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AN ART CENTER
FOR
TUCSON, ARIZONA

Part I

Undergraduate Thesis in Architectural Design

By

Robert B. Ball

Submitted to the School of Architecture as
partial fulfillment of the requirements for
the Degree of Bachelor of Architecture

at

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TUCSON ART CENTER

Summary

Tucson is a growing, changing city. Throughout the downtown district, a revitalization program is actively underway in answer to the changing needs of the community. Of extreme importance is the need for Tucson to achieve a cultural and social identity. More specifically, this refers to plans for a new community center which will include new facilities for the Tucson Art Center. This presentation is an attempt to place a proper solution within the existing framework of constraints.

The site finally agreed upon by the officials of the Art Center and the City of Tucson is located west, across Main Ave., from the main body of the community center. In the original plans, a pedestrian bridge linked the community center to the parking area, south of the site for the art center. So that the Tucson Art Center may become a more integral part of the entire development, this pedestrian bridge was moved to the corner of the site. In addition to the site being the entrance to the Tucson Art Center, it is also the primary entrance to the community center. The rationale behind the design of this space is its function as a place to rest or wait either prior to or after the use of the bridge. It therefore becomes a drop-off or pick-up point for people using any part of the community center. It is hoped that more people will be exposed to the art center and a greater tendency to use these facilities will be generated.

The actual physical plant will house two primary functions, a museum and a school. The primary user of the museum will be the casual visitor and must be the more dominant architectural feature,

in order to receive the attention necessary for its proper function. The school, which is a relatively private space does not require the architectural dominance necessary in the museum. These two spaces are connected both functionally and visually by the auditorium and administrative areas. Aesthetically, the design is a balance of the architectural form and the function it houses. In order to achieve this balance, the school, a very busy and viable place, is a relatively plain and simple form. On the other hand, the museum is a very quiet and casual atmosphere, balanced by very dynamic and imposing architectural forms. In order that the visual link may be obtained in the auditorium space, its form is influenced by both the school and museum.

The museum consists of several independent structures surrounding a covered sculpture court. Each of these structures is a very flexible and anonymous exhibition space so that their character may be derived from the exhibitions housed within. These spaces are connected by ramps providing an area of neutral influence between exhibitions. The ramps also provide a path directing the visitor while using the museum, and provides vantage points for the sculpture garden. This sculpture court extends to an exterior court to take advantage of the warm climate.

As in any educational space, the constantly changing teaching methods and course content preclude flexible spaces. The use of a perimeter classroom arrangement allows this flexibility and affords a perfect opportunity to take advantage of the climate. At the same time the defined spaces are retained, such as ceramics, crafts, etc. The Member's lounge, which is a very exclusive area within the center, is located above the administrative area overlooking the

school court. The auditorium is a rigid space with fixed seating and sloping floors for the best arrangement for presenting films and lectures. The Backstage Theater must be used for dance and painting as well as experimental drama, and must be a completely flexible space. As designed, it will house nearly any possible stage arrangement.

The proposed Tucson Art Center is probably the most important contribution to the Community Center Project. It becomes a place of identification for the whole community, promoting the cultural and social identity to which the City of Tucson Aspires.

PROLOGUE

"It is one of the encouraging signs of mature society to seek to re-established a fair balance between the flesh and the spirit. The greater our wealth in material goods, the greater seems to be the need to find a high and satisfying set of values. The remarkable flowering of the Arts has been one of the phenomena of post-war America. The museums, even more than other institutions, have been setting standards of excellence in communities all over the land, exerting a deep and liberating influence on all kinds of other human activities. It has become clear that the museum has now become a symbol of the greatness to which a city may aspire, and without which there can be no greatness."

Pietro Belluschi, Dean
School of Architecture and Planning
Massachusetts Institute of Technology

proposal

The city of Tucson is presently involved in a revitalization of its downtown district through the application of the Model Cities and Urban Renewal Programs. Of major importance in this redevelopment is the Tucson Art Center, the subject of my thesis. I became acquainted with this project while attending summer school at the University of Arizona during the summer of 1969. Professor Greene of the College of Architecture at the University encouraged my interest in the project.

My experiences during the summer have given me somewhat of an understanding of the conditions of the area. Because of the difference in environments between southern Arizona and those I have been accustomed to, I realized the challenge of the project. After talking with H. Gregg Swihart, President of the Art Center, the functions of the institution began to emerge. The Tucson Art Center as I envisioned it will provide two very different yet related activities, one of an educational nature and the other a museum.

history

of the

art center

The Tucson Art Center, as it exists today is the result of over 45 years of growth and crisis. Beginning as an organization to present exhibitions and collections from other parts of the country, it has grown to be one of the primary educational institutions of the Tucson area.

The history of the Art Center dates back to the Art Section of the Tucson Women's Club. During this time, enough interest in the arts was generated to establish a separate organization. By 1924, the Tucson Fine Arts Association, predecessor to the Tucson Art Center, was established by Mrs. E. F. Harris, Mrs. George Kitt, and Mrs. Alice Teasdale. The effectiveness of the infant organization as a promoter of the arts was understandably limited and probably consisted of minor exhibitions and lectures.

By 1929, exhibition space was acquired in the Temple of Music and Art. Although a limited organization, their efforts to improve presentations persisted. In 1936, a generous patron pledged \$250 per year providing at least one collection from both the east and west coast were presented annually. With this newly found wealth, they changed their name to the Tucson Art Center and incorporated.

During and just after the war years, pressure began mounting to offer more support to local artists. Because of this conflict, the artists separated from the center and formed the Tucson Independent Artists Association. The result of divided interests made both organizations unable to function effectively. When it became apparent that they must resolve their differences, the two organizations rejoined in 1948. However, this difference of opinion concerning the role the Art Center was to play in the community sparked a much more comprehensive program.

During the years that followed, the Art Center experimented with a wide variety of programs to stimulate interest and promote the Art Center.

Among these was the organization of the Junior League, though not effective until 1957, which is an agreement with the school systems in the area to establish tours for all school age children. The idea being "exposure will foster interest". Along with this, an excellent educational program was instituted to instruct children, as well as adults, in the techniques of various art forms.

Results of this "comprehensive art center" idea, were the ability to show more and better collections from other museums, the addition of exhibits from foreign countries, an annual art festival, and expansion into other forms of art such as sculpture, ceramics, crafts, and photography.

By the early 1950's the Tucson Art Center had become an effective part of the community. The need now was to have a permanent home. The Kingman Memorial Museum, built as a private residence, was a gift to the University of Arizona from Mr. and Mrs. Lawrence V. Robertson, and was purchased by the Art Center in 1955 to become their present home. Largely responsible for the money involved was the Women's League, whose primary function is that of fund raising and promotion.

The Women's League is also responsible for the beginning of the first permanent collection of Spanish Colonial Art. This has since grown into a sizable and very fine collection. Just recently, acquisitions of the Pre-Columbian period have begun the second permanent collection.

Within the last ten years, the educational programs of the Tucson Art Center have become a tremendous success. The enrollment of the school varies now from 175 to 225 students per term and is steadily growing. The Center plans to establish a maximum of 250 students per term, in order to maintain an optimum teaching-learning environment.

In 1967, the city of Tucson began a revitalization program for its downtown district. With this program, a site was to be given for new facilities for the Tucson Art Center. Considerable disagreement resulted about the location, and late in June 1969, the city and Art Center finally agreed upon a new location within the same development. At this time, 140,000 square feet had been given to the Art Center by the city for their new structure. In September 1969 the Center began their fund raising campaign with the hope that a building can be under construction by mid-1971.

As can be seen from this short history, the Tucson Art Center has become a very important institution to the city of Tucson and all of southern Arizona. Its exhibitions and its educational program are designed to compliment that of the College of Art at the University of Arizona, making it possible to serve all of the community in an effective way.

function

of the

art center

Throughout the history of the Tucson Art Center, its purpose, or responsibility to the community has been challenged, analyzed and reorganized. The result on the part of the Art Center is an effort to become a totally working museum. More clearly, to serve the entire community through collecting, preserving, exhibiting, and teaching. Through these activities the Art Center must reach the interests of as many people as possible. (6:5-13)

The Art Center hopes to develop its Spanish Colonial and Pre-Columbian collections into their best attractions. There is in the vaults of the Philadelphia Museum, one of the world's best Pre-Columbian collections which will become available to the Tucson Art Center on a long-term loan. In addition to collecting, it is the purpose of the Art Center to catalog and research these items for the purposes of teaching. The Art Center will actually become a foremost authority on both periods.

Along with their permanent collections, the center must acquaint the public to many other sources of art. One of these sources is their own school. For the purposes of exhibition, the art will be judged by jury for presentation. Other sources of exhibitions are those acquired on loan from collectors, dealers, loan organizations, and other museums. These are generally selected by the Director and the President of the Board of Trustees. Such exhibits in the past have consisted of "The World of Alexander Girard", the "Mead Collection", and works by Robert Russin, Robert Henri, Arshile Gorky, to name just a few. To date the Art Center has an excellent reputation for the interest and variety of its exhibitions.

Of equal importance to the functions of collecting and exhibiting is that of preservation. When the Tucson Art Center receives an exhibit,

they become totally responsible to protect that exhibit from damage, deterioration, and wear. (14:1969)

The real heart of what the Art Center has become in the past few years is its educational program. It is designed to serve all ages and backgrounds with local professionals instructing. In order that the Center may serve the entire community, a scholarship program is established providing aid to underprivileged who have shown promise in the arts. Although this school is operated outside of the jurisdiction of the University, there is an effort to offer a complimentary program to the University. It is possible to receive University credit for many of the courses taught. Classes are kept small and directed toward three primary age groups: grade school, high school, and adult. The courses offered include dance, fabric design, film, raku pottery, drawing, painting, and jewelry design. With the planning of the new facilities, drama and music will certainly be added. (16:1969)

In addition to the functions already discussed, the Tucson Art Center should be a place where all people, rich and poor alike, can identify. It must be a place for the casual visitor as well as the student of the arts. Groups and individuals, child and adult should be planned for. The Junior League alone has several thousand children yearly visiting the Art Center.

The Tucson Art Center must provide at least part of the culture necessary for the individual. The effective presentation of the arts will at the same time enhance the arts themselves. The Center has every possibility of being the most valuable modern attraction of southern Arizona.

**conditions
creating a
need**

SIZE

Considering the progressive history of the Tucson Art Center, the size of the present Art Center is probably the most restrictive to its future growth. The problem lies not so much in the available space as it does in the arrangement of that space. From an exhibition designer's point of view, none but the smallest exhibitions can be effectively presented. While some exhibitions want the intimacy available, others require a vast openness, indicating an unwanted rigidity. Due to the lack of artificial control and arrangement, the instructional space is simply too inhibited to be effective. (1:170-80) This problem is caused by the fact that the building has been designed as a private residence, resulting in many small rooms and prohibiting any flexibility. This problem extends also to the rapidly growing permanent exhibitions. Aside from exhibition areas, the administration space, storage and work space, and sculpture garden are too small. What educational space is available is of very poor quality. (14:1969)

LIGHTING

When considering the quality of the space available, lighting becomes a problem in the exterior rooms. Windows emit a varying quality of exterior light during different times of day and different weather conditions. For some types of exhibitions, mainly the crafts, any natural light is undesirable because it deteriorates fabrics and causes some pigments to fade. For purposes of control and preservation, most exhibitions should be totally without natural light.

CLIMATE CONTROL

Another even more serious problem is that of climate control. Safety limits for the environment of diverse collections are temperatures between 60.8°F and 64.4°F, and humidity between 58% and 62%. Contrast these figures for those of the Tucson area of 25-105°F and 2-100% humidity. To maintain the desired ranges within a building with no insulation and very permeable walls is almost an economic impossibility.

SECURITY

Although the building is not in the condition to be condemned, it is an old structure of poor material condition. The result is an exorbitant cost for fire insurance to cover the materials housed. The extreme economic burden is in addition to the unwillingness of owners to accept the possible loss of their collections. Many owners will not even allow their works to be brought into the building.

