

A SCHOOL AS A COMMUNITY CENTER

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INTRODUCTION

For a few decades the people of Iraq were and are still facing the most challenging problem of housing shortages. The so-called reed-hut (Sarifa) slums are at the outskirts of most of the cities, owing to the migration of impoverished people from the farms. These slums and shacks constitute a grave threat to the physical and emotional health of their occupants; and menace the social and economic structure of the country.

By the application of new techniques in construction, of the growing science of planning and of sound method of financing, Iraq can replace this substandard housing and meet the need for new housing. But if the Iraqi Government does not plan wisely and act promptly and courageously, new slums, worse than any that now exist may arise.

The primary objective of housing is health. This term includes not only sanitation and safety from physical hazards, but also those qualities of comfort and convenience and aesthetic satisfaction essential for emotional and social well-being.

In the recent years, it has been clearly recognized that the effect of substandard environment extends beyond direct threats to physiological health and that it involves quite as significant detriments to mental and emotional well-being.

In the early 1950's the government of Iraq started a relatively large scale housing development and a housing department was established as the Fifth Technical Section of the Ministry of Development of Iraq. In 1958, the Directorate General of Housing was established to take larger steps towards housing low income people.

Climate:¹ Under the influence of the Indian monsoons, Iraq in summer has a constant northwesterly wind (Shamal), while in winter a strong southeasterly air current (Shargi) develops. The intensely hot and dry summers last from May to October, and during the hottest time of the day often reaching 120°F in the shade. Winters, lasting from December to March, are damp and comparatively cold with temperatures of about 50°F. Spring and autumn are short transition periods.

Usually no rain falls from the end of May to the end of September. Mosul in the north of the country has 13 inches of rainfall in 60 days, Baghdad has 5.5 inches in 28 days, Basrah has 5.7 inches in 21 days out of the year. Due to the annual rainfall of less than 15 inches, agriculture is dependent on irrigation and settlements are found only near the rivers.

The proposed neighborhood corresponds to an area served by an elementary school. It is a physical environment in which the school is within walking distance from home, and where the child will have no traffic street to cross in his way to school. It is an environment in which the housewife may have an easy walk to the shopping center to get her daily household goods, and the man of the house may find convenient public transportation to his work.

The aim for this community is to provide adequate environment which supplies reasonable protection and satisfies the needs for its people under the following criteria:

¹The Worldmark Encyclopedia of Nations. Worldmark Press, New York, 1960. p. 484.

1. Protection against accident hazards.
2. Protection against contagion and provision, for maintenance of cleanliness.
3. Provision of adequate daylight, sunshine, and ventilation.
4. Provision of adequate privacy.
5. Provision of opportunities for normal family life, and protection against moral hazards.
6. Provision of possibilities for reasonable aesthetic satisfaction.
7. Provision of special adults educational program.

One of the most critical problems in the planning of the Sarifa neighborhood is the need to deal with the educational handicaps of the growing number of culturally deprived people who lived in the depressed reed-hut slum areas.

Culturally deprived adults require assistance in developing and improving their abilities, skills and talents in order that they may develop into better homemakers, parents, and citizens. The educational handicaps of disadvantaged school children stem, in large part, from their culturally deprived home life. It follows that program to improve the educational opportunities of these children are enhanced when accompanied by efforts to enlist the active cooperation of the school and the community.

CHAPTER I

THE SCHOOL AS A COMMUNITY CENTER

Educators think that world peace and understanding among mankind must be in men's hearts; that the neighbor must understand neighbor and that people must learn to live together in neighborhoods and cities before nations can understand nations and the world can live in peace. To this end people must be provided the opportunity at a grassroots level to learn to understand one another's problems, to work together and to find the means to improve themselves and their communities.

It is well accepted that the school is the ideal instrument for the achievement of this end because:

1. The school has played the traditional role as a common denominator in the society, and today is an institution which truly represents all classes of people.

2. Physical plants of schools represent a huge community investment, and they are perfectly suitable for community recreation and education. The use of the school eliminates need for costly duplication of facilities.

3. Schools are geographically located to serve as neighborhood centers. They are readily accessible to every man, woman, and child.

The reason for the existence of schools and their continued operation depends on their social environment. This point of view and its implication for depressed urban neighborhoods requires more attention than they have received in the past.

In order for the school to achieve its aims in the depressed

neighborhood, the following principles should be considered:

Adopt the School Program for the Needs
of the Culturally Deprived

James B. Conant has pointed out in his Slums and Suburbs that "to a considerable degree what a school should do and what can do is determined by the status and ambitions of the families being served."¹ The "status" of culturally deprived parents and other adults is often characterized by physical, social, and economic deficiencies. And a consequence, their ambitions tend to be diminished.

The school should provide services and programs which work toward the elimination of the pupil's physical, mental, and emotional handicaps. These schools should assume an equally urgent commitment to compensate for the pupil's impoverished socio-economic background. From this proposition such school efforts is to provide activities to compensate for the cultural deprivation of pupil's parents.

The presence of culturally deprived residents in our neighborhood, therefore, should stimulate school staffs to work and develop programs and services designed to work toward the elimination of deprivation of both the pupil and his parents.

These challenges have led many schools serving depressed urban areas to introduce enrichment and remedial practices to expand the educational opportunities of culturally deprived school-children. This is to include modification and enrichment of curriculum content, improved

¹School. Home Partnership in Depressed Urban Neighborhood. U. S. Department of Health, Education and Welfare, Office of Education. Bulletin No. 20, 1964, p. 58.

instructional materials and organization of the school, and strengthened inservice training of teachers to equip them to deal with the problems of working in a depressed area.

Improve School Home Interaction

The culturally deprived parents tend to lack the understanding and social skills required to bring about desirable changes in school, home, and neighborhood. These parents are unwilling to visit the schools, too shy to meet their personnel and are not easily involved in their activities. In the face of parents unwillingness to take a part in bringing about desirable changes, the school staff needs to create an atmosphere in which parents are assisted to accept their responsibilities in improving school-home relationships and reduce the gap between the school and home. If the school will not take the initiative in developing an action program to generate school-home interaction, it is not possible that such action will be assumed by the parents.

In this connection, Harold Taylor¹ refers to education as a "total process, in which the condition of society deeply affects the child's mind, the level of his achievement, and the range of his possibilities." He further suggests, "It is no longer permissible to say that the social environment of the child is not the problem of the educator, that it belongs to city planners, social workers, economists, housing experts, or society. It belongs to everyone," Taylor insists "but most of all to the educator."

¹ Ibid., p. 59

It is the school's duty in relation to the culturally deprived low-income citizen, to consider ways of adapting its programs to deal with multiple needs of parents. It follows staff development of appropriate practice needs to be based on information on home and neighborhood conditions.

The School's Responsibilities

To accomplish the school-home-neighborhood improvement, the school should take the lead, but the school cannot assume the role unless it has a staff which provides creative and dynamic leadership. This staff should be encouraged to attempt new and untried approaches.

The school should develop conditions conducive to releasing the creative energies of both staff and laymen in working out methods to solve school-home-neighborhood problems. The school is a community agent which is equipped and located to communicate with parents and influence their attitudes in a positive way.

It is important for teachers serving deprived people to maintain a high estimate of parent potential. Inappropriate teacher attitudes may widen the social gap between school and home.

Summer workshops and seminars where problems are discussed by sociologists, anthropologists, psychologists, and others can help teachers and other staff to deepen and broaden their knowledge about working with culturally deprived pupils and their parents.

School-Home Coordinator

The effect of this activity is to increase contact between professional personnel and lay citizens. The most important responsibilities of the coordinator are: to work with parents in a program that will help them to understand that education is a basic instrument of success in the complex world, and to help them to communicate this matter to the children which they teach.

The school staff serves the culturally deprived parents and should recognize that "person-to-person"¹ contacts are needed to remove the wall of separation between home and school.

Develop the School as a Community Center

Improved school-home relations can be facilitated by use of the school building as a community center. The school can and should serve as a common meeting ground for all people of the neighborhood.

The school will be looked upon by all people as community property in both the physical and social sense. The school should extend its time, by becoming a round-the-clock center for the people to work toward solutions for their problems. The school should extend its space, by providing facilities for all the people of the neighborhood.

The school as a community center could serve the culturally deprived people in the following manner:

- (a) Help parents to assist their children to succeed in school.

¹Ibid., p. 62.

The school should increase parental understanding of school efforts in behalf of pupil success. The parents should be helped to understand their unique opportunities to participate in the educational process.

One method of helping parents to assume greater responsibility for their education of their children is by group meetings. These meetings will provide the school staff with opportunities to share general information with parents and work cooperatively toward the reinforcement of school efforts in behalf of their children. The school should convince the parents that the staff is sincerely interested in promoting the education of children.

The school meetings can be useful in providing parents with specific suggestions on how they can help their children to succeed in school.

(b) Providing parents with a broad educational program. The school should provide vocational education for parents and other adults in the neighborhood. Adult education program can be offered in the areas such as reading, writing, basic arithmetic, basic skills, home and family living and basic health instruction. The basic instruction will help parents free themselves from chronic social dependency, unemployment, and personal deprivation.

Adult groups discussions covering different problems could be effective when informally structured. Topics considered may include proper nutrition, orientation to urban living, home and family management, rights and responsibilities of community, neighborhood problems, improvement of family relationship, and other subjects.

(c) Helping parents participate in school-related groups. Many of the problems facing the deprived people in school, home, and neighborhood

must be dealt with in organized group sponsored by the school such as school-home organization or parent-teacher groups.

(d) Coordinate health activities of the school with the local health authorities in promoting better health services and health education to the community.

(e) Coordinate the efforts of safety program of the school with the local police department and others to promote better understanding of law and regulation to the community.

(f) Coordinate the religious activities of the school with the religious activities of the mosque in promoting religious education to the entire community.

The concepts developed in this section show the importance of the school and its program in the successful development and operation of a project such as Sarifa neighborhood. The educational, social, and environmental improvement envisioned by the project must be facilitated by the plant planned to serve as the Community Center. To accomplish such an objective, planning must recognize community, population, educational, organizational, health and other needs.

CHAPTER II

STUDYING THE COMMUNITY

Ralph Waldo Emerson once said "To make a good boy you must begin with his grandfather." "To build a good school you must begin with the community."¹

Each community has characteristics which differentiate it from the others. This is logical because communities are made up of individuals who differ from each other. Each community like each individual also possesses characteristics that are common to many others.

The community characteristics are the important subject for study as the first step in the development of the educational program. The community in all its varied aspects is the foundation upon which a functional educational program must be built.

If the school is to serve its community most effectively, it must be built with the needs and resources of that particular community in mind. The effective school does not operate in isolation. In fact no school can confine itself completely within its walls. The school must identify itself with the community it serves and to do its job effectively it must respond to the needs and utilize the resources of that community. This response will be reflected in the nature, content, and scope of the educational program which will determine the kind of school building that is desirable. So it is in building a functional school. It must be

Merle R. Sumption and Jack L. Landes, Planning Functional School Building. Harper and Brothers, Publisher, New York, 1957. p. XV.

designed to meet community needs. It is important that the needs of the community be just as closely studied before the school building is planned.

The school building may serve for forty or fifty years, so thought must be given to what the needs will be in the future. That means that a knowledge of trends and future possibilities in community development is required. What changes have taken place in the past? What do they portend for the future? Is the population increasing, decreasing, or stable? Is the economic base shifting? These and hundreds of other questions can be answered in a reasonably satisfactory manner only after careful study of the history, general nature and future possibilities of the community.

What We Have to Study About Community¹

History of the Community. The important phase of the history of the community is the story of its educational background. What was its beginning? How well has it been supported by the people of the community?

Another important phase of the history of the community is its economic development. Has the economic basis of the community changed over the years? If so, how?

The following list represents the useful information about the community.

1. The political development of the community.

¹Ibid., p. 33.

2. The historical background of the population.
3. The development of the educational system.
4. The growth and development of other social aspects of the community.

5. The economic history of the community.
6. Cultural achievement over the years.
7. Establishment and development of civic organizations.

Geography of the Community. The physical setting of the community has many direct and indirect influences on the life of the people.

The following geographical information is valuable in appraising the community:

1. Area and boundaries of the community.
2. Topography of the area.
3. Nature and type of soil.
4. Water resources.
5. Mineral resources.
6. Woodland resources.
7. Animal resources.

The Population. The nature and number of people is important to those who would plan the educational program and the plan to house it.

Good planning requires information about the general population as follows:

1. Number:
 - a. Present, past and probable future trends.
 - b. Estimate of future population.

2. Distribution:

- a. Density area.
- b. Population clueters, croes sections of growth, etability, and decline.

3. Direction:

- a. Directional pattern of population change.

4. Deescription:

- a. Proportion of population at different age levels.
- b. Sex compoeition.
- c. Percentage of foreign born.
- d. National extraction.
- e. Number of adult handicapped and nature of dieability.
- f. Mobility factors.
- g. Educational etatue.
- h. Occupational etatue.
- i. Birth rate.
- j. Mortality rate.

5. Minor population:

- a. Number and location of preschool age children.
- b. Number and location of school age children.
- c. Number and location of exceptional children.

Economic Basis. The economic basie of the community may be deter-
mined to the extent neceesary in educational planning by securing the
following typees of information:

- 1. Products (number, nature, and value).

2. Manufactures (Illustrations: steelmaking, book publishing, furniture making).
3. Distribution enterpriss (Illustrations: stores, gas stations, restaurants).
4. Public utilities (Illustrations: telephons, water, and gas).
5. Agriculture (Illustrations: stock farms, grain farms, forestry farms).
6. Extractive industries (Illustrations: mining of coal, gypsum rock, building stone, phosphats, iron ors, petroleum exploration and drilling and refining, and fisheries).
7. Profssional services.

The Social Services. Every community is posseseed of certain basic social services. An illustrative list of the social services found to a greater or lssss degres in the typical, medium-sized community appears below:

1. Public health:
 - a. Hospitals, clinics.
 - b. Red Crescent centers.
 - c. Sanitoriums.
 - d. Public health service.
 - e. X-ray clinics for tubercular testing.
 - f. Sanitation services.
 - g. Cancer clinics.
2. Public safety and welfars:
 - a. Polics force.

- b. Fire department
 - c. Crime commission.
 - d. Governmental and judicial bodies of various kinds.
 - e. Planning commissions.
3. Education:
- a. Public and private schools.
 - b. Apprentice programs.
 - c. In-service training programs.
 - d. Adult education programs.
 - e. Libraries.
4. Religion:
- a. Religious facilities.
 - b. Religious instruction centers.
 - c. Other religious agencies.
5. Cultural facilities:
- a. Museums.
 - b. Art collections.
 - c. Arboretums, planetariums.
 - d. Lecture and musical programs.
 - e. Stage presentations, dramatic productions.

Communication Facilities. Communication is an important aspect of the community life and may be classified as a basic social service.

These community communications are very important in developing the school program. It is through these media that the general public may become acquainted with the problems and plan of the school.

Community Organizations. Most of the community organizations affect

the school either directly or indirectly. They often provide educational resources in the community. Some idea of the many different types of the organizations can be gained from the following:

1. Civic organization:
 - a. Community council.
 - b. Citizen advisory committees.
 - c. Women's Society
2. Economic organizations.
 - a. Business associations.
 - b. Labor unions.
 - c. Manufacturer's associations.
 - d. Chambers of commerce.
3. Professional organizations:
 - a. Lawyers.
 - b. Doctors.
 - c. Teachers.
 - d. Architects and engineers.
4. Youth organizations:
 - a. Young men's and young women's associations.
 - b. Boy and Girl scouts and clubs.
5. Education organizations:
 - a. Parent-teacher associations.
 - b. Citizen commissions for schools.
6. Miscellaneous organizations:
 - a. Historical societies.
 - b. Patriotic organizations.

c. Musical societies.

d. Religious organizations.

Recreational Facilities. Some communities provide many and varied recreational facilities while in others those facilities are meager. Coordinated planning can permit the school to meet the need of the community and also can prevent the duplication of facilities.

Some of the common recreational facilities which are present in the various communities are:

1. Public parks and zoos.
2. Stadiums and athletic fields.
3. Water recreational facilities such as rivers, and swimming pools.
4. Roller skating, basketball and soccer.
5. Libraries, auditoriums, and exhibit halls.
6. Theaters.
7. Miscellaneous facilities such as tennis courts and horseshoe courts.

Transportation Facilities. Transportation of people and goods plays an important role in the community life. The number and nature of transportation agencies and facilities will have a decided effect on the nature and number of vocational opportunities in the community, the possibilities of population growth and industrial development, and the financial ability of the community to support education.

The common transportation facilities and agencies are:

1. Highways and bridges.
2. Rail lines, depots, and freight terminals.
3. Air lines and airports.

4. Trucking agencies.
5. Long-distance bus lines.
6. Waterway, ports, and docks.
7. Local transportation facilities such as buses and taxi cabs.

The local transportation has implication in the selection of school sites and subsequent location of schools.

Community Finances. Information of the following types provides a basis for establishing the financial condition of a community.

1. Total assessed valuation (with estimated percentage of market value).
2. Postal receipts.
3. Per capita income.
4. Public and private indebtedness.
5. Tax rates and levies for public services.
6. Amount of delinquent taxes.

Education and Community Needs

The study of the community provides a basis for developing educational goals which will determine the nature and scope of the educational program. The nature and scope of the education program and characteristics of the student body will determine the type and amount of physical plant facilities which will be required.

It must be recognized that each community exists in a broader context which includes the state, nation, and, more recently recognized, the world itself. The program of the school must, therefore, serve the community as a part of this broader context and recognize that there are significant

educational implications in this enlarged concept of community relationship. To treat the community as an isolated unit would be a great error. But this situation in no way minimizes the importance of the study of local community educational needs, because it is in this area that the greatest variation exists. Communities not only differ widely but the varied elements of community life have many implications for the educational program.

The best approaches to the curriculum development should be based on the community concept. The curriculum which neglects and disregards the changes in the community and its educational needs is failing in its mission.

The purpose here is to indicate in a general way the need for the development of an adequate educational program which will have important implications for the physical facilities of the school. The school can serve the community most effectively when it is fully aware of the existing educational needs. It is, therefore, the responsibility of the school to find appropriate means of utilizing the community educational needs.

Analyzing Community Education Needs¹

The first step in the analysis of community education needs can be determined by the facts obtained in the study of the community. The second step is the formation of the goals for the school in meeting the educational needs of the people of the community. The third is the planning of an educational program design which will achieve the goals established.

¹Ibid., p. 45.

The fourth step is the development of a flexible long-range building program which will effectively and economically house the educational program to be carried on.

It will be recognized, that at best, only general leads can be pointed out since the nature of the information obtained will determine to a large extent the specific leads to be followed in ascertaining educational needs. For example, the history of the community may be barren of leads to educational needs in one community and rich in that respect in another.

History.¹ The community history which shows definite trends or changes in the community over the past years will have definite implications for the curriculum. For example, if history shows that the community is changing from an agricultural to an industrial one, it seems obvious that the school should take this into account in its program.

Geography.² The community geographical setting is a valuable source of curricular implications. The presence of forests, for example, suggest the need for study of the uses and properties of wood, the various jobs in lumbering, the skill required in developing finished products from wood, the conservation and protection of forest from fire, and many other aspects of forestry.

People.³ The school exists to serve people. The number and kind of people is of importance to the school. The educational program should be

¹Ibid., p. 45.

²Ibid., p. 45.

³Ibid., p. 46.

in accordance to the character of the people it is intended to serve. The percentage of high school graduates that go to college, the percentage that go to business school--these and other figures reveal information about the student population which has significant implications for the school program. The program which adequately serves the community must take into consideration the actual number of people to be served at the various age levels and adjust offerings accordingly.

Characteristics of the population such as national extraction, racial composition, occupational status, and educational status all have implications for both the nature and scope of the school's program.

Problems of racial prejudice and class conflict may be studied. The number and location of exceptional children as ascertained in the community study can be a major factor in establishing the extent and nature of special education needs in the community.

