

THE DESIGN OF  
CONTEMPORARY SCHOOLS IN TAIWAN

by 817

KE-CHIANG TUAN

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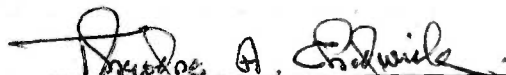
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Approved by:

  
Major Professor

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## Introduction

Education is essential in every country. The strength of a country depends on her ever-developing educational system. China, in her long history through many dynasties, unfortunately had not changed her educational system during the past five thousand years until the very recent past. In 1839, the Opium War opened the door of a culturally isolated country to outside influence. Western cultures from then on began to play a part in the ways of life in this land, politically as well as culturally.

In its long history the development of Chinese education can be roughly divided into four different stages.

1. The period before Confucius (500 B. C.) - Formal schooling lacking: This was the period of personal tutoring, from father to son, teachers to disciples, etc. Confucius was the first person in Chinese history to perform public tutoring. He had three thousand students and established the backbone of the early school system in China. His influence was great. Many followed in his footsteps and carried on his work, and his methods were adopted far and wide.

2. From 500 B. C. to 1839 many colleges and schools of different levels had been established. These schools are not quite similar to the ones we now have. Most primary schools were private ones with students numbering from three to twenty. The curriculum included the teaching of Confucius' and other

great men's thoughts in the form of history, classical literature, and philosophy which were usually too profound for the young at first but nevertheless proved basically effective in the long run.

3. The period from 1839 to 1911: Science during this period in China was underdeveloped and philosophy as always, was still given great attention. China was then compelled to open her door to Europeans whose material powers impressed the Tsing Dynasty who then tried to establish many schools mainly for the study of military sciences. In addition, many young students were sent to the West for further study. Upon the return of these young men, many important schools patterned after the Western system were established.

4. The period after 1911 until the present: After the revolution in China, many more young people were still sent abroad. They went to England, Germany, America etc. The educational systems of these countries continuously influenced the building up of the modern educational system of China until it reached its present form which is a 5-stage system:

Nursery school and Kindergarten	3 to 6 years of age
Elementary school 6 grades	6 to 12 years of age
Junior high school 3 grades	13 to 15 years of age
Senior high school 3 grades	16 to 18 years of age
University or college and graduate school	

Because of the unfortunate endless war situation in China, education has never been given due consideration. As a result, the school plants have not been very well developed according to modern standards. After mainland China was overrun by communists, the Central Government of the Republic of China moved to the island of Taiwan. During the twenty years of temporary peace an intensive drive in the field of education has been initiated. Because the population of Taiwan is growing very rapidly, the Central Government was soon faced with a shortage in schools. In order to meet this challenge, modern school buildings were constructed at a rather rapid pace.

It is now expected that with a still growing population, more school buildings will continue to be needed to insure the maintenance of the countries fundamental principles, that will promote democratic government. In short, the building of schools will reflect the nation's progress.

In this thesis the general conditions of topography, climate, and population of Taiwan have been discussed. Because of the rapid population growth of Taiwan, the problems of education are becoming more serious than they were in the past. To meet the problems of education in the future the erection of reasonable and economical school plants is very important and necessary. In this thesis four types of school buildings are illustrated. They are the nursery school, kindergarten school, elementary school, and secondary school. The contemporary curriculum, teaching methods, flexibility of classroom

space, economy of operation of school plants, mass production, and use of available native materials will be considered in this thesis.



## The Land of Taiwan

Taiwan is a small island. The total area is about 30 thousand square Km., an equivalent of 12 thousand square miles. Seventy percent of the total land area consists of mountains, hills, or rivers. Most of its flat land is located on the western part of the island, and 90% of its population is living in this area. The relationship of Taiwan to its general surroundings is shown by the maps on pages 5, 6, and 7.

Plate I

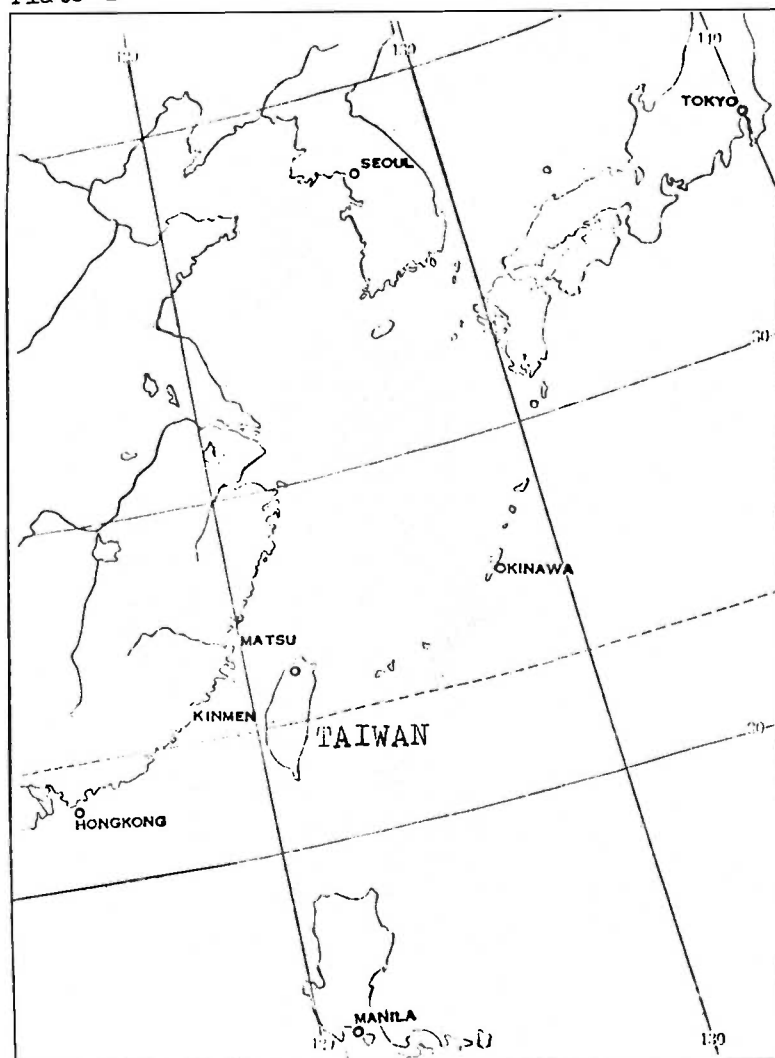


Plate II

臺灣地形圖  
TOPOGRAPHY OF TAIWAN

高度 (呎)



- altitude (feet)
- 9,900呎以上
- above 9,900 feet
- 6,600—9,900呎
- 6,600—9,900 ft
- 3,300—6,600呎
- 3,300—6,600 ft
- 1,650—3,300呎
- 1,650—3,300 ft
- 330—1,650呎
- 330—1,650 ft
- 330呎以下
- below 330 ft

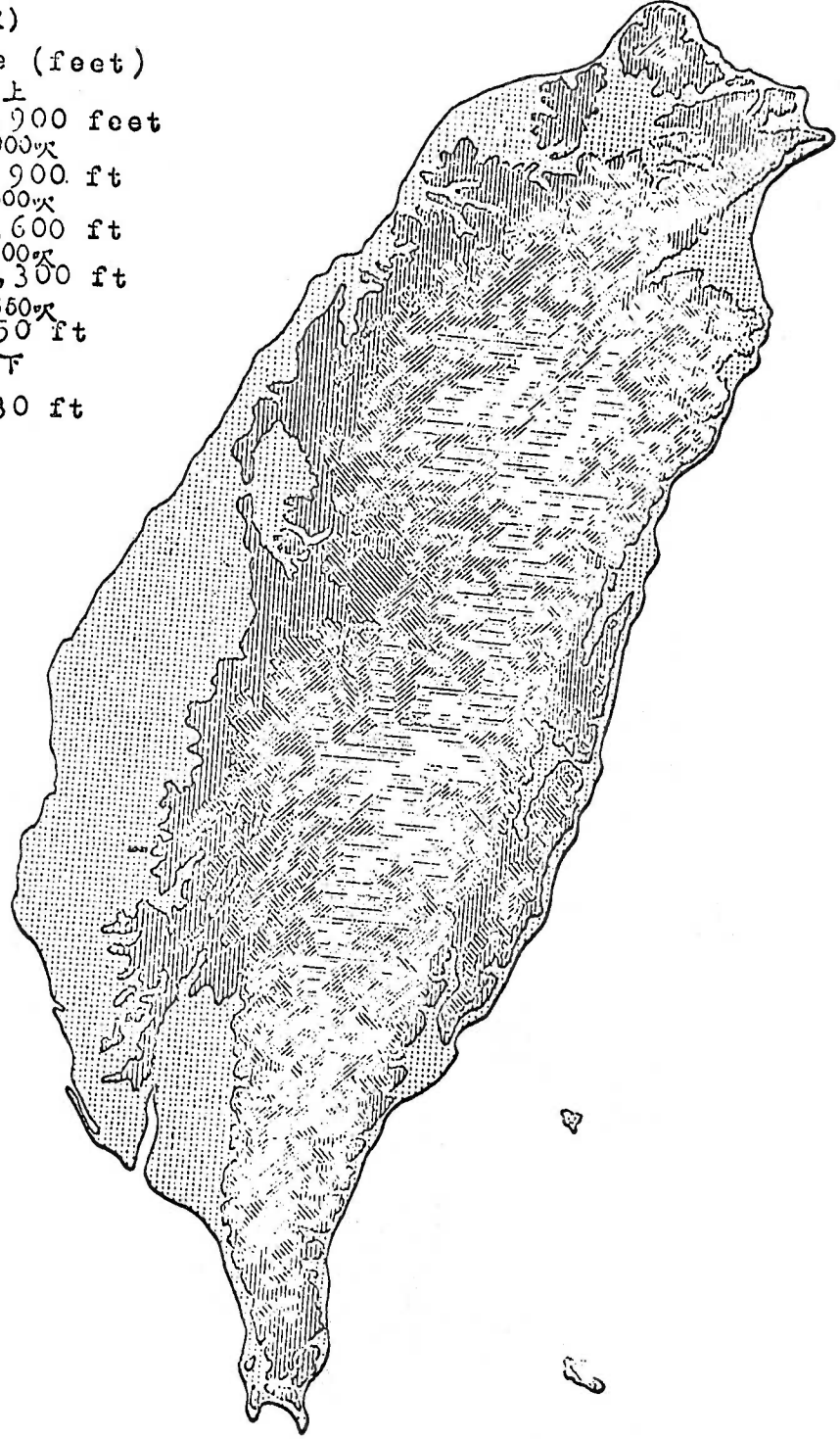


Illustration 1. Topography of Taiwan.

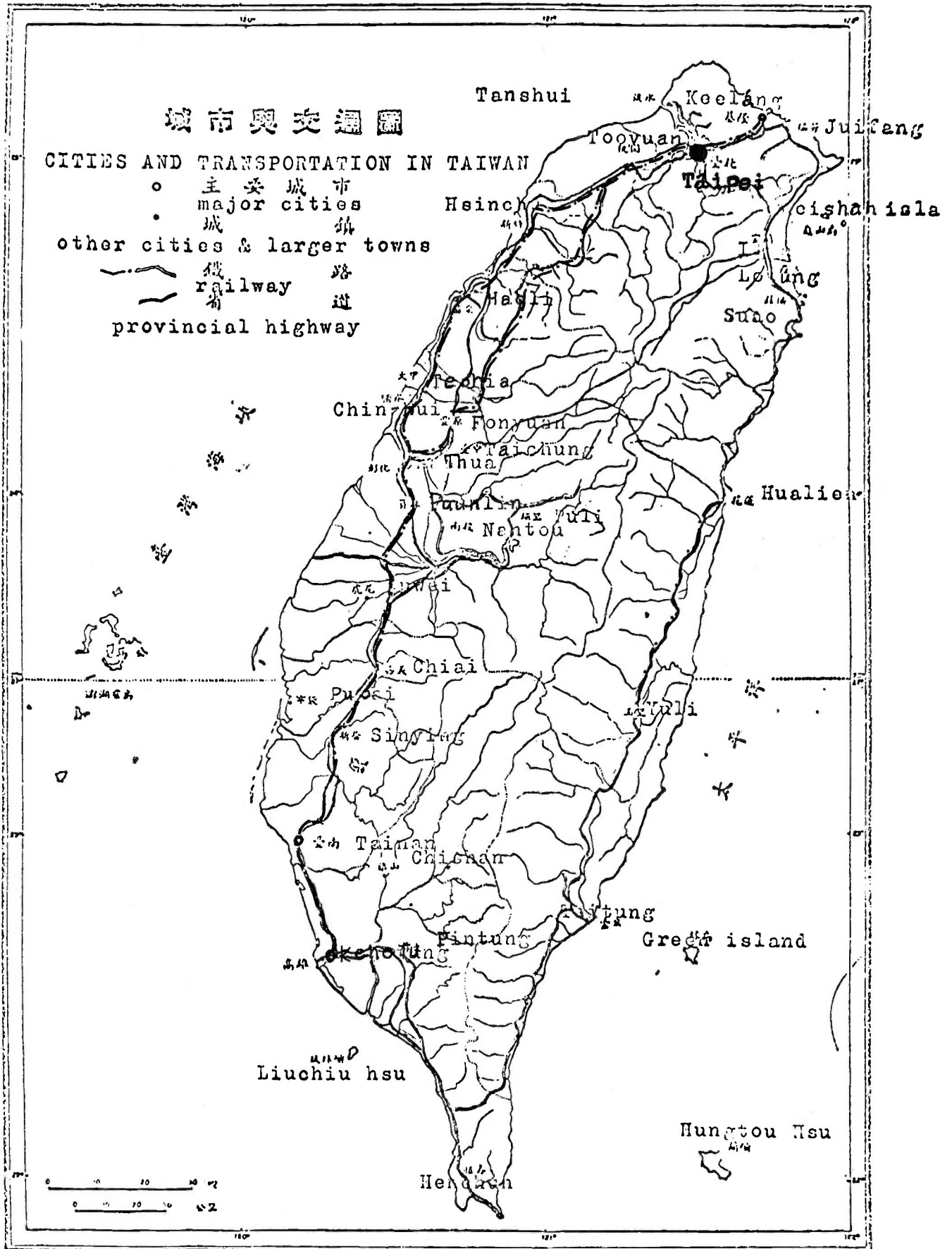


Illustration 11. Cities and transportation in Taiwan.

