A COMPARATIVE ANALYSIS OF AIR FORCE AND CIVILIAN LAND USE PLANNING AS A BASIS FOR ZONING

by

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PREFACE

As an Air Force sponsored student, the scope of this thesis is required to be relevant to current Air Force problems. While space and aircraft are major subjects for discussion, other problems are similarly important. Changes in technology have revised the use of many existing structures resulting in segmented, unrelated land use patterns. Inefficient land use relationships and circulation systems can impair the mission of an air base. Consequently, a possible solution to this problem is the goal of this thesis. The ideas presented are those of the author and do not necessarily reflect the official opinion or position of the Department of the Air Force. This document is not to be reproduced in whole or in part without the permission of the author.

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CHAPTER I

INTRODUCTION

In the past, the primary function of air base planning was to support base engineering capabilities of "getting the aircraft off the ground." While this is still true as a broad Air Force policy, planning philosophy for individual bases has changed. As new technologies have increased the number of activities and personnel, bases have become multi-mission in character. Primary missions of education and research, which may not be as directly related to aircraft as strategic and tactical missions, require differing facilities. At the same time, greater demands are being made for off-duty and dependent facilities, e.g., recreation, shopping, and housing. These new elements have forced the planner to view the air base as a complete, specialized community: one in which the services required for personnel and their dependents are similar to those available in adjacent civilian communities located in the same environment.

I. PURPOSE OF THE STUDY

This study was undertaken to aid air base planners by demonstrating that planning techniques can be improved by adapting model civilian zoning ordinances for use as an air base zoning ordinance to provide a more restrictive control of land use. This will be accomplished by showing: (1) that air base and civilian planning legislation and administration have similar functions and responsibilities; and (2) that civilian principles

of land use planning, as a basis for zoning, are applicable to the air base.

II. IMPORTANCE OF THE STUDY

Air Force Manual 86-6, Master Planning, is the only procedural guide available for air base planning.[1] Published in 1959, this document does not reflect current planning principles and procedures generally advocated by civilian planners. Techniques of separating mutually incompatible uses, grouping functionally related uses, and integrating the base with the surrounding environment through restrictive land use control measures are unavailable. Planning is further hindered by the lack of trained, qualified personnel. These two elements indicate that additional guidance and research are needed.

Well-conceived plans will separate mutually harmful uses and establish functional areas that are both intra-related and interrelated. For example, the base community center has facilities related to each other (intra-related) and to activities located elsewhere on the base (interrelated). Furthermore, the plan should be an integral part of the vicinal environment. When the base is located adjacent to, or within, an urban area, the master plan should take cognizance of adjacent civilian land uses. The public impression will not be enhanced by locating an engine test or sewage treatment facility immediately adjacent to civilian residential areas of a host community.

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[1]Air Force Manuals are hereafter referred to as AFM.

To ensure the maximum benefits of a plan, a system of land use controls for the environment should be adopted. This system may be separated into two parts: (1) off-base, and (2) on-base.

Off-base controls should be established and enforced by the civilian community. So-called airport zoning ordinances often prohibit the location of unwarranted or undesirable uses adjacent to the base. The Air Force has a responsibility to promote the enactment of such an ordinance so that other measures (eminent domain, leasing, and easements) will not be necessary.[2] Because of this responsibility, the Air Force should assume the leadership role in developing a system of land use controls. Probably the best method of promoting restrictive airport zoning is to develop an on-base zoning ordinance.

Some form of land use control is necessary to establish and regulate the specialized functional relationships identified and incorporated into the base master plan. Zoning appears to offer a means of greater administrative efficiency and a logical framework within which siting, development, and all other proposals may be evaluated for their contribution to the master plan. In addition, a restrictive zoning ordinance would assure civilian authorities that base activities would not be placed in locations detrimental to existing adjacent planning proposals. With this assurance, a precedent would be set for the civilian community to establish zoning or increase restrictions of an existing ordinance. The result is the protection of both military and

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[2]AFM 86-7, Air Force Zoning, p. 4.

civilian integrity and amenities of the environment, which will improve the efficiency of mission accomplishment.

III. DEFINITIONS

In an analysis that describes two similar procedures, differing connotations may be applied to the same term. To aid the reader, the following definitions and clarifications are offered. While these are not necessarily standard, they will be treated as such in this thesis.

Community. According to Dakin, a community may be defined as:

> Any population aggregate, inhabiting a contiguous area or territory, organized within a framework of primary associations (both formal and informal), providing some collective services and facilities, and having some common beliefs and traditions.[3]

Since this definition is applicable to the Air Force base and city, the term community shall infer both unless otherwise specified.

City. The words city, civilian community, and local government are used interchangeably and denote all sizes and forms.

Air base. The term air base is to infer an Air Force base and has been shortened for reason of brevity. However, the ideas presented may also be applicable to other Department of Defense air base communities.

Planning. This general term is synonymous with such terms

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[3]Lecture by Dr. R.E. Dakin, Kansas State University, February 10, 1965. Permission to quote secured.

as master planning or comprehensive planning and is defined as the process of anticipating and adjusting the physical environment to fulfill the social, economic, and moral objectives of the community considering both present and future requirements.[4]

Zoning. Zoning is a form of land use control defined as the division of the incorporated area into districts or zones within which specific uses or activities are designated and regulated according to height, bulk, layout, performance or effect, and other elements as specified by the provisions of the zoning ordinance.[5]

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[4]F. Stuart Chapin, Jr., Urban Land Use Planning, p. xiv.

[5]John Delafons, Land Use Controls in the United States, p. 37.

CHAPTER II

PLANNING LEGISLATION AND ADMINISTRATION

Before local governments can begin the planning process, there must be: (1) some form of legislation, and (2) an administrative organization capable of both current and long range planning.

I. LEGISLATIVE BASES FOR PLANNING

Two major controls have evolved that set the boundaries that communities may not exceed in diminishing individual use privileges or other aspects of property interest: (1) planning measures must satisfy federal and state requirements of "due process" by being directly related to the public health, safety, morals, or general welfare; and (2) planning must be in accordance with the enabling act or charter that is the source of local government planning powers.[1]

Enabling legislation. A local government has only those powers that are delegated by the state. Before a community can proceed with the planning process, authorization granting such power must be received either in the form of enabling acts or charter revisions. These authorizations usually specify the specific powers but occasionally minimum standards will be described with additional authorization to supplement the legislation as required by individual communities. Administrative procedures

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[1]Mary McLean, ed., Local Planning Administration, p. 23.

to be followed by local governments are also stipulated.

Local planning ordinances. Enabling legislation for planning is usually permissive rather than mandatory. Permissive legislation does not require the establishment of local planning agencies but permits cities to do so provided that a specified organization and procedure is used. To establish the planning function, cities must adopt a local planning ordinance that usually incorporates the applicable sections of the enabling act. Both forms of legislative actions may require that certain or all parts of the master plan be enacted into law to have any legal effect. For example, zoning regulations must be adopted in the form of an ordinance.

Administrative regulations. A city ordinance may delegate to an agency or officer of the government the power to fill in the details of a regulation by issuing administrative regulations. So long as this power is delegated by the state, the regulation has the force of law. Designation of parking zones by the police department is an example.[2]

Regulatory controls. The primary regulatory controls in the civilian community are the taxing power, eminent domain, and the police power. Cities receive these powers from the state and are further limited as to forms and rates of taxes, particularly the property tax.

Eminent domain is the process of acquiring land for public use, with or without the owner's consent, with compensation. By

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[2]Ibid., p. 26.

contrast, the police power does not require compensation. This power denotes all those regulations of property that are consistent with due process. Therefore, these controls must be justified on the basis of public health, safety, morals, or the general welfare. The police power is the basis for zoning and building regulations, subdivision regulations, and similar planning controls.[3]

Of these primary regulatory controls, the former cannot be compared with Air Force controls as the taxing power is inapplicable. Eminent domain, however, is the method that is generally used to acquire Air Force owned land. Parallel to the police power are Air Force Regulations that provide for airfield zoning and standards of construction.[4]

Air Force Regulations. The bases for all planning and regulatory controls in the air base community are the Air Force Regulations. AFR 86-4 requires each base to develop a long range plan of utilization and construction based on the assigned mission of the base, which is described in classified program documents.[5] AFR 86-11 establishes airfield zoning pertaining to off-base or so-called airport zoning as enacted by the civilian communities.[6] Other regulations establish forms of controls such

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[3]Ibid., pp. 26-28.

[4]Air Force Regulations are hereafter referred to as AFR.

[5]AFR 86-4, Master Planning, p. 1.

[6]AFR 86-11, Installation Planning and Development, "Airfield Zoning," p. 1.

as the powers for designating parking zones by the air police. These are usually major command or base supplements. In addition, AFR 86-7 establishes the administrative structure of the planning process, as do planning ordinances and enabling acts.[7]

II. ADMINISTRATIVE STRUCTURE

Planning is accomplished through the coordinated activities of many agencies. The specific process and number of persons may vary with form of government, but the responsibilities are essentially the same.

The legislative body. Regardless of the form of government, the role of the legislative body is that of decision and policy making. The city council or commission form this organization in the civilian community. The air base legislative body is the base commander and his staff. While the civilian structure is characterized by complete separation of legislative and administrative personnel, the air base personnel play dual roles. For example, the civilian government finance director is not a city councilman but the base comptroller is director of base finance administrative activities and a member of the base commander's staff. In addition, each staff member usually serves as secretary to the commander on boards pertaining to the base as a whole. The base financial plan is prepared through a working committee of staff organizations with the base commander as chairman and the base comptroller as secretary. For planning

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[7]AFR 86-7, Utilization of Real Property Facilities, 3 pp.

functions, the base engineer is secretary of the Facilities Utilization Board (hereafter referred to in the text as FUB).[8]

Each air base staff function is responsible to the base commander while civilian staff agencies are responsible to the mayor or manager and, as in the case of planning, may answer to a working commission appointed by the legislative body.

The planning commission (department) and staff. The planning commission or department is the legal agency of the local government through which planning is performed. The difference between these two organizations is rather nebulous. The planning department advises the city manager on planning matters. The department director is appointed by either the council or manager, depending on the enabling act. On the other hand, the planning commission is comprised of lay citizens appointed by either the manager or council as prescribed by legislation. The particular enabling act will further indicate whether the commission shall advise the planning department, manager or staff. Therefore, the difference is only the particular form of government used by the city. For example, some cities do not have a department; others have only a commission; and still others have both. Use of both in the organizational structure has posed a basic problem--namely, the locus for basic planning authority as contrasted with advisory powers. Vesting authority in the department, subject to advice by a lay planning commission appointed by the manager, which corresponds to the structure

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[8]Ibid., p. 2.

shown in Figure 1 is recommended.[9]

While the structure varies, the duties of the planning offices are essentially identical. Powers of this office usually include the authority to: (1) develop a comprehensive plan; (2) prepare platting regulations; (3) review and act on all subdivision plans and other proposed land use developments; (4) prepare a zoning ordinance; (5) review all special exceptions permitted under zoning; (6) review and make recommendations on all amendments to the zoning ordinance, including the drafting of revisions; (7) prepare mapped street plans and the official map; (8) develop plans for urban renewal or redevelopment; (9) prepare the long range capital improvements program; and (10) undertake such surveys, studies, and prepare such reports as may be required to carry out the planning program.[10] These functions are usually carried out by a staff of technical, professionally trained personnel.

The Facilities Utilization Board. The Air Force parallel to the planning commission is the FUB. The role of this board is to provide the best possible utilization of Air Force facilities and the best possible facilities for Air Force activities. The FUB is a working committee of the base commander's office for planning matters, created and required by AFR 86-7.[11] The powers of

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[9]Arthur W. Bromage, Introduction to Municipal Government and Administration, p. 403.

[10]Donald H. Webster, Urban Planning and Municipal Public Policy, p. 107.

[11]AFR 86-7, loc. cit.

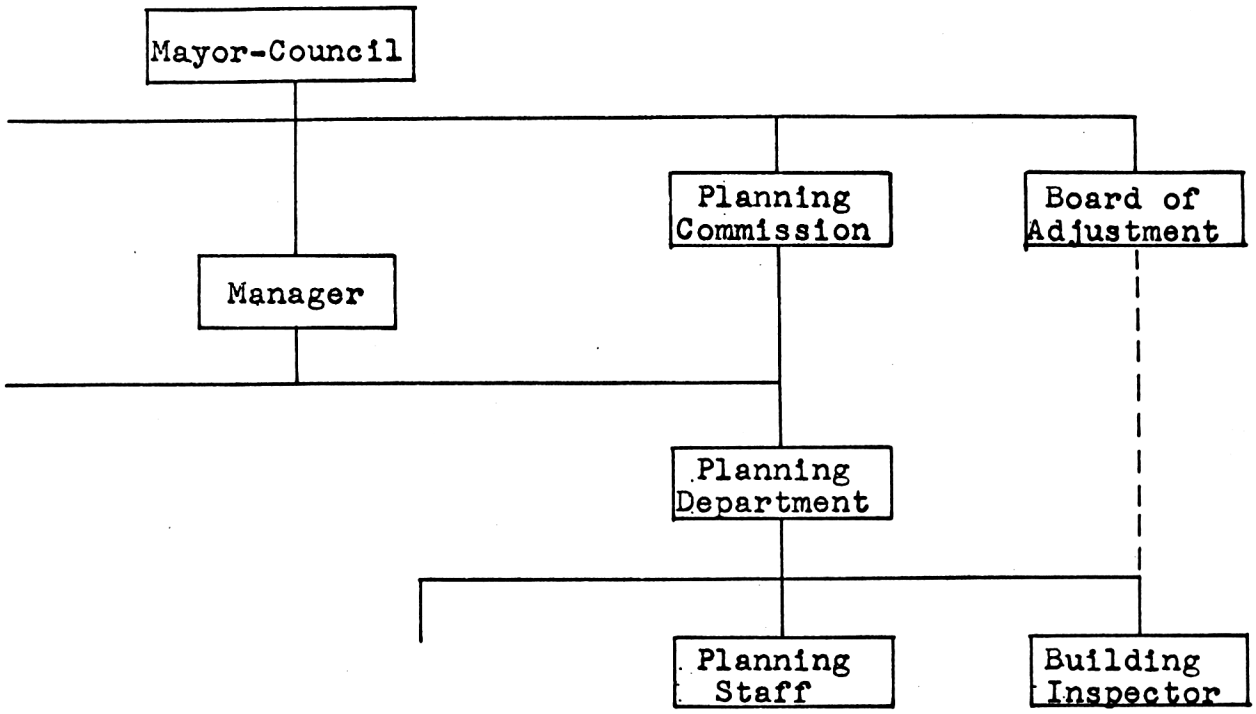

FIGURE 1

CIVILIAN PLANNING ADMINISTRATIVE STRUCTURE

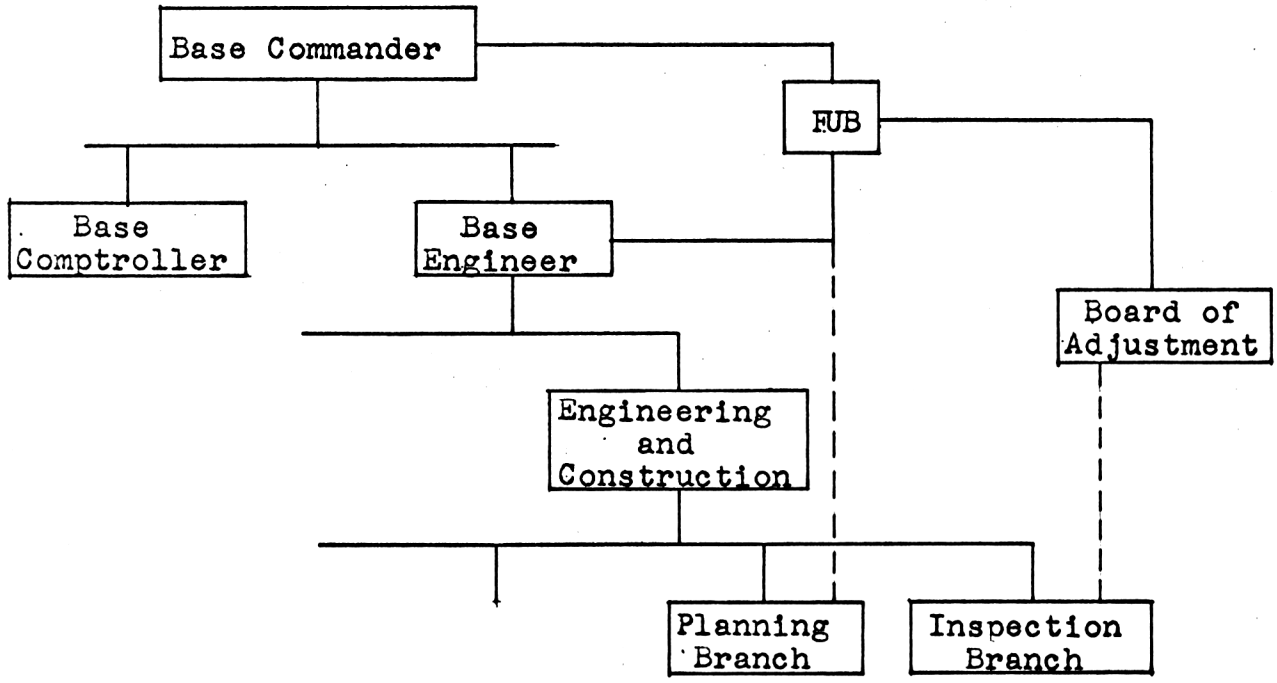

FIGURE 2

AIR BASE PLANNING ADMINISTRATIVE STRUCTURE

this board, which are similar to the civilian planning office, include the authority to: (1) develop a master plan; (2) prepare and submit recommendations concerning the disposal, inactivation, activation, acquisition, or major alteration of buildings, facilities, and land; (3) apply instructions and design criteria received from higher echelons of command in the development of a master plan and, in turn, to recommend to higher authorities criteria and procedures warranting consideration; (4) cooperate with local government planning agencies, particularly for the enactment of airport zoning ordinances; (5) ensure that the use of each facility is consistent with the approved master plan; and (6) undertake such studies and surveys and prepare such reports as may be necessary to carry out the planning process.[12] As in the civilian community, the FUB utilizes the services of a technical staff to carry out these functions. The planning branch, engineering and construction division, directorate of civil engineering is charged with the responsibility of preparing plans for the FUB.[13] This structure is shown in Figure 2.

Zoning board of adjustment (appeals). The board of adjustment is usually a quasi-independent body appointed by the mayor or council. The powers of the board, which derive from enabling legislation, include the authority to hear and grant special exceptions and variances to the explicit letter of the law when

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[12] Ibid.