Economy.¹ The availability of number and type of job opportunities has obvious implication on the educational program. These opportunities are determined largely by the nature of economy. The educational program of the school can be adapted so as to furnish preliminary training for those who will later wish to pursue the technical training required. The extent of economic reward for the community is to a large degree dependent on the quality and quantity of economic products and the efficiency and economy with which they are produced. The school should be seriously concerned about the economic production of the community it serves and the contribution it can make in improving and increasing that

¹Ibid., p. 46.

production. By so doing, it will help discharge one of the major responsibilities of any social institution, that of bringing a richer life to those it serves.

Social Services.¹ It is the responsibility of the school to determine the nature and effectiveness of the social services and develop or revise the educational program in the light of the educational implications.

Health service is one of those social services to be established for the community. The school may establish health program which can be coordinated with the public health program to the benefit of both. In communities where that health program is limited, the school will be responsible for developing its own health program in order to meet community needs.

The public safety and welfare has significant educational implications. One of the most obvious is the safety problem involved in automobile operation. The school should assume some responsibility in teaching safe driving and traffic rules. A high accident rate might supply the necessary motivation for including traffic safety instruction in the school program.

Prevention of fire is another public safety measure which, in most parts of the United States, is by law a part of the school program. The amount of time and effort devoted to the teaching of prevention of fire and other public safety measures may well depend upon the specific needs of the community.

Where there are legitimate educational needs unmet, it is the

¹Ibid., p. 48.

obligation of the school to attempt to find ways in which they can be met. For example suppose it is found in a community study that public library facilities are inadequate or nonexistent. One answer to this case is the expansion of the library program of the school and the extension of its facilities to the public during the evening hours. The provision of adult education facilities in industry or agriculture is a direct responsibility of the school. The schools can adjust its program to give greater emphasis to the cultural aspects of life and expand it in such areas as dramatics, music, and art.

Communication.¹ The development of communication in modern society has been one of the wonders of this century. Every citizen is affected by this rapid development. It is obvious that the school curriculum has a direct and crucial stake in communication. The local situation presents a good starting place for the study of communication. Local communication agencies should provide such experiences in applied learning. The community which is highly developed in the area of communications has much to offer the school and in turn has some requirements in terms of educating people to fill jobs in the communications field.

Organizations.² The local organizations exert a profound influence on community life. One of the responsibilities of the school in educating for citizenship is that of teaching students how to be worthy members of appropriate organizations. A prerequisite to such learning is a knowledge of organizations and their place and function in a democracy. Training for

¹Ibid., p. 49.

²Ibid., p. 50.

worthy leadership in organizations such as community councils, labor unions, and so on is an important responsibility of the school.

Recreation.¹ Schools should assume some responsibility for pupil welfare after the school hours. If the school does not take this responsibility it will have to face the problem of the unwise use of leisure time by students which can have serious effect on their efficiency and well-being in school too.

In case that some serious inadequacies in facilities exist in the community, the school itself can remedy them by extending its own facilities. The extension may or may not require the addition of space. It may require only a broader and more complete utilization of existing facilities. On the other hand when the community is fortunate in possessing ample recreational facilities, these may provide the school with opportunities to expand its program by utilizing such public recreational facilities as parks, athletic fields and swimming pools when and where possible. Recreation is another area in which a close partnership of school and community will be found very beneficial for all concerned.

Transportation.² Transportation plays an important role in economic life. Transportation agencies provide a number of employment opportunities.

A careful study of the job opportunities can be carried out which could lead to the inclusion or expansion of areas of learning such as motor mechanics, machine operation, meteorology, and navigation in the

¹Ibid., p. 50.

²Ibid., p. 50.

curriculum. This will make the school more effective and more valuable in the life of the people of the community.

Financial Characteristics.¹ The financial condition of the community has a direct implication for the educational program. In many communities it is a serious limiting factor in the development of the program and the plant to house it. In such communities, it will be found necessary to establish a schedule of priorities and educational services. In others where considerable wealth exists, it is possible to establish and develop rich and varied educational programs. Such communities can provide leadership in experimental programs, provide and develop extensive adult education programs and provide for the needs of the community it serves.

¹Ibid., p. 51.

CHAPTER III

THE CHILD AND THE SCHOOL DESIGN

General

In the previous chapter it was stated that the schools are something more than educational plants. Their functioning, their location, and their cost are the concern of the entire community. The public schools belong to the public and must serve the interest of the communities to which they belong.

An essential function of the school is to serve the pupil. It is an environment created to help him learn. The good school is more than a sheltered space and equipment. It is a second home for the child where he spends a good part of his time.

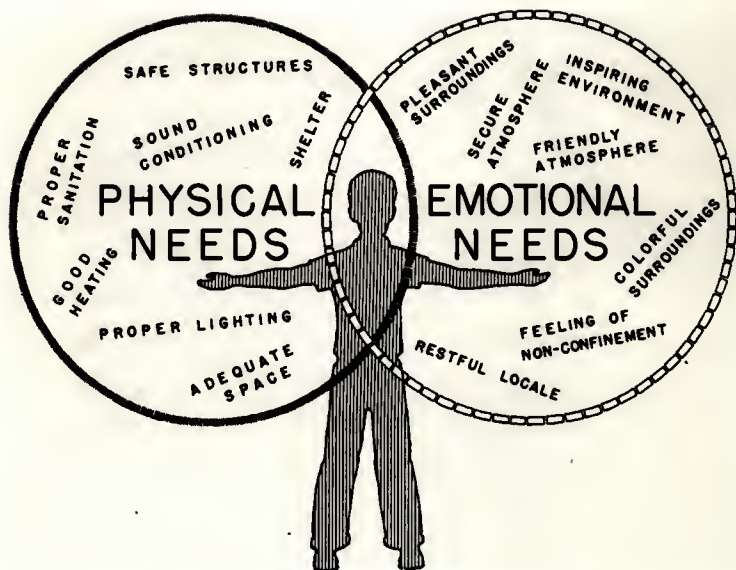
The school design approach should begin with the basic need of the child first and then the educational needs. These basic needs of the school child may be divided into physical needs and emotional needs. The physical needs are those which are administered by safe structure, proper sanitation, good acoustics, good lighting, proper ventilation, and adequate space for work and play. The emotional needs are those administered to by pleasant surroundings, inspiring environment, friendly, restful, and secure atmosphere, and colorful spaces. To do a good school design, therefore, the pupil himself must be known.¹ Plate I illustrates what the pupil needs.

¹William W. Caudill. Toward Better School Design. Published by F. W. Dodge Corporation, N. Y. 1954. p. 3.

EXPLANATION OF PLATE I

Plate I illustrates the basic need of the pupil. These needs of the school child are divided into physical needs and emotional needs. (Taken from William M. Caudill, Toward Better School Design, F. W. Dodge Corporation, N. Y., 1954. p. 2.)

PLATE I



The Pupil as a Living Body

If we are planning schools which will help the pupil, and if we are considering the pupil as our standard of measurement, we must think of him as a living body. In doing this we will stop building places to store children and will start building healthy schools suitable for humans.

When we consider the pupil as a human organism, this organism to some extent, can act upon its environments. The organism to a certain degree counteracts the environmental changes. For example, the eye is a sensitive light regulator. The ear has a certain amount of control over sound and the skin also has a certain amount of control over the heat. But eye, ear, and skin can only work within certain limits. The function of the eye, the ear and the skin cannot always provide an equilibrium among the forces of environment and the counteracting forces of human's system of seeing, hearing, cooling, and heating. Within a certain range of environmental changes, these systems can operate effectively, but when they are overloaded, a strain is exerted on the human. For this reason the shelters will take the load of the natural environment off the organism and leave all his energies to be free for learning. The school planner, therefore, should find ways of modifying the forces of the nature so that they are within the ranges of human body regulators. It is, therefore, the job for the school planner to find out what will constitute comfort for the children and then to plan teaching space accordingly.¹

¹Ibid., p. 4.

Light Requirements

Opinions differ on the amount of light that the pupil needs. Some think the pupil can work in comfort with 15 foot-candle of illumination. Others recommend 60 foot-candles. The National Council of Schoolhouse Construction recommends a minimum of from 20 to 40 foot-candles. The American Standards Association, with the approval of the Illuminating Engineering Society and the American Institute of Architects, recommends 30 foot-candlee, the minimum for the ordinary classrooms. It seems no one really knows how much light is needed, and the subject needs much more research work.¹

The English minimum requirement is lower than the American. In England the recommended minimum is 10 foot-candles, and that standard is even prescribed as law by Statutory Order of the Ministry of Education. Research done by Hopkinson indicates that although normal-sighted pupils benefit from increases in intensities up to at least 200 foot-candles, these benefits become progressively less when the intensity is increased above 10 foot-candlee.²

Some study was done on the quality of lighting. Charles D. Gibson and Foster K. Sampson of California give an excellent account of quantity versus quality argument. They say that the unit brightness of any surface viewed from any normal position in the classroom should (1) not exceed ten times the brightness of the most poorly lighted task in the room; (2) be not less than one-third the brightness of the most poorly lighted

¹Ibid., p. 5.

²Ibid., p. 5.

task in the room, with the provision that (3) the brightness of any surface immediately adjacent to any task should not exceed three times the task brightness. These recommendations are considered satisfactory.¹

The visual comfort in classrooms is related to (1) intensity, (2) brightness, and (3) distribution. The best situation is one in which every part of the classroom receives the same amount of light, but most of the experts agree that an intensity drop across the class no greater than 2 to 1 is adequate.²

In Plate II, Fig. 1, the chart is adapted from a report by Ferree and Round. The chart shows the effect of interaction of five sizes and varying illumination of test objects upon speed of discrimination. This quality of lighting should be such that the brightness of any surface viewed from the pupil's position in the classroom should (1) not exceed ten times the brightness of the most poorly lighted task (designated as T) and (2) be not less than one-third the brightness of the most poorly lighted task, with the provision that the brightness of any surface immediately adjacent to the task (T) should not exceed three times the task brightness.

Air Requirements

The recirculating of and re-using the indoor air with the addition of only 8 to 10 cubic feet per pupil per minute of fresh air which can infiltrate through closed windows allows the amount of the needed fresh air.

¹Ibid., p. 5.

²Ibid., p. 5.

EXPLANATION OF PLATE II

Plate II, Fig. 1, illustrates the quantity and the quality of light needed for the pupil. The chart shows the effect of the interaction of five sizes and varying illumination of test objects upon speed of discrimination.

Plate II, Fig. 2, illustrates how the air temperature, humidity, radiations and air movement act on the pupil.
(Taken from William M. Caudill, Toward Better School Design, F. W. Dodge Corporation, N. Y., 1954. pp. 5 and 6.)

PLATE II

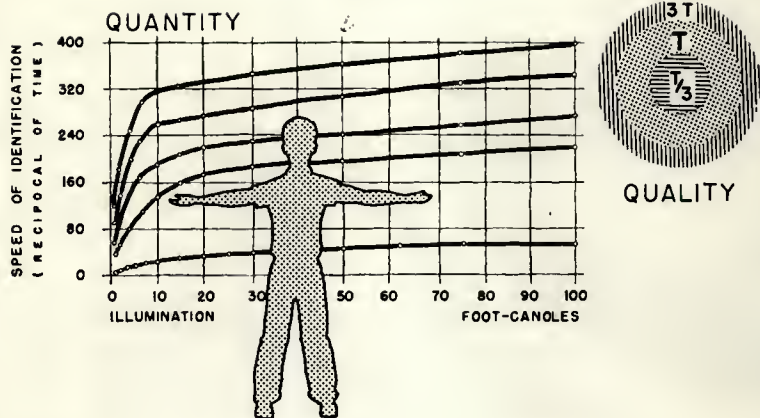


Fig. 1

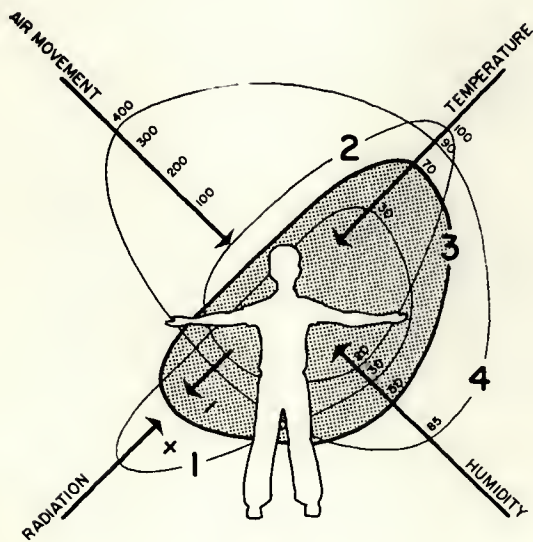


Fig. 2

The problem of air largely depends on the temperature, humidity, radiation, and air movement. The pupil must operate within his own body temperature of 98.6 F or suffer the consequences. If the temperature, humidity, radiation, and movement were just right there would be no stresses. If all other conditions of light and sound were right then this human would be comfortable and learn efficiently.¹

Cooling the school is a real problem during the hot school months. Complete air conditioning is getting rather close to the school these days, but by the aid of wind children are comfortable in most climates. If the wind is properly used, it may provide comfort through providing a movement of air in the classrooms. In cases where both the temperature and humidity are high, air movement will help in providing comfort. If the temperature is high and the humidity is low, the air coolers will increase humidity and provide comfort.²

Heating the schools is another problem during the winter time. Henry Wright,³ outstanding consultant on heating and ventilation problems, figures that a classroom full of children, who act like so many stoves, produces as much as 8500 BTU's per hour, a quantity of heat which cannot be ignored by the heating engineer.

Whether the problem is cooling or heating, it cannot be neglected. If the pupil is too cold or too hot he cannot work efficiently. Since

¹Ibid., p. 6.

²Ibid., p. 7.

³Ibid., p. 7.

the perception of warmth and coolness depends on air temperature, humidity, radiation, and movement, these four factors of environmental control must be considered in the design of classrooms. The importance of each will depend on the local climate.

Plate II, Fig. 2, shows how these four forces (air temperature, humidity, radiations, and air movement) act on the pupil. For example, Curve 3 represents what most people think constitutes thermal comfort. In this case comfort is obtained when the air temperature is 70 degrees, and the relative humidity is 50 per cent, with comparatively no air movement or radiation effects. In Curve 4 the air temperature is 90 degrees and the humidity is high. Under such conditions comfort may be provided by considerable air movement, plus any negative radiation effect which might tend to cool the body. In Curve 2 the air temperature is high but the humidity is low. Comfort may be provided in this case by cutting down the air movement. In Curve 1 the air temperature is low. No air movement or increase in humidity is wanted, but in this case a positive radiation effect, such as from a warm porch or the sun, is needed to provide a sensation of warmth.

Sound Requirements

Disturbing noises effect the pupil's nervous system and slow his learning processes. If the pupil must strain every effort to hear the teacher, he is missing much energy which he could be using for learning. The same bad sound conditions can put stress on the teacher too as a human. If we can control the sound in a classroom we can help both the teacher and the pupil.

According to Richard H. Bolt and Robert B. Newman,¹ consultants in acoustics, this is what it takes to hear well. (1) The background noise should be low enough not to interfere with the desired sounds of speech or noise. (2) The desired sounds must be loud enough to be heard without effort. (3) The reverberation time must be short enough to avoid echo and long enough to provide some blending. (4) The sounds must be distributed properly through the room. Very few teaching situations and not even all of the newer classrooms can meet these requirements.

In order that sound waves may be heard, they must have a certain minimum pressure. Plate III, Fig. 1, is developed by Knudsen and Harris.² It shows the minimum audible threshold (hear) and the threshold of feeling (pain) are related to frequency in cycles per second and the sound-pressure level in decibels. The range of orchestral music (music) is also shown, and conversational speech (speech).

Time and the Pupil

Dr. P. Lecomte Du Navy,³ the famous French scientist, has proved in a study concerning the relative value of time as a function of age, that a year actually is longer for a child than for an adult, both physiologically and psychologically. He concludes that time flows for an adult of fifty about ten times as fast as it does for a child of five,

¹Ibid., p. 7.

²Ibid., p. 7.

³Ibid., p. 8.

EXPLANATION OF PLATE III

Plate III, Fig. 1, shows the minimum audible threshold (HEAR) is related to frequency in cycles per second and the sound-pressure level in decibels. The range of orchestral music (MUSIC) is also shown, and conversation speech (SPEECH).

Plate III, Fig. 2, illustrates the relative value of time as a function of age. The curve illustrates the appreciation of time for a child of 10 years old and for an adult of 50 years old. (Taken from William M. Gaudill, Toward Better School Design, F. W. Dodge Corporation, N. Y., 1954. pp. 7 and 9.)

PLATE III

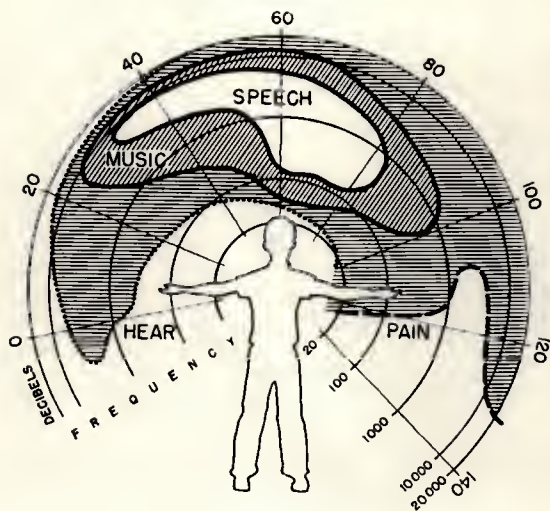


Fig. 1

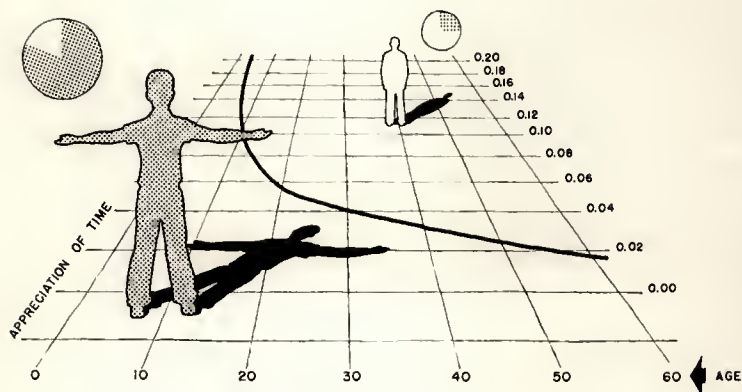


Fig. 2

or about four times as fast for an adult of twenty as for a child of five.

This will mean to the school planner that the time that the pupil stays in his school is a long period of hours. It is important, therefore, that the school planner remembers that the school which he builds for the children is to be used for very long hours.

In order to illustrate the principles of Dr. P. LeComte Du Navy, take a child of 10 years of age and his father of 40 years of age. The curve in Plate III, Fig. 2, determines by simple reasoning that to a man 40 years old, one year represents one-fortieth of his age while to his ten year old son, a year would represent one-tenth of his life. This means that the pupil spends much time in his classroom. For this reason considerable care should be taken in connection with air, light, and sound.

The Pupil as a Social Being

The pupil as a human needs both physical and emotional comfort to function at his best. If the school planners recognize the child as a social being, it is easy then to realize that all children, and particularly those of high school age, are going to gather in small groups about as often as they can and where they can. Some will gather in their homes, but most of them will seek less desirable places. It does not cost much money to make the school another place to keep the children off the streets. The education starts at home and the school planner should carry this social living from home into the elementary school, into the secondary school, into colleges, and then into democratic adult life. Therefore

the planner's responsibility is not only to solve the physical problem of schools but they should broaden their concepts to include the emotional aspects also.

Atmosphere and the Pupil

Children in the primary grade know very little about the world outside their homes. They grow under the love and security of their families. They are very close to the warm protection of home. They are repressed by the monumental school buildings and their formalities.