These risks are not just a result of the conditions of the building, but of the lack of security against theft and damage as well. The layout of the present building makes this security very difficult. (14:1969)

LOCATION

The last physical condition creating a need is the present location of the Art Center in respect to surrounding activities and circulation paths. (See Figure 1, p. 10) The Art Center is actually disassociated from all of these outside nodes of activity. This prohibits many of the casual visitors from a "chance" finding of the center. Because of local topography, it is difficult to find the Center, even knowing its location. If by some miracle of navigation you can find the Tucson Art Center,

chances are great that there will be no available parking. (14:1969)

IMPLICATIONS

A new building will have profound implications for the Center. As in any new structure, there definitely be a renewed community interest, allowing the Center greater membership and more financial stability. A better location will increase the number of casual visitors and afford the opportunity of serving more people more efficiently. I believe that the most important thing is that the Center will be unhampered in its growth, allowing more chance for the Tucson Art Center to fulfill its active role in the community.

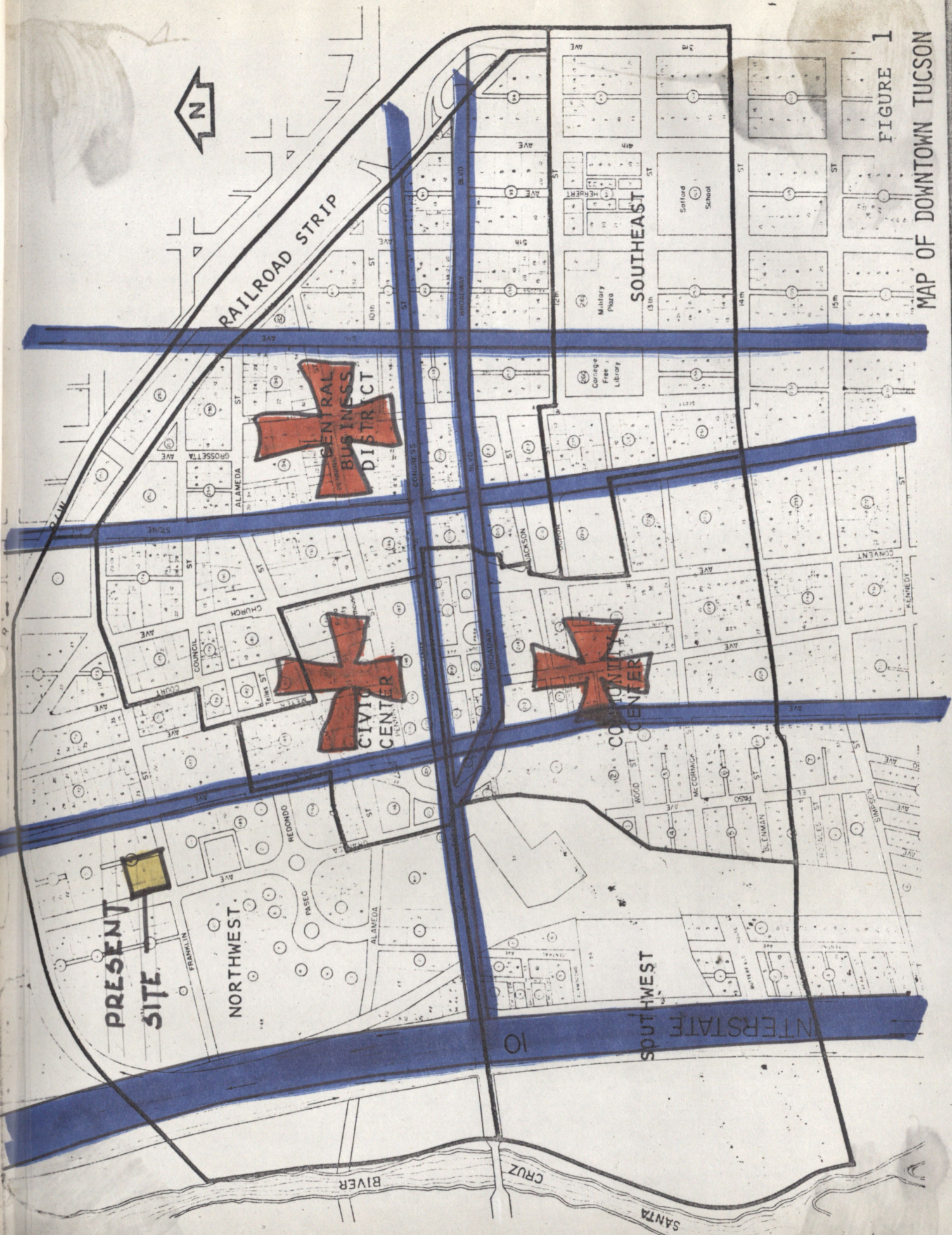


FIGURE 1

MAP OF DOWNTOWN TUCSON

organization

STRUCTURE

The Tucson Art Center operates as a non-profit organization. A structural diagram is shown in Figure 2, p. 13. It functions through a Board of Trustees by the coordinated activities of the President of the Board and the Director of the Art Center. These two men are responsible for the administration of the school and the museum, the two primary activities of the Center.

Directing the school is the Curator of Education, who is given a relatively free hand in its operation. The present Curator of Education believes that instruction should be offered by professional artists in a manner in which each would operate his own studio. As a result, the school is almost free of any restriction concerning course content and teaching methods. Those classes requiring a close student-teacher relationship are limited to a twelve student maximum. The entire school will be limited to 250 students. Approximately $2/3$ of the students are tuition paying students, while the remaining $1/3$ are on scholarship from the school. Although the money received through tuition will pay most of the expenses of the classes and instructors, the school does require some subsidy from the Art Center. (16:1969)

The President of the Board and the Director of the Art Center are generally responsible for the content of the exhibitions, with the Director being responsible for the preservation and design tasks. With the advent of a new building and the expansion anticipated, there will undoubtedly be a Curator of the museum. When this comes about, the curator will be responsible for the preservation, design, and other handling of exhibitions.

The League (Women's League) is in actuality an auxillary to the Tucson Art Center, but not an actual section within the structure of the Art Center. It does, however, serve the indispensable role of raising funds, recruiting members, and recruiting volunteer help. The League is either directly or indirectly responsible for all money available for use by the Art Center.

ECONOMICS

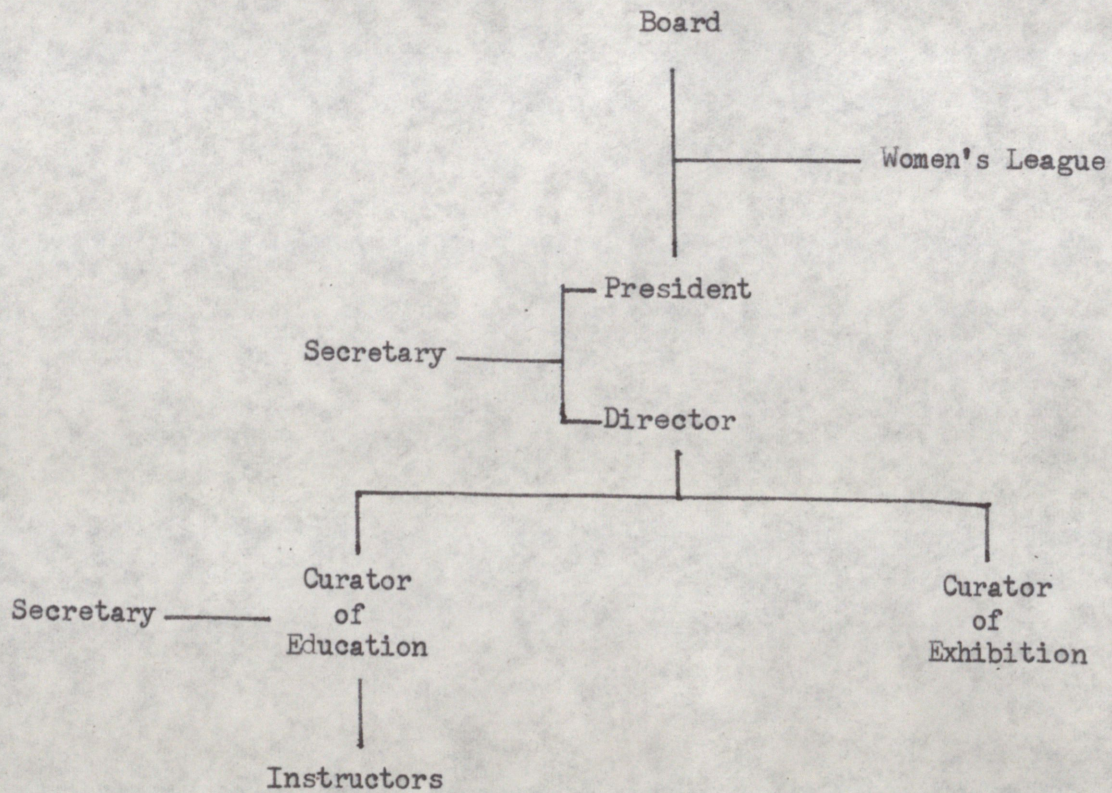
Traditionally, the Art Center is financed on a year-to-year basis. These monies available are obtained through membership fees and other donations. When special funds are needed, such as for the purchase of the present Art Center, a fund raising drive for that purpose is initiated. Such as the one for obtaining money for the new Center. September 1969 was the announcement of the drive for the new building. The goal was set at \$1,500,000. Judging from past drives, this goal will be exceeded by at least 25%. However, to ensure the amount will be available for construction, we will use the \$1,500,000 plus present assets. These assets consist of the land and building presently occupied by the Art Center. Since no exact assessment has been made, we will use the estimate of \$350,000. Considering that the site for the new Center is donated by the city free of charge, the entire amount will be available for design and construction.

Public subscription	\$1,500,000
Assets	<u>350,000</u>
Total available	\$1,850,000 (14:1969)

A preliminary estimate of space required is about 70,000 square feet, indicating an approximate cost of \$28 per square foot.

Figure 2.

STRUCTURE OF TUCSON ART CENTER



conditions

of the

area

GEOGRAPHY

Tucson, Arizona, 32° 15'N; 111°W, is the heart of one of the fastest growing areas in the United States. It is located approximately 120 miles south of Phoenix and 65 miles north of Nogalas, Sonora, Mexico. See Figure 3, p. 19. The city itself is located in a relatively small valley in the middle of four mountain ranges: Catalinas to the north, Tucsons to the west, Rincons to the east, and the Coronados to the southeast. The heart of the city is west of the Santa Cruz River and south of Rillito Creek at an elevation of 2400 feet above sea level. The area is characterized by semi-arid desert growth of only the heartiest types, low relative humidity, and abundant sunshine. The river beds are generally dry except during the rainy seasons. It is the largest community in the United States that still relies on underground water as the sole source of water for the community. See Figure 4, p. 20.

HISTORY

Tucson has been settled by outside cultures for over 300 years, each making its own mark on the community concerning land use and visual arrangement within the natural environment. The only people native to the area are the Papagos Indians. Settlement began about 1690 by the Spaniards and missionaries of the Catholic Church, and later by the Mexicans. The most important institutions of Pimeria Alta, southern Arizona, were the presidio and the Catholic mission. In 1700, Father Mino laid the foundation for the first San Xavier del Bac Mission, only to have it burned to the ground in 1751 by the Pima Indians. In 1776, the Presidio, or Spanish Fort, was built to protect the settlers and Mission from further attacks. This Presidio was located on what is now

the Government Center, about two blocks from the future site of the Tucson Art Center. In 1797, the second San Xavier del Bac Mission was completed.

The main reason for the Spaniards being in southern Arizona was to maintain a trade link between Sonora and southern California. By the time of the Gadsden Purchase in 1853, the town was fairly well established with a population of about 500 people. A visitor to Tucson in the mid-1800's characterized the town as a "small city of inferior adobe houses." In 1882, the Southern Pacific Railroad was completed and Tucson became an excellent site for future industry. In 1891, the University of Arizona was established as a fully accredited, state supported institution.

In the early 1900's, Tucson built the first municipal airport in the United States, which was to become the site of Davis-Monthan Air Force Base in 1940. This base was designated for the production of B-24 Bombers, beginning the first major industrialization of the area. In 1951, Hughes Aircraft Missile plant moved into these facilities to become one of the major industries of Tucson. As can be seen in Graph 1, p. 21, this period of industrialization brought with it a phenomenal growth pattern. The population increased from 70,000 in 1940 to 328,000 in 1967.

