PLANNING FOR AIR BASE COMMUNITY CENTERS

by

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CHAPTER I

INTRODUCTION

> The modern shopping center is a group of commercial establishments planned, owned, developed, and managed as a unit with off-street parking provided on the property and related in location, size, and type of shops offered to the trade area the unit serves.[1]

People take civic pride in their own personal neighborhoods and communities. They patronize their local shopping centers and neighborhood business district always aware of quality, price, and selection in the merchandise and services they require. They are also aware of the basic need for such planned facilities in their every day lives.

The purpose of this thesis is to present a comprehensive approach to planning community centers for Air Force installations.

I. THE NEED FOR PLANNING

When the United States Air Force was established as a separate service in 1947, it occupied bases that had been previously used by the Army and Army Air Forces. In many of these installations, community facilities were scattered over the base. The United States now maintains a strong military force for instant retaliation in the event of armed aggression. The maintenance of this force requires large areas for mission support facilities as well as specialized structures for community facilities.

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[1] Ross J. McKeever (Editor), Shopping Centers Restudied. (Washington, D. C.: Urban Land Institute, 1957), p. 9.

With the increasing importance of the time factor in daily living, the need for consolidation and convenience is of primary importance in planning for any air base facility.[2] To provide the consolidation and convenience required, community facilities should be incorporated in a planned community center complex. In addition, a community center complex will aid in reducing traffic congestion on the base, lower construction and maintenance costs, and contribute appreciably to the improvement of base morale.[3]

Until recently, very little has been done in establishing procedures for planning air base community centers. Air Force Manuel 86-6, Air Base Master Planning, contains a short presentation of the concept for community centers. In the opinion of the writer, however, this section is inadequate for the effective planning and development of an air base community center. This thesis is presented with the belief and hope that it will serve as a guideline for planning community center facilities.

Due to the broad scope of the subject and the many variables unique to each particular situation, this presentation does not attempt to provide a set planning formula or design pattern that will apply to every Air Force installation. Rather, it is intended to propose a general planning approach in regard to the many considerations that are involved. It should also be noted that procedures

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[2] Air Force Manual 86-4, Master Planning. pp. 200-201.

[3] Ibid.

presented in this thesis are intended to be flexible guides that will require adaptation to the various situations involved with any one center. Further, the approach presented is intended for the planning of new community center facilities.

Throughout the text, emphasis will be placed on the overall planning procedures as illustrated in Figure 1-1. Specific details in related professional fields such as engineering require expert consideration and will therefore be dealt with in a purely superficial manner.

Due to the limited amount of material available on military planning it will be necessary to rely on the experiences of civilian planners and centers for reference. This methodology seems most acceptable for both the civilian and the military center are linked by common characteristics. The use and application of these common elements - location, layout, design, circulation, and facility types - directly influence the atmosphere of the center. While an air base community center is not dependent upon competitive development of these elements for patronage, their proper blending and mixing is essential to a successful military facility.[4]

II. EVOLUTION AND CONCEPT

The community center--or shopping center as it is commonly referred to in the civilian community--is a number of individual facilities or businesses which band together and subscribe to

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[4] Ibid.

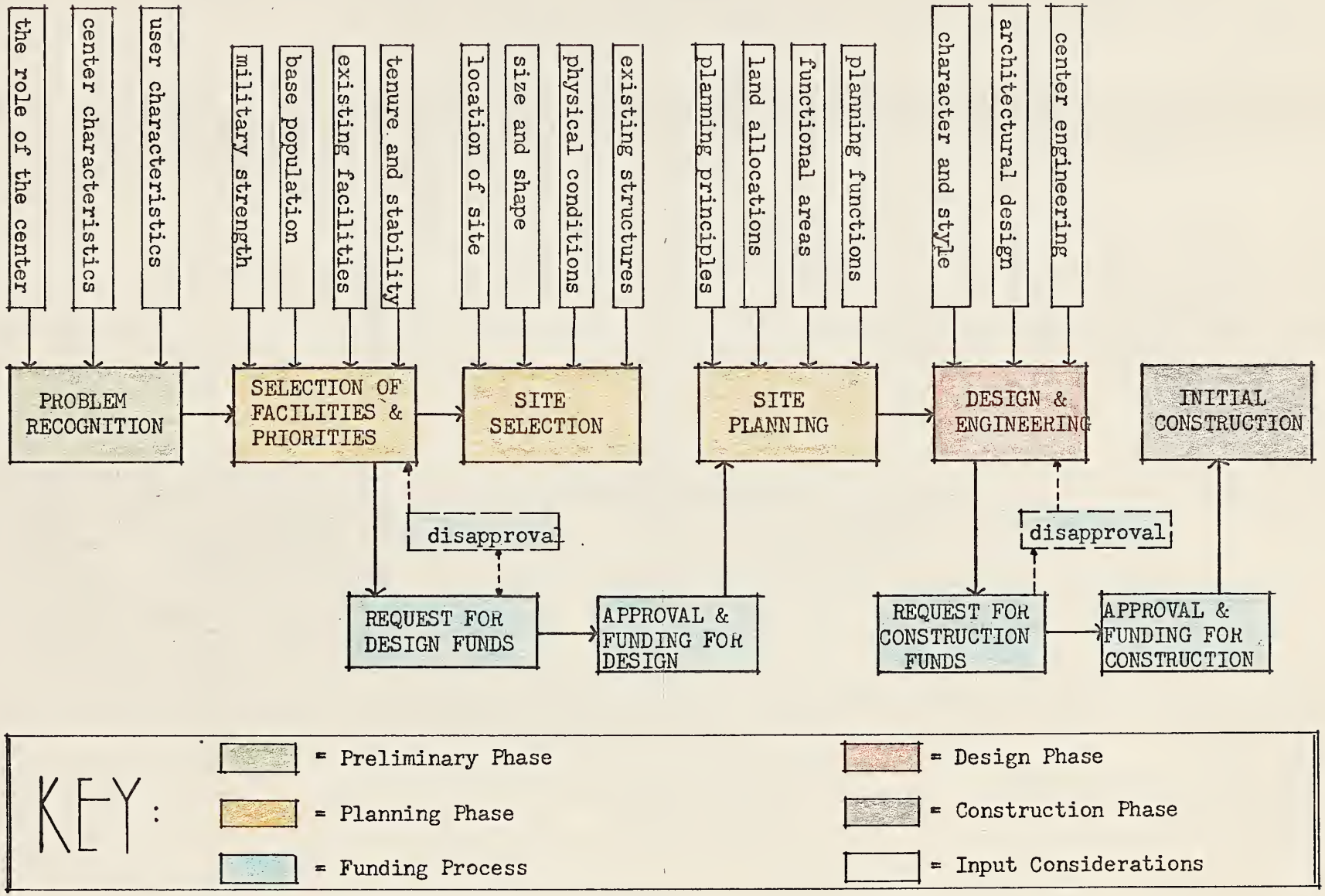

FIGURE 1-1

PROCESS DIAGRAM FOR PLANNING
AIR BASE COMMUNITY CENTERS

certain common rules to further their common good. It is an agglomeration of structures bound together with an underlying cooperative spirit.

The concept of such centralized facilities serving individual communities dates back to the very origin of cluster development. However, the first community center as such that is formally documented was the Greek agora. It was located in the center of the town, and the major east-west and north-south streets led directly to it. There, they either terminated or circled the square. Consequently, circulation in the agora itself was confined to pedestrian movement.[5]

Surrounding the agora were the local shops and market booths. Other main facets of community life such as the assembly hall, the council hall, and the council chamber were directly accessible from the agora even though they did not face it.

As the centuries and civilizations passed into history, the concept of a community center was revised and expanded. The Romans had their forum and centers for military encampments; the medieval city brought the market square back from the Dark Ages and surrounded it with a church, city hall, and guild halls. When the American colonies were established, they promoted the town square. All of these centers were the historic ancestors of the contemporary central business district, or urban center.

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[5]Arthur Gallion and Simon Eisner, The Urban Pattern. (New York: D. Van Nostrand Company, 1963), p. 15.

The dawn of the Industrial Revolution spawned the active community center as motorized transportation aided urban development into outlying fringe areas. As the suburbs developed, more people moved from the central city and became suburbanites. This meant that these same people had to travel long distances to use the downtown commercial facilities.

Actual retail decentralization in many cities began in the 1920's. In Chicago, for example, major outlying retail centers with department stores developed in areas where railed mass transit systems to the central city were slow. This decentralization was also facilitated by the establishment of movie theaters, branch banks, drug stores, and chain variety stores in these outlying centers.[6]

These early shopping centers were actually satellites similar in structure to the central business district. They were located at station stop-points and relied on the patronage of pedestrians discharged from mass transit vehicles. As the private vehicle developed and the need for adequate automobile storage and circulation became evident, businessmen realized the need for a new retail mechanism.[7] This mechanism became the shopping center as we know it today.

Such has been the evolution of the civilian shopping center. The air base community center is an outgrowth of this type of civilian

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[6]Mayer and Kohn (Editors), Readings in Urban Geography. (Chicago: University of Chicago Press, 1964), p. 326.

[7]Ibid.

development.[8] However, the air base community center has broader implications in the aspect of total service to the community. This distinction between the civilian shopping center and the air base community center is due to their differential in orientations.

To attract the economic patronage vital to a civilian shopping center, the developer must provide four basic elements: convenience and comfort in shopping; proximity of location and accessibility; variety of selection; and competitive pricing. If these elements are favorable to a center and price differential with other centers is small, the civilian consumer will patronize the center in question.[9]

The civilian shopping center thus becomes an attractive commercial outlet rather than a total service facility for the community population. It provides the major shopping facilities for the suburban area, while the neighborhood business district becomes the service center for the community. The personal service and recreation facilities of the community are generally centralized in these business districts. Thus, the civilian community population is served by two separate functional areas.

The community center has a much more meaningful connotation in air base community life. The concept of the air base community center actually had its beginning during the Roman era when the

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[8] Air Force Manual 86-6, Air Base Master Planning, p. 200.

[9] McKeever, op. cit., p. 61.

legionnaires used to make small purchases from tiny shops around their encampments.[10] Today, this concept is a combination of the civilian shopping center and the neighborhood business district.[11] The air base community center differs from its civilian counterpart in that its orientation is toward total community service rather than commercial profit.

The modern Air Force base is a city in itself with the principal function of national defense. As a city it must provide the services and facilities that are commonly required by all community populations. These facilities are classified into three main categories: merchandising, such as the exchange sales store; recreation, such as the base theater; and services, such as the chapel, bank, and personnel affairs office.[12]

These functions, when grouped together, form the air base community center complex. This center serves as the hub of recreational, cultural, and commercial base activities. To maximize the functional usage of this complex, comprehensive planning principles must be utilized during the various stages of center development. The chapters which

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[10] "The World-Wide PX: $2 Billion in Bargains," Newsweek, LXVII(January, 1966), p. 72.

[11] Joe B. Hollingsworth, "An Analysis of Air Force Master Planning and the Effect of Space Programs on Land Development." Unpublished Master's Thesis, Kansas State University, Manhattan, Kansas, 1965. p. 67.

[12] Air Force Manual 86-6, op. cit.

follow present these planning principles and their possible application. These principles will be used in determining the optimum location, site design, tenancy, and design elements for air base community centers.

This thesis represents the views of the writer and does not necessarily reflect the official opinion or position of the Department of the Air Force.

CHAPTER II

THE ROLE OF THE COMMUNITY CENTER

> When the shopping center becomes indeed a place which provides physical living requirements for suburbia and simultaneously fulfills civic, cultural, social, and recreational needs, it will make a significant contribution to better living.[1]

Before a planner can begin to plan a community center complex, he must first be cognizant of the structure he is to deal with. He must be aware of the overall function as well as the individual characteristics that are inherent to a base community center. Only when he is aware of these matters will he be able to adequately determine his approach to solve the problems of his particular situation.

I. THE COMMUNITY CENTER FUNCTION

The concept of the military community center is a combination of the civilian suburban shopping center and neighborhood business district.[2] Since most air bases are located at a distance from urban areas, the base itself must provide the services and goods that are common to any civilian community. In essence, the center complex serves

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[1] Victor Gruen, Larry Smith, Shopping Towns U.S.A. (New York: Reinhold Publishing Corporation, 1960), p. 275.

[2] Joe B. Hollingsworth, "An Analysis of Air Force Master Planning and the Effect of Space Programs on Land Development." Unpublished Master's Thesis, Kansas State University, Manhattan, Kansas, 1965. p. 67.

as the socio-economic hub of the base--the gathering place of the people.[3]

It has been noted that civilian shopping centers have evolved and continued to flourish due to shoppers' demands for convenience and accessibility. These demands are also present in the military community, but must be subjugated to the mission of the base, whether it is the training of new recruits or the international retaliatory defense of the nation. However, the community center fits compactly into this military mission for its planning and centralization of facilities serve to eliminate excessive travel and traffic congestion. The centralization of facilities is also an important factor in base economy. One parking area may be used to serve the merchandising requirements of the community during the day time and the recreational requirements at night. Such multi-use facilities have long been advocated by military installations to improve the economy and efficiency of base activities.[4]

Another important function of the community center involves the intangible aspect of base morale. A modern center that makes shopping a pleasurable experience and also offers a wide range of cultural fulfillment and community activities will have a positive effect on base personnel and their families. Such a positive morale factor is essential

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[3] J. Turwhitt, J. L. Sert, and E. N. Rogers, The Heart of the City. (New York: Pellegrini and Cudahy, 1952), p. 103.

[4] Air Force Manual 86-6, Air Base Master Planning. p. 201.

to the nation as a whole.[5]

The need to fulfill community desires has long been realized by civilian developers. They have provided auditoriums for local civic groups, children's nurseries, art shows, fashion shows, and other non-commercial activities of interest to the community they serve. Almost all of the modern civilian centers have one or more restaurants and the newest centers even have movie theaters.[6] All of these services help the civilian developer realize his share of the market in the constant competition for consumer patronage. By blending these additional features with ease of accessibility, convenience and comfort in shopping, variety of selection and relatively low prices, the civilian center seeks to fulfill the needs and desires of the community it serves. This is its basic responsibility.

The military center has this same functional responsibility to the community it serves. It must not only provide the services and facilities required by the population, but it must also provide them at a distinct saving to the consumer. For example, the base commissary is required by law to save its customers at least twenty per cent on groceries over civilian stores. The average service man generally saves from twenty-five to forty-six per cent on his food bill at the commissary.[7]

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[5]Francil and Katherine Drake, "Paupers in Uniform," Reader's Digest LXXXVI (March, 1965). p. 137.

[6]The Producers Council Inc., Technical Bulletin #104, Regional Shopping Centers. Lancaster, Pennsylvania, June 1963, p. 146.

[7]Carole Ritch, "Controversial Commissaries," Family Magazine-Air Force Times, (February, 1966). p. 2.

Another major merchandising function is the exchange services. These services save the average enlisted man approximately three hundred dollars every year. Consequently, the commissary and the exchange services are the most generous fringe benefit military personnel receive.[8] They also play a vital role in encouraging reenlistments and boosting morale.[9] Thus, in many instances, center facilities are an economic necessity.

In general, the center is the social core of the base. It provides the physical environment where people will encounter old friends, previously unaware that they were stationed in the same area.[10] As such, it has a principal responsibility to reflect an atmosphere of general relaxation, spontaneous participation, and at the same time a sense of social or civic consciousness. It is immediately apparent that an entire series of activities need to find their outlet through the center-activities that are divergent in time as well as space.[11] It must be realized that the primary purpose of the military center is to serve the military community.

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[8]"The World-Wide PX: #2 Billion in Bargains," Newsweek, LXVII (January, 1966), pp. 72-76.

[9]Ibid.

[10]Ritch, op. cit.

[11]Turwhitt, op. cit., p. 168.

II. CENTER CHARACTERISTICS

In their early development, military center facilities were scattered across the base due to the development pattern of World War II bases. This random scattering still exists on many bases today as shown by the generalized plans of actual bases in Figures 2-1 and 2-2. However, the Air Force has become aware of the definite need for adequately planned base development and facilities. Figures 2-3 and 2-4 are indicative of the early attempts to locate community center facilities in existing buildings within the same general area. This partial solution is a step in the right direction, but the optimum solution is the final community center complex as shown in Figures 2-5 and 2-6. Center facilities are now being located in complexes wherever possible to better serve the base population.[12]

The elements considered in creating the complex shown in Figures 2-5 and 2-6 are the characteristics which distinguish a modern center complex as a distinct type of military land use. These characteristics are as follows:

1. A site suited to the type of center desired and easily accessible to the community population.
2. A building group that is an architectural unit and not just an assembly of miscellaneous stores.
3. An adequate on-site parking area with properly designed exits and entrances and a relatively short walking distance to the stores.
4. The separation of service traffic and customer circulation.
5. A congenial shopping atmosphere with protection from the weather, landscaping, and a separation of pedestrians and vehicles.[13]

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[12]Air Force Manual, op. cit., p. 199.

[13]Architectural Record Book, Design for Modern Merchandising, (New York: F. W. Dodge Corporation, 1954), p. 245.

FIGURE 2-1

CENTER FACILITIES AND GENERAL LAND USE
AIR BASE "A"

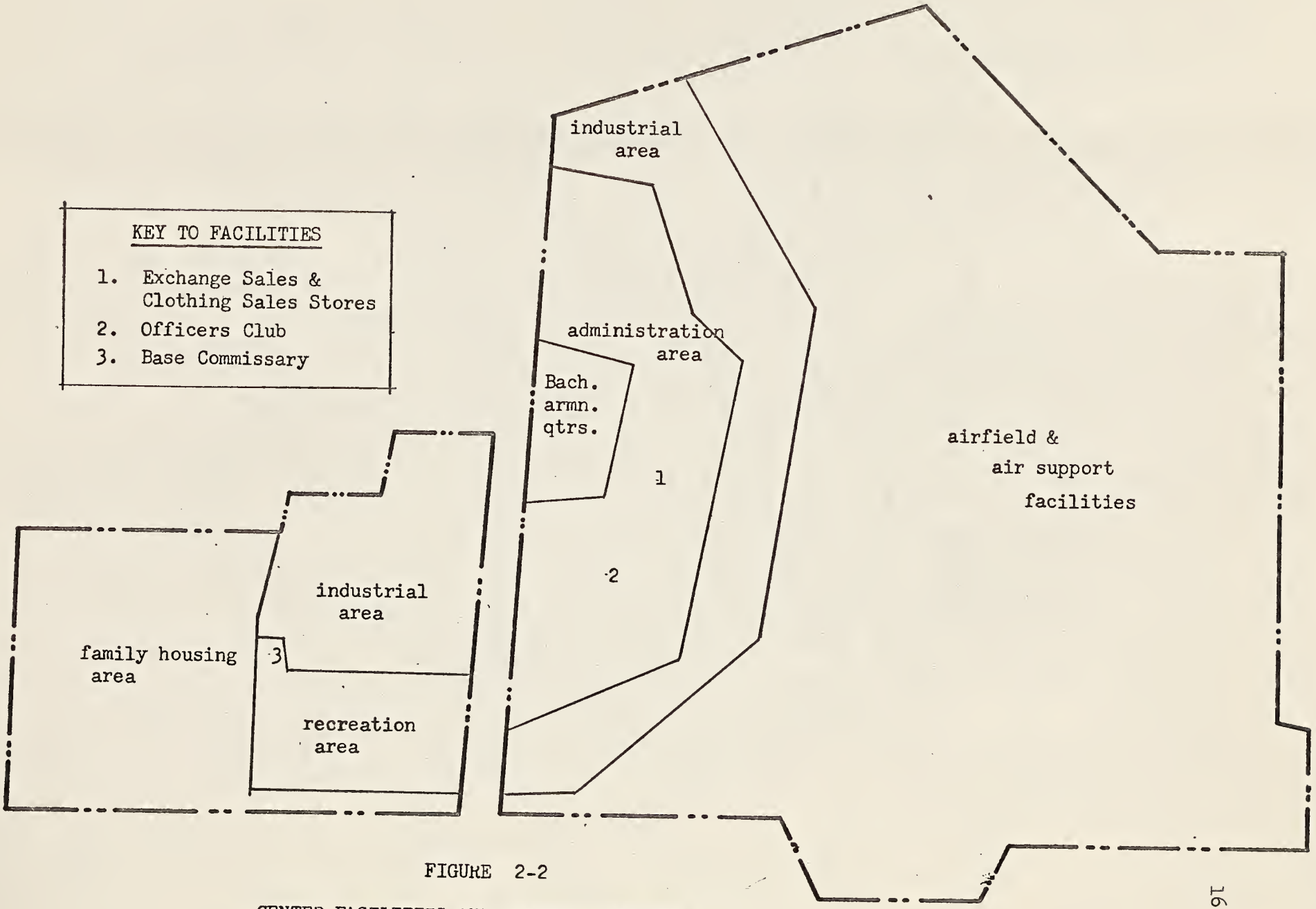


FIGURE 2-2

CENTER FACILITIES AND GENERAL LAND USE
AIR BASE "B"

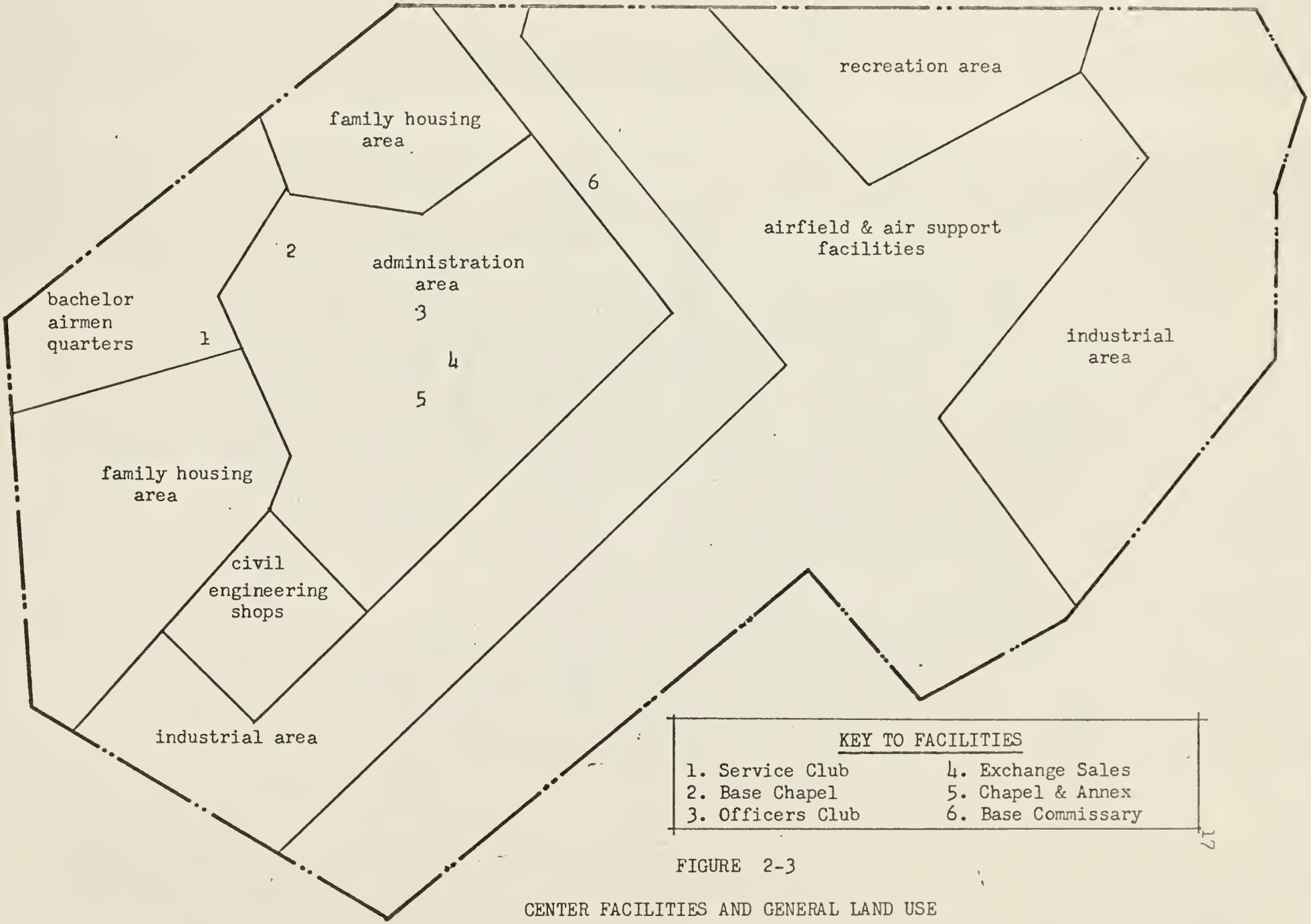


FIGURE 2-3

CENTER FACILITIES AND GENERAL LAND USE
AIR BASE "C"