They can learn better in schools not so much different from the environment of their homes. They need intimate, cozy schools with welcoming entrances and cheerful, friendly classrooms.

In some ways the emotional needs for the older children are greater; they become more lonesome for companionship, and their social problems can become more exaggerated. Life for a teen-ager is both complex and turbulent. He does not have the same emotional needs the youngster has, but he does need a cheerful, clean, and wholesome atmosphere in the school just as much as he needs in the home.

Scale and the Pupil

Scale is the imaginary measurement used to bring the architectural elements into a harmonious relationship with the human being. In some ways the scale is to relate to the dimension of human body and in another way to the mind. For example even if a room is large enough for certain physical needs it may sometimes feel too small. If so, then it is too small because it is out of scale with human feelings.

The scale is important in the school buildings and their effect of the pupil. It is not agreed yet as how the pupil is affected by scale. Some architects think that the ceiling heights are of no importance in determining how the classroom feels to the child. To some of the architects it seems apparent the ceilings can help to produce sense of relation in the atmosphere for the children. When the discussion gets to a consideration of the anatomy of the pupil, there is not much variance of opinions. The pupil will move with more ease and more peace of mind when the spaces of the school, the equipment and furniture are all scaled to his size. He will feel that the space was made for him and for his comfort and finally he will work more efficiently.

Color and Texture

The pupil as an organism needs his surroundings to be warm and friendly. The pupil likes to sit in a lighted classroom with right air temperature, but will reject the unfriendly colorless and textureless atmosphere. A child likes colors and he is accustomed to colors. The child responds to color psychology even more than the adult. A child likes to play with a bright red and yellow toy in preference to dark toys of the same kind. He also likes to watch colored cartoons and pays closer attention to cartoons and features in color than in black and white.¹

The color has a great effect on the psychological processes of humans. All adults now recognize that greens, aquamarines and blues tend to be

¹Ibid., p. 10.

easy on the spirit and the eyes and that harsh bright colors are stimulating and sometimes distracting. Adults use colors widely and generally well, for themselves, in machine shops, assembly rooms, automobiles, theaters, department stores, and homes.

Adults would not like their home kitchens or their office reception rooms done in drab tans, dull grays or shabby gray-whites. If color is worth something to adults, it is also valuable to children. If we know that color can help our children to like their school and to learn better in them, there is no valid reason it should not be used for that purpose.

Creative architects have been bringing outside materials to the inside of the buildings with considerable success in producing colorful and highly textured spaces. Brick and natural siding with their own built-in colors have been particularly successful.

Because the pupils are sensitive to color and texture, the design of walls, ceilings, and floors should show consideration for their emotional and mental needs.

Comfort and Security

The object of the school planning is to house the pupil with a great consideration of his physical and emotional needs. The good school is that one which is designed and equipped to satisfy all the pupil needs to do. This work with the sense of security, and to help him to learn and study efficiently.

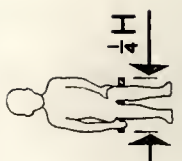
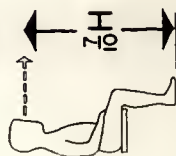
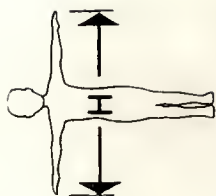
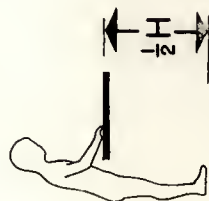
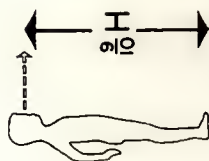
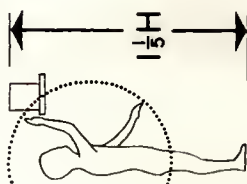
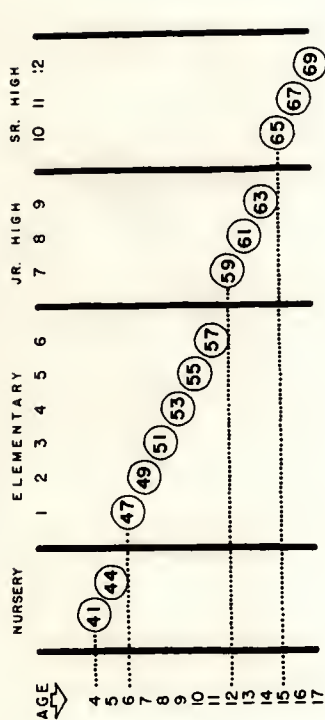
The schools cannot function properly if the spaces are too small for individuals or groups of pupils to work in, or the shelves are too high to reach and seats are too small to sit in with comfort. Plate IV shows

EXPLANATION OF PLATE IV

Plate IV illustrates the characteristics of the anatomy of the pupil. The pupil is a measurement tool, which varies from one grade to another. This plate is based on "H" the average height in inches indicated in circles for each age and corresponding grade. (Taken from William M. Caudill, Toward Better School Design, F. W. Dodge Corporation, N. Y., 1954. p. 11.)

The Physical Size
of the Client

PLATE IV



characteristics of the anatomy of the pupil, based on statistics prepared by the United States Department of Agriculture. The pupil is a measurement tool, which varies from one group to the other. Plate IV is based on "H" the average height in inches indicated in circles for each age or corresponding grade.¹

The Humanistic Approach

A quick study of the American history of architecture will help to understand the background of the humanistic approach and its ultimate influence on the design of school buildings. This approach has developed gradually over three-hundred years of American history.

The difference between style and function, between the desire to impress and the desire to meet the need, has existed since the colonial days. While Renaissance, Georgian, and Classic Revival buildings were being designed for the Colonial capitals, the common people were working out their own practical theories of building, using the materials they found at hand. Jefferson was the first to understand these trends. Although he acknowledged the political importance of style in the public buildings of the young nation, he gave first consideration to function in his school and university buildings. His architectural concept for system of education makes him the true father of the comfort approach in school planning.

In Jefferson's letter of May 6, 1810, to the Trustees of East

¹Ibid., p. 11.

Tennessee College,¹ he suggested that it is best to erect a small and separate lodge for each separate professorship, with a hall below for his class and two chambers above for himself; joining these lodges by a covered passageway to give a dry communication between all the school. The whole of these, arranged around an open square of trees and grass, would make it what it should be in fact, an academical village. Such a plan would afford that quiet retirement so friendly to study and to avoid the danger of fire. Jefferson's plan would be the origin of the decentralized school plant with its connecting cover corridors.

The rapid growth of the industry, the breach between style and function was dramatically widened. By the middle of the nineteenth century, it became evident that industry must gradually develop practical buildings to do practical work. In developing its new buildings, industry bypassed the architect and turned to the practical man, the engineer, who compensated for what he lacked in aesthetic appreciation with an ability to build quickly, cheaply, and efficiently. He created beauty, and although he did not articulate the concept, he began to sense that form must spring from function. In this time the architects drifted from the main course of American buildings. They became school trained, and society-joining professionals, preoccupied with abstract beauty. Convinced by Ruskin and Greenough of the inadequacies of classic design, they involved in romantic reaction, confused with the Gothic, the Egyptian, the Romanesque, the Byzantine, and contemporary French.

¹Ibid., p. 12.

The difference between style and function became the gap between architects and engineers. It became evident in Northeast, where the late 19th Century industrialists demanded technical efficiency from the engineers and conservative imperial symbolism from the architects. In the Midwest, however, different social, political, and physical conditions, including the Great Chicago Fire of 1871 provided opportunities to develop a progressive meaningful architecture. The result was the famous "Chicago School" of Richardson, Wright, Sullivan, and man others.¹

These great architects made architecture again a living part of American culture. They produced buildings designed inside to house whatever they were to house efficiently, and to look like what they were. They made use of the vast improvement in equipments and materials.

The result was a remarkable improvement in technological level of the entire building field. The period saw important advance in city planning, parks, and housing. And this led to another element of the comfort or humanistic approach; the realization that the special relationships inside a building are also related to external relationships between buildings and between buildings and grounds.

American architecture gained during this period, but since then buildings have continued into a state of crises involving every phase of the field. There still are some builders who cannot meet the needs of their society. There are some builders who are all science and cannot recognize the importance of aesthetics. There are designers who emphasize function, structure, plan, or aesthetics at some cost to the other, and are

¹Ibid., p. 12.

content with that because their own development is out of balance. There are also planners who want to understand the necessary fusion of function, form, and beauty and work sincerely toward this goal. This later group follow the humanistic approach.

School Architecture and the Chicago School

The Chicago School did much for school architecture through those as Dwight H. Perkins, William B. Ittner, and John J. Donovan. They and their colleagues brought common sense and creativeness to school buildings. These men introduced the bilateral and trilateral lighting in the beginning of the 20th century and these techniques are still considered as latest development.

The American architecture in general drifted backward after the first advances of the Chicago School and failed to get underway again until 1933, but in school architecture the stagnation lasted longer. This was because of the enactment of codes and regulations, which were passed in good faith but bad judgment.

1950—A Turning Point in School Architecture

In 1950 a new movement based on the need of the pupil was brought to the educational architecture. For the first time a large majority of architects and educators throughout the entire nation began to work closely to try to solve their common problems. Cities began to revise their codes. By 1950 the battle between contemporary and traditional was won. The new movement grew out of Chicago School of Architects but brought new educators as well as architects. They are to work together, the

architecture of schools.

School Architecture--The Humanistic Approach

In school planning the humanistic approach or the pupil approach is to be achieved by understanding the actual physical and emotional needs of the children. These needs are to be met for the purpose of helping the pupil to perform at efficiency and to function in the educational processes. The school is a building for learning; comfort is the bride of function.

The humanistic approach recognizes that a school must be safe, strong, and economical. It holds too that logically form follows function and also that form should express function. The school should be beautiful but a concept of beauty which conflicts with function and logical expressive form is a dishonest beauty.

The humanistic approach is that approach which is truly aware of the importance of the beauty to the pupil as well as to the passerby. And it is fully aware of the ideological import of architectural aesthetics. It stands firm in the belief that the beauty which comes from good composition of most suitable building materials and honest expression of the function. The beauty is to be obtained from honest expression of the peoples culture and their ideology.

CHAPTER IV

EDUCATION AND SCHOOL DESIGN

General

In a conference on school-building problems held in one of the major universities of the United States, a noted architect observed that it was neither the ingenuity of engineers, the vision of architects, nor the dreams of school administrators that have created the character of school plants. Rather, the character and design of the school buildings have been dictated by the educational program.¹ Undoubtedly, there is a great deal of truth in what they say, for school buildings have a long life. In many instances it is used 40 or 50 years or longer. During such a span of time, even in the least progressive school systems, remarkable changes are made in the educational program. Even with the best planning, school buildings tend to be less flexible than both curriculum and instructional methods.

Function and Form

The methods of instruction, philosophy of teaching and curriculum of content determine the character of the school plant for a long period of time. To note the effects that educational program has had on the school plants, look back for a few years and note the curriculum changes and their effects on the school construction. Many people may remember

¹Planning American School Building. Report of the American Association of School Administration, School Building Commission. 1960. p. 3.

the time when the agriculture became a part of the instructional program in the secondary school. With the vocational agriculture, there was added to the school plant the farm shop which became a part of the educational program.

In that period school plants assumed new character and proportion with the addition of homemaking laboratories, unit for teaching commercial work, machine shops, facilities for mechanical drawing and trade education. Health services with suitable facilities for physical examinations of pupils, space for school nurse, and space for dental hygienist have been added.

The adult education program has developed as an integral part of the community educational program within a short period of time. In addition to this, there are many informal meetings when groups of people gather in the school building for recreational activities in art and sports as well as for the consideration of common problem facing the community.

The Mott program of Flint, Michigan,¹ is the remarkable phase which may illustrate the wide range of educational activities that may be carried on in the school building. The community school program has become so widely recognized and accepted that in any well-planned school building, a careful study is given to the designing and location of units that are to be used for those activities. Hot-lunch program has become one of the basic elements of the school plant. This program is to include not only

¹The Journal of Educational Sociology. December 1959, p. 149.

planning the cafeteria but also requires a plan to be made for receiving, storing, and preparing food.

All old and newly established parts of the curriculum require newer types of facilities as new content is added to the courses of study and as research gives further insight into intricate processes of teaching and learning. Not long ago the pupil was considered as a charge and the function of the elementary school was to bring him to become an adult as soon as possible. The secondary school is to prepare him for college work through the academic study of the liberal arts. Teaching and learning were formal.

The formal teaching concept was reflected by the school architecture. Due to the fact that the human rights and children's needs were not given the required consideration, the schools were almost uniformly, uncomfortable and depressing. In plan they were as formal as the education process. The classrooms were arranged so that the pupils were seated in stiff rows facing the teacher's raised platform from which issued all knowledge.

Since early 1900's forces were at work to change this way of education. The attitude now is changed, the pupil is considered as a real person with human rights and needs which must be respected. The elementary education is to help the child to become socially adjusted and to make him literate and be provided with basic knowledge. The secondary education is to help pupils to be prepared for what they are going to do and to make them responsible citizens as well as to prepare them for the college work. Teaching became relatively informal and democratic.

School architecture today tries to reflect this new education concept.

As the pupil is being considered a real person with his own rights and needs, schools are more comfortable and cheerful. In plan they are flexible and informal. In appearance they tend to fit the pupil's emotional needs.

Elementary Education—Its Aims and Process

There are those historical developments which have determined the general character of the present public school system in the United States.

The first of these developments is the realization of the human rights and needs of the pupil. The result of this has been the change in aims of education beginning in the elementary school. The aim has been broadened and became more social in nature. The education of today is to develop the child and to make him a responsible and self-reliant social being. The education of today is to develop in the child an understanding and appreciation of the democracy besides the purpose of making him literate by having basic knowledge.

The second development is that of shifting from autocratic, sit-and-learn methods to a variety of less formal methods in which the children learn by doing in a number of different group relationships with their activities directly related to home and family life.

The third development is the close relationship of the school to the community. The new attitude is that the school is an extension of the community. This relationship between the community and the school has brought the various community activities into the school building.

These three historical developments have caused changes in curricula and methods of teaching. The most influential force on the school

architecture is the movement toward a fundamentally different type of curriculum which is based upon the idea of learning by doing. The new type of curriculum requires great changes in design and layout as well as space and equipment requirements.¹

Self-Contained Classroom

The change in aims of education and methods of teaching has not only affected the type of curriculum, but has also turned the school from the departmental plan to a self-contained classroom unit. Educators are not yet in agreement as to which is best, but self-contained classroom seems to be more popular. Many educators think that the self-contained classroom is not capable of meeting all the child's needs. Some other facilities are required to give the children the opportunities not afforded by the self-contained classroom. Caswell and Foshay² suggest that a group of service centers—representing persons, materials, and equipments be provided to support the general classroom, and they suggest five such centers as library, laboratory-shop, art studio, music center, gymnasium, and health center. These centers should be available to each teacher when the class activities require their use. The pupil may go to any part of the service center of the school when he has a defined purpose determined by the teacher of the self-contained classroom. If such an idea is to be carried out in the elementary school then a

¹William W. Caudill. *Toward Better School Design*. Published by F. W. Dodge Corporation, N. Y., 1954. p. 24.

²Ibid., p. 28.

difficult architectural problem may be involved and requires a solution.

The self-contained classroom is clear enough in definition, and it is in general, cheerful and informal. Its shape is different than the regular classroom and it is bigger in area. It may extend to include part of the outdoor to become bigger and more informal. It has individual lockers for all the pupils. It has additional storage and more equipment and supplies. The self-contained classroom may share with another classroom a piano and other instruments. It has its own toilets and plenty of chalkboard and tackboard surface.

Classroom--Shape and Space

Some architects like the square type classroom. Other architects say that the conventional rectangular classroom will serve the formal program as well as the informal activity program. Other planners suggest that the L-shape classroom best suits the educational process. There are strong arguments for the circle, the pentagon, the octagon, the hexagon, and the parallelogram.

The arguments on size of the classroom run from 600 sq. ft. to 1200 sq. ft.¹ The only way that the planner can tell what the size and shapes of a classroom should be is to know (1) what kind of activities will take place within this room and (2) what is the number of pupils that this room is to house. Then the planner will be able to formulate a functional shape and size for the classroom.

The architect would rather have a statement of the activities which

¹Ibid., p. 28.

will take place in the classroom than to be limited by certain shape and size. When the architect is limited by specific shape and size he will lose part of his control on the design of the structure and over the construction cost. In order to reach a reasonable solution, the educator should take the lead in specifying the classroom function and that the architect should take the lead in specifying the architectural shape to fit that function. Architects and educators should work together because their responsibilities overlap and because form should follow function.

In order to establish a basis for determining how large and what shape the classroom should be, the architectural staff of the Texas Engineering Experiment Station, together with L. S. Richardson, superintendent of the A & M Consolidated School District, College Station, Texas, concluded an experiment involving a first grade class. The researchers worked with Mrs. Betty Moon, the first grade teacher. They established the number of pupils—in this case, thirty—which fixed the first of the two variables. Mrs. Moon was interviewed by the researchers as to the kind of activities which would take place in her classroom.

A plan was formed to record the size and shape of each of the activities which might be carried on during a week. This was done by photography, and the results are shown in the following Plates.

Classroom Seating Arrangement¹

Plate V, Fig. 1, shows the conventional formal seating arrangement. Even this type of seating arrangement is related to the old teaching method,

¹Ibid., p. 29.

there are some occasions suited to this arrangement. It is good during tests and writing drills. It takes little space, that is, 20 ft. by 15 ft. or 10 sq. ft. per pupil.

Plate V, Fig. 2, shows that the pupils are working in groups of six, and the furniture was arranged to serve the purpose. This kind of arrangement is used quite often. Some of the groups may be reading and others may be given some writing. This arrangement takes more space than the arrangement in Plate V, Fig. 1.

Plate VI, Fig. 1, shows another pupil group arrangement, the teacher at the small reference table with two students. The large group is having a committee meeting to see how the class could build a model of a home as a part of the current unit study. The other group is studying what will go into the home.

Plate VI, Fig. 2, shows that all the pupils with their teacher gathered in an informal arrangement to discuss a special subject. In this arrangement each pupil has the opportunity of talking and discussing as well as of being near, every other member of the group. It is democracy in action as they sit altogether with their teacher.

Plate VII, Fig. 1, shows that the class area is cleared of the furniture and pupils are using this time for folk dancing. The space used now is rather small.

Plate VII, Fig. 2, shows that the pupils are looking at a movie as a visual aid. The space here became rather small, less than 7 sq. ft. per pupil.

Plate VIII, Fig. 1, shows that the pupils are having a little play. Two of the youngsters are seen performing on the stage. Educators believe

that a little dramatization like this one is a wonderful learning medium as well as a great opportunity for self-expression.

Plate VIII, Fig. 2, shows that pupils are working in different projects in art and the class was arranged for these activities.

Plate IX, Fig. 1, shows that the class is engaged in building a model for a house. The group of boys is building the roof and another group of girls is making the curtains. The other groups are performing other work related to the project. This kind of activity requires a lot of space as can be shown.

Plate IX, Fig. 2, shows that a large table was arranged for group study and activity. One of the pupils is giving a demonstration at the chalkboard. The use of tables in this manner provide facilities for innumerable learning activities.

Plate I shows that if we superimpose all of the diagrams of the ten classroom arrangements, the composite picture of all these activities will come within an area of 26 ft. by 28 ft. This is very close to a square or circle. Probably this is the reason why some planners and architects believe that square classroom to be the best. But if for structural reasons, one side has to be squeezed down a little, it would not hurt the educational process very much. This particular situation studied Moon's class, with her teaching methods and her thirty pupils. A classroom space approaching a square seems to be adequate. But this does not mean that all the classrooms should take this exact shape. There will be some space in which to place the desks and chairs to make room for some of the pupil's activities. When we add the spaces for these to the Mrs. Moon's classroom space, the classroom probably could take any

shape--square, L-shape, circular, hexagonal, and so on. So the furniture and equipment make the difference. Arrangement of the furniture and equipment help to determine the shape of the classroom.