SOCIAL

Most of Tucson's population is non-native, having been attracted to the area because of the pleasant living conditions, climate, or health. Tucson was first settled by the Spanish and then the Mexicans. This group, now called Spanish-American, comprises about 16.4% of the total population of Tucson. Although many are direct descendants of those first settlers, a great many more have since immigrated from northern Mexico, and with them brought a great deal of history and tradition. While

having to assimilate much of the Anglo culture, they have managed to conserve the tradition of their own past. There is now a distinct Mexican-American (Chicano) culture which permeates the society. This structure is so well established, that the city can easily be considered bi-lingual, speaking Spanish and English.

The Negro population of Tucson is relatively small. It totals only about 3.5% of the population. There have been Negro residents in the Tucson area since practically its earliest days of settlement, and this population has grown steadily through primarily natural increase. There have been no significant periods of Negro immigration to Tucson, as has been the case in many other industrialized cities.

Chinese settlers came to Tucson before the days of the railroad. Although they are very few, they have established an extremely prosperous society.

The Indian population is primarily of two tribes, the Papagos being indigenous to the area, and the Yuquise who migrated from northern Mexico to escape persecution from the Mexican authorities. The combined total of these two tribes is just over 1%. The circle graph (Graph 2, p. 22) indicates the sizes of the ethnic groups to the total.

With the University of Arizona as a center of higher learning, the educational levels within the community are relatively high. However, about 15.6% of the adults have less than eight years of schooling. These people are generally located in or near the downtown area or in South Tucson. (4:17-19)

ECONOMIC

For more than twenty years, Tucson has been one of the nation's true growth areas, see Graph 3, p. 23. However, in the 1963 to 1965

period, Tucson experienced a rather serious economic turndown. Population continued to grow, but at a much reduced rate. Since 1965, things have looked much better, primarily because of the mining and manufacturing sectors of the economy.

The rather recent upturn in the economy does not necessarily imply continued high growth at prior levels. It is believed that healthy growth can only be attained if significant community action is taken. Considering no community action, Pima County's population in 1985 is projected at 432,000, an increase of 104,000. During the past 20 years, the population increased 192,000--almost twice as much as the minimum projection.

If major community actions are taken, the projection for a 1985 population is 738,000, more than double present levels of growth. A splitting of the difference indicates a moderate population rise to 565,000. In this regard, it is useful to consider potential growth as a means to offset adversity. For example, if Hughes and Davis-Monthan were completely shut down, moderate or maximum growth levels would permit recovery in at least ten years. Minimum growth levels would not permit such recovery. It should be noted however, that Tucson has established the Development Authority for Tucson's Expansion and the Chamber of Commerce, both of which are very active and receive wide support from the community. With the apparently successful job being done, it is fair to assume that at least the moderate growth level will be attained.

Graph 4, p.24, is Pima County's distribution of export jobs. Federal Government agencies and the University of Arizona presently comprise over half of all these basic industry jobs. Graph 5, p. 25, shows population projections, and Figure 5, p. 26, indicates the percentage increases

under the three projections. (5:24-29)

CLIMATE

Tucson is on the border of a tropical and sub-tropical steppe climate, see Figure 6, p. 27. The temperature ranges are from 25°F to 105°F while the humidity ranges from 2% to 100%. The average annual temperature is 69°F. Most of the year is mild and dry, except the two rainy seasons. July through September is hot and humid with most of the 7.20 inches of precipitation falling then. The other rainy season, December through February is much less severe with milder temperatures.

The winds in Tucson are relatively mild, averaging just less than 4 miles per hour. These winds are almost always northwest or southeast, with the exception of the normal valley breezes. The day breezes are toward the mountains and the night breezes are away from the mountains. See Figure 7, p. 28.

Although wind is not a serious problem, the sun is. During the hot season, the sun can be unmercifully harsh. The maximum sun angle during the summer months is 85° from the horizontal, and the minimum during the winter is 31°F. See Figure 8, p. 29.

Figure 3.



...helps plan your trip free!

Just stop at the sign of the Chevron for a request form. Mail it in and you'll receive free a fact-filled trip kit.

Personalized map, with your route clearly marked.

Highway log, describing points of interest along your route.

Trip record with expense chart and check list of things to do before leaving.

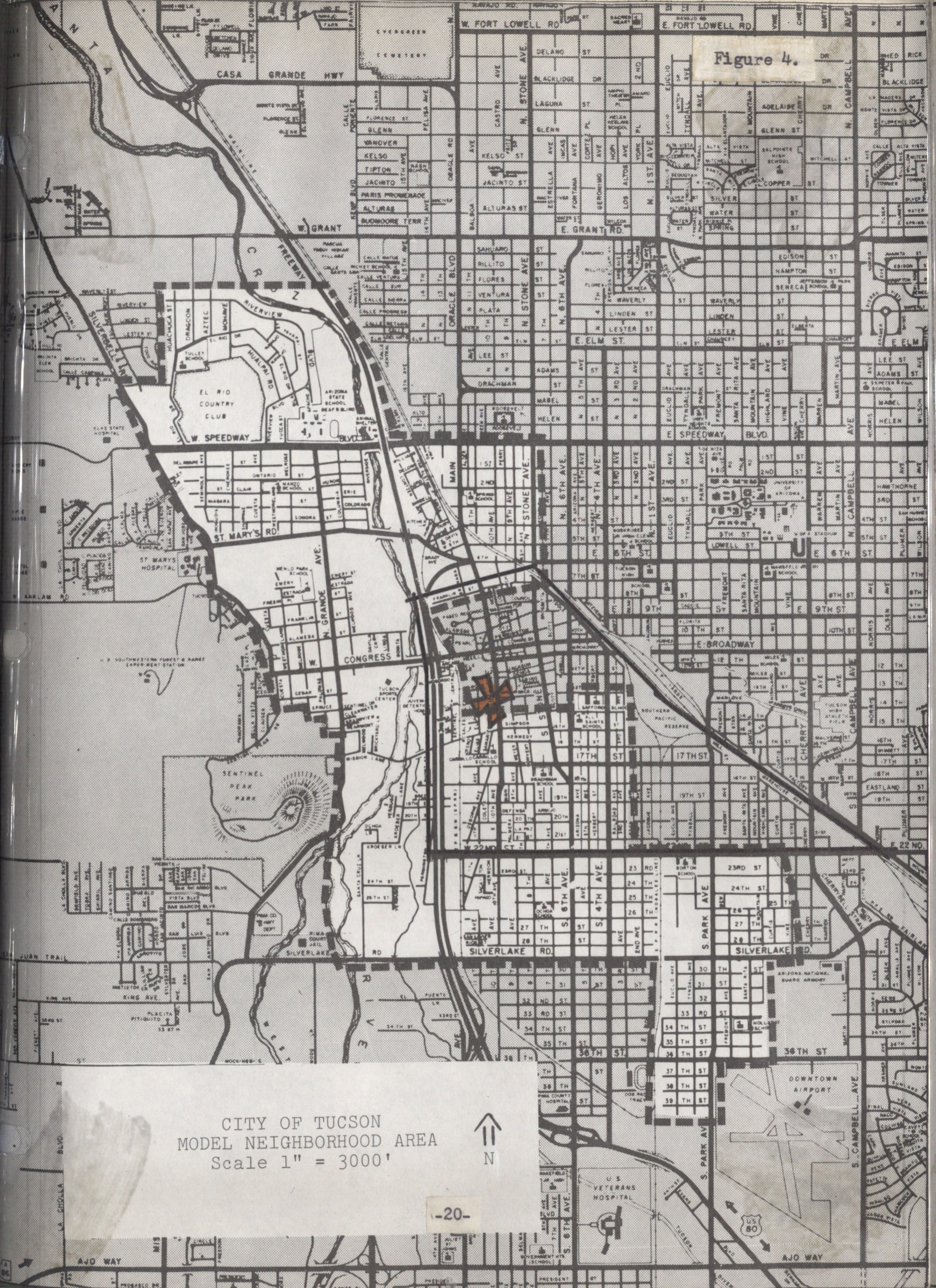
Accommodation sources, where to write for information

SCENIC ROADS

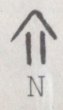
Looking for scenic beauty?
Drive any of the roads paralleled



Figure 4.



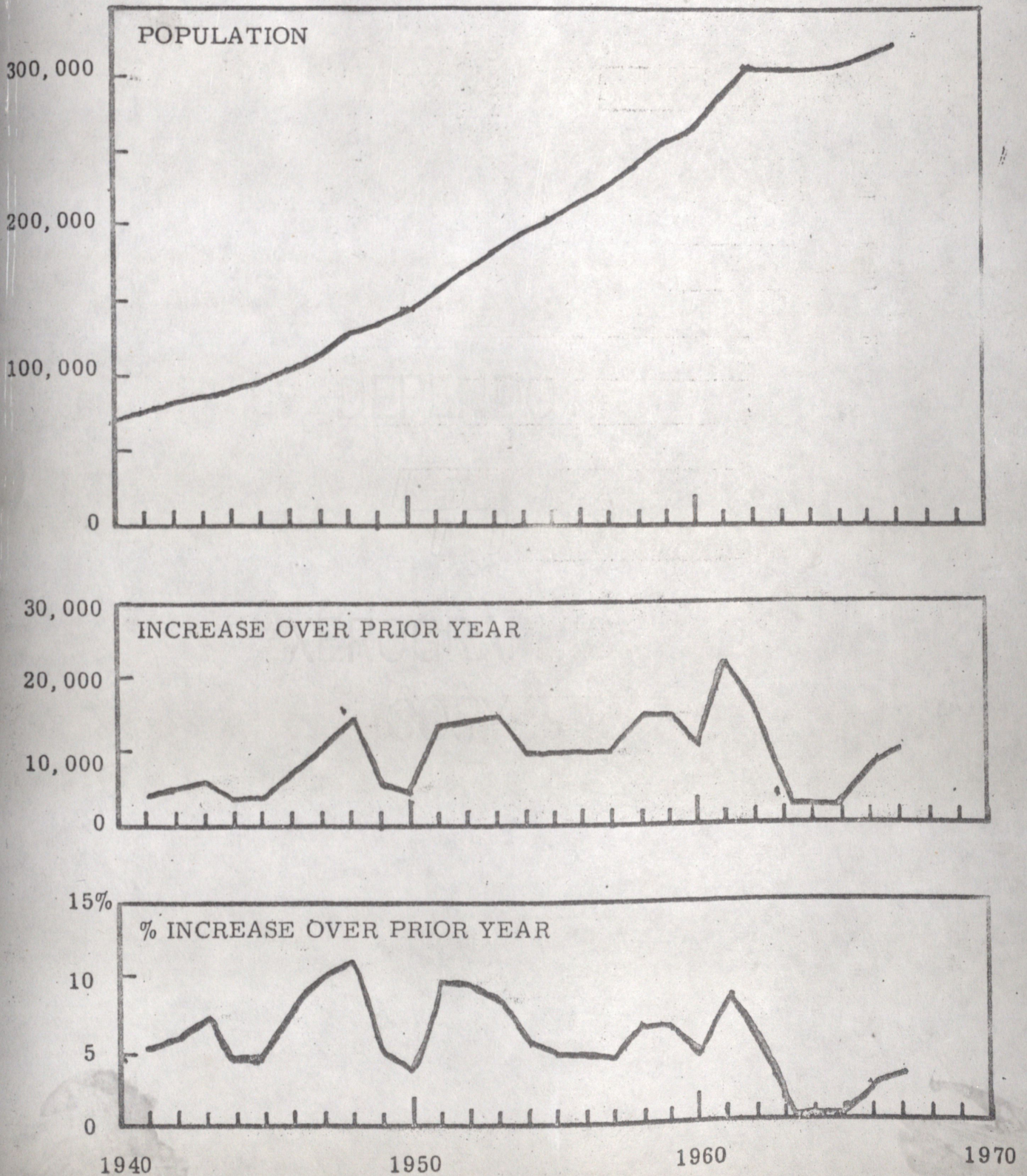
CITY OF TUCSON
MODEL NEIGHBORHOOD AREA
Scale 1" = 3000'



