

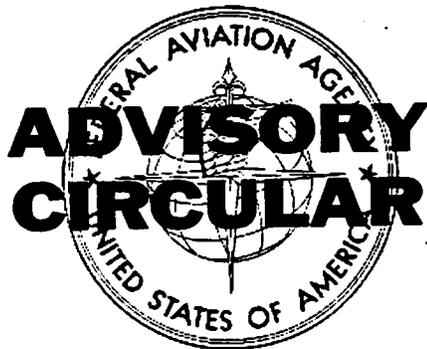
PLANNING THE AIRPORT INDUSTRIAL PARK



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DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

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SUBJECT : PLANNING THE AIRPORT INDUSTRIAL PARK

1. PURPOSE. This advisory circular provides guidance to communities, airport boards and industrial developers for the planning and development of Airport Industrial Parks. This presentation of current consolidated guidance material is intended to encourage the type of industrial development on and adjacent to airports which will be compatible with airport operations.

2. SCOPE. This material covers the planning, organizational control and operation of this type of industrial development and presents discussions and layouts of selected operating airport industrial parks.


Cole Morrow, Director
Airports Service

TABLE OF CONTENTS

<i>Paragraph</i>		<i>Page</i>
	Chapter 1. INTRODUCTION	
1. General -----		1
	Chapter 2. THE AIRPORT'S ATTRACTION FOR INDUSTRY	
2. General -----		3
3. Large Airports -----		3
4. Smaller Airports -----		3
5. Factors Influencing Airport Industrial District Development -----		4
	Chapter 3. HISTORICAL DEVELOPMENT OF AIRPORT INDUSTRIAL PARKS	
6. General -----		5
7. Transportation Hubs as Attractions for Industrial Development -----		5
8. Influence of the Motor Vehicle -----		5
9. Factory Design Concepts -----		5
10. Land Use and Zoning -----		5
11. Industrial District Development -----		5
12. The Airport Industrial Park -----		6
	Chapter 4. ORGANIZATION FOR DEVELOPMENT	
13. General -----		7
14. Municipally Owned and Operated -----		7
15. The Industrial Foundation -----		7
16. The Contract Developer -----		7
17. Private Developments -----		8
	Chapter 5. PHYSICAL PLANNING	
18. Coordination in the Airport Layout Plan -----		9
19. Location on the Airport -----		9
20. Taxiway Access -----		9
21. Railroad Access -----		11
22. Street System -----		11
23. Off Street Parking and Loading -----		12
24. Building Setbacks -----		13
25. Site Layout -----		14
26. Utilities -----		15
27. Park Center -----		15
28. Landscaping and Architectural Design -----		15
	Chapter 6. LAND USE CONTROLS	
29. General -----		17
30. The Comprehensive Plan -----		17
31. Zoning -----		17
32. Covenants, Restrictions and Development Standards -----		18
	Chapter 7. MANAGEMENT AND OPERATIONS	
33. Goals and Benefits -----		21
34. Economic Planning and Market Research -----		21
35. Preparation of the Physical Plan -----		21
36. Financing -----		21
37. Construction of Facilities -----		21

Paragraph	Page
38. Promotion and Sales -----	22
39. Continued Operations -----	22

Chapter 8. FEDERAL AND STATE ASSISTANCE

40. Federal Programs -----	23
41. The Federal Aviation Agency -----	23
42. The Housing and Home Finance Agency -----	23
43. U.S. Department of Commerce -----	24
44. State Programs -----	25

Chapter 9. BIBLIOGRAPHY OF REFERENCE MATERIAL

45. FAA Publications -----	27
46. Other U.S. Government Publications -----	27
47. Other Reference Material -----	27

Appendix 1. AIRPORT INDUSTRIAL PARK SURVEY

	Appendix 1 Page
Skywest, Hayward, California -----	1
Fresno Air Terminal, Fresno, California -----	4
Rancho Conejo Light Manufacturing and Research Center, Ventura County California -----	8
Irvine Industrial Center, Orange County, California -----	10
Oceanside Industrial Center, Oceanside, California -----	16
Fulton Industrial District, Atlanta, Georgia -----	18
Roncari Industrial Park, East Granby, Connecticut -----	21
North Central Industrial Air Park, Lincoln-Smithfield, Rhode Island -----	22
Brainard Industrial Center, Hartford, Connecticut -----	24
Greater Manchester Industrial Airpark, Manchester, New Hampshire -----	26
El Paso International Airport Industrial Park, El Paso, Texas -----	28

ILLUSTRATIONS

	Page
Figure 1. Industrial Park Located on the Opposite Side of the Runway from the Terminal -----	10
2. Industrial Park Located in the Vicinity of the General Aviation Area --	11
3. Industrial Park with Taxiway only to Lots Directly Abutting the Air- craft Movement Areas -----	12
4. Industrial Park with Taxiway into Aircraft Parking Apron Surrounded by Industrial Lots -----	13
5. Industrial Park without Taxiway Access Located Adjacent to the General Aviation Area -----	14
	Appendix 1 Page
6. Skywest, Land Use Plan -----	2
7. Skywest, Industrial Area Development Plan -----	3
8. Fresno Air Terminal Zoning Map -----	5
9. Fresno Air Terminal, Land Use Controls -----	6
10. Fresno Air Terminal, Industrial Lease Area -----	7
11. Rancho Conejo Light Industry and Research Center -----	9
12. Irvine Ranch General Plan -----	11
13. Avigation Easements for Orange County Airport -----	13
14. Irvine Industrial Complex -----	15
15. Oceanside Industrial Center -----	17
16. Fulton Industrial District, Vicinity Map -----	19
17. Fulton Industrial District, Master Plan -----	20
18. North Central Industrial Air Park, Development Plan -----	23
19. Brainard Industrial Center -----	25
20. Greater Manchester Industrial Airpark -----	27
21. El Paso International Airport Industrial Park, General Location Map --	29
22. El Paso International Airport Industrial Park, Master Plan-- Development -----	30

Chapter 1. INTRODUCTION

1. GENERAL

a. The airport industrial park is a recent trend in industrial development. Increased reliance on air transportation is attracting industry to seek sites on or adjacent to airports. There is therefore, a need to encourage this activity which is compatible to both the airport and the community from a physical, social and economic perspective.

b. In recognition of the need for current consolidated guidance concerning this subject, the Federal Aviation Agency surveyed representative airport industrial parks in the latter part of 1964, in order to determine their specific characteristics, and to identify the programs and procedures which contributed to successful development. Ten of the eleven projects surveyed were physically inspected. Guidelines presented in this advisory

circular are derived from the best practices demonstrated in the projects surveyed, tempered by the professional judgment of those who have contributed to the preparation of this circular. Appendix 1, "Airport Industrial Park Survey" presents the different approaches taken in the various surveyed projects in planning, financing, organization and management.

c. The integration of properly planned and organized industrial development with airport development can bring long term economic benefits to communities and to the airports which serve them and also bring relief to the pressing problems of airport zoning and compatible land use in the airport environs. In addition, the guidance in this advisory circular should serve to safeguard against economically unsound, and ill-planned developments by pointing out those elements required for a successful project.

Chapter 2. THE AIRPORT'S ATTRACTION FOR INDUSTRY

2. GENERAL. Within the past 10 years there has been a definite trend toward the location of planned industrial districts or industrial "parks" on or immediately adjacent to airports. Business is relying increasingly on air transportation because of the advantages it offers in speed, and the flexibility of operations. The following two sections discuss the relationship between industrial location and business flying at large airports with predominantly air carrier activity and at smaller airports which are used predominantly by general aviation and local service air carriers.

3. LARGE AIRPORTS.

a. The use of larger and faster turbine-powered aircraft has progressively increased at airports used by air carriers. During the fourth quarter of 1962, turbine-powered aircraft accounted for 81 percent of the revenue miles flown by the certificated route carriers.

b. Increased use of air cargo is demonstrated by the rise of 118 percent in the tons of enplaned air cargo in 1962, as compared with 1952.

c. This increased use of faster, more efficient aircraft for the movement of people and goods has been a definite inducement to the location of industry in the vicinity of the major commercial airports. "A Study of the Impact of Airports on the Market Value of Real Estate in the Adjacent Areas" by H. O. Walther, finds that ". . . Industries tend to locate near airports, which makes job opportunities and increases demand for other services." The purpose of Mr. Walther's study was to determine what effect three large commercial airports—John F. Kennedy International Airport, Chicago O'Hare International Airport, and San Francisco International Airport—have had on the market value of real estate in the adjacent areas. He reports that ". . . the impact of the airport has tended to

make this (Centex Industrial District, immediately west of O'Hare International Airport) one of the most active industrial sections in the metropolitan area of Chicago." He also reports a rise in industrial land values in the vicinity of San Francisco International Airport of 1,200 percent during the 10-year period 1950 to 1960. The few transactions noted in the vicinity of John F. Kennedy International Airport indicate that proximity to the airport was apparently responsible for higher prices paid for industrial properties.

4. SMALLER AIRPORTS.

a. General aviation flying is defined as all civil flying except that by air carriers. The size of the general aviation fleet in the United States has risen from 53,890 active aircraft in 1954 to 85,890 in 1964.

b. The business flying category of general aviation represents the use of aircraft as a transportation vehicle in the conduct of a business. The aircraft in this category are owned or leased by the company or individual, and are used in the business as a transportation vehicle, much the same as automobiles or trucks. Company-owned aircraft are used to transport executives, sales personnel, technicians and components from plant to plant and to customer locations, thereby saving time and enabling coverage of greater marketing territories.

c. It is estimated that over 10,000 American business firms now operate their own aircraft. Approximately 25,000 aircraft representing over 32 percent of the number of general aviation aircraft are used in business flying. In 1962, business aircraft flew 48 percent of the total miles in general aviation. The following figures for selected years depict the growth in business flying.

ESTIMATED MILES FLOWN IN BUSINESS FLYING

Year	Thousands of Miles	Percent of General Aviation Mileage
1931	13,391	14
1936	11,789	13
1941	27,439	8
1942	29,667	10
1946	121,530	14
1951	379,845	39
1956	672,000	51
1961	887,671	48
1962	934,659	48
1963	983,315	48

d. Although business used aircraft before World War II, significant growth in this use began after the war. The number of miles flown per year has increased approximately eightfold since 1946. This upsurge in the use of aircraft by business organizations has been followed by a new trend in industrial land development, a new concept called the "airport industrial park." At present over 200 airport industrial sites are reported to be in various stages of development.

e. Review of the primary aeronautical function at the airports at which these sites are located shows that approximately one-half of the airport industrial parks are at airports used primarily by general aviation. The remainder are about equally distributed between local service airports and airports whose primary user group is trunk, international, and territorial carriers.

At about one-half of these airports the longest runway is between 4,000 and 5,999 feet. Approximately 20 percent are under 4,000 feet in length and 30 percent over 6,000 feet. Those airports serving general aviation primarily and those with limited airline service are receiving the

most attention for industrial development, according to the review.

5. FACTORS INFLUENCING AIRPORT INDUSTRIAL DISTRICT DEVELOPMENT.

a. Robert Boley in Urban Land Institute's Technical Bulletin 41, "Industrial Districts—Principles in Practice" cites six related factors influencing the development of industrial districts in the vicinities of airports:

(1) High quality, high capacity highway access provided to serve the airport also provides direct and efficient access to nearby industrial facilities.

(2) Open land beyond the intensely developed sections of the urban areas served by the airports provides the required space for modern horizontal-type industrial facilities.

(3) Flat terrain required for airport development meets the needs of modern large-scale industrial site development.

(4) Utilities installed to serve airports can also serve nearby industrial facilities.

(5) Availability of air transportation, including commercial, air cargo and privately owned business aircraft is a bonus which results from airfield proximity, especially for selected industries.

(6) Prestige location results from the architecturally distinguished surroundings often found in major airport facilities.

b. Mr. Boley makes the valid observation that airport oriented districts are not equally appealing to all industries because of environmental characteristics such as noise, vibration and electrical disturbances as well as height limitations imposed on structures in the vicinity of the airport.

Chapter 3. HISTORICAL DEVELOPMENT OF AIRPORT INDUSTRIAL PARKS

6. GENERAL. Besides the airport's unique attractions, a brief look should be taken at the historical factors which have helped to bring about this new form of land development.

7. TRANSPORTATION HUBS AS ATTRACTIONS FOR INDUSTRIAL DEVELOPMENT.

a. There is a natural tendency for industry to concentrate at transportation hubs as has historically been shown by the early industrialization of the world's seaports, followed by the concentration of industry around rail terminal locations. Heavy industry and large bulk storage operations continue to depend upon the bulk shipping advantages of rail and water transportation. This tendency of industry to concentrate in transportation hubs has been the primary cause for the rapid growth of cities.

b. Most of the major industrial cities of the United States were laid out at a period when rail transportation was the predominant form for transporting goods. As a result, little consideration was given to the movement of goods and people on other forms of wheeled transportation. In fact, most of these cities were founded before the automobile was in existence. The concentration of industry, commerce, and dense residential development in the "central" cities has resulted in time in strangulation, due to the impact of the automobile age.

8. INFLUENCE OF THE MOTOR VEHICLE.

a. In most cities today, the automobile is the primary mode of transportation for people commuting to and from work. Although a few adequate mass transit systems do exist in this country, in the main, existing transit systems are recognized as inadequate. The use of private automobiles for daily transportation has created parking demands for these vehicles.

b. Since the end of World War II, the Nation has been forced into a vast program of highway and freeway construction because of the increase

in road traffic. These new and fast access routes have served to open up to development a great amount of land which previously was too remote from the central city to be considered for industrial sites.

9. FACTORY DESIGN CONCEPTS.

a. Obsolescence of the traffic circulation system in the central cities was also accompanied by decay and decline in the building construction in the original industrial areas. A good portion of these buildings, which date from the early nineteenth hundreds, are multiple story buildings with inadequate elevator facilities and are not generally suitable for modern production methods which depend to a great extent on horizontal flow of people and goods.

b. New technologies have also brought rapidly changing methods of production which imply the further requirement that factories be flexible. The square bay has been adopted by many factory designers and industrial engineers in an effort to achieve greater flexibility for changes of process. The concept of planning for expansion through factory design inevitably has resulted in the requirement for greater land areas for modern factories.

10. LAND USE AND ZONING.

a. Another problem of industries located in central cities has been the intrusion of other and often conflicting land uses. Zoning controls in most cities were not sufficient protection for industrial land, as industrial was often considered a "lesser land use" and other so-called "higher land uses" were permitted in zones of lesser use. In most industrial zones of central cities today, there is a mixture of incompatible land uses which contributes to the deterioration of the area.

11. INDUSTRIAL DISTRICT DEVELOPMENT.

a. Railroads and private real estate developers in the beginning of the twentieth century were

alert to the needs of industry to locate in a controlled area free from the intrusions of incompatible land uses and so situated as to efficiently provide rail service sites. To accomplish these ends profitably, preplanning and the formation of an organization for development, promotion, and continuing control were recognized as essential requirements. Successful planned industrial districts became a part of the urban scene in the larger cities in the early 1900's.

b. As industrial developers later faced the need to gain community acceptance for planned industrial districts in suburban areas where rezoning was essential to gaining community approval for industrial uses, it was necessary to establish additional environmental controls which would guarantee the aesthetic quality of the development, as well as adopting performance standards which would eliminate obnoxious aspects of industrial activity. The term "industrial park" began to be used after World War II to describe planned industrial districts which included the more restrictive standards.

c. An industrial park may, therefore, be defined as a particular type of a planned industrial district, the distinguishing features of which are long-range comprehensive planning, compatibility of industries and planned environmental factors such as architectural and site design, landscaping and performance standards. The managing organization bears the responsibility for the quality of the development by establishing

and enforcing restrictive covenants, development standards, and zoning controls.

d. Although the industrial park concept at first was oriented toward gaining community acceptance of rezoning for industry in suburban areas, the concept has proved to give protection to property values for both the developer and the industrial tenants.

12. THE AIRPORT INDUSTRIAL PARK.

a. The airport industrial park is a recent development which combines the attributes of an industrial park with the exclusive values of its airport location. The "airport industrial park" can be defined as an industrial park located on or adjacent to an active airport and designed to integrate air transportation into the industrial operation.

b. In addition to its airport location, the following are distinguishing features of the airport industrial park:

(1) Direct access from the industrial installations to the aircraft movement areas by taxiways leading from the industrial park, or close proximity to the aircraft parking aprons.

(2) Compatibility of locating industries which are interested in making maximum use of air transportation in the movement of personnel and products.

(3) Horizontal rather than vertical development of structures.

Chapter 4. ORGANIZATION FOR DEVELOPMENT

13. GENERAL.

a. The successful development of an airport industrial park is a complex task requiring the cooperation and coordinated efforts of both public and private interests.

b. Projects are not likely to be identical in sponsorship. The individuals and groups who may be involved in a project include the airport manager, the local government, the industrial development council or foundation, the local chamber of commerce, the Federal Aviation Agency, State aviation agency, the industrial commission, industrial developers, industrial realtors, airport planners, industrial development and engineering consultants.

c. To identify the contributions of these individuals and organizations, a description follows of the different types of project organizations which were formed to fit local situations.

14. MUNICIPALLY OWNED AND OPERATED.

a. The simplest situation is one in which the municipality is a free-holders' chartered city where the city can do anything in the realm of municipal affairs which is not prohibited either by the State constitution or the city charter. If the city is not prohibited from operating in a propriety capacity, it may operate the industrial park and perform all the management functions such as planning, writing leases with tenants, enforcing lease restrictions, etc. The management role in this case would normally be performed by the airport manager as principle executive of the airport board.

b. Promotion may be handled by the municipality itself with the help of the local chamber of commerce and the industrial development corporation. Marketing of leased sites can be done through a single representative or broker or by a standard agreement with all licensed real estate agencies.

15. THE INDUSTRIAL FOUNDATION.

a. A more common situation is one in which the municipality cannot manage the development because of statutory limitations or multiple jurisdictional control or wishes to free the development from political pressures and implications. A device often employed in these cases is the formation of an industrial foundation as the responsible organization for developing the property.

b. The industrial foundation assumes the management role, contracts for planning and engineering consultant services, appoints the agents for leasing or selling the lots, enforces the development standards and covenants or lease restrictions, and handles financial arrangements with the prospective tenants.

c. The municipality provides the utilities and site development and signs the sales contracts or lease agreements since the ownership of the property in most cases is not transferred to the foundation.