[13] AFR 23-33, Base Civil Engineer Organization and Functions, p. 9.

appealed from decisions or interpretations made by the enforcing officials.[14] Although this board is, at present, applicable only to civilian communities, the use of zoning, the establishment of a board of adjustment, and an enforcement official for the Air Force is proposed in Chapters V and VI.

Both types of communities require some form of legislative basis. State enabling acts for community planning are usually permissive; Air Force Regulations are mandatory. Moreover, each form stipulates the organizational framework, functions, and powers of the planning office. While some differences exist, the powers for the planning of land use have enough similarity to allow further comparison.

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[14]Delafons, op. cit., pp. 58, 59.

CHAPTER III

PLANNING OF LAND USE

Communities grow as a result of new technologies that require additional personnel and land. Knowledge of these activities and the space devoted to each in terms of their effect on other land use determinants in the broad pattern of land use is a prerequisite to rational planning.[1]

I. THE NATURE OF PLANNING

Many uninformed persons think that planning is basically an architectural and aesthetic design process for public facilities. However, since the late nineteenth century, the planning concept has been changing. Architectural design of individual areas is now the last of several steps instead of the only one. Preceding design and construction come determination of objectives, collection of data, discovery of solutions, and choice of action.[2] This change in philosophy has followed the advent of industrialization and the development of science. The scientific rules of procedure--collection, classification, analysis of the data, explanation of facts, and subsequent development of a hypothesis--are the essence of the planning process.[3]

Although this process has grown from the scientific

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[1]Harland Bartholomew, Land Uses in American Cities, p. 11.

[2]McLean, op. cit., p. 2.

[3]Ibid., p. 1.

approach, several other concepts are included. One is that the possession of a master plan on paper is not the same as engaging in planning. A plan must also be carried out through an administrative process. Another concept is that objectives, proposals, and policies must be adjusted with new information or changing events. Still another, and perhaps the most important, is the fact that communities are dynamic rather than static. By the time a phase of the plan has been realized, the situation has changed. Thus, development of the master plan takes place by stages and must be a continuing process.[4]

Figure 3 provides a comparison of Air Force and civilian master plan requirements. The content of this thesis relates to Tabs C-1, Basic Plan; F-1, Development Plan; and F-4, Zoning Plan.

II. DEVELOPMENT OF THE LAND USE MAP

The land use map, which is a two-dimensional expression of how land is presently used, should be employed as a planning tool, not a solution plan. To develop such a map, an inventory and classification should be made for each parcel of land.[5]

The land use inventory. To develop a land use map, persons or teams should systematically survey each facility and parcel of land to determine the specific use. The usual method is to obtain the use data listed on the real property records and then

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[4]Ibid., p. 2.

[5]Chapin, op. cit., p. 276.

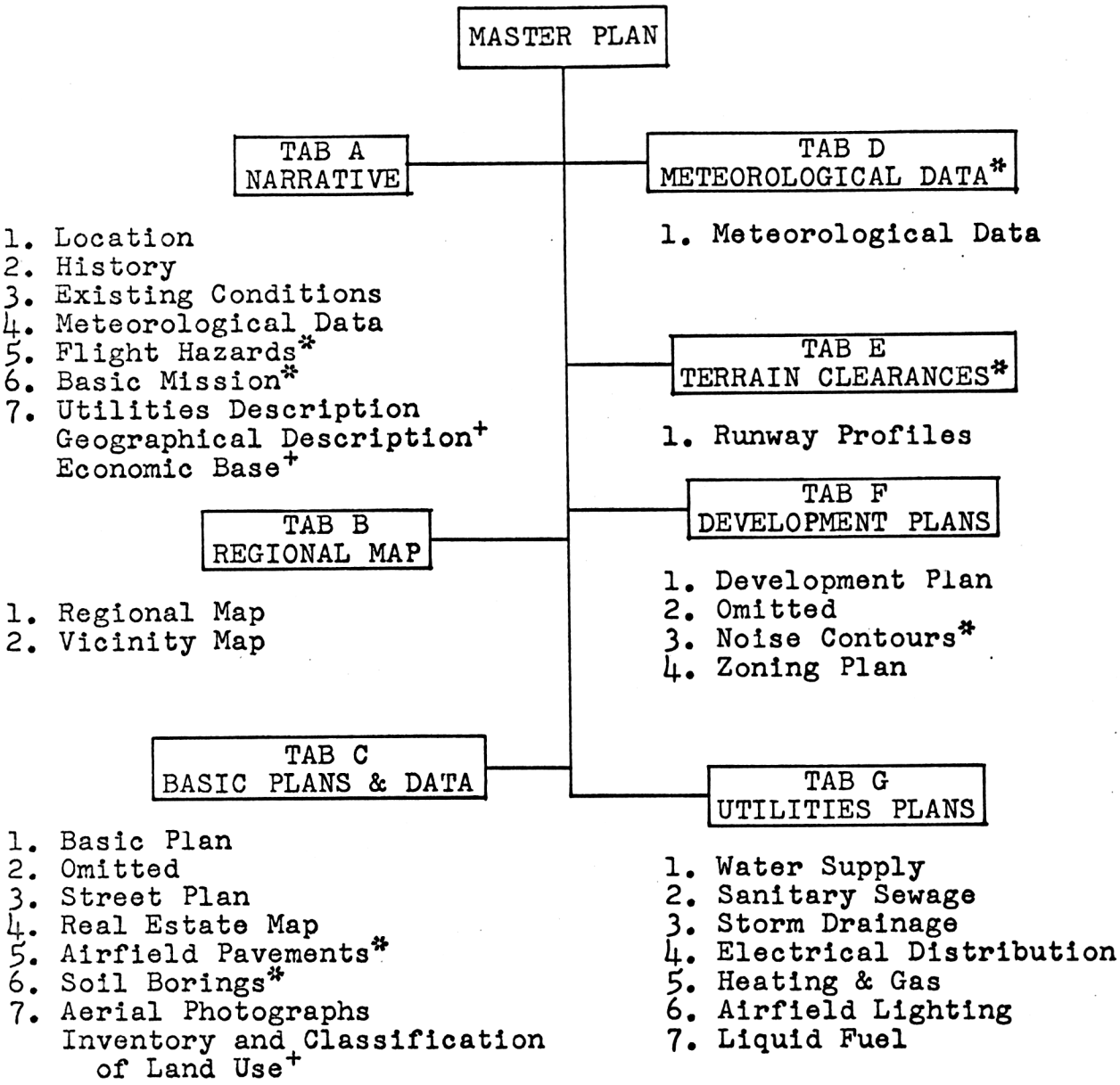

FIGURE 3

COMPARISON OF MASTER PLAN REQUIREMENTS
(FROM AFM 86-6, AIR BASE MASTER
PLANNING; DONALD H. WEBSTER,
URBAN PLANNING AND
MUNICIPAL PUBLIC
POLICY)

*AIR FORCE ONLY +CIVILIAN ONLY

visually survey the land or facility to check the accuracy of the records. Using this method, the teams can immediately note errors. As the rcords do not give complete data for multi-use facilities, such information should be obtained and tabulated.

Another advantage of this procedure is that a preliminary classification of land use can and should be made. Therefore, the survey teams can note mixed and unrelated land uses, functional integration of uses, and identifiable activity-related organizations.

While the purpose of the land use survey is merely to find existing data, the personnel conducting the survey should be skilled in their task so that a complete analysis for correcting errors and reclassification of land may be obtained.

The classification of land use. Neither the air base nor the civilian community has a standard classification of land uses. Since land use relationships vary from one community to another, the liklihood of finding a useful stereotype classification is remote.[6] However, as in the civilian community, a listing of common uses should be employed as a starting point for all air base communities. Table 1 compares a list of land uses common for all air bases and civilian communities. Table 2 illustrates air base facilities that should be included in each classification.

Previous land use classifications developed for air base communities inadvertently omitted a category for open space or

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[6]McLean, op. cit., p. 98.

TABLE 1

COMPARISON OF LAND USE CLASSIFICATIONS

AIR FORCE+	CIVILIAN
Airfield and Missile Launch	Applicable to airports only
Industrial	Industrial Intensive Intermediate Extensive
Administrative	Public, Semi-Public, Governmental and Commercial Offices
Community Support	Retail sales elements of CBD and neighborhood shopping centers; utilities, except treatment and disposal; streets and roadways; and schools
Housing	Residential--all classes
Community Recreation	Parks, playgrounds; commercial, public, and private forms of recreation
Vacant*	Agricultural and Vacant

+Joe B. Hollingsworth, An Analysis of Air Force Master Planning and the Effect of Space Programs on Land Development.

*Added by author.

TABLE 2

CLASSIFICATION OF AIR BASE LAND USES

AIRFIELD AND AIR SUPPORT

Runways
Taxiways
Aprons
Hardstands
Pads
Fuel Systems
Instrument Landing System
Radar
RAPCON Center
Weather Control
Airfield Lighting
Hangars
Fire Station
Terminals
Alarm System

INDUSTRIAL

Aircraft Maintenance
Engine Test Facility
Vehicle Fuel Station
POL Operations
Liquid Fuel Station
Auto Maintenance Shops
Civil Engineering Maintenance Shops
Fuel Storage
Aircraft Component Storage
Warehouses
Water Supply and Treatment
Emergency Power Plant
Sewage Treatment Plant

ADMINISTRATIVE

Communications
Photo Lab
Academic Facilities
Administrative Facilities
Headquarters Facilities
Civil Engineering Offices
Procurement
Finance
Personnel

COMMUNITY SUPPORT

Hospital Facilities
Dining Halls
Public Restaurants
Dry Cleaners
Schools
Air Police
Bank
Credit Union
Chapel
Thrift Shop
Clothing Sales Store
Commissary
Base Exchange
Guest Housing
Post Office
Roads and Streets
Fire Station

COMMUNITY RECREATION

Service Club
NCO Club
Officers' Club
Bowling Alley
Gymnasium
Auditorium
Theatre
Library
Athletic Fields
Golf Courses
Swimming Pools

HOUSING

Bachelor Officer Quarters
Bachelor Airmen Quarters
Family Housing
Mobile Home Parks
Detached Garage
Detached Carport

VACANT LAND

Unprogrammed Land

Extracted from AFM 85-27, Real Property Standard Codes and Nomenclature.

vacant land. Civilian principles of open space should be used to determine the required ratio of open space to buildings for adequate light and air. Expansion areas, and other vacant lands that are programmed for future use, should not be included with unprogrammed open space. For example, most organizations should be provided with expansion capability. Areas set aside for expansion would be vacant, but programmed for use. A category for unprogrammed vacant land should be established to meet future contingencies. During the inventory of land use, the survey teams should note all programmed open space, which, in turn, would assist in determining total required vacant or open space land.

The land use map (Tab C-1). Following the completion of the survey, analysis, and classification of land, a map should be prepared to illustrate the various relationships and patterns of existing land use. Since this map should be used for daily study, reference in various meetings and briefings, and as a tool for developing the land use plan, the importance of accurate information cannot be overly emphasized.

II. DEVELOPMENT OF THE LAND USE PLAN

The ideal situation would provide the opportunity, time, and ability to develop a land use plan for a new base. However, this is not the normal situation. Most military bases have grown over a period of years experiencing intervals of accelerated or arrested growth. Actual growth of bases results from new technologies and systems that are subsequently sited at some base for

further research and development. Classified Program documents for each base provide the planner with short, medium, and long range information, from which new systems or facilities for a base can be determined.

Because of emergency war programs or changes in priority, bases may be selected for a new system ahead of the original schedule. In these situations, an alternative site must be selected, which may not be in accordance with preliminary plans. From this type of growth, bases have developed into a mixture of independently functional areas, but often unrelated to one another. Consequently, two planning solutions are needed: (1) a system of on-base land use controls should be adopted to regulate future development (see Chapters V, VI, and VII); and (2) corrective actions should be taken to increase the efficiency of mission accomplishment by grouping functionally related activities and separating mutually incompatible activities.

To correct these conditions, an analysis of the existing situation should be made with regard to the determinants and patterns of land use and the land requirements of various base organizations.

Land use determinants. There are three basic determinants of land use in the civilian community: (1) social values; (2) economics of the land; and (3) the "public interest."[7] Social determinants are concerned with the development of land caused by the actions of individuals and groups motivated by values, ideals

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[7]Chapin, op. cit., pp. 7-72.

and attitudes. The economics of land indicate that land use is a consequence of the behavior of the urbanite in terms of the location and interrelationships of activities and land values. The "public interest" is concerned with the broad elements of health, safety, and general welfare. This involves not only the desires of the individual to assure livability but also the degree of control exerted by the community government. Therefore, the "public interest" is of concern to the individual and the entire community and must be provided through central governmental actions.

A hypothetical illustration should help clarify the interrelationships of these land use determinants. Suppose that a group of developers motivated by profit values set out to acquire several acres in a suburb to develop a housing project, including a shopping center. This group must define their economic objectives, consider the alternatives, and reach a decision before acquiring land. With respect to each alternative site, the land use determinants must be evaluated. Proximity to other types of housing areas with respect to social class, ease of changing zoning, the public announcement of intent that will cause some adverse feelings with regard to traffic, natural surroundings, and increase or decrease in property values should be considered. Whatever the decision, the original profit motive becomes interrelated with the social and "public interest" determinants as well as the economic interest of those being affected. The outcome thus affects the configuration or pattern of land use. Hence, social and economic elements play major roles in the

civilian community.[8]

By contrast, social and economic determinants of air base land use have been relegated subordinate roles to the primary mission. Social and economic aspects should then be included in a second air base determinant; namely, efficiency of mission accomplishment. Too often, social and economic influences are not given enough consideration. Ignoring these elements may unintentionally impair mission efficiency. For example, the shortage of base family housing may seriously affect the morale and retention of capable personnel. Lower morale, in turn, affects individual efficiency and mission accomplishment. A third and final determinant, which is paralleled by "public interest," is termed environmental performance.

According to AFM 1-2, forces provided by the Air Force are employed for the following purposes:

> 1. To deter general or limited war.
>
> 2. If general war occurs, to defeat the enemy as quickly as possible.
>
> 3. If limited war occurs, to be able immediately to conduct selective operations wherever required for the prompt resolution of the conflict under acceptable circumstances.
>
> 4. In cold war, to conduct operations as directed; to counter or forestall activities considered harmful to the interests of the United States and its allies.
>
> 5. In peacetime, to conduct such operations in the aerospace as will advance men's knowledge and capabilities, with benefits to people everywhere.[9]

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[8] Ibid., pp. 69, 70.

[9] AFM 1-2, United States Air Force Basic Doctrine, p. 9.

The mission of each Air Force base is directly related to these purposes. Some bases have relatively simple missions such as training pilots; others have a mission of strategic capability; still others have multi-missions. The latter is the usual case; but whatever, the specific classified mission is the highest priority of the determinants. For example, the goal of all personnel on a training base is to put aircraft in the air. Maintenance personnel keep the aircraft running; civil engineering keeps the runway and other needed facilities in top performance; base operations control the flight patterns for safety; and base headquarters keeps informed of command policies and implements the necessary programs. All jobs are related to the mission; either directly to continual flight training or to maintenance and management of equipment and personnel facilitating this mission.

The ability of each interrelated activity to accomplish the mission in terms of cost and convenience is the second determinant of land use. The elements of cost and convenience, as they refer to land use efficiency, are concerned with the spatial relationships between various activities and the circulation of the base. That is, given the proper spatial relationship between activities and a good circulation system, the efficiency of any single activity would probably increase. With a well-planned circulation system that would provide convenient access to all points of the base, the motor pool section could react to calls quicker, handle more calls with fewer personnel, and improve its safety records.

Another element involved with efficiency is the effect of mixed, unrelated land uses. For example, the location of an administrative section in a heavy industrial area that produces adverse effects of mental well-being would probably lead to decreasing efficiency on the part of the administrative section.

This problem of mental well-being is interrelated with the third determinant, environmental performance, which is directly concerned with the health, safety, welfare, and security of both military personnel and civil service employees, and indirectly related to the civilian community. Of particular concern are: (1) land use activities creating dust, smoke, noise, glare, and odor; (2) activities generating large volumes of traffic; (3) areas of high voltage, explosives, and flammable fuels; and (4) security of various classified activities. For example, jet aircraft and missiles create noise patterns that should be studied to determine their affects on various types of activities. Siting of new activities should then be in conformance with compatible noise levels. To attain this higher degree of livability, some control should be exercised to improve the performance of the environment.

Also related to livability is the provision for social, recreational, and shopping facilities in the community. Since the air base should be a complete community, these various elements should be available to Air Force personnel and their dependents. Without them, the degree of livability and efficiency of mission accomplishment would be impaired.

While social and economic elements are, in themselves,

determinants of civilian land use patterns, they are secondary to mission accomplishment in the air base community. The primary determinant is the base mission; however, Air Force officials should not neglect the fact that without people, the mission would fail.

Patterns of land use. In the development of a land use plan, cognizance should be made of the existing pattern of land use. Most civilian and air base communities have become a complex of what the sociologist calls natural areas. These areas develop as the result of two process phenomenon: symbiosis and segregation.[10] Symbiosis is the tendency for functionally supplementary activities to locate in proximity. For example, restaurants usually locate in proximity to hotels and motels; and aircraft maintenance shops usually locate adjacent to the flight line. The second process, segregation, is the tendency for mutually incompatible functions to sort out and locate in exclusive areas away from each other. To illustrate, minority housing areas and industrial areas are not located adjacent or close to high or middle income residential areas; and family housing is not near jet engine test facilities or the airfield area.

