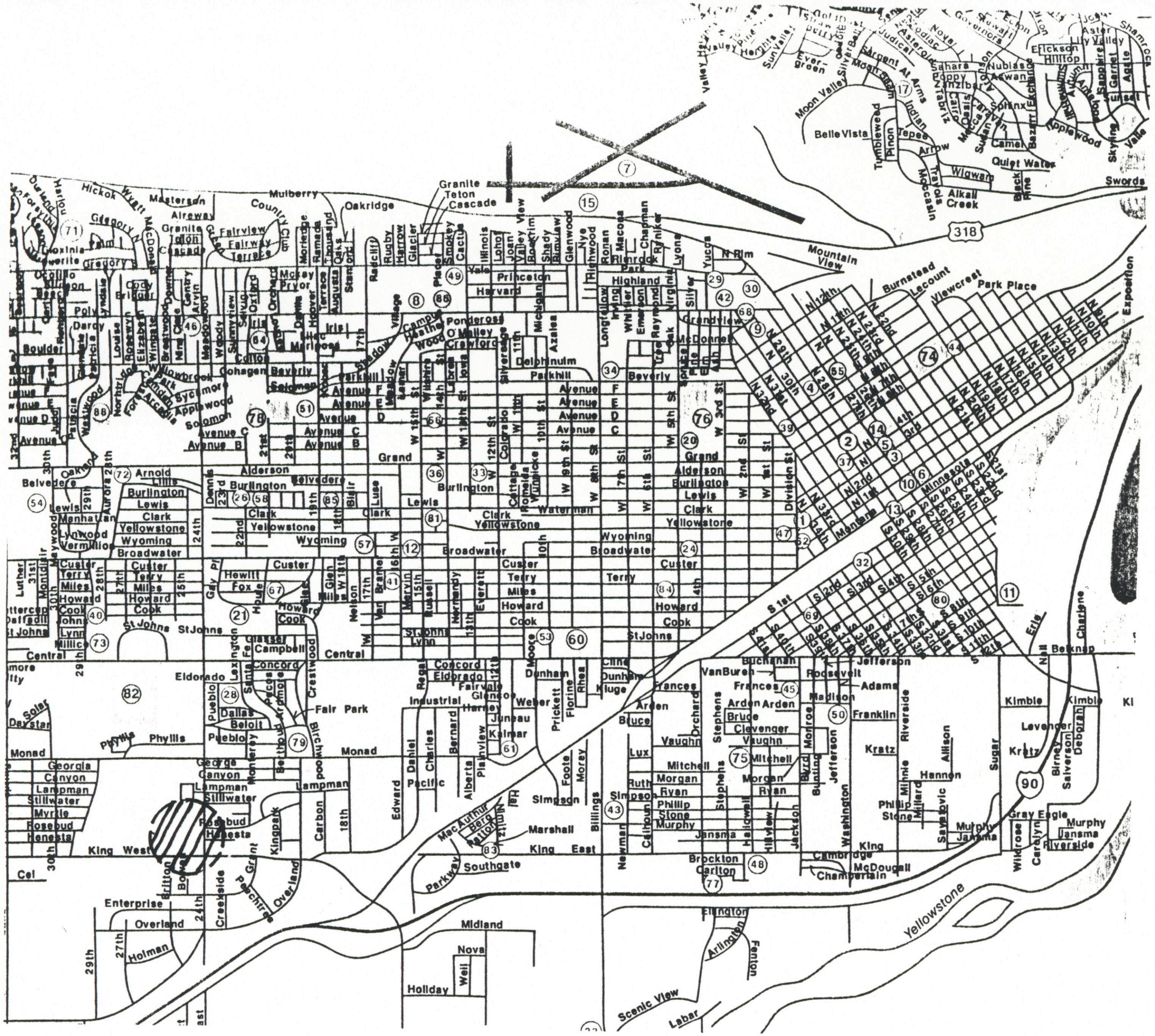
dedication it gives the people and the way the people deal with the company. This is true whether it is in operations overseas, in Canada or any of the operations Sun has in the United States.

NEW DEVELOPMENTS

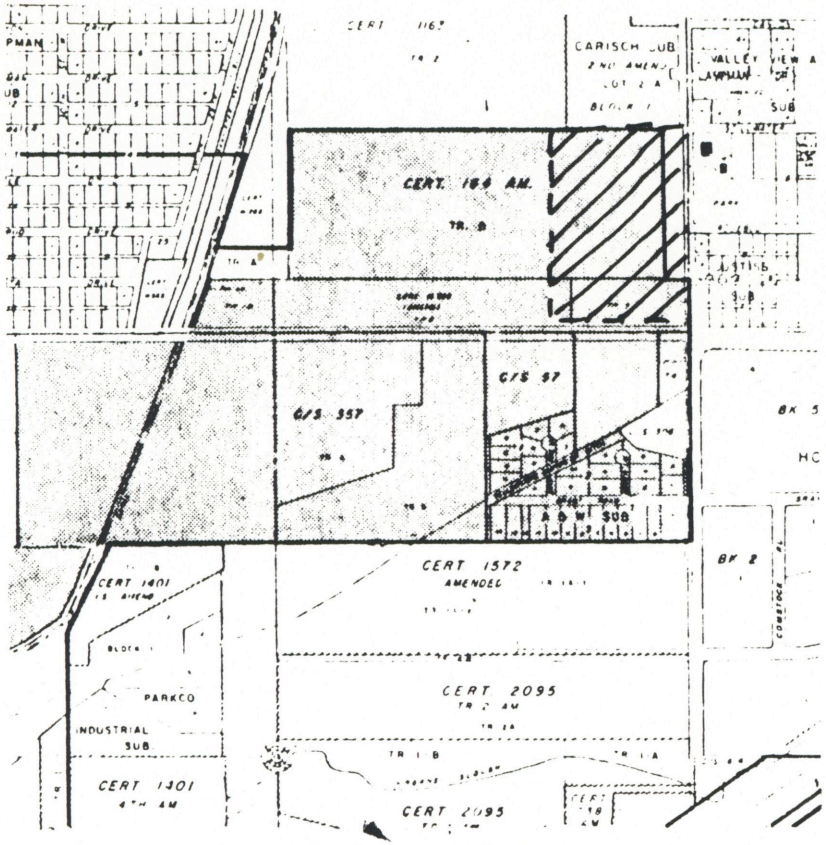
As an innovator in many aspects Sun Company will continue to dedicate its commitment to the energy scene. New technologies for extraction of energy are continually being developed. Sun is searching for new ways to process fuels and lubricants by getting the most out of the original crude product and maintain quality in the product for the consumer. Today Sun is searching for better ways to capture the energy the sun has to offer by developing better solar energy techniques for the consumers use. Today Sun is also concerned with better environmental aspects to maintain environmental responsibility to the community that the company serves.



SITE ANALYSIS

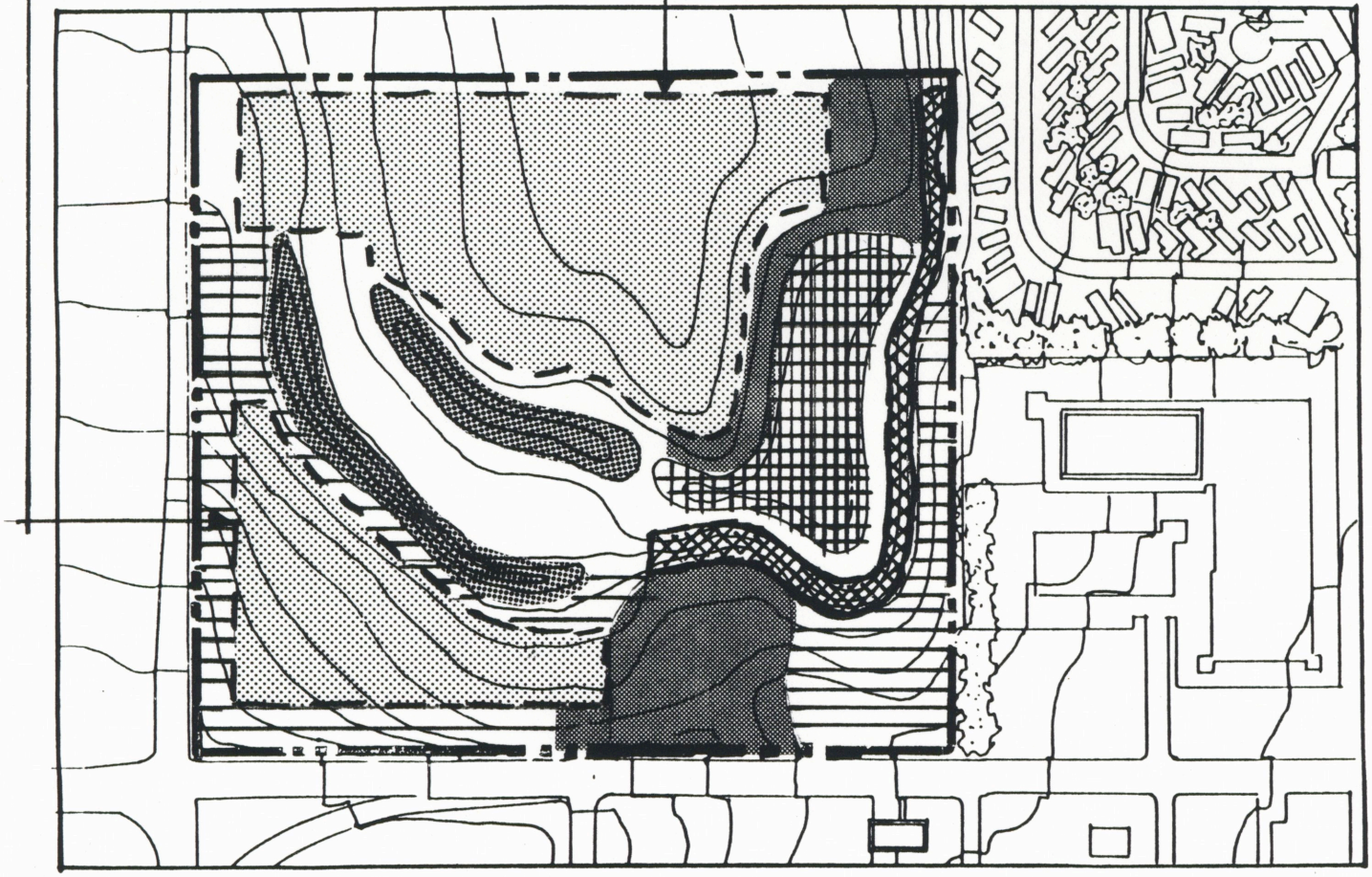


VICINITY MAP


CERT 1162
CARISCH SUB
CERT. 164 AM.
TR. B
TR. A
G/S 357
G/S 97
A & W 308
CERT 1572
AMENDED
CERT 1401
PARKCO
INDUSTRIAL
SUB
CERT 1401
CERT 2095
TR 1 B
TR 1 A
CERT 2095
BK 2
BK 5

AREA MAP

BEST BUILDING ZONES



0 - 3 %

3 - 5%

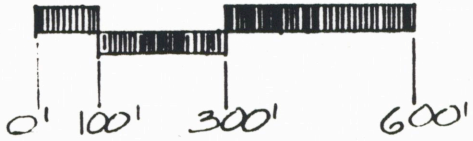
5 - 10%

15 - 20%

20 - 50%

POND

BUILDING ZONES ARE SLOPED AT 0 - 10%

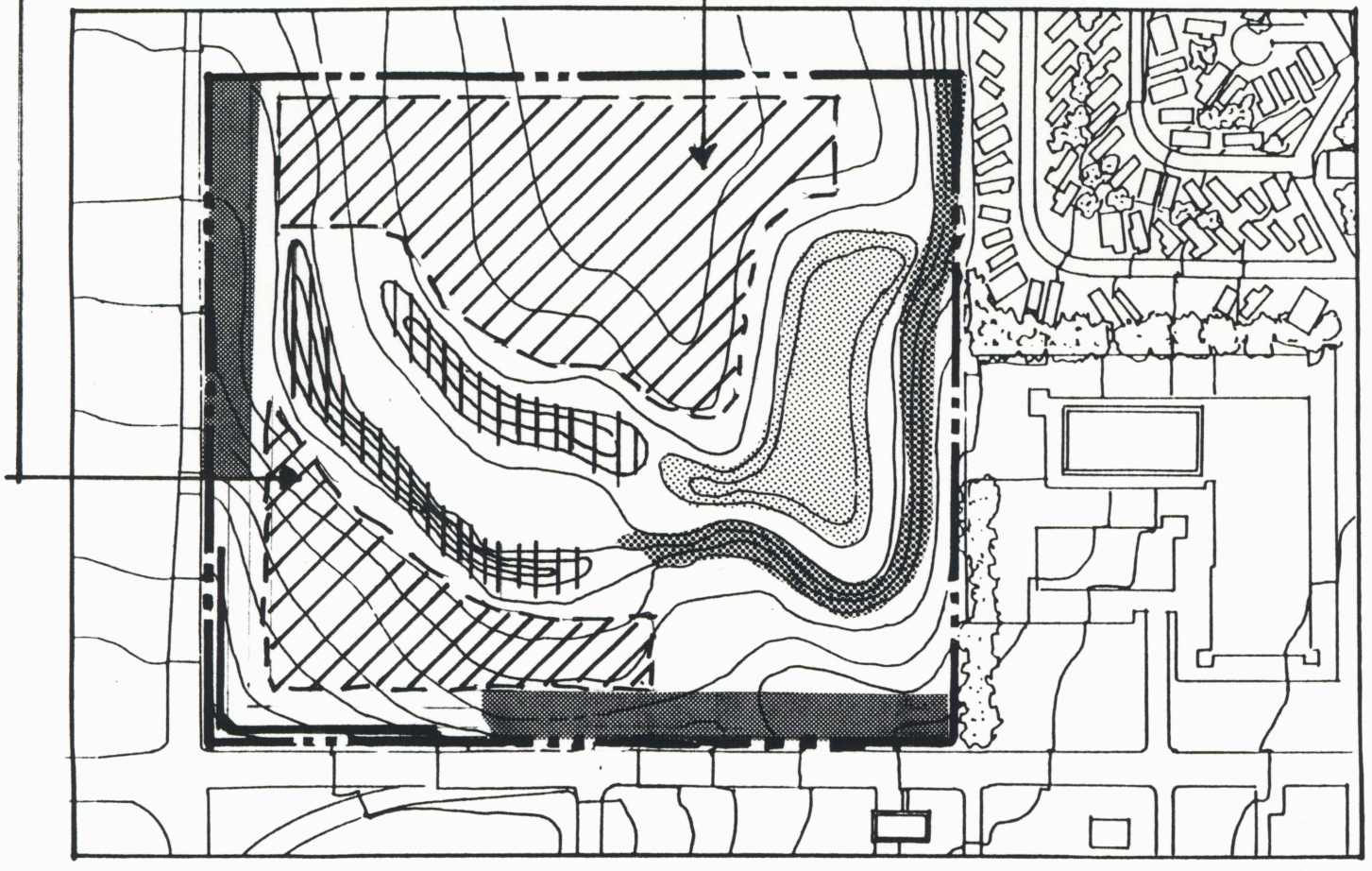




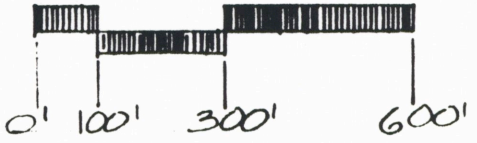
SLOPE

BEST BUILDING ZONES

BUILDING ZONES DETERMINED FROM IMPLICATIONS OF FEATURES



- POND FEATURE
  INCORPORATE INTO FACILITY
- PRIME ACCESS AREAS
- LEDGE
  PROHIBITS EAST DEVELOPMENT
- BERMS
  MAY NEED TO BE REMOVED

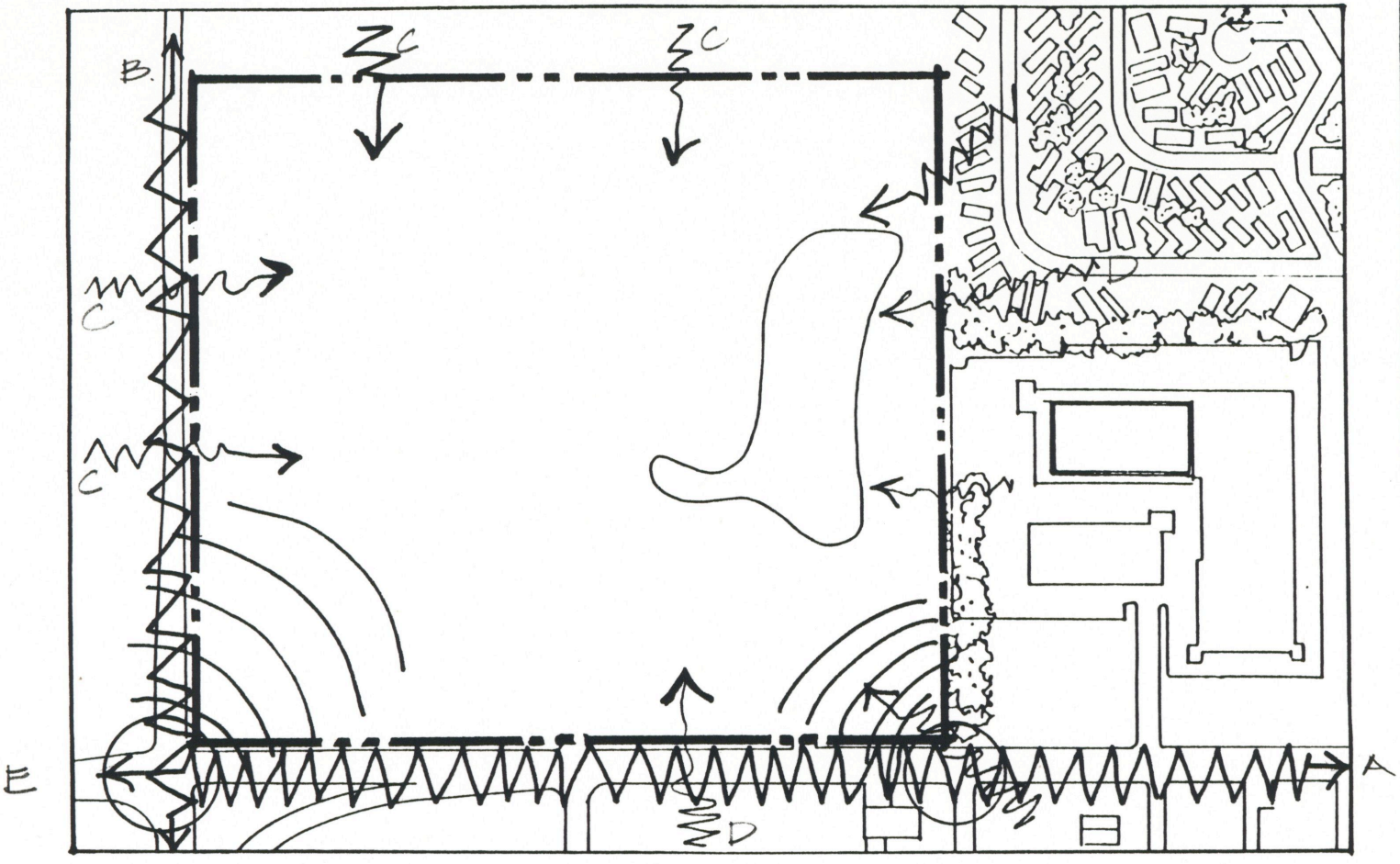




FEATURES

NOISE

NOISE PATTERNS ARE ALL OF VARYING DECIBELS



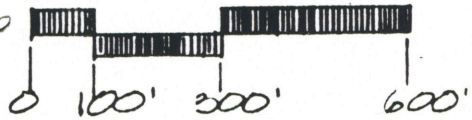
A. MAJOR TRAFFIC NOISE. CARS, TRUCKS BUSES