16. THE CONTRACT DEVELOPER.

a. If the municipality owns the land but cannot or does not wish to involve city personnel in the details of operating an industrial park it can enter into a contract with a developer.

b. The municipality enters into a long term lease with the contract developer. The contract developer assumes the responsibility of financing the development; preparing the development plan, development standards and standard lease contract forms; entering into contracts for engineering services; negotiating and signing sub-leases; promotion, and the continuing operation and maintenance of the project.

c. The one known case of this type of arrangement is at Hayward Air Terminal, Hayward, California, where the City of Hayward entered into a 50 year lease with Airport Investors, Inc.

of Hayward. The development plan, including standard lease clauses and development standards were adopted by resolution of the city council and thereby made binding documents to assure the city of a specified quality of development. The eventual revenue from the project is to be shared on a predetermined proportional basis between the municipality and the developer.

d. The advantages to the municipality of the contract developer method are the following:

(1) Minimum involvement of city personnel.

(2) Full-time operation and management by personnel fully knowledgeable in the field of land development.

(3) Ability of the developer to conduct negotiations for leases and entering into financial agreements and arrangements which the city may be prohibited from doing itself because of statutory limitations.

(4) The developer has a free hand to take advantage of whatever methods he deems proper for promoting the project. He is able to bargain for the best interests of the project.

17. PRIVATE DEVELOPMENTS.

a. It is often to the advantage of the municipality to encourage and cooperate with private developers who wish to develop property on or adjacent to the airport.

(1) At Brainard Field, Hartford, Connecticut, the city sold 157 acres of its airport property to a private developer who is developing the

Brainard Industrial Center. The remainder of the property was sold to the State as an airport and is one of the airports in the State of Connecticut Airport System. The municipality placed this property in a special industrial zone which requires higher standards of development than the typical industrial zoning provisions.

(2) At Orange County Airport in California, a large private development includes a 2,200 acre industrial park adjoining the airport known as the Irvine Industrial Complex. Cooperation between the county and the developer has resulted in adoption of avigation easements for all the property surrounding the airport which is under the control of this one developer. The county is providing taxiway access to the boundary between the airport and the industrial park. The developer, in turn, is providing taxiway access within his development for those industries which are air oriented.

(3) Another type of private development is one in which the developer builds an airport to provide air accessibility to a totally private development. The disadvantage to this approach is the lack of assurance that the airport will not be converted to other uses because of appreciation of the airport's land value brought about by the intensive surrounding development. Only through public ownership can assurance be given that the airport will not be abandoned because of pressures from other land uses and potential increases in local property taxes.

Chapter 5. PHYSICAL PLANNING

18. COORDINATION IN THE PREPARATION OF THE AIRPORT LAYOUT PLAN.

a. If the airport is considered a suitable location for an airport industrial park, the industrial park's location and land requirements should be taken into account during the preparation of the airport layout plan.

b. Economy of layout and operations requires that the airport industrial park be one contiguous area. In order to achieve this contiguity, careful study of the other airport land requirements must be made. It is advisable to free the maximum amount of land for industrial development consistent with retaining full expansion capability for essential airport uses such as aircraft movement areas, passenger and freight terminals, aircraft parking aprons, navigation aids, automobile parking areas and aircraft maintenance areas. Airports planning guidance is available from the Airports Branch of the FAA Area Office.

19. LOCATION ON THE AIRPORT.

a. The land available for development for an airport industrial park should be located so as to take full advantage of its airport situation.

b. A location which often is a good choice for the industrial park is on the side of the runway opposite the terminal. This is particularly true at airports used by air carriers, where diversion of industrial traffic from the terminal traffic boulevard is advisable. Also, in this area, airport supporting services are not competing for land to use for activities such as terminal auto parking and commercial concessions. (See Figure 1).

c. A location in the vicinity of the general aviation area has the advantage of being close to the area where the aircraft will be stored and maintained. This location keeps ground taxi time at a minimum. (See Figure 2).

20. TAXIWAY ACCESS.

a. The taxiway system connecting the aircraft movement areas with the individual units of the industrial park should be decided upon in the early stages of planning. The access routes are a determining factor in the development pattern. Proper planning of these traffic lanes will conserve land valuable for other uses—uses more productive of revenue. Determination must be made at an early stage of the proportion of the tract to be served by taxiways to the aircraft movement area of the airport. The airport owner reserves the right to establish a user charge for the privilege of access through these taxiways to the common use landing area.

b. Opinion is divided as to the necessity of providing taxiway access to each lot because of the relatively large amount of land this requires. In most cases a compromise can be reached by providing access to those lots closest to the aircraft movement areas. A 50-foot service taxiway within a 150-foot right of way is generally sufficient for business aircraft. To minimize conflict with the street system, it is recommended that the taxiway right-of-way be located at the rear of the lots served and that the blocks be long and narrow to reduce the number of intersections between streets and taxiways. (See Figure 1).

c. Two interesting variations for providing access to the aircraft movement areas are:

(1) A taxiway provided to those lots directly abutting the aircraft movement areas. (See Figure 3).

(2) A taxiway into an aircraft parking apron which is surrounded by industrial lots. (See Figure 4).

d. In projects where no taxiway into the airport industrial park is provided, reasonable accessibility can be had by locating the industrial area in close proximity to the general aviation apron. (See Figure 5).

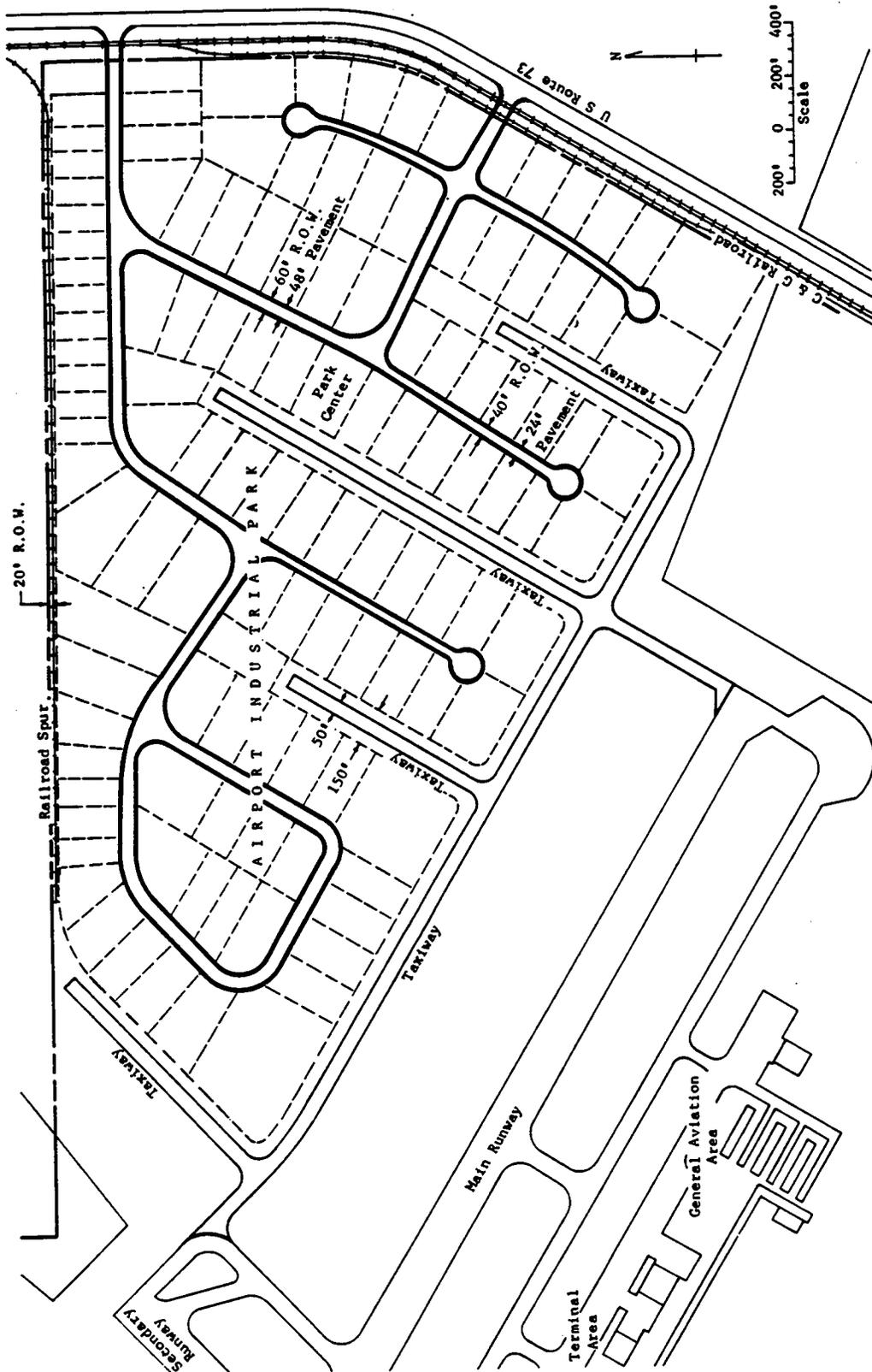


FIGURE 1.—Industrial park located on the opposite side of the runway from the Terminal.

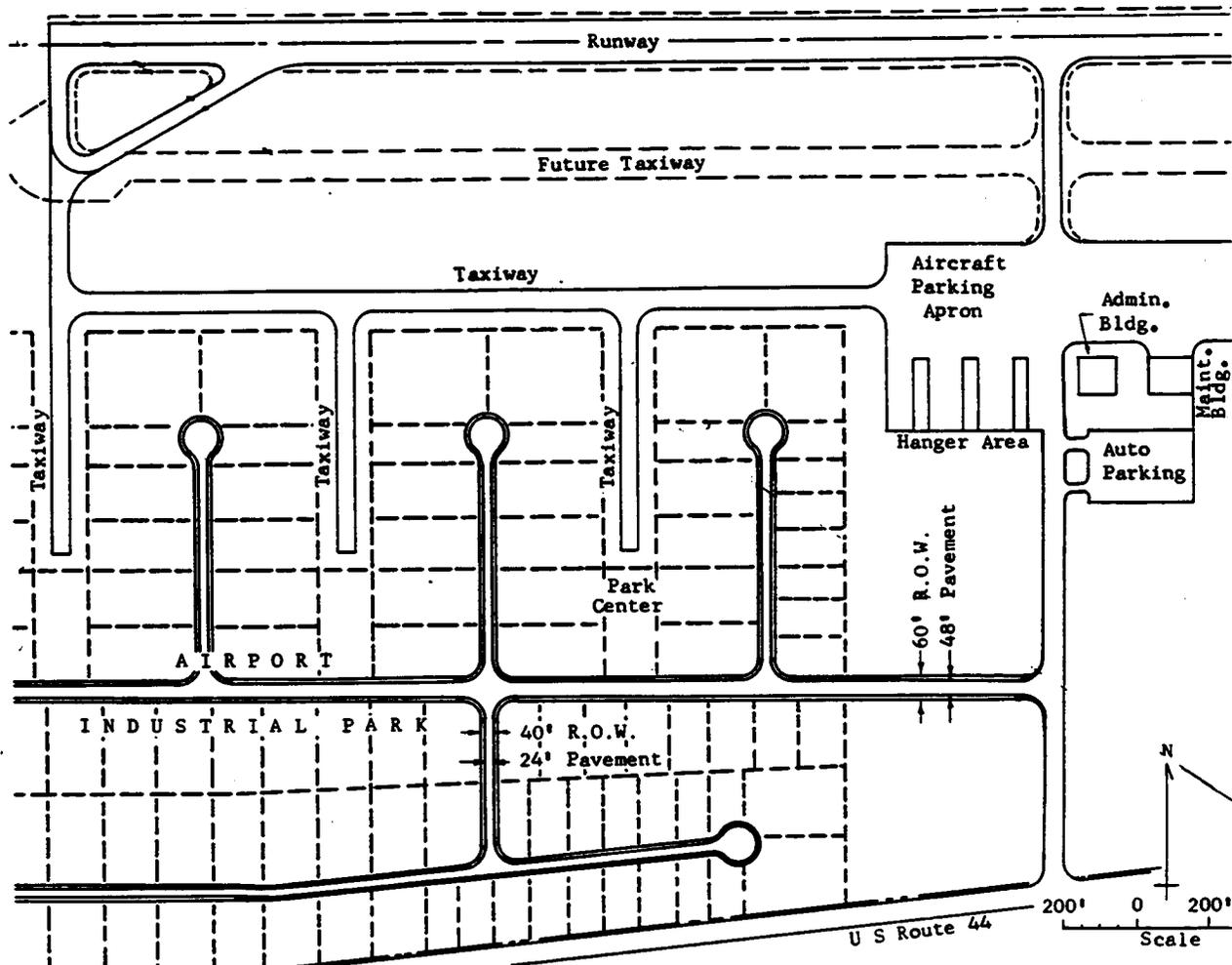


FIGURE 2.—Industrial park located in the vicinity of the general aviation area.

21. RAILROAD ACCESS.

a. If rail service is available to the site, a 20-foot right-of-way is sufficient for a single track spur. Determination should be made in advance of the proportion of the lots to receive rail service. The rail service right-of-way should be located on the opposite end of the lots from the vehicular right-of-way.

b. Contact with the railroad serving the area should be made to assure construction that will meet the railroad's standards. In most cases, cost of the railroad spur will have to be paid for by the management of the industrial park, but there are instances when the railroad has paid the cost of the spur track. Usually, if the railroad spur is paid for by the railroad, title to the right-of-way will have to be passed to the railroad.

22. STREET SYSTEM.

a. The widths of the right of way and the pavement depend on the anticipated traffic demand. Excessive pavement width, in addition to its high cost, has the tendency to encourage on-street parking which creates traffic problems. Minimum pavement widths and strict enforcement of on-street parking prohibitions are recommended.

b. Curbs and gutters rather than drainage ditches are recommended in order to keep the right-of-way width to a minimum; these will facilitate drainage of the site and also assure a cleaner, more attractive site.

c. Airport industrial parks surveyed show considerable variation in the widths of pavements and rights of way selected. With enforcement of

on-street parking prohibitions and the use of curbs and gutters, the right-of-way should be a minimum of 40 feet for a 24-foot (2-lane) pavement. These dimensions are sufficient for secondary streets. Additional lanes are required in larger developments to add capacity to meet peak hour demands. For larger developments, on streets which will have a substantial number of industrial installations, a 60-foot right-of-way is recommended so that two additional lanes of traffic can be added when the demand warrants.

d. For primary feeder streets, a minimum of 48 feet of pavement within a 60-foot right-of-way is recommended.

e. Street intersections should have a curb radius of at least 40 feet to accommodate tractor-trailer vehicles.

f. It is recommended that the number of entrances into the industrial park be as few as possible to discourage use of the circulation system by traffic which is not directly related to the park. The entrances should be from a public thoroughfare with at least equivalent capacity and be separate from the airport entrance road in order to avoid traffic mix with those vehicles serving or visiting the airport.

23. OFF-STREET PARKING AND LOADING.

a. *Off-street Parking* should be provided for all vehicles which come into the airport industrial park. Parking spaces should be provided for employees, visitors, company vehicles and all trucks.

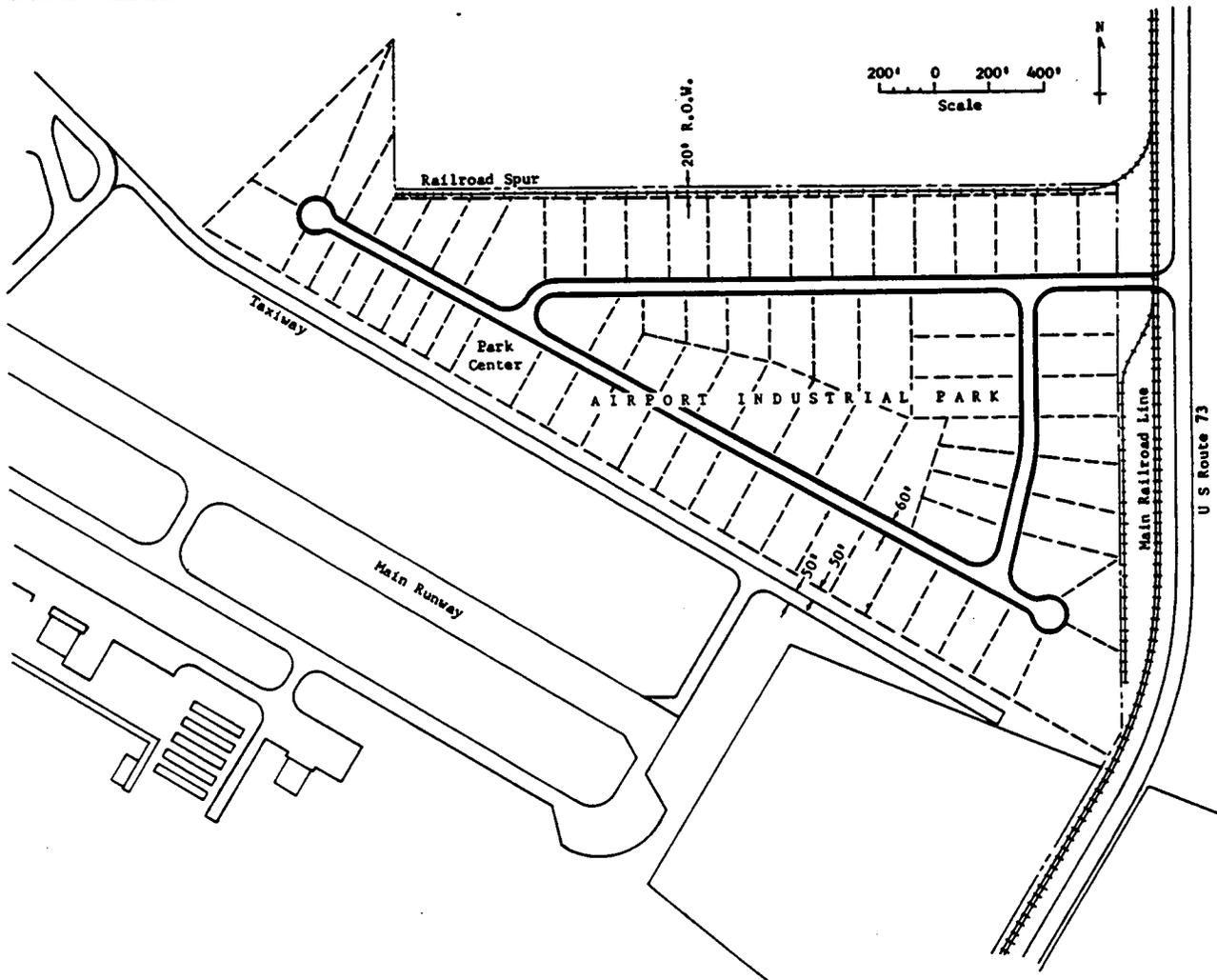


FIGURE 3.—Industrial park with taxiway only to lots directly abutting the aircraft movement areas.