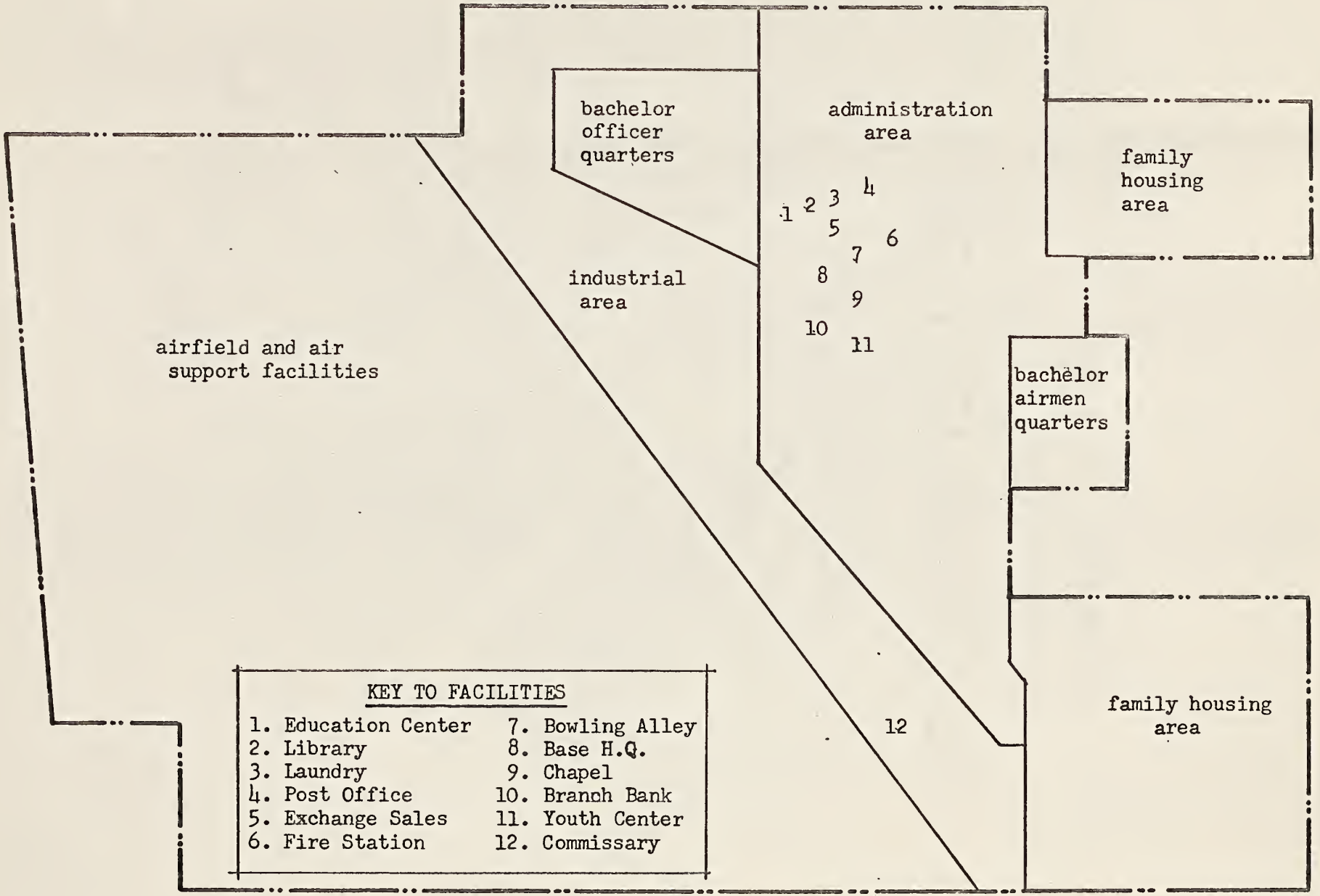
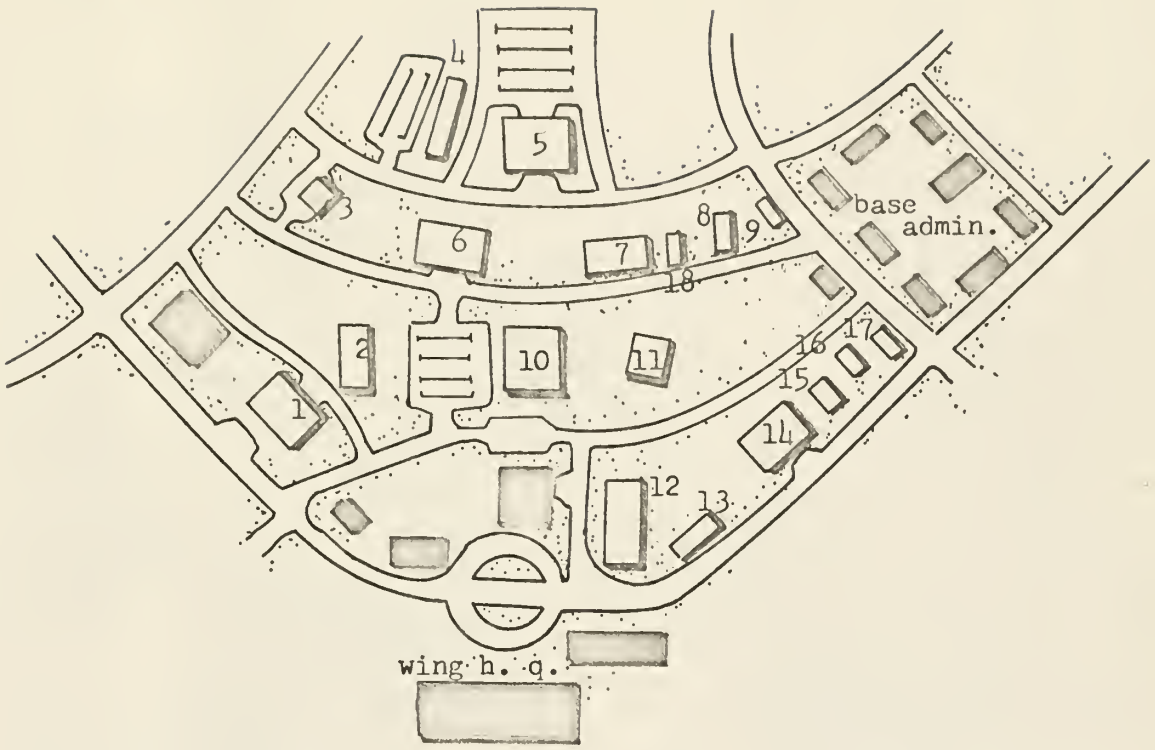


FIGURE 2-4

CENTER FACILITIES AND GENERAL LAND USE
AIR BASE "D"



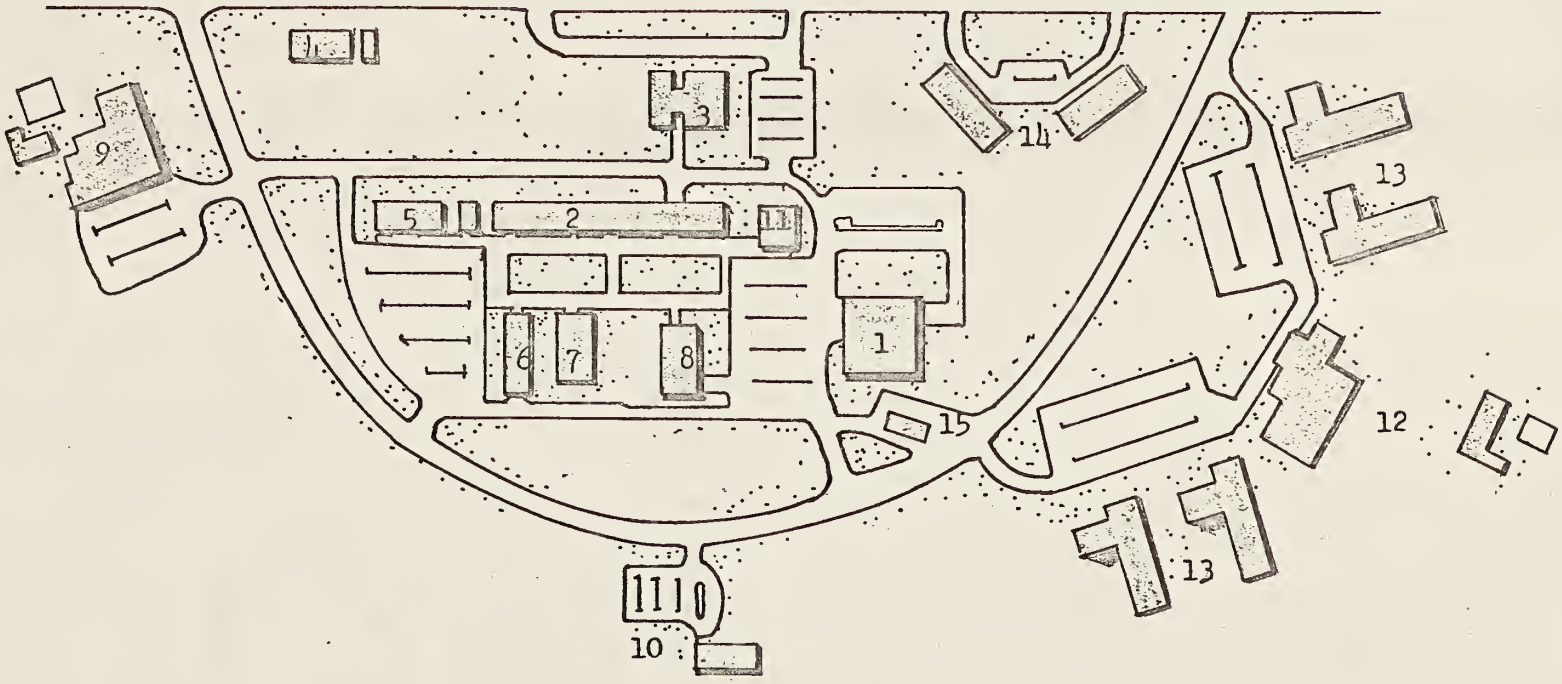
KEY TO FACILITIES

1. Hobby-Craft Shop	7. Service Club	13. Exchange Snack Bar
2. Bowling Alley	8. Clothing Sales	14. Exchange Cafeteria
3. Service Station	9. Nursery	15. Central Post Office
4. Cold Storage	10. Gymnasium	16. Base Library
5. Commissary Store	11. Tennis Courts	17. Education Center
6. N.C.O. Club	12. Exchange Sales	18. Gymnasium

= non-community center facility (administration facility)

FIGURE 2-5

COMMUNITY FACILITIES AREA
TURNER AIR FORCE BASE



KEY TO FACILITIES

1. Base Commissary	6. Post Office	11. Branch Bank
2. Exchange Sales	7. Library Services	12. Officers Club & Pool
3. Chapel & Annex	8. Base Theater	13. Bachelor Officer Hsg.
4. Education Center	9. N.C.O. Club & Pool	14. Guest Housing
5. Bowling Alley	10. Golf Pro-shop	15. Service Station

FIGURE 2-6

AIR BASE COMMUNITY CENTER
LITTLE ROCK AIR FORCE BASE

Another distinguishing characteristic of a center concerns its relative size and facilities offered to the community. Since the military center is basically an out-growth of the civilian shopping center, the civilian center classifications are readily adaptable for military use. The three basic classifications for center size and type are the neighborhood center, the community center, and the regional center.

The neighborhood center is the smallest of the three center types and generally provides convenience goods such as foods, drugs, and personal services. The major store in the complex is usually a supermarket with anywhere from four to fourteen other small stores finishing the complex. The site area ranges from five to ten acres and requires a minimum of one thousand families for support.[14]

The community center classification is the mid-range category. It generally features a variety store or junior department store as the principal merchant. In addition to convenience goods and personal services, the community center provides for the sale of both "soft lines" such as clothing, and "hard lines" such as hardware and appliances. The number of commercial outlets may range from fifteen to thirty, and may occupy from ten to thirty acres. The average building area of one hundred and fifty thousand square feet serves approximately five thousand families. This particular category is the most difficult to judge for size and drawing power in the civilian community due to the availability of a few shopping goods which consumers want to compare.[15] Although some

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[14]Ross J. McKeever (Editor), Shopping Centers Restudied. (Washington, D. C.: Urban Land Institute, 1957), p. 75.

[15]Ibid.

bases may be large enough to support a facility of this size, most bases will be best able to support a "neighborhood" size center.[16]

The last classification is that of the regional center which is the largest of the three. As such, it provides general merchandise, apparel, furniture, and home furnishings with a major department store as the principal tenant. Some regional centers may have as many as eighty separate stores covering a minimum site area of forty acres. The amount of actual building area ranges from four hundred thousand square feet to one million six hundred thousand square feet and will require one hundred thousand to two hundred thousand people for support.[17] A center of this size is entirely too large for any single military installation. However, such a center might be conceivable if two large installations were located relatively close to each other. The regional size center could serve personnel from both installations as the major service center with small annex centers at each installation for the provision of convenience items. Such a possibility would be a separate study in itself and will not be considered further in this paper.

The adaptation of the civilian classification to military standards is relatively simple. It has already been established that only two of the civilian categories, neighborhood and community, are actually feasible for military use due to the number of facilities offered and the number

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[16] Hollingsworth, op. cit.

[17] McKeever, op. cit.

of people required for support. However, to cover all military situations, three separate classifications should be used. By discounting the need for profit realization and competition between individual stores, the following classifications can be applied to military community centers:

Utility Center

The smallest of the classifications, this center is designed primarily for installations ranging up to a personnel strength of three thousand men. The largest unit in the complex would generally be the base commissary with from three to thirteen other facilities in the complex. The site area may range from three to six acres.

Convenience Center

This medium range classification is designed primarily for installations ranging in strength from three thousand to ten thousand personnel. The major occupants, the base commissary and exchange sales store, are approximately equal in size. More personal service and recreation facilities are included and the complex may feature from thirteen to twenty-three stores in addition to the two major units. The site area may range from six to eighteen acres.

Service Center

The largest of the three center types is designed for installations with ten thousand or more personnel. The three largest facilities in this complex are the commissary, exchange sales store and theater. A center of this size may contain as many as forty-four facilities covering a minimum site area of eighteen acres.

In addition to the above description, it must be noted that all military centers will have at least three facilities: a commissary, exchange sales store, and a recreational facility such as a multi-purpose facility.[18] Although these classifications are rather general in nature they represent a practical system for preliminary facility allotments.

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[18] Air Force Manual 86-6, op. cit., pp. 165-190.

The specific facilities to be located in the different centers will be discussed in Chapter Three.

III. USER CHARACTERISTICS

To adequately plan for a base community center, the planner must not only understand the various functions and physical characteristics of the complex itself. He must also have a knowledge and basic understanding of the people who will be using the center because he is actually planning for people.

In serving a community, whether it be civilian or military, the primary facet of concentration is the people involved. There can be no specific differentiation between the needs and desires of the civilian and military consumers. Both are equally concerned with the basic needs of food, clothing, shelter and comfort for their families at the most economical level possible. If any attempt at differentiation were to be made, it would have to be on the aspect of the income of the average consumer.

In general, two basic types of shoppers will be found on any air base. Also, these "types" will vary from day to day depending upon each day's circumstances that must be endured. Although these types are basically for shoppers, there is no reason why they do not apply to any center patron.

The first type is the economic consumer. This person feels a sense of responsibility for shopping and household duties. He is extremely sensitive to price, quality, selection, and overall efficiency

of operations.[19] Consequently, a center complex that is well-planned and constructed will meet the efficiency requirements of this consumer. This should be a primary consideration for the planner since the economic consumer accounts for approximately sixty-five per cent of the center patrons.[20]

The other primary type of consumer is classified as apathetic for he shops "because he has to." Shopping for this person is an onerous task that is to be endured for as little time as possible. Consequently, ease of access and a convenient location are of primary concern to this person.[21] This points out the importance of site selection and reinforces the aspect of desired efficiency to shorten the overall shopping time. This type of consumer represents approximately thirty per cent of center patrons while the remaining five per cent are indeterminant.[22]

In addition to the type of center patrons to plan for, the planner must also consider the various shopping habits that are common to communities throughout the country. As determined by recent surveys, there are certain shopping habits that are considered basic to all types of centers. First, eighty to ninety per cent of all shopping and family oriented errands are done by women. Second, the two most important

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[19]G. P. Stone, "City Shoppers and Urban Identification," American Journal of Sociology, LX (July, 1954), pp. 39-40.

[20]I. T. Sanders, The Community: An Introduction to a Social System. (New York: Ronald Press Co., 1958), p. 48.

[21]Stone, op. cit.

[22]Sanders, op. cit.

factors influencing consumer habits are the selection of goods and services and the convenience of facilities. Previous studies have determined that the military center serves a captive clientele. Because of the isolated location of many bases, the military shopper must use the center or drive a considerable distance to civilian facilities.[23] In this case, the driving time involved is more important than parking at the center. In terms of travel time, it has been established that most people do not like to spend over twelve minutes driving to a center for daily household needs and services.[24]

It is in this aspect of user desires that the elements of convenience and actual environmental enjoyment play a large role in boosting and maintaining community or base morale. The atmosphere of the center must be one of pleasure, perhaps even excitement. The "adventure" of going to the center can and should be an every day actuality for all users.[25]

The final factors of user trends to be considered is that of the actual time of usage. In most civilian centers, the planners must provide ample parking for night patrons as well as regular day time demands. In fact, most civilian developers advocate that all

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[23] Hollingsworth, op. cit., p.

[24] McKeever, op. cit., p. 24.

[25] James S. Hornbeck (Editor), Stores and Shopping Centers, (New York: McGraw-Hill Book Company, 1962), p. 93.

facilities in the center remain open at least two nights a week for family shopping.[26]

In the military center, this problem is lessened to a certain degree. In most centers the facilities are open two nights a week to better serve personnel and their families. Certain recreational and service facilities such as the base theater, personnel clubs, and chapel are open other week nights also. However, as civilian centers continue to prove the distinct advantages of maintaining evening hours, the military facilities may tend to adopt these same procedures. At the present time, some civilian centers in the neighborhood and community size classes are realizing up to sixty per cent of their patronage at night, and the trend indicates that this will even increase in the future.[27]

Actually, this is not as surprising as it may seem. When else can a husband and wife go out together to do the family shopping without reducing the free time they have available on weekends? The civilian centers have realized that the opportunity for family shopping is one of the important aspects of both the one-stop center and the night-shopping center. The planner must realize that the actual usage pattern of any center is as one planner states, "a compromise

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[26] J. C. Nichols, Mistakes We Have Made in Developing Shopping Centers. Technical Bulletin #4, (Washington, D.C.: Urban Land Institute, 1945), p. 12.

[27] Donald L. Curtiss, Operation Shopping centers. (Washington, D.C.: Urban Land Institute, 1961), p. 6.

adaptation to attracting and repelling forces which are evaluated within the framework of the individuals attitudes and values."[28]

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[28] C. T. Jonassen, The Shopping Center Vs Downtown. (Columbus, Ohio: Bureau of Business Research, College of Commerce, Ohio State University, 1955), p. 1.

CHAPTER III

COMMUNITY CENTER FACILITIES

> One cannot rely on a set of ready solutions applicable to any tenant in a specific category.[1]

Once the planner is aware of the general background function and characteristics of the community center complex, he is ready to begin the next phase of the planning process: determining what specific facilities are to be included in the completed complex. This is a change from the civilian process which requires a detailed economic study to select the site prior to determining specific facility types.[2] This is necessary to insure that the civilian center is economically feasible.

However, the military planner is not concerned with profit oriented feasibility. The military center has been recognized to be an integral part of any base activity pattern, almost to the point of being a necessity.[3] Consequently, the planner's main approach will be to determine the specific facilities to be included, their respective sizes, and the site area that will be required. Once the preliminary amount of required area is determined, the planner must then select the proper location on the base. The actual site and its various

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[1]Victor Gruen and Larry Smith, Shopping Towns U.S.A. (New York: Reinhold Publishing Corporation, 1960), p. 55.

[2]Ibid.

[3]Air Force Manual 86-6, Air Base Master Planning. pp. 199-200.

assets and limitations will then be dealt with specifically during the site planning phase of the planning process.

I. CRITERIA FOR SELECTING FACILITIES

As in civilian centers, the military planner cannot plan for any facilities that he cannot objectively justify. Rather than leave this justification and selection of facilities to one person's discretion, the Air Force specifies the pertinent factors which must be thoroughly considered for each facility in question. These include the number of assigned personnel, tenure and stability of the installation, the proximity to existing facilities at other installations or in local communities, climatic conditions affecting facility usage, and the facility's impact on installation morale.[4]

Prior to discussing these facility selection criteria, certain terms will be clarified. The military strength of an installation includes only the permanently assigned military personnel and cadet or student personnel normally assigned to the installation for a period of more than thirty days. The civilian personnel strength of an installation refers to those civilians that are employed by various sections throughout the installation. The total installation population includes military and civilian personnel and their dependents, plus any rotational, transient, and cadet personnel and their dependents which are to be included in installation planning.[5]

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[4] Air Force Manual 86-4, Master Planning. p. 172.

[5] Ibid.

Base Population

If there were no military personnel, a base community center would not be needed for there would be no base. Consequently, the military strength of any Air Force base is the most important factor in planning for community center facilities. The permanent party personnel and their dependents are the primary consumers for which community facilities are established. They would be classified as the primary trade area for a civilian center and expected to account for ninety-five per cent of the center's business. The remaining five per cent would be expected to come from the secondary and tertiary trade areas.[6]

The military planner can also count on his primary trade area, the military personnel and their dependents, for ninety-five per cent of the total center volume. The remaining five per cent will come from transient, rotational, and retired military personnel. Considering this basic premise, together with the absence of competition between store types and non-profit orientation of military facilities, the military planner is primarily concerned with the number of people to be served. This is illustrated by the fact that space requirements for all center complex facilities with the exception of the commissary, personnel clubs, public restaurants and the chapel are allotted on the basis of military strength.[7] (For a description of facility space requirements and functions, see Appendix A.)

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[6]Gruen, op. cit., p. 32.

[7]Air Force Manual 86-4, op. cit. pp. 165-190.

Of these four exceptions, two have secondary linkages to the actual military strength. Space allotments for the base commissary are based on the dollar volume of monthly sales. Since we assume that the military personnel and their dependents account for ninety-five per cent of center volume, we can summarily say that the commissary allotments are directly linked to the military strength of the installation. The other exception is the personnel club facilities. These include the service clubs, the non-commissioned officers open mess, and the officer's open mess. Space allotments for all three are based upon the number of assigned military personnel in the specific grade and rank designations.[8] Again, this is a secondary linkage to total military strength.