B. LIGHT TRAFFIC NOISE. MAINLY TRUCKS

C. DISTANT INDUSTRIAL BACKGROUND NOISES SHEILDED BY TOPOGRAPHY

D. RESIDENTIAL NOISES. CHILDREN PLAYING VEHICLES STARTING

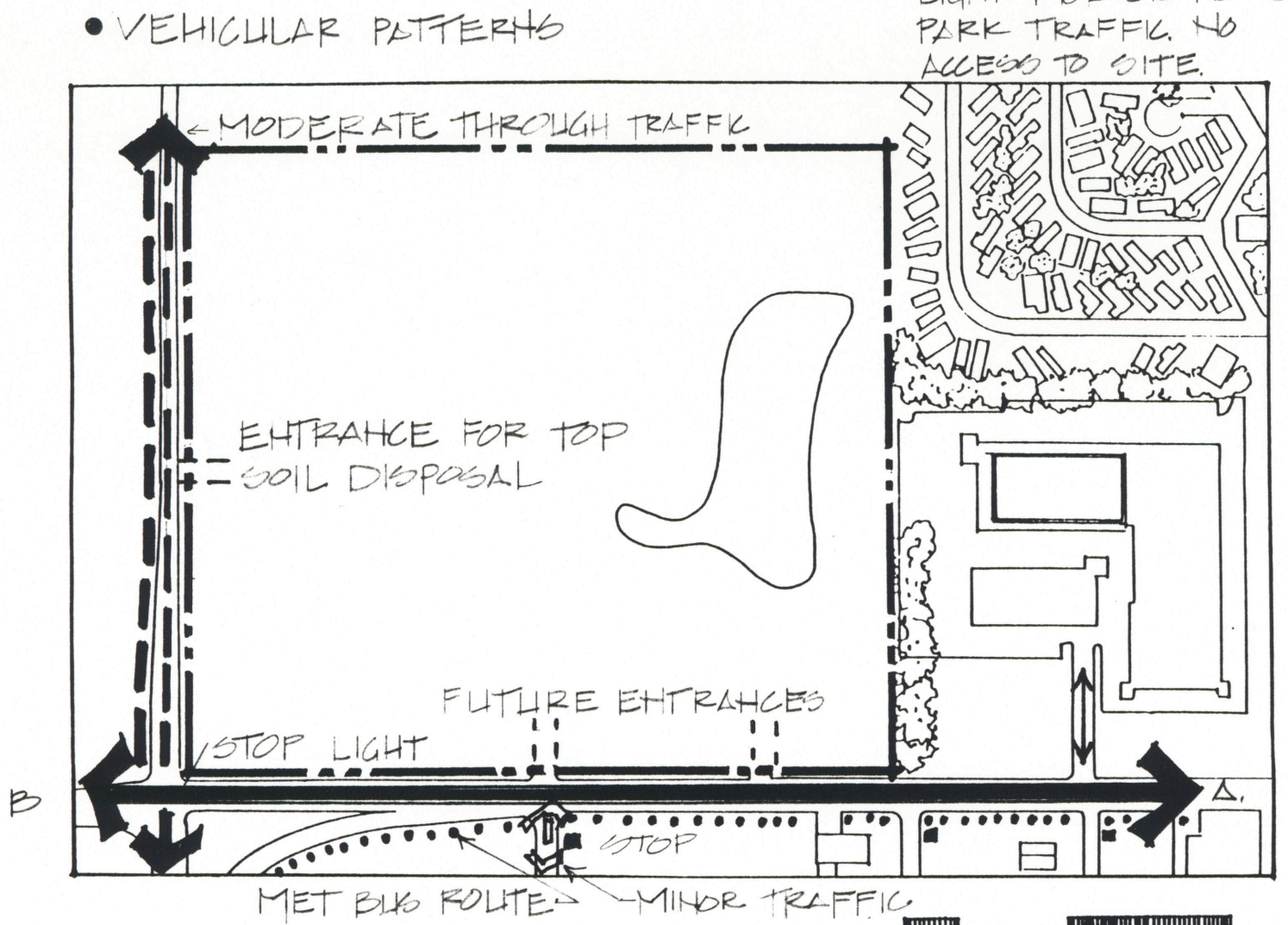
E. POINT SOURCE NOISES AT TRAFFIC LIGHTS DISCONTINUOUS





TRAFFIC

• VEHICULAR PATTERNS



A. MAXIMUM TRAFFIC 8:00–9:00 AND 4:30–5:30 P.M MAJOR ARTERY TO BUSINESS SECTOR, SPEEDING AND CONJESTION.

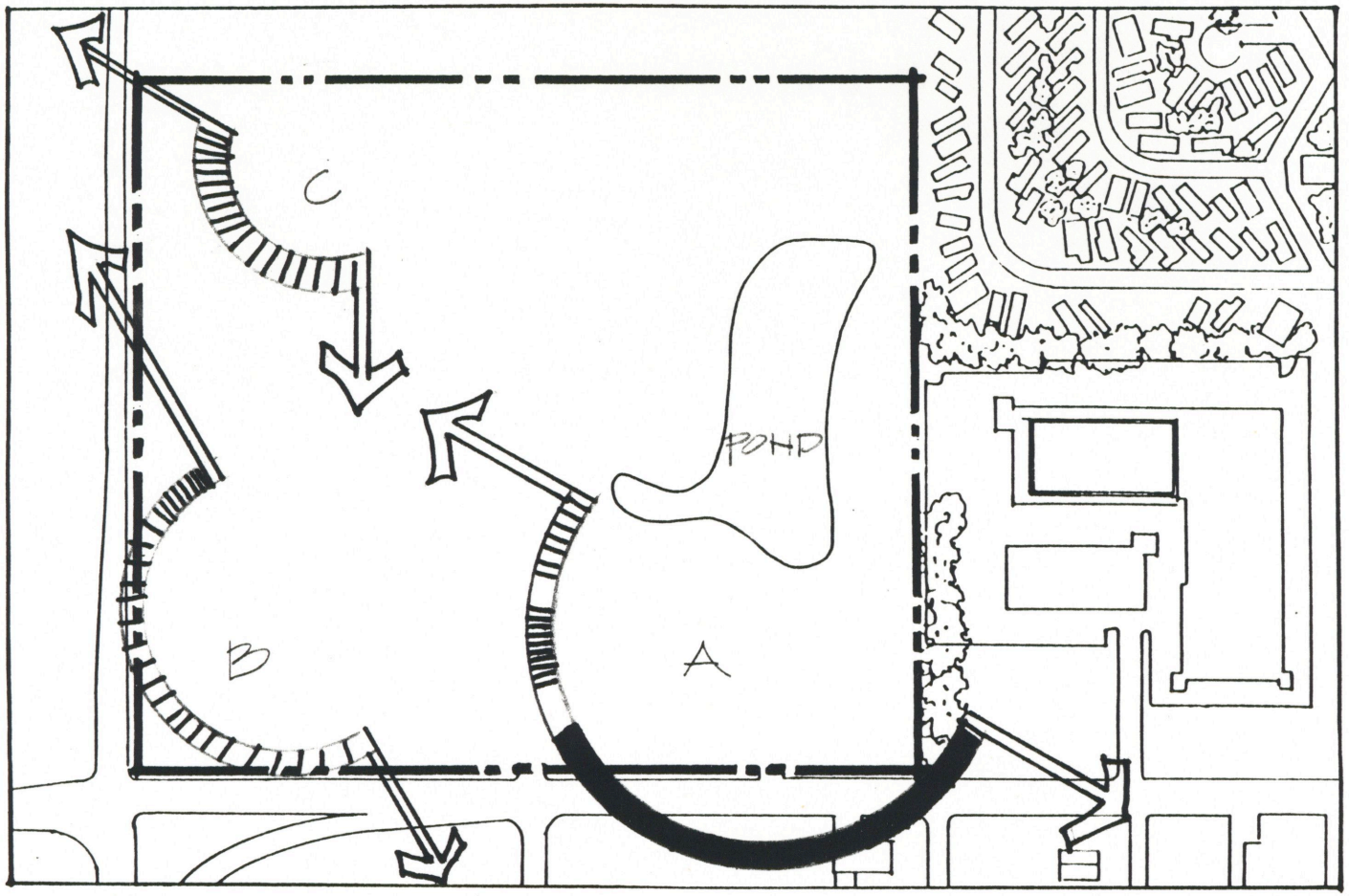


B. INTERSECTION AND BOTH STREET LEADING FROM IT SOUTH AND S.E HAVE BEEN IMPROVED TO ACCOMMODATE TRAFFIC FROM NEW BUSINESSES



VIEWS

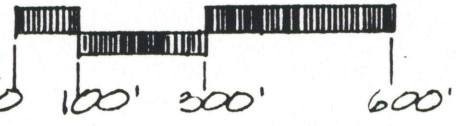
- FROM SITE
- GENERAL



A. PRIMARY VIEWING AREA DUE TO TOPO. MAJOR OBSTRUCTIONS. DISTANT VIEW TO YELLOWSTONE RIVER CLIFFS.

B. GENERAL AND DISTANT VIEWS. SOMEWHAT LIMITED DUE TO SURROUNDING TOPO.

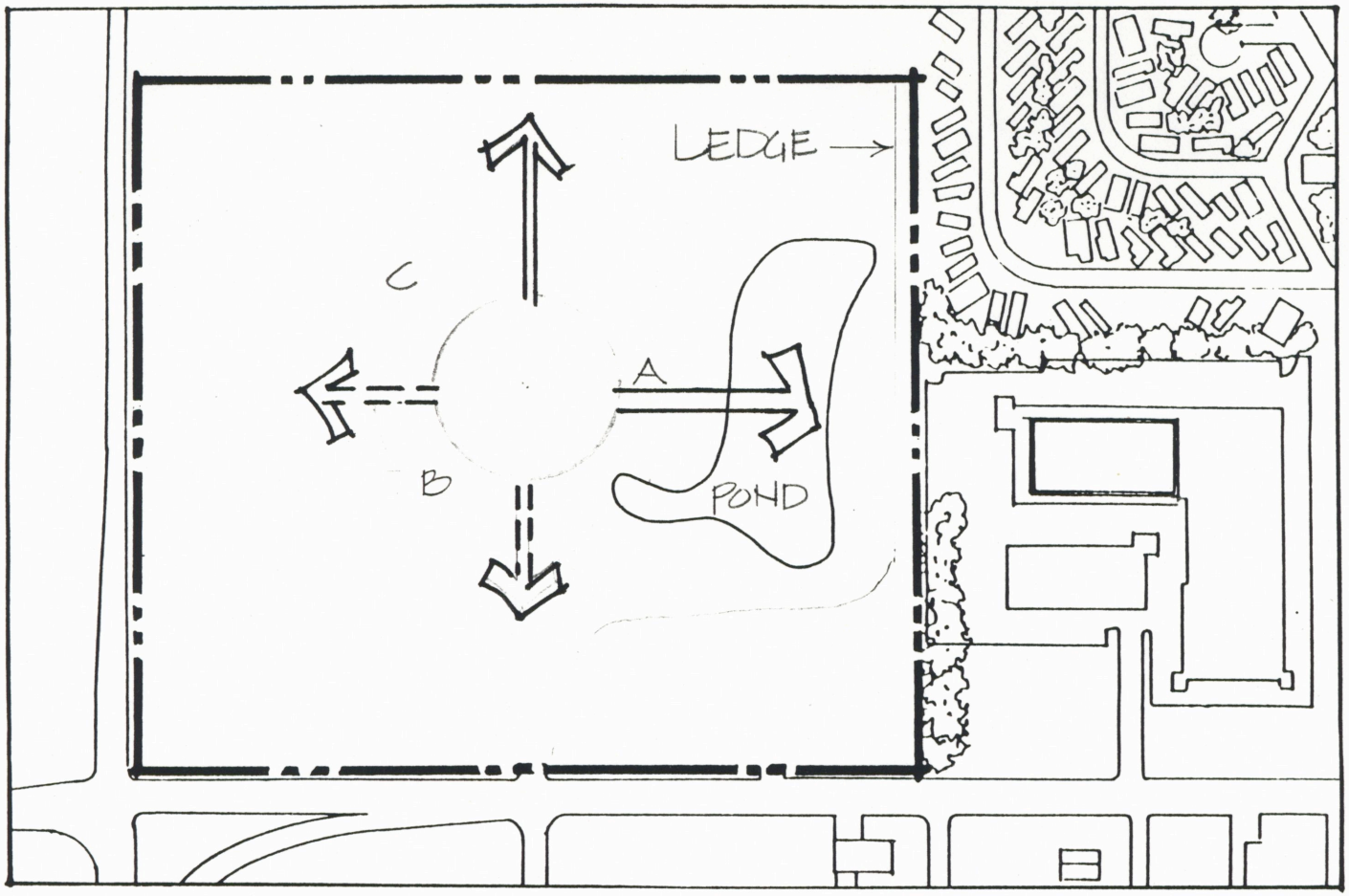
C. GENERAL VIEWS. WORST VIEWING AREA FROM SITE.





VIEWS

- WITHIN SITE



A. VIEWS TO POND AND LEDGE
POND IS STRONGEST VISUAL ASSET
VEGETATION PROVIDES PLEASENT VIEW
AND SCREENS RESIDENTIAL.

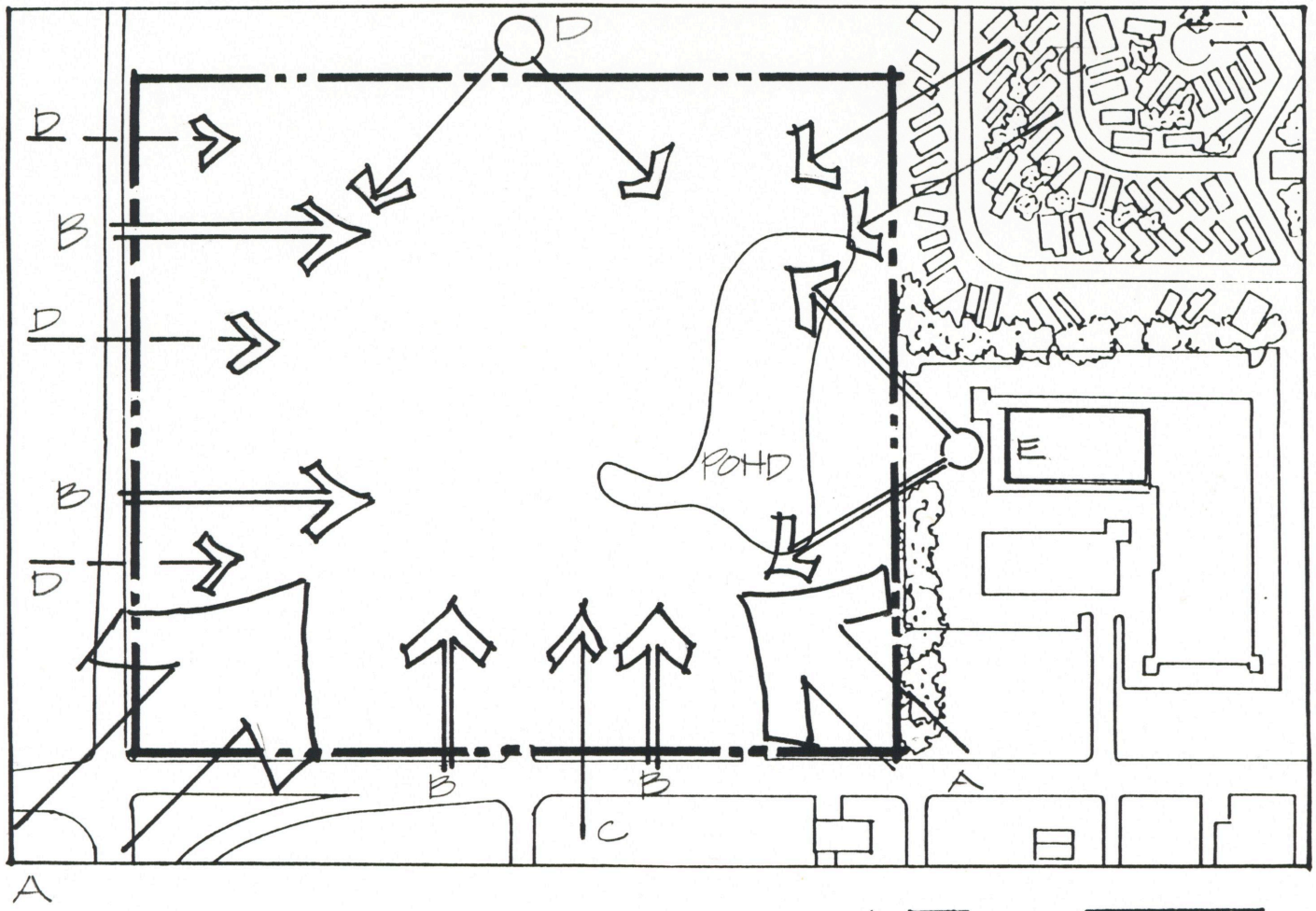
B. VIEW TO ROLLING TOPOGRAPHY. VISUAL BARRIER

C. VIEW TO OPEN LAND. MAY BE SOMEWHAT PLEASENT. THE QUALITY OF FUTURE DEVELOPMENT MAY DESTROY AREA

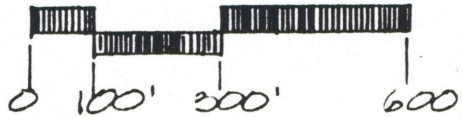




NOTE: ARROW WIDTH INDICATES IMPORTANCE.



A. MAJOR VIEW FROM NEW BUSINESS DISTRICT AND MAJOR INTERSECTION
B VIEW FROM KING AVE. AND ALSO 24TH
C. VIEW FROM RESIDENTIAL
D VIEW FROM DISTANT BUSINESSES
E VIEW FROM OFFICE





VIEWS

- INTO SITE



CLIMATE

CLIMATE ANALYSIS

The climate of the Billings area takes on characteristics of both the Rocky Mountain region and the Great Plain region. The climate of Billings is best classified as semi arid. The major factors that contribute to this are the geographic location and the elevation varying from 3100 feet to 3600 feet above sea level.

The winter months are usually cold with mild periods of a week to several weeks in length. Northwest winds and snow set the stage for the winter months in late November. The winter months from November to February are also those of least precipitation. Blizzard conditions in Billings are rare during the winter months, however the rural areas around Billings may experience a blizzard several times during a winter. The cold temperatures are usually broke up with Chinook winds that cause a "mild winter". The last true "mild winter" occurred during the winter of '69 to '70.

Spring brings many fluctuations in the weather that are rapid and frequent. Cloudy and cool periods are experienced with the beginning of major precipitation. May begins the thunderstorm period and usually marks the end of the freeze and thaw season.

The summers in Billings are usually warm with great amounts of sun and low humidities. The season is average overall. The nights however tend to be cool because of the altitude. The summer season is generally dry and arid with a few thunderstorms in the late afternoons. There are also hot periods during the season that lasts about a week. This is usually during mid July and the beginning of August when the temperatures hit 110 degrees.

The fall season usually begins with the first freezing temperatures at the end of September. The fall season over the years has been about the same in the distribution of wet and cold periods and dry mild fall periods. First snows usually accumulate during mid November and remain until the spring thaw.

Precipitation varies from year to year. On the average

annual precipitation is 14 to 14 1/2 inches. About one third of the amount comes during May and June, however, June tends to be the wettest month. The winter months produce about 20 percent of the precipitation while the other months pick up the remainder.

The general favorable aspects of the weather also has its bad side. Summer thunderstorms, possible hailstorms, and the possibilities of tornados become destructive elements to the area.

IMPLICATIONS OF CLIMATE

The harsh climate of Billings caused by weather variations of the Rocky Mountain Region and the Great Plains area inclines the architect to design the spaces adequately for year round use.
The architect can take advantage of the summer season for outdoor use. He needs to create the best possible spaces with what the weather has to offer. The architects needs to take advantage of the sun as much as possible to create the best possible environment for both indoor and outdoor spaces.