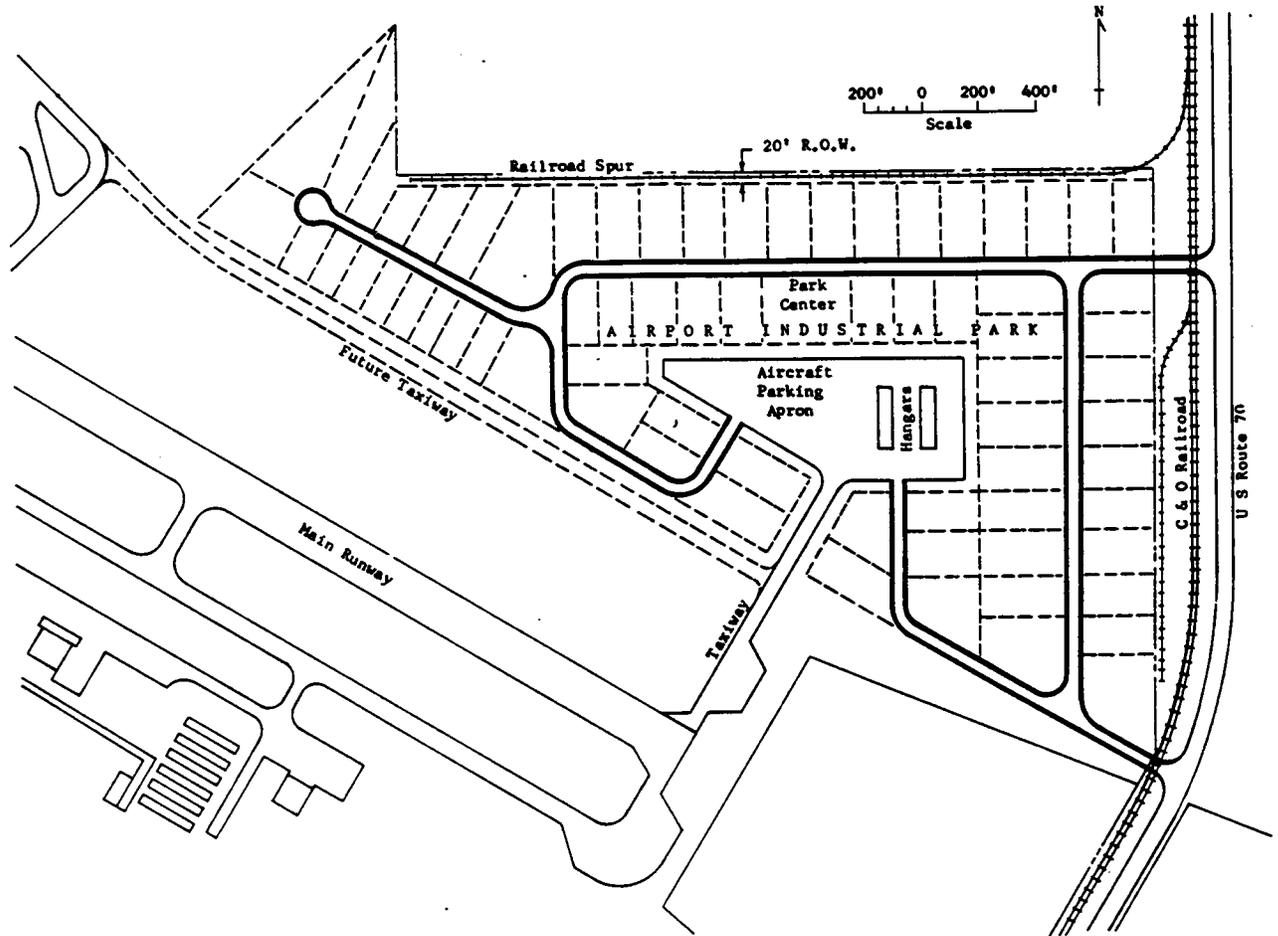


FIGURE 4.—Industrial park with taxiway into aircraft parking apron surrounded by industrial lots.

b. Employee Parking—In airport industrial parks virtually all employees drive to work. Consideration should be given to overlapping requirements of successive shifts. Provision should be made for one parking space for every 1.3 employees on the combined shifts. Allowance of 300 square feet should be made for maneuvering and parking each vehicle.

c. Visitor Parking—Parking space for visitors should be provided at the rate of one parking space for every 15 employees on the main shift.

d. Company Vehicles—Provision of one parking space for each company vehicle is recommended.

e. Truck Loading Docks—Loading docks should accommodate truck trailers and local pickup trucks. To accommodate truck trailers, berths should be 14 feet wide by 60 feet deep with an

additional depth of 60 feet for maneuvering. For local pickup trucks, berths 10 feet wide by 20 feet deep are sufficient with a 20-foot additional depth for maneuvering. Loading docks should not be located on the street side of the building.

f. Entrance Driveways—Entrance driveways for truck access should be offset from the truck parking ramp to prevent trucks from backing from the street into a loading dock. Curb radii of 25 feet minimum are recommended for truck access drives. Driveways for automobiles should have minimum curb radii of 15 feet.

24. BUILDING SETBACKS.

a. The airport industrial parks surveyed indicate a variety of setback standards which are generally related to the size of the lots in the particular developments. Aesthetic considera-

tions are significant and no single set of standards will be applicable to all airport industrial parks. The main goal is to retain a feeling of open space in the development. In addition, setbacks may be related to the topography, rougher terrain generally requiring greater setbacks to minimize the amount of site work to the developer and to neighboring tenants. On most airports, the land developed for industry will be relatively flat, which would permit setbacks to be the minimum required for aesthetic considerations, free movement of fire apparatus around structures and meeting the requirements of local ordinances.

b. A 30-foot front setback from the property line, using the street rights-of-way previously discussed, will allow approximately 36 to 48 feet from the edge of the street pavement. This should be sufficient in projects where the smallest lots are 1/2 acre or less.

c. Side and rear setbacks of at least 25 feet are recommended for fire safety separation, aircraft clearance and architectural harmony.

d. A further measure that is recommended for assuring the park-like quality of the development is to limit the amount of each site permitted to be occupied by structures. Site coverage of 60 percent should be a maximum although 50 percent is preferable.

25. SITE LAYOUT.

a. An airport industrial park should be at least 50 acres to justify the management effort required for planning, promotion, and continuing operation.

b. Block dimensions are determined in part by the depths established for groups of lots. Within the block it is then possible to adjust lot widths to suit the needs of individual tenants.

c. A variety of block sizes based on lot depths of 150 feet up to 500 feet allows for inclusion in the project of sites varying from about 1/3 of an acre to 10 acres. Minimum lot width should be about 100 feet in order to provide buildable sites for small industries.

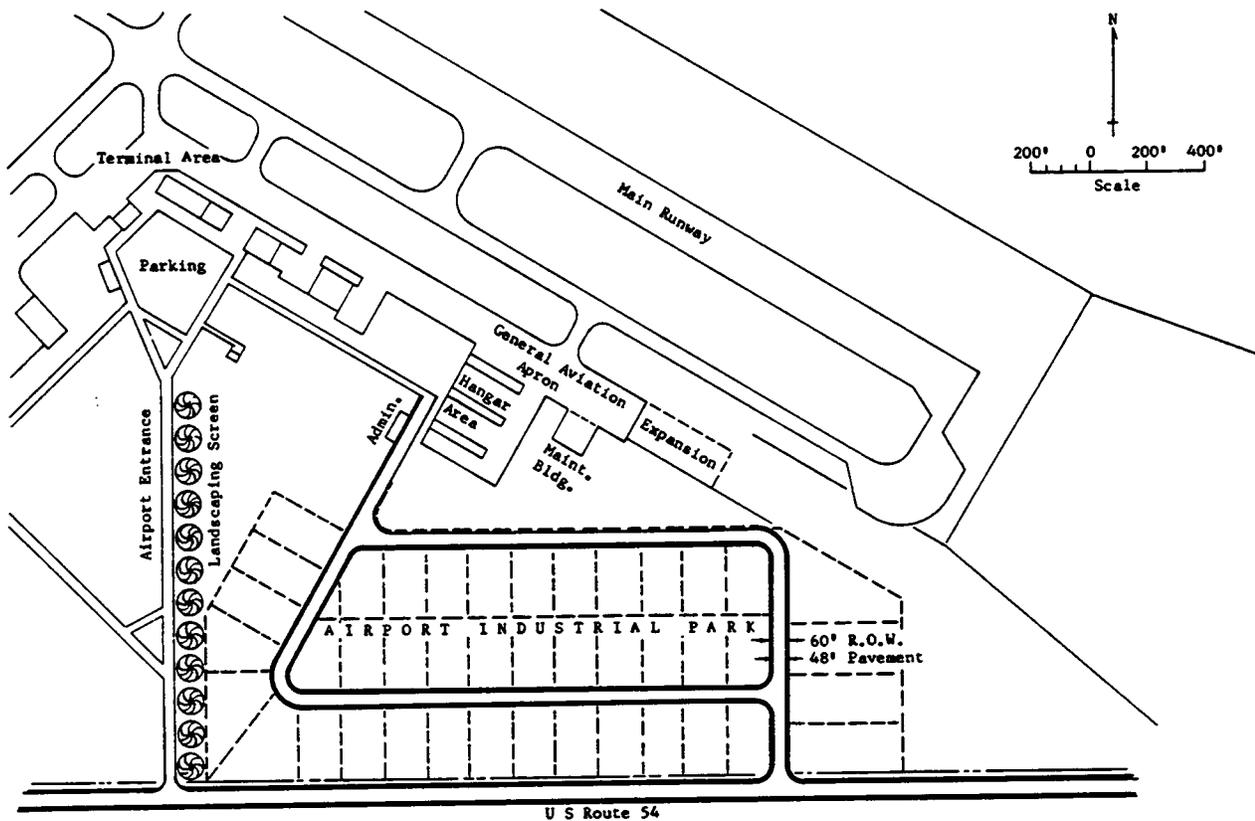


FIGURE 5.—Industrial park without taxiway access located adjacent to the general aviation area.

d. It is recommended that blocks be as long as practicable to reduce the costs incurred in the construction of cross streets. Within the industrial park, there is little need for lot-to-lot circulation because most traffic is to and from destinations outside the industrial park.

e. Stage construction usually is a necessity because of flexibility and cost considerations. Sections that are opened for development should be improved so that lots offered for lease or sale are developed lots rather than raw land. Streets and utilities should be provided ready for use at the sites.

26. UTILITIES.

a. Utilities that are essential are water, sanitary sewer system, electric power, gas distribution, fire hydrants and storm sewers adequate for drainage on and off site. Utilities are provided by the sponsor through his own resources, or by arrangement with the local utility companies, so that the tenant is only required to connect his installation to existing systems.

b. Utility easements may be provided in the rights-of-way reserved for streets or rail spurs. Underground utilities may be provided in aircraft taxiway rights-of-way.

27. **PARK CENTER.** Reservation of an area for a park center should be made in larger projects. This center would include the offices of the park management and maintenance functions. Facilities for the common use of park tenants could be offered, such as restaurant, banking facilities, small shops for sale of sundries and, possibly, motel facilities for the accommodation of overnight guests. Other commercial services and personal conveniences could be provided at the discretion of the park management in the park center.

28. LANDSCAPING AND ARCHITECTURAL DESIGN.

It is recommended that landscaping treatment of the common areas be performed by the park management in accordance with the project standard as an example of the level of quality expected of the tenants on the individual lots. It is advisable that a general landscaping plan be prepared for the entire project, including plantings for ground cover, screening, and accents. Architectural design of structures built by the managing organization also will establish the design standard expected from the tenants. A high standard of design in architecture and landscaping is a factor in attracting and keeping tenants as well as contributing toward public acceptance of the project.

Chapter 6. LAND USE CONTROLS

29. GENERAL.

a. Land use is normally controlled by the local zoning laws and restrictive covenants. Usually the land lies wholly within the boundary of one municipality and the approval of only the single government is needed. If the land lies within the jurisdiction of more than one local government, each government must give its approval for the industrial use of the property.

b. Zoning, to be effective, must be based on a comprehensive plan for the community or metropolitan area.

30. THE COMPREHENSIVE PLAN.

The comprehensive plan for the community or metropolitan area is an overall guide for directing the growth and development of the area. As such it involves consideration and coordination of land uses, transportation systems, traffic circulation, and the provision of community facilities. It is long range and establishes the general design for the community's development. Consideration of the airport's requirements affects all segments of the plan.

a. Height limitations for structures required for the safe operation of aircraft influences the land uses to be permitted in the approach zones of runways and in the general vicinity of the airport. Aircraft noise must be minimized in behalf of residential neighbors. Consideration of the essentiality of air transportation to the economic well-being of the community is of vital importance. The community planning staff has the responsibility of establishing a compatible land use pattern in the vicinity of the airport.

b. The design of the circulation system for the community should take into account the requirement for airport access. Coordination of the efforts of the city and the county (in the case of split jurisdiction) must be accomplished early in the planning process, and particularly prior to the acquisition of highway or freeway rights-

of-way. One case was recently brought to the attention of this Agency where a proposed freeway through a large city in a metropolitan area was located approximately one mile from the major airport serving the area and no direct access was provided from the airport to the freeway. This costly error occurred because the airport was located in the county and there was no coordination between the city and county jurisdictional authorities.

c. Planning for mass transit that takes the airport's needs into consideration can be of great help in reducing the air passengers' ground travel time. Excessive ground travel time is one of the principal shortcomings in the air transportation system.

d. Community facilities planning that recognizes the airport's needs and operations will provide sufficient utility service to the airport and also be effective in restricting places of public assembly from the approach zones of the airport. Advance planning for utilities, fire protection, and flood control is effective in encouraging industrial development in the airport environs.

31. ZONING.

a. Zoning is a recognized tool for effectuating planning. The weakness of many existing zoning ordinances is the classification of zones according to "desirability" or "quality" ranging from "single-family housing" as "most desirable" through "multiple-family, commercial, light industrial to heavy industrial" as "least desirable." These outdated zoning laws permit so-called "higher land use" in zones of "lesser land use", with the result that industrial zones often permit any and all other uses. More recent zoning ordinances include "exclusive use" provisions that exclude all but specified uses from a zone. Another recent innovation in zoning is the "special district" in which the ordinance specifies types of permitted uses and also imposes qualitative

and quantitative limitations as well as generally requiring adherence to a specific physical plan.

b. It is recommended that the airport be placed in an industrial zone if the existing zoning ordinance is of the more common type. This is a minimum legal protection for the airport from potential complaints from residential neighbors. If the zoning is of one of the recent varieties which includes either exclusive use provisions or special districts, greater protection can be given to the airport and to industrial development either on or immediately adjacent to the airport.

c. It is cautioned that zoning alone is not always an effective means of controlling land uses. Zoning control is the result of action of a legislative body, and as such, it is subject to revision or amendment by the same body.

d. In areas of multiple jurisdiction, effective zoning control requires cooperation and coordination of the jurisdiction concerned in order to be effective. The adoption of the same zoning classifications and definitions by both jurisdictions is often an involved problem that may require many joint conferences and considerable effort in a spirit of accommodation to reach concurrence.

32. COVENANTS, RESTRICTIONS AND DEVELOPMENT STANDARDS. Protective covenants, deed and lease restrictions, and development standards are the documents used by the airport industrial parks surveyed to control the type, character, and appearance of the development. Following are typical controls recommended for inclusion in such documents:

a. **Submission of Plans and Specifications.** The managing organization reserves the right to itself to approve the architectural and engineering plans for the structures as well as the site plan to assure compliance with the standards established by the organization and harmony of design with the remainder of the development. No construction is allowed to proceed prior to this approval.

b. **Height Restrictions.** No structure is permitted that would be an obstruction to air navigation as defined in Part 77 of the Federal Aviation Regulations. Building heights are generally restricted in airport industrial parks to

more stringent standards, based on the type and size of the development and also on the topography. The locations surveyed limit building height to 25 feet to 45 feet above finish grade. Exceptions are often permitted with the approval of the managing organization for special structures required to operate or maintain a building.

c. **Building Setbacks.** See Chapter 5, Paragraph 24 for the recommended building setback requirements.

d. **Construction Materials.** Materials recommended are those used for permanent-type construction.

e. **Signs.** Signs should be restricted to those that identify the name, business and products of the person or firm occupying the premises. No signs should be permitted which, through illumination at night or glare during the day, could create a hazard to aircraft. Restrictions on the size of signs and their heights above roof lines are usually included. The managing organization reserves the right of approval on all signs and advertising devices within the airport industrial park.

f. **Parking and Loading.** See Chapter 5, Paragraph 23 for the recommendations and restrictions.

g. **Outside Storage or Operations.** Generally restricted to the rear portion of the lot, these areas should be screened from view from the streets and adjoining lots. Volatile fluids and gases are generally required to be stored underground.

h. **Nuisances.** The following nuisances should be prohibited or subject to control: noise, smoke and particulate matter, toxic, noxious or odorous matter, glare, heat emission, accumulation of refuse or trash, keeping of animals or livestock, electronic and radio interference.

i. **Uses.** Restrictions may state either preferred uses or prohibited uses, or both. The Standard Industrial Classification of the 1958 Census of Manufacturers, U.S. Bureau of Census, is a reference for definitions of industrial activities.

j. **Landscaping and Grounds Care.** It is generally required that landscaping be provided adjacent to all streets. Some projects require landscaping of all areas not covered by buildings or

paved parking areas. "Skywest" at Hayward Air Terminal requires landscaping to be in accordance with the Corporation's general landscaping plan. This requirement was imposed in order to achieve coherence of design throughout

the project. Such a requirement is worthy of consideration.

k. Fire and Safety Hazards. No business or activity should be permitted that would be a potential fire hazard to surrounding property.