The number of civilians employed on the installation is the basis for space allotments of the third exception--public restaurants. Although the civilians do not have access to other center facilities, they still must be considered for planning pedestrian ways as well as vehicular movement areas.

Space allotments for the fourth exception, the base chapel and annex, are based upon total base population. To approximately determine what the total installation population for planning purposes will be, a "dependent factor" is used. This calculation involves multiplying the permanent party military population by a dependent

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[8] Ibid., pp. 177-182.

factor of 1.75 and adding the rotational, transient, and student strengths of the installation.[9]

Proximity to Other Facilities

Another selection criteria considers the capacity and proximity of other facilities, both civilian and military.[10] In most instances two separate Air Force installations will not be located close enough to each other to even consider only one set of community center facilities. However, there are some cases where small Air Force installations are located in proximity to a larger installation of another military service. In this case, if the size differential were significant (i.e., a ratio of 1:10 or greater) it might be advantageous to utilize the community center facilities of the other military installations.

However, installation size is not the only factor to be considered in this instance. The questions of accessibility, capacity, and convenience for the Air Force personnel involved must also be considered.[11] In such instances, further study that is beyond the scope of this paper would be required before any final recommendations could be made.

The consideration of local civilian facilities is an entirely different matter. Throughout the world, certain installations are located very near civilian communities. In most instances, these

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[9] Ibid., p. 173.

[10] Ibid., p. 165.

[11] Ibid.

communities are heavily dependent upon the installation for their economic support. Many of the local civilian retailers feel that the military center facilities represent unfair competition.[12]

To help promote good will between the civilian community and the installation, the military planner should make an exhaustive study of the civilian facilities that are offered. This study should consider what goods and services are available, their respective prices and quality, accessibility and convenience to military personnel, and the consumer environment.[13] Only after such a study is conducted should the planner determine whether or not to utilize the local facilities, as opposed to possible concession facilities within the military center.

Tenure and Stability

Another prime factor in facility selection is that of installation tenure and stability. Obviously, any installation scheduled for either reduction in strength or total closure in the foreseeable future should not plan for the construction of new center facilities. In this regard, the planner should carefully study the classified documents regarding future installation activity.[14] With this information regarding

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[12]"The World-Wide PX: $2 Billion in Bargains," Newsweek. LXVII (January, 1966), pp. 72-76.

[13]Gruen, op. cit.

[14]Interview with Colonel B. L. Ruggles, Professor of Aero-Space Studies, Kansas State University, Manhattan, Kansas, March 17, 1966.

installation permanency and future size, the planner should be able to determine what facilities will be most desired and needed in the center.

Climate

The final factor for consideration is that of the particular climatic conditions. Since all of the center facilities are suited primarily for indoor areas with the exception of outdoor recreation facilities, the climate factor is not a strong influence on overall facility selection. However, the climate does exert a strong influence upon the site planning of the center. This influence is discussed at length in Chapter Five.

II. FACILITIES TO BE INCLUDED

Basic Facilities

Table I lists the facilities that may be included in the community center. Of these forty-four different facilities, five are considered basic to every Air Force installation. These are the chapel and chapel annex, base exchange, commissary, the personnel clubs, and the recreation facility.

The chapel and chapel annex are considered essential to the religious and moral environment of all installations. There will always be chapel facilities regardless of installation size. The only factor to be considered for planning is the relative size of the facility to be accommodated, and their location in the complex. There is no question as to whether or not there will be a chapel.[15]

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[15]Air Force Manual 86-4, op. cit., pp. 173-174.

TABLE I

AIR BASE COMMUNITY CENTER FACILITIES

Merchandising	Services
Commissary	Chapel
Cold Storage	Chapel Annex
Exchange Sales Store	Branch Bank
Exchange Concessions*	Post Office
Clothing Sales Store	Laundry (Concession)*
Exchange Service Station	Dry Cleaning (Concession)*
Exchange Retail Warehouse	Tailor (Concession)*
Exchange Maintenance Shop	Barber Shop*
Exchange Administration Center	Beauty Shop*
Thrift Shop	Telephone and Telegraph*
	Information Center*
Recreation and Cultural	Personal and Family Affairs Counseling*
	Nursery*
Multi-purpose Facility	Bus Shelter*
Gymnasium	Exchange Cafeteria
Field House	Public Restaurants*
Base Theater	Guest Housing
Bowling Alley	Exchange Service Outlets
Craft Workshop	Washeteria
Automotive Workshop	Shoe Repair
Library	Radio and T.V. Repair
Education Center	Photo Studio
Youth Activities Center	Watch Repair
Service Club	Credit Union

*Facilities indicated with an asterisk (*) are not standard facility requirements, but may require planning considerations under certain conditions. This is particularly true of concession facilities.

Source: Air Force Manual 86-6: Air Base Master Planning, 10 Feb., 1959, p. 204; J. R. Breneman.

The base exchange is the serviceman's department store. Controlled by the Pentagon, but operated predominantly by civilian employees, it provides almost every product and service that could be desired by base personnel. Its sales range from diaper pins to sofas and refrigerators and its services from beauty parlors to guest houses and garages. It even offers brokerage services in Europe and a tank washing service in Korea. In other words, the exchange exists to serve the man in uniform on every installation.[16]

The base commissary has the responsibility of providing groceries for base personnel. It is the serviceman's supermarket. Although its service is generally subject to loud complaints, it has proved to be an economic necessity for all installations.[17] The primary planning problem with this facility is that of determining the size required. This will be discussed further in Chapter Five.

The fourth center facility common to all installations is the personnel club. This facility type includes three separate activities: the service club, the non-commissioned officer's open mess and the officers open mess. These personnel clubs are the primary social facilities for all personnel.[18] The service club is commonly provided and maintained

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[16]The World Wide PX: op. cit., p. 72.

[17]Carole Ritch, "Controversial Commissaries," Family Magazine-Air Force Times, (February, 1966), p. 4.

[18]Air Force Manual 86-4, op. cit., p. 181.

by funds appropriated from Congress to serve the enlisted personnel, their families, and friends. The non-commissioned officer's club (NCO club) and officer's club, on the other hand, are built and maintained by the membership themselves and are not supported by appropriated funds.[19] Since it has been determined that most personnel desire a separate and distinct location for the open-mess facilities, only the service club will be considered when planning for community center facilities.[20]

The recreation facility is the final basic item in any community center complex. Its size and function are dependent upon the military strength of the installation. On a small installation, this facility may also provide space for the service club and other activities, such as the theater, that cannot qualify for separate structural facilities. As with the other basic facilities, the main planning consideration for the recreational facility is the size of facility required.[21]

Facilities by Center Size

The selection of specific facilities for any community center complex depends entirely upon the factors discussed previously in this chapter. No specific rules can be established that will determine what facilities are to be selected for every conceivable situation. Each installation must be thoroughly evaluated before facilities are selected.

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[19]Colonel Ruggles, op. cit.

[20]Air Force Manual 86-6, op. cit., p. 204.

[21]Air Force Manual 86-4, op. cit., pp. 183-184.

After studying facility space allotments as set forth in the Air Force Manual 86-4 and facility functions, the writer has proposed certain general guidelines for facility selection, as shown in Tables II, III, and IV. In each table, one center classification is presented to show the possible hierarchy of facilities and priorities. It should again be noted that these tables are general proposals and should not be interpreted as inflexible requirements.

Facilities in the utility size center are primarily hard-core essentials. They provide the goods and services required by the base population without any extra or luxury services. Table II shows that certain facilities are added to the basic facilities, as the size of the installation increases. It does not show the necessary expansion of existing facilities as the new facilities are added.

Table III presents the basic facilities and possible additions for a Convenience Center. As compared to the Utility Center, fewer new facilities are added as the installation size increases. Those that are added tend toward specialty line and branch expansions of the existing facilities.

Table IV illustrates the fact that as installation size increases, the basic facilities tend to require branch facilities for adequate service. In this size facility, more specialty shops are present. These specialty shops would be concessions of the base exchange. The specific specialty shops listed were selected for overall popularity in existing centers.[22]

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[22]Architectural Record Book, Design for Modern Merchandising, (New York: F. W. Dodge Corporation, 1954), p. 152.

TABLE II

FACILITY PRIORITIES FOR A UTILITY SIZE CENTER

Basic Facilities	Facilities to be added for military strengths of: 250 - 500	500 - 1,000	1,000 - 3,000
Merchandising			
Commissary			
Exchange Sales			
	Exch. Service Station		
	Thrift Shop		
		Cold Storage	
		Exch. Maintenance	
		Clothing Sales	
			Exch. Warehouse
Services			
Chapel			
	Laundry		
	Dry Cleaner		
	Chapel Annex		
	Barber Shop		
		Branch Bank	
		Beauty Shop	
			Guest Housing
			Post Office
			Washeteria
			Credit Union
Recreation			
Multi-Purpose			Gymnasium[1]
	Craft Workshop		
	Library		
		Education Center	
		Bowling Alley	
		Service Club	Theater

[1]Replaces multi-purpose facility at this strength.

TABLE III

FACILITY PRIORITIES FOR A CONVENIENCE SIZE CENTER

Basic Facilities	Facilities to be added for military strengths of: 3,000 - 5,000	5,000 - 7,000	7,000 - 10,000
Merchandising			
Commissary			
Exchange Sales			
Exch. Service Stn.			
Thrift Shop			
Cold Storage			
Exch. Maintenance			
Esch. Warehouse			
	Exch. Administration Area		
		Exch. Bakery	
			Exch. Shoe Store
Services			
Chapel & Annex			
Cafeteria			
Barber Shop			
Beauty Shop			
Guest Housing			
Post Office			
Branch Bank			
Washeteria			
Credit Union			
Laundry			
Dry Cleaner			
	Shoe Repair*		
	Radio & TV Shop*		
	Nursery		
		Watch & Jewelry Repair Shop*	
		Information Center	
			Photo Studio*
			Personal & Family Affairs Counsel.
Recreation			
Gymnasium			
Craft Workshop			
Education Center			
Bowling Alley			
Library			
Service Club			
	Gymnasium		
	Auto Work-Shop		
		Youth Activity	Field House

*Denotes Exchange Concessions

TABLE IV

FACILITY PRIORITIES FOR A SERVICE SIZE CENTER

Basic Facilities	Facilities to be added for a military strength of: 10,000 - 15,000	15,000 - 25,000	over 25,000
Merchandising			
Commissary			
Exchange Sales		Womens' Wear*	
Exch. Service Stn.		Childrens' Wear*	
Thrift Shop	Thrift Shop - for home furnish.		
Cold Storage			
Exch. Maintenance			
Exch. Warehouse			
Exch. Admin. Area			
Exch. Bakery*	Gifts & Candies*		
Exch. Shoe Store*			
Services			
Chapel - 600 Seat		Chapel - 600 Seat	Chapel - 600 Seat
Chapel - 600 Seat	Chapel - 300 Seat	Chapel - 300 Seat	
Chapel Annex			
Cafeteria			
Barber Shop	Barber Shop		Barber Shop - 2
Beauty Shop	Beauty Shop	Beauty Shop	Beauty Shop
Branch Bank		Branch Bank	
Guest Housing		Guest Housing	
Post Office			
Washeteria	Washeteria		Washeteria
Credit Union		Credit Union	
Shoe Repair*			
Nursery			
Jewelry Repair*			
Information Center			
Photo Studio*			Photo Studio*
Personal & Family Affairs Counsel.			
Laundry*	Laundry*		
Dry Cleaner*	Dry Cleaner*		
	Telephone & Telegraph Off.		
Recreation			
Gymnasium - 2	Gymnasium	Gymnasium - 2	Gymnasium
Field House			Field House
Craft Workshop	Craft Workshop		Craft Workshop
Auto Workshop		Auto Workshop	
Bowling Alley			
Library & Eductn.			
Service Club			
Youth Center			
Theater	Theater - 2	Theater - 2	Theater

*Denotes Exchange Concessions

III. PLANNING FOR FACILITIES

Short-range Planning

Once the specific center facilities are selected, the planner must then determine priorities for construction and inclusion of facilities in the center complex. The Military Construction Priority Sequence has long been recognized as an important part of the planning process that normally hinders community center development. It is highly improbable that all of the desired center facilities will be authorized and funded in one fiscal year.[23]

The military planner must therefore establish a priority system for facility construction. It is recommended that this priority system be established as soon as the desired facilities are selected. A possible priority system can easily be derived from Tables II, III, and IV. Only after official authorization and funding for construction are received should the planner attempt to work out a detailed site plan. By waiting for authorization, the planner will be able to design a site plan based on the facilities authorized, and use these facilities as the nucleus for the total complex.[24]

To initiate the priority system, it is obvious that the planner should place a high priority on existing facilities. The facilities that can be justifiably expanded are especially important. Each existing facility should be studied for three things: structural adequacy,

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[23] Air Force Manual 86-6, op. cit., p. 206.

[24] Ibid.

functional capacity, and potential for expansion. A major facility such as the commissary that is in sound structural condition and is located on a large, open site could conceivably be used as the nucleus for a center on its existing site. In any event, all possibilites in this area should be thoroughly investigated.

Long Range Planning

The civilian developer can analyze his surrounding trade areas and project future growth trends. Based on these trends, he can set aside a certain amount of area for future expansion that is relatively certain. However, the military planner has a distinct advantage in this phase of community center planning. Classified base utilization documents, as previously mentioned, provide the military planner with an accurate forecast of the installation's future. These documents contain information regarding aircraft utilization, command level and military strength for each installation in ten-year increments.[25] Such information is invaluable to the planner in determining what center facilities may or may not be required in the future.[26]

There may be one slight drawback to this information. National defense plans are continually reevaluated and revised. Each year these classified utilization documents are revised for the succeeding ten years. In these revisions, it is entirely possible that a base slated

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[25]Colonel Ruggles, op. cit.

[26]Gruen, op. cit.

for permanency the year before may be closed within two or three years.[27] However, planning for such instances is almost impossible. It is highly impractical at best. The planner must base his selection and design only on the information that is currently at his disposal. His primary concern for long range planning is to work for a completed community center complex that adequately serves the military community and is an asset to the base environment.[28]

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[27] Colonel Ruggles, op. cit.

[28] Air Force Manual, 86-6, op. cit., pp. 200-201.

CHAPTER IV

SITE SELECTION

> Through careful scientific planning and by evaluating the multitude of inter-related items, a sound master plan for development can be produced.[1]

The location of the base community center is an important feature of any military installation. As the socio-economic hub of the base, it will generate large volumes of traffic, both pedestrian and vehicular. Still, its location must not interfere with the operational traffic and procedures relevant to the mission of the base.[2] The other major aspects of any site are its size, shape, and physical condition. These are the factors that ultimately determine the final site plan and cost of construction.

I. BASIC REQUIREMENTS

Thorough investigation is essential in all cases: whether an existing facility is to be the nucleus of the community center; whether a site is to be selected from available open land; or whether the center is to be located on a site specifically set aside for that purpose in the Base Master Plan. In all of these cases, it is highly desirable

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[1] Ross J. McKeever (Editor), Shopping Centers Restudied. (Washington, D. C.: Urban Land Institute, 1957), p. 23.

[2] Air Force Manual 86-6, Air Base Master Planning. p. 202.

that the site in question meet six basic requirements:[3]

1. There must be enough land available to allow construction of facilities that will meet both existing and future demands.
2. The shape of the site must be such that the entire area may be feasibly utilized.
3. The site must be in one piece, free from intervening roadways, flight patterns, or other barriers that would require a separation of center facilities.
4. The physical conditions of the site must be such that construction is economically feasible.
5. The site must be physically and visually accessible from major thoroughfares.
6. Surrounding land uses should be compatible with center development and should, if possible, offer contributing and enhancing characteristics.

Though these elements are extremely desirable, rarely will one site fulfill all six requirements. In most cases, the planner will have to weigh the assets against the liabilities for each possible site before the final selection is made.[4] This will require a detailed examination of each site, particularly in regard to geographical location, size and shape of available areas, and physical site conditions.

II. LOCATION

There are two basic types of center locations: generative and suscipient. The generative location directly attracts the consumer from his place of residence for the expressed purpose of utilizing center facilities. Such a location should be easily accessible to the greatest proportion of persons intending to use center facilities. The suscipient

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[3]Architectural Record Book, Design for Modern Merchandising, (New York: F. W. Dodge Corporation, 1954), p. 151.

[4]Victor Gruen, Larry Smith, Shopping Towns U.S.A. (New York: Reinhold Publishing Corporation, 1960), p. 38.

location is an impulsive attractor for people whose primary reason for being away from home is non-center oriented. This location type should be easily accessible to people on their way home from work or errands.[5]

Accessibility

The military planner must select a site that is a combination of the two types mentioned above. In both cases, the key factor in site location is accessibility. This is particularly true for the military center. By increasing accessibility to center facilities, the planner will reduce the overall amount of non-operational traffic throughout the installation.

The degree of site accessibility comes primarily from four separate studies, all of which must be made for each proposed location. These studies consider both pedestrians and vehicles as follows:[6]

Pedestrian Access:

1. A determination of the number of people in walking distance (generally considered to be one-third mile) and the comfort and pleasantness of the walking routes.

Vehicular Access:

2. A study of driving times and routes. In addition, the road pattern should be carefully studied to determine the ease of accessibility and driving comfort.

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[5] Richard L. Nelson, The Selection of Retail Locations. (New York: F. W. Dodge Corporation, 1958), p. 45.

[6] Ibid., p. 209.

3. An analysis of the public transportation going to the site and possible transit routes.
4. An analysis of service traffic that will be required and possible service routes.

Pedestrian Access. The primary sources to be considered for pedestrian access are bachelor quarters and family housing. Whenever possible, the site for the community center should be immediately adjacent to airmen and officer living quarters.[7] Where proximity to family housing is possible, the center should be located on the fringe of the housing area. This will effectively reduce the possibility of center traffic circulating through the residential area.

Vehicular Access. Vehicular access is generally the most important consideration due to the amount of area required for parking and circulation on the site. Vehicular traffic can be separated into three distinct types: User or private vehicle, public transit, and service vehicle. The two primary sources for private vehicular traffic are the family housing area and the main entrance to the base. These are "installation" origins for dependents of personel living in on- or-off base quarters. To provide convenient access from both sources, the site should be located in proximity to the major thoroughfares from each source. Since the center serves a "captive" clientele due to the exclusion of center competition, the site should be within ten minutes driving time of the family housing area.[8] Based on civilian

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[7]Joe B. Hollingsworth, "An Analysis of Air Force Master Planning and the Effect of Space Programs on Land Development." Unpublished Master's Thesis, Kansas State University, Manhattan, Kansas, 1965.

[8]Ibid.

consumer desires, it is also recommended that the site be within seven minutes driving time of the main entrance to the base.[9]

By locating the site in proximity to the major thoroughfares mentioned previously, the problem of public transit access will be solved coincidentally. Almost all non-military transit vehicles will enter the base at the main entrance and have at least one stop in the family housing area. Situated as above, the center would be a natural transit stopping point.

Service vehicles are another important factor in site accessibility. They will be coming primarily from the industrial warehouse sector of the base, or an industrial entrance to the base. Whenever possible, a special service entrance or road should be incorporated for service vehicles to separate them from user traffic.

A primary consideration for all types of vehicular access is that of congestion. Any congestion which may interfere with a user reaching the center should be avoided.[10] The reduction of congestion is essential to both center traffic and operational base traffic. In general, the site should be located in an area that will not interfere with operational traffic. To insure a separation of the two traffic types

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[9] Donald L. Curtiss, Operation Shopping Centers. (Washington, D.C.: Urban Land Institute, 1961), p. 4.

[10] Geoffrey Baker, Bruno Funaro, Shopping Centers: Design and Construction. (New York: Reinhold Publishing Corporation, 1951), p. 23.

the center should be located on a secondary road rather than a major thoroughfare.[11]

Visual Access. One type of access common to both vehicular and pedestrian traffic is that of vision. Civilian centers require visual access for advertising and promotional interests. Visual access is also desirable for the military center, but for different reasons. By making the center visible from various locations, it becomes a landmark for establishing relative locations and directions on the base. The bell tower of the chapel is ideally suited for establishing such a focal point. Visual access is also desirable to aid newly assigned personnel in locating and using center facilities.[12]

Land Use Relationships

In addition to accessibility, the surrounding land uses must also be considered when selecting a suitable location for the center. The center should be completely isolated from any base activities that generate large volumes of traffic, noise, or other objectionable features.

Ideally, the community center complex should be in the community area of the installation as shown in Figure 4-1. Unfortunately, this solution is hardly ever possible due to the layout of the installation, or the lack of adequate site area in these sectors. In all instances, the planner must consider adjacent land uses for each site considered, and determine how they would affect the operation of the center.

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[11] Air Force Manual, op. cit.

[12] Ibid., p. 199.

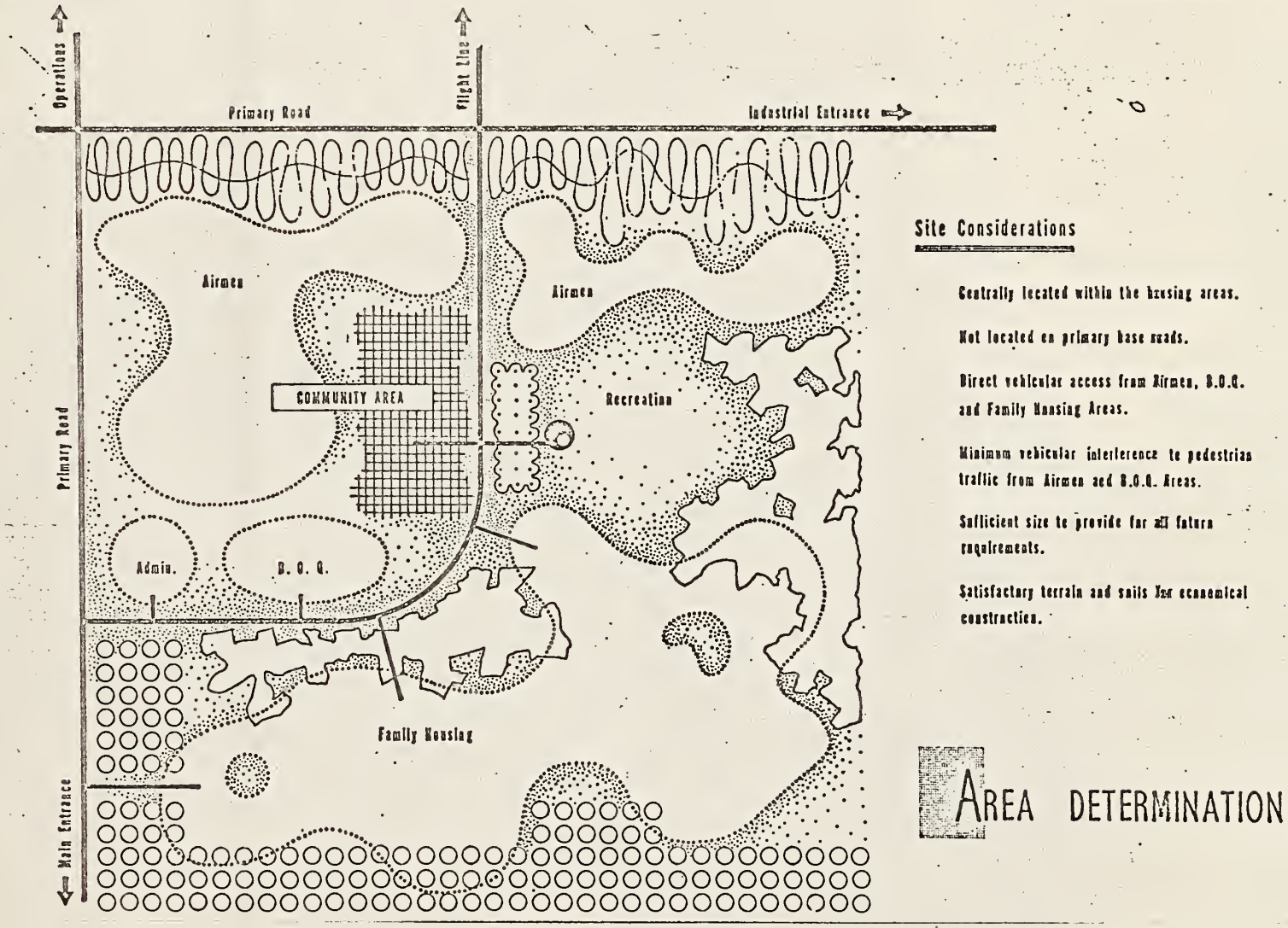

FIGURE 4-1

COMMUNITY CENTER LOCATION

Source: Air Force Manual 86-6,
Air Base Master Planning,
10 February 1959. Page 214.