The teaching activities take up a space of 26 feet by 28 feet, or about 25 square feet per pupil. But when added to the space required to store the equipment and furniture, this figure will go up. The recommended space of 35 sq. ft. per pupil proposed by W. W. Caudill in 1941 probably still is considered as good as any other figure to use for an activity type classroom.¹ The conclusions based on this study of classroom size and shapes are as follows:

The classroom should have at least 35 sq. ft. per pupil to meet his activity program, the shape to be determined by the furniture and equipment arrangement and storage facilities.

The study indicated that the width of the main teaching space should be set. It seems that 26 ft. is a reasonable figure and possibly it could be as low as 24 ft. but not lower than that. These studies and measurements were made on a first grade class. A higher grade group would take more space for the reason that the children are bigger and they need more space to move in and larger furniture and equipment to use. For that reason the 35 sq. ft. per pupil should be considered a minimum. The space study should be carried on for other spaces. A similar study should be done on eating spaces, assembly and recreational areas.

¹Ibid., p. 30.

EXPLANATION OF PLATE V

Plate V, Fig. 1, shows the conventional formal seating arrangement. It takes little space, that is, 20 feet by 15 feet.

Plate V, Fig. 2, shows that the pupils are working in groups of six, and the furniture was arranged to serve the purpose. The space required for this arrangement is 15 feet by 20 feet. (Taken from William M. Caudill, Toward Better School Design, F. W. Dodge Corporation, N. Y., 1954. p. 30.)

PLATE V

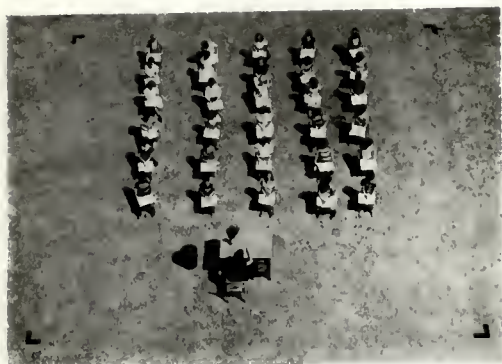


Fig. 1

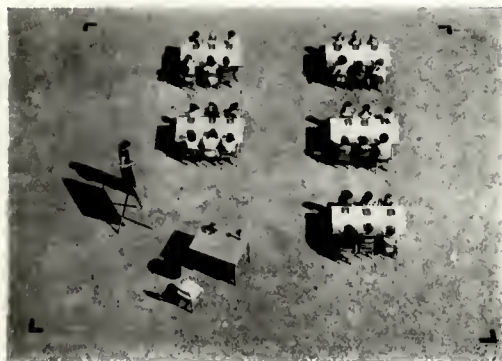
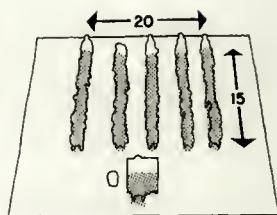
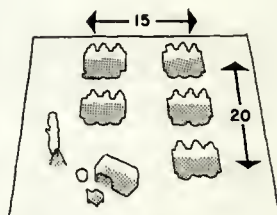


Fig. 2



EXPLANATION OF PLATE VI

Plate VI, Fig. 1, shows another arrangement. The pupils are working in two groups of different sizes. The space required in this case is 15 feet by 20 feet.

Plate VI, Fig. 2, shows that all the pupils with their teacher gathered in an informal arrangement to discuss a special subject. The space required in this case is 20 feet by 20 feet. (Taken from William M. Caudill, Toward Better School Design, F. W. Dodge Corporation, N. Y., 1954. p. 31.)

PLATE VI

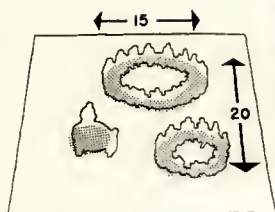


Fig. 1

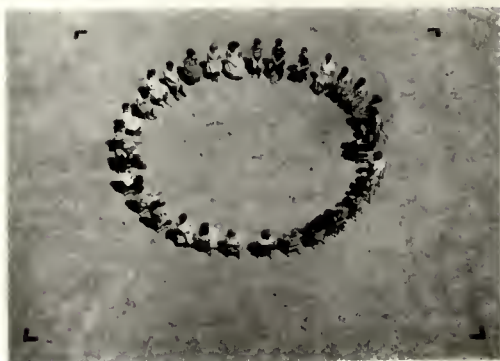
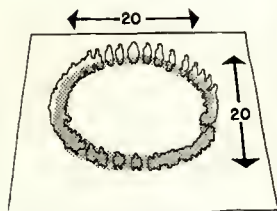


Fig. 2

EXPLANATION OF PLATE VII

Plate VII, Fig. 1, shows that the class area is cleared of the furniture and the pupils are using this time for folk dancing. The space required for this activity is 15 feet by 15 feet.

Plate VII, Fig. 2, shows that the pupils are looking at a movie as a visual aid. The space required is 10 feet by 18 feet. (Taken from William M. Caudill, Toward Better School Design, F. W. Dodge Corporation, N. Y., 1954. p. 32.)

PLATE VII



Fig. 1

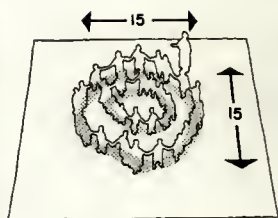
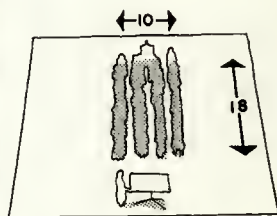


Fig. 2



EXPLANATION OF PLATE VIII

Plate VIII, Fig. 1, shows that the pupils are having a little play. The space required for this activity is 20 feet by 20 feet.

Plate VIII, Fig. 2, shows that the pupils are working in different projects in art. The space required for this activity is 15 feet by 25 feet. (Taken from William M. Caudill, Toward Better School Design, F. W. Dodge Corporation, N. Y., 1954. p. 33.)

PLATE VIII

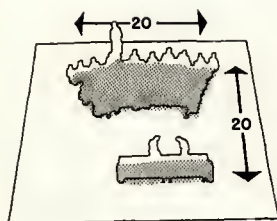


Fig. 1

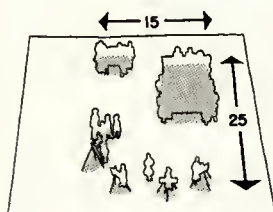


Fig. 2

EXPLANATION OF PLATE IX

Plate IX, Fig. 1, shows that the class is engaged in building a model. The space required for this activity is 25 feet by 20 feet.

Plate IX, Fig. 2, shows that a large table was arranged for group study and activity. The space required for this activity is 12 feet by 15 feet. (Taken from William M. Caudill, Toward Better School Design, F. W. Dodge Corporation, N. Y., 1954. p. 34.)

PLATE IX



Fig. 1

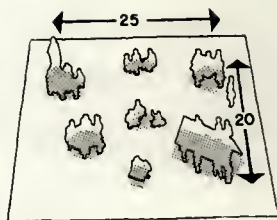
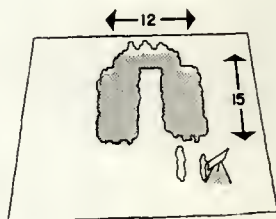


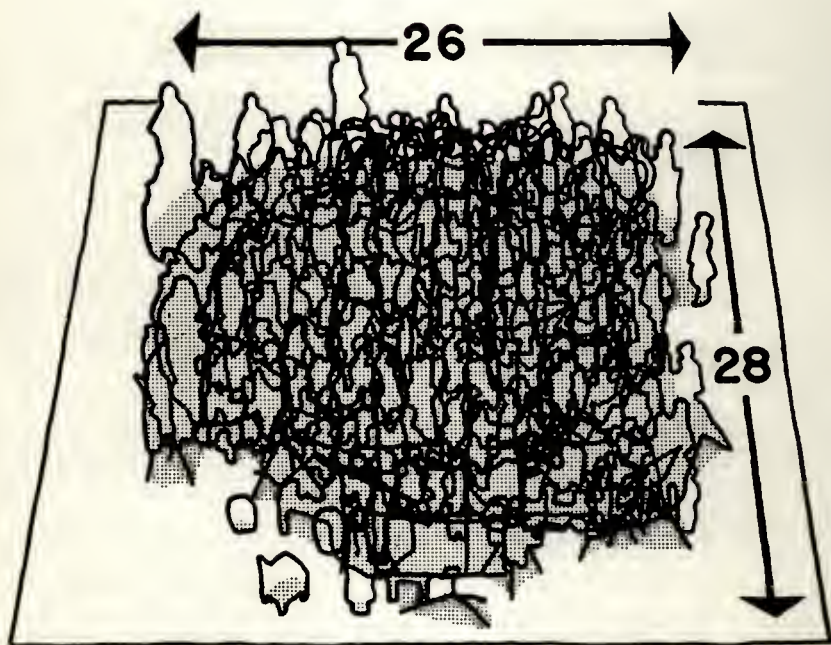
Fig. 2



EXPLANATION OF PLATE X

This plate illustrates the area required for the ten classroom arrangements. The composite picture of all these activities will come within an area of 26 feet by 28 feet. (Taken from William M. Caudill, Toward Better School Design, F. W. Dodge Corporation, N. Y., 1954. p. 35.)

PLATE X



Secondary Education--Its Aims and Process

The educators realize that one student out of five or six goes to college,¹ and they feel strong responsibility toward the great majority of the students who do not. Now the secondary school tries to prepare students to live and work. The responsibility of the secondary school is to meet the educational needs for the students and to make them active members in their community. In a booklet called Planning for American Youths, the National Association of Secondary School Principals² lists the needs as:

1. Society needs to be organized and governed so all people live in peace and stability.
2. Society needs a free economic system which provides the basic needs.
3. Society needs to be cooperative to reach agreements for planning.
4. Society needs to organize business and labor to share the benefit of their production.
5. Society needs to provide opportunities and security for each individual.
6. Society needs to develop the principle of democracy and to protect individual freedom.
7. Society needs to provide equal opportunities and education.
8. Society needs to protect its welfare from illegal practices.

¹Ibid., p. 32.

²Ibid., p. 33.

9. Society needs to protect its natural resources so that they may be not wasted.

10. Society needs to protect its social, moral, and spiritual values.

It is the school's responsibility to see that each boy and girl should be aware of his responsibility to understand and to work effectively with these needs. It is also the school's responsibility to meet the individual needs of youths to make them capable to deal with the common problems of the society. These needs of youth are listed in Planning for American Youth as:¹

1. All youth needs to develop skills and understandings and attitudes to make intelligent and protective workers.
2. All youth needs to develop and maintain good health.
3. All youth need to understand their rights and duties.
4. All youth need to understand the significance of the family to the individual and society and how the family life can be successful.
5. All youth need to know how to purchase and use goods and services intelligently.
6. All youth need to understand the methods of science and its influence on the human life.
7. All youth need to develop their abilities to understand and to appreciate beauty, literature, art, music, and nature.
8. All youth need to develop respect to other people and be able to live with them cooperatively.

¹Ibid., p. 35.

9. All youth need to learn to use their leisure well and useful.

10. All youth need to be able to think and understand.

The document listing these ten imperative needs of youth is an instrument that can be used in planning the building as well as planning the curriculum. In planning of secondary schools, these needs of youth represent a base line from which to work. Curriculums will change and will make inflexible school buildings out of date, but those needs of youth will remain for some time. In the opinion of Paul E. Elicker, Executive Secretary of the National Association of Secondary School Principals said:¹

Although I cannot place myself in the role of a prophet, I am inclined to think that these needs are so sound and so general that they will be accepted for a rather long time. There may be some slight and minor changes in them, but I believe that their acceptance has been so firm that they will be before our school people for quite a number of years.

The Youth Needs and Architecture²

The youth needs show that boys and girls of secondary school age must learn to work and play together. The list of needs suggest that in order to make good citizens, the secondary school students must learn how to solve their problems intelligently. In other words, the secondary school plant should be a social and cultural as well as a recreational center. This means that the school building should be so attractive and equipped and arranged so that the students would like to spend most of their time in it.

¹Ibid., p. 35.

²Ibid., p. 37.

The school planner should set down a statement containing the prominent considerations for the design of the school, a statement offering a real basis for his work. These considerations are:

1. The secondary school students will continue to grow, and the courses will continue to change; therefore the school design should be flexible and can be expanded.
2. In each individual subject of study there will be a continuous change in teaching techniques; therefore each classroom or laboratory should design for efficient adaptations to these changes.
3. The students will spend more than an hour a day in the halls; therefore, all circulation areas and halls should be designed to achieve the aim of the educational program.
4. The best educational program emphasizes communication among students as well as communication between teacher and his students. Therefore class areas should be flexible for seating arrangement.
5. The school will be used for community education and recreation; therefore the school should be designed to facilitate community use.
6. The school should be a social center for its student; therefore the school should be designed and equipped in such a way to attract the student and to be considered as the most desirable in the community to learn and play.

A Common Design Approach of Elementary and Secondary School

Educators think that there are certain basic similarities and common ground between elementary and secondary schools. As one very well-received and highly noted source put it,

Historically the elementary school is the common school. Only in the present century has the theory that the secondary school should provide an equalized educational opportunity for all been widely accepted as a basis for action. Until this occurred, the secondary school was separated from the elementary by a fundamental difference in philosophy. At present the pressing problem of the secondary school is precisely in this change of philosophy, for its purpose is to provide an appropriate education for all youth, an education centered in the role of youth, as citizens, homemakers, and workers.

This problem should bring the two schools together. In brief, here is a common dominating purpose operating for twelve years of elementary and secondary education. Secondary schools are moving to become a part of common school system of America, in fact as well as in theory. If this is to be accomplished, the gap between elementary and secondary schools should be eliminated altogether. Elementary school graduations, secondary school selection of students, marked differences in curriculum organization between the last grade of the elementary school and the first year of high school, major sequences of the curriculum, separate standards of preparation and recommendation for teachers, all these differentiating factors should be eliminated and the elementary and secondary school drawn together in the closest possible relationship, forming a twelve-year continuous program of education. Elementary schools and secondary schools should be put in convenient units for administration and organization of program.¹

Elementary and secondary schools are moving closer and if they have a basic similarity between them, then the functional architecture which serves the elementary school level should equally serve the secondary school level, and the approach to design of both schools should be common. There are certain factors in both schools which require common design

¹Ibid., p. 52.

approach. These factors are:

1. Both schools are occupied by children having the same physical and emotional needs.
2. Both schools are occupied by children being educated to meet the society and youth needs.
3. Both structure will see partial or specific changes due to the change in the process of education. This change will require that both school design should be flexible.

The design which meets the needs of children, and which provides flexibility to meet the changing in educational process, will make a good elementary school planning as well as it does for a secondary school.

CHAPTER V

BASIC REQUIREMENTS FOR SARIFA NEIGHBORHOOD

The Sarifa neighborhood is that development which adopts all the public facilities and conditions required by the low income families in Iraq for their comfort and proper living. It is the minimum planning unit of housing development in which the Housing Directorate General in Iraq is engaged. It is the housing development for the rural people who migrate to the city of Baghdad.

It is the area within which residences may all share the common services, social activities and facilities required in the vicinity of the dwelling. It is the housing environment with the smallest geographic unit which includes these basic facilities and conditions; a unit which will permit organization of physical surroundings to eliminate inconveniences and hazards; and which will provide a physical form suitable for the full development of community life. For the planning purposes we will assume that the extent of the Sarifa Neighborhood will be determined by the service area of an elementary school.¹

The existence of a unified neighborhood is a strong force for stability and development of individual and family life. To retain this unity, the Sarifa Neighborhood should be physically self-contained in respect to most of the daily necessities of life. It will be obviously dependent on the city of Baghdad for its basic employment, transportation

¹Arthur B. Gallion and Simon Eisner. The Urban Pattern. D. Van Nostrand Company, Inc., Princeton, New Jersey, 1963. p. 252.

and community-wide cultural and social facilities.

The Sarifa Neighborhood concept should not imply that adequate housing consists merely of the individual homes, but that all the residential and community facilities and services required for the shelters, health, and convenience of the residents.

Several types of elements, therefore, comprise the housing environment, which are as follows:¹

1. Residential facilities which include houses and immediate spaces around.
2. Neighborhood community center: educational, health, social, cultural, recreational, and shopping facilities, used by the normal family every day.
3. Utilities and services: water supply, light, gas, telephone, storm water, and sewage disposal; fire protection and police service.
4. Circulation of persons and goods. These consist of walks in general due to the limitation of private cars, and also limited streets for services and emergency use only.

Walter Gropius in his book "Rebuilding our Communities" stressed that building the neighborhood community center is more urgent than building the housing itself. Those centers will form "a cultural breeding ground" which enable people of the neighborhood to attain status within their community.²

¹Planning the Neighborhood. The American Public Health Association Committee on Hygiene of Housing. 1960. p. 2.

²Walter Gropius. Rebuilding Our Communities. 1945. p. 54.

Area and Population

The area and population of 5,850 persons which can be served by an elementary school form a reasonable basis for the size of the Sarifa Neighborhood. The neighborhood size would be limited by the accessibility to the school. The school would be within a walking distance of each dwelling or about one-half mile. The Sarifa Neighborhood with a centrally located school will cover about 280 acres.

Boundaries

The existence of logical boundaries for each Sarifa Neighborhood unit is more significant in determining its actual area than consideration of population or overall dimensions. In this case the "Army Canal" which has been built recently will act as one boundary for the Sarifa Neighborhood, as well as a dividing line from the city of Baghdad. This neighborhood should be planned in relation to the city of Baghdad.

Assumed Family Size and Composition

The average family size and age distribution are given in Table 1. The assumption was taken from the American Standards,¹ but it was modified to suit and represent the Sarifa people's conditions. This table will give a base line for our planning purposes.

In dealing with average age distributions, it must be realized that this composition should be modified when the Iraqi statistics are available.

¹Planning the Neighborhood, op. cit., p. 4.

Table 1. Assumed family size and age distribution: Selected Data

<hr/>		
1) Average size of family	5.2 persons ¹	
2) Age distribution of children served by neighborhood school		
	Children per 1000 persons	Children per family
Kindergarten		
5 years	19	0.10
Six grade elementary school		
6 through 11 years	122	0.64
Children by play age group		
2 1/2 through 5 years	74	0.38
Playground		
6 through 13 years	165	0.86
<hr/>		

Availability of Sanitary and Protective Services²

Water Supply and Sanitary Sewage Disposal. It is necessary to have adequate amount and healthy water supply. It is important also to have the collection and ultimate disposal of human excreta without sanitary hazard.

Removal of Refuse. It is important that the site shall have facilities for the removal of domestic wastes. Garbage should be collected daily by the municipality of Baghdad (Amanat Alasima).

¹Demographic Yearbook 1962. United Nations. p. 412.

²Planning the Neighborhood, op. cit., p. 5.

Power, Fuel, and Communication. Electricity is important for every home. The Directorate General of Housing should consult the Baghdad Electricity Department for the standard they require.

Telephones can be extended to the site. Public telephones can be installed in special places for public and emergency use.

Fire and Police Protection

The water requirement for fire fighting shall set the peak load demand for the community supply. Availability of fire-fighting crews and equipment will depend on the Baghdad Fire Department.

The police protection will be offered by Baghdad Police Department as it is usually the case in all the suburbs of Baghdad. The police section of this will be offered a sufficient office space in the "Civic Center" building of this neighborhood.

Access to Community Facilities Outside the Sarifa Neighborhood

Certain facilities which are needed by the residents are not available in this neighborhood. These include the center of employment, secondary school, major shopping center and specialized health center and similar features which can be found in Baghdad. Therefore, availability of transportation and standards of access to extra-neighborhood facilities are to be considered.