IMPLICATIONS

Sun:

*Proper shading for building areas on hot summer days.
*Proper shading devices for outdoor spaces.
*Use of heat absorbing materials and glass to gather suns heat during winter months.
*Create outdoor areas to take advantage of sun (seasonal)
*Use of daylighting techniques

Snow:

Due to the varying degrees of accumulation of snow for each year there are both site and building concerns.

Site:
*Provide areas for proper snow removal.
*Create paths such that they are easy to remove snow from.
*Create shielded entries with the use of landscaping techniques.
*Landscape should have proper drainage to handle runoff without obstructing the paths for people.

Building:

*Structure is to be designed properly for snow loads.

*Provide for proper building drainage and runoff for periods of freeze and thaw cycles to prevent icicles from accumulating on the structure and doing possible damage.

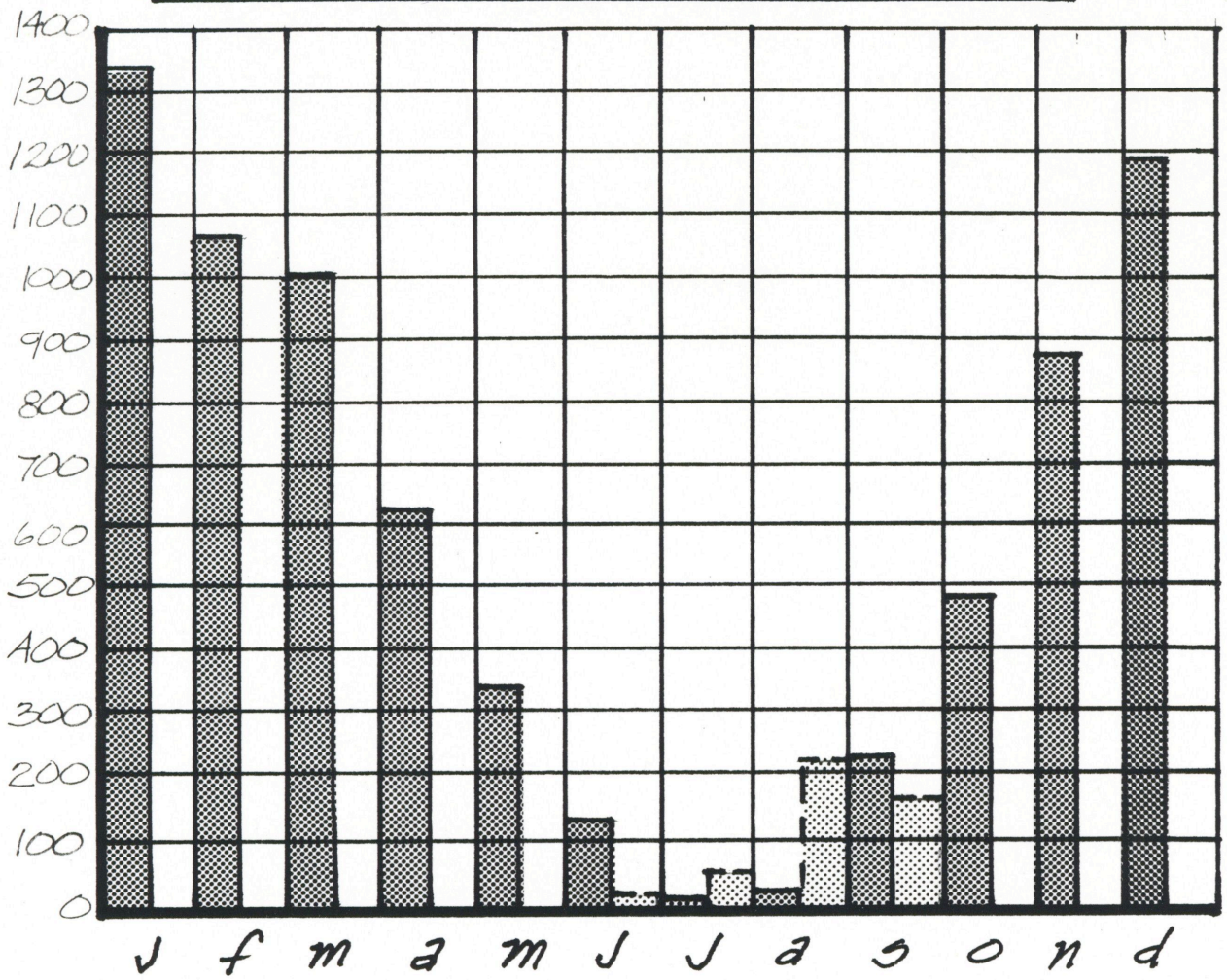
*Provide shielded entries.

*Minimize north facing outdoor spaces

Relative Humidity:

Due to the low humidity levels the mechanical system must be designed to provide maximum comfort for the users.

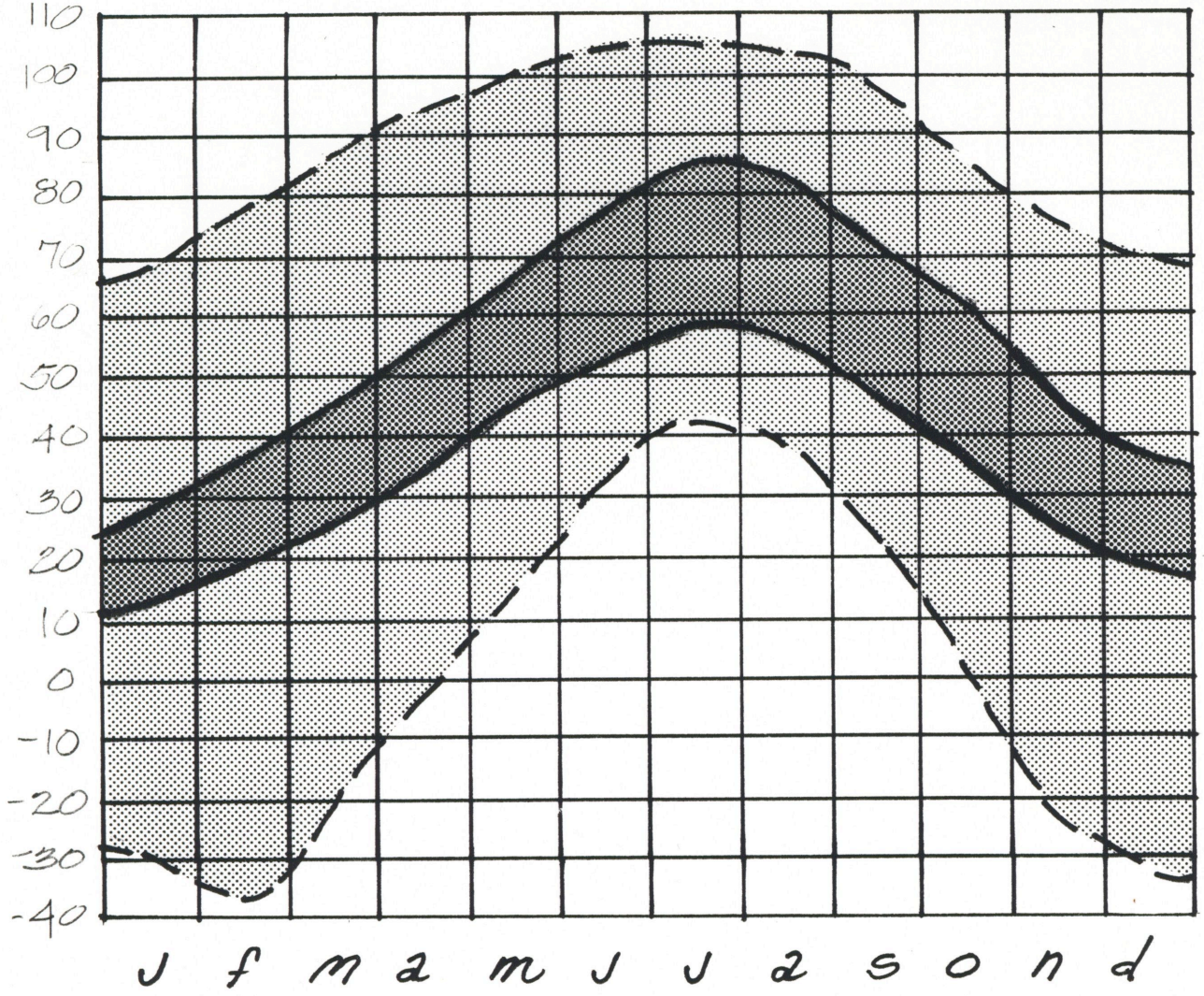
NORMAL DEGREE DAYS



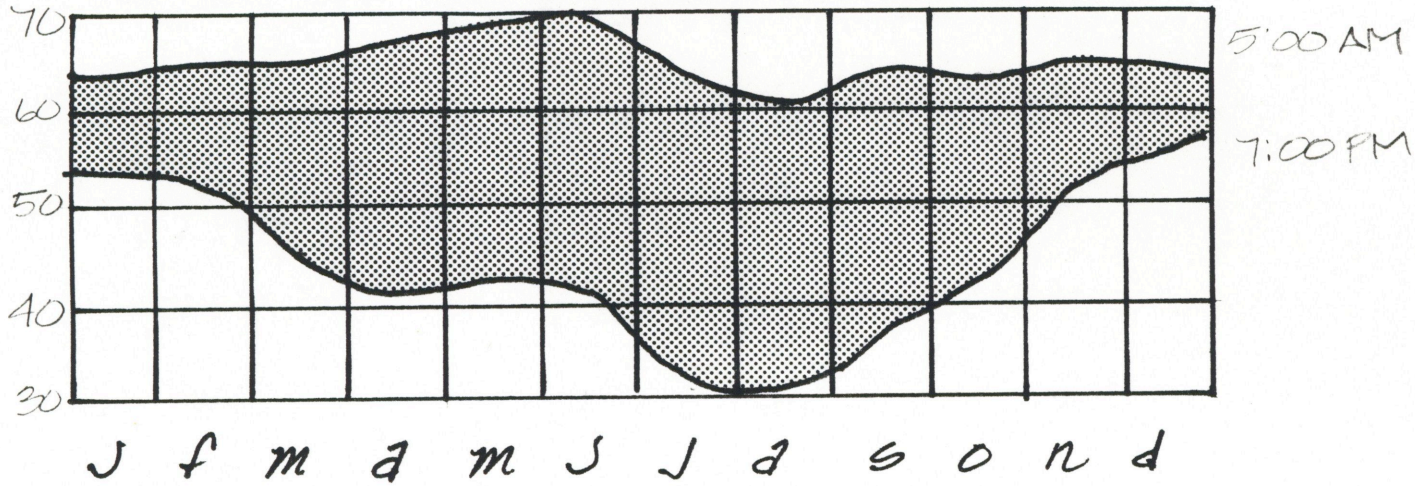
AVERAGE YEARLY HEATING DEGREE DAYS 7265

AVERAGE YEARLY COOLING DEGREE DAYS 498

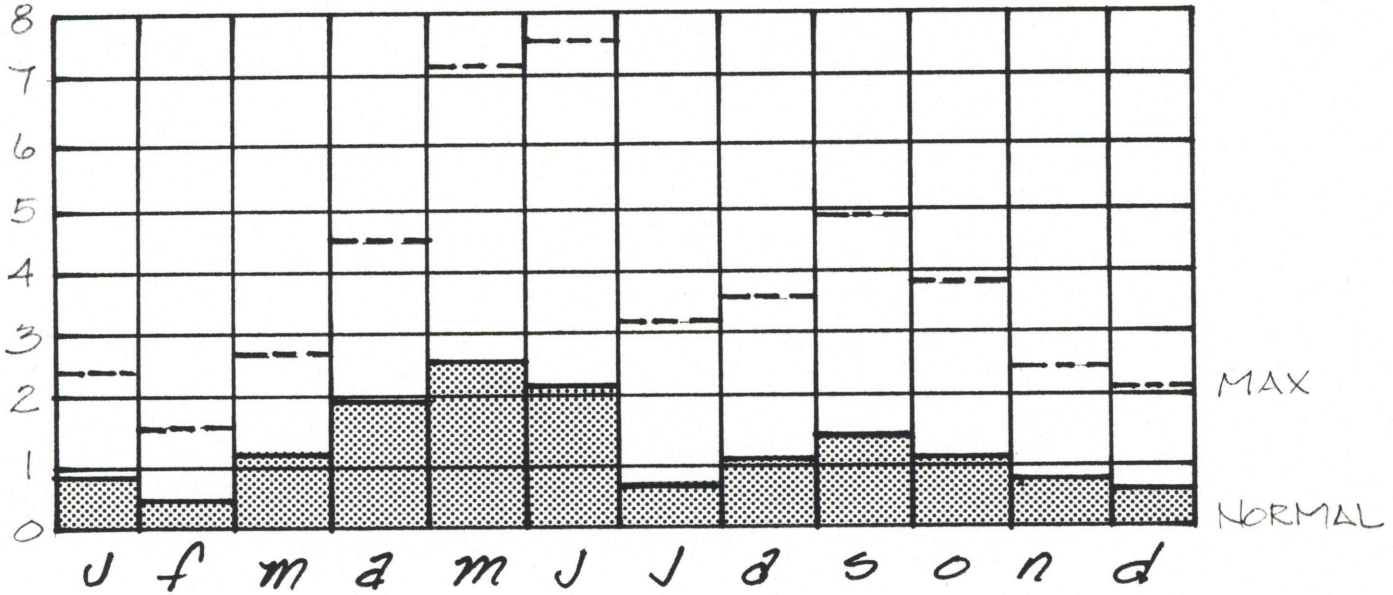
TEMPERATURE



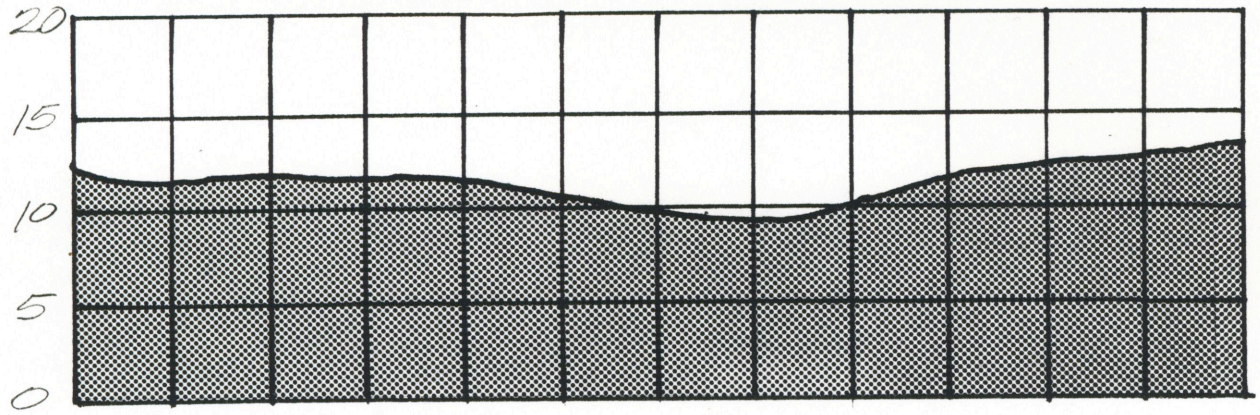
RELATIVE HUMIDITY (%)



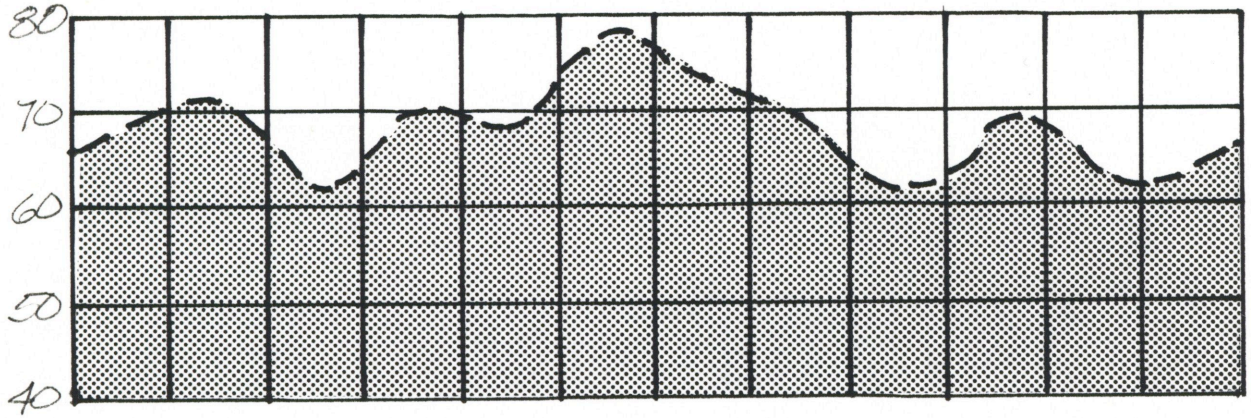
PRECIPITATION (INCHES)