III. GEOGRAPHICAL SIZE AND SHAPE

Once the general location for the site is selected, detailed studies of individual site characteristics must be conducted. The primary characteristics that determine design and circulation feasibility are the size and shape of the area in question.

Size

Upon selecting the facilities to be included in the center as discussed in the previous chapter, the planner should have a preliminary estimate of the building area that will be required for the center facilities. With these data he can then determine the approximate amount of land required for the center.

An acre of ground can be expected to provide ten thousand square feet of building area, thirty thousand square feet of parking space, and three thousand five hundred square feet of area for buffer areas, landscaping and walkways.[13] For example, a proposed center of sixty thousand square feet gross floor area would require a minimum site of six acres. This rule-of-thumb can be used to determine the site area required to meet the existing needs.

Planning for facility expansion at some future date requires that additional ground area be added to the original estimates. This land will be incorporated into the overall site plan for the complex and reserved for future expansion of both structural facilities and parking

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[13] McKeever, op. cit., p. 25.

areas. Based on the writer's studies of existing civilian centers, it is recommended that one-half acre of reserve land be added to the areal requirements for every two acres of land needed to meet existing demands. For example, if six acres of land are needed to meet existing demands, an additional one and one-half acres will be included for reserve land for a total site requirement of seven and one-half acres.

Shape

The physical shape of the site is also an important factor which influences the design and layout of the center. There are many ways in which this shape may prove undesirable, as shown in Figure 4-2.

In Figure 4-2A, the length of the site is disproportionately large in relation to the depth. Such a site dictates a strip-type layout that will allow only a limited variation in store depth which can be a serious problem.[14]

The wedge-shaped or irregular shapes, as shown in Figure 4-2 B & C, are also undesirable for community center sites. In both cases, certain portions of the site may be unusable for either parking or structures. Whenever a site of unusual shape is considered, a detailed study should be made to determine whether or not it is both functionally and economically feasible for center development. In a few cases, an imaginative planner or architect may create a very pleasing community center with an unusually shaped site. However, this is the exception and not the rule.

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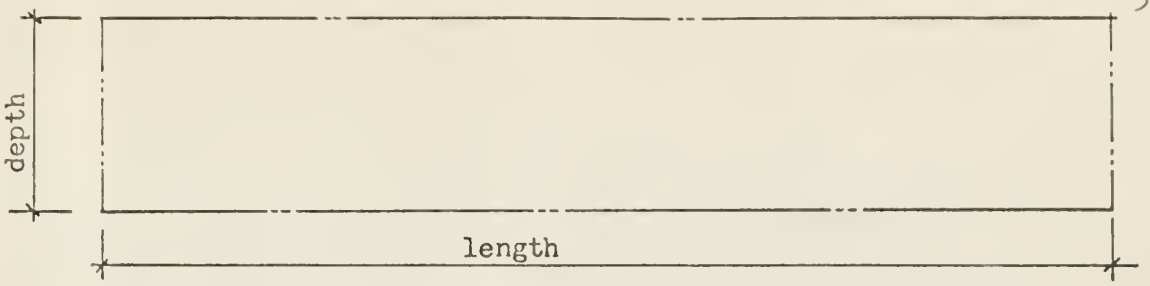
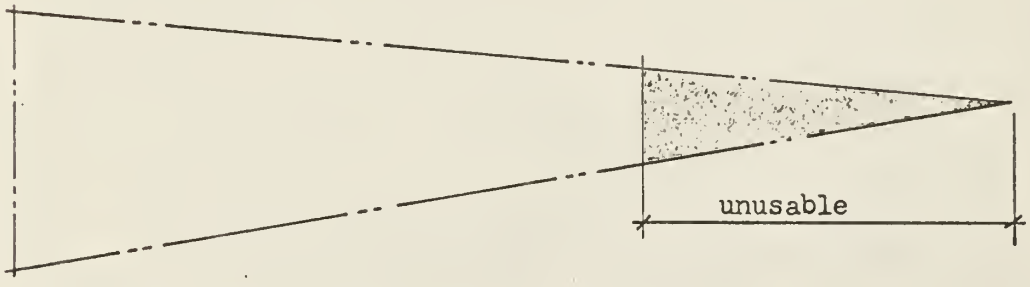
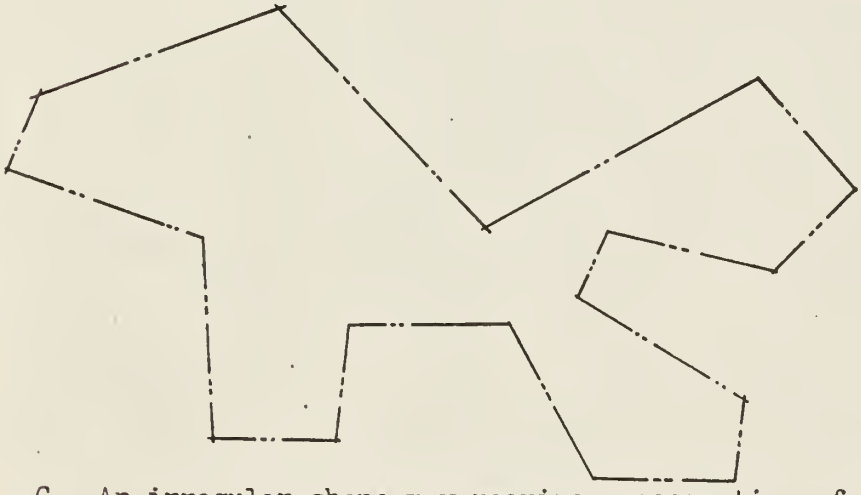
[14]J. C. Nichols, Mistakes We Have Made in Developing Shopping Centers. Technical Bulletin #4, (Washington, D.C.: Urban Land Institute, 1945), p. 1.



A. The site length is disproportionately large in relation to its depth.



B. A wedge-shaped site cannot be fully utilized.



C. An irregular shape may require a separation of facilities.

FIGURE 4-2

UNDESIRABLE SITE SHAPES

In most instances, an irregular site will result in forced and expensive solutions.[15]

IV. PHYSICAL CONDITIONS

The physical conditions of the site are the characteristics which influence the structural design and construction of the community center complex. These include topographical features, geological conditions, and engineering features such as utilities and drainage. In essence, these characteristics determine the economics of site engineering and construction.[16]

Topography

The topography of the land is an important factor to consider when selecting a site. Excessive slopes create difficulties in site planning and extensive grading costs in construction.[17] In the case of a slightly sloping site, multi-level design may be feasible and even highly desirable.

The size of the proposed center plays an important role in the consideration of topographical features. A large service center is more flexible and can be easily adapted to varying site conditions. Facilities may be designed in levels that will fit into a rugged

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[15]Gruen, op. cit., p. 41.

[16]Nelson, op. cit., p. 54.

[17]Baker, op. cit.

topographical environment and create an interesting center layout. A smaller center, however, does not have this flexibility due to the small area required. In this case, multi-level construction would cost more than could be justified.[18]

The natural features of the site must also be considered part of the topographical pattern. Such features as existing trees, unusual views, or small bodies of water should be utilized as integral parts of the community center complex. In certain instances, the advantages of the natural features on the site may outweigh some of its shortcomings in other areas. The Air Foce recommends that if other factors are equal, a site should be chosen that has some natural features for development.[19]

Geological Conditions

In any site evaluation, careful consideration must be given to the sub-surface soil conditions. Test borings should be made for each site under consideration to determine bearing capacity, water table, and drainage.[20]

The special deep foundations required with low bearing capacity soil may make construction economically unfeasible. Excessive expense will also be encountered if considerable rock excavation is required. As a rule-of-thumb, any physical features which have to be mastered

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[18]McKeever, op. cit.

[19]Air Force Manual, op. cit.

[20]Ibid.

rather than turned to an advantage should be regarded with suspicion.[21]

Engineering Features

The primary engineering feature to be considered is that of utility service. Based on the facilities selected for inclusion in the complex, the planner will have an approximate idea of the types and amounts of utility service that will be required. Each potential site should then be evaluated for utilities provided. An estimate should be made of the cost involved in modifying and/or extending existing facilities and also the cost of supplying any additional utility service required. If other factors are equal, a site where existing utilities can be economically modified or extended should be chosen over a site that would require expensive utility installation.[22]

Weighting Selection Criteria

It can be concluded that the selection of a site poses complex problems. The selection of an optimum site can only be made after all of the existing conditions are evaluated and compared. To aid the military planner in evaluating a site, the values in Table V are presented for weighting selection criteria. These values have been determined by experienced civilian planners[23] and adapted for military

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[21] Baker, op. cit.

[22] Air Force Manual, op. cit.

[23] Gruen, op. cit., p. 45.

centers by the writer. This adaptation accounts for the lack of competition and non-profit orientation in military centers. Table V indicates the relative importance that various criteria might assume in decisions concerning site selection. It should be noted that these are presented as suggested values and should not be interpreted as requirements to be rigidly applied to all situations.

TABLE V

SITE SELECTION WEIGHT LIST

Criteria	Value
Location	500
1. Population w/in walking distance	50
2. Family housing w/in 5 minutes driving time	50
3. Family housing w/in 10 minutes driving time	40
4. Base entrance w/in 5 minutes driving time	50
5. Base entrance w/in 10 minutes driving time	30
6. Public transportation	30
7. Near major thoroughfare from family housing	70
8. Near major thoroughfare from main entrance	70
9. On secondary base road	50
10. Visibility	30
11. Surrounding areas	30
Size and Shape	250
1. Size meets existing demands	120
2. Size large enough to allow for future expansion	80
3. Shape of site for design	50
Physical Conditions	250
1. Site of one or more existing facilities	50
2. Site in one piece	40
3. Cost of clearing and grading	30
4. Abundance of natural features	20
5. Satisfactory bearing capacity	40
6. Cost of excavation in rock	40
7. Cost of utilities	30
Total:	1000

CHAPTER V

SITE PLANNING

> Techniques and mechanics can be described, learned, and mastered. If they are mastered, workable plans will result. Really spirited planning, however, depends upon the presence of something additional which might be called intuition, imagination or creativeness.[1]

I. BASIC CONCEPTS

Having selected the facilities to be located in the center and the physical site for the center, the planner's next job is to design the site for the completed complex. In this phase, the planner must consider facility locations, landscaping, pedestrian and vehicular movement and overall design to create the desirable and intangible feature called atmosphere.[2] Also in this phase, the planner must contend with the most serious problem encountered in community center planning--expansion and development.[3] In most civilian centers, the entire complex is constructed in one operation, and expansion refers primarily to increasing existing areas. In the military center, however, funds are rarely available for construction of an entire center.

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[1] Victor Gruen, Larry Smith, Shopping Towns U.S.A. (New York: Reinhold Publishing Corporation, 1960), p. 87.

[2] Air Force Manual 86-6, Air Base Master Planning. p. 199.

[3] Gruen, op. cit., p. 204.

In this case expansion refers not only to the increasing of existing areas, but also to the addition of entirely new facilities.

Due to the Military Construction Priority Sequence discussed in Chapter Three, the writer recommends that all community centers be planned for phased development. In this instance only a portion of the ultimate plan is carried out in the first phase, and other elements are then constructed as funds are made available.

Planning for phased development can be successful only if a total master site plan is completed before detailed planning of the first stage is undertaken.[4] Therefore, detailed site planning should not begin until authorization is received to design and construct the initial facilities. Once this authorization is received, the facilities authorized will be used as the nucleus of the center and the site planning process can begin.

Site Planning Principles

To properly develop a community center complex, the planner must be conscious of the various principles involved in site planning. These principles must be the planner's guideline if he is to create a successful military center. These principles are as follows:[5]

1. Safeguard surrounding areas.
2. Maximize pedestrian access to facilities.
3. Separate the various types of traffic.
4. Maximize comfort and convenience.
5. Create unity, orderliness, and beauty.

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[4]Air Force Manual, op. cit., p. 204.

[5]Gruen, op. cit., p. 75.

The areas surrounding the site should be a vital consideration in any center design. While it has been suggested that the surrounding areas be predominantly residential, steps must be taken to protect adjacent areas regardless of their use. These protective measures should insure that center traffic will be kept out of residential streets and that the surrounding areas will not be bothered by the noise, fumes, or unsightliness often created by commercial activities. The most effective way to safeguard these areas is to incorporate them within the original planning concepts.[6]

To maximize pedestrian access, two distinct types of foot traffic must be considered. The first type concerns the distance the user must walk from the parking area to the building group. This distance should be minimized as much as possible to increase access and to reduce congestion created by mixed traffic modes.[7] The second type of foot traffic results from the user walking from one facility to another within the building group. These routes must be kept relatively short, but they must also be made interesting and enjoyable. The specific details of pedestrian-way design are discussed at length later in this chapter.

One of the most vital elements in any center design is the effective separation of the various traffic types. The combination of user, transit and service vehicles within one area will always create congestion unless they are segregated from each other. Pedestrian

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[6] Ibid.

[7] Ross J. McKeever (Editor), Shopping Centers Restudied. (Washington, D.C.: Urban Land Institute, 1957), p. 10.

traffic must also be isolated within its own confines whenever possible. The noise, fumes, and possible danger inherent with vehicle movement are likely to diminish or completely destroy the effectiveness of amenity features for shopping enjoyment if such isolation is not created.[8] The element of safety also enters into the traffic considerations. In most instances, the increased safety of traffic separation will be enough to justify any added expenditures for this purpose.

The maximization of comfort and convenience is a general concept that has far-reaching connotations. It includes convenience of access, movement, parking, and store usage in addition to physical shopping comfort.[9] In essence, this principle requires the planner to plan for the needs of the users--the people that will shop, relax, and even work within the community center complex. Wherever possible, the needs of the center user must be fulfilled.

Although the concept of unity, order and beauty is the final principle to be considered in this discussion, the planner must be fully conscious of it in all the design phases of his work. He must plan in three-dimensions so that all elements of the completed center will blend together to form an integrated architectural unit and not just an assemblage of miscellaneous facilities.[10] Landscaping, site and facility design, circulation patterns, signs, colors, textures, and

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[8]Gruen, op. cit., p. 81.

[9]Ibid.

[10]McKeever, op. cit.

materials must all be integrated to fulfill the aesthetic and environmental requirements for a successful center.

Site Functions

Site planning, as such, is the allotment of space to various center activities based on the principles previously discussed in this section. To facilitate the space allotment or site planning procedure, the various center activities are consolidated into four basic functional areas: structures, vehicle movement, pedestrian circulation, and reserve and buffer zones. Each of these four areas provides a function essential to the full utilization of center facilities.

The structures are the physical facilities for displaying merchandise, and providing recreational activities and personal services to the military population. Structures also provide the facilities needed for maintenance, heating and air conditioning equipment, and merchandise storage--all vital elements of any center.

The vehicular circulation function provides for the entrance, storage, service and movement of all vehicles entering the complex area. It must provide convenient entrances, exits, and adequate parking facilities for the users, as well as separate entrance ways and loading facilities for service vehicles. The specific details and design factors for the circulation function are discussed at length in Chapter Six.

Pedestrian circulation functions are closely related to both vehicle circulation and structures. However, since pedestrian contact with vehicular areas is primarily a means to the end (contact with the structure function) it should be considered a secondary relation. The

primary relation for the pedestrian function will be with the structures.

Buffer and reserve areas also perform a function essential to center operation. These areas provide the space needed for future expansion as well as helping to protect the surrounding areas from noise, fumes, and possible unsightliness. Although relatively passive in character, they must be considered equally with the other functional areas to achieve harmonious balance in the final site plan.

Site Planning Procedure

With the basic principles of site planning and a full realization of the functional areas in mind, the planner is ready to begin the actual process of planning the site as shown in Figure 5-1. The first step will be the preliminary allocation of space to the functional areas. Once this is completed, the general site layout must be considered. At this time, the actual building pattern will be determined in broad terms. With the basic building pattern in mind, the planner must then study the specific characteristics of each proposed facility in regard to size and location within the center core. Once the preliminary locations and sizes are established for each facility, the planner can then progress to the detailed design of parking and access facilities, pedestrian circulation and buffer and reserved areas.

Space Allocation--Building Area. Before any site areas are determined, the planner must decide whether or not multi-level construction will be used. In large service Centers, two-story facilities may be feasible. Smaller centers may not be able to justify such construction, but the decision must be made as to whether or not facilities

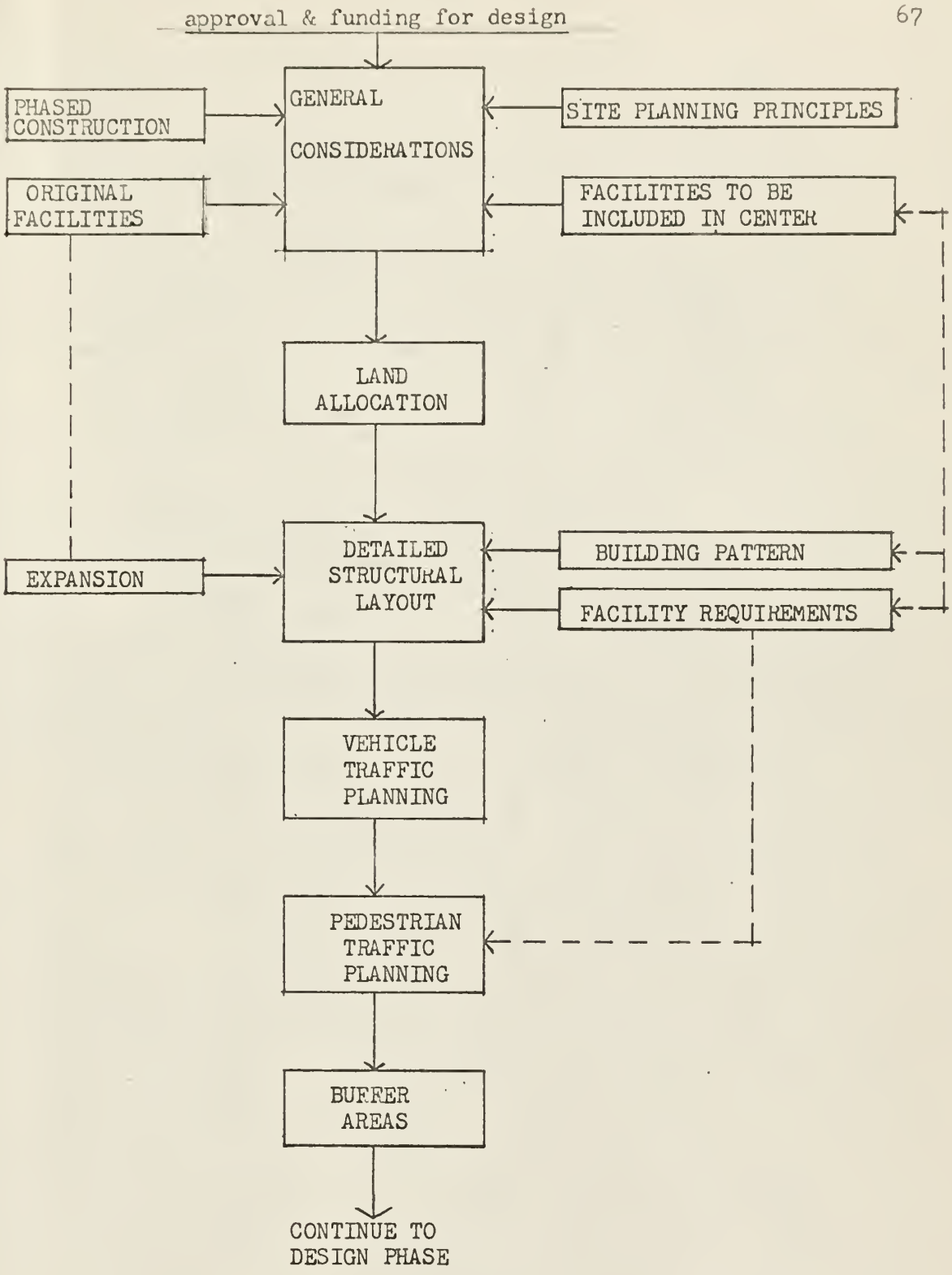

FIGURE 5-1

THE SITE PLANNING PROCESS

are to be constructed with basement areas. Since the area requirements set forth in the Air Force Manuel 86-4 are gross areas, the basement space is counted as part of the area allotment for each facility.[11] The decision of multi-level construction must be determined by the individual planner to best fulfill the needs of the particular installation.

Once the question of multi-level construction is settled, the planner must then refer back to the original area requirements established during the selection of facilities. The sum of the individual facility areas, minus the sum of basement or other level areas will determine the amount of ground level building area to be allocated for planning purposes.

Transportation Area. The next step in the land allocation is to determine the amount of land that will be required for vehicular transportation. Since the standard method of determining this area is to apply a given ratio of active (rental, in civilian terms) floor area to transportation area, the amount of active floor area must be determined.[12] A standard rule-of-thumb for determining active floor area is to assume that fifteen per cent of the gross floor area not used for storage is consumed by corridors, mechanical equipment, and other non-active uses.[13] In other words, the active floor area of the center is eighty-five per cent

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[11]Air Force Manual 86-4, Master Planning. p. i.

[12]Gruen, op. cit., p. 90.

[13]Geoffrey Baker, Bruno Funaro, Shopping Centers: Design and Construction. (New York: Reinhold Publishing Corporation, 1951), p. 23.

of the gross floor area not used for storage purposes.

To determine the transportation area required, it is recommended that a ratio of three square feet of transportation area be provided for every square foot of active floor area.[14] The exact number of parking stalls may be determined by assuming four hundred square feet per stall. This will allow ample space for both parking and circulation.[15] However, the number of parking spaces must not exceed four per cent of the military strength of the installation.[16] For purposes of the space allotment phase, the procedures outlined above will be sufficient. Traffic planning for the entire center complex will be discussed further in Chapter Six.

Reserve and Buffer Areas. Once the required building and transportation areas have been subtracted from the total site area, the remaining area must be allocated between reserve and buffer areas, and pedestrian areas. Of these two, the reserve and buffer area should receive first choice in order to adequately provide for future expansion and to safeguard the surrounding areas.

Based upon studies of both civilian and military facility expansions, the writer recommends the following procedure for determining reserve area requirements for future expansion: Assume that the facility

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[14]Joe B. Hollingsworth, "An Analysis of Air Force Master Planning and the Effect of Space Programs on Land Development." Unpublished Master's Thesis, Kansas State University, Manhattan, Kansas, 1965, p. 49.