## The Population in Taiwan

A. The population in Taiwan is 12,500,000. The density is 812.2 people per square mile. The growing population ratio is 2.5%. Accordingly when the population will be 16,218,100 in 1973, the density will be 1172.6 people per square mile. The population in Taipei now is 1,030,000. Because of more and more development of industry in the Taipei area, the population forecast is for 1,390,000 by 1973.<sup>(1)</sup>

B. For developing the education in Taiwan, the various government departments in the field of education jointly have a long-range development program for education in Taiwan. This program will try to solve the school problem shortage by providing enough space for school children in the years to come. It is expected that in 1968, the students enrolled in public school will total 2,681,900.<sup>(2)</sup>

C. The population structure in Taiwan is shown on page 10.

Age composition	Percentage
0 - 4	18.1%
5 - 12	16.9%
13 - 19	14.5%
20 - 29	14.1%
30 - 64	28.7%
65 above	6.7%

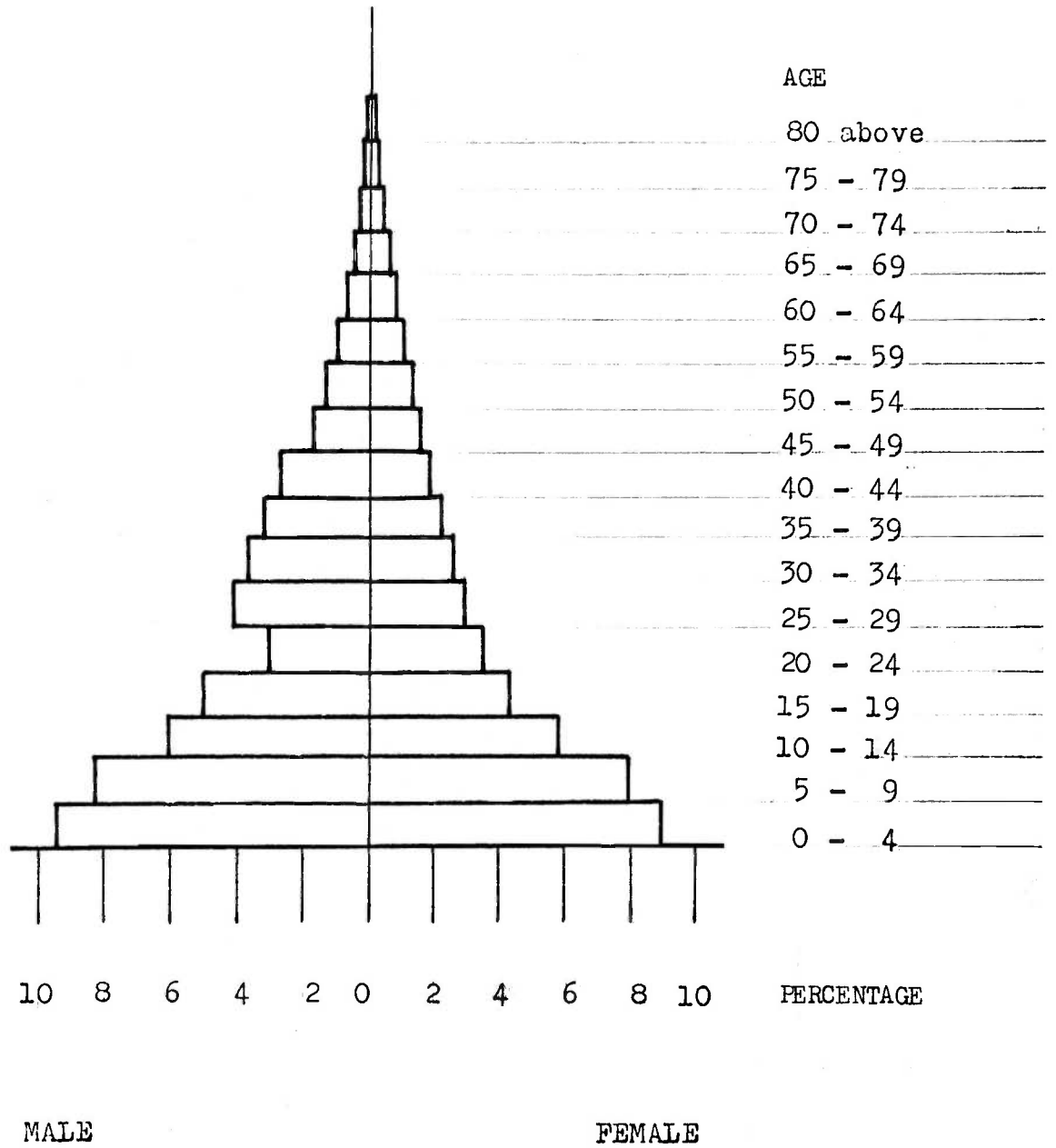
(1),(2) The Problem of Taiwan's Population (see bibliography, P.90)

THE DISTRIBUTION OF POPULATION IN TAIWAN



Plate V

FIGURE OF POPULATION COMPOSITION IN TAIWAN



POPULATION PYRAMID

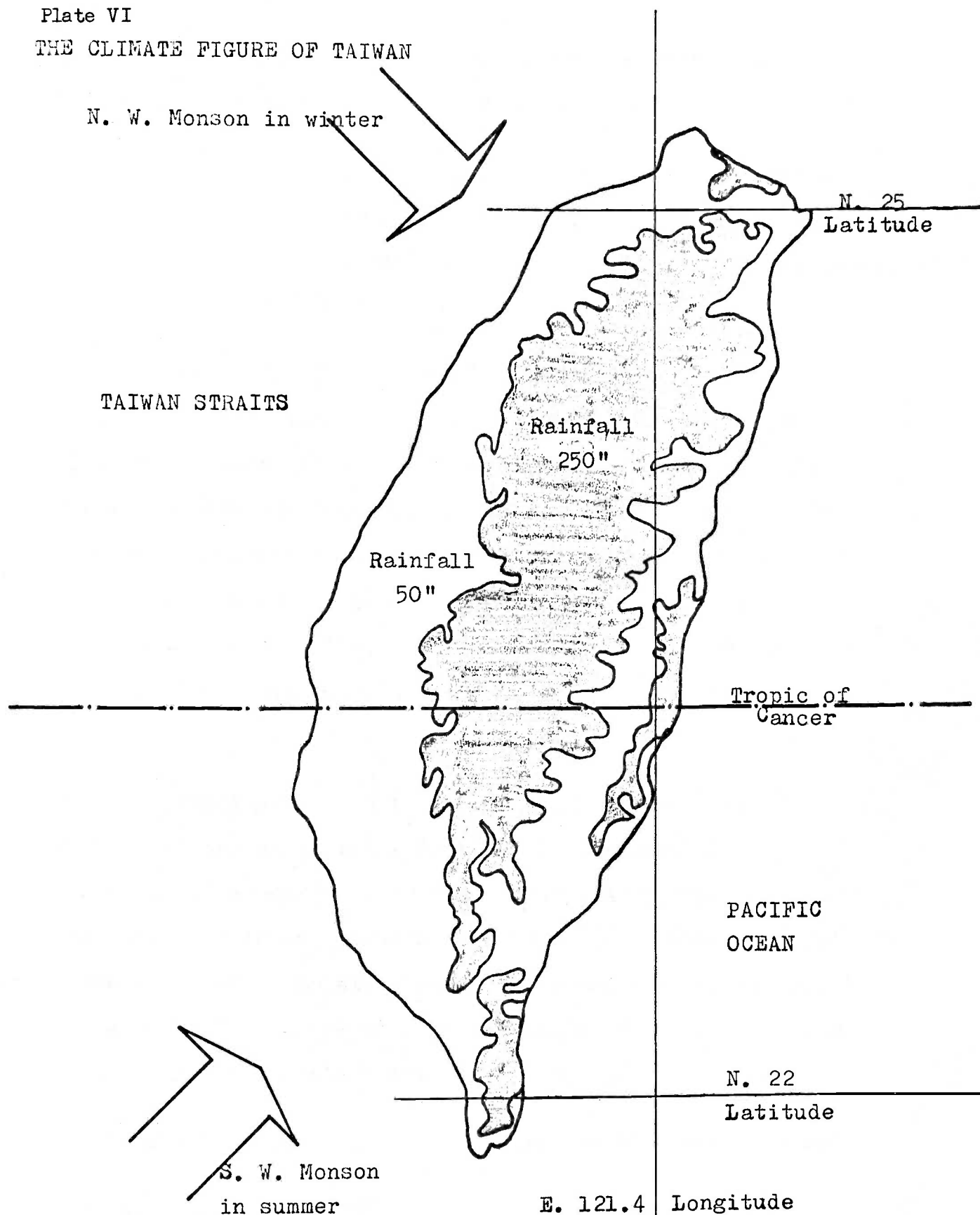
## The Climate of Taiwan

The climate is subtropical, usually with a long period of a hot and humid summer between March and October and a short and wet cold winter from the middle of November to early February broken by periods of pleasantly warm weather. This island is situated within the great Asian Monsoon area, and the local wind blows from the northeast in the winter and from the southwest in the summer. The average temperature is  $70.9^{\circ}\text{F}$ . The average yearly rainfall is about 50 inches on the low western coast and about 250 inches in the mountain area.

An average of one to three destructive typhoons pass over the island of Taiwan each year. Usually typhoons occur in June and September. This situation plus the existence of occasional earthquakes make it necessary to build structural soundness as a vital factor in design.

The figure on page 12 represents a picture of the climate of Taiwan.

Plate VI  
THE CLIMATE FIGURE OF TAIWAN





## The General Set Up of Educational System of Child Development Centers, Kindergartens, and Elementary Schools

A. Administration: The agencies that administrate and control the nursery school, kindergarten, and elementary school are 1) county and city governments, 2) vocational and military organizations, and 3) private groups.

B. Finance: There are three sources of income for the support of elementary schools; 1) county or city governments, 2) private funds, fees, or income from endowments, and 3) vocational and military organizations. Usually the 6-year elementary education is free of charge wherever the schools are situated in areas that are under the law of compulsory education. Most of the nursery schools and kindergartens are run by private organizations and need support from student fees.

C. Curriculum: In the lower grades, the curriculum consists of Chinese, official language (Maderine), music, arts, and physical education. In the higher grades, the curriculum consists of Chinese, national language, arithmetic, general sciences, music, social sciences, arts and crafts, and physical education. This curriculum is similar to that of all elementary schools the world over.

## The General Set Up of Educational Systems for Secondary Schools:

A. Administration: Secondary education in China is the

responsibility of: 1) the local government of the province or the county, or the department of education in a city, 2) experimental schools run by a normal university (teacher college), and 3) private organizations.

B. Finance: There are five sources for support of secondary education: 1) the central government, 2) the provincial governments, 3) the local governments, 4) the normal university involved, and 5) the private organizations.

C. Curriculum: The secondary curriculum generally includes Chinese, English, mathematics, social sciences, natural sciences, and vocational subjects.

The financial aids set up in terms of percentage in an annual budget for education in China are listed in the following schedule:

Sponsors	Annual Budget
Central Government University Secondary School	10%
Provincial Government University Secondary School	15%
Local Government Secondary School Elementary School	25%

The Development Scheme of Education in Taiwan for the Past 20 Years, and the Proposed Development of Education for the coming Years

The Republic of China assures the minimum of an elementary school education of six years for every child. Of Taiwan's 13 million people, nearly one-fourth are attending schools. Of this nearly 2½ million are enrolled in primary schools and a half million in junior and senior high schools. Ninety-eight of every 100 elementary-age children are now in schools. Literacy reaches the height of 92 percent as a result of compulsory education requirement for previously illiterate adults.

Educational authorities are working on long-term plans to eliminate two-shift half-day sessions and to provide junior and senior high school space sufficient for all who wish to attend. At present, examinations are required for admission to grades beyond the sixth and also for college matriculation; only about half the applicants can be admitted. The tables below show the relationship of students and schools for the past 20 years, and the probable relationship for the years 1967 - 1980.

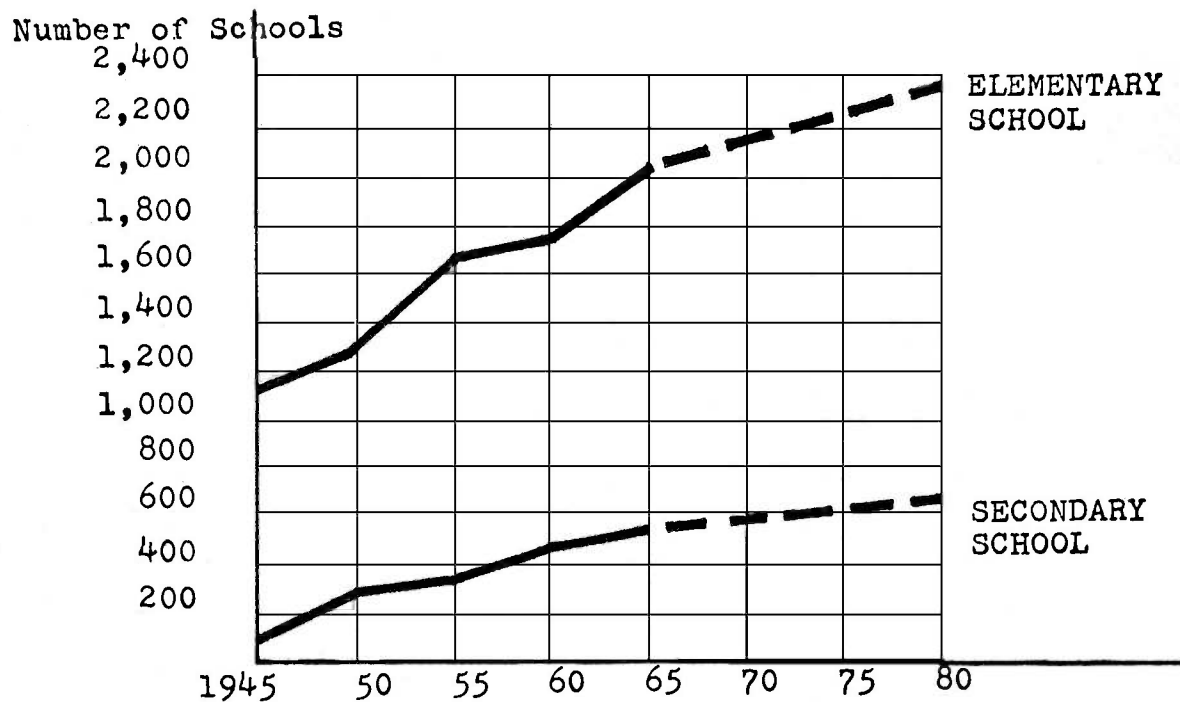
The Increase of Schools

Elementary School	From 1,079 to 2,019	84%
Secondary School	From 91 to 540	493%

The Increase of Students

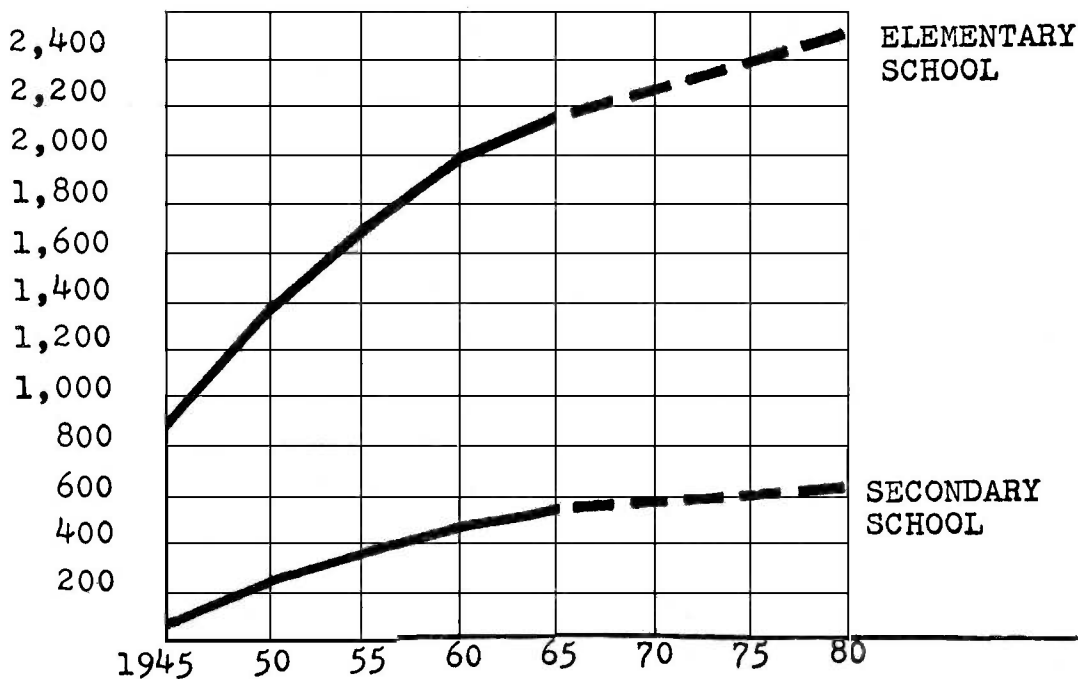
Elementary School	From 898,424 to 2,135,880	26%
Secondary School	From 47,057 to 546,899	10.6%

The Increase of Schools in the past 20 years and in the future



The Increase of Students in the past 20 years and in the future

Number of Students ( 1,000 persons )



## The General Technological Concept of School Design for this Project

### Climate

The characteristics of a school plant depend on the natural environment. The control of natural heat, cold, and humidity is very important especially on a sub-tropical island like Taiwan. So the orientation of the school on the site should be carefully considered in relationship to proper location. The choice of materials, the thickness of walls, the breeze, the shading of the building, the size of openings and so forth are all factors that are related to a good design.

### Lighting

Brightness-balance instead of high foot-candle levels is a prime requirement in establishing acceptable visual environment for critical visual tasks. Sky brightness and ground brightness are two major sources of daylight and both must be controlled in order to produce a positive visual environment for a critical visual task. Progress in daylight design depends not only upon development of more effective classroom sections but also upon planned and intelligent integration of all buildings in a school plant into patterns which guarantee daylight sources as well as sky brightness control. The function of electric lighting is to supplement or in some cases to replace day lighting. The electric lighting should be accomplished by use of both uniform and spot lighting. Thus, a building design

developed by correlating interior with exterior elements will be a combination of both in order to produce a comfortable and efficient visual environment.