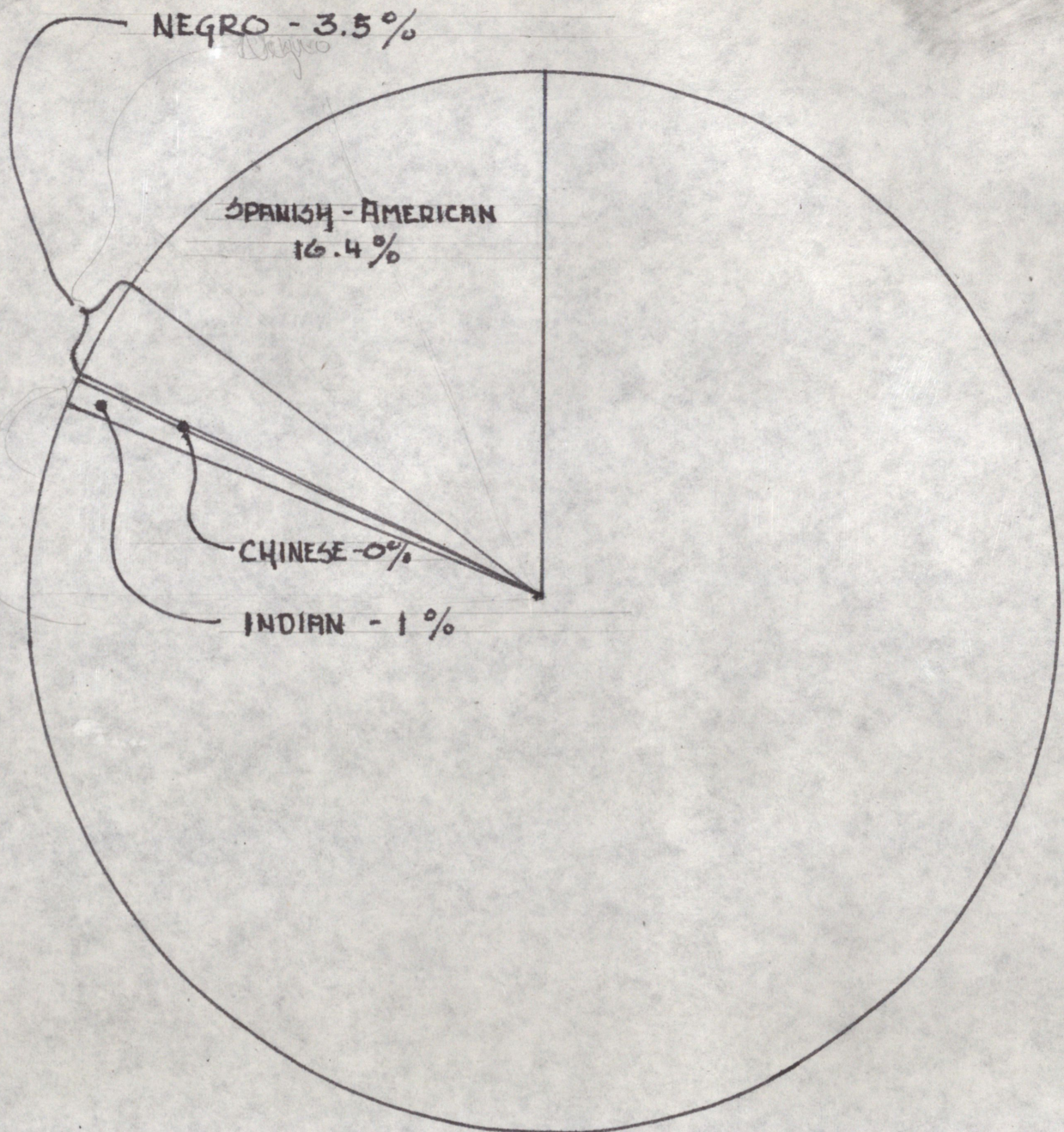
Graph 1.

Exhibit 7.2

PIMA COUNTY POPULATION GROWTH



Graph 2.



SOCIAL BREAKDOWN

TOTAL POPULATION = 328,000

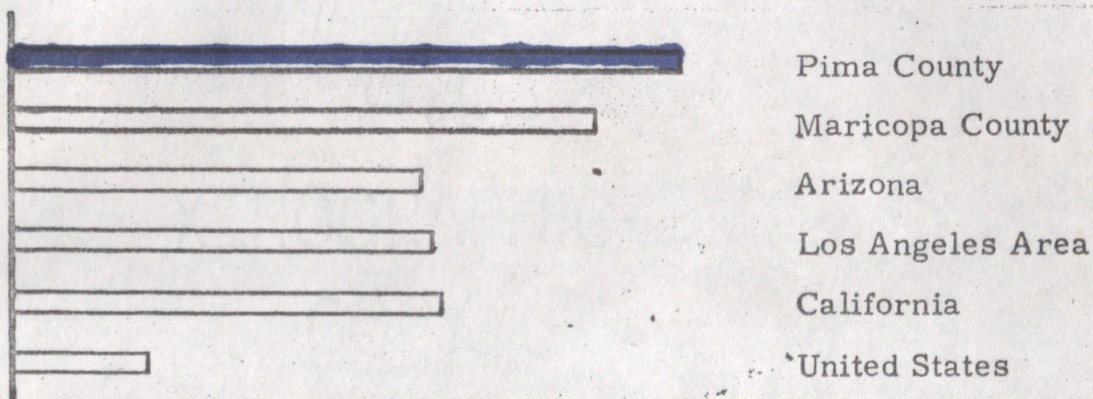
Graph 3.

Exhibit 24

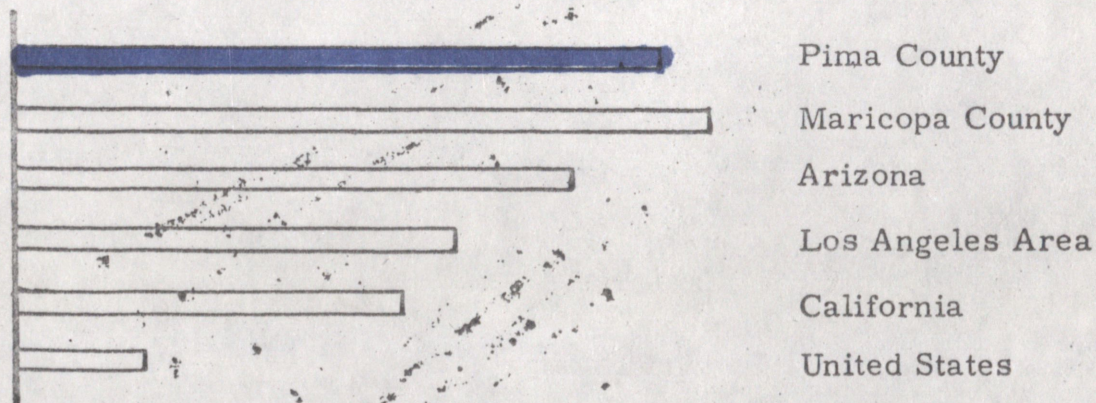
COMPARATIVE POPULATION GROWTH AREAS

--% AVERAGE ANNUAL INCREASE--

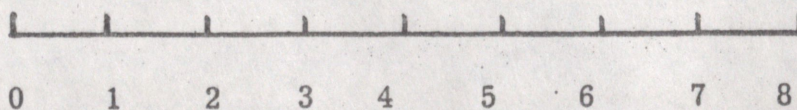
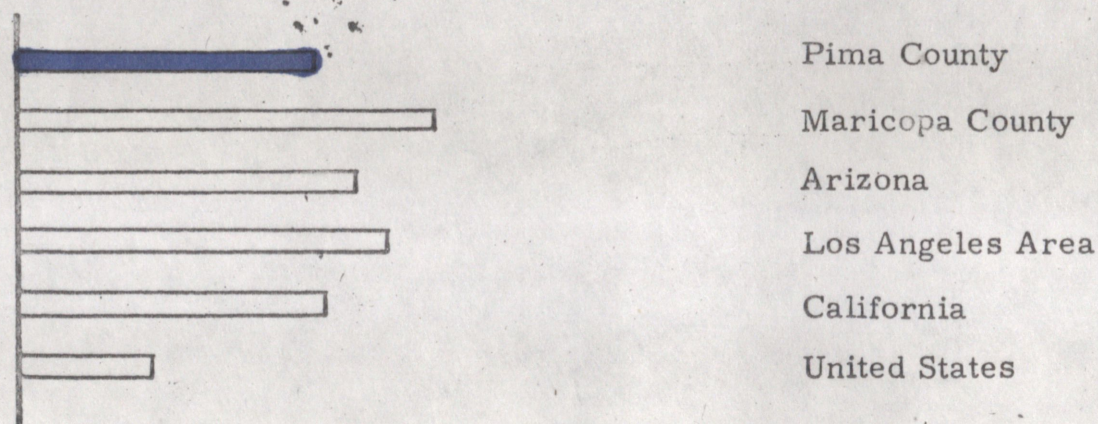
1960's



1950's



1940's

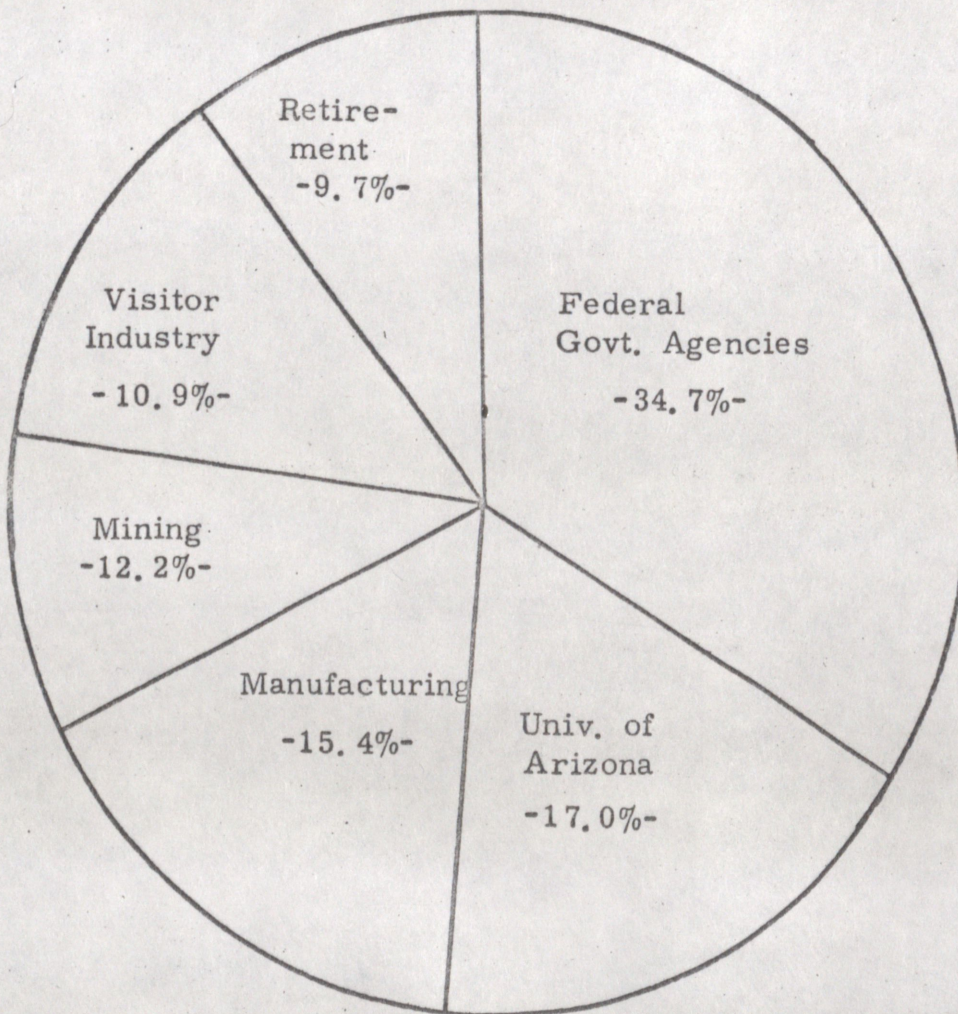


% Per Year

Graph 4.