Various urban scientists have studied the concept of natural areas as to the internal structure of land use. The most prominent of these are shown in Figure 4. Stated in simple terms, Burgess' Concentric Zone Theory shows that land uses form concentric zones of decreasing density outward from the central

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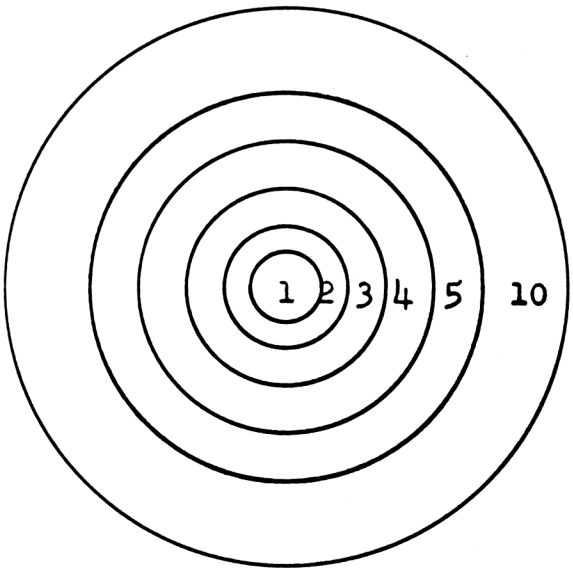
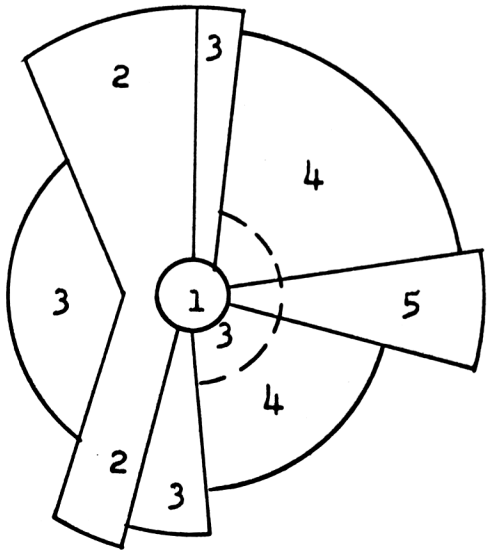
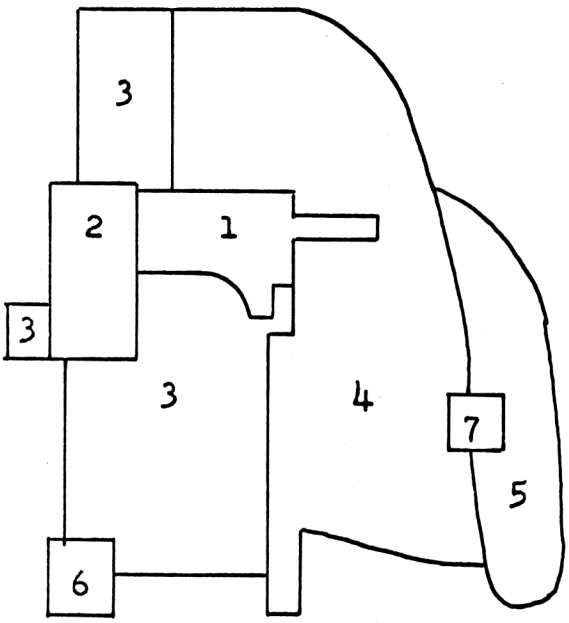
[10]Irwin T. Sanders, The Community, pp. 35, 43.



CONCENTRIC ZONE THEORY



SECTOR THEORY



9 MULTIPLE NUCLEI THEORY 8

Three abstractions of the internal structure of cities

1. Central Business District
2. Light Manufacturing
3. Low-Class Residential
4. Medium-Class Residential
5. High-Class Residential
6. Heavy Manufacturing
7. Outlying Business District
8. Residential Suburb
9. Industrial Suburb
10. Commuters' Zone

FIGURE 4

CIVILIAN LAND USE PATTERNS

business district. Hoyt's Sector Theory indicates that types of land use tend to form wedge-shaped sectors radial to the city's center along established lines of transportation. The Multiple Nuclei Concept, first suggested by McKenzie, theorizes that there are a series of nuclei about which urban land develops.[11] Since these are generalized statements, not specific forms, and cities usually have some characteristics of each, they should not be used as guides for planning the ideal city.

With a similar theory in mind, analysis was made of some fifty bases to determine if the concept of natural areas was applicable. In all cases, natural, functional areas were evident; however, only twenty-six, about one-half, had discernible structures. Of these, there were three identifiable patterns, which are shown in Figure 5. Most bases had some characteristics of all the patterns, therefore, these abstractions should be used only as a guide in determining the land use pattern of a base, not as a land use plan.

These patterns illustrate that functional relationships exist between activities, especially industrial to airfield and administrative. Also, the community center, when existing, was usually centrally located adjacent to both administrative and housing areas for working personnel and dependents respectively. The task of the planner is to analyze these patterns for determining the activity relationships of the various organizations. The land use plan should then provide for the grouping of

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[11]Chapin, op. cit., pp. 10, 11.

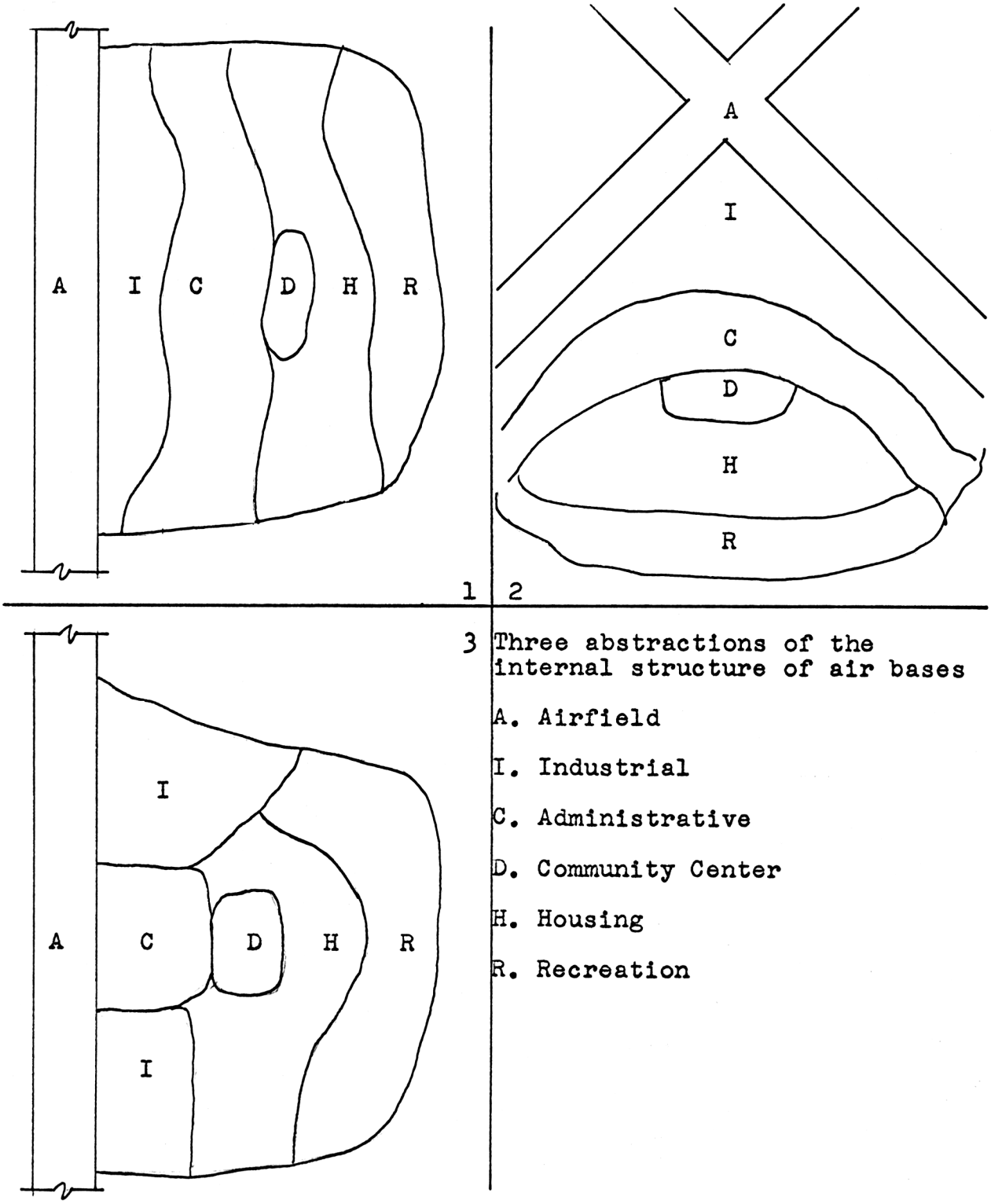

FIGURE 5

AIR BASE LAND USE PATTERNS

mutually related, and the separation of mutually harmful, functions. When the activity relationships are determined, the planner must then obtain the land requirements of each function.

Land use planning. Both the Air Force and civilian communities have experienced a molecular growth; that is, additional molecules or tracts of land are annexed only when needed. The difference, however, is the reason for annexation. Civilian communities annex land to increase revenue from taxes by increasing population or providing needed sites for industrial parks. The air base community annexes land only when there is insufficient space to provide for new technology necessary to the mission. Since this is not an everyday occurrence, and tax revenue is not applicable, expansion capability is not as critical.

Furthermore, the occupational structure is directly controlled by the assigned mission, resulting in a stable economic base. Each organization is authorized a specific number of personnel that cannot be exceeded. While these elements tend to limit the need for expansion capability, they are off-set by the excessively high density on many bases and the need for replacing World War II structures. The task of the planner is to determine the amount of space available and required for existing facilities and future increases in technology. A list of the functions to be accommodated in the future, new requirements of existing activities, and data on the base population must be available to determine how much land is needed. To accomplish these tasks, the base should be divided into related activity areas.

There are three major areas of the civilian community: (1) work areas, (2) living areas, and (3) recreation areas.[12] Using the previously recommended classifications of air base land use, airfield/missile launch, industrial, and administrative land uses may be classified as work areas. These areas should be located near, but not adjacent to, living areas. Separation should be given to each classification; however, adequate circulation routes should be provided to ensure easy accessibility. Interrelated work areas such as aircraft parking aprons and aircraft maintenance shops should be in proximity. In addition, some industrial activities require direct access to heavy transportation facilities and large capacity utility lines. These specific requirements must be known and are usually stated during the building and land use inventory. To estimate total requirements or to check existing facilities for adequacy, the following densities that are based on averages that various cities permit and from expert personal judgement are suggested:

> 1. Aircraft Maintenance Facilities--Thirty to fifty workers per gross acre. Open Space Ratio--One (building) to four (open space).
> 2. Industrial Land Use--Density Class Intensive--Fifty workers per gross acre. Density Class Intermediate--Eighteen workers per gross acre. Density Class Extensive--Six workers per gross acre. Two to fifteen square feet floor area per base capita. Open Space Ratio--One (building) to four (open space).
> 3. Administrative Land Use--Two to fifteen square feet floor area per base capita. Open Space Ratio--One (building) to six (open space).[13]

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[12] Ibid., p. 91.

[13] Joe B. Hollingsworth, An Analysis of Air Force Master Planning and the Effect of Space Programs on Land Development, p. 47; Chapin, op. cit., p. 308.

Housing and community support land uses may be compared with civilian living areas. The neighborhood concept, long advocated in the civilian community is also applicable to air base communities. While a definition has not been standardized, the concept generally denotes a physical environment in which no traffic streets have to be crossed for a child to reach a school that is within easy walking distance; one in which goods and services needed daily may be found; and one in which well-equipped playgrounds for the children exist.[14] These elements should be incorporated into the air base land use plan. The family housing areas should not allow heavy traffic streets; there should be schools, close access to shopping and community services, recreation, religious facilities, and base bus lines. Shopping and community services should be placed in a base community center. Facilities that should be included are shown in Table 3.

Items 1 through 6 of Table 4, which suggests distance relationships, are based on civilian standards for the neighborhood concept. Considering the configuration of existing bases, these standards may not be practical; however, they should be used as desirable planning goals. For example, an existing branch exchange store in an administrative area would change distance relationships of the community center. The remaining elements of the Table are based on current Air Force requisites, but should be used cautiously. As indicated, firing ranges should be

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[14]Arthur B. Gallion and Simon Eisner, The Urban Pattern, p. 251.

TABLE 3

FACILITIES FOR AIR BASE COMMUNITY CENTERS

MERCHANDISING	
Exchange Sales Store	Exchange Concessions*
Commissary Store	Clothing Sales Store
Exchange Service Station	Party Shop
SERVICES	
Chapel	Chapel Annex
Bank*	Post Office
Laundry Concession*	Dry Cleaning Concession*
Barber Shop*	Beauty Shop*
Red Cross Office	Personal and Family Affairs
Telephone-Telegraph Center	Education Center
Information Center	Bus Shelter
Nursery	Exchange Retail Warehouse
Exchange Maintenance Shop	Exchange Cafeteria
Public Restaurant*	Florist*
Shoe Repair*	Optical Shop*
Photo Studio*	Travel Agency*
Tailor*	
RECREATIONAL	
Theater	Service Club
Library	Bowling Alley
Recreation Hobby Workshop	Gymnasium
Fieldhouse	Swimming Pool
Youth Activity Center	

*Service concessions included under the general heading of merchandising (exchange concessions).

Adapted from AFM 86-4, Standard Facility Requirements, pp. 155-182.

TABLE 4

COMMUNITY SUPPORT LAND USE DISTANCE STANDARDS

Community Center+
Within ½ mile or 10 minutes of family housing
Adjacent to bachelor housing

Elementary School+
Within ½ mile or 10 minutes walk of each family housing unit

Junior High School+
Within ½ mile or 10 minutes of family housing

Playgrounds+
Should be consolidated with school playground

Playlot+
Within 1 block of each family housing unit

Recreation Center+
Within ½ mile or 10 minutes
Should be consolidated with community center

Bachelor Dormitories*
Within 800 ft. of dining halls
Immediately adjacent to community center

Hospital*
Not less than 8,000 ft. from airfield land use
Not more than ½ mile or 10 minutes from family housing

Family Housing**
Not less than 20,000 ft. from missile launch pads
Not less than 4,500 ft. from airfield land use
Not less than 1,320 ft. from industrial land use
Not less than 1,000 ft. from firing range
Buffer zones 250 ft. in depth should separate all other land use classifications

+F. Stuart Chapin, Jr., Urban Land Use Planning, p. 297.

*AFM 86-6, Air Base Master Planning, p. 166.

**AFM 88-25, Family Housing, pp. 56, 57.

located no less than 1,000 feet from housing. In addition to this broad limitation, the direction of firing should be away from the housing area, isolated by both natural and man-made barriers, and well marked for location. Other hazardous areas should be similarly isolated.

Area requirements for community centers have been discussed by various authors. However, standards have not been suggested. Apparently, the required area is related more to the specific elements to be included than to the population of an area. Area requirements for family housing are stated in AFM 88-25, Family Housing, as a maximum of four and one-half dwelling units per gross acre. Table 5 presents suggested area requirements for schools and parks. These standards are also based on civilian principles but should be adhered to when possible.

Indoor recreation facilities such as theaters, bowling alleys, and libraries should be located adjacent to or within the community center. Outdoor spectator sports such as tennis and softball areas should also be adjacent to the community center. Parks, golf courses, and other non-spectator sports should be located in fringe areas to serve as buffer zones between the various land uses.

These aforementioned analyses should provide complete, accurate data on the existing situation, trends of land use patterns, and future land requirements. The planner should then correlate the proposed locations with the transportation network.

Transportation planning. Air base transportation planning has three distinct objectives. The first is the movement of

TABLE 5

AREA REQUIREMENTS FOR SCHOOLS AND PARKS

SCHOOLS

Type of School	Enrollment Range	Min. Acres	Desirable Acres	Preferred Acres	Radius of Area Served
Elementary	300 - 800	5	5+1/100 pupils	10 - 25	0.5 miles
Jr. High	1000-1500	10	15+1/100 pupils	25 - 40	1.0 miles
Sr. High	1500-2500	20	25+1/100 pupils	40-100	2.0 miles

PARKS

Type of Park	Acres Required
Children's playlot with equipment	1.0 acres each @ 0.5 acres/1000 population
Playground	3-6 acres each @ 1.0 acres/ 800 population
Playfield	10-30 acres each @ 1.0 acres/ 800 population
Local park	2+ acres each @ 1.0 acres/1000 population
Athletic field	15 acres each @ 1.5 acres/1000 population

Arthur B. Gallion and Simon Eisner, The Urban Pattern, pp. 257, 260.

people and goods to and from the base via public streets and highways. As an integral part of this objective, the location of terminals at the base must be coordinated with the local governmental units.

The second objective is to provide for circulation within the confines of the base. As in civilian communities, problems of circulation are interrelated with problems of land use. For example, civilian freeways and major arterials serve as both transportation facilities and boundaries to housing and industrial areas. The same principle should be held for air base transportation facilities. The system should be designed to conform to the framework of organizational requirements.

The third objective is the conservation of military personnel and government property. Traffic accidents are a basic source of waste for both manpower and property. Therefore, the planning of transportation facilities must include maximum reduction of traffic accidents.

The responsibility of the planner is to understand the transportation requirements of the community and develop a circulation system that will accomplish these objectives. A logical first step would be to prepare an inventory of existing facilities. Each component of the street system should be classified as to local, collector, and arterial; the capacities, volume, and characteristics should be determined and recorded; and an accident spot map showing location and types of accidents should be prepared.

The second step would be to conduct a traffic survey to

prepare an inventory of travel characteristics. This includes determination of major trip producers and attractors, number and types of trips, and maps of desired travel paths. Obtained from the land use map and actual surveys, these serve to improve the understanding of the nature of travel and form a basis for projecting future travel characteristics.

Design of the transportation system would be the third step. According to AFM 86-6, there are six elements of design which must be considered in developing the transportation plan. These are:

1. Relate the base network to the public highways in the region.
2. Determine the type and quantity of transportation required for the base employees.
3. Design access facilities to the base, including security gates and highway entrance patterns.
4. Analyze the major traffic generators (producers and attractors) with relation to other land use elements.
5. Design the internal road network keeping in mind classification and characteristics of existing roads, land use, pedestrian traffic, and traffic control devices.
6. Determine the location and capacity of required parking facilities and relate them to the existing and proposed transportation network.[15]

The fourth, and final, step correlates the proposed

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[15]AFM 86-6, Air Base Master Planning, p. 128.

transportation network with the land use analyses to prepare a land use plan. Although described separately, land use planning and transportation planning must be simultaneous studies. If performed independently, any compatibility of proposed elements would be coincidental. Because of the interrelationships, the two studies must be coordinated and then combined for a final land use plan.

The land use plan (Tab F-1). The land use plan, which is a rational expression of how land should be used, reflects the relationships of every individual land use to all other uses and includes necessary supporting items, such as community services and circulation. These elements relate to the efficiency, convenience, and performance of the living environment and reflect the basic mission of the air base community.

The following elements should be considered when developing and evaluating the land use plan:

1. The general plan of the base should permit maximum flexibility of utilization, which is the multi-mission concept and applies to the planning of individual land use areas, the facilities within those areas, and for expansion capabilities.
2. Activities should be located for their most satisfactory and efficient intended use, including the functional relationship between facilities within a specific land use area as with other land use areas.
3. Facilities should be located to provide for minimum circulation conflicts between vehicular and pedestrian

traffic. Pedestrian traffic should be simplified as much as possible. Adequate and unobtrusive service and fire access should be made to all buildings and areas. Parking areas should be located for maximum accessibility to facilities served while minimizing movement conflicts.