The following table is adopted standard according to minimum New York footcandle recommendations:

<u>Room</u>	<u>Footcandle</u>
Classroom, lecture room, libraries, office	20
Sewing, drafting, art room	30
Shops and laboratories	20
Gymnasium and playroom	20
Cafeteria	20
Auditorium	10
Corridors and stairs	5
Locker room and toilet room	5

#### Acoustics

Acoustics is one of the most important physical properties that determine how well the school building can serve its primary function and for which a consideration of the following points is required:

##### A. The selection of site:

The acceptable noise level at the exterior of a school site should be below 70 db, which is substantially below that of the noise generally created by traffic, or other machinery vibration. The selection of the site for a school building,

the layout of the building itself, and the grading and landscaping of the site are necessarily the indispensable consideration parts of good planning against noise in buildings. The site should therefore avoid space close to highways, railroads, under aircraft flyout patterns, or heavy industrial areas.

B. Classrooms:

The acceptable noise level within school rooms is about 40 db. for ordinary classrooms and as low as 35 db. for language rooms, and music rooms. The amount of absorptive material that must be added to each classroom in order to provide the optimum reverberation time will depend on the room's size, purpose, and seating capacity.

C. The acoustical design of the gymnasium, cafeteria, library, shops, study room, office, lobbies, etc. in school buildings does not present any particular problems that deserve special consideration other than the ordinary requirements such as noise control, sound insulation, and reduction of reverberation. The special acoustical treatment of auditorium is shown in this project.

Ventilation

The ventilation for this project is a complementary system between natural ventilation and air-conditioning. No heating will be introduced in this project.

A. Natural ventilation:

In Taiwan the humidity is very high. A person will feel comfortable only when the air is moving around his body. Natural ventilation, being the cheapest means to this end, will be widely used in the semi-outdoor areas of this school project.

B. The air-conditioning will be introduced in all school plants of this project for controlling temperature and humidity for interior space. Different systems will be used in the elementary school and secondary school because of difference in volume.

Air Movement

Since 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 the classrooms.

Cooling the school is a real problem during the hot school months. Complete air-conditioning is getting rather close, to being a requirement in the schools of these days, but by the aid of air movement children may be made comfortable in most climates. If the wind is properly used, it may provide comfort through producing a movement of air in the classroom. (See page 23.)

The summer comfort chart on page 24 shows a relationship of temperature and humidity for getting a comfortable school



environment. The solar heat which comes from roofs, walls, windows and grounds should be prevented from entering the buildings. If the humidity is left at 30% and dry bulb is dropped from 10 to 80, the effective temperature thus becomes 72°F which is a comfortable level for most people.

### Color

Being low-cost in installation and maintenance, color is used to improve visibility, visual orderliness, identification efficiency which are vital for the morale, and spiritual well-being in learning. For the same reason the ceiling should be high in value suspended electrical fixtures provide indirect lighting. Chalkboards and tack boards are much lower in reflectance than the ceiling, hence the color of surfaces immediately adjacent to them should have a value between their reflectance factor and that of the higher reflectance of surrounding surface to serve as a transition. Color of flooring material should be light in order to reflect and diffuse light and to reduce brightness contrast with visual tasks at desk-top level.

In classroom: The obvious conclusion for a color scheme is to make it predominately natural and peaceful. We should not underestimate the long term effect of color during occupancy for hours, days, or months. In traffic areas, there is an opportunity to play with stimulating colors with a wide range of value. Long corridors, for instance, can be shortened by a strong advancing hue at the end of a corridor vista.

## Comfort and Security

The objective of the school planning is to house the pupil with as great a consideration of his physical and emotional needs as is possible. The good school is that one which is designed and equipped to satisfy all that the pupil needs to do. Working with the sense of security helps him to learn and to study efficiently.

The schools cannot function properly if the spaces are too small for individuals or groups of pupils to work in, or if the shelves are too high to reach and seats are too small to sit in with comfort. The sizes of the school's furniture or equipment should be determined according to the ages of the students. Plate X shows that the pupil is a measurement factor, which varies from one group to another. The "H" is the average height in inches indicated in circles for each age or corresponding grade. (See Plate X on page 27.)

Figure 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.

Figure 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, New York, 1954, pp. 5 and 6.)

Plate VIII

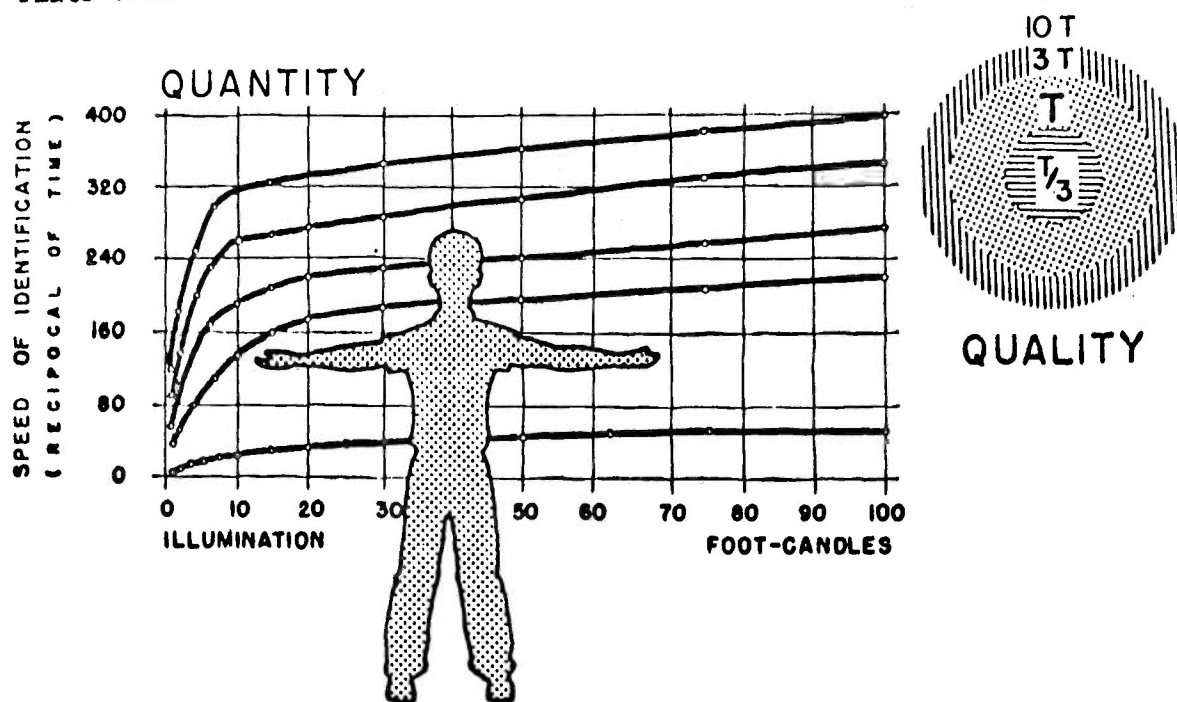


Fig. 1

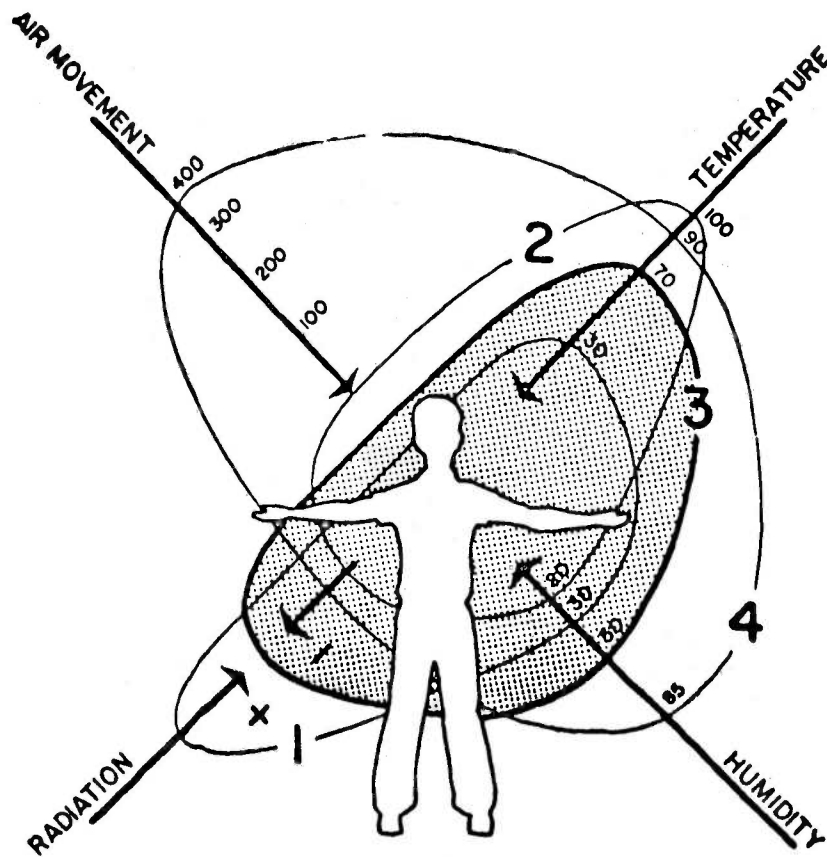
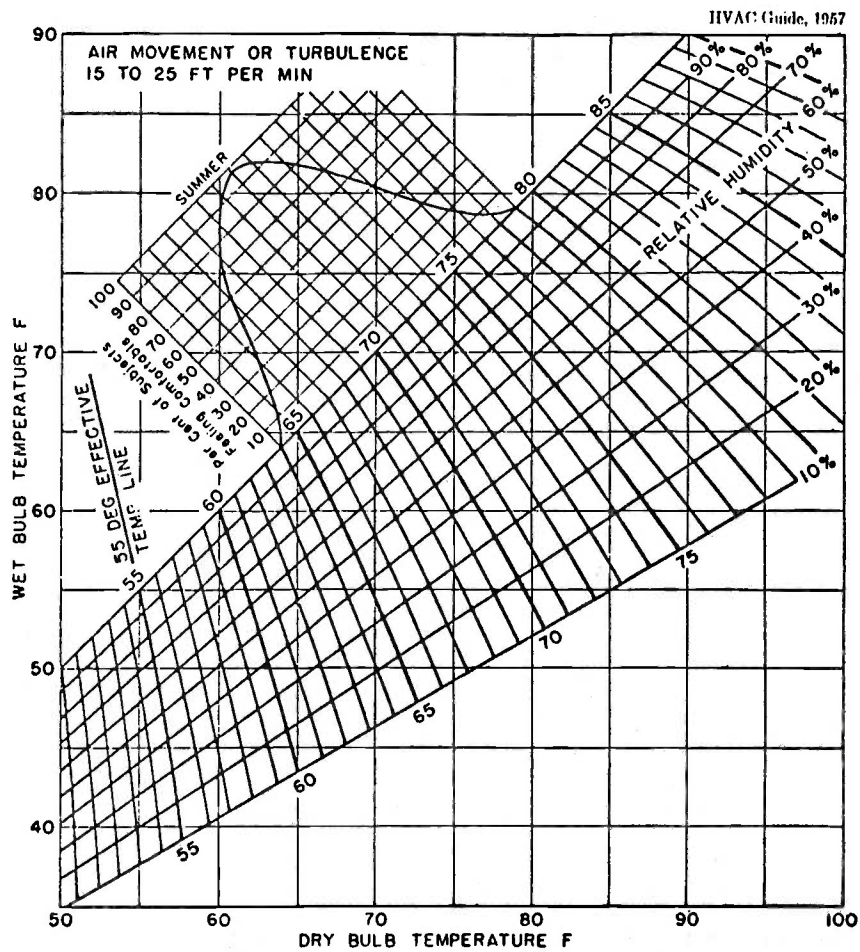


Fig. 2

Plate IX

SUMMER COMFORT CHART FOR STILL AIR:

[ THERMAL CONTROL; SUMMER ]

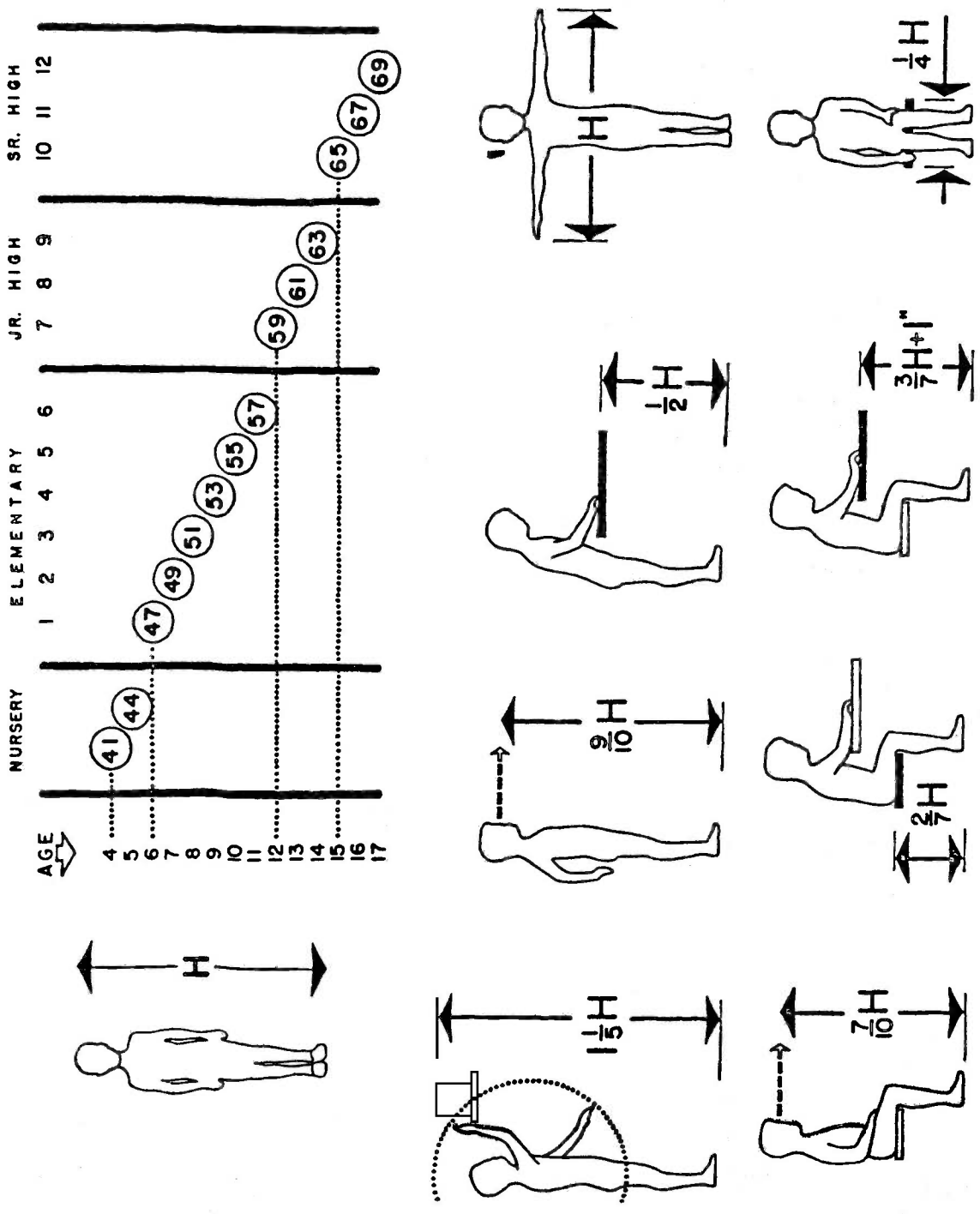


5/3 SUMMER COMFORT CHART FOR STILL AIR  
 Applies to buildings in the U. S. where occupants become fully adapted to artificial air conditioning, such as houses, and to regions in the latitudes of Pittsburgh and farther north that are not more than 1000 feet above sea level. An increase of 1° ET should be made for each 5° reduction in north latitude.

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.

Plate X

The Physical Size of the Client



## The Concept of Design for the School

Children Development Center (Nursery school)  
From three to five years of age (See Plates XIII,  
XIV, and XV).

Those who are interested in nursery education do not need to be told that play<sup>(1)</sup> is important for very young children. Play in fact is the core of their curriculum. The quality of play, or course, is influenced not only by the attitude of the adult leader towards the play but also by the nature of the space and the quality of materials used to enhance the space for play.

Since education is a means by which individuals are ushered into an understanding of their contemporary culture, Chinese education at each level also has its purpose clearly defined: to help children in learning to live in a democratic society. The nursery school has a particularly important role to play in achieving this purpose. It offers the children their earliest opportunity to live outside of their homes, interdependently with a group of contemporaries, and thus to develop attitudes concerning themselves and the life attitude that will be required in a democratic society. It is obvious, however, that school alone cannot be responsible for such a vital course; home and school must cooperate in this joint venture. The nursery school must, therefore, work with the parents to supplement and to enrich a child's mental and physical development.