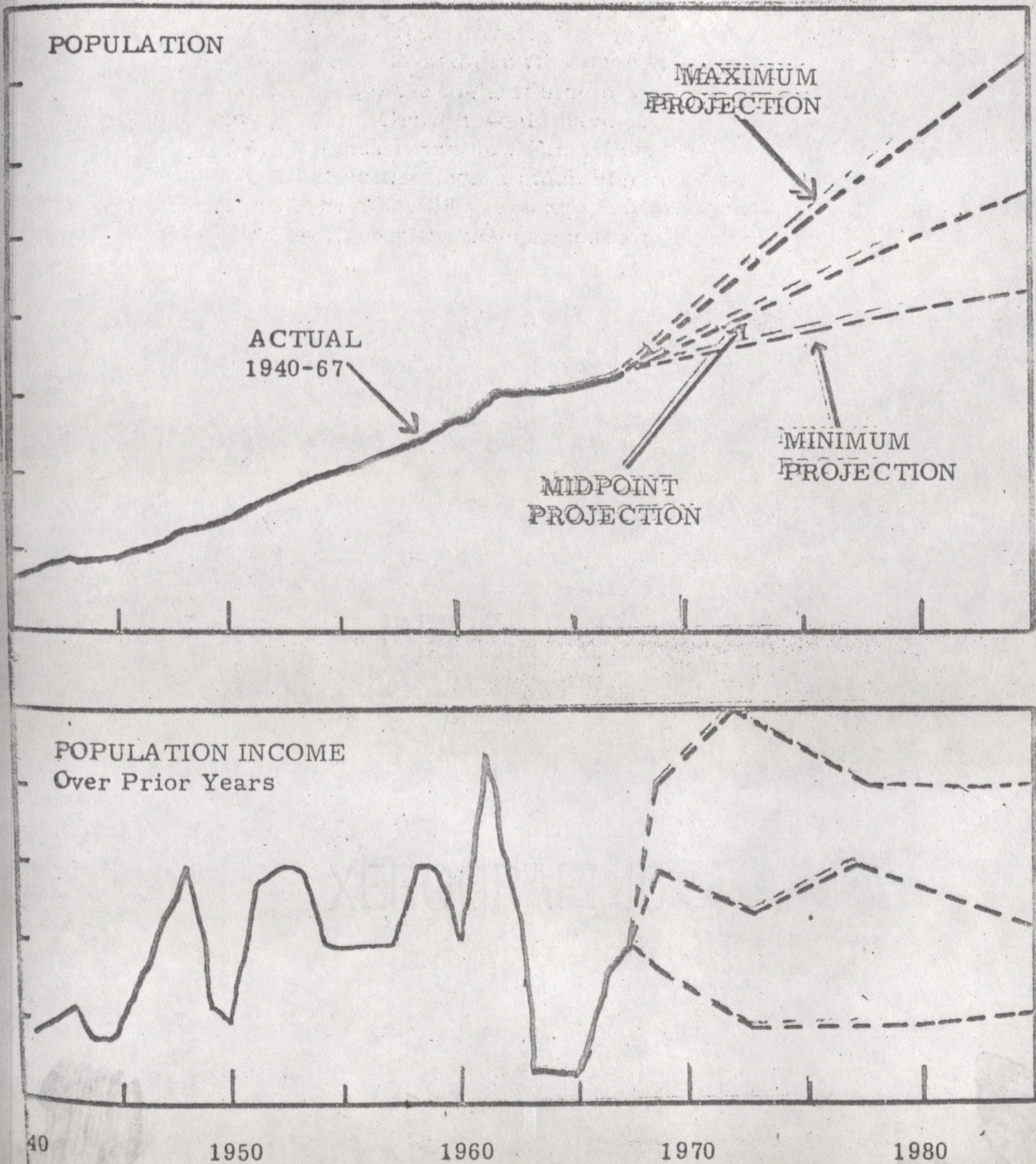
Exhibit 8-10

DISTRIBUTION OF PIMA COUNTY'S "EXPORT" JOBS
-1967-



Graph 5.

PIMA COUNTY POPULATION PROJECTIONS
(And Past Projections)



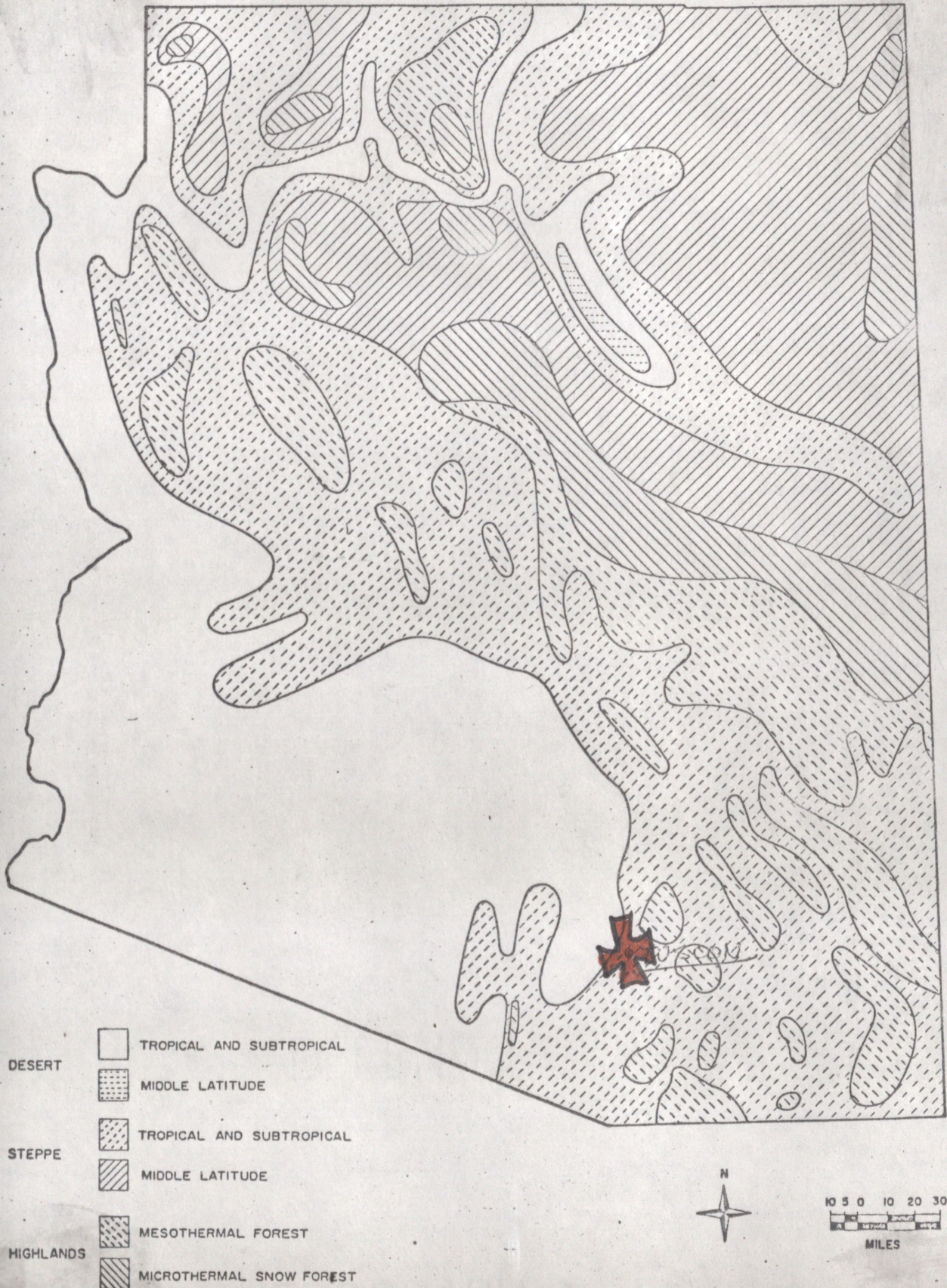
	1967 Actual ^a		1985 Projection		Increase from 1967 to 1985	
	Number of Employees	Percent of Total	Number of Employees	Percent of Total	Number of Employees	Percent of Total
<u>Minimum Projection</u>						
Manufacturing	5,668	15.4%	8,100	17.3%	2,432	24.1%
Mining	4,510	12.3	5,650	12.1	1,140	11.3
Visitor	4,000	10.9	5,750	12.3	1,750	17.4
Retirement	3,540	9.7	6,040	12.9	2,500	24.8
University of Arizona Federal Government Agencies	6,235	17.0	8,495	18.2	2,260	22.4
	12,725	34.7	12,725	27.2	--	--
Total	36,678	100.0%	46,760	100.0%	10,082	100.0%
<u>Maximum Projection</u>						
Manufacturing	(Same as above)		21,000	27.5%	15,332	38.6%
Mining			9,865	12.9	5,355	13.5
Visitor			9,670	12.7	5,670	14.3
Retirement			10,000	13.1	6,460	16.2
University of Arizona Federal Government Agencies			13,180	17.2	6,945	17.4
			12,725	16.6	--	--
Total			76,440	100.0%	39,762	100.0%
<u>Midpoint Projection</u>						
Manufacturing			14,400	24.3%	8,732	38.7%
Mining			7,670	12.9	3,160	14.0
Visitor			6,830	11.5	2,830	12.5
Retirement			7,290	12.3	3,750	16.6
University of Arizona Federal Government Agencies			10,340	17.5	4,105	18.2
			12,725	21.5	--	--
Total			59,255	100.0%	22,577	100.0%

^a Estimate of principal sectors, per Table 11.

Source: Development Research Associates

Figure 6.

CLIMATIC REGIONS



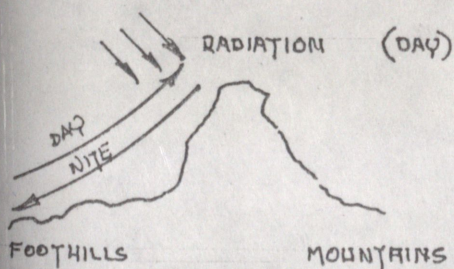
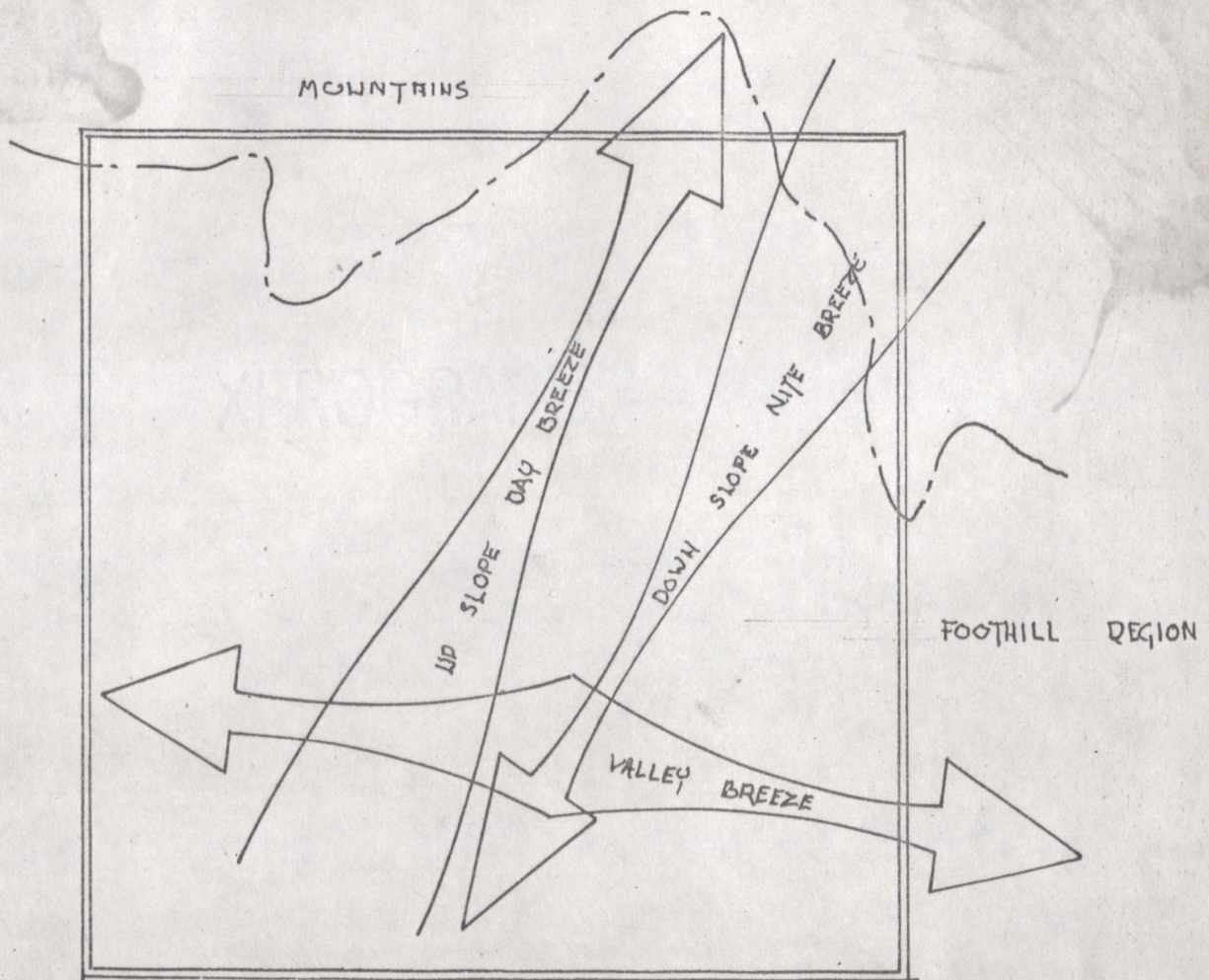
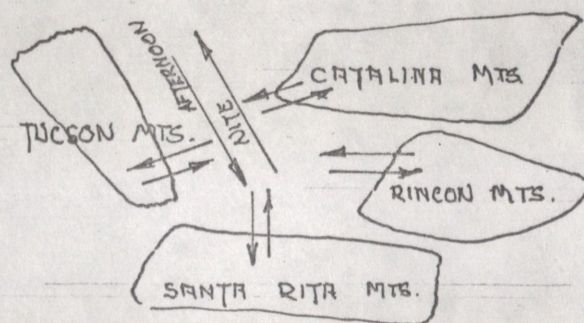
SOURCE: ATMOSPHERIC PHYSICS LAB, U of A