Public Transit. All residents of the Sarifa neighborhood development area should have access to adequate public transportation to central business area and places of work in Baghdad. It is desirable to walk only 1/4 to 1/2 mile to the nearest stop of public buses which connect

this neighborhood and other parts of the city of Baghdad.¹

Pedestrian Walks. Walks are to be considered the major way of circulation in this neighborhood. The residents are very low income people and have no private cars. They depend on the public transportation to go to work or to business. The walk will be a major access to the community center. Walks will be lighted.

Essential City Facilities

Secondary School. This problem should be discussed with educational authorities to determine whether existing secondary schools could accommodate the anticipated student body.

Because the huge number of Arab people and the sincere desire of the government of Iraq to provide residences for them, it is obvious that several neighborhoods will be established, and secondary schools will be needed.

N. L. Engelhardt, Jr., recommends that the neighborhood unit include the elementary school. Two of such units will support an intermediate school (junior high-school). Four of these units will support a secondary (high school).²

Urban Center. In addition to the facilities to be established in this neighborhood, the people will depend on Baghdad for their employment, major medical care, cultural and entertainment centers, and the departments of the government. These facilities should be available to the site by

¹Planning the Neighborhood, op. cit., p. 9.

²Gallion and Eisner, op. cit., p. 252.

automobile routes and public transit.

Outdoor Recreation. In addition to the playground provided in this neighborhood, the people should have access to a wider range of outdoor recreation facilities, such as are provided by major city parks and athletic play fields in the city of Baghdad.

Health Services. Sarifa people should have a convenient access to the central hospital of Baghdad and to participating physicians in case of major medical care. Plates XI, XII and XIII show the general layout of the Sarifa Neighborhood.

EXPLANATION OF PLATE XI

This plate illustrates the general layout of the Sarifa Neighborhood. It indicates the different residential units, the community center and circulation system. This plate is photo of the neighborhood model built to scale of 1" = 100' (size approximately 35"x48").

PLATE XI



EXPLANATION OF PLATE XII

This plate is a photograph of the same model of the neighborhood, taken from the west direction, where the army canal is located.

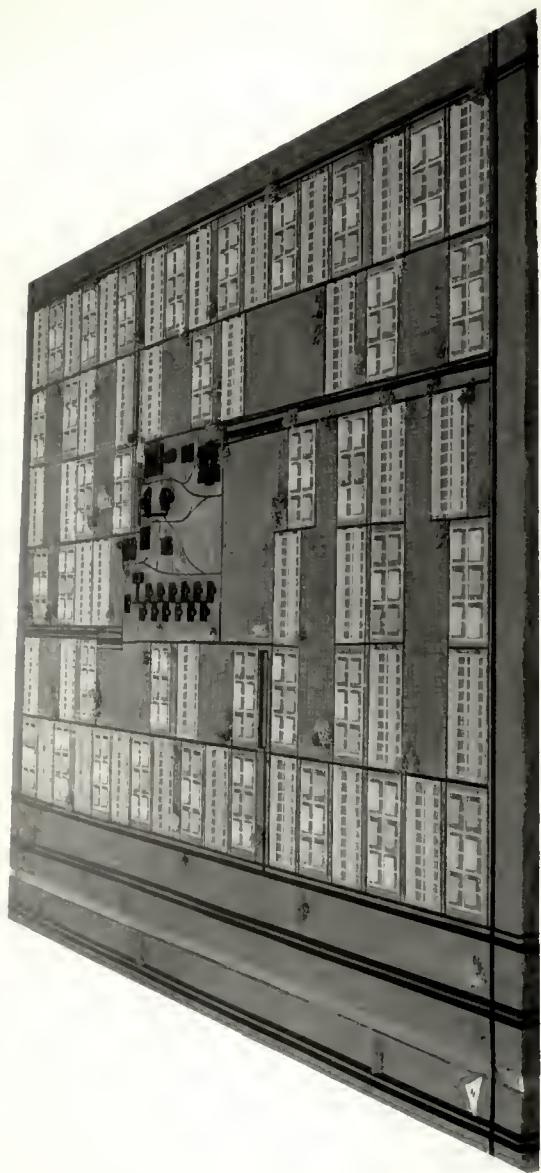
PLATE XII



EXPLANATION OF PLATE XIII

This plate is a photograph of the same mode of the neighborhood, taken from the south direction.

PLATE XIII



CHAPTER VI

DEVELOPMENT OF LAND, UTILITIES AND SERVICES

General Consideration

The development of land for Sarifa housing implies not only grading and planting of the surface to make it free from accident hazards, but involves also the provision of surface and underground utilities.

The layout of utilities is a highly technical problem, requiring the best thought of the different governmental departments engaged in the development, and their recommendations coordinated at all stages with the work of the planning division of the Directorate General of Housing. Sewage disposal and storm water sewers should be laid out as a first step in constructing this neighborhood.

Grading and Surface Drainage for Sarifa Housing

Proper grading and drainage of the site are essential to health and safety. Unless storm water is effectively drained from the site, it may damage buildings, inundate roads, walks or recreation areas, disrupt utilities and essential services.

Planting is usually the cheapest and most practical means of preventing erosion of land. Generous use of planting, particularly shrubs and ground cover, increases the absorption of storm water.

Grading for Removal of Storm Water. Adequate continuous slopes should be provided to all parts of the site for effective surface drainage of all rain water.

Drainage from walks or other paved areas onto grass area is undesirable. Sloping of lawns and planted areas towards streets, walks and other surface areas is recommended.

Provision of Storm Sewers. The removal of storm water requires a system of drains in addition to proper grading of the site. Provision of adequate drains and storm sewer is particularly important in this neighborhood site because it is clay soil and poor absorption capacity. Separate storm and sanitary sewers are preferable. Separate sewers are cheaper to maintain, and disposal works can be scaled down in size if domestic wastes only are to be treated.

Drains and inlets should be spaced so that alternative inlets may receive runoff where the stoppage of a simple inlet may cause flooding of buildings or other serious damage. Catch basins should be designed to exclude debris from storm sewer, and should be readily accessible for clearing and mosquito-suppressive treatment.

The storm drainage system, should have sufficient capacity to carry the anticipated runoff. The amount of runoff is a function of the rate of rainfall and the absorptive capacity of the soil.

Water Supply

General Requirements. An adequate supply of safe and suitable water for drinking delivered under pressure within the dwellings, is essential for healthful housing. Every building should have connection to a water supply which usually is operated by the government as a public service.

Quantity. The water supply should be adequate to meet the needs of all residents for domestic consumption, at a cost which will not

discourage desirable use, and for fire-fighting.

As the requirements in rate of supply for fire protection are far in excess of those for domestic consumption a domestic supply of 50-100 gallons per day per person is adequate. Compliance with fire-protection standards will insure an ample rate of supply for domestic consumption. Firefighting standards established by the U. S. National Board of Fire-Underwriters may be applied for Iraq until an Iraqi standard may be established. In general, it is necessary to provide for several hours of continuous flow at rates and pressures which are determined by available fire-fighting equipment and the combustibility of structure.¹

There should be assurance that the water supply will be safe and potable at all times. The standards commonly used for water supplies are those of the Ministry of Health of Iraq. Although the chemical and physical properties of water are important, bacteriological quality is of paramount significance from the standpoint of public health. In this satisfactory conditions are present only if they conform to standards of the Ministry of Health of Iraq.

Layout of Distribution System.² Pressure of the system should be adequate to provide water in sufficient volume, with a pressure of at least 15 pounds per square inch at the top of the highest structures in the neighborhood. All mains should be of sufficient size to insure adequate flow. Mains for fire-fighting should be 6 inches minimum.

¹Planning the Neighborhood. The American Public Health Association Committee on the Hygiene of Housing, 1960. p. 14

²Ibid., p. 16.

Water lines should be laid at a distance from sewer lines to prevent possible contamination of the water supply. At least 10 feet of horizontal separation is recommended. Water lines must be at higher elevation than adjacent sewers to prevent possible contamination by leakage from the latter. The number of water and sewers crossing should be minimized.

Sewage Disposal for Sarifa Housing

Layout of Sanitary Sewers.¹ Sanitary sewers should flow by gravity according to gradients which will produce adequate velocity of flow. All sewers should be designed to provide self-cleansing velocities, or they should be equipped with head-tanks for periodic flushing. A velocity of at least 2 feet per second is generally recommended. Standby pumping equipment should be provided in case of emergencies.

Sewers should be laid at a sufficient depth to prevent freezing.

In case water and sewer lines must cross, sewers should be of cast iron or other watertight construction within 10 feet of water lines. Sewer lines should not be laid in the same trench as water lines. Sewer lines should be laid at greater depth than water lines.

Sanitary sewers, main and house connections, should be of sufficient size. House connections should be not less than 4 inches in diameter, short laterals 6 inches, and all other lines 8 inches or more depending on the flow.

Any faults in design of the collection system, such as inadequate provision for handling gases, faulty gradient or other obstacles to

¹Ibid., p. 18.

proper flow, failure to provide for manholes and cleanouts or inadequate capacity may be the direct cause of health hazards.

Removal of Refuses

General Requirements. The solid wastes of the community which are called refuse are classified as:

- 1) Garbage: kitchen matter consisting of animal and vegetable matter.
- 2) Combustible rubbish: paper, rags, floor sweepings, etc.
- 3) Noncombustible rubbish: metals (cans), glass (bottles), ashes.

Poorly handled refuse affects the appearance of the development.

Adequate provision should be made for the storage collection of garbage and other wastes so that these will be not health hazards, and so that breeding places of rodents and insects are not created.

The area that is selected for the Sarifa neighborhood should be served by daily collection of garbage and refuse. The collection and disposal of wastes will involve the following steps:

1. Removal from the building to a temporary storage can.
2. Collection.
3. Final disposal.

Power, Fuel, and Communications

Electrical Distribution System. Electricity is considered to be an essential utility. Producers of domestic electrical equipment usually design their units for use on 220-volt alternating current systems. The rated load on the power lines provided within the development should be based on the coordination work of Housing Department and Baghdad Electricity

Department.

Bottled Gas System. The gas will be distributed by cans for individual residences in this neighborhood as it is usually the way in Baghdad.

Telephone and Other Communication Systems. Telephones in each dwelling unit are desirable, but not essential. However, a telephone system should be provided in this development. Public telephones may be enclosed in booths at convenient places.

Planting and Landscape Design

In the Sarifa Neighborhood, the skillful treatment of vegetation can play an important role: aesthetic, utilitarian, and hygienic.

For creation of a pleasant atmosphere and to give a feeling of satisfaction, the appearance of residential areas cannot be considered satisfactory unless there is some growing plant life visible from all dwellings. This is not only an aesthetic consideration but a basic psychological need.

Planting can often help in reducing the level of noises to which residents are subject. It is also desirable to employ such planting to suppress dust. Creation of pleasant atmosphere by planting helps to retain the same atmosphere these people were used to in rural areas.

To accomplish this end we have to do the following:

1. Plant trees around each of the residential units.
2. Plant trees around the neighborhood community facilities.

3. Plantings should be provided around the shopping center to protect nearby residences from noises.

4. Plant grass and bushes to surround the walks and other circulation facilities.

CHAPTER VII

PLANNING FOR RESIDENTIAL FACILITIES

General Considerations

Definition of Residential Facilities. Residential facilities are the structures and adjoining land devoted to residential and directly accessory services.

Governing Factors in Residential Site Planning. The residential facilities are closely related to other elements of the neighborhood plan such as circulation layout and the location of school and other community facilities. Therefore, residential facilities can not be divorced from the general neighborhood plan. The site plan will provide:

- a) Light and air in the buildings.
- b) Outdoor space for daily family needs.
- c) Protection against noise.
- d) Safety from accidents and fire.

Classification of Sarifa Dwelling Types. The Sarifa Neighborhood will consist of two types of housing:

Semidetached--Each two houses will have part of wall in common for both structures as is shown in Plate XIV.

Attached (row)--Both side walls are common except the end. In the Sarifa row houses there will be a covered passageway to the backyards at the end of each house as is shown in Plates XV and XVI.

Attached (row house) is recommended for Sarifa Housing for economical reasons. By eliminating sideyards, the number of units will increase. The

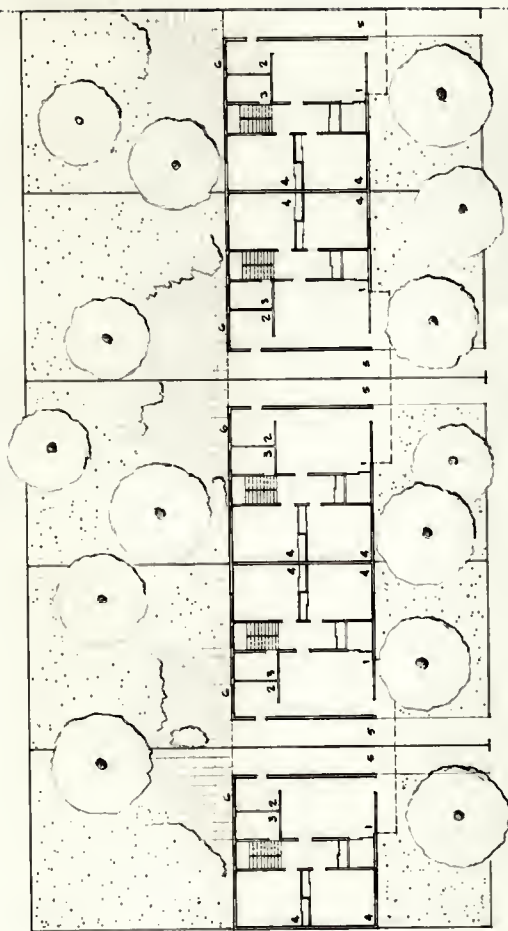
EXPLANATION OF PLATE XIV

This plate illustrates five units of the row houses.
Each row house is provided with a private yard. (Scale in feet)

The numbers indicate the following:

1. Living-Dining Room
2. Kitchen
3. Bath
4. Bedroom
5. Covered Passageway
6. Out-door Living Area

PLATE XIV



SCALE
0 5 10 15

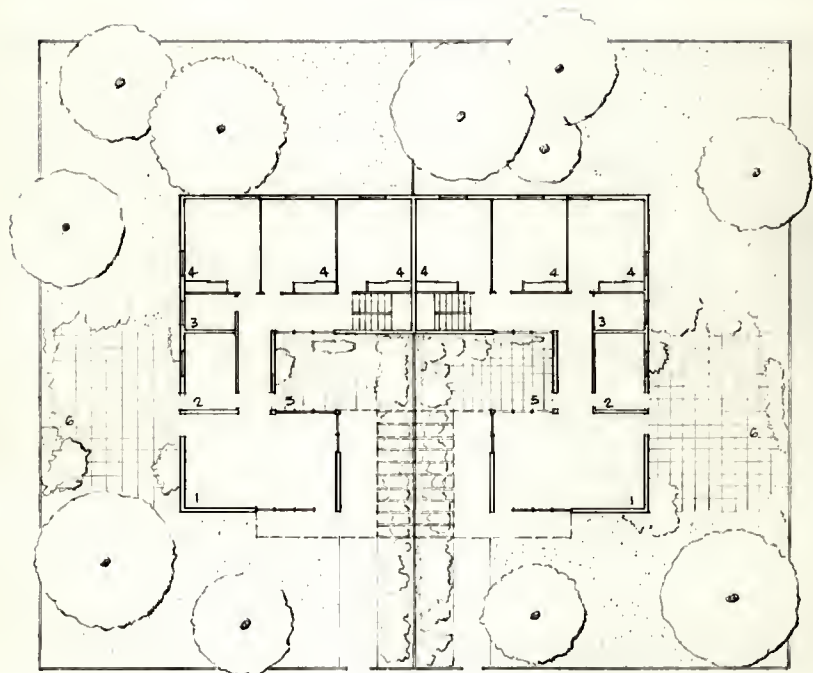
EXPLANATION OF PLATE XV

This plate illustrates two units of semidetached houses of three bedroom each. (Scale in feet)

The numbers indicate the following:

1. Living-Dining Room
2. Kitchen
3. Bath
4. Bedroom
5. Interior Court Yard
6. Out-door Living Area

PLATE XV



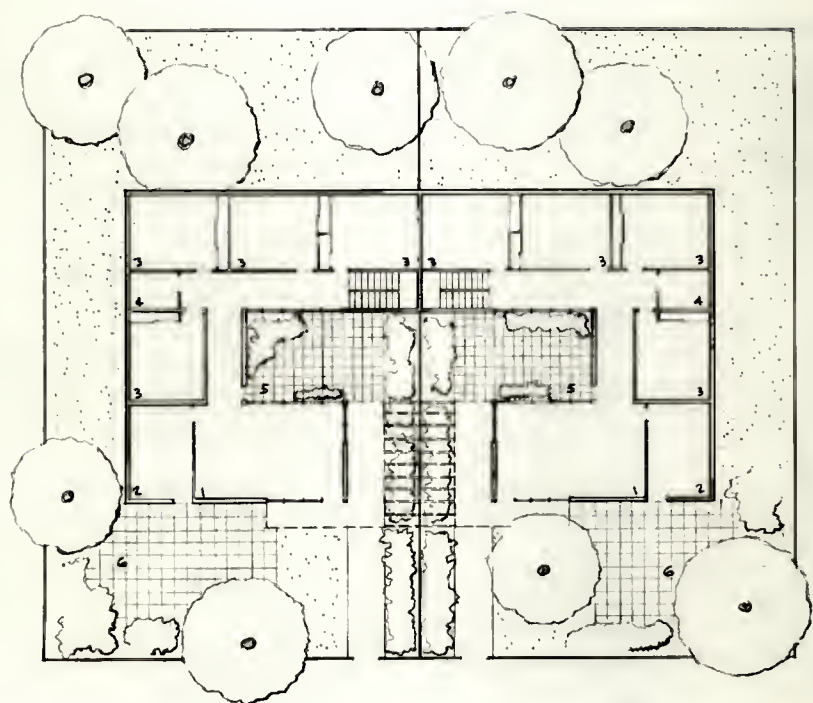
EXPLANATION OF PLATE XVI

This plate illustrates two units of semidetached houses for four bedroom each. (Scale in feet)

The numbers indicate the following:

1. Living-Dining Room
2. Kitchen
3. Bedroom
4. Bath
5. Interior Court Yard
6. Out-door Area

PLATE XVI



5 0 5 10 15



row house is economical because grouping reduces street and walk-way length and saves in cost of paving, utilities, and land. At the same time it gives each family its own home and its private yard. By eliminating the narrow side yards it may be possible to provide both attractive front and back yards. Shallow homes, two-rooms deep, compensates for the lack of windows on the sides. The easy access to rear yard is provided by covered passage in the units. The number of units in a row house usually is from four to ten. The number of units in the Sarifa row house will be ten in a row.

The Sarifa neighborhood is designed to support an elementary school of 24 classrooms for 720 pupils. If the number of pupils were divided by 0.64 (from Table 1) the results will be 1125 families.

Due to the lack of the population statistics for the Sarifa people, the design will be based on the American distribution of families by number of children, after the necessary modifications to suit and represent the Sarifa family's conditions.¹

The families with one child and two children will form 62 per cent, those with three children will form 19.4 per cent and those with four children or more will form 18.6 per cent.

In order to meet the requirement of these families, our houses should be as follows:

700 row houses with two bedrooms for those families of one and two children as is shown in Plate XIV.

¹Statistical Abstract of the United States. 1963--84th Annual Edition by U. S. Department of Commerce. p. 41.

215 single family houses, semidetached, with three bedrooms for those families of three children as is shown in Plate IV.

210 single family houses, semidetached, with four bedrooms for those families having four children or more as is shown in Plate XVI.

The number of various houses can be modified as soon as Iraqi statistics can be provided for these Sarifa people.

Site Design Requirements

It is required that the placement of buildings to be in such a way that they provide adequate daylight, sunlight, air circulation, quiet and safety for indoor and outdoor living spaces.