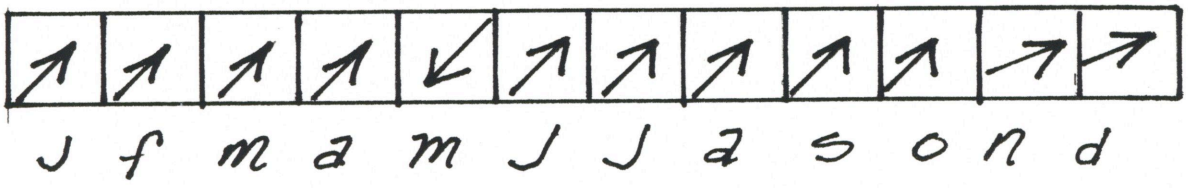
AVERAGE WIND SPEED



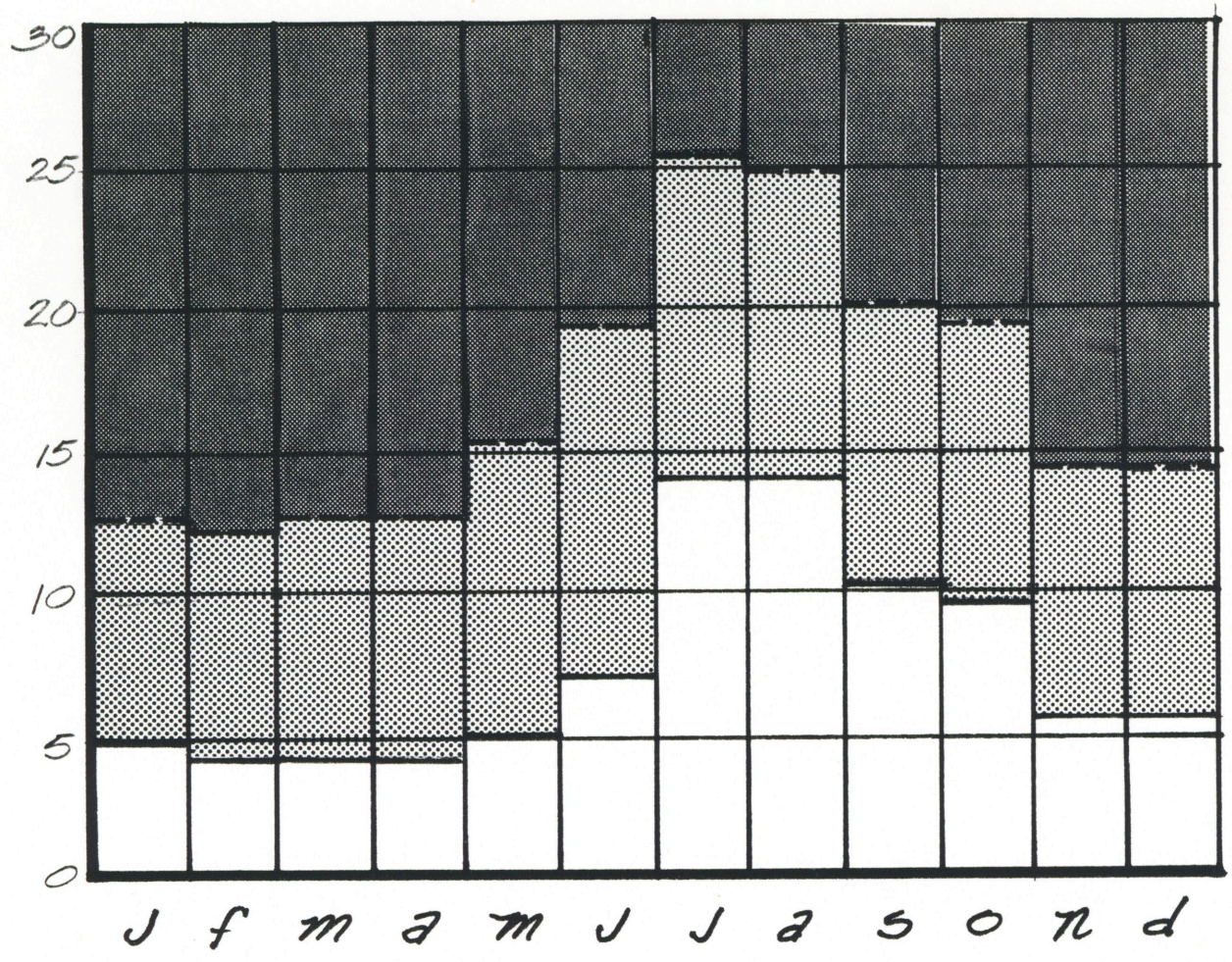
MAXIMUM WIND SPEED

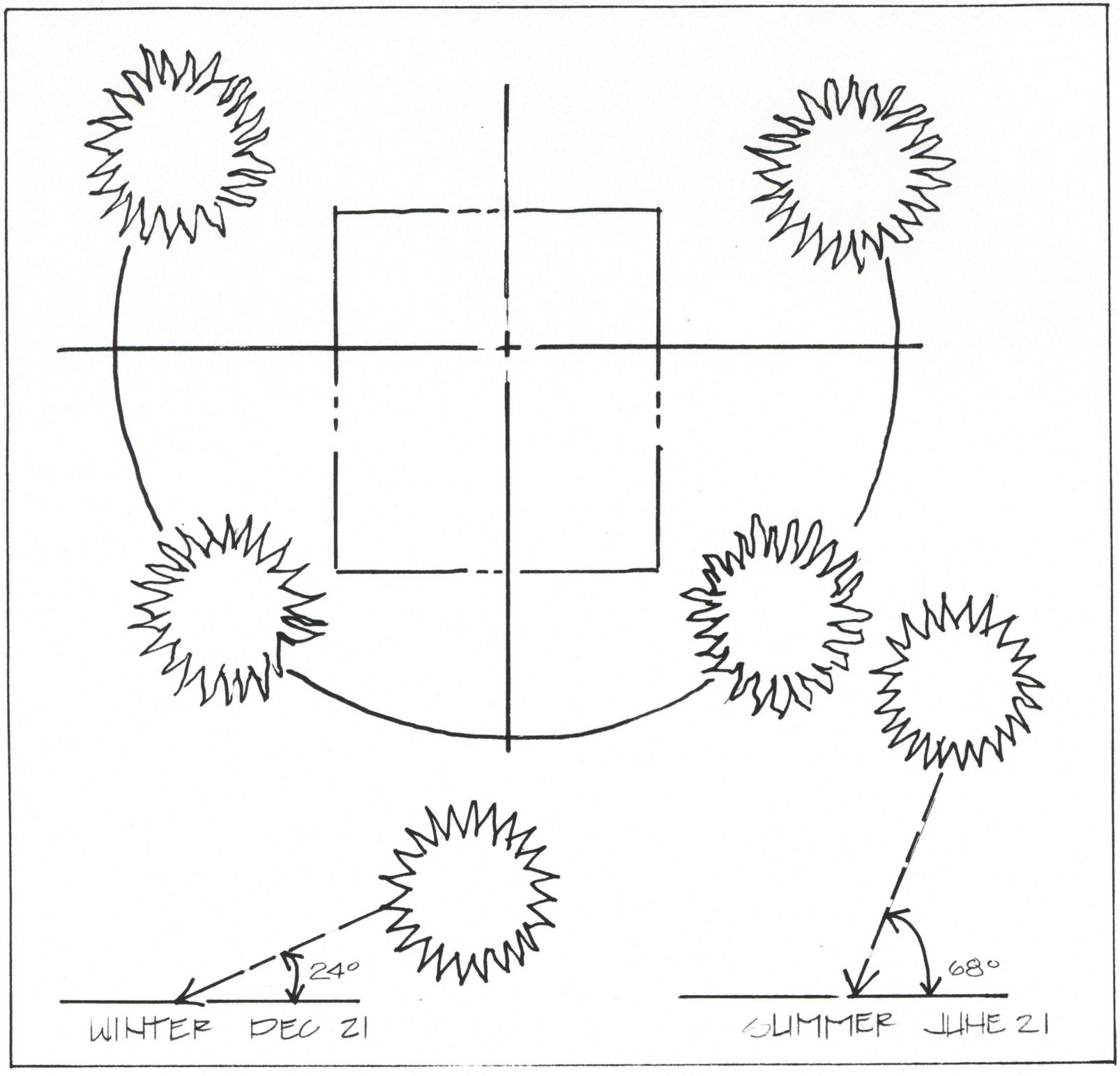


WIND DIRECTION



SKYCOVER




24°
WINTER DEC 21
68°
SUMMER JUNE 21



SPATIAL

SPATIAL PROGRAM: OFFICES

CORPORATE HEADQUARTERS OFFICE

I. EXECUTIVE SUITE

1.	District President	375 sq. ft.
2.	District Chairman Bd.	375 sq. ft.
3.	District Ex. Officer Operations	375 sq. ft.
4.	District Vice President	375 sq. ft.
5.	Dist. Assist. Officer Operations	375 sq. ft.
6.	Secretaries 6 @ 150 sq. ft.	900 sq. ft.
7.	Reception	800 sq. ft.
8.	Board Room	500 sq. ft.
9.	Conference Rooms 2 @ 650 sq. ft.	1350 sq. ft.
10.	Records and files	600 sq. ft.
11.	Executive library	500 sq. ft.
12.	Restrooms 2 @ 150 sq. ft.	300 sq. ft.
	subtotal	6825 sq. ft.

II. CORPORATE DEPARTMENTS

A. District Law Department

1.	Director	225 sq. ft.
2.	Counsel 2 @ 200 sq. ft.	400 sq. ft.
3.	Reception	500 sq. ft.
4.	Secretaries 2 @ 100	200 sq. ft.
	total	1325 sq. ft.

B. TAX DEPARTMENT

1.	Accountant	225 sq. ft.

2.	Secretary	100 sq. ft.
3.	Files and Records (Law also).	600 sq. ft.
	total	925 sq. ft.

C. PURCHASING

1.	District director	225 sq. ft.
2.	Purchasing agents 2 @ 200	400 sq. ft.
3.	Secretaries 3 @ 100	300 sq. ft.
4.	Reception	400 sq. ft.
5.	Files and records	300 sq. ft.
	total	1625 sq. ft.

D. INSURANCE

1.	Administers of Corporate ins.	
	* Employee affairs	225 sq. ft.
	* District at large	225 sq. ft.
2.	Secretary	100 sq. ft.
3.	File (with law and tax)	0 sq. ft.
	total	550 sq. ft.

E. EMPLOYEE RELATIONS

1.	Dist. P.R./Employee Relations	225 sq. ft.
2.	Assistant	225 sq. ft.
3.	Secretaries 3 @ 100	300 sq. ft.
4.	Testing/Interview (Group)	450 sq. ft.
5.	Testing/Interview (Individual)	200 sq. ft.
6.	Reception	400 sq. ft.
7.	Files and storage	200 sq. ft.
	total	2000 sq. ft.

F. COMMUNICATIONS

1.	Director	225 sq. ft.
2.	Secretary	100 sq. ft.
	total	325 sq. ft.
	subtotal	6750 sq. ft.*

* The corporate subtotal excludes conference spaces and general purpose spaces.

III. FINANCE DEPARTMENT

A. PAYABLE/RECEIVABLE

1.	Coordinator	225 sq. ft.
2.	Secretaries 2 @ 100 sq. ft.	200 sq. ft.

B. PAYROLL

1.	Coordinator	225 sq. ft.
2.	Secretaries 2 @ 100 sq. ft.	200 sq. ft.
3.	Files and records	200 sq. ft.
	subtotal	1050 sq. ft.

IV. ENGINEERING OFFICES MANAGEMENT

A. ENGINEERING ALL OPERATIONS

1.	Director of all departments	225 sq. ft.

2. Assistant director		200 sq. ft.
3. Secretaries 2 @ 100 sq. ft.		200 sq. ft.
	total	625 sq. ft.

B. ENGINEERING DEPARTMENTS

1. Energy tech. head		200 sq. ft.
2. Energy testing dept. head		200 sq. ft.
3. Solar energy dept. head		200 sq. ft.
4. Secretaries 2 @ 100		200 sq. ft.
5. Reception		400 sq. ft.
	total	1200 sq. ft.

C. PRODUCTION ALL OPERATIONS

1. Director		225 sq. ft.
2. Assistant dir production		225 sq. ft.
3. Secretaries 2 @ 100		200 sq. ft.
	total	650 sq. ft.

D. PRODUCTION STUDIO OPERATIONS

1. Production head for all mock up operations		225 sq. ft.
2. Secretary		100 sq. ft.
	total	325 sq. ft.

E. MATERIALS MANAGEMENT

1. Manager	200 sq. ft.

2. Secretary	100 sq. ft.

	total	300 sq. ft.

E. ENVIRONMENTAL AND PRODUCT QUALITY CONTROL

1.	Supervisor/inspector	225 sq. ft.
2.	Supervisor of E.C.	225 sq. ft.
3.	Secretaries 2 @ 100 sq. ft.	200 sq. ft.
	total	650 sq. ft.
	subtotal	3750 sq. ft.

V. MARKETING

A. ADMINISTRATIVE

1.	Director	225 sq. ft.
2.	Assistant director	225 sq. ft.
3.	Secretaries 2 @ 100 sq. ft.	200 sq. ft.

B. SALES

1.	Field 2 @ 200	400 sq. ft.
2.	Inhouse 2 @ 200	400 sq. ft.
3.	Secretaries 2 @ 100 sq. ft.	200 sq. ft.
4.	Reception (all marketing)	400 sq. ft.
5.	Storage and records	200 sq. ft.
	subtotal	2250 sq. ft.

VI. ADMINISTRATIVE SERVICES

A. BUILDING SERVICES

1. Director		225 sq. ft.
2. Secretary		100 sq. ft.
	total	325 sq. ft.

B. MAIN RECEPTION

1000 sq. ft.

C. FACILITIES MANAGEMENT

1. Manager		200 sq. ft.
2. Assistant manager		150 sq. ft.
3. Draftsmen 2 @ 85 sq. ft.		170 sq. ft.
4. Secretaries 2 @ 100 sq. ft.		200 sq. ft.
5. Files and print storage		225 sq. ft.
	total	945 sq. ft.

D. INFORMATION SERVICES

1. Director		225 sq. ft.
2. Assistants 2 @ 200 sq. ft.		400 sq. ft.
3. Secretaries 2 @ 100 sq. ft.		200 sq. ft.
4. Programmer work room		400 sq. ft.
5. Analysis work room		400 sq. ft.
6. Program files and library (supplement of main library)		500 sq. ft.
	total	2125 sq. ft.

E. OFFICE SERVICES
(except reproduction)

1.	Mail and messenger	500 sq. ft.
2.	Telephone and telex operations	250 sq. ft.
3.	Storage	250 sq. ft.
	total	1000 sq. ft.

F. COMPUTER HARDWARE 2500 sq. ft.

G. CONFERENCE DEPARTMENTAL
(excluding executive suite)

1. General w/ a.v. capability
   8 - 20 people @ 25 sq. ft./ person
   2 x (20 x 25) 1000 sq. ft.

2. Conference for engineering
   15 - 25 people @ 22 sq. ft./ person 550 sq. ft.

3. Auditorium type conference
   100 - 130 people @ 12 sq. ft./ person
   150 x 12 sq. ft. 1560 sq. ft.

total 3110 sq. ft.

subtotal 11005 sq. ft.

VII. EMPLOYEE SERVICES

A. FOOD SERVICE FOR 400 EMPLOYEES

1. Cafe
   (est. utilization 65 %, 20 private)
   2.5 eating shifts
   400 x .65 = 260 people
   260 - 20 = 240 users
   240 / 2.5 = 96 users/shift
   96 x .10, approx 105 seats

105 seats x 15 sq. ft./person		1575 sq. ft.
2. Serving net 105 x 5 sq. ft./person		525 sq. ft.
3. Private dining 20 people 20 people x 20 sq. ft./person		400 sq. ft.
4. kitchen facilities efficiency ratio 3.2 260 x 3.2 (approx)		835 sq. ft.
	total	3335 sq. ft.
B. LIBRARY/MEDIA		4000 sq. ft.
	subtotal	7335 sq. ft.

BUILDING SQ. FT. SUBTOTAL
(excluding: lounges, restrooms, mechanical, building and facility services, reproduction and general receiving and storage.

SUBTOTAL 38965 sq. ft.

VIII. BUILDING SERVICES

A. GENERAL RECEIVING 38965 x .035	1365 sq. ft.
B. FACILITY SERVICES	
1. Reproduction 38965 x .015	585 sq. ft.
C. RESTROOMS	
1. men: 6 @ 250 sq. ft.	1500 sq. ft.*
2. women: 6 @ 300 sq. ft.	1800 sq. ft.*

* may need to be increased accordingly

TOTAL NET SQ. FT.	44215	sq. ft.
TOTAL GROSS (excluding atrium)		
1. 44215 x 1.49*	65880	sq. ft.
INTERNAL ATRIUM SPACE	18500	sq. ft.
TOTAL GROSS	84380	sq. ft.

*Gross efficiency ratio for corporate headquarter offices includes:

space taken up by walls and partitions
circulation
mechanical: duct shafts, electrical, plumbing, hvac.
janitors closets etc.

SPATIAL PROGRAM: Training/Wellness

I. OFFICE FACILITIES

A. Directors:

1.	Director of Programs	225 sq. ft.
2.	Assistant Director	200 sq. ft.
3.	Secretary	100 sq. ft.
	total	525 sq. ft.

B. Safety

1.	Safety Director	225 sq. ft.
2.	Assistant Safety Dir.	200 sq. ft.
3.	Secretary	100 sq. ft.
	total	525 sq. ft.

C. Health Department
(Health Dept. for entire complex)

1.	Administrator	200 sq. ft.
2.	Training area	500 sq. ft.

D. Registration

1.	Secretaries 2 @ 100	200 sq. ft.
	Total (c&d)	900 sq. ft.

E. Reception 500 sq. ft.

F. Staff Offices*

(teaching staff)
* area includes workspace and storage

1. 6 @ 200 sq. ft.	1200 sq. ft.
G. Conference	650 sq. ft.
total (e-g)	1765 sq. ft.
subtotal	3315 sq. ft.

II. TRAINING AREAS

A. Classrooms (seminar)	
1. 30 people/class @ 40 sq. ft./person 1200 sq. ft. x 4	4800 sq. ft.
B. Testing	
1. 4 @ 50	200 sq. ft.
2. A.V. space (supplement off main library)	400 sq. ft.
C. Health Suite	
1. Exam Room	400 sq. ft.
2. Waiting	200 sq. ft.
3. Medical storage	150 sq. ft.
4. Office	200 sq. ft.
D. Simulator Training Room	
1. Control/office	150 sq. ft.
2. Simulators 25 @ 40 sq. ft.	1000 sq. ft.
3. A.V.	100 sq. ft.
E. Staff Lounge	200 sq. ft.
F. Public/Employee Restroom	

1.	15% of 23730	3560 sq. ft.
2.	circulation 15% of 23730	3560 sq. ft.
	TOTAL	**30849 sq. ft.***

* This area does not include space taken up by exterior and interior walls or partitions.

SPATIAL PROGRAM: RESEARCH AND DEVELOPMENT

I. OFFICES (MANAGEMENT)

A. Private offices

1.	Supervisors 3 @ 225 sq. ft.	675 sq. ft.
2.	Secretary	100 sq. ft.
3.	Reception	600 sq. ft.
	total	1375 sq. ft.

II. RESEARCH AND DEVELOPMENT

A. Fuel Technologies
(95 technicians)

1.	Private offices 10 @ 150 sq. ft.	1500 sq. ft.
2.	Private office lab space Minimum: 10 @ 50 sq. ft.	500 sq. ft.
3.	General Lab space Closed 20 @ 600	12000 sq. ft.
	Open w/assist. tech. 25 @ 100 sq. ft.	2500 sq. ft.
	subtotal	16500 sq. ft.

B. Energy Testing
(95 technicians)

1.	Private offices (as above)	1500 sq. ft.
2.	Private office lab	500 sq. ft.
3.	Closed Wet Lab 15 @ 600 sq. ft.	9000 sq. ft.
4.	Closed Wet Lab 5 @ 1250 sq. ft.	6250 sq. ft.
5.	Assist. tech. lab (as above)	2500 sq. ft.
	subtotal	19750 sq. ft.

C. Solar Energy Development (50 technicians)	
1. Private offices 5 @ 100 sq. ft.	500 sq. ft.
2. Open office 20 @ 100 sq. ft.	2000 sq. ft.
3. Dry Computerized lab	5000 sq. ft.
subtotal	75000 sq. ft.
D. Open office (general)	9000 sq. ft.
TOTAL LAB AND OFFICE SPACE	54125 sq. ft.

III. EMPLOYEE SERVICES

A. Lounges	
1. 2 @ 400 sq. ft.	800 sq. ft.

IV. SERVICES

A. Office services	
1. (I + II + III) x .055 54125 x .055	2975 sq. ft.
B. Office services	
1. (I + II + III) x .035 54125 x .035	1895 sq. ft.
C. Restrooms	
1. Mens 4 @ 250	1000 sq. ft.