STEPHEN BAHR

W I N D

CONVECTION CAUSE LOCAL AIR MOVEMENT

Figure 7.

SLOPE BREEZEVALLEY BREEZE

- PREVAILING BREEZES ARE TO BE CONSIDERED
- WITHIN THE TOTAL DESIGN TO THE ADVANTAGE
- OF THE DESIGNER TO USE COOLING BREEZES
- WITH AN OBJECTION OF MAKING SPACE
- INHABITABLE.

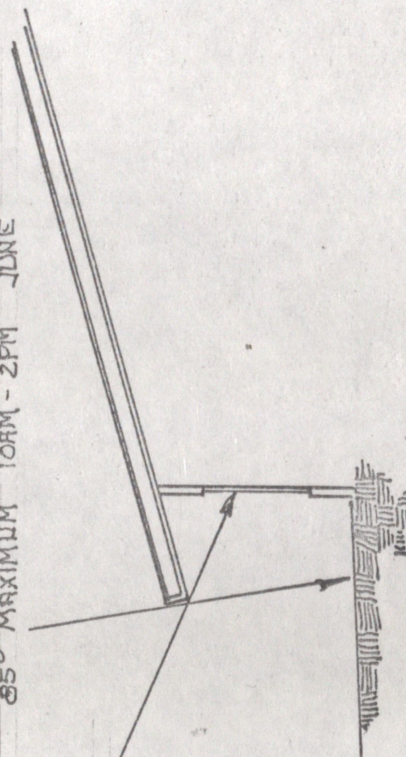
SUN PROFILE ANGLES

COMPUTED AT 32° LATITUDE & BALANCED TO BE APPROPRIATE FOR DESIGN AT 30° THRU 34° LATITUDE. COMPUTED FOR THE 22 ND DAY OF EACH MONTH. INTERPOLATE FOR DATES AND TIMES BETWEEN THOSE CHARTED	60° S.W.		45° S.W.		30° S.W.		FACING TRUE SOUTH		30° S.E.		45° S.E.		60° S.E.	
	10 A.M.	2 P.M.	10 A.M.	2 P.M.	10 A.M.	2 P.M.	10 A.M.	2 P.M.	10 A.M.	2 P.M.	10 A.M.	2 P.M.	10 A.M.	2 P.M.
		30	65	28	46	27	31	31	27	46	28	65	30	
		33	70	31	52	30	35	35	30	52	31	70	33	
		40	82	38	65	30	45	45	38	65	38	82	40	
	48		92-	48	78	42	57	57	47	78	48	92-	48	
	55		98-	55	90	60	72	72	60	90	65	98-	55	
	68		104-	64	92-	67	82	82	67	97-	64	104-	62	
	64		105-	66	100-	71	83	85	71	100-	66	105-	68	

NOTE: WHEN SUN ANGLE IS GREATER THAN 90°, THE SUN IS ON THE OPPOSITE SIDE OF BUILDING

85° MAXIMUM 10AM - 2PM JUNE

MINIMUM 31° 10AM - 2PM DEC.



NORTH AND SOUTH ORIENTATION

Figure 8.

site

"A" In 1967, the city of Tucson began a program of Urban Redevelopment. The first segment of the program was the Pueblo Redevelopment Center Project, shown in Figure 9, p. 32. A parcel of land on the north end of this project was originally designated for use by the Tucson Art Center, however, many persons within the structure of the Art Center were dissatisfied with the site donated. A great deal of dispute arose and many alternate sites were considered. Among them was a site out of town at the base of the mountains, which was finally discarded so that the Art Center could remain closer to the activities of the downtown area. Finally the present site, also in the Redevelopment project, was agreed upon by the city and Art Center officials, see Figure 9, p. 32. (14:1969) The site is located across Granada (Main) from the proposed convention center, theater and music hall, and southwest of the government center. (Figure 10, p. 33) They have been granted 70,000 square feet within the present Redevelopment project with another 70,000 to be reclaimed, totaling 140,000 square feet.

The site is located just south of the Carl Hayden Memorial Hospital with an old set of railroad tracks between. The central business district is almost directly east. South Tucson to the south with "A" Mountain and the Tucson Range to the west are shown in the photographs in Figure 11, p. 34. The site is very close to being rectilinear and nearly flat. The grade raises about 5 feet from the southwest corner to the northeast corner, as shown in Figure 12, p. 35. It should be noted in the photographs that the scale of the distant buildings to the north and east are large highrises of 7 to 12 stories. The buildings closer to the site are of a smaller scale vertically but massive in the horizontal dimension.

"A" Mountain reads as a mass from the site, but the mountains behind are more of a limiting boundary or wall. To the south are small scale homes. Interstate 10, which is a very physical boundary does not read as such from the site. If the Butterfield Route is built, it will be below grade, offering no visual obstructions.

The only major traffic artery to be concerned with is Main Avenue, which carries a good portion of the traffic into and out of the central business district from the south. The busy times for this street are the morning and evening hours. Figure 13, p. 36, shows the 24-hour traffic volume for Main as compared to other streets. (4:22-26)

All utilities are also available from Main Avenue. See Figure 14, p. 37.

All zoning restrictions are listed in the 1964 Uniform Building Code. Waivers on this code are fairly easy to obtain, should the need arise, through corroboration with the city planning office. The major effect of the zoning will be upon the design character of the building. This is due to the site being within the Redevelopment project and will be discussed in the next section of this paper. (15:1969)

PUEBLO CENTER REDEVELOPMENT PROJECT

CITY OF TUCSON, DEPARTMENT OF COMMUNITY DEVELOPMENT, URBAN RENEWAL DIVISION

Figure 9.



12

LEGEND

- | | | |
|-----------------------------------|-------------------------------------|-----------------------------|
| 1. ART CENTER & PLANETARIUM | 6. PIMA COUNTY GOVERNMENTAL COMPLEX | 11. THEATRE |
| 2. FEDERAL BUILDING | 7. HOTEL | 12. ARENA & EXHIBITION HALL |
| 3. CITY HALL | 8. LA PLACITA SPECIALTY SHOPS | 13. CATHEDRAL EXPANSION |
| 4. EL PRESIDIO UNDERGROUND GARAGE | 9. MUSIC HALL | 14. CENTRAL FIRE STATION |
| 5. COURTHOUSE | 10. FREMONT & OTHER HOMES | 15. POLICE STATION |

0 100 200

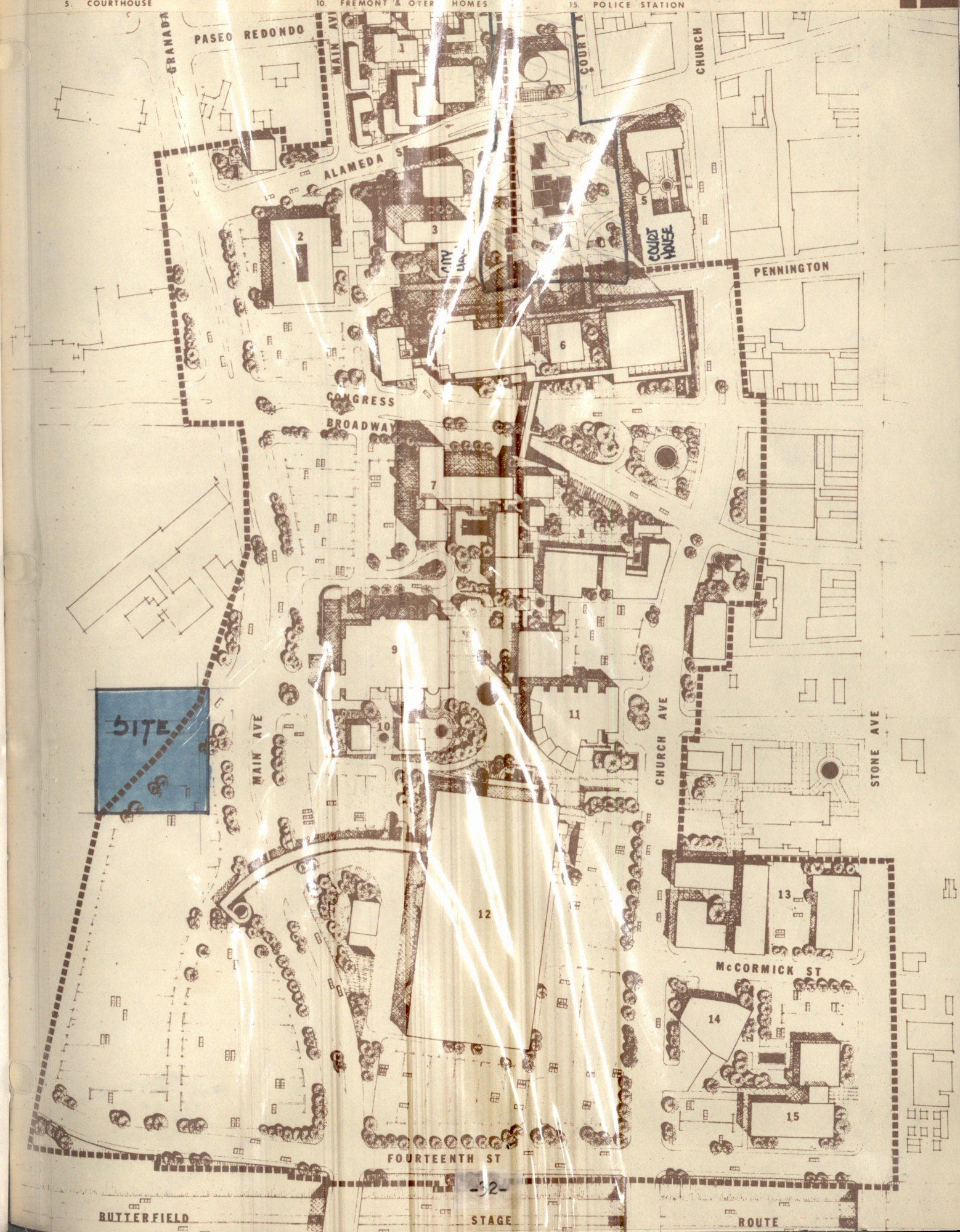


Figure 10.