Chapter 7. MANAGEMENT AND OPERATIONS

33. GOALS AND BENEFITS.

a. The specific goal for the development of an airport industrial park is economic gain for the community through increased employment and the expansion of industry and commerce by the provision of attractive, efficient sites for industry. Additional benefits that accrue to the community and the airport are the increased usage of airport facilities and air services, the attraction of compatible neighbors to the airport and direct revenue from taxable building improvements and ground lease payments.

b. In order to achieve the above goals and benefits, it is imperative that an orderly procedure be established for accomplishing these ends. The job is best handled by an organization sufficiently staffed and with sufficient financial backing to carry through a project that may take 10 years or more to reach substantial fulfillment. Following are some of the tasks that must be undertaken and their relative time phasing.

34. ECONOMIC PLANNING AND MARKET RESEARCH.

a. Prior to the expenditure of funds for physical facilities, thorough research of the potential market for industrial sites in the community is required in order to determine the size of the development that can be marketed, the range of lot sizes most suited, the types of industries to be attracted and the potential lease or sales price of the developed sites. Analyses are required of population, economic trends and characteristics, including the type, character and availability of the local labor supply and the types of industries which would be interested in relocating or expanding to a new site. The local planning commission, chamber of commerce, or development group can often provide staff assistance in such studies.

35. PREPARATION OF THE PHYSICAL PLAN.

a. The preparation of the physical plan and feasibility study may be done either by in-house staff or by planning and engineering consultants. Based on analyses of existing conditions including topography, soil characteristics, location and character of utility services, on-site and off-site drainage, highway, railroad and airport considerations, the physical plan and feasibility study are prepared. The physical plan is the graphic presentation of the work to be undertaken. The feasibility study is the narrative description of the work, including preliminary estimates of costs, basic decisions concerning types, routings and overall sizes of supporting utility systems and recommendations for stage development.

b. With the physical plan and the feasibility report, market potential can be studied and the management decision can be made on the advisability of proceeding with the project.

36. FINANCING.

a. Financing arrangements are made prior to proceeding with detailed design and construction. Financing may be by revenue bonds, general obligation bonds, lease-back through a nonprofit corporation, or by assessment financing. Each of these methods was used in at least one of the projects surveyed. Determination of the type of financing will depend on local legislation and specific conditions related to each particular project. Investment brokers specializing in municipal securities can be retained to prepare the financial feasibility studies and to sell the bonds.

b. The preparation of a thorough and professional plan and engineering feasibility study in advance will be of great benefit in analyzing financing requirements and in marketing the securities.

37. CONSTRUCTION OF FACILITIES. Within the overall framework of the physical plan, detailed

engineering drawings and specifications are prepared for the first stage of the development. Construction of the first stage includes provision of all pavements and utilities for one segment of the tract.

38. PROMOTION AND SALES.

a. Although it is sometimes possible to arrive at contracts with prospective tenants prior to the actual construction of the first stage of the development, in most cases positive results can be achieved only after construction of the first stage is complete. Tenants want to be assured that no delays to occupancy will be occasioned by site development work.

b. Lots may be offered for lease or for sale, or both, depending on the individual situation and restrictions. It is advantageous to be able to offer a variety of proposals to prospective tenants. Some tenants prefer to lease, some prefer to buy outright and some prefer a package deal, where a complete facility including the building ready for occupancy is available. The latter arrangement is difficult for a public body to offer, but it is possible to provide through a worthy middle man who will assume the obligation of financing and constructing the facility and writing a sublease or mortgage contract with the tenant.

c. Promotion of the project is a costly and time consuming effort. Cooperation from local development groups can help focus attention on this project along with other industrial development projects in the community. It may be advisable to employ the services of a public relations firm to handle national advertising. It is advantageous to the development if the initial occupants are local companies who are dissatisfied with their present facilities. The existence of

industrial plants that are completed or under construction is then added inducement to new prospects. The airport location becomes a distinctive sales tool as it is possible to make arrangements to bring prospects by air directly to the site and return to their home office with a minimum of lost time. The distinct advantage of the airport location can thereby be established at the outset.

d. Sales may be handled by a resident development manager, a single real estate broker or by a standardized agreement with all bona fide real estate agencies. Reasonable commissions should be paid to any bona fide agent who delivers an acceptable tenant. Full cooperation of the real estate community will increase sales.

e. Lease and sales contract forms should be standardized to the extent that performance requirements for the tenants and all general terms are equivalent. The deed restrictions, covenants or development standards should be made a part of the lease agreement. The tenants' responsibilities and those of the management for operation and maintenance should be carefully delineated. Standardization of agreements will head off potential frictions between management and tenants and will promote good will.

39. CONTINUED OPERATIONS. A small permanent staff should remain as agent during the life of the project. Staff duties may be coupled with other duties related to the airport or the owning organization, but a definite point of contact must be maintained to handle new leases or lease renewals, approve plans for new or enlarged facilities, enforce development standards, proceed with additional stages of construction and oversee the maintenances of the common areas and facilities.

Chapter 8. FEDERAL AND STATE ASSISTANCE

40. FEDERAL PROGRAMS. Several Federal programs for financial aid, planning, and technical assistance are in existence which may be of interest to potential sponsors of airport industrial parks. The "Handbook of Federal Aids to Communities" for sale by the Superintendent of Documents and Field Offices of the U.S. Department of Commerce is a valuable guide to technical services, information sources and descriptions of financial aid programs of the Federal government, some of which are pertinent to the subject of this advisory circular. The planning and financing aids briefly described in this advisory circular are indicative of the types of Federal assistance available.

41. THE FEDERAL AVIATION AGENCY.

a. The Federal Aviation Agency is authorized under the Federal Airport Act to provide financial assistance for the accomplishment of airport development. This assistance is provided through a grant-in-aid program, the Federal-aid Airport Program (FAAP), for those locations included in the National Airport Plan. This Plan specifies in terms of general location and development, the projects considered by the Administrator to be necessary to provide a system of public airports adequate to anticipate and meet the needs of civil aeronautics. Federal grants under FAAP are on a matching basis with the Federal Government generally providing 50 percent of the cost of airport development and the local public agency the remaining 50 percent.

b. Public Law 88-280, approved March 11, 1964, which amended the Federal Airport Act to extend the time for making grants and other purposes includes authorization for the Administrator of the FAA to make grants to sponsors for the purpose of developing airport layout plans and plans designed to lead to a project application. Federal financial participation is limited to 50 percent of the estimated cost.

c. Detailed information concerning the Federal-aid Airport Program as well as technical advice and assistance on airport planning and construction is available from the Airports Branch of the FAA Area Office.

42. THE HOUSING AND HOME FINANCE AGENCY.

a. Public Facility Loans. The Community Facilities Administration (CFA) of the Housing and Home Finance Agency administers the Public Facility Loans (PFL) program to help local communities finance the construction of basic public facilities such as water and sewer systems, sewage treatment plants, hospitals and bridges. Assistance under the PFL program is available to local government agencies and public bodies with populations under 50,000, except in redevelopment areas designated by the Economic Development Administration of the U.S. Department of Commerce, and National Aeronautics and Space Administration affected communities where populations must be under 150,000. This program lends money for up to 40 years for any public facility other than schools, which the applicant has authority to finance and construct, provided the loan is financially sound and the applicant cannot otherwise obtain financing on reasonable terms.

b. Advances for Public Works Planning. The program of advances for public works planning is administered by the CFA. Its purpose is to encourage States and other public bodies to plan for current and future public works needs by preparing and maintaining a reservoir of well-planned public works projects that can be put into construction quickly, particularly if needed to bolster the local or national economy. The program is designed also to promote economy and efficiency in planning and building public works. These planning advances are repayable without interest when construction is started.

c. Urban Planning Assistance Program. The Urban Renewal Administration of the HHFA

through its Urban Planning Assistance program makes grants to assist State and local governments in solving planning problems resulting from increasing population concentrations in urban areas; to facilitate comprehensive planning on a continuing basis by such governments; and to encourage such governments to assist and improve planning staffs. Grants may cover up to two-thirds of the total cost of planning work (up to three-quarters for cities and counties in designated redevelopment areas under section 401 of the Public Works and Economic Development Act).

d. Community Renewal. Federal assistance from the Urban Renewal Administration may be given for urban renewal projects to local public redevelopment agencies (LPA) authorized by State and local law to receive such aid and to carry out the various activities involved.

(1) An urban renewal project may include diversified efforts by the locality to prevent and eliminate slums and blight. Although nonresidential clearance areas generally must be converted to predominantly residential uses, Federal financial assistance may be granted for an urban renewal area which is not predominantly residential in character before or after redevelopment if the local governing body determines the necessity of such nonresidential uses for proper development of the community.

(2) Federal aids include grants for Community Renewal Programs, planning advances, temporary and definitive loans for urban renewal projects, grants for urban renewal projects and demonstration grants.

e. Information. Further information on programs and activities of the Housing and Home Finance Agency may be obtained through its regional offices. Publications are available from the regional offices or from Housing and Home Finance Agency, Washington, D.C. 20410.

43. U.S. DEPARTMENT OF COMMERCE.

a. Economic Development Administration. Helping communities solve the problem of chronic unemployment or underemployment is the fulltime job of the Economic Development Administration of the U.S. Department of Commerce. The EDA assists communities in planning and carrying out long range programs of local economic develop-

ment. The program includes industrial loans, public facility loans and grants, technical assistance, and job retraining. These tools are designed to provide direct assistance to designated redevelopment areas and related economic development centers.

(1) The Economic Development Administration was established by the Public Works and Economic Development Act, Public Law 89-136.

(2) For detailed information concerning the EDA program, contact the Economic Development Administration, U.S. Department of Commerce, Washington, D.C. 20230. Following are brief descriptions of some of the current programs and guidance offered by EDA:

(a) **Industrial Loans.** The Economic Development Administration makes low-cost, long term loans for job-generating industrial and commercial projects. These loans can cover up to 65 percent of the cost of acquiring land, constructing buildings, and in cases of demonstrated need, purchasing machinery and equipment. EDA is not authorized to make loans for working capital, loans to assist in industrial relocation, or loans that will add to excess capacity.

(b) **Public Works Loans and Grants.** Funds are available to redevelopment areas for financing the purchase or development of land for public facilities and for financing the construction, rehabilitation, alteration, expansion, or improvement of public facilities that will contribute directly or indirectly to new and permanent commercial or industrial employment. If inadequate water systems, sewage disposal systems, access roads, railroad spurs, or other facilities are obstacles to bringing in new industry or expanding existing plants, EDA can lend and/or grant funds to have these facilities built or improved. The EDA works cooperatively with the CFA of the HHFA in assisting in the financing of public facilities.

(c) **Technical Assistance.** EDA makes three kinds of technical assistance available to redevelopment areas: technical publications that offer general guidelines useful to all of these areas; technical experts who pro-

vide, on a short term basis, on the spot guidance in solving the specific problems facing a particular area; and technical assistance projects which involve detailed studies of commercial or industrial development possibilities of a community or region. Technical studies cover, for example, the requirements of various industries so as to determine which industries are best suited to a particular area. Grants-in-aid to appropriate public or private nonprofit State, area, district or local organizations may be provided to defray not to exceed 75% of the administrative expenses of such organizations. Where practicable, grants-in-aid are to be used in conjunction with other available Federal planning grants.

b. Small Business Administration. The Small Business Administration has the ability to provide financial assistance to State development organizations, local development organizations and to individual small businesses. Loans to State and local development organizations are to be used in assisting specific small businesses.

(1) SBA loans may be made to small manufacturers, small business pools, wholesalers, retailers, service establishments, and to other small businesses for business construction, conversion or expansion, for purchase of facilities, machinery, equipment, supplies and material, and for working capital. The maximum loan that SBA may make to an individual borrower is \$350,000.

(2) To qualify for any type of loan under SBA's program, an applicant must be an identi-

fiable small business or approved small business "pool." A small business is defined as one which is independently owned and operated and which is not dominant in its field.

(3) State and local development organizations should contact Small Business Regional offices. Individual small business firms should contact SBA Field Offices for additional information and assistance. SBA Publications are available from SBA Field and Regional Offices and from Small Business Administration, Washington, D.C. 20417

c. Technical Assistance. The 39 U.S. Department of Commerce Field Offices provide economic information and guidance to community leaders and to local firms. The field offices carry out the field programs of the four major Commerce agencies—the Business and Defense Services Administration, Bureau of International Commerce, Office of Business Economics, and Office of Technical Services. They also disseminate Bureau of the Census data and serve as local information centers for other Commerce agencies.

44. STATE PROGRAMS. Many States have programs for airport development, financial aid for industrial development and financial and technical assistance for comprehensive planning. Typical State organizations which may be of assistance to potential sponsors of airport industrial parks are State Aeronautics Commissions, State industrial development commissions and State planning departments. Programs in individual States vary, therefore, sponsors should contact these agencies directly for specific information concerning types of assistance available.

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Appendix 1. AIRPORT INDUSTRIAL PARK SURVEY

Project Name: Skywest

Location: Hayward, California

Airport: Hayward Air Terminal

Sponsor: The City of Hayward and Airport Investors, Inc. of Hayward

Persons Contacted: Leigh Fisher, President, Airport Investors, Inc.

FINDINGS:

This project is a joint venture of the City of Hayward and the Contract Developer, Airport Investors, Inc. The project includes 300 acres within the boundary of Hayward Air Terminal. Not included in the project is that area designated Public Airport Area, which is under the operational control of the Airport Manager. Areas have been reserved for the following land uses: Industrial park of 130 acres, general commercial, garden apartments, commercial—combined aviation and general commercial, aviation commercial, unit hangar and tiedown, golf course.

The Development Plan was adopted by resolution of the city of Hayward and includes the following:

- a. Physical Plan
- b. Development Standards
- c. Standard Lease Clauses

The agreement between the city and the contract developer delegates to the contract developer the entire responsibility for leasing the parcels, planning the details, approval of all plans for improvements to be built upon the parcels in accordance with the development standards, and direction of all phases of the operation for this

development. The city will share 50 percent of the developer's profits.

The advantages to the city of the contract developer method are the following:

- a. Minimum involvement of city personnel.
- b. Freedom of the contract developer to conduct negotiations and enter into agreements such as building for lease, which the city would not be permitted to do directly.

The 130 acre industrial park includes an aircraft taxiway system with direct access to the aircraft movement areas of the airport and rail spurs to a portion of the development. Minimum lot size is 10,000 square feet with maximum lot coverage of 60 percent.

Under the terms of a 50-year development lease, the contract developer is empowered to enter into long term subleases. The land remains under city ownership, but tenants will be permitted to subordinate their leaseholds.

The following features are considered by the developer as favorable aspects of this development:

- a. Verified market for the parcels in the designated land use areas.
- b. Excellent transportation facilities including highway, rail and air. The area in the future will be served by the Bay Area Rapid Transit System.
- c. Comprehensive planning for the complete development.
- d. Enforceable high standards of the development which will protect property values.

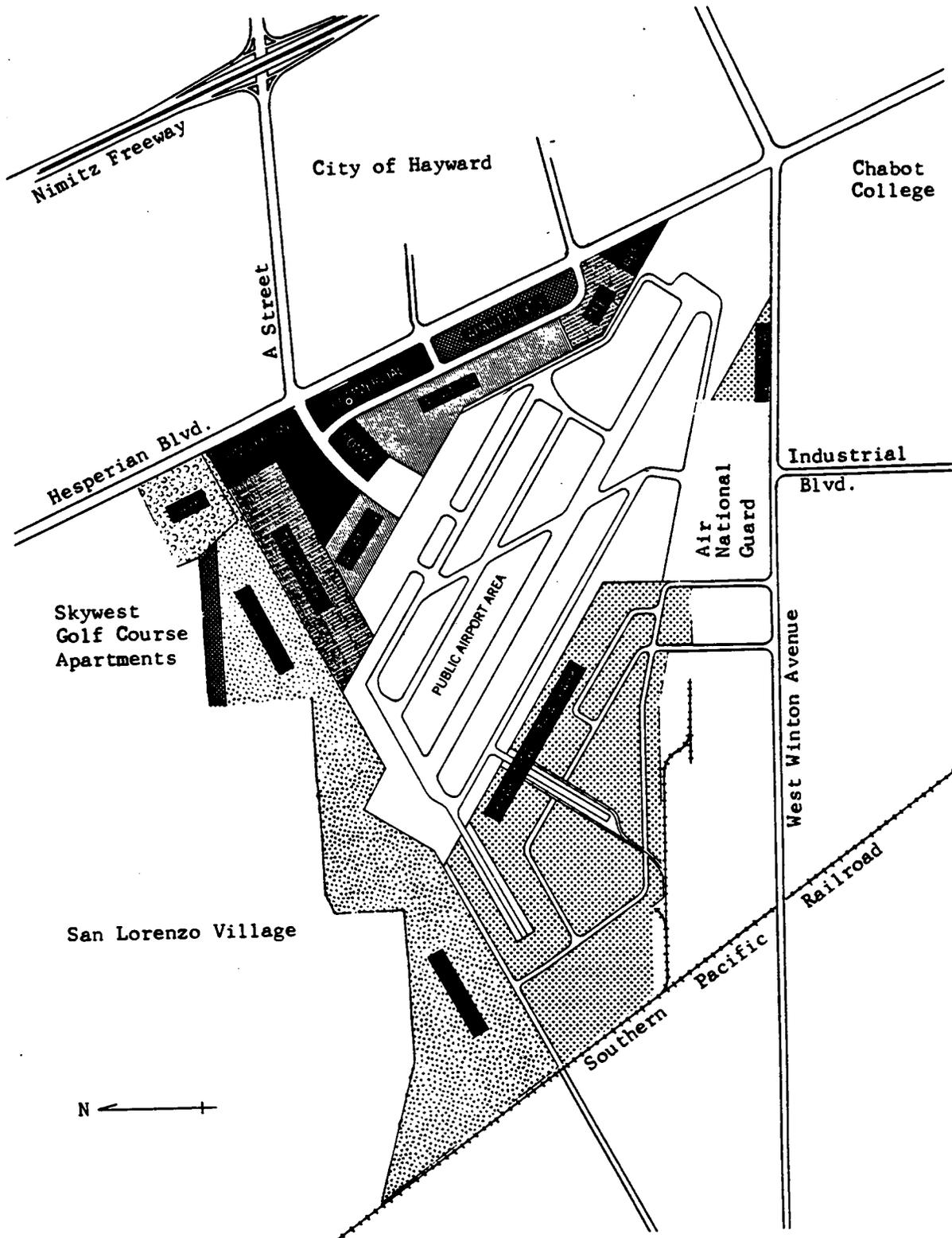


FIGURE 6.—Skywest, land use plan.