2. Womens 4 @ 250		1000 sq. ft.
	subtotal	6865 sq. ft.

V. APPLICATION STUDIO/TESTING

A. Office space	
1. Coordinator	225 sq. ft.
2. Assistant	150 sq. ft.
3. Secretary	100 sq. ft.
B. Testing Control	
1. 3 @ 100 sq. ft.	300 sq. ft.
C. Testing areas	
1. Large Scale Testing	15400 sq. ft.
2. Small Scale Testing	5000 sq. ft.
3. Pilot Plant	10000 sq. ft.
D. Warehouse	
1. Usable floor area	5000 sq. ft.
E. Restroom	
1. Mens	100 sq. ft.
2. Womens	100 sq. ft.
subtotal	36375 sq. ft.
Net area subtotal	**97365 sq. ft.**

VI. GROSS AREA EST.

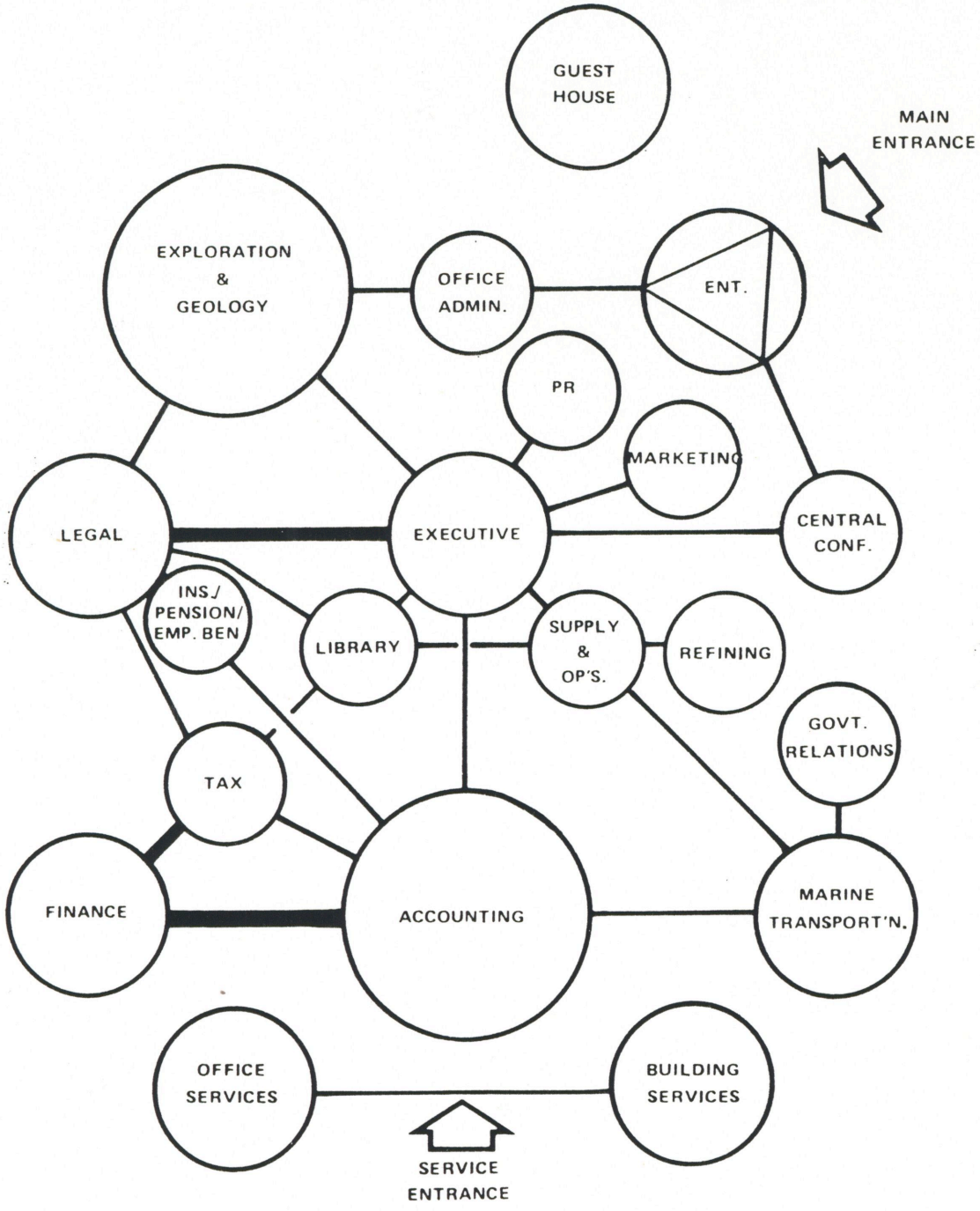
A. Estimating value for Corporate Research.

1.	1.54 x 97365	149940 sq. ft.
	total	149940 sq. ft.

SPATIAL PROGRAM SUMMARY

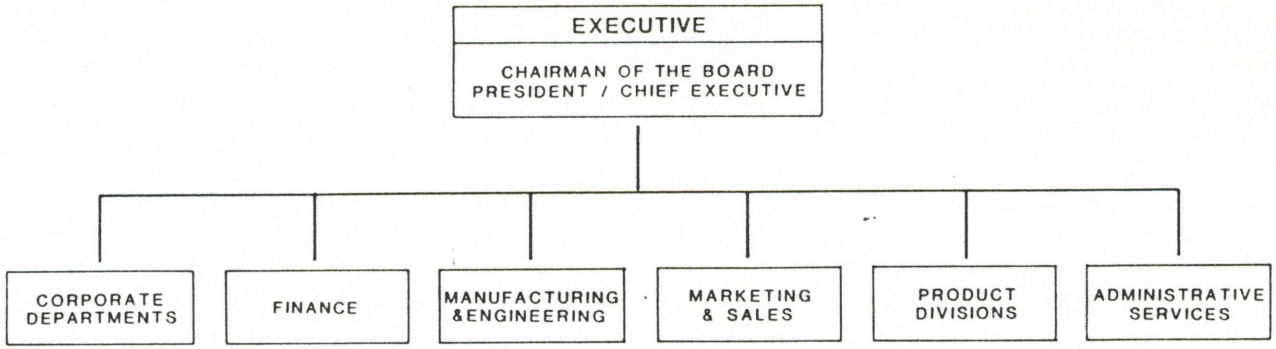
Corporate office Complex	84,380 sq. ft.
Training/Wellness Center	30,849 sq. ft.
Research and Development	149,940 sq. ft.

Grand total 265,169 sq. ft.

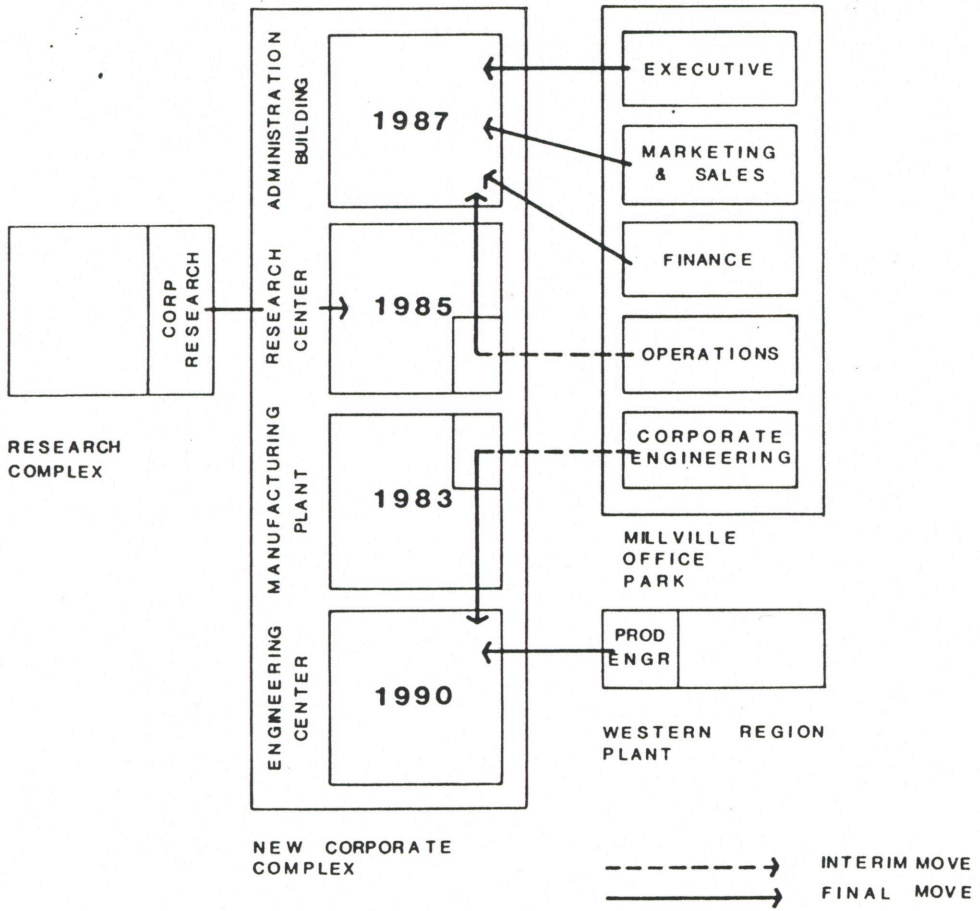


Relationship diagram for all headquarters functions for the U.S. headquarters of an international oil company.

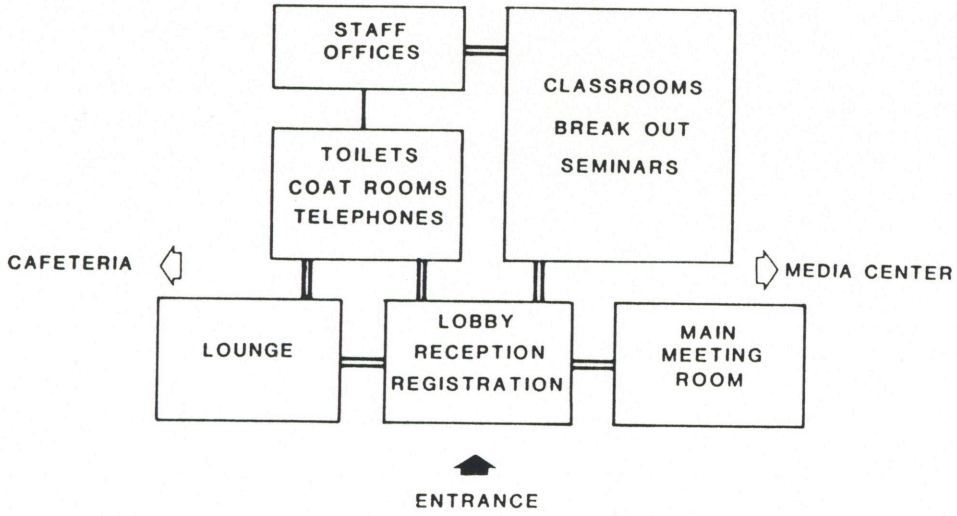
FUNCTIONAL REQUIREMENTS OF THE CORPORATE HEADQUARTERS



Organization chart for headquarters.



Long-range facilities plan.



Essential relationships, training center.



CASE STUDIES

CASE STUDY

ARCO Corporation Chemical Company and Research Center
Architects: Brody and Davis, Lleyelwn Davies

The Atlantic Richfield Corporation (ARCO) Chemical Company and Engineering center in Newtown Square, Pennsylvania, is a relevent case study for the type of facility I have proposed. Composed of a managerial sector and a research and development facility the component, the facility becomes a major area
for future development in chemical derivatives from fuel sources.

The research and development center of the facility expresses the type of commercial industrial facility that many energy companies are turning to.[1] The facility is a user friendly facility that maintains a creative and productive atmosphere throughout the 700,000 square foot complex. The research and development center of the entire complex denotes a high tech status for the image of ARCO. The combination of wet and dry labs creates a diversity in working conditions for the employees of ARCO to concentrate on future development.

A creative campus type plan emerges from the consolidation of key elements of research and development that brings together
800 key employees of ARCO development. The study shows the importance of consolidating and how successfully a facility of this nature can work and maintain a strong image for and energy corporation.

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1. "A Sylvan Campus for ARCO" Architectural Record, (April 1982) p. 110.

The high tech facility maintains ARCO's status image. The curtain wall system for the complex was detailed to convey the image of technological precision conveyed throughout ARCO's product line. However, the facility was also to maintain the status image of Atlantic Richfield Corporation as an elite and scholarly corporation.[2]

2. Ibid. p. 109 - 110.

CASE STUDY FACTS.

ARCO Corporation Chemical Company and Research Center.

Site Building Relations

1. Campus type plan.
   a. Research and engineering
   b. Gymnasium
   c. Auditorium
   d. Training
   e. Medical facilities

2. Reuse existing buildings.

3. Low sprawling research and development facility. A tower would or marred the landscape.

Exterior Detailing

1. Curtain walls and high tech materials.

2. Articulated granite bollards at entries.

3. Harmonious order based on 10 foot module.

4. Functions are based off a central core.

Interior (General)

1. Large open spaces, open offices.

2. Interior landscape.

3. Classical motifs in lobby areas.

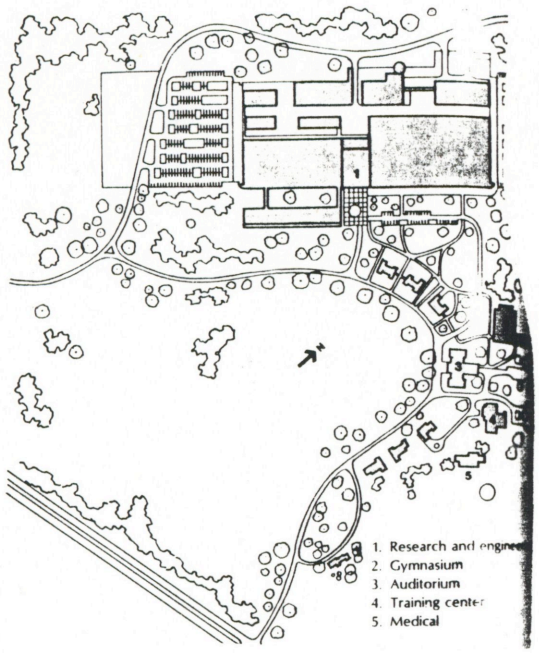
Special Consideration

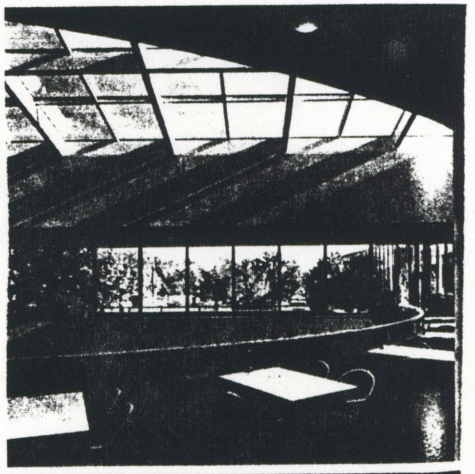
The artria, library and various work areas all maintain a

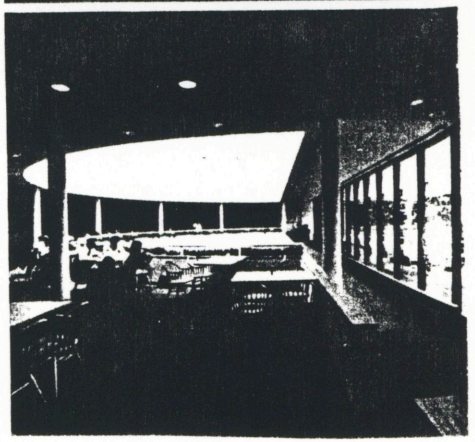
unique feeling through the use of different patterns on floors, walls etc. influenced by Herbert Bayer, the design artist consultant for ARCO.

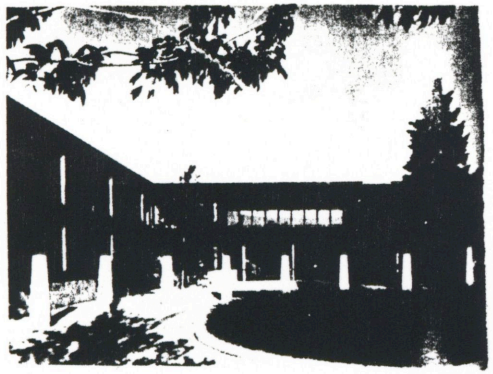
Sources:

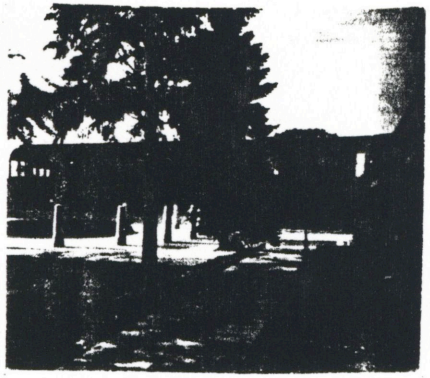
Architectural Record (April 1982) p. 108 - 115.
Interior Design (March 1982) p. 168 - 177.
Design for Research p. 105 - 113.


1. Research and engineering
2. Gymnasium
3. Auditorium
4. Training center
5. Medical









CASE STUDY

MOBIL Research Division Lab, Dallas Texas
ARCHITECT: I.M. Pei and Associates

Today in the energy scene there are complexes that achieve and represent a celebration and unity with the sciences. These are the types of facilities that preserve and also celebrate the image of the corporation. The Mobil Research Division lab by Pei and Associates is a facility of 340,000 square feet that establishes the previous character set. Mobil representatives insured that Mobils interests would be accommodated efficiently and effectively as possible. To find the "right solution" to protect these interests would in turn enhance the dialogue of Mobils image.

The complex provides for a type of regional corporate office management and a center for production and exploration of new fuels and technologies involved in deriving them. The Mobil image of hierarchy is construed to extremely throughout the facility from executive offices to the laboratory settings. The main emphasis on maintaining Mobils image was handled on the interior aspect of the project. It was handled in terms of a basic system for office design. Pei Associates convinced Mobil that one basic solution invoking simplicity could be carried out through the entire facility and yet the idea of the corporate hierarchial ladder could still be tangible.

The use of an open office plan will allow Mobil to constantly readapt and reorganize because of new developments.
The idea of redefinition internally without a major disruption shows that Mobil is in with the changing times.
The status of Mobils image in every aspect is characterized in art forms ann styles instead of new high

tech architectural form. Mobil leads the way with imagery through art form, yet the high tech image is characterized by the internal functions of the facility.[1]

1. "Upward Mobility in Open Office Design" Interiors (March 1984) p. 112.

CASE STUDY FACTS

Mobil Research Division Lab

Plan Considerations

1. Small tower with sprawling wing.
   a. Tower: office functions.
   b. Wing: Lab functions.

Exterior

1. Precast concrete carried through to the interior to show complete integration of materials.

2. Represents a celebration of science without high tech look.
   a. Celebration of mechanical systems in discrete areas.

Interior

1. Open offices and private offices.

2. Location of employee areas put in a unique location.
   a. Library and cafeteria under footprint of tower.

Considerations

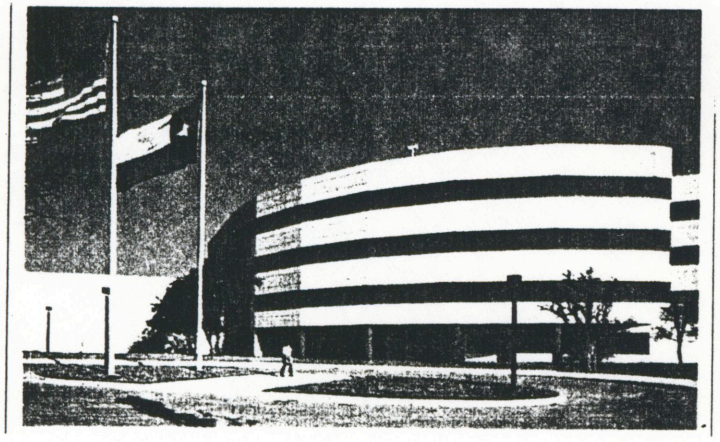
1. Lighting troughs with barrel vaulted corridors break up the length of lab wing.

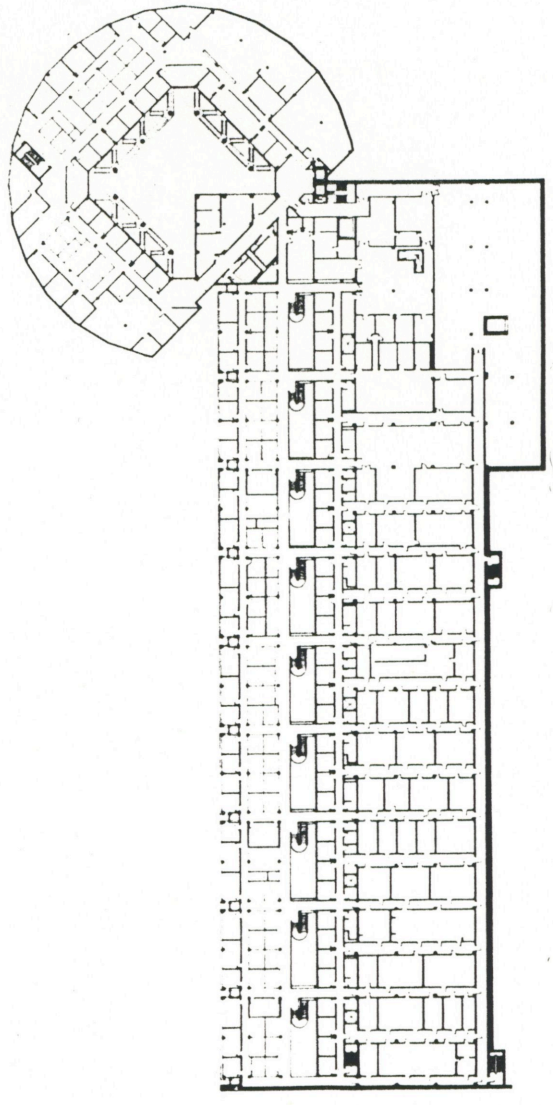
2. Transition zones.
   a. Galleries between offices and labs.
   b. Art breaks up the monotony by humanizing the work space.