Site Looking East
(Proposed Convention Center)



Site Looking North x Northeast
(Government Center)



Site Looking North
(Carl Hayden Memorial Hospital)



Figure 11.

Site Looking Northeast x East
(Central Business District)



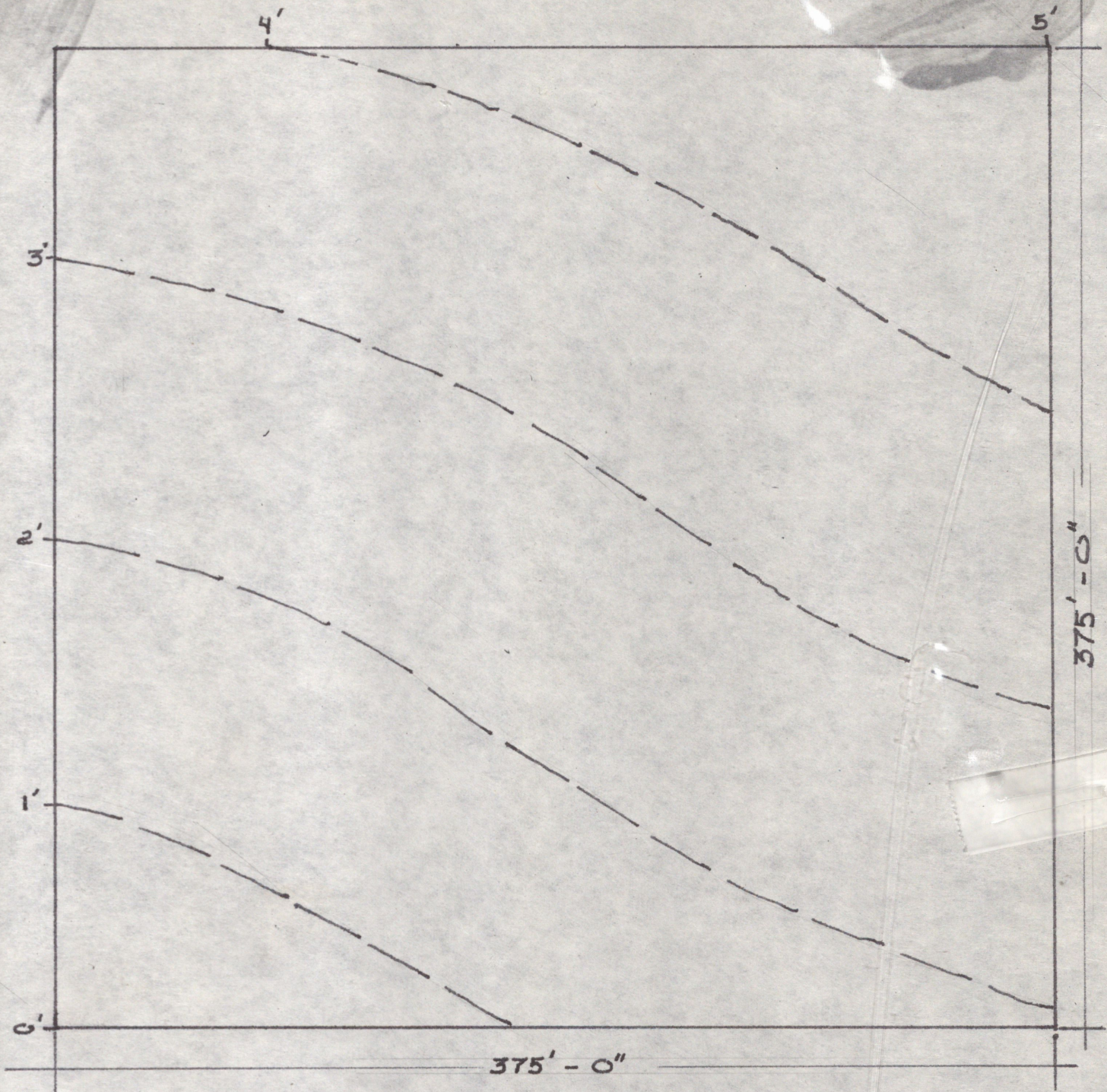
Site Looking South
(South Tucson)



Site Looking West
("A" Mountain)



Figure 12.

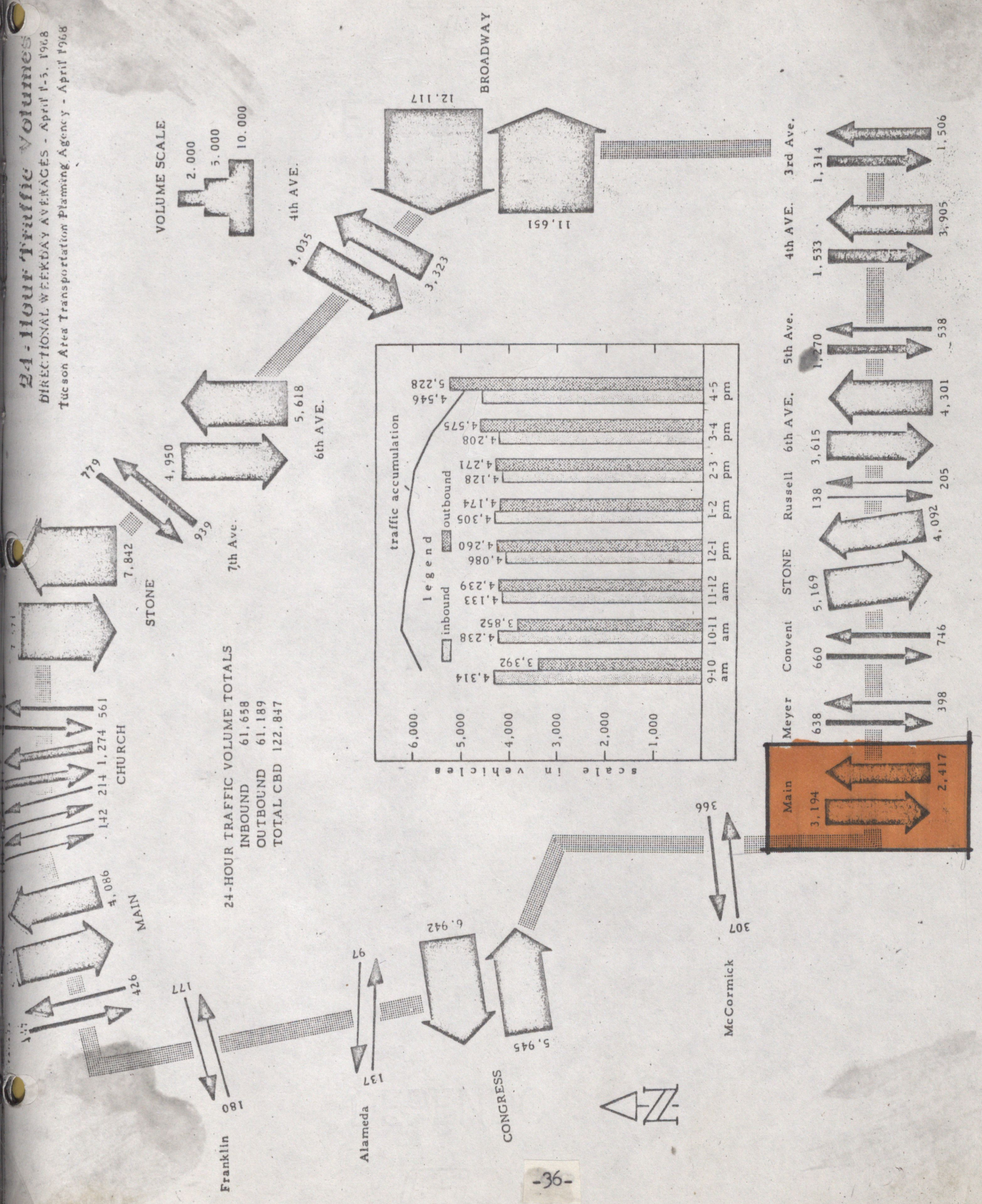


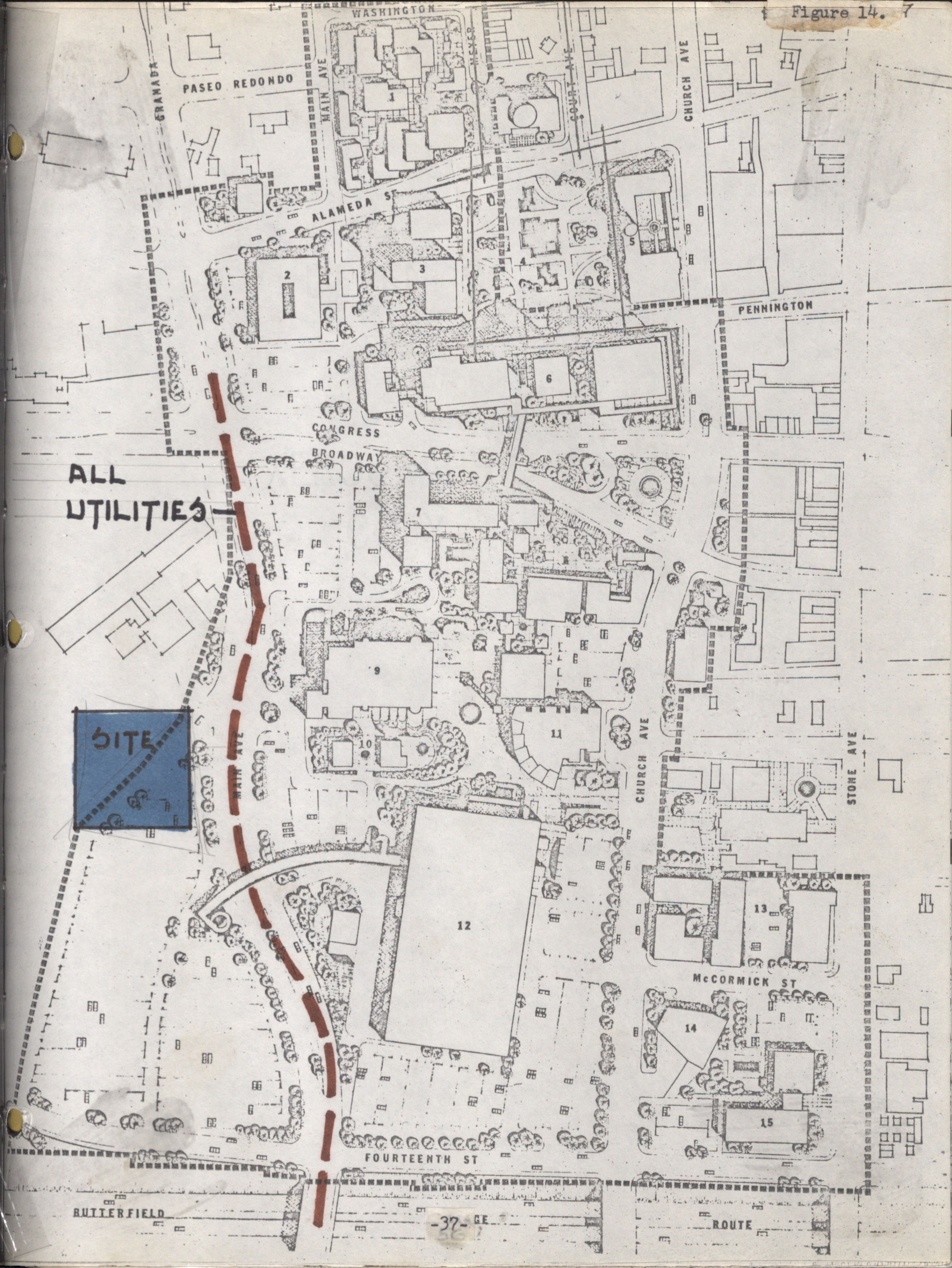
S I T E

NO SCALE

24-Hour Traffic Volumes
 DIRECTIONAL WEEKDAY AVERAGES - April 1-5, 1968
 Tucson Area Transportation Planning Agency - April 1968

Figure 13.





aesthetics

That portion of "well building" by Sir Henry Wotton, which he called delight (3:15), is an elusive and difficult term with which to work. Aesthetics, oftentimes considered a synonym of delight is also a term which cannot be dealt with directly. However, the meaning of this term is the heart of any artistic evaluation, and for my purposes must be abridged.