Daylight, direct sunlight, and the sun heat are to be considered essential for the neighborhood environment:

1. To assure penetration of direct sunlight into habitable spaces of all dwelling units at all seasons of the year. The standard is that all rooms of the dwelling unit shall receive direct sunlight for at least an hour each day in all seasons. This standard can be met if all buildings were two rooms in depth and the alignment of all buildings in North-South direction. Recommended standard is that at least half of the habitable rooms of the dwelling unit receive direct sunlight for one hour or more during midday between 10 A.M. and 2 P.M. in the winter. As the sun is then at its lowest height the penetration specified will assure sunlight in all seasons. Because of the constant northwesterly summer wind, building orientation in this neighborhood is 15° - 20° west of north-south direction.

2. To assure the admission of daylight to all rooms, buildings

should be spaced in order to admit daylight to all rooms in amount adequate to perform all household tasks without artificial light during all the day.

3. To avoid exposure of the windowed walls of dwellings to excessive sun heat. Minimum exposure of western windowed walls to the late afternoon sun in summer is desired.

4. To assure penetration by direct sunlight to outdoor living spaces and outdoor use area in amount and time desirable. Play area, laundry drying yards and similar features should receive direct sunlight through as much of the year as possible.

Southerly exposure will generally provide (in the north temperate zone where Iraq is located) the most effective orientation to light and sun.¹ It gives a low vertical angle of incidence with maximum sunlight and heat in the midday of winter; in the summer when the midday sun is high it gives minimum exposure to sunlight and heat. East-west exposures are not desirable for rooms of daytime use. Rooms exposed to east or west received little sun in winter when the horizontal angle of incidence is to be below the effective limit. On the other hand, western exposures are very hot in the summer afternoon. In this case a northerly exposure is more desirable. Orientation of the continuous Sarifa row houses with one main wall facing 15° - 20° west of north-south have advantage, of the summer prevailing wind also.

As a rule in northern latitudes the continuous parallel Sarifa

¹Planning the Neighborhood by the American Public Health Association Committee on the Hygiene of Housing, 1960. p. 31.

row houses with north-south exposure should be spaced two or two and one-half times as far apart as their vertical walls are high to obtain winter sun as specified in the recommended standard.¹

Air Circulation. Free air circulation is essential to comfort in all dwellings and open spaces. By following the standards of spacing for sunlight and daylight, the circulation of air between buildings will be assured. A special consideration is to be given to the effect of breezes on the indoor comfort. Summer thermal comfort depends on three factors: air temperature, air movement, and relative humidity. It is important to expose Sarifa Housing to get the advantages of the cool northwest summer breeze.

Quiet. The basic objectives in designing for quiet may be expressed as follows:

1. To assume that bedrooms will be quiet to prevent interference with sleep at any time.
2. To assure that other habitable rooms and outdoor living spaces will be quiet enough to enable residents to carry on their activities without interruption.

Sources of noise may be a) off-site, b) on the site but outside the dwelling structure, c) within the structure itself.

The designer can control noise by the following:

In the housing type selected for Sarifa Neighborhood the noise will be transmitted through walls and adequate protection can be obtained by

¹Ibid., p. 31.

interior layout and construction.

The outside noise can be controlled by spacing, setback and orientation of the row houses of the Sarifa. The distance of buildings from the source of noise determines its volume at the point of desired control. Orientation of buildings to source of noise determines the amount of surface exposed to the noise and the extent of diffusion of noise.

Provision of baffle such as walls, heavy planting and the breaking up of solid surfaces by layout, planting or choice of structural materials may absorb or diffuse part of the sound and thereby reduce its nuisance value.

Site design should organize outside space and building arrangement in such a manner that noise should be minimized.

Adequate setbacks from streets, playground and community facilities and adequate space between buildings can be effective means of obtaining quiet.

As to spacing between buildings no standards are available. The spacing recommended for sunlight is sufficient to dissipate many objected noises.

The spacing between the housing units will be 50 feet arranged as follows:

8 feet green strip

4 feet walkway

26 feet green space

4 feet walkway

8 feet green strip.

Noise from neighboring dwellings or other structures may be minimized by staggered or zigzag rows so that walls do not parallel to each other across narrow spaces.

Noise reduction may be achieved by arranging residential structure so that their longitudinal walls are at angles of 45° - 90° to street or other linear sources of noise and by providing 50 feet spaces between each housing unit.

Safety. The proper design of walks and streets is major consideration of safety. Adequate spacing of building for sunlight will commonly provide good firebreak. The principal rooms of all dwellings should be accessible for fire protection.

Useable Outdoor Space. Adequate outdoor space adjacent to the dwelling is essential for family living and should be regarded as an extension of the individual dwelling. Sunny outdoor space for children is essential for their healthy growth.

Each family should have outdoor space for the following activities:

- a) Play space for children.
- b) Sitting out and gardening.
- c) Clothes drying.
- d) Storage of refuse.
- e) Storage of lawn and garden tools and baby carriages and bicycles.

Density of Residential Development

The land use should not cause congestion of buildings or prevent the Amenities of the good neighborhood. The density should be limited to provide:

- a) Adequate daylight, sunlight, air and open spaces.
- b) Adequate space for all community facilities.
- c) A general feeling of openness and privacy.

Density should have a reasonable relationship to land use and cost.

Two types of density measurement are needed as follows:

1. Residential or dwelling densities. Density measure for residential areas of the neighborhood to insure adequate open space, light and air for residential facilities.
2. Neighborhood densities. Density measure for the entire neighborhood, taking all land use into account, to insure provision of adequate community facilities in relation to population load.

Measure of Density. The intensity of residential use can be expressed by different types of density calculations, showing the mathematical relationship between the area of a piece of land and the population load or building bulk. Area measurements are given in acres, population load as number of persons (or families) per acre of land or as acres of land per 1000 persons, and dwelling density as the number of dwelling units per acre of land or as the number of acres (or square feet) of land per dwelling unit.

Net Dwelling Densities Basis on Calculation. For one-family semi-detached and attached (row) dwellings, the recommended dimensions and areas of lot are as follows:

- a) One-family semidetached $60' \times 100' = 6000$ sq. ft.
- b) One-family row house $40' \times 100' = 4000$ sq. ft.

Net Dwelling Densities in Relation to Population Densities. Dwelling densisites do not measure the exact population load on residential land.

The number of persons will vary with a dwellings size and with income conditions. The number of persons per acre is useful as an index of the population load on the community facilities. Population density standards are most usefully applied on a neighborhood unit basis.

Building Coverage. Building coverage is the proportion of net or gross residential land area taken up by buildings. A maximum standard of 30 per cent net coverage is recommended.¹

¹Ibid., p. 40.

CHAPTER VIII

PROVISION OF NEIGHBORHOOD COMMUNITY FACILITIES

Factors of Need, Selection, and Accessibility

Factors for Neighborhood Community Facilities. The basic services which cannot be supplied to the individual family in its own dwelling should be included in the neighborhood facilities.

Type Included. Sarifa Neighborhood community facilities should include:

Educational: Elementary school, kindergarten, vocational school and adult education.

Outdoor recreation: Playground, parks.

Indoor social and cultural: Mosque, library, restaurant and coffee shop, assembly and lecture hall.

Health Center and Public bath.

Civic Administration Center.

Neighborhood shopping: Food and drugstores, miscellaneous services.

Responsibility for Provision of Facilities. Most of the Sarifa neighborhood community facilities will normally be provided and operated by the government of Iraq. The government officials are to coordinate their activities within the Sarifa neighborhood community center. Shopping centers will be provided by the government but will be operated by private lease.

Safe and Convenient Access. Standards for accessibility are based on avoidance protection from traffic and other hazards, and encouragement to use of the facilities.

In Table 2 access standards are given for each type of facility, ranging from one-fourth to one-half mile. One-half mile is to be considered as the maximum.

Table 2. Access standards for community facilities within the neighborhood recommended distance, with maximum limit.¹

Neighborhood Facility	Walking Distance (One Way) From Farthest Dwelling
Kindergarten	1/4 to 1/2 mile
Elementary School	1/4 to 1/2 mile ^a
Playground	1/4 to 1/2 mile ^b
Shopping Center	1/4 to 1/2 mile
Indoor social, cultural and recreation center	1/2 mile ^c
Health center	1/2 mile

^aIn exceptional circumstances, the limit may be 3/4 mile walk or 20 minutes elapsed time by school bus, if children may obtain hot lunches at school at nominal cost.

^bOne-half mile permissible only in planned neighborhoods meeting all requirements for safe access, and where playground is adjacent to elementary school.

^cWhere facility cannot be provided within neighborhood or walking distance it should be at least within 20 minutes elapsed time by public transit.

Education

Type of Facilities. The educational facilities to be in Sarifa Neighborhood are: Kindergarten, elementary school, and adult educational facilities. Secondary schools will be provided on the following principle:

¹Ibid., p. 44.

one intermediate school (junior high school) for two neighborhoods and one secondary (senior high) school for a group of four Sarifa neighborhoods. Kindergarten is important in the neighborhood because they give the children broad guidance in group activity and release the mother from part of the work.

Responsibility for Provision and Operation. The Ministry of Education provides the elementary school facilities required for any neighborhood. The adult education facilities have been considered as a part of public educational system and to be sponsored by the government in many communities.

Multiple Use of Facilities. Elementary schools and related facilities may be combined for multiple use. This combination may include:

Combination of elementary school and playground: eliminate duplication of facilities and save space. Coordination between school and recreation authorities is required.

Use elementary school for adult education and indoor social and cultural activities: most economical way of providing space, storage, and similar uses. Authorities involved in these activities should be coordinated.

Elementary School and Kindergarten Facilities. The school will normally include such facilities as playground, library, workshops, art and crafts facilities, classrooms, as well as school office building. The Ministry of Education is to provide the exact need.

The elementary and secondary classes are as follows:

- a) Elementary school--six grades.
- b) Intermediate (junior high) school--three classes.

c) Secondary (senior high) school—two classes.

Number of Pupils Per Class room. The recommended number of pupils per classroom is 30. Total number of pupils in the elementary school in this neighborhood according to Table 3 is 720 pupils. Table 3 gives the number of pupils, number of classrooms and the number of people of the neighborhood to be served by this elementary school.

Table 3. Elementary school capacity related to neighborhood population.

	Average School
Classrooms	24
Pupils	720
Families	1125
Persons	5850 ^a

^aNumber of persons in the Sarifa Neighborhood based on that the average family size is 5.2 persons.

The elementary school occupies the center of the neighborhood. It is composed of twelve individual units, connected by covered walkways. Each of these units has two classes and spaces for teacher and toilets. These units are illustrated in Plate XVII. The scattered arrangement of the units makes it possible to preserve the natural site advantages of air and light and pleasant view. It also provides easy access for open-air class meetings.

Kindergarten. The kindergarten forms another independent unit with two classrooms. This unit will serve 110 kindergarten children, that is, one-half of these pupils will come to morning class and the other half in the afternoon. This means that two classrooms for the kindergarten

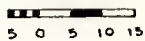
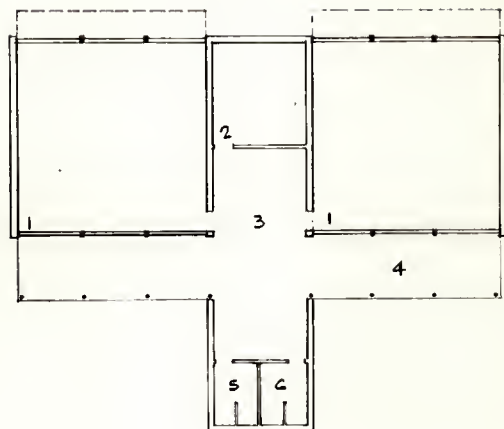
EXPLANATION OF PLATE XVII

This plate illustrates a unit of two classrooms.
It shows the floor plan and the elevations of one unit.
(Scale in feet)

The numbers indicate the following:

1. Classroom
2. Teachers' Room
3. Hall
4. Covered Passageway
5. Boy's Toilets
6. Girl's Toilets

PLATE XVII



should be provided. This unit has its teachers and its playground for easy control as is illustrated in Plates XVIII and XIX.

Adult Education. Adult education is that to serve and guide those beyond the elementary and secondary school age limit. There will be a great number among Sarifa people who are badly in need of such a program of education especially those who did not have the chance to go to school. This field of education may concern the following fields:

1. Special classes in reading and writing.
2. Basic arithmetics.
3. General business training.
4. Training in mechanics.
5. Training in electricity.
6. Training in construction.
7. Training in woodwork.
8. Health education.
9. Child development.
10. Sewing.

This program may be carried on in the vocational school building. This building is composed of two sections, one provided for men's activities, and the other for women. Each section has a big hall as a workshop, with number of classrooms. The hall area may be divided up by movable partitions in order to separate the various activities. This building is illustrated in Plates XX and XXI and the school office building in Plate XXII.

Some of the adult educational program may be carried on in the elementary school after the school regular hours. This will be possible if the required adjustable furniture is provided. The adjustable-height

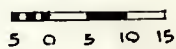
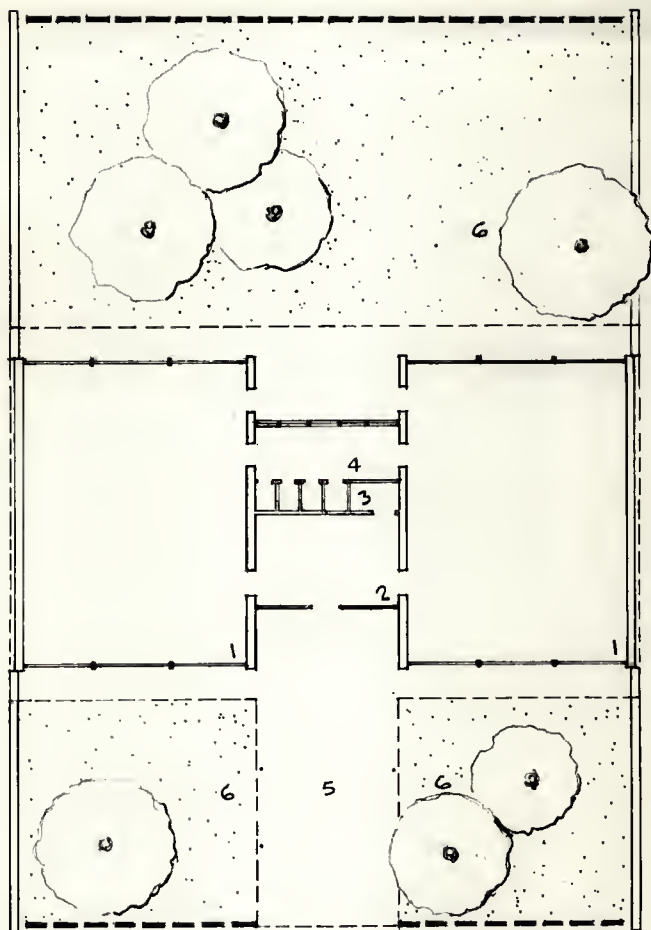
EXPLANATION OF PLATE XVIII

This plate illustrates the kindergarten floor plan and the private playground for the children. (Scale in feet)

The numbers indicate the following:

1. Classroom
2. Teachers' Room
3. Teachers' Toilets
4. Pupils' Toilets
5. Shed
6. Playground

PLATE XVIII



EXPLANATION OF PLATE XIX

This plate illustrates three elevations and a section of the kindergarten shown in Plate XVIII.

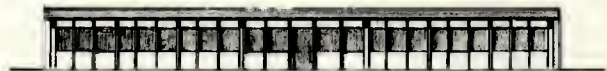
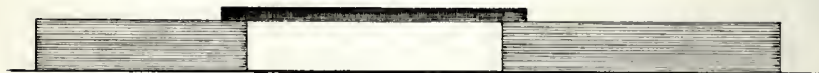
Top - Side Elevation

Next to top - Front Elevation

Next to bottom - Rear Elevation

Bottom - Section through front playground

PLATE XIX



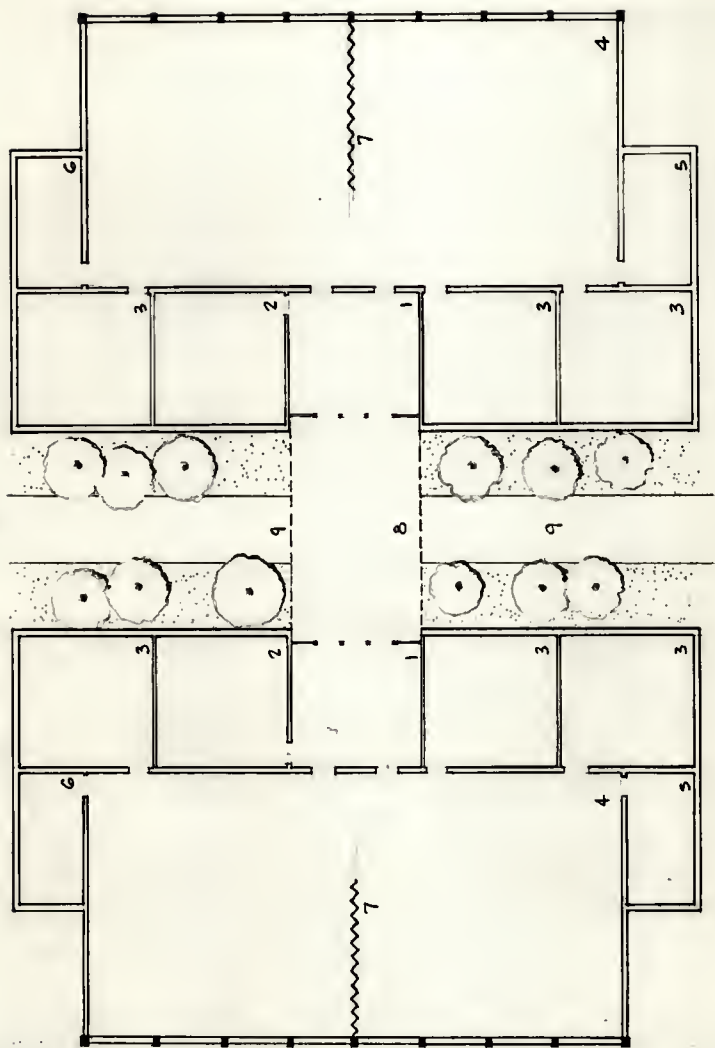
EXPLANATION OF PLATE XX

This plate illustrates the vocational school building floor plan which has a men's and a women's section. (Scale in feet)

The numbers indicate the following:

1. Lobby
2. Teachers' Room
3. Classrooms
4. Shops
5. Storage
6. Toilets
7. Movable Portion
8. Covered Passageway
9. Walkway

PLATE XX



0 5 10 15

EXPLANATION OF PLATE XXI

This plate illustrates the elevations of the vocational school building shown in Plate XI.

Top - Side Elevation

Bottom - Front Elevation

PLATE XXI



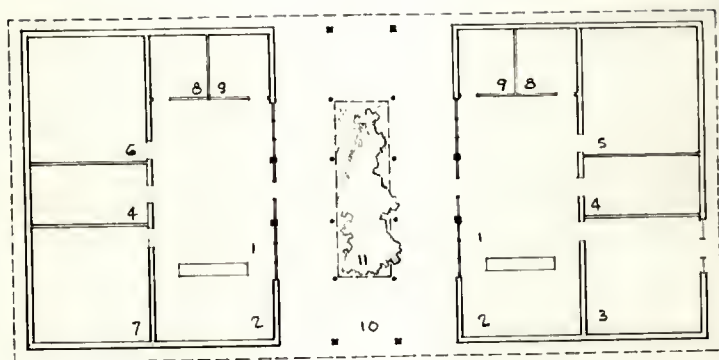
EXPLANATION OF PLATE XXII

This plate illustrates the school office building. It shows the floor plan and three elevations. (Scale in feet)

The numbers indicate the following:

1. Lobby
2. Secretarial Section
3. Principal's Office
4. File and Record Room
5. Conference
6. Cultural Guidance Office
7. Social Guidance Office
8. Men's Toilets
9. Women's Toilets
10. Covered Court
11. Garden

PLATE XXII



chairs and table would need:¹

1. Removable crank handle,
2. Cast magnesium bases, and
3. Laminate tops.

Outdoor Recreation

Type of Facilities. Outdoor recreation facilities to be included are neighborhood parks and playgrounds. They provide exercise and exposure to sunshine which is necessary for children. They provide the opportunity for group recreation and fostering good social relationships. Standards for the size and facilities of active recreation areas have been well established. It is recommended that parks and playgrounds are close to all neighborhood families. It is recommended that 10 acres for 1000 persons² as a city-wide total for active and passive recreation space is adequate. Responsibility of provision and operating facilities usually rests with the Department of Parks of "Amanat Alasima."