(1) Schools for the Very Young (see bibliography, P.90)



In summary, it may be desirable to say that nursery school education with its deep respect for the individual and with emphasis on producing sound and creative thinking aiming at the promotion of cooperative effort will be an important stage contributing to a child's overall growth. Thus, the design of the nursery school becomes a rather important part in the total educational scheme.

#### The Kindergarten

From five to six years of age (See Plates XIII,XIV,XVI,)

Kindergarten is the bridge linking nursery school and elementary school. Design of a kindergarten is characterized by the space preeminently used for physical movement in conducting various kinds of work and play. Another characteristic of the kindergarten program is the development of a sense of belonging to a group. This aim is furthered by the numerous and varied occasions for group participation. Creative work and play are encouraged, particularly in terms of the simple constructive operation of building toys, a car, a truck, or a train. In the entire process of planning and designing of the space for the kindergarten, enough space should be provided for cooperative and constructive activities.

#### The Elementary School

From six to twelve years of age (See Plates XIII,XIV, XVI,XVII,XVIII,and XIX).

The elementary school plants and facilities provided will have to be planned more or less on the basis of education of

an individual. It is more important than ever that adequate planning efforts should be made not only to provide just sufficient space to accommodate the school population but also to provide the right kind of space to house an individual within a community. The school plant is thus more than just a shelter. It should be an adequate plant to implement and to facilitate the instructional program, for each and for all. A new elementary school so designed that it is aesthetically sound and functionally flexible is the result of careful and conscientious planning that involves the resources of many people's research over a long period of time.

In this modern elementary school, attempts are made to care for individual needs. This situation means that free and flexible space is definitely needed for each individual's constant alertness in response to individual needs of others which are usually different one from another and subject to change from time to time. Considerable differentiated study of individual interest, aptitude, and level of achievement in every class will be required. The serious consideration of teacher-parent conference as a method of reporting pupil progress is of great value since from such reports parents may get a much clearer understanding of the child's progress in an informal talk with the teacher rather than from the formal report card.

The purpose of modern elementary education in China today involves not only the development of competence in the skills of reading, writing, speaking, and arithmetic exercises,

but also the development of individual interests and good habits socially acceptable in working and playing with others.

The Secondary School (Junior high and Senior high)  
From thirteen to nineteen years of age (See Plates XX through XXIX)

It is here proposed that junior and senior high education should help students to develop useful skills, good health and fine citizenship contributing to a happy family and social life. The result expected is that a student will master the techniques in various fields, in order to appreciate the best in his culture and to engage in creative activity. In fact, he is supposed to use his leisure time acceptably and to select his moral values wisely. He, of course, must master the skills of communication.

There is general acceptance of the idea that in junior high school the adolescent youngsters can make a progressive and pleasant transition from that of an individual's general experience in the elementary school to that of the more specific and intensive experience in the high school. The curriculum of secondary school consists of the following: business education, language arts, homemaking, industrial arts, mathematics, music, physical education, and science. The junior high school program of studies is the same for all pupils, with the exception of homemaking for girls and industrial arts for boys. In the senior high school the required subjects for all pupils are the same as the requirements set forth by the Department of Education.

## The Problem and the Sites

### The Problem

The objective of this problem is to design a standard and economical child development center, an elementary school, and a secondary school (Junior high and senior high school) for a new and rapidly growing community which is located in the suburbs of Taipei City. The school is to accommodate the child development center for 80 pupils, 60 pupils in the kindergarten, 540 pupils in the elementary school, and 1,200 to 1,500 students in the secondary school.

### The Site and Site Selection

A. For the child development center and the elementary school, the site is to be located in a rapidly growing southeastern Taipei suburb. The east-west highway is on the north side 1/2 mile from the site. Tun-Hua South Road is on the east side, and Jen-Ai Road section 4 is on the south of the site. On the north and the west of the sites are residential and park areas. The climate is sub-tropical. There is usually a long period of hot humid summer from March to October and a short wet cool winter period from the middle of November to early February. These two periods are occasionally broken by spells of pleasant warm weather. The average annual temperature is 70.9°F and the average yearly rainfall is about 50 inches. The area of the site is about 720 feet by 790 feet or about 12 acres.

B. For the secondary school (junior high and senior high school) the site is to be located south and east two blocks away from the site of the elementary school. The main streets are Hsin-Yi Road section 4 on the North, Ho-Ping East Road section 3 on the South, and Pai-Dei Road on the West of the site. On the East of the site is a farm area. The area of the secondary school site is about 1,900 feet by 1,340 feet or about 45.5 acres.

Since the site should be selected far in advance of immediate building needs, it is impossible to determine exactly the nature of the future building and the needs it will serve. Education and planning consultants can usually provide basic population information to guide the board in selecting the best probably general location for the proposed site.

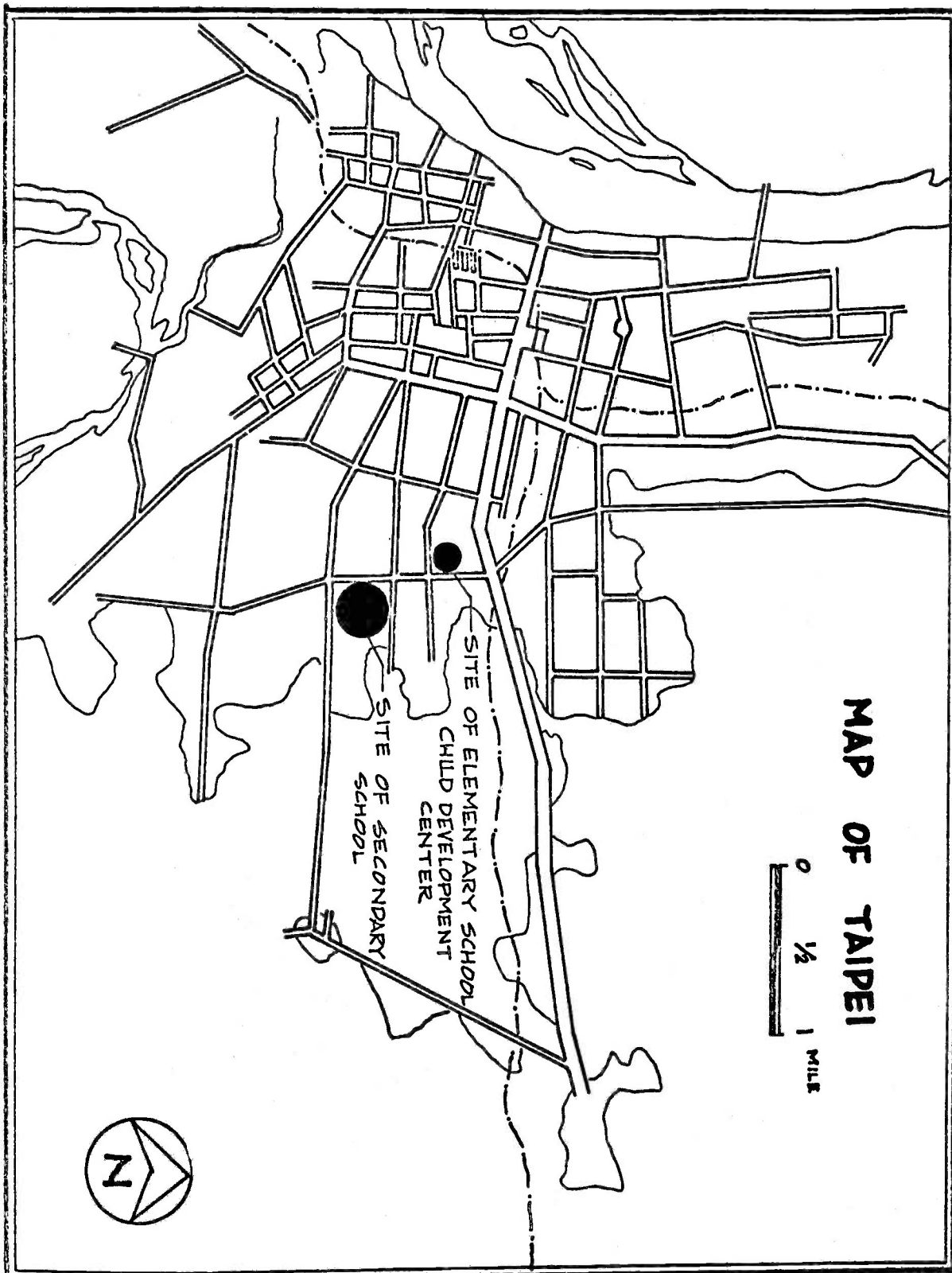
The criteria of scoring school sites used in the Schneider Site Evaluation Rating Sheet, on page 34, were the comparative of merits of a given site in relation to all other sites rated in the same area and the optimum conditions surrounding and affecting the location of the new plant in that area. The factors used in this rating sheet are accessibility, acquisition, community use, drainage, environment, expansion, the proximity to a population center, site preparation, topography, the proximity to traffic hazards, the location of its utilities, area zoning, the acreage available, and the space for two local options.

Plate XI

SCHNEIDER SITE EVALUATION RATING SHEET

Location:												Site Design		
District:												Final Rating		
Date:												Evaluated by:		
Weightings			10	9	8	7	6	5	4	3	2	1	0	
EVALUATED ITEMS	Accessibility	1	*	*	*	*	*	*	*	*	*	*	*	Final Rating CALCULATION: A/B 1000=
	Acquisition	2	*	*	*	*	*	*	*	*	*	*	*	
	Community use	3	*	*	*	*	*	*	*	*	*	*	*	
	Drainage	4	*	*	*	*	*	*	*	*	*	*	*	
	Environment	5	*	*	*	*	*	*	*	*	*	*	*	
	Expansion	6	*	*	*	*	*	*	*	*	*	*	*	
	Population	7	*	*	*	*	*	*	*	*	*	*	*	
	Topography	8	*	*	*	*	*	*	*	*	*	*	*	
	Preparation	9	*	*	*	*	*	*	*	*	*	*	*	
	Traffic	10	*	*	*	*	*	*	*	*	*	*	*	
	Utilities	11	*	*	*	*	*	*	*	*	*	*	*	
	Zoning	12	*	*	*	*	*	*	*	*	*	*	*	
	Acreage	13	*	*	*	*	*	*	*	*	*	*	*	
	Option	14	*	*	*	*	*	*	*	*	*	*	*	
Total Score														A. Total Score B. Items Scored

Plate XII



## The Space Requirement in this Program

### The Space Requirement of the Child Development Center (The Nursery School)

#### A. Playroom 3 units

In this room children will be learning to become part of a group, and at the same time they will be learning to become independent individuals. Usually 40 square feet per pupil are necessary in the playroom. This room must contain space enough for taking naps, working, and eating. The storage room and the toilet room should be located conveniently. About 1,000 square feet are required for these areas.

#### B. Observation room 3 units

This room is so designed that people can observe the children inside the playroom without their knowing that they are being watched. It is used by teachers, parents, researchers, and observers. A recorder and other electronic equipment are required in this observation room for the purpose of doing research work. One hundred and thirty square feet of space is required.

#### C. Storage 3 units

One hundred and fifty square feet of space is needed for the storage of toys and nap equipment.

#### D. Locker space

The children need 70 square feet of space for storage of their own coats and toys.



E. Toilet room 3 units

This room should be easily accessible from the outdoor play area and from the playroom inside. About 170 square feet of space is necessary.

F. Isolation room 1 unit

This room is used to isolate a sick child while he is waiting for his parents before hospitalization. The isolation room is a part of the medical unit and it should be located near director's office. The space requirement is 120 square feet.

G. Administrative space

This space will include the following:

<u>Name of Room</u>	<u>Number of Room</u>	<u>Sq. Ft. Needed</u>
Director's office	1	160 sq. ft.
Mechanical and janitor's room	1	170 "
Conference room	1	240 "
Medical room	1	110 "
Kitchen, storage, laundry	1	560 "
Staff lounge	1	190 "
Reception room	1	140 "

H. Teacher's office and lounge 3 units

This space is to be used by the teachers for resting, or for working with visitors or researchers. Two hundred and sixty square feet of space is required.

I. Hall and Exhibition space 1 unit

Five hundred and seventy square feet is needed.

J. A similar indoor play space 1 unit

One thousand and six hundred square feet is needed.

K. A play ground of out of doors

This area will combine with the elementary school play ground. Two thousand square feet is the minimum required for the children.

#### The Space Requirement of the Kindergarten

A. Multi-purpose room 2 units

The multi-purpose room is to be used as a reading area, a group play area, a nap area, an eating area, and an area for other play activities. One of the basic objectives of the kindergarten program is the development of a sense of belonging to a group doing creative work and play under the encouragement of the instructors. Flexibility and adaptability should characterize the construction of the play room. There should be 1,200 square feet for every 30 children.

B. Toilet room 1 unit

The toilet room should be used as a wash room and it should be easily accessible from the multi-purpose room and also from the outdoor playground area. Five hundred and fifty square feet of space area is required.

C. Storage 2 units

This area should be located near the multi-purpose room, as it is to be used for the storage of toys and nap equipment.

The Space Requirement of the Elementary School

A. Classroom 18 units

The equipment in each room includes a television set, chalk board, tack board, a sink, work tables, exhibition space, book cases, various kinds of electrical equipment, and a small storage space. The size of the desks and the chairs in the classroom should be adjustable to the size of the pupils using them. The total area required for each classroom is 900 square feet.

B. Assembly room 3 units

The assembly room is to be used as a meeting room for all the pupils. They gather here to watch movies and to participate in other activities of this nature. This room may also be used as an exhibition room or an interior play area. Two thousand square feet is needed for the assembly room.

C. Classroom Unit Service Area 3 units

This area is a complex containing a boys' and a girls' toilet room, a janitor's room, a mechanic's room, and a teachers' lounge. The complex requires 770 square feet of space.

D. Library 1 unit

The reading room is to be used by the higher grades and should have an outdoor reading space near by. Five hundred square feet is advised for this area.

E. Speech room 1 unit

The speech room is used by the higher grades to study languages. Two hundred square feet is needed.

F. Student Activity room 1 unit

The activity room is to be used as a meeting room for the various student club and organizations. Two hundred and twenty square feet is needed.

G. Multi-purpose room 1 unit

This room will be used in the following ways:

Playroom, gymnasium ..... physical education.

Assembly Center ..... playing, meeting.

Cafeteria ..... eating.

Community use ..... social gatherings.

This room should be independently accessible. Accoustics is one of the major problems of concern. The ceiling height should not be lower than 20 feet while the room size should be approximately 4,400 square feet. Locker rooms for the boys and the girls should be located near by.

H. Music room 1 unit

The music room is for use in music instruction or for band practice. Nine hundred square feet is needed.

### I. Administrative office 1 unit

General office and staff working room .... 1,200 sq. ft.  
 Principal's office ..... 250 sq. ft.  
 Registration office and Secretaries' office 250 sq. ft.

(This room should be placed adjacent to the principal's office and it should be located conveniently for access by persons desiring to obtain information.)

Health room ..... 250 sq. ft.  
 Caretaker's room ..... 250 sq. ft.

### J. Outdoor Space

This space will include play field areas, court game areas, playground areas, and bicycle and parking areas.

### The Space Requirement of Secondary School

#### A. Administration Area

This space for administration of the secondary school should be located near the heart of the school's buildings. Its location should provide access by students and staff as well as by parents and other visitors. Usually activities in this area are reception, general office, registration, conference for parents, teachers and students.

Guidance and counseling should be near the center of pupil activity, adjacent to the library and accessible from a building entrance. This area should not be identified with administration, but should be a bridge between students and administration.