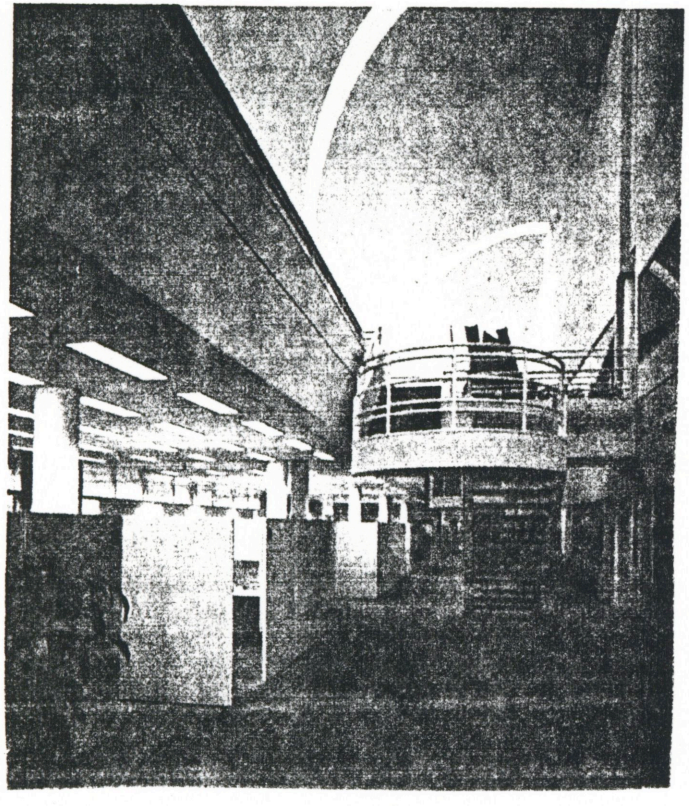
Sources:

Interiors (March 1984) p. 109 - 113.

Interiors (November 1984) p. 144 -145.







CASE STUDY

HYL INTERNATIONAL TRAINING CENTER, MONTERRY, MEXICO
ARCHITECT: Booth/ Hansen and Associates

The International Training center emphasizes training for the industrial process of producing sponge iron for developing countries. The facility is involved with the people who manufacture the iron in developing countries. Therefore, the facility handles a wealth of people from both Mexico and developing countries in the business. The 44500 square foot facility is an adaptable facility to train students of all aspects that are involved in the process, from mining the minerals to forging the iron.

The training facility is highly adaptable to serve the changing needs of HYL. The overall plan of it allows for further expansion to double or triple the size requirements as the number of trainees increases. The facility maintains an industrial character on the site, yet also creates a campus type atmosphere throughout the complex.

Classrooms focus onto an inner courtyard that is linked to the entry court. The courtyard causes a separation of administration and various student activities. This constitutes the campus feeling. In its setting, the entire facility captures a sense of place.

CASE STUDY FACTS

HYL International Training Center

Site Building Relations

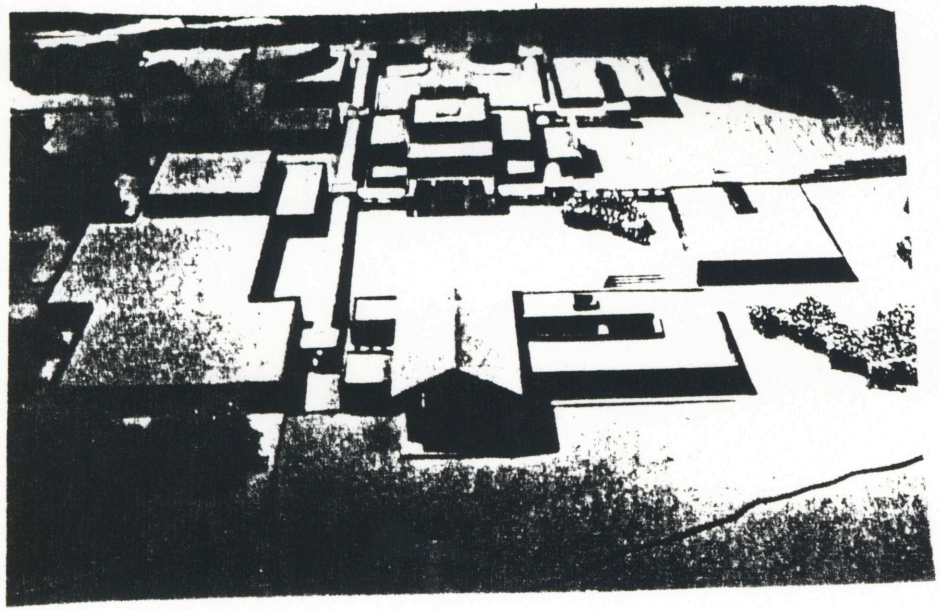
1. Campus type plan.
   a. Creation of solids and voids.
   b. Intimate spaces.

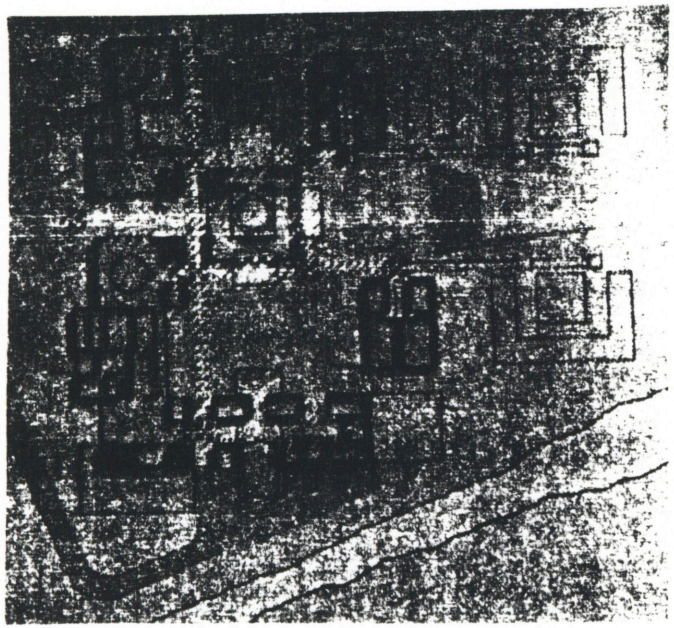
Exterior

1. Industrial character, yet sensitive to classical.
2. Reference to Myan temple forms.
3. Concrete used throughout.
4. Solar integration due to the climate.

Source:

Progressive Architecture (January 1982) p. 132 - 135.





CASE STUDY

Hollister Corporate Headquarters, Libertyville, Illinois
ARCHITECT: Hollabird and Root

This facility incorporate four components of varying degree into one major structure. The multipurpose building houses manufacturing, laboratories, a data center, and the corporate offices for Hollister Manufacturing. The components are discrete units, yet are tied together by unifying atriums that link the components together to allow the facility to read as one.

The post modern high tech design achieves a sense of status and creates a memorable image that Hollister wishes to convey. The variation of the Miesian theme achieves an elegant image throughout the complex. The highly polished building encloses 200,000 square feet of space that is used for office space, computer and testing facilities.

The facility achieves a dramatic effect with its relationship to the rolling hill wooded site. The structure integrated as such achieves a sense of command and status that the Hollister corporation wished to portray.

CASE STUDY FACTS

Hollister Headquarters

Site Building Relation

1. Dramatic entrance through site to building.

2. Building creates a strong sense of command.

3. Overlooks natural entities.
   a. Water

4. Low sprawling facility.

5. All components are linked in a manner to allow the building become one. Therefore there is little site destruction.

Exterior

1. Curtain wall system with high tech panels to maintain a technical image. This system is maintained throughout the facility.

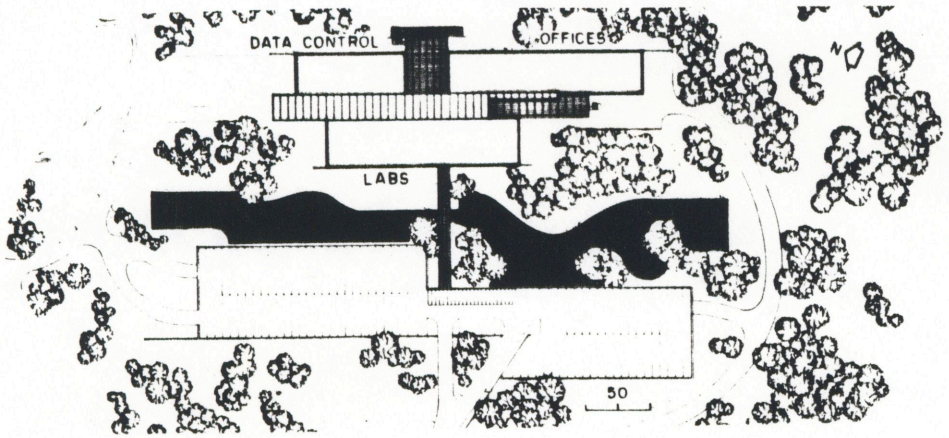
2. Sharp clean forms.

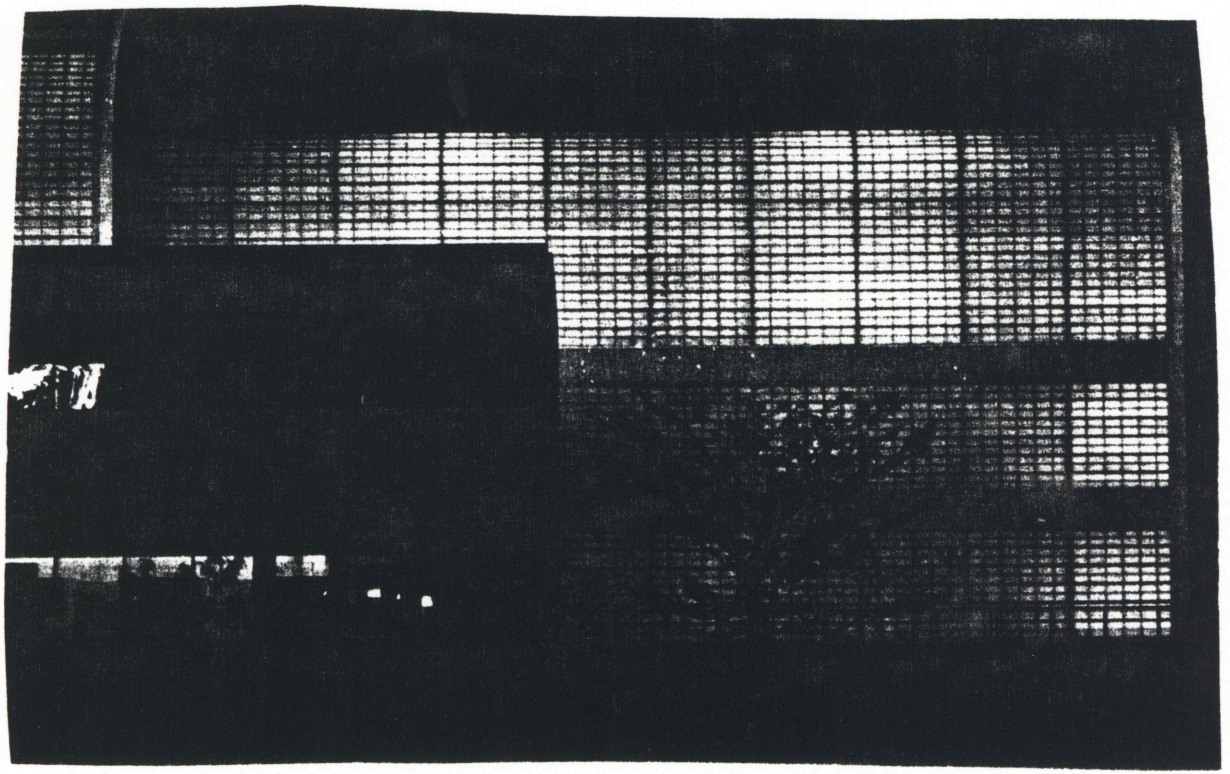
3. The facility becomes transparent in areas.

4. Character is of strong image.

Sources

AIA Journal (February 1983) p. 104 - 111.
Architectural Record (March 1982) p. 49 - 51.


DATA CONTROL
OFFICES
LABS
50





ZONING

ZONING REQUIREMENTS

ZONE: B - 2

TYPE: Controlled Industrial/Community Highway Business District

Intent:

The intent of this is to provide for a broad range of retail and service functions especially those needing orientation to major thoroughfares.

Permitted Uses:

1. Ambulance Service
2. Antique shops
3. Art and music supply stores
4. Barber and beauty shops
5. Bars, taverns and cocktail lounges
6. Bowling alleys
7. Car washes
8. Churches
9. Conditional uses provided in Chapter 18.72
10. Equipment sales and services
11. Financial institutions
12. Fire Stations
13. Food and drug stores
14. Frozen food storage and locker rental
15. Furniture stores and suppliers
16. Hotels and motels
17. Gasoline service stations
18. Laundries and dry cleaning services
19. Liquor store
20. Mortuaries
21. Post offices
22. Professional and business office complexes
23. Research and development institutions.
24. Restaurants, cafes, and drive in eating

establishments
25. Shopping centers
26. Signs
27. Sporting goods stores and outlets
28. Temporary buildings for and during construction
29. In house theaters, no drive in theaters.
30. Use inclusive to the above
31. Vehicle and boat sales, showrooms and service areas
32. Veterinary clinics

Lot area and width:

Lot area for this district shall not be less than 7500 square feet and no lot width shall be less than 75 feet.

Lot coverage:

The entire lot exclusive of required yards and parking may be occupied by the principal and accessory buildings.

Maximum building coverage:

The maximum lot coverage in this area of any one building or a combination of buildings thereof is 75 percent of allowable lot size determined by existing boundaries and easements. There is no minimum lot coverage.

Yard requirements:

Front yards: 20 feet
Side yard no adjacency: 0 feet*
Side yard adjacency: 10 feet minimum
Rear yard: 0 feet*

* When a lot is adjacent or faces upon another zone, the yards shall meet the requirements of the adjoining zone and building shall be screened with some form of landscaping. When a lot abuts a street of alley on

either side of the rear, a yard of at least 15 feet shall be provided on the street or alley.

Building height:

The maximum building height in this district of a principal building or of any accessory buildings shall be 70 feet.

Site control:

Proper landscaping shall be provided to enhance site area.
Proper lighting is to be provided to light the outside of the principal structure, parking areas, accessory building and street entrances thereof in accordance with chapter 18.92.



APPENDIX

THE DECISION TO BUILD

This chapter discusses the reasons for building, the options that may be available to a company, and the preliminary determinations of scope and timing of construction.

INTRODUCTION

Planning the new corporate headquarters provides guidance to a project team in the predesign phases of a building program. While much of the information contained in this book may be applied to any type of project, certain sections specifically deal with the unique requirements of corporate headquarters. The book is intended as a reference for executives, facilities managers, architects, management consultants, and others involved in project development.

Predesign and Its Importance

The term *predesign* is used to define the phases and tasks which the book describes. As a coined word, predesign may bother those who think of design as embracing all activities. Nevertheless, the term is considered appropriate because it categorizes certain specific tasks that need to be done before schematic design drawings are begun. For the purpose of this book, predesign is assumed to start with the decision to build and to end with the formulation of a general design concept for site and building.

Predesign is of crucial importance because actions taken early in a building program directly affect the performance of facilities. Decisions, good or bad, made in the predesign phase have a ripple effect that continues throughout the life of a structure. Actions founded on good planning result in facilities that can be expanded or changed to react to corporate growth or redirection. Decisions based on hastily assembled, patched-together data can bedevil for years a building's owner and occupants.

The Special Nature of a Corporate Headquarters

As the workplace of the senior executives and the administrative center of all operations, the headquarters symbolizes the company. Corporate executives receive their peers there, so they usually want distinctive surroundings. Accordingly the headquarters is usually provided with a superior environment and designed to impart some image of the company.

More important, from a planning standpoint, is the fact that executives and corporate groups should remain together on the same site. It's not desirable to "spin off" such groups to other locations. Moreover, a company may acquire, divest, or even merge with other companies during the life of the building. Thus, provision for corporate growth and possible reorganization should be made in planning.

The building's facilities may include com-

puter and training departments, a conference center, and advanced "office-of-the future" systems. In addition, the individual corporate departments often require special space to support their operations.

A corporate headquarters is a one-of-a-kind facility, designed for sophisticated men and women who nearly always have a sharp perception of what they want and need. Its design can't be approached as if it were a simple office building any more than a hospital can be planned as a nursing home. The well-designed headquarters provides an appropriate environment for the people who are charged with making a company grow and prosper.

The Predesign Process

The book follows project developments throughout their predesign phases. Figure 1 shows the predesign tasks arranged in typical sequence. A full array of services is depicted, although not all may be required for a particular project. The facilities program is the component that undergirds all others in the process. Inasmuch as it defines the total projected building area, the program is indispensable in budgeting and planning. When existing facilities are to be altered or expanded, the survey data of the building and site are compared with the program to determine the scope of new construction.

THE SCOPE AND TIMING OF CONSTRUCTION

This analysis also yields the priorities and issues that go into effective planning.

REASONS FOR BUILDING

Although occasionally it's necessary to build a headquarters for a newly organized company, the reasons for building usually stem from corporate growth coupled with inadequacies in existing locations or facilities. A young firm may begin its operations in rented offices and then find itself moving frequently to ever larger quarters as its business grows. This company can't continue to live like a tribe of gypsies and must settle in a permanent location. An older company may have built a headquarters with a certainty that its needs would be satisfied for many years, only to experience a shortage of space much sooner than expected. This company is forced to find additional facilities. The executives and employees of other firms are simply dissatisfied with the locale or working conditions of their present headquarters. The exodus of leading corporations from city to suburb is one manifestation of such frustrations as high taxes, poor transportation, and lack of space for expansion.

POSSIBLE OPTIONS

Once a company realizes that it must have new space, it should set out a range of options for obtaining the required facilities. Sometimes there is only one sensible course of action, but more often there are others that deserve consideration. It's important to seek out all factors in decision-making and to weigh them in some rational system of analysis. When this is done, initial assumptions may be seen in a different light. Also the process may afford time to temper some emotional reaction (like an executive's frustration at transportation delays) that triggered precipitate action. Remember that ideally a company should settle at one location,

with land and facilities that can accommodate corporate growth. Moving or expanding a headquarters is costly and consumes the time and patience of everyone involved. The decision to build deserves full and dispassionate consideration of all options. Table 1 identifies four basic options and some of the variables that can occur within these options, as well as the factors that should be considered in analyzing them. The table shows that even if only one option is feasible, there may be a number of variables to be considered. Proper analysis requires the assembly of a considerable body of information and its arrangement in a system for evaluating the pros and cons of each issue.

Later chapters of the book describe methods for evaluating sites and buildings, establishing the scope of facilities, and other tasks that may be involved in the analysis of options.