[15]Gruen, op. cit., p. 91.

[16]Air Force Manual 86-4, op. cit., p. 196.

space requirements will be raised two levels; the reserve area required then equals the difference between the area allotment at this level and the existing allotment with a maximum reserve area of four thousand square feet per facility. For example, a three thousand man installation is allotted 5120 square feet of floor area for a clothing sales store. The next level allotment (5000 to 10,000 personnel) is 6400 square feet and the second level allotment (10,000 personnel and over) is 6700 square feet. Therefore, the reserve area required equals the difference between 6700 square feet and 5120 square feet or a total of 1580 square feet. Since 1580 square feet is less than the 4000 square feet recommended maximum, the calculated reserve area is permissible.

The amount of land to be allocated for buffer zones will vary from center to center. To determine the optimum buffer area for any particular center, the planner must consider the adjacent land uses and the size of the proposed center. Generally the size of the buffer areas will increase proportionately with the size of the center. As a minimum requirement, a densely planted buffer strip twenty feet wide is suggested when the center is near a residential area.[17]

Pedestrian Areas. After the building area, transport area and buffer and reserve area have been deducted from the total site area, the remaining land is finally allocated to pedestrian areas. Although it is considered last among the functional areas, pedestrian ways should not be considered the least important. Rather, they rank second in

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[17]Architectural Record Book, Design for Modern Merchandising, (New York: F. W. Dodge Corporation, 1954), p. 164.

value behind the building area for the pedestrian ways provide the arteries for the life blood of the center--the people.

No specific ratio can be applied for determining the optimum amount of pedestrian area in relation to the other three functions. It can be assumed, however, that their proportionate share of the total area is relatively large. Experience in planning has shown that the pedestrian area is approximately equal to the gross building area.[18] These areas provide the greatest challenge for the planner. No matter how large or small they may be, they must be planned to provide an interesting and pleasurable environment for the center user to enjoy.

Though seemingly long and involved, this allocation of space is merely the first step in the site planning process. It is a preliminary estimate that is essential in establishing guidelines for the detailed design of center facilities. Once these guidelines are established, the planner is in the position to start planning the physical layout of the site. However, the writer again recommends that detailed site planning be initiated only after authorization for design studies has been received.

II. PLANNING FOR STRUCTURES

The first step in the physical design phase of site planning is the location and layout of facility structures within the area guidelines

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[18]Gruen, op. cit., p. 89.

previously established. In this phase, the size and locational needs of each facility must be thoroughly examined to create a successful center complex. Not only must the needs of each facility be fulfilled, but the entire complex must be designed and planned as a unit that is functionally and aesthetically integrated. This requires the planner to consider the needs of the overall building pattern as well as those of the individual facilities.

Building Patterns

Experimentation with community center design has resulted in the development of three basic shapes as illustrated in Figure 5-2 A, B, and C: the strip, the mall, and the cluster, or hub.[19] Each configuration has its own particular advantages and disadvantages. The military planner should be aware of these characteristics if he is to select the optimum pattern for his particular situation.

The Strip. The strip is a row of individual stores closely spaced or joined together with entrance fronts facing the parking area.[20] This is the most common type of civilian center for convenience and shoppers goods. This building pattern is suitable only for very small centers less than six hundred feet in length. If the length exceeds six hundred feet, shoppers will drive to the

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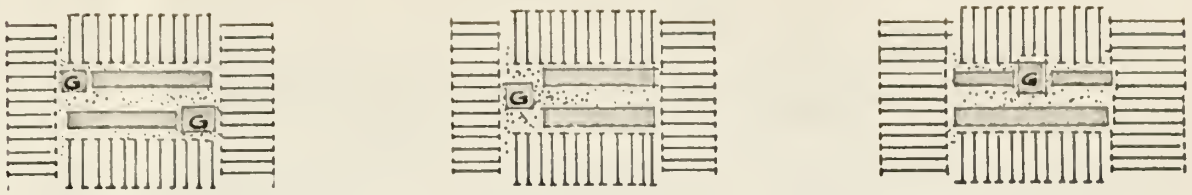
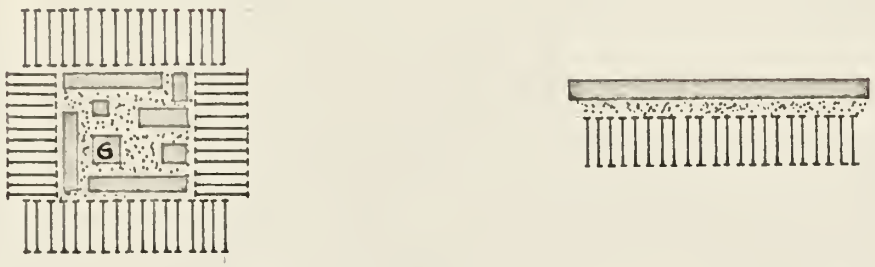
[19]Richard L. Nelson, The Selection of Retail Locations. (New York: F. W. Dodge Corporation, 1958), pp. 235-236.

[20]Air Force Manual 86-6, op. cit., p. 204.



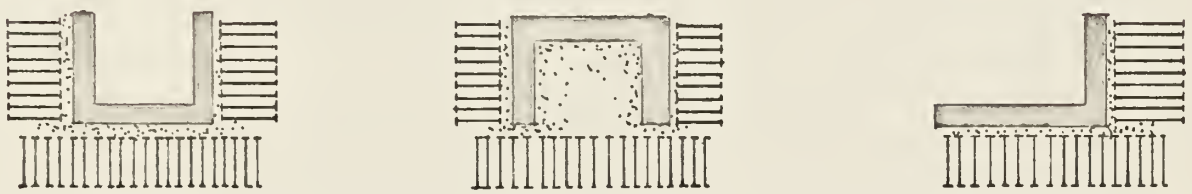
A. The Mall Type Center



B. The Cluster Type Center

C. The Strip Type Center

Basic Building Patterns



D. The "U" Type Center

E. The Court Type Center

F. The "L" Type Center

Variations of Basic Building Patterns

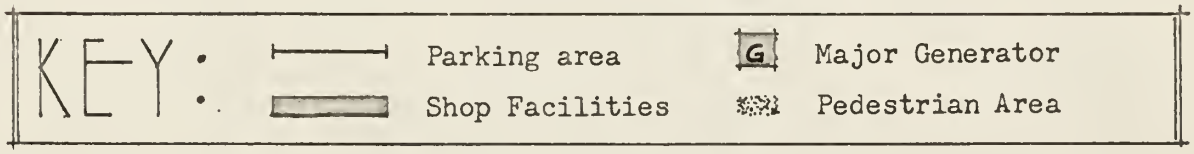


FIGURE 5-2

BUILDING PATTERNS FOR
COMMUNITY CENTERS

other end which defeats the purpose for the one-stop center. Three common forms of the strip pattern are the "U", "L", and the court layouts shown in Figure 5-2 D, E, and F. They are merely adaptations of the strip pattern to a square lot.[21]

The Mall. The mall pattern is basically the prototype for all civilian centers of 200,000 square feet or more. Many planners consider it the ultimate in shopper convenience and amenities. In essence, it is two strip centers facing each other and separated by a pedestrian street or mall. This arrangement helps to isolate the center patrons from the transportation areas and provides an environment conducive to shopping enjoyment. One of the major advantages of this pattern is its flexibility for the location of major facilities, or generators as shown in Figure 5-2.[22]

Two major problems are common to the mall pattern. First, service vehicles require access to each facility and therefore are mixed with user traffic in the parking areas. This mixture creates congestion which decreases the efficiency of the center for both the user and the service personnel. Second, rear building facades are presented to the surrounding areas. Such exposure problems can only be solved by architectural treatment or the thorough development of buffer zones. In either case, the solution tends to be expensive.

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[21]Nelson, op. cit., p. 237.

[22]Ibid., p. 239.

The Cluster. Popular with many large centers, the cluster pattern is a series of building groups that are interconnected by pedestrian malls and courts. This arrangement also separates pedestrian traffic from vehicular traffic, but in a more flexible and informal fashion. By grouping certain facilities together, the cluster pattern tends to separate vehicular traffic and focus it upon the major facilities. This characteristic can be particularly useful when the peak active periods of certain facilities are separated in time. The grouping pattern also suggests the provision of interior service courts to help relieve the congestion normally created by mixing service and user vehicles.[23]

The disadvantages of the cluster pattern are similar to those of the mall. Rear facades must still be exposed and there is a tendency for mixing user and service traffic. This pattern is also slightly more expensive than the mall, for more exterior walls are required due to the separation of facilities.

Obviously, no one pattern can be recommended as the optimum for all military centers.[24] Although the Air Force does not presently recommend a strip pattern this arrangement should not be automatically excluded, especially in the case of small centers. Again, the military planner must analyze his own situation in detail before determining which of the basic patterns will best satisfy the requirements for his particular situation.

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[23]J. C. Nichols, Mistakes We Have Made in Developing Shopping Centers. Technical Bulletin #4, (Washington, D.C.: Urban Land Institute, 1945), p. 2.

[24]Nelson, op. cit., p. 38.

Facility Location

The location of a facility within the overall building pattern depends upon four items: the nature of the facility, the type of access it requires, the amount of traffic it will generate, and its interrelations with other center facilities. These four items must be determined for each facility and then compared to the characteristics of the other facilities before an optimum location is selected. Figure 5-3 suggests a possible form to be used in these comparisons. A detailed discussion of location requirements for each center facility is presented in the Appendix.

Of the four general characteristics, the interrelations between individual facilities should be considered first to determine possible facility groupings. Similar or complimentary functions should be grouped together to increase user access and convenience. Some typical combinations of interrelated facilities are the branch bank and post office, the commissary and cold storage facilities, the exchange sales and clothing sales stores, and the service club, base theater, and bowling alley.[25]

The type of access required should be the planner's second consideration. This includes both service and user access. Small personal service shops that require little or no access for service vehicles should be located within the complex interior, away from service entrances and loading areas. These shops should be readily accessible to all pedestrian

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[25] Air Force Manual 86-6, op. cit., p. 206.

NAME OF FACILITY	GROUND FLR. AREA - sqft	CHARACTERISTICS		ACCESS REQUIRED		GENERATOR TYPE	RELATED FACILITIES		
		hours open	user types	USER	SERVICE		MERCHANDISE	SERVICE	RECREATION

FIGURE 5-3

A FORM FOR COMPARING
FACILITY CHARACTERISTICS

traffic.[26] On the other hand, large facilities such as the commissary should be located on the outside of the complex to maximize parking and service accessibility. Wherever possible, facilities requiring major service accessibility should be grouped around a common service court to eliminate duplication of loading facilities.[27]

The amount of traffic a facility will generate is reflected in its access requirements. A facility requiring maximum parking access can be expected to generate large volumes of traffic with a high rate of turnover and vice versa. Parking for these facilities must be located so as to be undesirable for long term parkers. Facility entrances are also influenced by the amount of traffic generated. A small generator may require only a single three foot door for both entrance and exit, while a large generator may require separate six foot openings for both entrance and exit.[28]

The final characteristic involves the specific nature of each facility. Although reflected to a certain degree by the previous characteristics, the specific nature of the facility may preclude any locational requirements previously established. The importance of this characteristic is exemplified in the base chapel. Although it could be considered supplementary to other facilities for parking purposes, the

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[26]Nelson, op. cit., p. 103.

[27]Ibid.

[28]Nelson, op. cit., p. 104.

chapel requires a separate location in a setting and atmosphere that is worthy of the activity.[29]

Based on studies of these characteristics and location desires of civilian retailers and developers, the writer recommends the following principles of location:[30]

1. Complimentary stores should be located together whenever possible.
2. Large generators should be located at opposite ends of a complex to separate user traffic and also to route pedestrians past the smaller shops.
3. Convenience goods and service facilities should be located as close as possible to parking.
4. Small service facilities (less than one thousand square feet in gross floor area) should be located to maximize pedestrian access, provided that they do not require major access for service vehicles.
5. Each facility should be in a location that is conducive to the effective enjoyment and use of the facility as reflected by the nature of its activities.

III. PLANNING FOR CIRCULATION

The most important influence on the site plan of any shopping center is circulation. This includes shoppers in cars, pedestrians, public transit service, and freight loading and unloading at the store. Of these four traffic types, vehicular traffic is the largest and most important. In almost all centers, the vehicular circulation area becomes the dominant feature of the site plan.[31] Due to this areal

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[29]Air Force Manual 86-6, op. cit., p. 207.

[30]Architectural Record Book, op. cit., p. 154.

[31]Baker, op. cit., p. 31.

dominance and the specialized nature of the activities involved, traffic planning for vehicular circulation is discussed separately in Chapter Six.

However, there is another major element of circulation that must be considered when designing the core of the center complex--pedestrian traffic. In fact, the provision of special pedestrian areas is one of the major characteristics that distinguishes a community center from just another group of buildings.[32]

The use of the center should be more than utilitarian in function. As discussed in Chapter Two, the community center is the hub of socio-economic activity on the base. Consequently, the environment within this center must be pleasant and attractive so that patrons will enjoy their trips to the center. An attractive and stimulating center atmosphere cannot help but provide an encouraging boost to base morale.

One of the most desirable aspects of center atmosphere is that of relaxation and informality. This type of atmosphere suggests leisurely circulation so that the user will have time to enjoy the center. The planner then has the responsibility to create this atmosphere.

Although pedestrian circulation will generally follow direct routes from building to building, these routes should still suggest leisure and informality.[33] To achieve this desirable condition, the planner can use any of several tools at his disposal. These tools include mall and sidewalk widths, paving color and texture, planted areas,

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[32]Gruen, op. cit., p. 47.

[33]Air Force Manual 86-6, op. cit., p. 209.

decorative pools and sculpture, street furniture and community display areas.

No specific rules can be established for using these tools. The only requirement that must be fulfilled in the design of pedestrian areas is that congestion must be eliminated at all costs. In many of the older civilian centers, walking is more convenient than riding, but the sidewalks are so congested that shopping is no longer a pleasure.[34] To avoid congestion, the planner must seriously consider both the size of the pedestrian way and the size and location of planted areas, street furniture, etc.

In regard to the widths of pedestrian ways, the writer recommends minimum walk widths of seventeen feet for Service Centers, fifteen feet for Convenience Centers, and twelve feet for Utility Centers. These widths will allow for fire plugs, mail boxes, street signs and lights, street furniture, planted areas and ample free pedestrian movement.[35]

The size, shape and location of planting beds and other physical features must also be given careful consideration. By analyzing probable flow diagrams of pedestrian traffic, the planner should be able to determine where these features should or should not be placed.

Obviously, the planning and design of pedestrian ways is no small task. In many instances, these areas may provide more challenge to the planner than the design of a structural facility.

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[34]Dr. Louis Parnes, A.I.A., Planning Stores That Pay. (New York: F. W. Dodge Corporation, 1948), p. 11.

[35]Air Force Manual 86-6, op. cit., p. 204.

IV. PLANNING FOR RESERVE AREAS

Reserve Areas

Planning for future expansion or reserve areas cannot be considered an isolated phase. This planning must be integrated with the considerations of facility locations if it is to be successful. Adequate space between buildings must be provided wherever possible to insure the feasibility of future expansion.

One of the most practical solutions to the expansion problem can be implemented coincidentally with phased construction. The details for each phase should include plans for expanding some of the existing facilities as well as adding new facilities to the complex. To be successful, this requires that the entire complex be designed for the total expanded facility size. This would be the planning size recommended in the space allotment section of this chapter.

If for some reason this method cannot be utilized, the writer recommends that facilities be provided with basement areas that could be utilized for active floor area whenever expansion can be justified.

As with most planning elements, no single solution will be feasible for all installations. In all instances, the planner must evaluate his own situation and determine which possibility will work best for the center he is planning.

V. POSSIBLE SOLUTIONS

Site planning for an air base community center requires the mastering of certain relationships between buildings, pedestrian ways, roads, and parking areas. These man-made features must also be blended within the natural setting of trees and open space to achieve desirable aesthetic environment.[36] Figures 5-4 through 5-6 are presented as possible solutions to the problem of site planning. These plans have been prepared utilizing current Air Force architectural definitives for building designs.[37]

Again, these figures are presented only as possible solutions. Under no circumstances should they be interpreted as standard or optimum community center designs.

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[36] Ibid., p. 201.

[37] Ibid., p. 205.

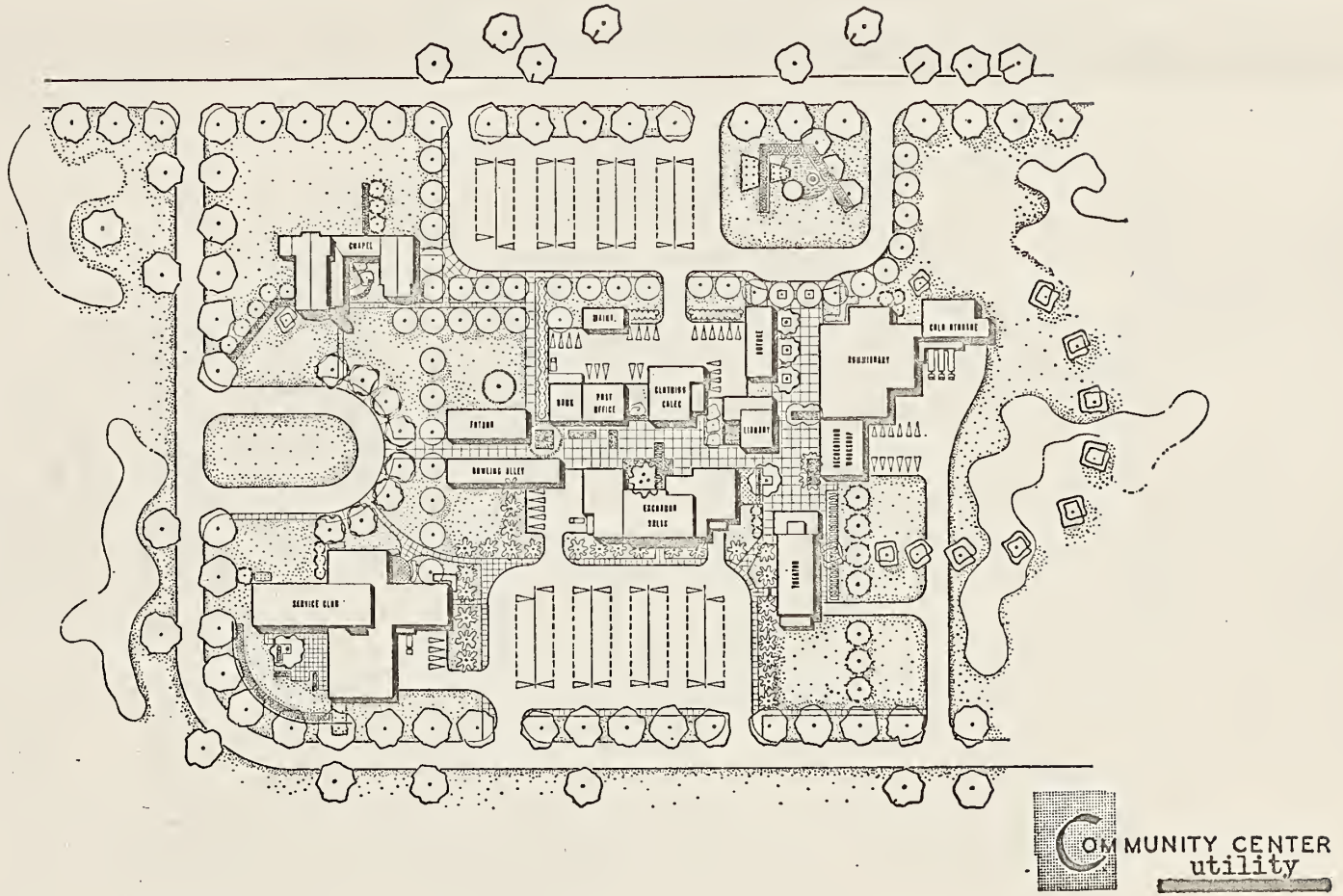

FIGURE 5-4

UTILITY SIZE COMMUNITY CENTER

Source: Air Force Manual 86-6.
Air Base Master Planning.
10 February 1959. Page 217.

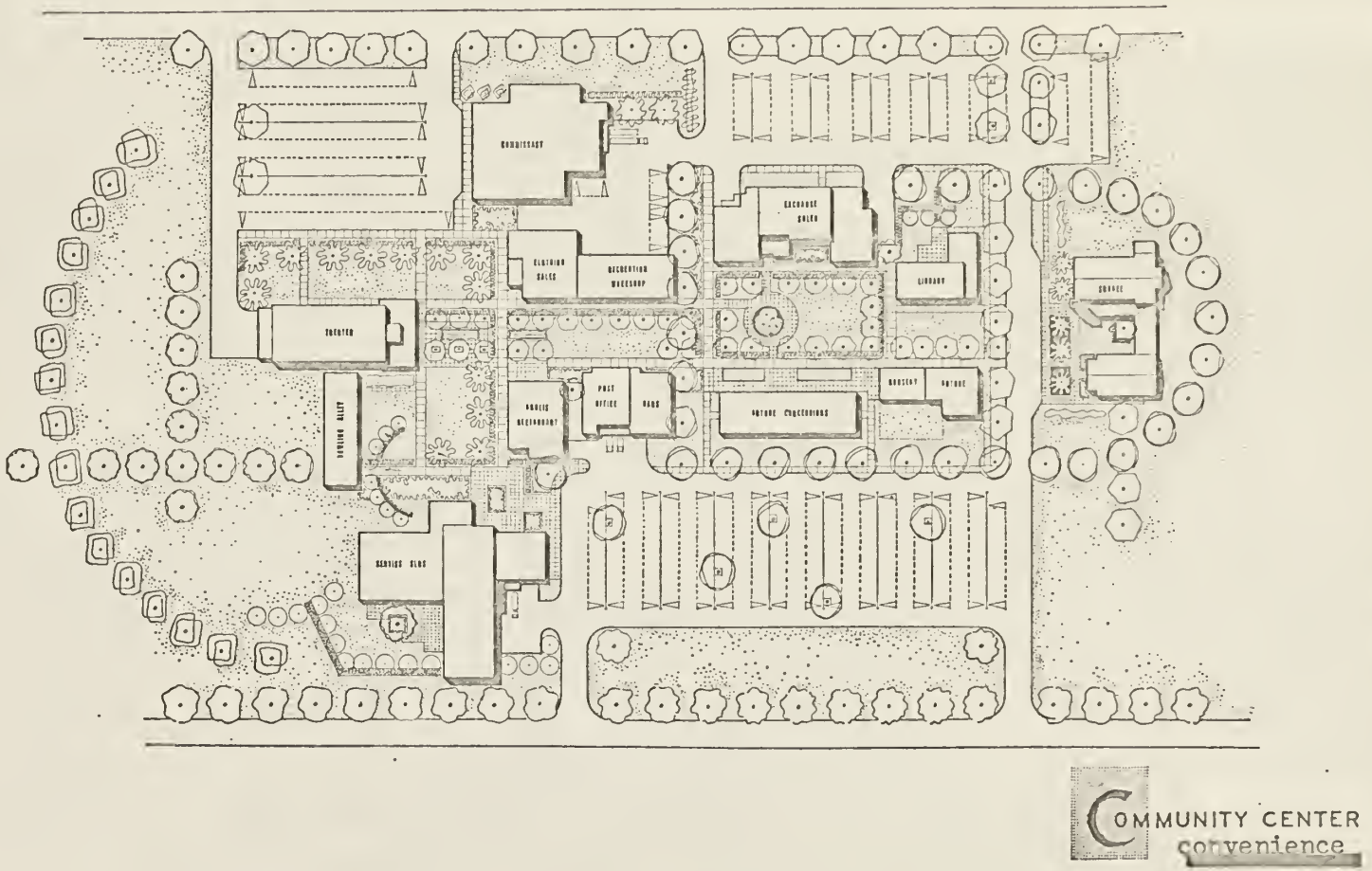

FIGURE 5-5

CONVENIENCE SIZE COMMUNITY CENTER

Source: Air Force Manual 86-6.
Air Base Master Planning.
10 February 1959. Page 219.