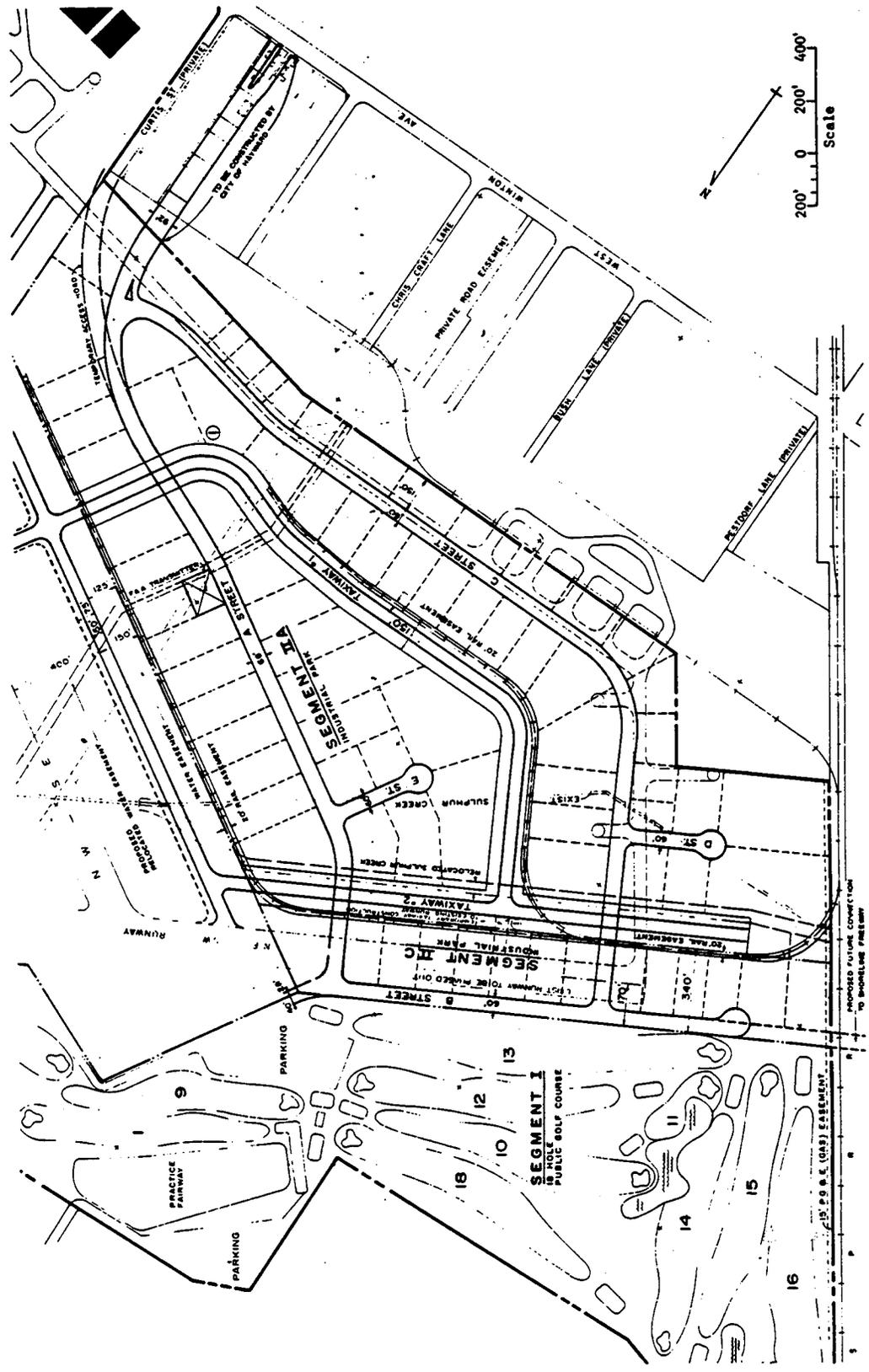


FIGURE 7.—Skywest, industrial area development plan.

Project Name: Fresno Air Terminal
Location: Fresno, California
Airport: Fresno Air Terminal
Sponsor: The City of Fresno
Persons Contacted: Wilmer Garrett, Airport Manager

FINDINGS:

Fresno Air Terminal has 65 acres of airport property planned for industrial sites. There is no direct taxiway access, although the property is adjacent to the General Aviation area. The airport manager believes that the provision of a direct access taxiway would remove too much of the available land from development and also create auto-aircraft traffic problems. In addition the possibility of a lessor competing with the fixed base operators would create management problems.

The recapture clause at Fresno Air Terminal has been eliminated, which simplifies financial arrangements with prospective tenants. Leases are based on 6 percent per annum of the fair

market value of the land, renegotiable at the end of each ten-year period, based on reappraisal at that time.

The City's M-1 and M-1 P Zoning restrictions are the only restrictions on the use of the land.

The land use plan for Fresno Air Terminal was adopted in 1958 by the City and the County. It was reevaluated in 1963 based on recent aircraft noise criteria. Airport zoning has been effectuated by close cooperation and coordination by the airport manager and the Planning Departments of the City and the County. The initial step in this coordinating effort was the adoption of common zoning classifications and definitions by the City and the County. It is considered that the placing of the airport in the M-1 zone has been excellent protection for the airport against lawsuits from residential complainants. Further protection for the airport was provided in 1963 by the adoption of the Park-Recreation and Sports Center Plan, which provided additional buffer zones to the residential areas in the vicinity of the airport.

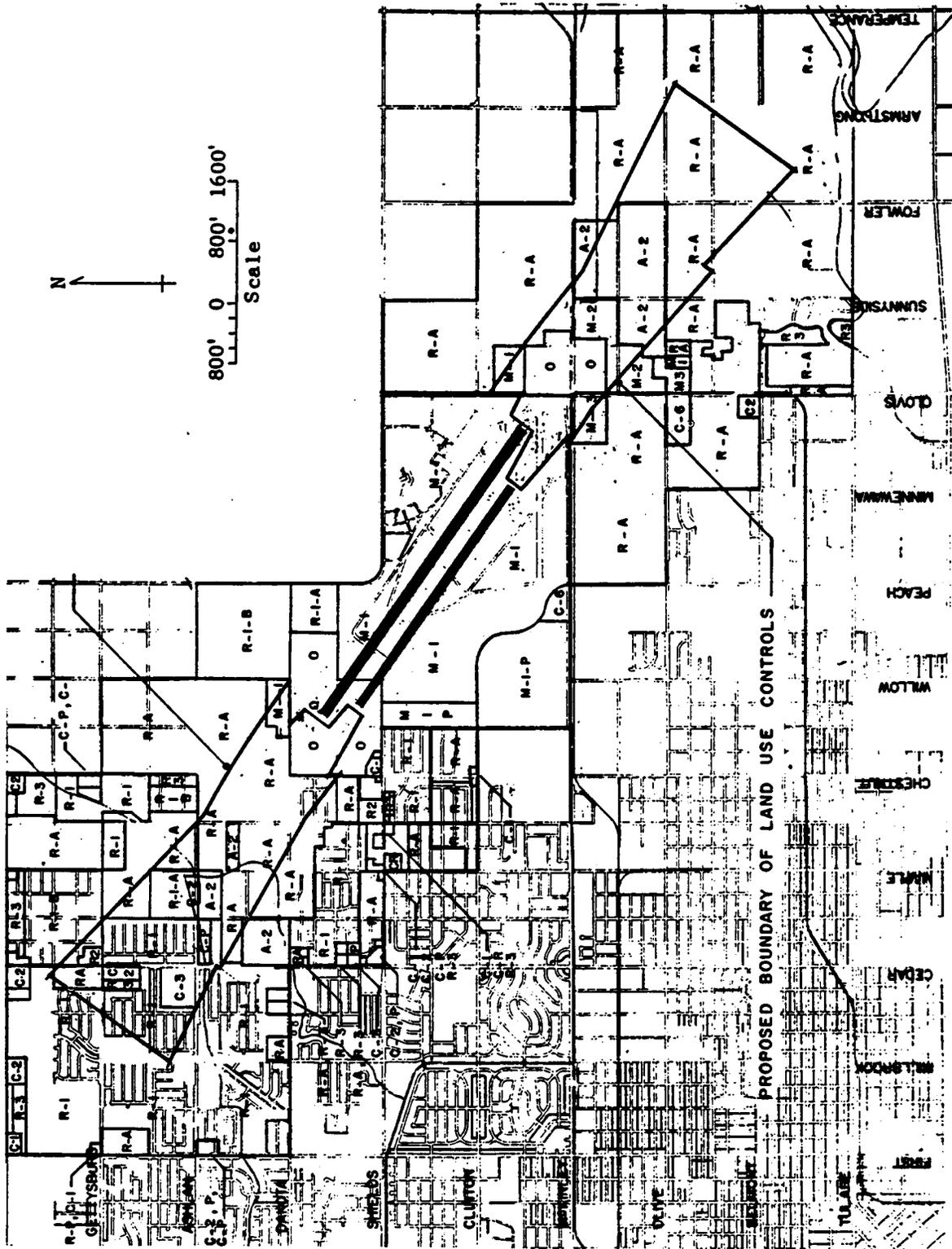


Figure 8.—Fresno Air Terminal, zoning map.

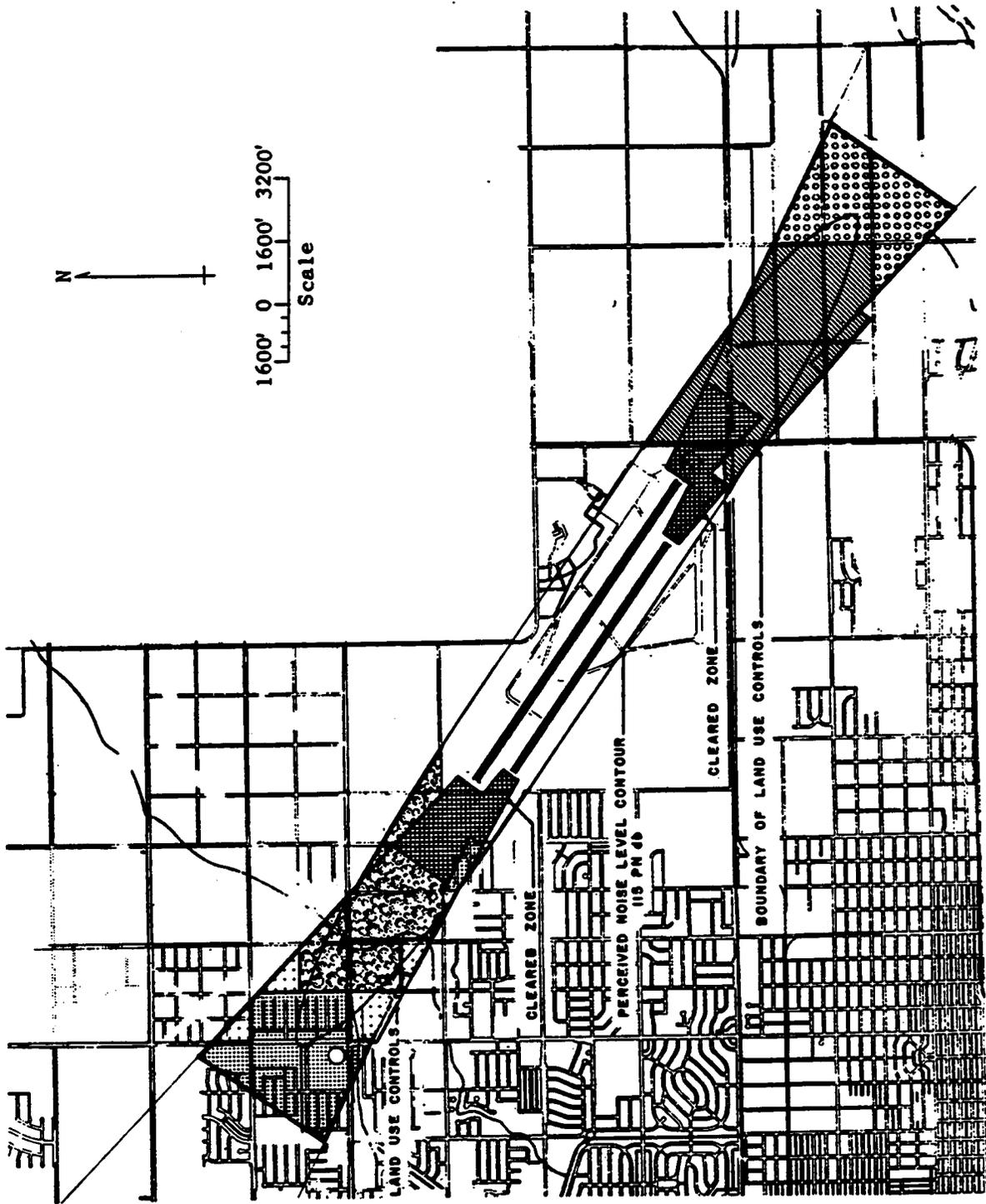


FIGURE 9.—Fresno Air Terminal, land use controls.

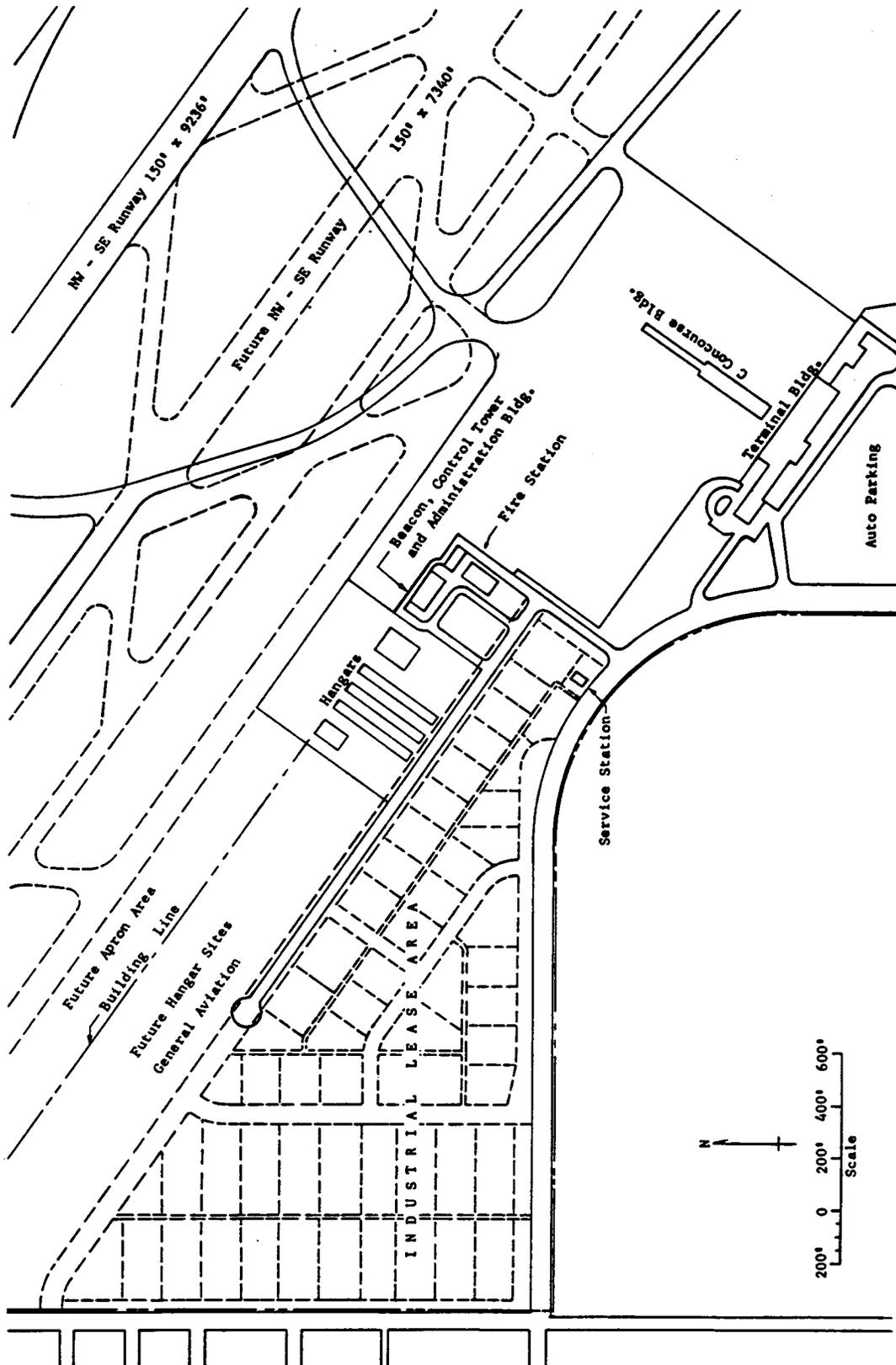


FIGURE 10.—Fresno Air Terminal, Industrial Lease Area.

Project Name: Rancho Conejo Light Manufacturing and Research Center

Location: Ventura County, California

Airport: Rancho Conejo Airport

Sponsor: Janss Corporation, Thousand Oaks, California

Persons Contacted: James C. Ellis, Vice President, Janss Corporation

FINDINGS:

This airport oriented industrial park includes approximately 1,000 acres and is part of a 10,000 acre planned community development. The Conejo Valley was bypassed by the railroads in the early days and consequently has no rail service. Janss Corporation built the airport to help counterbalance the lack of rail service. The 4,300-foot paved runway is adequate for the business aircraft expected to use it. The airport has runway lighting and has 50 hangar spaces. There is a full time airport manager and fixed base operator.

The airport is considered a substantial fringe benefit which has been a useful personalized element in attracting new industries whose executives are air oriented. The Janss Corporation operates three aircraft which are used to bring prospective tenants to the site.

Comprehensive planning is considered by the Corporation to be the most important element

for success of this development. The corporation maintains a full time in-house planning staff headed by an architect/planner with six architects and eight planners on the staff. The developer's intent is to provide all desirable elements of community life.

Land is sold or leased according to the tenants' requirements. Financial arrangements are made either by investment lenders or by the Corporation according to the individual tenant's need. The corporation will also build for a tenant to his specifications or will build to suit the buyer of the property.