The spaces required are the following:

<u>Name of Room</u>	<u>Number of Room</u>	<u>Space needed</u>
Principal's office	1	150 sq. ft.
Vice Principal's office	1	150 "
Reception room and Secretary's office	1	220 "
General office	1	720 "
Vault	1	80 "
Mimeograph and Duplicating	1	200 "
Dean's offices (boys' and girls')	2	130 "
Test service director's room	1	220 "
Dean's secretary's office	1	160 "
Counselor's office	4	140 "
Conference room	1	470 "
File storage	2	200 "
Toilet room	4	110 "
Janitor's room	1	200 "
Storage	2	200 "
Student's activities center	2	450 "

B. Health service center

This space should be near the administration area and easily accessible for students, parents, doctors, and hospitals. The space shall include the following:

<u>Name of room</u>	<u>Number of Room</u>	<u>Space needed</u>
Dental and medical office	1	400 sq. ft.
Reception room	1	360 "

<u>Name of Room</u>	<u>Number of Room</u>	<u>Space needed</u>
Examination room	1	120 sq. ft.
Rest room	1	80 "
Storage	1	100 "

#### C. Arts and Crafts

In this particular space instruction will be offered for painting and design as well as for crafts work in ceramics, leather and metal. Sculpture is also a possibility. It would therefore seem advisable to have the area near the auditorium stage and with somewhat ready access to an outside entrance for the delivery of supplies and for outdoor sketching. A north window area is needed. The acoustics provisions, lighting provisions, ventilation provisions, utilities provisions, audiovisual provisions should be carefully related. The space required is the following:

<u>Names of Room</u>	<u>Space Needed</u>
Classroom	2,300 sq. ft.
Store and kiln room	500 "
Office	200 "

#### D. General purpose room

General purpose classrooms are used for the teaching of the Chinese language, Chinese, journalism, dramatics, modern foreign language and the social sciences. Except for speech training, these rooms are similar and have about the same requirement for furniture, interior finishing and storage. Each shall serve 25 to 45 students for six one-hour periods per day.

General purpose rooms must be located so that classes can move readily to and from the library. They shall be far enough away from the music rooms, shops, and activity fields to prevent sounds of instrument and voices from becoming distracting problems. It must be possible for the teacher to move about the room to any work stations and for any student to move from his station to any other part of the room. Recommended allocations are the following:

<u>Name of Room</u>	<u>Space Needed</u>
Language art room	1,700 sq. ft.
Classroom	900 "
Language lab.	900 "
Social studies	3,000 "

#### E. Science and Mathematics

Each science space shall be planned to serve the dual purpose of laboratory and recitation. It is suggested that perimeter arrangements of work sinks, gas, water supplies be considered. Further requirements are that in a science room audio-visual aids are frequently, and there are demonstrations and experiments that require a darkened room. Floor in biology and chemistry rooms must be acidresistant. The space required is the following:

<u>Names of Room</u>	<u>Space Needed</u>
Biology lecture-laboratory	2,600 sq. ft.
Chemistry lecture-laboratory	1,700 "
Physics lecture-laboratory	1,700 "



<u>Names of Room</u>	<u>Space Needed</u>
General science lecture room	900 sq. ft.
Mathematics classroom	900 "
Project room (storage)	140 "
Storage	200 "

#### F. Business Administration

This department shall be located near the school office.

The courses given are:

Typing: A beginning course designed to acquaint the student with the fundamental procedures in typewriting. The space needed is 1,400 square feet.

Shorthand: Course to prepare for stenographic work in an office. Space needed is 900 square feet.

Bookkeeping: To prepare for work in an office for keeping accounts or preparation to enter college accountancy course. The space needed is 900 square feet.

Business Machines: The room will probably be the smallest of all and the business classrooms and should be connected with shorthand and bookkeeping rooms. The space required is 600 square feet.

Storage: The space needed is 300 square feet.

#### G. Homemaking

The main objective of homemaking instruction is to help students become better home makers through the acquisition of

skills and knowledge, right attitude and understanding related to the problems of contemporary family living. The activities will be those of child care and development, clothing and textiles, food and nutrition, health and safety, home management, and home furnishings. Service access from a parking area is important for the unit. A relatively easy access to arts and crafts and science should be considered. Flexible walls are needed so that the entire area can be used for large groups. The color scheme should provide variety and interest. Floors should be attractive and comfortable to stand on. The space requirements are the following:

<u>Name of Room</u>	<u>Space Needed</u>
Cooking laboratory room	1,700 sq. ft.
Practice dining room	500 "
Clothing and textiles room	900 "
Office	700 "
Storage	200 "
Multi-purpose room	1,700 "

#### H. Music

The total music department should be planned to serve choral, band and orchestral functions and to offer instruction in music theory and appreciation. There should be a main floor location for both instrumental and vocal departments, direct access to auditorium stage, direct outside entrance to each main rehearsal room. To make music rooms serviceable, there are details that should be considered rather carefully:

1) avoid parallel wall surface. 2) use non-perpendicular

angles to help in breaking up undesirable sound wave reflections. 3) avoid concave surfaces which focus sound, and 4) be careful about any design which may create echoes, dead or bright spots, flutter echoes and standing waves. The space requirements are the following:

<u>Name of Room</u>	<u>Space Needed</u>
Instrumentation room	2,000 sq. ft.
Practice room (large)	1,000 "
Practice room (small)	570 "
Office room	500 "
Choral room	1,000 "

#### I. Library

The library is the heart of the school. Its resources give meaning and content to the curriculum. The library functions are the following: 1) a service agency, 2) a teaching agency, and 3) a reading area where provides a place for individual and small group project work and research as well as being a nice place for use of students who are interested in reading. The library assumes the responsibility of being a source for current literature in the field of science, electronics, aviation, mechanics and other areas, and 4) audio-visual material center: music and playing records are now considered an integral part of library materials. The library is the accepted location for storage and preview of audio-visual materials. The library should be quite conveniently near the center of student traffic and adjacent to most of

the general classrooms. It must therefore occupy an area of maximum accessibility as well as maximum privacy. The space required is the following:

<u>Name of Room</u>	<u>Space Needed</u>
Reading room	2,500 sq. ft.
Librarian's space	140 "
Audio-visual aid room	600 "
Conference room	700 "
Stack	
Office and work room and storage	1,700 "
Newspaper room	700 "

#### J. Auditorium

Auditorium space functions primarily in the school's instructional program. Included in this program will be musical presentation, dramatic productions, lectures, and projection of films and slides. All such activity is designed to convey information, understanding, and appreciation to the student audience. Included also are learning experiences achieved by students who are involved in various types of presentations for which a stage, orchestra pit and audience are required. A second and important function is that which is related to the social life of the school. A third importance of the auditorium space is in the serving of civic and community requirements. Included here are those events in which parents and citizens take part either in dramatic presentations or community meetings. The auditorium should

be located as near to the grade school as possible. Partial isolation from the rest of the school buildings is recommended for these reasons: 1) safety and convenience of crowds in entering and leaving, 2) easy cooling and ventilation, 3) acoustical treatment, and 4) more accessibility to parking space.

The size and form of the space should be carefully designed to provide the necessary seats, aisles and sightlines, and to avoid echoes. The reverberation time should be controlled by introducing a balance of absorption of sounds not only at high frequencies but also an ample low frequency absorption for better listening. The spaces required are the following:

<u>Name of Space</u>	<u>Space Needed</u>
Seating and aisles area	9,000 sq. ft.
Stage and wings	5,400 sq. ft.
Orchestra pit	1,200 "
Toilet rooms	1,200 "
Ticket room	170 "
Coat room	760 "
Dressing room	650 "
Storage	

#### K. Cafeteria

The cafeteria will be used by almost all students during lunch period. The dining area will be used by most students the rest of the day. The kitchen, storage, serving spaces

should be well isolated from the dining-study area. The noise of kitchen preparation and clean-up should not interfere with study-hour usage. Dining-study space should be centrally located with direct access to the classroom areas and the library. It should also be easily accessible for pedestrians and for service-cars from the parking area. For evening school and community use it should be possible to isolate this area from most of the rest of the building. The spaces required are the following:

<u>Name of Space</u>	<u>Space Needed</u>
Dining room and teachers' dining room	6,000 sq. ft.
Kitchen area	1,700 "

Kitchen, dishwashing room, storeroom, refuse and garbage can storing room, snack bar, toilet room for students, toilet room and locker room for the employees, office.

#### L. Gymnasium

Physical education instruction is designed for the optimum development of a boy's or a girl's physical fitness, organic vigor and health. Social adjustment, emotional stability, and intellectual development are related to participation in games and studies. The gymnasium and locker room facilities should be located in the periphery of the area related to the rest of the building and to the outside play and parking areas. The physical education offices should be located so that instructors can supervise much of the shower room, locker room, gym

floor, and play field. The equipment issue room should be near the office to make it easier for supervising. The space requirements are the following:

<u>Name of Space</u>	<u>Space Needed</u>
Gymnasium floor and seating area	14,800 sq. ft.
Offices for instructors	700 "
Lockers, showers, and toilet room (boys' and girls')	2,650 "
Indoor swimming pool	5,900 "
Storage	470 "

#### M. Shops and Service space

The shops provide the opportunity for acquiring the knowledge of tools and their operation, the techniques and procedures employed by man in securing, modifying, exchanging, and using natural resources in meeting physical needs. The shop working program is established to function through three years with a primary emphasis on developing vocational skills. The shops should have entrances and exits located on drive-ways making them accessible by auto and truck. Parking areas should also be provided. The spaces needed are the following:

<u>Name of Space</u>	<u>Space Needed</u>
Cold and hot metals	1,900 sq. ft.
Auto shop	1,000 "
Electric shop	700 "
Wood shop	1,200 "
Drafting room	600 "
Print	650 "

<u>Names of Space</u>	<u>Space Needed</u>
Photograph room	600 sq. ft.
Office	300 "
Classroom	900 "
Storage	500 "
Maintenance and boiler room area	2,000 "

#### N. Outdoor physical facilities

Baseball diamonds

Softball diamonds

Little league baseball diamonds

Tennis and other court games

Outdoor swimming pool

Wading pool

Shuffleboard

Horse shoe

Roller skating

Archery

Track and field games

Soccer stadium

Hockey

Handball

#### O. Vehicle Parking (bicycles and cars)

Since most students will go to school by bicycles, bicycle parking will be a major space requirement for the students. The car parking area for 50 cars should be allocated for school staff and teachers; a parking space for 100 cars

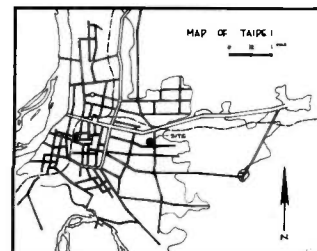
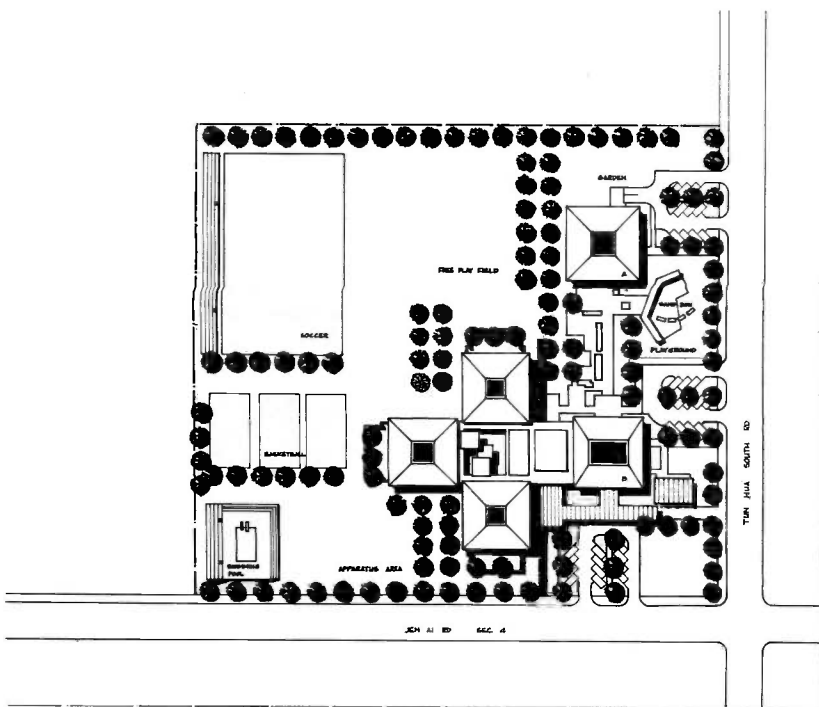


should be allocated for visitors. The school buses are frequently used by students.

## Conclusion

In conclusion, this designer has made an effort to understand what are the principal needs in education in the Republic of China. He has read history and found out the traditional background of education in China and has experienced personally the use of the modernized, well-improved educational system developing on Taiwan. He is also impressed by the revolutionary ideas which lead the educators to reevaluate their teaching methods and programs in order to bring their educational efforts to the highest degree of service. In designing this project, the designer tried to combine all the factors which have had a positive influence on the school planning into a well balanced entity. The character of the people, the structure of the involved community, the natural topographical conditions of the proposed site have been carefully analyzed, considered, and worked into the planning. It is hoped that this design will provide not only an appropriate architectural environment for both the physical and mental needs of the younger generation at the most important developing stage of their growth, but also set up a standard solution for school planning which can be followed throughout the country.

Plate XIII illustrates the location of site in Taipei City and the site plan of child development center, and elementary school.



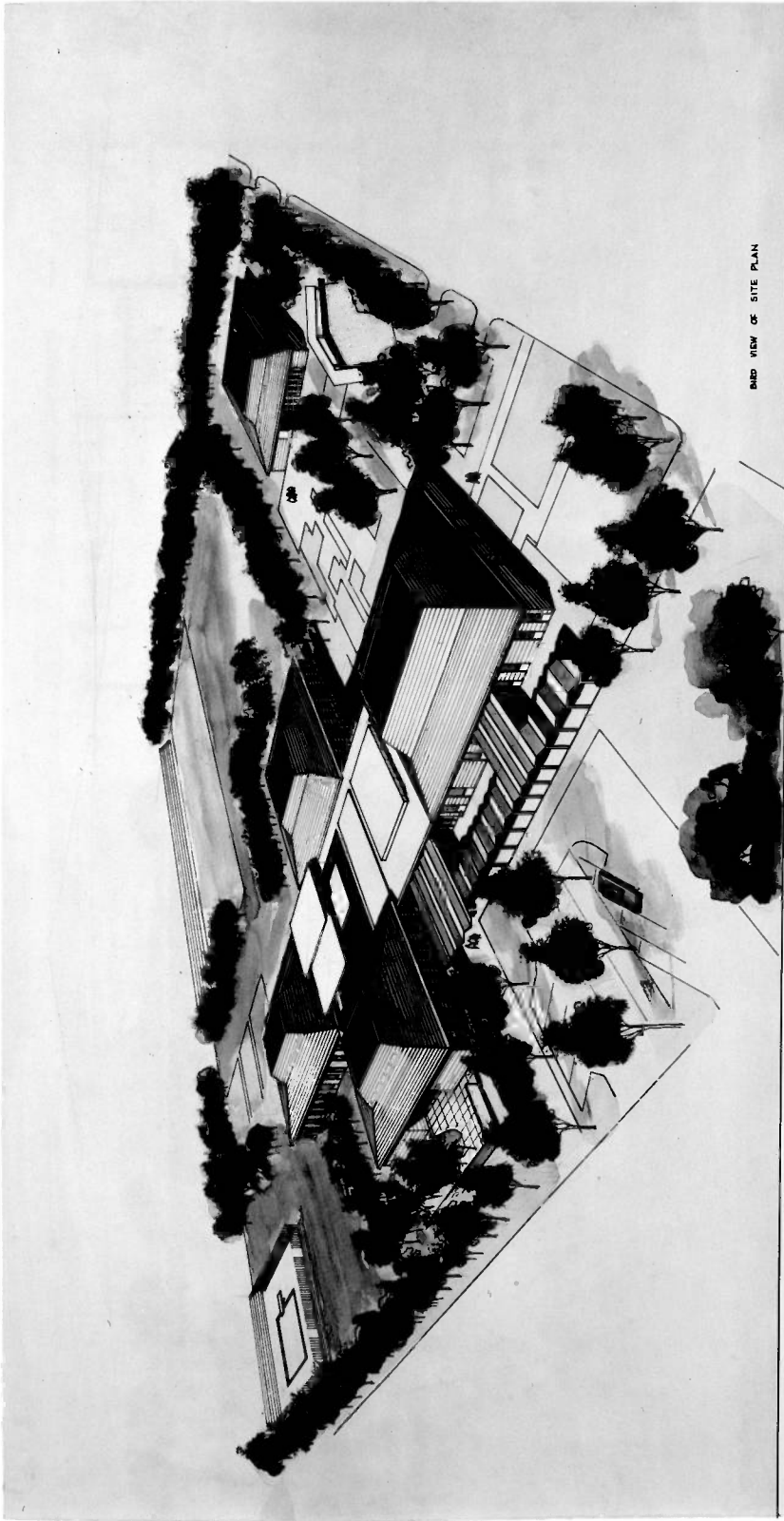
SITE PLAN  
SCALE: 1:60  
NORTH  
CHILD DEVELOPMENT CENTER A  
ELEMENTARY SCHOOL B

# CONTEMPORARY SCHOOLS IN TAIWAN

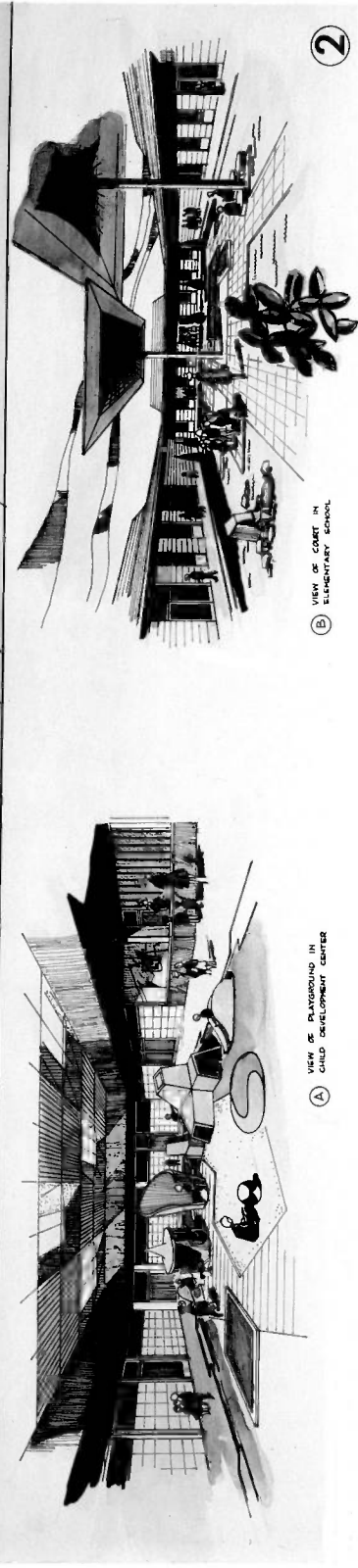
CHILD DEVELOPMENT CENTER  
ELEMENTARY SCHOOL

PROF. THEODORE A. CHADWICK  
TUAN, KE-CHIANG JAN 17, 67

Plate XIV illustrates the perspective of site plan, the perspective of center court in child development center, and the perspective of center court in elementary school.