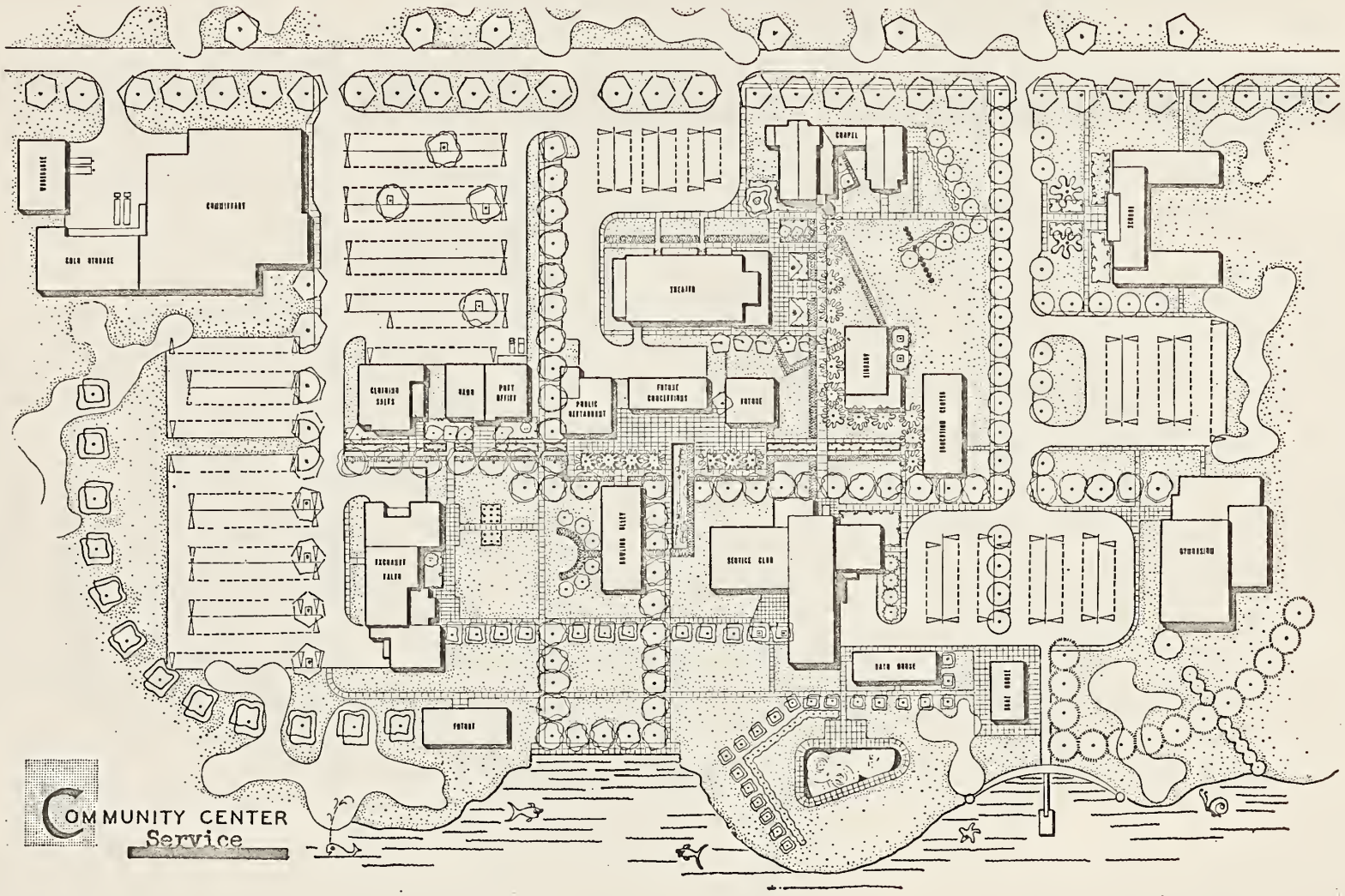

FIGURE 5-6

SERVICE SIZE COMMUNITY CENTER

Source: Air Force Manual 86-6.
Air Base Master Planning.
10 February 1959. Page 223.

CHAPTER VI

TRAFFIC PLANNING

> When considering the question of traffic, it is essential to keep in mind that the community center is not to be planned to serve traffic; rather, traffic is to be planned to serve the center.[1]

Traffic planning is an integral part of planning any community center. In spite of its specialized nature, traffic planning is not the sole responsibility of the traffic engineer or traffic expert. Basic traffic planning concerns the planning team as a whole and the planner or architect in particular.[2]

Traffic planning must provide ways for the center user to enter the site, drive to a parking space without too much effort, park the car, and enter the shopping core. When the user is finished at the center, the procedure is reversed. All of these activities must be as easy, safe and efficient as possible if the desires of the user are to be fulfilled.[3] When each activity is considered, general requirements are established for traffic planning:[4]

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[1] Victor Gruen, Larry Smith, Shopping Towns U.S.A. (New York: Reinhold Publishing Corporation, 1960), p. 115.

[2] Ibid.

[3] James S. Hornbeck (Editor), Stores and Shopping Centers. (New York: McGraw-Hill Book Company, 1962), p. 101.

[4] Dr. Louis Parnes, Planning Stores That Pay. (New York: F. W. Dodge Corporation, 1948), p. 13.

1. Easy traffic flow on surrounding roads.
2. Efficient transfer of road traffic on to the community center site.
3. Even and efficient distribution of on-site circulation.
4. Separation of user vehicles from service traffic.
5. Convenient and efficient arrangement of car storage facilities.

In essence, these requirements focus on elements of accessibility, circulation and storage.

I. ACCESSIBILITY

Accessibility is primarily concerned with the first two requirements: providing for the efficient transfer of vehicles from the roads to the site while minimizing congestion on both. While accessibility is a prime factor in selecting the site, as discussed in Chapter Four, it becomes even more essential once the site is established. In selecting the site, the planner was concerned with traffic origins, routes, and volumes of flow to determine the optimum location for the center. These factors are still important in traffic planning but here they are analyzed to determine specific on-site access points.[5]

Due to the community orientation of all military installations, the planner's first consideration must be the elimination of congestion on surrounding roads. It is imperative that center traffic not interfere with operational traffic. Therefore the site should be located on a secondary road whenever possible.[6] If this is not possible, the planner

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[5]Gruen, op. cit., p. 121.

[6]Air Force Manual 86-6, Air Base Master Planning, p. 121.

should seriously consider the possibility of providing separate entrance or magazine roads to reduce congestion to operational traffic. The possibility of magazine roads should also be considered to transfer road traffic onto the center site. They may serve as a gradual transition from road traffic to parking lot traffic.

Other devices which may be used are separate turning lanes, channelization techniques and traffic control devices. In either instance, whenever the expected traffic volumes on surrounding streets approach practical street capacities, serious consideration should be given to the utilization of such devices.[7]

The location and size of entrance and exit facilities is one of the most important aspects of traffic site planning. These facilities must be located to lead users into the center from the surrounding roads naturally and efficiently.[8] Studies have shown that this requires a minimum of four hundred feet between major street intersections and site entrances or exits.[9] The number and size of these access facilities are solely dependent upon the amount of traffic the center is expected to generate.

Providing access for service vehicles is a problem in itself. For each center, the planner will have to estimate the number and trip

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[7] Ibid., 122.

[8] J. C. Nichols, Mistakes We Have Made in Developing Shopping Centers. Technical Bulletin #4, (Washington, D. C.: Urban Land Institute, 1954), pp. 1-2.

[9] Gruen, op. cit., p. 124.

frequency of all service vehicles that require access to the center. If this number is relatively small in comparison with total traffic, separate access facilities may not be justified. However, for greater service requirements separate access roads should be provided.[10] No specific rules can be provided in making this decision due to variations in center size, type, location, site characteristics, and traffic requirements.

Certain rules can be applied to aid the planner in estimating the number of service vehicles to be expected. Based on traffic surveys of existing centers, the number of service vehicles expected per day averages .29 vehicles per 1000 square feet of usable floor area. Further, twelve per cent of these vehicles can be expected to desire access to the center at any one time.[11]

II. CIRCULATION

On-site circulation is an important aspect of traffic planning. The planner has the responsibility of designing a circulation system that is free from congestion, safe and economical. The amount of area allocated to traffic circulation depends primarily upon one element; the size of the center. In general, the planner can expect to have an average area of fifty square feet per parking stall for circulation.[12]

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[10] Air Force Manual, op. cit., p. 209.

[11] Gruen, op. cit., p. 129.

[12] Ibid., p. 91.

However, if this amount of area is not sufficient to provide smooth and safe circulation, additional area should be used without hesitation.

The primary element of the circulation system must be the separation of traffic types.[13] This includes the separation of pedestrians and vehicles as well as the separation of user vehicles and service vehicles. The separation of pedestrians and vehicles is created primarily by excluding vehicular traffic from the shopping core as discussed in Chapter Five. However, special pedestrian routes or walk-lanes must also be provided to get the user safely from the parking area to the core and back again.[14] These walk-ways should be clearly designated so that they are easily recognized by drivers and pedestrians alike. They should be located so that every parking stall is easily accessible to the pedestrian. This requires that parking lanes be designed to lead toward the center whenever possible as shown in Figure 6-1 A. If this is not possible, a break in the line of parked cars should be provided every so often for pedestrian access.[15]

The primary separation problem concerns user vehicles and service vehicles. Although it has been noted that mixing the two may be permissible in certain instances, this mixture should be minimized whenever possible. Such minimization can be achieved only by designing for

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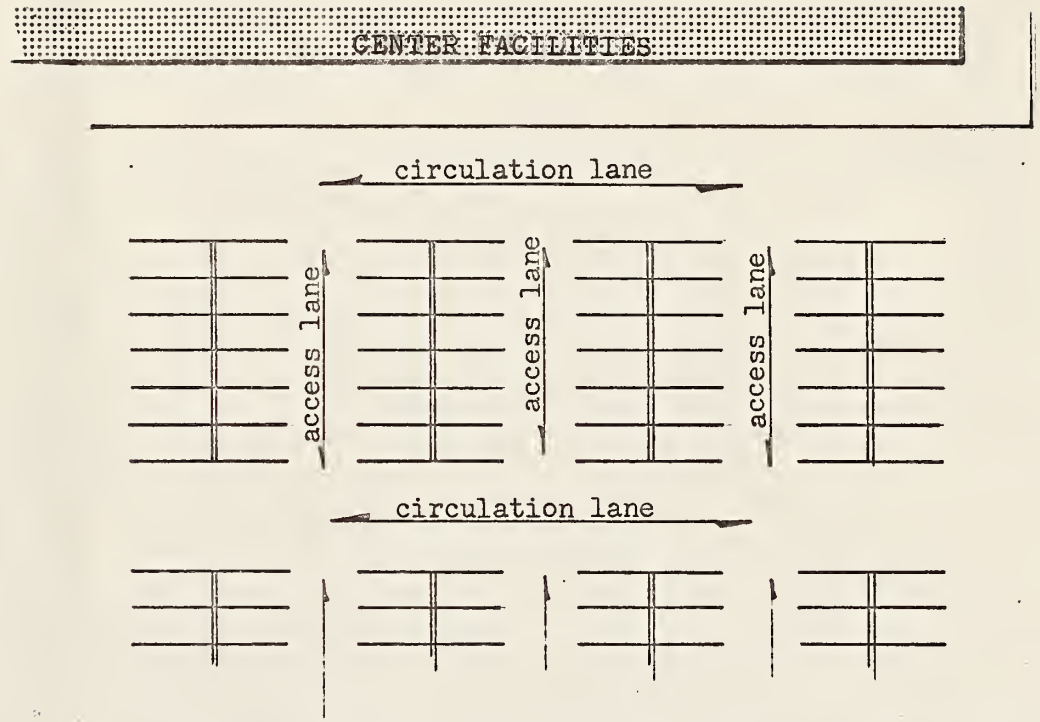
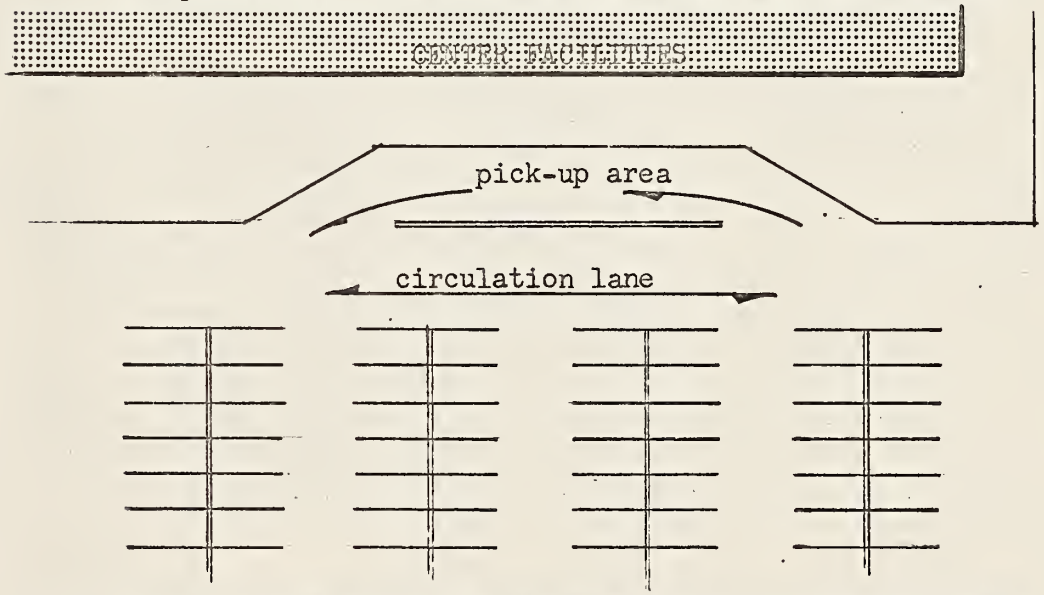
[13]Parnes, op. cit.

[14]J. Turwhitt, J. L. Sert, E. N. Rogers, The Heart of the City. (New York: Pellegrini and Cudahy, 1952), p. 103.

[15]Geoffrey Baker, Bruno Funaro, Parking. (New York: Reinhold Publishing Corporation, 1958), p. 197.



A. Access lanes connect circulation lanes and provide areas for pedestrian flow between the center and parked cars.



B. Pick up zones should be separated from circulation lanes for safety and convenience.

FIGURE 6-1

VEHICULAR AND PEDESTRIAN CIRCULATION

the specific circulatory needs of each type.

The desires of the center user are centered on two elements of circulation: parking and loading. The user first desires to find a parking place as near to the center as possible and as soon as possible. This requires perimeter circulation lanes leading directly from the site entrance to the parking area. These perimeter lanes should be a minimum of thirty feet wide and should not be lined with parking stalls. They should be kept free for circulation and not hampered by drivers searching for a place to park or by those maneuvering into or out of a parking stall. This can be created by connecting the circulation lanes with access aisles that are directly accessible to the parking stalls.[16] (Figure 6-1 A)

The center user also desires simple and direct circulation to various pick-up areas in the center.[17] Circulation lanes should be provided to these areas, but they should not be coincidental. The pick-up areas should be distinctly separated for both the convenience and safety of the customer as shown in Figure 6-1 B.

The problems of circulation for service vehicles focuses on two elements: maneuvering area and loading areas. In general, ideal service circulation is characterized as follows:[18]

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[16] Ibid., p. 168.

[17] Air Force Manual 86-6, op. cit., p. 209.

[18] Gruen, op. cit., p. 129.

1. Easy access from surrounding roadways and minimum interference with user traffic.
2. Delivery spaces isolated from normal user areas.
3. Sufficient maneuvering space for fast, safe, and efficient docking.
4. Docks designed for easy loading and unloading.
5. Delivery docks located for direct access to service and stock areas.

The amount of maneuvering space required depends upon the size of the vehicle to be accommodated. For most centers, the fifty foot tractor semi-trailer unit is assumed to be the maximum for design purposes.[19] For this unit, a minimum outside turning radius of fifty feet is adequate in negotiating turns. To further aid truck movement, the maneuvering area should be planned in such a way that any backing up operations will swing the trailer clear of the driver's line of vision. It has been observed that even an average operator can maintain minimum clearance when he can sight back along one side of his vehicle.[20]

Dock areas must also be considered in relation to the size of the vehicle to be accommodated. While many trucks have side-loading capabilities, the most desirable method is to unload from the end of the unit.[21] Each truck berth should have a minimum size of ten feet by forty feet, with fourteen feet overhead clearance. The dock area should at least equal the floor area of the maximum number of trucks

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[19] Ibid.

[20] Gruen, op. cit., p. 130.

[21] Ibid.

to be docked at one time.[22] For example, a dock capable of handling five trucks at one time would require a minimum length of fifty feet. If the total floor area of all five trucks is 640 square feet (five trucks, 8 feet by 16 feet), the dock area should be at least 1280 square feet. With a length of fifty feet, the depth would then have to be twenty-six feet. While this rule of thumb is highly acceptable for such facilities as the commissary and exchange sales store smaller facilities that require less truck service will require smaller dock areas. In these cases, the ratio of dock area to truck bed area may only approach unity.[23]

III. VEHICLE STORAGE

The storage of vehicles on the center site requires the largest land apportionment of all the center functions. Consequently, it has a great influence on the planning and design of any center. In the traffic pattern, parking becomes the transition stage between vehicular traffic on the surrounding road system and pedestrian traffic within the center.[24] As such, three basic items must be considered in planning parking for both user and employee: the amount of area required, the location on the site, and the physical design details for construction.

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[22]Baker, op. cit., p. 106.

[23]Gruen, op. cit., p. 130.

[24]Geoffry Baker, Bruno Funaro, Shopping Centers: Design and Construction. (New York: Reinhold Publishing Corp. 1951), p. 31.

Area Required

The amount of parking that is required varies from center to center. Two centers that are approximately equal in size may not have the same parking requirements. This variation is due to differences in certain characteristics that are unique to each center:[25]

1. Size, number, and type of facilities.
2. The amount of "walk-in" business.
3. The number of shoppers per auto.
4. The rate of turnover in parking stalls.
5. The incidence and amplitude of peak usage periods.
6. The incidence of auto ownership.
7. The availability of autos to housewives during the day.

In the previous chapter a ratio of three square feet of parking space to one square foot of active floor area was used for preliminary parking estimates. While this may be satisfactory for preliminary space allocations, a more detailed analysis is desirable to determine the actual number of stalls required. Various techniques are commonly available for determining parking requirements based on different ratios of active floor area to parking area.[26] These are relatively unsuitable because they do not account for the variants mentioned. A ratio that is suitable for one center will not necessarily be suitable for all others.

There is one technique that presents a flexible approach to the problem as shown in Figure 6-2. In this method, the ratio of parking area to active floor area is dependent upon the percentage of auto

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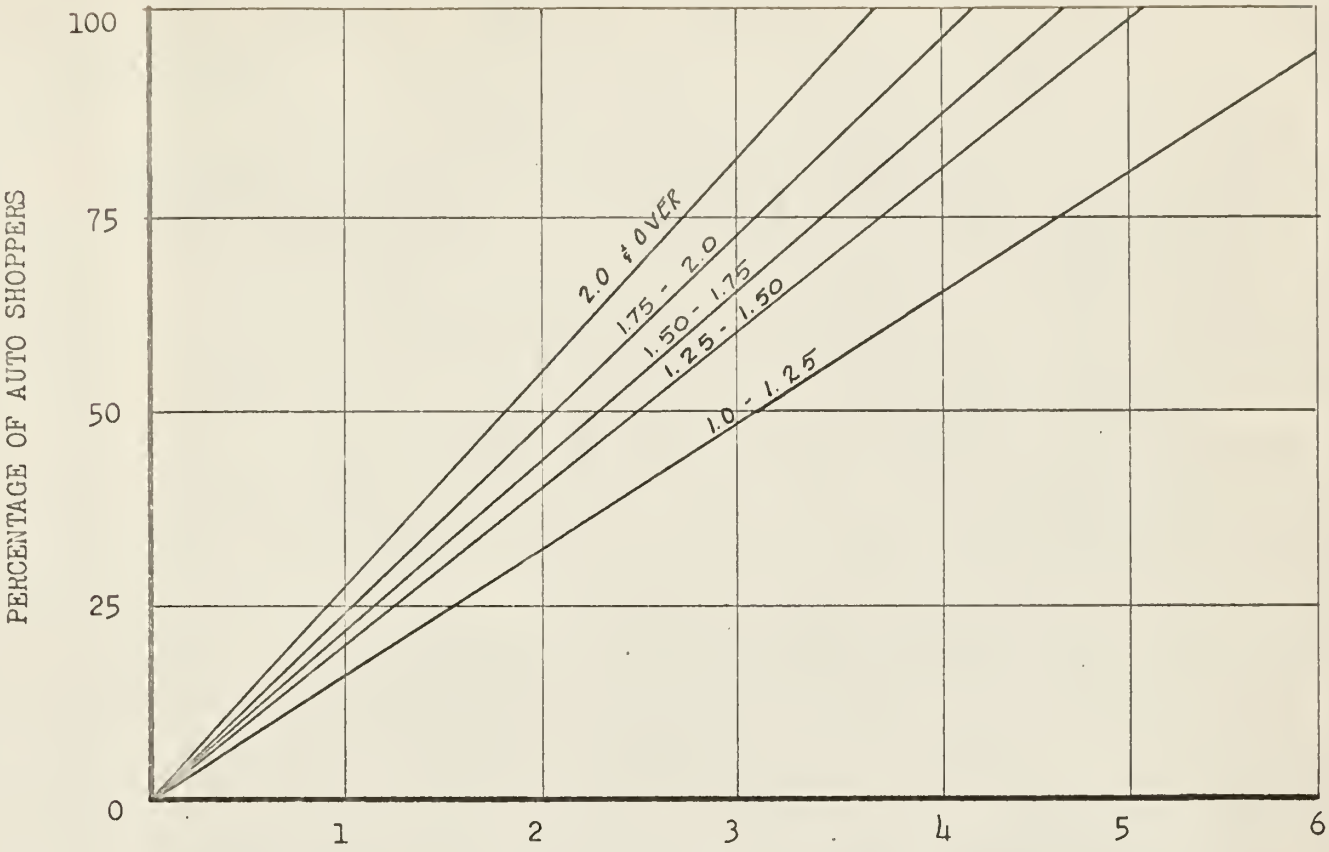
[25]Richard Nelson, The Selection of Retail Locations. (New York: F. W. Dodge Corporation, 1958), p. 110.

[26]Ibid., p. 250.