The Declaration of Restrictions limits uses to the following: light industrial, including light manufacturing, warehousing, research and development or other similar or related purposes. Included in the restrictions are on street parking prohibitions, off street parking requirements, loading requirements, performance standards to control nuisances, architectural design and landscaping standards including review procedures, setbacks, building height limitation and operational regulations.

The developer feels that the combination of careful planning, strict controls, strategic location, the variety of financing and building arrangements available, and the excellent transportation facilities are the factors that favor this development.

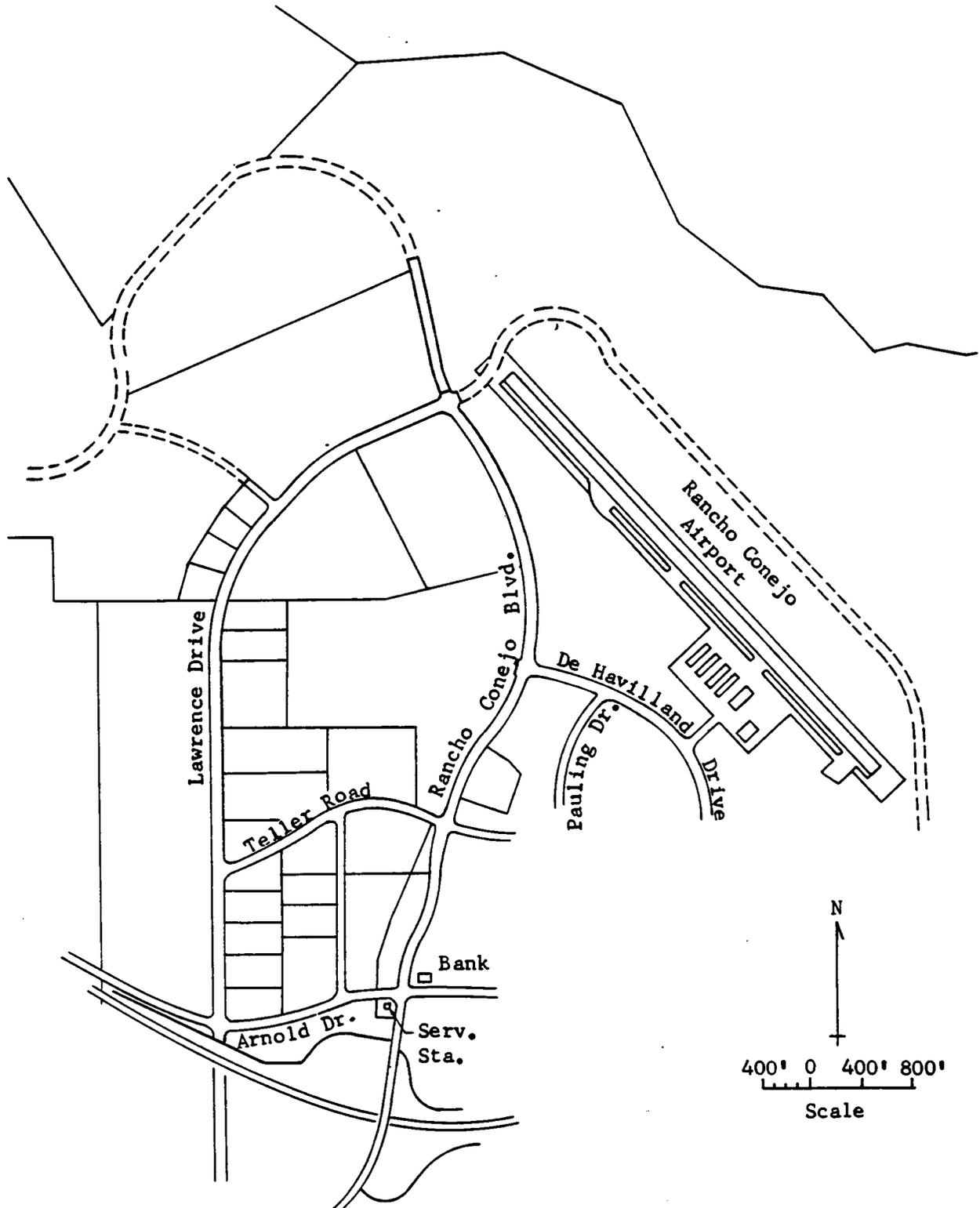


FIGURE 11.—Rancho Conejo Industry and Research Center.

Project Name: Irvine Industrial Complex

Location: Orange County California

Airport: Orange County Airport

Sponsor: The Irvine Company

Persons Contacted: W. R. Mason, Vice President, Engineering, The Irvine Company; George H. Cormack, Real Property Services, County of Orange.

FINDINGS:

The Irvine Industrial Complex, a wholly owned subsidiary of the Irvine Company, is developing an Industrial Planned Community which is a part of the master plan for the Southern Sector of the Irvine Ranch. The Irvine Industrial Complex owns 2,600 acres surrounding Orange County Airport. Access to four major freeways, as well as rail service, is provided. The portion of the complex to the west of the airport will have direct taxiway access. That portion on the terminal (east) side will be reserved for airport commercial and research-oriented industry.

The total area of the Southern Sector of the Irvine Ranch now planned includes over 30,000 acres. It will have a projected population of 275,000. Comprehensive planning for the entire area is a joint effort of Orange County and the land owner. Approximately 2 years of work were spent on solution of airport and freeway conflicts in order to protect the airport. A joint effort of the County and the Irvine Company re-

sulted in the adoption of an Avigation Easement Map in March of 1964, which will give permanent protection to the airport approaches.

The Orange County Airport is under the control of the Department of Real Property Services of Orange County. The new master plan for the airport takes into consideration the provision of access taxiways to the airport property line abutting the industrial park complex.

The developer considers that the following factors favor this use of the land area adjacent to the airport:

- a. Marketability of sites based on economic analyses and projections.
- b. Comprehensive planning of an entire community with excellent cooperation between the developer and the County.
- c. "Industrial Planned Community" ordinance adopted by the County in 1964 includes more protective provisions than normal industrial zoning
- d. Focal point of transportation facilities including highways, rail and air service.
- e. Variety of financing arrangements. Financing will be done by the corporation or by mortgage lenders. The corporation will sell, lease, build and sell, and build and lease as appropriate to meet the needs of the tenants.
- f. Architectural and development standards will be under the control of the corporation.

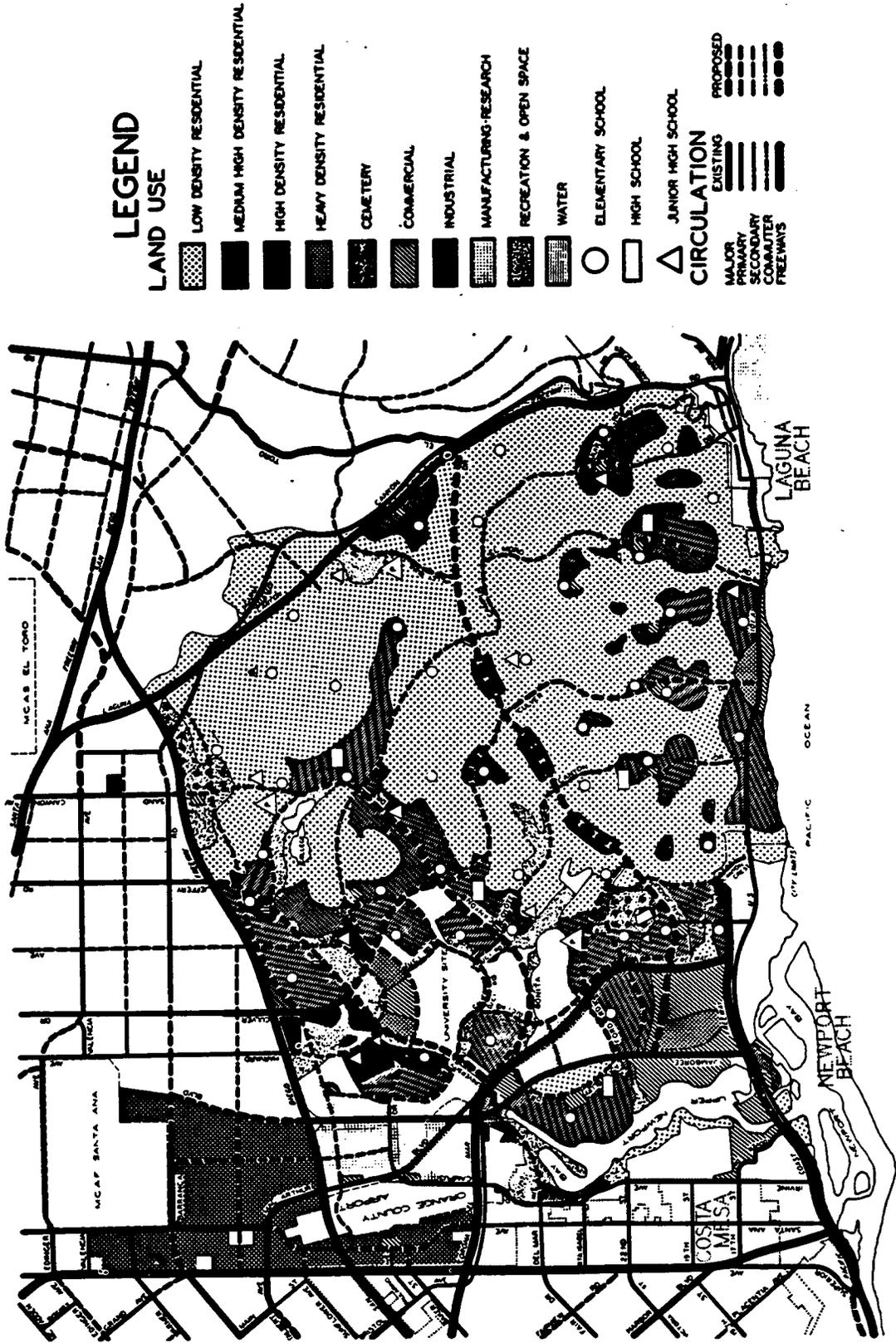


FIGURE 12.—Irvine Ranch General Plan.

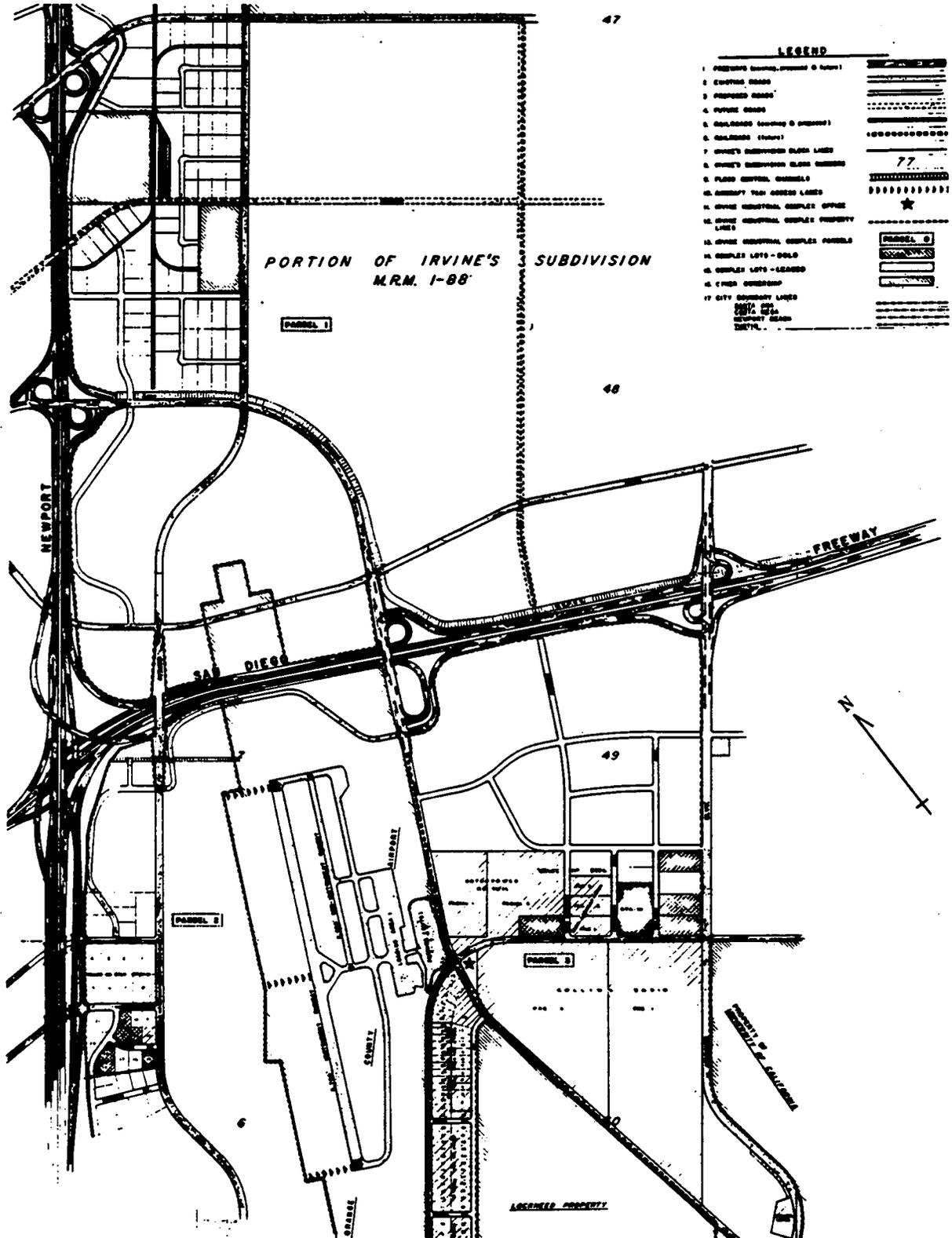


FIGURE 14.—Irvine Industrial Complex.

Project Name: Oceanside Industrial Center
Location: Oceanside, California
Airport: Oceanside Municipal Airport
Sponsor: The Roymar Land Company, Oceanside, California
Persons Contacted: Marc Josepho, President, Roymar Land Company

Oceanside Industrial Center is a 150-acre industrial complex being developed by the Roymar Land Company. The Roymar Company bought property 8 years ago adjacent to the old city airport and took an option on the airport land. The option was exercised and as the developer felt that it was now desirable to have an airport adjacent, he donated land to the city for a new airport which would have better approaches than the existing one. The City constructed a new air-

port with a 3,000-foot runway on the donated land.

This developer feels that the airport has not in itself proved to be a substantial attraction to new industry. However, he has realized a side benefit by building 12-tee hangars on his property adjoining the airport parking area. He has an easement agreement and the fixed base operator acts as his agent for leasing these buildings.

The development has been successful in attracting local industry. The developer has had success in erecting buildings on speculation and thereby attracting tenants. Leases are written to fit the particular situation.

Lots are also available for sale. Deed restrictions cover type of activity and construction permitted; these are not stringent but are considered sufficiently restrictive for a development of this type and size.

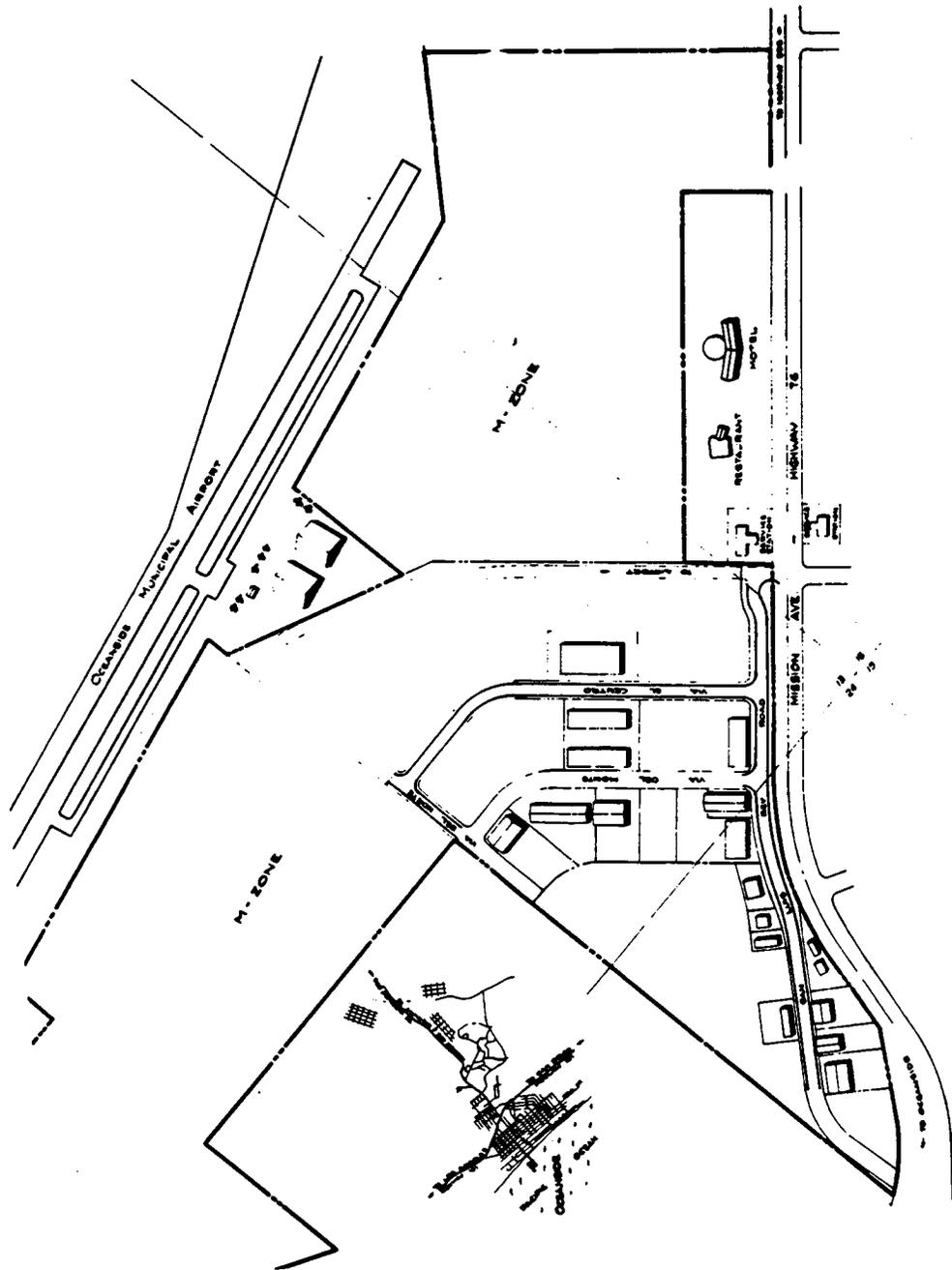


FIGURE 15.—Oceanside Industrial Center.