Combination of playground and park: The park can be located to provide noise buffer between the playground and residences. Many facilities can be located interchangeably and greater flexibility is provided.

Use of park as a buffer strip between residence and shopping center or other nonresidential use reduces the total area needed and is quite acceptable as park functions are not impaired because of this use.

¹America School and University, Volume 36, No. 7, March 1964. p. 31.

²Planning the Neighborhood, op. cit., p. 47.

Neighborhood Playground. The neighborhood playground is the chief center of the elementary school children. Equipment should be provided which should permit a wide range of normal play activities. Children below the elementary school age may use the playground under some sort of supervision. Adults can enjoy games which require little space.

The playground should be provided with most of the following facilities:

- a) Apparatus area for older children.
- b) Open space for informal play.
- c) Surfaced space for court games as volleyball, tennis, and others.
- d) Field for games such as soft ball and others.
- e) Area for quiet games.
- f) Water activity area.
- g) Shelter building with toilets; washbowls, and drinking fountains.

The range of playground size is limited by the minimum area which will accomodate the layout for required activities, and by the maximum number of children who can participats in all activities. The area of the playground is about 11 acres which is included in school play area.

Proper surfacing of playgrounds is important for protection of children. Surfaces should be compacted, dust free and quick drying. Asphalt bound pavement containing coke or other resilient material, and fine stone screening on cinder foundation (settled and bound with calcium chloride) are considered safe surface.

Table 4 shows a range of site sizes for 6 grade elementary schools. The area for playground is excluded.

Table 4. Neighborhood playground size.

Type of Development	Neighborhood Population 1125 families, 5850 persons
1-family and row house development with private lot area per family of less than one-fourth acre	
Playground (acres)	11
Playground square feet per family	430

Neighborhood Park. The neighborhood park area is the pleasant green area and trees surrounding the housing units and circulation ways. They should not be in one location, but rather they should be scattered in the neighborhood. Shades, walks, and benches are required in these passive recreation areas. Each park should have a minimum area of 1 1/2 acres to 2 acres. Each few families in the neighborhood will have a small park in their vicinity. These green areas will retain the rural atmosphere the people are used to. To retain the rural family living, I would suggest that this neighborhood will have scattered small parks among the housing units. To maintain this end about 0.045 acres of parks per family will be satisfactory. All park areas, therefore, will be about 50 acres.

The neighborhood park will be organized as follows:

1. Four 3.6 acre parks each serving 76 to 84 families.
2. Two 5 acre parks each serving 108-116 families.
3. Four 6.4 acre parks each serving 140-148 families.

Table 5. Neighborhood park size, recommended total area, by type of development and population of neighborhood.

Type of Development	Neighborhood Population 1125 families, 5850 persons
1-family and row house development with private lot area per family of less than 1/4 acre	
Park: total acres	50
Park: square feet per family	1950

Indoor Social and Cultural Facilities

Type of Services and Facilities. Indoor social, cultural and recreational facilities supplement dwelling facilities and provide group activity. Services and organizations for which space may be required include:

Social Service: vocational and employment guidance, child guidance, family problems, boys and girls scout troops, consumer groups, parents-teachers associations, and other community organizations.

Religion: place for religious gathering in the religious occasion and religious education.

Literature: movies and music.

Recreation: parties given by the people of Sarifa Neighborhood organization and sports.

In order to meet the space requirements for the above mentioned social and cultural activities, the following type of facilities are generally required:

- a) Assembly hall with a stage for meetings and movies.
- b) Restaurant and coffee shop.
- c) Library.
- d) Mosques.

The Assembly Hall. This building is designed to provide a space to seat 300 persons. This will serve as a lecture hall for the school children and for the public as well.

The assembly hall will provide opportunity for normal group activities such as political and educational speeches, motion picture theater and other social activities. This building is illustrated in Plates XXIII and XXIV.

The Restaurant and the Coffee Shop. This is another building which duplication is avoided. The building is to serve the purpose of providing lunches for school children as part of the health and hygiene education. The building is composed of three circular shell elements. One of these shells will house the kitchen facilities and a cafeteria counter. The other two shells will serve as a dining area for the pupil's luncheon in daytime. One of these will be used as a restaurant and the other as a coffee shop for the public use at after the school session. The coffee shop will be an entertainment place for the people in the evening, in which they can play chess and some other local games. This building as a whole can be used as a gathering place in some of the social and religious occasions. This building is illustrated in Plate XV.

The Library. The building is to be planned to serve both the school pupils and the people of the community. The entrance of this building is opened to a pleasant interior court, and is regulated by the control desk.

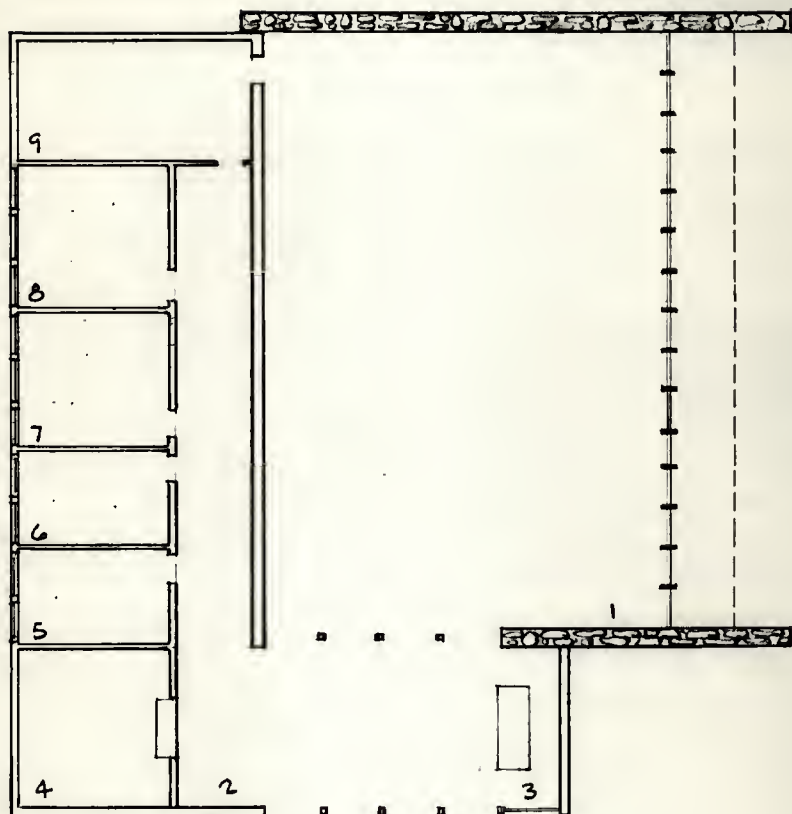
EXPLANATION OF PLATE XXIII

This plate illustrates the assembly hall building floor plan. (Scale in feet)

The numbers indicate the following:

1. The Lecture Hall
2. Lobby
3. Reception
4. Information
5. Men's Toilets
6. Women's Toilets
7. Lounge
8. Office
9. Preparation Room

PLATE XXIII



5 0 5 10 15

EXPLANATION OF PLATE XXIV

This plate illustrates the elevations and a section of the assembly hall shown in Plate XXIII.

Top - Right Side Elevation

Middle - Front Elevation

Bottom - Section

PLATE XXIV



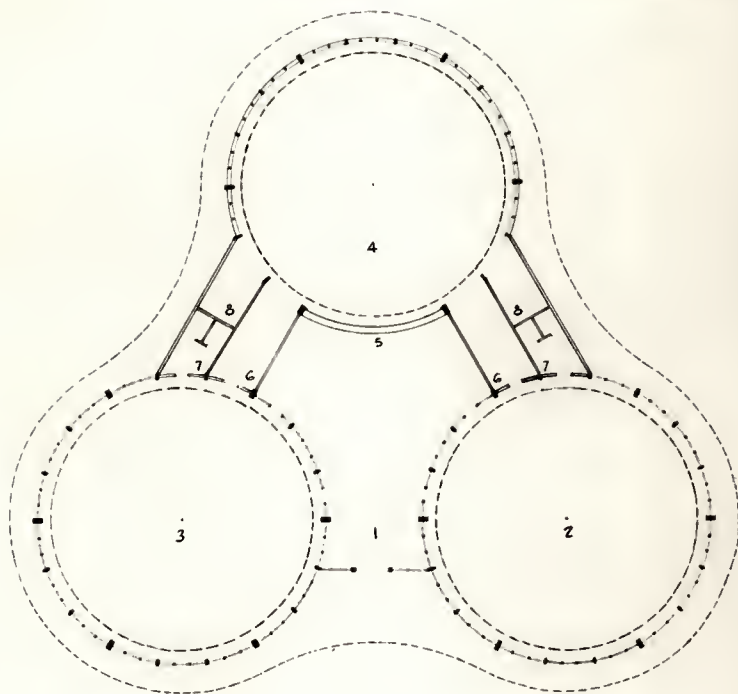
EXPLANATION OF PLATE XIV

This plate illustrates the restaurant and the coffee shop building. (Scale in feet)

The numbers indicate the following:

1. Lobby
- 2 and 3. Dining area for pupils during daytime.
2. Restaurant for the community use after the school session
3. Coffee Shop for the community use after the school session
4. Kitchen
5. Cafeteria Counter
6. Passageway for food service
7. Toilets
8. Storage

PLATE XXV



5 0 5 10 15



The open planning concept is one of the main characters of the building. The adult and the children's reading halls are separated by movable shelves. The quiet interior court will provide an adequate and pleasing area as a reading space during the summer evenings.

The building is provided with a conference room for official meetings and it may be used in special cases for classroom meetings. The music room and informal reading area close to the main lobby gives an inviting atmosphere to the people of the community and encourages them to use the library more often. This building is illustrated in Plates XXVI and XXVII.

The Mosque. The mosque in Sarifa Neighborhood is an important place not only for religious purposes, but also in the social and cultural life of the people. One mosque will be sufficient for this neighborhood. The mosque will be provided by the government. The Housing Directorate General usually consult the Antiquities Department in relation to the direction of the building toward the holy land in "Mecca".

The Health Center Facilities

Health service facilities are important and essential. Among the health activities which will be carried on in this center are the following:

1. Maternity health service.
2. General health service, such as:
 - a. Communicable disease clinic
 - b. Infant health service
 - c. Dental clinic
 - d. Nutrition education.

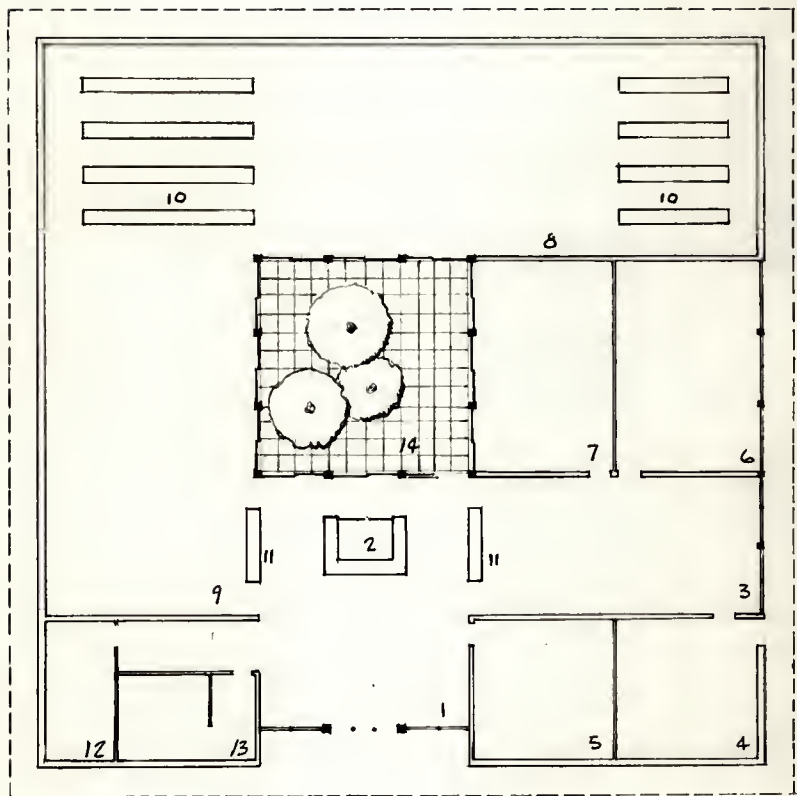
EXPLANATION OF PLATE XXVI

This plate illustrates the library building floor plan. (Scale in feet)

The numbers indicate the following:

1. Lobby
2. Control
3. Magazine and Newspaper Reading Hall
4. Workroom Area
5. Librarian's Office
6. Music and records
7. Conference
8. Adult's Reading Hall
9. Children's Reading Hall
10. Stacks
11. Catalogs
12. Men's Toilets
13. Women's Toilets
14. Courtyards

PLATE XXVI



EXPLANATION OF PLATE XXVII

This plate illustrates the elevations of the library shown in Plate XXVI.

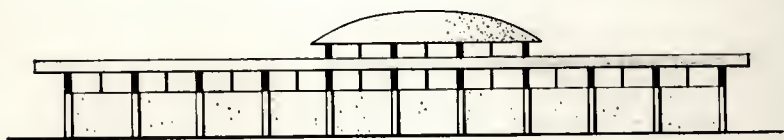
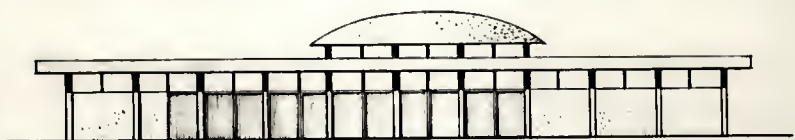
Top - Front Elevation

Next to top - Right Side Elevation

Next to bottom - Rear Elevation

Bottom - Left Side Elevation

PLATE XXVII



The health center is composed of three sections all organized in one building. These sections are:

1. General Clinic: large waiting area, rooms for medical care, pharmacy and offices for doctors and nurses. These spaces are organized around an interior court which give an attractive relaxing environment to the patients.

2. Maternity health service: All the requirements for women's health and delivery with a ward for five beds. Kitchen facilities are provided too. Inside patients will have an access to a pleasant atmosphere in the courtyard.

3. Common facility section: In order to eliminate duplication, a common section is provided accessible to the general clinic and maternity health section. This section includes control office and records, x-ray, minor operation, laboratory, and service yard. This building is illustrated in Plates XXVIII and XXIX.

The Civic Administration Center

This building will house the government employees in charge of the various services of this neighborhood. These officers will work separately and will be related to the main officers in the city of Baghdad.

These offices are:

1. Postoffice
2. Police station
3. Municipality (sanitation and building regulations)
4. Water, electricity and gas.

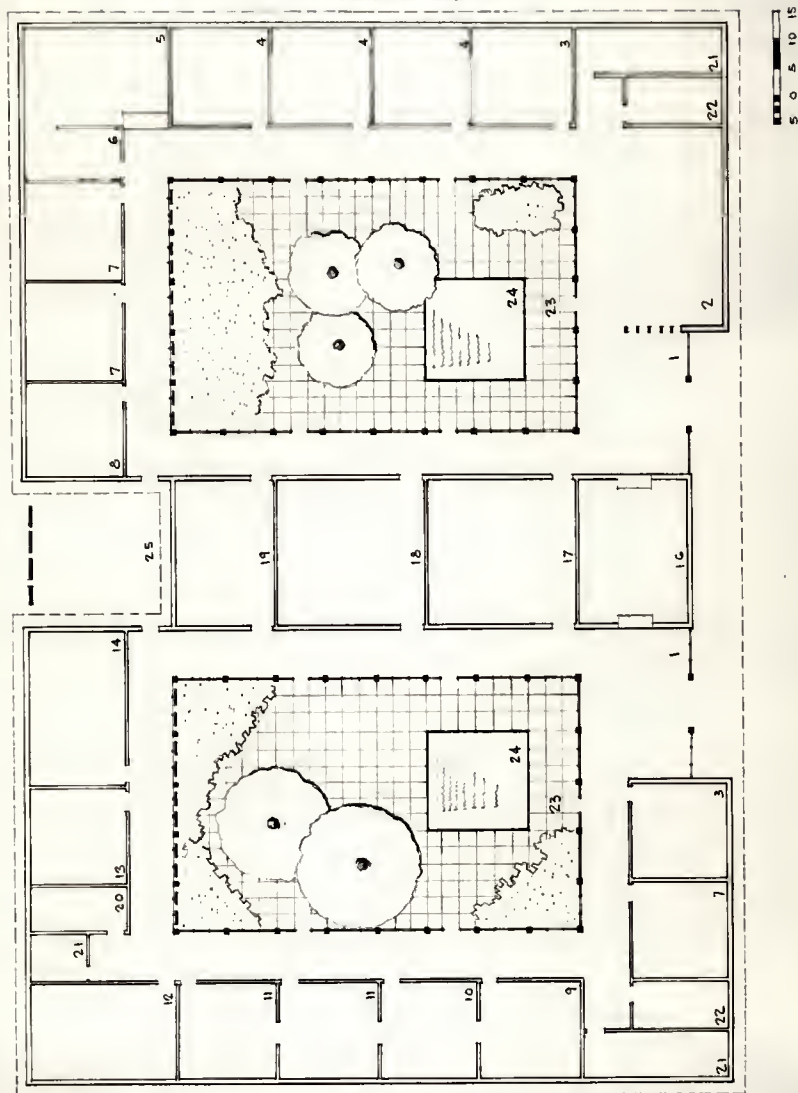
EXPLANATION OF PLATE XVIII

This plate illustrates the floor plan of the health center. (Scale in feet)

The numbers indicate the following:

- | | |
|-----------------------|-----------------------|
| 1. Lobby | 14. Kitchen |
| 2. Waiting Room | 16. Records and Files |
| 3. Nurse's Office | 17. X-Rays |
| 4. Examination Room | 18. Minor Operation |
| 5. Pharmacy | 19. Laboratory |
| 6. Storage for Drugs | 20. Bath |
| 7. Doctor's Office | 21. Women's Toilets |
| 8. Director's Office | 22. Men's Toilets |
| 9. Sterilization Room | 23. Court Yards |
| 10. Labor Room | 24. Pool |
| 11. Delivery Room | 25. Service Yards |
| 12. Ward | |
| 13. Laundry | |

PLATE XXVIII



EXPLANATION OF PLATE XXIX

This plate illustrates the elevation of the health
center shown in Plate XXVIII.

Top - Side Elevation

Middle - Front Elevation

Bottom - Rear Elevation

PLATE XXIX



These offices are to be housed in one central building, but each will have its own personnel and facilities. This building is illustrated in Plate XXX.

Neighborhood Shopping

General Requirements. The shopping facilities include those stores and services which are used by all families and which should be easily accessible to the home. Shopping is the only community facility which is provided by the government but operated by private enterprise. The shopping center should be constructed by the Housing Department as a part of the public building.

The Shopping Center. The main feature of this building is the central mall. The shoppers enter this center through covered walkways.

All the elements of this shopping center are facing an interior court surrounded by covered ways. Service is provided from the perimeter.

The building will consist of the following:

1. Two grocery stores
2. Laundry and dry cleaning
3. Electrical appliance shop
4. Two soft good stores
5. Drug store
6. Beauty shop
7. Barber shop

This building is illustrated in Plates XXXI and XXXII.