PAID VIEW OF SITE PLAN



(A) VIEW OF COURTYARD IN CHILD DEVELOPMENT CENTER

(B) VIEW OF COURTYARD IN ELEMENTARY SCHOOL

2

Plate XV illustrates the plan,  
two sections, three elevations  
of child development center,  
and the typical ceiling plan  
of playrooms.





Plate XVI illustrates the plan of  
elementary school.

Plate XVI

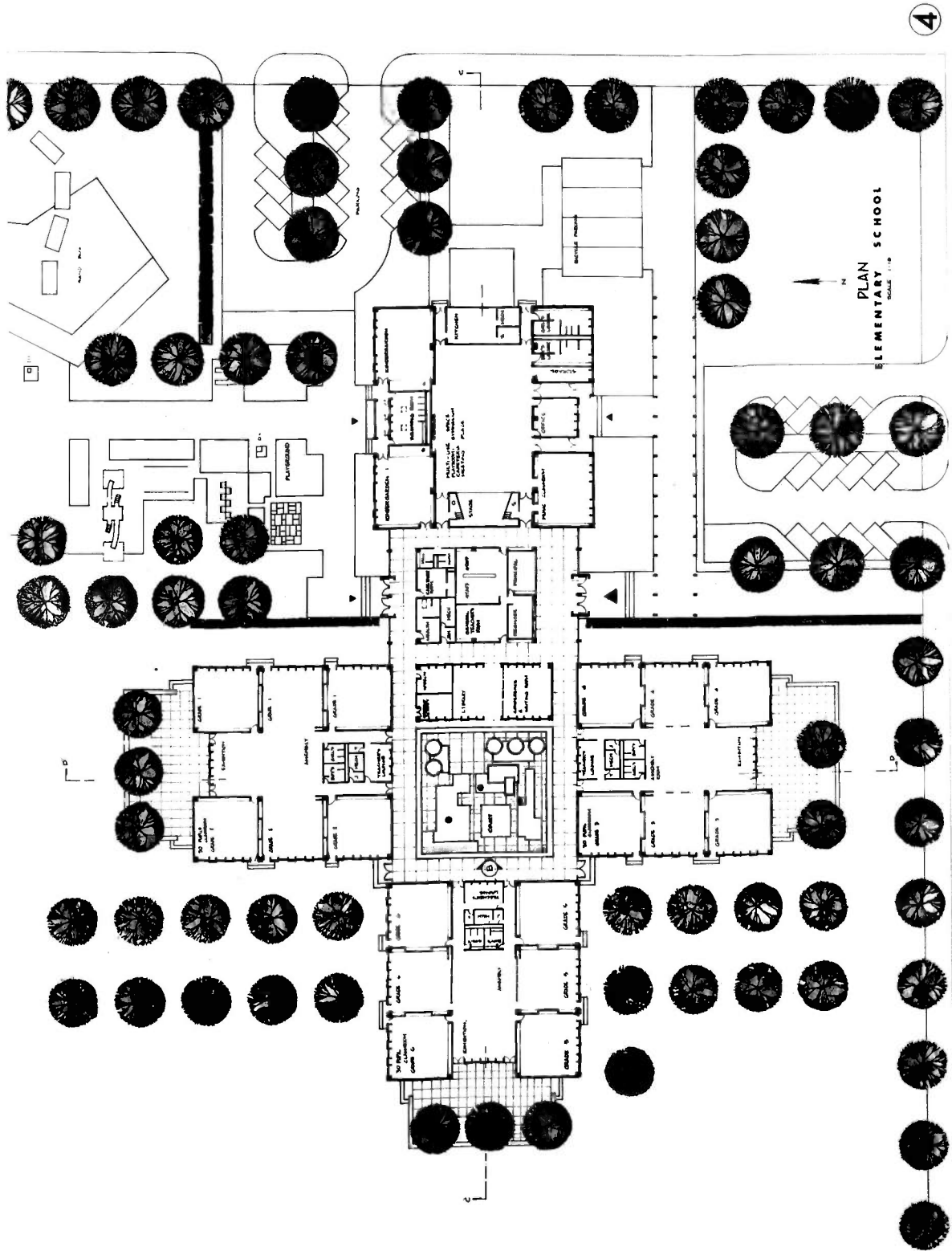
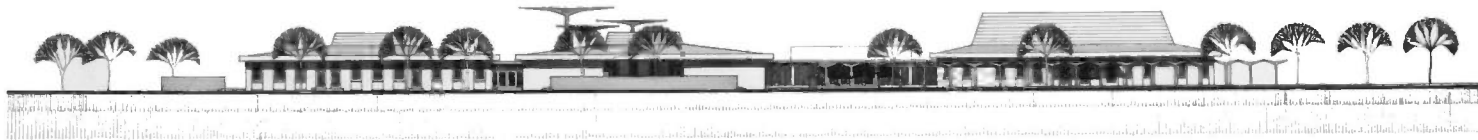
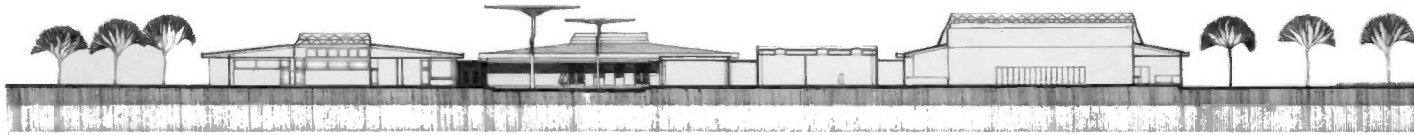


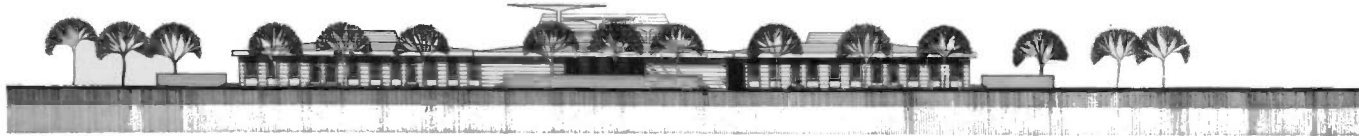
Plate XVII illustrates the four  
elevations, and two cross sections  
of elementary school.



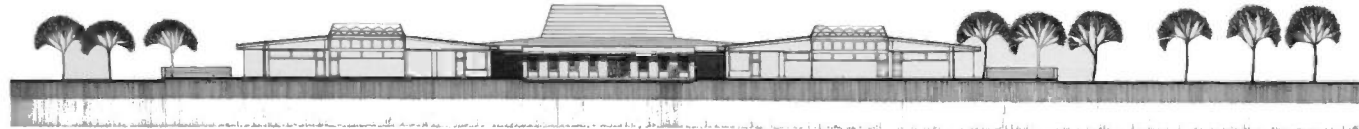
SOUTH ELEVATION SCALE 1/8"=1'-0"



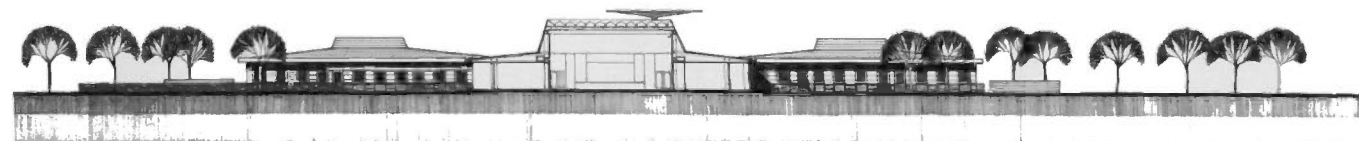
SECTION C-C SCALE 1/8"=1'-0"



WEST ELEVATION SCALE 1/8"=1'-0"



SECTION D-D SCALE 1/8"=1'-0"



EAST ELEVATION SCALE 1/8"=1'-0"



NORTH ELEVATION SCALE 1/8"=1'-0"

Plate XVIII illustrates the  
typical classroom unit plan  
of elementary school and its  
ceiling plan.

Plate XVIII

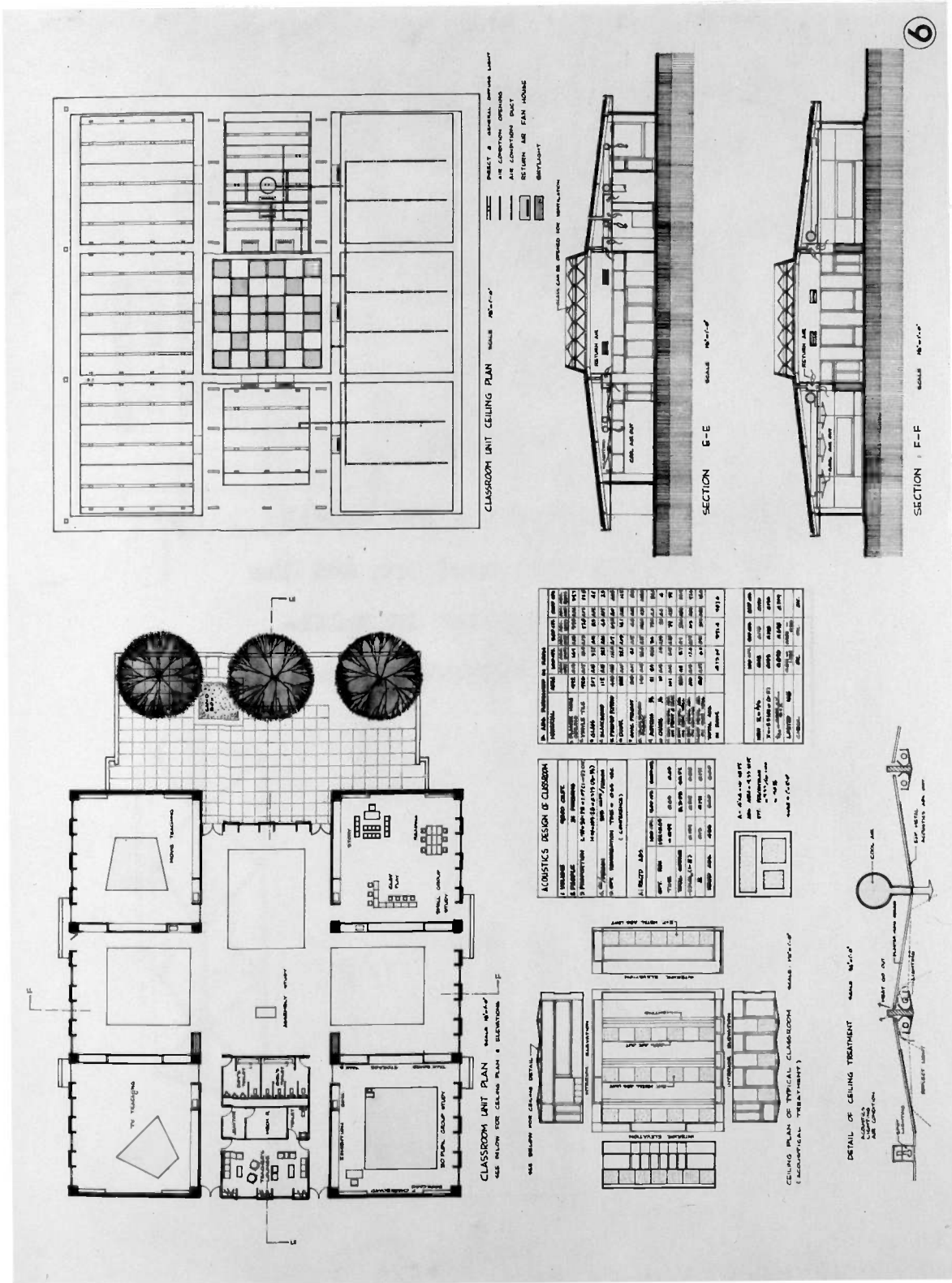
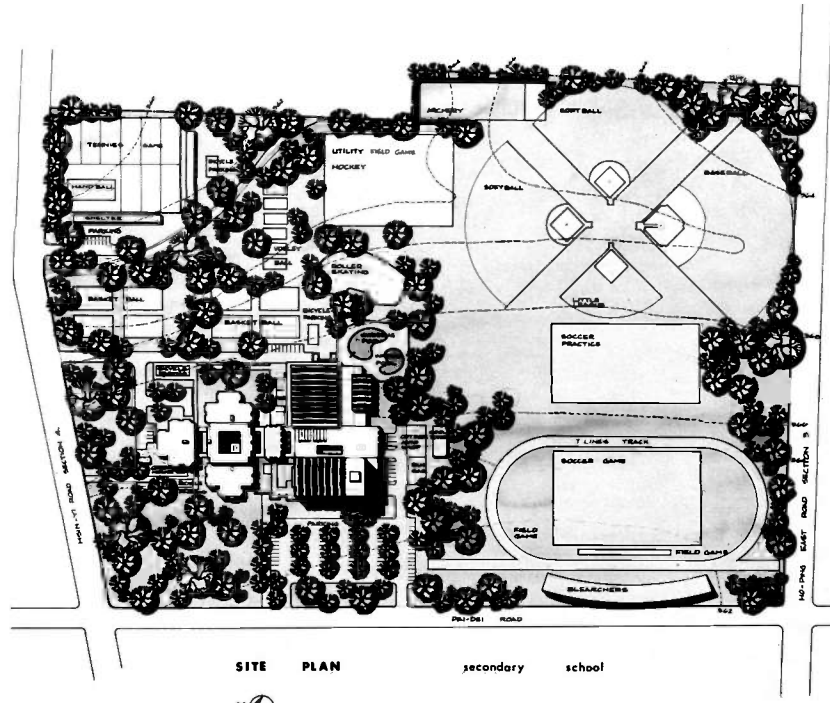
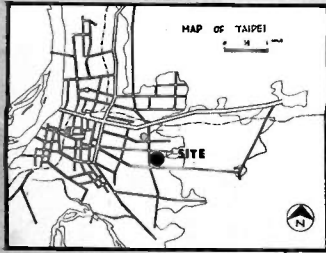


Plate XIX illustrates the detail of skylight, wall sections and the treatment of acoustics in multi-purpose room of elementary school.





Plate XX illustrates the location  
of secondary school in Taipei City  
and the site plan.



SITE PLAN secondary school



# CONTEMPORARY SCHOOLS IN TAIWAN

SECONDARY SCHOOL

PROF. THEODORE A. CHADWICK

TUAN, KF-CHIANG JULY 15, 67

Plate XXI illustrates the  
perspective of the site plan  
of secondary school.