Percentage of auto shoppers	Average Number of Shoppers Per Car				
	1.0-1.25	1.25-1.50	1.50-1.75	1.75-2.00	over 2.00
	Parking area required per square foot of active sales area - sqft				
100 - 90	6.0	5.0	4.5	4.0	3.5
90 - 80	5.3	4.4	4.0	3.5	3.1
80 - 70	4.7	3.9	3.5	3.1	2.7
70 - 60	4.1	3.3	3.0	2.7	2.3
60 - 50	3.4	2.8	2.5	2.2	1.9
50 - 40	2.8	2.2	2.0	1.8	1.6
40 - 30	2.1	1.6	1.5	1.3	1.2
30 - 20	1.5	1.1	1.0	0.9	0.8
20 - 00	0.5	0.2	0.2	0.2	0.2

FIGURE 6-2

PARKING AREA REQUIREMENTS

Source: Regional Shopping Centers. Technical Bulletin No. 104. Producers Council, P. 254.

shoppers and number of shoppers per vehicle. Also the ratio that is established relates the amount of parking area directly to the size of the center.[27]

To determine the per cent of auto shoppers, the planner must survey a sample portion of the base personnel. The estimate of shoppers per car can best be made by actual count at existing facilities. Although this method requires more background data, the value of its flexibility and relative accuracy outweigh its disadvantages.[28]

The determination of employee parking requirements presents still another consideration for the planner. In civilian centers, the average allotment is three spaces for every ten employees.[29] However, due to the distance of installations from nearby cities, it can safely be assumed that more spaces will be needed for a military center. Air Force studies have determined that the number of parking spaces should equal thirty-eight per cent of the largest number of civilian employees working at one time.[30]

Location of Parking Facilities

The location of parking facilities has long been questioned by center planners. Some contemporary planners contend that parked cars

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[27]The Producers Council Inc., Technical Bulletin #104, Regional Shopping Centers. Lancaster, Pennsylvania, June, 1963. p. 146.

[28]Ibid., p. 256.

[29]Architectural Record Book, Design for Modern Merchandising, (New York: F. W. Dodge Corporation, 1954), p. 160.

[30]Air Force Manual 86-4, Master Planning, p. 196.

are ugly and should therefore be hidden from view.[31] Others argue that people will not patronize a center unless they are assured of a place to park, therefore, the parking lots should be visible from the street.[32] For the military center serving a captive clientele, the aesthetic approach is the most desirable. Parking lots should be screened by strategic landscaping or by actually constructing the parking facilities two or three feet below street level. These techniques will emphasize the buildings in the center. An imaginative architectural style emphasized in this manner could well be an asset to the physical image of the installation.

The location of employee parking facilities requires careful consideration. Most civilian centers provide a separate parking area on the outer perimeter of the site for employee vehicles. Such a location guarantees the employee a parking place, and at the same time prevents employee cars from occupying choice parking spaces that should be reserved for users.[33] Another possible location for employee parking is in conjunction with large service courts or roads.

Physical Layout and Design

The most prominent factors influencing the physical design of parking facilities are the parking angle and the size of stall. Since

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[31]Baker, op. cit., p. 22.

[32]Nelson, op. cit., p. 237.

[33]Nichols, op. cit., p. 14.

these two elements directly affect the ease, speed, and accuracy of parking they require careful consideration before the planner starts to design the parking areas.[34]

The choice of parking angle will usually be determined by requirements of economy, speed, and convenience of use.[35] Of the three angles most commonly used--forty-five degrees, sixty degrees, and ninety degrees--the forty-five degree angle is generally considered the most suitable for convenience, speed, and accuracy. However, these qualities are obtained at the expense of economy of space and ease of circulation as shown in Figure 6-3. Since the matter of economy is of considerable importance to the military planner, a parking angle of ninety is favored.[36] In addition to saving space, a ninety degree angle provides a two way traffic flow and eliminates the need for expensive curbing.[37]

The size of parking stalls is also of vital importance to the planner. The standard length of stalls depends upon the parking angle selected as shown in Table VI. The stall width is also somewhat dependent upon the parking angle, but it may vary as much as six inches for any one angle, as is shown in the following table.

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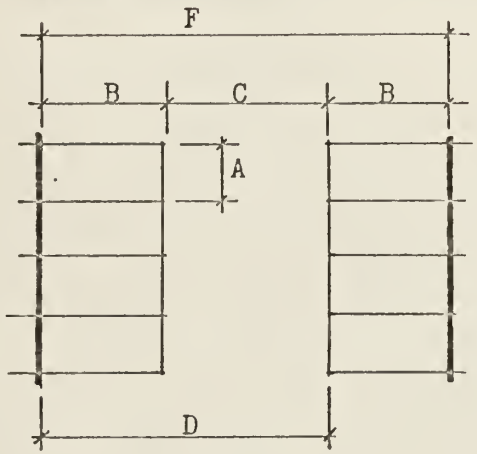
[34] Air Force Manual 86-6, op. cit., p. 209.

[35] Baker, op. cit., p. 168.

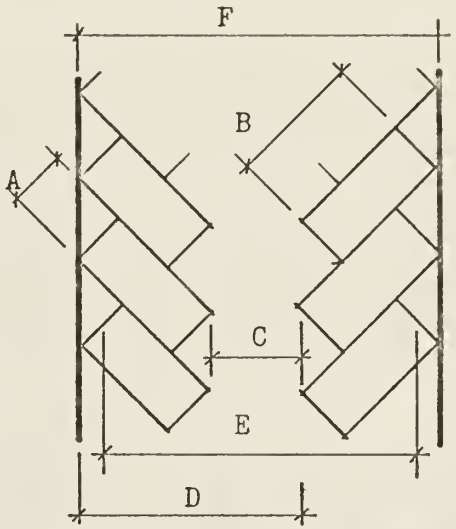
[36] Air Force Manual 86-6, op. cit., p. 209.

[37] Architectural Record Book, op. cit., p. 158.

RIGHT ANGLE



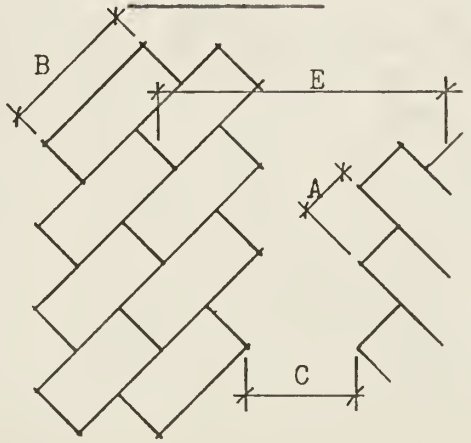
ANGLE



FORTY-FIVE DEGREE ANGLE

A	B	C	D	E	F
8'-2"	19'-0"	12'-0"	31'-0"	53'-0"	58'-0
8'-4"	19'-0"	12'-0"	31'-2"	51'-0"	57'-0
8'-8"	19'-0"	12'-0"	31'-6"	49'-0"	55'-0

OVERLAPPED



NINETY DEGREE ANGLE

A	B	C	D	E
8'-6"	19'-0"	25'-0"	44'-0"	63'-0"
8'-9"	19'-0"	25'-0"	44'-0"	63'-0"
9'-0"	19'-0"	24'-0"	43'-0"	62'-0"

SIXTY DEGREE ANGLE

A	B	C	D	E	F
8'-4"	19'-0"	18'-0"	38'-4"	55'-0"	59'-0
8'-6"	19'-0"	18'-0"	38'-7"	54'-0"	58'-0
8'-10"	19'-0"	18'-0"	39'-0"	52'-0"	56'-0

FIGURE 6-3

PARKING ANGLE CHARACTERISTICS

TABLE VI

RECOMMENDED PARKING STALL WIDTHS[38]

Angle	Minimum	Average	Maximum
90	8'-6"	8'-9"	9'-0"
60	8'-4"	8'-6"	8'-10"
45	8'-2"	8'-4"	8'-8"

No specific rules can be established that if followed will guarantee the optimum parking solution. However, certain design principles applicable to community center facilities have evolved and should serve as guidelines for planning parking areas:[39]

1. The maximum distance from the outer edge of the lot to the nearest store should be 600 feet.
2. Parking aisles should be laid out perpendicular to the buildings in such a manner that traffic flow seems natural and does not require back tracking to find a parking space.
3. Stalls should be designed with adequate room for door swing.
4. Whenever possible, the parker should be able to see the stores between cards so that he will not feel lost in a sea of cars.
5. The parking angle should be suited to the situation.
6. Raised walkways between cars should be avoided for they waste space and are obstacles to efficient maintenance.

By now it should be obvious that all elements of the community center traffic system are permanent and expensive. Therefore, it is the responsibility of the planner to create a highly efficient circulation or traffic system within a minimum amount of space. The traffic system must exist solely to provide fast, safe, convenient, and economical vehicular service.

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[38]Gruen, op. cit., p. 126.

[39]Nelson, op. cit., p. 261.

CHAPTER VII

DESIGN AND ENGINEERING

> Every store should be planned and designed to do a maximum amount of business in a minimum amount of space.[1]

The architectural and engineering design of the center is the final stage in regard to planning considerations. The initial construction of the center will begin after the plans prepared in this final design stage are approved and funded. While previous stages have been focused on seemingly two-dimensional planning considerations, the final design stage must translate these planning results into three-dimensional structures.[2]

The need for planning and designing the community center complex in its entirety has already been established in Chapter Five. This overall design is essential for the final design phase of center development. In this phase architectural style and character must be determined for the entire complex to create the desired expression of a unified facility.[3] No attempt will be made at this point to determine what this style or character might be. Trying to establish a set pattern for creating an architectural style would be as ludicrous as trying to set rules for composing a symphony.

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[1] Geoffry Baker, Bruno Funaro, Shopping Centers: Design and Construction. (New York: Reinhold Publishing Company, 1951), p. 11.

[2] Victor Gruen, Larry Smith, Shopping Towns U.S.A. (New York: Reinhold Publishing Corporation, 1960), p. 140.

[3] Air Force Manual 86-6, Air Base Master Planning, p. 201.

I. ARCHITECTURAL DESIGN

The major aspects of architectural design are structural solutions, exterior unity, center-wide conveniences, weather protection, environmental engineering, sign design, and provisions for expansion.[4] These elements must all be effectively combined to create an optimum community center complex. Although designated as architectural elements above, certain engineering elements are included such as structural and environmental engineering. This mixture is intentional and inevitable for the architectural and engineering activities cannot be separated. They must proceed simultaneously through all stages of design, each influencing and complimenting the other.[5]

In designing the center, three distinct spheres of endeavor are encountered: Determinations of building size, interior arrangement, and exterior treatment. Although each sphere is relatively dependent on the other two, specific features in each must be considered. In all instances, however, the designer must strive for functional merchandising as well as architectural perfection.[6]

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[4] J. Ross McKeever (Editor), Shopping Centers Restudied. (Washington, D. C.: Urban Land Institute, 1957), p. 12.

[5] Gruen, op. cit., p. 140.

[6] J. C. Nichols, Mistakes We Have Made in Developing Shopping Centers. Technical Bulletin #4, (Washington, D.C.: Urban Land Institute, 1954), p. 5.

Building Size

Due to construction priorities and funding processes used in the military today, air base community centers are generally designed as groupings of single-tenant buildings as shown in Figures 5-4, 5-5 and 5-6, pages 84-86. However, civilian developers have determined that the majority of center facilities should be located in multiple tenant structures to increase architectural unity, and lower construction and maintenance costs.[7] Therefore, the military planner should consider this type of structural arrangement whenever possible.

Single tenancy buildings are planned in regard to the specific requirements of the individual tenant. The basic design of these structures should be guided by requirements of Air Force Manual 88-2, Definitive Designs of Air Force Structures. However, these designs should be in harmony with the overall character of the center.[8] In many instances, single tenancy structures can be utilized as a variation in the complex development, and therefore may be desirable features in spite of their higher construction cost. The multiple-family structure must be designed for flexibility so that the needs of each facility may be fulfilled. To provide this flexibility, the designer must establish a common denominator for such elements as ceiling height, column spacing, and store depth.[9]

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[7]Gruen, op. cit., p. 141.

[8]Air Force Manual 86-6, op. cit., p. 210.

[9]Nichols, op. cit., p. 10.

For single story buildings, such as those in the military center, ceiling heights are an important consideration. A clear ceiling height of nine feet to fourteen feet generally is sufficient for small and medium size facilities, while greater heights are used for large facilities such as the commissary or exchange sales store.[10] Ample clear space between the suspended ceiling and roof structure may cost a little more originally, but it will pay off with economical installation of mechanical and electrical work.[11]

Ceiling height has a direct influence on the design of the store front. Minimum heights cause problems in signing and an undesirable feeling of smallness within the general area. On the other hand, ceilings that are too high will exaggerate the scale of the area and tend to make the patron feel lost and uncomfortable.[12] The architect, therefore, must evaluate the center to determine what ceiling height will best solve the problem. In any case, the ceiling height should be kept constant through as many adjoining shops as possible. They might need to be combined later for a larger facility, and every aspect of continuity helps to insure flexibility for future expansion.[13]

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[10]Gruen, op. cit., p. 141.

[11]Ibid.

[12]James S. Hornbeck (Editor), Stores and Shopping Centers. (New York: McGraw-Hill Book Company, 1962), p. 94.

[13]Nichols, op. cit., p. 7.

The depth of structures will depend on certain factors the architect must reconcile. Average store depth generally ranges from 80 feet to 180 feet. Stores without basements require nearly as much storage area as sales area. Therefore, where basement storage is not available, a minimum of 125 feet of store depth is generally required.[14] This is also true of stores that have two entrances (one facing the parking area and one facing the pedestrian area). Where docking facilities are required, the minimum depth requirement may be 140 feet.[15]

The width of structures is dependent upon the spacing of columns or load bearing partitions, and the interior merchandising arrangement. Widths for smaller stores generally range from ten feet to twenty-eight feet depending upon the interior arrangement desired as shown in Figure 7-1.[16] Column spacing must then be determined to serve the desires of the greatest number of stores at the lowest cost. In most cases, a spacing of thirty feet will provide the greatest flexibility at the lowest cost for both interior arrangement and frontage design.[17]

A final factor in regard to facility size should also be considered: that of basements. Most civilian developers insist that

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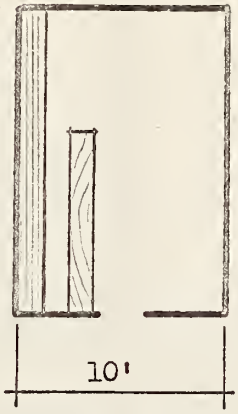
[14]Architectural Record Book, Design for Modern Merchandising, (New York: F. W. Dodge Corporation, 1954), p. 151.

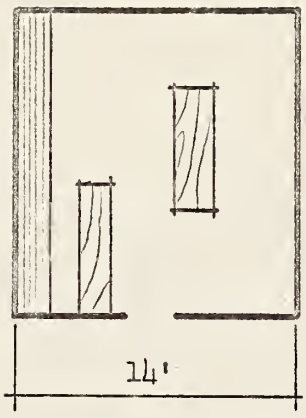
[15]Gruen, op. cit., p. 142.

[16]Nichols, op. cit., p. 8.

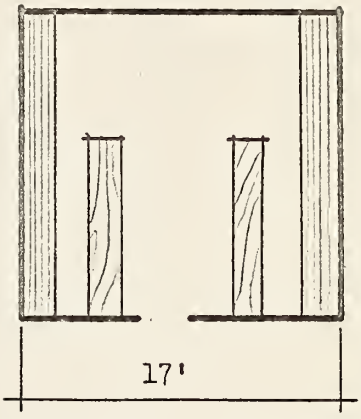
[17]Gruen, op. cit., p. 142.



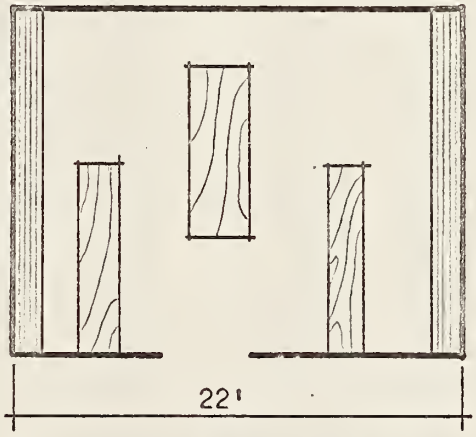
A. Cases and counter on one side only.



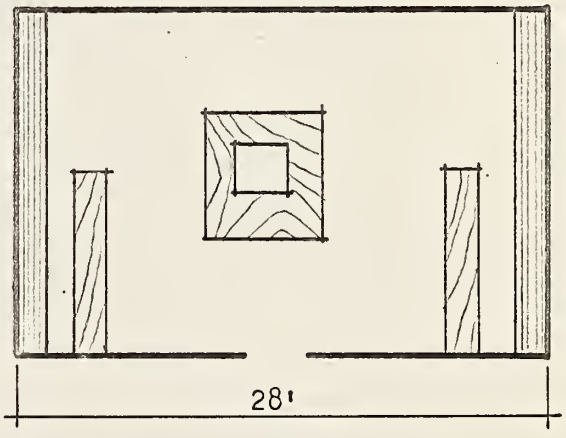
B. Cases and counter on one side and a center display table.



C. Cases and counter on both sides with a central aisle area.



D. Cases and counters on both sides with a central display area and table.



E. Cases and counters on both sides with a central sales island and display area.

FIGURE 7-1

TYPICAL SHOP WIDTHS

Source: J.C. Nichols.
Mistakes We Have Made in Shopping Centers.
Page 8.

basements be included whenever possible.[18] Not only do basements reduce the amount of storage space required at ground level, they are also a simple way to expand floor area. In planning for expansion, basements should be designed for a ceiling height of nine feet and stairways should be at least five feet wide.[19] Although construction costs are increased by providing basements, their potential as future expansion areas and even fall-out shelters may outweigh the disadvantage of cost.

Interior Arrangements

Whenever possible interior partitions should be of non-load-bearing design. This will insure flexibility for future expansion and consolidation. However, load-bearing partitions should be provided every so often for fire resistances. They may also provide space for the inclusion of electrical and mechanical fixtures.[20]

The interior arrangement should be designed for the specific needs of the tenant. These needs should also be tempered with the innate habits of most shoppers. For instance, most shoppers walk to the right when they enter a store. Consequently, office space, employee rest rooms, and stairs to basement storage areas should be located in the left rear corner whenever possible. In the same manner, stairs to basement merchandising space

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[18] Nichols, op. cit., p. 6.

[19] Ibid.

[20] Ibid.

should be situated on the right side of the store.[21]

The arrangement of the utilitarian facilities for employees mentioned above require further study. In the case of small shops, these facilities could be consolidated in a service core to serve several tenants.[22] This arrangement would help reduce construction costs as well as conserve space.

Lighting is another important consideration for interior spaces, and should be an integral part of every design. Used effectively, it creates a sense of size, proportion and shape and aids in creating a desirable environment for the center user.[23] In most facilities an illumination of from 30-100 foot candles is generally sufficient. This will require a power input of approximately ten watts per square foot of illumination.[24]

Exterior Treatment

The element of flexibility mentioned previously should be carried throughout the design process. This requires that exterior facades also be designed for flexibility. Standardization of window and door sizes will help in this aspect, but they should be flexible so as to permit

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[21] Ibid., p. 8.

[22] Gruen, op. cit., p. 143.

[23] Regional Shopping Centers. Technical Bulletin #4, (Lancaster, Pennsylvania: Producers Council Incorporated, 1963), p. 33.

[24] Ibid., p. 45.

individual expression for each facility.[25] Figure 7-2 is presented to illustrate the desirable and undesirable effects of standardization.

The selection of materials for exterior walls is one of the most important decisions the architect must make. The material selected and its treatment are primary determinants of architectural character. While generally restricted to non-combustible materials, the military architect can create attractive facades by imaginative use of construction techniques and design principles.[26] With modular materials such as brick, concrete block, and cut stone, variations in size, texture, and tone can be utilized to create interesting facades. A thin granite veneer is also very attractive and requires less maintenance than terra cotta, brick, or concrete.[27]

Although discussed last, exterior treatment for protection from the elements is of vital importance to the designer. Obviously, completely enclosed pedestrian malls are the most desirable method for protecting center users from environmental adversities. However, the additional cost of such facilities may not be justifiable except in areas of extreme climatic conditions.[28] Therefore, the architect must make effective use of roof overhangs, arcades, and other techniques to shelter

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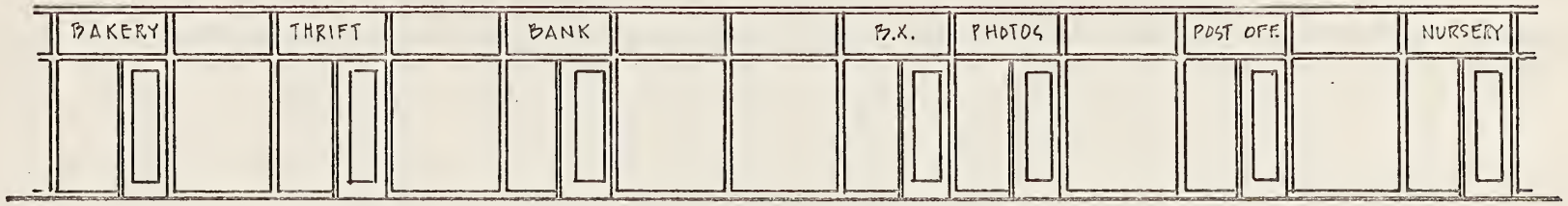
[25]Gruen, op. cit., p. 145.

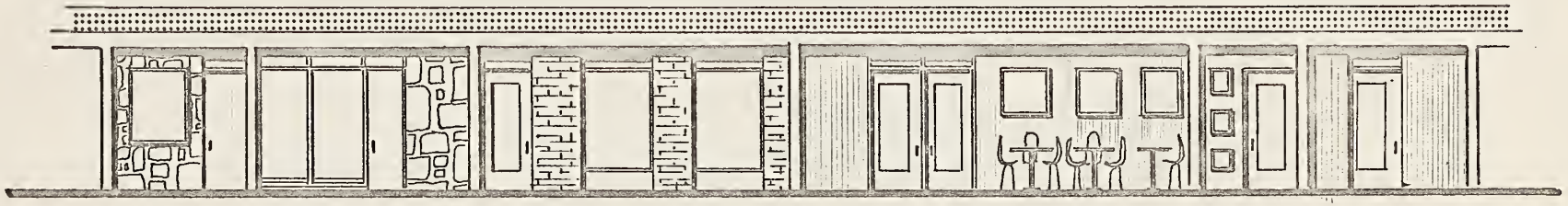
[26]Air Force Manual 88-15, Standard Outline Specifications for Air Force Facilities, pp. 1-3.

[27]Nichols, op. cit., p. 9.

[28]Air Force Manual 88-15, op. cit., pp. 6-16.



A. Complete Regimentation Results in Monotony.



B. Individuality Within an Architectural Framework Creates Interest and Variety that is Desirable.

FIGURE 7-2

STORE FRONTS & STANDARDIZATION

Source: V. Gruen & L. Smith.
Shopping Towns U.S.A.
Page 144.

pedestrian walks. These features should cover the full width of the sidewalk to protect center patrons from rain, snow, and wind as much as possible.[29] They also offer valuable opportunities for developing the architectural character of the center.

It should be obvious by now that the architectural design of a community center is a combination of many separate considerations and decisions that are all interrelated. This section has presented just a few of the innumerable factors that are involved in the architectural design of a center. The various design techniques available to the architect are also too numerous to mention. In essence, the architect should be limited only by his own creative ability.

II. ENGINEERING FOR CONSTRUCTION

Engineering considerations for a community center complex can be separated into three areas: structural, mechanical, and electrical. Structural engineering includes the type of construction that is required as well as the actual design of the structural system. Mechanical engineering is expressly concerned with heating, air conditioning, and plumbing while electrical engineering concerns lighting, service, and communication.