4. Buildings should be located with respect to topography, sunlight, prevailing winds, vehicular circulation, and vistas. Buildings should be adequately spaced to permit light, circulation of air, and fire safety clearances. The arrangement should be pleasant and functional to avoid monotony and regimentation. Open spaces should be provided for breathing space and recreational activities for the improvement of physical and mental well-being of all personnel.
5. Density should be based on socially accepted standards, particularly in dormitory, bachelor officer quarters, and family housing areas.
6. Simple planting for ease of maintenance and attractiveness should be provided as amenities. Maximum attempts should be made to conserve existing vegetation for shade, sound abatement, and soil stabilization.[16]

When completed, the land use plan becomes a part of the base master plan document (Tabs A-G), which is then presented for review and approval. When approved, the plan should be

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[16] Ibid., pp. 19, 20.

effectuated through administrative and judicial enforcement of land use controls.

CHAPTER IV

CONTROL OF LAND USE

Although controls have been used for a variety of purposes, they are essentially a means of ensuring that the various land uses in the community are properly situated in relationship to one another; that adequate space is available for each type of development; that densities are held at levels that can be economically serviced by community support items such as streets, schools, parks, utilities, and recreation centers; and that development is left sufficiently open to permit air, light, and privacy for persons living and working within the community.[1] These elements are usually included in the following types of controls: (1) health and safety standards; (2) subdivision regulations; and (3) zoning.

I. HEALTH AND SAFETY STANDARDS

While health and safety standards are not specifically methods of controlling the <u>use</u> of land, they are concerned with regulating the construction and design of facilities placed <u>on</u> the land. Land use planning has a goal of protecting the health, safety, and morals of the people; therefore, land use controls must be concerned with the standards which regulate this goal. These standards are usually in the form of fire, housing, sanitation, and building codes established by the city or county.

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[1]McLean, <u>op</u>. <u>cit</u>., p. 306.

Air base communities generally have more detailed restrictions regarding health and safety than do civilian communities. Various Air Force publications cover almost every aspect of construction, including fire, health, safety, sanitation, and housing. Moreover, publications are available on ground safety, accident prevention, flight safety, and many others that are unavailable in the civilian community.

II. SUBDIVISION REGULATIONS

The major area of deficiency for the Air Force is in residential development. AFM 88-25 gives explicit details on housing construction and density but very little information on planned developments.[2] Civilian communities usually include development standards in subdivision regulations.

These regulations specify the minimum standards that apply to all new residential development. This includes street design and construction, the arrangement of lots, drainage, water supply, sewerage, and, in some cases, street signs, fire hydrants, and street lighting. In recent years subdivision control has been expanded to include planned developments and, in some cases, complete neighborhood units. The control may also be used to secure other objectives such as future parks and recreation sites, and to regulate the pace of new development.

The improved procedures and broadened scope of subdivision control are aimed at improving neighborhood planning by: ensuring

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[2]AFM 88-25, Family Housing, 265 pp.

that the developer does a responsible job of construction; securing a full range of community facilities, well planned in relation to new development; achieving compact development well coordinated with existing uses, ensuring convenience for the public and economy of public services.[3]

Improving the scope of planning for family housing was the objective of Jones when he offered the following advantages to cluster layout:

1. No garage door (or carports) face directly to the street.
2. Guest parking is on cul-de-sac driveways. If street parking were prohibited, streets could be twenty-five per cent narrower, and thus provides an additional saving in development cost.
3. Each house faces a cul-de-sac road, eliminating the dangers of children at play and pedestrians on a through street serving the house.
4. Visually, the houses appear to have a greater separation than when placed on the conventional row type lot.
5. The finished lot shapes permit easier and more imaginative house designs and landscaping plans.[4]

The inclusion of the cluster concept of housing development in Chapter 3, General Design Criteria, of AFM 88-25, Family Housing, is recommended.

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[3]Delafons, op. cit., pp. 60-65.

[4]A. Quincy Jones and Frederick E. Emmons, Builders' Homes for Better Living, p. 34.

While subdivision regulations control the layout of lots and streets on undeveloped land, the control for performance, use, and types of facilities on the land is zoning.

III. ZONING

While the master or comprehensive plan expresses the basic policies that shape community character, the zoning plan establishes the specific limitations that apply to the use of land as an instrument for achieving the goals of the master plan.[5]

Traditional Zoning

So-called traditional zoning ordinances may be described as being of two general types, permissive or exclusive.[6] Permissive ordinances allow all items of one class and all other less intense land uses. For example, industrial zones, which are the most intense, would allow all types of industry as well as all other land uses, including residential. Exclusive ordinances allow only those items in a specific class and those items of related intensity. In this form, industrial zones would allow only particular classes of industry of related intensity. The key word in either form of ordinance is intensity, for which standard definitions do not exist.

The traditional zoning ordinance includes detailed dimensional controls that specify the height, minimum lot size and

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[5]Gallion and Eisner, op. cit., p. 204.

[6]Ibid., pp. 203-223.

frontage, minimum depth of side, front, and rear yards, and percentage of the lot to be left open. While most modern ordinances have retained these controls for low density residential areas, the floor area ratio (ratio between total floor area of the building and the ground area of the site) and density controls, which regulate the number of persons or dwelling units per acre, are being used. Each of these various controls is applicable by specific zone. For example, differing controls are established for residential, commercial, or industrial zones.

Traditional zoning was generally devised for piecemeal development on individual lots. Large scale developments were disallowed because of the specific wording and interpretation of the ordinance. However, several recent ordinances (New York, Washington, San Francisco, and others) have overcome this deficiency by utilizing the "floating zone."[7]

In this concept, heights, bulk, and open space regulations are relaxed to allow varied layouts and the provision of local shopping and services in a scale with proposed residential development. Minimum site size and ground area covered are the usual restrictions with the specific layout and facility designs by the developer. These are, of course, subject to review and approval by the planning agency having jurisdictional control. In addition to these limits, the areas where the floating zone cannot be used should be stated in the zoning ordinance.

Another disadvantage of the traditional ordinance has been

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[7]Delaphons, op. cit., p. 47.

the lack of control over new industrial techniques. This need not be the case. Technical performance standards that measure the effect of industry have been developed and should be incorporated into the zoning ordinance to provide a higher degree of differentiation among industrial zones. To date, standards for noise, vibration, smoke, dust, odor, fire, toxic and noxious matter, explosives, humidity, heat, glare, and radiation have been developed. When applied, industry that meet these high standards of operation may be sited adjacent to residential areas where convenience to the employees' homes is enhanced.[8]

Airport Zoning

Airport zoning ordinances, which are passed by the civilian community are referred to as off-base zoning of the air base. While not having the authority to adopt such an ordinance, the Air Force is responsible for promoting the enactment by civilian officials.

Provisions governing the use of land and the types of facilities placed on the land adjacent to airports and military air bases are actually forms of performance standards. Performances of the specific aircraft on the base and the proposed adjacent uses are measured for compatibility and their effects on the general public and military personnel.

The need for these ordinances became increasingly apparent as the development and use of jet aircraft increased after World

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[8]Gallion and Eisner, op. cit., pp. 210-212.

War II. The incidence of community complaints multiplied because of the heightened noise factors. Indications were strong that the use, value, and upkeep of residential, commercial, and industrial property within the immediate vicinity of airfields would be progressively impaired. As Joseph H. Tippets indicated, people put up with gasoline fumes and highway noises because so many own cars and use them in their daily routine. However, the average family does not realize that a part of their budget is associated with jet aircraft because only a small percentage of the nation's population travel by aircraft.[9]

The intent of these ordinances is to enter into formal agreement with the neighboring communities to restrict the use of land and the types of facilities, including construction, on the land that is immediately adjacent to the air base, specifically in those areas in which flight patterns now exist or are proposed. As stated by AFM 86-7, the Air Force policies are to:

> Protect the safety and comfort of the citizens of neighboring communities from interference on account of air base operations.
>
> Ensure that development around the base will not interfere unreasonably with safe flight operations, necessary future expansion, and effective accomplishment of the mission of the base.[10]

The Air Force further recommends that the following controls be included in the airport zoning ordinance:

Regulation of the type and density of land use in areas

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[9]Joseph H. Tippets, "Experience With Jets-And a Look Ahead", Planning 1961, pp. 93, 94.

[10]AFM 86-7, op. cit., p. 1.

nearest the flight pattern.

Limitation of the height of objects in the aerial approaches and traffic patterns of the airfield.

Prevention of smoke or other atmospheric pollution and electrical disturbances which reduce visibility or interfere with the operation of radio aids and communications.

Promotion of the health and comfort of Air Force personnel through local regulation of the uses to which adjacent land is put.[11]

Some states lack the enabling legislation that authorizes the civilian community to pass an airport zoning ordinance. When this situation exists, regulation of development should be through other methods of control. These may be in the form of building codes regulating construction; subdivision controls that regulate real estate development; smoke and nuisance abatement laws to reduce atmospheric pollution; license regulations for business and commercial development; public utility regulations restricting heights of towers; and highway access controls, which limit roadside development. While these are useful as individual controls in the absence of airport zoning, the latter is more desirable as a single form of control. Moreover, the airport zoning ordinance would be more effective when incorporated as a part of a comprehensive (Air Force and civilian) control system.

IV. COMPREHENSIVE CONTROLS

Comprehensive controls would incorporate airport and recent forms of traditional zoning, subdivision regulations, health,

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[11] *Ibid.*

safety, and construction standards, and all other forms of control that are affecting the use of land in the community. This is not a single control ordinance; however, the required degree of coordination warrants a single enforcing agency. For example, placement of the building inspection and planning offices in a single department would increase administrative efficiency (see Figure 1, page 12).[12]

Communities have several forms of control that affect the use of land. Ideally, the various controls should be coordinated and administered by a single agency. As shown in Figure 2, page 12, the Air Force organizational structure would be capable of administering comprehensive controls; therefore, to complete the control system, on-base zoning is recommended for the Air Force.

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[12]Clyde O. Fisher, Jr., "Zoning Administration," Planning 1962, p. 63.

CHAPTER V

PROPOSED AIR BASE ZONING

The fact that land use controls are advocated and used by the Air Force is expressed through existing strict regulation of construction, family housing, height of facilities, and the responsibility for promoting civilian airport zoning. The considerations for developing the land use plan (see page 40) further indicate that the placement and arrangement of facilities should be controlled. While current Air Force policy requires each base to site facilities in accordance with the master plan, the looseness of this control is detrimental to effective planning.

A case example will help illustrate this point. Two adjacent parcels of land had been allocated to two organizations that were both research oriented. One organization had a building under construction that housed some sophisticated engineering testing equipment. The second organization then submitted a siting request for an electronics research facility. According to the master plan, this could be, and was, done. However, the engineering testing equipment will probably cause interference with the electronic equipment. With additional site and spatial relationship requirements, these organizations would have been prohibited from locating in proximity.

The master plan can indicate specific sites only for those facilities known to be needed. If expansion space is available adjacent to a requesting organization, problems probably would

not occur. However, when expansion space is not available or previously unforeseen facilities are needed, a problem of siting evolves. At present, the requesting organization selects the site, which must then be approved by the FUB. During FUB meetings, all affected organizations can indicate their approval or disapproval but, in the final analysis, the only criteria is space and the objective desires of responsible persons. Results of this are improper activity relationships, serious impairment to the environment, and subsequent inefficiency of mission accomplishment. Hence, some form of written regulation to provide a standard basis for the placement and arrangement of facilities in carrying out the base master plan is an urgent necessity. The use of on-base zoning would provide this important land use control and complete a system of comprehensive controls.

I. CONCEPT OF ZONING

The underlying principle of zoning is to promote the health, safety, morals, and general welfare of the community. Not by coincidence, this is the same basic principle of land use planning. Since protecting the working and living environment cannot be provided solely by a master plan, control of land use must be exercised to effectuate the plan. Thus, zoning is a tool for carrying out the land use plan.

II. RELATION OF ZONING TO THE MASTER PLAN

The base master plan should provide areas for activities that have mutually compatible functions and separate those

activities that are mutually harmful. The function of zoning would be to establish these zones and restrict the activities that could be placed within them. This would be accomplished by designating the general use of the zone and regulating the performance, placement, and arrangement of facilities. Delimitation of the zones would also provide for the establishment of: (1) height zones for controlling airspace and airfield areas; (2) noise zones within which certain facilities may be located with respect to the noise levels produced by the aircraft assigned to the base; and (3) a zone for a centralized base community center.

A base master plan should also provide expansion space for each type of land use or major complex. Zoning regulations would provide standards for density of population, light and air, and open space for each district or zone. Therefore, expansion space would be guaranteed. In addition, vacant land should be set aside for new base mission requirements resulting from new technologies or priority changes. Zoning would control the non-utilization of this use and establish criteria for future use.

Related to open space is the desire to provide some aesthetic controls and preserve existing amenities. The land use plan should designate areas for conservation, such as existing vegetation and historic or scenic elements that can be used as future parks, recreation areas, or small garden plots. Zoning would describe these elements and prohibit destruction or removal of these amenities. Aesthetic controls could also be used to regulate: the location and performance of obnoxious land uses such as junk yards, storage areas, and parking lots; landscaped

open areas or buffers between zones; and site and building relationships in all zones.

Another function of zoning relates to the base transportation system. As previously stated, the land use development plan includes the proposed transportation system. The establishment of activity of use zones would provide a logical basis for the circulation system. That is, the major arterials would interconnect but not bisect the zones and only collector and local streets would be used within the zones. Thus, the street system is the zonal link on the base, and the external link to the civilian community.

Being placed on soil, an air base becomes an element of the surrounding environment. Although a separate community, isolation is impossible and should not be attempted. Therefore, when developing the master plan, cognizance should be made of both existing and proposed land uses adjacent to the base. The function of zoning would be to integrate the base with the environment. The character of the base, recreation and open space standards, street patterns, and zoning districts should be designed with the thought of possible future disposition to the civilian community. Therefore, zoning on the base should establish districts that are compatible with adjacent civilian land uses. In addition, the base authorities should promote the enactment of restrictive airport zoning ordinances. The Air Force function would prevent the placement of obnoxious activities adjacent to the base boundaries; the civilian function would prevent the reverse situation.

Finally, the development plan should be supplemented by a zoning map that describes the types and boundaries of the zones. This map would be of invaluable assistance to members of the FUB during siting action discussions.

III. MERITS OF ZONING

The merits of zoning have been argued by those for and against since the turn of the century. Some arguments against have been centered on interference with individual rights and the misuse of the intent of the ordinance. While these are valid complaints, they rightfully belong in the category of administrative deficiencies rather than arguments against the concept.[1] Other opponents would place all the powers of zoning in the master plan.[2] This would force a mandatory and inflexible plan that would not conform to our democratic society or the dynamic characteristics of our communities. Therefore, zoning has remained and developed into a tool for executing the plan and a means for providing judicial flexibility in the planning process.

As with civilian communities, the merits of zoning, which would vary from base to base, are usually directly related to the functions. In addition to the functions stated above, the elements enumerated below illustrate some general merits for the Air Force.

1. An ordinance would consolidate in one source many

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[1]J. H. Beuscher, Land Use Controls, 577 pp.

[2]John Reps, "Requiem for Zoning," Planning 1964, p. 62.

independent controls or restrictions. Various organizations and functions have specific operating, spatial, and construction restrictions that are described in publications pertaining to them. For example, manuals on nuclear reactors describe the performance of the facility and give distance relationships to other critical functions on the base; AFM 86-8 gives height restrictions in the immediate areas of the airfield; and AFM 86-7 gives details for off-base or airport zoning.[3]

2. The establishment of use and/or performance zones on existing bases could include nonconforming uses in some zones. The zoning ordinance would provide for the future relocation of these facilities.
3. Zoning ordinances would allow the planned integration of land uses by providing the services required for each zone, although the classifications could be different. For example, recreation areas would be provided within housing areas.
4. A zoning ordinance on the base would give greater emphasis for the enactment of an airport ordinance that would be compatible with adjacent on-base land uses.
5. A comprehensive zoning ordinance would provide a central authority for establishing the location of new

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[3]AFM 86-8, Airfield and Airspace Criteria, 20 pp.; AFM 86-7, op. cit., 30 pp.

facilities. Bases which have tenant commands performing their individual programming activities often have siting problems. As the zoning ordinance would prescribe the uses, performance, and heights allowed in each zone, siting actions would be simplified.

6. Changes in mission, contemplated for specific bases, could be analyzed in terms of changes in land use per type of zone. Changes in flight technology could change flight patterns and height restrictions. The problems involved could easily be noted on the zoning map and quickly solved through enforcement of the ordinance.

7. With zoning districts established, a change in mission would not disrupt the entire planning process. Mission changes could dictate revisions to the land use plan but would probably have little effect on the overall zoning ordinance. Therefore, the ordinance would provide a basic framework within which land use revisions could be made.

To obtain additional information, prominent civilian planning consultants, knowledgeable in air base planning, were contacted and asked to comment on the concept of air base zoning. Letters of response, which are presented in the Appendix, substantiate many of the points presented in this chapter. One of the major problems concerned with the development of air base zoning, which was noted by both Harland Bartholomew and Associates and Howard, Needles, Tammen, and Bergendoff, would be

related to administration and enforcement of the zoning ordinance.[4]

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[4]Claire Avis, letter to author, March 7, 1966; Charles T. Munson, letter to author, March 2, 1966.

CHAPTER VI

PROPOSED ZONING ORDINANCE ADMINISTRATION

The administration of the zoning ordinance is usually characterized as the negative aspect of zoning. Although certain sections are prohibitory in nature, the task of administration is not primarily to deny requests or investigate alleged violations. The adjustment of situations in which the strict application of the ordinance would be arbitrary is far from a negative art. Therefore, the person or persons authorized to enforce the zoning ordinance must be competent, enlightened, and apply the regulations without prejudice.

I. ENFORCEMENT

The organization designated to enforce the air base zoning ordinance should be the inspection branch, the air base counterpart to the civilian office of the building inspector (see Figure 2, page 14). Some civilian authorities advise against this system because of the lack of coordination with the planning office.[1] However, this disadvantage need not occur in the air base organizational structure. All project justification requests (DD Form 1391), which contain plot plan and use description, are subject to mandatory review by the planning branch. An information copy, sent to the inspection branch would establish the coordination channel and give forewarning of the project.

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[1]McLean, op. cit., p. 340.

Further base coordination is currently provided through required approval signatures of the base engineer and base commander, secretary and chairman of the FUB, respectively.

Following project approval at both base and command levels, and the completion of construction drawings and specifications, a second mandatory review is currently conducted by the engineering and construction office. A representative of the inspection branch, who will be the designated inspector, also reviews the construction documents to become more familiar with the project. A simple addition to this existing procedure would require the inspector to review for conformity to the zoning regulations and issue a permit for construction (building permit) stating that the proposed facility conforms to the ordinance. After the issuance of such a permit, existing procedures for construction would be applicable.