I do not feel that it is possible to establish an absolute criteria for which the composition of a building may be judged. I must therefore relate aesthetics to the solution of problems concerning context. My solution must relate to the existing forms, both natural and manmade, and possibly more important to the relation to the harsh climate from which these existing forms received their context. I believe the building itself will be a compromise between the natural context and the functions housed.

The museum, by its very nature, is a device for communication. (1:6) Its purpose is to communicate the arts in the most efficient manner. The museum must enhance that process, and in no way detract the visitor from that purpose. In the words of Michael Brawne, "Only the most anonymous and variable spaces can provide a satisfactory museum." (1:156) However, this does not imply that the museum must be without character.

Respect for the climate (at times extremely harsh) is undoubtedly the most important factor in the area of Tucson. Examples of the architecture, some very old, are shown in the photographs in Figures 15 and 16, pp. 40 and 41. Seen in these photographs are three primary methods of climate control, all of them dealing with the sun. The first two show the use of protective vegetation, although very effective, increasing the

humidity of the area. However, this is not a serious problem considering the air conditioning equipment available. The next two show the use of mechanical devices--sun screens, small windows, overhangs, etc. The last method is devised to reduce reflected radiation. This is accomplished by the use of colored materials, grass, brick, etc., around the sun sides of the building.

To conform to the restrictions of the Public Redevelopment project, there will have to be an awareness to the scale of buildings in the project. While concerning ourselves with form, the mountains to the west as well as the lack of forms to the south will be important. One very strong restriction placed by the Redevelopment project is that the building must be of a like material to those in the rest of the project. (15:1969) Fortunately, these buildings are a very neutral colored concrete. One advantage of this material is its anonymity. The proposed design must read as an individual element within the Pueblo Redevelopment Center.

Figure 15.

Prohibitive Vegetation



Prohibitive Vegetation



Mechanical Devices



Figure 16.

Mechanical Devices



Colored Materials



Colored Materials



program

GENERAL

The program for the Tucson Art Center evolved primarily from personal interviews with Mr. H. Gregg Swihart and Mr. Tom Wiper of the Art Center. Through their experiences as officials of the Art Center, they were able to supply nearly all of the present and projected needs affecting the program.

The completed building will house two primary activities, a museum and a school. A third function, common to both the museum and the school, is administration. Two aspects of these primary activities will have a strong influence on the design of the building. The first is the desirable flexibility for both spaces so that the environment may be changed as exhibitions and teaching methods change. The second is the conflict of the casual atmosphere of the museum and the bustling atmosphere of the school.

MUSEUM

The museum space will be oriented primarily for the casual visitor. It will consist of two exhibition rooms for presenting the Art Center's two permanent collections, Spanish Colonial and Pre-Columbian. These two spaces should have a definite character relating to the content of each.

The remaining exhibition spaces must present as many as twenty other collections, primarily traveling exhibits. Due to the varying size and character of these exhibitions, the spaces housing them should be as flexible and anonymous as possible.

The sculpture court, for exhibition of 3-dimensional art, is a very open, free space. Since the space allows for random circulation, it may also serve as the primary circulation space for the galleries.

Due to the delicate nature of the material presented in the galleries, the design must allow for strict lighting and climatic control within these areas.

In order that an optimum educational environment can be maintained within the school, the museum visitors should not be encouraged to wander aimlessly into the educational facilities. It is better that they should be received at an information center for direction to other parts of the Center.

SCHOOL

The school is operated on a trimester system, corresponding very closely to the schedule of the University of Arizona. The students are organized into three age groups--elementary school, high school, and adult. Curriculum variations are generally between the elementary group and the other two.

The differences in activities within the school, preclude some preliminary design considerations. Within the painting and drawing spaces, the equipment is easily moved and indicates very flexible areas. The flexibility is not possible in other areas such as ceramics, sculpture, and crafts.

A small auditorium will be desirable as an extension of the school, qualifying closely to the requirements of an intimate theater. Although the school will be the primary user of this space, lectures and films will also be presented for those on the membership roles.

The entire school should be separated yet available to the museum visitors through the administration area.

COMMON AREAS

The main common area will be that of the administrative area, which should serve as the circulation link between the two separate activities.

In addition, the mechanical and maintenance areas will also be common to both the school and museum.

MUSEUM SPACES

<u>Description</u>	<u>Area-Sq.Ft.</u>	<u>No.</u>
<u>Entrance</u>	1000	1
Function -	Provide a transition into the environment for groups as well as for individuals	
Relate to -	Sales and information, circulation area, coat room	
<u>Sales and Information</u>	1000	1
Function -	Space for sale of gifts and memoirs and to obtain information concerning the Art Center. May also serve as a security post.	
Capacity -	One staff member and four shoppers	
Relate to -	Administration and coat room	
<u>Coat Room</u>	150	1
Function -	For public and operated by sales personnel	
Capacity -	200 coats	
<u>Sculpture Garden</u>	3000	1
Function -	To see, to walk around, to touch sculpture, and to serve as circulation to galleries	
Character -	Free and open with vegetation	
Relate to -	All galleries	
<u>Permanent Gallery</u>	1500	2
Function -	Presentation of the permanent collections with reasonable flexibility	
Character -	Must relate to the periods exhibited	
<u>Small Gallery</u>	1500	1
Function -	Presentation of small intimate collections with extreme flexibility.	

Character -	Flexible and anonymous		
<u>Large Gallery</u>		3000	1
Function -	Presentation of large collections with extreme flexibility		
Character -	Flexible and anonymous		
<u>Medium Gallery</u>		2000	2
Function -	Presentation of varying collections		
Character -	Flexible and anonymous		
<u>Shipping</u>		1000	1
Function -	Loading dock for small truck (1½ tons) with space for crating		
Character -	Can be outside		
Relate to -	Receiving and school workshop		
<u>Receiving</u>		500	1
Function -	For organization of exhibits		
Relate to -	Vault, art storage, conservation room, gallery work areas, and administration		
<u>Conservation Room</u>		300	1
Function -	For repair of damaged art		
Related to -	Receiving		
<u>Vault</u>		150	1
Function -	For storage of extremely valuable art and some administrative papers		
Relate to -	Receiving		
<u>Art Storage</u>		1500	1
Function -	Storage of art not being exhibited		
Relate to -	Receiving		

<u>Gallery Work Areas</u>		500	2
Function -	Final exhibit preparation		
Relate to -	All galleries and sculpture garden		
Capacity -	One instructor and four students		
<u>SCHOOL SPACES</u>			
<u>Instructors office</u>		250	4
Function -	Work and counsel		
Capacity -	Two instructors and two visitors		
Relate to -	School and administration		
<u>Printmaking Studio</u>		600	1
Function -	Instruction and study of printing techniques		
Capacity -	One instructor and twelve students		
<u>Painting and Drawing Studio</u>		1000	2
Function -	Instruction in various painting and drawing techniques		
Capacity -	One instructor and twelve students		
<u>Drafting and Design Studio</u>		1000	1
Function -	Instruction in the art of design		
Capacity -	One instructor and twelve students		
<u>Ceramic Studio</u>		600	1
Function -	Design and construction of Raku pottery		
Capacity -	One instructor and twelve students		
Relate to -	Kiln room and glazing room		
<u>Kiln Room</u>		400	1
Function -	Drying and firing of Raku pottery		
Capacity -	One instructor and four students		
Relate to -	Ceramic studio		

<u>Glazing Room</u>	200	1
Function -	Mixing and application of glazes to ceramics	
Capacity -	One instructor and four students	
Relate to -	Ceramics studio	
<u>Crafts Workshop</u>	600	1
Function -	Instruction in design and construction of metal and fabric materials	
Capacity -	One instructor and twelve students	
<u>Sculpture Studio</u>	800	1
Function -	Design and construction of sculpture in various media	
Capacity -	One instructor and twelve students	
Relate to -	Shipping	
<u>Film Editing</u>	200	1
Function -	Composition of films	
Capacity -	One instructor and three students	
Relate to -	Photo lab	
<u>Photo lab</u>	200	1
Function -	Preparation of films	
Capacity -	One instructor and three students	
Relate to -	Editing room	
<u>Auditorium</u>	3500	1
Function -	For lectures, films, slides, and simple drama	
Capacity -	150 persons	
<u>Backstage</u>	7500	1
Function -	Preparation for performances and lectures, dressing, make up	

Relate to -	Stage in auditorium, school		
<u>Theater Lounge</u>		1000	1
Function -	Conversation and relaxation		
Capacity -	150 persons		
Related to -	Auditorium		
<u>Jury and Lecture Room</u>		750	1
Function -	Small class lecturing and judging of school work		
Capacity -	20 people		
<u>Student exhibition lobby</u>		Min. 1500	1
Function -	Display of student work and major circulation area		
<u>Coat Room</u>		200	1
Function -	For students and theater visitors		
Capacity -	250 coats		
<u>General Storage</u>		500	1
Function -	Miscellaneous and art storage for school		
<u>Men's Toilets</u>		200	1
Capacity -	Two water closets, two urinals, and three lavs		
<u>Women's Toilets</u>		300	1
Capacity -	Four water closets, three lavs, powder room		
 <u>COMMON AREAS</u>			
<u>Main Office</u>		300	1
Function -	Receiving visitors and coordinating administrative activities of the Art Center		

Capacity -	Two secretaries and four others		
<u>Staff Offices</u>		200	3
Function -	Private conferences, general office work, and counseling		
Capacity -	One officer and two visitors		
<u>Staff Lounge</u>		400	1
Function -	Relaxation, meeting, and reading		
Capacity -	Ten staff members		
<u>Library</u>		500	1
Function -	Study, reading, and browsing		
Capacity -	Twenty people		
<u>Conference Room</u>		400	1
Function -	Board meetings, staff meetings, general conferences		
Capacity -	Fifteen people		
<u>Kitchen</u>		150	1
Function -	Minor food preparation and coffee		
Capacity -	Two people		
Relate to -	Conference, staff lounge, members lounge		
<u>Members Lounge</u>		400	1
Function -	Meetings and conversation		
Capacity -	Ten people		
Relate to -	Volunteer work space		
<u>Volunteer Work Space</u>		200	1
Function -	Mailing and organization tasks		
Capacity -	Four people		
Relate to -	Members lounge		

<u>Maintenance</u>	100	1
Function -	Cleaning, storage	
<u>Mechanical</u>	1500	1
Function -	House climate control equipment	
<u>General Storage</u>	200	1
Function -	Storage of administrative supplies	
<u>Men's Toilet</u>	75	1
Capacity -	Staff only - 1 water closet, 1 lavatory	
<u>Women's Toilet</u>	75	1
Capacity -	Staff only - 1 water closet, 1 lavatory	
<u>Coat Room</u>	50	1
Capacity -	Staff only - 20 coats	

LIGHTING

Due to the deteriorating effects of light on all materials except metal, stone, and glass, it is desirable to have as little illumination as possible in the museum areas. The lighting within these areas should also be as flexible as possible.

Those objects insensitive to light should be lit with daylight fluorescent of 6500°K, and not exceeding 30 lumens/sq. ft. except for special emphasis.

Most other objects should be lit with daylight, tungsten, or fluorescent light at 4200°K, not to exceed 15 lumens/ sq. ft.

The most sensitive objects should be lit with tungsten filament, not to exceed 5 lumens/sq. ft.

General lighting requirements are as follows:

General museum	15 LSF
----------------	--------

Art gallery

Individual lighting	10 LSF
Vertical surfaces	20 LSF
Library	30 LSF
Offices	30 LSF
Drafting	45 LSF
Leather	100 LSF
Painting	70 LSF
Pottery	40 LSF
Weaving	70 LSF

CLIMATE CONTROL

Normal working areas should have a temperature range of 72°F to 84°F with a humidity range of 30% to 70%.

Museum areas shall be 60.8°F to 64.4°F with a humidity range of 58% to 62%.

All air entering the museum must be filtered of dust.

SECURITY

An extensive fire alarm and extinguisher system should be incorporated into the design.

A security alarm system is also necessary.

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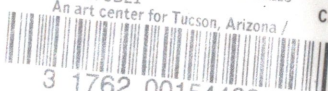
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