Structural

The major facilities in an air base community center such as the commissary, exchange sales store, and theater are required to be

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[29]Dr. Louis Parnes, Planning Stores That Pay. (New York: F. W. Dodge Corporation, 1948), p. 25.

of permanent type construction.[30] This means they will be built to serve a specific purpose for a minimum of twenty-five years with normal maintenance. The other smaller facilities, then, may be of semi-permanent construction for a life span ranging from five to twenty-five years. In both cases, the buildings are required to be structurally sound, economic to maintain, and fire safe.[31]

The structural system selected for this type of construction must also meet certain requirements. As discussed in the previous section, the structural system must provide a certain degree of flexibility for desirable interior arrangements in individual stores. In addition, the system must be as economical as possible. The primary objectives in military construction are low construction costs and low long-range maintenance costs.[32]

To fulfill both of these requirements, the architect-engineer should follow certain rules or guidelines:[33]

1. In many instances, bar joist construction permits wider spans at lower costs than conventional beam and column financing. They should be carefully considered as well as other pre-engineered systems.
2. Standard sizes should be used whenever possible.
3. Specially rolled or extruded metal shapes or sections should be avoided.

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[30]Air Force Manual 88-15, op. cit., p. 2-3.

[31]Ibid., p. 1-3 and 1-4.

[32]Ibid., p. 3-1.

[33]Ibid., p. 3-2.

4. Do not select materials or construction techniques that are finer or more expensive than needed.
5. Simplicity should be the guiding principle in both architectural and engineering design.
6. Whenever possible select materials and systems that require a minimum of maintenance.

Mechanical

The elements of mechanical engineering are directly dependent on the geographical location of the installation, the size of the center, and the individual facilities to be served. The geographic location is the major determinant as to heating and air conditioning facilities. The size of the center and the facilities to be served also affect the heating and air conditioning requirements, but they are more important for determining plumbing facilities.

Heating and Air Conditioning. Environmental systems for all centers must comply with the requirements set forth in Air Force Manual 88-15 and Air Force Manual 88-8. These manuals establish what center activities will be heated, air conditioned, or both depending on the type of facility and the geographical location of the installation.[34] However, certain engineering and construction features are worth considering at this point for they have been proven to be economical in civilian centers.

Originally, central heating and air conditioning plants were considered to be the most economical solution. However, many center developers have found that several small units serving small groups of tenants provide acceptable service at lower operating costs.[35]

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[34] Ibid., p. Chapters 5 and 6.

[35] Nichols, op. cit., p. 10.

This is particularly true where there is a variation in hours of service between the various facilities.

To provide maximum flexibility for expansion, ducts and piping should be located in or near structural columns and load-bearing walls.[36] In the event of future expansion or consolidation, these features will generally not be moved. Consequently, little alteration will be required in the mechanical system.

Plumbing. Most problems regarding plumbing requirements for a community center will be in regard to individual facilities. These requirements are specified in Air Force Manual 88-8 and Air Force Manual 85-20.[37] Although these requirements are for individual stores, special consideration should be given to consolidating these facilities. Combined toilet facilities that serve several stores can be extremely economical, both in original construction costs as well as maintenance costs. Provisions should also be made for public rest rooms that are easily accessible from pedestrian areas.[38]

The architect-engineer should also give careful consideration to the possibility of a sprinkler system within the center. Normally, single story buildings do not require sprinklers. However, two story buildings of over 10,000 square feet and storage basements of over

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[36] Ibid.

[37] Air Force Manual 88-15, op. cit., p. 4-1.

[38] Gruen, op. cit., p. 185.

2500 square feet should be provided with sprinklers.[39]

Electrical

The electrical service to the center will be guided by the provisions of Air Force Manual 88-9. Generally, distribution voltage will not exceed 12,470 volts.[40] Whenever possible two sources of high voltage supply should be provided, preferably in two separate substations. This will insure a basic distribution of 480-277 volts. Parking lot lighting may then be supplied directly at 480 volts, some interior panels at 277 volts, and normal store lighting at 120 volts through air cooled transformers.[41]

Lighting level requirements will vary from area to area. As mentioned previously, individual store requirements generally range from thirty to one hundred footcandles. For night shopping, pedestrian areas should be provided with a maximum illumination of ten footcandles, and parking lots provided with illumination of one or two footcandles.[42]

Many civilian centers have found that a low-voltage communication system is highly desirable, almost to the point of necessity in the larger centers.[43] Consequently, their potential should not be overlooked

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[39] National Building Code, recommended by the National Board of underwriters., 1955.

[40] Air Force Manual, 88-15, op. cit. p. 8-1.

[41] Gruen, op. cit., p. 187.

[42] Ibid., p. 188.

[43] Ibid., p. 189.

by the military designer. Strategically located telephones directly connected to the center switch board can be used for supplying information to center users, as well as reporting emergency conditions. A central public address system connecting all stores can be used to supply background music as well as for paging individuals who may be somewhere in the center.

SUMMARY AND CONCLUSION

I. SUMMARY

The contemporary Air Force base is a city in itself with the principal function of national defense. As a city, it must provide the services and facilities that are commonly required by all community populations. These facilities are of three types: merchandising, recreation, and personal services. When grouped together, these facilities form the air base community center complex--the socio-economic hub of the base.

The air base community center is actually an outgrowth of the civilian shopping center. It is a group of individual facilities planned, owned, and developed as a unit with off-street parking provided on the site; and directly related in location, size, and type of facilities offered to the military community served.

To maximize the functional usage of this complex, comprehensive planning principles must be applied during the various phases of center development. This thesis presents an objective approach to planning air base community centers through the various phases of problem recognition, selection of facilities and priorities, site selection, site planning, and finally, three-dimensional design and engineering. It is not intended to set rigid requirements, but rather to establish flexible guidelines to aid the military planner.

Before a planner can begin to plan a community center complex, he must first be cognizant of the structure he is to deal with. He must be aware of the overall function as well as the individual characteristics that are inherent to an air base community center. Only when he is aware

of these matters will he be able to adequately determine the best approach to solve the problem.

The community center for a military installation has one purpose: to serve the man in uniform and his dependents. In doing so, it simplifies socio-economic trip patterns, reduces traffic congestion on the base, provides more efficient facility utilization, and has a positive effect on base morale. To accomplish these tasks, the center must provide easy accessibility, comfortable and convenient shopping, and a variety of selection in facilities, all at a distinct saving to the military consumer.

Three classifications of centers are recommended to help the planner differentiate between center size and facilities offered: (1) Utility Center, (2) Convenience Center and (3) Service Center. The Utility Center is designed for small installations and may include from five to fifteen different facilities. The Convenience Center is for medium size installations of from 3,000 to 10,000 personnel, and may provide up to twenty-five different facilities. The Service Center, for large installations in excess of 10,000 personnel, features amenities that cannot be justified for smaller bases. It may contain as many as forty-four facilities covering a minimum site area of eighteen acres.

The selection of center facilities is based upon the consideration of five factors: (1) number of assigned personnel, (2) tenure and stability of the installation, (3) proximity to other facilities, (4) climatic conditions, and (5) the impact of facilities on base morale. In all cases, there should be at least five facilities in the complex:

(1) chapel, (2) commissary, (3) exchange sales store, (4) recreational facilities, and (5) service club. Each of these is highly essential to base morale.

Facility priorities are an integral part of facility selection. Due to the funding process involved, the center should be planned for phased construction. Therefore, priorities must be established to determine what facilities will be constructed initially. Priorities should be established as soon as facilities are selected.

The writer recommends that design funds be requested for all facilities immediately after these priorities have been established. Then, while the requests are being considered, the site selection phase may be carried out. Hopefully, the site will be selected at approximately the same time as design funds are authorized.

The site selection process requires a detailed examination of each possible site in regard to location, size, shape, and physical conditions. In all instances, it is highly desirable that the site selected meet six requirements: (1) space must be available for both present and future development, (2) the shape must permit maximum usage of the land, (3) it must be in one piece (4) construction must be economically feasible, (5) maximum accessibility must be provided and (6) surrounding land uses must be compatible with center development. In most cases, the planner will have to weigh the advantages and disadvantages of each possible site before the final selection is made.

Detailed site planning should not begin until authorization is received to design the initial facilities. These initial facilities will be used as the nucleus of the center for phased development.

Four functional areas must be planned specifically for each site: (1) structures, (2) vehicle movement, (3) pedestrian movement, and (4) reserve and buffers. This planning is accomplished in five stages: (1) allocate space to the four functional areas, (2) lay out building patterns and determine facility locations, (3) plan vehicular circulation, (4) plan pedestrian circulation, and (5) plan buffer and reserve areas. In all stages the planner must remember that the center exists to serve the military community as a basis for all decisions.

Architectural design and engineering constitute the final phase of community center planning. The architectural character of the center will emerge naturally as the designer solves the problems of building sizes, interior arrangements, and exterior treatment. Coincidentally, the engineering features of structural mechanical, and electrical systems will be resolved. Such simultaneous solutions are inevitable, for the architectural and engineering activities cannot be divorced from each other. They must proceed together; each influencing and complimenting the other.

II. CONCLUSIONS

A basic need exists for a planned community center at each Air Force base. However, the development of these centers has been extremely slow and almost non-existant. Only a few bases have been provided with such facilities. This is due partly to a lack of appropriated funds, but also to the lack of adequate planning guidelines for center development.

The development of an air base community center is an extremely complex process. Extensive skill, knowledge and experience in the disciplines of planning, architecture, and engineering must be intricately combined to produce the optimum result: an architectural unit, economical to construct and maintain, that fulfills the socio-economic needs of the military community it serves.

To achieve this result, the Air Force should adopt comprehensive guidelines for community center planning. At the same time existing facility requirements, design specifications and construction standards should be reviewed and revised to take advantage of modern techniques relating to community center development.

The writer also recommends that a planning team be established to plan and design each center. This team should be composed of at least three professional people from the fields of planning, architecture, and engineering. Each member should have a staff of trained personnel at his disposal, and a thorough knowledge of Air Force requirements and procedures. The ideal solution would be the establishment of special Air Force teams permanently assigned to plan and design community center facilities for all installations.

III. AREAS FOR FURTHER STUDY

During the preparation of this thesis the writer has encountered certain areas of study that require investigation beyond the scope of this paper. Many require analysis by trained professionals. Others require the coordinated efforts of planners, architects and engineers. Further study in these suggested areas will be very helpful in planning

and developing Air Base Community Centers.

Land Use Control. Wherever possible, the community center should be located in proximity to the various housing areas on the base. However, this is not possible at many bases due to the lack of previous planning. Future bases should be planned with a specific site area for community center facilities. Application of comprehensive land use controls would reserve this site for future development. This general subject area is presently being studied in a thesis by First Lieutenant D. B. Cavender, Kansas State University, graduate planning student. The thesis title is "A Comparative Analysis of Civilian and Military Land Use Planning as a Basis for Zoning."

Regional Facilities. The feasibility of Regional Service Centers requires considerable investigation. This type of center could be established to serve several military installations located in one city. Each installation would have a small utility size center composed of branch facilities from the Regional Center. This possibility might be more economical than providing several large centers, but entails a coordinated effort of the various military services involved.

Center Management. Further study is required in the area of center management. Civilian centers generally employ a manager to coordinate activities of the various facilities. It is entirely conceivable that the military center could also benefit from unified management techniques. A management team composed of a maintenance officer, commissary officer, and exchange manager could effectively coordinate facility activities for efficient center operation.

Rehabilitation. In many instances, the planner will encounter existing facilities and structures located on a site that would be appropriate for a community center. A special study should be made of remodeling and rehabilitation techniques that could be applied to make these existing structures suitable for inclusion in the community center complex.

Facility Reduction. A major problem of community center facilities arises when the military strength of the installation is reduced. On the basis of established area allotments, there is an excess of space in these facilities when personnel strengths are decreased. This problem requires detailed study to determine what course of action will be best in this situation.

Protective Construction. The incorporation of fall-out shelters in building design will continue to be a problem as long as the threat of nuclear war exists. In the event of nuclear attack, military installations will be primary targets and should therefore provide as much protection for base personnel and their dependents as possible. The possibility of incorporating fall-out shelters in community centers should be carefully studied from the standpoint of protection, economics, and design.

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APPENDIX

APPENDIX A

FACILITY FUNCTION AND LOCATION

The size and disposition of all community center facilities are established by the provisions in the Air Force Manual 86-4, Standard Facility Requirements. They are continually reviewed and revised. The space requirements now in existence could possibly become obsolete in the near future. Therefore, the specific space requirements will not be included in this thesis.

On the other hand, the basic functions unique to each facility are relatively stable and are worth presenting at this point. The functions stated in this appendix are based upon the functional provisions of Air Force Manual 86-4.

The location of each facility must be established to best fulfill the needs of both the center user and the facility itself. The locational considerations presented in this appendix are recommended by the writer based on studies of both civilian and military centers. They have been determined by studying the nature of the facility, the amount and type of service required and the relative size of the facility.

I. MERCHANDISING

Commissary

The commissary is the supermarket for the military installation. It provides groceries to military personnel at a savings of approximately thirty-five per cent under civilian establishments. The commissary is perhaps the largest single generator of community center traffic. In all cases it should be located for maximum parking accessibility. It should

generally be located at one end of the complex apart from other facilities. It should also be located for convenient truck access and must be provided with a large truck service court. A parcel-pick up area isolated from vehicle circulation lanes should also be provided for the safety and convenience of customers.

Exchange Sales Store

The exchange sales store (Base Exchange or BX) is a combination department and variety store for military installations. It can provide goods from diaper pins to household appliances, and services from watch and camera repair to tank-washing. It comprises retail sales area, stock area, rest rooms, entrance facilities, office space and may even include a small snack bar.

The BX can be generally considered the second largest traffic generator in the complex. It is advisable to locate this facility at the opposite end of the complex from the commissary with convenient access to parking facilities. Its location should be in proximity to the maintenance shop, warehouse, clothing sales store, thrift shop, and exchange cafeteria. This facility will also require a large service area which could possibly be designed to serve the other facilities mentioned above.

Exchange Maintenance Shop and Warehouse

The maintenance shop is provided for the local repair of exchange equipment and fixtures. The warehouse provides storage space for exchange stock, operating supplies and equipment. In certain instances, it may also provide area for the retail sale of large items.

These facilities should be located in direct relation to the exchange sales store. Since they are basically non-retail facilities, they should be separated from pedestrian ways and oriented toward service traffic.

Exchange Service Station

The service station provides gasoline sales and automotive service to military personnel. The station should be segregated so that it will not interfere with parking access and circulation. This requires a location on the edge of the site near the road with carefully controlled access points. At the same time, it should be within reasonable walking distance to other facilities. This will allow personnel to have their cars serviced while using the community center facilities.

Clothing Sales Store

The clothing sales store provides a limited stock of uniform items for sale to military personnel. In addition to stock area, a retail sales area must be provided for the display and fitting of uniform items.

Due to the specialty nature of this facility, it should be located in proximity to the exchange sales store and provided with convenient access to both parking and pedestrian areas. It should have direct access to service areas for the delivering and unloading of stock items.

Thrift Shop

The thrift shop is a non-profit facility for the sale and purchase by military personnel of used apparel, furniture, home furnishings, and equipment. The thrift shop is another specialty facility that should be

located in proximity to the clothing sales store with convenient access to both pedestrian and parking areas. It should also be relatively accessible to small trucks that might be required to deliver furniture and other large items.

II. SERVICES

Chapel and Chapel Annex

The chapel and its annex are the central facilities for religious activities on the base. The chapel includes the worship area, choir room, chaplain offices, restrooms and service facilities. The annex provides space for classrooms, fellowship areas, kitchen facilities, and administrative offices.

The nature of these facilities dictates their location in the complex. They should be served by adequate parking areas, but separated from facilities that will generate noise or interfere with religious activities in any way. They should be located in a setting worthy of their function.

Branch Bank

The branch bank provides complete banking services for military personnel, but must be authorized by the Treasury Department and the Deputy Assistant Secretary of Defense. The bank should be located with direct access to parking areas, but can well be placed in an "off" location for pedestrians. Whenever possible it should be located in proximity to the post office facility.

Post Office

The central post office on a military installation serves the same function as in a civilian environment. It provides mail service for the community. This facility requires direct access to truck service and parking areas, but can be somewhat separated from pedestrianways. A location near the bank is desirable.

Credit Union

The credit union provides low-cost saving and loan services for its members. Although they are private organizations, a Federal Credit Union may be established at any installation for the convenience of the personnel.

The credit union is another personal service that does not require direct pedestrian movement for successful operation. It should have direct access to parking facilities, and works well when located in proximity to the bank and post office.

Exchange Service Outlets

Most of these specialty shops should be directly accessible to pedestrian areas. The exceptions to be noted are barber and beauty shops which should be located in areas that will not conflict with other center facilities. In all cases, these shops should be reasonably accessible to parking areas and have some provision for service by small delivery trucks.

Guest Housing

Guest housing facilities provide overnight transient facilities for visiting relatives and friends of military personnel. They will

be provided only where similar facilities are not available in nearby civilian communities at reasonable prices.

Guest housing units should be located toward an edge of the site to separate them from center traffic and noise. However, they should be within reasonable walking distance of the center. They require a separate parking area that should be accessible without having to pass through areas of center traffic. The location should be well landscaped and protected from any objectionable aspects of center operation.

Exchange Cafeteria

The exchange cafeteria is provided in conjunction with the main exchange sales store. This facility provides convenient eating facilities at a moderate price for military personnel and civilian employees.

The cafeteria should have direct access to both parking and pedestrian areas. Wherever possible, it should be located in proximity to the exchange sales store. A service area, well protected from pedestrian areas, should be provided for delivery and trash collection vehicles. This service area should be accessible only from a separate service road whenever possible.

Public Restaurant

A public restaurant can only be provided at installations where a large number of civilian personnel are employed and other adequate food service facilities are not available. This facility provides hot lunches, soft drinks, tobacco goods, and candies for purchase by civilian employees.

This facility should be accessible from a large parking area,

but may be somewhat isolated from pedestrian areas. Whenever possible it should be on the same service road as the exchange cafeteria.

III. RECREATION

Theater

The base theater has three basic functions. It is used to show motion pictures, to present live stage productions, and to provide auditorium facilities for group activities. These group activities may include group instruction, graduation exercises, organization meetings, troop information programs, officer and airmen calls, and general club meetings.

The theater should be located in proximity to the service club, a large parking space, and an entrance drive. If there is enough difference in time of usage it could share the BX parking area. Wherever possible, the theater should be located toward the airmen housing area.

Field House, Gymnasium, and Multi-Purpose Facility

The major recreation facility will generally be one of three types: field house, gymnasium, or multi-purpose. These three facilities differ primarily in their size and scope of activities. They are used for the daily physical conditioning, training, and recreation of all personnel.

The multi-purpose facility is for small bases of from 250-1000 personnel. It contains a regulation basketball court and may even provide areas for a theater and service club where the military strength is not sufficient to justify separate facilities.

The gymnasium is provided for installations with a personnel strength of 1000 or more. In addition to standard gymnasium facilities such as basketball and handball courts, showers, and dressing rooms, it may also include steam and massage rooms.

The field house is provided for installations with a military strength of 7000 or more personnel. It provides indoor areas for large troop assemblies.

In all instances, the facility should be somewhat separated from the rest of the center due to the nature of use involved. It should have direct access to parking and an entrance point. Generally, the customs and requirements of each base will determine the location.

Bowling Alley

The bowling alley provides recreational bowling facilities at moderate cost for all personnel. It may range in size from two to thirty-six lanes depending upon the military strength of the installation. The facility should be located in proximity to the service club with direct access to a parking area. Whenever possible, it should be oriented toward the airmen's quarters for easy pedestrian access.

Recreational Workshop

The recreational workshop has two segments: the multi-purpose craft shop and the auto shop. Both provide recreational facilities for all personnel. The craft shop may provide space and equipment for drawing and painting, ceramics, jewelry and metal work, leather work, model design and construction, photography, electronics and woodworking. The auto shop provides facilities for the maintenance repair, modification

and improvement of automobiles belonging to military personnel.

A question arises as to even locating these facilities in the complex due to the noise and clutter involved. If they are included, they should be located where these objectionable features can be screened out. This could perhaps occur on the perimeter of the site where truck service and a large work yard could be provided.

Personnel Clubs

The personnel clubs are places of social recreation and relaxation for military personnel. The service club is for the use of all enlisted personnel, their family and friends. The NCO club, providing space for recreation and dining, is available to all airmen in the top five pay grades. The officers' open mess provides recreation, relaxation and dining facilities for all commissioned officers, warrant officers, their families and friends.

The personnel clubs should be located in proximity to the theater and bowling alley. They require direct access to parking facilities, but only a reasonable access to main pedestrian areas. Generally, the customs and requirements of each base will determine their location.

Education Center

The education center provides facilities for the academic advancement of all personnel in order to enhance their potential to the Air Force. The education center fits naturally into a triangular grouping with chapel and library facilities. It should be reasonably accessible from parking areas, and slightly accessible from main pedestrian areas.

Library

The base library is utilized for storing and issuing books, pamphlets, periodicals, documents, newspapers, maps, pictures, recording and similar material. These facilities are available to all military personnel and are highly desirable for each installation.

The library should be in close proximity to the education center and the chapel. In all instances, it should be separated from the normal bustle of center activity. It should be provided with truck access and a parking area that could be shared with the chapel and the education center.

PLANNING FOR AIR BASE COMMUNITY CENTERS

by

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The purpose of this thesis is to present a comprehensive approach to planning community centers for Air Force installations. Particular attention has been given to the use and application of sound planning principles developed for civilian suburban shopping centers.

The air base community center is an outgrowth of the civilian shopping center. It is a group of individual establishments planned, owned, and developed as a unit with off-street parking provided on the site. It is directly related in location, size and type of facilities offered to the military community served.

Six basic phases are involved in the development of a community center: (1) problem recognition, (2) selection of facilities and facility priorities, (3) site selection, (4) site planning, (5) architectural design, and finally (6) initial construction.

The center is the hub of recreational, cultural, and commercial activity on the base. Its facilities are classified into three main categories: (1) merchandising, (2) service, and (3) recreational. There are three basic types of community centers: (1) the Utility Center for small installations, (2) the Convenience Center for medium installations, and (3) the Service Center for large installations. The differences among these centers are the type, size and number of facilities offered.

Civilian and military consumers are very similar. Both require efficiency, convenience, and easy access to the center facilities. Planning these facilities requires a knowledge of shopping habits and time-usage patterns.

The selection of community facilities requires the consideration of five factors: (1) number of assigned personnel, (2) tenure and stability of the installation, (3) proximity to other facilities, (4) climatic conditions and (5) the impact of the facility on morale. In all cases, there will be at least five facilities in a center: (1) commissary, (2) exchange sales store, (3) recreation facility, (4) chapel, and (5) service club. Priorities for facility construction must be established for a phased development sequence, also based on the above considerations.

Site selection requires a detailed examination of each possible site in regard to location, size and shape, and physical conditions. Whenever possible, the site selected should meet six basic requirements: (1) provide ample space, (2) be of usable shape, (3) be in one piece, (4) provide for economical construction, (5) be easily accessible and (6) be compatible with adjacent land uses.

The site for the community center should be planned for phased development. Four functional areas must be planned for each site: (1) structures, (2) vehicle movement, (3) pedestrian movement, and (4) buffer and reserve. The site planning process consists of five steps: (1) space allocation, (2) layout of structures, (3) plan for vehicular circulation, (4) plan for pedestrian circulation and (5) plan for reserve and buffer zones.

Architectural design and engineering constitute the final phase for community center planning. Architectural character emerges as the designer solves the problems of building sizes, interior arrangements, and exterior treatment. The engineering problems which must be solved

coincidentally with the architectural design are: structures, mechanical equipment, and electrical service.

The planning and design decisions in all phases must be carefully integrated to produce the optimum result: an architectural unit, economical to construct and maintain, that fulfills the socio-economic needs of the military community it serves.