With the completion of construction and final inspection of the facility, the using agency or agencies should be provided with a certificate of occupancy stating that the building complied with the regulations in effect at the time of construction. This procedure is illustrated in Figure 6.

The enforcement officer should be charged with carrying out the literal provisions of the zoning ordinance, outlined in Chapter VII. He would not possess any discretionary authority on interpretation matters, nor the power to grant variances or make special exceptions. These are board of adjustment functions.[2]

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[2] Ibid., p. 341.

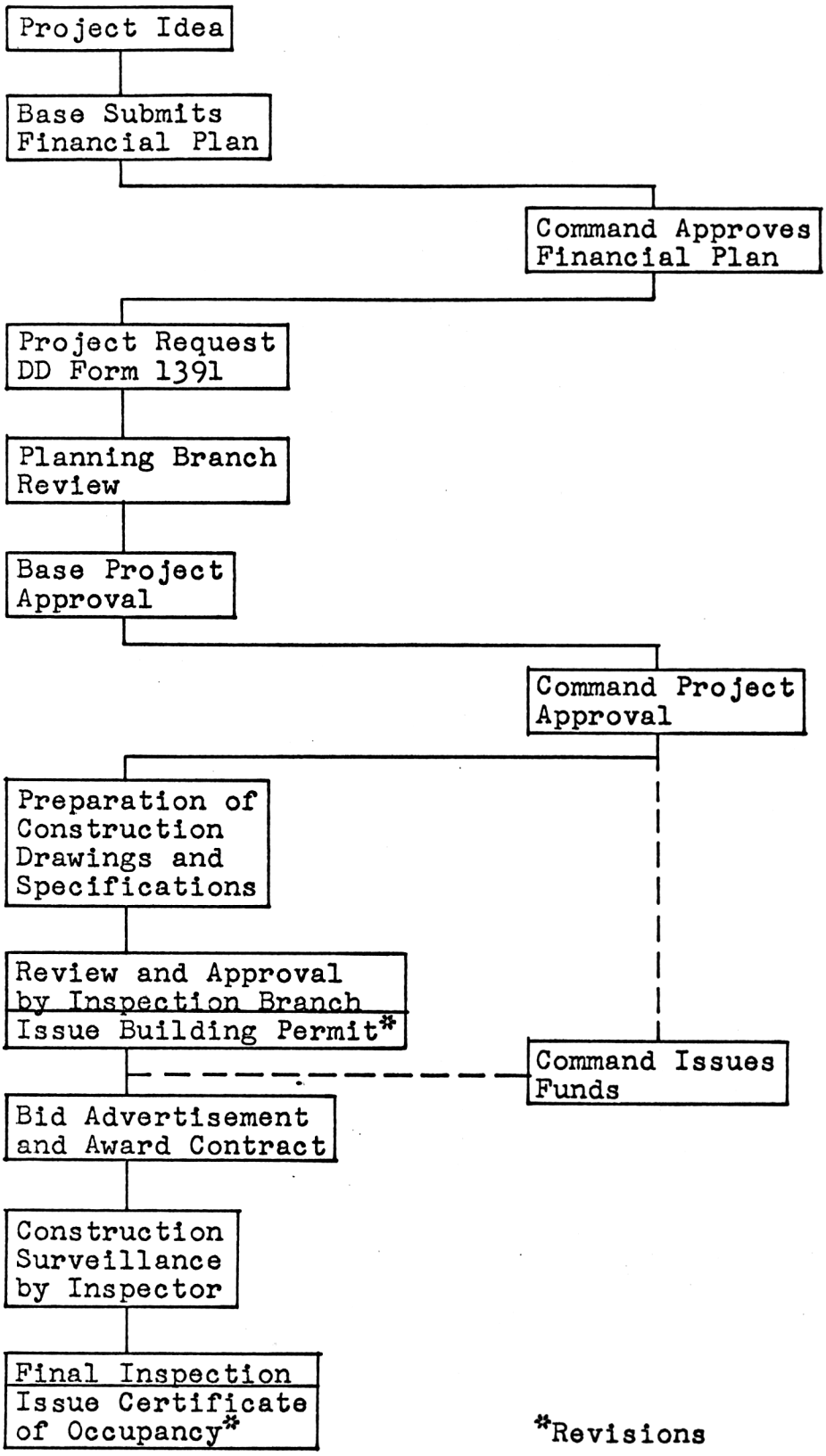

FIGURE 6

REVISED PROJECT APPROVAL PROCEDURE

II. BOARD OF ADJUSTMENT

The board of adjustment would be a quasi-judicial body charged with administering and interpreting the meaning and spirit of the zoning ordinance. There would be no authority to substitute judgment for legislative actions.[3]

Composition of the Board

The size of the board should relate directly to the size and complexity of the base, with membership ranging from five to nine members. The chairman should be appointed by the base commander from, and subject to the approval of, the members of the FUB. The chairman would not vote except to decide tie issues. Because of records available to his office, the secretary, also a non-voting member, should be the chief of the inspection branch.

Voting members should include representatives of: (1) the planning branch, to establish planning coordination; (2) the base judge advocate's office, for judicial advice and review; (3) base operations, to advise on matters pertaining to special exceptions and their effect on aircraft flight patterns; and (4) other technically qualified personnel in the areas of noise controls, industrial performance standards, housing development standards, fire protection, and ground safety. Specific members and length of terms should be decided by the chairman, subject to approval by the FUB.

Length of term is an undecided element. There are four

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[3]Ibid.

possibilities: (1) all members should be military personnel and have overlapping two year terms; (2) all members should be military personnel and hold their appointed position until they depart the base permanently, at which time their replacement automatically assumes the duties; (3) only the chairman, specially qualified members, and their future replacements should be military and other members would be civilians with permanent positions; and (4) all members except the chairman would be civilians with permanent positions. The use of military personnel would provide only a limited degree of continuity. Being subject to transfer at any time, all members could depart the base in a short time span before replacements could become familiar with the base and environs. However, the turnover of personnel could provide a fresh outlook and reduce tendencies to become static and biased. Therefore, the use of a mixture of both military and civilian members as in (3) above is recommended.

Functions of the Board

While the duties of the board of adjustment may be and, in civilian cases often are, delegated to the planning office, the arrangement has rarely worked satisfactorily. Planning offices thus burdened have little or no time for long range planning. Without a master plan, the planners find themselves incapable of logical zoning decisions. Inevitably, the planning office degenerates into little more than a day-by-day, crisis-by-crisis office resulting in continual spot zoning that eventually undermines the land use plan. To preclude this situation, a

discretionary body must be established that can allow some deviation to the strict letter of the law for special exceptions and variances based on sufficient cause. This board must have a thorough knowledge of the actions and policies of the planning branch. However, their functions should be distinct and separate from those of planning.

In general, the board's functions fall under three major headings: (1) interpretation of the zoning ordinance, (2) granting of special exceptions, and (3) granting variances.[4]

Interpretation. The function of interpretation is similar to a court action. This consists of hearing appeals on decisions rendered by the enforcement official when the specific organization alleges that the application or meaning of the ordinance has been misinterpreted. The board should first determine the true facts of the case and apply those facts to their interpretation of the ordinance. For example, the board may need to make a decision as to whether a use at a specific location would be offensive to adjacent organizations by reason of the emission of smoke, dust, odors, or noise. Ordinarily, the findings of the board are taken as final; however, interpretations of the meaning of the ordinance are subject to review and possible reversal by the FUB through judicial review actions, which are discussed in a later section.

Granting special exceptions. In establishing the zoning districts, certain existing uses may be found that are not in

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[4]Ibid., p. 342.

conformity to the ordinance. Administration of nonconforming uses would be a function of the enforcement officer, which is described in Chapter VI. However, to establish a nonconforming use in an existing district, the board would grant a special exception or use permit. A common example of this would be a utility substation that must be located in new residential areas. Although nonconforming, the use is required; therefore, the permit would be issued but subject to conditions stated by the board. That is, small enclosed buildings in character with the housing area or specific landscaping may be a condition of the permit. Generally, the only requirement would be for the conditions to be reasonable. The board, composed of technically qualified personnel, should exercise ingenuity in devising conditions that produce the desired effect.

The principle to be followed in granting special exceptions is the same as for interpretation powers; the board must follow the exact language of the ordinance and act only after all necessary facts have been presented.[5]

Granting variances. Probably the major reason for creating the board of adjustment is to take care of the many special situations that cannot be anticipated in the ordinance. In fact, there should be no attempt to include regulations for every possible contingency. Since the board can handle cases that deviate from the usual, only the probable variations should be described. Variances should be granted for deviant cases only

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[5] *Ibid.*

when the strict application of the ordinance would cause unnecessary hardships.[6] A typical example is where topography of a particular site (unusual terrain or exceptional narrowness) would make compliance almost impossible. An underground optics research laboratory requires specific geologic conditions. The particular site chosen to meet requirements may result in the need for a special exception for the use district and a variance because of setback or area requirements. There are three principles expressed by this example. One is that a variance should not be issued for nonconforming uses. Secondly, the board should consider the importance of the request as to mission accomplishment. Lastly, the board should consider how granting a particular variance would affect neighboring organizations and/or land uses. If more harm would be done by making rather than denying the grant, the variance should be disapproved.

In granting variances, as with special exceptions, the board has the power to stipulate conditions. Since a variance is a privilege, the responsible organization must comply with whatever conditions are imposed.

Jurisdictional powers. These two grants illustrate the types of jurisdictional powers held by the board. The granting of special exceptions through appeal procedures are referred to as the appellate jurisdiction. Cases representing deviations to the specified area regulations are matters of original jurisdiction; that is, the application for a variance would be made

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[6] Ibid., p. 343.

directly to the board of adjustment.[7] Upon approval of either grant, building permits would be issued by the board secretary, chief of the inspection branch.

Procedures of the Board

Immediately after the appointment of the board, rules of procedure should be adopted. Standard forms for appeals applications and administration of exceptions and variances should be designed. When conducting hearings, proper notice should be given to all base organizations and personnel. In addition, records should be made for each case to show the evidence received, the facts upon which decisions were based, and the decision.[8] Determinations of both appellate and original jurisdiction would be final; however, all findings on matters of interpretation would be subject to judicial review.

III. JUDICIAL REVIEW

The first judicial review of interpretation would be by the board of adjustment, as previously described. Being subject to review, decisions do not become final until certified by the FUB. If the decision disagrees with the desires of the applicant, higher judicial review would be warranted.

Another provision of the zoning ordinance that may require judicial review pertains to amendments to the zoning regulations

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[7]Murlin R. Hodgell, Zoning, Kansas State College Bulletin No. 84, p. 117.

[8]McLean, op. cit., p. 344.

and district boundaries. These may be initiated three ways: (1) by the FUB, subject to advice by the planning branch; (2) by recommendation of the planning branch; and (3) by petition of fifty per cent of the organizations in a specific zoning district. Before the FUB can incorporate the amendment into the ordinance, a base-wide public hearing would be held to present the proposal. A simple majority favorable vote would be required to effectuate the provision. Against a protest of at least fifty per cent of the organizations affected, the favorable vote must be four-fifths. In the third method, the FUB may disapprove the request by a four-fifths vote. In all three cases, the provisions may be appealed by the protesting parties.

Appeals for both amendments and interpretation cases should follow the same progressive procedure. Subsequent to FUB action, the case would go to a base zoning court, composed of three representatives of the base judge advocate's office, none of whom serve on the board of adjustment or FUB. This court, which would be the highest judicial review on the base, would probably terminate most appeal actions. However, a few cases may warrant higher review. The next echelon would be a command board of adjustment, created by the same methods as described for the base. Final review would be by a special panel of two representatives from the judge advocate and civil engineering offices, respectively, at Headquarters USAF.

At each echelon, the evidence of the case would be carefully considered. Should a hearing not be granted, previous determinations are final. However, if the hearing should be granted,

final decisions would be made by the higher review board. When a final determination has been made, a case may not be reopened unless bonafide new evidence is certified by the base engineer.

Administration of the ordinance would require only minor changes to existing project procedures. Judicial review would, however, require establishing new boards and procedures to ensure just and impartial administration of the zoning ordinance.

CHAPTER VII

PROPOSED AIR BASE ZONING ORDINANCE

Zoning ordinances usually have four parts: (1) introduction, (2) zoning districts, (3) regulations, and (4) administration. A typical outline of the ordinance would be as follows:

I. INTRODUCTION
   A. Purpose
   B. Definitions
II. ZONING DISTRICTS
   A. Zoning Map
   B. District Designations
III. REGULATIONS
   A. General Application
   B. Conflict with Other Regulations
   C. Description of District Regulations
   D. Supplementary Regulations
   E. Nonconforming Uses
IV. ADMINISTRATION
   A. Enforcement
      1. Building permits
      2. Certificates of occupancy
   B. Board of Adjustment
      1. Interpretation
      2. Special exceptions
      3. Variances
   C. Amendments
   D. Validity
   E. Violations and Penalties
   F. Effective Date[1]

Although this outline illustrates the general information to be included in the ordinance, a standard format for all air bases should be adopted to prevent possible misinterpretations by mobile Air Force personnel.

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[1]Hodgell, op. cit., pp. 130-132.

I. INTRODUCTION

The introduction consists of the authorization to enact the ordinance, the purpose of enactment, and definitions of terminology to be used.

Purpose. The authorization and purpose or scope of the ordinance may be stated in the form of a preamble. If, however, a preamble is not used, a short statement citing the authorizing Air Force and base publications is a necessity. The purposes may then be stated at the beginning of each section of the ordinance to explain the explicit reasoning for each regulation.

Definitions. In zoning, words and phrases peculiar to the function are employed. Furthermore, words in common use may have meanings different than the dictionary definitions. This situation necessitates that all terms not used in the customary sense be defined; and that the special meaning of any specific term be known prior to reading the text of the ordinance. If a term has more than one interpretation, each should be defined. In this instance, the first definition is for customary interpretation and the following are for special meanings. This emphasizes the necessity for scrutinizing the term in light of the particular conditions.

The list of definitions should be preceded by an introductory statement that may take the following form:

> DEFINITIONS. Except where specifically defined herein, all words in this ordinance shall carry their customary meanings. Words used in the present tense include the future, and plural includes the singular; the word "shall" is intended to be mandatory; "occupied" or "used" shall be considered as though followed by the words "intended,

arranged, or designed to be used or occupied."[2]
Examples of words to be defined are: dwelling, building, floor area, hospital, junk yard, site, repair, maintenance, alteration, sign, street, and use, among others. These words are probably defined in various manuals. The task of the committee established to write the ordinance would be to exhaust all publications for terminology that may be necessary to include.

II. ZONING DISTRICTS

This section, which establishes the zoning districts, should indicate the types of districts and define the specific boundaries.

Zoning map. A map that illustrates and fixes the district boundaries should be incorporated as a part of the ordinance. However, if a map is not used, a statement should be placed after each district title to define the boundaries. When used, a provision should be made to recognize the map as an official part of the ordinance. This statement is included after enumerating the districts, as shown below.

District designations. The number and types of districts may vary from base to base in direct relation to size and complexity. The land use pattern of the base, as shown in Figure 5, page 30, may be used as a starting point for delimiting the district boundaries. A list of probable district types and a statement for their establishment could read as follows:

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[2] Ibid., p. 23.

ESTABLISHMENT OF DISTRICTS. For the purpose of promoting the health, safety, morals, and general welfare, (Name) AFB is hereby divided into the following districts:

1. A-1: Airfield Districts
2. A-2: Missile Launch Districts
3. I-1: Heavy Industrial Districts
4. I-2: Light Industrial Districts
5. C-1: Administrative Districts
6. D-1: Community Center District
7. D-2: Hospital Districts
8. D-3: School Districts
9. H-1: Bachelor Officer Housing Districts
10. H-2: Bachelor Airman Housing Districts
11. H-3: Officer Family Housing Districts
12. H-4: Enlisted Family Housing Districts
13. R-1: Recreation District

Said districts are bounded and defined as shown on a map entitled Zoning Map of (Name) AFB, adopted (Date) and certified by the Base Engineer for the Base Commander, which accompanies and which, with all explanatory matter thereon, is hereby made a part of this ordinance.[3]

Every effort should be made to fix and show zone boundaries clearly and definitely to prevent any misinterpretation. A set of rules should be established to describe boundaries where uncertainty exists. Examples of these are as follows:

RULES FOR INTERPRETATION OF DISTRICT BOUNDARIES. Where uncertainty exists with respect to the boundaries of any of the aforesaid districts as shown on the zoning map, the following rules shall apply:

1. Where district boundaries are indicated as approximately following the center lines of streets, said street lines shall be construed to be such boundaries.
2. Where district boundaries are so indicated that they are approximately parallel to the center lines or curb lines of streets, such district boundaries shall be construed as being parallel thereto and at such distance therefrom as indicated by dimension or scale on the zoning map.
3. Where the boundary of a district follows a railroad line, such boundary shall be deemed to be located midway between the main tracks of the railroad.
4. Where the boundary of a district follows a stream, lake,

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[3] Ibid., p. 38.

or other body of water, said boundary line shall be deemed to be at the limit of jurisdiction of the base unless otherwise indicated.

5. Where the application of the aforesaid rules leaves a reasonable doubt, the regulations of the more restrictive districts shall govern, unless otherwise determined by the Zoning Enforcement Officer or upon appeal to the Board of Adjustment.[4]

Without this last statement, the interpretation would allow the least restrictive regulation and would not indicate responsibility for final interpretation.

III. REGULATIONS

General application. Since the regulations that apply to the various uses could vary by zone, a specific provision should be included to state that the use of all land, buildings, or structures shall be in conformity to the regulations. Therefore, the district regulations should be preceded by a statement similar to the following:

GENERAL APPLICATION OF REGULATIONS. Except as hereinafter provided:

1. No building or land shall hereafter be used or occupied and no building or part thereof shall be erected, moved, or altered unless in conformity with the regulations herein specified for the district in which it is located or to be located.
2. No building shall hereafter be erected or altered: to exceed the height; to accomodate a greater number of persons or families; to occupy a greater percentage of site area; or to have narrower or smaller rear yards, front yards, side yards, inner or outer courts than is specified herein for the district in which such building is located or to be located.
3. No part of a yard or other open space required about any building for the purpose of complying with the provisions of this ordinance shall be included as a part of a yard

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[4] Ibid., p. 39.

or other open space similarly required for another building.[5]

Conflict with other regulations. Every effort should be made to eliminate inconsistencies that may exist among Air Force Regulations and the ordinance in case of overlapping jurisdiction. Related parts of other publications that affect land use should be coordinated with the ordinance. However, first attempts to be all inclusive will, no doubt, result in overlooking some elements. Therefore, a statement relating to interpretation of conflicting regulations should be included.