Plate XXI

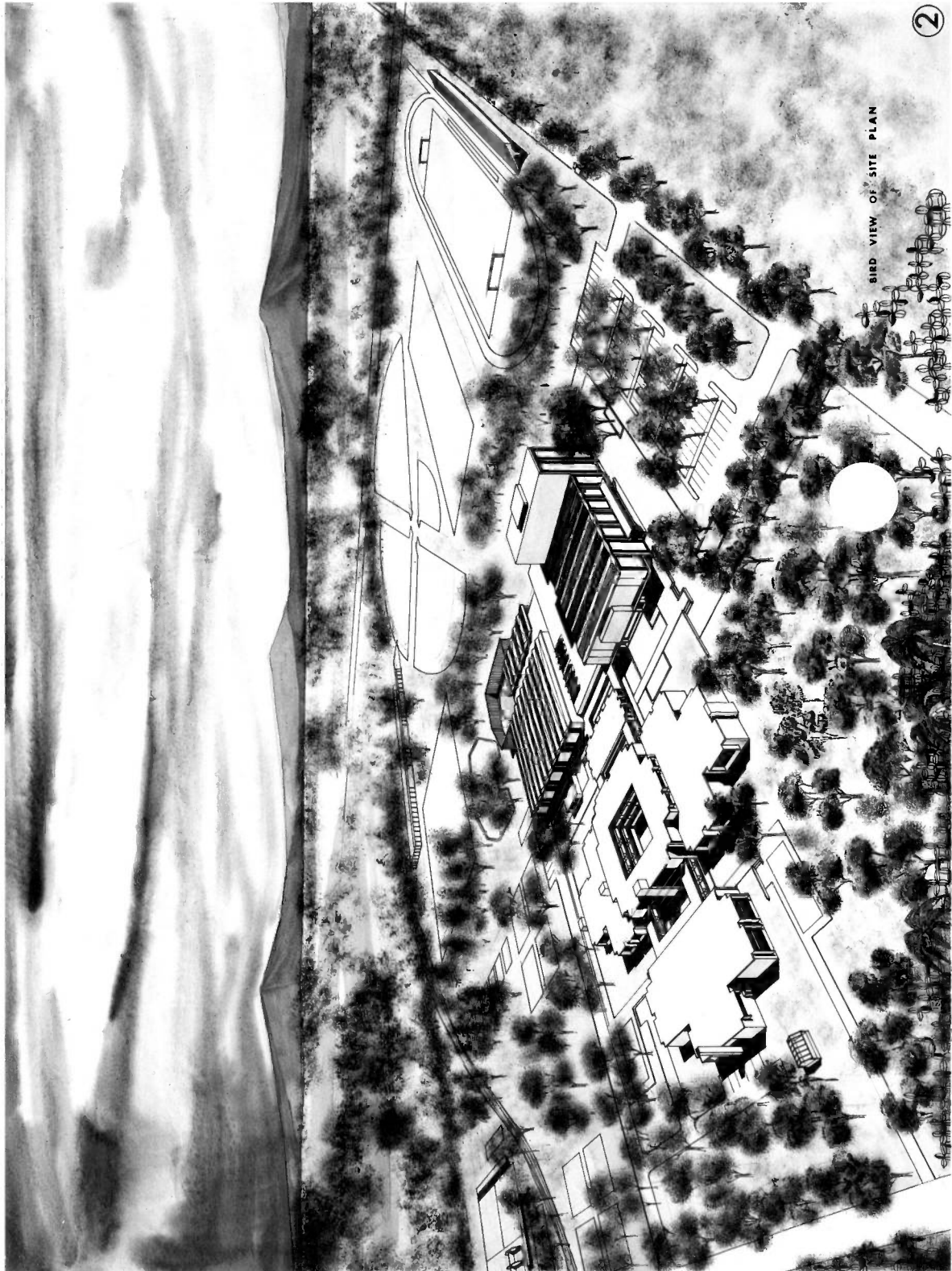
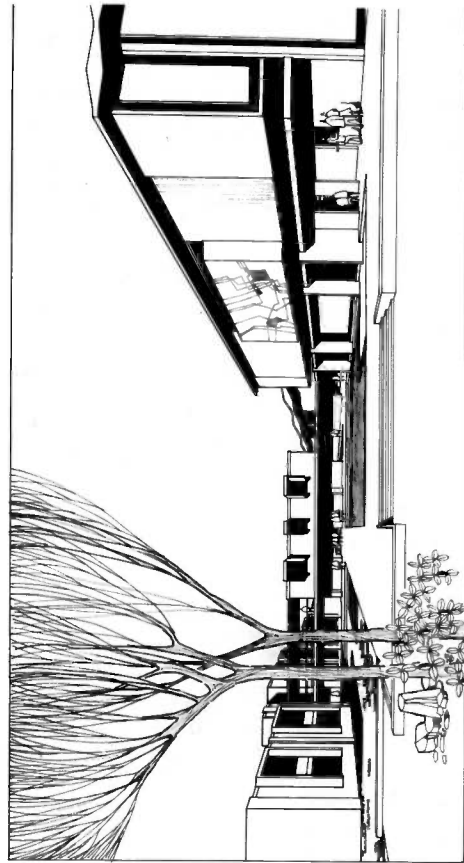


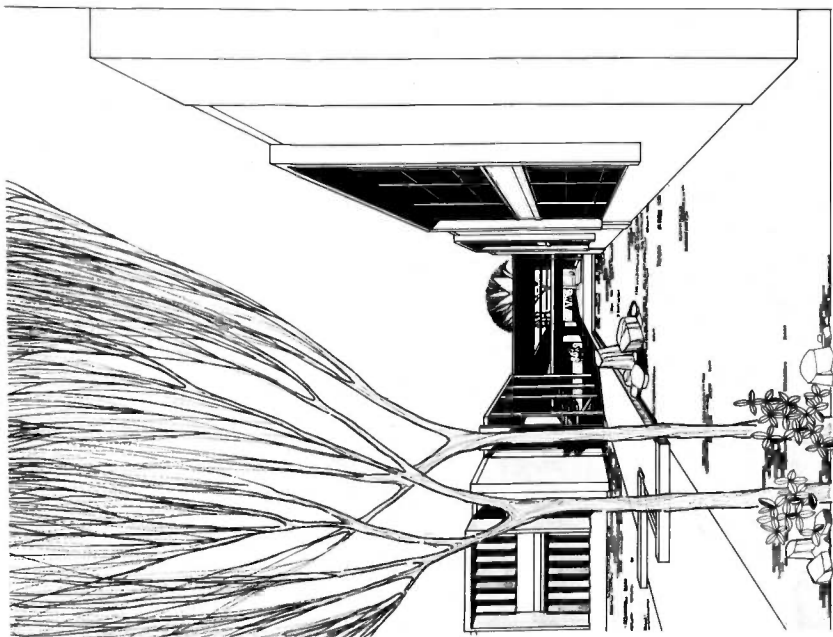
Plate XXII illustrates the  
perspective of major and minor  
entrance in secondary school.

Plate XXII



major entrance

3



minor entrance

Plate XXIII illustrates the  
ground floor plan of secondary  
school.

Plate XXIII

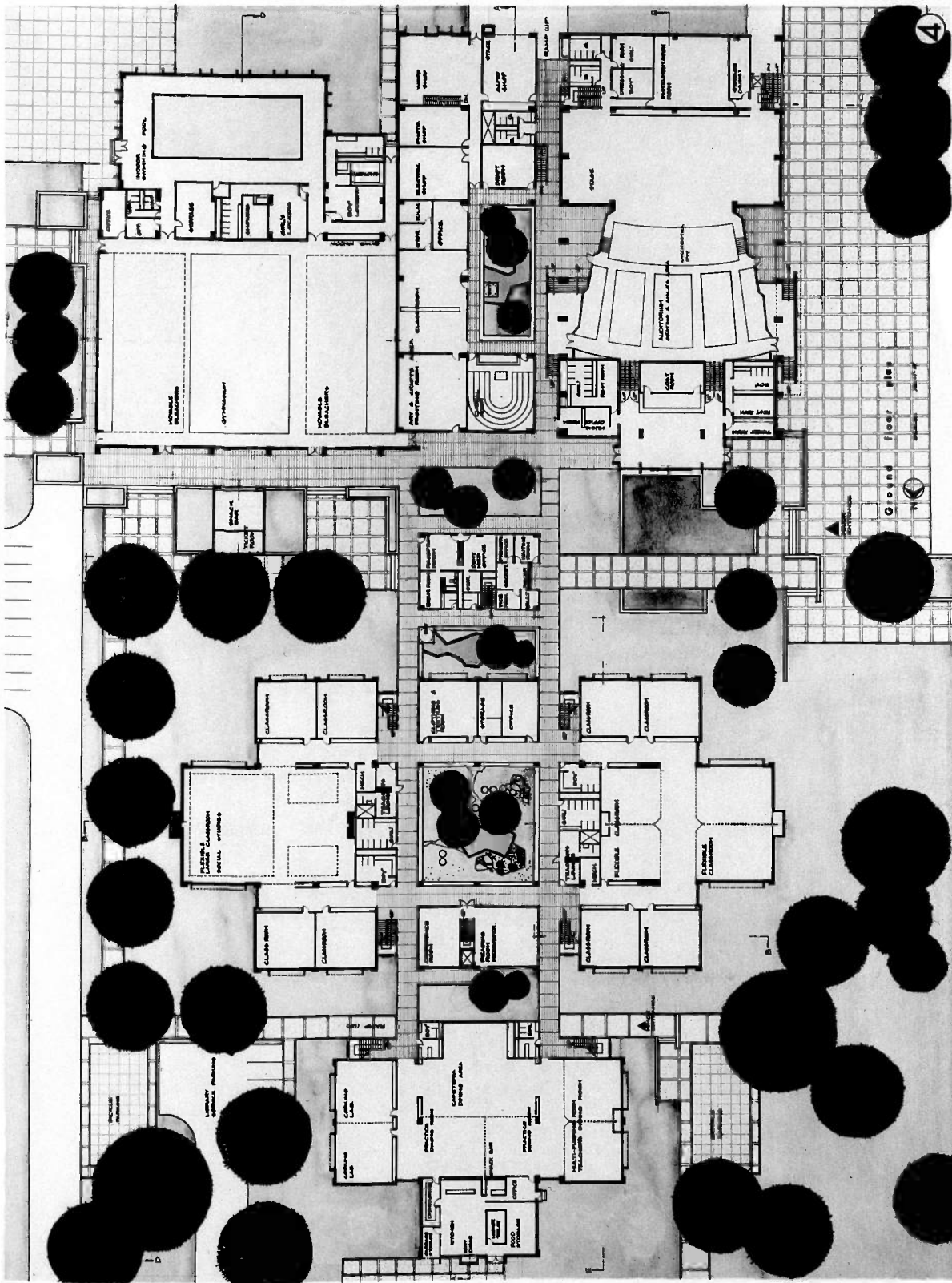
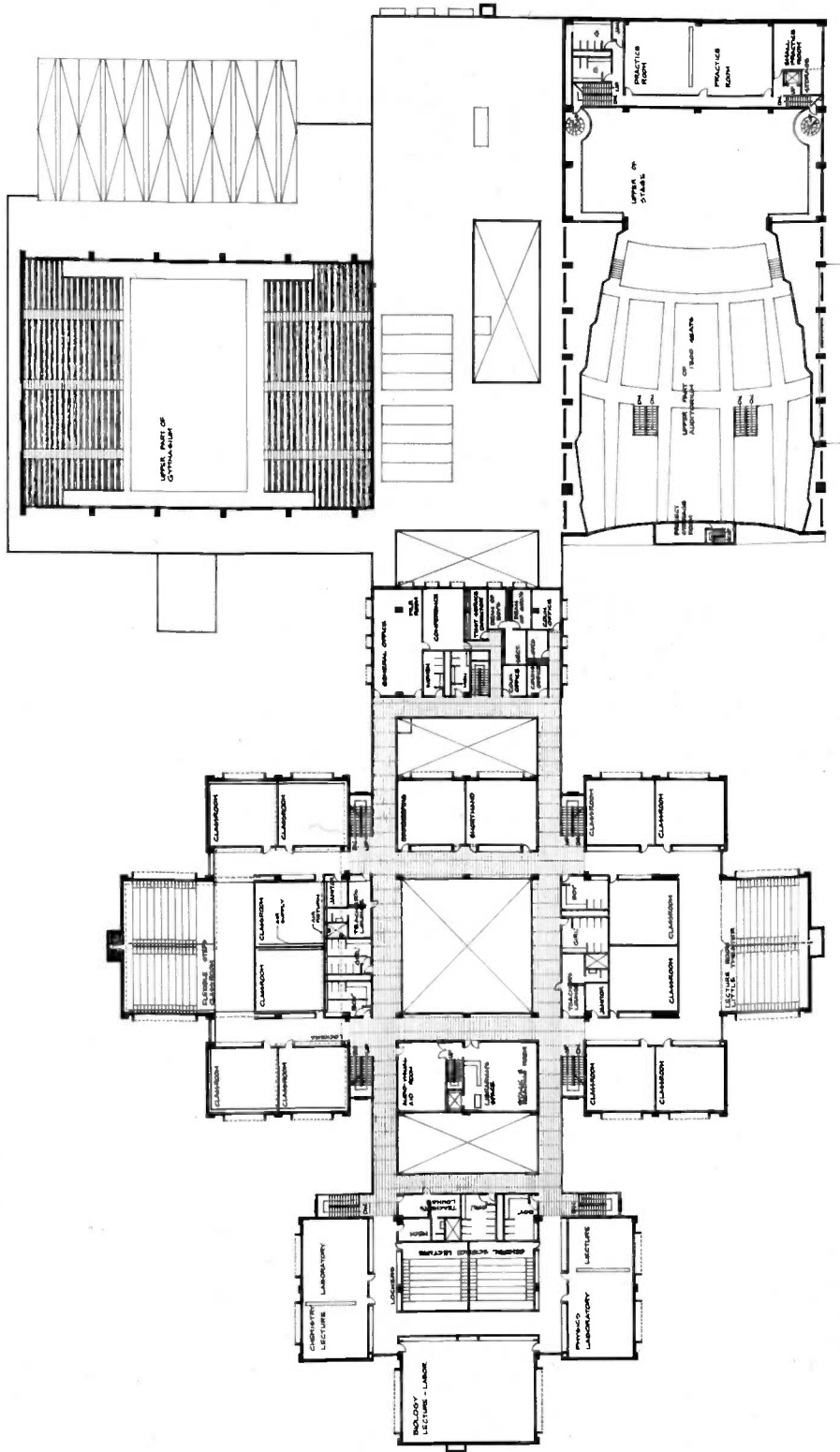




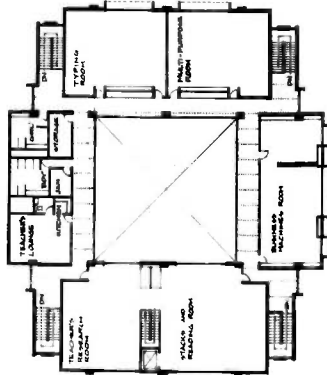
Plate XXIV illustrates the  
second floor plan of secondary  
school.



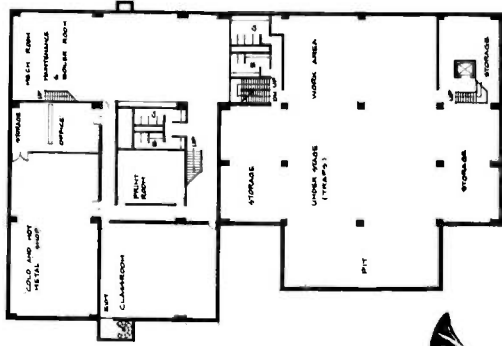
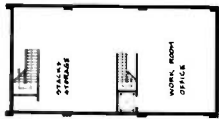
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Second floor plan SCALE 1/4" = 1'-0"

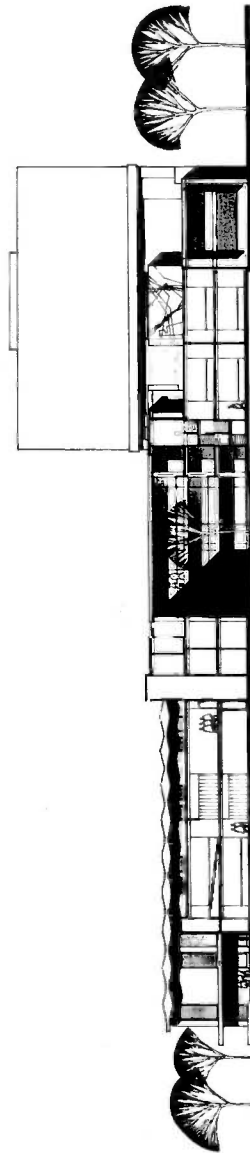
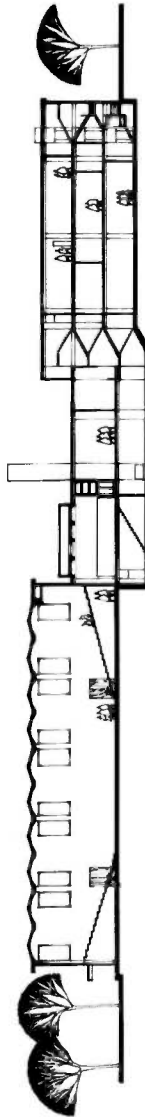
Plate XXV illustrates the third floor plan, the basement of library, shop, administration of secondary school, and section C-C, section B-B of secondary school.