THE SCOPE AND TIMING OF CONSTRUCTION

Once a need for new facilities has been established, it may be necessary to make a preliminary determination of the scope of the proposed headquarters and to assume a general timetable for construction. The most precise definition of scope is yielded through facilities programming, as detailed in Chapter 4, while a master plan, as described in Chapter 8, can define the timing and cost of specific increments of construction. The following sections provide guidelines to be used when approximations are needed in advance of programming and planning:

The Company's Forecasts

As noted earlier, one objective in building a corporate headquarters is to provide sites and facilities that can accommodate growth and thus enable the corporate groups to remain together.

It is recommended that facilites be planned so that enough expansion space will be available upon occupancy to accommodate three to five years' growth in personnel and operations. This allows the company to settle into its new space before the first stage of expansion begins. Assuming a minimum two-year design-build period, the company should make its forecasts apply to a span of not less than five years. Additional forecasts in five-year increments should be made for the 10 or 15 years following the initial projection.

Corporate planners sometimes resist making long-range forecasts, particularly when a company is young or is facing a period of possible changes. Nevertheless, a corporation must grow to compete and be profitable, so the planning of facilities should be based on some reasonable projection, however tentative. Although the degree of accuracy in forecasting diminishes as the planning period extends, fairly sound projections can usually be made for the five to eight years encompassing design, construction, and initial occupancy.

Forecasts should be made for two aspects of growth: (1) increases in the number of personnel and (2) new operations which may take place in the headquarters. Such operations might include computerization, marketing of new products, or training programs. Unfortunately, it is difficult to reduce to formulas personnel forecasting for corporate groups (as, for instance, in insurance operations where premium dollars can be equated to number of personnel). Some established corporations plan on an overall annual growth in personnel of 3% to 5% (noncom-

pounded) for headquarters groups. However, a young company or one in a growth industry may forecast 10% or more for near-term planning.

SCOPE OF FACILITIES

A rough but useful estimate may be made of the gross building area by calculating the square feet of floor area required by each occupant of the headquarters. When a new building is planned, the calculation should produce *gross* area. When space is to be bought or leased in an existing building, *net* area should be estimated.

Net and Gross Area Defined

Net and gross area may be differently perceived by design professionals, rental agents, and space planners. This book defines the terms as follows: *gross area* is all of the floor space inside a building, measured from outside surfaces of exterior walls.

Net area is the usable floor space measured from inside face (or "convector line") of exterior walls. Net area does not include space taken up by:

Major circulation, including corridors, primary aisles in open-office areas, stairs, elevators, and elevator lobbies

Walls and partitions

Mechanical and electrical rooms and shaftways

Public toilets and janitor's closets.

Area per Person Calculations

Because of the tentative nature of the calculations, these calculations should be expressed within ranges, based on the probable scope of facilities. The major variables are the presence or absence of a full cafeteria or a computer center. Because the data-processing facilities can vary so greatly, they cannot be computed by formulas. Instead, an allowance for the probable scope of a computer area should be added to the estimate derived by unit allocation. The following rules of thumb assume a headquarters with an executive suite, private and general office areas, and normal office and building services. The units do not include allowance for a computer center. The higher units should be used for relatively small (below 100,000 gross sq ft) headquarters or when a large amount of special space, such as a training center, is needed.

SIZE OF SITE

Sites in or near cities are so constrained by existing constructions, street grids, and land values that guidelines for size cannot be established until planning is well advanced. If a company intends to locate a headquarters in the suburbs, an approximation of site area can be made as a basis for preliminary budgeting. In such estimates, it is well to add substantial contingencies for expansion and possible zoning regulations affecting their size. Site area may be estimated by the following method:

Divide gross building area by assumed number of stories to obtain land coverage by buildings in square feet.

Multiply building population by 0.90 to obtain number of parking spaces.

Multiply number of parking by 325 to obtain square feet of land coverage by parking.

Add building coverage and parking coverage and divide by 43,560 to obtain acres of

	Net Area Range Square Feet per Person	Gross Area Range Square Feet per Person
Headquarters with cafeteria	170–200	250–300
Headquarters without cafeteria	160–190	235–285

Estimating Net and Gross Building Area

Functional Division	Calculation of Net Area
A. Executive area	No. executives X 375 + No. executive secretaries X 100
B. Private & general offices	No. managers and professionals X 135 + No. clerical personnel X 100 + total net square feet managers and clerical X 0.20 (special areas)
C. General purpose conference (not including training center)	$\frac{\text{No. managers and professionals}}{4} \times 20$
D. Computer hardware	(Given)
E. Office services	Total net square feet A through D X 0.055
F. Building services	Total net square feet A through D X 0.035
G. Employee services	Cafeteria – use formula (Chapter 3) + other employee services, A through D X 0.015
Total Gross = total net square feet (A through G) X 1.49	

coverage.

Assume that total coverage by building and parking will total 15% to 25% of total area; for example, if coverage is five acres the required size should be 20 to 33 acres.

Of course, a headquarters and the required parking could be accommodated on a smaller site than one estimated by the above method and still comply with nearly any zoning ordinances. However, by its nature a headquarters should express a concern for good use of the land for the benefit of the surrounding community.

FINANCIAL PLANNING

Preliminary Cost Assumptions

Having made preliminary forecasts of personnel, gross building area, and site acreage, a company will want to know at least the general dimensions of the future cost commitment for construction. Because this determination is made before any firm data have been developed (or perhaps before a site has been selected), the cost assumptions are highly tentative. They are usually determined by applying an overall unit cost to gross square feet of building, making an

allowance for site work and escalating the building and site costs to the time of construction. Computerized cost-estimating services are available for such preliminary assumptions. More detailed information about predesign estimating is given in Chapter 7.

Computer Assisted Analysis

Computer programs are available for analysis of different options for locations, construction, sale of property, and leasing. The programs can identify the short and long-term costs and the risks entailed in each option.

A GENERAL PROGRAM FOR DEVELOPMENT

A company may wish to consolidate operations that are housed at several locations. Quite difficult logistics may be involved in sustaining operations during the design-build period and in coordinating the moving of the separate corporate groups. In such a situation, a general program is needed well before plans are made for sites or buildings. Figure 3 (which is based on actual cases) shows how a company could consolidate dispersed groups in a new corporate complex. The program provides "swing space" for expansion during the design-build period by temporary use of unassigned space in manufacturing and research facilities. Ultimately, all corporate groups are located in new facilities. The space vacated at off-site locations is either abandoned or used for expansion. Developing the general program can be an elaborate chess game with many possible moves and a corresponding need for separate analyses. A number of the options and variables given in Table 1 may need to be considered in the program.

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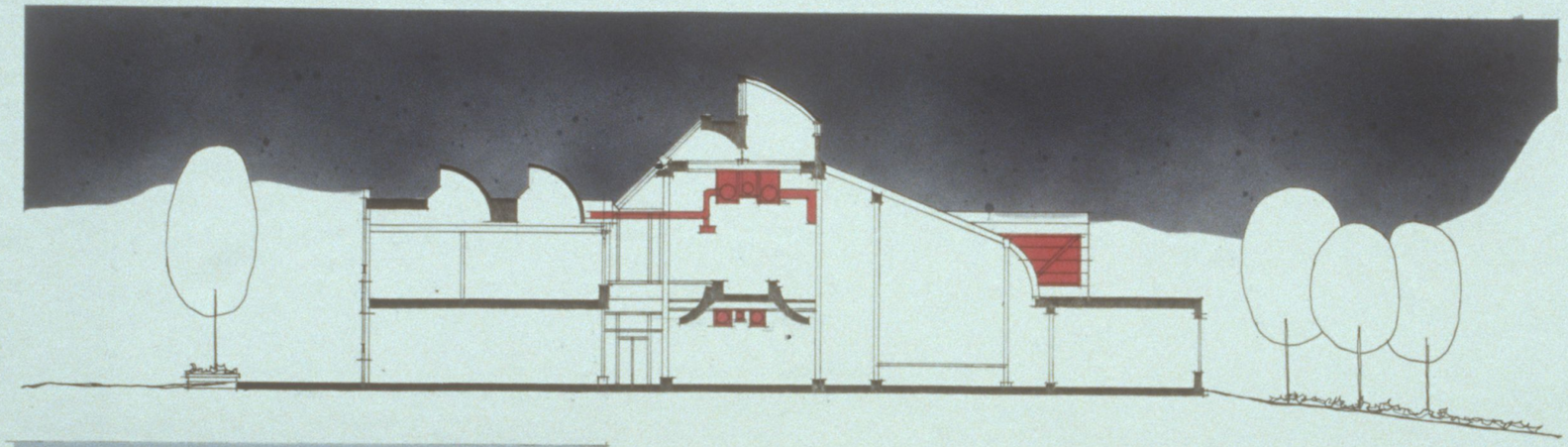
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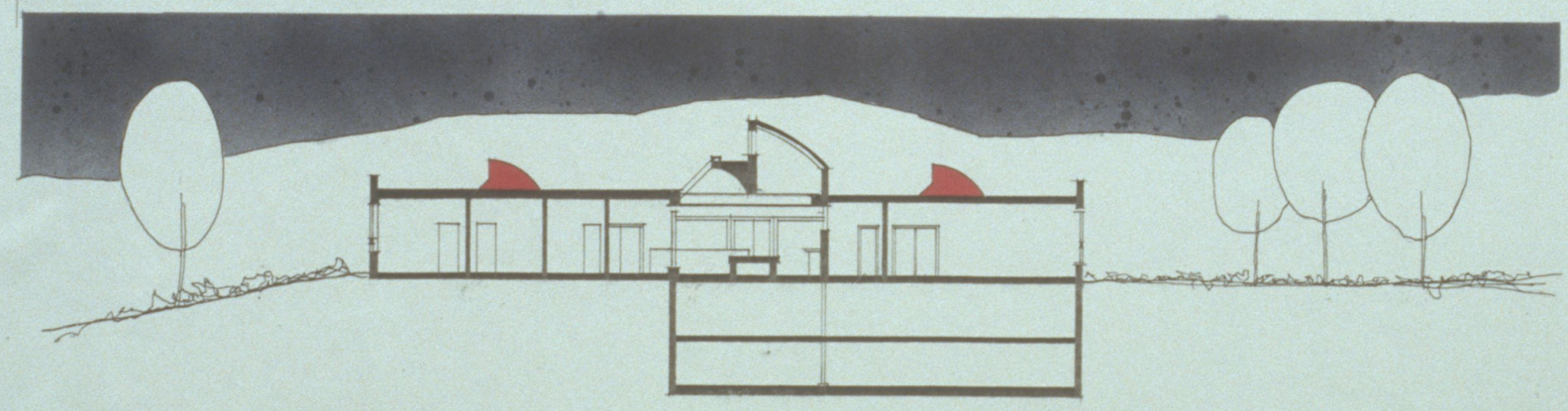
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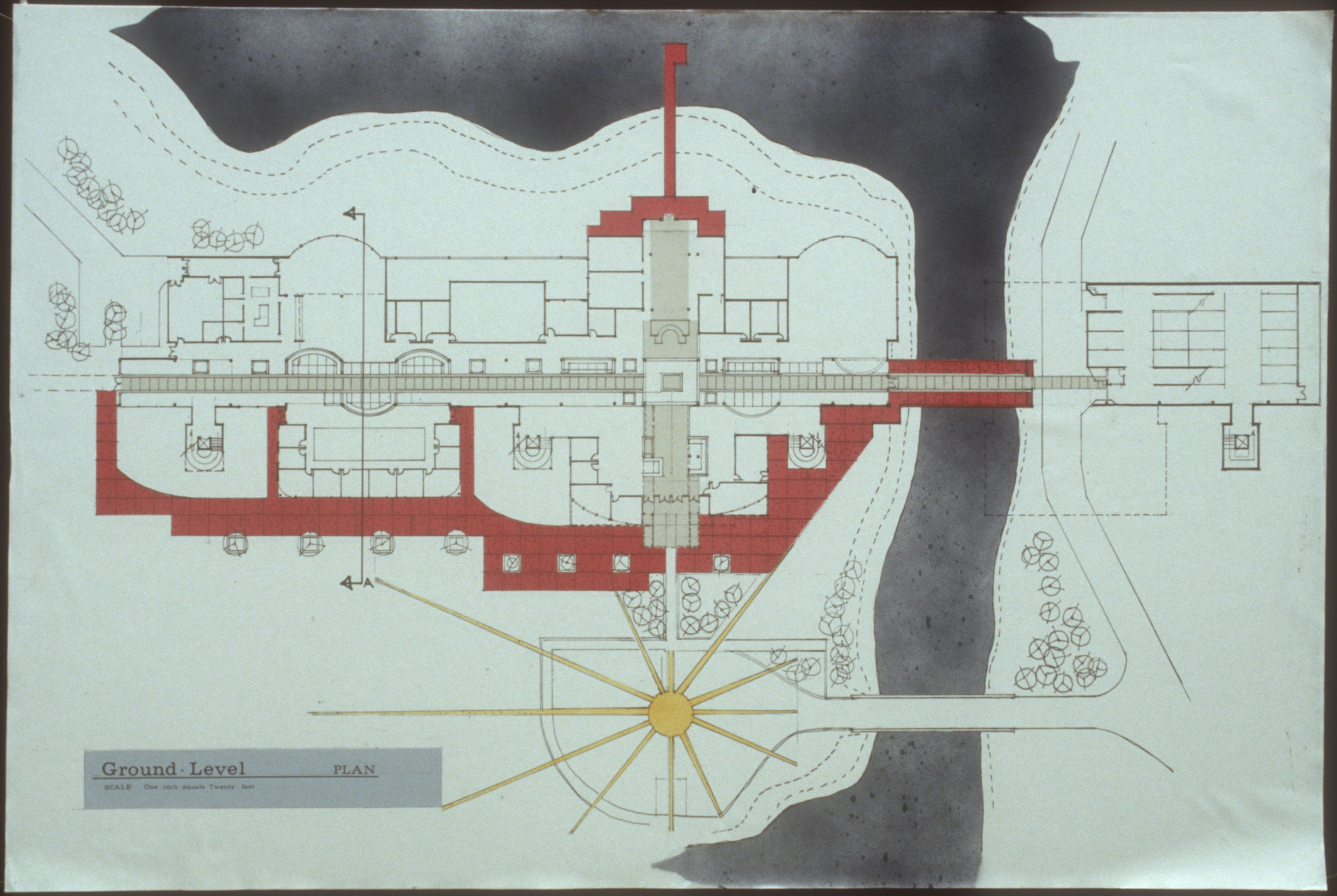
Building · Section A