> INTERPRETATION, CONFLICT WITH OTHER REGULATIONS. In their interpretation and application, the provisions of this ordinance shall be held to be minimum requirements, adopted for the promotion of the public health, morals, safety, or the general welfare. Wherever the requirements of this ordinance are at variance with the requirements of other applicable regulations, the most restrictive, or that imposing the higher standards, shall govern.[6]

Description of district regulations. Following the general applications, regulations for each district should be described. When necessary, a short definition should be stated for each district. These regulations should outline the following:

A. Uses Permitted
B. Uses Prohibited
C. Building Height Limits
D. Required Site Area
E. Percentage of Site Coverage
F. Yards Required
G. Performance Standards[7]

Uses permitted and prohibited may vary from base to base;

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[5]Ibid., p. 42.

[6]Ibid., p. 115.

[7]Ibid., pp. 43-93.

however, the listing in Table 1, page 19, could be used as a basic starting point. Those listed for each category would be permitted uses for that zone classification; those listed in other categories would be prohibited uses. There would, of course, be exceptions to this general rule. Since basic services of related intensity should be allowed in the same zone, small playgrounds would be included in a housing zone rather than creating a separate recreation zone.

An intimate relationship exists between the use, height, and bulk of buildings, the open spaces around them, and the community health, safety, and general welfare. The value of air free from dust, smoke, fumes, or offensive odor is accepted without question. The quality and quantity of air are influenced by neighboring buildings and the uses to which they are put. The restriction of heights would be a means of reducing excessive noises and flight obstructions. Furthermore, population density would be controlled and the congestion of sidewalks and streets limited; and the safety of occupants of buildings would be promoted by controlling the degree of fire hazard in buildings of increased height, and the space between buildings.

Zoning regulations should also be used to secure an appropriate distribution of population in housing zones. This should be accomplished through the regulation of housing developments within the zones and with relation to the surrounding land uses. Various publications that provide design guidance for specific functions and facilities would have to be consulted to compile these regulations. If inconsistent, standard regulations should

then be devised. In addition, references made to planned developments (cluster housing) and other design elements of family housing, included in other publications, should be enumerated by subject and location.

To determine if a function is a permitted or prohibited use, tests or measures of the effects created should be compared with allowable performance ratings listed for each district. For example, an industrial facility that produces noises above some established maximum would be prohibited. The same type of standard should be established for fumes, smoke, toxic or noxious matter, dust, odor, radiation, and any other factor which may affect the living and working environment. Various Air Force publications contain information that could be compiled into a performance table for critical facilities or functions. A table of this type would provide standard classification for uses permitted and prohibited in each zone. Furthermore, nonconforming uses could be easily identified.

Another table to aid interpretation would be a zoning schedule. The verbal restrictions should be listed across the top of the table with each zone enumerated down the first column. Matching rows to columns illustrates the restrictions per zone. By circulating this form to all base activities, the administrative time required to explain the ordinance restrictions would be reduced.

Finally, the regulations describing each district should follow the same format. Since the restrictions described must be uniform within a zone, but may vary from zone to zone, a standard

format is mandatory to prevent misinterpretation.

Supplementary regulations. Occasionally, regulations may be applicable to two or more districts or be of general application. To avoid repetition, these particular provisions are listed as supplements. If only a few are required, they should be included with the district regulations. If not, however, the same format as for district regulations should be used to avoid misinterpretation. These provisions should be preceded by a statement similar to the following:

> The provisions of this ordinance shall be subject to such exceptions, additions, or alterations as herein provided by the following supplementary regulations.[8]

These regulations would be used to enumerate additional or accessory uses permitted in certain districts. For example, branch commissary stores and public restaurants would be permitted accessory uses in administrative zones. Outdoor signs, sodding excavation, dispensaries, and historical markers are further examples.

Supplementary height regulations should be described for church spires, smoke stacks, and radio towers. Also, height restrictions could be partially relaxed when yard areas are increased. Provisions for this situation may be applicable to bachelor enlisted and officer dormitory areas.

Supplementary area regulations may be required to prohibit hedges, fences, walls, or other structures that would interfere with vision from vehicles at intersections. This provision would

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[8] Ibid., p. 98.

stipulate distances from the curb lines.

Regulations may also be written to indicate parking and loading zone restrictions and/or requirements in each district. The format for this regulation does not need to follow that previously described; however, the order should be the same as that of district regulations. For example, if the first district described is A-1 Airfield, the first provision in the regulation would describe the parking and loading zone restrictions and/or requirements for the same district.

As stated, supplementary regulations should be used to avoid repetition. They should not, under any circumstances, be used for describing nonconforming uses.

Nonconforming uses. When the zoning districts are delineated, some existing functions may be included that are unrelated to the desired uses in a zone. These functions are termed nonconforming uses. The zoning ordinance should not force removal or immediate change of existing structures but should encourage an eventual conversion to a conforming use. Methods for attaining conformity are illustrated by the following:

> NONCONFORMING USES. The use of any building or land existing at the time of the enactment of this ordinance may be continued although such use does not conform with the provisions of this ordinance.
>
> 1. Unsafe structures. Any structure or portion thereof declared unsafe by a proper authority may be restored to a safe condition.
> 2. Alterations. A nonconforming building may not be reconstructed or structurally altered during its life to an extent exceeding fifty per cent of the replacement value of the building unless said building is changed to a conforming use.
> 3. Extension. A nonconforming use shall not be extended, but the extension of a conforming use to any portion of a

nonconforming building which existed prior to the enactment of this ordinance shall not be deemed the extension of such nonconforming use.

4. Construction approved prior to ordinance. Nothing herein contained shall require any change in plans, construction, or designated use of a building for which a building permit has been hereto issued and the construction of which shall have been diligently prosecuted within X months of the date of such permit, and which entire building shall be completed according to such plans as filed within X years from date of this ordinance.
5. Restoration. No building damaged by fire or other causes to the extent of more than fifty per cent of its replacement value shall be repaired or rebuilt except in conformity with the regulations of this ordinance.
6. Abandonment. Whenever a nonconforming use has been discontinued for a period of one year, such use shall not thereafter be reestablished, and any future use shall be in conformity with the provisions of this ordinance.
7. Changes. A nonconforming use may be changed to a use of the same or higher classification, and when so changed, such use thereafter shall not be changed to a lower classification. Once changed to a conforming use, no building or land shall be permitted to revert to a nonconforming use.
8. Displacement. No nonconforming use shall be extended to displace a conforming use.
9. Cessation. Notwithstanding any other provisions of this ordinance, any nonconforming use that is detrimental to the health, safety, and general moral of the people located in that district and is in existence at the date of enactment of this ordinance shall at the expiration of three years from such date become a prohibited use and shall be discontinued.
10. District changes. Whenever the boundaries of a district shall be changed so as to transfer an area from one district to another district of a different classification, the foregoing provisions shall also apply to any nonconforming uses existing therein.[9]

The effectiveness of these zoning regulations depends upon the thoroughness of studies relating to the intelligent analysis of existing land use conditions and trends, the drafting of regulations specifically applicable to the districts established, and the impartial administration of the provisions of the ordinance.

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[9] Ibid., pp. 107-111.

IV. ADMINISTRATION

Enforcement. The zoning ordinance should include provisions designating the enforcement official, the means of enforcement, and procedures for conforming to the ordinance, both before and after construction of facilities. These provisions may read as follows:

> ENFORCEMENT. This ordinance shall be enforced by the Inspection Branch. No building permit or certificate of occupancy shall be granted for any purpose except in compliance with the provisions of this ordinance. Because of time required for base-wide public hearings and judicial review, no building permit shall be issued for construction in any district within which an amendment is pending for a period up to X days.
>
> BUILDING PERMITS.
> 1. No building or structure shall be erected, added to or structurally altered until a permit therefore has been issued by the Inspection Branch. Except upon a written order of the Board of Adjustment, no such building permit, or certificate of occupancy, shall be issued for any building where said construction, addition, alteration, or use thereof would be in violation of any of the provisions of this ordinance.
> 2. There shall be submitted with all applications for building permits two copies of a layout or site plan drawn to scale showing the actual dimensions of the site, the exact size and location of the building and accessory buildings to be erected, and such other information as may be necessary to determine and provide for the enforcement of this ordinance.
> 3. One copy of said site plan shall be returned when approved by the Inspection Branch.
>
> CERTIFICATE OF OCCUPANCY
> 1. No land shall be occupied or used and no building hereafter erected, altered, or extended shall be used or changed in use until a certificate of occupancy shall have been issued by the Inspection Branch, stating that the building or proposed use thereof complies with the provisions of this ordinance.
> 2. No nonconforming use shall be maintained, renewed, changed, or extended without a certificate of occupancy having first been issued by the Inspection Branch therefore.
> 3. All certificates of occupancy shall be applied for

coincident with the application for a building permit. Said certificate shall be issued within 10 days after the erection or alteration shall have been approved as complying with the provisions of this ordinance.

4. The Inspection Branch shall maintain a record of all certificates, and copies shall be furnished, upon request, to any organization having tenancy interest in the building affected.
5. No permit for excavation for, or the erection or alteration of or repairs to any building shall be issued until an application has been made for a certificate of occupancy.
6. Temporary certificates of occupancy shall be issued for a period up to 30 days when use of the facility must be assumed prior to final construction approval or in other cases on direct order from the Board of Adjustment.[10]

The enforcement officer would be charged with implementing the literal provisions of the zoning ordinance. He would issue building permits; check to see that construction was carried out in accordance with the permit; issue a certificate of occupancy if the completed work was in accordance with ordinance requirements; issue such a certificate whenever building uses change; administer provisions of the ordinance dealing with nonconforming uses; make periodic investigations for violations; initiate adjustment actions to halt violations of the ordinance; and keep records of individual cases. Powers of interpretive discretion, granting special exceptions, and granting variances would be duties of the board of adjustment.

Board of adjustment. The ordinance should state the exact powers and functions of the board so that all base organizations and personnel can become familiar with the required procedures. Also, the authorization and composition should be stated.

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[10] *Ibid.*, pp. 112-115.

BOARD OF ADJUSTMENT.

1. Creation, Appointment, and Organization. A Board of Adjustment is hereby created. Said Board shall consist of X members. The Board chairman shall be appointed by the Base Commander from, and approved by, the members of the Facilities Utilization Board. The chairman shall serve as a nonvoting member except to decide tied issues. The voting members shall be appointed by the chairman subject to the approval of the FUB. One member each shall be from the Planning Branch, Base Operations, and Judge Advocate's office. The secretary shall be the chief of the Inspection Branch, and be a nonvoting member.
2. Powers and Duties. The Board of Adjustment shall have all the powers and duties prescribed by Air Force Regulation X-X and by this ordinance, which are more particularly specified as follows:
   a. Interpretation. Upon appeal from a decision by an enforcing official, to decide any question involving the interpretation of any provision of this ordinance, including determination of the exact location of any district boundary if there is uncertainty with respect thereto.
   b. Special exceptions. To issue special exceptions for any of the uses for which this ordinance requires the obtaining of such exceptions from the Board of Adjustment; or for the extension of a building or use as such existed at the time of the passage of this ordinance into a contiguous, more restricted district not exceeding X feet; but not for any other use or purpose. No such special exception shall be granted by the Board unless found that the use for which such exception is sought will not, in the circumstances of the particular case and under any conditions that the Board considers to be necessary or desirable, be injurious to the neighborhood or otherwise detrimental to the public welfare.
   c. Variances. To vary or adapt the strict application of any requirements of this ordinance in the case of exceptionally irregular, narrow, shallow, or steep sites or other exceptional physical conditions, whereby such strict application would result in unnecessary hardship that would deprive the reasonable use of the land or building involved, but in no other case. No variance in the strict application of any provision of this ordinance shall be granted by the Board unless it finds
      (1) That there are special circumstances or conditions, fully described in the findings, applying to the land or building for which the variance is sought, which circumstances or conditions are peculiar to such land or buildings and do not apply generally to land or buildings in the

neighborhood, and that the strict application of the provisions of this ordinance would deprive the applicant of the reasonable use of such land or building.

(2) That, for reasons fully set forth in the findings, the granting of the variance is necessary for the reasonable use of the land or building and that the variance as granted by the Board is the minimum variance that will accomplish this purpose.

(3) That the granting of the variance will be in harmony with the general purpose and intent of this ordinance, and will not be injurious to the neighborhood or otherwise detrimental to the public welfare or in conflict with the Master Plan. In granting any variance, the Board shall prescribe any conditions that it deems necessary or desirable.

3. Procedure. The Board of Adjustment shall act in strict accordance with the procedure specified by Air Force Regulation X-X and by this ordinance. All appeals and applications made to the Board shall be in writing, on forms prescribed by the Board. Every appeal or application shall refer to the specific provision of the ordinance involved, and shall exactly set forth the interpretation that is claimed, the use for which the special exception is sought, or the details of the variance that is applied for and grounds on which it is claimed that the variance should be granted, as the case may be.

At least X days before the date of the hearing required by AFR X-X on an application or appeal to the Board, the secretary of said Board shall transmit to the Planning Branch a copy of said application or appeal, together with a copy of aforesaid hearing notice, and shall request that the Planning Branch submit an advisory opinion prior to the date of said hearing. Every decision of the Board shall be by resolution, each of which shall contain a full record of the findings in the particular case. Each such resolution shall be filed in the office of the Base Engineer by case number or by the following headings: Interpretations; Special Exceptions; and Variances. The Board shall notify the FUB and the Planning Branch of each special exception and each variance granted under the provisions of this ordinance; however, matters of interpretation shall be reviewed by the FUB. Aggrieved personnel or organizations may appeal for a hearing before the FUB. If the evidence warrants, decisions by said Board shall be binding, unless revoked upon appeal through judicial procedures as described by AFR X-X. If a hearing is not granted, decisions rendered by the Board of Adjustment are final.[11]

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[11] Ibid., pp. 116-125.

Amendments. The dynamic characteristics of all communities indicate that land uses do not remain static; therefore, every zoning ordinance should be subjected to continual scrutiny and periodic revision. For example, new developments in technology and mission may require amendments to the zoning regulations or changes to the district boundaries. If changes do not occur, either the ordinance is not being enforced or the provisions are so lax that they have no real value. Also, repeated requests for variance indicate that restudy of the ordinance is warranted. A provision for amendments procedure could read as follows:

> AMENDMENTS. The Facilities Utilization Board may from time to time on their own motion or on petition, or on recommendation of the Planning Branch amend, supplement, or repeal the regulations and provisions of this ordinance. Every such proposed amendment or change whether initiated by the FUB or by petition of organizations within any such affected district shall be referred to the Planning Branch for report thereon before a public hearing hereinafter provided.
>
> The FUB, by resolution adopted at a stated meeting, shall fix the time and place of a base-wide public hearing on the proposed amendments by mailing a notice thereof to every base organization.
>
> Whenever fifty (50) per cent of the organizations in any district shall present to the FUB a petition duly signed and acknowledged, requesting an amendment, supplement, change, or repeal of the regulations prescribed for zoning maps including said district or part thereof, it shall be the duty of the FUB to hold a base-wide public hearing thereon and cause notice thereof to be given in the manner prescribed above.
>
> Amendments shall require a simple majority favorable vote for adoption. In the case of protest by fifty (50) per cent of the organizations of an affected district, a four-fifths favorable vote shall be required. To overrule a request from base personnel, a like four-fifths majority shall be required. Dissatisfied personnel may appeal according to the procedures outlined in AFR X-X.[12]

Validity. First attempts to create zoning ordinances for

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[12] Ibid., pp. 125-127.

air base communities may be subjected to critical judicial review and subsequent invalidation of some portions. To prevent the entire ordinance from becoming invalid, a separability clause should be provided. This provision is a simple statement to the effect that the invalidity of any regulation does not invalidate any other provision of the ordinance.

Violations. Most civilian ordinances contain a section on violations and penalties that apply to their own community. When included, an additional provision for the filing of complaints is required. While these sections may be desirable at some bases, the proposed administrative system has been developed with mandatory review and strict enforcement procedures that should preclude the necessity for such provisions.

Effective date. The final provision of the ordinance should be the effective date. The preferred method is to state a specific date and time.

To utilize air base zoning, the concept must be adopted by the Air Force. In addition, several publications would have to be revised. Extensive examination was made in this area, the results of which appear in the Appendix. Following these actions, the guidelines presented in this proposed zoning ordinance should be used to publish an Air Force Base Model Zoning Ordinance. With the model, each base could describe and designate districts; draft regulations; incorporate the administrative procedures; and, finally, enact a base zoning ordinance that would complete the system of comprehensive land use controls.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

This study, which was undertaken to stimulate interest and research in air base planning, has shown that civilian planning tools, specifically zoning, can be adapted for Air Force use.

I. SUMMARY

Planning legislation and administration. Air Force and civilian communities require authorization to engage in planning. Civilian authorization is usually contained in state enabling legislation, which also defines the powers and functions of planning administration. Air Force Regulations provide the legal basis for air base planning and also stipulate the powers and functions of the FUB, a legislative-administrative body. This element is the major difference. The Air Force places both policy formulation and administration responsibilities in one body; whereas, the city council establishes policy and the planning commission is charged with administration. A tool used by the civilian community to implement the plan is zoning. To provide judicial review for zoning appeals, a board of adjustment is established by the city council. Neither of these elements are utilized by the Air Force.

Planning of land use. While planning implementation differs, the requirements of the master plan are very similar. Aside from elements that differ due to the specialized nature of air bases, there are two dissimilarities. First, civilian

communities consider that the land use inventory is an integral part of the master plan. Logically, air base planners must survey land use before planning; however, procedural manuals are nonexistent and the results of studies are not included in the plan document.

Second, the civilian community utilizes zoning to aid plan implementation. To describe the types and boundaries of districts, a zoning plan is included as a major element of the master plan document.

Procedures and standards used by the civilian community are also applicable to air base planning. In developing the land use plan, the determinants of land use--the mission, efficiency of mission accomplishment, and environmental performance--should be related to the existing patterns of land use, activity relationships, and the transportation network.

Development standards are needed for the functional areas of the base. For example, density standards for work and living areas, and land requirements for schools and parks should be established.

Finally, when developing or analyzing the land use plan, the following elements should be considered: (1) the plan should permit maximum flexibility; (2) activities should be placed in their most efficient location; (3) facilities should be located to minimize circulation conflicts; (4) facilities should be placed to maximize environmental performance; (5) densities should be based on socially acceptable standards; and (6) vegetation and open space should be provided to improve the environment.