Third floor plan SCALE 1/8" = 1'-0"

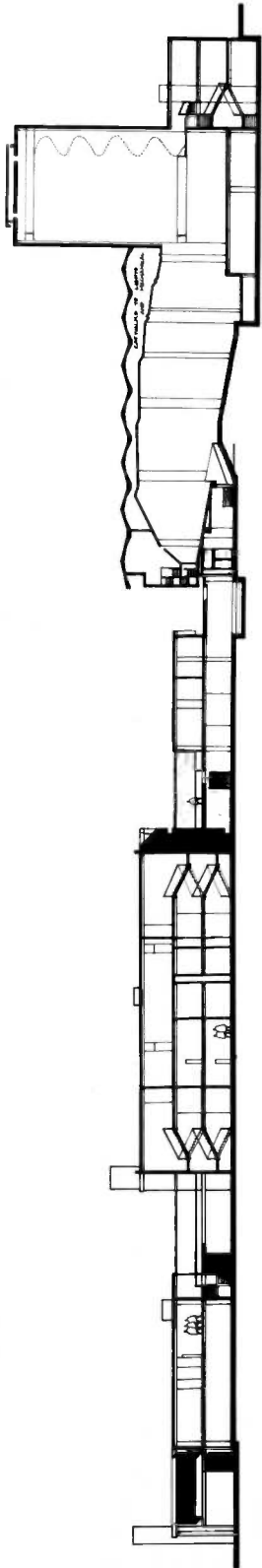


Basement floor plan (SHOP AND STUDIO) SCALE 1/8" = 1'-0"

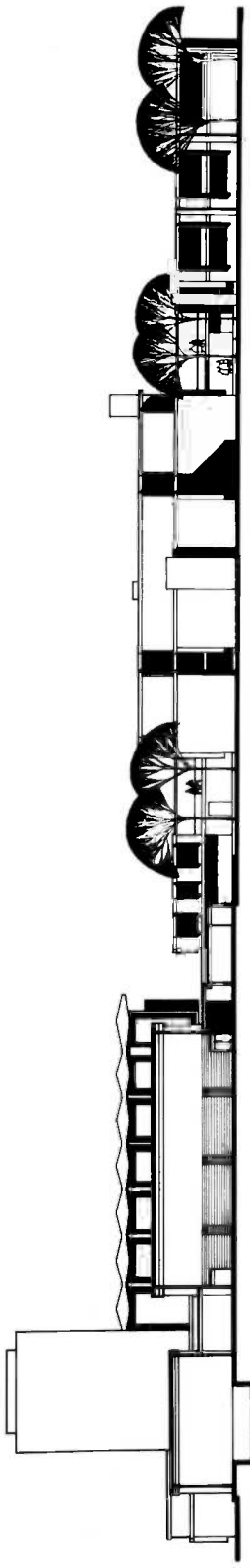


Basement floor plan (ADMINISTRATION) SCALE 1/8" = 1'-0"

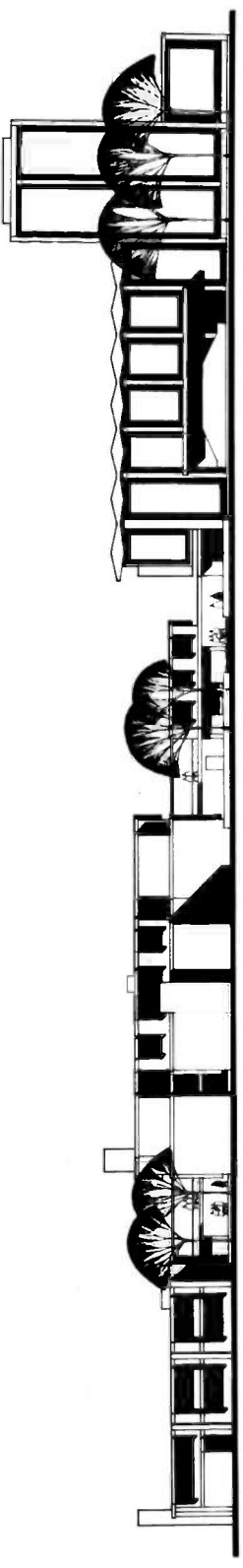
Plate XXVI illustrates the section  
E-E, west elevation and section  
D-D of secondary school.



SECTION E-E  
SCALE: 1/16"=1'-0"



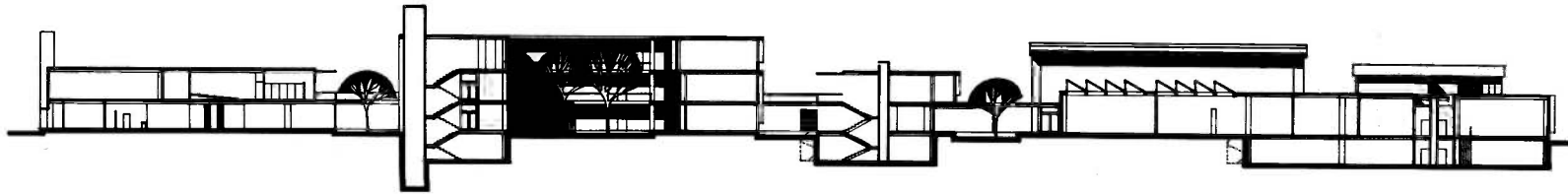
EAST ELEV. & SECTION D-D  
SCALE: 1/16"=1'-0"



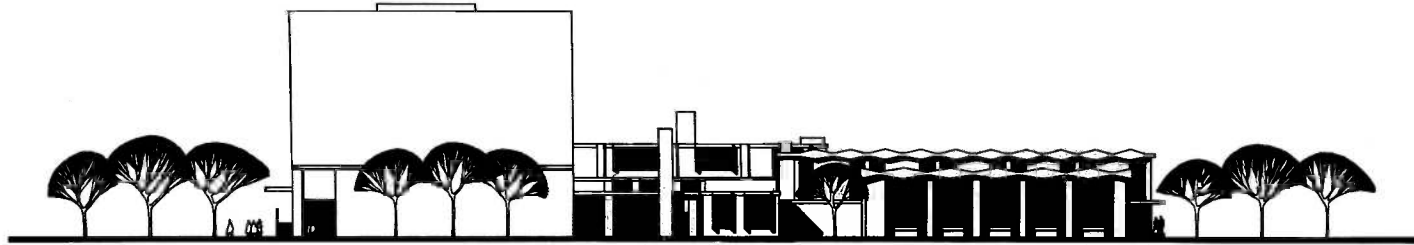
WEST ELEVATION  
SCALE: 1/16"=1'-0"

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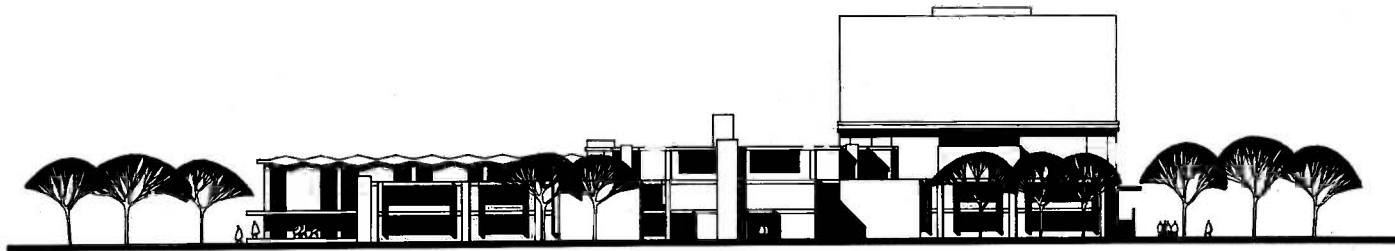
Plate XXVII illustrates the section  
A-A, south elevation, and north  
elevation of secondary school.



SECTION A A SCALE: 1/16"=1'-0"



SOUTH ELEVATION SCALE: 1/16"=1'-0"



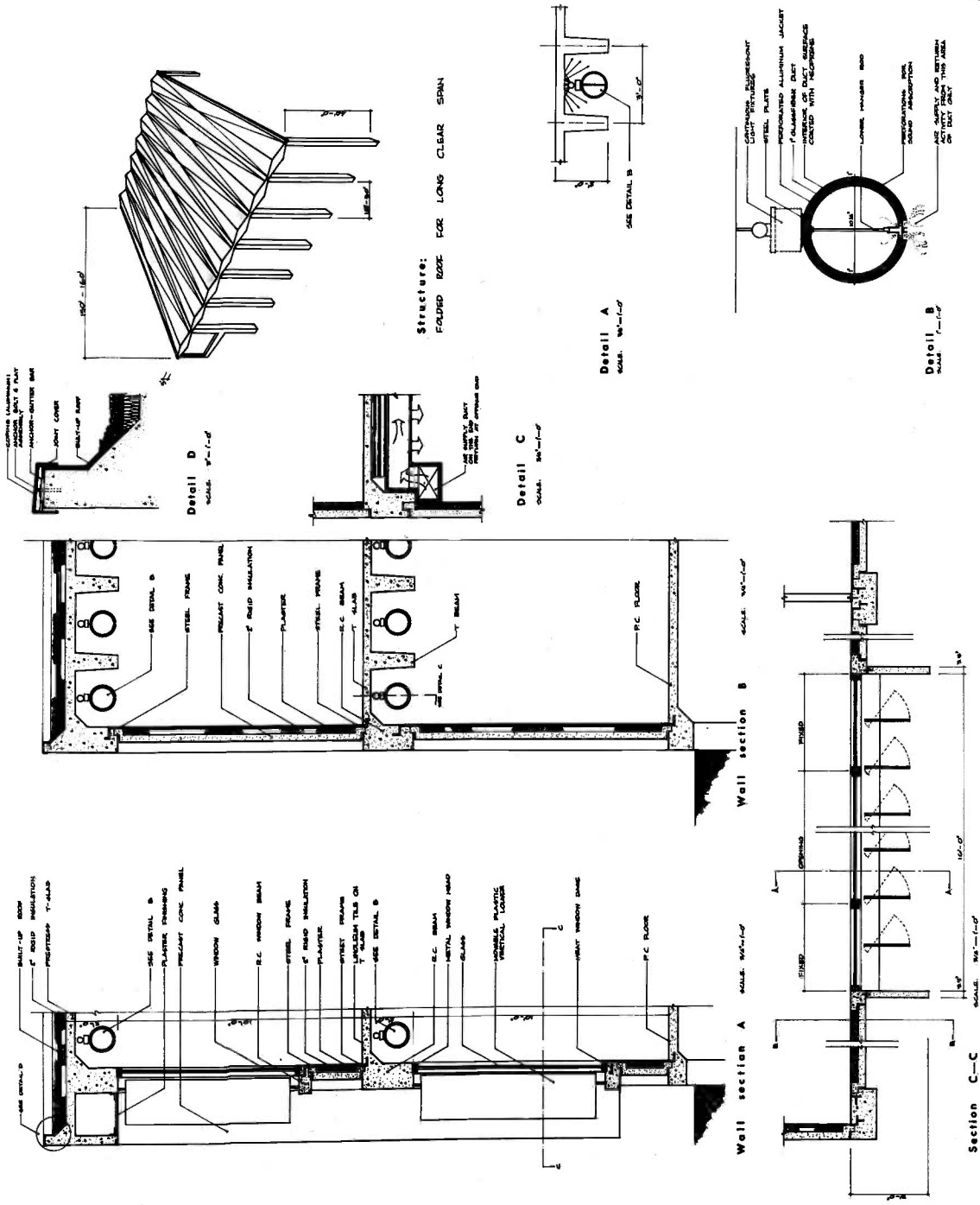
NORTH ELEVATION SCALE: 1/16"=1'-0"



Plate XXVIII illustrates the  
acoustical design in auditorium  
of secondary school.



Plate XXIX illustrates the typical wall sections, and detail of lighting and air conditioning layout of secondary school.



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The author expresses his sincere thanks to his major advisor Professor Theodore A. Chadwick, College of Architecture and Design. This thesis, together with the design, was prepared under his able guidance and supervision.

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## BIBLIOGRAPHY

- Architectural Acoustical Materials, Acoustical Materials Association, A.I.A., No. 39-B, 1966.
- Aronin, Jeffery Ellis, Climate and Architecture, New York: Reinhold Publishing Corp., 1953.
- Design for ETV, New York, New York: Educational Facilities Laboratories.
- Donovan, John J., A Method of Procedure and Checking Schedule for Planning School Buildings and their Equipment, New York: Bruce Publishing Co.
- Harrison, Wallace Kirkman, School Buildings of Today and Tomorrow, New York: Architectural Book Publishing Co., Inc., 1931.
- Knudsen, Vern O., Acoustical Designing in Architecture, New York: John Wiley and Sons, Inc., 1963.
- MacConnell, James D., Planning for School Buildings, Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1957.
- Planning America's School Buildings, Washington, D. C.: American Association of School Administration, 1960.
- Progressive Architecture, New York: Reinhold Publishing Corp., (February, 1965).
- The Schools and Urban Renewal, Educational Facilities Laboratories.
- School Planning, Design, and Construction, Educational Facilities Laboratories.
- Staugle, William Hull, An Air-Conditioning Primer, New York and London: McGraw-Hill Book Co., Inc., 1940.
- Tone, S. J., The Problem of Taiwan's Population, Taipei, Taiwan: Republic of China, 1964.
- Waechter, H. H., Schools for the Very Young, F. W. Dodge, Corp., 1951.

THE DESIGN OF  
CONTEMPORARY SCHOOLS IN TAIWAN

by

KE-CHIANG TUAN

B.S. Chung Kung University, Taiwan, 1962

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AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the  
requirements for the degree

MASTER OF ARCHITECTURE

College of Architecture and Design

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

1968

This thesis presents a recommendation for a school system in a suburb of Taipei, Taiwan, Republic of China. Three school buildings have been designed as a solution to overcome the shortage of school buildings caused by the rapid growth of population in Taiwan. They are the nursery school for 80 pupils, kindergarten school for 60 pupils, elementary school for 540 pupils, and 1,200 to 1,500 students in secondary school.

The designer of this project is convinced that "play" is important for all young children, especially for the children from three to five years of age. As a matter of fact, play is the main core of their curriculum. The quality of play, of course, is influenced not only by the attitude of the adult leader towards play but also by the nature of the space and the quality of materials used to enhance the space for playing. It is obvious, however, that school alone cannot be the only place for educating the child; home and the school must cooperate with the parents in this joint venture.

Design of a kindergarten is characterized chiefly by the space pre-eminently used for physical movement in conducting various kinds of work and play projects. Another characteristic of the kindergarten program is the development of a sense of belonging to a group. This aim can be furthered by the numerous and varied programs available for group participation.

The elementary school plants and facilities recommended have been planned on the basis of education for the individual. This situation means that free and flexible space is definitely needed for each individual's constant alertness in response to



the individual needs of others which differ one from another and are subject to change from time to time. The serious consideration of teacher-parents' conferences as a method of reporting pupil's progress is of great value since from such reports parents may get a much clearer understanding of the child's progress than can be obtained from the formal report card.

It is proposed that secondary education should help students to develop useful skills, good health and fine citizenship that will contribute to a happy family and social life. The result expected is that a student will master the techniques in various fields in order to appreciate the best in his culture and to be able to engage in creative activities.

In designing this project, the designer tried to combine all the factors which have a positive influence on the school planning and production of a balanced entity. The character of the people, the structure of the community and the natural topographical conditions of the proposed site have been carefully analyzed, evaluated, and worked into the plan. It is hoped that these designs will provide not only a better architectural environment for both the physical and mental needs of the younger generation during the most important developing stage of their growth, but also will set up a standard solution for school planning which can be followed throughout the country.