SCALE · One · inch · equals · Ten · feet



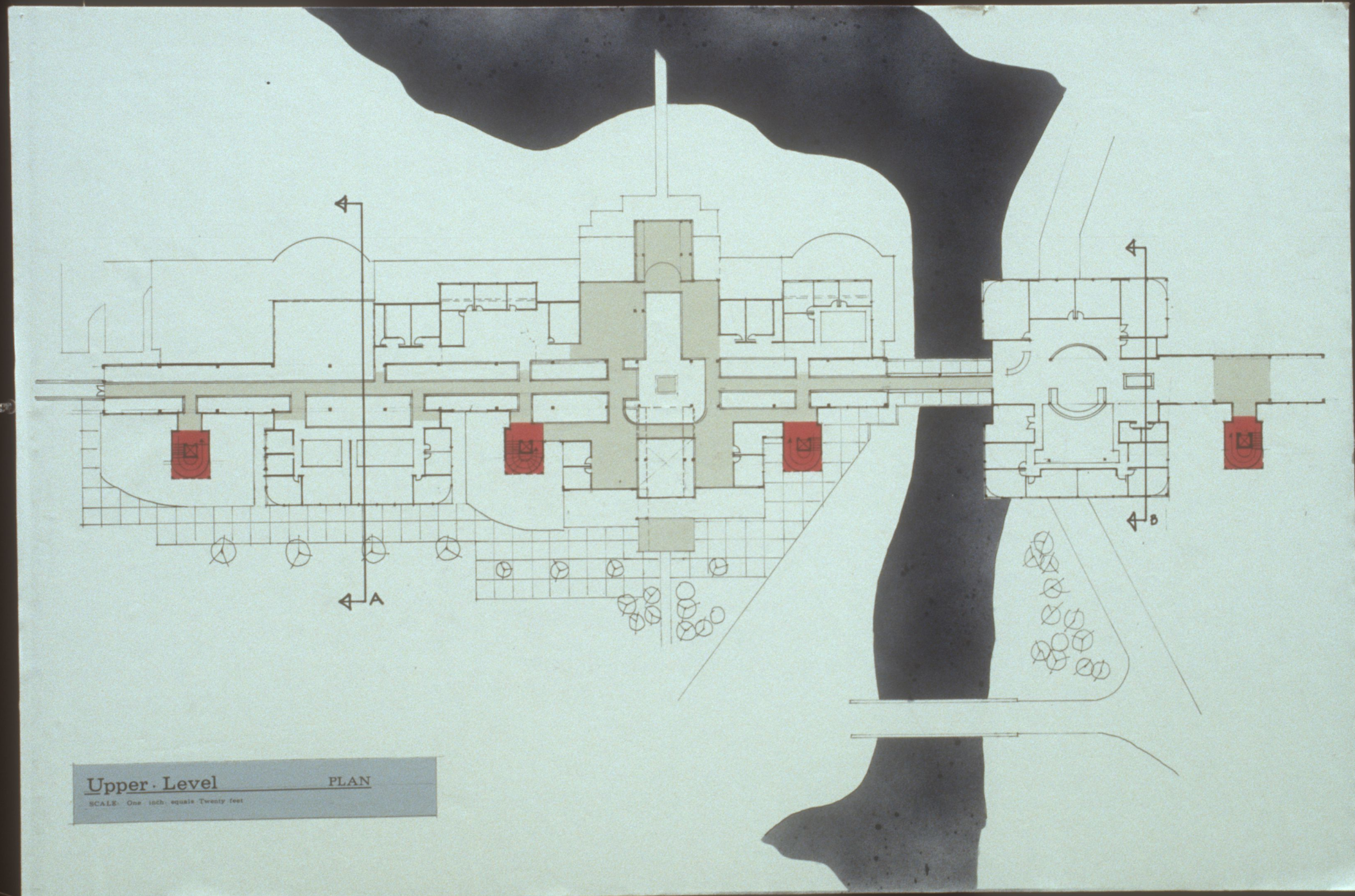
Building · Section B

SCALE · One · inch · equals · Ten · feet



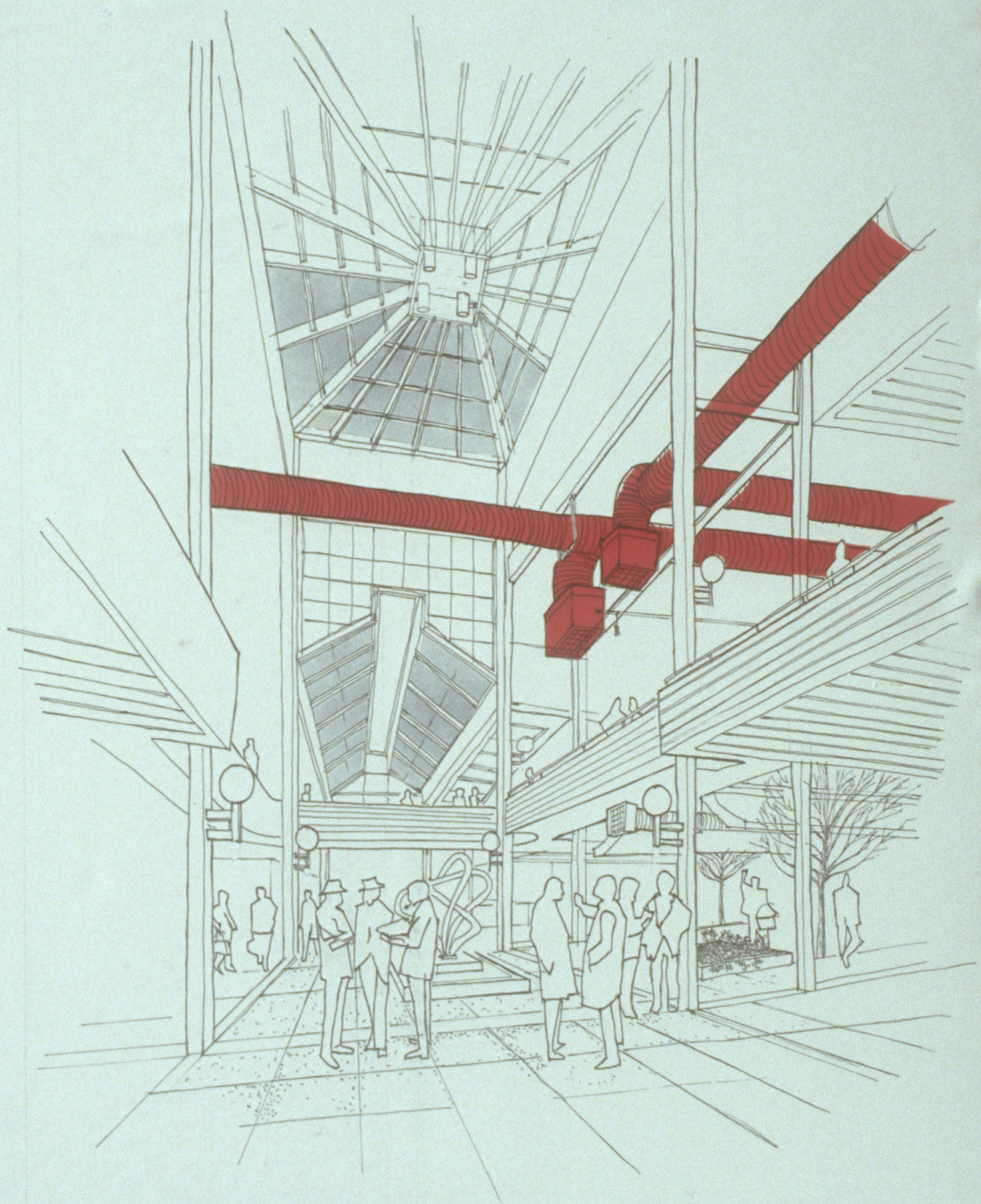
Ground · Level PLAN

SCALE One inch equals Twenty feet

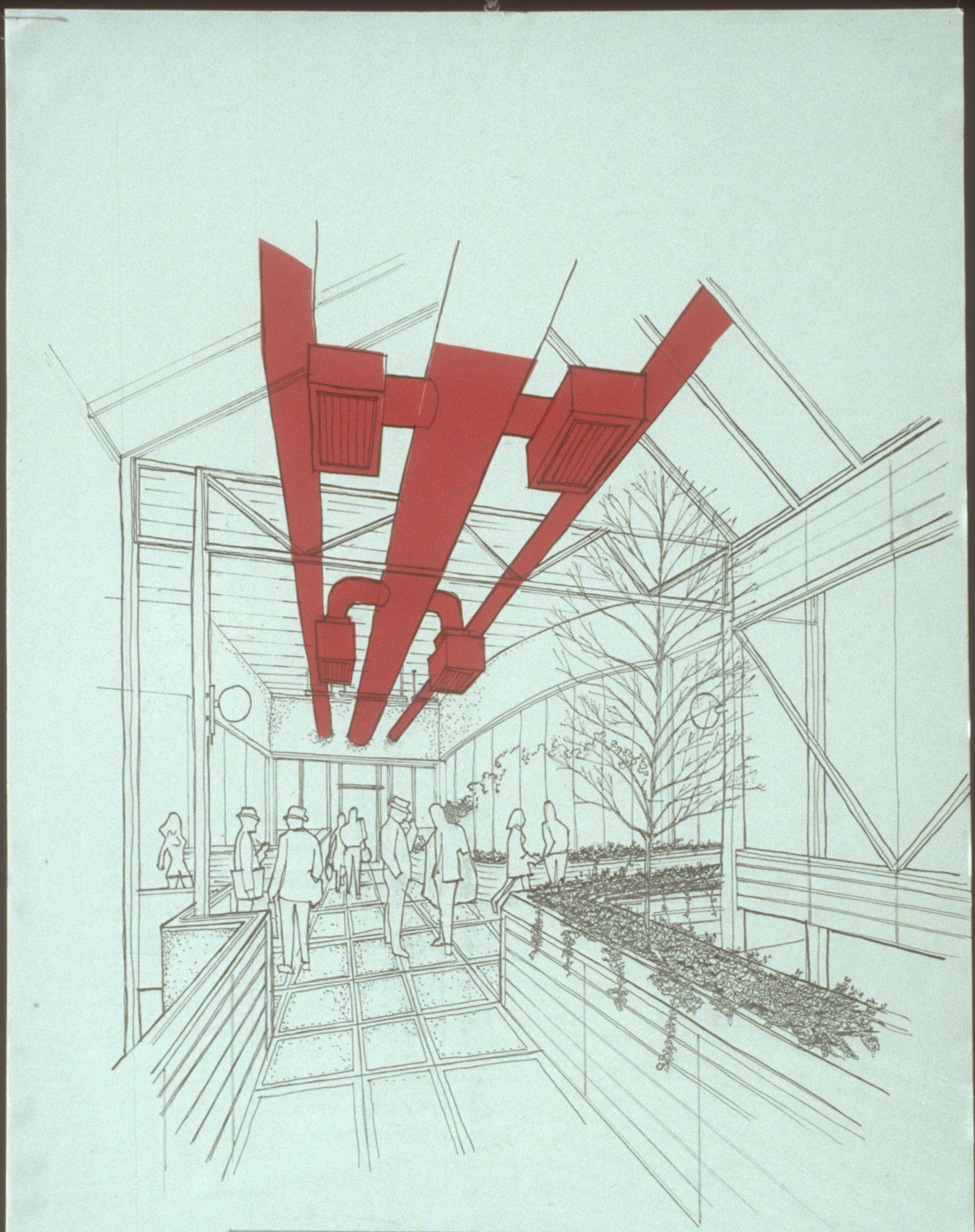


Upper · Level PLAN

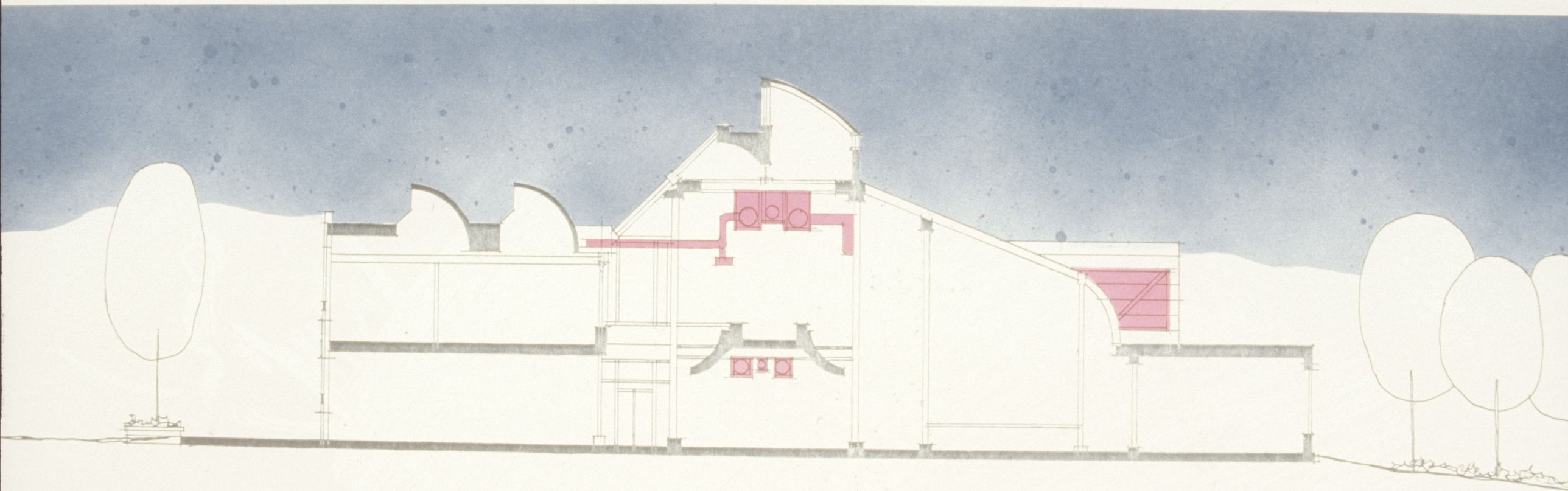
SCALE: One inch equals Twenty feet



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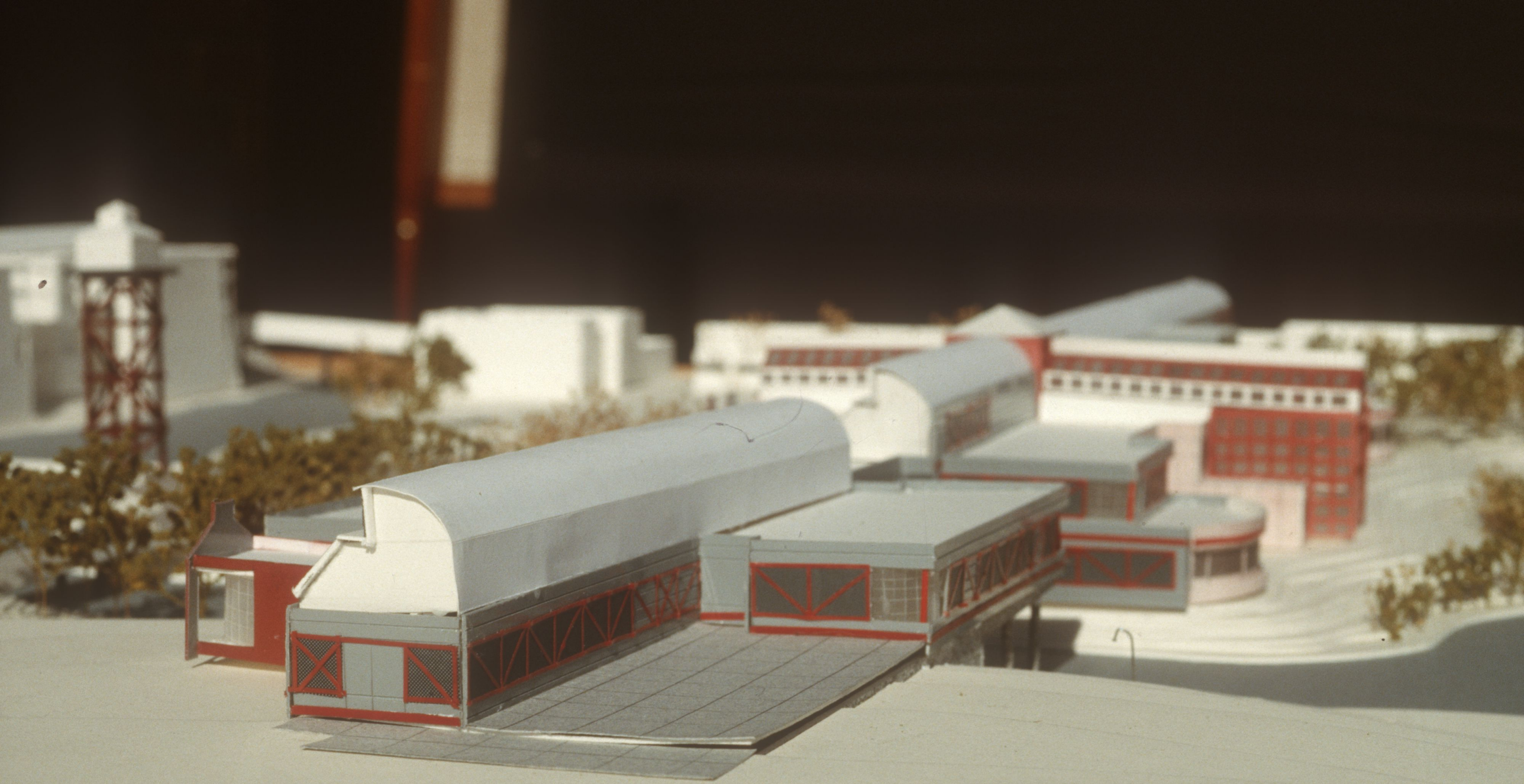


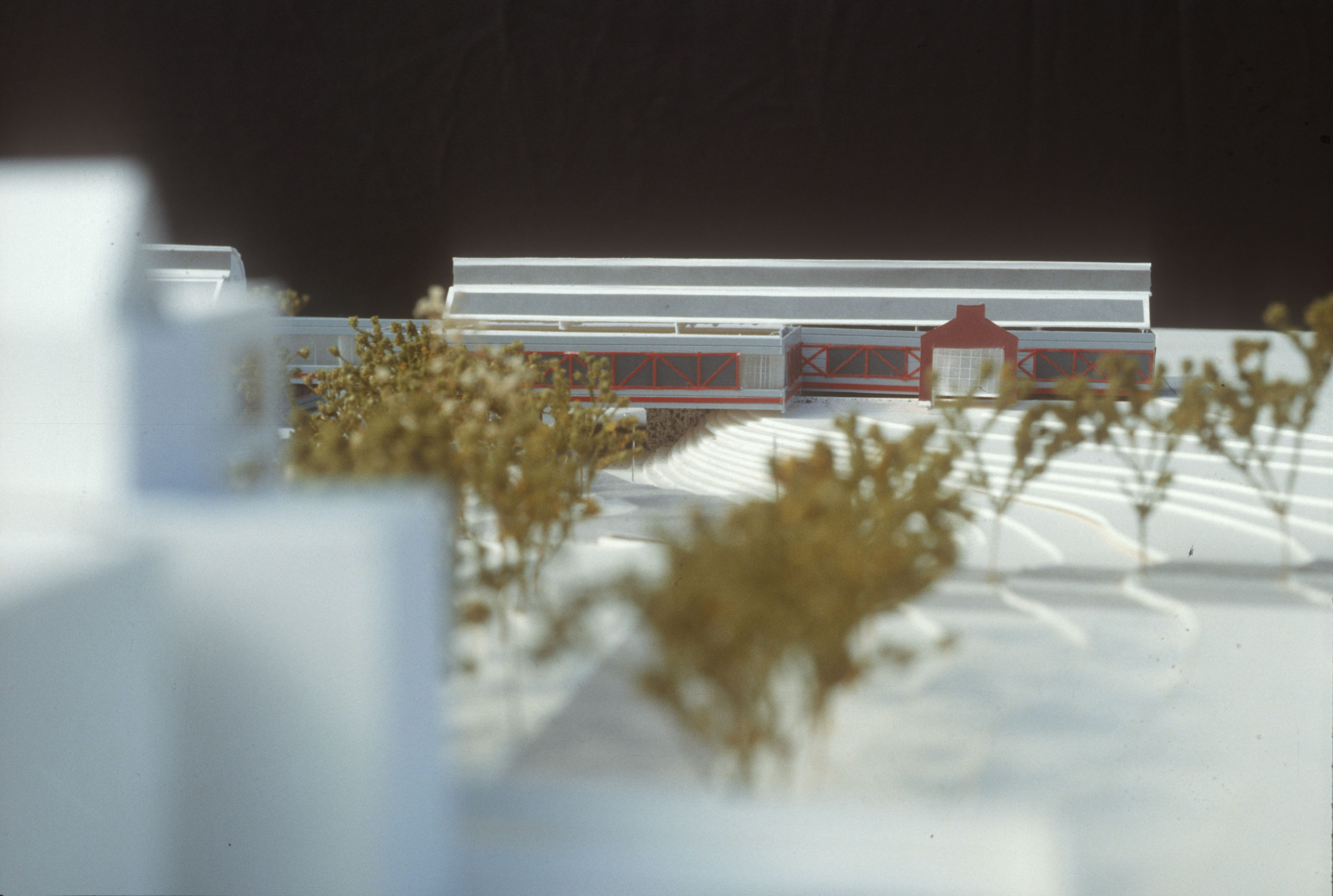
ilding · Section A

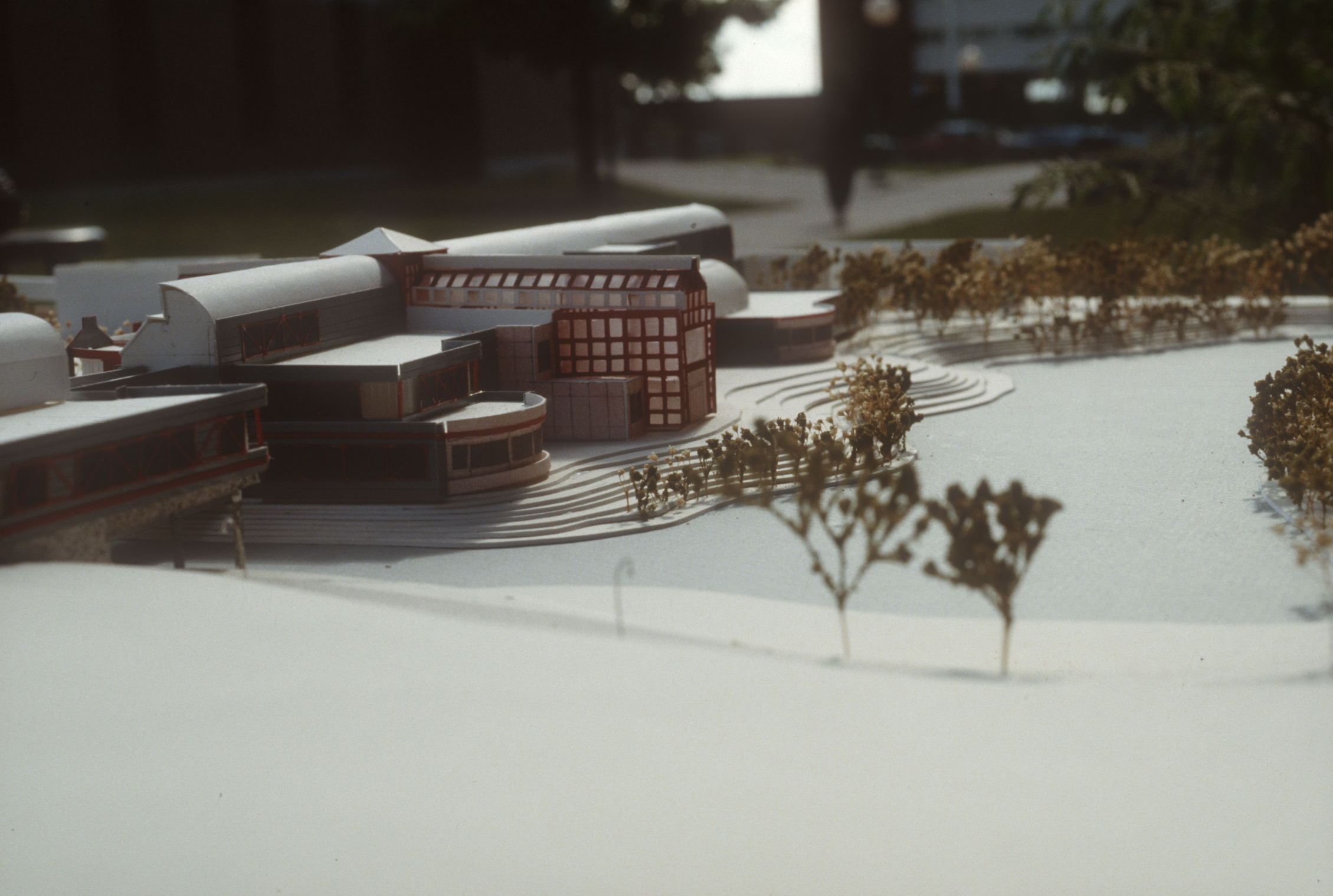
One · inch · equals · Ten · feet


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