The completed master plan is subject to review and approval in both communities. The city council usually maintains the right of approval; whereas, air base master plans are approved at Headquarters USAF. When approved, the plan should be implemented through effective comprehensive land use controls.

Control of land use. Controls are essentially a means of ensuring that the various land uses in the community are properly situated in relationship to one another; that adequate space is available for each type of development; that densities are held at levels that can be economically serviced by community support items such as streets, schools, parks, utilities, and recreation facilities; and that development is left sufficiently open to permit air, light, and privacy for persons living and working within the community.

Land use controls may be divided into three categories: (1) health and safety standards, which are not direct controls of the use of land but regulate construction of facilities placed on the land; (2) subdivision regulations, which provide minimum standards applicable to residential development; and (3) zoning, which is concerned with the establishment of use zones to regulate height, bulk, performance or effect, placement, and arrangement of facilities within each zone. Civilian communities exercising all three forms have comprehensive controls; Air Force bases do not because of the lack of zoning.

Proposed air base zoning. Land use planning and zoning have a common basic principle; namely, the promotion of the health, safety, morals, and general welfare of the community. Since

protecting the working and living environment cannot be provided solely by a master plan, control of land must be exercised to implement the plan. Thus, zoning performs the following functions to execute the plan: (1) establish separate areas for activities that have mutually compatible functions; (2) separate mutually harmful activities; (3) guarantee expansion capability for existing and possible future activities; (4) stipulate standards for facility performance, density, light and air, and open space for fire breaks, recreation, and breathing; (5) provide a logical basis for street classification by using major arterials to interconnect, not bisect, activity zones; (6) preserve all amenities from destruction or removal; and (7) interrelate the base and environment by providing compatible activities with existing and adjacent civilian land uses.

In performing these functions, zoning would help provide orderly development of the base, increasing efficiency of mission accomplishment, and a pleasant environment. However, the effectiveness of zoning regulations would depend upon intelligent analysis of existing land use conditions and trends, drafting of regulations specifically applicable to the districts established, and impartial administration of the ordinance.

Proposed zoning ordinance administration. Administration of the proposed ordinance would require only minor changes to existing project request procedures. The inspection branch, which would be designated as the enforcing agency, must have some means of assuring compliance to the ordinance; therefore, building permits would be required prior to beginning construction of any

type. To indicate that the completed construction complied with the provisions of the ordinance, a certificate of occupancy would be issued to the using organization.

The enforcing officials would be charged with administering the literal provisions of the ordinance. Discretionary interpretation, granting special exceptions, and granting variances would be functions of the board of adjustment, created by the FUB.

The board of adjustment would be a quasi-judicial board charged with interpreting the meaning and spirit of the ordinance. The board chairman, who would be appointed by the base commander from, and subject to the approval of, the FUB, would appoint three to seven additional members. However, there should be one each from the planning, judge advocate, and base operations offices. The secretary would be the chief of the inspection branch.

To provide impartial administration, a series of judicial reviews would be established. The first review would be by the board of adjustment for appeals resulting from denied building permits. Second, a base zoning court would be established, consisting of three members of the judge advocate's office. This would be the highest base review and would terminate most cases. For special cases, a major command board of adjustment, established as for the base, would provide a higher review. Final review would be by a special panel at Headquarters USAF, consisting of two representatives each from the judge advocate and civil engineering offices. At each echelon, evidence of the case would be reviewed to determine the validity of appeals and

decisions, which may be upheld or revoked.

Proposed zoning ordinance. To provide guidance for the development of a model, an air base zoning ordinance has been briefly described. Typically, these ordinances would have four parts: (1) introduction, consisting of authorization, purpose, and definitions; (2) zoning districts, which delineate the types and boundaries of all base districts; (3) regulations, which describe the general application and specific district regulations; and (4) administration, which outlines enforcement and judicial review procedures.

II. FURTHER STUDY NEEDED

An attempt was made to gather research materials for developing land use and zoning plans for Schilling AFB, Kansas. However, as the base terminated operations, mission requirements were unobtainable. Consequently, only materials for preparing an existing zoning map were available. This map is displayed in the Appendix.

While mission requirements could have been assumed, the reality of practical application would have been lost. Therefore, the zoning theory presented in this thesis is untested for Air Force utilization. The development of a model ordinance by a team of zoning specialists and subsequent testing at one or more bases for a substantial period of time is recommended.

During the drafting of the model ordinance, solutions will be needed for problems that have not been presented in this thesis. One in particular concerns an apparent Air Force policy;

namely, that all existing facilities will be utilized for new purposes prior to new construction regardless of location and condition of facilities or ramifications upon adjacent land uses, present and future.

Examples of how effective planning could reduce operational and maintenance costs have been given in this thesis. However, statistical information to prove these examples are unavailable. Additional study in the economics of planning would be extremely beneficial to the Air Force. One method that could be used would compare from two bases selected organizations, some of which had engaged in planning and the others had not.

In addition, further research is needed in the field of procedures, techniques, and standards. Of particular importance would be a guide for planning and zoning administrative procedures to be used by the FUB. Secondly, current publications on traffic engineering should be revised to include techniques of transportation planning. Finally, to provide a pleasant working and living environment, standards for noise and facility performance are needed.

III. CONCLUSION

The general welfare dictates that the air, sun, and space should be available to be enjoyed by all. Further, the health and safety of the community requires that mutually compatible or harmful land uses be segregated, properly spaced, and shielded from other utilizations. This deversified interest in land brings zoning into appropriate perspective. Through properly

conceived plans that are enforced without prejudice, the best elements of the community can be preserved; the undesirable restricted or eliminated; and the undeveloped programmed for future utilization.

SELECTED BIBLIOGRAPHY

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A. BOOKS

Bartholomew, Harland. Land Uses in American Cities. Cambridge: Harvard University Press, 1955.

Beuscher, J. H. Land Use Controls: Cases and Materials. Madison, Wisconsin: The College Printing and Typing Co., 1964.

Bromage, Arthur W. Introduction to Municipal Government and Administration. New York: Appleton-Century-Crofts, Inc., 1957.

Chapin, F. Stuart, Jr. Urban Land Use Planning. New York: Harper and Brothers, Publishers, 1957.

Delafons, John. Land Use Controls in the United States. Cambridge, Mass.: Harvard University Press, 1962.

Gallion, Arthur B. and Simon Eisner. The Urban Pattern. New York: D. Van Nostrand Company, Inc., 1963.

Green, Phillip. Cases on Planning Law and Administration. Chapel Hill, North Carolina: Institute of Government, 1962.

Horack, F. E. and V. Nolan (ed.). Land Use Controls. St. Paul, Minnesota: West Publishing Co., 1955.

Jones, A. Quincy and Frederick Emmons. Builders' Homes for Better Living. New York: Reinhold Publishing Company, 1957.

McLean, Mary (ed.). Local Planning Administration. Chicago: The International City Managers' Association, 1959.

Perloff, H. S. Planning and the Urban Community. Pittsburgh: University of Pittsburgh Press, 1961.

Sanders, Irwin T. The Community. New York: The Ronald Press Company, 1958.

Smith, H. H. The Citizen's Guide to Planning. West Trenton, N. J.: Chandler-Davis Publishing Company, 1961.

Webster, Donald H. Urban Planning and Municipal Public Policy. New York: Harper and Brothers, Publishers, 1957.

Willhelm, S. M. Urban Zoning and Land Use Theory. New York: The Free Press of Glencoe, 1962.

B. PUBLICATIONS OF THE GOVERNMENT, LEARNED SOCIETIES, AND OTHER ORGANIZATIONS

Fisher, Clyde O. "Zoning Administration," Planning 1962. Chicago: American Society of Planning Officials, 1962.

Hodgell, Murlin R. Zoning...A Guide to the Preparation, Revision, or Interpretation of Zoning Ordinances in Kansas. Kansas Engineering Experiment Station, Kansas State College Bulletin 84. Manhattan: Kansas State University Press, 1958.

Reps, John W. "Requiem for Zoning," Planning 1964. Chicago: American Society of Planning Officials, 1964.

Tippets, Joseph H. "Experience With Jets: And a Look Ahead," Planning 1961. Chicago: American Society of Planning Officials, 1961.

United States Department of the Air Force. Base Civil Engineer Organization and Functions. Air Force Regulation 23-33. Washington: Government Printing Office, 1961.

_____. Master Planning. Air Force Regulation 86-4. Washington: Government Printing Office, 1964.

_____. Utilization of Real Property Facilities. Air Force Regulation 86-7. Washington: Government Printing Office, 1959.

_____. Installation and Development. "Airfield Zoning," Air Force Regulation 86-11. Washington: Government Printing Office, 1956.

_____. United States Air Force Basic Doctrine. Air Force Manual 1-2. Washington: Government Printing Office, 1959.

_____. Real Property Standard Codes and Nomenclature. Air Force Manual 85-27. Washington: Government Printing Office, 1962.

_____. Standard Facility Requirements. Air Force Manual 86-4. Washington: Government Printing Office, 1961.

_____. Air Base Master Planning. Air Force Manual 86-6. Washington: Government Printing Office, 1959.

_____. Air Force Zoning. Air Force Manual 86-7. Washington: Government Printing Office, 1957.

_____. Airfield and Airspace Criteria. Air Force Manual 86-8. Washington: Government Printing Office, 1964.

United States Department of the Air Force. Family Housing. Air Force Manual 88-25. Washington: Government Printing Office, 1963.

C. UNPUBLISHED MATERIAL

Breneman, James R. Planning for Air Base Community Centers. Unpublished MRP thesis, Kansas State University, Manhattan, Kansas, 1966.

Hollingsworth, Joe B. An Analysis of Air Force Master Planning and the Effect of Space Programs on Land Development. Unpublished MRP thesis, Kansas State University, Manhattan, Kansas, 1965.

APPENDIX A

RESEARCH LETTERS

DEPARTMENT OF THE AIR FORCE
DETACHMENT 270, AIR FORCE ROTC (AU)
KANSAS STATE UNIVERSITY, MANHATTAN, KANSAS 66502

SUBJECT: Master of Regional Planning Thesis

TO:

Dear Sir

1. A requirement for the degree Master of Regional Planning at Kansas State University is to write a thesis on a subject of the student's choice. In the case of Air Force sponsored active duty personnel, the thesis topic must deal with a current Air Force problem. The subject chosen to satisfy these requirements is A Comparative Analysis of Air Force and Civilian Land Use Planning as a Basis for Zoning.

2. This thesis discusses the administrative organizations in planning, the process of land use planning, and the various types of land use controls working in both military (Air Force) and civilian communities. These various sections build a case for land use controls, specifically zoning, on the Air Force Base. In addition, the thesis proposes that a zoning ordinance be adapted from civilian ordinances. This ordinance and the administrative procedures required are described. Lastly, the planning process for the development of a master plan for Schilling AFB, Kansas (closed) is analyzed to further justify the need for better planning techniques.

3. Prominent consultants for Air Force master planning are being asked to comment on the idea of air base zoning. The material collected will be used to further justify the subject, or indicate the problems that would be incurred with land use controls. Inclusion of the letters of response in the Appendix of the thesis is desired. Please indicate if your firm's name should be withheld or may be used.

4. To comply with June 1966 graduation requirements, the finished thesis is due in the Graduate School in April. Therefore, an expedient reply will be appreciated. Thank you for your prompt cooperation.

Dwight B. Cavender

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WASHINGTON, D.C.

March 2, 1966

Dwight B. Cavender
1st Lieutenant, USAF
402 Shelle Road
Manhattan, Kansas 66502

Dear Lieutenant Cavender:

Your letter concerning air base zoning and related land use controls, which was referred to me for reply, aroused my interest since I am familiar with military air base operations from a tour of Navy duty, and one of our client communities recently "inherited" a closed Air Force air base facility.

The design of a military air base facility is, of course, primarily a function of the particular mission such base is expected to perform in carrying out the overall policy of the individual branch of service concerned. Obviously the primary objective of an air base, and number one concern of command, is to put airplanes in the air. All primary, secondary and supporting facilities are keyed to this fundamental objective. Therefore, in my opinion, land use and zoning controls for a military air base would have to help accomplish the primary mission, or be relegated to mis-use or non-use.

Individual categories of land uses on an air base are not entirely unlike their civilian land-use counterparts. For example, living quarters should have some measure of privacy and protection from noise, odor, smoke danger in both military and civilian land patterns. Residential areas at an air base ideally should have the same relationship to commercial and recreational uses as those desirable for civilian land development: convenient to, yet protected from, non-residential uses.

Your letter states, in part, in paragraph 2 . . . "the thesis proposes that a zoning ordinance be adopted from civilian ordinances". Keeping in mind that control of land use is subject to much more authoritarian measures than is true in the civilian setting, I believe the adoption of a zoning ordinance, based on the same precepts that hold forth in the design of a typical civilian zoning ordinance, would be a positive step. The basic concept of separation of mutually harmful uses, and the proper grouping of organically related uses would be codified and therefore provide a workable tool.

From the civilian point of view air base zoning would be weighed and judged by its similarity to civilian customs and practices in land use planning. If development of an air force base was accomplished with any reasonable

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March 2, 1966

amount of attention paid to principles embodied in sound civilian land use planning practices, the resultant product should be adaptable to civilian needs, depending on free market forces, assuming a base is deactivated and made available for use of the civilian economy. Obviously some individual elements of a base might have to be removed or altered, but the base, as an entity, should be capable of ultimate absorption into the civilian land use pattern.

In summary, a zoning ordinance regulating land usage on an Air Force air base would be subject to arbitrary interpretation and change from time to time. However, such an ordinance would be serving a very useful purpose if it accomplished nothing more than enabling technicians, charged with preparation of base land use plans, to approach those in command position with some assurance discussions would be based on a reasonable and satisfactory "point of departure".

I trust this letter will assist you in your thesis work. There is no objection in using the firm's name when referring to the information contained in this letter.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

Yours very truly,

Charles T. Munson, Associate A.I.P.
Senior Community Planner

CTM:mcd

HARLAND BARTHOLOMEW AND ASSOCIATES
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GARFIELD 1-2107 CABLE ADDRESS: HARPLAN

March 7, 1966

Lt. Dwight B. Cavender, U.S.A.F.
402 Shelle Road
Manhattan, Kansas 66502

Dear Lt. Cavender:

In answer to your letter of 27 February 1966, your concept of using zoning and establishing zoning ordinances for Air Force Base planning implementation is most interesting. You, no doubt, have given a great deal of thought and have investigated the problems concerning the use of zoning as a tool of planning for an Air Base; preliminary considerations from a planning consultant's view indicates possible advantages and disadvantages.

One of the major problems in the use of zoning on a military base would be the provision of an official status of such magnitude and authority that it would be possible to enforce the ordinance. The sudden changes in demands for space for unanticipated (and in many cases unforseeable) uses could preclude the enforcement of zoning. Limitation of time, availability of funds, and available site areas would all tend to create conditions that could cause overall revision to the land use planning and zoning and could create situations of "spot zoning".

A major advantage of establishing a zoning ordinance would be the possibility of integrating the overall plan for the base into the neighborhood or environment in which it is located. This would be particularly true in establishing intensities of land usage such as would be reflected in the standards of lot areas (for residential uses), setbacks for all types of structures, and the maintenance of large open areas. For example, an Air Force Base in the southwest would have a completely different character and different zoning standards from one located in New England, or an Air Force Base in a rural area versus one located in a metropolitan complex.

There could be considerable benefit to the communities surrounding an Air Force Base if the base were to take the lead in developing a high quality ordinance that would incorporate restrictive measures to insure desirable residential, commercial

and industrial development. By the Base generating a zoning ordinance of a restrictive character, it might be possible to promote the adoption of similar ordinances (or the upgrading of ordinances) in the surrounding civilian areas.

When your thesis is finished we would very much appreciate having the opportunity to read it and, if possible, to discuss more fully with you your ideas on zoning for an Air Force Base.

Sincerely yours,

HARLAND BARTHOLOMEW AND ASSOCIATES

By Claire Avis

Claire Avis
Associate Partner

CA/kw

LEO A DALY CO · ARCHITECTS · ENGINEERS · PLANNERS

LAD

Omaha, Nebraska 68114
March 8, 1966

Lt. Dwight B. Cavender
402 Shelle Road
Manhattan, Kansas 66502

Dear Lt. Cavender:

This letter contains the comments of the Leo A. Daly Company on the subject of air base zoning.

Land use controls are necessary to the specialized functional relationships that must be established in the master plan for an air base. As a major component of a system of land use controls, zoning appears to us to offer a means of greater administrative efficiency and a logical framework within which to evaluate segmented and short-range proposals that, taken all together, contribute to the manner in which the master plan is actually carried out. Therefore, we consider zoning to be a potentially useful tool in air base master planning.

As an extension of this, we would stress the importance of correlating zoning for the air base itself with zoning for the surrounding area. The problems of maintaining air approaches are widely recognized, but there has been less emphasis upon the problems created by surrounding land uses as such. The need for expansion area required by technological changes, the problems of vehicular access, and environmental amenities for air base personnel all demand effective zoning controls by civilian authorities. The air base must be an integral part of this area-wide planning, and zoning of both base and area should be, as far as is possible, a joint procedure between military and civilian authorities.

We would further add that the zoning of an air base should from its inception take account of possible disposition of the base for other uses. It would seem, first, that many bases revert to civilian use for either airport or other uses and that, second, air base planning and zoning may often anticipate desirable conversions without detriment to military needs.

The name of our firm may be used in your contemplated thesis. Please feel free to call upon us if we may be of any further assistance.

Sincerely yours,

William C. Bullard, Jr.
William C. Bullard, Jr.
Planner

WCB/js

OMAHA 6600 INDIAN HILLS DRIVE · ST LOUIS 3207 OLIVE STREET · SEATTLE SECURITIES BUILDING · SAN FRANCISCO 45 MAIDEN LANE · NEW ORLEANS 4035 TOURO STREET

WILSON
& COMPANY
ENGINEERS &
ARCHITECTS

P. O. BOX 28
SALINA, KANSAS

631 E. CRAWFORD
TAYLOR 7-4407

6 April 1966

Dwight B. Cavender
First Lieutenant, USAF
402 Shelle Road
Manhattan, Kansas 66502

Dear Lieutenant Cavender:

For more than twenty-five years, Wilson & Company has been directly involved in the planning and design of airfield facilities for the Army, Navy and Air Force. During this time we have observed the increasing importance that the administrative military organizations have placed on the matter of planning.

Our more recent assignments for the United States Air Force, particularly the Strategic Air Command, have involved a wide variety of air bases ranging in age from the older converted Army airfields to the newer installations constructed in the 1950's. Because of varied past and present missions, geographical locations, and age, the problems of planning and the siting of new facilities is most certainly different at each base. Despite these differences, we believe that many base problems would have been minimized or eliminated had established principles of land use and zoning been rigidly enforced during the many stages of development of every base. We further believe that these accepted principles of planning could have been applied without adverse effects to the effectiveness of the military mission.