EXPLANATION OF PLATE XXX

This plate illustrates the civic administration center building. It shows the plan and elevations.

(Scale in feet)

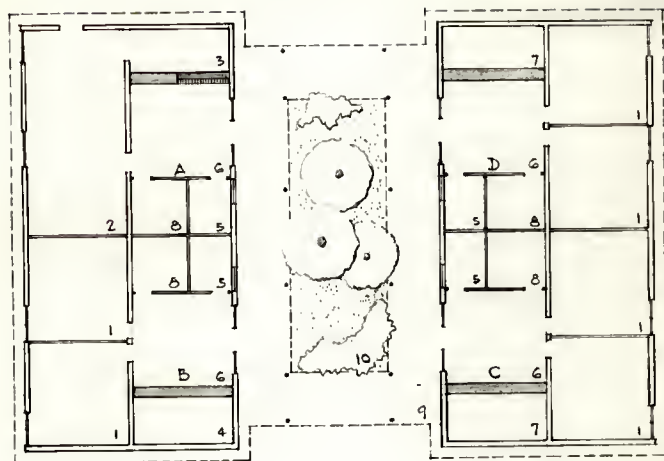
This building composed of:

- A. Postoffice
- B. Police Station
- C. Municipality
- D. Office for water, electricity, and gas

The numbers indicate the following:

- 1. Office
- 2. Working Area
- 3. Stamps and Mail Boxes
- 4. Information
- 5. Toilets
- 6. Lobby
- 7. Cashier
- 8. Files and Records
- 9. Covered Court
- 10. Garden

PLATE XXX



5 0 5 10 15



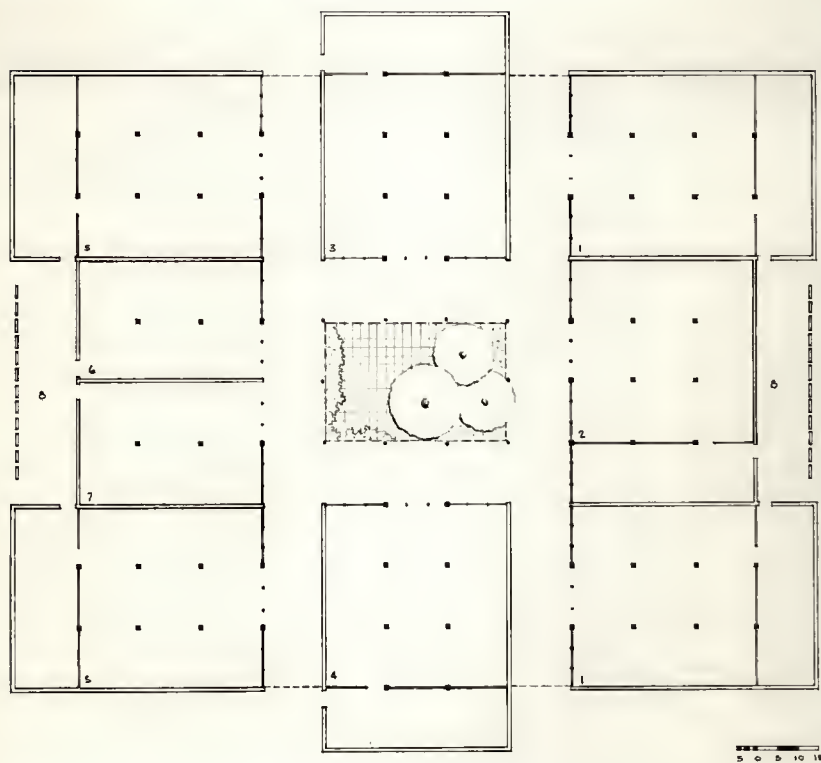
EXPLANATION OF PLATE XXXI

This plate illustrates the shopping center building floor plan.

The numbers indicate the following:

1. Soft Goods Stores
2. Laundry and Dry Cleaning
3. Drug Store
4. Electrical Appliances
5. Grocery Stores
6. Beauty Shop
7. Barber Shop

PLATE XXXI



EXPLANATION OF PLATE XXXII

This plate illustrates the elevations of the shopping center shown in Plate XXI.

Top - Side Elevation

Bottom - Front Elevation

PLATE XXXII



Methods of Providing Facilities

The community facilities required for the Sarifa neighborhood will be administered by the following ways:

1. Facilities administered directly by the school authority.
 - a. The kindergarten educational program.
 - b. The elementary educational program.
 - c. The adult educational program.
 - d. The provision of cultural and social activity program in the assembly hall.
 - e. The library to serve the school pupils as well as the people of the community.
 - f. Dining space to provide lunches for school children as a part of the health and hygiene education and to serve as a coffee shop and restaurant for the public after the school session.
 - g. The provision of the neighborhood playground area is the responsibility of the school authorities. The equipment should be provided which should permit a wide range of normal play. The adults of the neighborhood as well as the pupils will have access to these facilities.

2. Facilities which will be administered by the other governmental authority but will be coordinated with the school and educational authorities are as follows:

- a. The Health Center Facilities. The public health facilities will be coordinated with the health facilities provided by

the educational authorities in promoting health and safety activities program of all the people of the Sarifa neighborhood.

- b. The public bath agency will cooperate with the school authorities in providing health program for the entire neighborhood.
 - c. The religious authorities in the mosque also will cooperate with the school authorities in extending and furthering the religious instructions to the pupils as well as to the adults.
 - d. The Civic Administration will be cooperating with the school authorities in promoting safety program and provide better municipality services.
3. The shopping center will be run by private enterprise.

CHAPTER IX

THE LAYOUT FOR CIRCULATION

The Function of Circulation

A proper design for circulation is important to avoid nuisance and hazards of the motor traffic to public health. Functionally, circulation provides access for residents and for all those who serve the neighborhood. Physically, the circulation pattern, linking residences to each other, residences to neighborhood community facilities and the neighborhood to center of business and employment center in Baghdad.

The circulation system may be classified as follows:

Types of uses--

1. For residents in all daily activities.
2. For deliveries and collections, including fuel, furniture moving, mail, garbage.
3. For protection services, fire, police, ambulance, and hearse.
4. For maintenance and repair, utilities, grounds and structures.

Circulation routes--

1. Access from the outside to the neighborhood.
2. Access to dwelling community.
3. Access to the community facilities.

Mode of Circulation--

1. Pedestrian.
2. Automobile, truck, and motorcycle.

3. Public transit.

4. Others (bicycle, roller skates, baby carriage, etc.).

Circulation ways—

1. Streets—which are used for services and emergencies.

2. Walks.

3. Parking areas.

Convenient access for collecting garbage and fire protection is very important for health and safety.

Organization of the Circulation System

Street Types. Due to the fact that the low-income people of Sarifa neighborhood are to use the public transportation, the street inside the neighborhood will be designed only for service and emergencies. There will be a need for few service streets connecting community facilities to the major streets. These provide direct access for the officials who usually live in Baghdad and work in this neighborhood. Streets will also serve in case of emergency.

Parking Requirements. Provision for suitably located parking spaces for official vehicles and a few private cars for official employers working in the community. Parking spaces are required near the neighborhood community facilities.

Public Transit. Public transit will be almost the only means of transportation for the Sarifa people. As buses are inevitably noisy, their presence close to dwellings is undesirable. It is preferable to route them on the boundary of the neighborhood. Attention should be paid to provisions of safety zones at bus stops.

Pedestrian Circulation. Walks from all dwellings should provide convenient and safe access to elementary schools, shops, playgrounds, and other chief pedestrian objectives. The emphasis should be on a system of continuous main walks connected to dwellings by service walks. The purposes of various walks should be clearly recognized and they should be differentiated in width and location, in a manner similar to the articulated treatment of streets. Walks may be classified into three general types.

1. Entrance walks -- to individual dwellings.
2. Service walks -- serving a group of residential structures, connecting entrance walks to major walks.
3. Major walks -- direct pedestrian connection between parts of the neighborhood, to neighborhood community facilities, to public transit facilities, to main pedestrian thoroughfares outside the neighborhood.

Design of Walks¹

Design standards given below will be applied to all walks which are in the center of blocks and those parallel to streets. It is generally considered desirable to separate sidewalks from streets by planting strips. A minimum width of planting strips of 4 feet is desirable.

Width of Walks. The width of walks should be based on the volume to pedestrian traffic. Entrance walks to single dwellings should have a minimum of 3 feet. For entrances to group (up to 16 dwellings), the

¹Planning the Neighborhood. The American Public Health Association Committee on the Hygiene of Housing, 1960. p. 60.

minimum width should be 3 feet and 6 inches and 4 feet is desirable.

Service walks and sidewalks along service streets should generally be 4 feet wide and 5 feet is desirable. Major walks and sidewalks carrying an appreciable load of traffic should have a minimum width of 5 feet. Approaches to schools, shopping centers, and other community facilities may have to be wider than the minimum standards.

Grades, Surfaces, and Drainage of Walks. The recommended maximum slopes are 10 per cent. Steps should be provided when slope exceeds 15 per cent. When steps are needed, they should be grouped in flights. In any flights, the steps should be uniform, that is all treads should be equal and not more than 11 inches, and risers should be equal and not more than 7 inches. Walks should have some cross-slopes or crown to shed water. Standard cross-slope is one-fourth inch per foot, which is recommended.

Design of Parking Space. Parking spaces for the public civil servant, store managers, official service vehicles and other services should be provided. The number of the private cars used by the public civil servant will be about 150. The number of cars and vehicles used for services and visitors will be about another 100. An area of 75,000 square feet is anticipated to be sufficient for parking space in this neighborhood. Pavement slope of 0.5 per cent will avoid standing water.

Circulation Lighting

Light should be provided for walks, streets, and parking spaces to prevent pedestrian accidents. This requires lighting throughout the night along all streets and walks. Any economy measure which serves to

reduce or eliminate the lighting during some part of the night should be considered as substandard, since lights are needed in each case of emergency or unusual conditions as well as during normal travel hours.

It has been found that lighting is generally inadequate or wasteful if the spacing of lights exceed the distance equal to eight times the height of the lights. A minimum height of 15 feet is recommended for circulation lights, and 20 feet is more desirable. This implies that circulation lights should be spaced approximately 120-160 feet apart.¹

Glare from circulation lights shining directly into bedrooms should be avoided by proper location of lights and provision of adequate shields. An important aim of lighting is prevention of crime and discouragement of thieves. The design of street and walk lighting is a specialized problem. The Baghdad Electricity Department should be consulted for the final solution.

¹Ibid., p. 62.

CHAPTER X

NEIGHBORHOOD DENSITY

Protection of Livability Through Neighborhood Density Control

Although standards for each of these elements of the neighborhood are presented separately, compliance with such standards must be judged in terms of the total neighborhood design. Safety and health depends on the layout of the whole neighborhood, not on the circulation pattern considered in a vacuum. Densities on a neighborhood-wide basis must prevent land crowding, which commonly results from applying net residential density standards to the neighborhood, without provision for school and park facilities, shopping centers, parking areas and the similar uses.

The manner in which adequate land for all the needs can be assured is the concept of neighborhood density limitation. The only assurance of a livable neighborhood is to work out how much land per family will be required for all neighborhood functions.

Definition of Neighborhood Density. Neighborhood density is the ratio of population to the total neighborhood land area, including all land used for neighborhood purposes. It is the families or persons per acre of total neighborhood land.

Use of Densities in Design and Legal Control. The neighborhood density figures which are based on a combination of all neighborhood land uses makes a valuable tool in planning. They provide the broad neighborhood density figures of total population in relation to the size of the site. They provide a method of expressing total land and population ratios for

the purpose of preliminary cost estimates. They provide a combination of dwelling types desired to make up a neighborhood.

The government can keep all densities within the limits necessary to health and amenity, and establish a density pattern to obtain the most efficient population distribution.

Neighborhood Area

The required area for this neighborhood can be summarized as follows:

1. The area required for the residential facilities is as follows:

	Square Feet	Acres
a) Single family semidetached houses		
Number of houses	425	
Area per house (60x100)	6000	
Total area	2,550,000	
Total area		59
b) Attached--row houses		
Number of houses	700	
Area per house (40x100)	4,000	
Total area	2,800,000	
Total area		63

The total area required for houses 122

2. The area required for the neighborhood community facilities is as follows:

a) Education		
1. Elementary School	42,000	
2. Kindergarten	4,500	
3. Vocational school	12,500	
4. Administration center	5,500	
5. Total area covered by building	64,500	
6. Total area covered by building		1.50
7. Area for lawns, garden, service and expansion		7.50
8. Total area required for the educational facilities		9.00
9. Area per family	350	

	Square Feet	Acres
b) The Health Center		
1. Area covered by building	21,500	
2. Area for lawn, garden, and service	103,500	
3. Total area	125,000	2.85
4. Total area		
5. Area per family	110	
c) The Shopping Center		
1. Area covered by building	26,500	
2. Area for lawn and service	73,500	
3. Total area	100,000	2.30
4. Total area		
5. Area per family	89	
d) The Mosque		
1. Area covered by building	5,000	
2. Area for lawn and garden	45,000	
3. Total area	50,000	1.15
4. Total area		
5. Area per family	44	
e) The Library		
1. Area covered by building	10,000	
2. Area for lawn and service	50,000	
3. Total area	60,000	1.40
4. Total area		
5. Area per family	53	
f) The Assembly Hall		
1. Area covered by building	5,000	
2. Area for lawn and service	45,000	
3. Total area	50,000	1.15
4. Total area		
5. Area per family	44	
g) The Restaurant and the Coffee Shop		
1. Area covered by building	10,500	
2. Area for gardens and service	64,500	
3. Total area	75,000	1.73
4. Total area		
5. Area per family	66	
h) The Public Bath		
1. Area covered by building	5,000	
2. Area for lawn and service	15,000	
3. Total area	20,000	0.45
4. Total area		
5. Area per family	18	

	Square Feet	Acres
1) The Civic Administration Center		
1. Area covered by building	6,000	
2. Area for lawn and service	34,000	
3. Total area	40,000	0.92
4. Total area		
5. Area per family	36	
Total area for community facilities		21
Area per family	810	
3. Area required for the neighborhood parks is as follows:		
a) Four parks of 3.6 acres		14.4
b) Two parks of 5 acres		10
c) Four parks of 6.4 acres		50
Area per family	1,950	
4. Area required for the neighborhood playground is as follows:		
a) Total area for playground		11
b) Area per family	420	
5. The area required for the circulation is:		
a) Street R.O.W. Service (Boundary)		
1. Area required	1,280,000	
2. Area required		29.5
3. Area required per family	1,290	
b) Parking		
1. Area required	75,000	
2. Area required		1.8
3. Area required by family	70	
c) Walkways		
1. Area required	1,900,000	
2. Area required		44.7
3. Area required by family	1,660	
Total area required for circulation		76
Area required by family	3,020	

Total area required by one family in the Sarifa neighborhood will be as follows:

a. Area required for a semidetached house is as follows:

1. Residential area	6,000
2. Community facilities	810
3. Parks	1,950
4. Playground	420
5. Circulation	<u>3,020</u>
Total	12,200

b. Area required for a row house is as follows:

1. Residential area	4,000
2. Community facilities	810
3. Parks	1,950
4. Playground	420
5. Circulation	<u>3,020</u>
Total	10,200

Table 6. Land area per family, families per acre, and persons per acre basic allowance, by type of dwelling and population of neighborhood.

Dwelling Type	Neighborhood population 5850 persons, 1125 families		
	Square Feet per Family	Families per Acre	Persons per Acre
1-family semidetached	6000 + 6200 = 12,200	3.6	18.70
1-family attached (row)	4000 + 6200 = 10,200	4.3	22.25

6000 square feet is the area of a semidetached single family house.

4000 square feet is the area of a row house.

6200 square feet is the area devoted to each family which is related to other community facilities.

Table 7. Land area and density for a neighborhood of 5850 persons (1125 families) with diversified dwelling types.

Population Composition Type of Family	% of Families	Proposed Dwelling Type	Dwelling Units ¹ (Families) %	No.	Required Neighborhood	
					Sq. ft. per family	Total acres
Families with minor children	100.0	1-family semidetached 1-family row	38 62	425 700	12,200 10,200	118 162
Total	100.0		100	1125		280
Resultant Neighborhood density: 4.1 families per acre						

¹Statistical Abstract of the United States. 1963-34th Annual Edition by U. S. Dept. of Commerce. p. 41

Rangs of Sarifa Neighborhood Sizes

Determination of Neighborhood Area and Population. It was indicated in Chapter V that the neighborhood size at which all the requirements for neighborhood facilities can be met is based on the following factors:

- a) Population which will support an elementary school and other neighborhood facilities;
- b) Area which will meet accessibility standards;
- c) Area which will accommodate the necessary dwellings and community facilities in accordance with the space requirements.

The size of a neighborhood is expressed in two ways: the population and area. The population is set by the capacity of an elementary school. The maximum extent of area is fixed by walking distance to school and other community facilities. The population and area within the above limits will depend on the desirable densities.

The Planned Location of the Sarifa Neighborhood Elements

The community facilities and residences of the neighborhood should be located so as to meet the standards recommended. Furthermore, elements of the neighborhood should be located in relation to each other so as:

- a) To meet the standards of convenient and safe access between dwellings and neighborhood community facilities;
- b) To encourage the residents to use the community facilities;
- c) To create a focal point in the neighborhood which will stimulate the growth of vital community relationships and give stability to the neighborhood;
- d) To avoid nuisances and hazards to the residents;

- e) To produce the most efficient and economical land use pattern, and to avoid any unnecessary duplication of facilities.

Certain advantages occur when all community facilities are grouped together in a central location and are connected to the residential parts by direct pedestrian routes.

Centrally located community buildings will serve as a focal point of architectural interest and residential activity. The grouping together of elementary school, kindergarten, community and shopping center, vocational school, health center, library, mosque, assembly hall, the restaurant and the coffee shop, will promote multiple use of these facilities and will encourage the more frequent use of all facilities by a larger number of residents.

Functional planning of open spaces and parks in relation to community and residential facilities may make the difference between a good and a poor neighborhood. It should tie all parts of the neighborhood together in order to create a feeling of continuous open park space throughout the development.

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A SCHOOL AS A COMMUNITY CENTER

by

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Reed-hut (sarifa) slums at the outskirts of the big cities of Iraq are a substandard environment which culturally deprives the residents. The Government of Iraq proposes to apply new techniques in construction and planning to develop new neighborhoods to improve physiological health and emotional well-being.

This report proposes a solution showing the importance of the school as the community center of the neighborhood which supplies reasonable protection and satisfies the needs of these people. Improved school to home relations will involve the parents as well as the students in the educational activities. The school program is adapted to the needs of the culturally deprived people.

Before determining the program and facilities, a detailed study of the educational needs is outlined in the light of the physical, economic and social characteristics of the community. Analysis of the community educational needs is made from the facts of the community survey.

The physical and emotional needs of the child are traced. A humanistic approach lets the needs of the child influence the design as exemplified in the "Chicago School" of architecture. Educational function determines the form of facilities. Self-contained classrooms systems can serve more flexible programs.

Basic requirements for the sarifa are established based on family composition, housing types, and proposed standards for neighborhood facilities. Services and utilities to be provided are designated. The design of the residential housing type related to family size results in row and semidetached units.

Design of the community center includes educational, health and

shopping facilities. Of the twelve buildings, seven will be administered by the school, four will cooperate with the school, and one will be run by private enterprise. The neighborhood playground will be supervised by the school but smaller parks will be operated cooperatively by the school and the municipality. Drawings are presented for major buildings, houses, and the overall neighborhood layout.

Tables of land use areas show the allocation of space to various purposes. The distribution of families per gross acre is compiled.

The objective of the report is to establish general standards that with refinement and thorough application of local variations in population and family composition can serve as a guide to the design of new satellite neighborhoods in Iraq. The neighborhood presented is treated as an example of how the standards might be applied rather than as a recommended design for a specific neighborhood.