Project Name: Fulton Industrial District
Location: Atlanta, Georgia
Airport: Fulton County Airport
Sponsor: The Fulton Industrial Authority
Persons Contacted: Henry H. Robinson, Vice President, The Adams-Cates Company, Realtors, Atlanta; Richard (Dick) Aderholt, Airport Manager, Fulton County Airport.

FINDINGS:

Fulton Industrial District includes 2,500 acres located along the Chattahoochee River, in Fulton County, Georgia, about 8 miles west of downtown Atlanta. Fulton County Airport is located directly to the northeast of the site. U.S. Highway 74 (Industrial Boulevard) and U.S. Highway 78 (Bankhead Highway) both go through the site. Atlantic Coast Line's main spur track borders the site on the southwest, northwest, and north.

The site was County owned property. In 1957, the County established the Fulton Industrial Authority which was given the responsibility to develop the Fulton Industrial District. The Authority engaged a local architect-engineer firm to prepare physical plans. The Adams-Cates Company was appointed sales agent in 1958.

Development of streets and provisions for utilities are County responsibilities. A fire station and a post office substation have been authorized for the District and will be established in the near future. A police station will be established at

Adamsville, which is a short distance from the District.

The lots of sizes varying from 2 to 200 acres are sold to individual companies. Intermediary developers have taken on some of the larger parcels of land for development.

Land prices originally were established at \$3,333 per acre. In 1965, some parcels are selling for as much as \$11,000 per acre. To date, over \$2.5 million worth of land has been sold in the District.

Fulton County Airport was built by the County during 1948-50 and financed by revenue bonds. The airport has developed into one of the most active general aviation airports in the United States with over 150 based aircraft. The Airport Manager stated that several occupants of the Fulton Industrial District use the airport for their own aircraft and cited the case of one manufacturer who definitely would not have located there if facilities for its aircraft had not been available.

The following factors are considered by the sponsor to favor this development:

- a. Excellent highway, rail, and air service.
- b. Reasonably priced land to attract purchasers.
- c. Good financial inducement for real estate brokers to actively promote the development.
- d. Guaranteed provision of streets and utilities by the county.

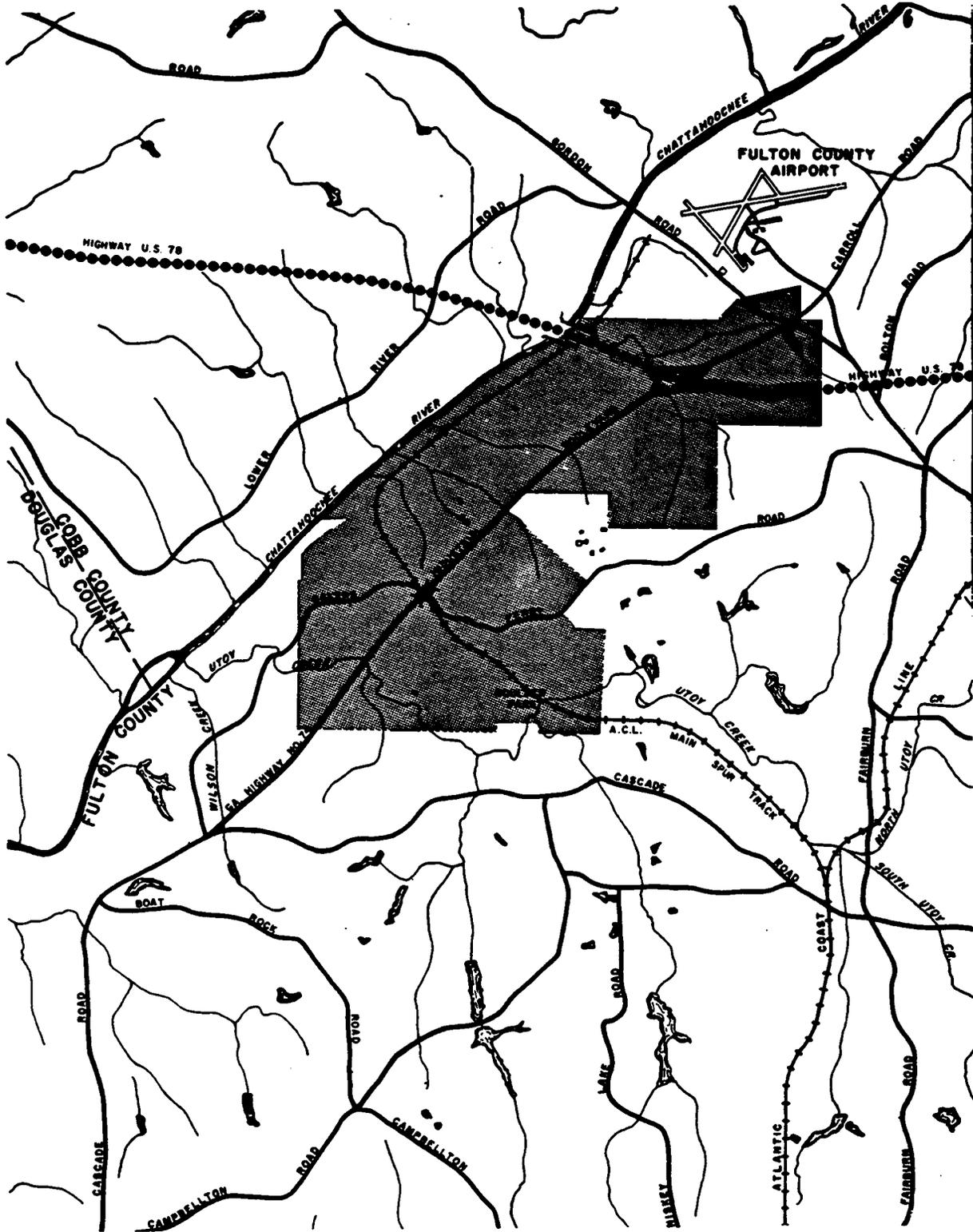


FIGURE 16.—Fulton Industrial District, Vicinity Map.

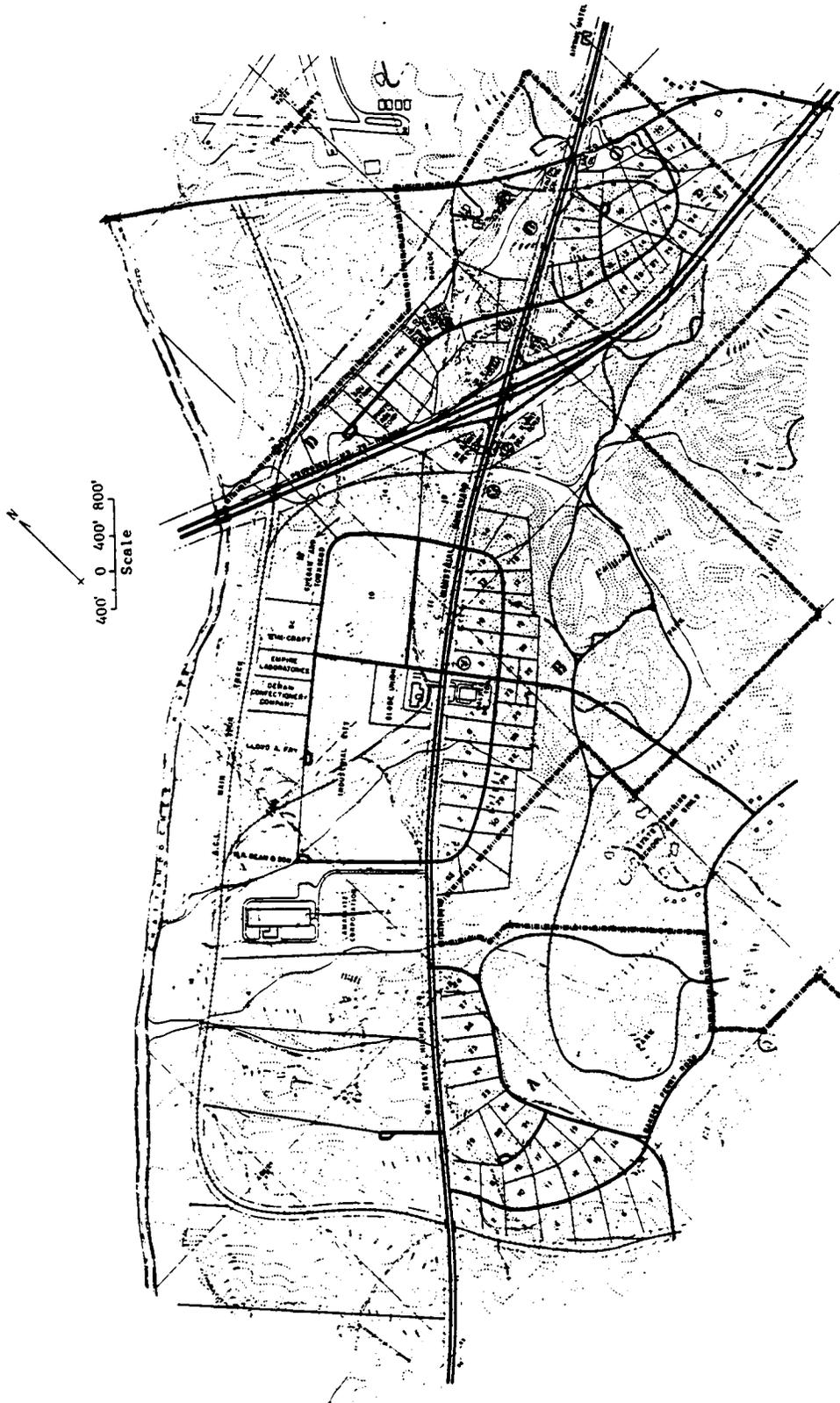


Figure 17.—Fulton Industrial District, Master Plan.

Project Name: Roncari Industrial Park

Location: East Granby, Connecticut

Airport: Bradley Field

Sponsor: Roncari Industries, East Granby, Connecticut

Persons Contacted: George L. Sherwood, Airport Engineer, State of Connecticut Department of Aeronautics; Raymond A. Roncari, Vice President, Roncari Industries, East Granby, Connecticut.

FINDINGS:

This is one of the private industrial developments on the perimeter of Bradley Field. Bradley Field is the largest airport in the State of Connecticut Airport System and is used by certificated air carriers and by general aviation. Between 1961 and 1964 general aviation operations more than doubled at this location.

Highway access is provided by the Bradley Field Connector, a major connecting expressway from Bradley Field to the Hartford-Springfield Expressway (Route I-19).

Included in this planned project are 55 acres being developed on a speculative basis. The developer is erecting "industrial apartments." These are modular 12,000-square foot units laid out in groups of four, and offered with 20-year leases to young, air-oriented industries.

A variety of financing plans are offered, including total financing under lease, sale and lease back, or direct construction with or without owner financing. Land use control is by deed restrictions and by local zoning.

The developer expects to improve additional land in the Bradley Field environs because he anticipates large scale growth in air commerce, particularly air cargo, at this location.

Project Name: North Central Industrial Air Park

Location: Lincoln-Smithfield, Rhode Island

Airport: North Central State Airport

Sponsor: Second Pawtucket Area Industrial Foundation (Nonprofit)

Persons Contacted: Albert R. Tavani, Administrator, Rhode Island Division of Aeronautics; George R. Bennett, Industrial Development Manager, Pawtucket-Blackstone Valley Chamber of Commerce, Pawtucket, Rhode Island.

FINDINGS:

North Central Industrial Air Park includes 250 acres located on North Central State Airport, a general aviation airport which is State-owned, one of the elements of the State of Rhode Island Airport System. About a mile from the site will be an interchange on Interstate 295 and Route 146. Locations of all elements of the state system were coordinated with the State highway plan as part of the overall transportation system.

The State bought the land originally to control land use as airport zoning protection. In order to put the land to productive use and benefit the local community, it was decided to put the property in the control of a nonprofit foundation for industrial development compatible with airport interests.

Cooperation between public and private interests resulted in the letting of a contract to a firm of consultants to prepare a feasibility study and development plan for the site. The costs were shared by the State of Rhode Island, the Town of Lincoln in which the land is physically located and the Pawtucket-Blackstone Valley Chamber of Commerce.

Following the consultant's recommendations, the Second Pawtucket Area Industrial Foundation (nonprofit) was chartered. Land was transferred from the State to the Foundation in January 1963. The Foundation secured financing for the on-site development and hired an industrial manager. The water supply system was built by the Town of Lincoln, financed by a bond issue and with the assistance of a Federal Accelerated Public Works loan. The local company brought power into the area.

The project is being developed in three phases. The first phase includes the construction of the utility system and site development for 11 lots averaging 4 acres each, on the west portion of the tract.

The second phase includes an aircraft taxiway and apron area in the park, a hangar area with maintenance, loading and storage facilities, development of 5 additional lots on the west tract, and a park or community center to house a cafeteria or catering service, a first aid station, an office for park maintenance, banking facilities, automotive service station, convenience shops, and possibly a small auditorium.

The third phase is the development of the east tract which is separated by a transmission easement from the west tract. Taxiway access is not anticipated at this time for the east tract.

Maintenance of roads and utilities and provision of fire and police protection will be by the Town.

Financial assistance for industries locating in the park is available from the Rhode Island Development Authority which is empowered to finance up to 100 percent for industrial properties.

Land is available for sale or lease. Deed restrictions include categories such as landscaping, setbacks, off-street parking, uses, architectural controls, and similar items. Architectural and engineering review is made by the staff of the State Division of Aeronautics.

The following factors are considered by the sponsors to favor this development:

- a. Avoids multiple handling of raw materials and products which reduces transportation cost to a minimum.
- b. Excellent highway and air transportation provides fast and convenient accessibility to and from other markets.
- c. The concept of moving air transportation into the production line reduces lead time for production and brings quality control back into the product by permitting specialized operations to be performed at the source of the specialty with minimum lost time.
- d. Ready supply of trained and trainable local labor.
- e. Preplanning assures the tenant of the quality of development and the types of services provided.

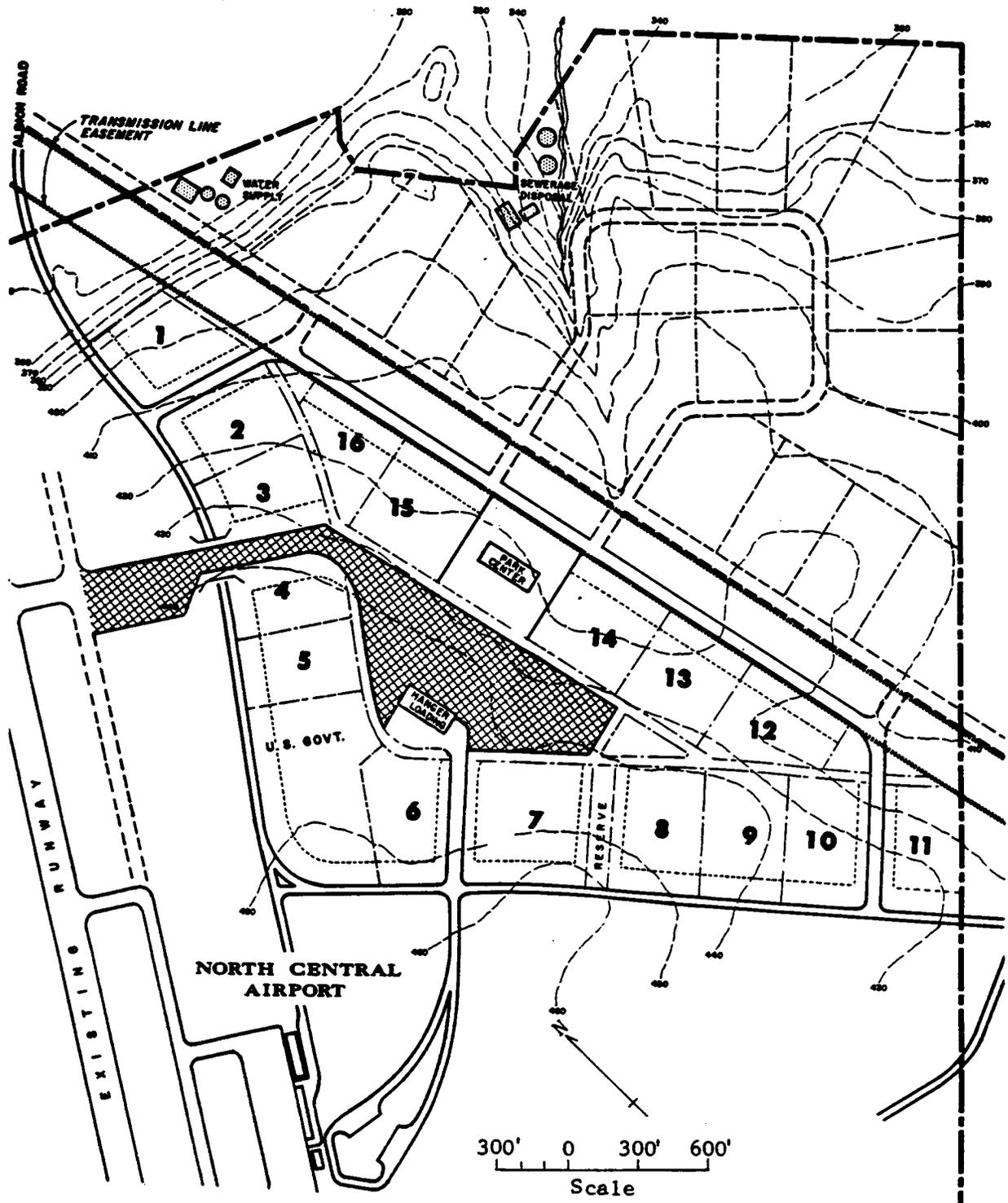


FIGURE 18.—North Central Industrial Air Park, Development Plan.

Project Name: Brainard Industrial Center

Location: Hartford, Connecticut

Airport: Brainard Field

Sponsor: Abraham D. Horn and John E. Hayes

Persons Contacted: George L. Sherwood, Airport Engineer, State of Connecticut Department of Aeronautics; Abraham D. Horn, Co-developer, Brainard Industrial Center.