The development of an air base is influenced by many factors. Primarily, the development of a base has been dictated by the changing missions of both host and tenant organizations. The expediencies of lower first costs and time have resulted in decisions to convert existing facilities to new uses in lieu of new construction. In too many instances, these decisions have resulted in lowered efficiencies in the use of manpower, created or aggrevated existing traffic problems, or established a land use entirely incompatible with adjacent land uses. In civilian terminology, these decisions created "spot-zones". Spot-zoning at an air base has the same results as it does in a civilian community. Important environmental factors such as noise, traffic, congestion, and reservation of open-space are not given the considerations appropriate to them. We often find that planning and facility siting decisions have been influenced by the individuals in authority at the time of decision making. The personal preferences of individuals should not influence or violate basic planning and zoning principles.

It has been a pleasure to work with you in the preparation of your thesis. Hopefully, your study and research will lead to an increased emphasis on the importance of land-use planning by the military, and the control of land use by realistic zoning.

WILSON & COMPANY

R. A. McAuliffe
Chief, Military Planner

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APPENDIX B

PUBLICATION REVISIONS

To utilize the concept of zoning, several Air Force publications will have to be revised and some written specifically for the planning and zoning process.

Extensive examination was made of publications pertaining to Air Force Civil Engineering, particularly master planning. Examination of all Air Force documents and publications was, of course, impossible; consequently, the list of changes is undoubtedly incomplete. The list of publications and recommended changes is described below.

Air Force Regulations

AFR 23-33, Base Civil Engineer Organization and Functions, 1 December 1961, should be expanded to include the duties of the zoning enforcement officer in the inspection branch of the engineering and construction division.

AFR 75-92, Transportation, 10 November 1954. No change.

AFR 85-1, Operation and Maintenance of Air Force Family Housing, 12 February 1962; AFR 85-2, Preventive Maintenance, 9 July 1965; AFR 85-5, Operation and Maintenance of Installation Facilities, 10 June 1959. No change.

AFR 85-6, Real Property Maintenance, Repair, and Construction, 11 May 1965, should be changed to state explicitly that mandatory review by the planning branch and subsequent review of construction drawings and specifications by the enforcement officer is an established part of the project approval process.

AFR 85-7, Family Housing Self-Help Work, 29 July 1964, should be expanded to provide for review of proposed work by the zoning enforcement officer.

AFR 85-11, Section 810 Housing Program, 19 April 1962; AFR 85-13, Leased Family Housing, 8 February 1963; AFR 85-17, Installations-General, 30 July 1952. No change.

AFR 85-18, Trailer Parks for Privately Owned and Government Owned Trailers, 21 September 1964, requires changing so that those parts pertaining to the planning for trailer parks are included in AFM 86-6, Master Planning. In addition, those parts referring to site layout requirements should be deleted and incorporated into the zoning ordinance.

AFR 85-19, Air Force Inventory and Utilization of Military Family Housing, 3 December 1965. No change.

AFR 85-20, Substandard Family Housing, Criteria for Improvement, Replacement, Retention, and Disposition, 15 January 1965, should be revised to refer to the zoning ordinance for standards of adequacy and retention criteria as established by the zoning ordinance.

AFR 85-24, Air Force Regional Civil Engineer, 27 August 1963, requires that all military construction programs will be reviewed by the AFRCE. This should be revised to state that review will also be for conformity to general zoning requirements. Base and command requirements shall have already been stated, reviewed and approved prior to submittal to the AFRCE.

AFR 86-4, Master Planning, 4 August 1964, establishes the master planning function. This should be amended to include zoning as a part of the planning process and the zoning map as a part of the master plan. Sections pertaining to review of the master plan should be changed to state that higher echelons of command will review for conformance to the approved base zoning and development plans and that revision thereto must be explained.

AFR 86-5, Surveys of Installations, 6 July 1964. No change.

AFR 86-7, Utilization of Real Property Facilities, 26 May 1965, establishes the facilities utilization board and charges said board with the responsibility of preparing the master plan. The duties of this board should be amended to establish a board of adjustment, amend the zoning ordinance and conduct hearings thereon, and establish procedures for reviewing decisions of the board of adjustment.

AFR 86-(8 proposed) should be written to describe the duties and responsibilities of the board of adjustment. This regulation should include the following sections: (1) establishment of the board and terms of office of the members; (2) rules of the board relating to minutes, voting, and appeals procedure; (3) matters of appellate jurisdiction; (4) matters of original jurisdiction; (5) granting of permits for certain uses stated in the ordinance; and (6) judicial review.

AFR 86-(10 proposed) should be written to describe the functions and duties of the enforcing official and procedures for obtaining building permits and certificates of occupancy.

AFR 86-11, Installation Planning and Development, "Airfield Zoning," 9 May 1956, should be expanded to incorporate the purpose and goals of on-base zoning as well as off-base zoning. The title should be changed to Air Base Zoning.

AFR 87-2, Real Property Facilities, 23 November 1962, that pertains to the conversion and redesignation of facilities should be changed to refer to the zoning ordinance pertaining to uses permitted in specific districts and the requirement for building permits prior to changes in use of a facility.

AFR 87-3, Granting Temporary Use of Real Property, 28 September 1960; AFR 87-4, Disposal of Real Property, 3 August 1962; AFR 87-8, Non-utilization of Military Real Property, 1 October 1963; and AFR 87-22, Retention and Study of Government Owned and Leased Properties, 14 January 1959, should state that to retain, reuse, dispose, or improve real property shall be based on criteria contained in the zoning ordinance as to age, performance, use, and location of said facility or facilities and the land use development plan as to future use of said parcel of ground or facility.

AFR 87-5, Classification of Air Force Installations, 15 January 1964; AFR 87-7, Family Housing for Essential Employees at Research and Development Installations, 21 April 1965; AFR 87-19, Non-Industrial Facilities for Mobilization, 2 April 1965. No change.

AFR 88-3, New Construction, 29 March 1955; AFR 88-7, Installations-New Construction, 25 June 1958; AFR 88-9, Transfer and Acceptance of Facilities Constructed for the Air Force, 3 May 1962; AFR 88-11, Air Force Command Responsibilities for Military Construction Programs, 24 January 1964, should state that the authorization, approval, and site selected for all classes of construction funds shall be subject to a mandatory review by the planning branch and the inspection branch as appropriately described by the zoning ordinance.

AFR 88-10, Design and Construction Deficiency Report, 28 September 1962. No change.

AFR 91-19, Utilities Operations and Services, 11 May 1954, pertains to the marking of flight obstructions. Height restrictions are noted in the zoning ordinance and give standards for marking any existing obstruction that violates the stated restrictions. Therefore, those sections of AFR 91-19 should be referenced by the zoning ordinance.

AFR 91-23, Maintenance and Improvement of Grounds, 9 October 1964, should incorporate a reference to the zoning ordinance for criteria in the improvement of grounds for nonconforming uses.

AFR 92-1, The Air Force Fire Protection Program, 18 October 1961, as pertaining to open spaces between and around facilities should be incorporated into the zoning ordinance and deleted from this publication. If, however, duplication is not important, both publications may indicate requirements and restrictions, so long as discrepancies are eliminated.

Air Force Manuals

AFM 85-1, Maintenance Management for Real Property Facilities, 10 July 1964, describes the process for securing approval for maintenance, repair, alteration, and minor construction projects. This process should be amended to state mandatory review by the planning branch; include the requirement for securing building permits and certificates of occupancy; and indicate that appeals to decisions may be made in accordance with the zoning ordinance.

AFM 85-26, Military Construction Programming, 10 May 1965. No change.

AFM 85-27, Real Property Standard Codes and Nomenclature, 1 May 1962, gives accounting codes for all facilities. Revision of these codes to indicate type of land use and zoning district is recommended.

AFM 86-4, Standard Installation Facility Requirements, 1 September 1961, gives planning data as to space requirements for all types of facilities. Additional information is needed to classify each facility be use and performance so that a proper zone of location may be determined during the project approval stage.

AFM 86-5, Land Use Planning With Respect to Aircraft Noise, 1 October 1964, provides basic criteria in the immediate vicinity of the airfield. Additional standards need to be developed to give minimum distance requirements for all types of facilities and activities. These standards should then be referenced by the zoning ordinance or included therein, or both.

AFM 86-6, Air Base Master Planning, 10 February 1959, is the basic guide for Air Force planning. This publication should be revised to incorporate zoning as a basic planning tool. In Chapter 1, "Introduction," the definition of zoning should be revised to delete "utilized by local governments; ...." The definition then reads, "Zoning: a method of control over the use to which land is put, including height of structure and density of development."

Chapter 2, "Master Plans," which describes the requirements of the master plan and review and revision procedures should be amended to include a zoning map as a part of the master plan and state that the review process includes conformity to the zoning ordinance. In addition, the procedure for conducting a land use

survey should be described using data presented earlier in this thesis.

Chapter 4, "Land Use Controls and Real Estate Interests," refers to types of control and acquisition of land outside the boundaries of the base. This chapter should include a brief introduction to the zoning concept with reference to AFM 86-7.

Chapter 5, "Military Construction Programs," should be amended to indicate the approval process as defined for AFM 85-1, and to state that the siting of new facilities shall be in accordance with the land use plan and the zoning ordinance.

Chapters 6 and 7. No change.

AFM 86-7, Air Force Zoning, 31 January 1957, which refers to off-base zoning should be expanded to include on-base zoning. The title should be changed to "Zoning." This publication should become the basic guide to zoning. The information presented in Chapter VII and this appendix can serve as a guide to the development of this more inclusive publication.

AFM 86-8, Airfield and Airspace Criteria, 15 July 1964, which pertains to obstructions to flight paths and patterns should be discontinued and incorporated into AFM 86-7.

AFM 88-25, Family Housing, 20 August 1963, describes the planning data for housing projects. The apparent Air Force policy is to separate all items pertaining to family housing into a single manual. Even if this is true, the zoning ordinance would still be referenced for procedures on obtaining building permits and certificates of occupancy, height restrictions, performance regulations, densities, open space requirements, and distances required from other base facilities.

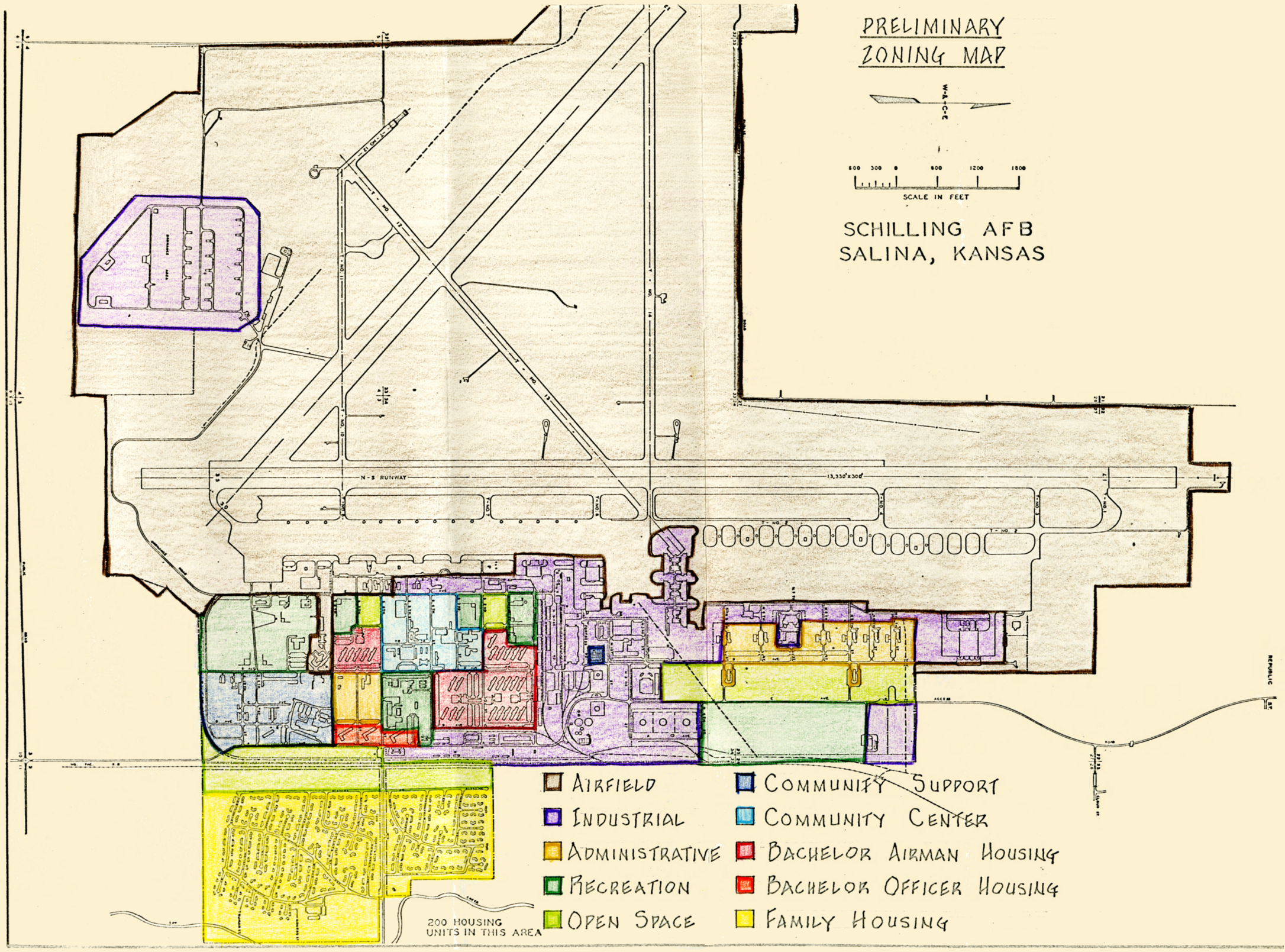
AFM 92-1, Fire Protection Program Operational Procedures, 15 January 1964, which describes the basic program for fire protection includes information pertaining to topography, firebreaks, open space, separation of structures, and minimum water supply standards. These elements should either be referenced by or included in the zoning ordinance, or both.

AFM 93-1, Air Force Real Property Accountable Records, 15 January 1964, provides standard account coding for all facilities. This system should be revised to indicate age, use, and performance of facilities to provide for easy classification, reference, and possibly disposal.

Air Force Pamphlets

AFP 88-880-1, Criteria for Fire Protection of Air Force Facilities, which includes additional information pertaining to open space requirements should be included in the zoning ordinance.

APPENDIX C


PRELIMINARY
ZONING MAP
W-A-C-E
SCALE IN FEET
SCHILLING AFB
SALINA, KANSAS
N-S RUNWAY
13,330'x300'
AIRFIELD
INDUSTRIAL
ADMINISTRATIVE
RECREATION
OPEN SPACE
COMMUNITY SUPPORT
COMMUNITY CENTER
BACHELOR AIRMAN HOUSING
BACHELOR OFFICER HOUSING
FAMILY HOUSING
200 HOUSING
UNITS IN THIS AREA

A COMPARATIVE ANALYSIS OF AIR FORCE AND CIVILIAN LAND USE PLANNING AS A BASIS FOR ZONING

by

DWIGHT BURNELL CAVENDER

B. Arch., University of Kansas, 1962

AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF REGIONAL PLANNING

College of Architecture and Design

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1966

A COMPARATIVE ANALYSIS OF AIR FORCE AND CIVILIAN LAND USE PLANNING AS A BASIS FOR ZONING

This study was undertaken to aid air base planners by demonstrating that planning techniques can be improved by adapting model civilian zoning ordinances for use as an air base zoning ordinance.

Air Force and civilian planning legislation and administration were compared. Both types of communities require higher authorization to engage in planning. Civilian enabling acts are usually permissive; whereas, Air Force Regulations are mandatory. Each form also stipulates the organizational framework, powers, and functions, which are remarkably similar.

Procedures for land use planning and the requirements of the master plan were also compared. There is a lack of appropriate planning standards to guide air base development. Techniques, procedures, and standards used by the civilian community can, and should be, used by air base planners. While the master plan requirements are almost identical, the Air Force does not provide land use controls for executing the plan.

Land use controls may be divided into three categories: (1) health and safety standards, which are not direct controls of the <u>use</u> of land but regulate construction of facilities placed <u>on</u> the land; (2) subdivision regulations, which provide minimum standards applicable to residential development; and (3) zoning, which is concerned with the establishment of use zones to regulate height, bulk, performance or effect, placement, and arrangement of facilities within each zone. Communities

exercising all three forms have comprehensive controls; whereas, Air Force bases do not because of the lack of zoning.

Land use planning and zoning have a common basic principle; namely, the promotion of the health, safety, morals, and general welfare of the community. Since protecting the working and living environment cannot be provided solely by a master plan, control of land use must be exercised to effectuate the plan. Thus, zoning performs the following functions to execute the plan: (1) establish separate areas for activities that have mutually compatible functions; (2) separate mutually harmful activities; (3) guarantee expansion capability for all existing and possible new activities; (4) stipulate standards for facility performance, density, light and air, and open space for fire breaks, recreation, and breathing; (5) provide a logical basis for street classification by using major arterials to interconnect, not bisect, activity zones; (6) preserve all amenities from destruction or removal; and (7) interrelate the base and environment by providing compatible activities with existing and adjacent civilian land uses. Zoning would help provide orderly development of the base, increasing efficiency of mission accomplishment, and a pleasant environment for military personnel and their dependents. The effectiveness of zoning regulations would depend upon intelligent analysis of existing land use conditions and trends, drafting of regulations specifically applicable to the districts established, and impartial administration of the ordinance.

Administration of the ordinance would require only minor changes to existing project procedures. Enforcement officials

must have some means ascertaining conformance to the ordinance; therefore, building permits and subsequent certificates of occupancy would be included as requirements to present procedures. To ensure impartial administration, a series of judicial reviews have been proposed. A base board of adjustment, base zoning court, major command board of adjustment, and a special review panel at Headquarters USAF provide progressive reviews. At each echelon, evidence of the case would be reviewed to determine validity of appeals and decisions, which may be upheld or revoked.

To provide guidance for the development of a model, an air base zoning ordinance has been briefly described. Typical zoning ordinances have four parts: (1) introduction, consisting of authorization, purposes, and definitions; (2) zoning districts, which delineate the types and boundaries of all base districts; (3) regulations, which describe the general application and specific district regulations; and (4) administration, which outlines enforcement and judicial review procedures. With a model ordinance, each base could designate districts, draft regulations, and enact a zoning ordinance that would complete the system of comprehensive land use controls.