FINDINGS:

Brainard Field at one time was the civil airport for Hartford and was city owned. At the end of World War II, Bradley Field was released from use as a military facility to the State of Connecticut as a civil airport to accommodate air carrier operations. In 1959, the City of Hartford sold the airfield portion of Brainard Field (203 acres) to the State of Connecticut for use as a general aviation airport. The remaining 157 acres were sold to a private developer, Brainard Industrial Center.

Zoning control requires adherence to a special industrial zone with performance standards that are more restrictive than normal industrial zoning. Development standards imposed by the developer include provisions for landscaping, architectural approval, site drainage, off-street parking, and building setbacks.

Land is offered for sale or lease. Financial arrangements are made to suit the tenants' needs. The developer prefers to offer a package deal on a lease arrangement. The developer is also

erecting a modular building of 60,000 square feet for "industrial flats," which will be rented to small industrial companies on short term leases at reasonable rentals.

In addition to the industrial center, the sponsor is developing a 25 acre commercial center west of the site to provide office space, banking facilities, restaurant and motel services.

The site is approximately 8 minutes driving time from downtown Hartford and is served by Interstate 91 and US 5. Rail service is provided by a spur track from the New Haven Railroad to the site.

The following factors are considered by the sponsor to favor this development:

- a. Transportation advantages — expressway, rail and air transportation.
- b. Complete utility services.
- c. Self-contained, planned development to include commercial services.
- d. Ideal marketing location.

The sponsor is of the opinion that the airport usefulness would be considerably increased if Brainard could be made an all-weather field. Bradley Field is cited as being strong competition for this development. The sponsor flies his own aircraft and feels that increased utilization of Brainard Field by transient aircraft would result from the installation of a control tower and by the reduction of minimums through the installation of a low cost Instrument Landing System.

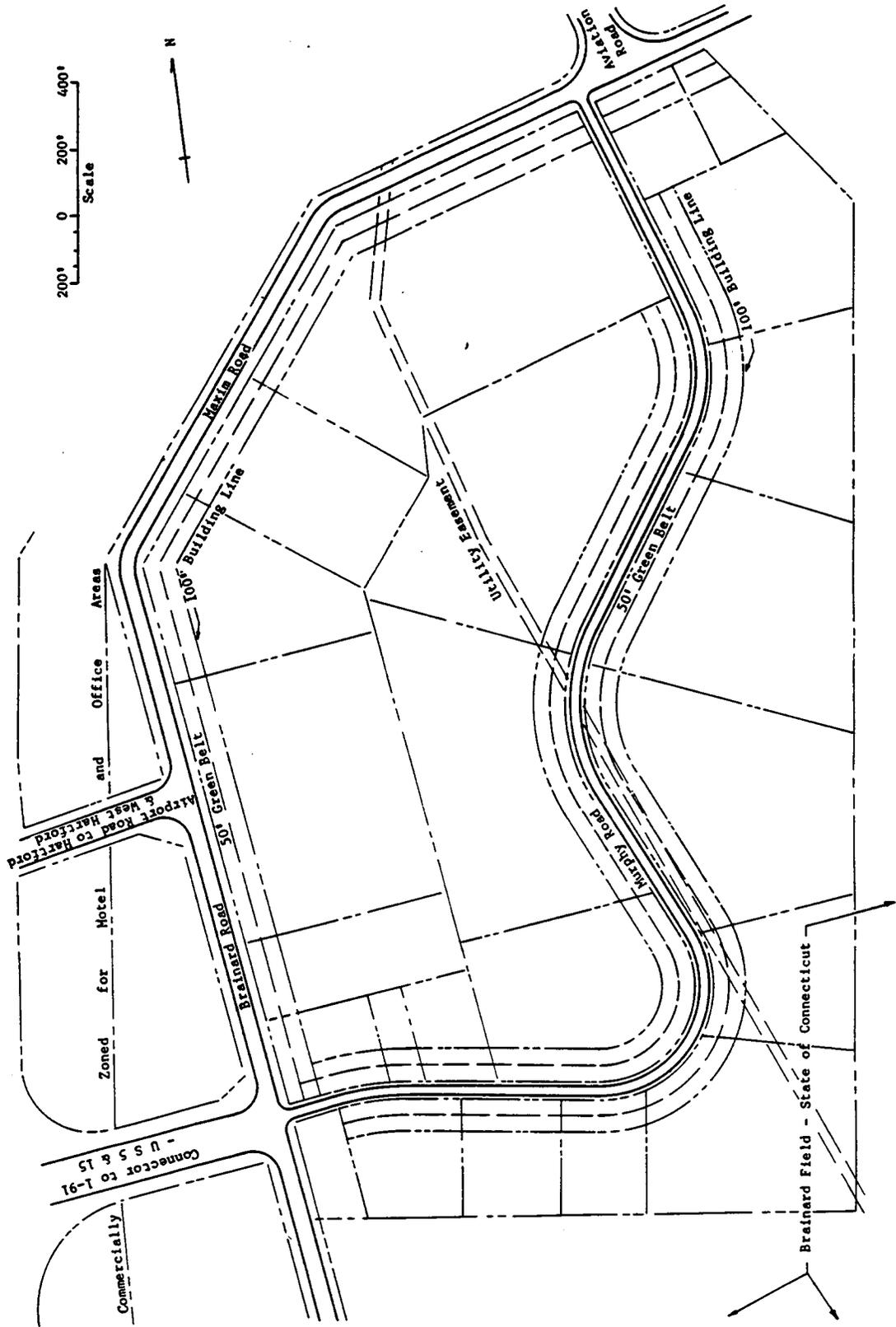


FIGURE 10.—Brainard Industrial Center.

Project Name: Greater Manchester Air Industrial Park

Location: Manchester, New Hampshire

Airport: Grenier Field

Sponsor: City of Manchester/Manchester Regional Industrial Foundation

Persons Contacted: William N. Depuy, Airport Manager, Grenier Field, Manchester Airport Authority; Merrill J. Teulon, Manchester Industrial Council.

FINDINGS:

Greater Manchester Air Industrial Park is located in the infield of Grenier Field, adjacent to the air terminal, and includes 98 contiguous acres. The land is owned by the city with authority to act vested in the Airport Authority. The land has been let on a 49-year lease to The Manchester Regional Industrial Foundation, a nonprofit charitable trust. The Foundation is authorized to sublease sites to air oriented industries at nominal rental fees. The stated purpose of the trust agreement is to facilitate industrial development and to work toward a solution of unemployment problems in the area by a continuous effort to attract and establish new industrial activity for the participating communities.

The Manchester Industrial Council has been designated responsible agent for promotion of the project and the Airport Authority, as custodian for the city, signs all leases.

Up to 100 percent financing for new plant construction is available under several different arrangements. The New Hampshire Industrial Park Authority can finance the top 50 percent. In addition, Amoskeag Industries, a local development corporation, formed by the banks and

power companies when Amoskeag Manufacturing Company (a major employer in the area) went bankrupt in 1935, is a principal vehicle for financing.

The development plan and the feasibility study were prepared in 1958 by a consultant. Costs were shared by the city, the late Roscoe A. Ammon, a local industrialist, and Amoskeag Industries.

Local coordination has been the key to the progress of this development. The cooperation of the public and private interests has been coupled with that of the two municipalities in which the land is physically located, Manchester and Londonderry.

Direct taxiway access is provided to all lots in the development. Highway access connects to Interstate routes 193 and 93. Railroad service is available on the airfield, although there is no spur track into the industrial park at this time.

The area is under zoning control of Manchester and Londonderry. The industrial park itself is also controlled by restrictive covenants which include very complete provisions such as height restrictions, setbacks, sign and billboard control, fire and safety hazard prohibitions, landscaping and grounds care requirements, parking, loading and on site storage provisions, performance standards for nuisance control, preferred and prohibited uses and architectural control.

The community considers the airport to be the focal point for economic expansion for the entire area. The creation of an industrial complex fully integrated with modern airport facilities will allow full utilization of the airport both as an industrial and transportation center having direct access to major markets.

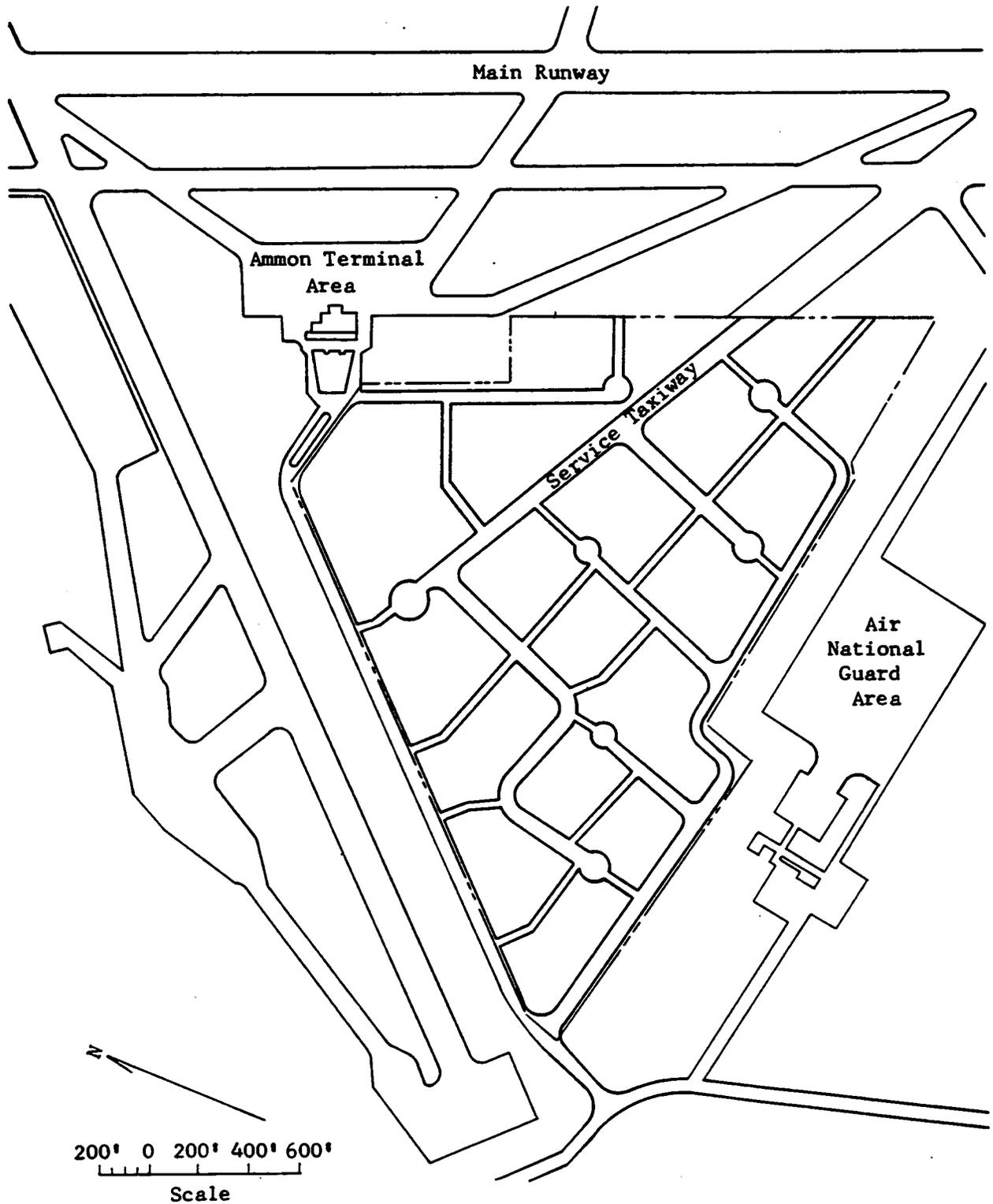


FIGURE 20.—Greater Manchester Industrial Airpark.

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Project Name: El Paso International Airport Industrial Park

Location: El Paso International Airport

Sponsor: City of El Paso

Persons Contacted: James R. Mettler, Airport Manager, El Paso International Airport.

FINDINGS:

This projects consists of 196 acres of property for lease, located on the airport proper. Areas within the project boundary have been reserved for the following related land uses: restricted industrial, nonaviation commercial, noncommercial aviation, aviation and nonaviation commercial, and a reserved area that is a buffer between the restricted industrial area and the terminal entrance road and parking area.

Based on plans and recommendations for airport development prepared by the combined efforts of the Airport Board and management with airport planning, architect and engineering consultants, approximately \$1 million of a \$3.1 million revenue bond issue for airport development was allocated to El Paso's Airport Industrial Park for site improvements including clearing and grading, street improvements and all utilities essential to attract long-term ground tenants.

When it was decided to finance the proposed airport development with self-liquidating revenue bonds, the development plan, feasibility report and cost data were used to secure administrative approval, public acceptance and to favorably influence the bond market.

Nearly 40 acres of the park have been developed for aviation related activities (with taxiway access). About 55 acres have been completed as the first stage of development of nonairport access industrial use.

Deed restrictions and covenants include: performance standards covering all potential nuisances; definitions of permitted uses in the particular land use areas; site development and improvement requirements which include provisions for off-street parking, vehicle loading, setbacks, landscaping, building heights, site coverage, permitted types of construction; procedures for preparation, review and approval of plans for im-

provements and general provisions which include cutting and filling, housekeeping, maintenance of landscaping and use permits.

These restrictions and covenants have been made a part of standardized lease program to govern the development.

Industrial lease ground rents are based upon an annual rental equaling 6 percent per year of the appraised market value. The lease rental is re-adjusted in predetermined increments. For example, a 50-year lease is readjusted at the end of the first 10-year period, and then at the end of each succeeding 5-year period based on reappraisals at those times; however, rental increase through appreciation is limited to 20 percent of the annual rental for the first 10-year period and 10 percent for each 5-year period thereafter.

The sponsor reports that the restriction on subordination of airports land sometimes poses a problem in the financing of tenant improvements particularly to local industrial prospects, although lack of subordination has not forestalled nationally ranked or strong regionally ranked tenants. Alternatives for dealing with this problem are being considered because a large portion of the industrial land market is for relocating or expanding local industries.

The following factors have been identified by the sponsor as being directly related to the success of this project:

- a. Prime location with proximity to population concentrations and excellent air, rail and highway transportation.
- b. Preplanning utilizing the services of qualified experts in the fields of airport and industrial park planning, design and financing, has resulted in an attractive marketing package.
- c. A strong promotional program based on sound planning, a highly competitive project, close coordination with the promotional efforts of local development groups and uniform agreements with bona fide sales agents concerning commissions.
- d. The standardized lease program which allows an industry to project its maximum rental obligation over the life of the lease, thereby being in a better position to deal satisfactorily with its source of financing.

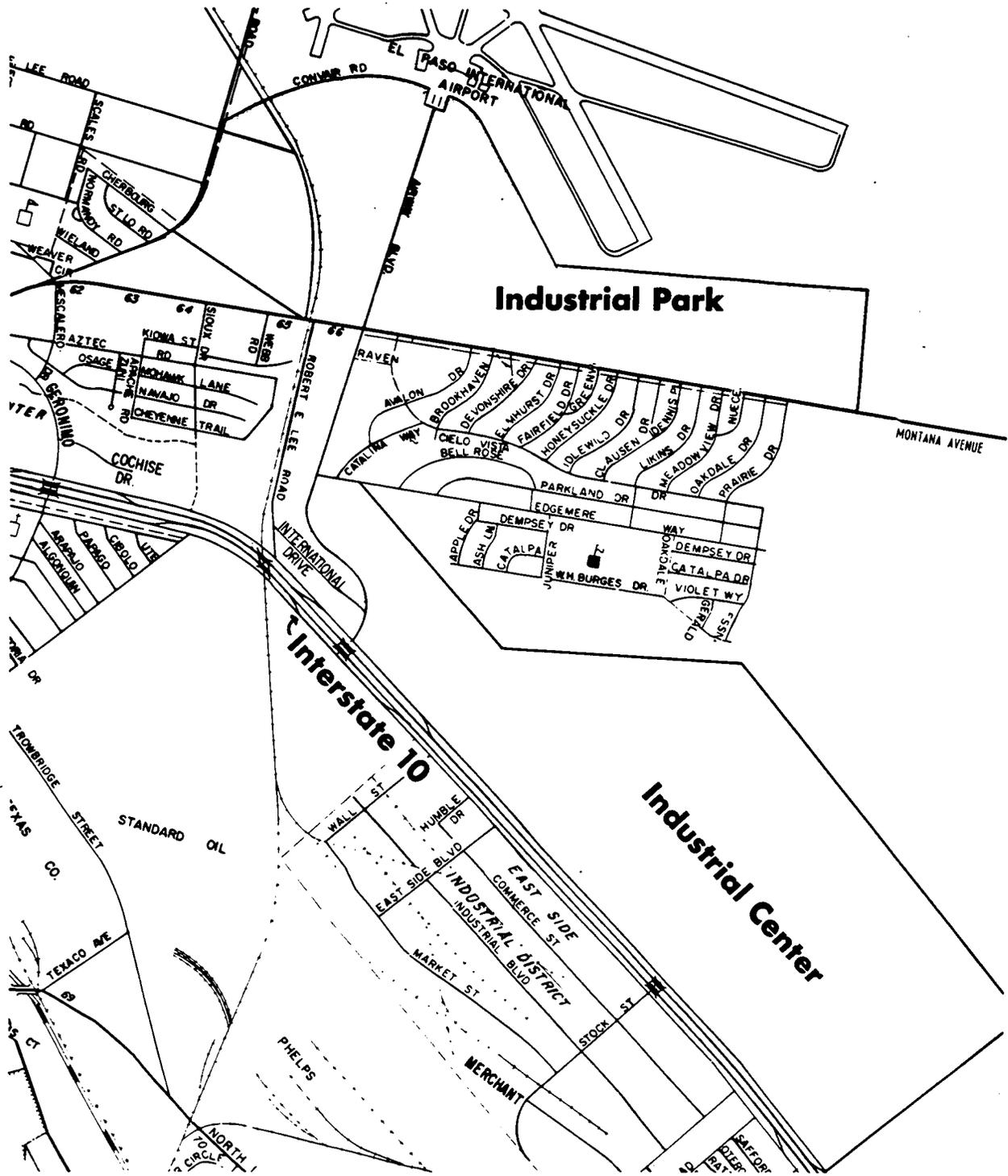


FIGURE 21.—El Paso International Airport Industrial Park—General Location Map.

U.S. Department
of Transportation

**Federal Aviation
Administration**

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Official Business
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